

**AN ASSESSMENT OF THE SUSTAINABILITY OF
RESIDENTIAL BUILDINGS AND NEIGHBOURHOODS IN
IKEJA. LAGOS STATE, NIGERIA**

By

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CERTIFICATION

This Thesis entitled “An Assessment of the Sustainability of Neighbourhoods and residential buildings in Ikeja, Lagos State, Nigeria” carried out by OGUNBODEDE Bolawole Femi under our supervision, meets the regulations governing the award of the degree of Doctor of Philosophy (Ph.D) in Architecture of the University of Lagos, Akoka, Lagos State, Nigeria. We certify that it has not been submitted for the degree of Ph.D or any other in this or any other University, and is approved for its contribution to knowledge and literary presentation.

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DECLARATION

I, OGUNBODEDE Bolawole Femi, declare that this was done entirely by me under the supervision of Dr A. K Adebayo (main supervisor) of the department of Architecture, University of Lagos, Akoka, Lagos State and Prof S. A Amole (2nd supervisor) of the department of Architecture, Obafemi Awolowo University, Ile-Ife, Osun State. The thesis has not been presented either wholly or partly, for any degree elsewhere before now. All sources of scholarly information used in this thesis were fully acknowledged.

OGUNBODEDE Bolawole Femi

DEDICATION

This work is dedicated to my LORD and saviour Jesus Christ, by whose grace I was able to surmount challenges in my research journey.

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ABSTRACT

Sustainability has become a global term in recent years, and people have different views of its significance. Studies revealed the trend of environmental non-sustainability to be the aftermath of human activities. This has affected Ikeja which faces many environmental problems. These are linked with the negative attitude of residents towards the sustainability of their neighbourhoods, and non-participation in environmental issues. The study was conducted in three residential zones of Ikeja in Lagos state, Nigeria. The thesis identifies neighbourhoods and residential buildings and their characteristics; examines the socio-economic characteristics of the residents; analyses the knowledge of residents about sustainability; identifies the factors that determine the sustainability of the study area. The case study approach was adopted. Three contiguous density areas were selected for the administration of questionnaires, based on the number of buildings. The data generated from the questionnaires were analysed using frequencies, percentages and factor and regression analyses. Simple cross tabulation was adopted to analyse the characteristics of the buildings and neighbourhoods, and residents' perception of sustainability, across all density zones. Factor analysis was employed to analyse environmental sustainability factors of the area while regression analysis was used to analyse the characteristics that determine sustainability of neighbourhoods in the study area. Findings reveal no significant difference in building characteristics, socio-economic characteristics, respondents, perception and knowledge of sustainability across density zones. Indices and factors in which sustainability is based were provided, out of which neighbourhood sustainability is found to be based on Greening and health, Population, Government and community influence, Environmental pollution, Energy usage and Proneness to flood.

Keywords: Sustainability, Residential Neighbourhoods, Buildings and Assessment

CHAPTER 1

1.0 INTRODUCTION AND BACKGROUND OF STUDY

The concept of Sustainable development means many things to many people, as not as many as endorse it do practice it (Howley 2010). Studies in African climate and development have revealed that, climatic changes emanate from developmental activities such as extensive agriculture, mass housing production, oil exploitation, commercialisation and industrialisation (Pat-Mbano & Alaka 2012). About 13 million hectares of forest around the world was lost to these activities between year 2000 and 2010. These developments are said to have contributed large volumes of greenhouse gases, a large part of which is the emission of carbon dioxide (CO₂) at 2.6 per cent globally between 2010 and 2011, the scenario that puts the global emission at 32.2 billion metric tons in 2011; a rise of 48.9 per cent above 1990 level (United Nations 2014). The activities that lead to these are however, a threat to the global community, but have become an integral part of the communities whose life has one way or the other become dependent on them (Pat-Mbano & Alaka 2012).

It is predicted that, half of the world's population will soon be domiciled in urban centres (Cohen 2004) and that the world urban population may increase by 75 percent in the year 2050, that is, from 3.6 billion in 2011 to 6.3 billion in 2050 (United Nations, 2012). Over 60% of the world's population is also expected to live in cities in 2030. This will make energy use, which is an important part of human development progress, increase faster than the population. Urban areas, like Lagos particularly, will become vulnerable to the effects of global warming, as cities discharge an amount of heat comparable to that received from solar radiation (Hunt *et al*, 2011).

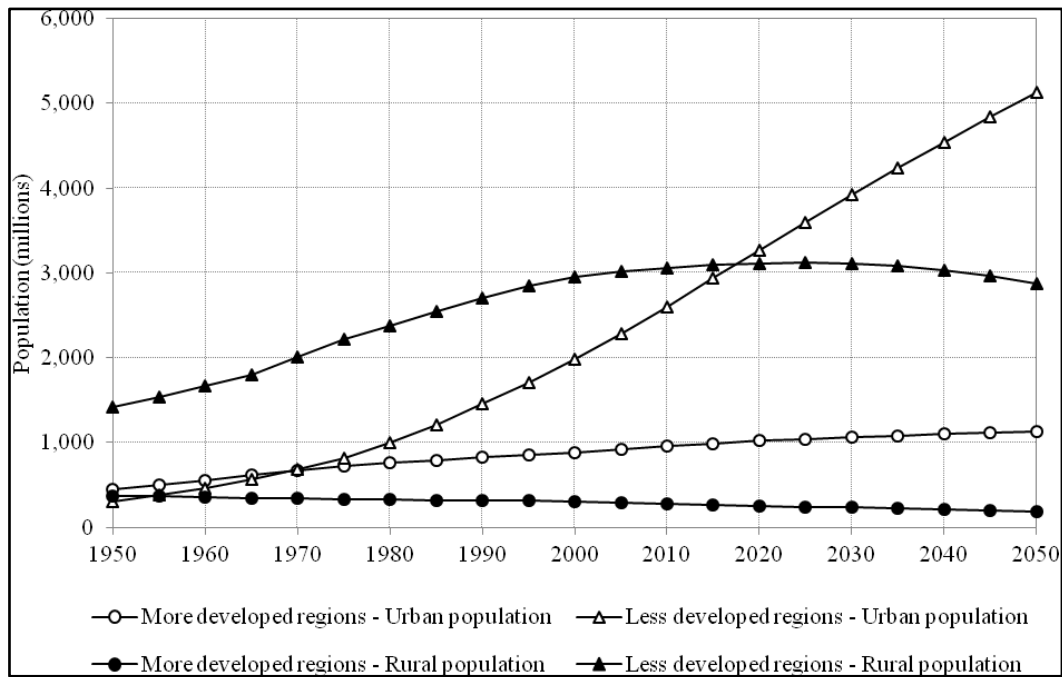


Figure 1. Urban and Rural Population by development group, 1950-2050 (United Nations Population Division 2011)

Sustainable growth or development, being an effectiveness of environmental, economic and social considerations (Pressman, 2007) is essential for organisations to flourish and contribute positively to communities around them (Jankowska & Marcum, 2011). Sustainability is not limited to environmental friendliness of the environment and the energy efficiency of the buildings; access to employment, schools, health care facilities and public transportation are integral parts of sustainability (Ajayi & Omole, 2012). Poorer households usually concentrate on areas of dereliction, with air and noise pollution. This is due to economic factors, and cultural affinity. There is also an established link between sustainability and other areas, like social cohesion, social exclusion, social capital and quality of life (Winston & Eastway, 2008, Levett, 1998).

The Brundtland report (1987) introduced the term ‘sustainable development’ and defined it as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. This definition makes Sustainability a social construct, which implies an action plan with an ethical basis, letting the need for survival

dictate environmental or ecological ethics. However, the survival of societies depends on the existence of the global eco-system, which is regulated by globally based environmental ethics. (Scokolay, 2008). It is good to note that, though the ability for the global communities to continue to survive is dependent on both technological and behavioural practices of its citizens, the socio-cultural and economical tendencies of neighbourhood dwellers cannot be ignored. The assertion that, human beings are the ones that need the environment, not the reverse, is noteworthy. Those that dwell on earth are said to be the ones destroying it, even though, the environment can do very well without them. There is a need to rethink, change our mind-set, and realize that we are part of it. The capacity to destroy it is embedded into us, though, we cannot live without it (Maathai 2004 cited in Obe, 2010)

The pollution from vehicles that ply the city roads each day, contribute in varying proportion, to the greenhouse gases (GHG) that threatens the global community. So also is the use of generators which emit gases that lead to death in extreme cases due to air pollution. The absence of appropriate laws and regulations and the failure of politically structured administrations to put adequate infrastructure in place make these practices go unchecked. (Pat-Mbano & Alaka, 2012).

Construction methods and energy practices are also factors, which make structures contribute to increased carbon emissions and energy inefficiency. Buildings, as a result of these, contribute, as much as one third of total global greenhouse gas emissions (United Nations Environment Programme, 2016). The rate of construction in Lagos makes it susceptible to this practice.



Figure 2. Wastes by the fence of a residence in Ikeja

Carbon dioxide (CO₂) is the most important greenhouse gas, and its biggest source is the burning of fossil fuels for energy. Six billion tons of carbon dioxide is released every year, from this source. About 1.6 billion tons of this gas is also released per year, as a result of deforestation and removal of grassland, this is aside the emission of methane that occurs, during the management and disposal of waste. (Greenpeace International, 1998). The impact of this, in the Nigerian context, is more severe in Lagos, due to its being the commercial and industrial hub of the nation. There are more vehicles, more industries and more electricity generators in Lagos. The negative impact, which comes as a result of these activities, is a contributing factor to diseases. (Smith *et al*, 2010).

Many reports have also pointed out that these emissions arise from anthropogenic activities. Which makes it important for many countries to take up the urgent task of evolving into low-carbon societies. This is especially pertinent to countries of Asia and Africa, where rapid

urbanization is causing a swift increase in CO_2 emissions (Fijita, Matsumoto and Siong 2009). However, there is a need to identify these human factors, in other to create awareness, towards the mitigation of the negative impacts.



Figure 3. Emission of CO_2 through vehicle exhaust, within Ikeja axis of Lagos highway



Figure 4. Over flown garbage bins in Ikeja

The removal of topsoil is also a major factor towards making neighbourhoods unsustainable. It is washed away in storms, discarded into landfills or sold for economic considerations. These increase the need for irrigation of gardens and green spaces and the cost of planting and restoration (Frame & Vale, 2006).



Figure 5. Garbage bags placed within a major road of Ikeja



Figure 6. Dumping of refuse in a rain water channel in Ikeja



Figure 7.Generators arranged by the fence in Ikeja neighbourhood



Figure 8. Flooded street in Ikeja neighbourhood

The operation of poorly maintained infrastructure projects has equally induced various social, economic, cultural and environmental problems. (Shen, Wu and Zhang, 2011). The population density of Lagos is a viable pointer to this assertion.

There is a growing view that human flourishing has been sacrificed in our drive toward greater growth. (Gilory, 2008).

This thesis focuses on several issues that impact the residential neighbourhoods and buildings. These include the environmental, economic and socio-cultural aspects. It aims to achieve this through literature, interviews, administration and analysis of questionnaires. It includes the identification of neighbourhoods and buildings within Lagos with their characteristics and



Figure 9. Cigarette Smoking; a habit that contributes to pollution in Ikeja

matching the existing indicators with the characteristics of Lagos neighbourhoods. The assessment of the sustainability of the neighbourhoods and buildings and the analysis of the attitudes of residents to sustainability will be carried out through this means.



Figure 10. Cooking for commercial purpose, within Ikeja Neighbourhood



Figure 11. Cooking on the main road, within Ikeja Neighbourhood



Figure 12. Cooking on the main road, within Ikeja Neighbourhood

1.1 PROBLEM STATEMENT OF THE RESEARCH

Ikeja the capital of Lagos state is the focus of this research. The study area faces many environmental problems. These problems include industrial wastes, solid waste management, deficit in sanitary infrastructure, air and water pollution, flooding and inadequate access to basic infrastructure (Oduwaye & Lawanson, 2007).

People's attitude towards these issues, through their lack of seriousness to environmental cleanliness in Ikeja, has contributed to the continuous existence of the problems. However, an attitudinal change in environmental issues is urgently required to achieve a sustainable environment (Ilevbare *et al*, 2014). These negative attitudes include disposal of wastes on streets, roadways and gutters; a method that devalues Ikeja neighbourhoods and make them prone to flooding (Falaye, 2016). The Lagos state ministry of the environment sees a need to

develop an initiative that involves the residents, on the need to urgently take steps towards a sustainable environment.

In the opinion of Oduwaye & Gamu-Kaka (2007), non-participation of residents in environmental sustainability related issues makes planning unsustainable as this erodes people's sense of responsibility towards their environment. There is however no known study, to the best of the researcher's knowledge, which has assessed the environmental sustainability of neighbourhoods through the perspective of the residents and also posits the main factors that determines the sustainability of Ikeja.

There is need to assess the environmental sustainability of Ikeja, due to its crucial role as the administrative capital of Lagos state. This is to identify several environmental issues that affect its sustainability; expose the effects of human activities in residential buildings and neighbourhoods on architectural designs; show how architectural designs affect solid and human waste management.

1.2 AIM AND OBJECTIVES

The aim of this research is to assess the sustainability of residential buildings and neighbourhoods in Ikeja, Lagos, and determine the resident's attitudinal and behavioural responses.

The specific objectives are to:

- i. identify neighbourhoods and residential buildings and their characteristics in Ikeja, Lagos.
- ii. examine the socio-economic characteristics of the residents, in Ikeja.
- iii. determine the knowledge of residents about sustainability.
- iv. identify the factors that determine the sustainability of the study area.

1.3 RESEARCH QUESTIONS

- i. What are the characteristics of residential neighbourhoods and buildings in Ikeja?
- ii. What are the socio-economic characteristics of the residents in the study area?
- iii. What is the level of residents' knowledge of sustainability?
- iv. What are the factors that determine sustainability in the study area?

1.4 RESEARCH HYPOTHESES

- i. There is no significant association between residential density zones and apartment types.
- ii. There is no significant relationship between the income of residents and their apartment types in Ikeja.
- iii. The knowledge of respondents about sustainability is independent of their level of education.
- iv. There is no significant difference in the residents' perception of sustainability across the density zones.

1.5 THEORETICAL FRAMEWORK

Different theoretical views have been formulated by researchers over the years, on sustainability and sustainable practices. Some of these theories are outlined below.

1.5.1 The Triple Bottom Line (TBL) Concept

This concept describes the three factors embedded into sustainability, and equally points to the relationship between these factors. It considers the basic factors of economic, social and environmental aspects. It is also called the pillars of sustainability, as represented by people, planet and profits. The social aspect is synonymous with people and the environmental aspect is synonymous with the planet while the economy is synonymous with profit (Kuhlman &

Farrington, 2010). This theory is anchored on the opinion that environmental, societal and economic factors are the main determinants of sustainable development, which makes the evaluation of sustainable development impossible, if any of these factors is excluded.

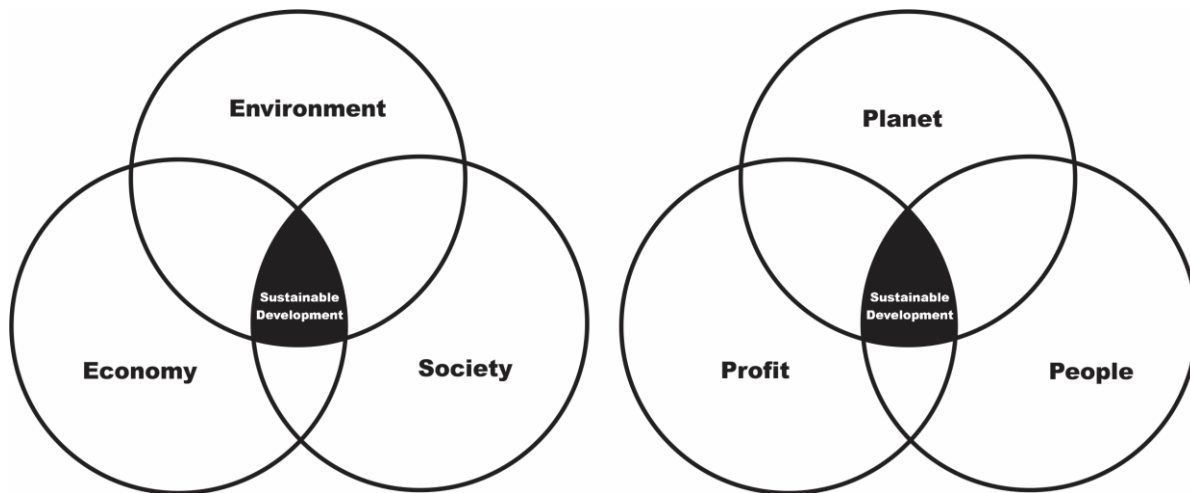


Figure 13. Triple Bottom Line (TBL) Concept as coined by Alkington J. (Kuhlman & Farrington, 2010)

1.5.2. Compass of Sustainability

Compass of sustainability places sustainability into four parts, through an implicit comparism with the compass. This concept puts issues of the protection of natural environment and ecosystem under nature. The economy part of it encompasses issues of societal economic stability. The aspect of culture and other social issues are grouped under society, while well-being takes care of people's needs and rights.

The tool is formulated to promote sustainability by identifying the point at which a system experiences the greatest impact through the linkage of the issues concerning nature, economy, society and well-being (Atkinsson & Hatcher 2001), (teachingparadox.edublogs.org 2014).

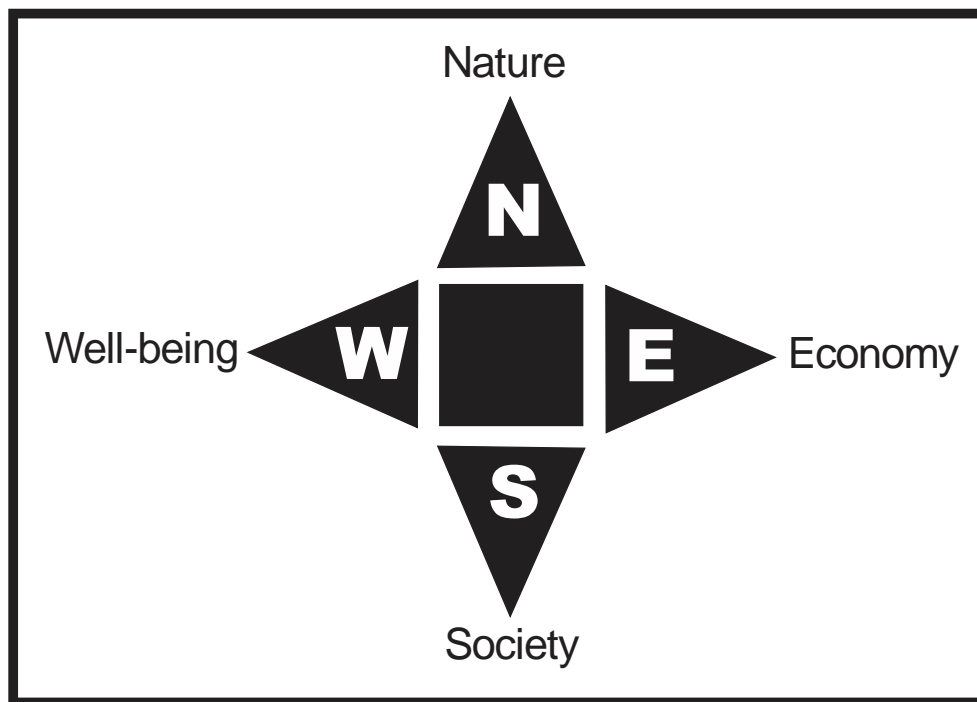


Figure 14. Alan Attkisson's Compass of Sustainability

1.5.2. Conceptual Evaluation Model of Sustainability

The conceptual evaluation model of the social sustainability of housing (fig. 3.1), is built on the presupposition that some housing needs warrant greater weight than others. The fundamental aspects of housing affordability and quality constitute the most basic needs in relation to housing. A household's ability to meet the cost of housing is a limiting factor as to whether they can access adequate housing or not. The quality of housing is also of central importance, particularly on issues of overcrowding, inadequacy and poor design impact.

Access to facilities and adequate transport to those facilities make up the intermediate social needs related to housing in the model.

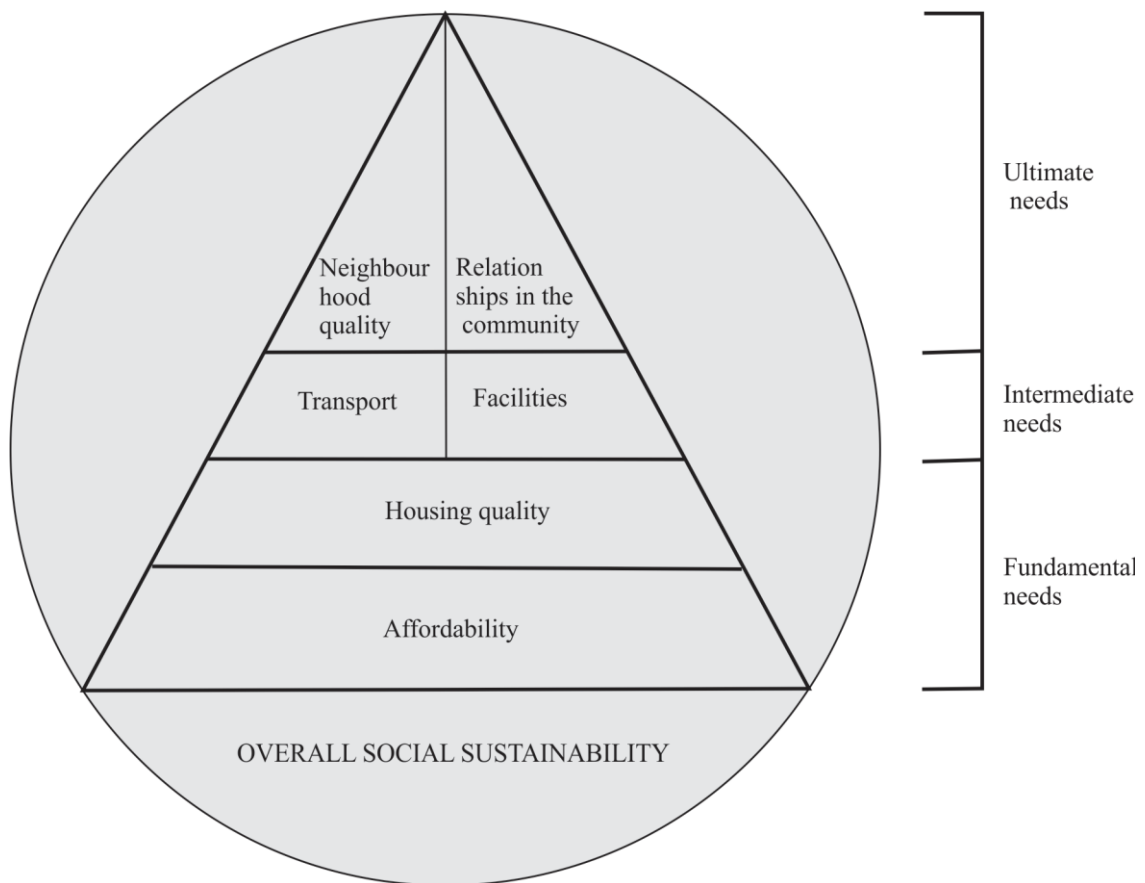


Figure 15. Conceptual evaluation model of the social sustainability of housing (Ansell & Thompson-Fawcett, 2008)

1.5.3. Design Requirements on Sustainable Issues

Towards a meaningful design, Bala (2010) suggests that energy efficiency, building orientation, natural lighting, ventilation and compatibility to climatic conditions should be the basic design requirements regarding sustainable issues in Architectural Design

Table 1. Design requirements regarding sustainable issues in Architectural Design (**Bala 2010**)

SITE INPUTS and LAND USE	
Topography	Building Orientation
COMPATIBILITY TO CLIMATE	
Effects of the micro-climate on a building	
ENERGY EFFICIENCY IN BUILDING	
Mass/space ratio	
SOLAR CONTROL	
Control of transparent surfaces	
PASSIVE HEATING-COOLING	
Active gain system	
Scatter or linear mass System	Compact mass system
NATURAL VENTILATION	
Wind and solar chimney	
NATURAL LIGHTING	
Access to daylight	
ECO-TECHNOLOGY	
Solar collector	
REFUSE, RECYCLE and RENEWABLE RESOURCES	
To collect rainwater and the use of rainwater for irrigation	Demolition debris through reuse and recycling
ECOMATERIALS	
The use of natural materials	

1.5.4. Determination of Organizational Sustainability

In the area of organisational sustainability, Navickas & Navickiene (2009) developed a model for its determination. It simplified the visualisation process of the external sustainability, the generation of indicators, indicator significances, and creation of questionnaire as well as setting of indicator values.

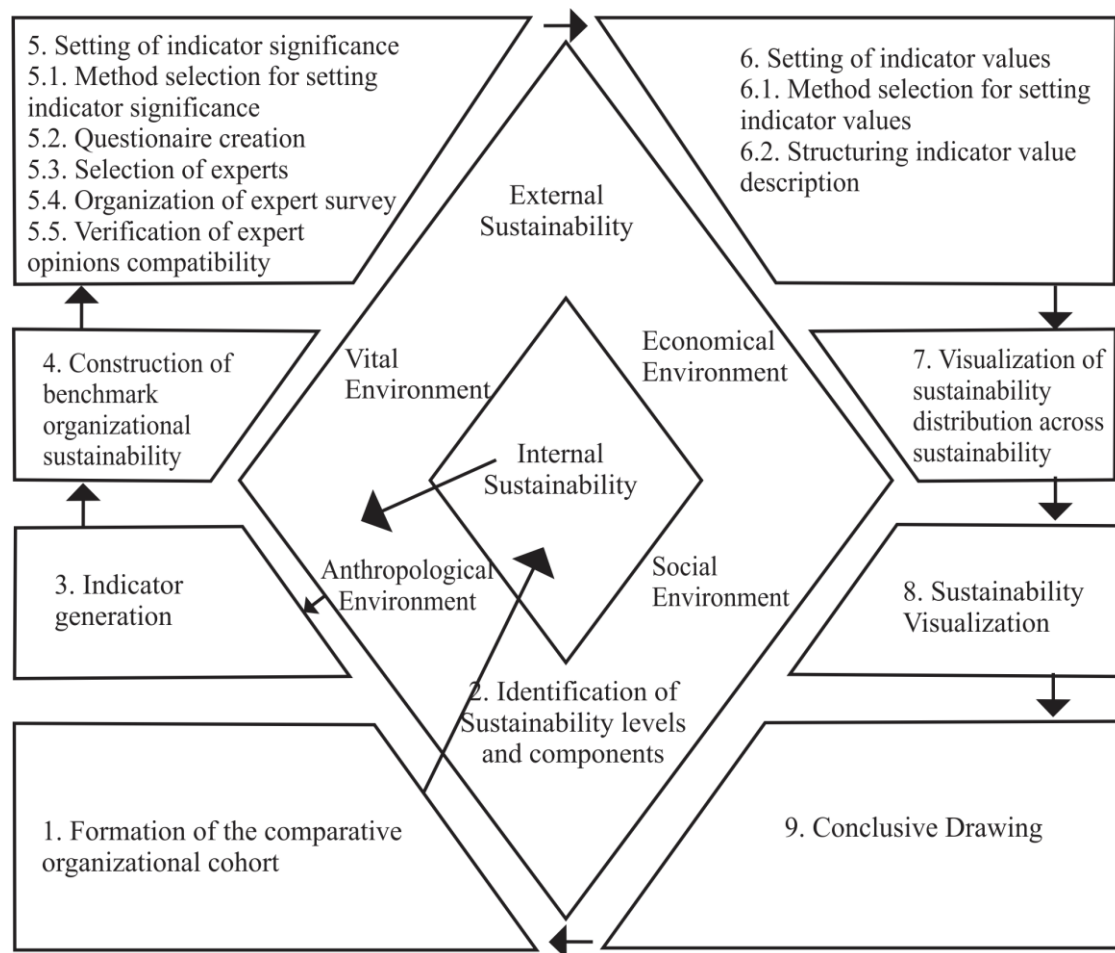


Figure 16. Model for Determination of Organizational Sustainability (Navickas & Navickiene, 2009)

1.5.5. Concept of sustainability

The Rio declaration regarding environment and development, describes sustainability as development corresponding to present needs without compromise for the future generations to meet their own needs, led to the development of DD concept according to Bacescu-Carbunaru (2010). The concept supposes interaction and compatibility of four systems that were born of actual world reality, characterised by accelerated economic and demographic growth.

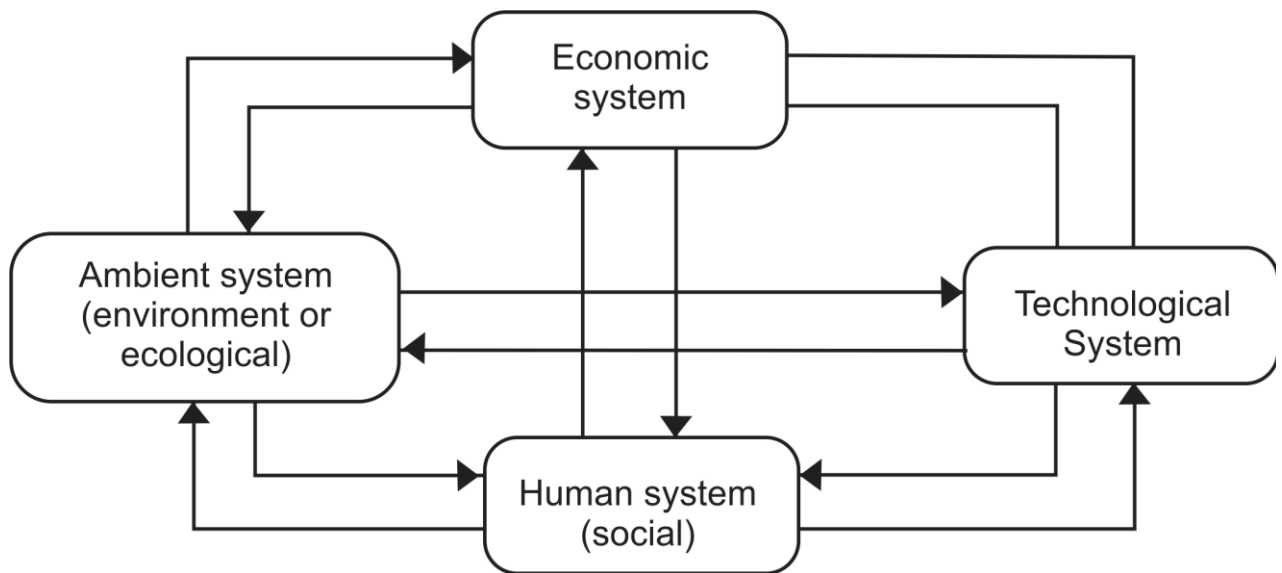


Figure 17. DD concept of sustainability Model (Bacescu-Carbunaru, 2010)

1.5.6. Dimensions of Sustainability

In Bacescu-Carbunaru (2010), it is pointed out that, three dimensions of sustainability depend on five (5) factors: population; natural resources and environment; industrial production; agricultural production and pollution.

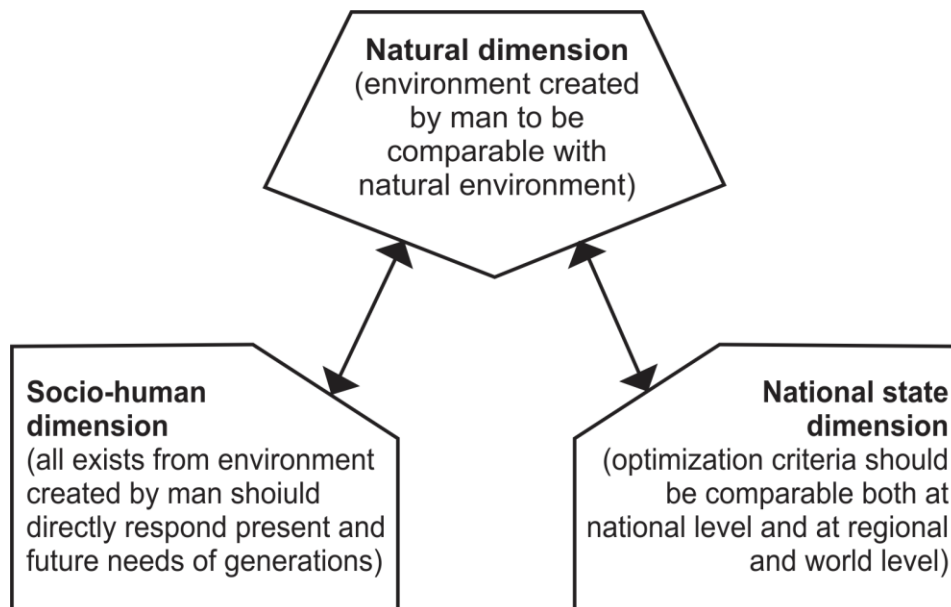


Figure 18. Dimensions of Sustainability Model (Bacescu-Carbunaru, 2010)

1.5.7. Precautionary principle

It states that:

If an action or policy has a suspected risk of causing harm to the public, or to the environment in the absence of scientific consensus that the action or policy is harmful, the burden of proof that it is not harmful falls on those taking an act.

The formal concept of this principle evolved out of German socio-legal tradition in 1930, centering on good household management. The primary foundation of the principle is from the 1992 Earth summit, which notes in its 15th principle that, to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. It explains the idea that scientific uncertainty should not preclude preventive measures to protect the environment. The 1998 Wingspread statement on the principle summarises that; when an activity raises threats of harm to human health or the environment, precautionary measures should be taken. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives. (<http://www.sehn.org/precaution.html>, 2013).

The principle, which is also seen as a way of taking precautions in advance, has two major elements, which are; an expression of a need by decision-makers to anticipate harm before it occurs, and the establishment of an obligation, if the level of harm may be high, for action to prevent or minimise such harm, even when the absence of scientific certainty makes it difficult to predict the likelihood of harm occurring, or the level of harm should it occur (en.wikipedia.org, 2013)

1.5.8. Sustainability Value Map

This was developed by Butters (2004), with the belief that all aspects of architectural practice should be compelled to visualise sustainability in the three broad areas of Ecology, Society and Economy. The circle is divided into three towards the assessment of these key issues. The author is of the opinion that, sustainability changes with time, as a result of which it is meant to be evaluated based on current situations, or as a comparison between the past and presence. The assessment is made through a value scale of six points, where the lowest point indicates very poor performance and the highest point stands for optimum performance (Skjerve-Nielssen, 2009).

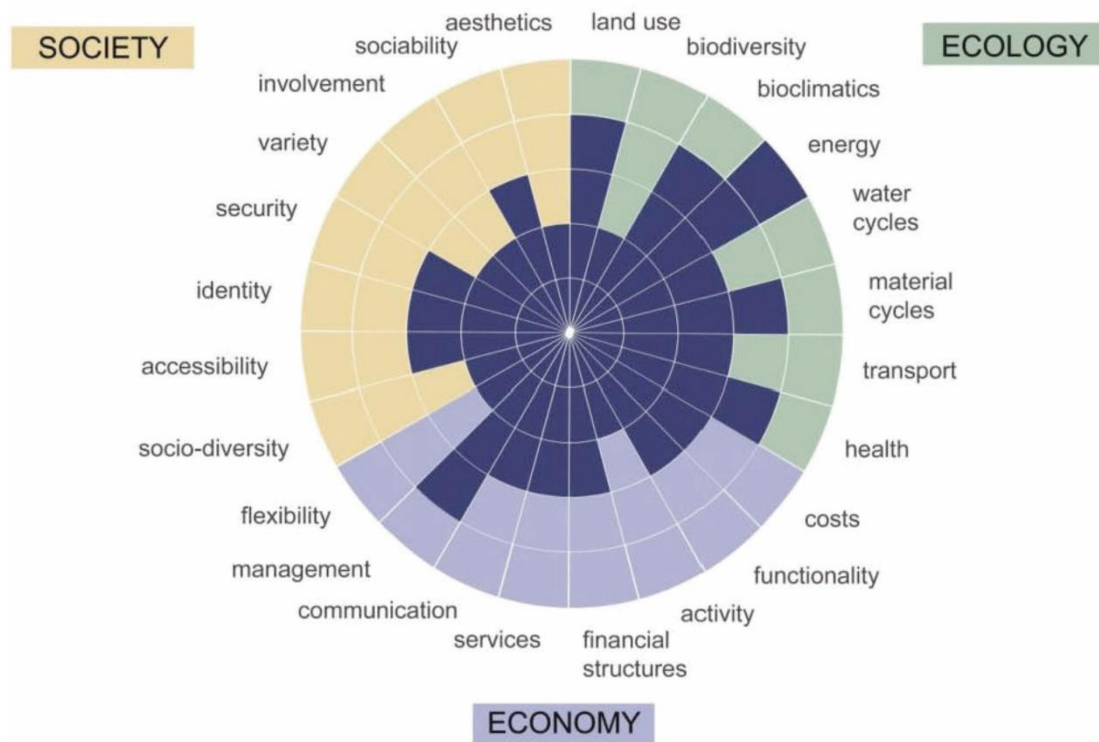


Figure 19. Sustainability Value Map

1.6. CONCEPTUAL FRAMEWORK

The conceptual model is founded on the models identified in this chapter.

Dimension of sustainability model shows that, action of the state and human activities affect the natural state of the environment; this is corroborated by DD concept of sustainability which links economic system, technological system, social system, environment and ecological system as having effects on each other, while the advent of technology has a direct influence on the environment.

In the case of the concept evaluation model of social sustainability of housing, there is a closer focus on people's needs. It puts affordability as priority, while quality of the residential buildings and neighbourhood quality are classified as intermediate and ultimate needs respectively. Design requirements are however classified as; compatibility to climate, energy efficiency, solar control, natural ventilation and lighting, eco-technology, material re-use and recycle, plus the use of natural materials.

The model for Determination of Organisational Sustainability in its own approach, puts external sustainability, economic and social environment as having influences on internal sustainability, while the Precautionary principle recommends that, precautionary measures be taken, when activities are likely to become a threat to the environment.

Venn diagram of sustainability and Sustainability Value Map, in their merit, emphasis the tripartite combination of environment or ecology, society and economy. This is with the assertion that, sustainable development cannot be ascertained without an equal consideration of these factors.

Based on the analysis of these identified models and theories, the Neighbourhood Sustainability Track Model is developed to guide the flow of this research, indicating the extent of its being based on residents' perception through the yellow code.

The model presupposes that, social, economic, attitudinal and environmental factors have influences on each other, and consequently influences the neighbourhood in which residential

buildings are situated. Putting these activities within a frame, it affects the sustainability of neighbourhoods and residential buildings, while sustainable practices also affect the neighbourhoods and residential buildings.

