AN ASSESSMENT OF THE PROVISION OF INFRASTRUCTURE UNDER THE PUBLIC PRIVATE PARTNERSHIP HOUSING SCHEME IN ABUJA

BY

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DECEMBER, 2015

DECLARATION

I declare that the work in this thesis **An Assessment of the Provision of Infrastructure under the Public Private Partnership Housing Scheme in Abuja** has been carried out by me in the Department of Building. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at this or any other Institution.

Michael Ejugwu OWOICHO Date

CERTIFICATION

This thesis entitled **"AN ASSESSMENT OF THE PROVISION OF INFRASTRUCTURE UNDER THE PUBLIC PRIVATE PARTNERSHIP HOUSING SCHEME IN ABUJA"** by Michael Ejugwu OWOICHO meets the regulations governing the award of the degree of Master of Science in Construction Management of the Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This research work is dedicated to God Almighty for His goodness towards me.

Table of Contents

Page

Title Page……i

Declaration…..……ii

Certification……...……iii

Acknowledgements……iv

Dedication……...v

Table of Contents……...……vi

List of Tables……..x

List of Figures……....xi

List of Appendices……xii

Abstract……xiii

1.0 INTRODUCTION.....1

1.1 Background to the Study.....1

1.2 Statement of the Research Problem 3

1.3 Justification of Study 4

1.4 Aim and Objectives.....5

1.4.1 Aim.....5

1.4.2 Objectives.....5

1.5 Scope and Limitation 6

1.5.1 Scope.....6

1.5.2 Limitation.....6

2.0 LITERATURE REVIEW.....7

2.1 Concept of Housing.....7

2.2 The Urban Housing Scene in Nigeria.....8

2.3 Review of Housing Policies.....10

2.4 Public Private Partnership in Housing in Nigeria 12

2.4.1 Overview of Public Private Partnership Housing in Abuja 15

2.4.2 Land Allocation of Public Private Partnership in Housing in Abuja 16
2.4.3 The Development Lease Agreement 19
2.4.4 The Goals and Requirements of the Partnership 20
2.5 Infrastructure 21
2.5.1 Categories and Components of Infrastructure 22
2.6 The Provision of Infrastructure in Nigeria 24
2.6.1 Electricity 25
2.6.2 Water Supply 25
2..6.3 Transportation 26
2.6.4 Telecommunication 26
2.7 Real Estate Developer 27
2.8 Challenges in the Provision of Housing and Infrastructure under the Public Private Partnership Arrangement in Abuja 28
2.8.1 Poor Participation by the Government 28
2.8.2 Inadequate Planning 29
2.8.3 Finance Constraints 29
2.8.4 Poor Monitoring and Supervision 30
2.8.5 High Cost of Construction 31
2.8.6 Negative Effect on the Affordability of the Housing Units 31
2.8.7 Inconsitency in government 32
2.8.8 Delayed Detailed Land Use and Site Development Plans 32
2.8.9 Risk of low returns on investment 32
2.8.10 Increasing Demands due to rapid urbanization 32
2.8.11 Lack of Professionals 33
2.8.12 Delay by Subcontractors 33
2.8.13 High Infrastructure Standard 33
2.9 **Practices to enhance the Provision of Infrastructure in the PPP Housing Scheme** 34

2.10 Effects of Infrastructure on Property Values 35

2.11 Impact of Infrastructure on Health 36

3.0 RESEARCH METHODOLOGY 38

3.1 Research Design 38

3.2 Study Area 41

3.3 Population and Sample 41

3.3.1 Population 41

3.3.2 Sampling Size and Sampling Technique 41

3.4 Data Collection Instrument 45

3.4.1 Questionnaire Design 45

3.4.2 Checklist Design 45

3.5 Data Collection Technique 46

3.6 Data Analysis Technique 46

3.6.1 Relative Importance Index (RII) 46

4.0 DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS 48

4.1 Data Presentation and Analysis 48

4.2 Questionnaire Response from Private Estate Developers 48

4.2.1 Working Experience of Respondents 49

4.2.2 Academic Qualification of Respondents 49

4.2.3 Category of Developer 50

4.2.4 Developers' Involvement in Infratsructure Provision under PPP Scheme within Abuja 51

4.2.5 Developers Awareness to the Importance of Infrastructure in Housing Delivery 52

4.2.6 Developers' Response to the Stage Infrastructure is Provided in Housing Estates 52

4.2.7 Developers' Source of Finance used in the Provision of Infrastructure 53

4.2.8 Developers' Level of Participation in Infrastructure Delivery in Housing Estates 54

4.2.9 Type of Labour Employed in the Provision of Infrastructure in PPP Housing Estates 54

4.2.10 Factors Affecting the Provision of Infrastructure in Estates under the PPP Scheme 55
4.2.11: Practices to Enhance the Provision of Infrastructure in PPP Estates 57
4.3 Compliance to Infrastructure Provision in Housing Estates 59
4.3.1 Breakdown of checklist used 59
4.3.2 Year of Establishment of Estates. 59
4.3.3 Type of Residential Buildings in the Estates Visited 60
4.3.4 Provision of Paved Access Road by Private Estate Developers in Estates 61
4.3.5 Provision of Pipe Borne Water by Private Estate Developers in Estates 61
4.3.6 Provision of Drainages by Private Estate Developers in Estates 62
4.3.7 Provision of Street Lights by Private Estate Developers in Estates 62
4.3.8 Provision of sewer lines by Private Estate Developers in Estates 63
4.3.9 Provision of Electricity by Private Estate Developers in Housing Estates 63
4.3.10 Provision of Shopping Complex by Private Estate Developers in Estates 64
4.3.11 Provision of Recreational Park by Private Estate Developers in Estates 64
5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS 65
5.1 Summary of the Findings 65
5.2 Conclusion 66
5.3 Recommendations 67
5.4 Contributions To Knowledge 67
5.5 Recommendation for Further Research 68
REFERENCES 69
APPENDICES 77

List of Tables

Table 2.1: Mass Housing Land Allocation by Districts in the First Phase of Allocation.... 17
Table 2.2: Total Land Allocation for Mass Housing in FCT Abuja..... 18
Table 3.1: Names of Housing Estates Visited 43
Table 4.1: Questionnaire Administred to Private Estate Developers 49
Table 4.2: Years of Working Experience of Respondents..... 49
Table 4.3: Developer's Catergory..... 51
Table 4.4: The Involvement of Developers in the Provision of Infrastructure in Housing Estates 51
Table 4.5: The Awareness of Developers to the Importance of Infrastructure in Housing Estates 52
Table 4.6: Stage at which Infrastructure are Provided in Housing Estates..... 53
Table 4.7: Source of Finance used in the Provision of Infrastructure 53
Table 4.8: The Labour Employed in the Provision of Infrastructure in PPP Housing Estates 55
Table 4.9: Developers' Perception on the Practices Affecting the Provision of ..... Infrastructure in Housing Estates under PPP scheme..... 56
Table 4.10: Developers' Perception on Practices that would Enhance the Provision of Infrastructure in Housing Estates under the PPP Scheme 58
Table 4.11: Breakdown of Checklist used..... 59
Table 4.12: Residential Buildings in the Estates Visited..... 60
Table 4.13: The Availability of Paved Access Roads in Estates..... 61
Table 4.14: The Availability of Pipe Borne Water in Estates 61
Table 4.15: The Availability of of Street Lights in Estates 62
Table 4.16: The Availability of Sewer lines in Estates..... 63
Table 4.17: The Availability of Electricity in Estates 63
Table 4.18: The Availability of Shopping Complexes in Estates..... 64
Table 4.19: The Availability of Receational Parksin Estates 64

List of Figures

Figure 2.1: Conceptual Framework for Assessing the Role of Government Agencies in PPP . Housing in Nigeria……..14

Figure 3.1: Method of Research Design 38

Figure 4.1: The Academic Qualification of Respondents..... 50

Figure 4.2: Participation of Developers in the Infrastructure Delivery of Infrastructure 54

Figure 4.3: Year of Establishment of Estates 60

Figure 4.4: Availability of Drainage in Housing Estates..... 62

List of Appendices

Appendix I: Questionnaire……...…….77

Appendix II: Checklist…...……...……80

Abstract

The study focused on the provision of infrastructure in public private partnership housing scheme by estate developers in Abuja. Cases of no and poor infrastructure have been reported by residents in estates under this scheme. Adequate infrastructure plays an important role to the wellbeing of individuals in any society hence the need for this study. The research administered 63 questionnaires to private estate developers randomly in order to assess the factors affecting the provision of infrastructure in public private partnership housing scheme. A sample size of 56 estates was selected to ascertain the compliance of private estate developers in the provision of infrastructure, a checklist was used for this purpose. From the research findings, the inability of government to provide primary infrastructure to districts, insufficient finance and high interests on loan ranked as the high significant factors affecting the provision of infrastructure. Early provision of primary infrastructure by government, availability of funds to provide infrastructure in estates, low interest on loans, provision of subsidies on materials by government and availability of long term loans ranked as the high significant practices that would enhance the provision of infrastructure in housing estates under the public private partnership arrangement. From the estates visited, there is poor provision of sewer lines (0%), water supply (10.94%), shopping facility (14.6%) and recreational parks (29.2%). From the findings, it was concluded that government's inability to provide primary infrastructure in districts is the most significant factor affecting the provision of infrastructure, while early provision of infrastructure in districts by government and availability of loans and subsidies for developers are practices that would enhance the provision of infrastructures in PPP housing scheme. The research

recommends active participation from the government in the provision of primary infrastructure, the provision of soft loans and subsidies for private estate developers.

CHAPTER 1

INTRODUCTION

1.1 Background to the Study

Housing has been viewed as the process of delivering a large number of residential buildings on a permanent basis, with sufficient physical infrastructure and social amenities, in planned, decent, safe and sanitary neighborhoods (The Federal Ministry of Works and Housing, 2002; Ibrahim and Mbamali, 2013). Rapid growth in population creates high demand towards shelter and efficient supply and distribution of basic utilities and services for city dwellers (Bala and Bustani, 2009). In most urban centers, the problem of housing is not only restricted to quantity but to the poor quality of available housing units (Ajayi and Omole, 2012). According to Coker *et al*., (2007), a satisfactory home is one in a suitable living environment with portable water, adequate shelter and other services and facilities. The housing condition of a country is a pointer to the health motivation, economic well-being and the social circumstances of her citizens. Housing affects the life of an individual as it provides the space for protection, privacy, economic activities, recreation and livelihood (Ajayi and Omole, 2012).

The introduction of Public Private Partnership in housing in Nigeria started in the early 1990s with the introduction of National Housing Policy (NHP) (Ademuyi, 2010). According to Ukwayi *et al.,* (2012), the poor performance of the National Housing Policy in meeting its set goals and objectives led to a comprehensive review. A new approach to the partnership between the government and private sector in providing housing and infrastructure was initiated in the year 2000 (National Technical Working Group on Housing, 2009). According to Ukoje and Kanu, (2014) the partnership between the Federal Capital Territory

Administration (FCTA) and the private sector started in the year 2000 due to the inability of government to meet the high demands for housing and its needed infrastructure. The purpose of partnership was to reduce the burden of providing housing and infrastructure on the part of the government and increase the participation of the private sector (Ibrahim and Kwankur, 2012). The FCTA (2008), identifies twenty seven districts allocated for the housing scheme under the PPP arrangement between (2000-2011). Ibrahim and Kwankur (2012), identifies access roads, pipe borne water, drainages, sewer systems, electricity, recreational parks, shopping complexes and street lights as part of the infrastructure to be provided under the PPP housing scheme. Abdullahi and Aziz (2010), asserted that the growing population witnessed in Abuja and the inability of government to meet its obligation towards the provision of housing and infrastructure gave rise to the partnership.

In recent times, the development of cities and its infrastructural needs around the world is achieved by joint efforts of both the government and private individual efforts and initiatives. Nigeria operates a three tier system of government; the federal government, State government and local government, all required to provide affordable and comfortable housing and infrastructure to the people. The delivery of basic utilities and services especially housing, is partly the responsibility of the government, which has been handicapped by financial constraints, political instability and many other issues (Ademiluyi and Raji, 2008).

In developing countries such as Nigeria, poor housing delivery has been attributed to insufficient mechanisms and systems for land allocation, funding, mortgage institutions and

infrastructure (Bala and Bustani 2008; Encarta, 2007). One major part of urban problem with respect to housing is the poor state of the infrastructures (Ajanlekoko, 2001; Ajayi and Omole, 2012). Giddings (2007), observed that one of the most serious policy constraints to scaling up investments in housing and urban infrastructure in Africa is that in most countries in the region the sector is not accorded the priority it should command in national planning strategies and therefore receives short shrift in attracting budgetary resources.

Ajibola *et al*., (2013) identified that where urban infrastructure is adequately provided and efficiently managed, productive and profitable land uses are usually attracted towards such area. Thus, the study intends to assess the provision of infrastructure under the PPP housing scheme in Abuja

1.2 Statement of the Research Problem

As urban areas in developing countries continue to experience rapidly growing population, there are signs that despite the important role infrastructure plays in physical and socio-economic development of individuals and communities, and the efforts made in tackling the situation, the problem is escalating (Ibem, 2009). According to Umoh (2012), insufficient infrastructure is one of the major problems facing the housing scheme under the PPP arrangement. According to Abdullahi *and* Aziz (2010), there are many estates in districts allocated for PPP housing scheme for more than ten years without the provision of infrastructure.

Code Wit News (2013), reported a dispute between a private estate developer and residents of Jubilation Bethel Estate, Lokogoma, the residents complained about no provision of access roads, drainages, electricity and street lights by the developers. The estate falls under the districts allocated for housing scheme under the PPP arrangement. The quality and

coverage of infrastructure services have a major impact on living standards and economic growth, yet it is estimated that two billion of the world's poor people lack access to adequate sanitation, two billion lack access to electricity, one billion lack access to clean water (United Nations, 2002). This is to say that infrastructure is a basic necessity in any community as it contributes to the wellbeing of the inhabitants yet the provision is limited.

The remarkable rise in population, number and size of cities over the past few years have manifested in the acute shortage of dwelling units which resulted in overcrowding, high rents, poor urban living conditions, and low infrastructure services and indeed high crime rates (Ajayi and Omole, 2012). The reality in many urban areas in Africa is that there is poor delivery of infrastructure necessary for housing, this is due to insufficient finance and capacity to deliver, coupled with greater responsibilities and mandates for municipalities, and the increasing demands of rapid urbanization (Kihato, 2012). UN-HABITAT estimates that worldwide close to three billion people will need access to housing and basic infrastructure services over the next 25 years. This will require 35.1 million housing units per year or 96,150 per day or 4,000 per hour in order to meet the demand for housing and basic infrastructure over the next 25 years. This statistics calls for concern due to the importance housing and infrastructure play in our day to day lives.

1.3 Justification of Study

There is an obligation by the government and private developers to meet the growing demand of infrastructure in estates under the PPP arrangement hence the need for this study. Nubi (2003), describes infrastructure as the aggregate of all facilities that allows a city to function effectively. These facilities consists of electricity, pipe-borne water,

drainage, waste disposal, roads, sewage, health, education, telecommunications and institutional structures like police station, fire fighting stations, banks and post office. Ajibola *et al*., (2013) identified that where urban infrastructure is adequately provided and efficiently managed, productive and profitable land uses are usually attracted towards such area. Infrastructure provision forms a vital component to housing development and dependent on relevant authorities delivering sufficient infrastructure (Kihato, 2012). Urban infrastructure and housing provision are interwoven. Without infrastructures, housing cannot be sustainable and hence should be treated together (Otegbulu and Adewumi, 2009).

