

# **A Review of Mass Housing in Abuja, Nigeria: Problems and Possible Solutions towards Sustainable Housing**

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## **ABSTRACT**

Housing is one of the most basic and oldest developments of mankind. Because of its necessity and importance, it has evolved tremendously over time. Due to rural – urban migration, mass housing has become an inevitable part in the development of cities. Most significant of the development of the idea of mass housing are: (1) The industrial Revolution, which brought about a massive movement of people from rural to urban areas in search of jobs to earn a wage or salary, and (2) The World War, after which a large number of houses were to be built quickly and economically to shelter immigrants in search of shelter, and also to make up for the destroyed or damaged housing developments in the affected areas. Mass housing during these periods became an important part of urban development. These mass housing developments which came as a solution to shelter an ever growing population unfortunately came along with physical, socio – cultural and economic problems.

Abuja, being a city undergoing massive development, due to the fact that it is the Federal Capital Territory of Nigeria, also in turn faces massive urbanization due to the movement of people to the city in search of jobs. Mass Housing developments have also been provided as a solution to shelter the growing urban population and also to provide a re – settlement scheme for the original settlers of the area.

The main aim of this study is to find out why the mass housing schemes in Abuja, Nigeria are not successful by the analysis of the situation of mass housing environments in Abuja, which were developed by the federal government, and to see if they qualify as

sustainable developments or not and if not, find out how sustainability can help in solving the problems created by these mass housing developments and suggest some solutions according to the design considerations for sustainable mass housing developments.

In trying to do this, an analysis of the situation of mass housing is done through literature review of existing data, and also, some selected case studies, which include the Gwarimpa Estate, Lugbe Estate and The Re – Settlement scheme, have been analyzed in terms of Socio – Cultural, Physical and Economic development, through site survey

After the analysis of the case studies through the design considerations for sustainable mass housing developments, the advantages and disadvantages of the different mass housing schemes have been identified in a comparative way, problems identified, at the end, possible solutions given according to the principles of sustainable development.

## ÖZET

Konut insanlığın en temel ve en eski gelişimlerinden biridir. Konutun gerekliliği ve önemi nedeniyle, zaman içinde muazzam gelişmiştir. Kırsal – kentsel göçten dolayı, toplu konutlar kentlerin gelişmesinin kaçınılmaz bir parçası haline gelmiştir. Toplu konut fikrinin gelişmesindeki en önemli etkenler şunlardır: (1) Sanayi Devrimi, kırsal alanlardan kentsel alanlara iş arayan bir ücret ve maaş kazanmak için gelen büyük bir insan hareketi, ve 2) Dünya Savaşı, savaş sonrasında sığınacak yer arayan göçmenlerin sığınak aramasından kurtulmak için hızlı ve ekonomik olarak inşa edilen çok sayıda konut, ve ayrıca savaştan tahrip olan ve etkilenen konutları telafi etmek. Toplu konut, bu dönemlerde kentsel gelişimin önemli bir parçası haline gelmiştir. Toplu konuttaki bu gelişmeler büyüyen nüfusa sığınak çözümü yaratsa da ne yazık ki fiziksel, sosyo - kültürel ve ekonomik sorunları da beraberinde getirmiştir.

Abuja, Nijerya’da büyük gelişim altında olan bir şehirdir; Nijerya Federal Başşehir Bölgesi olmasından dolayı, bunun yanında, insanların iş arama nedeni ile büyük bir şehirleşme hareketiyle karşı karşıya kalmıştır. Toplu konuttaki gelişmeler, gelişen nüfusun barınması için bir çözüm yaratmakta ve aynı zamanda özgün yerleşimcilere yeniden yerleşim düzeni sağlamaktadır.

Bu çalışmanın amacı Abuja’daki federal devlet tarafından geliştirilen toplu konut projelerinin, neden başarılı olmadıklarını, buldukları ortama göre analiz etmek ve sürdürülebilir gelişim olup olmadıklarının sebeplerini ortaya koymaktır. Toplu konut gelişimlerinin yarattığı problemlerin çözümlenmesinde sürdürülebilirliğin nasıl yardımcı

olacağını bulmak ve sürdürülebilir toplu konut gelişimlerinin tasarım hususlarından göre bazı çözümler önermek de araştırmanın bir diğer amacıdır.

Bu çalışmayı yapmak için, toplu konut durum analizi mevcut literatür taraması yapılmış ve bunun yanında Gwarimpa Emlak, Lugbe Emlak ve Yeni Yerleşim Planı gibi seçilmiş alan çalışmaları, sosyo-kültürel, fiziksel ve ekonomik gelişmeler yönünden incelenmiştir.

Sürdürülebilir toplu konut gelişmeleri için tasarım esasları örnek çalışmaları üzerinde analiz edildikten sonra, farklı toplu konutların avantaj ve dezavantajları karşılaştırmalı bir şekilde tespit edilmiş, problemler tanımlanmış, sonunda, sürdürülebilir gelişim ilkelerine göre çözüm önerileri sunulmuştur.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Problem Definition

Housing is an important factor in the recognition of a society's success among nations. It is difficult to talk about the success of a nation, or a society within a nation without analyzing its housing situation.

Housing provides a link between the physical development of a city, and its social and economic outcomes. The availability of decent housing for each family defines the level of development which the country has reached. This is because the social and economic wealth of the country can only co-exist with good housing.

Housing is not concerned with the design of a specific housing unit. It is concerned with the design of a whole housing environment which includes accommodation, jobs, education, health services, etc., in a context which is accessible, safe, hygienic, aesthetically pleasing and also sustainable.

Mass Housing, generally, when first thought of is a term most people use to describe a cluster of high rise, low cost residential buildings. This is usually not always the case. Mass housing is the construction or springing up of a relatively high number of residential buildings in an area in a relatively short period of time due to high demand.

One of the notable periods which brought about the idea of mass housing and also came along with numerous housing problems was the industrial revolution. It was called a revolution because it changed the society in a rapid and significant way. It brought about capitalism and also created a shift from the agricultural society to modern industrial societies. Due to this introduction of capitalism and the movement of goods production from houses to factories, people migrated from these rural areas of agriculture to cities in search of new jobs, so as to earn a wage or salary. With time, urbanization increased rapidly, and led to a significant rapid increase in population in the industrial cities. Because of this rapid increase in population, more and more housing had to be provided for the labor force. This scarcity of housing led to the construction of mass housing, which had poor living conditions and were characterized as unhygienic, overcrowded and also lacked infrastructures and social amenities.

The World War is another event in history which affected the provision and construction of housing. After the war, there was a critically high demand of housing because of the number of houses damaged or destroyed by enemy attacks, and also in cities which still stood but had a high number of immigrants in search of shelter. Large numbers of houses were to be built quickly and economically. The idea was to design houses that could be mass-produced and prefabricated.

Another event that has brought about a change in the housing and is present to date is globalization, post communism which increased immigration to developed countries from other countries, and privatization.

Mass Housing would come to be an important and essential development in most developing countries because of the amount of people moving from rural parts of the country to the urbanized and developing parts.

The lack and deterioration of housing environments pose some of the greatest practical and ethical problems which were faced by developed countries and are still being faced by some developed countries and developing countries.

Another contemporary issue regarding housing is Sustainability and Sustainable housing. This is because sustainability refers to the ability of the natural environment to accommodate human activities, most especially those involving long term economic development; and because housing provides a link between the physical development of a city, which has to do with the environment, and also its social and economic outcomes, it is in a position of showing the way a more sustainable development.

Nigeria as a developing country, with 36 states, is undergoing a fast process of urbanization. It is a country blessed with agriculture and crude oil. Its major source of income and revenue was from agricultural produce but after the oil boom in the 1970s, Nigeria started shifting its concentration from agriculture to crude oil and of 2007 was the

15<sup>th</sup> largest producer of petroleum in the world. Also, it has one of the fastest growing telecommunication markets in the world, and is also developing vastly in information technology. Due to these diversions from agriculture, and a vast development in the urban areas, high populations of people migrate from rural to urban areas in search of jobs to earn a higher salary and a means of living. This migration means an increase in the demand of housing in these urban areas.

Mass housing is a solution which Nigeria and most other developing countries take up as a solution to their housing problems, but in most of these mass housing environments, neither the demand of the households and need of space, or the cultural factors are usually considered during the design process. This, coupled with other factors which not only affect the mass housing environments, but also affect the housing of the country as a whole in one way or another.

Some thirty years ago, the Government moved the Federal Capital Territory of Nigeria from Lagos to the inner part of the country towards the center, and the city of Abuja was founded. As the new Federal Capital Territory of Nigeria, Abuja is a city where urbanization and development in terms of commercial, residential, industrial, social and political growth has been in progress and is still taking place. Today, it is a city of grand avenues and huge complexes, which house government offices.

The population of Abuja has increased tremendously and is still on the increase due to urbanization. Due to this rapid increase in population, there is a long gap between the



production of housing and its demand. It is a lovely city, but it is also a city which is too costly for most of the people who work in the government and service industries to afford, and as such, like so many other cities in the developing world, it is surrounded by vast neighborhoods of poverty, satellite towns, slums, informal settlements and different mass housing schemes.

The provision of this mass housing in Abuja by the government is an answer to providing shelter for people, but in most cases, these developments come with negative physical, socio – cultural and economical effects on the overall city.

Also, the part of Nigeria which was selected and demarcated to be made the Federal Capital Territory of the country was already inhabited by the Gbagy people, who are the original settlers. Because of this, the settlers had to be displaced from their place of origin. The federal government, after this, constructed different mass housing developments in various parts of Abuja for these original settlers to be relocated and re – settled. This was another development, in which neither the socio – cultural factors nor the need of space were considered.

From the present situation of mass housing environments in Abuja, it seems the mass housing developments are showing unsustainable characteristics.

Thus, this research is based on an analysis of different mass housing schemes which the government has developed in Abuja, the impact they have had on the city, as an urban

mass, and also its users, the problems which these developments create and at the end, suggest possible solutions to the problems identified by focusing on sustainability in mass housing.