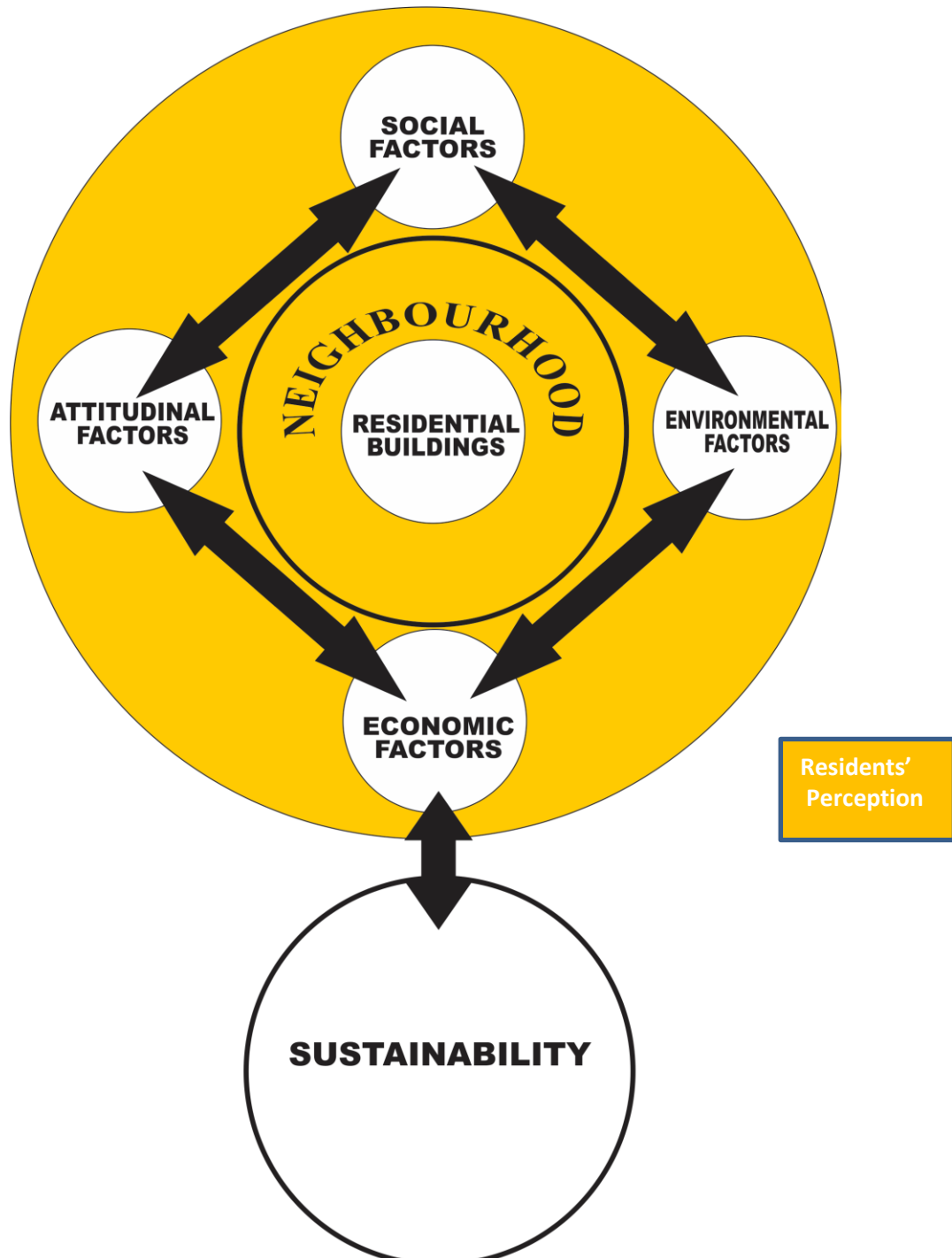


Figure 20. Neighbourhood Sustainability Track Model: The Conceptual Framework

1.7. SIGNIFICANCE OF THE STUDY

It was reported that, about 7 million people died in the year 2012, as a result of air pollution. This is the consequence of household air pollution, a combination from both indoor and outdoor air pollution. Cardiovascular diseases, respiratory disorders and cancer, has been, as a result of this act. The low and medium-income countries, including Africa, in which Nigeria is the most populated, are most affected. Unsustainable policies in the areas of transportation, energy generation and distribution, waste management and industrial activities has been the bane of this occurrence (World Health Organisation 2014).

The percentage of citizens that depend on solid fuel for cooking as the year 2002, stands at 67% in Nigeria, and 76% in the continent of Africa. The proportion of the Nigerian population with access to clean water is 72% within the urban areas, while the rural area remains below 50%. Those that have access to improved sanitation, within the urban regions is 48%, with 30% within the rural areas (Country Health System Fact Sheet for Nigeria 2006).

Lagos State, the most populated and urbanised section of Nigeria, is faced with challenges of overstretched infrastructure, high population growth rate and inadequate housing required, to support sustainable existence of the neighbourhoods and residential buildings. (Lagos Household Survey, 2010). This challenge of existence, contributes to the various environmental consequences.

It is therefore recommended that built environment initiative be combined with research into behavioural changes to achieve the desired outcome of a sustainable built environment, that will lead to increase in dialogue between communities, developers and local authorities. (Frame & Vale, 2006).

Sustainability, being a topic of both policy appraisal and scientific study (Kuhlman & Farrington, 2010), presupposes a need to identify indicators that have direct and indirect

effect on the sustainability of neighbourhoods and residential buildings within Lagos State, considering the present situation where the Nigerian Government is yet to implement campaigns and climate control-related-policies in executing development projects (Pat-Mbano & Alaka, 2012). There is equally a need to review the progress of our neighbourhoods from time to time and the indicators will help in doing this. Beyond the review, they highlight the areas with challenges and also help in people's understanding of sustainable development, within their countries, states, cities and neighbourhoods (<http://collections.europarchive.org>).

Assessment of neighbourhood and residential buildings sustainability, through residents' perception, opens up a different view in environmental sustainability assessment. It will lead to further research with a view to addressing the gaps in other measurement approaches adopted by researchers as mentioned in the literature.

Data and analysis from this study, will assist the government in measuring the effectiveness of its programmes, and also make adequate plans towards sustainability of neighbourhoods and residential buildings. Reliable statistics according to Wong (2000) are essential to public management and accountability.

This thesis will be a reference tool for researchers, professionals within and outside the building industry, environmentalists, developers and other states of in Nigerian. It will form a basis for constant evaluation of the sustainability of neighbourhoods and residential buildings and also be a reference for architects in conceptualising sustainable buildings and neighbourhoods.

1.9. RESEARCH ASSUMPTIONS

1. Residents are assumed to have a pre-knowledge of the spaces within their homes before moving into them.
2. Residents are assumed to have a pre-knowledge of the road links within their neighbourhoods, before moving into them.
3. Residents are aware of the existing amenities within their neighbourhoods.
4. Government at all levels are aware of the types of designs for the residential building, and the neighbourhood plans.
5. The neighbourhoods are under the control of the Local and State Governments.
6. The coordinating authorities have access to the residents within the neighbourhoods and vice-visa.

1.10. SCOPE AND DELIMITATIONS OF THE STUDY

This research is limited to Ikeja Local Government, within Lagos State. This is due to its having a representation of all the classified density zones, which makes the research adaptable to other areas. Data collection covers only residential neighbourhoods and buildings, with ownership spread amongst individuals. It extends to residential neighbourhoods and buildings with corporate organisations and government establishments as owners.

It limits its findings, through appropriate use of research methods, to the effects of behavioural, economic, social, design and planning patterns on the sustainability of neighbourhoods and residential buildings, and vice versa. It also discusses the general preferences of the residents within the neighbourhoods.

1.8 OPERATIONAL DEFINITION OF TERMS

Metropolitan Lagos: The conurbation of 16 local governments, that emanated from the spread of developmental activities of Lagos state, namely: Agege, Ajeromi-Ifelodun, Alimosho, Amuwo-Odofin, Apapa, Eti-Osa, Ifako-Ijaiye, Ikeja, Kosofe, Lagos Island, Lagos Mainland, Mushin, Ojo, Oshodi-Isolo, Somolu and Surulere (Lagos state Government, n.d).

Residential neighbourhoods: These are Independent Electoral Commission delineated wards, carved out mainly for political purposes in Ikeja.

Residential buildings: These are buildings where more than half of floor area is used for dwelling purposes (OECD Glossary of statistical terms, 2007)

Sustainable neighbourhood: It is a neighbourhood that is socially, environmentally and economically healthy (City of Pickering, 2017).

Density areas: Low density neighbourhoods are with an average plot size of 2000 square meters; medium density areas have an average plot size of 750 square meters while high density areas have average plot size of 460 square meters (Adebayo & Ogunleye, 2014)

CHAPTER 2

2.0 LITERATURE REVIEW

This review looks at relevant issues, definitions and theories on sustainability, neighbourhoods and housing. Through this, a wide range of viewpoints, including the list of established global indicators on sustainability, are obtained. Sustainability perspectives from various local, regional, national, global and diverse fields of endeavour including science, business and architecture are also reviewed. It also considers the economic, social and environmental aspects of sustainability. The review is organized as follows:

- General views on Neighbourhoods and Housing
- The notion of Sustainability
- Neighbourhood and Sustainability
- Housing Sustainability
- Environmental Sustainability
- Socio-economic Sustainability
- Established global indicators
- Views on neighbourhood sustainability assessment

2.1 GENERAL VIEWS ON NEIGHBOURHOODS AND HOUSING

The home locality is most being formulated in terms of neighbourhoods, since these represent identifiable and meaningful contexts within social learning and participation (Morgan 2009). Neighbourhood can have different connotations depending on an individual's interpretation; there is variety in the size of individuals' perceived neighbourhoods, ranging from single streets, to areas including the local town centre and surround. Neighbourhood could be defined as a social unit, a spatial unit, or a network of relationships, associations and patterns of use. Those defining their neighbourhood in terms of social relationships are more likely to

describe smaller units, than those thinking to describe and other frequently travelled destinations. Moreover, while individuals might stress one dimension over another, the area is namely the result of a single dimension (Soutj *et al*, 2010).

Neighbourhoods are universal, as most people consider themselves to be living in one. There is no specific definition for neighbourhood. It is either seen as a social community with considerable face to face interaction among residents, or as a specific geographic area. It is a place of common values and socialisation, with effective social control and accessibility.

Official delineation of neighbourhoods comes in different forms and format. It is known as districts, sub-districts, streets and quarters. Within these delineations are households (en.wikipedia.org/wiki/Neighbourhood, 2014). However, in Nigeria, with particular emphasis on Lagos, neighbourhoods are also known as Wards, Local Council Development Authority (LCDA) ([en.wikipedia.org/wiki/Lagos State](http://en.wikipedia.org/wiki/Lagos_State), 2014) Government Reserved Area (GRA), (Cambridge Dictionary, 2017), Streets and Quarters (www.nigeriavillagesquare.com).

Housing, however is a social practice of ensuring that, members of the society have a place to live in (Microsoft® Encarta, 2009)

It may be on temporary or permanent basis. This function takes place in buildings that functions as home for humans and animals as well. These come in form of basic shelters as huts, and complex modern structures. The social unit that dwell in these houses are called households (Cambridge Dictionary, 2017). Several combinations of these houses arranged in defined patterns make up neighbourhoods.

Taking a view into its history; shelter as a human need developed in stages, as the world progressed. Before man developed the art of building houses, they used the natural environment to provide shelter, these were trees and caves. As human knowledge increased, stone and tree branches were used, during the early days of housing construction. Simple tools

were gradually discovered; this helped in the development of better structures, which later evolved in shape and form. Earth was eventually used to make bricks that became a basic building material for buildings.

To construct the homes of elites and peasants, around 3100BC, the Egyptians used dried bricks. The Greeks at ancient times used the combination of materials like stone, bricks, wood and straw. The Romans improved on the Greek system, through the introduction of earthenware pipes, under the roofs and floors, through which hot water or air passes through for heating. The ancient Chinese adopted the basic materials, but introduced elements of decoration.

Through advancement of technology, mass production of materials eventually came. The rate at which shelters were constructed increased. Iron was mass produced in factories in different forms and shapes. Brick was also produced en-mass, a situation that led to its being used extensively in buildings as a result of cost reduction.

The contemporary period, ushers in more complex structures like high-rise buildings, which has have become more visible in several neighbourhoods. The strength of concrete was enhanced at this period, and methods developed to pump concrete to upper levels during construction of buildings (Tom *et al*, 2014).

Developments of Neighbourhoods go along with the trend in housing development. The houses being a major component of Neighbourhoods, within which households are embedded.

2.2 THE NOTION OF SUSTAINABILITY

It became clear to many in the 1960s and 1970s that the global population, and its rate of growth, compared with the natural environment and available resources will be stretched to an imposed limit, set by global ecosphere and availability of mineral and fossil fuel (Bartlett

2012). This consciousness led to Sustainability, the term that is believed to have originated from a policy concept, through Bruntland report of 1987 (Kuhlman and Farrington 2010).

The term, “Sustainable development” is perceived by many stakeholders as an abstract concept, that cannot be pinned down to an actual interpretation (Williams & Millington, 2004), but, a very common definition of Sustainability according to Bartlett (2012), Heinberg (2010), Macion (2010) & Bruntland Commission Report (1987) is as coined by Bruntland report, which defines Sustainable development as the “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs”. They believe this to be the generally accepted definition of sustainable development.

Heinberg (2010) submitted that, though, the Bruntland definition is appealing to many, but its virtue has vagueness attached to it. It fails to portray the nature of sustainable society. This makes people use the term sustainability to mean whatever they want it to. The definition also lays first emphasis on the needs of the present, before considering the generations of the future, without the consciousness that sustainability is more important for the future than the present. He believes that, this definition should be re-written as the “development that does not compromise the ability of future generations to meet their own needs”. However, it will not be seen as being out of place to include the current situation of the world as a necessary view of existence, which may be taken as the reason for the inclusion of the current situation in the Bruntland report definition.

Kuhlman & Farrington (2010) also opined that, the Bruntland report definition, which is of the aspiration of the world to achieve a better life, under the limitations of nature has been changed in the course of time. Their submission is that, this change makes it difficult to understand the conflict between providing welfare for all and the conservation of the

environment. This change, according to this opinion, relegates the importance of the environment and equally separates the social from the economic which are meant to be the same. They proposed that the original concept that is concerned with the future generations, especially in the area of natural resources that cannot be replaced upheld.

According to Okedele (2008), Sustainability could be seen to have several meanings, within the perspective of Bruntland's definition. These are: the development that takes the positive existence of the future into consideration; improvement on the quality of life, while protecting the eco-system; the ability to deliver environmental, economic and social services to the community; determination to promote social and economic progress to all; making sure that everyone has better quality of life.

Williams & Millington (2004), in their own submission, supports sustainable development to be about the Earth and the future, but opined sustainability to be an equality in what is demanded of the Earth and what the Earth is capable of giving, this in their own opinion, can be achieved if the demand on the earth is reduced to meet the Earth's supply or the Earth can be manipulated to increase its resources. Since unsustainable practices could be classified under manipulations, working artificially on the earth to boost its resources, will result in a situation that may not be classified as being sustainable.

Sustainability can also be defined, according to Kuhlman & Farrington (2010), as "a state of affairs where the sum of natural and man-made resources remains at least constant for the foreseeable future, in order that the well-being of future generations does not decline". Sustainability, through this definition, is then an issue of the natural resources, environmental quality and capital, reserved for the future generations. This definition has a slight touch with the Bruntland concept, especially in its reference to future generations. But, in this case, the main emphasis is on the future generation, with a moderate silence on the present state of the environment.

Heinberg (2010) believes that, the word sustainable has been used to refer only to environmentally sound practices, instead of it being seen as what could be maintained over time. This, by implication means that, an unsustainable society is such that is not capable of being maintained for long and as such, will lead to seizure functionally.

Sustainability has over the years been given many meanings; it is perceived as, the capacity of a phenomenon to sustain itself, making sure that present lifestyles do not affect others now, or in the future, by living within the means of the natural systems. It is also seen as being about people, culture, economy and the environment (www.landlearnsw.org). It is equally said that; it is based on the principle that portrays what is needed for survival as being linked directly with the natural environment - a platform is created, through it, where nature and people co-exists productively (www.epa.gov). The ability to live in sustenance, through a non-depletion of the natural state of the environment is also portrayed as sustainability (dictionary.reference.com).

Sustainability through other views, is an attempt to combine ecology with economy; living in harmony with nature, renewing resources at the rate at which they are consumed; living within existing resources, without creating any damage; creation of an economic environment, that creates good quality of life, through the renewal of resources within the environment; having communities where living systems that combine, in a balanced state, the human and economic resources; having the consciousness of how every action affects the future generations (www.sustainabilitystore.com).

Another key aspect of sustainability is the ability of biological systems to survive, so it is also interpreted as an endurance of process and existing systems. Its connection is not limited to economics, culture and ecology, but also politics. It is a social challenge that takes into consideration, the planning of neighbourhood and cities, transportation and lifestyles, under key areas of existence, which are: economy, society and the environment (en.wikipedia.org).

Sustainability integrates three main goals, namely; environmental health, economic profitability, and social and economic equity (Alkon, 2008). Parkin, Sommer and Uren (2003) also emphasis sustainable development as a combination of environmental, economic and social factors. It is also regarded as the ability to meet the objectives of meeting everyone's need, environmental protection, cautious use of natural resources and keeping abreast with economic growth (collections.europarchive.org).

On these matters of sustainability, the needs of the environment, the people, and the economy are to be addressed (Ancell & Thompson – Fawcett, 2008), to avoid negative consequences that may affect the environment. Educating designers on these will mitigate these envisaged effects (Adebamowo & Kusimo, 2008).

Discussions will support the need to reinterpret sustainable housing environments beyond the view of technical efficiency and expand considerations towards key social notions of home, dwelling, technology, comfort and efficiency. Therefore, considering the value of sustainable design beyond practice therefore has the opportunity to reconnect with the domestic environment alongside the application of technical efficiency. This reinterpretation provides a developed view of sustainable housing and how sustainable projects can be perceived and the key values of the domestic environment. (Marsh, 2010). The concept of Sustainability has become a wide ranging term commonly associated with all of human and common place term in policy parlance (Chuguill, 2007)

There has been an increasing interest in the concept of sustainability in research and policy framework, in response to the intensity and deflation of resource use and degrading of the environment (Rees, 2011, Capello & Nijkamp, 2002) cited in (Abdullahi, *et al*, 2011). Sustainable housing policy though, is meant to be the one that meets the housing needs of the poor, economically viable, socially acceptable, technically feasible and environmentally compatible (choguill, 2007) cited in (Abdullahi, *et al*, 2011), as Sustainable development is

defined as a mode of human development in which resource use aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for generations to come. ([www.buildinggreen](http://www.buildinggreen.com), 2013). But, Environmental degradation has now compromises our human, social and ecological health (Dunkel & Torres, 2009).

Since the early 1990s, the issue of sustainability has moved to the forefront of urban planning theory and practice. The sustainability debate has given rise to more environmentally sensitive and responsible land-use and building practices in cities (Poitrab, 2009).

Sustainability of a community is subject to the perceptions of the residents who live in community and their satisfaction with their local conditions (Kooti, Valentine & Valentine, 2011).

Sustainable communities means neighbourhoods that require little or no state intervention to deal with physical and social deterioration, in which citizens are to be increasingly responsible for their own life outcomes through normalized acts of consumption (Mcintyre & Mckee, 2008). Forests are also, to be managed in order to meet the public needs for wood and other forest products and to perform the protective and recreational functions of forests. (Navickas & Navickiene, 2011).

Defining sustainable communities and their characteristics is challenging, as no communities or societies in human history could stay sustainable forever. The notion of sustainable communities is relative and there is no definition that is relevant for all times and places (Hempel 1999 cited in Ercan, 2010). But, the president's council on Sustainable Development in United States defines sustainable communities as healthy communities where natural and historic resources are preserved, jobs are available, sprawl is contained, neighbourhoods are secure, education is life-long, transportation and health care are accessible, and all citizens have opportunities to improve the quality of their lives. Meanwhile, in the UK, sustainable

communities are places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to the environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all (Kline 1995; Agyeman, 2005 cited in Ercan, 2010), as Sustainability is about meeting basic human needs and wants by researching and identifying new ways of creating economic vitality, protecting and maintaining healthy environment and building healthy communities (Banuen *et al.* 1996 cited in Ercan, 2010).

Sustainability means that what is sustainable may last, may go on and on. And there are surely things like – processes, states, objects, ideas, features, which may last or go on, each in its own way. It could also mean “marine life should not be destroyed industry” or that “current deforestation must stop or reversed”. It has become such a vast word that, to ask for its meaning may be similar to asking for a list of people with common name. (Raatzchj, 2012).

Sustainability is age-old. What is new is the catchword “sustainability”. The enrichment of the use of the catchword re-enacts in reality what has always been present in the concept. (Raatzsch 2012). Sustainable management is meant to focus on strategic environment that enables steady organic growth. (Nurmet & Seive, 2011). and development planning should integrate ecological elements to reach sustainability. (Bacescu-Carbunaryu, 2010).

Sustainability principles are equally embedded, in the language and practices of new urban policies, questions of why and how the integration of sustainability principles in public sector urban redevelopment policies occur, and analysis of private sector implementation of

sustainability policies become are relevant for the examination of contemporary urbanization processes and the study of local forms of sustainability. (Bounce 2009).

2.3 NEIGHBOURHOOD AND SUSTAINABILITY

There are two conflicting views on how humankind and nature relates, according to Kuhlman & Farrington (2010); one emphasises harmony and adaptation, while the other view sees nature as what is meant to be conquered.

Cities, within which there are neighbourhoods, are the major consumers of renewable and non-renewable resources, this makes them responsible for the largest proportion of unsustainable development, and as such, sustainable development is now seen as having significant implications on the design and planning of urban regions. If these urban regions can be designed and managed in order to minimize the use of resources that result in pollution, a major contribution to the solution of global environmental problems can be achieved (White 1994 & Breheny 1992 cited in Howley, 2010). Cities put pressure on the capacities of natural resources and physical infrastructure, and as such, need better design to deliver improved environmental, economic, social and cultural outcomes (Frame & Vale, 2006). It is the responsibility of all to take proper care of the environment, not simply for the basic value, but to preserve resources for generations to come. These systems are damaged at our peril, as we do not have the right to destroy other species. We are to preserve the beauty of the natural environment for our sake and that of the future generations (Kuhlman & Farrington, 2010).

The issue of sustainability has moved to the forefront of urban planning practice. The sustainability debate has given rise to more environmentally sensitive and responsible land-use and building practices in cities. (Poitras, 2009).

This concept of meeting the needs of the present without compromising the ability of future generations to meet their own needs embedded into the Brundtland commission's 1987 report, tagged our common future has grown in popularity and plays a role in many planning processes at all levels of community organization. Sustainable development initiatives are now everywhere at community level, as local participation is crucial to long-term implementation of sustainable development.

Community sustainable development initiatives are sometimes self-organising as groups of concerned citizens mobilize around specific issues to rebuild community-level systems to meet their needs and resolve conflicts. (Newman, Waldron, Dale & Carriere, 2008).

The existence of sustainable planning is warranted by the need to comply with the principle of balance of interests, which requires that the plan takes into consideration, right from the beginning, with qualitative and quantitative concerns, the housing needs of the population, especially of those who are socially disadvantaged. (Oliviera, 2012).

The idea of designing and planning communities and cities that sustain human and ecological well-being has gained wide recognition. Sustainable development now serves as a guiding principle for building a more environmental-friendly city.

Urban sustainability has become a value used by local authorities, policy-makers, and real estate developers to mitigate urban and social change.

Housing is considered a key component of neighbourhood gentrification process. This process involves the construction of new buildings on brownfield land or grey field sites and infill housing. (Poitras 2009). Meanwhile, when gentrification is taken in a broad sense, it could mean the creation of space for affluent users (McIntype & Mckee, 2008).

Planning should, in its real sense, manage patterns of urban growth to make the fullest use of public transport and focus development in existing centres and near to major public transport

interchanges (CLG, 2005, cited in Champion, 2009). One of the concerns of planning is how to make cities good places for people to live in. The increase in the necessity of sustainability has strongly influenced practitioners and decision makers to craft good cities in terms of achieving sustainability, though, local areas sometimes, may identify what needs of the environment the people, and the economy are to be addressed. (Ancell & Thompson-Fawcett, 2008).

Urban sustainability remains a value used by local authorities, policy-makers, and real estate developers to mitigate urban and social change, while urban problems are identified in terms of quality of life and developmental issues (Poitras, 2009).

Though, in some places, sustainability is not yet forming the basis of planning, development, and the renovation and construction of buildings (Hanna, 2006) cited in (Poitras, 2009). This has led to the negative impact of the built environment becoming a contributing factor to non-communicable disease, including cardio-vascular disease, cancer, and obesity (Smith *et al*, 2010). This makes it an issue to bear in mind that well-being is determined to a significant degree by quality of place (Gilroy, 2008)

Non-automobile travel, as well, is consistent with commitment to environmental sustainability and each hour spent in a car per day is associated with a 6 per cent increase in the likelihood of obesity (Frank *et al.*, 2004, p. 87, cited in Danyluk & Ley, 2007).

More sustainable buildings in more sustainable neighbourhoods are an essential part of the move towards a more sustainable society. However, if the behaviour of the inhabitants of these buildings and neighbourhoods does not change to embrace more sustainable practices, changes to the physical fabric of the built environment will not be enough to bring about the necessary reductions the adverse environmental impact of human society. To bring about the

necessary changes research into behavioural change must proceed hand in hand with research into the design of physical environment. (Frame & Vale, 2006).

Neighbourhoods should include developments of mixed tenure housing as well as integrated infrastructure, such as schools and transport links. (McIntyre & Mckee, 2008). Communities and cities should be planned to sustain human and ecological well-being, and resident should be encouraged to reduce car use, limit energy consumption or diminish the amount of waste produced. Considering the fact that environmental indicators have shown an increase in amount of waste sent to waste facilities, the number of cars registered, the number of kilometres travelled in automobile, and energy consumption (Poitras, 2009).

It could be said that, sustainable development should be regarded as a process of reconciliation of three imperatives: (i) the ecological imperative to live within global biophysical carrying capacity and maintain biodiversity (ii) the social imperative to ensure the development of democratic systems of governance to effectively propagate and sustain the values that people wish to live by; and (iii) the economic imperative to ensure that basic needs are met worldwide. (Dale & Newman, 2009).

Regulation of land use and phenomenon of urbanization help ensure a cohesive, integrated and socially sustainable community. These will lead to proper delivery of public services to different strata of the population and the effective respect for constitutional rights (Olivier, 2012).

Planning options should create solutions of positive discrimination in favour of disadvantaged groups, presenting themselves as socially and environmentally fair options. Planning solutions that burden only minority or disadvantaged social groups should be discouraged, while the development of urban policies aimed at creating and improving employment in neighbourhoods.

Housing needs are not the only ones that must be taken into account in the process of territorial planning. If one wants to present it as socially sustainable, it is also necessary that other needs of the population are considered. (Oliviera, 2012).

Compact city policy leads to less car dependency, low emissions, reduced energy consumption, better public transport services, increased overall accessibility and the re-use of infrastructure (Howley, 2010).

However, while compact urban development provides substantial benefits and can contribute towards sustainable urban development, it is unclear whether the benefits outweigh perceived negative effects, such as congestion and pollution on quality of life (Jenks *et al.* 2000; De Roo & Miller, 2000) cited in Howley, 2010). There are many other components to compact city policies, these include: a street network circulation design that will utilize shorter street lengths in a grid-like pattern to promote better traffic flow; greater mixture of land uses that will reduce the number of vehicle miles travelled; the provision of a variety of transportation choices and walkable neighbourhoods (Sherlock 1990; Duanny & Plater-Zyberk, 1992; Van & Senior, 2000; Knapp & Talen, 2005; Song, 2005 cited in Howley, 2010).

Hopes for sustainable urban futures rest on the belief that higher residential densities can reduce travel demand, provide benefits in terms of resource efficiency, regenerate urban areas, and at the same time result in liveable communities. Further increases in residential densities are now a policy objective that is being rigorously pursued both nationally and internationally as a necessary condition for sustainable development.

In promoting sustainable development, it is not just a question of building more high-density housing, but of equal importance is creating attractive residential housing and neighbourhoods that are suitable throughout all stages of an individual's life-cycle. (Howley, 2010). For a city

to be sustainable, population and functions must be concentrated at higher densities, but for a city to be liveable, functions and population must be dispersed at lower densities.

Many residents express the desire to reside in lower-density locations in order to get access to areas with better housing, a cleaner environment and more open space. Yet, these same qualities are not exclusive to lower-density areas as they exist in abundance in dense cities. (Howley, 2010). For a community to be seen as sustainable, it must offer good public transport, schools, hospitals, and shops. Public health professionals increasingly should advocate mixed use neighbourhood in the interest of economic and human health. (Beig, 2011).

Access to affordable housing in a quality environment, an improved traffic environment. Mixed-use development is also part of a strategy to create sustainable environments where work, living, retail, and leisure areas are physically connected, therefore, making walking and cycling efficient transportation modes. Addition of greenery to the area will tackle urban heat islands.

A compact city characterized by a mixed-use environment where heritage is well preserved and small specialty stores and leisure amenities abound is favoured over the automobile-oriented sprawling metropolis. (Poitras, 2009). Many European countries promote the concept of compact city on the basis of environmental arguments (Carty & Ahern, 2010).

Reserved parking spots for a car sharing company will entice some residents to live without owning a car. Poitras (2009). Existence of greenways has a lot of environmental benefits, in terms of environmental quality and recreational activities. These are becoming increasingly popular in urban areas. (Kurdoglu, Yalcinalp and Var, 2010). Planning for high density has two main goals in the context of transport energy consumption; firstly by reducing trip length and total mobility by concentrating residential, employment and services areas and secondly

by changing the model split to reduce the share of the private vehicle use in relation to public transportation, walking and cycling (Carty & Ahern, 2010).

Urban form characteristics such as density, mixed-use development, proximity to public transport and distance from urban centres have a role to play in promoting more sustainable development (Carty & Ahern, 2010).

Mixed land used is likely to reduce trip length and change the distribution of trips during the day and therefore reduce energy consumption. The mixed land use settlement pattern is characterized by high connectivity of roads, pavements and lanes supporting pedestrians as well as cyclists (Cerveno, 1996 cited in Carty and Ahern, 2010). Urban change is favoured by supporting social mix through the attraction of middle-class residents to inner city neighbourhoods. (Poitras, 2009).

2.4 HOUSING SUSTAINABILITY

Housing and infrastructure are essential human needs; it is known to be one of the most noticeable sources of pollution, energy consumption, land use and waste generation (Claes *et al* 2012).

Housing is the key element in the generation of economic growth and development. The state of housing has strong positive impact on the growth and development of society. The success of housing policy, in a way is a reflection of success realized in other facet of the society (Abdullahi *et al*, 2011).

Housing system is a complex agglomeration of systems and subsystems, including builders, developers, contractors, consumers, manufacturers and so on, while stakeholders within the system are developers, builders and consumers (Crabtree & Hes, 2009).

Housing provides a vehicle which can aid elements of community, through creating sustainable communities in a resource efficient manner. Sustainability housing therefore involves more than simply technical efficiency, bringing physical, social and cultural feature into one agenda (Marsh, 2010).

In the third world countries housing problems are one of the most important issues... Green housing means a healthy housing that use less energy and resources, while green building is the process of design and construction of buildings and infrastructure, using methods and materials development and provision of living environments healthy for humans, and also to minimize the use of energy and the negative effects on ecosystems at global, regional and local levels (Mohammed & Darus, 2011).

Building owners, designers and builders face a challenge to meet the demands on new and renovated facilities that are safe, healthy and productive while minimizing their impact on the environment (<http://buildinggreen.com>) cited in (Mohammed & Darus, 2011). Design decisions taken during the early phases of the design processes play an important role in ensuring concern for the sustainability issue. (Bala, 2010).

The largest portion of the world's total energy consumption is spent on heating, cooling and lighting in buildings (Edwards 1999, WCED 1987). An architect's first design decisions are the most important parameters in determining the energy consumption in buildings. In other words, sustainable architecture is not an approach or an attitude it is simply architecture itself. There is also need to create a sustainable architectural consciousness within students who will be the next generation of architects. Sustainable design must be a part of an architectural educational programme and that architectural education must be based on a sustainable world view approach.

Since sustainability as a philosophy is becoming more and more apparent in many fields of human activity, the creation of new and significantly different lifestyles must be continually assessed and subsequently implemented into the heart of architectural design sustainability. (Bala, 2010).

It is equally an important component to work as a team in designing architecture and additionally in sustainable architecture. A multidisciplinary approach allows team members to share expertise. In the process of making designs, the placement and design of sharing devices and facades are such that should enhance sustainability together with other elements used for sustainability like cross ventilation, and systems for collecting rainwater.

A very important point to note is that, timber housing construction emits less CO_2 than reinforced-concrete housing, from the production of cement as it uses calcium carbonate as a raw material. Changing of the structural materials from reinforced-concrete to timber will reduce their CO_2 emission. The idea of using timber for housing construction may be able to satisfy the housing demands and achieve a reduction in CO_2 emissions, it is important to ensure sustainable timber usage without eroding the forest as a future resource. (Fujita, Matsumoto and Song, 2009).

Approach of simply designating some subset of units as social housing is insufficient. (Dale & Newman, 2009).

2.5 ENVIRONMENTAL SUSTAINABILITY

Various groups have different definitions and explanations for Environmental Sustainability. Township of Langely (2017), defines it as “the rate of renewable resource harvest, pollution creation, and non-renewable resources depletion that can be continued indefinitely”; Financial Times (2017) defines it as “a state in which the demands placed on the environment can be met without reducing its capacity to allow all people to live well, now and in the future” ;

Green Innovations (2017) defines it as “the ability to maintain the qualities that are valued in the physical environment”

Conserve Energy Future (2017) however opines that, Environmental sustainability and sustainable development may appear similar, but that, they are not the same. According to this group, Environmental sustainability is focussed on the conservation of natural resources and the development of sources of power that will have less harmful effect to the environment. While sustainable development is the approach through which developments of projects are done to mitigate their impact on the environment.

It is generally accepted that, for an environment to be sustainable, the perception of end-users plays a major role on planning and policy formulation (Valentina *et al*, 2009). Changes in the way people behave or respond can also improve the environment significantly.

2.6 SOCIO-ECONOMIC SUSTAINABILITY

Since the availability and scarcity of materials is of great concern in social sciences, sustainability has become a natural topic of study for economists. And also in its endless drive for materialism, the world has gone the wrong direction. Habitable future becomes impossible, except the demand by human beings change, through a re-think on attitudes towards nature, as well as, the world view of economic progress and development. The ecosystems are meant to be protected and not just for the pleasure of people. Nature has a right to be unmolested, just as human organisations establish human rights, to maintain unmolested existence. (Williams & Millington, 2004).

The natural resources have been subjected to pressure, because of economic growth and increase in need for welfare. This is due to the use of technological, social and economic solutions that has a long term unsustainable consequences, yet are not adaptable to the real

needs of countries, especially the developing ones (Claes *et al*, 2012). This development that is often linked with the destruction of natural resources is a familiar occurrence, all over the world, including Nigeria. That is, as the producer of a certain goods satisfies a need with a good, while doing this, also poisons the society with that good. Such producer has not satisfied any need in its practical sense, as he has taken back what has been given, through unsustainable practices (Rattzsch, 2012). This practice is perceived as a high rate of exhaustion, in which the social cost of losing the resource outweighs the social benefit it yields over the period of use. So, we are to leave an undiminished stock of natural reserves for generations to come, as the depletion of these cannot be recovered at the present state of scientific knowledge (Kuhlman & Farrington, 2010).

Approach to creating a sustainable society requires changes in behaviour (Frame & Vale, 2006). Humankind as always been seen as the only source of value; and nature as just a raw material, to be used to satisfy people. This attitude of dominance over nature should generally be contested. Nature is meant to be understood, for it to be controlled and managed for the benefit of all. These behavioural changes should include, a change from a human-centred worldview of the earth, a de-emphasis on growth-oriented approach to economic development, a consideration given to the need for change in people's demands on the earth and, a turn-around on the thinking that nature is a collection of natural resources that are meant to be subdued by human beings. There is also, an urgent need to re-define wealth as well-being (Williams & Millington, 2004).

Meanwhile, the definition of sustainable development, as coined in Bruntland report, as the one that meets the present needs without compromising the ability of future generations to meet their own needs, was placed on the impact of economic development and conservation of natural resources (Oliviera, 2012). Viewing this in another angle, according to Kuhlman & Farrington (2010), socio-economic aspects are about the well being of the current generation,

while the environmental ones are about taking care of the future. It makes the socio-economic aspect more important than the environmental factors. This then, is at variance with the Brundtland report that disagrees with development taking place at the expense future generations. Though they believe that, the future should consider the cultural, infrastructural, technological and institutional aspects.

Economic, environmental and social dimensions, are all embodied in sustainable development (Shen, Wu and Zhang, 2011), but, the major case which comes to mind when thinking of sustainability is the sustainability of an economy or a form of economic development. Sustainable development is often used as shorthand for sustainable economic development, but sustainability belongs to the concept of economy, and it has always been part of the idea of an economy, though, other things however, other than economic development may also be called sustainability, but the economic aspect of sustainability is very vital, in that, what comes to mind when thinking of sustainability is the sustainability of an economy. It is important to know that an economy can be sustainable, before knowing what it takes to have an economy, as it is also possible to have an economy without that economy being sustainable (Raatzsch, 2012).

Environmental sustainability is closely tied to different social classes and cultural groups, as it encourages co-existence of the different classes, and equally promotes a greater richness of the social fabric, and also strengthens its cohesion (Oliviera, 2012).

Economic sustainability puts to check the administration of economic life, in order to limit dysfunctions in the economy, like crisis, unemployment and inflation, which in the process harmonises the economic growth with evolution of social issues. It makes economic growth real, through keeping the jobs, with the possibility that, future generations could meet their own needs. (Bacescu-carbunaru, 2010). It also focuses on a planned accumulation and distribution of intangible assets, that increases constantly, and the prudent management of

risks and opportunities. Sustainability is equally viewed as the only option for most enterprises, being the key question for long-term survival (Nurmet & Seire, 2011).

Due to economic and social development of sustainable development, enterprises and organizations in the residential trade and industry, are held to practice sustainable business strategies. Key players in this area are commercial enterprises in the housing industry. (Macion, 2010).

For an activity to be socially sustainable, it must maintain or enhance the current social structures and values, as there are social limitations to human existence in the same way as there are ecological limitations (Chies, 2003) cited in (Ancell & Thompson-Fawcett, 2008). Any developments that cause an infringement of establishment social values and norms would, therefore, be considered to be socially unsustainable (Ancell & Fawcett, 2008).

Business activities of multinational corporations have a detrimental impact on natural systems. This results in an increase in pollution, toxic waste, and global climate change, which eventually lead to destruction of Earth's life-support systems, despite the perceived notion that corporations have a responsibility for the environment and must conduct their business as stewards of the environment by operating in a manner that protects the earth, so as not to compromise the ability of future generations to sustain themselves (Edwards, 2010).

However, if the producer of a good satisfies a need with that good, and in the process of doing this, we are poisoned with that same good, will that amount to a "need satisfaction?" , since economic sustainability is meant to be the paradigm of an economy, and its normal form, as a proper economy is a sustainable one (Raatzsch, 2012).

Social, cultural and economic aspects of sustainability need to be given greater recognition. Social practices that lead to continued environmental and social degradation does not lead to overall sustainability (Ancell & Thompson-fawcett, 2008).

Local winners and their families are increasingly being priced out of the countryside, threatening the economic viability of moral enterprises and the goal of a living working neighbourhood. (Taylor Review, 2008) cited in Champion, 2009). “A sustainable place is one in which a balance of employment, housing, and social faculties are present and available to a range of socio-economic groups. It is populated by sustainable citizens who are politically, socially and economically active and self-reliant. (Glasgow Economic Forum, 2003) cited in (McIntyre & Mckee, 2008). To be socially sustainable, there is a need for equitable distribution of resources and assets, harmonious social relations and acceptable quality of life (Chie, 2003) cited in (Ancell & Thompson-Fawcett, 2008). Poorer neighbourhoods are unstable because they lack owner occupiers, that is, the physical and social fabric of these neighbourhoods decline because home owners are missing (McIntyre & Mckee, 2008).

As socio-economic equity should be a pre-condition of sustainability, the poor are being at disadvantaged in the implementation of housing policies in developing countries. (Abdullahi *et al*, 2011). Chogwill (2007) submitted that, labelling a housing policy sustainable is a necessary guide to attainment of its objective. But without significant improvement of the housing of the poor, is pointless. In assessing any country’s housing policy and sustainability, two fundamental questions must be addressed. First, is whether the housing policy addresses the needs of the poor, as it requires prioritizing the poor as the central principle of the policy. Second, is whether the socio-economic structure of the country enhances the poor. This requires that the privatization and liberation of the supply of housing should not exclude the poor.

Ungentrified neighbourhoods are an attraction to the low income class, because they offer inexpensive housing and community services, as gentrification and rent increase are linked. Social displacement is also seen as one of the ill-effects of gentrification. (Poitras, 2009). Gentrification leads to rent increase (Poitras 2009). Gentrification, taken in a broad sense means, the creation of space for more affluent users (Mclyntyre & Mckee, 2008). Some of the positive impacts of gentrification include increased property values, as well as critical reduction in sprawl; gentrification restores and upgrades housing stock, improves aesthetic appeal, and increases community safety. Negatives include resentment, decreased social diversity, and increased housing costs (Atkinson, 2004, cited in Dale & Newman, 2009).

Economically, disadvantaged groups can be pushed to the edges of a city region, where they can no longer access public transit and needed services, and in fact, greater concentration of similar populations can lead to more protracted urban social problems. (Dale & Newman, 2009).

Caution is needed when we assume that sustainable development projects will be respectful of equity, issues and naturally lead to meeting social imperatives that integrate both equity and liveability concerns through affordability. In fact, we argue that there may be an inverse relationship: greening of neighbourhoods can increase desirability and thus spur gentrification that drives up housing prices, making these developments increasingly less affordable. (Dale & Newman, 2009).

It is perceived that, brownfield developments would seem to be likely sites for enhancing the social imperative of sustainable development as they are in effect taking urban voids and turning them into mixes of appealing public and private spaces.