According to Pritika and Piyush (2012), housing and basic infrastructure plays a vital role in providing an enabling environment or the overall development and urbanization and all municipal attempts to provide better housing and basic infrastructure for its residents through policies and enabling conditions. The study is geared towards enhancing the provision of infrastructure in housing estates under PPP arrangement in Abuja.

1.4 Aim and Objectives

1.4.1 Aim

The aim of this research is to assess the provision of infrastructure under Public Private Partnership housing scheme in Abuja with a view to enhancing the provision of infrastructure in private developers' housing estates.

1.4.2 Objectives

The objectives are:

1. To articulate the role of government and private developers in the provision of infrastructure in housing estates under PPP arrangement

2. To assess the factors affecting the provision of infrastructure in housing estates in Abuja.
3. To ascertain the compliance of private estate developers to the provision of infrastructure.

1.5 Scope and limitation

1.5.1 Scope

The scope of this study is to assess the provision of infrastructure under the PPP housing scheme in Abuja, Nigeria.

1.5.2 Limitation

The study is limited to the provision of infrastructure in estates under PPP housing scheme between 2000 to 2011 in Abuja.

CHAPTER 2

LITERATURE REVIEW

2.1 Concept of Housing

Housing is defined as the process of providing safe, comfortable, attractive, functional, affordable and identifiable shelter in a proper setting within a neighbourhood, supported by continuous maintenance of the built environment for the daily living activities of individuals/families within the community while reflecting their socio-economic, cultural aspirations and preferences (National Housing Policy, 2012).
The World Health Organization (WHO) describes "housing as residential environment which includes the physical structure used for shelter, all necessary services, facilities, equipment and devices needed or desired for the physical and mental health and social wellbeing of the family and individuals". A house also provides the physical framework in which human, social, economic, and cultural resources are realized, enriched, and integrated. In the traditional African society, in particular, housing is, in fact, one of the greatly cherished material properties (Ademiluyi, 2010).

Housing has been a driver of economic growth throughout the world and there is no reason why it cannot do the same in Africa (Giddings, 2007). Failure to look into issues in the delivery of affordable housing and improved urban service delivery will not only lead to the creation of slums and worsen the standard of living for the majority of Africa's urban dwellers, it will also deter the region's plans to create the broad-based economic growth required to lower poverty (Giddings, 2007).

Omole (2009), asserted that housing is essential and comprises of vital services and facilities, which constitutes the physical environment that connects individuals with the community in which they evolve. Therefore, environmental amenities like waste disposal, water supply, road access and location services inferred by the distinct links between required economic and social infrastructure like education, health and recreation are all parts of the package of services designated as housing (Aribigbola, 2001). The National Technical Working Group on Housing (2009), describes the meaningful influence housing plays in the economy as it accounts for a substantial part of the manufacturing activity of a country, through its linkages to land markets, furniture, materials used for building, labour markets and its relationship with financial markets.

2.2 The Urban Housing Scene in Nigeria

Urbanization in Africa has not yet brought the economic development and degree of prosperity that might have been expected (Giddings, 2007). Inadequate education and physical infrastructure, combined with poor governance, have constrained the efficient use of productive resources, and the industrial development that might have come with it (UN-HABITAT, 2012). Housing is a key component of urban development. Improved housing is not only a desirable goal in its own right, but it also contributes to economic growth, social development, improved governance and enhanced security and stability (Giddings, 2007). The crisis in the housing sector of the developing world has various dimensions, which range from absolute housing units shortages, to the emergence and proliferation of the slums/squatter settlements, the rising cost of housing rent, and the growing inability of the average citizen to own their own houses or procure decent accommodation of their taste in the housing market (Ademiluyi, 2010).

Ibem (2009), opined that one of the major problems developing countries are faced with, is the issue of inadequate provision of housing and infrastructure for the growing urban population.

According to Giddings (2007), African governments' efforts to provide shelter for the increasing urban population hasn't yielded much result, very little new housing is actually being built or improved by the formal sector and most of it that is built remains unaffordable to the great majority of the poor. Since the urban areas is regarded as the engine of growth which propels national economic development (Akhmat and Bochun, 2010), the effects and problems generating from these population growth have obviously constituted critical challenges to sustainable housing and urban development (Jiboye, 2011). Giddings (2007), estimates that Zambia has 74% of urban dwellers living in slums; in Nigeria, 80%; in Sudan, 85.7%; in Tanzania, 92.1%; in Madagascar 92.9%; and in Ethiopia, a staggering 99.4%. The Kibera slum in Nairobi has more than half a million people packed into 225 hectares (2,000 people per hectare)

The proportion of the Nigerian population living in urban centers has therefore increased phenomenally over the years; while only 7% of Nigerians lived in urban centers in the 1930s, and 10 percent in 1950, by 1970, 1980 and 1990, 20 percent, 27 percent and 35% lived in the cities respectively (Jiboye, 2011). Over 40% of Nigerians now live in urban centers of varying sizes (Okupe, 2002). Olotuah (2002), estimated that about 2.3 million urban housing units are below standard, only 33% of houses are considered to be physically sound, and 44% and 19% require minor and major repairs respectively to bring them to

normative and structural standards. It is the right of every individual to have decent housing yet a greater number of Nigerians live in poor housing conditions.

The reality of this development is that the urban house forms in Nigeria is occupied by extended family living with many inconveniences, while spatial congestion and infrastructures overloads cause problems in living comfort (Awotona and Ogunshakin, 1994; Jiboye, 2011). According to Jiboye (2011), the issue of inadequate housing can be attributed to rapid urbanization and lack of policy implementation witnessed in major cities across the country which is the case of the study area, Abuja.

2.3 Review of Housing Policies

The first official intervention in housing started in the colonial period. According to Jiboye (2011), the housing activities, efforts and policies made in beginning of the colonial rule were geared towards providing housing quarters for expatriate stage and few indigenous staff working with the police and railways. This brought about Government Residential Areas (GRAs) in Nigeria. According to Ukwayi *et al.*, (2012), the concept of the GRA policy was to provide comfortable housin g and housing environment similar as those found in respective countries where expatriates come from to work in the country. In 1958, two years before independence, the defunct regional governments, namely, Western, Eastern, Northern and Mid-Western Regions, established Housing Corporations to construct and manage housing estates as well as grant soft loans to individuals wishing to build their own houses (Ukwayi *et al*., 2012).

The post-independent period was between (1960-1979). It targeted a five-yearly development plan as an instrument for economic growth. The first two plans didn't yield

the required results due to negligence (Ibem *et al.*, 2011). The housing sector witnessed further deterioration due to the civil war; areas affected by the war were most affected (Jiboye, 2011). By establishing the Federal Housing Authority (FHA), Federal Ministry of Environment Housing and Urban Development (FMEHUD), Ministry of Works and Housing, State Housing Corporations and Federal Mortgage Bank of Nigeria (FMBN) in the 1970s, Nigeria was set to witness massive government involvement in housing construction (Ibem *et al.*, 2011). In the mid-1970s, Bauchi, Benue, Gongola, Imo, Niger, Ogun, Ondo and Lagos were the created and first government-assisted self-help housing programme started in these states (Ibem, 2011). Ukwayi *et al.*, (2012), stated that the third plan period (1975-1980) introduced the most comprehensive and active intervention by the government in the housing sector.

The second civilian administration period was between (1980-1983), it was characterized by high increase in the interest and involvement of the public sector in housing delivery and the significance the housing sector play in the overall economy (Ukwayi *et al.*, 2012). Most of the strategies and activities during these periods may be seen to be in conformity with enabling concept, public production of shelter remained their common feature (Jiboye 2011). The National Housing Program launched for the first time in 1980. It was allocated 1.9 billion naira for the construction of 160,000 housing units in all the twenty states of Nigeria, including Abuja for low-income people. The second phase of the housing program set out to construct 20,000 housing units across the country. According to Jiboye (2011), this period witnessed huge failures due to the fact that by June 1983, 600 million naira (37.5%) had been spent to complete only 32,000 units, yielding an overall achievement level of just 20 per cent.

The post second republic period is from 1984 to date. According to Ukwayi *et al.,* (2012), there were no significant activities done in this period as it has been very much transitional one, in which the Federal Government was preoccupied with the preparation of a new and more relevant National housing Policy. The policy was launched in 1991 but didn't meet its set goals and objectives which led to the New National Housing and Development Policy (NHUDP) of 2002. The NHUDP aimed at ensuring that all Nigerians own or have access to decent housing through private sector-led initiatives (Ibem *et al.,* 2011). The policy was revised in 2004 entailing strategies for housing provision and the institutional framework for it.

2.4 Public Private Partnership in Housing in Nigeria

The Council for Public Private Partnership (2003) in Canada defines PPP as a 'cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards'. Public Private Partnership (PPP) may also be defined as a contractual agreement between the government and the private sector for the delivery of goods and services normally provided by the government with both party sharing in the risks and rewards inherent in the delivery of the goods or service which include financial risks and responsibilities (World Bank, 2015) . In simple terms, public private partnership means the cooperation of the government and the private sector where each party contributes her quota to the delivery of goods and services.

In housing provision, PPP has gained currency in recent times on the premise that it promotes multi-stakeholders' participation; enhances productivity of the public- sector housing and reduces housing affordability challenges (UN-HABITAT, 2006b; Shelter

Afrique, 2008). Based on the agreement, PPP in housing according to the enablement, the private sector plays the role of physical construction, funding, implementation and in some cases the management of the disposal. Government's role on the other hand is by setting the goals, supervision and monitoring, standardization and provision of legal, institutional, economic policy frameworks (Abdullahi and Aziz 2010; Sengupta, 2007 and Tipple; Tecco, 2008). Akintoye *et al.,* (2006) observed that the delivery of adequate housing through PPP with a functioning housing market is more effective than through the public agencies or the non-profit non-governmental agencies.

According to Sengupta (2006), in developing countries PPP in housing are still emerging and its utilization is dependent on the economic strength, dominant political environment and housing tradition of a particular city. In Africa, cities are growing at an exceptional rate and there is rising pressure on government to house the people and provide infrastructure facilities, but in large part governments are unable to match demand with concurrent provision of adequate housing and infrastructure (Ajanlekoko, 2001; Ukoje and Kanu, 2014). The need for PPP in housing became necessary due to the inability of the government to meet up with the rising demands of housing caused by rapid urbanization in cities. The principal motive for government's formulation of housing programmes and policies is to improve on existing housing conditions of the people thereby enhancing the quality of life.

The involvement of the private sector in the provision of housing in Nigeria dates back to the early 1990s which was introduced in the 1991 National housing policy (NHP) (Ukoje and Kanu, 2014). The government embarked on a plan which entailed encouraging direct public housing provision and simultaneous stimulation of the private sector housing to

improve housing delivery (Abdullahi and Aziz, 2010). The private sector was encouraged to play a more effective role in housing provision while government intervened through direct public housing provision. A more market driven strategy was adopted in the year 2000 in housing delivery and infrastructure development in Nigeria, stressing its role as that of enabler and regulator, rather than a provider (Ukoje and Kanu, 2014).

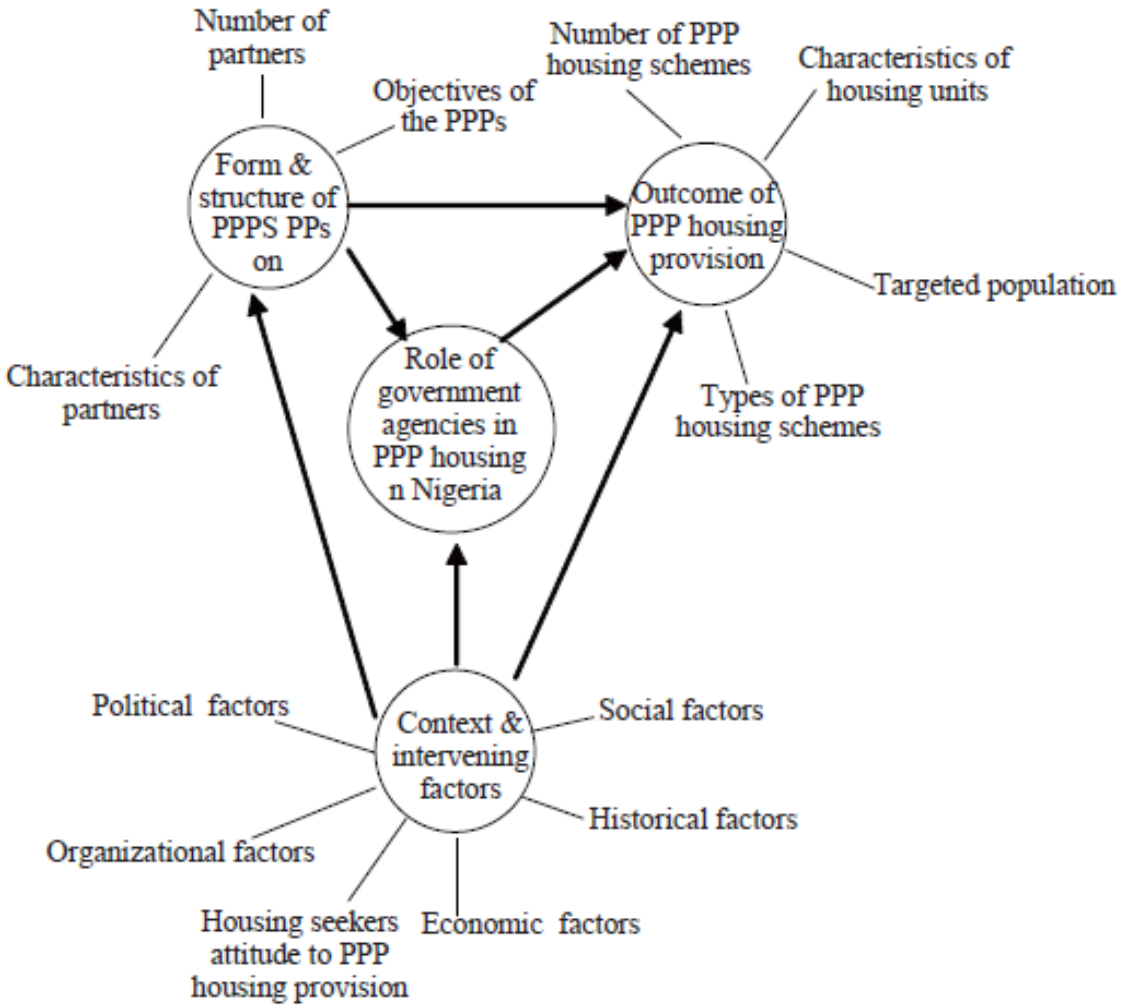


Figure 2.1: Conceptual Framework for Assessing the Role of Government Agencies in PPP Housing in Nigeria
Source: Ibem (2010)

Ibem (2010), addressed a conceptual framework for assessing the role of government agencies in PPP housing in Nigeria. The framework as seen in Figure 2.1 proposes that an assessment of the role of government agencies in PPP housing involves adequate knowledge on the composition and characteristics of the PPPs, the context of the situation in which they operate and the outcome of PPP housing provision schemes. The conceptual framework is grouped into three basic components. These include the form and structure of the PPPs (e.g., the number of partners, the socio-economic and organizational characteristics of the partners, the types and objectives of the PPPs), the contextual and intervening factors that influence the operation of the PPPs in public housing provisions (e.g., economic, political, organizational, institutional and operational factors and the targeted population) and the outcome of PPP housing provision schemes (the quantity and characteristics of the provided housing and the socio-economic characteristics of the beneficiaries).