## **1.2 Research Questions, Aims and Objectives**

This research intends to answer the following 2 main research questions as its major task:

- Why are mass housing schemes unsuccessful in Abuja?
- How can sustainability help in solving the problems created/associated with mass housing developments in Abuja?

To be able to answer these two questions, the answers of the following sub – questions will be dealt with through out the research:

- What is housing?
- What is mass housing, and how did it come to exist?
- What are the effects of mass housing developments to urban areas?
- What are the factors that influence the quality of mass housing developments?
- What is sustainability and sustainable development?
- What is sustainable housing development, and how can it be achieved?
- How does sustainable development affect mass housing developments, and How can it be achieved in the mass housing developments?
- What are the problems associated with housing in Nigeria, and why do they exist?
- What are the problems associated with housing, and more specifically mass housing in Abuja?

Accordingly, the main aim of this research is to analyze the mass housing schemes in Abuja, which are constructed by the federal government, so as to identify their positive and negative effects on the users, and to the city as a whole, and to understand the issues which prevent these mass housing schemes from being a success.

Secondly, the research aims to identify the advantages and disadvantages of these mass housing schemes and also the problems with the mass housing schemes which give them their negative characteristics.

Thirdly, to explore some principles of sustainability, the importance of sustainability to mass housing, and at the end suggest sustainable solutions which would help the housing authorities, the government, designers and planners in the design of mass housing developments in Abuja.

The objectives of this research, therefore, are listed as follows:

- To understand the concept of housing, housing principles and housing environments
- To analyze and perceive the concept and reason for mass housing and to determine and identify the issues and problems of these developments
- To understand the concept and reasons of sustainability
- To explore the relationship between mass housing and sustainability and also the importance of sustainability to mass housing and how sustainability can be applied to improve mass housing developments.

- To explore mass housing in Abuja, identify the physical, socio – cultural and economic problems associated with these developments and to determine solutions which could be applied to achieve a sustainable mass housing development.

### **1.3 Research Methodology**

The research methodology, which has been conducted both as deskwork and field work study, is a case study research and documentary research.

As a case study, the research concentrates on some selected cases in Abuja, which is the Federal Capital Territory of Nigeria, and tries to analyze its mass housing developments, by looking at three cases, which include The Gwarimpa Housing Estate, the Lugbe Housing Estate and the Re – Settlement scheme of the original settlers of the area which is now known as Abuja, according to the design considerations for sustainable mass housing developments.

As a documentary research, the study deals with an extensive literature review of existing data documented in books, journals, articles, published and unpublished papers, news papers and the internet.

Additionally, the research incorporates a descriptive and explanatory approach consequently. In this research, as part of the theoretical background, in Chapter Two, housing, mass housing, sustainability and sustainable housing developments have been analyzed and evaluated through both descriptive and explanatory approaches, and the parts of sustainability which are directly related to housing are clarified.

Similarly, in the case studies which are presented in Chapter Three, with the purpose of understanding the existing characteristics of the mass housing developments in Abuja, an analysis has been done by site survey of these mass housing developments, on - site observations and also by looking inside the life of those groups of people and their experiences in these developments by participation, through an explanatory approach.

The major techniques used for this research include personal observations and primary and secondary documents.

For the study of documents, as part of the theoretical background in Chapter Two, both book and non – book sources, which include books, journals, articles, published and unpublished papers, news papers and the internet, have been used.

The research study is action and future oriented because it analyzes the situation of mass housing in Abuja and at the end tries to determine solutions to the problems identified through sustainability.

#### **1.4 Limitations**

This thesis is both theory based and survey based but due to the limited documentation of Nigeria as a whole and therefore the limited documentation of Abuja also, there is a possibility that it would give an incomplete picture of the area studied. The survey tries to compensate for the limitations of the documentation. The thesis covers the understanding of mass housing development and studies the socio – cultural, economic and physical

aspects of these environments, but does not go into detail on specific housing units and their architectural features in these environments.

## **1.5 Scope**

This research comprises of four chapters. Chapter one, which is the introductory chapter, introduces the past and current issues of housing, and further more rules out the ideology of mass housing and defines the problems associated with this type of development in general, and in the country of Nigeria and its Federal Capital Territory, Abuja. Additionally, research questions, aims and objectives of the research, the research methodology and the scope are also presented in chapter one.

Chapter two deals with a literature review of already documented information about housing, mass housing, sustainability, sustainable developments, and mass housing and sustainability.

Chapter three includes a brief information of Nigeria, its housing problems and its legal frame work for housing. It also gives a brief information of the city of Abuja, its housing situation, and then the analysis of selected case studies.

Chapter four, which is the conclusion of the present research, summarizes the results / findings of the research and gives some recommendations in providing sustainable solutions to mass housing developments in the area of study (Abuja).

## **CHAPTER 2**

# **THEORETICAL FRAMEWORK FOR MASS HOUSING AND SUSTAINABILITY**

### **2.1 Housing and Housing Environments**

Housing is by far the most common form of building in the world and has, in many ways received considerable attention from decision-makers, architects, planners and critics alike. (Ismail 1988, 23). It is a form of development which has been in existence since in the stone age. This is because it provides the shelter and protection human beings need from harsh climatic conditions and crime. It is in many respects the most central environmental setting encountered by individuals during their daily routine, taking into consideration its psychological and social significance, which makes it one of the most vital development issues of our time.

Housing environments may provide a haven of security and comfortable, supportive milieu from which individuals organize their daily plans and activities. (Oktay 2001, 5)

Housing, as human habitat, is a dominant factor in the recognition of a society's success among nations. The availability of decent shelter for each family defines the level of development that the nation has reached. The social and economic wealth can only co-exist with good housing. (Ural 2002, 3). It, represents the physical manifestation of investment in a community, and directly relates to a primary concern of municipalities,

that of land use and development, and provides a link between physical development and social and economic outcomes. Housing, therefore, appears to be a reasonable and potentially powerful medium for monitoring the social, physical, environmental and economic characteristics of community. (Vehbi, Hoskara, Hoskara, 2009)

As economies grow, urbanization accelerates and demographics explode, pose some of the greatest practical and ethical problems that developing countries face. In the seamless web we call national development, housing is only one factor influencing the quality of human life. But how vital is it to human safety, still more fundamentally, the state of a person's home touches deep chords in the human spirit. (Khan 1988, 8)

Land in rural areas cannot provide the poor with a job, so migration in most cases is like a plea for employment, a courageous expression of the willingness to work, more than the poor soil or the unjust society of their home area. When these poor, jobless migrants land up in cities, they find neither jobs nor affordable housing and having no other alternative, tend to become part of the sprawling, ever-expanding squatters' slums. In some of the countries, half-hearted attempts have no doubt been made to solve the problem by launching low-cost housing programs for the urban poor but these policies miserably fail mainly because the government response to meet the shelter needs of the urban poor is not compatible with their sociology and economics. (Tasneem 1988, 74). The changing scenario of habitat all over the world is creating chaotic urban areas. These are characterized by rapid migration to the cities and chaotic developments of slums/unplanned habitable spaces.(Sanyal 2002, 313)



Since housing areas are the places where the problems of the environment touch most people's quality of life, the planning and design of housing environments requires a sensitive approach promoting sustainability. (Oktay 2001, V). As Plessis, (1999, 36) stated, Housing environments should be a source of community and a better life for individuals. The quality of one's environment can be negatively influenced by a variety of factors such as pollution of the air and water, badly maintained sanitary services, litter, overcrowding and hostile or bad quality buildings. People living in an environment of inferior quality are less likely to feel pride of belonging and ownership of their environment and are therefore less likely to act on both environmental problems and crime.

Housing for the urban and rural poor is not only shelter but the basic requirement of all economic activities. It is the starting point for a person to organize his actions, stabilize his mind and undertake plans and programs for doing something meaningful (Tasneem 1988, 74). It is important to provide an environment which is safe, hygienic and reflects human bonding and community spirit for a person to be able to organize himself and stabilize his mind in order to make a meaningful day. Success in housing depends more on how the space between buildings are handled than on interior design (Oktay, 2001)

Specific components of the housing environment are seen as those parts of the individual and Community identity that impact on health and well-being. These components include:

- the living unit and the division of space within the unit,
- hidden space within the building,
- indoor and outdoor recreational areas,
- sanitary facilities,
- water supply,
- protection from weather,
- heat and noise insulation,
- neighborhood circulation patterns,
- and proximity to sources of noise and fumes

(Kasl, 1979; Burden, 1979) in (Vehbi, Hoskara, Hoskara, 2009)

Housing is not only concerned with the design of a specific number of house units, but rather, the design of a whole environment that provides accommodation, jobs, education, health, services, etc. all this is to be achieved within a context that is accessible, safe, beautiful and sustainable (Erskine 1998, 22)

Communities that have control over their environment, are more inclined to intervene in issues such as crime that may be to their social and economic detriment. The benefit of territoriality and ownership stretches wider than encouraging the defending of private space. It also encourages improvements to and better maintenance of the built environment, resulting in a better quality environment. (Plessis, 1999, 35)

In his essay: “Towards a Sustainable Housing Development” Dilip da Cunha - states that: “Housing, because of its ability, as a total entity, to satisfy all the levels of need - spiritual, cultural, economic and physical is in a unique position to be the leading sector, showing the way towards more holistic policies and sustainable development”. (Vehbi, Hoskara, Hoskara, 2009)

## **2.2 Evolution of Mass Housing and its ideology**

There are two notable times/events in history when the world saw a rapid growth of urbanization. One of them was the Industrial Revolution, and the other was the World War (WW1 and WW2).

Historically, the nature and form of urban areas have undergone a long but inconsistent evolutionary process with the most rapid changes coming in the most recent 250 years with rapid urbanization accompanying industrialization. The industrial revolution started in the second half of the eighteenth century, beginning in Western Europe and centered in the UK. The explosion of technological advancement led to rapid development of new machines and systems and more efficient ways (at least in terms of the workforce) of producing goods. This in turn led to increasing demands for manpower and raw materials and drew more and more people to live and work in towns and cities. (Pitts 2004, 8)

The revolution transformed agriculture and the production of goods into an industrial one, and created a shift from the agricultural society to the industrial society. It occurred at a time when goods which were made in houses by individuals were transferred to factories. It affected what was produced, where it was produced and how it was

produced. It created a shift from the agricultural society to modern industrial societies. Due to this movement of goods production from houses to factories, people migrated from these rural areas of agriculture to cities in search of new jobs. (Schwab 1992; Rowe 1993; Gottdiener & Hutchison 1994)

Before industrialization, as much as 90 per cent of the population was rurally based; after then, it was as low as 10 per cent. (Pitts 2004, 9). Housing was to be provided for the growing labor force.