Community involvement should be highly valued from the beginning; the general attitude should be to explore issues until a solution evolved, that everybody could accept. (Dale & Newman, 2009).

Economic needs of people include access to an adequate livelihood or productive assets, and one of the approaches to sustainability is freedom to participate in national and local politics and in decisions regarding management and development of one's home and neighbourhood, within a broader framework which ensures respect for civic and political rights and the implementation of environmental legislations.

Sustainable development could also imply minimizing the waste of cultural, historic and natural assets within cities that are irreplaceable and thus, non-renewable, such as historic artefacts. (Satterthwaite 1999 cited in Ercan 2010). Both social and cultural issues are essential to environmental concerns. So long as there are people living in poverty there will be on-going people living in poverty there will be on-going Eco systematic decline. Poverty is not only lack of economic opportunities but also lack of educational, meaning making, and culturally enriching opportunities. For example, a forest used by an indigenous community to obtain fire-wood for their survival cannot be protected unless we find alternative ways of supporting its human community.

A forest can be sustainably managed. The wood gathered could be transformed by the community into valuable products that celebrate the culture and identity of the people rather than being sold as fire wood for export. There are many herbs and mushrooms that can also be sustainably harvested. Economic growth without due coordination for socio-cultural and planetary well-being is a trap.

We need to create organizational ecologies of new ways of working, learning and living that embody social, cultural and environmental integrity (Alkon 2008). Heritage preservation and

the rehabilitation of significant buildings and sites are used as a tool for managing change. These involve the adaptive reuse of building and sites that have a long history within their neighbourhood. For communities, urban sustainability must above all pursue a goal of social justice by defending the basic right to decent housing. Mixed-use development is part of a strategy to create sustainable environments, where work, living, retail and leisure areas are physically connected, therefore, making walking and cycling efficient transportation modes. Also, preserving existing jobs and adding new ones, creating a thriving retail corridor, and offering more services are goals that can contribute to a sustainable urban model. Urban sustainability as a planning ideal is related to standards offered by policy-makers and developers. The principle of social equity or justice should be addressed by these actors. (Poitras, 2009).

There are two essential components for designing a traditional city. The first is to have the ideas of improving the city for everyday life in order to state the critical values in the function of the city. The second is to refer to cultural ideas that are important to respect the ideas in the form of the landscape. So as to, translate the cultural ideas of the city into an operational interface for sustainable design. (Lin & Lee, 2010).

Vision for creating an urban environment promoting heritage conservation and interpretation of public spaces, economic security, housing affordability and a community role in planning decisions generate a liveable city. Economic development through investments in the real estate sector have become an enhancement for neighbourhood transformation (Poitras, 2009). The trouble with social sustainability is that it is hard to measure, and certainly compared with the many indicators of ecological and economic community development, the social remains frustratingly abstract. (Dale & Newman, 2009)

If sustainable community development is to address the social imperative, sustainable community development projects will have to actively plan how to keep such communities accessible to a diverse range of income groups, professions, and retailers. A sustainable development paradigm that addresses the social imperative of sustainable community development in the form of equity and liveability should not be building sustainable neighbourhoods for only the higher-income subsection of the population either passively or actively through the displacement of lower-income families. Sustainable development, if it is actually to be sustainable, should not be for some, but for all. A city, like a people, shall be judged by how it treats its most vulnerable members. (Dale & Newman, 2009). Promotion of public participation in environmentally and territorial relevant procedures are important dimensions to the principle of sustainability (Oliviera 2012).

The notion of improving buildings' functions appear at the core of sustainable efficiency, though it curbs recognition of the housing environment and the presence of its social values. (Rees, 2011, Capello & Nijkamp 2002 cited in Abdullahi, *et al*, 2011).

Housing satisfaction plays a crucial role in overall quality of life and the residential decisions of consumers (Howley 2010). Concerns of dwellers in neighbourhoods are of great importance as sometimes complaints of tenants about a lack of social facilities in a locality could result in the establishment of new social businesses (McIntyre & Mckee, 2008). The home constitutes physical, social, cultural and psychological space which, on one hand, shapes our behaviours and on the other, helps to form our perspective on the world (Daly & Daly, 1996 cited in Marsh, 2010).

By investing in undervalued urban areas, real estate promoters have also become key partners in the revitalization process to overcome economic disinvestment. (Poitras 2009).

2.7 ESTABLISHED GLOBAL SUSTAINABILITY RELATED INDICATORS

2.6.1. UK Sustainable Development Indicators (UK Government indicators 2007)

In a bid to setting the goal for sustainable development, that makes people satisfy their basic needs and also enjoy a better quality of life, without a compromise to the life of future generations, the UK government launched a sustainable development strategy. Indicators were outlined through this strategy, as summarised below. These indicators are created as useful and accessible references, to help simplify the challenges of sustainable development and to encourage others towards finding more indicators (UK Government Strategy indicators 2007)

1. Demography

The documentation of human population, with emphasis on age, growth, density, distribution; population of both employed and unemployed, population of those living in low, medium and high income households, with their ages.

2. Gas Emissions

This covers the emission of carbon dioxide as a greenhouse gas, and others within the category. It also considers the means through which these gases are emitted into the atmosphere, such as electricity generation, transportation, fuel storage, household energy consumption, smoking and manufacturing.

3. Resource Use

Material consumed in the process of extraction, construction and water usage.

4. Waste production

Wastes produced by households, commerce and industry (including construction and demolition and municipal waste).

5. Land use

Areas covered with grass, forest, water, buildings (new, renovated and concerted)

6. Flooding

Likelihood of flooding occurring.

7. Community Participation

Rate of participation and awareness of community dwellers, on environmental issues.

8. Education

Level of formal education and level of education on environmental issues.

9. Mobility

Mode of transportation, frequency of movement and distance covered.

10. Social Justice

Social agreement with the coordinating authorities on environmental and neighbourhood sustainability issues, existing environmental conditions.

Sustainability Indicators of UK Department of the Environment, Transport and the Regions, with their relevance as stated in Local Quality of life counts (2000).

1. Energy Use

Allows for the monitoring of the use of energy, as this has a widespread environmental impact, especially in the areas of carbon dioxide release into the atmosphere.

2. Domestic Water use

Water as a renewable resource has bounds to availability. Reduction in rainfall sometimes affects availability and the pattern of use for the available affects continuous availability. This cumulatively affects the neighbourhoods and the entire habitat.

3. Household Waste arising

Identification of types of waste produced, management of the wastes, pattern of transportation of the wastes, impacts on the environment, levels of reuse, recycling and energy recovery.

4. Recycling of Household Waste

Amount of waste produced points to the quantity of resources consumed. Level of recycling shows the level of reduction in environmental impact through waste disposal.

5. Air pollution

A need to control air pollution in order to reduce risks of harm to human health, the natural environment and quality of life.

6. Sourcing of water from rivers of good and fair quality

The importance of rivers stressed, being a major source of water used for drinking and by industry, and also for its support for a variety of wildlife and recreation.

7. Change in natural and semi-natural habitats

A need to conserve the wide variety of wildlife species and habitats, for the sake of our surroundings and our quality of life.

8. Changes in population of selected characteristic species

A need to put a value on wildlife, as an integral part of our surroundings and quality of life, for the benefit of future generations.

9. Mortality Rate by cause

Improving people's health as a major sustainable development objective, through making sure that, there is better health for everyone – starting from the less affluent to the more affluent men and women of the society.

10. Qualifications of young people

Educational qualifications provide people with skills to make a positive contribution to the economy and the society; these have a wider effect on active participation and positive social involvement.

11. Adult Education

Adult education contributes to a broader sense of well-being. As nature of work changes, people update their skills and become adaptable, to a more positive society.

12. Homes judged unfit to live in

Poor quality housing leads to health and problems; this makes the issue of housing an important one for quality of life.

13. Homelessness

Lack of accommodation can lead to uncertainty and instability, which may influence attitudes to environmental development, as housing is a key component of a decent quality of life.

14. Access to key services

Communities need access to key services, like medical care, as it is a disadvantage, especially to the poor, the ill and the elderly, if these facilities are less accessible.

15. Travel to work

A need to encourage people to walk, cycle or use public transport more than their private vehicles, and also to reduce the time to travel, through better land use planning.

16. How school children travel to school

To reduce road traffic, congestion and air pollution, and also to improve children's health; there is a need to switch school journeys from car to walking, cycling or through public buses.

17. Overall traffic volumes

There is a need to strike a balance between the role of transportation as allowing people to travel to where they are going and helping economic progress, while the environment needs to be protected and the quality of life needs an improvement at the same time. Traffic growth has been associated with economic growth in the past, but the volume of traffic usually leads to congestion, noise and air pollution which contributes to greenhouse gas emissions that cause climate change.

18. New homes built on previously developed land (including conversions)

Fresh development within existing neighbourhoods, contributes to the renewal of communities and makes people to live near to shops and employment, this reduces the need to travel. Reuse of lands is also important for the protection of the green belt and suburbs.

19. Public concern over noise

Noise has negative effect on life. Excessive noise can cause annoyance and stress, which may lead to negative attitude.

20. Crime

Crime imposes economic costs, leads to social exclusion, and can hasten the environmental decline of neighbourhoods. It is capable of making people become reluctant to walk or use public transport.

21. Fear of crime

Fear of crime can have a negative effect on behaviour, due to the anxiety it causes, which also affects people's quality of life. It makes people become reluctant to walk or public transport.

22. Social participation

Public involvement helps the sustainability of a community. Voluntary activities promote social inclusion and unity towards a common positive purpose.

23. Community well being

This is an important feature of sustainable neighbourhoods, as it covers the general sense of satisfaction.

24. Tenant satisfaction/participation

As a general drive towards sustainable communities, there is need to encourage an all-inclusive participation.

25. Employment/Unemployment

Unemployment leads to deprivation and social exclusion, which makes it also a waste of human resources. The higher the rate of unemployment, the higher its negative effects on sustainability.

26. Benefit recipients

This about ensuring that there is a better quality of life for everyone, by addressing the problems of poverty and social exclusion, towards building sustainable communities that will be free of crime, poor health and degraded surroundings.

27. Business start-ups

This is to make everyone benefit from economic growth, which can lead to a positive approach to environmental issues.

28. Companies and Environmental Management Systems

Companies have a role in helping to protect the environment through good management practices.

29. Social and community enterprises

Provision of local services that bring people together, through which sustainability issues can be addressed.

2.6.2 The third edition of United Nations set of indicators for Sustainable Development

(www.un.org, 2014)

1. Poverty

This document opined that income inequality, sanitation, access to drinking water, access to energy and other living conditions are responsible for poverty or vice-versa. It stated the proportion of population living below national poverty line, ratio of share in national income, proportion of population using improved sanitation facility, proportion of population with access to drinking water, households without electricity or other modern energy services and proportion of urban population living in slums as core indicators.

2. Governance

The document breaks this down into Corruption and Crime. It sets percentage of population being paid bribes and the number of international homicides per 100,000 population as core indicators.

3. Health

This is broken down into Mortality, Health Care Delivery, Nutritional and Health Status. Life expectancy, percentage of population with access to primary health care facilities and the morbidity of diseases like HIV/AIDS, malaria and tuberculosis is set as core indicators.

4. Education

The core indicator for this is taken to be the net enrolment rate in primary education, adult secondary/tertiary schooling attainment and adult literacy rate.

5. Atmosphere

This is in the aspect of air quality, with ambient concentration of air pollutants in urban areas as core indicator.

6. Land

This is in the areas of land use, desertification and agriculture. The core indicators are arable and permanent cropland area, and the proportion of land area covered by forests.

7. Freshwater

This is considered in terms of quantity and quality of water. The core areas are the proportion of total water resources used, water use intensity by economic activity, and the presence of faecal coliforms in fresh water.

8. Consumption and production patterns

This covers the areas of, material consumption, energy use, waste generation and management, and transportation. The core indicators are; material intensity of the economy, annual energy consumption, waste treatment and disposal and modal split of passenger transportation.

2.6.3. CIDA's framework for sustainable development Indicators (Hodge 1997)

This framework has major themes, with several subthemes embedded into them.

1. Environmental Sustainability

The subthemes embedded into this are; ecosystem integrity, Biological diversity and population.

2. Economic Sustainability

The subthemes are; appropriate economic policies, efficient resource use, more equitable access to resources including gender equity, increasing productive capacity of the poor.

3. Social Sustainability

The subthemes are; improved income distribution, gender quality, investing in basic health and education, emphasizing participation of the beneficiaries.

4. Cultural Sustainability

The subthemes are; sensitivity to cultural factors, recognition of values that are conducive to development.

2.6.4. Indicators on Perceptions on Sustainable housing and the Factors that affect its sustainability.

According to Huong & Soebarto (2003), the perception of stakeholders in the building industry are embedded into several areas, within economic, social-cultural and environmental perspectives, these are listed below:

1. Harmony with the environment
2. Environment protection
3. Infrastructure
4. Energy saving
5. Durability
6. Resource conservation
7. Affordability
8. Business opportunity
9. Fulfilment of economic requirements
10. Beauty

11. Good design
12. Convenience of users
13. Fulfilment of social requirements
14. Ownership
15. Type of house
16. Relationship with neighbour
17. Appliances
18. Safety
19. Location

Furtherance to this submission, the following points were also highlighted, as factors that affect the sustainability of housing:

1. Respect to site
2. Environmental protection
3. Management improvement
4. Infrastructure
5. Type of house
6. Increase in green area
7. Density
8. Waste management
9. Energy efficiency
10. Durability
11. Resource conservation
12. Affordability
13. Good design
14. Social requirements

15. Increase in standard

16. Service facilities

2.8 NEIGHBOURHOOD SUSTAINABILITY ASSESSMENT

Several assessment tools have been developed within the past years, with the aim of achieving global environmental sustainability. This development is to ascertain the effectiveness of the growing neighbourhoods and residential buildings.

These neighbourhoods and buildings sustainability assessment tools include; Leadership in Energy and Environmental Design (LEEDS), Building Research Establishment Environmental Assessment Methodology (BREEAM), Comprehensive Assessment System for Built Environment Efficiency (CASBEE), Ecocity, Norwegian Green Building Council, Sweden Green Building Council and Dutch Green Building Council.

The efficiency of these assessment tools have been subjected to analysis by various researchers. They have in some cases been found valuable in gathering information on the sustainability of neighbourhoods in terms of how these neighbourhoods relate with the larger communities where they are situated. They are believed not to have contributed to policy formulation (Sharifi, 2013). Stakeholders are however encouraged to evaluate policies with regard to sustainable principles through community participation (Roseland, 2012). It is also observed by Bird (2015) that, economy, knowledge, health, education and culture play a vital role in the sustainability of neighbourhoods. These roles affect the behaviour of residents, as their current behaviour will have an impact on their future approach, with consequences on the sustainability of the neighbourhoods (Khansas *et al*, 2014).

However, Sharifi (2013) concludes that there is no neighbourhood sustainability assessment method that could be regarded as adequate, as these tools do not cover the social, economic, and Institutional aspects, and there are shortcomings in the ratings, due to the absence of

residents' participation and non-local adaptation. This is in consonance with the submission of Amole (2012) that studies in housing and residential buildings should focus more on residents' attitudes and preferences.

CHAPTER 3

3.0. RESEARCH METHODOLOGY

This chapter indicates the various steps taken to collect and analyse the relevant data for the study. It highlights the research design, research area, population of the study, data collection procedure and instrument, sampling technique, sample size and statistical methods.

Organizational sustainability is generally characterized by large amount of multicomponent indicators and indicator values (Navickas & Navickiene, 2011). The community should be involved in indicator selection so that indicators reflect what is important to people (Ancell & Thompson-Fawcett, 2008). Background variable such as age and ethnicity as well as design elements of the dwelling unit is also a significant predictor of overall housing satisfaction in this study (Howley, 2010). Quantitative indicators which are simple scale-measures that provide information about aspects of environmental, social, cultural or economic factors are taken into consideration along with others (Frame & Vale, 2006).

3.1. RESEARCH DESIGN

Case Study and Survey research has been adopted for this research. Gathering of data is done through structured questionnaire which is based on indicators for Sustainable Development as reviewed within the body of the literature. Questionnaires were evenly distributed based on the number of residential buildings per street. An unbiased representation of the respondents' view and assessment in the study area will be achieved.

3.2. NATURE AND SOURCES OF DATA

The data was obtained through structured questionnaire under 3 classified groups, namely; High Density, Medium Density and Low Density. This is according to the relevance of each of the indicators, to Residential Neighbourhoods and Buildings. These existing indicators will

form the basis of assessment of the sustainability of the study area, which will be determined, through analysis of quantitative data.

3.3. RESEARCH POPULATION

The total number of residential buildings in Ikeja is 25,313, and number of polling units 350 (Independent National Electoral Commission, 2000). This gives an approximate 72 buildings per polling unit. When applied to these three contiguous wards, by working out the number of buildings in each ward through the application of the ratio of polling units per ward, considering that, the number of polling units was determined, by the number of residential buildings in each of the ward, the figures are as shown in table 3.

This gives a population of 7,953 buildings, as the basis for sampling

3.4. STUDY AREA

The case study approach was adopted for the study. The specific case selected was Ikeja. Lagos State, where Ikeja is situated, was created on the 27th of May, 1967, through States Creation and Transitional Provision Decree No 14 of 1967. Before this time, Lagos municipality was administered as a Federal Territory by the Federal Government. The State took off fully as an administrative entity on the 11th of April, 1968. It is the 6th largest city in the world, with the smallest landmass in Africa. It is West Africa's most resourceful single trading market with highest concentration of people, and it is projected to be the 3rd largest urban conurbation in the world in the year 2015. It has an area of 358,861 hectares or 3,577sq.km. (Abe, 2010, pp. 15-17).

Lagos is located on the Atlantic coast in southern Nigeria; it became the capital of southern Nigeria in year 1906, and later became the capital of Nigeria after the combined protectorate of Nigeria was formed in 1914. It became a melting pot, through its being the terminus of roads and rail lines leading to all parts of the country and it is the site of Nigeria's main

international airport. The political and economic situation in recent years attracts more Nigerians to metropolitan Lagos to seek employment, a situation which has led to a constant increase in its population (Appiah & Gates, 1999).

Although Lagos state, in terms of area, is the smallest state in Nigeria, of which 75,755 hectares of its area are wetlands, yet it has the highest population, which is over five per cent of the national estimate. Of this population, Metropolitan Lagos, an area covering 37% of the land area is home to over 85% of the State population.

The rate of population growth is about 600,000 per annum with a population density of about 4,193 persons per sq. km. In the built-up areas of Metropolitan Lagos, the average density is over 20,000 persons per square km. Current demographic trend analysis revealed that the State population is growing ten times faster than New York and Los Angeles with grave implication for urban sustainability. (Lagos State Bureau of Statistics, 2005).

Lagos has a diverse and fast-growing population, resulting from migration to the city from all parts of Nigeria and neighbouring countries. This is the only urban settlement in the UN list of 30 largest urban settings in the world (Cohen 2004). In 1992, Lagos had an estimated population of about 1,347,000. The population of its metropolitan area was about 10.1 million in 2003. The United Nations predicts that, the city's metropolitan area, which had only about 290,000 inhabitants in 1950, will exceed 20 million by 2010, making Lagos one of the world's five largest cities (Microsoft Encarta, 2009).



Figure 21. Map of Nigerian, showing the location of Lagos State Source: <http://www.google.com.ng> (2013)

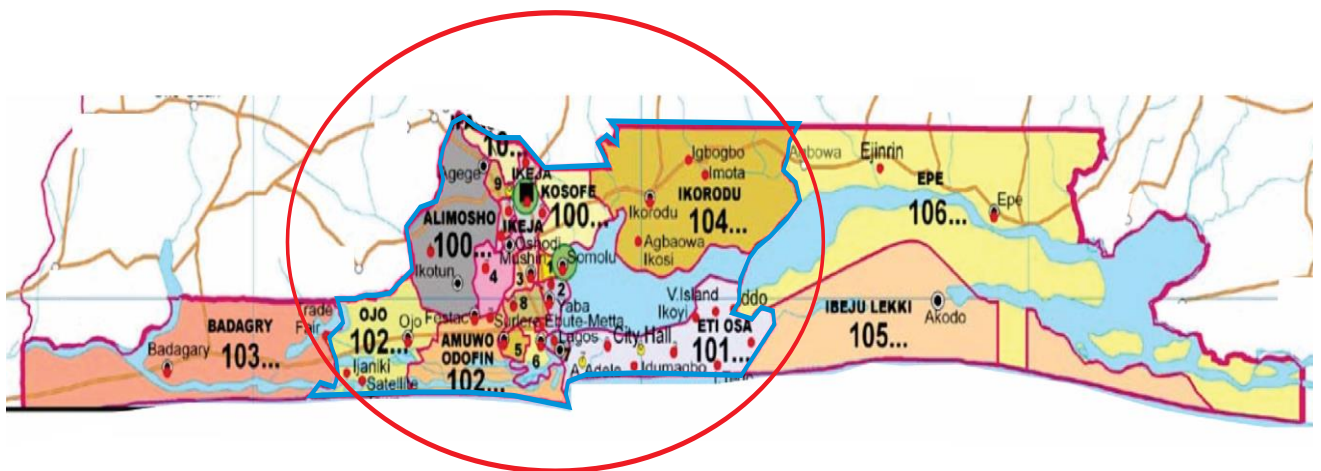


Figure 22. Map of Lagos State, showing Metropolitan Lagos in red highlight. Source: www.google.com (2015)

Ikeja, the study location, is the capital of Lagos State of Nigeria. This city was pronounced the capital in 1976. This area has economic, social and material potentials, it also has its

environmental and physical challenges. Ikeja covers 5,630 hectares of land area (table 3...) which accounts for 1.57% of the state's total area. It however accommodates 3.45% of the population, which is a total of 533, 237 (table 3.2). It is projected to become 1,062,833 in 2020 (table 3.3). Lagos state house survey 2010, takes the population of Ikeja to be 735, 828. It is documented that, 85% of the buildable space in Ikeja has already been utilized.



Figure 23. Map of Lagos State, showing sixteen of the existing twenty Local Governments in Metropolitan Lagos; Ikeja Local government in red highlight.

Source: <http://www.google.com.ng> (2015)

(Ministry of Physical Planning & Urban Development 2009).

For ease of administration and political monitoring, Ikeja is divided into 10 wards, namely:

1. Anifowose/Ikeja
2. Ojodu/ Agidingbi/Omole
3. Alausa/Olusosun/Oregun
4. Airport/Onipetesi/Onilekere
5. Ipodo/Seriki Aro
6. Adekunle Village/Adeniyi Jones/Ogba
7. Oke-Ira/Aguda
8. Onigbongbo/Military Cantonment

9. GRA
10. Wasimi/Opebi/Allen

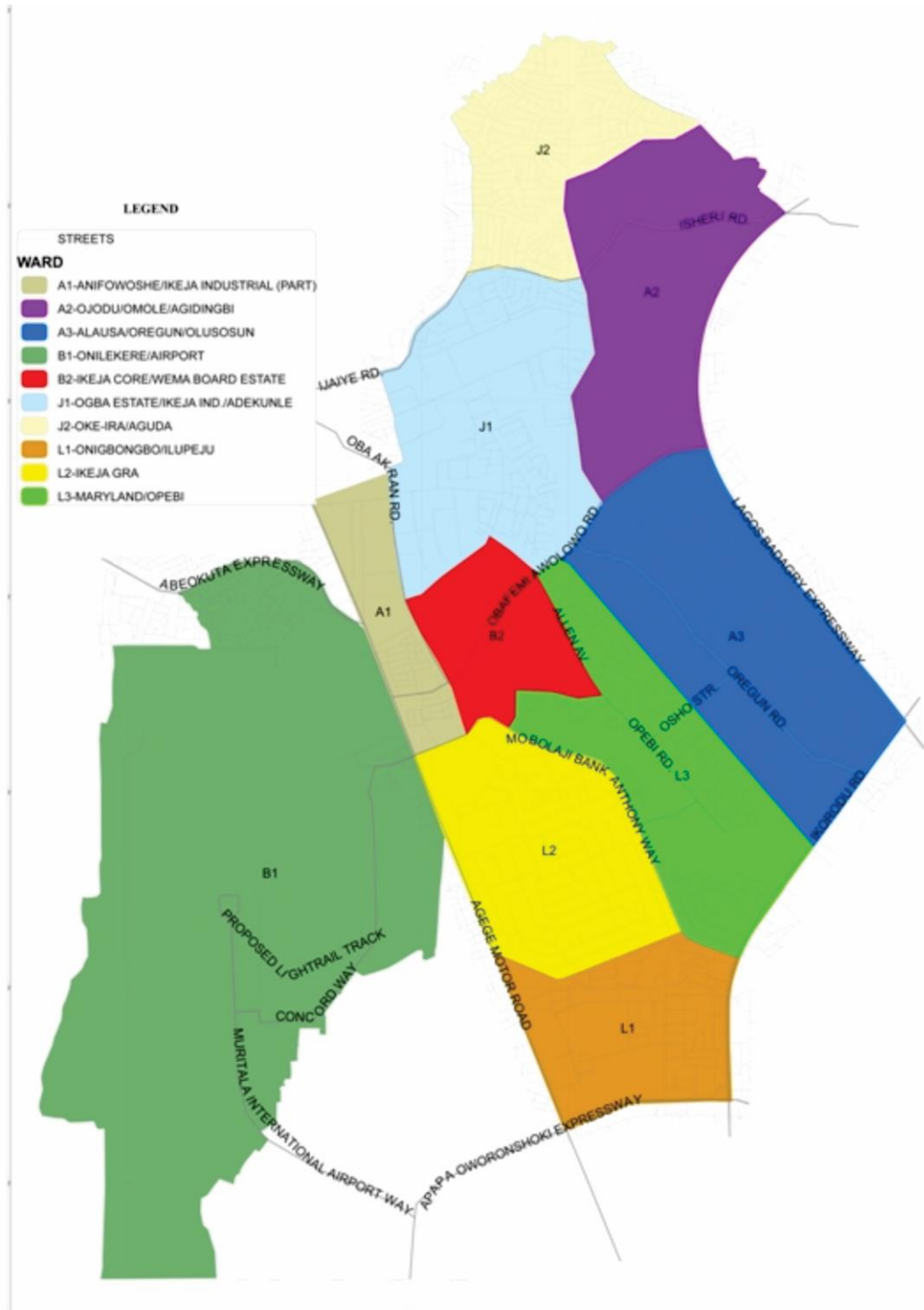


Figure 24: Map of Lagos State, showing sixteen of the existing twenty Local Governments in Metropolitan Lagos; Ikeja Local government in red highlight. Source: Monitoring of Physical Planning & Urban Development 2009)

Ikeja is also noted for industrial activities apart from having most of its land area dedicated to residential. It carries 46.4% of manufacturing production values, the highest in Nigeria as at 2014.

The population induced pressure on Ikeja has made the existing infrastructure inadequate for the populace, which led to the degeneration in the quality of life and physical environment. There is a need to plan our neighbourhoods further, for sustainable living and comprehensive redevelopment, that meets the physical, social, economic and environmental needs of the people.

The choice of Ikeja as a study area is due to its being the capital of Lagos State where the presence of the state government is domiciled. It also has a representation of the 3 major income groups; low income/high density/medium income/medium density and high income/low density. Apart from its being predominantly residential, industrial and commercial activities are also located in this study area.

The choice of Ikeja for the purpose of this research, has been largely due to its significance in Lagos state and its importance to Nigeria. Its economic and social activities makes it a place of good representation (Meenan, 2004).

3.5. SAMPLING TECHNIQUE

The study area has all the classified wards in it; low density, medium density and high density income wards (table 2). It was purposively selected, due to its being the capital of Lagos State.

Table 2: Wards within Ikeja Local Government

	LOW INCOME/HIGH DENSITY WARD	MEDIUM INCOME/MEDIUM DENSITY WARD	HIGH INCOME/LOW DENSITY WARD
Ikeja	1	Anifowose/Ikeja	
	2	Agidingbi/Omole/Ojodu	
	3	Alausa/Oregun/Olusosun	
	4	Onilekere/Onipetesi	
	5	Ipodo/Seriki Aro	
	6	Adeniyi Jones/Ogba	
	7	Okeira/Aguda Titun	
	8		Onigbongbo
	9		GRA
	10	Wasinmi/Opebi/Allen	

Ipodo/Seriki Aro, the only high density ward in Ikeja was selected, Wasinmi/Opebi/Allen was randomly selected from the medium density wards, while GRA was equally selected randomly, from the low density wards. The choice of these wards is based on their being contiguous (table 2). The contiguous nature of these wards is shown in figure 26.

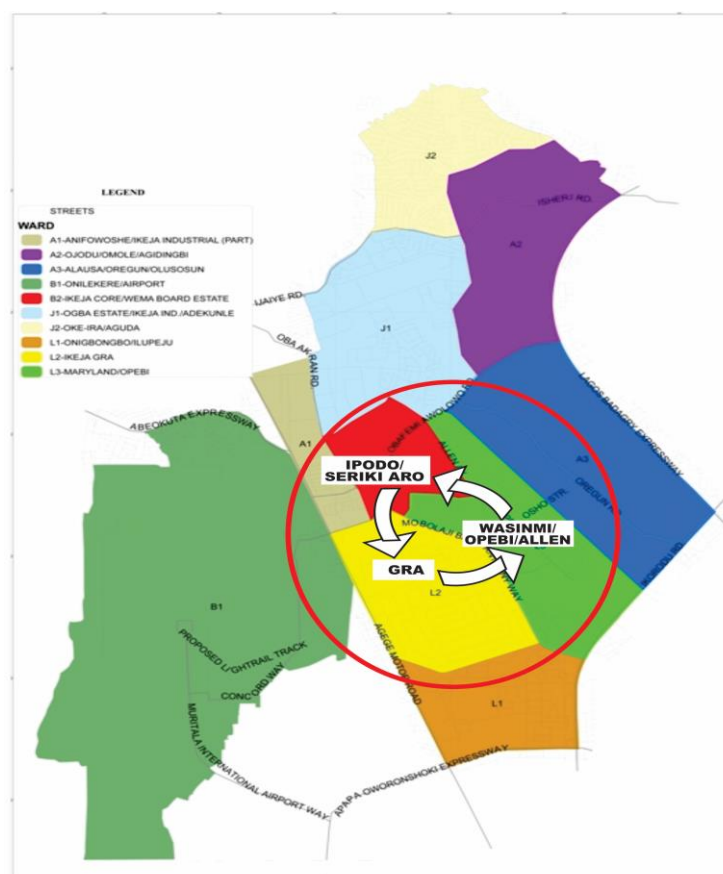


Figure 25: Randomly selected wards Source: Lagos State Ministry of Physical Planning and Urban development (2010)

Questionnaires were administered in selected residential buildings within these wards. Stratified sampling procedure employed in this research was to ensure adequate representative of the study population across all types of residential neighbourhoods.

3.6. SAMPLING UNIT

The basis for sampling as enumerated in the following tables.

Table 3: Selected contiguous wards. Source: Independent National Electoral Commission (2000)

S/N	WARD	AVERAGE No OF BUILDINGS/POLLING UNIT X No OF POLLING UNITS	POPULATION (Residents) BASED ON No OF BUILDINGS
1	Ipodo/Seriki Aro	72 X 55	3,960

2	Wasimi/Opebi/Allen	72 X 30	2,160
3	GRA	72 X 25	1,800
TOTAL		72 X 110	7,920

The sample size of this research was based on the population of residential buildings in selected wards, which is 7,953. Questionnaires were administered on the basis of this estimate.

3.7. SAMPLE SIZE

The sample size was determined in reference to table 4, at a confidence level of 95% and a margin error of 5%.

Table 4: Sample size requirements (Glenn D. Israel 2015) University of Florida, IFAS extention. Source: <https://edis.ifas.ufl.edu/pdffiles/PD/PD00600.pdf>

Size of Population	Sample Size (n) for Precision (e) of:			
	±3%	±5%	±7%	±10%
500	a	222	145	83
600	a	240	152	86
700	a	255	158	88
800	a	267	163	89
900	a	277	166	90
1,000	a	286	169	91
2,000	714	333	185	95
3,000	811	353	191	97
4,000	870	364	194	98
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99
20,000	1,053	392	204	100
25,000	1,064	394	204	100
50,000	1,087	397	204	100
100,000	1,099	398	204	100
>100,000	1,111	400	204	100

A total number of 750 questionnaires (about double the size of the recommendation on table 4) were administered in the 3 contiguous zones, with the assumption that, the number of remitted questionnaires will not be less than the recommended sample size of 381.

3.8. DATA COLLECTION

A number of streets were selected from each zone. The selected streets fall within less than 1 kilometre radius. It falls within 0.83 kilometre for GRA, 0.6 kilometre for Allen/Opebi ward and 0.6 kilometre for Ipodo/Seriki Aro (figure 28, figure 29 & figure 30).



Figure 26: Street Map of Ikeja, Local Government, showing streets where Questionnaires were administered, and the number of administered Questionnaire, within the High Density Wards. Source of Street Map: Lagos State Ministry of Physical Planning and Urban Development (2013)



Figure 27: Street Map of Ikeja, Local Government, showing streets where Questionnaires were administered, and the number of administered Questionnaire, within the Medium Density Ward. Source of Street Map: Lagos State Ministry of Physical Planning and Urban development (2013)



Figure 28: Street Map of Ikeja, Local Government, showing streets where Questionnaire were administered, and the number of administered Questionnaire, within the High Density Ward. Source of Street Map: Lagos State Ministry of Physical Planning and Urban development (2013)

Number of questionnaires administered to heads of households or their representatives were 750. This was done in selected residential buildings, based on their number within the street, as highlighted in table 5, table 6 & table 7.

Table 5: Ipodo/Seriki (High density ward): Selected streets Source: **Lagos State Ministry of Environment (2013)**

SN	STREET	No OF BUILDINGS	No OF QUESTIONNAIRES ADMINISTERED
1	Ajiboye Street	33	12
2	Ajao Avenue	127	41
3	Seriki Aro Avenue	70	23
4	Afariogun Street	50	17
5	Ayeni Street	52	18
6	Tonade Street	43	15
7	Ipodo Street	40	14
8	Olowu Street	93	30
9	Unity Road	100	33
10	Orishe Street	63	16
11	Balogun Street	133	43
	TOTAL	804	262



Figure 29: Questionnaire distribution pattern on Ajiboye Street (Selected buildings in red)



Figure 30: Questionnaire distribution pattern on Ajao Street (Selected buildings in red)



Figure 31: Questionnaire distribution pattern on Seriki Aro Avenue (Selected buildings in red)



Figure 32: Questionnaire distribution pattern on Afariogun Street (Selected buildings in red)



Figure 33: Questionnaire distribution pattern on Ayeni Street (Selected buildings in red)

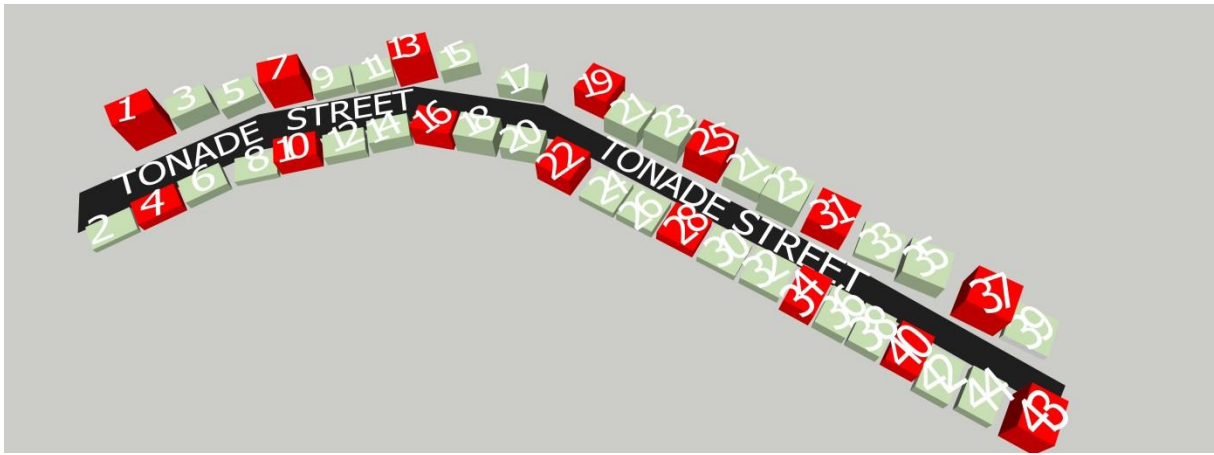


Figure 34: Questionnaire distribution pattern on Tonade Street (Selected buildings in red)
Figure....:



Figure 35: Questionnaire distribution pattern on Ipodu Street (Selected buildings in red)



Figure 36: Questionnaire distribution pattern on Olowu Street (Selected buildings in red)

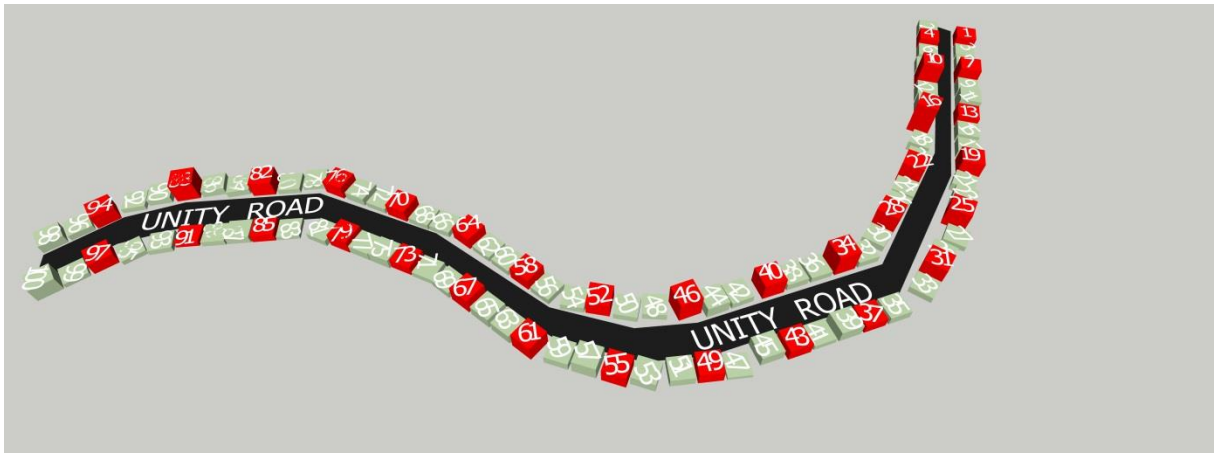


Figure 37: Questionnaire distribution pattern on Unity Road (Selected buildings in red)



Figure 38: Questionnaire distribution pattern on Orishe Street (Selected buildings in red)



Figure 39: Questionnaire distribution pattern on Balogun Street (Selected buildings in red)

Table 6: Allen/opebi (Medium density ward): Selected streets **Source: Lagos State Ministry of Environment (2013)**

SN	STREET	No OF BUILDINGS	No OF QUESTIONNAIRES ADMINISTERED
1	Adeleke Street	47	15
2	Oluwaleyimu Street	37	12
3	Owodunni Street	26	9
4	Amore Street	38	12
5	Majekodunmi Street	38	12
6	Emina Crescent	83	28
7	Omotayo Ojo Street	27	9
8	Oladipupo Kuku Street	32	10
9	Folawewo Street	53	17
10	Ogundana Street	91	30
11	Hilton Drive	11	4
12	Bamishile Street	49	16
13	Tiwalade Close	41	13
14	Adebayo Banjo Street	44	14
15	Moshood Abiola Crescent	41	13
16	Felicia Koleosho Street	20	7
17	Sule Abuka Crescent	41	13
18	Agbaoku Street	28	9
19	Folorunsho Kuku Street	30	10
	TOTAL	777	253