2.4.1 Overview of public private partnership housing in Abuja

The concept of involving the private sector in housing development in Abuja is traceable to Mabogunje (2001) position paper in 1999. Mabogunje (2001) recommended government to encourage the development of OPS and made land available to this class of developers in the city. The Federal Capital Territory Administration (FCTA) and the Federal Capital Development Authority (FCDA) decided in the year 2000 to embark on a new approach in order to meet the challenges. The Mass Housing Scheme (MHS) was initiated with more emphasis in creating the enabling environment for the private sector to participate more actively. It aimed to bridge the wide gap that existed between supply and demand of housing stock within the City of Abuja and its environs (Ibrahim & Kwankur, 2012).

The private real estate developers were allocated parcel of land within Abuja to develop housing estates. At the beginning the land allocation was made to the OPS developers at no cost, apart from the little processing fee paid, as government equity contribution to the scheme. They are however not issued with a formal Right of Occupancy letter which is the standard practice but a 'Letter of Intent'. This allows them to source for fund from any financial institution to enable them carry out their development.

The private developers were made to sign a Development Lease Agreement (DLA) and an undertaken to mobilize to site within six months and complete development within three years from the date of signing of agreement (Ukoje and Kanu, 2014). Umoh (2012), asserted that it required the developers to comply with the city's regulations, standards and specifications in the course of construction of the housing units. Most of the OPS were from REDAN having 93% and remaining is shared between international construction companies, public corporations and formal organizations staff co-operatives enlisted for participation (Abdullahi and Aziz, 2010).

2.4.2 Land allocation of public private partnership in housing in Abuja

According to Abdullahi and Aziz (2010), studies carried out on Abuja points out that the access to land and its cost makes up the major constraint to housing developers. The work of Egbu, Olomolaiye and Gameson (2008), shows that official land acquisition and necessary development rights the developer needs to spend 381 days (one year and two weeks) when all the requirements are fulfilled. The collaboration of the government and the private sector brought about an ease to OPS developers in acquiring land for housing development, where the government provides land as part of the contribution to the partnership.

The allocation of land to developers was done broadly in three phases. The first phase of allocation was between 2000 to 2003 where 184 developers where granted allocations in six districts of the FCT totaling 2610 hectares. The minimum allocation to developers was 5 hectares and the maximum was 100 hectares.

Table 2.1: Mass Housing Land Allocation by Districts in the First Phase of Allocation

S/No.	District	Total Number of Allocation	Total Land (HA)
1	Wumba	46	478
2	Kafe	26	567
3	Galadimawa	21	460
4	Dakwo	20	204
5	Lokogoma	61	731
6	Mbora	10	170
	Total	184	2610

Source: FCTA (2008)

The second and third phase of allocation of land took place between 2004 to 2007 and 2008 to 2011 respectively where a total area of 10,081.7 hectares was allocated to 176 developers.

Table 2.2: Total Land Allocation for Mass Housing in FCT Abuja

S/No.	District	Land Allocation(HA)
1	Dakwo (south)	568.5
2	Duboyi (south)	336.29
3	Duste (south)	540.94
4	Gaduwa (south)	481.66
5	Galadimawa (south)	661.05
6	Saraji (south)	561.07
7	Lokogoma (south)	800.4
8	Wumba (south)	591.94
9	Bunkoro (north)	836.78
10	Gwarinpa II (north)	433.52
11	Ido-Gwari (north)	627.41
12	Idu-Sabo (north)	428.85
13	Kado (north)	489.51
14	Kafe (north)	598.69
15	Karsana East (north)	765.81
16	Karsana North (north)	915.47
17	Karsana South (north)	605.23
18	Karsana West (north)	509.72
19	Kodo (north)	376.75
20	Mbora (north)	537.13
21	Sabon Gida (north)	741.01
22	Wupa (north)	284.02
	Total	12,691.69

Source: Kanu (2012)

2.4.3 The development lease agreement

The development lease agreement is between the developer and the Federal Capital Development Authority (FCDA). According to Umoh (2012), the both parties commit to a number of responsibilities. The developer commits to the following:

i. Jointly assessing with the FCT any development made by villagers in the allocated land and appropriately compensating the villagers (for which they were to be reimbursed by the FCDA).
ii. Not assigning or subletting any part of the allocated land.
iii. Submitting within 3 months of signing the development lease, building plans for approval and commencing effective mobilization to site.
iv. Providing secondary and tertiary infrastructure to the buildings.

Also Umoh (2012) identified the responsibilities of the FCDA to include:

i. Deferring building approval fees until the developer processes title deeds for the built up properties in the estate.
ii. Guaranteeing approval of properly documented building plans by development control within one month of submission
iii. Providing primary and arterial infrastructure to the property but in situations where they fail to do as stipulated, the developer is at liberty to provide such infrastructure to make the building habitable
iv. Granting a Certificate of Occupancy directly to any person designated by the developer as a purchaser upon payment of all fees and deferred charges.

It is essential to note that developers in PPP for mass housing scheme are only granted access to develop. The title for the land remains with the FCDA. After development of land

with all necessary secondary infrastructure, the developers can now sell to the general public and submit names of subscriber to the FCDA. It is only after a subscriber pays the appropriate fees that a Certificate of Occupancy, the statutory title deed in Nigeria, is issued (Abdullahi and Aziz; 2010; Umoh 2012).

Ibrahim and Kwankur (2012), identified the infrastructure in the agreement to be provided by both parties. The government is to provide primary infrastructure which include: - major roads in districts, power supply from the main grid, pipe borne water from main trunk line and major sewer line connection to estates. The developer is expected to provide secondary infrastructure like, secondary roads and local streets within the estate, drainages and sewer lines, power supply to the individual units of house, local facilities for shopping and recreational activities.

2.4.4 The goals and requirements of the partnership

The partnership is a form of leasehold agreement between the FCTA and its agencies, and the private housing developers, many of whom belong to the Real Estate Developers Association of Nigeria (REDAN) (Kanu, 2012; Ukoje and Kanu, 2014).

Furthermore (Ukoje and Kanu, 2014) identified the goals of the FCTA in involving private sector in the mass housing delivery to be:

i. To foster the participation of the private sector in housing delivery through favorable policies
ii. To bridge the gap between supply and demand of the housing stock within the city of Abuja and its environs.

iii. To reduce government's participation in the provision of infrastructure for the teeming population

The goal of the private partners is to deliver decent housing at an affordable cost to the populace and generate sufficient returns in investment.

2.5 Infrastructure

Infrastructure is widely defined as the system of services and facilities which provides for the basic wellbeing and quality of life (Ziara and Ayyub, 1996). The Longman online dictionary (2014) defines infrastructure as the basic systems and structures that a country or organization needs in order to work properly, for example roads, railways, banks etc. Infrastructure can be described generally as the set of interconnected structural elements that provide framework supporting an entire structure of development. Ziara and Ayyub (1996), further described infrastructure as facilities and basic systems on which the sustainability and growth of a community and state depends. The term typically refers to the technical structures that support a society, such as roads, water supply, sewers, electrical national grids, telecommunications, and so forth, and can be defined as "the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions" (Fulmer, 2009). The major features in the above definition of infrastructure consists of facilities and utilities which are provided for the public to enhance living standards of the people

Urban facilities are the required public facilities for upholding people's lifestyle and city functions and refer to the framework for urban structure (Japan, 2004; Zakout, 2006). These may include transportation facilities such as roads and park lots, public spaces such

as parks, green spaces and public squares, supply facilities such as water and electricity, waste disposal facilities such as sewers, waste treatment plants and garbage incinerators, educational and cultural facilities such as schools, libraries and research facilities, and medical and social welfare facilities such as hospitals and child care centers (Japan, 2004; Zakout, 2006). Infrastructure is a very important aspect of housing development as it provides a conducive environment for inhabitants to live comfortably. Amis and Kumar (2000) asserted that it is easier for individuals to cope with different levels of poverty due to the existence of infrastructure. It also follows that cities with the greatest number of poor people are those whose citizens lack infrastructure the most (Udoka, 2013).

Kumar (2005), classified infrastructure into two types, soft and hard infrastructure. Soft infrastructure refers to all the institutions which are required to maintain the economic, health, and cultural and social standards of a country, such as the financial system, the education system, the health system, the governance system, and judiciary system, as well as security while the hard infrastructure refers to the large physical networks necessary for the functioning of a modern industrial nation.

2.5.1 Categories and components of infrastructure

Zakout (2006), stated that infrastructure is important to attain adequate housing and good quality of life for individuals especially in the construction of low cost housing and therefore urban infrastructure should be classified into two main categories, namely:

i. Basic Infrastructure Components
ii. Supportive Infrastructure Components

2.5.1.1 Basic infrastructure components

According to Amis and Kumar (2000), basic infrastructure are basic requirement for the safety of life, health and the security of people. It is usually the responsibility of the owners and developers to provide these infrastructure (Kihato, 2009) and integrating the cost components during the preliminary and construction phases (Zakout, 2006). The basic infrastructure components are as follows: water supply, wastewater collection (sewerage system), wastewater treatment and reuse or disposal, power supply and security lighting, access and paving, storm water drainage and telephone lines (Zakout, 2006).

2.5.1.2 Supportive infrastructure components

This category of infrastructure includes all services which are considered to be supportive to the lives of the residents, but not necessary essential for their basic wellbeing (Zakout, 2006). The provision of supportive infrastructure services within an estate or community is to provide proximity to services and facilitate the social life of residents (Kumar, 2005). Thus, they are considered additional public facilities. Supportive infrastructure components include one or more of the following service facilities: parks and green areas, schools, health centre, worship area, public market and public service buildings (Zakout, 2006).

2.6 The Provision of Infrastructure in Nigeria

Differences in infrastructure across regions have implications for the prosperity of cities and reflect a variety of factors, including levels of income or development, economic growth, pace of urbanization, technical capacities and political commitment, the lowest levels of infrastructure provision are to be found in urban Africa (UN-Habitat, 2012).

There is a positive link between the provision of infrastructure and the level of urbanization (UN-Habitat, 2012). As urbanization takes place, the need to provide basic and supportive infrastructure to the inhabitants arises. According to Iseh (2003), the construction of infrastructure and its maintenance is capital intensive and these services are normally provided by the different tier of government although the private sector is becoming involved due to the liberalization policy of some aspect of the national economy by the government.

Ogu (2005), identified three broad strategies for urban infrastructure development in Nigeria. These are the technocratic conventional state provision, private provision and the international-led participatory approach. According to Ogu (2005), the conventional state provision requires urban policies in which physical planning, implementation and maintenance of urban infrastructure services are firmly in the hands of public agencies. Kihato (2009), asserted that the provision of infrastructure is performed by municipal government. The Private provision is the second approach. Due to the prevailing initiative towards the liberalization of the provision of infrastructure and international agency emphasis on the involvement of the private sector in infrastructure development, cities have engaged the services private operators in infrastructure development (Ogu, 2005). Ukoje and Kanu (2014), noted that the private sector became active in infrastructure

development in 2000. The international-led participatory approach involves the increased role for Non-Governmental Organizations (NGO) and Community Based Organizations (CBO) and international agencies and support, as well as relinquishment of rigid master plans for the planning of urban physical development (Ogu, 2005).

2.6.1 Electricity

According to the National Bureau of Statistics (2014), electricity generation, transmission and distribution account for less than 1% of Nigeria's Gross Domestic Products (GDP), but 54% of the share of utilities (electricity and water supply) in the GDP. They make up a small economic activity in Nigeria in relation to her size and population. Nigeria's power supply is not adequate, it is characterized with frequent power cuts even in major cities across the nation (Omole, 2010). A comparative analysis of consumption of electricity worldwide in the work of The irregular supply of electricity has caused many industries or some other commercial concerns to produce below capacities and, in some extreme cases, fold up, thereby forcing many employees into the labour market (Udoka, 2013).

2.6.2 Water Supply

Africa has the lowest proportion of the total population of 64% with access to an improved water supply of all regions in the world (UN-HABITAT, 2011). In Nigeria, operation of public water supply systems commenced only early in the twentieth century in Lagos and a few towns like Calabar, Kano, Ibadan, Abeokuta, Ijebu Ode and Enugu (Kashim, 2012). The government's major intervention came during the first national development plan period (1962 – 1968) through the establishment of the River Niger and Lake Chad basin commissions (Abdulahi *et.al.,* 2013). The first water corporation was formed in the western

region in 1966 with the staff of the water division of the ministry of works constituting the nucleus (Kashim, 2012). The next sets of corporations were formed in the 1970s. The Federal Government elevated its level of involvement in the management of water resources in 1976 when the Federal Ministry of Water Resources and the eleven River Basin Development Authorities (RBDAs) were created. The purpose of the RBDAs was to provide bulk water, primarily for irrigation.

2.6.3 Transportation

Since independence in 1960, the Nigerian transport system has continued to wallow in crisis, and confronted by myriads of problems even to the point of near paralysis (Sumaila, 2013). The National Bureau of Statistics (2014), estimates that the share of transport in the Gross Domestic Product [GDP] is in the neighbourhood of 3%.

The total road network in Nigeria is 193200 Kilometers comprising 34123km Federal roads, 30,500 km state roads and 129577 km Local Government roads. Nigeria has 12 major navigable rivers of about 3800 km, and an extensive coastline of about 852 km. It consists of only 3505 Km narrow gauge, single track lines, it accounts for less than 1 per cent of land transportation in Nigeria (The National Bureau of Statistics, 2014).

2.6.4 Telecommunication

The Nigeria Telecommunications Limited (NITEL) was responsible for providing telecommunication services in the past, the operation was characterized by delays in the allocation of telephone lines while the services provided are often interrupted with frequent disconnection (Iseh, 2003). The Nigeria government embarked on the deregulation of the telecommunication sector in 1985. The Nigerian Communications Commission (NCC), was

formed in 1992. The NCC was established as a regulatory body to supervise private companies participating in the telecom sector and help develop and invest in the country's infrastructure.

2.7 Real Estate Developer

A real estate developer builds on land, thereby increasing its value. The developer may be an individual, but is often a partnership or a corporation. Private developers intends to make profit, as against the government which provides buildings for social and welfare reasons. Mabogunje (2002), defined a real estate developer as an entrepreneur who is committed to assuming the risks of mass housing production in advance of sale.

Gummel (2000) categorized private estate developers into four: Firstly, land developers that acquire lands, prepare the plots and make them available for prospective builders. Secondly, on-site developers involved in acquiring lands and construct buildings on them for sale. Thirdly, merchant builders who could be local industrialists that build several units of houses of similar design with the aim of achieving economic of scale and sell them to home buyer immediately after completion. Finally, developer investor who is similar to merchant builders expect that they retain the ownership of the constructed buildings which are rented out to the users.

Okupe (2002), identified two categories of players in the housing supply market. Those in the first category are players who are usually called upon to construct housing projects funded by an arm of the private sector or government while those under the other category are mostly involved in building houses for outright sale to members of the public.