As the new towns and cities rapidly developed during the Industrial Revolution the need for cheap housing, near the factories, increased. Whilst there were some men, such as Robert Owen, who were willing to create good housing for their workers, many employers were not. These employers ruthlessly exploited their workers by erecting poor, and often unsanitary, shoddily built houses. Workers often paid high rents for, at best, sub-standard housing. (<http://www.saburchill.com/history/chapters/IR/039a.html>)

These mass housing environments which had poor living conditions were characterized as unhygienic, overcrowded and also lacked infrastructures and social amenities.

While new wealth helped finance the improvement of houses in both country and town, rapid increases in house-building to accommodate rural laborers migrating into urban areas led to a marked deterioration in the environment. Terraces of shoddily built dwellings were squeezed into poorly drained sites left over between factories and canal wharves. (Golland, et al 2004. 22)

For the industrial revolution, Mass Housing came as an idea to house the urban poor (factory workers) by the factory owners.

The First World War (1914 – 18) proved a major threshold in dwelling design and provision. (Golland, et al 2004. 23). After the war, there was a critically high demand for housing either by people migrating to safe areas in search of shelter or in areas which had been damaged by enemy attacks.

The Second World War (1939 – 45) saw a virtual moratorium on house-building as construction resources were diverted to military works. Governments of England looked to Architects after the 2<sup>nd</sup> World War to find solutions to housing problems – it was Architects who said the solution was the high rise block (Serageldin, 1988). After which, high rise residential buildings became an architectural discourse.

Urbanism is another development which encouraged the development of high rise structures.

According to Louis Worth, “urbanism was produced in relatively large, densely populated settlements containing heterogeneous people” (Gottdiener and Hutchison 2000, 116)

According to Harvey Molotch (1976), in his essay, *The City as a Growth Machine*,

*“A city and, more generally, any locality, is conceived as the real expression of the interests of some land-based elite. Such an elite is seen to profit through the increasing intensification of the land use of the area in which its members hold a common interest. An elite competes with other land-based elites in an effort to have growth-inducing resources invested within its own area as opposed to that of another. Governmental authority, at the local and nonlocal levels, is utilized to assist in achieving this growth at the expense of competing localities. Conditions of community life are largely a consequence of the social, economic, and political forces embodied in this growth machine.”*

This growth machines shows why there is a concentration of resources mainly in places where the elite and upper class people in the society reside, and also, due to the intensity of land use in certain areas, the land gains more value hereby increasing the cost of housing in such areas and therefore pushing land developers to develop high rise residential structures.

The sheer magnitude of homeless thousands has required large responses. Limitations of available capital, materials, management, and technical know-how seemed to dictate that governments adopt quick, low-cost solutions in the form of mass housing for low-income groups. (Khan 1988, 9)

### **2.3 Mass Housing in Developed and Developing Countries**

The previous section of this chapter draws out the process which brought about the ideology of mass housing. This occurred in countries which today we term as developed countries because they have gone through years of positive and negative changes and have tried numerous solutions to come to a concluding solution which best answers the problems associated with housing and especially mass housing developments in their countries.

For example, after the First World War in the United Kingdom, Prime Minister Lloyd George famously promised 'house for heroes' after the poor general health of recruits to military service and factory production became public knowledge. The Tudor Walters report (1918) advocated public subsidy to local authorities to build housing for rent at a recommended density of 12 dwellings per acre (30 per hectare), contrasting with 40 d.p.a (100 d.p.h) in the average terrace housing. Council estates were typically laid out with a radial concentric street pattern, influenced by neo-classical town planning but distinguished by semi-detached or short rows of three to six dwellings designed in the 'Arcadian' (rustic) style. In the two decades 1919-39 approximately 4 million dwellings were built, about 1.5 million by the public sector and 2.5 million by the private sector. Provision of incidental open space was certainly less than in municipal estates. (Wynn 1984).

Speculative housing development between the wars was encouraged by low agricultural land prices, lack of effective planning controls, a low bank rate, and the fact that many suburban market gardens could not get manure due to the replacement of draught horses by motor vehicles (Cherry, 1972). Local dairy farms suffered increasing competition from refrigerated transport and many were therefore sold for development. (Golland, et al 2004. 25). Great Britain has gone through several Housing policy changes, which include: Pre – 1945 Housing Policy and the First Post – War Labor Government, The Conservation Housing Policy 1951 – 1964, The Labor Housing Policy 1964 – 1970, etc. (Wynn 1984).

In other developed countries, such as the United States of America, France, Germany and Italy, such policy changes have also occurred over a period of time, all in the process of finding solutions which can best resolve the problem of housing and mass housing in these countries. (Wynn 1984).

Today we see examples of Sustainable Housing Developments such as the BedZED zero energy development, located in Wallington, England, The Cube House in Rotterdam – a mixed use development providing 24hrs use, The Cittaslow towns in the England, Norway, Wales, Poland, Germany, Italy, etc.

On the other hand, developing countries are at present going through the same process which the developed countries passed through, with little or no precautions to ensure that same mistakes are made.

Governments in the Third World have been content with improving the built environment by purely technical methods primarily aimed at securing a high volume of construction without particular regard to cultural and social factors. Their housing programs have been determined, not by a thorough analysis of real housing needs, but by the meager financial resources at their disposal and by the productive capacity of their construction industries. (Zulficar, 1988)



Besides, the importance of the connectivity between environmental, economic and social issues has not yet been realized and decision makers still treat these issues separately. (Doratli, Hoskara & Pulhan, 2003)

There is again the problem of lack of implemented housing policies in developing countries. The housing policies may exist but the lack of implementation of these policies give people the freedom to act as they want. Because of this, as explained in the previous section of this chapter, the growth machine principle then take effect in such areas, hereby providing more for the elite and less for the low income group of the society, which then leads to the construction of spontaneous settlements, many of which are dismal slums with miserable and unsanitary conditions, or overcrowded mass housing environments. (Serageldin, 1988; Molotch, 1976)

Governments in developing countries are often tempted to embrace ecologically unsafe development strategies in order to achieve short term economic growth. This results in mass housing developments which in no time become slums.

In most of these countries there are no definite regulations regarding the proper subdivision and making use of the land. In some of the countries, there exist some regulations and in others such regulations are incorporated in the framework of the general and long term planning. The rapid increase of population and willingness to live in cities on the one hand and the lack of land policy and the regulations for proper use of land on the other hand causes an improper growth of the city areas. Lack of proper policy

for citizenship and land creates the most important problem called “housing” in such countries and in such a way many slum areas are created too. (Massoudi and Simonian, 1978).

Since Housing areas are the places where the problems of the environment touch most people’s quality of life, the planning and design of housing environments requires a sensitive approach promoting sustainability (Oktay 2001, V).

## **2.4 Sustainability as a Contemporary Concept**

Urban areas are faced with rapid urbanization and because of this, there is a production of a series of environmental, socio-cultural and economic problems, which arise from the ever increasing population, consumption of natural resources, and the consequent regeneration of waste and pollution.

The concept of Sustainability has been developed to provide a solution to the issues and problems which are faced by many developed and developing countries, and has become one of the most commonly used words in every form of development today.

### **2.4.1 Definition of Sustainability and Sustainable Development**

*Sustainability can be defined as*

*“A dynamic equilibrium in the processes of interaction between a population and the carrying capacity of an environment, such that the population develops to express its full potential without producing irreversible adverse effects on the carrying capacity of the environment upon which it depends”.*  
([http://www.realitysandwich.com/sustainability\\_five\\_core\\_principles](http://www.realitysandwich.com/sustainability_five_core_principles))

It refers to the ability of the natural environment, or the ecosystem, to accommodate human activities, especially those constituting economic development, in the long term. (Vehbi, Hoskara & Hoskara 2009)

*Sustainability, in essence, is a way of thinking of one's relationship to the natural world in the context of time. (Oktay 2001, 1)*

There are several definitions for Sustainable Development, but the most well-known definition of sustainable development is that of the World commission on Environment and Development (WCED)(Introduced by Brudtland in 1987): “...*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (Hoff 1998, 6)

Sustainable development is based upon a development which balances urban development with the conservation of environmental resources of land, air, water, forests, energy, etc. (Oktay 2001, 1)

Sustainable development requires not just new techniques but new ways of thinking about social, economic and environmental goals and how to achieve them. (Warburton 1998, 4)

Sustainability (Nachhaltigkeit) as postulated in Germany "requires the inextricable linkage of ecology, economy and social security. Sustainable development requires that

improvements in economic and social living conditions accord with the long-term process of securing the natural foundations of life (G1)" (Beer, 2002)

As stated by Plessis & Holm (1999, 65), the central tenet behind sustainable development is to achieve harmony and balance between humankind and nature in such a way that it also allows equitable social and economical systems.

According to the International Conference on Conservation and Development (1986), Sustainable Development is defined as:

- Integration of conservation and development;
- Satisfaction of basic human needs;
- Achievement of equity and social justice;
- Provision of social self-determination and cultural diversity;
- Maintenance of ecological integrity.