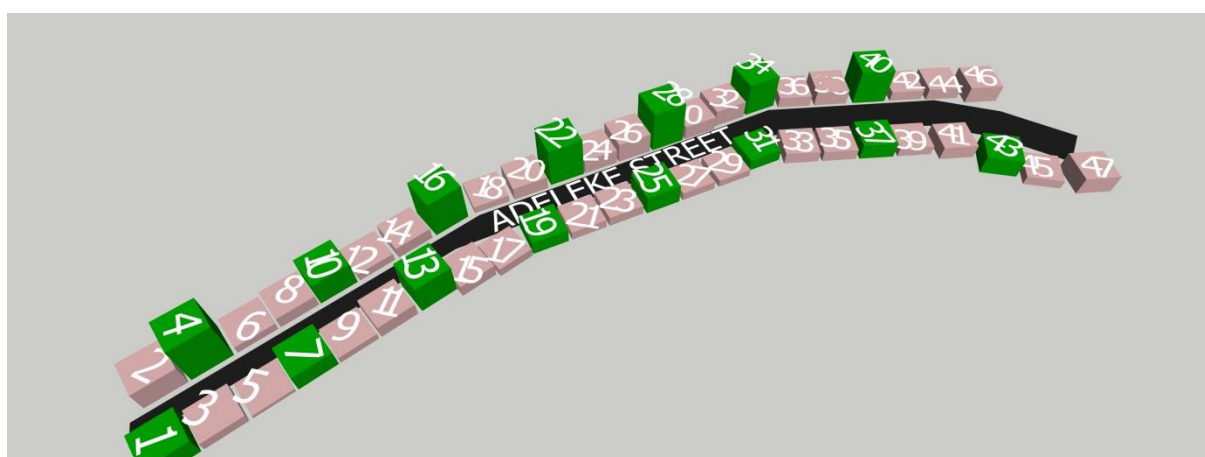


Figure 40: Questionnaire distribution pattern on Balogun Street (Selected buildings in green)



Figure 41: Questionnaire distribution pattern on Oluwaleyimu Street (Selected buildings in green)

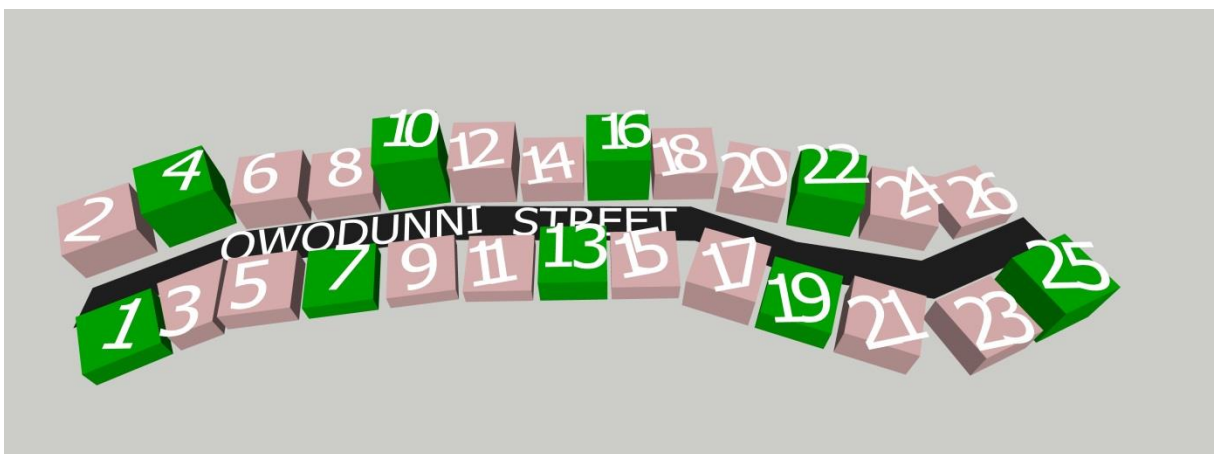


Figure 42: Questionnaire distribution pattern on Owodunni Street (Selected buildings in green)



Figure 43: Questionnaire distribution pattern on Amore Street (Selected buildings in green)



Figure 44: Questionnaire distribution pattern on Majekodunmi Street (Selected buildings in green)



Figure 45: Questionnaire distribution pattern on Emina Crescent (Selected buildings in green)



Figure 46: Questionnaire distribution pattern on Omotayo Ojo Street (Selected buildings in green)

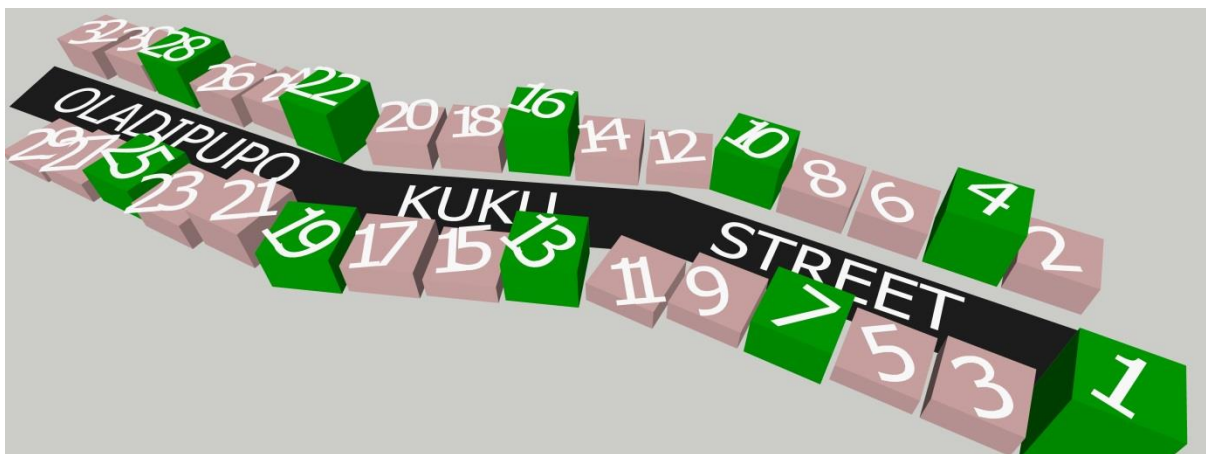


Figure 47: Questionnaire distribution pattern on Oluwadipupo Kuku Street (Selected buildings in green)

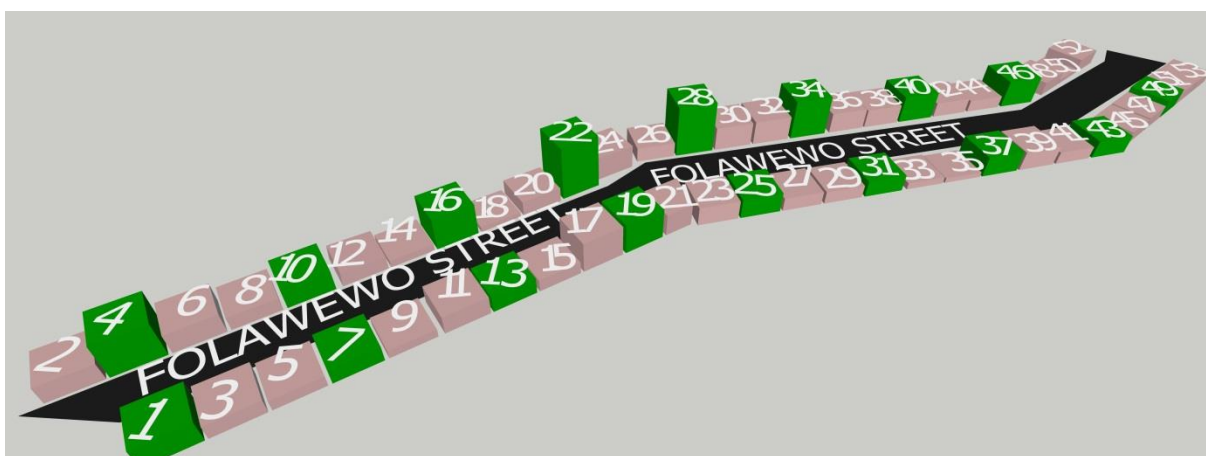


Figure 48: Questionnaire distribution pattern on Folawewo Street (Selected buildings in green)



Figure 49: Questionnaire distribution pattern on Ogundana Street (Selected buildings in green)



Figure 50: Questionnaire distribution pattern on Hilton Drive (Selected buildings in green)



Figure 51: Questionnaire distribution pattern on Bamishile Street (Selected buildings in green)

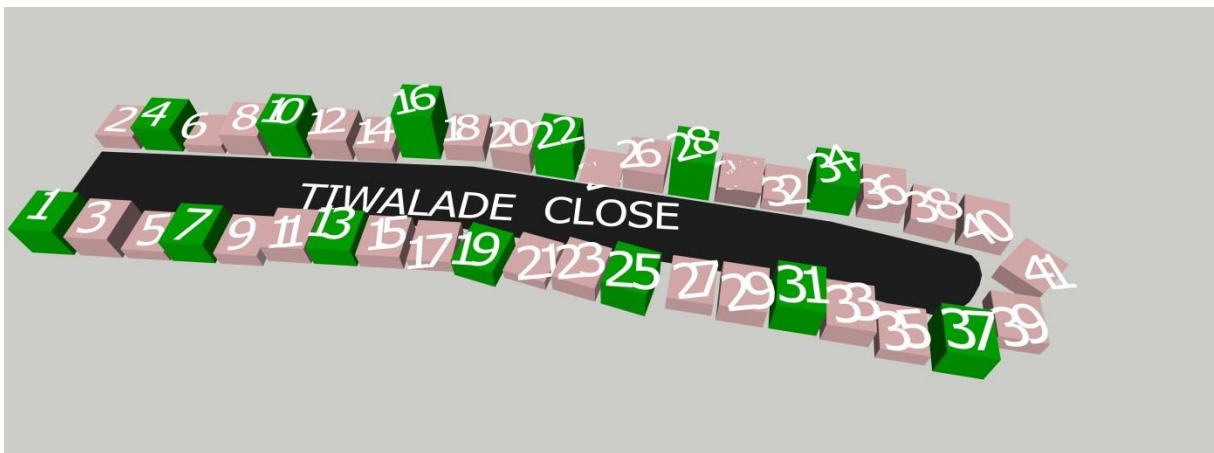


Figure 52: Questionnaire distribution pattern on Tiwalade Close (Selected buildings in green)

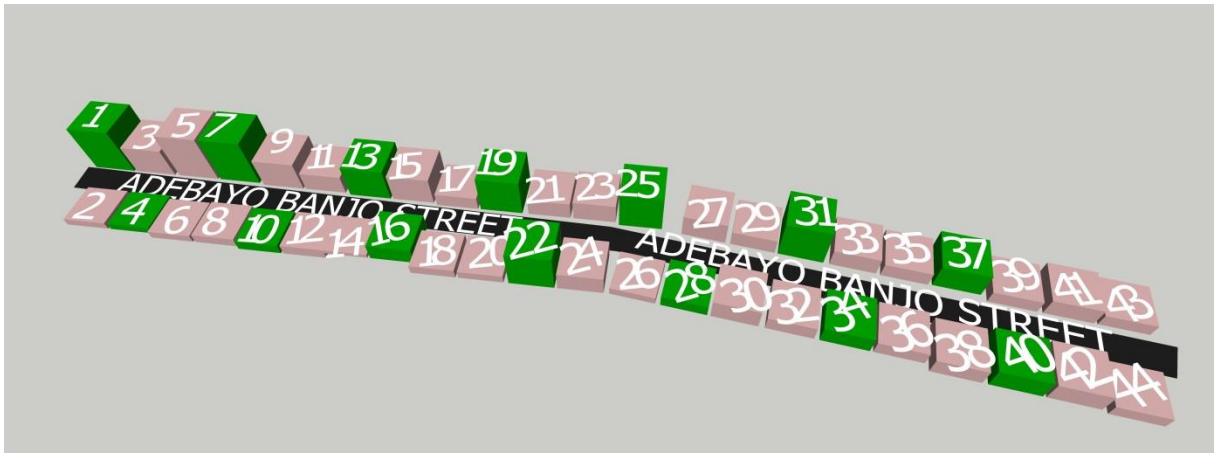


Figure 53: Questionnaire distribution pattern on Adebayo Banjo (Selected buildings in green)

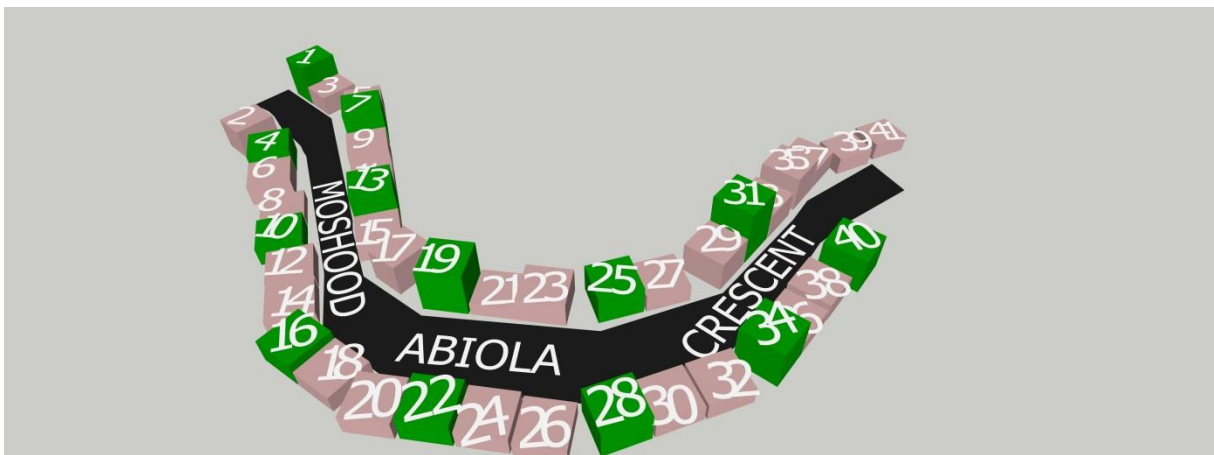


Figure 54: Questionnaire distribution pattern on Moshood Abiola Crescent (Selected buildings in green)



Figure 55: Questionnaire distribution pattern on Felicia Koleosho Street (Selected buildings in green)

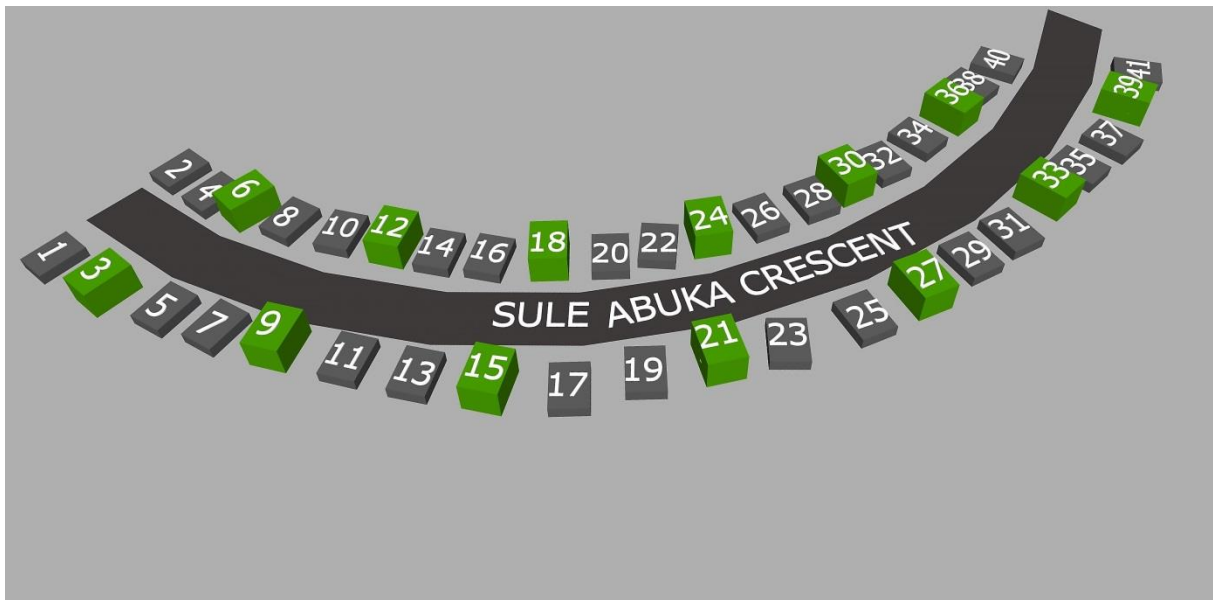


Figure 56: Questionnaire distribution pattern on Sule Abuka Crescent (Selected buildings in green)



Figure 57: Questionnaire distribution pattern on Agbaoku Street (Selected buildings in green)



Figure 58: Questionnaire distribution pattern on Folorunsho Kuku Street (Selected buildings in green)

Table 7: GRA (Low density ward): Selected streets **Source: Lagos State Ministry of Environment (2013)**

SN	STREET	No OF BUILDINGS	No OF QUESTIONNAIRES ADMINISTERED
1	Sobo Aribiodu Street	110	36
2	Adeyemo Alakija Street	67	22
3	Ladoke Akintola Street	43	14
4	Oba Adeniji Adele Street	19	7
5	Remi Fani Kayode Street	67	22
6	Sowemimo Street	49	16
7	Joel Ogunnaike Street	93	30
8	Oba Akinjobi Road	113	37
9	Ayoola Coker	92	30
10	Micheal Ogun Street	38	12
11	Harold Sodipo Street	26	9
TOTAL		717	235



Figure 59: Questionnaire distribution pattern on Sobo Aribidu Street (Selected buildings in yellow)

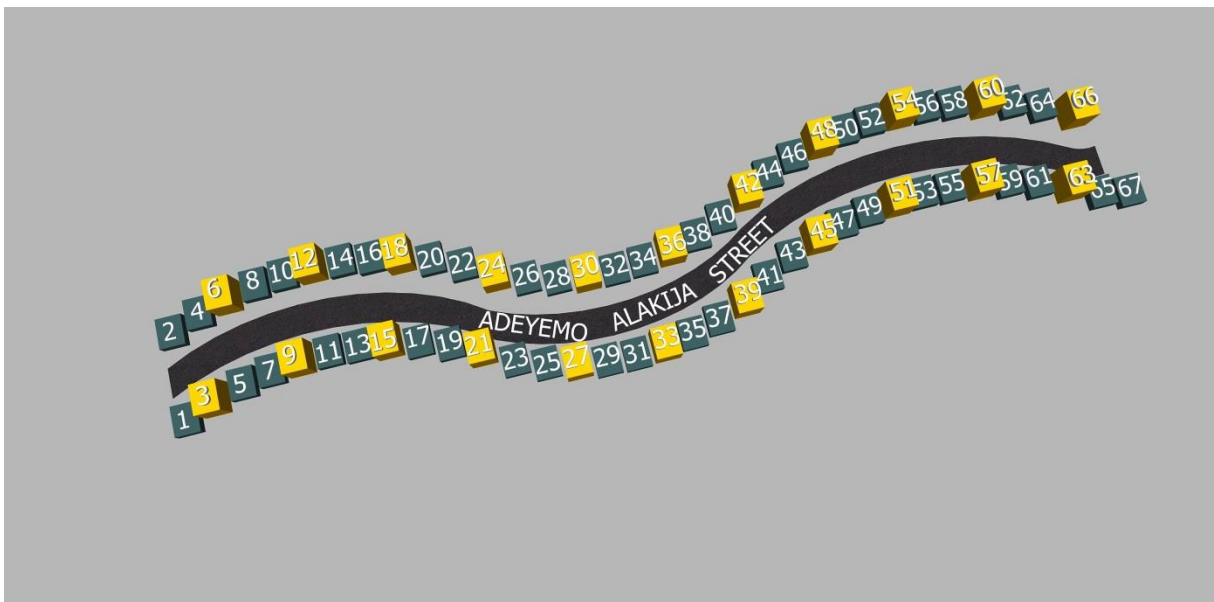


Figure 60: Questionnaire distribution pattern on Adeyemi Alakija Street (Selected buildings in yellow)

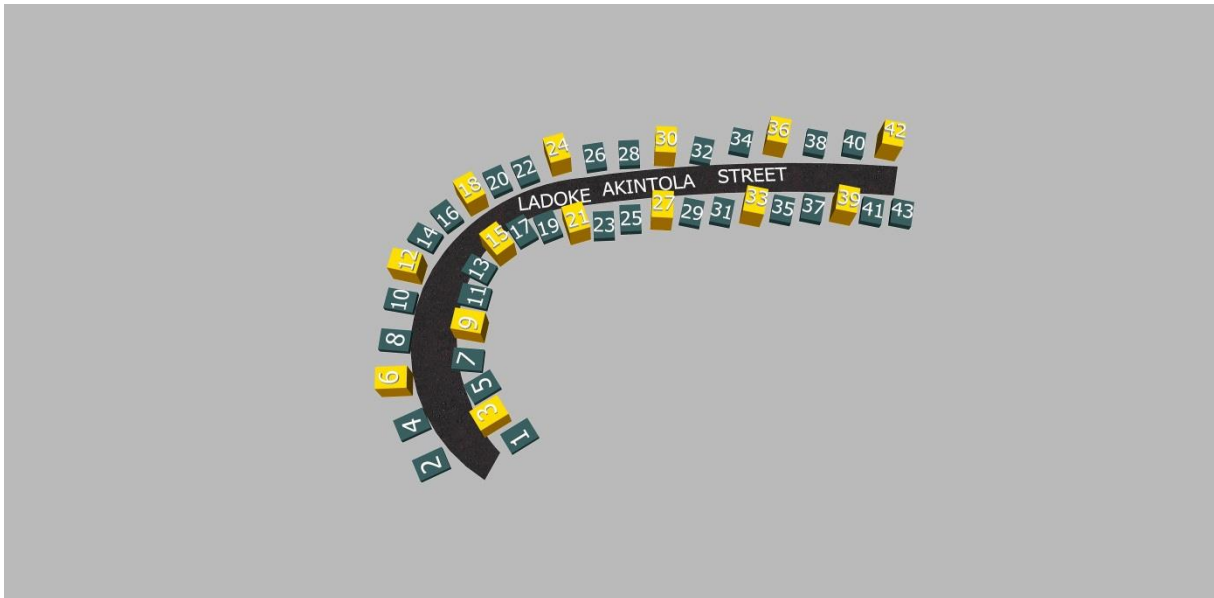


Figure 61: Questionnaire distribution pattern on Ladoke Akintola Street (Selected buildings in yellow)

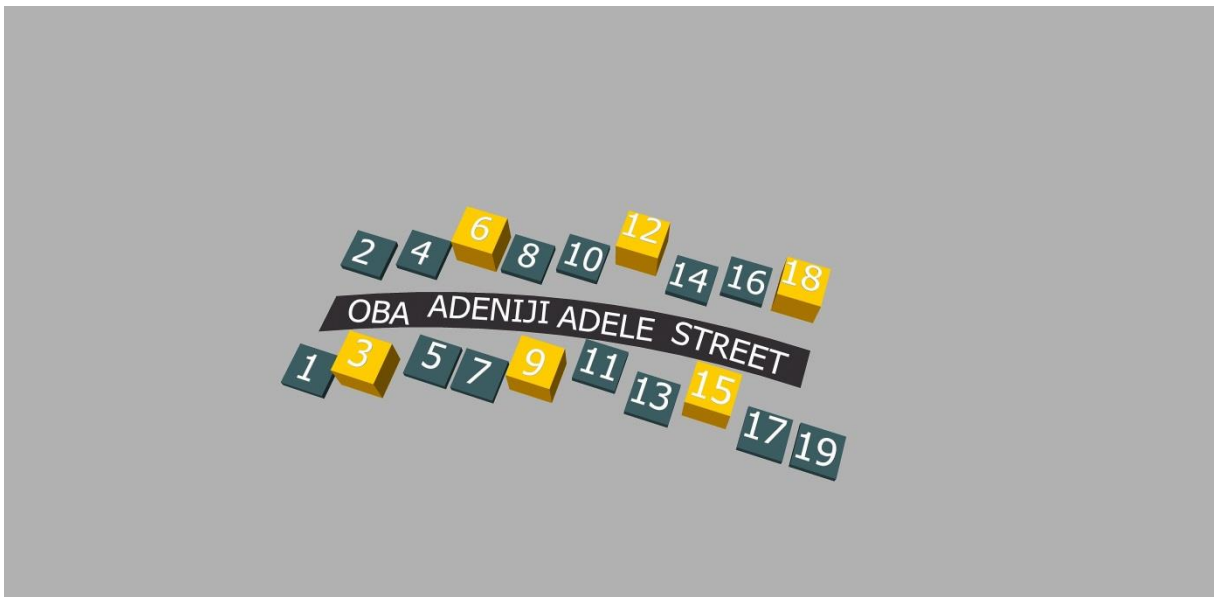


Figure 62: Questionnaire distribution pattern on Adeniji Adele Street (Selected buildings in yellow)

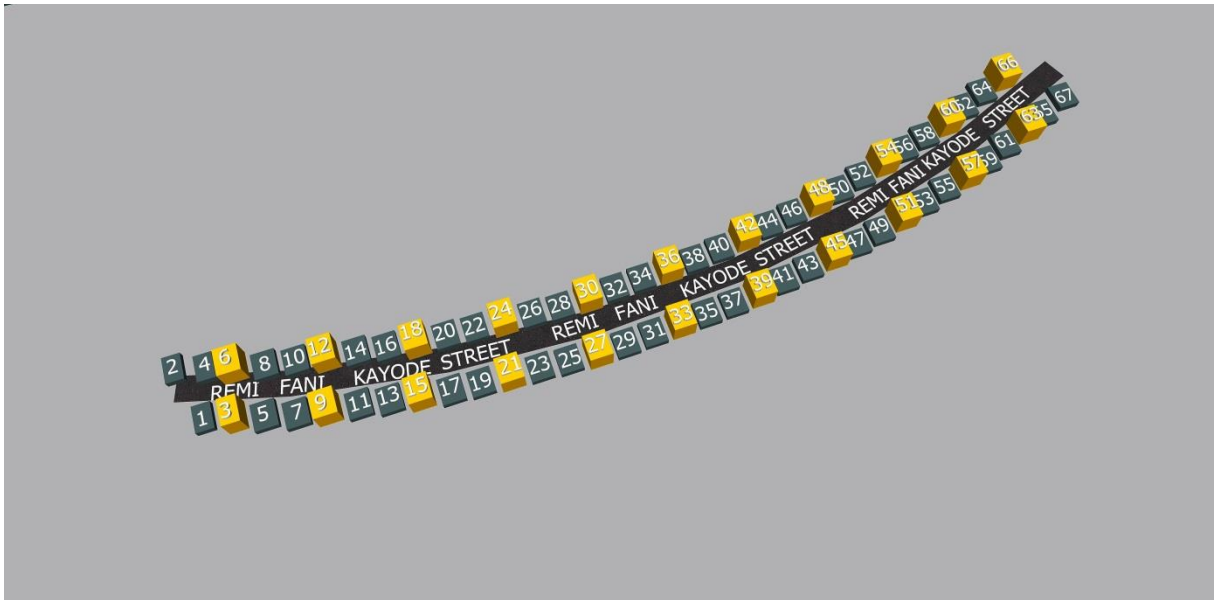


Figure 63: Questionnaire distribution pattern on Remi Fani Kayode Street (Selected buildings in yellow)

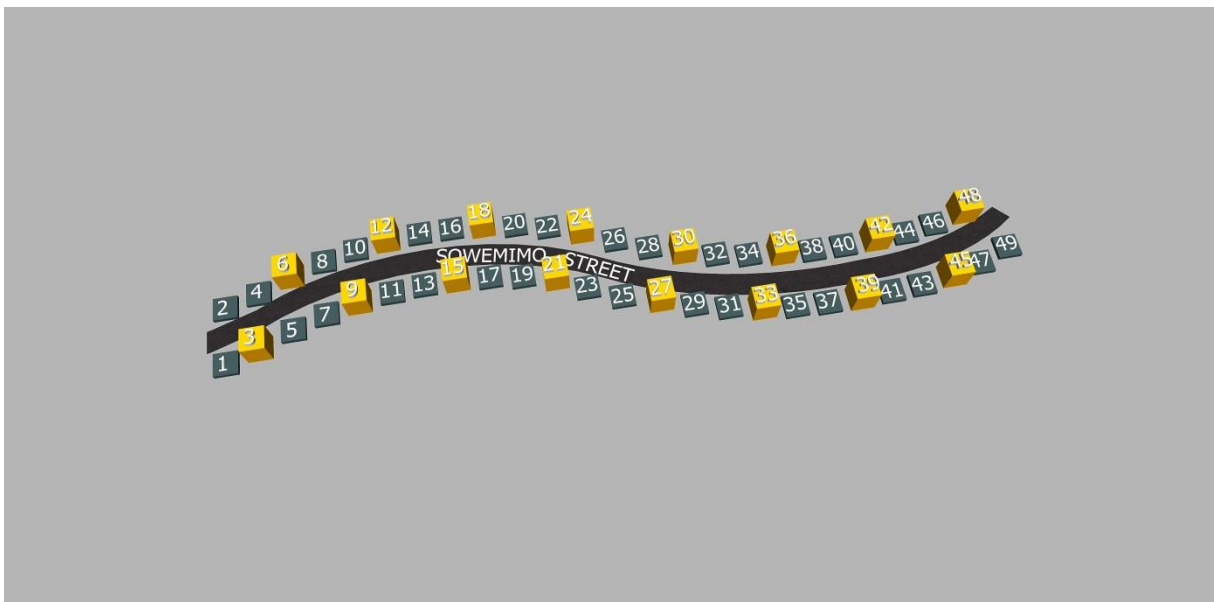


Figure 64: Questionnaire distribution pattern on Sowemimo Street (Selected buildings in yellow)



Figure 65: Questionnaire distribution pattern on Joel Ogunnaike Street (Selected buildings in yellow)

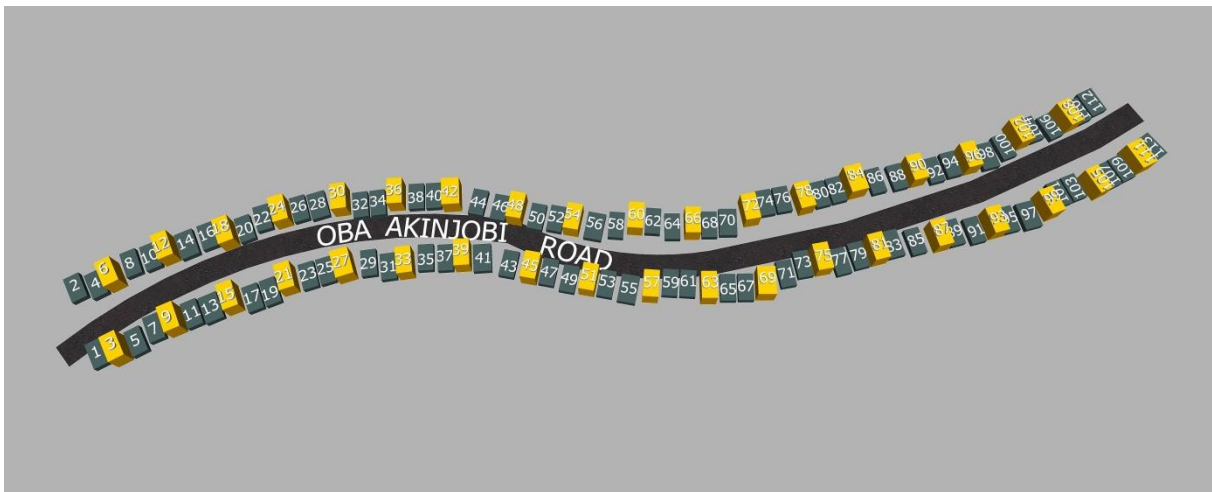


Figure 66: Questionnaire distribution pattern on Oba Akinjobi Road (Selected buildings in yellow)



Figure 67: Questionnaire distribution pattern on Ayoola Coker Street (Selected buildings in yellow)

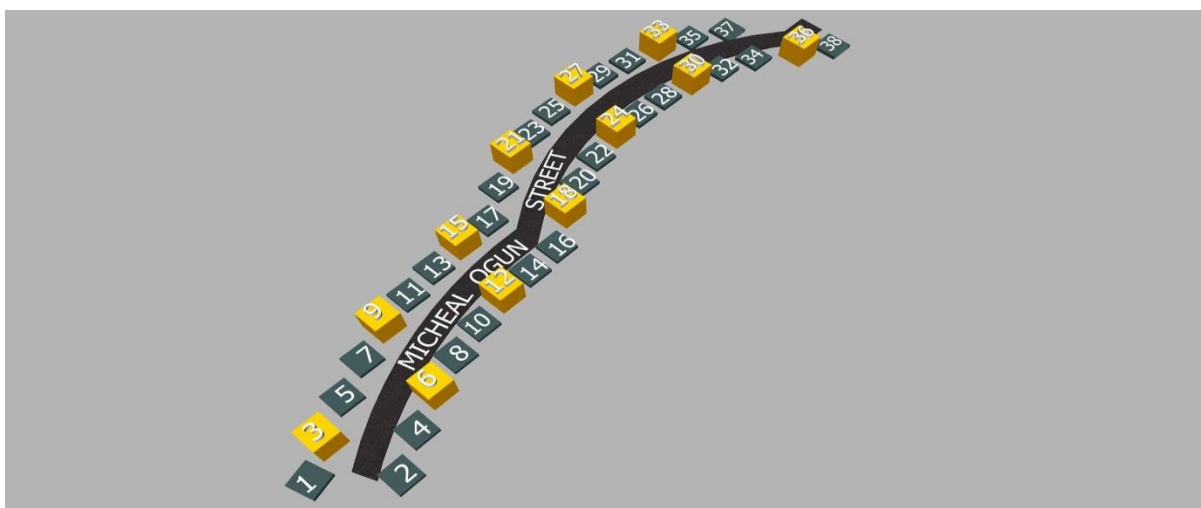


Figure 68: Questionnaire distribution pattern on Michael Ogun Street (Selected buildings in yellow)

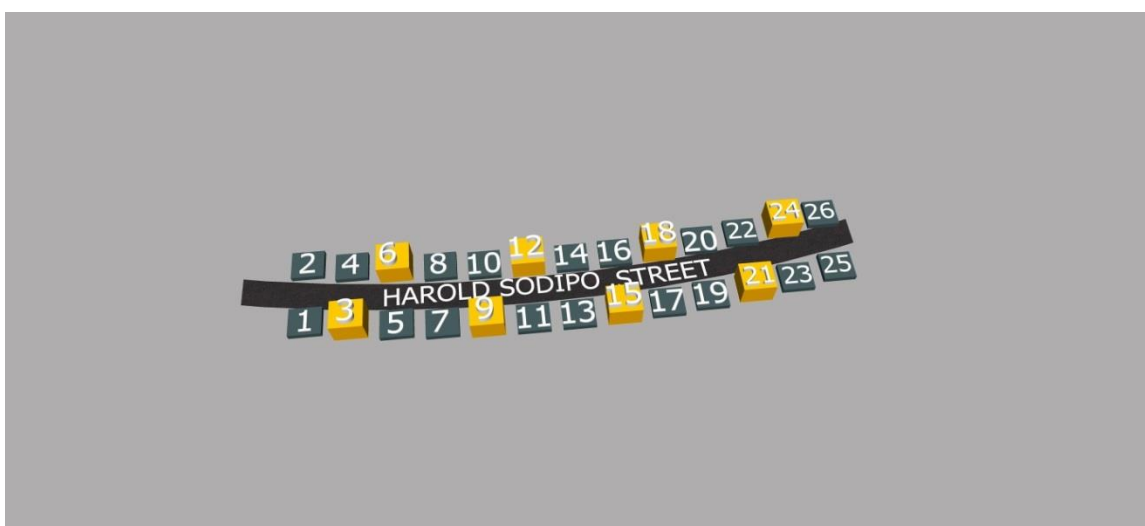


Figure 69: Questionnaire distribution pattern on Harold Sodipo Street (Selected buildings in yellow)

3.9. SURVEY RESPONSE

Table 8: Questionnaires administered and retrieved

	No OF BUILDINGS	No OF QUESTIONAIRES ADMINISTERED	No OF QUESTIONAIRES RETRIEVED	% RETRIEVED
High Density	804	262	180	68.7%
Medium Density	777	253	200	80%
Low Density	717	235	215	91.5%
TOTAL	2,298	750	595	79.3%

CHAPTER FOUR

4.0 DATA PRESENTATION AND ANALYSIS

The conceptual model of this study seeks to identify the nature of neighbourhoods and residential buildings within the study area. It is to examine the socio-economic and cultural characteristics of its residents, and their knowledge and attitude to sustainability. It is also focused at determining the sustainability of the study area, and the factors that influence it.

Four objectives were set to achieve the set goal, under 3 major residential classes; that is; High Density, Medium Density and Low Density:

1. **The first objective:** to identify the residential buildings and neighbourhoods, and their characteristics. The variables identified to achieve this objective are; nature of apartment, nature of dwelling, existence of home based enterprises, number of years in apartment, number of people living in apartment, mode of cooking, Source of water supply, type of toilet facility and whether such toilet facility is shared or exclusive, source of power supply, types of lighting fittings, mode of waste disposal, frequency of waste disposal, pattern of waste storage, frequency of waste disposal, where waste is kept, whether the respondents sort their waste and whether the design of the apartment envisages waste management. The physical characteristics of the buildings documented during field work is also examined.
2. **The second objective:** to examine the socio-economic and cultural characteristics of the residents within these income groups. Variables outlined to determine these are: age, gender, marital status, ethnic group, employment status, monthly income, level of education, and the ability to pay utility bills.

3. **The third objective:** seeks to analyse the knowledge, attitude and behaviour of respondents, to environmental sustainability, the factors considered under this objective are: respondents' knowledge of environmental sustainability, knowledge of global warming, knowledge of requirements to reduce global warming, awareness of laws guiding neighbourhood sustainable practice and the involvement of respondents' on sustainability programmes.
4. **The fourth objective:** to determine the sustainability of the study area and the implicated factors. To determine this, all variables used in this research are considered.

The questionnaires were administered to occupants of residential buildings within the high density, medium density low density areas. All the questionnaires were appraised for completeness and accuracy. They were checked to ensure that related answers match all questions asked, and all relevant fields filled accordingly. This process identifies inappropriately filled questionnaires, and this subsequently led to their removal, before the commencement of analysis. The process was intended to reduce errors during the stage of analysis.

At the subjection of this to a reliability test, Cronbach's Alpha was 0.730, while Cronbach's Alpha Based on Standardized Items was 0.749.

Table 9: Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.730	0.749	545

4.1 VERIFICATION OF RETURNED QUESTIONNAIRES FOR ACCURACY AND UNIFORMITY

The questionnaires employed in this study were designed to answer the four research questions, that meets the objectives of the study, which are to: identify neighbourhoods and residential buildings and their characteristics in Ikeja, Lagos; examine the socio-economic characteristics of the residents, in Ikeja; determine the knowledge of residents about sustainability; identify the factors that determine the sustainability of the study area.

They were admitted to occupants of residential buildings within the high density, medium density and low density areas. All the questionnaires were appraised for completeness and accuracy.

The questionnaires were checked to ensure that related answers match all questions asked, and all relevant fields filled accordingly. This process identifies inappropriately filled questionnaires, and this subsequently led to the removal of inappropriately filled ones, before the commencement of analysis. The process was intended to reduce errors during the stage of analysis.

4.2 RESPONSE RATE

The total return rate was 595, which accounts for 79.3%. After subjecting the questionnaires thorough check, 72.7% (545) were analysed. However, of the 750 questionnaires distributed, 262 questionnaires were administered in the high income zone, 68.7% returned, while 89% of returned questionnaires were analysed. For the medium income zone, 253 questionnaires were distributed, 79.1% was returned, while 88.5% of returned questionnaires were used for analysis after thorough check. The total number of questionnaires administered in the low income area was 235, 91.5% of these were returned, while 86.6% of returned questionnaires

were analysed. In totality, 750 questionnaires were administered, 79.3% returned, while 72.7% was analysed after check.

Table 10: QUESTIONNAIRES RETURNED RATE/PATTERN

Income group	No distributed	No returned (%)	No properly filled (%)
High Density	262	180(68.7%)	160(89%)
Medium Density	253	200(79.1%)	177(88.5%)
Low Density	235	215(91.5%)	208(86.7%)
Total	750	595(79.3%)	545(72.7%)

4.3. DATA PRESENTATION

Upon presentation of analysis of data collected, the analysis done was classified into several tables. This was done to reflect the three (3) income groups (through cross-tabulation) within the study area.

These tables are grouped to reflect each of the stated objectives of the study.

ANALYSIS

Out of 545 respondents, analysed in the data, 29.36% (160) fall under the low income/high density area, 32.48% (177) are under the middle income/middle density area, while 38.16% (208) are within the high income/low density group.

The first set of analysis (table 11) seeks to identify neighbourhoods and residential buildings and their characteristics in Ikeja, Lagos.