2.8 Factors Affecting the Provision of Housing and Infrastructure under the Public Private Partnership Arrangement in Abuja

Public private partnership in the provision of housing and infrastructure has yielded success in developed countries with active participation from the government and the organized private sector. In developing countries, the inability of the public sector to meet up with the increasing demands of housing and infrastructure has also led to the participation of the organized private sector (Kihato, 2009). African countries during the past several years have begun to significantly revamp their housing policies to support a much greater role for the private sector in housing construction (Giddings, 2007). The success of the partnership depends greatly on the participation of the both parties. The challenges are given below:

2.8.1 Poor participation by the government

Government's poor participation is one the challenges facing this arrangement, the partnership between the government and organized private sector actively started in the year 2000 (Ibrahim and Kwankur, 2012). According to Abdullahi and Aziz (2010), part of the hindrance experienced in the course of implementation was the inability of government to fulfil its agreement of providing the primary infrastructure due to the funding constraints. It was further noted that many plots in districts allocated under the PPP arrangement for more than ten years are without infrastructure. Ibrahim and Kwankur (2012), stated that government did not keep to its own side of the bargain by failing to provide primary infrastructure to most of this districts as agreed in the development lease agreement signed by the two parties. This clearly demonstrates half-hearted commitment by Government, and

may be responsible for the low rate of mobilization and development by the private partners within that section of the mass housing sites (Ukoje and Kanu, 2014).

2.8.2 Inadequate planning

The issue of delay in detailed land use, detailed engineering design and site development plan by development control department in districts brought about poor performance (Ibrahim and Kwankur, 2012). As earlier stated the PPP arrangement in Abuja commenced in the year 2000. The detailed policy document which was to guide development was not ready until 2009, long after the program commenced (Ukoje and Kanu, 2014). Since there was no plan and standards to adhere to, it led to serious violation of the master plan. Ibrahim and Kwankur (2012), stated that developers were obligated to submit details of their intended design drawings to the development control department for vetting, approval and final issuance of development permit. On the other hand, the development control department is expected to vet drawings and grant setting out approvals on site before any developer could commence real development. Unfortunately, the agencies responsible for enforcement allowed the private developers commence development without prior approvals of their developments (Abdullahi and Aziz, 2010). The department of engineering services realized the effect such development would cause in terms of integrating primary and secondary infrastructure in the long run and removed illegal structures.

2.8.3 Finance constraints

A major limitation to providing decent, affordable housing, almost generally recognized by both the public and the private sectors, is the lack of proper financing and an operational

means to provide basic infrastructure to potentially well located sites, to create serviced sites for housing construction and to upgrade slum areas (Giddings, 2007). Funding as one of the factor amongst the most important factors to inadequate infrastructures provision has become a major hindrance to infrastructural and other projects development in Nigeria for decades (Odenyinka and Yusuf, 1997; Ayodele and Alabi, 2011; Aloku, 2008; Ihuah and Benebo, 2014).

The work of Abdullahi and Aziz (2010), emphasized on the insincerity and fraudulent practice that characterized the National Housing Trust Fund (NHTF) loan window to Primary Mortgage Institutions (PMIs) and estate development window to the organized private sector developers offered by the Federal Mortgage Bank of Nigeria (FMBN). This laudable step was targeted at attracting massive participation of both developers and house buyers in mass housing delivery in the country. The loan attracted an interest rate of 10% per annum (p.a), half of the prevailing rate in the private financial institution and was for housing development, excluding the cost of infrastructure provision. The outcome of this scheme shows that only few developers accessed the loan, some diverted the loan to other uses and others could not service the loan. For many banks, building societies, and mortgage companies, the discrepancy between the short term nature of their deposits and the longer term nature of mortgage lending, in addition with the unavailability of longer term sources of finance, remain limitations (Giddings, 2007). Ukoje and Kanu asserted that majority of the developers find it difficult to access loans due to high interest rates and other stiff requirement which the loan attracts.

2.8.4 Poor monitoring and supervision

The PPP arrangement started in a hurry without poor planning therefore it was difficult monitoring and supervising the activities of developers. Ukoje and Kanu (2014), asserted that the decisions were made as the need for it arises and the committee originally saddled with the responsibility of monitoring the OPS construction work was ineffective. The development lease agreement that the developers were made to sign before the beginning of the project completely was abandoned and disregarded, which normally should have acted as guide, standardization and moderator of the projects between the parties of the contract (Abdullahi and Aziz, 2010).

2.8.5 High cost of construction and building materials

The final cost of housing development is dependent on the cost of materials and the construction meaning the higher the cost costs, the higher the cost of purchase of housing units and vice-versa (Ajanlekoko, 2001). This is attributed to the high standards and technologies which are mostly imported (Ukoje and Kanu, 2014). Most of the buildings constructed by developers focuses on medium and high costs leaving very few units or none to low income earners (Abdullahi and Aziz, 2010). The authorities of FCTA criticized such extensive low density developments that were not commensurate with values of land in the city, considering the high cost of infrastructure provision in the city (FCTA, 2008).

2.8.6 Negative effect on the affordability of the housing units

The final cost of housing and infrastructure development is dependent on the cost of materials and construction meaning the higher the these costs, the higher the cost of purchase of housing units (Ukoje and Kanu, 2014). Akeju (2007), stated that infrastructure

accounts for thirty percent of housing cost, this has caused the low provision of infrastructure for housing by developers.

2.8.7 Inconsistency in government policies

The PPP housing scheme has witnessed changes in policies as regards the provision of housing and infrastructure (Abdullahi and Aziz, 2010). These policies includes the change of land use, finance mechanisms and incentives in the cost of building materials.

2.8.8 Delayed detailed land use and site development plans

As part of the guidelines to control the development of infrastructure in estates, the FCTA provides detailed site development plans (Ibrahim and kwankur, 2012). Abdullahi and Aziz (2010), stated that most of the detailed land use and development plans weren't ready from the inception of the scheme before developers moved to site and started construction. This resulted in demolition due to change in land use and obstruction.

2.8.9 Risk of low returns on investment

Ibem *et al.,* (2011) stated that high cost of providing infrastructure in housing estates has affected the affordability of houses. Leadership News (2015), reported that houses with adequate infrastructure in Abuja stay on the market for long due to the high price attached to them and developers fear that their investment won't yield the expected interest.

2.8.10 Increasing demands due to rapid urbanization

Kihato (2009), identified the rapid growth of population in urban areas in Africa as one of factors affecting the provision of housing infrastructure by the government and the private sector. The population of Abuja has over years been growing steadily as several censuses

had revealed. In 1991 and 2006 National Population Commission (NPC) census the population of FCT of Abuja was estimated to be 378,671 and 1,406,239 respectively (Abdullahi and Aziz, 2010).

2.8.11 Lack of technical professionals

Umoh, (2012) opined that the PPP housing scheme has not been successful in terms of quality and quantity of housing and infrastructure provided. The FCTA (2008), noted that Development Control Department had to embark on demolishing of many houses and instructed the re-construction of infrastructure due to poor coordination, supervision and workmanship on the side of the developers. In the work of Rufai (2010), it was affirmed that lack of technical professionals led to low quality of jobs provided in the scheme.

2.8.12 Delays by subcontractors

Construction works in estates under the PPP scheme are subcontracted due to tight time schedules and lack of well trained professionals to handle big time jobs been carried out (Rufai, 2010). The use of subcontractors bring about delays in the completion time as scheduled (Wakirwa, 2006; Rufai).

2.8.13 High infrastructure standards

Developers have blamed the high cost of housing units on the high standards put in place for provision of infrastructure by the FCTA. According to Abdulahi and Aziz (2010), one of the objectives of the PPP housing scheme was to provide comfortable housing and living conditions for low income group in Abuja. Furthermore, it was stated that the cost of providing quality housing and infrastructure increased the price of housing units.

2.9 Practices to enhance the Provision of Infrastructure in the PPP Housing Scheme

Based on previous studies the research identified important practices that would enhance the provision of infrastructure in housing estates under the PPP arrangement. Giddings (2007), stated that access to funds would enhance the private sector's participation is housing and infrastructural development in developing countries. According to Kanu (2012), government needs to fashion out a way to provide intervention funds to serious private sector estate developers. Kihato (2007), also added that the private sector is attracted more towards long term loans with low interest rates. The work of Abdullahi and Aziz (2010) identified poor commitment of the government in the provision of primary infrastructure to districts under the PPP scheme. This is in agreement with Kanu (2014), who opined that early provision of primary infrastructure in districts would motivate developers in providing secondary infrastructure in estates.

Ibrahim and Kwankur (2012), identified the importance of providing detailed site development plan for districts as well as timely approval of developers' plan before developers commence work. This has become essential due to problems of linking primary and secondary infrastructure. According to Ibem (2010), subsidies on construction materials is needed to ensure the goals of the PPP scheme is achieved. Kanu (2012) asserted that granting incentives like tax waivers on imported construction materials and equipment to developers involved in the PPP scheme is key to the success of the project. According to Akeji (2007) and Ibem (2010), consistency in housing policies would provide an enabling environment for businesses thereby attracting investors in housing and its needed infrastructure. Kanu (2014), stressed the need for the cooperation between developers and regulatory bodies involved in the delivery of infrastructure in the PPP scheme in Abuja.

Developers are required to provide infrastructure to the housing estate with high standards. Ibem (2010), opined that the revision of these standards and procedures would encourage

the use of cost effective materials and local materials in construction by developers. This would reduce the cost of building materials and reduce the final cost of the housing units in the estates. Rufai (2010), stated the importance of proper planning and monitoring of works by all stakeholders involved in the PPP scheme so as to achieve the desired results. One key feature of PPP is sharing of responsibilities, risks and benefits (UN-HABITAT, 2006b; Shelter Afrique, 2008). Akeji (2007), opined that appropriate risk sharing between parties in housing and infrastructure delivery is important. Developers involved in PPP housing scheme are to provide houses and all necessary infrastructure before selling it to individuals (Ibrahim and Kwankur, 2012). The generation of funds from off-takers by developers to provide infrastructure in estates can be encouraged if the process can be carefully monitored by the government to ensure the developers meets all obligations.

2.10 Effects of Infrastructure on Property Values

The availability and condition of infrastructure is an important indicator for assessment and pointer of status of any urban system (Ajibola *et al.,* 2013). Olujimi (2010), asserted that the problems of deteriorated infrastructure are particularly peculiar in the old, indigenous core areas of the cities while the non-availability of infrastructure is peculiar to the outer spontaneous settlements that accommodate the low-income population. Public infrastructure when properly delivered offers a lot of benefits within its operative network (Famuyiwa and Otegbulu, 2012). Real estate without utility has no value, if it is not scarce and if it is not effectively demanded (Ajibola *et al.,* 2013).

Economies require the development of infrastructure, such as water, energy, roads provision, transport networks, information, and communication technology for sustainability and these urban services also influence the value of real estate positively as they enchance housing conditions and quality (Famuyiwa and Otegbulu, 2012). Odudu (2003), observed that housing values tended to peak in those locations that enjoyed one form of infrastructure or the other. Johnson *et al*., (2005), stated that one of the determinants of property value is infrastructure, the presence of which leads to appreciation in property values.

2.11 Impact of Infrastructure on Health

The World Health Organization (WHO) (2009) defines "environmental health as encompassing those elements of human health that are influenced by physical, chemical, biological, social and psychological factors in the environment". Human exposure to hazardous agents in the air, water, soil, food also to physical hazards in the environment are major contributors to illness, disability, and death worldwide (Lawason, 2010). Poor environmental conditions is estimated to be directly accountable for approximately 25 percent of all preventable ill health in the world, especially among vulnerable populations (World Health Organization, 2002). The effect of the physical environment on the health status of a population is well recognized. The absence of infrastructure and deteriorated infrastructure is known to have a negative impact on health, particularly with regard to infectious and parasitic diseases.

Access to clean water is essential for healthy living in any community. Diseases are associated with the intake of water of poor quality include gastroenteritis, diarrhoea,

typhoid fever and hepatitis (Weli and Ogbonna, 2015). Parasitic diseases associated with contaminated water include giardiasis, dysentery and diarrhoea. Young children are specifically at risk of suffering from potentially severe consequences due to infection with water-borne diseases (World Health Organization, 2002).

In cities, poor solid waste management has a direct impact upon health, length of life and the urban environment (UN-Habitat, 2010). Ever since the middle of the 19th century, when infectious diseases were linked for the first time to poor sanitation and uncollected solid waste, municipalities have therefore been responsible for providing solid waste collection services to their citizens (UN-Habitat, 2010). Inadequate power and electricity supply may restrict the capacity of people to carry out healthy living practices such as washing, cooking, food storage, temperature control and lighting. Poor electricity supply or inadequately maintained power supply may also cause trauma and injury (Australian Institute of Health and Welfare, 2007).

CHAPTER 3

RESEARCH METHODOLOGY

This chapter focuses on the methodology adopted for the study, data collection, research tools, sample size and method of analysis used for this research. Research methodology is a systematic way to solve a problem. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena is called research methodology (Rajasekar *et al*., 2013).

3.1 Research Design

Burns and Grove (2003) define a research design as "a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings".

This research was carried out in five stages as seen in Figure 3.1 with each of the stages representing each of the chapters one to five. The stages are highlighted and explained below;

Stage 1: The first stage introduced the thesis and the research problem was explained. It focused on the background of the research by highlighting the research problems, research purpose, research objectives, and justification for the research, proposed methodology and thesis organization.

Stage 2: The second stage of this research included the review of literature on public private partnership in housing and infrastructure as it relates to the research. Also review of past government efforts in the provision of housing and infrastructure in Nigeria. Government and private estate developers' role in the provision of infrastructure were captured in this stage.

Stage 3: This stage described the methodology used in the research. It focused on the methodology used to achieve the objectives of this research.

Stage 4: Analysis of results obtained from the questionnaires distributed and checklists used is contained in this stage. Discussions were made from the data obtained from questionnaires distributed and checklists coupled with making of inferences from the results.

Stage 5: Summary, conclusion and recommendation. Summary of the major findings of the research, conclusions were drawn the various findings and recommendations made on how the problems identified by the research were addressed.