(Oktay & Hoskara, 2003)

Sustainable Development can thus be defined as the evolving or transformation of the environment in a way that promotes a healthy and better way of life, both socially and economically, while the environment is still protected and nurtured, and in this process, not compromising the quality of life for future generations

#### **2.4.2 Three Dimensions of Sustainability**

Sustainable development is now commonly classified as having three main components: Economic Sustainability, Environmental sustainability and Social sustainability (this final

element sometimes being referred to as *equity*, thus giving the so called three Es: Economics; Environment and Equity) (Pitts 2004, 4). Therefore, there are three dimensions of sustainable development:

**The Social Dimension**, which covers cultural identity, empowerment, accessibility, stability and equity;

**The Economic Dimension**, which includes growth, development, productivity and trickle-down; and

**The environmental Dimension** including ecosystem integrity, carrying capacity and biodiversity

The linkages between these different dimensions of sustainability should be fully taken into account, and they should not be isolated from one another (Khan, 1995; Goodland and Daly, 1996; Mitlin and Satterthwaite, 1996, Hart, 1999; Williams, et al, 2000; Chiu, 2003) in (Vehbi, Hoskara & Hoskara 2009)

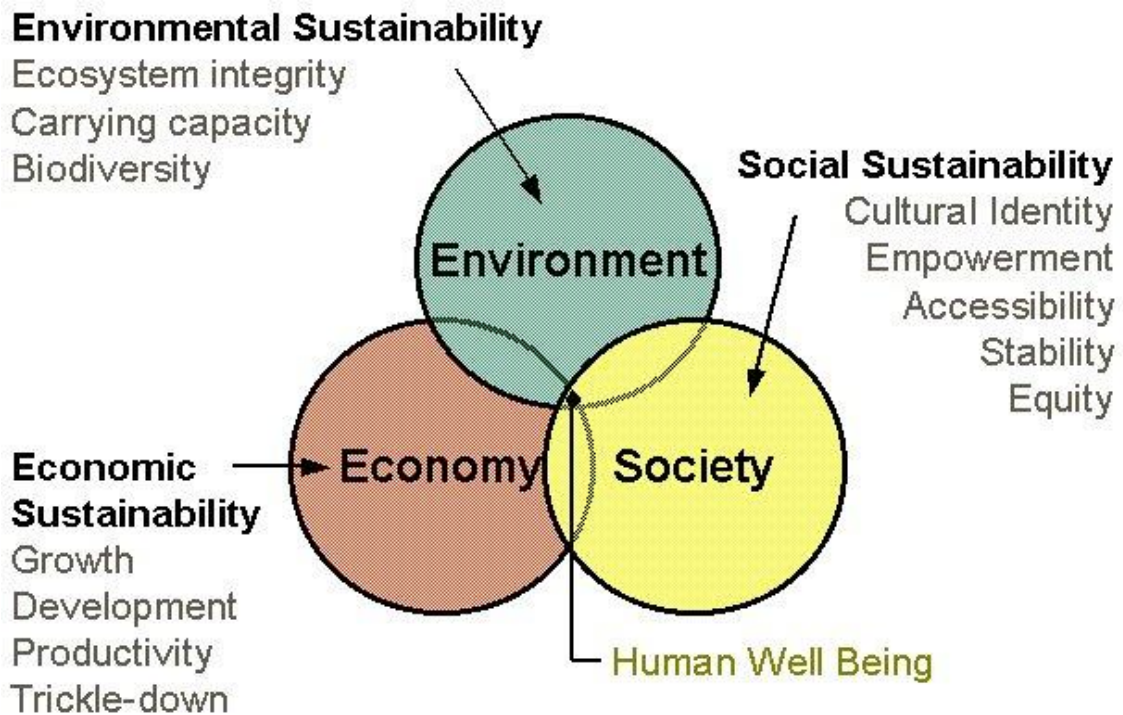


Figure 1: Relationship between the three dimensions of sustainability, with human well being at the point of intersection (Beer, 2002)

### 2.4.3 Principles of Sustainability

As Plessis (1999) analyzed, a key element of a sustainable environment is its ability to foster social cohesion and provide security for all who live in it. It would appear that there are various social and environmental factors that greatly influence both crime and sustainability. These are:

- **Poverty**
- **Equity and ownership**
- **Quality of the environment, and**
- **Access to Infrastructure, facilities and services.**

(Plessis, 1999, 35)

**Poverty:** Poverty is faced with physical and social marginalization and therefore little opportunity for self-improvement, many poor people turn to crime as both a survival mechanism and an entrepreneurial opportunity. Poverty, whatever it causes, is one of the great stumbling blocks to sustainable development. It impacts on the environment, the economy and the society. While poverty is mainly an issue that requires socio-economic solutions, the built environment can contribute to sustaining poverty levels. Many of today's cities create 'poverty traps' by placing the poor on the urban periphery at the mercy of expensive public transport systems, thereby preventing equitable access to health and educational facilities, as well as economic opportunities. Furthermore, people living in poorer areas not only have to cope with insufficient and badly maintained infrastructure, high crime rates and a bad quality environment, but the stigma of living in certain areas often leads to discrimination when applying for jobs or financial services. (Plessis 1999, 35)

There are three generalizations relating both to housing and health which are valid for the low-income majority in virtually all third world cities. The first is the fact that the accommodation in which they live is inadequate in protecting them from health risks. The second is that through lack of income they have very little chance of obtaining more adequate (or healthy) house, with sufficient space, security, services and facilities. The third, almost as universal as the previous two, is insecure tenure. Fear of eviction is a constant worry for most tenants, temporary boarders in cheap rooming houses, *de facto*

owners in illegal settlements or renters of land on which a house has been built. (Hardoy, Cairncross & Satterthwaite 1990, 18)

Sustainable development provides a new focus for tackling poverty and linking the implications of poverty to ecological damage:

*“Poverty is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfill their aspirations for a better life. A world in which poverty is endemic will always be prone to ecological and other catastrophes”.* (WCED 1987, 8) in (Warburton 1998, 20)

**Equity and Ownership:** Ownership addresses the principles of equity and self determination that underlie sustainable development, and, through fostering territoriality, influence crime patterns and the willingness of people to intervene in a potential crime situation. Newman (1972) saw the issue of territoriality as one of the key principles for crime prevention through environmental design. To him, there are four elements which make a space defensible through design:

- The territorial definition of space in developments reflecting the areas of influence of the inhabitants. This works by subdividing the residential environment into zones toward which adjacent residents easily adopt proprietary attitudes.
- The positioning of apartment windows to allow resident to naturally survey the exterior and interior public areas of their living environment.



- The adoption of building forms and idioms which avoid the stigma of peculiarity that allows others to perceive the vulnerability and isolation of the inhabitants.
- The enhancement of safety by locating residential developments in functionally sympathetic urban areas immediately adjacent to activities that do not provide continued threat.

(Newman, 1972)

**Quality of the Environment:** The quality of one's environment can be negatively influenced by a variety of factors such as pollution of the air and water, badly maintained sanitary services, litter, overcrowding and hostile or bad quality buildings. People living in an environment of inferior quality are less likely to feel pride of belonging and ownership of their environment and are therefore less likely to act on both environmental problems and crime. (Plessis 1999, 36)

Environments which have sanitary living conditions are more likely to attract people and individuals who live in such environments feel a sense of pride and belonging.

**Access to infrastructure, Facilities and Services:** The poor are excluded from economic activities and educational facilities due to their geographical position on the city periphery. Community facilities like libraries, clinics, day care, schools and recreational facilities, if they do exist, are often inadequate and offer inferior service. Separating the

poor from the rich in artificially striated communities heightens social disparities and incites negative, rather than positive interactions (CUTR, 1995) in (Plessis, 1999, 39)

The urban poor are in a more difficult position to move up the employment ladder when they get to urban areas. This is because even schools are not available to them, be it handcrafts workshop or schools which teach professional courses, not to talk of libraries. They live in environments which are unhealthy and have bad sanitary conditions but still they lack clinics. Hospitals are located far into the city centers and therefore create an extra cost of transportation on people in the society whom are already tagged the urban poor. They lack health services let alone talk of recreational facilities and day care. Lack of access to these facilities, which and one point or another become a necessity to the urban poor is what pushes them to crime. Sustainability promotes the provision of facilities close to residential areas. That alone can help go a long way.

It is an essential connection of any housing development that its residents have easy access to a range of community facilities. These include open spaces and meeting places, education and health services, and shops providing goods. (Towers, 2005)

A sustainable community seeks to:

**Protect and enhance the environment by:**

- Using energy, water, and other natural resources efficiently and with care
- Minimizing waste; then reuse or recover it through recycling, composting, or energy recovery; and finally sustainably dispose of what is left

- Limiting pollution to levels that do not damage natural systems
- Valuing and protecting the diversity of nature

**Meet social needs by:**

- Creating or enhancing places, spaces, and buildings that work well, wear well, and look well
- Making settlements human in scale or form
- Valuing and protecting diversity and local distinctiveness and strengthen local community and cultural identity
- Protecting human health and amenity through safe, clean, pleasant environments
- Emphasizing health service prevention action as well as cure
- Ensuring access to good food, water, housing, and fuel at reasonable cost
- Meeting local needs locally wherever possible
- Maximizing everyone's access to the skills and knowledge needed to play a full part in society
- Empowering all sections of the community to participate in decision making, and consider the social and community impacts of decisions

**Promote economic success by:**

- Creating a vibrant local economy that gives access to satisfying and rewarding work without damaging the local, national, or global environment
- Valuing unpaid work
- Encouraging necessary access to facilities, services, goods, and other people in ways that make less use of the car and minimize impacts on the environment
- Making opportunities for culture, leisure, and recreation readily available to all

(Department of Environment, Transport and the Regions, 1998) in (Agyeman & Evans, 2003)

As ruled out by Hoskara (1997, 75), a more comprehensive analysis of sustainable urban design principles, identified by the Local Government management Board of UK, can be summarized as:

- **Increasing local self sufficiency** (which is relevant to a range of scales from individual buildings to city-region – World/Biosphere/Gaya, Country/Sea/Airspace, City/Region/River, Neighborhood/Farm/Industry, Individual Building/Dwelling. At each level, the designer should attempt to maximize the level of autonomy of the eco-system by nesting spheres of influence; that is, to reduce the impact of the inner spheres on the outer spheres)
- **Satisfaction of the human needs** (by providing energy efficient housing; improving the quality of local environment; creating an attractive, safe and well-supervised urban environment with social stability and sense of community)
- **Structuring development around energy efficient movement networks** (the objective is to reduce the need to travel and in particular the reliance on car, while increasing travel choices for all groups in society; also to give all parts of development good access to public transport)
- **Providing an open space network** (Serving a number of inter-related purposes concerning managing pollution, wildlife, energy, water, sewage and green space)
- **Introducing linear concentration** (linear forms rather than compact forms)

- **Having a strong energy strategy** (which relates to reducing heat loss, maximizing solar gain, combined heat and power potential, embodied energy)
- **Having a water strategy** (by relying on end of pipe off-site solutions; minimizing consumption; encouraging on-site infiltration and waste treatment).