Objective 1

Within the low income area, 1 room apartment accounts for 18.1%, room and parlour type of apartment is 6.9% in this income group. 2-bedroom flat is at 19.4% while 3-bedroom flat is of the highest percentage at 37.5%. 4-bedroom flat and 5-bedroom flat accounts for 8.1% and 1.2% respectively. However, in the middle income group, 1 room apartment is at 11.9%, room and parlour at 15.3%, 1-bedroom flat at 6.8%, 2-bedroom flat at 24.3%, 3-bedroom flat at 30.5%, 4-bedroom flat at 8.5%, and 5-bedroom flat at 1.7%. Within the high income group, 1 room apartment is at 11.1%, room and parlour at 13.0%, 2-bedroom flat at 18.8%, 3-bedroom flat 23.6%, 4-bedroom flat at 15.9%, while 5 bedroom flat is 6.2%. Within the totality of respondents, 1 room apartment accounts for 13.4%, room and parlour, 11.9%, 1 bedroom flat 29.9%, 4-bedroom flat 11.2%, 5-bedroom flat 3.3%, while other types of apartment accounts for 3.9%. 3-bedroom flat has the highest percentage in all the 3 income groups. 4-bedroom flat is at a similar percentage of 8.1% and 8.5% in the low and middle income groups, while this is significantly different in the high income group with 15.9%. The significance level of this variable within the various income groups is 0.000, which is distinctly significant.

On the nature of dwelling, single unit building on a plot is 32.5% in the low income zone, 8.1% has twin buildings on a plot, 8.8% has 2 apartments per plot, 3 apartments per plot accounts for 10.0%, 4 apartments on a plot is 20.6%, while more than 4 apartments per plot is 20.6% within the low income area. For the middle income area, 20.6% has a single unit apartment on a plot, 5.6% has twin buildings on a plot, 11.3% has 2 apartments on a plot, 12.4% has 3 apartments on a plot, 29.4% has 4 apartments on a plot for the high income area, 34.1% are single units on a plot, twin buildings on a plot is 12.5%, 2 apartments per plot is 9.1%, 11.5% for 3 apartments on a plot, 15.4% for 4 apartments on a plot, while 14.4% has more than 4 apartments on a plot.

The relational difference within the 3 income groups is not significant at 0.126.

However, within the middle income area, the highest percentage of 29.4% has 4 apartments on a plot, while the low and high income groups have the highest percentage as single plots per units at 32.5% and 34.1% respectively. At the combination of the 3 income groups, plots with single plots on them has the highest percentage of 28.4%, followed by 4 apartments per plot at 21.5% and more than 4 apartments per plot at 17.6%.

For the existence of home based enterprises, 82.5% do not run home-based enterprises within the low income group, 88.1% do not run it in the middle income area, while 89.4% do not run it in the high income area. Within the total respondents, 87.0% do not run home based enterprises. There is a significant relationship at 0.003.

The highest percentage of respondents, within the low income groups have stayed between 4-7 years in their apartments, this is 38.1%. The middle and high income areas have their highest percentages of 4-7 years stay in apartments, at 42.4% and 43.8%. This is followed by those who have stayed for between 0-3 years at 33.8% for low income. Those who have stayed between 8-15 years, are in the 3rd place, uniformly within the 3 income groups at, 19.4% for low income, 13.0% for middle income and 21.2% for high income. Within the combination of the 3 income groups, those with 4-7 years stay in their apartment has the highest percentage of 41.7%, followed by 0-3 years at 33.0%, 8-15 years at 18.0%, and those with 16 years and above at 7.3%. This has an insignificant relationship of 0.143.

For the number of people in apartment, the highest percentage within income groups is 3-5 persons per dwelling, these cuts across all the income groups, with 56.0% for low income group, 63.8% for middle income group and 59.1% for high income group. For the low income area, 6-8 persons per apartment is next with 21.4%, unlike the middle and high income areas, whose next percentage is 1-2 persons per apartment at 18.1% and 20.2% for

middle and high income respectively. Within the combination of the 3 income groups, 3-5 persons per dwelling is the highest in similarity to individual areas, at 59.7%. It has a significance level of 0.016.

Table 11: Characteristics of Apartment

		High Density	Medium Density	Low Density	Total
Nature of Apartment	1room apartment	29 (18.1%)	21 (11.9%)	23 (11.1%)	73 (13.4%)
	Room & Parlor	11 (6.9%)	27 (15.3%)	27 (13.0%)	65 (11.9%)
	1 bedroom flat	11 (6.9%)	12 (6.8%)	8 (3.8%)	31 (5.7%)
	2 bedroom flat	31 (19.4%)	43 (24.3%)	39 (18.8%)	113 (20.7%)
	3 bedroom flat	60 (37.5%)	54 (30.5%)	49 (23.6%)	163 (29.9%)
	4 bedroom flat	13 (8.1%)	15 (8.5%)	33 (15.9%)	61 (11.2%)
	5 bedroom flat	2 (1.2%)	3 (1.7%)	13 (6.2%)	18 (3.3%)
	Others	3 (1.9%)	2 (1.1%)	16 (7.7%)	21 (3.9%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Nature of Dwelling	Single unit/plot	52(32.5%)	32(20.6%)	71(34.1%)	155(28.4%)
	Twin buildings/plot	13(8.1%)	10(5.6%)	26(12.5%)	49(9.0%)
	2 apartments/plot	14(8.8%)	20(11.3%)	18(9.1%)	52(9.7%)
	3 apartments/plot	16(10.0%)	22(12.4%)	24(11.5%)	62(11.4%)
	4 apartments/plot	33(20.6%)	52(29.4%)	32(15.4%)	117(21.5%)
	More than 4 apartments/plots	27(16.9%)	39(22.0%)	30(14.4%)	96(17.6%)
	Others	5(3.1%)	2(1.1%)	6(2.9%)	13(2.4%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Home based enterprise	Yes	28(17.5%)	21(11.9%)	22(10.6%)	71(13.0%)
	No	132(82.5%)	156(88.1%)	186(89.4%)	474(87.0%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Years in apartment	0-3 years	54(33.8%)	69(39.0%)	57(27.4%)	180(33.0%)
	4-7years	61(38.1%)	75(42.4%)	91(43.8%)	227(41.7%)
	8-15years	31(19.4%)	23(13.0%)	44(21.2%)	98(18.0%)
	16 years and above	14(8.8%)	10(5.6%)	16(7.7%)	40(7.3%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Number of people in apartment	1-2 persons	22(13.8%)	32(18.1%)	42(20.2%)	96(17.6%)
	3-5 persons	89(56.0%)	113(63.8%)	123(59.1%)	325(59.7%)
	6-8 persons	34(21.4%)	29(16.4%)	34(17.8%)	97(18.4%)
	9 or more persons	14(8.8%)	3(1.7%)	6(2.9%)	23(4.2%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)

Physical Characteristics:

On the physical characteristics through field work, most neighbourhoods randomly selected for physical assessment in the high density area have shops attached to the buildings or their compounds, for commercial activities (Figure 72, 73, 74 and 75). These shops are mostly operated by non-residents of these buildings, as most residents across the density areas do not run home based enterprises (Table 11).

In terms of incorporating plants into neighbourhoods and residential buildings, most physically assessed buildings within the high density area do not have plants around them (Figure 72,73,74 and 75). For the medium density area, a few buildings have plants moderately incorporated into them (Figure 77). However, more neighbourhoods and residential buildings within the low density area are planted. (Figure 81, 82, 84, and 87).

Field observation also revealed that, residential buildings across the density zones, predominantly have terraces incorporated into them (Figure 72, 73, 74, 75, 77, 78, 79, 80, 82, 83 and 84).

On the mode adopted by respondents for cooking, the highest percentage is Gas cooker, within the income groups uniformly. This is 76.2% for low income group, 68.4% for middle income and 72.1% for high income group. The next to this is stove, which is 19.4% for low income, 29.4% for middle income and 20.7% for high income. This trend is replicated in the combination of all the income groups, with Gas cooker at 72.1% and stove at 23.1%. This is at a significant level of 0.040.

For water supply, majority of respondents rely on private bore-holes or wells, this is evident within the 3 income groups and across the generality of respondents. This is 61.2% within the low income group, 70.1% within the middle income group, 70.7% within the high income group and 67.7% at the combination of all income groups. Government supplied pipe-borne water is next at 30.0% within low income zone, 21.5% within middle income zone, 21.6% within high income zone and 24.0% at the combination of the 3 zones. This is at a significance of 0.259.

On the type of toilet facility used by respondents, 93.8% use flush toilets within low income area, 97.2% within the middle income area, 96.6% within the high income area, while 96.0 of

them use flush toilets at the combination of the 3 income areas. This is at a significant level of 0.230.

On the sharing of toilet facilities by respondents, is higher percentage within the 3 income groups do not share toilets. This is at 75.0% within the low income area, 88.7% within the middle income area, 80.8% within the high income area and 81.7% at the combination of all the 3 income groups. This is a significance level of 0.005.

Most apartments within all the income groups are powered by generators 55.6% within the low income group, 53.7% within the middle income and 56.2% within the high income area. Within the generality of respondents, covering all the income groups, 55.2% are supplied through the use of generators. The next in percentage in power supply is government generated power. This accounts for 36.9% within the low income group, 40.7% within the middle income, 39.4% within the high income group and 39.1% in all the income groups combined. This at a significance level of 0.868.

As regards the type of lighting fittings used by respondents, 51.2% of those within the low income groups use energy saver fittings, 47.5% within the middle income group, 48.5% within the high income and 47.9% in all the income groups combined. This is followed by incandescent bulbs with 28.8% within the low income group, 33.9% within the middle income, 33.2% within the high income and 32.1% in all combined. This then followed by fluorescent lamps with 20.0% within the low income area, 18.6% within the middle income, 18.3% within the high income and 20.0% in all groups combined.

Table 12: Domestic Facilities (Objective 1)

		High Density	Medium Density	Low Density	Total
Cooking Mode	Electricity	5(3.1%)	3(1.7%)	14(6.7%)	22(4.0%)
	Gas cooker	122(76.2%)	121(68.4%)	150(72.1%)	393(72.1%)
	Stove	31(19.4%)	52(29.4%)	43(20.7%)	126(23.1%)
	Fire wood	2(1.2%)	0(0.0%)	1(0.5%)	3(0.6%)
	Wood dust	0(0.0%)	1(0.6%)	0(0.0%)	1(0.2%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Water Supply	Pipe-borne water	48(30.0%)	38(21.5%)	45(21.6%)	131(24.0%)
	Private bore-hole/well	98(61.2%)	124(70.1%)	147(70.7%)	369(67.7%)
	Water vendors	13(8.1%)	14(7.9%)	12(5.8%)	39(7.2%)
	Rain water	1(0.6%)	1(0.6%)	4(1.9%)	6(1.1%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Toilet facility	Flush toilet	150(93.8%)	172(97.2%)	201(96.6%)	523(96.0%)
	Pit latrine	10(6.2%)	5(2.8%)	7(3.4%)	22(4.0%)
	Pearson chi square value: 2.936 df: 2, sig: 0.230				
Toilet Sharing	Shared	40(25.0%)	20(11.3%)	40(19.2%)	100(18.3%)
	Exclusive	120(75.0%)	157(88.7%)	168(80.8%)	445(81.7%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Power Supply	Government supply	59(36.9%)	72(40.7%)	82(39.4%)	213(39.1%)
	Generator	89(55.6%)	95(53.7%)	117(56.2%)	301(55.2%)
	Candle/lantern	5(3.1%)	4(2.3%)	5(2.4%)	14(2.6%)
	Rechargeable source	6(3.8%)	6(3.4%)	3(1.4%)	15(2.8%)
	Solar source	1(0.6%)	0(0.0%)	1(0.5%)	2(0.4%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Light Fittings	Energy saver bulbs	82(51.2%)	84(47.5%)	111(48.5%)	277(47.9%)
	Incandescent bulbs	46(28.8%)	60(33.9%)	69(33.2%)	175(32.1%)
	Fluorescent lamps	32(20.0%)	33(18.6%)	38(18.3%)	103(20.0%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)

On the mode of waste disposal, above 80% of all respondents use the apparatus of the government for their waste disposal. 83.8% within the low income group, 86.5% within the

middle income group, 83.2% within the high income group and 84.3% in all respondents combined. This is at a significant level of 0.877.

As regards how frequent the respondents dispose their wastes. Those who dispose their wastes between 4-6 days make up 31.9% within the low income group, 33.9% within the middle income, 39.3% within the high income. For those that dispose between 7-10 days, 34.4% within the low income group, 33.9% within the middle income, 37.7% within the high income, while those that dispose between 1-3 days are 27.5% within the low income group, 24.3% within the middle income group and 35.6% within the high income.

On the percentage within the 3 income groups combined, 24.8% between 1-3 days, 33.6% between 7-10 days and 8.1% above 10 days. This is at a significance level of 0.922. For the storage of wastes, 26.9% use open waste bins within the low income group, 43.8% use covered bins, 25.6% use waste bags. Within the middle income group, 20.0% use open waste bins, 46.3% use covered bins, 24.9% use waste bags, while within the high income group, 23.1% use open waste bins, 54.3% use covered bins, 16.3% use waste bags. However, at the combination of all the 3 income groups, 25.1% use open waste bins, 48.6% use covered bins, 21.8% use waste bags, 1.5% use the bare floor, while 2.9% adopt other means. This at a significance level of 0.058.

On where waste is kept, the highest percentage within individual income groups, across the 3 groups store their wastes outside their apartments, but within their compounds. This is at 48.8% within the low income group, 54.8% within the medium income group. 48.1% within the high income group, 50.5% at the combination of all the 3 income groups. For others, 26.9% store their wastes in the balcony within the low income group, 22.0% within the medium income group, 17.3% within the high income group and 21.7% at the combination of all the areas. As for those that store their wastes in the kitchen, 19.4% within the low income

group, 19.2% within the middle income, 33.2% within the high income and 24.6% in all the areas combined. This is at a significance level of 0.005.

Within the income groups and across all, a higher percentage of them do not sort their wastes. 86.2% within the low income area, 89.9% within the middle income area, 89.9% within the middle income area, 82.7% within the high income area and 85.7% within all the areas combined. This at a significance level of 0.001.

A higher percentage of respondents believe that the design of their apartments do not take domestic waste management into consideration in the design. 58.8% within the low income area answer no to provision being made for waste management in the design of the buildings, 67.2% answers no within the middle income area, 64.4% answers no within the high income area, while 63.7% answers no in all the areas combined. This is at a significance of 0.260.

Table 13: Waste Management

		High Density	Medium Density	Low Density	Total
Mode of waste disposal	Government agency	134(83.8%)	153(86.5%)	173(83.2%)	460(84.3%)
	Dump site	8(5.0%)	10(5.6%)	15(7.2%)	33(6.1%)
	Any available space	8(5.0%)	3(1.7%)	8(3.8%)	19(3.5%)
	Paid community waste disposal	10(6.2%)	11(6.2%)	12(5.8%)	33(6.1%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Frequency of waste disposal	1-3 days	44(27.5%)	43(24.3%)	48(35.6%)	135(24.8%)
	4-6days	51(31.9%)	60(33.9%)	72(39.3%)	183(33.6%)
	7-10days	55(34.4%)	59(33.3%)	69(37.7%)	183(33.6%)
	Above 10 days	10(6.2%)	15(8.5%)	19(43.2%)	44(8.1%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Waste storage	Open waste bins	43(26.9%)	46(20.0%)	48(23.1%)	137(25.1%)
	Covered bins	70(43.8%)	82(46.3%)	113(54.3%)	265(48.6%)
	Waste bags	41(25.6%)	44(24.9%)	34(16.3%)	119(21.8%)
	Bare-floor	1(0.6%)	4(2.3%)	3(1.4%)	8(1.5%)
	Others	5(3.1%)	1(0.6%)	10(4.8%)	16(2.9%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Where waste is kept	Kitchen	31(19.4%)	34(19.2%)	69(33.2%)	134(24.6%)
	Balcony	43(26.9%)	39(22.0%)	36(17.3%)	118(21.7%)
	Outside apartment	78(48.8%)	97(54.8%)	100(48.1%)	275(50.5%)
	Within compound	8(5.0%)	7(4.0%)	3(1.4%)	18(3.3%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Waste sorting	Yes	22(13.8%)	18(10.2%)	38(18.3%)	78(14.3%)
	No	114(71.2%)	141(79.7%)	162(77.9%)	417(76.5%)
	No idea about sorting	24(15.0%)	18(10.2%)	8(3.8%)	50(9.2%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Design of Building provides for waste management	Yes	66(41.2%)	58(32.8%)	74(35.6%)	198(36.3%)
	No	94(58.8%)	119(67.2%)	134(64.4%)	347(63.7%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)

The second set of analysis seeks to examine the socio-economic and cultural characteristics of the residents within these neighbourhoods (table 14).

Objective 2

On the age of respondents, 23.8% within the low income area are between the age of 21-30 years, 31.9% between 31-40 years, 24.4% between the age of 41-50 years, 10.6% between the ages of 51-60 years, while 61 years and above are 1.9%. For the middle income, 4.5% are between 16-20 years, 26.0% are 21-30 years, 33.3% are between 31-40 years, 20.3% between 41-50 years, 11.9% between 51-60 years and 61 years and above at 4.0% the high income area has between 16-20 years of age at 7.2%, 21-30 years at 23.1%, 31-40 years at 24.0%, 41-50 years at 24.5%, 51-60 years at 15.4% and 61 years and above at 5.8%. the percentage at the combination of the 3 income zones are; 6.4% for 16-20 years of age, 24.2% for 21-30 years, 29.4% for 31-40 years, 23.1% for 41-50 years, 12.8% for 51-60 years and 4.0% for 61 years and above. This is at a significance level of 0.341.

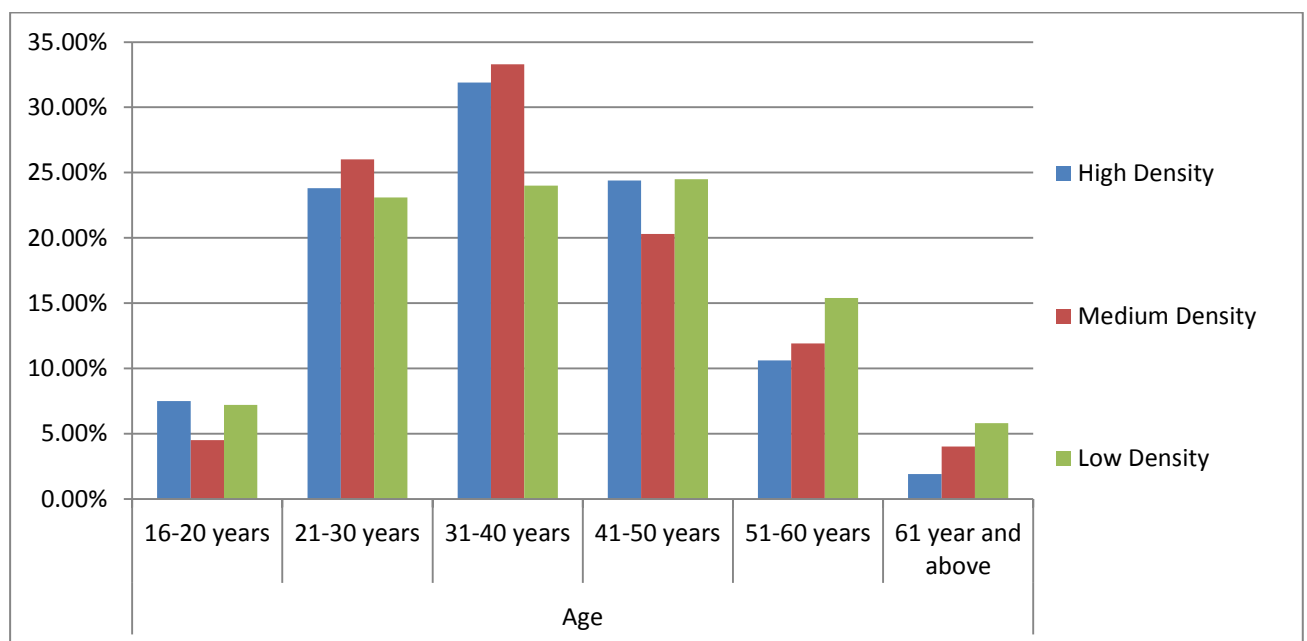


Figure 70: Ages of respondents across the density zones

The low income group has the highest percentage of male within it at 66.9%, while the high income area has the highest percentage of females within it, at 38.0%. There are, however, 62.0% male within the high income group, 65.0% within the middle income, 35.0% of females within the middle income and 33.1% in the low income area. At the combination of all the income groups, 64.4% are males, while 35.6% are females. This is at a significance level of 0.341.

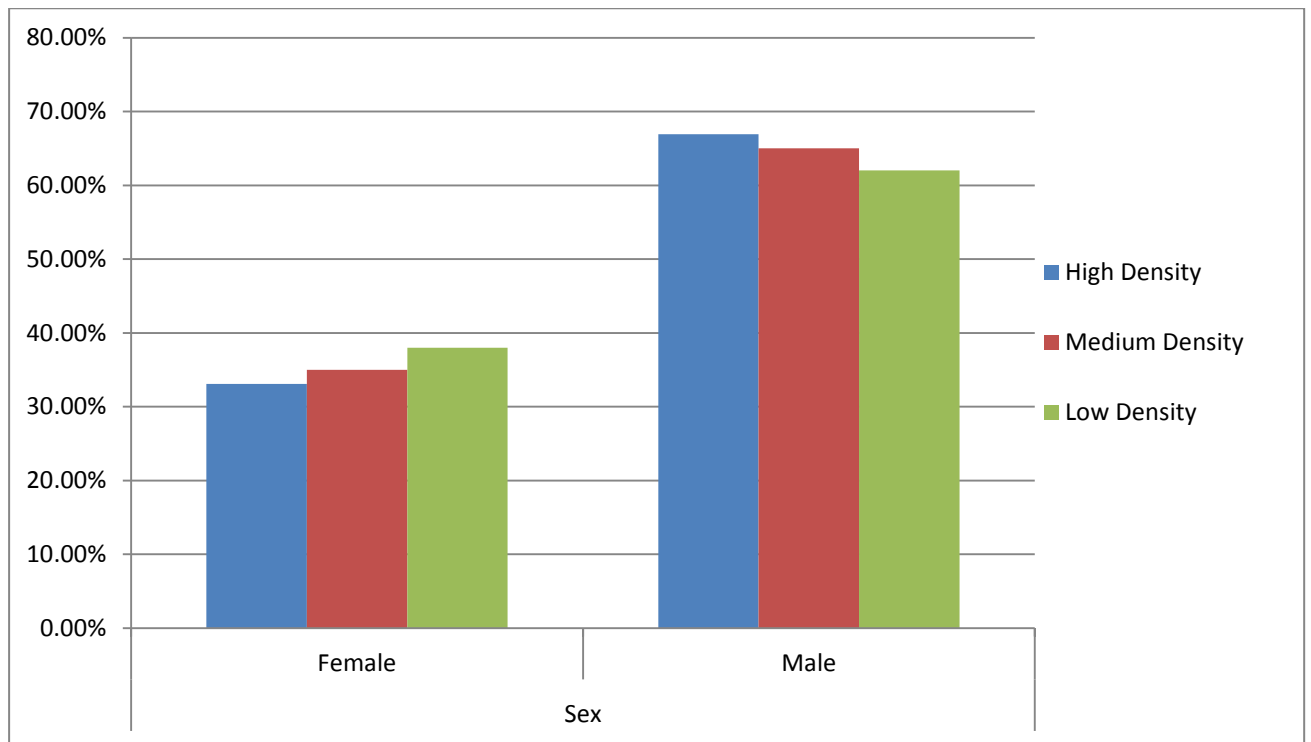


Figure 71: Gender of respondents across the density zones

Majority of respondents within all the income groups are married. 60.0% within the low income area, 62.7% in the middle income area and 55.3% in the high income area, 59.1% within the totality of respondents. This is followed in percentage by those that are single, 29.4% within the low income area, 24.9% within the middle income area, 28.4% in the high income area, and 27.5% within the totality of respondents.

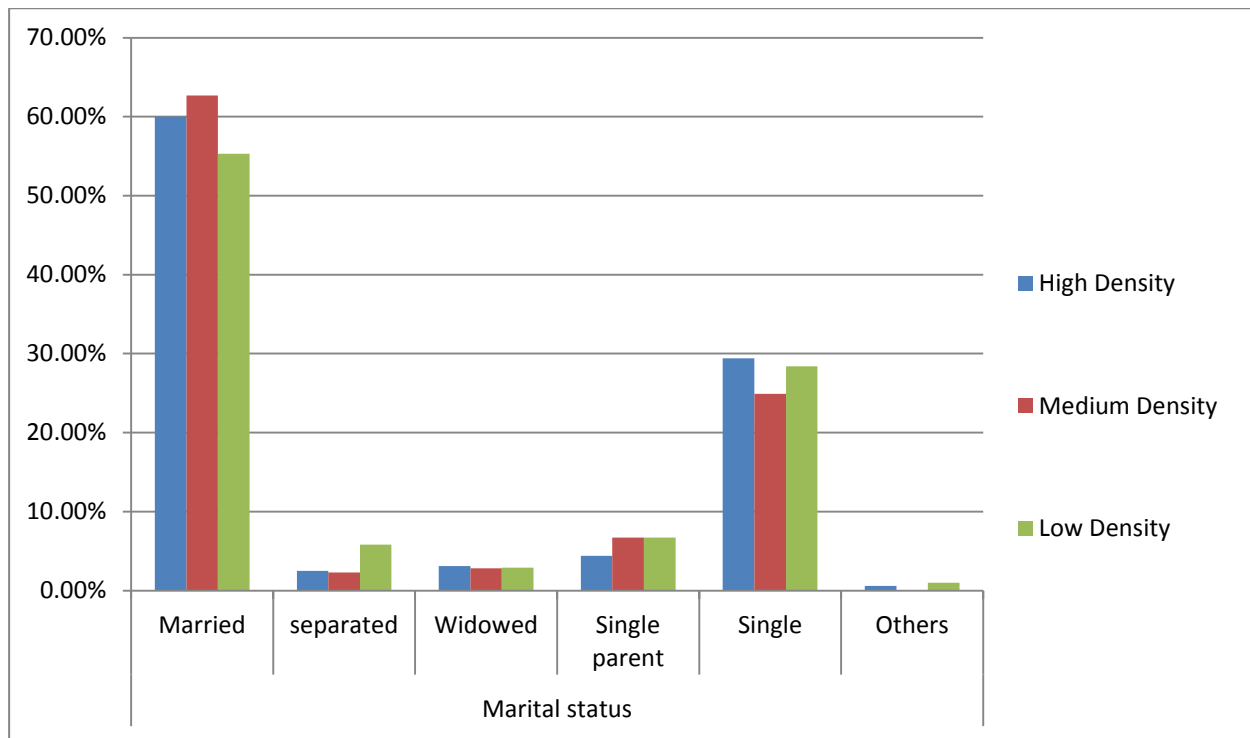


Figure 72: Marital status of respondents across the density zones

Most respondents belong to the Yoruba ethnic group, within all the income groups. 48.8% within the low income group, 53.7% within the middle income, 52.4% within the high income and 51.7% in all the income groups combined. This is followed by the Igbo ethnic group, with 26.2% within the low income group, 22.0% within the middle income group, 20.2% within the high income group and 22.6% within the combination of all the income groups. The Hausa/Fulani ethnic group has 10.6% of the respondents within the low income group. 5.6% in the middle income group, 6.7% in the high income area and 7.5% within a combination of all respondents. The other minor ethnic groups combined, has 14.4% within the low income area, 18.6% in the middle income area, 20.7% in the high income area, and 18.3% within the combination of all the income groups.

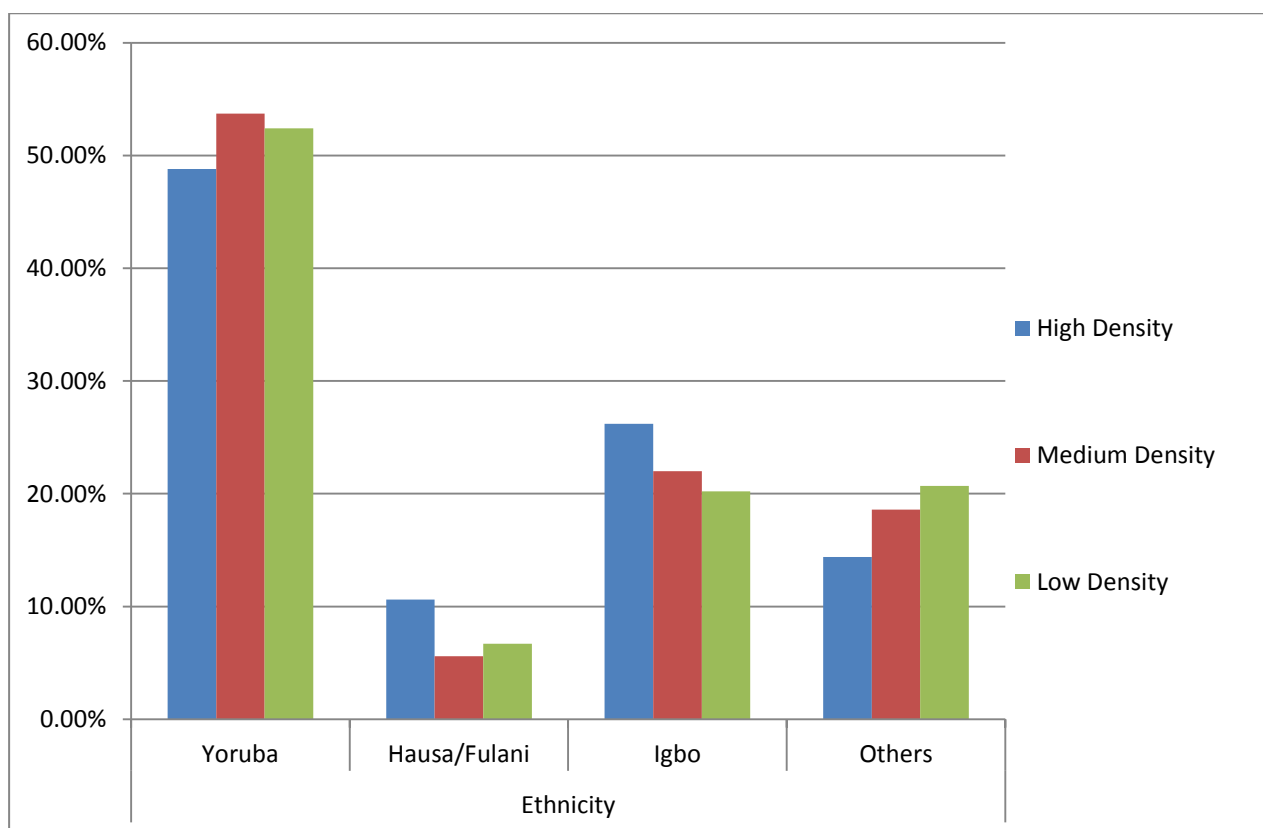


Figure 73: Ethnicity of respondents across the density zones

Majority of respondents within all the income groups are self-employed. 50.6% within the low income, 45.8% within the medium income, 34.1% within the high income and 42.8% within the combination of all the income groups. This is followed by those employed by private firms; 28.8% within the low income, 27.7% within the middle income, 31.7% within the high income and 29.5% within the combination of all respondents. For government employees, 9.4% are within the low income group, 15.3% within the middle income, 16.3% within the high income and 13.9% at the combination of all respondents. Meanwhile, 5.6% are unemployed within the low income group, 5.1% in the middle income group, 6.7% in the high income group and 5.9% at the combination of all the respondents.

On the monthly income of respondents, 26.5% of those within the low income area earn N100,000 and above, 23.7% within the middle income, 39.9% in the high income area 30.7% within the totality of respondents. Within the low income area, 7.7% earn between N76,000 and N99,000, 16.4% within the middle income area 13.5% within the high income area and 12.8% within all the areas combined. For those that earn between N51,000 – N75,000; 18.1% within the low income area, 19.8% within the middle income area, 7.7% within the high income area, and 14.6% in all areas combined. Within the low income group, 12.9% earn between N31,000 and N50,000, 12.4% in the middle income area, 13.9% within the high income area and 13.1% in all. For those that earn between N18,000 and N30,000, 18.1% within the low income area, 15.8% within the middle income, 13.5% within the high income area and 15.6% in all, while 16.8% of those within the low income earn below N18,000, 11.9% within the middle income area, 11.5% within the high income area and 13.1% in all.

In the high density region, 65.5% of respondents find it convenient to pay bills, 63.3% within the medium density zone and 68.3% within the low density zone. In total, 65.8% of respondents find payment of bills convenient. 11.2% are undecided on their ability to pay bills, within the high density area, 10.7% within the medium density area and 16.8% within the low density area. In the combination of the three zones, 13.2% are undecided. However, 23.1% of respondents within the high density area do not find it convenient to pay bills, 26% within the medium density zone, 14.9% within the low density zone and 20.9% at the combination of the three areas.

Table 14: Economic Characteristics

		High Density	Medium Density	Low Density	Total
Employment Status	Self employed	81(50.6%)	81(45.8%)	71(34.1%)	233(42.8%)
	Private firm	46(28.8%)	49(27.7%)	66(31.7%)	161(29.5%)
	employee	4(2.5%)	5(2.8%)	9(4.3%)	18(3.3%)
	Casual worker	15(9.4%)	27(15.3%)	34(16.3%)	76(13.9%)
	Government	3(1.9%)	5(2.8%)	11(5.3%)	19(3.5%)
	employee	9(5.6%)	9(5.1%)	14(6.7%)	32(5.9%)
	Retiree/pensioner	2(11.2%)	1(0.6%)	3(1.4%)	6(1.1%)
	Unemployed Others				
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Monthly Income	Below N18,000	26(16.8%)	21(11.9%)	25(11.5%)	72(13.1%)
	N18,000-N30,000	28(18.1%)	28(15.8%)	28(13.5%)	84(15.6%)
	N31,000-N50,000	20(12.9%)	22(12.4%)	29(13.9%)	71(13.1%)
	N51,000 – N75,000	28(18.1%)	35(19.8%)	16(7.7%)	79(14.6%)
	N76,000 – N99,000	12(7.7%)	29(16.4%)	28(13.5%)	69(12.8%)
	N100,000 & above	41(26.5%)	42(23.7%)	83(39.9%)	166(30.7%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Ability to pay bills	Not very convenient	12(7.5%)	12(6.8%)	5(2.4%)	29(5.3%)
	Not convenient	25(15.6%)	34(19.2%)	26(12.5%)	85(15.6%)
	Undecided	18(11.2%)	19(10.7%)	35(16.8%)	72(13.2%)
	Convenient	64(40.0%)	91(51.4%)	104(50.0%)	259(47.5%)
	Very convenient	41(25.6%)	21(11.9%)	38(18.3%)	100(18.3%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)

On the educational level of respondents, 3.8% within the low income area have no formal education, 2.8% in the middle income area, 2.4% in the high income area and 2.9% in all. 10.6% attend up to primary school level, 18.6% within the middle income, 17.8% within the high income area and 16.0% in all the areas combined. For those who education in terminates at secondary school level, 16.2% within the low income, 11.9% within the middle income, 5.3% within the high income and 10.6% in all. 7.5% within the low income are educated up to technical school middle income and high has 9.6% and 13.5% within them. 28.1% within

the low income, 30.5% within the middle income, 28.4% within the high income and 29.0% in all have NCE/OND certificates. However, 30.6% within the low income area have first degrees or HND, 19.2% within the middle income, 31.7% within the high income area and 27.3% in all the areas combined. Those that are educated up to post-graduate level are, 3.1% within the low income area, 7.3% within the middle income area, 1.0% within the high income area and 3.7% in all. There is a differential significance of 0.000

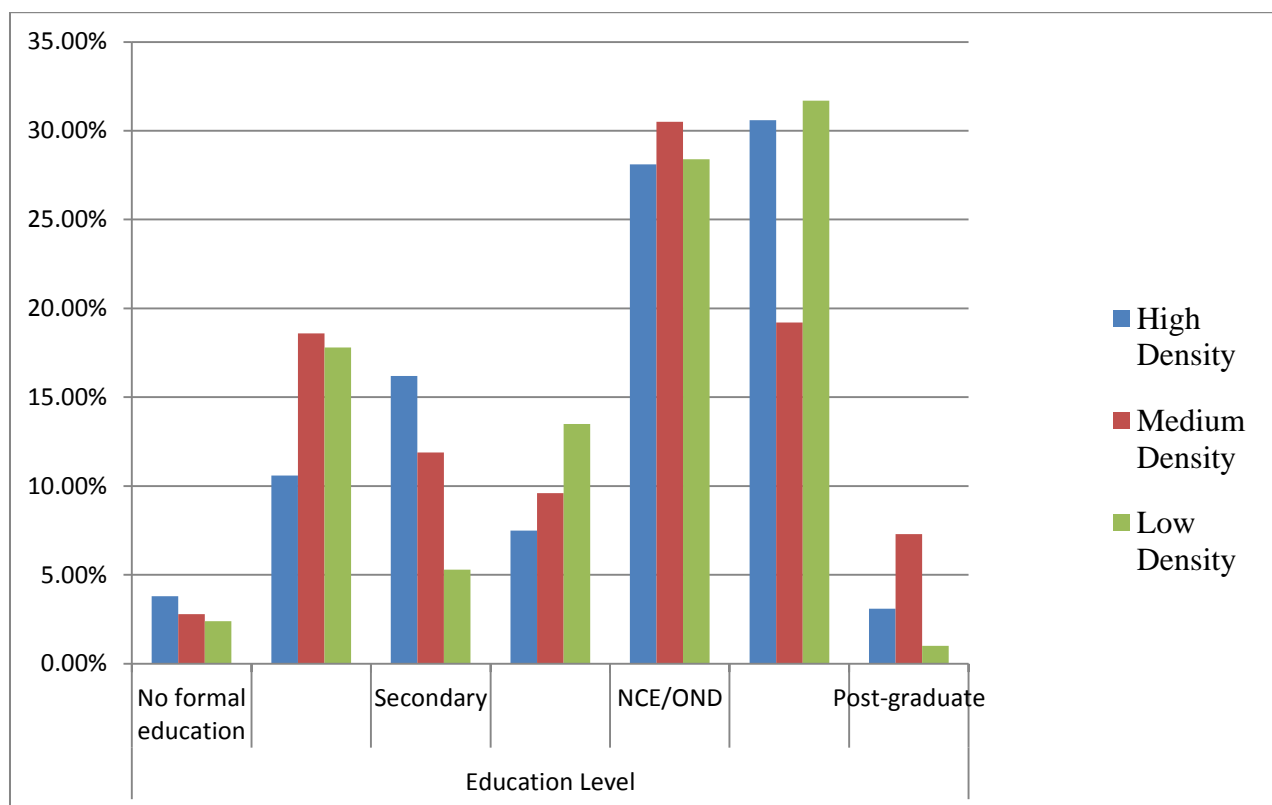


Figure 74: Education level of respondents across density zones

Majority of respondents within each income zone are Renters; 61.9% in the low income zone, 67.2% in the middle income zone, 51.4% in the high income zone and 59.5% in all combined. This is followed by owner occupiers, with 18.8% within the low income zone, 18.1% within the middle income, 27.9% within the high income and 22.0% within all respondents combined. This has a significance difference of 0.059.