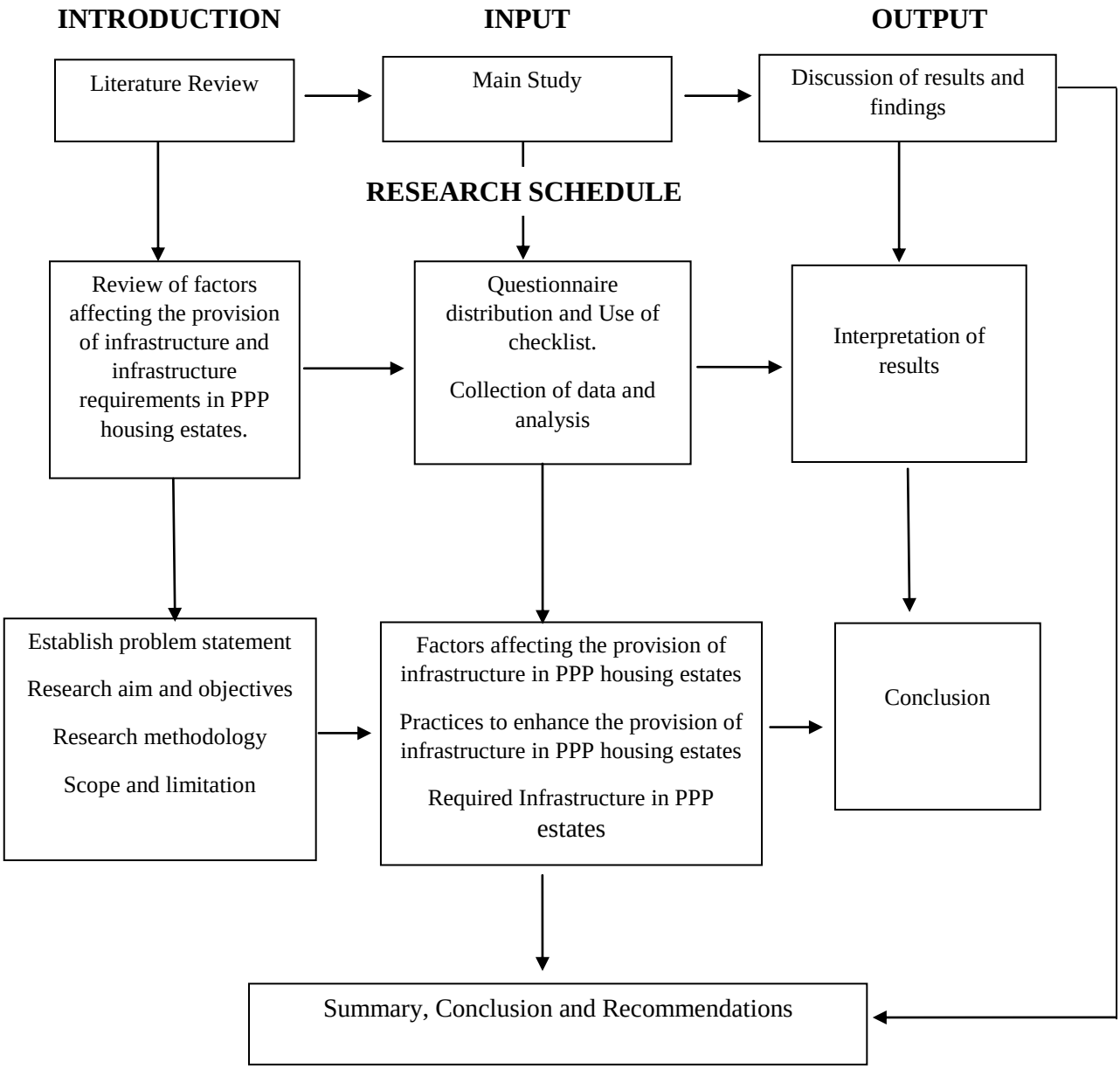


Figure 3.1: Method of Research Design

3.2 Study Area

Abuja is the Capital of Nigeria, the city is situated at the centre of Nigeria. It covers a land area of 275sq.mi, at an altitude of 840m. Abuja was created in 1976 by the military administration and the capital of Nigeria moved from Lagos to Abuja in 1991. Abuja accommodates all the Federal Ministries and Parastatals. The population of Abuja is estimated to be about 1.4 million (National Population Commission, 2006). The Federal Capital City of Nigeria experiences three weather conditions yearly. This is the warm, rainy and dry season respectively.

3.3 Population, Sample Size and Sampling Technique

3.3.1 Population

The population of the study consists of developers involved in providing housing estates and infrastructure in Abuja. According to REDAN (2014), there are 591 registered developers in Abuja. Therefore, the sample frame of the study is 591 estate developers.

3.3.2 Sample size and sampling technique

3.3.2.1 Sample size for developers

The sample size for developers was calculated using Glenn (2003) and Kish (1965) equation for 94% confidence level.

$$n = \frac{n^1}{\left(1+\left(\frac{n^1}{N}\right)\right)}$$

Where:

n = sample size from finite population

n^1 = sample size from infinite population = $\frac{s^2}{v^2}$

Where S^2 is the variance of the population elements and V^2 is a standard error of sampling population, S= 0.1 to 0.5 and V = 0.06

N = total number of population, S= 0.5 was chosen

$n^1 = \frac{s^2}{v^2}$ = 69.44, N= 591.

$$n = \frac{69.44}{\left(1+\left(\frac{69.44}{591}\right)\right)} = 63$$

Thus this study administered 63 questionnaires to developers.

3.3.2.2 Sample size for housing estates

The sampling size for housing estates was determined based on Cochran (1963) formula considering the targeted population is unknown.

n= $((z^2pq)/d^2)$

Where;

n = the desired sample size

z = the ordinate on the normal curve corresponding to αor the standard normal deviate. For the purpose of this study, a confidence level of 90% will be adopted.

Usually a 90% level of confidence has α = 0.10 and critical value of $z_{\alpha/2}$ = 1.64.

p = the proportion in the target population estimated to have a particular characteristics (normal between the range of 0.1-0.5)

q = 1.0 – p

d = degree of accuracy corresponding to the confidence level and Z selected.

The sample size is determined using the following parameters,

z = 1.64, d = 0.1, p = 0.3, q = 0.7

Sample size n = $[(1.64)^2 \times 0.3 \times 0.7]/ (0.1)^2 = 56.4$

Thus this study considered 56 estates.

The housing estates selected were only in districts under the PPP arrangements.

Table 3.1: Names of Housing Estates Visited

S/No.	Name of Housing Estates	Districts
1	Efab	Lokogoma
2	Minfa 1	Lokogoma
3	Minfa 2	Lokogoma
4	Sunny Vale	Lokogoma
5	City View	Lokogoma
6	First Generation	Lokogoma
7	Emerald's Flower	Lokogoma
8	Saraha Estate 1	Lokogoma
9	Saraha Estate 2	Lokogoma
10	Efab	Lokogoma
11	North Star	Mbora
12	Diamond	Mbora
13	Patasonic	Mbora
14	Nelocap	Mbora
15	Festroyl/Yemokeen	Mbora
16	Mercy Samuel	Mbora
17	Mount Pleasure	Mbora
18	Yayale Ahmed	Dutse
19	Suntrust	Dutse
20	Metrocity 1	Dutse

S/No.	Name of Housing Estates	Districts
21	Metrocity 2	Dutse
22	Trademore	Dutse
23	Harmony Homes	Wumba
24	Copa Cabana	Wumba
25	His Grace Pavillion	Wumba
26	Doliz Brown	Gaduwa
27	Hill View	Gaduwa
28	Cashew	Gaduwa
29	Bentell Villa	Gaduwa
30	La Villa	Gaduwa
31	Mac Global	Gwarinpa
32	Fine Stone	Gwarinpa
33	Sahara Homes 1	Gwarinpa
34	Sahara Homes 2	Gwarinpa
35	Marcospoli	Gwarinpa
36	Canaan	Kafe
37	Godab	Kafe
38	Saraha Dabo	Kafe
39	Brains and Hammers	Kafe
40	Saraha Phase 1	Galadimawa
41	Maccido	Galadimawa
42	Amssco	Galadimawa
43	Equlibrum	Karsana
44	Mac Global	Karsana
45	Shelther Homes	Karsana
46	Harmony	Karsana
47	Saraha 1	Dakwo
48	Saraha 2	Dakwo

3.4 Data Collection Instrument

3.4.1 Questionnaire design

The questionnaire is designed in such a way that each section of the questionnaire contains questions that helped in achieving each of the objectives. The questionnaire was grouped into four sections. The first section focuses on the respondent's profile, it targeted at gathering useful information about the respondents ranging from the educational background and years of experience to the category of developer the respondents belong to. The second section deals with the respondent's involvement in the provision of infrastructure in public private partnership housing estates. It gathers information about the stage at which infrastructure are provided in housing estates, type of labour employed and the means funds are generated for the provision of infrastructure in housing. The third and fourth section contains the factors affecting the provision of infrastructure in public private partnership housing estates and practices that would enhance timely and adequate infrastructure provision in public private partnership housing estates respectively, the respondents ranked each variable in this sections.

3.4.2 Checklist design

Checklist was used to take inventory of infrastructure available in existing estates. It was grouped into two sections, which consist; general information of estate and the list of infrastructure that should be available in estates as recommended by the FCTA/FCDA. The infrastructure includes; access roads, pipe-borne water, drainages, street lights, sewer lines, electricity, shopping facility and recreational facility.

3.5 Data Collection Technique

A review of existing literature was carried out to collect secondary data for this research, literatures from professional journals, text books, published and unpublished thesis, National dailies and internet sources. Questionnaire and checklist served as the primary sources of data. Questionnaires were administered to randomly selected developers within Abuja for this research. Checklist was used to identify infrastructure made available by developers in housing estates in districts within Abuja.

3.6 Data Analysis Technique

The data collected was analyzed using Statistical Package and Service Solution (SPSS), both descriptive and inferential data analysis was used. Means, percentages and Relative Importance Index (RII) were used to present results.

3.6.1 Relative importance index (RII)

Relative importance index was used in the study to rank the factors affecting the provision of infrastructure in PPP housing estates and best practices to enhance the provision of infrastructure in PPP housing estates.

$$\text{Relative Importance Index (RII)} = \frac{\sum fx}{\sum f} \times \frac{1}{k}$$

Where,

$\sum fx$ = is the total weight given to each attributes by the respondents.

$\sum f$ = is the total number or respondents in the sample.

K = is the highest weight on the likert scale.

Ranking of the items under consideration was based on their RII values. The item with the highest RII value is ranked first (1) the next (2) and so on.

The rating of all the factors for degree of significance was based on the value of their respective relative importance index (RII).

Mbamali and Okotie (2012), Interpreted of the RII Values as follows:

RII < 0.60, item is assessed to have a low significance

0..6 ≤ RII < 0.80, item assessed to have high significance

RII ≥ 0.80, item assessed to have very high significance

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.1 Data Presentation and Analysis

This chapter addresses presentation and interpretation of data obtained from the field survey, analysis of the data and discussion of findings. Data presentation is an important aspect of any research process as it enhances understanding of the findings of the research.

To attain this, responses from the questionnaires and the information obtained from the checklists used were considered and presented in various charts and tables. The discussions made were in respect to the questions and information from the questionnaire and checklist respectively.

4.2 Questionnaire Response from Private Estate Developers

To achieve one of the objectives of this research, 63 questionnaires were distributed to developers in Abuja. Table 4.1 represents the number of questionnaires distributed to private estate developers. A total of 63 questionnaires were distributed and 45 were properly completed and returned representing a percentage response of 71%. According to Moser and Kalton (1971), the result of a survey could be considered significant if the response rate not lower than 30-40%. Therefore, the response rate is considered to be adequate.

Table 4.1: Questionnaire Administered to Private Estate Developers

Questionnaire Distributed	Frequency (No.)	Percentage (%)
Returned	45	71.4
Not Returned	18	28.6
Total	63	100

Source: Field Survey, (2014)

4.2.1 Working experience of respondents

It was important to ascertain the working experience of respondents. Table 4.2 shows that 28.9% of the respondents with the highest frequency have 16-20 years working experience and 0-5 years working experience have the least frequency of 11.1%. Also 24.5%, 22.2% and 13.3% of the respondents have working experiences of 11-15 years, 6-10 years and 20 years above respectively. Therefore the respondents have adequate knowledge and experience.

Table 4.2: Years of Working Experience of Respondents

Years of Experience	Frequency (No.)	Percentage (%)
0-5 years	5	11.1
6-10 years	10	22.2
11-15 years	11	24.5
16-20 years	13	28.9
20 years and above	6	13.3
Total	45	100

Source: Field Survey, (2014)

4.2.2 Academic qualification of respondents

The academic qualification of the respondents are represented in Figure 4.1 of which 26.7% are Master Science (M.Sc.) holders. The other categories of academic qualification are

given as follows; First degree 40%, Postgraduate Diploma (PGD) 13.3%, Higher National Diploma (HND) 15.6% and Ordinary National Diploma (OND) 4.4%. The academic qualification of the respondents is important to the integrity and quality of the data collected for the research.

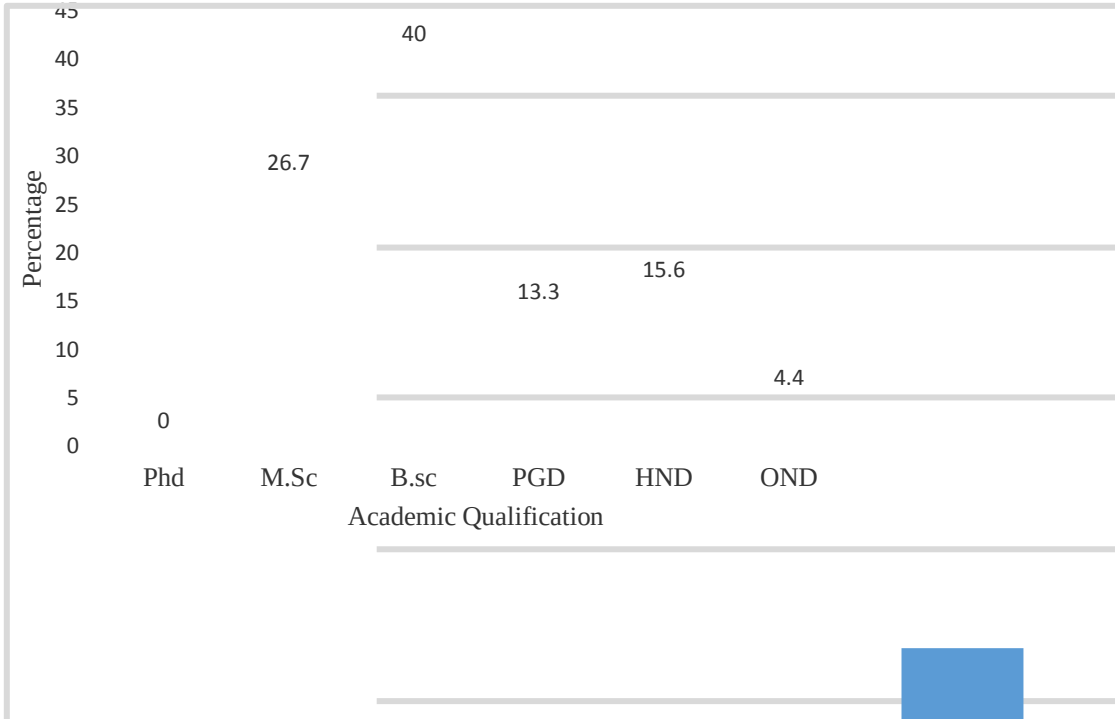


Figure 4.1: The Academic Qualification of Respondents

Source: Field Survey, (2014)

4.2.3 Category of developer

Table 4.3 shows the category of developer the respondents belong to, 15.6% of the respondents were land developers, 24.4% were on-site developers, 42.2% were merchant developers and 17.8% were developer investors.

Table 4.3: Developer's Category

Category of developer	Frequency (No.)	Percentage (%)
Land Developer	7	15.6
On-site Developer	11	24.4
Merchant Developer	19	42.2
Developer Investor	8	17.8
Total	45	100

Source: Field Survey, (2014)

4.2.4 Developers' involvement in infrastructure provision under PPP scheme within Abuja

It was important to ascertain the respondents' involvement in the provision of infrastructure under public private partnership arrangement in housing estates within Abuja. This part presents the developers' involvement in providing infrastructure under PPP within Abuja. From the results of the questionnaires distributed, 97.8% have been involved in providing infrastructure under PPP within Abuja and 2.2 haven't been involved. The result shows that most of the respondents have actually been involved in providing infrastructure under PPP within Abuja and have experiences which is important to achieving the objectives of this research.

Table 4.4: The Involvement of Developers in the Provision of Infrastructure in Housing Estates

Involvement	Frequency (No.)	Percentage (%)
Yes	44	97.8
No	1	2.2
Total	45	100

Source: Field Survey, (2014)

4.2.5 Developers' awareness of the importance of infrastructure provision

As earlier stated in this research, infrastructure provision plays an important role in housing development. It is therefore important to determine whether the respondents are aware of this importance.

From the information obtained, 100% of the respondents are aware of the importance of infrastructure provision in housing delivery. It shows clearly that all the respondents are aware of relevance of infrastructure in housing.