Caring for the Earth (1980) has also set out a range of principles for the achievement of a sustainable society. In summary they are:

- Respect and care for the community of life;
- Improve the quality of human life;
- Conserve the earth's vitality and diversity;
- Minimize the depletion of non-renewable resources;
- Keep within the earth's carrying capacity;
- Change personal attitudes and practices;
- Enable communities to care for their own environments;
- Provide a national frame work for integrating environment and conservation;
- Create a global alliance.

(Oktay & Hoskara, 2003, 143)

## **2.5 Mass Housing and Sustainability**

Sustainability is a concept which brings together a housing environment which solves most of the problems faced by mass housing developments.

Among the solutions provided or put forward to solve these problems faced by mass housing developments, Ebenezer Howard's Garden City, and his Social City, which included clusters of his Garden city is an example which best brings together a development which provides a sustainable solution to these developments.

Cities provided an urban environment which had characteristics as described by Ebenezer Howard in his diagram of the three magnets (Fig. 2). It consists of an environment closing out of nature, social opportunity, isolation of crowds, places of amusement, distance from work, high money wages, high rents and prices, changes of employment, excessive hours, army of unemployed, fogs and droughts, costly drainage, foul air, murky sky well lit streets, slums and gin palaces.

The city had economic and social opportunity, but overcrowded housing and an appalling physical environment. The countryside offered open fields and fresh air, but there all-too-few jobs and very little social life; and, paradoxically, if anything housing conditions for the average worker were just as bad. This contrast cannot be understood save in the context of the time: the 20 years of agricultural depression, which had brought a wave of mass migration from the country side to the town, coupled with economic changes in London and other large cities – the huge destruction of housing for offices and railways and docks – that had crowded the new arrivals ever more densely into slum tenements. (Hall and Ward 1998, 17)

Ebenezer Howard's diagram of the three magnets consisted of the Town, Country, and the Town-Country, with the people at the center.

The Town segment showed its characteristics of an environment closing out of nature, social opportunity, isolation of crowds, places of amusement, distance from work, high money wages, high rents and prices, changes of employment, excessive hours, army of unemployed, fogs and droughts, costly drainage, foul air, murky sky well lit streets, slums and gin palaces. The Country segment showed its characteristics of lack of society, beauty of nature, hands out of work, land lying idle, trespassers beware, wood, meadow, forest, long-hours-low wages, fresh air low rents, lack of drainage, abundance of water, lack of amusement, bright sunshine, no public spirit, need for reform and deserted villages.

In the third segment, his idea was to discover an environment which possesses the power to redistribute the population in a spontaneous and healthy manner. Its characteristics was a combination of some aspects of both the town and country which included beauty of nature, social opportunity, fields and parks of easy access, low rents, high wages, low rates, plenty to do, low prices, no sweating, field for enterprise, flow of capital, pure air and water, good drainage, bright homes and gardens, no smoke, no slums, freedom and co-operation.

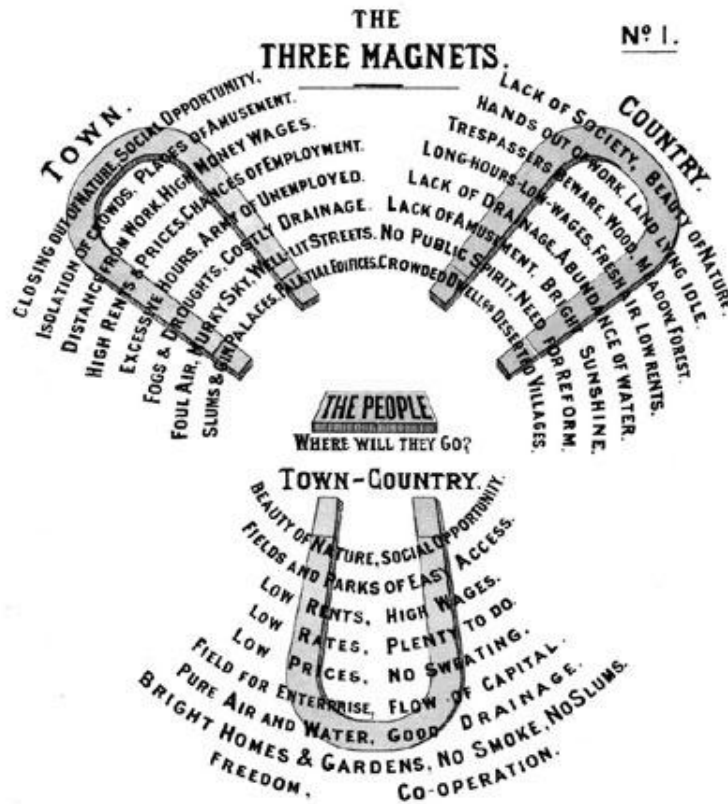


Figure 2: Ebenezer Howard's three magnets  
<http://www.tomorrowsgardencity.com/proudpast>

To achieve this, Howard argued, was to create a totally new town in the middle of the countryside, outside the sphere of the big city, where land could be bought at depressed agricultural land values. (Hall and Ward 1998, P. 17)

He came up with the idea of the *Garden City* (fig. 3). The basic notion was a mix-use, medium density, fixed-size development, jobs, schools, shops, parks, countryside all within walking distance.





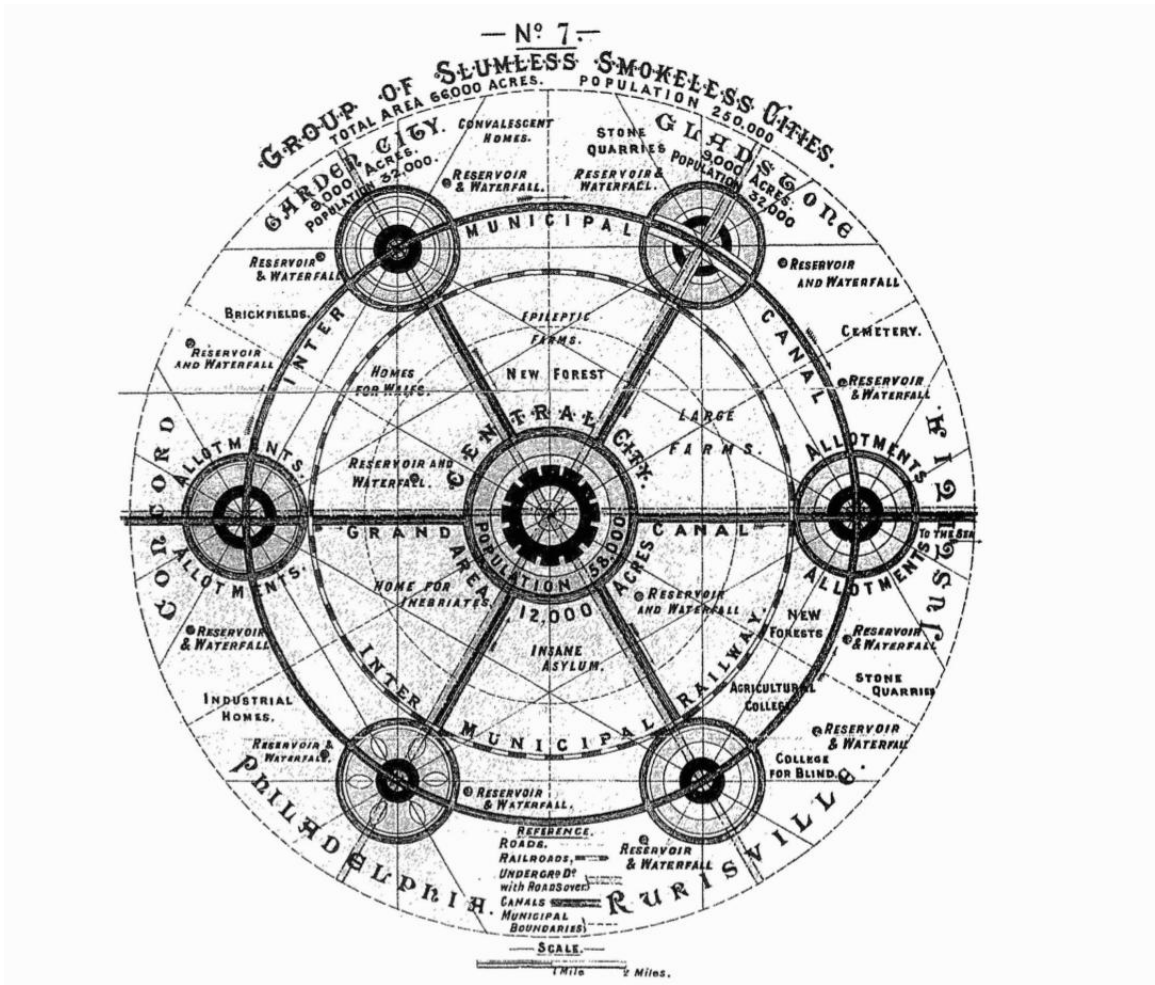


Figure 4: Ebenezer Howard's Social City showing clusters of garden cities, each sustainable ([http://farm4.static.flickr.com/3562/3696671853\\_51b9d11fea\\_o.png](http://farm4.static.flickr.com/3562/3696671853_51b9d11fea_o.png))

Today, we need one sector to show the way towards sustainable development. Housing, because of its ability as a total entity to satisfy all the level of need, is in a unique position to set this example, of a more holistic policy which proactively considers the broader issue of the global environment together with local tradition.