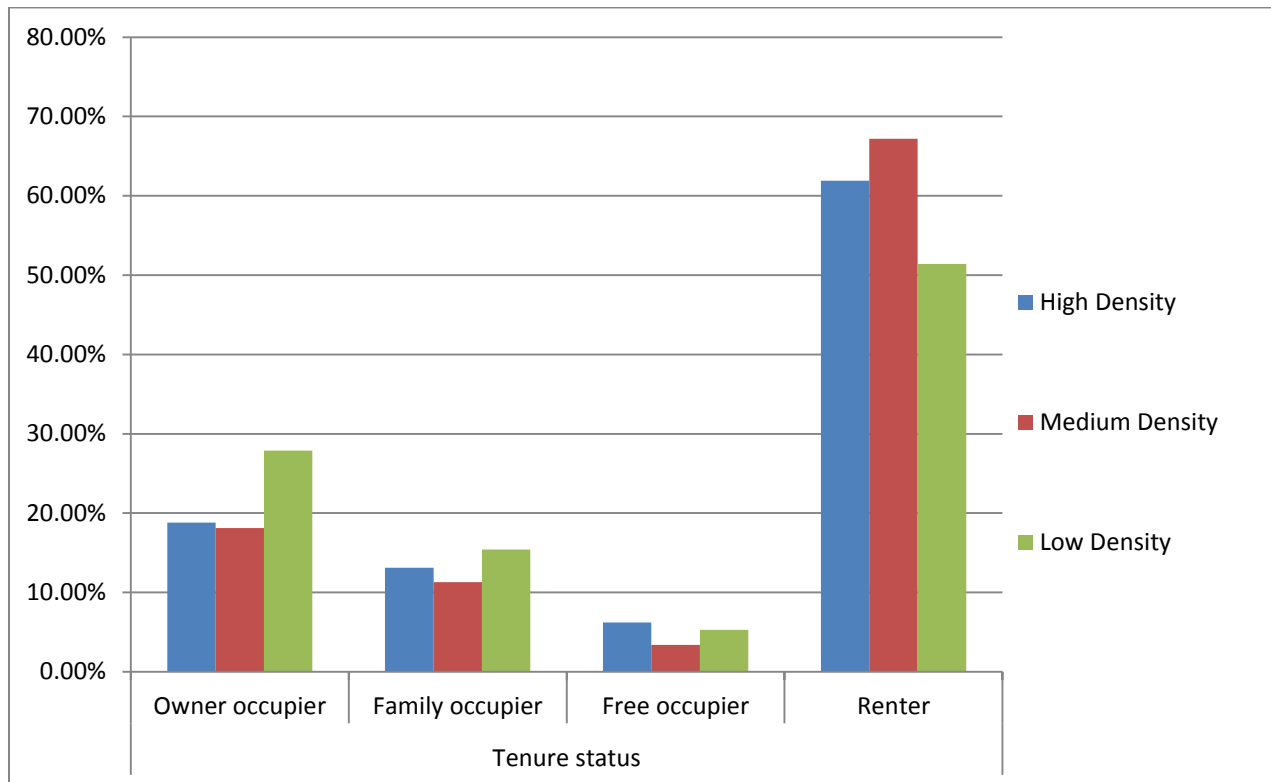


Figure 75: Tenure status of respondents across density zones

Most of the respondents find it convenient to play domestic bills; a total of 65.6% within the low income area, 63.3% in the middle income area, 68.3% within the high income area and 65.8% in all respondents combined. This is at a significance level of 0.003.

The third set of analysis (table 15) finds out the knowledge, attitudes and behaviour of residents to sustainability. Within the low income area, 61.9% of respondents have the knowledge of environmental sustainability, 52.0% have that knowledge within the middle income area, 63.9% within the high income area, and 59.4% in all combined. This is at a significance difference of 0.044.



Figure 76: View of a High density neighbourhood. Source: Field work



Figure 77: Area view of a High density neighbourhood. Source: Field work



Figure 78: View of a Medium density neighbourhood . Source: Field work



Figure 79: Area view of a Medium density neighbourhood . Source: Field work



Figure 80: View of a Low density neighbourhood. Source: Field work



Figure 81: View of a Low density neighbourhood. Source: Field work



Figure 82: Area view of a Low density neighbourhood. Source: Field work

Objective 3

On the knowledge of respondents about global warming, 72.5% within the low income area have the knowledge, 63.8% within the middle income, 75.5% within the high income and 70.8% at the combination of all respondents.

Most respondents are not aware of the laws guiding sustainable practice within their neighbourhoods. 61.9% within the low income area are ignorant of these laws, 68.4% within the middle income, 63.9% within the high income and 64.8% at the combination of all respondents.

On whether the respondents have been involved in any programme on sustainability; 71.9% answered no within the low income area, 71.2% answered no within the middle income area, 76.0% answered within the high income area and 73.2% at the combination of all.

On the knowledge of respondents of environmental sustainability, within the high density area, 61.9% answered yes, 52% within the medium density area, 63.9% within the low density area and 59.4% within the combination of the three zones. For respondents that have no knowledge of environmental sustainability, 38.19% are within the high density area, 48% within the middle income area, 36.1% within the low density area and 40.6% within the combination of the zones.

Most respondents' reaction to whether they have the knowledge of what it takes to reduce global warming, was yes, 56.2% within the high density area, 51.4% within the medium density area, 57.4% within the low density area and 55.2% within the combination of the three zones.

Table 15: Knowledge attitude and behaviour of residents to sustainability

		High Density	Medium Density	Low Density	Total
Knowledge of Environmental sustainability	Yes	99(61.9%)	92(52.0%)	133(63.9%)	324(59.4%)
	No	61(38.1%)	85(48.0%)	75(36.1%)	221(40.6%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Knowledge of Global Warming	Yes	116(72.5%)	113(63.8%)	113(75.5%)	342(70.8%)
	No	44(27.5%)	64(36.2%)	64(36.2%)	172(29.2%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Knowledge of requirements to reduce global warming	Yes	90(56.2%)	91(51.4%)	120(57.7%)	301(55.2%)
	No	70(43.8%)	86(48.6%)	88(42.3%)	244(44.8%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Awareness of laws guiding neighbourhood sustainable practice	Yes	61(38.1%)	56(31.6%)	75(36.1%)	192(35.2%)
	No	99(61.9%)	121(68.4%)	133(63.9%)	353(64.8%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)
Involvement on sustainability programme	Yes	45(28.1%)	51(28.8%)	50(24.0%)	146(26.8%)
	No	115(71.9%)	126(71.2%)	158(76.0%)	399(73.2%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)

The fourth set of analysis (table 15) is to determine the sustainability of the study area and the factors implicated in it.

Objective 4a

The sustainability of the area was scored, based on the following variables:

1. Susceptibility to flood
2. less use of energy for ventilation and lighting
3. the quality of air within the environment
4. the immediate environment being conducive and healthy
5. accessibility to health services
6. the nuisance of noise
7. community steps to maintain a sustainable environment
8. problems emanating from industrial activities
9. government intervention
10. infrastructures
11. awareness to the advantages of plants
12. security of the environment
13. building components
14. beauty of buildings
15. attitude of neighbours to clean environment
16. neighbourhood human concentration
17. acceptability of the neighbourhood as good

On the score, as reflected in table 16, within individual income areas, above 75% score between (54-71)%. Low income area scores 77.5%, middle income area scores 76.3%, high income scores 82.7% and the score at the combination of all is 79.1%. This is followed by (36-53)% score, with low income at 14.4%, middle income 18.1%, high income 15.9% and the total at 16.1%.

Table 16: Sustainability Score

	Rating	High Density	Medium Density	Low Density	Total
Sustainable score	Below 35%	1(0.6%)	0(0.0%)	0(0.0%)	1(0.2%)
	(36-53)%	23(14.4%)	32(18.1%)	33(15.9%)	88(16.1%)
	(54-71)%	124(77.5%)	135(76.3%)	172(82.7%)	431(79.1%)
	(72-90)%	12(7.5%)	12(5.6%)	3(1.4%)	27(4.6%)
	Total	160 (100%)	177 (100%)	208 (100%)	545 (100%)

Table 17: Factor Analysis

Variables	1 Greenery and Health	2 Population	3 Government and Community influence	4 Environm ental Pollution	5 Energy usage and proneness to flood
Planting of trees and grass in the environment	0.801				
Awareness of advantages of plants within environment	0.735				
Attitude of neighbours in keeping the environment clean	0.589				
Access to health services	0.467				
Population of Neighbourhood		0.961			
Government intervention in making environment sustainable			0.755		
Existence of infrastructures like roads, waterways			0.663		
Community steps towards sustainability			0.655		
Durable components of buildings			0.414		
Quality of air in the environment				0.678	
Health related conditions of the environment				0.625	
Problem of industrial activities				0.600	
Noise pollution				0.588	
Energy consumption					0.722
Susceptibility to flood					0.592
Eigen values	3.902	2.344	1.452	1.322	1.097
Percentage of variance explained	20.5	12.377	7.64	6.95	5.678
Percentage of total variance explained	53.151				

It could be deduced from the result that residents in the study area construed neighbourhood sustainability based on five factors; Greening and health, population, government and community influence, environmental pollution, and energy usage plus proneness to flood. 15 of the items on the 5 factors were loaded which indicates that residents attached importance to them. The 5 factors are the factors used to define neighbourhood sustainability in the study area. The factor with the highest weight is planting of trees and grass in the environment. It infers that the most important factor defining the satisfaction of the residents on the sustainability of their neighbourhoods was availability of plants in their environment.

Table 18: Regression with optimal scaling

	Variable	Beta	Significance
1	Age of Respondents	.118	.072
2	Sex of Respondents	.013	.666
3	Employment status of Respondents	.096	.000***
4	Monthly income of Respondents	.122	.014*
5	Education level of Respondents	-.193	.000***
6	Marital status of Respondents	.131	.000***
7	Income Group	-.090	.023*
8	Nature of Respondents' apartment	.171	.000***
9	Nature of Respondents' dwelling	.120	.000***
10	Tenure status of Respondents	.085	.008*
11	Home based enterprise of Respondents	-.021	.823
12	Respondents' number of years in apartment	-.005	.936
13	Number of people in apartment	-.088	.052
14	Respondent's mode of cooking	.084	.003**
15	Respondents' main source of water supply	.052	.232
16	Type of toilets used by Respondents	.054	.272
17	Respondents' major source of power supply	.063	.015*
18	Type of Light fittings used by Respondents	.073	.027*
19	Respondents' major use for Electricity	.156	.000***
20	Respondents' mode of waste disposal	.199	.000***
21	Respondents' frequency of waste disposal	.096	.001**
22	Respondents' method of refuse storage	.142	.000***
23	Respondents' knowledge of laws guiding sustainable practice	.162	.001**
24	Respondents' knowledge of environmental sustainability	.061	.155

Table 18 is an insight into those characteristics that determine the sustainability of residential neighbourhoods and buildings in Ikeja; Dependent variable = Sustainable score.

sig. = 0.000

4.4. TESTING OF RESEARCH HYPOTHESES

Hypothesis 1: There is no significant association between residential density zones and apartment types.

Table 19: Density zones and apartment types

	Nature of Respondents' apartment								Total
	One room apartment	Room and parlour	One bedroom flat	Two bedroom flat	Three bedroom flat	Four bedroom flat	Five bedroom apartment	others	
High Density	29	11	11	31	60	13	2	3	160
Medium Density	21	27	12	43	54	15	3	2	177
Low Density	23	27	8	39	49	33	13	16	208
Total	73	65	31	113	163	61	18	21	545

Table 20: Chi-Square Tests

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	47.083^a	14	.000
Likelihood Ratio	46.912	14	.000
Linear-by-Linear Association	7.958	1	.005
N of Valid Cases	545		

From table 20, since the chi-square value is 0.000, which is significant, the null hypothesis is rejected. Hence, we conclude that, there is significant association between residential density zones and apartment types.

Hypothesis 2: There is no significant relationship between the income of residents and their apartment types in Ikeja.

Table 21: Nature of Respondents' apartment

		1 room apart	Room & parlo ur	1 bedr flat	2 bedr flat	3 bedr flat	4 bedr flat	5 bedr flat	others	Total
Monthly income of Respondents	N18,000	21	14	4	9	13	8	2	0	71
	N18,000-N30,000	28	12	8	16	13	6	1	0	84
	N31,000-N50,000	15	12	5	20	16	0	1	2	71
	N51,000-N75,000	3	11	7	23	27	4	2	2	79
	N76,000-N99,000	2	10	2	17	27	8	2	1	69
	N100,000 and above	3	6	5	28	66	34	9	15	166
	Total	72	65	31	113	162	60	17	20	545

Table 22: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	168.292^a	35	.000
Likelihood Ratio	184.034	35	.000
Linear-by-Linear Association	113.146	1	.000
N of Valid Cases	545		

From table 22, since the chi-square value is 0.000, which is significant, the null hypothesis is rejected. Thence, we conclude that, there is significant association between the income of residents and their apartment types in Ikeja.

Hypothesis 3: There is no significant association between residential density zones and perception of residents to sustainability.

Table 23: Density zones and sustainability score

		Categorized sustainability score				Total
		below 35%	(36- 53)%	(54- 71)%	(72- 90)%	
Density zone	High density	1	23	124	12	160
	Medium density	0	32	135	10	177
	Low density	0	33	172	3	208
Total		1	88	431	25	545

Table 24: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.587^a	6	.072
Likelihood Ratio	12.770	6	.047
Linear-by-Linear Association	1.740	1	.187
N of Valid Cases	545		

From table 24, since the chi-square value is 0.072, which is not significant, the null hypothesis is accepted. Thence, we conclude that, there is no significant association between residential density zones and perception of residents to sustainability in Ikeja.

Hypothesis 4: The knowledge of respondents about sustainability is independent of their level of education.

Table 25: Level of education and residents' knowledge of sustainability

		Respondents' knowledge of environmental sustainability		Total
		Yes	No	
Education level of Respondents	No formal education	5	11	16
	Primary	34	53	87
	Secondary	20	38	58
	Technical school	30	27	57
	NCE/OND	107	51	158
	First Degree/HND	115	34	149
	Post-graduate	13	7	20
Total		324	221	545

Table 26: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	60.521^a	6	.000
Likelihood Ratio	61.366	6	.000
Linear-by-Linear Association	52.765	1	.000
N of Valid Cases	545		

From table 26, since the chi-square value is 0.000, which is significant, the null hypothesis is rejected. Thence, we conclude that, the knowledge of respondents about sustainability is dependent on their level of education.

On the factors affecting the sustainability of the study area: Regression analysis with optimal scaling was done, with sustainability score as dependent variable against personal characteristics, economic characteristics, and house characteristics on independent variables.

However, 15 variables were identified with significance level of 0.05 and below:

1. Employment status
2. monthly income
3. level of education
4. marital status
5. nature of apartment
6. nature of dwelling
7. tenure status
8. mode of cooking
9. source of power supply
10. type of light fittings
11. major use for electricity
12. mode of waste disposal
13. frequency of waste disposal
14. method adopted in waste storage
15. knowledge of laws guiding sustainability

CHAPTER 5

5.0. DISCUSSIONS AND SUMMARY OF FINDINGS

Table 27: Summary of Findings

SUMMARY OF FINDINGS		
Objective 1 Identify neighbourhoods and residential buildings and their characteristics in Ikeja, Lagos	1	Most respondents across the density zones stay in 3 bedroom flats
	2	Most respondents across the density zones have lived in their apartments for 4 to 7 years
	3	Most respondents across the density zones provide their own services; through wells or boreholes for water, and generators for electricity
	4	Across all density zones, most respondents store wastes in non-dedicated areas
	5	Most respondents across the density zones do not sort their wastes, prior to disposal
	6	Most residential buildings across high and medium density zones do not have plants incorporated into their them
	7	Most buildings across density zones have terraces
Objective 2 Examine the socio-economic characteristics of the residents, in Ikeja	1	Most respondents across the density zones are self employed
	2	Most respondents across the density zones find it convenient to pay bills
	3	Most respondents across the density zones are renters
	4	Monthly income of respondents across the density zones is above N100,000
	5	Most respondents are between the ages of 31 and 40 years, across the density zones
	6	Most respondents across the density zones are married
	7	Most respondents across the density zones are males
	8	Most respondents within the medium density area got NCE/OND level in their education; within the high density area, most respondents are HND/First degree holders, while most respondents have post-graduate degrees, within the low density area
Objective 3 Determine the knowledge of residents about sustainability	1	Most respondents across the density zones are knowledgeable about environmental sustainability
	2	Most respondents are aware of global warming across all density zones
	3	Most respondents across the density zones know what is required to reduce global warming
	4	Most respondents are unaware of laws guiding neighbourhood sustainability, across the density zones
	5	Most respondents across the density zones are not involved in sustainability related programmes
Objective 4 Identify the factors that determine the sustainability of the study area	1	Most respondents across the density zones perceive their neighbourhoods as sustainable
	2	Neighbourhood sustainability is based on six factors in the study area, these are; (1)Greening and health (2)Population (3)Government and community influence (4)Environmental pollution (5)Energy usage (6)Proneness to flood
	3	16 significant predictors were established. These are; Employment status of respondents, nature of dwellings, marital status, method of refuse storage, use for electricity, nature of apartment, mode of waste disposal, knowledge of laws guiding sustainability, frequency of waste disposal, mode of cooking, tenure status, monthly income, source of power supply, density area of respondents and type of light fittings. Employment status is the strongest predictor, while lighting fittings is the weakest

From the data presentation on objective 1, which is to identify the residential buildings and neighbourhoods and their characteristics, majority of selected buildings, are purely residential apartments, this cuts across all the income zones. 87.0% of the total number of respondents do not have any business being run in their homes.

Most apartments in the study area are 3 bedroom flats; these characteristics also cut across the income zones. An approximate percentage of 30% are in this category within the total number of respondents. This closely followed by 2 bedroom apartments with an approximate percentage of 21% within the totally respondents. This gives an average total of 51% at the combination of 2 and 3 bedroom apartments. However, the high income mostly 4 bedroom flats within it, 15.9% as compared with the middle income and low income with 8.5% and 8.0% respectively.

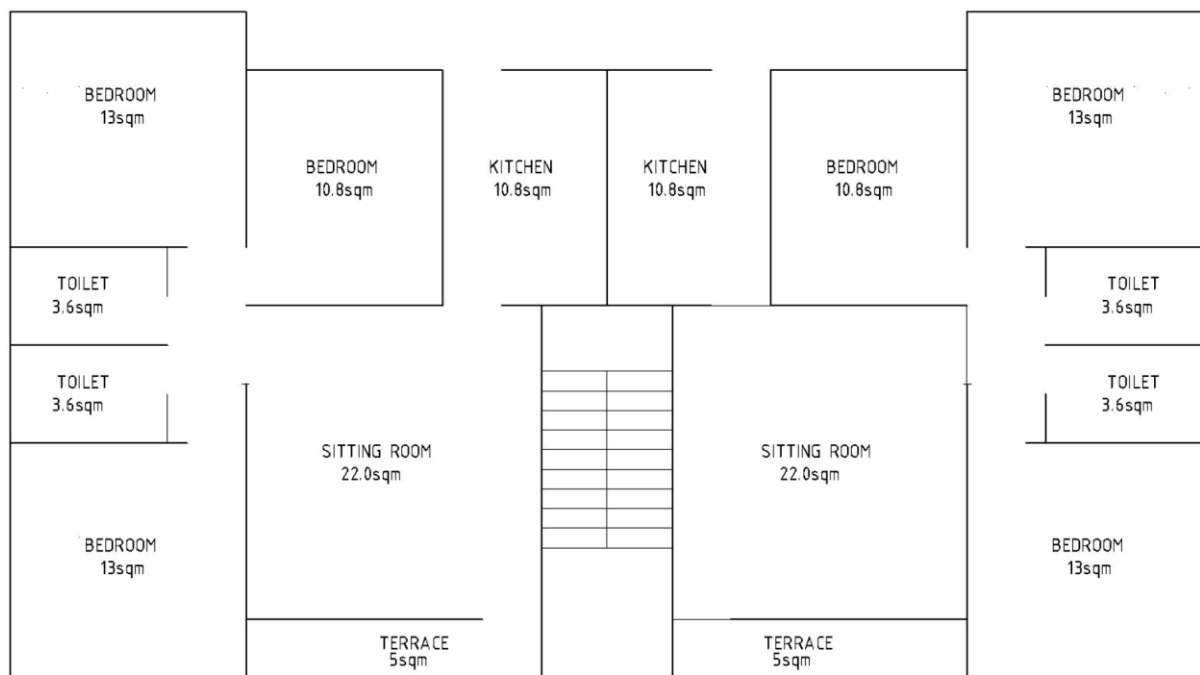


Figure 83: Sketch of a typical Floor Plan of a twin 3-bedroom flat in the high density area of Ikeja

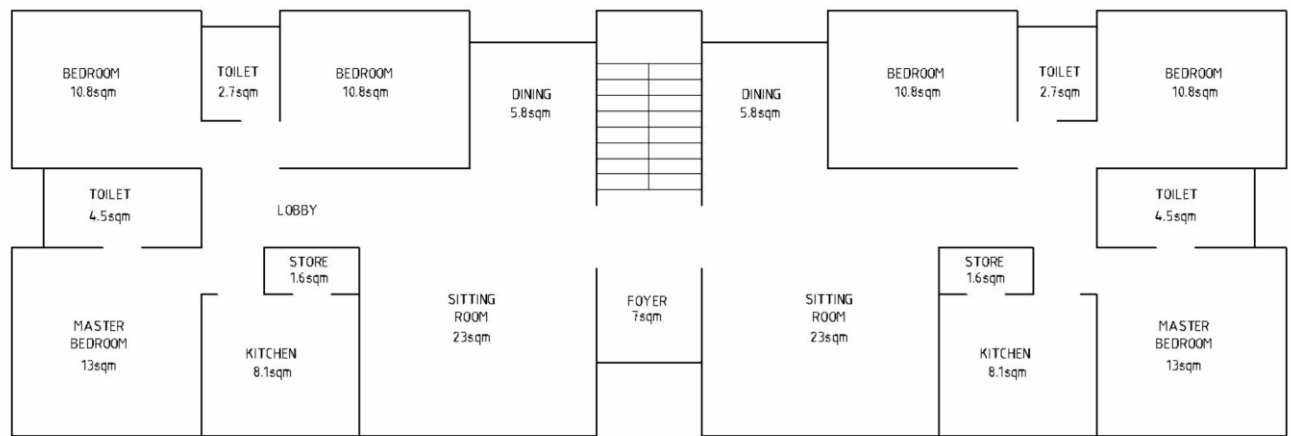


Figure 84: Sketch of a typical Floor Plan of a twin 3-bedroom flat in the medium density area of Ikeja

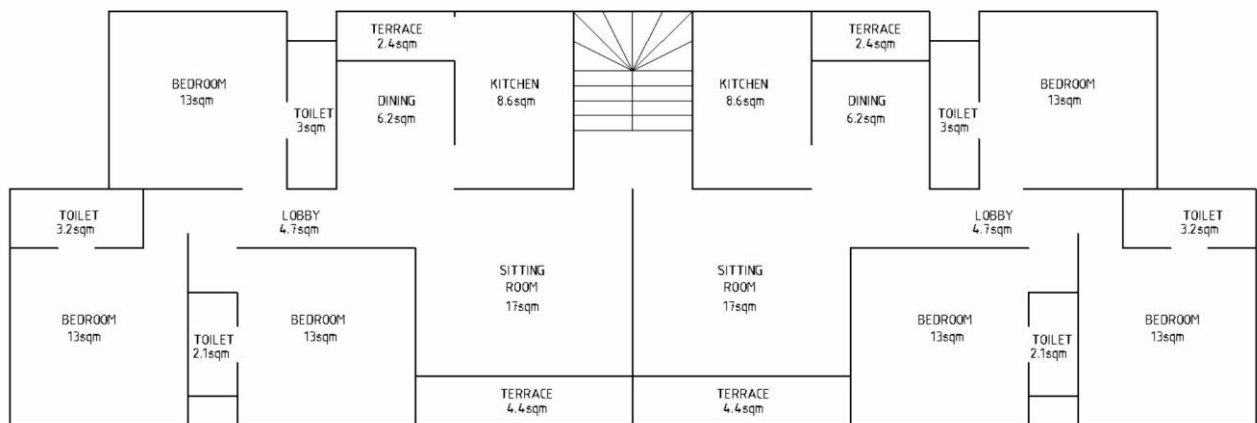


Figure 85: Sketch of a typical Floor Plan of a twin 3-bedroom flat in the low density area of Ikeja

The number of people living in the apartments is mostly 3-5 persons, 59.1% within the high income area, 63.8% in the middle income area, and 56.0% in the low income. Although the low income area has the lowest percentage, but statistics tallies with the existing Lagos State Statistics of 5 persons per apartment (Lagos State House Survey, 2010).

Most respondents across all income zones use gas cookers in their cooking, 72% in all. The physical assessment of a typical kitchen in the study area shows that gas cookers and cylinders are put side by side (Fig. 104).

However, according to safe use of gas cylinders guidance (2004), poor placement or storage of gas cylinders are a major cause of accidents in homes. They should not be stored to the lie or stand in water, meanwhile kitchens are part of the wet areas of the home. They should be

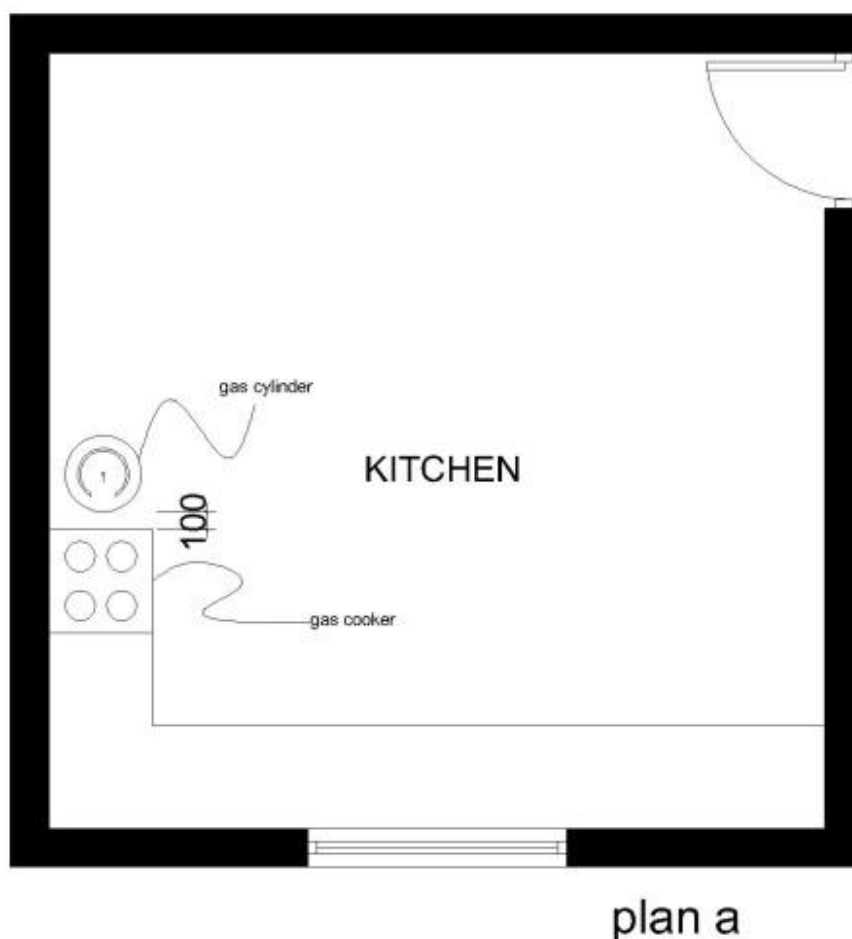


Figure 86: Placement of Gas cooker and cylinder common to residents

placed away from sources of ignition and other flammable materials. Placing the cylinder beside the gas burners as commonly done by respondents is against the sustainable safety measures put in place by the safe use of gas cylinders (2004).

Across all income groups, most respondents rely on private bore holes or wells for water supply, 67.7% in all combined while more than 90% of respondents use flush toilets. The existence of septic tanks were apparent in all observed properties as there are no sewage lines

in the study area. From the field study, bore holes and septic tanks are placed at less than 10 metres to each other (Fig. 4.2.4). According to Bada *et al* (2004), the improper siting of septic tanks may cause release of pollutants. The re-emphasised UNHCR guidelines for siting groundwater sources which set a minimum distance between bore hole and any potential polluting activity at 30 metres.

However, it is noted in the field study that selectively observed properties have their bore holes and septic tanks located at less than 30 metres to each other.

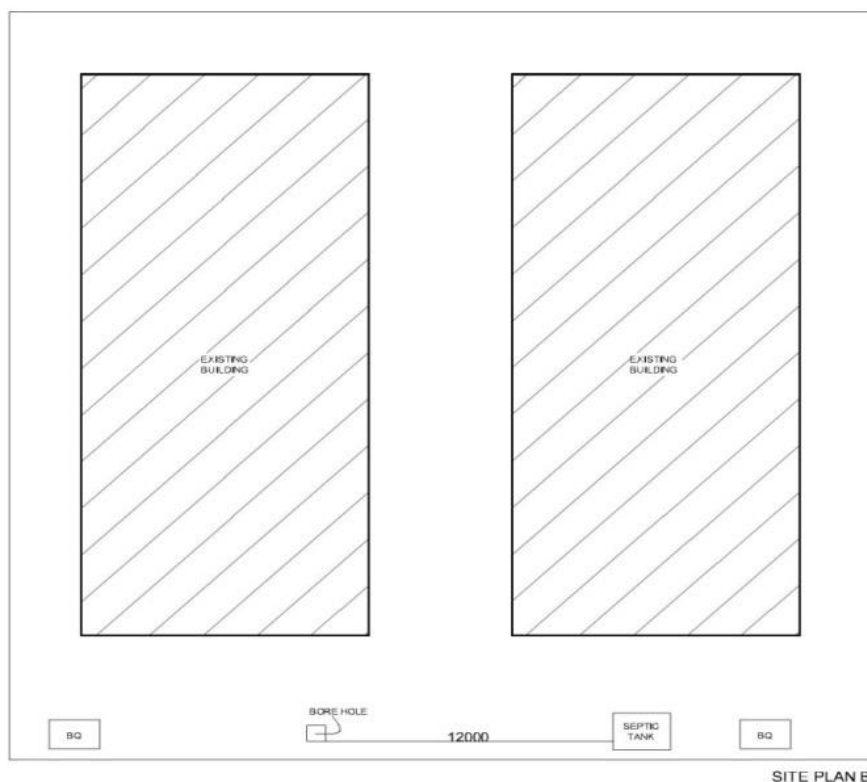


Figure 87: Borehole to Septic tank distance

Regular supply of power is generally through the use of generators as above average of all respondents across income areas use generators as their major source of power supply.

Observations from field study shows that there are no dedicated spaces for the placement of these generators in selectively observed apartments (fig. 106) that are put in place at the conceptual stage of the apartments. According to the United State's

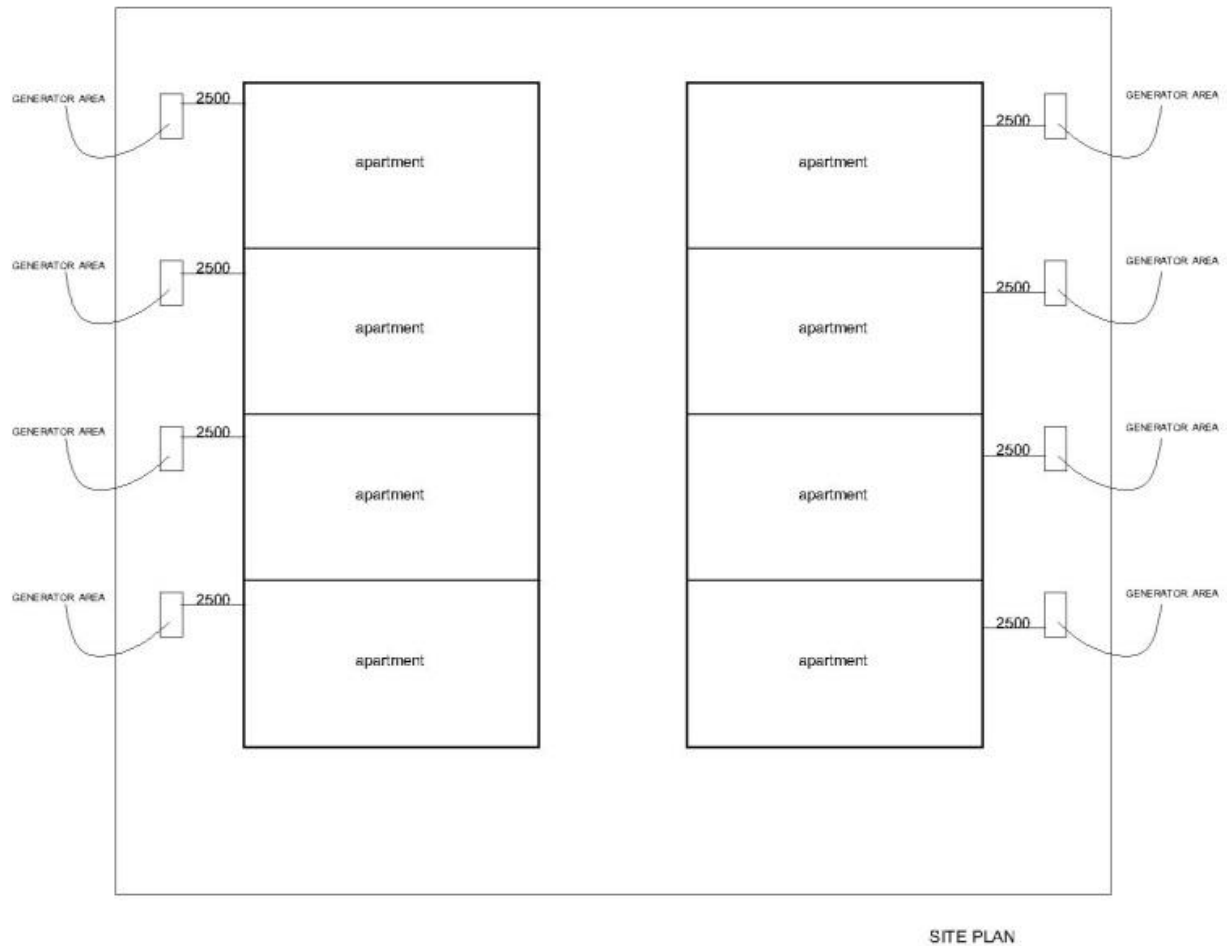


Figure 88: Positioning of Generators

National Institute of standards (NIST) 92007), generators emit potentially dangerous levels of carbon monoxide, as a result of which there is a need to keep generators away from the house at a distance as much as 7.62 metres.

Currently from selected observation, there is a proliferation of generators, and they are mostly placed at a distance less than 3 metres to apartments (Fig. 106).

Most respondents use energy saver bulbs. This may be due to the desire to reduce bills as most respondents claim to have the ability to pay bills. It may also be done to the availability of these type of bulbs against other types.

For the mode adopted in waste disposal, most respondents dispose their wastes through government agencies. Most respondents also claim to store the wastes in covered bins. These wastes are kept within their compounds before they are handed over to the agencies for final disposal.

From field observation, buildings within the 3 income zones do not have dedicated points, purposively designed for waste placement (Fig. 107) before they are carted away by government agencies, considering that more than 60% of respondents store their wastes for between 4 – 10 days before disposal.

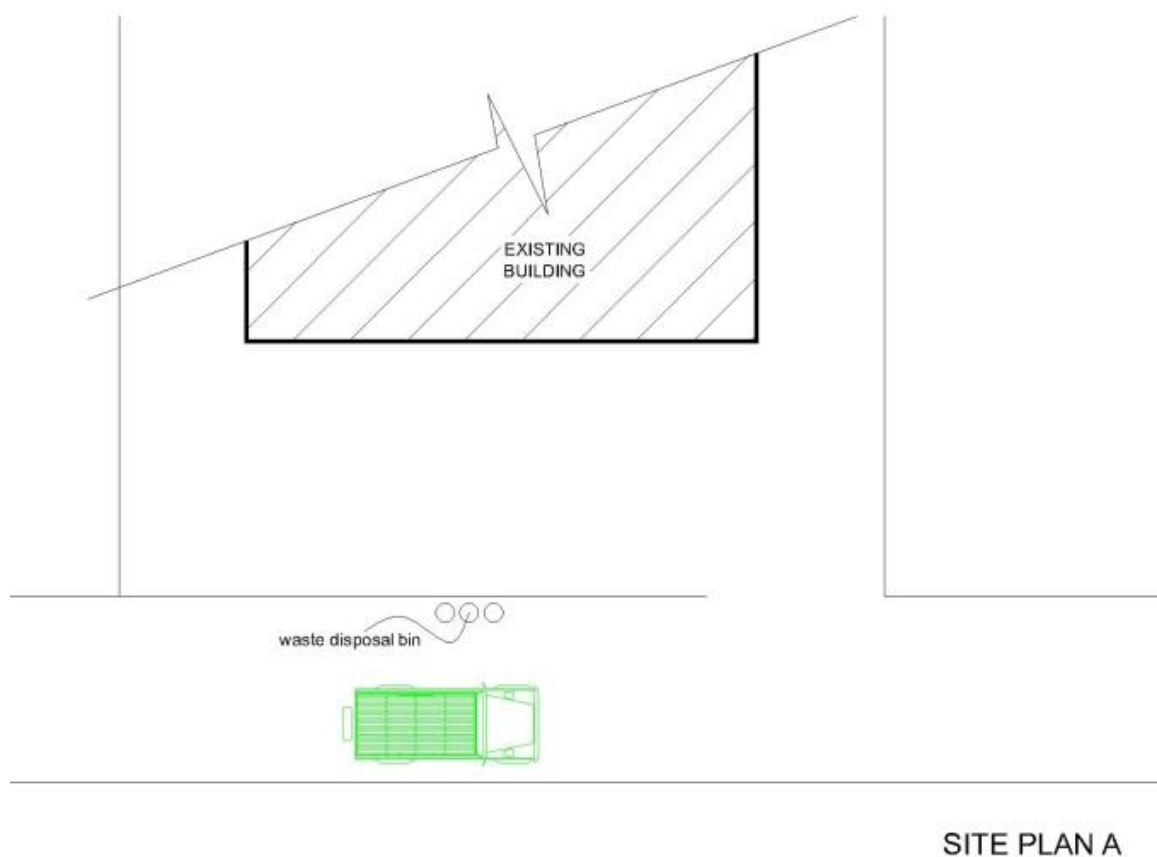


Figure 89: Current state of waste storage (Plan)



Figure 90: Current state of waste storage in low density neighbourhood

More than 80% of respondents do not sort their wastes (Fig. 108) before disposal. According to United Nations Educational Scientific and Cultural Organization (UNESCO), if piles of garbage are left around unsorted and unkempt in residential areas, they become a nuisance. They create an offensive atmosphere, attract insects and stray animals. This may become a major source of diseases.

About 60% of respondents believe that the designs of their buildings and apartments do not provide for waste storage and management. This may be responsible for why about 40% of them store their wastes in kitchens and balconies before disposal.

Looking at the second objective of the study, which is to examine the socio-economic and cultural characteristics of the residents within the neighbourhoods.

More than 70% of respondents across the income zones are between 21-50 years of age. This makes most residents fall in the active age, considering that the retirement age of the public sector is between 55-60 years (Fapohunda 2013 & Ali 2014). The activeness of the residents of these neighbourhoods may make a positive impact on the sustainability of these areas. This is because they are still within their active years and still have the capacity to be taught and also broadcast the steps to sustainable living within our neighbourhoods.

More than 60% of respondents are males, this trend is similar across the income groups. Males in the household have greater decisions. Making power than females in all the 3 major ethnic groups in Nigeria, that is, Yoruba, Hausa/Fulani and Igbo. This is particularly evident in marriages, but in some cases, sons may even make decisions for their mothers (Janice *et al* 2004). Going by this submission, decision on sustainability issues could tilt more towards the married men and males in general. So, it could be suggested that decision making on this issue in the study area will be with less difficulty, as those meant to make these decisions are in the majority.

Most respondents are either self-employed or work in private firms. Only an average of 14% of them works in the public sector. Sustainability tips may make more impact, if rooted through private firms.

Most respondents earn N100,000 and above, though this has a higher percentage in the high income area. While those that earn below N18,000 has a higher percentage in the low income area. However, more than 60% of respondents find it convenient to pay bills. This suggests that neighbourhood sustainability related bills will be paid by residents.

More than 60% of respondents are renters, except the high income area that has 51.4% the implication of this is that, more than average number of residents are in their apartments on a temporary basis. So, they may be concerned majorly with environmental issues that have an immediate impact on them and their immediate environment.

An approximately 80% of respondents are educated to at least secondary school level which implies that, a very high percentage of them can read and write, and are equally teachable. They will assimilate issues that relates to sustainability when they are exposed to them.

The third objective of this research is to analyse the knowledge, attitudes and behaviour of residents to sustainability. Most respondents have the knowledge of environmental sustainability, the knowledge of global warming and the knowledge of what is required to reduce global warming. This knowledge is prevalent in all the income groups.

Majority of them are however, unaware of laws guiding neighbourhood sustainable practice and more than 70% of them have never been involved in any program on sustainability. Environmental sustainability can thrive not only on the awareness of its necessity but on putting adequate enforcement strategies in place. The people are not aware of laws tailored towards sustaining the environment in the study area. Since making of laws is the primary responsibility of government organs at various levels, it may be inferred that the government under whose supervision the study area falls has failed in that responsibility of making and enforcing required laws to keep the neighbourhoods sustainable.

It is also the duty of the government, whose responsibility is to maintain environmental standards that will make the neighbourhoods sustainable, to create awareness through the involvement of residents in sustainability programmes. As this more may positively solidify the effects of their awareness on how their environment is perceived and handled.

From data analysis, several steps are taken to address the fourth objective, which is to determine the sustainability of the study area and the factors implicated in it.