Table 4.5: The Awareness of Developers to the Importance of Infrastructure in Housing Estates

Developer's Awareness	Frequency (No.)	Percentage (%)
Yes	45	100
No	0	0
Total	45	100

Source: Field Survey, (2014)

4.2.6 The stage at which infrastructure are provided in housing estates

According to Ibrahim and Kwankur (2012), one of the terms for the grant of land to a developer is to prepare the parcel of land obtained from the state, provide the necessary infrastructure, and develop the houses and then sale to the public. Table 4.6 shows that 20% of developers provide infrastructure before providing housing units and 80% of developers provide infrastructure after providing housing units.

Table 4.6: Stage at which Infrastructure are Provided in Housing Estates

Stage	Frequency (No.)	Percentage (%)
Before providing housing units	9	20
After providing housing units	36	80
Total	45	100

Source: Field Survey, (2014)

4.2.7 Developers' source of finance used in the provision of infrastructure

Finance is of major importance to any project, it is important to determine the source by which funds is generated for the provision of infrastructure in PPP housing estates. Developers' who source funds internally are 40%, which means that this set of developers generate funds internally from the company accounts. Also, 8.9% of developers source funds from thrift and credit society, 22.2% of developers from commercial banks and 28.9% from mortgage banks. Table 4.7 reveals that most of the developers have to source funds internally to provide infrastructure.

Table 4.7: Source of Finance used in the Provision of Infrastructure

Source of finance	Frequency (No.)	Percentage (%)
Internal funds	18	40
Loans from thrift and credit society	4	8.9
Commercial banks	10	22.2
Merchant banks	-	-
Mortgage banks	13	28.9
Insurance and pension funds	-	-
Government bonds	-	-
Foreign Direct Investment (FDI)	-	-
Shares	-	-
Total	45	100

Source: Field Survey, (2014)

4.2.8 Developers' level of participation in infrastructure delivery in housing estates

Developers were asked to rank their participation in the provision of infrastructure in PPP housing estates. From Figure 4.2, 36.7% of developers adjudged their level of participation as average. The level of participation perceived by other respondents are 25.6%, 18.1%, 10.8% and 8.8% for low, high , very low and very high respectively.

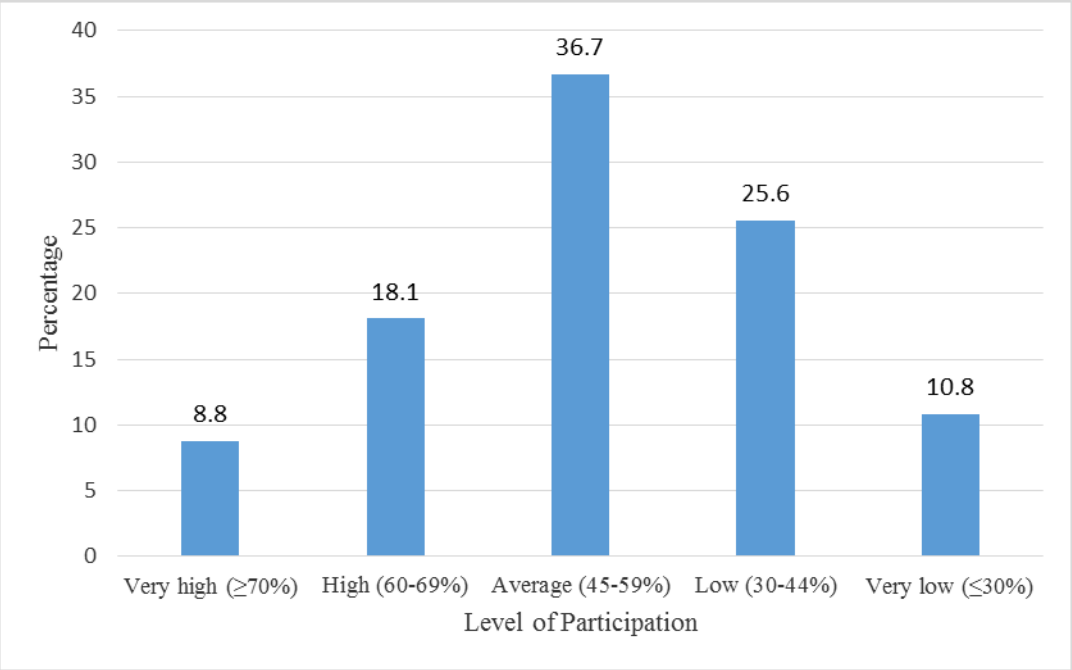


Figure 4.2: Participation of Developers in the Delivery of Infrastructure
Source: Field Survey, (2014)

4.2.9 Type of Labour Employed in the Provision of Infrastructure

Table 4.8 shows that 62.2% of developers use direct labour in the provision of infrastructure and 37.8% subcontract infrastructure provision to others. From the results, a higher percentage of developers are involved directly in providing infrastructure in PPP housing estates.

Table 4.8: The Labour Employed in the Provision of Infrastructure in PPP Housing Estates

Type of Labour	Frequency (No.)	Percentage (%)
Direct	28	62.2
Contract	17	37.8
Total	45	100

Source: Field Survey, (2014)

4.2.10 Factors Affecting the Provision of Infrastructure in Estates under the PPP Scheme

Table 4.9 shows the factors affecting the provision of infrastructure in PPP housing estates in Abuja and has been ranked accordingly. The highest ranked factor is the inability of government to provide primary infrastructure with the value of RII as 0.89, it is regarded as a factor with very high significance because the relative important index (RII) is greater than 0.8. Also insufficient finance and high interest on loans ranked second and third respectively with the values of relative important index (RII) as 0.87 and 0.80 having high significance. High cost of materials, lack of long term loans, high cost of construction, poor planning and execution strategies by developers, risk of low returns on investment, delayed detailed land use and site development and increasing demands due to rapid urbanization ranked fourth, fifth, sixth, seventh, eighth, ninth and tenth respectively with their relative important index (RII) assessed to be of high significance. High infrastructure standards and inability to provide collateral for loans, negative effect on the affordability of the houses and delays from subcontractors, lack of technical professionals, complexity of construction works and inconsistency in government policies ranked eleventh, twelfth, thirteenth, fourteenth fifteenth, sixteenth, seventeenth respectively with their RII assessed to be of low significance.

With the results obtained Table 4.9, it can be inferred the inability of government of government to provide primary infrastructure is the greatest challenge faced by developers. This conforms to the work of Ibrahim and Kwankur (2012), Ukoje and Kanu, 2014 which identified the low participation of government in providing primary infrastructure.

Table 4.9: Developers' Perception on the Factors Affecting the Provision of Infrastructure in Housing Estates under PPP scheme

S/N	Factors	Frequency of Response					∑f	∑fx	Mean	RII	Position
		1	2	3	4	5					
1.	Inability of government to provide primary infrastructure	-	2	3	13	27	45	200	4.44	0.89	1st
2.	Increasing demands due to rapid urbanization	5	19	1	12	8	45	134	2.98	0.60	10th
3.	Poor planning and execution strategies by developers	5	8	6	22	5	45	152	3.38	0.68	7th
4.	Insufficient finance	-	-	9	11	25	45	196	4.36	0.87	2nd
5.	High interest on loans	-	2	10	14	19	45	180	4.00	0.80	3rd
6.	Inconsistency in government policies	11	14	6	8	6	45	111	2.47	0.49	16th
7.	Delayed detailed land use and site development	5	6	8	22	4	45	149	3.31	0.66	9th
8.	High cost of building materials	3	7	2	12	21	45	176	3.91	0.78	4th
9.	Lack of technical professionals	14	11	7	9	4	45	113	2.51	0.50	15th
10.	Delays from subcontractors	10	12	14	6	3	45	115	2.56	0.51	13th
11.	High cost of construction	-	10	7	16	12	45	165	3.67	0.73	6th
12.	Risk of low returns on investment	-	15	11	7	12	45	151	3.35	0.67	8th
13.	High infrastructure standards	4	17	11	13	-	45	123	2.73	0.54	11th
14.	Complexity of construction works	3	7	12	15	8	45	153	2.43	0.49	16th
15.	Negative effect on the affordability of the houses	9	15	8	13	-	45	115	2.56	0.51	13th
16.	Inability to provide collateral for loans	12	10	7	11	5	45	122	2.71	0.54	11th
17.	Lack of long term loans	-	7	8	13	17	45	172	3.82	0.76	5th

Key: 1- Strongly Disagree, 2- Disagree, 3-Somewhat Agree, 4- Agree, 5- Strongly Agree

Source: Field Survey, (2014)

4.2.11 Practices to Enhance the Provision of Infrastructure in Estates under PPP scheme

Table 4.10 presents the practices that will enhance the provision of infrastructure in PPP housing estates by developers. Early provision of primary infrastructure by government and availability of funds to provide infrastructure in estates has been ranked as the highest with their relative importance index (RII) as 0.88. Low interest on loans, provision of subsidies on materials by government, availability of long term loans and generation of funds from off-takers to provide infrastructure ranked third, fourth, fifth and sixth respectively, having their relative importance index (RII) assessed to be of very high significance. Cooperation from regulatory body, Timely approval of site development plan, Reform high standards for infrastructure, Proper planning and execution strategies by developers, Consistency in housing policies by government and Appropriate risk allocation ranked seventh, eighth, ninth, tenth, eleventh and twelfth respectively having their relative importance index (RII) assessed to be of high significance.

Based on the findings below, early provision of primary infrastructure by government in districts allocated for housing and availability of funds are very important to the provision of infrastructure in estates.

Table 4.10: Developers' Perception on Practices that would enhance the Provision of Infrastructure in Housing Estates under PPP Scheme

S/N	Practices	Frequency of Response					∑f	∑fx	Mean	Standard Deviation	RII	Position
		1	2	3	4	5						
1.	Availability of funds to provide infrastructure in estates	-	-	7	13	25	45	198	4.40	0.75	0.88	2nd
2.	Low interest on loans	-	1	6	15	23	45	195	4.33	0.80	0.87	3rd
3.	Availability of long term loans	-	5	2	21	17	45	185	4.11	0.94	0.82	5th
4	Early provision of primary infrastructure by government	-	-	5	17	23	45	198	4.40	0.69	0.88	1st
5.	Timely approval of site development plan	-	4	18	11	12	45	166	3.69	0.97	0.74	8th
6.	Provision of subsidies on materials by government	-	-	10	19	16	45	186	4.13	0.76	0.83	4th
7.	Consistency in housing policies by government	2	9	15	12	7	45	148	3.29	1.10	0.66	11th
8.	Cooperation from regulatory body	-	2	14	17	12	45	174	3.89	0.87	0.78	7th
9.	Reform high standards for infrastructure	-	11	13	10	11	45	156	3.47	1.12	0.70	9th
10.	Proper planning and execution strategies by developers	3	7	12	15	8	45	153	3.40	1.16	0.68	10th
11.	Appropriate risk allocation	2	8	17	12	6	45	147	3.27	1.05	0.65	12th
12.	Generation of funds from off-takers to provide infrastructure	-	5	9	12	19	45	180	4.00	1.04	0.80	6th

Key: 1- Strongly Disagree, 2- Disagree, 3-Somewhat Agree, 4- Agree, 5- Strongly Agree
Source: Field Survey (2014)

4.3 The Compliance to the Provision of Infrastructure in Housing Estates

This section deals with the data presentation, analysis and discussion of results for checklists administered through visual inspection to ascertain the compliance of private estate developers in the provision of infrastructure in housing estates under PPP arrangement in Abuja. Based on the development lease agreement signed between the developer and the FCTA/FCDA, the government provides primary infrastructure; major roads, power supply from main grid while, water supply from the main trunk line and major sewer line while developers are to provide secondary infrastructure; local streets within the estate, drainages, sewer lines, power supply to the individual units of house, local facilities for shopping and recreational facilities.

4.3.1 Breakdown of checklist used

A percentage of 85.7% PPP housing estates were visited for visual inspection in different districts allocated for PPP housing scheme. This is presented clearly in Table 4.11

Table 4.11: Breakdown of Checklist used

Checklist Administered	Frequency (No.)	Percentage (%)
Administered	48	85.7
Not Administered	8	14.3
Total	56	100

Source: Field Survey, (2014)

4.3.2 Year of establishment of estates.

The chart in Figure 4.3 shows the year of establishment of estates visited in percentages. The highest number of estates visited were established between 2006-2010 and the lowest number of estates visited fall under those established between 2000-2005.

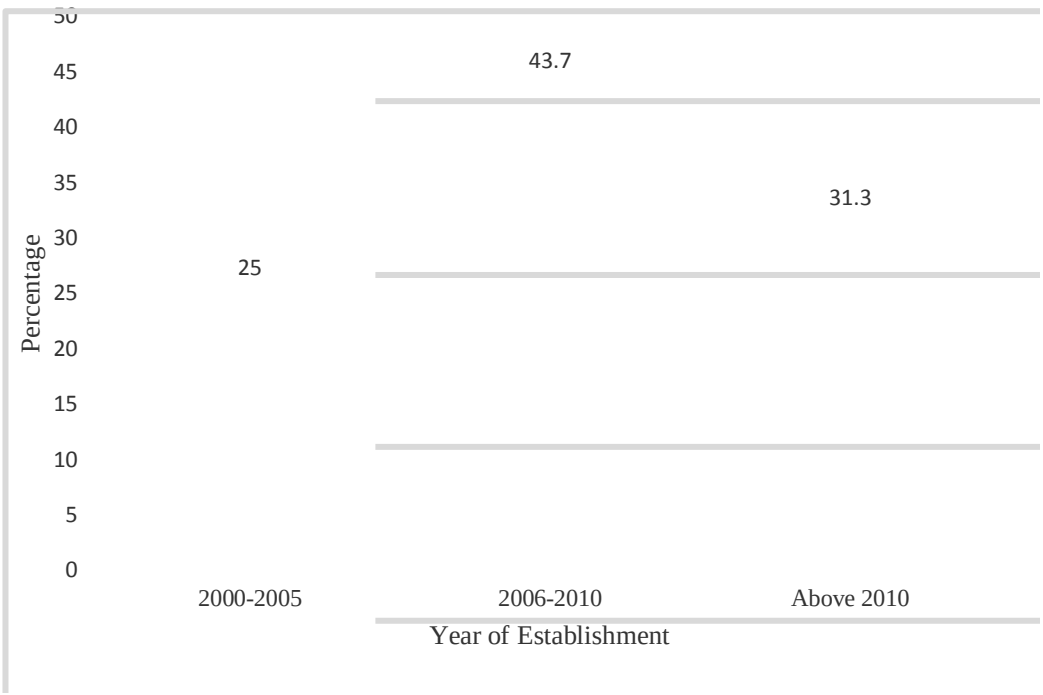


Figure 4.3: Year of Establishment of Estates

4.3.3 Type of residential buildings in the estates visited

Details about the type of buildings in the estates visited is presented in Table 4.12. From the estates visited, 39.5% were made of bungalows, 31.3% of duplexes, 22.9% of mixed buildings and 6.3% of block of flats.

Table 4.12: Residential Buildings in the Estates Visited

Type of residential building	Frequency (No.)	Percentage (%)
Bungalows	19	39.5
Duplexes	15	31.3
Block of flats	3	6.3
Mixed buildings	11	22.9
Total	48	100

Source: Field Survey, (2014)

4.3.4 Provision of paved access roads by private estate developers in estates

Table 4.13 presents the information about the existence of paved access road in the estates visited. As shown in table 4.13, 75% of the estates have paved roads while 25% of the estates have their access roads unpaved.