### 2.5.1 The Importance of Sustainability to Mass housing Developments

From the definition of sustainable development in the previous chapter, Sustainable Development requires not just new techniques, but new ways of thinking about social, economic and environmental goals and how to achieve them. (Warburton, 1998)

The principles of Sustainability, when summarized, include:

- The protection and enhancement of the environment,
- Meeting social needs, and
- Promoting Economic success.

The importance of sustainability to mass housing developments can therefore be listed as:

- **Social Opportunities**, which include the interaction of people in the environment, equality and diversity, convenient access to facilities, a feeling of safety and the availability of infrastructures.

The quality of life of individuals is improved by creating an attractive and safe urban environment with social stability and a sense of community. Sustainability also encourages the development of environments which have a character of vitality, variety and legibility which are high in quality, and therefore give the residents / users a sense of place - with the objective of reducing any sense of “placelessness”.

Mix of housing types and the integration of public open areas provides an environment which brings diverse people of different age, sex and income group to a common environment, which provides a place for interaction and therefore creates a sense of community and minimizes segregation.

Streets are not places just for passing by, they are places for interaction. Use of cars has diminished the possibility of this greatly. By bringing mixed uses in close proximity, people are encouraged to walk and not drive and therefore increases the possibility of interaction between people in that environment while doing this.

- **Economic Development**, which include job opportunities, reduction in every day cost of living, affordable housing,

A mixed land use environments brings together services which are important and useful to people, for example, schools, hospitals, places of work, public transportation, etc, in close proximity and at walking distances. In doing this, the distance between houses and these services is reduced and in turn reduces the dependency on cars which in return also reduces the residents everyday cost of living.

Mixed land use also provides job opportunities for the residents either directly or indirectly.

When houses are designed in an energy efficient way, it means that the uses of that space spend less in trying to regulate the internal temperature of their houses to get a comfortable atmosphere. Also, public outdoor spaces increase the time people spend outdoors to have a feel of the natural environment and watch children play. This reduces the amount of time spent indoors and therefore reduces the energy used when electrical appliances are on for entertainment, heating, cooling, etc.

- **Environmental Conservation**, which include the minimal use of environmental resources, reduction in pollution, use of minimum amount of water possible and also the use of recyclable materials

The quality of the environment is improved by creating a well supervised development, with a sense of community. User participation creates an environment which exists with a place attachment of its users which are also a part of its construction. Because of this, they generate a sense of responsibility to maintain the environment.

When a network serving a number of inter-related purposes concerning pollution and waste disposal management, and managing energy water and sewage is

provided, the level of waste is minimized and the structuring of housing developments around energy efficient networks also reduces energy waste.

A mixed land use reduces the distance travelled by individuals, which reduces their dependence on vehicles and therefore reduce pollution and energy use.

Outdoor green areas provide a comfortable outside atmosphere which attracts individuals to the natural environment, and the trees and grasses also reduce soil erosion.

### **2.5.2 Design Considerations in Sustainable Housing Developments**

The Habitat Agenda (UNCHS, 1996, Ch. 2) defines sustainable human settlements as:

*“.... those in which all people, without discrimination of any kind... have equal access to housing, infrastructure, health services, education, open spaces; equal opportunity for a productive and freely chosen livelihood; and equal opportunity for personal, spiritual, religious, cultural and social development.” (Plessis 1999)*

As Oktay (2001, 8) states, the following site design issues need to be addressed in housing developments to meet requirements for sustainability:

- Density and Context
- Movement patterns and land use
- Design and climate
- Land design: open space and landscaping

- Community development

**Density and Context** – Density in urban design is referred to as the number of buildings in the environment and not the number of people in that environment. Site planning starts with the appropriate density of dwelling units, number of units and proposed building shape, mass and scale. To achieve a more sustainable development and meet the local targets of housing, the concept of density needs to be responded to carefully. The density of a settlement does not mean much unless an appropriate contextual layout is considered as an entity within the changing context of the city. (Oktay 2001, 9).

**Movement Patterns and land use** - To achieve sustainable development of human settlements, the Habitat II Agenda sees the promotion of spatial diversification and mixed use of housing and services as of crucial importance, and recommends land use patterns that minimize transport demands and save energy, protect open and green spaces, encourage appropriate urban density, and enable mixed land-use guidelines (UNCHS, 1996, Ch. 3) in (Plessis, 1999, 37)

Design for effective land use and density. Increased land use efficiency reduces infrastructure costs. (Brebbia, C. A., et al 2002, 35)

The ‘New Urbanism’, a movement in the United States, which is based on the idea of ‘walkable’ neighborhoods, villages and small towns, comprises four major principles:

- All development should be in the form of compact, ‘walkable’ neighborhoods or districts. Such places should have clearly defined centers and edges. The center includes a public space such as a square, a green, or an important street intersection
- Neighborhoods and districts should also be compact and detailed to encourage pedestrian activity without excluding automobiles altogether. Streets should be laid out as an interconnected network forming coherent blocks, where building entrances front the streets rather than parking lots.
- A diverse mix of activities (residences, shops, schools, workplaces, and parks, etc.) should occur in proximity. A wide spectrum of housing options should also enable people of a broad range of incomes and ages to live within a single neighborhood or district
- Public buildings and spaces should be given priority  
(Oktay 2001, 22)

“For a truly sustainable environment, we need to maximize the exchange between services whilst minimizing the travel necessary to do it.” (Engwicht 1992, P. 17). One of the main attractions of the city living is proximity to work, shops and basic social, educational and leisure uses. Whether we are talking about mixing uses in the same neighborhood, a mix within a street, or urban block, or mixing uses vertically within a building, good urban design should encourage more people to live near to those services which they require on a regular basis. (Oktay 2001, 24)



**Design and climate** – As Vitruvius (110 BC) pointed out, “we must at the outset take note of the countries and climates in which buildings are built”. Many problems can be avoided if careful work is done at the city and site planning level to reduce the effects of the most annoying climatic factors. Types of undesirable weather conditions vary considerably from area to area and country to country. Each region has its own climatic conditions and cultural patterns, which must be the basis of the solutions in each individual case. (Oktay 2001, 36)

As analyzed by Pitts (2004), it is necessary to develop strategies at urban scale to ensure consistency and viability. Issues concerned are:

- Site layout, exposure and orientation
- Form, size and layout of new building
- Relationship to and effect of surrounding buildings
- Relationship to and effect of surrounding topography and landscape
- The effects of development on the functioning of already existing buildings and systems
- Interaction with local microclimate
- Use of passive and active design features matched to the climate
- Choice and use of materials and construction
- Choice and use of building services systems.

**Land design: Open space and landscaping** - Green spaces in a city contribute to human activity, climate amelioration and ecological diversity, without separating and isolating

people from each other, which is important for human interaction and community development. The understanding of the quality of nature in each place, expressing it in the design of communities, integrating it within our towns, and respecting its balance are essential ingredients in making the human environment sustainable and spiritually nourishing. Plants may enhance our environment through protecting water quality, reducing soil erosion, improving air quality, lowering summer air temperatures, conserving natural resources and screening busy streets. However, their location, species, year-round effect, shade effect, and windbreak effect should be considered for a proper land design. (Oktay 2001, 45)

There are five considerations in designing a sustainable landscape. The landscape should be:

- Functional – A functional landscape allows for easy accomplishment of movement, work, recreation and leisure that occurs in and around the landscape. These functions are related to the actual process or activities associated with a family, a business, or a public place.
- Maintainable – A maintainable landscape reduces the need for inputs such as fertilizers, pesticides, equipment, water and other things.
- Environmentally sound
- Cost effective, and
- Visually pleasing

(<http://www.sustland.umn.edu/design/module1.htm>)

**Community development** – The role of community in sustainable development has caused excitement and confusion in almost equal measure amongst practitioners and policy makers over recent years, and particularly since the United Nations Conference on Environment and Development (UNCED) in Rio in 1992, when world leaders signed up to Agenda 21 as the agenda for the twenty-first century, confirming that sustainable development requires community participation in practice as well as in principle.

*“If we are to help the Earth get better, and achieve a comfortable quality of life for all the people of the world, then sustainability must be deeply rooted in every local neighborhood. Success can only come through active participation from all corners of the community, with individuals and organizations playing their own particular strengths”.* (Baines 1995, 13) in (Warburton 1998)

There are still dissenting voices from, for instance, The National House Builders Federation (England), there is an agreement that sustainable housing will be based upon a combination of:

- Compact, medium to high density forms (but not high rise)
- Mix of land use based on overlapping zones of living, working, leisure and shopping
- Public transport orientated urban design
- Pedestrian friendly streets
- Well defined public spaces
- Integration of development and nature site
- Development patterns dictated by walking or cycling distances

(Tursoy, 2006)

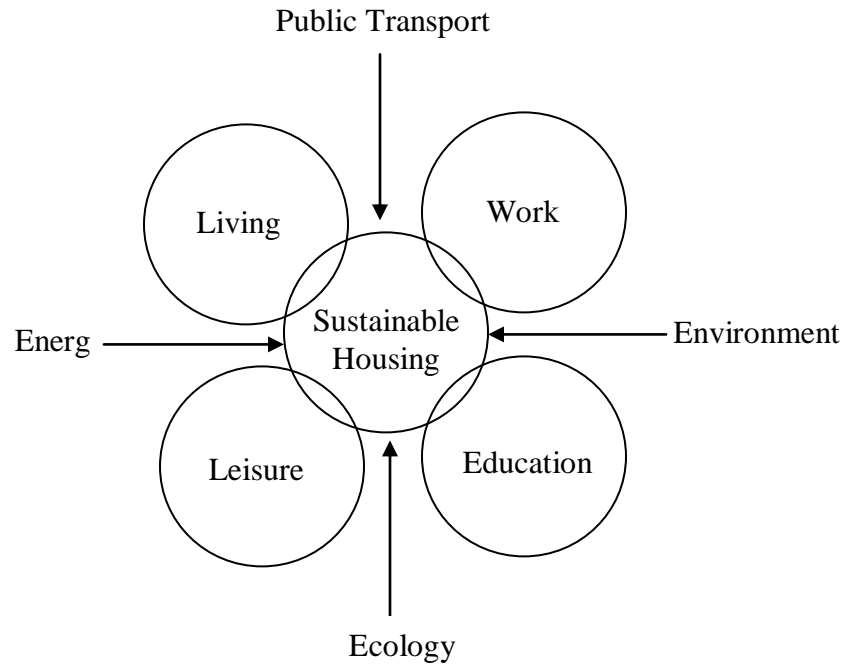


Figure 5: Key relationships in sustainable housing (Edward, 2000)

**Brian Edwards (2000)** suggests that sustainable housing design needs to display the following general features:

- High Density, mixed use diversified tenure
- Integration of land use and transport planning with emphasis upon public means of transportation
- Urban layout that creates shelter and safety
- The exploitation of renewable energy supplies
- Capture of rainfall for certain water uses
- Use of open spaces (streets, parks and squares) to facilitate social interaction and ecological well being

- Pollution and waste strategies
- Creation of natural habitats integrated with housing.