Sustainability was scored, based on 18 variables that highlights the perception of respondents on how sustainable their neighbourhood is. The variables address these issues:

1. The acceptability of the neighbourhood to flood
2. Less use of energy in the apartments, due to the sensitivity of the design
3. The quality of air in the environment as perceived within the case of breathing
4. The general healthiness of the environment through likely exposure to filth
5. The access to health facilities by residents
6. The constant experience of unwanted noise within the neighbourhood
7. The co-operation of the generality of residents to maintain a sustainable environment
8. The hazards of industrial activities as could be felt by respondents
9. The efforts of government agencies in making sure that the neighbourhoods are environmentally sustainable
10. The part played by basic infrastructures towards making the neighbourhood sustainable
11. The awareness of residents on the importance of plants in the neighbourhoods
12. Whether the neighbourhoods are actually well planted.
13. Perception of residents on security challenges
14. The durability of the building components
15. Beauty of the buildings in the neighbourhoods
16. Attitude of neighbourhoods towards keeping the environment clean.
17. The population of the neighbourhood and how it affects the comfort of residents
18. On whether the residents see the neighbourhoods as good or bad

At the level of score ranking, above 76% of all the income groups score (54-71)%. This may suggest that majority of respondents believe that their neighbourhoods are sustainable (table 27).

Dimensions of Neighbourhood Sustainability

On some of the variables on neighbourhood sustainability from literature as reflected in the questionnaire, dimension reduction in optimal scaling was carried out. Factor analysis using principal components method was used to determine the factors that had accounted for the sustainability of the neighbourhoods (Table 71)

15 variables were selected as predictor factors and used for the analysis. The factor analysis on sustainability of the neighbourhoods shows that 5 components with 15 variables accounted for 53.151% of the variance in the result. The 5 components with Eigen values 1.097 and above were analysed further.

The first component had Eigen value 3.902 and it accounted for 20.5% of the variance in the data represented. The variables that loaded on this component were planting of trees and grass in the environment (0.801) awareness of advantages of plants within the environment (0.735), attitude of neighbours is keeping the environment clean (0.589) and access to health services (0.467). These components seem to combine 2 concepts: Greening and health. The second factor accounted for 12.3777% of the variance in the data presented with Eigen value of 2.344. The single variable loaded on this factor was population of neighbourhood, which describes the factor on population. The third factor accounted for 7.64% of the variance in the data presented with Eigen value of 1.452. The variables loaded on this factor were; government intervention in making the environment sustainable (0.755) evidence of infrastructure like roads and waterways (0.663), community steps towards sustainability (0.655) and durable components of buildings (0.414). These components seem to combine 2

concepts: Government and community influence. The forth factor accounted for 6.95% of the variance in data presented with Eigen value 1.322. The variables loaded on this factor were; quality of air in the environment (0.678), health related conditions of the environment (0.625), problem of industrial activities (0.600) and noise pollution (0.588). These components appear to address environmental pollution.

The fifth component accounted for 5.698% of the variance in the data presented, with Eigen value of 1.097. The 2 variables loaded on this factor are; energy consumption and susceptibility to flood. These components address energy usage and proness to flood.

It could be deduced from the result that residents in the study area construed neighbourhood sustainability based on five factors; Greening and health, population, government and community influence, environmental pollution, and energy usage plus proneness to flood. 15 of the items on the 5 factors were loaded which indicates that residents attached importance to them. The 5 factors are the factors used to define neighbourhood sustainability in the study area. The factor with the highest weight is planting of trees and grass in the environment. It infers that the most important factor defining the satisfaction of the residents on the sustainability of their neighbourhoods was availability of plants in their environment.

Predictors of Neighbourhood Sustainability

The next set of analysis to determine the predictors of neighbourhood sustainability was categorical regression.

CHAPTER 6

6.0 CONCLUSSION AND RECOMMENDATIONS

RECOMMENDATIONS

1. There is need for the Lagos state government to have legislations that compel designers to make provisions for the storage of cooking gas cylinders (fig. 109)

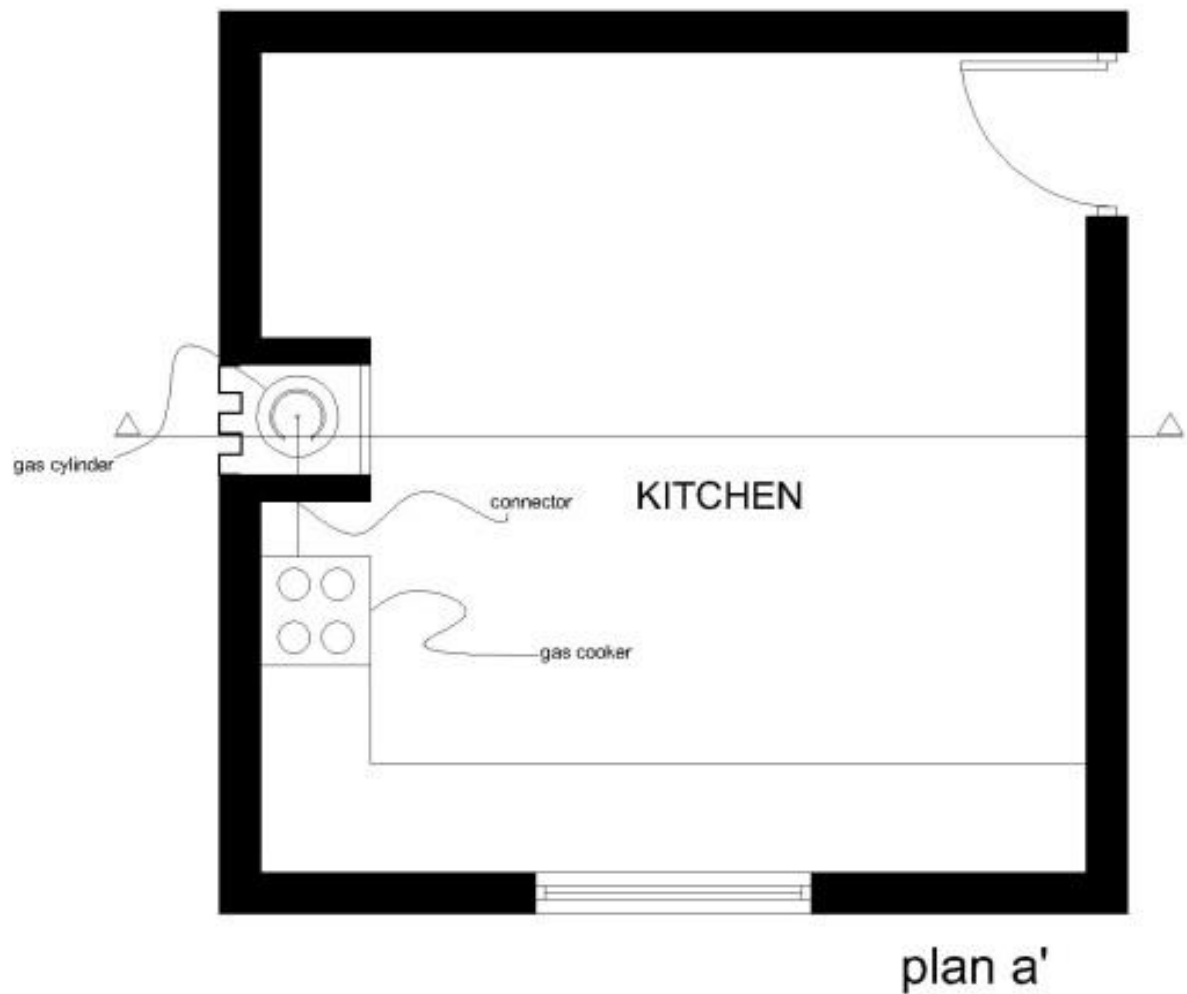


Figure 91: Recommended safe positioning of gas cylinders (floor plan)

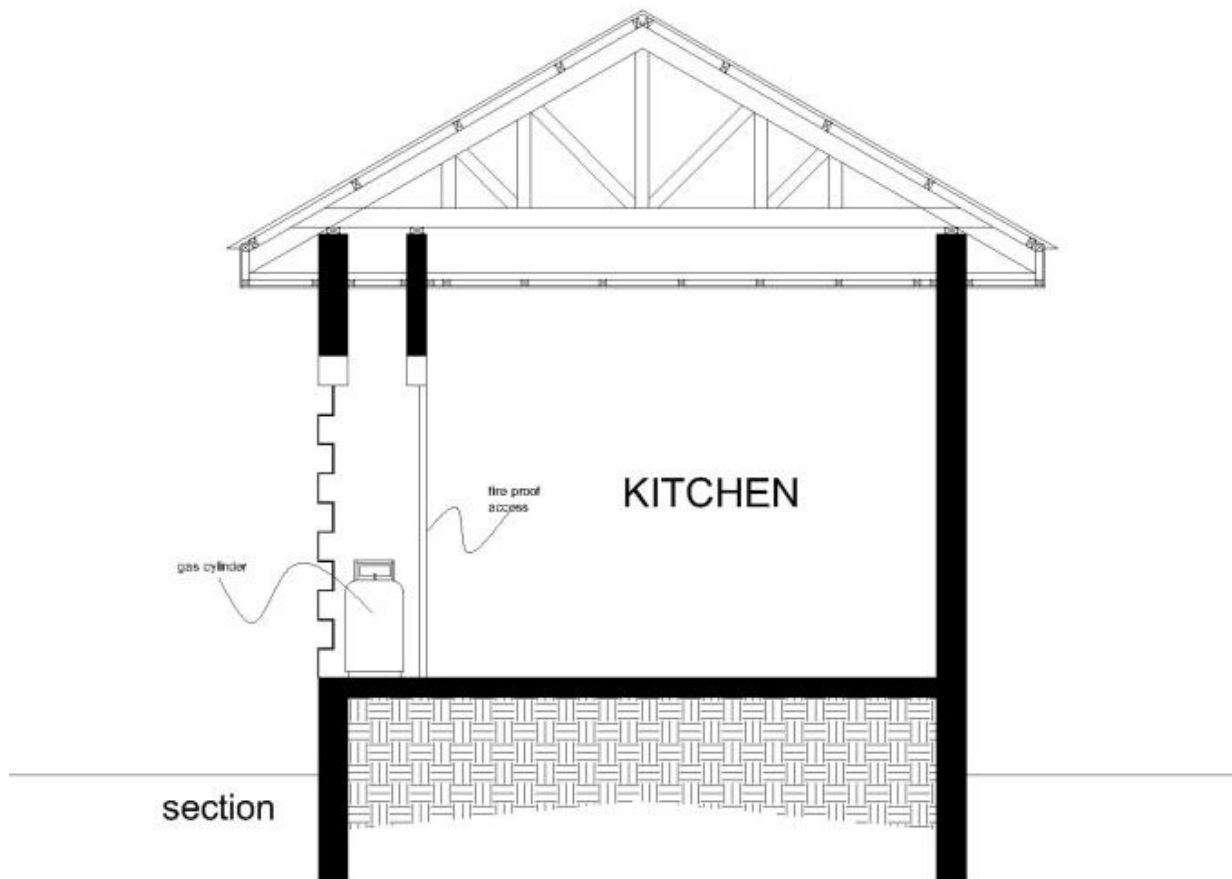


Figure 92: Recommended safe positioning of gas cylinders (section)

2. Legislations compelling developers to locate boreholes at appropriate distance to septic tanks, should be enacted by the government
3. Government agencies should make central sewage system a planning standard, within Lagos state
4. Government and professional agencies should educate the building industry professionals on the need to have the positioning of generators considered at the initial stage of designs.

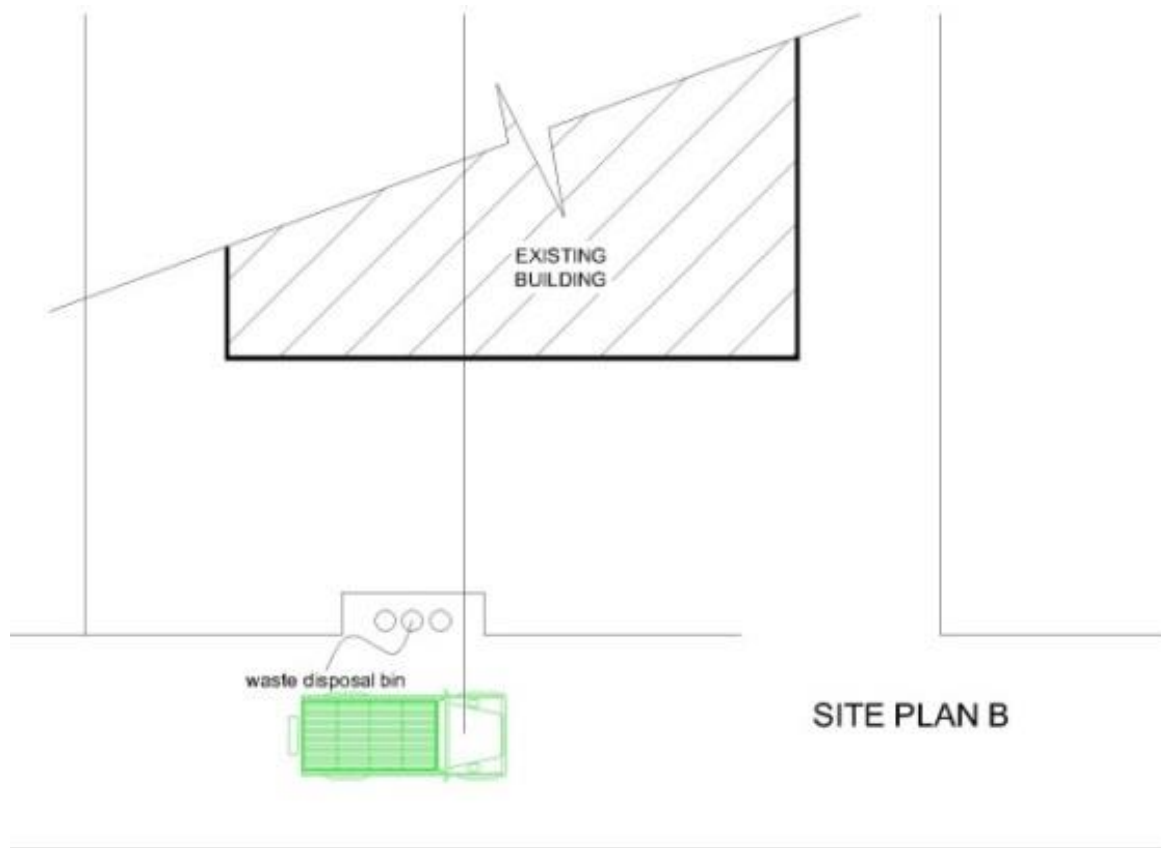


Figure 93: Recommended waste storage before disposal (plan)

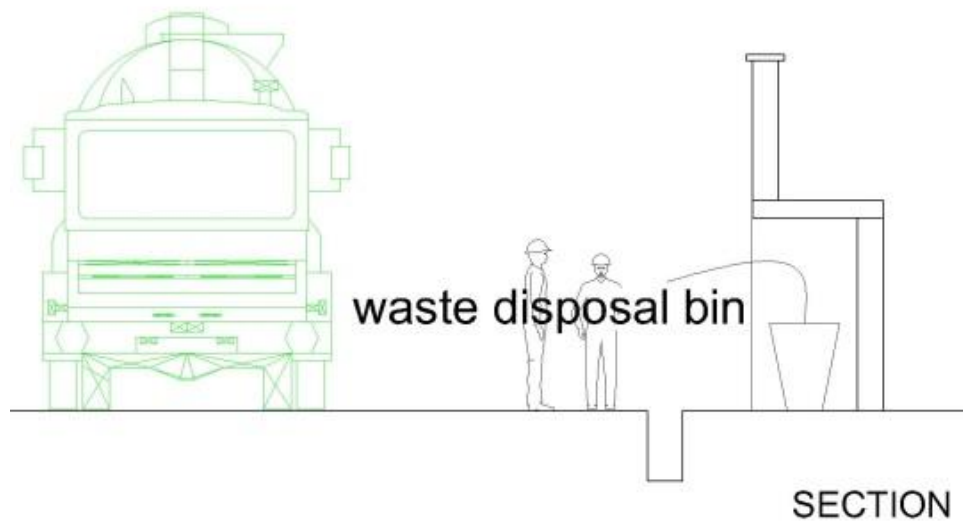


Figure 94: Recommended wasted storage before disposal

5. Designers should be compelled by relevant agencies to make storage of waste before disposal incorporated into designs (fig. 112)
6. Waste storage corner should be made a standard for kitchen designs (fig. 113)

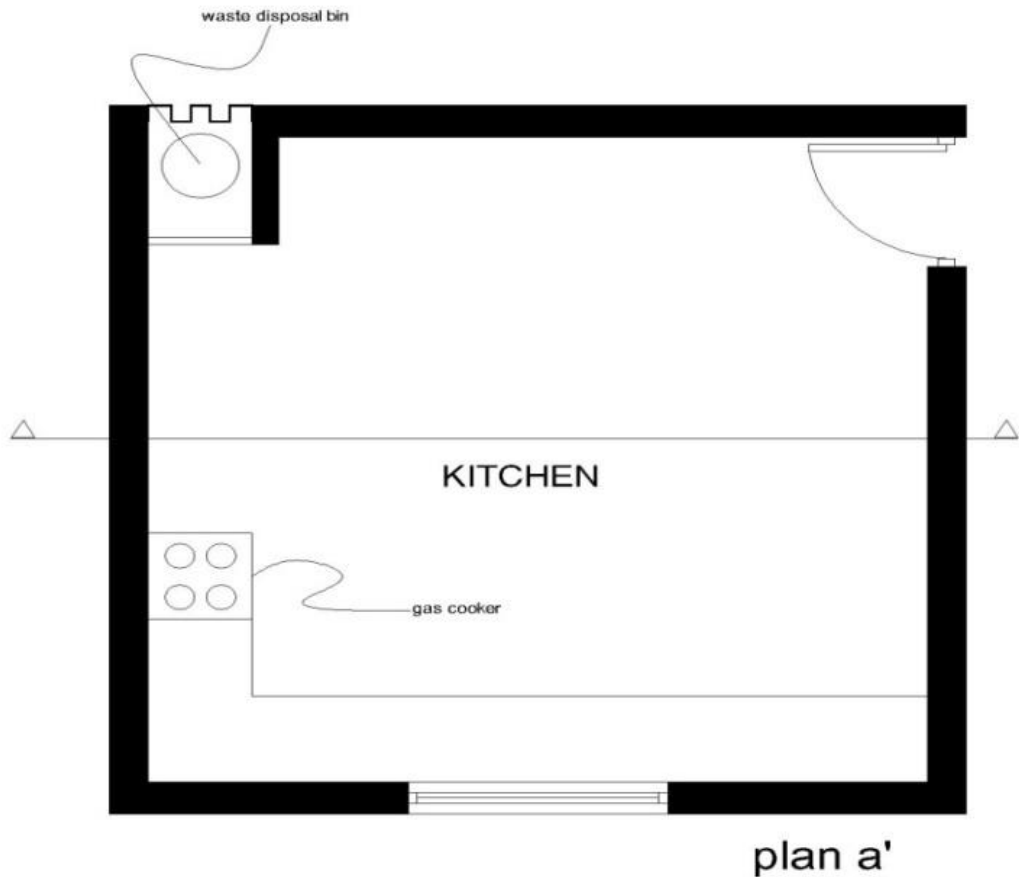


Figure 95: Recommended waste corner for kitchens
Figure 21:

7. There should be a legislation that compels residents to sort their wastes.
8. Adequate provision for waste management should be a pre-condition to design approval.
9. Residents should be made to pay for services needed for the sustainability of their neighbourhoods, since majority of them have the ability to pay bills.
10. Since most residents are educated, they should be exposed to adequate knowledge of environmental sustainability.

CONCLUSION

The assessment of the sustainability of residential neighbourhoods and buildings is seen as the preoccupation of building industry professionals. This is often done without the opinion of the residents. The assessment of the sustainability of the study area, based on residents' perspective has been established through this study. This will lead to the development of policies that will bear positive influence on the people and their neighbourhoods. It has also been revealed through this study that, there is no significant difference between the three major population density zones as presently delineated by the Lagos state government, in terms of their characteristics and environmental sustainability. This is a pointer to a need for a review of density zones within Lagos.

CONTRIBUTIONS TO KNOWLEDGE

- i. This thesis exposed the need to go beyond indicator centred measurement of environmental sustainability, by measuring through the perspective of residents.
- ii. The study identified peculiar and key factors that determine the environmental sustainability of Ikeja. These are needed by government, residents and other stakeholders, to protect the architectural sanity of the area, within the context of environmental sustainability.
- iii. This work pioneered intensive study of neighbourhood sustainability of Ikeja, through its findings, that reveal areas that require intervention, for Ikeja to be sustainable.

AREAS OF FURTHER STUDIES

The assessment of the sustainability of Neighbourhoods and Residential buildings in the perspective of users is an area that has not received adequate attention from researchers. This study has however addressed some of the issues. The following areas are suggested for further study.

- i. The assessment of the sustainability of neighbourhoods and residential buildings through the perspective of residents has been done through this thesis. The assessment of the sustainability of commercial and institutional buildings is suggested for further studies.
- ii. Findings and characteristics across the density zones are similar. Further studies are required to know the current status of neighbourhoods in Lagos state, with a view to ascertaining the zoning in terms of high, medium and low density.
- iii. Neighbourhood sustainability is based on six factors in Ikeja, these are: Greening and health, population, Government and community influence, environmental pollution, energy usage, proness to flood. Further studies are required to know what factors other areas in Lagos state are based on.
- iv. Sixteen significant predictors of the sustainability of neighbourhoods and residential buildings in Ikeja were found. Further studies are required to know the predictors of sustainability for other areas in Lagos.

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APPENDIX 1

DEPARTMENT OF ARCHITECTURE UNIVERSITY OF LAGOS, AKOKA

QUESTIONNAIRE

TITLE: AN ASSESSMENT OF THE SUSTAINABILITY OF RESIDENTIAL NEIGHBOURHOODS AND RESIDENTIAL BUILDINGS IN LAGOS

INTRODUCTION

This questionnaire is designed to evaluate the pattern of relationship, between residents of Lagos State and their homes. This is with the view to ascertaining the effects of the day to day activities of residents on their immediate environment, and also to determine the general effects on the neighbourhoods. It will help to determine how the sustainability of the neighbourhoods and residential houses are being influenced. Responses will be treated with strict anonymity and with utmost confidentiality. Thank you.

BOLA F. OGUNBODEDE

SECTION A: PERSONAL CHARACTERISTICS (Heads of Households)

1. What is your age as at last birthday?
2. Sex: Female [] Male []
3. Marital Status: Married [] Divorced/Separated [] Widowed []
Single mother [] Single Father [] Just Single [] Others (specify)
4. Nationality: Nigerian [] Other African Countries []
Other Countries (specify)
5. Ethnic group: Yoruba [] Hausa/Fulani [] Igbo [] Ijaw [] Edo []
Ibibio [] Kanuri/Tiv [] Ebira/Nupe [] Others (specify)
6. Religion: Christianity [] Islam [] Others (specify)
7. What is your occupation:

8. Employment status: Self-employed [] Private firm employee []
Casual worker [] Government employee [] Retired/Pensioner []
Unemployed [] Others (specify)
9. Average monthly income: Less than N18,000 [] N18,000-N30,000 []
N31,000-N50,000 [] N51,000-N75,000 [] N76,000-N99,000 []
N100,000 and above []
10. Level of Education: No formal education [] Primary [] Secondary []
Technical School [] NCE/OND [] First Degree/HND [] Post-graduate []
11. Do you smoke?: Yes [] No []
12. Do you take alcohol?: Yes [] No []
13. Do you take any form of hard drug?: Yes [] No []

SECTION B: HOUSE CHARACTERISTICS

14. What is the nature of your apartment?
One room apartment [] Room and parlour []
One bedroom flat [] Two bedroom flat []
Three bedroom flat [] Four bedroom flat []
Five bedroom apartment [] others
15. What is the nature of your dwelling? Single Family unit on a plot [] Twin houses
on a plot [] Two apartments on a plot [] Three apartments on a plot [] Four
apartments on a plot [] More than Four apartments on a plot []
Others (specify)
16. What is your tenure status: Owner-Occupier [] Family Occupier []
Free Occupier [] Renter []
17. Do you run a home-based enterprise within you dwelling: Yes [] No []
18. If question 17 is yes, what type of enterprise do you run?
.....
19. Number of years in this apartment:
20. How many people live in your apartment, including you?:
21. What are their relationships: Husband [] Wife [] Children []
Others (specify)

SECTION C: SERVICES

22. What is your mode of cooking?

Electricity [] Gas cooker [] Stove [] Firewood [] Wood dust []
Others (specify).....

23. Do you cook outside? Yes [] No []

24. If your answer to 24 is yes, what is your mode of cooking when you cook outside?

Electricity [] Gas cooker [] Stove [] Firewood [] Wood dust []
Others (specify).....

25. What is your main source of water supply?

Pipe-borne water [] Private borehole/well [] water vendors [] rain water
[] Others (specify).....

26. What type of toilet facility do you use? Flush toilet [] Pit latrine []

Others (specify)

27. Are your toilets shared or exclusive? Shared [] Exclusive []

28. If shared, by how many families?

29. Is your kitchen exclusive to your family or shared? Shared [] Exclusive []

30. If shared, by how many families?

31. What is your major source of power supply?

Government supply [] Generator [] Candle/Lantern []
Rechargeable source [] Solar source [] Others (specify).....

32. What sort of light fittings do you use, in your apartment?

Energy saver bulbs [] Incandescent bulbs [] Fluorescent Lamps []
Others (specify).....

33. What are your major uses for electricity in your apartment?
 Cooking [] Electronics [] lighting [] business activities []
 others (specify).....
34. What is your mode of waste disposal?
 Through government agency [] dump site [] any available space []
 paid community waste disposers [] drainage/carnal/lagoon/river/water ways []
 others (specify).....
35. What is your frequency of waste disposal?
 1-3 days [] 4-6 days [] 7-10 days [] above 10 days []
36. How do you store your refuse, before disposal? Open waste bins []
 Covered waste bins [] Waste bags [] Bare-floor []
 others (specify).....
37. Where do you keep your refuse before disposal?
 Kitchen [] balcony [] living room [] bed room []
 outside the apartment (within compound) [] Others (specify).....
38. Do you sort your wastes at the point of disposal? Yes [] No [] Do not know about
 waste sorting []
39. Does the design of the house make provision for waste storage before disposal?
 Yes [] No []
40. What is your frequent mode of transportation to and from your neighbourhood?
 Commercial Bus [] Taxi [] Commercial Motorcycle [] Bicycle [] Walking []
 Others [] Private vehicle []
41. Do you know what environmental sustainability is?
 Yes [] No []
42. Do you know what global warming is? Yes [] No []
43. Do you know what is required of household to reduce global warming?

Yes [] No []

44. Are you aware of laws guiding sustainable practice within your neighbourhood?

Yes [] No []

45. Have you ever being involved in any program on sustainability?

Yes [] No []

		Strongly Agree 5	Agree 4	Neither Agree nor Disagree 3	Disagree 2	Strongly Disagree 1
46	The nature of our neighbourhood makes it susceptible to flood					
47	The nature of the apartment results to less use of energy for ventilation and lighting					
48	The quality of air in the environment is satisfactory					
49	The nature of our immediate environment is healthy and conducive					
50	Our neighbourhood has access to health services					
51	Noise is a nuisance within the neighbourhood					
52	The community takes steps collectively to make the neighbourhood					

	maintain a sustainable environment					
53	Industrial activities are a major environmental problem in the neighbourhood					
54	Government intervention makes the environment conducive and sustainable					
55	Infrastructures, like roads, waterways, electricity and water-works are a major boost to the neighbourhood					
56	People are aware of the advantages of plants within their environments and are involved					
57	Our environment is well planted with trees and grass					
58	Our neighbourhood has security challenges like armed robbery and burglary					
59	The components in our building can be regarded as durable					
60	Our building can be said to be beautiful					
61	The attitude of our neighbours					

	help keep the environment clean and decent					
62	There are too many people living within our neighbourhood					
63	Our neighbourhood is a good place to identify with					
		Very convenient 5	Convenient 4	Undecided 3	Not convenient 2	Not very convenient 1
64	How will you rate your ability to pay bills					
65	How will you rate your ability to pay house rent (for tenants only)					

APPENDIX 2



Figure 96: Selected view of a neighbourhood within the high density area



Figure 97: Selected view of a residential building within the high density neighbourhood



Figure 98: Selected view of a residential building within the high density neighbourhood



Figure 99: Selected view of a residential building within the high density neighbourhood



Figure 100: Selected view of a residential building within the medium density neighbourhood



Figure 101: Selected view of a residential building within the medium density neighbourhood



Figure 102: Selected view of a residential building within the medium density neighbourhood



Figure 103: Selected view of a residential building within the medium density neighbourhood



Figure 104: Selected view of a residential building within the medium density neighbourhood

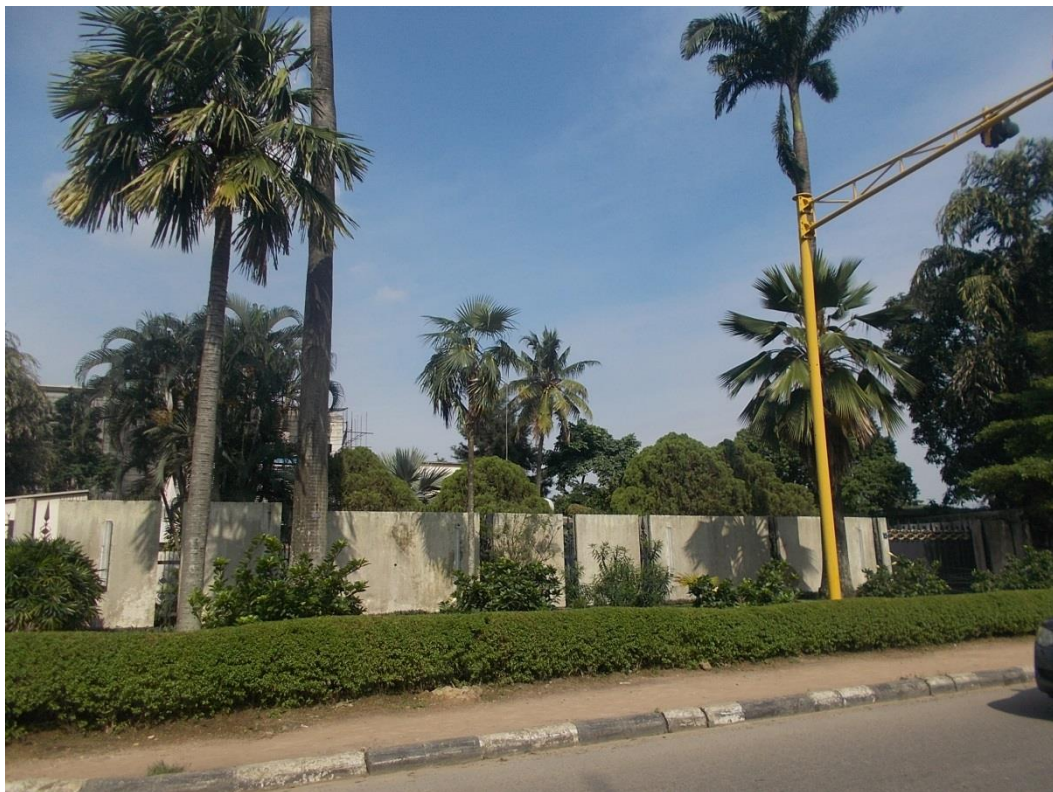


Figure 105: Selected view of a planted neighbourhood within the low density area



Figure 106: Selected view of a residential building within the low density neighbourhood



Figure 107: Selected view of a residential building within the low density neighbourhood



Figure 108: Selected view of a residential building within the low density neighbourhood



Figure 109: Selected view of a residential building within the low density neighbourhood



Figure 110: Selected view of a neighbourhood with vegetation within the low density area

APPENDIX 3

Table 28. List of Residential Neighbourhoods in Metropolitan Lagos.

Source: Independent National Electoral Commission (1998)

LOCAL GOVT AREA		WARD CLASSIFICATION		
		LOW INCOME/HIGH DENSITY WARDS	MEDIUM INCOME/MEDIUM DENSITY WARDS	HIGH INCOME/LOW DENSITY WARDS
Agege	1	Isale Oja/Idimangoro		
	2	Iloro/Onipetesi		
	3	Oniwaya/Papauku		
	4		Agbotikuvo/Dopemu	
	5	Oyewole/Papa Ashafa		
	6	Okekoto		
	7	Keke		
	8	Darocho		
	9		Tabon-Tabon/OkO-Oba	
	10	Orile-Agege/OkO-Oba		
Alimosho	11	Isale-Odo		
	1	Shasha/Akowonio		
	2	Egbeda/Alimosho		
	3	Idimu/Isheji		
	4	Ikotun/Ijegun		
	5	Egbe/Agodo		
	6	Igando/Egan		
	7		Ipaia North	
	8		Ipaia South	
	9	Avobo/Ijan		
	10		Oke-Odo/Pleasure	
Ifako/Ijaibe	11	Abule-Egba/Alagbado		
	1		Ogba/Oke-Ira	
	2	Old Ifako/Karaole		
	3		New Ifako/ Oyemekun	
	4	Fagba/Akute		
	5	Iju-Ishaga		
	6		Obawole	
	7	Panada/Abule-Egba		
	8		Ijaibe/Ojokoro	
	9	Agbado-Ijaibe		
	10	Alakuko/Kollinton		
Ikeja	11	Ajegun/Akinde		
	1		Anifowose/Ikeja	
	2		Agidingbi/Omole/Ojodu	
	3		Alausa/Oregun/Olusosun	
	4		Onilekere/Onipetesi	
	5	Ipodo/Seriki/Ado		
	6		Adeniji Jones/Ogba	
	7		Okeira/Aguda Titun	
	8			Onigbongbo/Military Cantonment GRA
	9			
	10		Wasinmi/Opebi/Allen	

Table 29. List of Residential Neighbourhoods in Metropolitan Lagos ...contd

Kosofe	1		Oworonsoki	
	2		Ifako	
	3		Anthony/Mende	
	4		Ojota/Ogudu	
	5		Ketu/Alapere	
	6		Isheri/Olowo-Ira	
	7	Ketu-Ikosi		
	8	Agbovi I		
	9	Agbovi II		
	10	Ajegunle		
Mushin	1	Alakara		
	2	Idi-Oro/Idi-Olowo		
	3	Babalosa		
	4	Ojuwoye		
	5		Ilupeju	
	6	Olateju		
	7		Kavode/Fadevi	
	8	Mushin/Atewolara		
	9	Papa-Ajao		
	10	Ilasamaja		
	11	Babalosa/Idi-Araba		
	12	Itire		
	13	Idi-Araba		
	14	Ilupeju/Industrial		
Oshodi/Isolo	1	Oshodi/Bolade		
	2	Orile-Oshodi		
	3		Isolo	
	4			Ajao-Estate
	5	Ilasamaja		
	6	Mafofuku		
	7		Sogunle	
	8		Alasia/Sogunle	
	9		Okota	
	10	Ishagatedo		
	11	Oke-Afa/Ejigbo		
Somolu	1		Onipanu	
	2		Palmgroove/Ijebu-tedo	
	3	Alade		
	4	Bajulaiye		
	5	Mofowoku/Pedro		
	6	Bariga		
	7		Ilaje/Akoka	
	8		Igbobi/Fadevi	
	9	Fola Agoro/Bajulaiye		
	10		Gbagada Phase I/Obanikoro	
	11		Gbagada Phase II/Apelehin	
	12	AbuleOkuta/Ilaje/Bariga		

Table 30 List of Residential Neighbourhoods in Metropolitan Lagos ...contd

LOCAL GOVT AREA		WARD CLASSIFICATION		
		LOW INCOME/HIGH DENSITY WARDS	MEDIUM INCOME/MEDIUM DENSITY WARDS	HIGH INCOME/LOW DENSITY WARDS
Apapa	1			Apapa I
	2			Apapa II
	3			Apapa III
	4			Apapa IV
	5	Ijora-Olove		
	6		Iganmu	
	7	Gaskiya		
	8		Afolabi-Alasia	
	9	Malu Road		
	10		Sari	
Eti-Osa	1			Victoria Island I
	2			Victoria Island II
	3		Ilasan Housing Est/Mavegun Village	
	4		Ikota/Ikate Village	
	5		Igbo-Efon/Ikota Housing Estate	
	6			Ajah Village
	7		Addo Village	
	8			Ikoyi I
	9			Ikoyi II
	10		Obalende	
Lagos Island	1	Olowogbo/Elegbeta		
	2	Oluwole		
	3	Idumota		
	4	Oju-Oto/Isale-Eko		
	5	Idumagbo/Okeawo		
	6	Agbarawu-Obadina		
	7	Iduntafa		
	8	Ilupesi		
	9	Isale-Agbede		
	10	Olosun		
	11	Olushi-Kakawa		
	12	Popo-Aguda		
	13	Anikantamo		
	14	Oko Faji		
	15	Eiyewole		
	16		Onikan/Okesuna	
	17	Sangrouse		
	18	Epetedo		
	19	Ilubirin/Lafiaji		
Lagos Mainland	1	Otto/Iddo		
	2		Apapa Road & Environs	
	3	Olaleye Village		
	4	Makoko/Ebute Metta		

Table 31 List of Residential Neighbourhoods in Metropolitan Lagos ...contd

	5	Oyingbo Market/Ebute Metta		
	6		Glover/Ebute Metta	
	7	Oko-Baba		
	8		Oyadiran Estate/Abule- Oia	
	9	Alagomeji		
	10	Iwaya		
	11	Yaba/Igbobi/Sabe		
Surulere	1		Akinhanmi/Cole	
	2	Yaba/Ojuelegbe		
	3		Gbaia/Stadium	
	4		Shitta/Ogunlana Drive	
	5		Adeniran Ogunsanya	
	6		Iponri Housing Estate/Eric More	
	7	Orile		
	8	Coker		
	9		Aguda	
	10	Ijeshatedo		
	11	Itire		
	12	Ikate		

Table 32. List of Residential Neighbourhoods in Metropolitan Lagos ...contd

LOCAL GOVT AREA		WARD CLASSIFICATION		
		LOW INCOME/HIGH DENSITY WARDS	MEDIUM INCOME/MEDIUM DENSITY WARDS	HIGH INCOME/LOW DENSITY WARDS
Ajeromi/Ifelodun	1	Ago Hausa		
	2	Awodi-Ora		
	3	Wilmer		
	4	Olodi		
	5	Tolu		
	6	Temidire I		
	7	Ojo road		
	8	Layeni		
	9	Alaba Oro		
	10	Mosafejo		
	11	Temidire		
Amuwo Odofin	1	Amuwo Odofin Housing Estate		
	2		Festac I	
	3		Festac II	
	4			Festac III
	5		Kirikiri	
	6	Agboju		
	7	Ijegun		
	8		Satellite	
	9	Iyagbe		
	10	Ibeshire		
	11	Igbologun		
Ojo	1	Ojo		
	2	Okomaiko		
	3	Ajangbadi		
	4	Ijanikin		
	5		Iba	
	6	Otto-Ilogbo		
	7	Irewe		
	8	Taffi		
	9	Etegbin		
	10	Idoluwo		
	11	Sabo/Alaba		

APPENDIX 3

Table 33: Streets in Ikeja and their number of buildings Source: Lagos State Ministry of Environment (2013)

NAME OF STREET/ROADS	LENGTH (M)	NO. OF BUILDING
ABEOKUTA ROAD	400	33
ABIEYUWA AMA DASUN STREET	119.6	10
ABIODUN STREET	150.6	13
ABIODUN CLOSE	85	7
ABIODUN OSHOWOLE STREET	160	13
ADEBAYO BANJO STREET	240	20
ADEBOYE SOLANKE STREET	236	20
ADEDAYO BANJO STREET	150	13
ADEDEJI CLOSE	762	64
ADEFOLU DRIVE	331	28
ADEGBEYERI	286	24
ADEKUNBI STREET	268	22
ADEKUNBI CRESCENT	186.8	16
ADEKUNLE FAJUJI ROAD	4500	375
ADELEKE	560.8	47
ADEMOLA CLOSE	591	49
ADENIJI ADELE STREET	325	27
ADENUBI STREET	110	9
ADENUBI CLOSE	901	75
ADEOLA ADEOYE STREET	120	10
ADEPELE STREET	168.8	14
ADEPOLU DRIVE	330	28
ADERIJU ADEWUYI STREET	230.1	19
ADESHINA STREET	180.6	15
ADESINA STREET	180.22	15
ADETUNJI ADEOBA STREET	958	80
ADEYEMI CLOSE	762	64
ADEYEMO ALAKIJA STREET	799.2	67
AFARIOGUN STREET	280	23
AFIOMAN DRIVE	200	17
AFOLABI AWOSANYA STREET	330	28
AGBAOKU AVENUE	330	28