Table 4.13: The Availability of Access Roads in Estates

Paved access road	Frequency (No.)	Percentage (%)
Available	36	75
Not Available	12	25
Total	48	100

Source: Field Survey, (2014)

4.3.5 Provision of pipe-borne water by private estate developers in estates

Table 4.14 shows the percentage of provision of pipe-borne water supply in the estates visited. From the table, only 10.4% of estates have water provided by the developers and 89.6% do not have water provided by the developers. The subscribers of estates without water supply, provide alternative source of water for themselves by sinking boreholes and digging wells. The main reason for the poor provision of water in estates can be linked to government's inability to provide districts with water supply from the main trunk line.

Table 4.14: The Availability of Pipe Borne Water in Estates

Water supply	Frequency (No.)	Percentage (%)
Available	5	10.4
Not Available	43	89.6
Total	48	100

Source: Field Survey, (2014)

4.3.6 Provision of drainages by private estate developers in estates

Figure 4.4 shows the existence of drainages in the estates visited. It was observed that 79.2% of the estates have drainages while 20.8 do not have drainages. From the results above a good percentage of estates have drainages provided by developers.

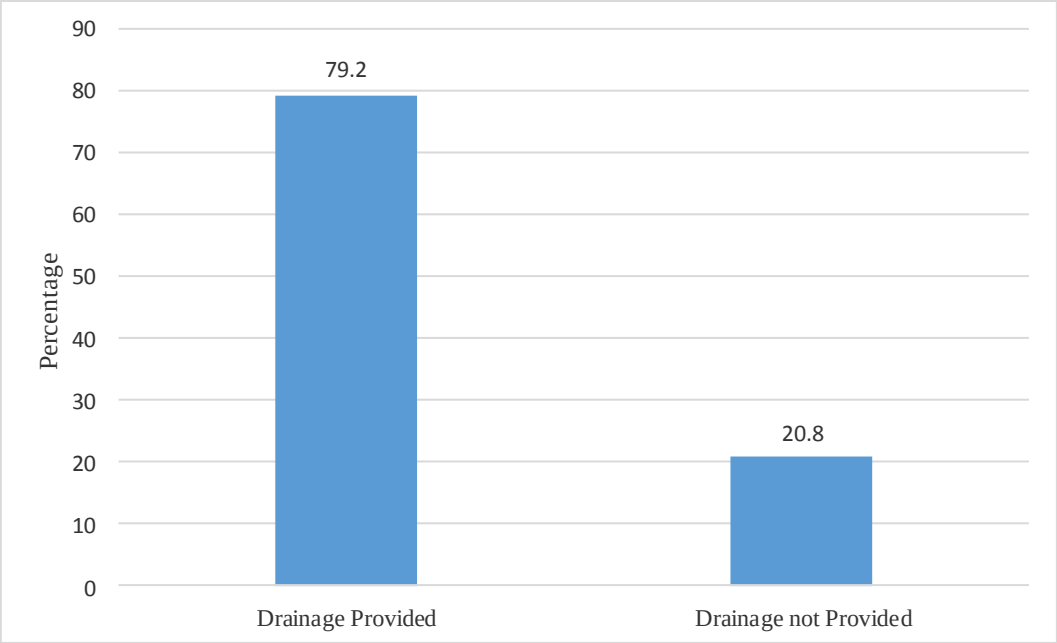


Figure 4.4: Availability of Drainage in Housing Estates
Source: Field Survey, (2014)

4.3.7 Provision of street lights by private estate developers in estates

Table 4.15 shows the existence of streetlights in the estates visited. It was observed that 83.3% of the estates have streetlights while 16.7% do not have streetlights.

Table 4.15: The Availability of Street Lights in Estates

Street lights	Frequency (No.)	Percentage (%)
Available	40	83.3
Not Available	8	16.7
Total	48	100

Source: Field Survey, (2014)

4.3.8 The provision of sewer lines by private estate developers in estates

Table 4.16 presents the provision of sewer lines in the estates visited in percentage. It shows that 100% of the estates do not have sewer lines provided. Based on the results above, it can be seen that none of the estates have sewer lines and soak away are provided by developers. This is due to the absence of major sewer line connection that ought to be provided by the government.

Table 4.16: The Availability of sewer lines in Estates

Sewer lines	Frequency (No.)	Percentage (%)
Available	0	0
Not Available	48	100
Total	48	100

Source: Field Survey, (2014)

4.3.9 The provision of electricity by private estate developers in estates

From Table 4.18, 95.83% of the estates visited have electricity and 4.17% do not have electricity. This shows that most districts visited have power supply from the main grid line provided by the government hence the provision of electricity in estates.

Table 4.17: The Availability of Electricity in Estates

Electricity	Frequency (No.)	Percentage (%)
Available	46	95.83
Not Available	2	4.17
Total	48	100

Source: Field Survey, (2014)

4.3.10 Provision of shopping complex by private estate developers in estates

Table 4.19 shows the availability of shopping complex in the estates. As seen in Table 4.19, 14.6% of the estates have shopping complex while 85.4% do not have shopping facility. There is poor provision of shopping complex in PPP housing estates due to the fact that land for this purpose are used for residential purposes as stated in the work of (Ibrahim and Kwankur, 2012).

Table 4.18: The Availability of shopping complexes in Estates

Shopping complex	Frequency (No.)	Percentage (%)
Available	7	14.6
Not Available	41	85.4
Total	48	100

Source: Field Survey, (2014)

4.3.11 Provision of recreational park by private estate developers in estates

Table 4.20 shows the availability of recreational park in the estates. As seen in Table 4.20, 29.2% of the estates have recreational parks while 70.8% do not have recreational facility. Based on the findings an appreciable percentage of estates lack parks for recreational activities. This is in agreement with the work of Ibrahim and Kwankur (2012), which states that land for recreational purposes are converted for other uses by developers.

Table 4.20: Provision of Recreational Park by Private Estate Developers in Estates

Recreational park	Frequency (No.)	Percentage (%)
Available	14	29.2
Not Available	34	70.8
Total	48	100

Source: Field Survey, (2014)

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the Findings

The summary of the results of this study are as follows:

i. The inability of government to provide primary infrastructure (RII=0.89), insufficient finance (RII=0.87) and high interest on loans (RII=0.80) are the most important challenges faced by developers in the provision of infrastructure in PPP housing estates.

ii. Developers perceived that these practices; early provision of primary infrastructure by government and availability of funds to provide infrastructure in estates (RII=0.88), low interest on loans (RII=0.87), provision of subsidies on materials by government (RII=0.83), availability of long term loans (R=0.82) and generation of funds from off-takers to provide infrastructure (R=0.80) would enhance the provision of infrastructure in PPP housing estates.

iii. From the estates visited, 75% have paved access roads, 10.4% have pipe-borne water supply, 79.2% have drainages, 83.3% have streetlights, 0% have sewer lines, 95.83% have electricity, 14.6% have shopping facility and 29.2% have recreational parks provided by the developers. Thus, the provision of paved access roads, drainages, streetlights and electricity by developers in these estates is well above average.

5.2 Conclusion

Based on the objectives of the research stated, the following conclusions were made in relation to the findings:

i. Government is responsible for the provision of primary infrastructure through the FCTA/FCDA in districts while private estate developers are responsible for the provision of secondary infrastructure in PPP housing estates.

ii. The main factors affecting developers' in the provision of infrastructure in PPP housing estates include; the inability of government to provide primary infrastructure, insufficient finance and high interest on loans.

iii. The major practices that would enhance the provision of infrastructure are the early provision of primary infrastructure by government, availability of funds to provide infrastructure in estates, low interest on loans, provision of subsidies on materials by government and availability of long term loans.

iv. Developers' level of compliance in respect to the infrastructure considered in this study is rated very low in the provision of water and sewer lines, this is due to government's inability to provide water supply from the main trunk line and major sewer line connection. Also, the provision of shopping facility and recreational parks is considered low.

v. It was observed during the visitation of estates in different districts that most of the districts lacked primary paved access roads.

5.3 Recommendations

Based on the results of the studies carried out, the following recommendations were made;

i. The FCTA/FCDA should provide primary infrastructure in districts allocated for PPP housing estates on time especially water, sewer lines and access roads.

ii. Government should provide financial support to developers by introducing intervention funds for the provision of infrastructure with long term loans and low interest rates.

iii. Subsidies and incentives on materials should be provided to developers involved in the provision of infrastructure in PPP housing estates by the government.

iv. The FCTA/FCDA should function effectively in terms of planning, monitoring and supervision of the housing and infrastructure delivery.

5.4 Contributions To Knowledge

i. This research has established important factors mitigating against the provision of infrastructure in PPP housing estates in Abuja.

ii. Practices that would enhance the provision of infrastructure in PPP housing estates was established in this research.

iii. The research has provided insights into the infrastructure provided least in housing estates under the PPP housing scheme by developers.

5.5 Recommendation for Further Research

i. Maintenance of the infrastructure in public private partnership housing estates in Abuja should be studied.

REFERENCES

Abdullahi, B. C. & Aziz, W. A. (2010). 'Nigeria's housing policy and public private partnership (PPP) strategy: Reflections in achieving home ownership for low income group in Abuja, Nigeria'. Urban Dynamics and Housing Change crossing into the 2nd Decade of the 3rd Millennium, 22nd Intentional housing Research Conference, Istanbul, 4-7 July.

Abdullahi, T., Abubakar, I., Tsoho, U & Rabi'a, L. (2013). Development of Effective Water Supply Model for Kaduna Metropolis using Unguwar Kanawa as Case Study; *International Journal of Engineering Sciences & Research Technology, 2(7),* 1802-1811.

AbdulAzeez, A. D. (2012). Development of a Prototype Electronic Document and Record Management System (EDRMS) for Small and Medium Building Firms. (Published doctoral thesis), Department of Building, Ahmadu Bello University, Zaria.

Ademiluyi, I. A. & Raji, B. A. (2008). Public and Private Developers as Agents in Urban Housing Delivery in sub-Saharan Africa: *The Situation in Lagos State. Humanity and Social Sciences Journal, 3(2*), 143-150.

Ademiluyi, I. A. (2010). Public Housing Delivery Strategies in Nigeria: A Historical Perspective of Policies and Programmes. *Journal of Sustainable Development in Africa, 12*(6), 153-161.

Ajanlekoko, J. S. (2001). 'Sustainable Housing Development in Nigeria – The Financial and Infrastructural Implication', International Conference on Spatial Information for Sustainable Development Nairobi, Kenya. October 2-5.

Ajayi, M. A. & Omole, F. K. (2012) Sustainable Housing Development and Communal Provision of Infrastructures in Asuwamo Residential Estate Akure, Nigeria. Proceedings of 4th West Africa Built Environment Research (WABER) Conference, 24-26 July 2012, Abuja, Nigeria, 191-201.

Ajibola, M. O., Awodiran, O. O. & Salu-Kosoko. O. (2013). Effects of Infrastructure on Property Values in Unity Estate, Lagos, Nigeria. *International Journal of Economy, Management and Social Sciences, 2(5),* 195-201.

Akeji, A.A (2007), Challenges to Providing Affordable Housing in Nigeria, A paper presented at the 2nd Emerging Urban Africa International Conference on Housing Finance in Nigeria, Held at Shehu Yar'adua Center Abuja. October 17-19.

Akintoye, A., Kyaw, T., Ngowi, A. & Bowen, P.A. (2006). Development in public-private partnerships for construction based projects in developing countries. Paper presented at CIB W107 Construction in Developing Countries International Symposium: 'Construction in Developing Economies: New Issues and Challenges', 18-20 January, Santiago, Chile.

Akhmat, G. & Bochun, Y. (2010), Rapidly Changing Dynamics of Urbanization in China: Escalating Regional Inequalities and Urban Management Problems. *Journal of Sustainable Development, 3(2),* 153-158.

Aluko, O. O. (2008). Construction project abandonment in Nigeria: A Threat to National Economy; *Knowledge Review, 16(3),* 18 – 23.

Amis, D. & Kumar. (2000). Urban economic growth, infrastructure, and poverty in India: Lessons from Visakhapatnam, environment and urbanization. *12 (1).*

Aribigbola, A. (2001). Housing and Nigerian Development: Assessment of Policy Measure and Direction. *African Journal of Environmental Studies, 2(2),* 117-122.

Awotona, A. & Ogunshakin, L. (1994), Multi-Habitation and Cultural Structures. Experiences from Nigeria, Book of Readings, Department of Architecture, O.A.U., Ile-Ife and CARDO, Newcastle, U.K.

Australian Institute of Health and Welfare (2007). Indigenous housing indicators 2005-06. Canberra: Australian Institute of Health and Welfare.

Ayodele, E. O. & Alabi, O. M. (2011), Abandonment of Construction Projects in Nigeria: Causes and Effects; *Journal of Emerging Trends in Economics and Management Sciences (JETEMS), 2(2),* 142-145.

Bala, K. & Bustani, S. A. (2009): A Review of Housing Delivery Efforts in Nigeria. ISA Housing Conference, "Housing Assets, Housing People". Department of Urban Studies, University of Glasgow.

Burns, N. & Grove, S. K. (2003) *Understanding nursing research.* 3rd Ed. Philadelphia, W.B. Saunders Company.

Cochran, W. G. 1963. *Sampling Techniques*, 2nd Ed., New York: John Wiley and Sons, Inc.

Code Wit News (2013). Abuja Jubilation Bethel Estate Crisis Deepens. Code Wit World News. Retrieved from http://www.codewit.com/business/14614-abuja-jubilation-bethel-estate-crisisdeepens.

Coker, O. A., Awokola, O. S., Olomolaiye, O. P & Booth, C. A (2007). Challenges of urban housing quality and its associations with neighborhood environments: insights and experiences of Ibadan City. Chartered Institute of Environmental health, *(7) 1.*

Council for Public-Private Partnerships. (2003). About PPP: Definitions. Retrieved from http:/www.pppcouncil.ca/aboutPPP_definition.asp.

Egbu, A., Olomolaiye, P., & Gameson, R. (2008). A neo-institutional economic critique of the system for allocating urban land and development rights in Nigeria. *Habitat International, 32 (1),* 121-135.

Encarta. (2007). A computer base Microsoft software.

Famuyiwa, F. & Otegbulu, A. C. (2012). Public water infrastructure in property prices: An environmental valuation approach. *Elixir Infrastructure Mgmt. 51.*

FCTA. (2008). *Report of the Committee on the Review of Mass Housing Scheme in the Federal Capital Territory (FCT)*. Abuja: FCTA

Federal Republic of Nigeria, (FRN), *National Housing Policy*, Lagos, (1991), Federal Ministry of Works and Housing.

Fulmer, J. (2009). What in the world is infrastructure? *PEI Infrastructure Investor* (July/August): 30–32.

Giddings, S. (2007). 'Housing challenges and opportunities in sub-sahara Africa', International Housing Coalition (IHC) Housing for All, Washington.

Glenn, I. D. (2003). Determining Sample Size, Agricultural Education and Communication Department, Florida Cooperative Extension Service, Institute of food and Agricultural Sciences, University of Florida.

Gumel, H.S. (2000). Strategies for Sustainable and Affordable Housing Delivery in Nigeria. *The Professional Builder, Journal of the Nigerian Institute of Building.* 3-7.

Ibrahim, K. & Mbamali I. (2013).Availability of Housing Financing Funds for Private Estate Developers in Abuja, Nigeria. A paper presented at the Sustainable building Conference held at Coventry University. 3-5, July.