Housing environments can be regarded as “sustainable” if they are planned and designed in such a way that:

- The location of housing should ideally be in close proximity to the residents place of work, services and public transport.
- The layout of the housing development is in compact urban form - providing an open space network, serving a number of inter-related purposes concerning managing pollution, wildlife, energy, water, sewage, and green space.
- Housing development is structured around energy-efficient movement networks in which the level of accessibility is maximized, and travel and car dependency is minimized, and, where necessary, can be achieved by walking, cycling or using public transport, so that travel choice for all groups in society is increased, and all parts of a development are provided with good access to public transport.
- The design of housing is energy efficient; thus, where there is a strong energy strategy, which relates to reducing heat loss, maximizing solar gain and solar energy use, combined heat and power potential, embodied energy.

- The housing area develops a water strategy by relying on end-of-pipe off-site solutions; minimizing consumption; encouraging on-site infiltration and waste treatment.
- The level of pollution and waste is minimized, and where a degree of pollution is unavoidable, the place should as far as possible be self-cleansing.
- The characteristics of vitality, variety and legibility in the housing environment are high in quality in order to give the users / residents a sense of place – with the objective of reducing any sense of “placelessness”.
- The quality of local environment / life is improved by creating an attractive, safe and well-supervised urban environment with social stability and a sense of community.

(Vehbi, Hoskara, & Hoskara, 2009)

### **2.5.3 A Synthesis on Sustainable Housing Development**

The information gathered by the study and analysis of documented data on the general features, characteristics and design of sustainable housing have been compared as in the table below and have been synthesized to identify the design considerations in sustainable housing developments for the purpose of this research.

Table 1: Comparison of the design considerations

<b>National House Builders Association (England)</b>	<b>Brian Edwards (2000)</b>	<b>Okday (2001)</b>	<b>Vehbi, Hoskara &amp; Hoskara (2009)</b>
Compact, medium to high density forms	High density forms	Optimum density	Compact urban form
Mixed land use	Mixed land use	Mixed land use	Housing in close proximity to other functions (mixed land use)
Public transport orientation	Emphasis on public transportation	Public transportation	
Pedestrian friendly streets		Pedestrian friendly streets and developments	Pedestrian friendly developments
Well defined public spaces	Open spaces	Open spaces and landscaping	Sense of place
Integration of development and nature	Creation of natural habitats integrated with housing		Wild life conservation
		Energy efficient house design and orientation	Energy sufficient house design
	Recycling / Re-use		Re-use, recycling and avoiding waste
Development dictated by cycling and walking distances	Shelter and safety	Community development	Community development and safety
	Pollution and waste strategies		Minimize waste and pollution

To conclude; after the analysis and comparison shown above, the design considerations in sustainable housing developments have been summarized to include; for the purpose of this research:

- Density
- Mixed land use
- Mixed housing types
- Public outdoor spaces and their spatial quality

- Public transportation and pedestrian friendly streets
- House design (including the issues of energy efficiency, re use and recycling)
- Provision of infrastructure
- User participation
- Safety

Among these criteria, density, house design and provision of infrastructure are related with environmental sustainability; mixed land use, mixed housing types, public outdoor spaces and their spatial quality, user participation and safety are related with social sustainability, and mixed land use, mixed housing types and public transportation and pedestrian friendly streets are related with economic sustainability.

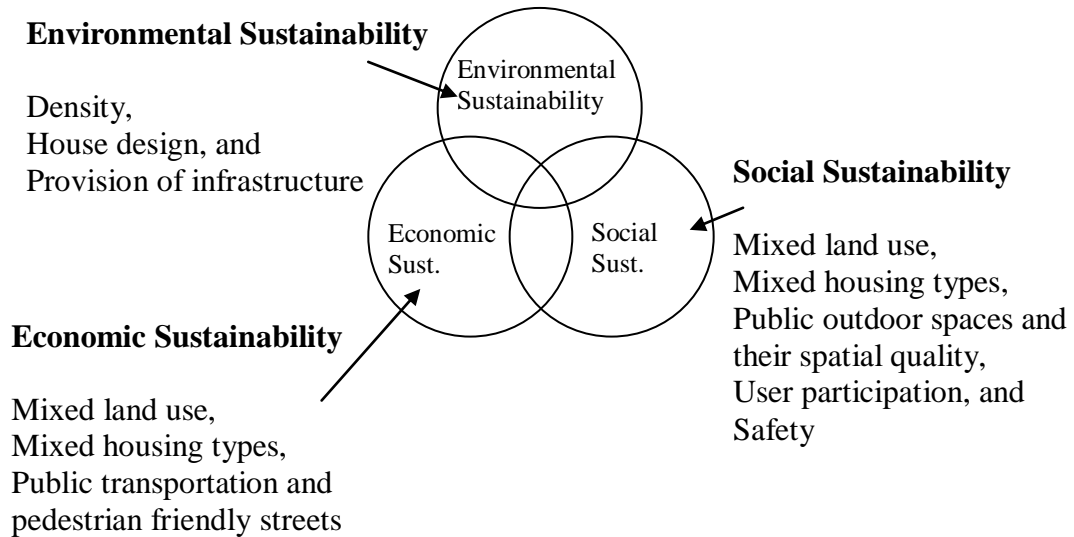


Figure 6: Design considerations of sustainable housing developments as related to economic, social and environmental sustainability



**Density** – Density in urban design is related to the building and not individuals. It is of more advantage to have low density in the vertical dimension and high density in the horizontal dimension, with high density in the horizontal dimension meaning optimum allowable density. As stated by Arrigone, (1997, 6), some of the advantages of low-rise/high density housing are listed below:

- It facilitates construction and upgrading of the units through self-help, mutual-aid and/or self-management construction, especially when ground-floor housing is used
- It can be incremental according to the owner's requirements and economic capacity, so that it does not need large capital investment which would drain the national economy. Extensions can only be made in the category of single or double-storey housing types
- It usually has a shorter construction period than high-rise housing. therefore, the interest cost of the capital input during the construction period is considerably less
- It can provide greater variety to the physical environment of neighborhoods, since individual owners are able to design and build extensions according to their own needs
- It need not use expensive materials and sophisticated building systems such as those used in high-rise buildings, for example reinforced concrete structures
- It can create an attractive and vibrant physical environment if principles of mixed land use are applied
- It makes possible free, 'open to the sky', highly usable spaces in moderate climates.

**Mixed land Use** – it is important to have a mix use of buildings. This includes zones of living, working, leisure and shopping. Places of work should also be spread around the environment to avoid its concentration in one part of the development alone.

The exceptions are certain industries or activities, which attract very high traffic volumes, or create noise at unsociable hours (Urban Task Force 1999) in (Oktay, 2001)

Watson (1992, 13) defined a mixed land use as ‘the spatial integration of residential, commercial, industrial, recreational and social/public land uses. It can take the form of different activities taking place within the same building . . . or different activities located adjacent to, or in close proximity to each other’. She highlighted the advantages of this approach as follows:

- A person operating a business from home saves paying for additional premises
- Operating a business from home, or nearby, reduces daily transport costs and time
- It reduces pressure on a city’s transport infrastructure and can be a major cost saving for the city’s population
- It can contribute to the reduction of crime levels in certain parts of cities
- It adds variety, diversity and excitement to what are otherwise monotonous and dreary non-functional areas.

(Arrigone, 1997, 6)

Mixed land-use increases the hours of use and therefore passive surveillance, making the area safer. It also provides optimum use of land and a decrease in automobile use and subsequent energy savings and less pollution. Furthermore, it creates a strong neighborhood character, providing opportunity for community building. (Plessis, 1999, 38)

In trying to achieve a mix in land-use, Alexander (1977, 56) states to “Use Zoning laws, neighborhood planning, tax incentives, and any other means available to scatter workplaces throughout the city. Prohibit large concentration of work without family life around them. Prohibit large concentration of family life without work places around them”. This prohibition of work places without family life around and family life without work places around prevents the environment from being empty and looking stagnant at any point/time of the day.

“Instead of modern supermarkets, establish frequent market places, each one made up of many smaller shops which are autonomous and specialized (cheese, meat, grain, fruit, and so on). Build the structure of the market as a minimum, which provides no more than a roof, columns which define aisles, and basic services. Within this structure allow the different shops to create their own environments, according to their building tastes and needs”. (Alexander 1977, 250)

**Mixed Housing Types** – In designing housing development, as Plessis (1999, 39) states, allow for a range of housing options in each neighborhood to accommodate all classes.

This would create stronger, more diverse communities, bringing the poor closer to employment opportunities and providing the rich with another tier of people with a vested interest in keeping the neighborhood safe.

As stated by Alexander (1977), “Encourage a mix of house hold types in every neighborhood, and every cluster so that one person households, couples, families and children, and group households are side by side.

Mixed housing encourages community diversity and provides an opportunity for closer social contact among a wide range of community residents. (Oktay 2001, 56)

The design of a number of housing types to include all income groups should be developed.

**Public Outdoor Spaces and their spatial quality** – The quality of Public outdoor spaces include spaces which are provided for public use by all. These outdoor spaces include parks, children play area, green areas, landscaping (both hard and soft).

Public outdoor spaces are necessary for the interaction of people in the community and also for community development.