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

AGBARA CLOSE	160	13
AGBOOLA AINA STREET	380.4	32
AJANAKU STREET	72	6
AJAO STREET	180	15
AJASA STREET	150	13
AJAYI STREET	138	12
AJIBOYE STREET	150	13
AJOKE AKINBAMI STREET	105	9
AKIN OSIYEMI STREET	395	33
AKINTOYE SHOGUNLE STREET	160.8	13
AKINYEMI STREET	461	38
ALABI STREET	294	25
ALADE CLOSE	806	67
ALADE AVENUE	220	18
ALAYODE CLOSE	100	8
ALFRED OLAIYA STREET	260.4	22
ALH. TOKUNBO ALLI STREET	150	13
ALHAJA KOFOWOROLA CRESCEN	400	33
ALLEN LANE	70	6
AMORE STREET	458.5	38
ANIKE APENA STREET	501	42
ANU OLUWAPO STREET	150	13
ANUOLUWAPO CLOSE	90	8
ARAROMI STREET	227	19
ARO OMOBA STREET	150	13
ASENUGA STREET	158.2	13
ATINUKE OLABANJI STREET	180	15
ATUNWA STREET	126	11
AYO ROSIJI STREET	632	53
AYO ROSIJI CRESCENT	337.7	28
BALOGUN STREET	388	32
BAMISHILE STREET	584	49
BASHIRU OWEH STREET	165	14
BAYO SHODIPO STREET	135	11
BELLO DOSUNMU STREET	185.5	15
BISI OGABI STREET	205.6	17

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

BLINJIDE STREET	85	7
BOLA AJIBOLA STREET	255	21
BOLANLE CLOSE	50	4
CHURCH STREET	607	51
COMMUNITY STREET	525	44
COMMUNITY CLOSE	65	5
DALGO DRIVE	764	64
DEHINSILU STREET	460.2	38
DIPEOLU STREET	228.1	19
DOTUN JOLAOSO STREET	100	8
ESO CLOSE	459	38
ESOMO CLOSE	195	16
EZEKIEL CLOSE	200	17
EZEKIEL STREET	254.2	21
FADEYI STREET	380.2	32
FADEYI ALADURA STREET	238.6	20
FELICIA KOLEOSHO STREET	321.4	27
FELICIA KOLEOSO STREET	240	20
FIRST FOUNDATION CLOSE	587	49
FOLawe AVENUE	220	18
FOLORUNSO KUKU STREET	360	30
FOLUSO ALADE STREET	110	9
GAFARI BALOGUN STREET	158	13
GBEMI OLUWA CLOSE	586	49
GBEMISOLA STREET	480.2	40
HAROLD SHODIPO STREET	315	26
HENRY ADEFOPE STREET	270.6	23
HILTON DRIVE	130	11
IBADAN CLOSE	75	6
IDOWU LANE	54	5
IGBASAN STREET	156.8	13
ILO STREET	120.5	10
IMOSHE OJULOWO STREET	148	12
INDEPENDENCE STREET	212	18
IPODO STREET	480	40
IREWALE AVENUE	300	25
ISAAC JOHN STREET	1250	104

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

ITOHAN STREET	110	9
JACOB BANJOKO STREET	120	10
JOHN OLUGBO STREET	470.8	39
JOHNSON STREET	560.8	47
JOSEPH STREET	158.1	13
KEV BAMIDO STREET	66	6
KODESHO STREET	133	11
KOLAWOLE ODUNSI STREET	150	13
LADIPO BATEYE STREET	1170	98
LADIPO KAFUNMU STREET	420.1	35
LADOKE AKINTOLA STREET	510	43
LATAYO STREET	90	8
LINKAGE STREET	626.8	52
MAJEKODUNMI STREET	460	38
METHODIST CHURCH STREET	268.6	22
MICHEAL OGUN STREET	456.2	38
MODUPE STREET	175	15
MOJIDI STREET	520.2	43
MOJIDI CLOSE	520.2	43
MOSHOOD ABIOLA CLOSE	89	7
MOSHOOD ABIOLA CRESCENT	489	41
NURUDEEN STREET	150	13
OBA ADENIJI ADELE STREET	225.7	19
OBA AKINJOBI STREET	1350	113
OBANTA CLOSE	110	9
OBASA STREET	277	23
OBASA CLOSE	210	18
OBE STREET	162	14
OBIKUN STREET	128.6	11
ODUDUWA STREET	720	60
ODUDUWA CRESCENT	128.1	11
ODUDUWA CRESCENT LINGAGE	568	47
ODUNUGA STREET	158.1	13
ODUYEMI STREET	478	40
OGUN STREET	120.15	10
OGUNDANA STREET	1091	91

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

OGUNLOWO STREET	425	35
OGUNMADE STREET	50	4
OGUNMODEDE STREET	187	16
OGUNSEFUNMI STREET	150	13
OGUNSOJI CLOSE	320	27
OJEDIRAN CLOSE	90	8
OJIGBA/ADEMILUYI STREET	283.3	24
OJOLOWO STREET	839	70
OLA AYENI STREET	625	52
OLADIPUPO KUKU STREET	380.2	32
OLADOSU STREET	901	75
OLAIDE TOMORI STREET	155	13
OLARIBIRO STREET	120	10
OLAWAYE STREET	175	15
OLAYINKA STREET	158.1	13
OLAYINKA BAMGBOSE STREET	150	13
OLAYODE CLOSE	90	8
1ST OLD SECRETARIAT	420	35
2ND OLD SECRETARIAT	420	35
OLD SECRETARIAT	626.8	52
OLORUNNISOLA STREET	98	8
OLOWU STREET	320.6	27
OLU AKERELE STREET	400	33
OLUGBESAN CLOSE	110	9
OLUWAFUNMILOLA OKIKIDU ST	120.8	10
OLUWALEYIMU STREET	438.1	37
OLUWOLE STREET	250	21
OLUWOLE OMOLE STREET	140	12
OMOLARA STREET	210	18
OMOTAYO OJO STREET	320.6	27
ONDO CLOSE	166	14
OREMEJI STREET	208.5	17
ORIJA STREET	90	8
ORITSHE STREET	750.65	63
ORIYOMI STREET	120.4	10
OSHITELU STREET	127	11

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

OSHO STREET	488.2	41
OSIFILA STREET	461	38
OWODUNNI STREET	310	26
OYEDIRAN CLOSE	70	6
OYELOLA STREET	219	18
OYETUBO STREET	250	21
PEPPLE STREET	120	10
PLANKING STREET	162	14
REGINA COKER STREET	136	11
REGINA OMOLARA CLOSE	180	15
REGINA OMOLARA STREET	224	19
REMI FANIKAYODE	800.3	67
REVEREN BAMIWO OMOGBEHIN	963	80
SALVATION STREET	488.1	41
SAMUEL AWONIYI STREET	176.2	15
SASEGBON 11 STREET	342	29
SEIDU AJIBOWO STREET	215	18
SERIKI ARO STREET	852	71
SEWEMIMO STREET	585.41	49
SEWIDU AJIBOWU STREET	138.2	12
SHANU STREET	230	19
SHOBO AROBIODUN STREET	130	11
SHOWEMIMO STREET	585.4	49
SOBO AROBIODUN STREET	102.8	9
SULE ABUKA STREET	180	15
SULE ABUKA CRESCENT	486.8	41
THOMAS AJUFO STREET	788	66
TINUADE STREET	551	46
TIWALADE CLOSE	150	13
TONADE STREET	310.7	26
TOYIN STREET	670	56
UMMARU ABBASS STREET	551	46
UNITY STREET	368	31
WEMI AKINSOLA STREET	140.8	12
WOLE OGUNJIMI STREET	300	25
WORKS ROAD G.R.A STREET	2290.5	191

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

YINUSA ADENIYI STREET	230.6	19
ABA JOHNSON CRESCENT	990	83
ABEOKUTA	1300	108
ABIGI CLOSE	250	21
ABIODUN JAGUN	450	38
ABISOGUN LEIGH	790	66
ABOABA	345	29
ACME	1567	131
ADEBAYO BANJO	525	44
ADEBOWALE	1800	150
ADEGBESAN ALADE	378	32
ADEGBOLA	972	81
ADEKUNLE FAJUYI	6000	500
ADELEKE	428	36
ADELOWO DOSUNMU	434	36
ADEMILUYI	614	51
ADENIYI JONES	4696	391
ADENUBI CLOSE	210	18
ADEOLA ADEOYE	382	32
ADEPELE	174	15
ADERIBIGBE SHITTA	320	27
ADESHIGBIN	450	38
ADESHINA	244	20
ADETUNJI ADEOBA	131	11
ADEYEMO AKAPO	2090	174
ADEYEMO ALAKIJA	696	58
ADU	398	33
AFARIOGUN	600	50
AFISMAN DRIVE	700	58
AFOLABI AWSANYA	540	45
AFOLABI AINA	420	35
AGBAOKU	646	54
AGORO	430	36
AINA	3300	275
AINA ELEKO	600	50
AJAO	1524	127
AJASA	298	25

Table 33: Streets in Ikeja Local Government and their number of buildings. ...contd

AJAYI	1560	130
AJOKE AKINBAMI	240	20
AKANDE	600	50
AKANMU DOHERTY	400	33
AKIN OSHINYEMI	660	55
AKINLAGUDA	1146	96
AKINLAGUN	846	71
AKINOLA COLE CRESCENT	972	81
AKINSANYA	3400	283
AKINYEMI	700	58
ALFRED OLAIYA	668	56
ALHAJA OMOTAYO LANE	194	16
ALHAJI BASIRU	804	67
ALHAJI DURODENA	180	15
ALHAJI IRAWO	200	17
ALHAJI JIMOH	1160	97
ALI ADESANYA	580	48
ALLEN AVENUE	2600	217
ALLI BALOGUN AVENUE	556	46
ANIKE APENA	266	22
ARAROMI	460	38
AROMIRE	400	33
ASENUGA	220	18
ASHOGBOH	690	58
ASS. WAY / LADOKE OYEJOKE	1200	100
AYINDE SANMI	250	21
AYO ALABI	900	75
AYO ROSIJI	460	38
AYOOLA COKER	1100	92
AYOROSIJI	460	38
BABA YUSUF	1700	142
BALOGUN	1600	133
BANKOLE	580	48
BANKOLE CRESCENT	944	79
BAYO AJAYI	720	60
BAYO DEJONWO	156	13
BAYO SHODIPO	280	23

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

BINTU	410	34
BISI OGABI	200	17
BODE THOMAS CLOSE	190	16
CHURCH	800	67
DEBO AINA OMOLE PHASE1	720	60
DIPE OLU	584	49
DUNLOP	628	52
EBUN	300	25
EFUNLEYE	550	46
EMINA CRESCENT	994	83
EPE CLOSE	208	17
EZEKIEL	672	56
FADEJU ALADURA	692	58
FEMI DERU	190	16
FOLAWEWO AVENUE	630	53
GBEMISOLA	674	56
GBOYEGA KILO	600	50
HAKEEM BALOGUN	3046	254
HENRY ADEFOWOPE CRESCENT	878	73
HENRY CAR STR.	400	33
HERBERT MACURLEY CRESCENT	992	83
IBIJOKE	770	64
IJAIYE	7000	583
IKOSI	2400	200
IPODO	900	75
IREBAWA	200	17
ISAAC JOHN	3010	251
ISHERI	11660	972
ISHERI HOLIDAY INN	600	50
ITOGBE	1090	91
IYALLA	494	41
JACOB NWAKOLO CLOSE	500	42
JACOB SHONOLA	432	36
JAYEIOBA FAJOBI	290	24
JIDE TAIWO	560	47
JINADU DOSUNMU	760	63

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

JOEL OGUNNAIKE	1112	93
JOHN OLUGBO	506	42
JOHNSON	340	28
JOSEPH	300	25
KAFFI	782	65
KAOIRI	772	64
KODESOH	1400	117
KUDETI	1484	124
KUDIRAT ABIOLA	7756	646
LADIPO BATEYE	2354	196
LAGOS STATE ASSEMBLY LINK	168	14
LATEEF JAKANDE	5000	417
LOLA HOLLOWAY	398	33
MAGODO	600	50
MAJEKODUNMI	300	25
MICHAEL OGUN	880	73
MODUPE	376	31
MOJIDI	680	57
MOLADE OKOYA THOMAS	930	78
MOSES ADEBAYO	660	55
NURUDEEN	600	50
OBA FALABI	550	46
OBA ADENIJI ADELE	642	54
OBA AKINJOBI	4142	345
OBA AKRAN AVENUE	4400	367
OBA DOCEMO	870	73
OBA KOSOKO	370	31
OBA LADEJOBI	982	82
OBAFEMI AWOLOWO	8800	733
OBASA	2410	201
OBOKUN AVENUE	242	20
ODEWALE	600	50
ODUDUWA CRESCENT	3932	328
ODUDUWA WAY	2724	227
ODUNIKAN	542	45
ODUNUGA	260	22
OGUNLOWO	854	71

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

OGUNSEFUNMI	460	38
OJIE / MIANUAN	680	57
OJOLOWO	360	30
OJULOWO IMOSHE	400	33
OKE - ITA	100	8
OLA AYENI	650	54
OLA AYINDE	778	65
OLA OLUWA	400	33
OLAIDE BENSON	500	42
OLAIDE TOMORI	324	27
OLALEKE TAIWO	1240	103
OLANREWAJU	600	50
OLAOYINBO	872	73
OLAYEMI ABIOLA	382	32
OLD SECRETARIAT	1000	83
OLOWORA	3300	275
OLOWU	1120	93
OLU AMANA	776	65
OMOTAYO OJO	650	54
OPALEYE	480	40
OPEBI	4400	367
OREMEJI	266	22
ORIJA	510	43
ORİYOMI	296	25
OSHIN	440	37
OSHITELU	276	23
OSHO	1058	88
OSIFILA	700	58
OTIGBA	268	22
OYELEKE	600	50
OYELOLA	600	50
PEPPLE	326	27
PFIZER	3600	300
PLANKING	480	40
POWER LINE	4640	387
REMI FANIKAYODE	3158	263
REV. OGUNBIYI	950	79

Table 33: Streets in Ikeja Local Government and their number of buildings...contd

RISI OJIKUTU	188	16
SALVATION ARMY	1020	85
SARATA	880	73
SASEGBON	800	67
SERIKI ARO	840	70
SHOBO AROBIODU	1318	110
SHOFELA	1012	84
SIMBIAT ABIOLA	565	47
SORINMADE	500	42
TALABI	1560	130
TIWALADE CLOSE	496	41
TOKUNBO ALI	376	31
TONADE	520	43
TOYIN	800	67
TUNDE GABBY	398	33
TUNDE OSILAJA	580	48
UNITY	1200	100
VORI CLOSE	730	61
WAKATI ADURAMI	716	60
WEMCO	3314	276
WORKS RD /OLD SECRETARIAT	1900	158
YETUNDE MORGAN	990	83
TOTAL		25313

APPENDIX 4

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)

LAGOS STATE			
WARDS AND THEIR CODES			
LGA NAME	LGA CODE	WARD NAME	WARD CODE
IKEJA	11	ANIFOWOSHE/IKEJA	01
		OJODU/AGIDINGBI/OMOLE	02
		ALAUZA/OREGUN/OLUSOGUN	03
		AIRPORT/ONIPETESI/ONILEKERE	04
		IPODO/SERIKI ARO	05
		ADEKUNLE VILLAGE/ADENIYI JONES/OGBA	06
		OKE-IRA/AGUDA	07
		ONIGBONGBO/MILITARY CANTONMENT	08
		GRA/POLICE BARRACKS	09
		WASIMI/OPEBI/ALLEN	10

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION

Coding System for Field Operations

State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ANIFOWOSHE/IKEJA	Code	01

POLLING / REGISTRATION UNITS

<u>Name / Location</u>	<u>Code</u>
ANIFOWOSHE PRY. SCH.	001
JUNCTION OF ODUYEMI/INDEPENDENCE ST.	002
ALONG INDEPENDENCE ST.	003
JUNCTION OF AKINREMI/ARAROMI ST.	004
JUNCTION OF ODUYEMI/ARAROMI ST.	005
IN FRONT OF NO. 3 BALOGUN ST.	006
IN FRONT OF NO. 5 NURUDEEN ST.	007
OPEN SPACE AT 5 NURUDEEN ST.	008
IN FRONT OF NO. 50 ABEOKUTA ST.	009
IN FRONT OF NO. 50 ABEOKUTA ST.	010
JUNCTION OF ODUYEMI/OJULOWO IMOSE ST.	011
JUNCTION OF BASIRU OWEH/PLANKING RD.	012
IKEJA LOCAL GOVT. COMMUNITY DEV.	013
IKEJA LOCAL GOVT. COMMUNITY DEV.	014

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ANIFOWOSHE/IKEJA	Code	01
POLLING / REGISTRATION UNITS			
Name / Location	Code		
IN FRONT OF NO. 6 OTIGBA ST.	015		
IN FRONT OF NO. 15 OLAYEMI ST.	016		
OPEN SPACE AT OLAYEMI STREET	017		
IN FRONT OF NO. 16 OSHITELU STREET	018		
JUNCTION OF IDOWU KODESOH ST.	019		
JUNCTION OF IDOWU KODESOH ST.	020		
WITHIN POLICE BARRACKS (KODESOH ST) ✓	021		
JUNCTION OF MODUPE/OSHIFILA ST.	022		
ALONG AKINREMI ST.	023		
IN FRONT OF N.S.O. QTRS. AWOLOWO WAY ✓	024		

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	OJODU/AGIDINGBI/OMOLE	Code	02
POLLING / REGISTRATION UNITS			
Name / Location		Code	
IN FRONT OF NO. 46, OREMETA ST.		001	
IN FRONT OF NO. 40, OREMETA ST.		002	
JUNCTION OF AINA/SONIBARE ST.		003	
ALONG AINA ST.		004	
JUNCTION OF MOSES ADEBAYO/ADEWALE ST.		005	
JUNCTION OF BALE/ADEBOWALE ST.		006	
ALONG ADEGOKE AJAYI ST.		007	
JUNCTION ISHERIRD/KOSOKO ST.		008	
BY YAKOYO ST.		009	
ALONG GBADAMOSI ST.		010	
IN FRONT OF AFRICANA HOTEL ODOZI ST.		011	
OJODU PRY. SCH.		012	
OJODU PRY. SCH.		013	
ALONG JIDE TAIWO ST.		014	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	OJODU/AGIDINGBI/OMOLE	Code	02
POLLING / REGISTRATION UNITS			
Name / Location		Code	
JUNCTION OF ISHOLA BELLO/NEW ISHERI RD.		015	
LONG ISHOLA BELLO ST.		016	
ODU GRAMMAR SCHOOL		017	
ODU GRAMMAR SCHOOL		018	
JUNCTION OF ALH. ABASS/MOSES ADEBAYO		019	
LONG OLALEKE TAIWO ST.		020	
LONG OLALEKE TAIWO ST.		021	
JUNCTION OF OLAWALE/OBOKUN ST.		022	
LONG OLAJIDE TAIWO		023	
JUNCTION OF BASIRU/OLAJIDE AVENUE		024	
JUNCTION AKINSANYA/SULE ABORE ST.		025	
LONG AKINSANYA ST.		026	
JUNCTION OF ISHERI/OLAWALE (NEAR AGIDINGBI MOSQUE)		027	
OMOLE GRAMMAR SCHOOL		028	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	1A
LGA Name	IKEJA	Code	11
Ward Name	OJODU/AGIDINGBI/OMOLE	Code	02
POLLING / REGISTRATION UNITS			
Name / Location	Code		
OMOLE GRAMMAR SCHOOL	029		
OMOLE GRAMMAR SCHOOL	030		
JUNCTION OF AKINSOWON/ISHOLA BELLO ST.	031		
ALONG ADENIYI OKE ST.	032		
GOVT. TECHNICAL COLLEGE AGIDINGBI	033		
AGIDINGBI GRAMMAR SCHOOL	034		
AGIDINGBI GRAMMAR SCHOOL	035		
IN FRONT OF LAGOS STATE QTRS. 139 AWOLowo WAY	036		
JUNCTION OF ALAUSA POLICE STATION/AWOLOWO WAY	037		
BESIDE ALAUSA POLICE STATION	038		
ALONG KOSOKO ST.	039		
AT GOVT. TECHNICAL COLLEGE	040		
AT GOVT. TECHNICAL COLLEGE	041		
ALONG ISHOLA BELLO STREET	042		

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
GA Name	IKEJA	Code	11
Ward Name	OJODU/AGIDINGBI/OMOLE	Code	02
POLLING / REGISTRATION UNITS			
Name / Location		Code	
FRONT OF MOSHOOD ABIOLA GARDEN GATE		043	
MOSHOOD ABIOLA GARDEN GATE OFF JUBILEE AVENUE		044	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	II
Ward Name	ALAUJA/OREGUN/OLUSOGUN	Code	03
POLLING / REGISTRATION UNITS			
Name / Location	Code		
JUNCTION OF FAGBOHUN/BELO ST.	001		
JUNCTION OF ODEWALE/ALAUJA	002		
ST. PETER'S ANGLICAN TRY. SCHOOL	003		
JUNCTION OF KAFEAWO/LOWO WAY	004		
JUNCTION OF DAMIGBOSE/KADIRI ST.	005		
ALONG DAMIGBOSE ST.	006		
ALONG IMALE-FALAFIA ST.	007		
JUNCTION OF MEGOB/BRANDLE ST.	008		
ALONG OREGUN RD. (IN FRONT OF APOSTOLIC CHURCH)	009		
IN FRONT OF 16, BALOGUN ST.	010		
IN FRONT OF 22, OSHIN ST.	011		
IN FRONT OF NO. 20, JOGUNSIMI ST.	012		
JUNCTION OF AWOSEYIN/LAWAL ST.	013		
JUNCTION OF OYELFKE/OSHIN	014		

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	1A
LGA Name	IKEJA	Code	11
Ward Name	ALAUSA/OREGUN/OLUSOGUN	Code	03
POLLING / REGISTRATION UNITS			
Name / Location	Code		
OPP NO 13, OREGUN RD.	015		
JUNCTION OF OGUNDI & OLADAPO ST.	016		
JUNCTION OF BANKOLE & OLADAPO ST.	017		
JUNCTION OF MUSTAPHA & OLANREWaju ST.	018		
OPEN SPACE AT MUSTAPHA ST.	019		
IN FRONT OF NO. 10 JAYOLA ST.	020		
JUNCTION OF OREGUN & OLANREWaju	021		
JUNCTION OF ALLI & JAYINDE ST	022		
JUNCTION OF OLA ADESEGBA & OREGUN RD.	023		
OPEN SPACE AT ADESEGBA ST.	024		
JUNCTION OF IBIJOKE & OREGUN	025		
ITEJA LOCAL GOV. FAMILY HEALTH CLINIC	026		
JUNCTION OF OLANIYI & OLOMANIAN	027		
JUNCTION OF LAWAL & OREGUN	028		

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ALAUJA/OREGUN/OLUSOGUN	Code	03
POLLING / REGISTRATION UNITS			
Name / Location	Code		
OPEN SPACE AT LAWAL ST.	009		
JUNCTION OREGUN STREET	030		
JUNCTION OF ADEKE/ ADEKUGA ST.	031		
JUNCTION OF OLA ADESEGBA/ ODUNUKAN ST	032		
OREGUN HIGH SCH.	033		
OREGUN HIGH SCH.	034		
OLUSOGUN PRV. SCH.	035		
OLUSOGUN PRV. SCH.	036		
OLUSOGUN PRV. SCH.	037		
ALONG OLORUNFEMI (BEHIND PHILLIPS)	038		
ALONG TADON TABON ST.	039		
ALONG TADON TABON ST.	040		
ALONG HASSAN ST.	041		
IN FRONT OF MIDDUM INC. HOUSING SCHEME	042		

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ALAUZA/OREGUN/OLUSOGUN	Code	03
POLLING / REGISTRATION UNITS			
Name / Location	Code		
S/FRONT OF NO. 19 OLADIGO ST.	043		
JUNCTION OF ODEWALE/ALAUZA ST.	044		
LONGIBUKE ST.	045		
LONGUGUNDE ST.	046		
JUNCTION OF KAFFAWOLOWO WAY ALAUZA	047		
N/FRONT OF S. BODEDEWALE CLOSE	048		

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	1A
LGA Name	IKEJA	Code	11
Ward Name	AIRPORT/ONIPETESI/ONILEKERE	Code	04
POLLING / REGISTRATION UNITS			
Name / Location		Code	
IN FRONT OF BLK. D21 N.A.A. QTRS.		001	
IN FRONT OF BAL ZONE A.N.A.A. QTRS.		002	
IN FRONT OF BAL ZONE A.N.A.A. QTRS.		005	
OPP NO. 12 MICHAEL AKINOLA ST.		004	
OPP NO. 18 BABARINJI ST.		005	
OPP NO. 39 ADEPTI ST.		006	
STATE PRY. SCH. ONIPETESI		007	
SCS Y. PRY. SCH. ONIPETESI		008	
ONILEKERE PRY. SCH.		009	
ALONG JOHNSON ST.		010	
IN FRONT OF NO. 18 EGBA ST.		011	
IN FRONT OF NO. 18 EGBA ST.		012	
ONILEKERE PRY. SCH.		013	
ALONG OLUKOWI LAIYE OFF EGBA ST.		014	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	1A
LGA Name	IKEJA	Code	11
Ward Name	AIRPORT/ONIPETES/ONILEKERE	Code	04
POLLING / REGISTRATION UNITS			
Name / Location		Code	
SECTION OF EBUN OLUWA/SAIDU ST		015	
LONG ONILEKERE ST.		016	
LONG ABUOLA ST.		017	
SECTION OF OGUNSO/A MORTUNE AVENUE		018	
LONG OGUNSO ST.		019	
LONG IREPODUN ST		020	
SECTION OF SOLOMONI GRA ST		021	
ITIN VALLEY ESTABL		022	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	IPODO/SERI KI ARO	Code	05
POLLING / REGISTRATION UNITS			
Name / Location	Code		
JUNCTION OF KODESOHORIYOMI ST.	001		
JUNCTION OF ORLYOMI/TONADE ST.	002		
OPEN SPACE AT TONADE ST.	003		
IN FRONT OF NO. 34 IPODO ROAD	004		
ALONG IPODO ROAD	005		
IN FRONT OF NO. 17 ILLO ST.	006		
IN FRONT OF NO. 16 ILLO ST.	007		
ALONG LORTIMOSE ST.	008		
IN FRONT OF NO. 19 OLOWU ST.	009		
IN FRONT OF NO. 6 SEIDU AJIBOWU ST.	010		
IN FRONT OF NO. 38 UNITY ROAD	011		
IN FRONT OF NO. 11 ALUNWA ST.	012		
IN FRONT OF NO. 11 ATUNWA ST.	013		
JUNCTION OF OLUWALEYIMI/ALAPASANWO ST.	014		

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
GA Name	IKEJA	Code	11
Ward Name	IPODO/SERIKI ARO	Code	05
POLLING / REGISTRATION UNITS			
Ward / Location	Code		
DAY OUTSIDE ENTRANCE OLUWALAYEMI	015		
ORIGIMCHI ST.	016		
KUNIKO ALI FRY. SCH.	017		
NCTION OF ADELLYE/AMUSA OLOYEDE	018		
LONG OLADIPOLUKU ST.	019		
NCTION OF ABIODUN WEMI AKINSOLA ST.	020		
FRONT OF NO. 6, MUSLIM AVENUE	021		
NCTION OF MUSTIMYINUSA ADENI ST.	022		
NCTION OF OLADIPOLUKU/ILUNADE ST.	023		
NCTION OF TOYIN/FUNMILOLA OKIKIOLU ST.	024		
P. AKINTOYE SOGUNLE FRY. SCH.	025		
P. AKINTOYE SOGUNLE FRY. SCH.	026		
LONG IZIKI ST.	027		
NCTION OF ADESINA/OLUSHE ST.	028		

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	IPODO/SERI KI ARO	Code	05
POLLING / REGISTRATION UNITS			
Name / Location		Code	
OPP. HOUSE 19 ORISHE ST.		029	
JUNCTION OF FADEYI ALADURA/OBOKUN ST.		030	
END OF DIPEOLU ST.		031	
JUNCTION OF ADESINA/CHURCH		032	
IN FRONT OF NO. 1 BISI OGABI ST.		033	
IN FRONT OF NO. 10 BISI OGABI ST.		034	
JUNCTION OF ELERUWA/ADEOJO ST.		035	
JUNCTION OF KOFOWOROLA/OGUNLOWO ST.		036	
JUNCTION OF KOFOWOROLA/OGUNLOWO ST.		037	
ALONG SAMOTAFOLA ST.		038	
AT OTEGBOLA VILLAGE		039	
WITHIN AGBEDE VILLAGE		040	
WITHIN AGBEDE VILLAGE IN FRONT OF CAR WASH		041	
IN FRONT OF NO. 15 SERIKI ARO		042	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION

Coding System for Field Operations

State Name	LAGOS	Code	LA
Local Government Area Name	IKEJA	Code	11
Ward Name	IPODO/SERI KI ARO	Code	05

POLLING / REGISTRATION UNITS

<u>Name / Location</u>	<u>Code</u>
ONG SERIKI ARO	043
SECTION OF JOHN AKINJIDE/SERI KI ARO	044
SECTION OF SANU/AFARIOGUN ST.	045
SECTION AJAO/OBANTA	046
OPEN SPACE AT OBANTA ST.	047
SECTION OF JACOB BANJOKO/OBEY AJASA ST.	048
ASOGBON BUS-STOP	049
FRONT OF NO. 30 OBA AKRAN ST.	050
SECTION OF ILLO/IPODO	051
ONG FADEYI ALADURA ST.	052
ONG ELERUWA ST.	053
OPEN SPACE AT GBAJOBI ST.	054
BEHIND IKEJA YOUTH CENTRE OLUWALEYIMU	055

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ADEKUNLE VILL./ADENIYI JONES/OGBA	Code	06
POLLING / REGISTRATION UNITS			
Name / Location		Code	
OPEN SPACE AT MURI BUSARI ST.		001	
OPEN SPACE AT MURI BUSARI ST.		002	
OPEN SPACE AT AKINOLA COLE		003	
ADENIYI JONES PRY. SCH.		004	
JUNCTION OF ORIMOLADE/ALH. JIMOH ST.		005	
OPEN SPACE AT ADENIYI JONES (NEAR PENITER)		006	
ALONG ADENIYI JONES		007	
OPEN SPACE AT EFUNLEYE ST.		008	
JUNCTION OF ALH. JIMOH/BADAGRY		009	
JUNCTION OF ALH. JIMOH/BADAGRY		010	
JUNCTION OF ODEGBAMI/EFUNLEYE ST.		011	
JUNCTION OF AKINLAGUDA/FATAI DOHERTY		012	
ALONG OYERO CLOSE		013	
OGBA PRY. SCH.		014	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ADEKUNLE VILL./ADENIYI JONES/OGBA	Code	06
POLLING / REGISTRATION UNITS			
Name / Location		Code	
STATE PRY. SCHL.		015	
STATE PRY. SCH. OGBA		016	
BEHIND BLK. 36 OGBA		017	
AT THE BACK OF BLK. 9 OGBA		018	
BESIDE BLK. 45 OGBA		019	
OGBA GRAMMAR SCHOOL		020	
IN FRONT OF OGBA POLICE STATION		021	
IN FRONT OF OGBA POLICE STATION		022	
BEHIND OGBA POLICE STATION		023	
OPEN SPACE AT ALH. JIMOH ST.		024	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	OKE-IRA/AGUDA	Code	07
POLLING / REGISTRATION UNITS			
Name / Location		Code	
ALONG AKINOLA ST. AGUDA		001	
ALONG OYATOGUN ST.		002	
JUNCTION OF AJAYI/FOLAWEWO ST.		003	
JUNCTION OF AJAYI/FOLAWEWO ST.		004	
ALONG FOLAWEWO ST.		005	
JUNCTION OF ATINUKE MOBOLAJI ST.		006	
ALONG ATINUKE ST.		007	
ALONG SHORINMADE ST.		008	
ALONG SHORINMADE ST.		009	
JUNCTION OF FADEJI MUYIBI ST.		010	
JUNCTION OF OREKUPOLATI/OKUNWO ST.		011	
IN FRONT OF NO. 5 OLADOYINBO ST.		012	
IN FRONT OF NO. 5 OLADOYINBO ST.		013	
IN FRONT OF NO. 30 OLADOYINBO ST.		014	

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Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
GA Name	IKEJA	Code	11
Ward Name	OKE-IRA/AGUDA	Code	07
POLLING / REGISTRATION UNITS			
Name / Location		Code	
JUNCTION OF AMUDATU/KOLA DAVID		015	
JUNCTION OF AMUDATU/KOLA DAVID		016	
JUNCTION OF OLANIPEKUN/OTUYELU ST.		017	
LONG FADEYI ST.		018	
LONG FADEYI ST.		019	
LONG OGUNSOLA ST.		020	
LONG ADEDOYIN ST.		021	
LONG ADEDOYIN ST.		022	
JUNCTION OF TUNDE GABBY/OSAYE		023	
JUNCTION OF TUNDE GABBY/OSAYE		024	
LONG OSAYE ST.		025	
LONG OSAYE ST.		026	
JUNCTION OF SHONOLA/ISHERI RD.		027	
LONG SHONOLA ST.		028	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	OKE-IRA/AGUDA	Code	07
POLLING / REGISTRATION UNITS			
Name / Location		Code	
ALONG SHONOLA ST.		029	
JUNCTION OF ONDO/AJAYI RD.		030	
JUNCTION OF ABOABA/AJAYI		031	
JUNCTION OF AJAYI/ADESINA		032	
ALONG ADESINA ST.		033	
ALONG IREPODUN ST.		034	
ALONG OSAYEMI ST.		035	
IN FRONT OF NO. 100 AYO ALABI ST.		036	
IN FRONT OF NO. 100 AYO ALABI ST.		037	
ALONG IFESOWO POST.		038	
ALONG SUNMONU ST.		039	
JUNCTION OF OLOGUN/OTUNBA ST.		040	
ALONG AYANLEYE ST.		041	
ALONG FADAHUNSI ST.		042	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	OKE-IRA/AGUDA	Code	07
POLLING / REGISTRATION UNITS			
Name / Location		Code	
OKEIRA PRY. SCH.		043	
JUNCTION OF MODINATU/TREBAWA		044	
JUNCTION OF LAWSON/OYEDIRAN		045	
ALONG AYO ALABI ST. IN FRONT OF SHOPPING CENTRE		046	
ALONG AYO ALABI ST. IN FRONT OF SHOPPING CENTRE		047	
IN FRONT OF NO. 52/54 AYO ALABI		048	
JUNCTION OF BABATUNDE/OLANIYAN		049	
JUNCTION OF MORENIKE/ADEDIRAN ST.		050	
JUNCTION OF BAYO ADEYEMO/OGUNDELE		051	
ALONG BAYO ADEYEMO ST.		052	
ALONG OGUNSOLA ST.		053	
AT MIDDLE OF ADESINA ST.		054	
ALONG FADUNSI ST.		055	
OPEN SPACE AT AYO ALABI ST.		056	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
<u>Coding System for Field Operations</u>			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	OKE-IRA/AGUDA	Code	07

POLLING / REGISTRATION UNITS	
<u>Name / Location</u>	<u>Code</u>
JUNCTION OF ABOABA/AJAYI	057
IN FRONT OF CHERUBIM & SERAPHIM CHURCH, CELESTIAL AVENUE POWER LINE	058

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Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ONIGBONGBO	Code	08
POLLING / REGISTRATION UNITS			
Name / Location		Code	
ALONG OLORUNSO LA ST.		001	
WITHIN MOSAFEJO VILL.		002	
JUNCTION OF IYA OLOYE/ARAROMI ST.		003	
JUNCTION OF FASHOLA/IYA OLOYE ST.		004	
JUNCTION OF IBADIARAN/OMOLAKE ST.		005	
JUNCTION OF IBADIARAN/OMOLAKE ST.		006	
JUNCTION OF AINA ELEKO/OLAIDE BENSON		007	
IN FRONT OF NO. 1 ALH. IRAWO ST.		008	
COMMUNITY HALL		009	
ALONG IJAOLA ST.		010	
BESIDE ONIGBONGBOB/STOP AJEGUNLE		011	
IN FRONT OF NO. 1B ADEKUNLE ST.		012	
IN FRONT OF NO. 3 ADEKUNLE FAJUYI		013	
IN FRONT OF NO. 6 ADEKUNLE FAJUYI		014	

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Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION

Coding System for Field Operations

State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ONIGBONGBO	Code	08

POLLING / REGISTRATION UNITS

<u>Name / Location</u>	<u>Code</u>
IN FRONT OF NO. 9 ADEKUNLE FAJUYI	015
OPEN SPACE AT NEPA TRANS ST. FAJUYI RD.	016
JUNCTION OF ABIEYWU AMASIN/ADEKUNLE FAJUYI	017
IN FRONT OF NO. 39B ADEKUNLE FAJUYI	018
OPP. G.R.A. PRY. SCH. FAJUYI	019
OPP. G.R.A. PRY. SCH. FAJUYI	020
OPP. GLORIFIED ACAD. SEC. SCH. FAJUYI	021
OPP. C.G.S.S. RES (MECH. W/SHOP) FAJUYI	022
JUNCTION OF FAJUYI/ODUDUWA WAY	023
IN FRONT OF NEW NO. 37	024
OPP. NO. 39 FAJUYI RD.	025
OPP. NO. 39 FAJUYI RD.	026
JUNCTION OF OLADIPO BATEYE/FAJUYI RD.	027
ALONG ARAROMI ST.	028

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	ONIGBONGBO	Code	08
POLLING / REGISTRATION UNITS			
Name / Location		Code	
COMMUNITY HALLY ONIGBONGBO		029	
JUNCTION OF AINA ELEKO/OLAIDE BENSON ST.		030	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	GRA/POLICE BARRACKS	Code	09
POLLING / REGISTRATION UNITS			
Name / Location		Code	
POLICE STATION GATE RESIDE ADEBAYO NIDOGAS		001	
IN FRONT OF FED. MIN. OF WORKS/HOUSING GATE B/ANTHONY		002	
IN FRONT OF BLK. A POLICE BARR.		003	
BESIDE PENSON OFFICE GATE POLICE BARR.		004	
BESIDE PENSON OFFICE GATE POLICE BARR.		005	
BESIDE WORKS GATE POLICE BARRACKS		006	
IN FRONT OF BLK. 3 POLICE BARR. BEHINDE FORCE H.Q.		007	
BESIDE MAGISTRATE COURT COMP.		008	
IN FRONT OF OLD SECRETARIAT GATE OBA AKINJOBI ST.		009	
IN FRONT OF NO. 1, OGUNBIYI VILLAGE		010	
IN FRONT OF CHURCH OF CHRIST OF NIG. OPP. BLK 3 P/BARRACKS		011	
IKEJA HIGH SCHOOL		012	
G.R.A. PRY. SCH.		013	
JUNCTION OF ESUGBAYI/AYOOLA COKER ST.		014	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

INDEPENDENT NATIONAL ELECTORAL COMMISSION			
Coding System for Field Operations			
State Name	LAGOS	Code	LA
LGA Name	IKEJA	Code	11
Ward Name	GRA/POLICE BARRACKS	Code	09
POLLING / REGISTRATION UNITS			
Name / Location		Code	
LAGOS STATE PUB. SERVICE CLUB, SOBO AROBIODU		015	
OPEN SPACE AT NO. 29 LADOKE AKINOLA		016	
JUNCTION OF ISAAC JOHN/OBA DOCEMO ST.		017	
ALONG OBA DOCEMO ST.		018	
ALONG ODUDUWA WAY		019	
IN FRONT OF NO. 78 ODUDUWA CRESCENT OPP/AMUSEMENT PARK		020	
IN FRONT OF NO. 78 ODUDUWA CRESCENT OPP/AMUSEMENT PARK		021	
JUNCTION OF REMI FANIKAYODE/SASEGBON ST.		022	
IN FRONT OF BLK. A POLICE BARRACKS, IKEJA		023	
IN FRONT OF NATIONAL DIRECTORATE OF EMPLOYMENT, ISAAC JOHN ST.		024	
IN FRONT OF OLD SECRETARIAT MOSQUE OBA AKINJOBI		025	

Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

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Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

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Table 34: Polling units per ward in Ikeja Local Government Source: Independent National Electoral Commission (2000)..contd

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