Ibrahim, U. I. & Kwankur, T. G. (2012). The Challenges of Housing Development and Needs in Abuja. A paper May 2012. The FIG working week, Rome, Italy.

Ibem, O. E. (2009). Community-led Infrastructure Provision in Low-Income Urban Communities in Developing Countries: A study on Ohafia, Nigeria. *Journal of Sustainable Development in Africa, 12*(6), 125–132.

Ibem, O. E. (2010). An Assessment of the Role of Government Agencies in Public-Private Partnerships in Housing Delivery in Nigeria. *Journal of Construction in Developing Countries, 15(2),* 23–48.

Ibem, E. O., Anosike, M. N. Azuh, D. E. (2011). Challenges in public housing provision in the post-independence era in Nigeria. *International Journal of Human Sciences, 8(2), 422-443.*

Ihuah, P. W. & Benebo, A. M. (2014). An Assessment of the Causes and Effects of Abandonment of Development Projects on Property Value in Nigeria, *International Journal of Research in Applied, Natural and Social Sciences, 2(6).* 25-36.

Iseh, F. (2003). The state of urban infrastructure in Nigeria. Atlantis Books, Ibadan. Nigeria.

Japan. (2004). Seminar on public works administration in regional government II. City Planning System. October, 2004. JICA, Japan.

Johnson, T., Davies, K. & Shapiro, E. (2005) Modern Methods of Valuation of Land, Houses and Buildings. Estate Gazette, London.

Jiboye, A. D. (2011). Urbanization challenges and housing delivery in Nigeria: The need for an effective Policy framework for Sustainable Development. *International Review of Social Sciences and Humanities, 2(1),* 176-185.

Kanu, K. U. (2012). 'Appraisal of the implementation of the mass housing programme in the FCT, Abuja'. Unpublished M.Sc thesis of the Department of Urban and Regional Planning, Ahmadu Bello University, Zaria.

Kashim, I. (2012). Development of Water Supply Infrastructure in Nigeria: Challenges and Prospects. A paper Nigerian Society of Engineers October Lecture.

Kihato, M. (2009). 'Infrastructure and housing finance': exploring the issues in Africa. Centre for affordable housing finance in Africa.

Kish, Leslie (1965) *Survey Sampling* New York John Wiley and Sons, Inc.

Kumar, D. (2005). Infrastructure in India. *ICFAI Journal of Infrastructure*. Retrieved from http://129.3.20.41/eps/urb/papers/0506/0506002.pdf.

Lawanson, T. (2010). Poverty and Environmental Conditions in the Lagos Megacity: Consequences for Environmental Health. . The Lagos Journal of Environmental Studies *7(2),* 99-105.

Leadership News (2015). Uninhabited Estates. Retrieved from http://leadership.ng/news/447643/uninhabited-estates-billion-naira-properties-rotting-away-in-abuja-investigation

Mabogunje, A. (2001). Abuja: the provision, the performance and the prospects. *The review of Abuja master plan* (pp. 1-10). Ibadan: Fountain publications.

Mbambali, I. & Okotie, A.J. (2012). An Assessment of the Threats and Opportunities of Globalization on Building Practice in Nigeria. *American international Journal of Contemporary Research. 2(4),* 143-150.

Moser, C. A. & Kalton, G. (1971) *Survey Methods in Social Investigation*, UK: Heinemann Educational.

National Bureau of Statistics (2014). The Nigerian statistical facts sheets on economic and social development. Abuja: NBS.

National Housing Policy. (2012). Retrieved from http://www.socialhousingnigeria.com/documents/National%20Housing%20Policy%20% 20adpoted%202012.doc.

National Population Commission, (2006). State Population, Retrieved from www.population.gov.ng/index.php/state-population.

National Technical Working Group on Housing. (2009). Nigeria Vision 2020. Retrieved from http://www.ibenaija.org/uploads/1/0/1/2/10128027/housing_ntwg_report.pdf.

Nubi, T. O. (2003). 'Procuring, Managing and Financing Urban Infrastructure: Towards an Integrated Approach' Land Management and Property Tax Reform in Nigeria, in Omirin et al. (ed.) Department of Estate Management, University of Lagos, Akoka.

Odenyinka, H. A. & Yusuf, A. (1997). The Causes and Effects of Construction Delays on Cost of Housing Project in Nigeria; *Journal of Financial Management and Property and Construction, 2*, 31-41.

Odudu, C. (2003). Significance of Infrastructure in Determining Land and Rental Values in an Urban Area-The Case of Lagos Metropolis. Land Management and Property Tax Reform in Nigeria-Proceedings of a National Workshop organized by the Department of Estate Management, University of Lagos, Nigeria.

Okupe, O. (2002). *Problem of Real Estate Developers in Nigeria*, A paper presented at a workshop organized by the Nigerian Institute of Quantity Surveyors, Abuja.

Ogu, V. I (2005). Urban Infrastructure and Development and sustainability. Human Settlement Development.

Olotuah, A. O. (2002). Recourse to Earth for Low-Cost Housing in Nigeria. *Building and Environment, 37*, 123-129.

Olujimi, J. A. (2010). Analysis of the Relationships of Infrastructural Facilities in the determination of Rental Values of Residential Properties in Akure, Nigeria. *Arts and Social Sciences Journal.*

Omole, F. K. (2010). An Assessment of Housing Condition and Socio-Economic Life Styles of Slum Dwellers in Akure, Nigeria. *Contemporary Management Research, 6(4),* 273-290.

Otegbulu, A & Adewunmi, Y. A (2009). Evaluating the Sustainability of Urban Housing Development in Nigeria through Innovative Infrastructure Management. *International Journal of Housing Markets and Analysis, 2(4),* 334- 346.

Pritika, H. & Piyush, T. (2012). Housing and basic infrastructure services for all: A conceptual framework for urban India.

Rajasekar, S., Philominathan, S. & Chinnathambi, V. (2013). Research Methodology. Retrieved from arxi.org/pdf/physics/0601009

Real Estate Developers Association of Nigeria (REDAN) (2014). *Registered members*. Retrieved from http://www.redansw.com/web/members.

Rufai, H.S. (2010). 'User Satisfaction Study of Selected Public–Private Partnership Projects in Abuja'. Unpublished M.Sc. thesis of the Department of Urban and Regional Planning Ahmadu Bello University, Zaria, Nigeria.

Sengupta, U. (2006). "Government intervention and public-private partnerships in Kolkata". Habitat International, 30, 448-461.

Sengupta, U. & Tipple, A. G. (2007). The performance of public-sector housing in Kolkata, India, in the Post-reform Milieu. *Urban Studies, 44(10),* 2009-2027.

Shelter Afrique (2008). "Mortgage financing for increased access to housing in Africa", symposium organized jointly by Shelter Afrique and the Ministry of Housing, Republic of Togo held in Lome, 10th June.

Sumaila A. F. (2013). "Building sustainable policy framework for transport development: A review of national transport policy initiatives in Nigeria", International *Journal of Development and Sustainability, 2(2),* 505-520.

Tecco, N. (2008). Financially sustainable investments in developing countries water sectors: what conditions could promote private sector involvement? *International Environment Agreements, 8,* 129–142.

The Federal Ministry of Works and Housing (2002).The Federal Ministry of Works and Housing Nigeria's Agenda 21.Federal Environment Protection Agency. Abuja.

The Longman online dictionary. (2014). Retrieved from http://www.ldoceonline.com/spellcheck/?q=%ednfrastructure

Udoka, I. S. (2013). The Imperatives of the Provision of Infrastructure and Improved Property Values in Nigeria. *Mediterranean Journal of Social Sciences, 4(15),* 21-33.

Ukoje, J. E. & Kanu, K. U. (2014). Implementation and the Challenges of the Mass Housing Scheme in Abuja, Nigeria. *American International Journal of Contemporary Research, 4(4),* 209-218.

Ukwayi, J. K., Eja, E. E., Ojong, F. E. & Otu, J. E. (2012). An Assessment of Housing Delivery in Nigeria: Federal Mortgage Bank Scenario. *Canadian Social Science, 8(6),* 68-74.

Umoh, N. (2012). Exploring the Enabling Approach to Housing through the Abuja Mass Housing Scheme. M.Sc. Thesis, Department of Urban Studies and Planning, Massachusetts Institute of Technology.

UN-Habitat. (2005), "Global report on human settlements 2005: Financing urban shelter", United Nations Human Settlement Programme, UN-Habitat, Earth Scan Publications, London.

UN-Habitat. (2006b). Public–Private Partnerships in Enabling Shelter Strategies. Nairobi: Retrieved from United Nations HABITAT Information Services. http://www.unhabitat.org/.

UN-Habitat. (2010). Solid Waste Management in the World's Cities. Retrieved from http:/www.waste.nl/sites/waste.nl/files/product/files/swm_in_world_cities_2010.pdf

UN-Habitat. (2011). Affordable Land and Housing in Africa. Retrieved from http://www.iut.nu/Literature/UnHabitat/Africa_AffordableHousing_2012.pdf

UN-Habitat. (2012). State of the World's Cities 2012/2013. Prosperity of Cities. Retrieved from https://sustainabledevelopment.un.org/content/documents/745habitat.pdf

United Nations. (2002). A United Nations Report on Human Settlement: The Changing Shelter Policies in Nigeria. Retrieved from: www.un-habitat.org

Wakirwa, A. M. (2006). Reviews of public private sector partnership in housing delivery: A case study of FHA Gwarimpa II, International Mbora project and EFAB – City Project. An unpublished M.Sc URP Thesis, ABU, Zaria.

Weli, V. & Ogbonna V. (2015). An Analysis of Well Water Quality and the incidence of Water Borne Diseases in Emohua Communities, Rivers state, Nigeria: *International Journal of Environment and Pollution Research, 3*(2), 32-41.

World Health Organization (2005). "Annual Review of Environment and Health in Africa" July 2004 - June 2005 WHO Geneva. 22-32.

World Bank (2015). What is PPP? Retrieved from http://ppp.worldbank.org/public-private-partnership/overview/what-are-public-private-partnerships.

World Bank. (2005) Global Strategy and Booster Programme. Annual Report.

World Health Organization. (2009) *Environmental health*. Retrieved from http://www.who.int/topics/environmental_health/en/

World Health Organization. (2002) Water, Sanitation and Hygiene links to Health: facts and figures. Retrieved from http://www.who.int/water_sanitation_health/en/factsfigures04.pdf

Zakout, A. A. (2006). Provisions of Infrastructure for Low-Cost Housing Developments. M.Sc. Thesis Department of Infrastructure Engineering, the Islamic University of Gaza, Palestine.

Ziara, M. & Ayyub, B. (1996). Methodology for construction reduced-cost Housing: System framework with decision analysis, Conference on Affordable Housing, Birzeit, Palestine.

APPENDIX I
QUESTIONNAIRE TO DEVELOPERS
An Assessment of the Provision of Infrastructure in Public Private Partnership Housing Estates in Abuja

Department of Building, Ahmadu Bello University, Zaria, Kaduna State

SECTION A (Respondent's Profile)

1. Name of your organization (optional) …….
2. Address of the organization
   …….....
   ……..
3. Kindly indicate the size of your company. a. 0-9 employees [ ] b.10-99 employees [ ] c. 100-200 employees [ ] d. Over 200 employees [ ]
4. Please indicate the type of ownership structure in your organization.
   a. Sole proprietor [ ] b. Partnership [ ] c. Corporation [ ] d. Public Limited e. Public Unlimited [ ]
5. Please indicate your years of working experience. a. 0-5 years [ ] b. 6 -10 years [ ] c. 11 – 15 years [ ] d. 16 – 20 years [ ] e. over 20 years [ ]
6. Kindly tick your highest academic qualification. a. Ordinary National Diploma [ ] b. Higher National Diploma c. Bachelor's Degree [ ] d. Post Graduate Diploma e. Masters [ ] f. Doctorate Degree [ ]g. Others (Please State) …….
7. What Category of developer does your organization belong to?
   a. Land Developer[ ]b. On-site developer [ ] c. Merchant developer [ ] d. Developer Investor [ ]

SECTION B (Assessment of Developers Involvement in Providing Infrastructure in Housing Estates in Abuja)

8. Have you ever been involved in providing housing units and infrastructure in estates within Abuja? Yes [ ] No [ ]
9. If yes how many ……
10. Are you aware of the problems involved in the provision of infrastructure in housing estates? Yes [ ] No [ ]
11. Are you aware of the importance infrastructure provision play in housing delivery? Yes [ ] No [ ]
12. When do u provide infrastructure in housing estates? a. Before providing housing units [ ] b. After housing units have been provided [ ]
13. Please kindly indicate source of funds for infrastructure development?
    a. Internal funds [ ] b. Commercial banks [ ]c. Mortgage banks [ ] d. Loans from Thrift and credit society[ ] e. Foreign Direct Investment[ ] f. Government bonds [ ]
14. Kindly rate the level of participation of developers in providing infrastructure in housing estates in Abuja. 5. Very high (≥ 70) [ ] 4. High (60-69%) [ ] 3. Average (45-59%) [ ] 2. Low (30-40%) [ ] 1. Very Low (≤30%) [ ]
15. What type of labour is employed in the provision of infrastructure? a. Direct [ ] b. Contract [ ]

SECTION C (Assessment of factors affecting the provision of infrastructure in housing estates in Abuja)

Please kindly rank the factors affecting the provision of infrastructure in housing estates in Abuja

S/No	Factors	Rank				
		Strongly Disagree	**Disagree**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	Inability of Government to provide primary infrastructure.					
2	Increasing demands due to rapid urbanization.					
3	Poor planning and execution strategies by developers.					
4	Insufficient finance					
5	High Interest on loans					
6	Inconsistency in government policies					
7	Delayed detailed land use and site development plans					
8	High cost of building materials.					
9	Lack of technical professionals					
10	Delays from subcontractors					
11	High cost of construction					
12	Risk of low returns on investment					
13	High infrastructure standards.					
14	Complexity of construction works					
15	Negative effect on the affordability of the houses					
16	Inability to provide collateral for loan					
17	Lack of long term loans					

Others _____

SECTION D (Practices to enhance the provision of infrastructure in housing estates in Abuja)

Please kindly rank the practices to enhance the provision of infrastructure in housing estates in Abuja

S/No	Practices	Rank				
		Strongly Disagree	**Disagree**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	Availability of funds to provide infrastructure in estates					
2	Low interests on loans					
3	Availability of long term loans					
4	Early provision of primary infrastructure by government.					
5	Timely approval of site development plan					
6	Provision of subsidies on building materials by government					
7	Consistency in housing policies by government					
8	Cooperation from regulatory body					
9	Reform high standards for infrastructure					
10	Proper planning and execution strategies by developers					
11	Appropriate risk allocation					
12	Generation of funds from off-takers to provide infrastructure.					

Others _____

APPENDIX II
INFRASTRUCTURE CHECKLIST TO ESTATES

SECTION A (Characteristics of estate)

1. Name of Estate …….
2. Location of Estate

   …….
3. Year of establishment? a. 1995 – 1999 [ ] b. 2000 – 2005 [ ] c. 2006 – 2010 [ ]

   d. Above 2010 [ ]
4. Types of Residential Buildings in Estates? a. Bungalows [ ] b. Duplexes [ ] c.

   Flats [ ]

SECTION B (List of Required Infrastructure in estates in Abuja)

5. Access roads ☐
6. Water Supply ☐
7. Drainages ☐
8. Street Lights ☐
9. Sewer lines ☐
10. Electricity ☐
11. Shopping facility ☐
12. Recreational facility ☐