Provision of green open space and parkland should be made within the proposals, appropriate with the size and scale of the development, and suitable means of access in

relation to residential areas should be ensured. These should be set within a long-term strategy for ecological maintenance and development. (Pitts 2004, 39)

A comfortable environment outside buildings encourage people to sit out and therefore reduce their daily expenses in terms of heating or cooling, and use of energy sources for entertainment. As ruled out by Brebbia, et al (2002, 35), Provide for outdoor porches, gardens, etc. to enhance human scale, social activities, surveillance and safety.

Trees, shrubs and grasses also help protect houses and the environment. Trees reduce the velocity of air which hits the buildings, can be used to direct air to certain areas and also protect certain facades of buildings from direct sun light. They also reduce the velocity of rainfall which hits the ground, hereby reducing soil erosion. Grasses as ground cover reduces the amount of heat which is gained and reflected to the surrounding and they also reduce the speed of runoff rain water on the ground which in turn reduces the possibility of soil erosion. Plants also improve the air quality in the environment by absorbing the carbon dioxide in the atmosphere and releasing oxygen. (Oktay, 2001)

Plants and public outdoor spaces are essential for the development of housing environments and should therefore be integrated into the design.

**Public transportation and pedestrian friendly streets** – As part of the network of bike paths, develop one system of paths that is extra safe – entirely separate from automobiles, with lights and bridges at the crossings, with homes and shops along it, so that there are always eyes on the path”. (Alexander 1977, 295)

Considering the negative effects of the vehicular traffic, making streets narrower simply ‘calm’ the traffic and enhance safety for pedestrians. Integrating narrow streets with pedestrian paths and bike ways promotes the forgotten activity of walking. As people walk, they meet their neighbors and friends; the neighborhood comes alive. (Oktay 2001, 21)

Build a system of paths designated as bike paths, with the following properties: the bike paths are marked clearly with a special, easily recognizable surface (for example, a red asphalt surface). As far as possible they run along local roads, or major pedestrian paths. Where a bike path runs along a local road, its surface may be level with the road – if possible, on the sunny side; where a bike path runs along a pedestrian path, keep it separate from the path and a few inches below it. Bring the system of bike paths to within 100ft of every building, and give every building a bike rack near its entrance”. (Alexander 1977, 291)

According to Alexander (1977, 112), “Establish a system of small taxi – like buses, carrying up to six people each, radio controlled, on call by telephone, able to provide point – to – point services according to the passengers’ needs, and supplemented by a computer system which guarantees minimum detours and minimum waiting times. Make bus stops for the mini buses 600ft in each direction and equip these bus stops with a phone for dialing a bus.”

Bike and walkways are critical to enhancing a more personal/pedestrian sense of community. These walkways should connect to convenient transit stops and should have

continuous pavement patterns across drive ways and streets. Pedestrian/bike connections are far more energy-and cost-efficient than auto dependent access. Provide ample bike parking. Reduce auto services to a minimum (18'-22' residential roadways) "Skinny" streets are a well-accepted traffic calming strategy. (Brebbia, C. A., et al 2002, 35)

Bicycle lanes, paved shoulders, wide kerb lanes for bicycles, mass transit service to all activity centers, greenway network promoting multi-modal transportation opportunities are some of the solutions towards transportation sustainability. (Brebbia, C. A., et al 2002, 7)

Provide a pedestrian friendly environment with adequate public transportation.

**House Design** - Houses should be designed with the climate of the environment taken into consideration. This is because a well oriented and designed building reduces the need for use of artificial energy sources to assure comfort of users.

There are a number of issues that should be encompassed at this scale:

- Planning the basic orientation of building and facades with respect to solar influences and determination of the environmental impact of sunlight and shade, and understanding the effect of site slope and topography
- Choice of appropriate form and massing of building and building grouping
- Designing to take advantage of the benefits of the local wind environment and reduce wind problems.

(Hoskara, 1997; Oktay, 2001)

It is also important to ensure user participation both in the design stage and in the construction stage for the houses of residents.

The use of recyclable materials and also appropriate construction systems according to the area which is to be developed is also important when designing sustainable housing developments.

**Provision of Infrastructures** – Infrastructures and support facilities such as houses, clinics, schools, shops, markets, water supply, sewage and waste disposal, water drainage and recycling facilities should be provided for in housing environments.

As states by Alexander (1977), “Use Zoning laws, neighborhood planning, tax incentives, and any other means available to scatter workplaces throughout the city. Prohibit large concentration of work without family life around them. Prohibit large concentration of family life without work places around them”.

This prohibition of work places without family life around and family life without work places around prevents the environment from being empty and looking stagnant at any point/time of the day.

For crime, inadequate social and recreational facilities may have two consequences. Firstly, it may lead to an amplification of delinquency among groups, particularly the youth, trapped by isolation in such estates. Secondly, offenders may travel to the inner



city areas to commit their offences, not as a positive act, but because the inner city remains the focus of their recreational world. (Plessis, 1999, 37)

There should be adequate provision for infrastructures and support facilities in the housing environment.

**User Participation** – User participation is another important design consideration for the development of mass housing. This is because it gives the designers an opportunity to understand the needs and demands of the users.

User participation is generally defined as ‘Public Participation’ or ‘Community Participation’. But both of them represent a voluntary action carried out by community members who participate with each other in different kinds of work to achieve desired goals. User participation is considered by many to be a requirement for the realization of democratic values, and for the achievement of design and planning that meets the needs of different people. Hamdi (1991: 83) states that “participatory programs advocate a democratic process for reaching decisions”. (Orcunoglu 2006, 45)

As stated by Oktay (2001, 59), “To strengthen cultural identity at house hold level, municipalities and other related bodies should ensure maximum resident participation, especially in the relocation of residents. Women, particularly, should be involved in decisions about the distribution and arrangement of housing”.

People usually have a sense of responsibility and a kind of place attachment to their environments when they are involved in the design, construction and/or even the finishing stage.

**Safety** - “One of the requirements of a sustainable environment is that it should be safe for all who use it. Just as it should not pose health threats to its inhabitants, people should not have cause to fear for their personal safety and the safety of their possessions”. (Plessis, 1999, 33). “In fact, safety has become a demand, and often the first priority, of the urban poor worldwide and particularly in developing countries”. (Vanderschueren, 1998:4) in (Plessis, 1999, 33)

It should have a mixed land use development.

All these design considerations directly affect the physical aspect of the environment, and indirectly affect the socio – cultural and economic aspects as well.

Based on these considerations for mass housing developments, the following chapter will now analyze three cases selected in Abuja, Nigeria, to achieve its major objective.

# CHAPTER 3

## MASS HOUSING IN ABUJA, NIGERIA

Nigeria is a country which comprises of 36 states and a Federal Capital Territory (Abuja). It is located in West Africa and is surrounded by 4 bordering countries, which include Chad and Cameroon to the east, Niger to the North, Benin to the West, on the South is its coast, which lies on the Gulf of Guinea, a part of the Atlantic Ocean.

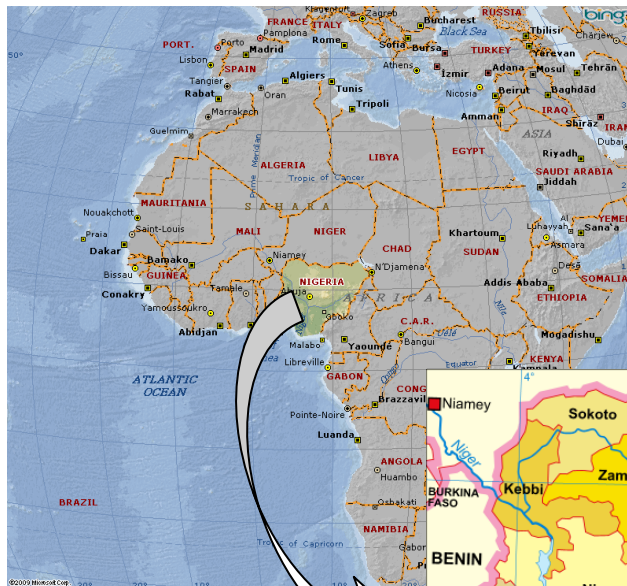


Fig 7a: Map of Africa showing the location of Nigeria. ([http://encarta.msn.com/map\\_701515127/nigeria.html](http://encarta.msn.com/map_701515127/nigeria.html))



Fig 7b: Map of Nigeria showing the 36 states and the FCT (Abuja) ([http://en.wikipedia.org/wiki/File:Nigeria\\_political.png](http://en.wikipedia.org/wiki/File:Nigeria_political.png))

Figure 7 (a) & (b): Map of Africa showing the location of Nigeria and Map of Nigeria showing its 36 states and the FCT

Nigeria has a land area of about 924,000 square kilometers, and as of 2007, according to the United Nations estimates, had a population of 148 million, which makes it the most populous country in Africa.

The official language of the country is English, and it comprises of over 200 ethnic groups, with Hausa, Yoruba and Igbo being the three largest and most influential.

As a developing country, Nigeria gained its independence on the 1<sup>st</sup> of October 1960, and is at present undergoing a fast process of urbanization. It is a country blessed with agriculture and crude oil. Its major source of income and revenue was from agricultural produce but after the oil boom in the 1970s, Nigeria started shifting its concentration from agriculture to crude oil and of 2007 was the 15<sup>th</sup> largest producer of petroleum in the world. Also, it has one of the fastest growing telecommunication markets in the world, and is also developing vastly in information technology.

It is a member of the Economic Community of West African States (ECOWAS), and in April 2006, Nigeria became the first African Country to completely pay off its debts owed to the Paris club, estimated to be about \$30 billion.

Nigeria, being a developing country is faced with a continuous increase in population in the urbanized and developing parts of the country. Due to this increase in population, several mass housing projects by the government sprung out, and more still in the construction stage.

### **3.1 Mass housing in Nigeria**

Nigeria was once a country whose major source of income and revenue was from agricultural produce. This came to change when crude oil was discovered in the country. After the oil boom in the 1970s, Nigeria diverted most of its resources to the development of oil refineries, and of present, crude oil is the main source of income and revenue in the country, with little emphasis on agriculture.

This diversion from agriculture to refining of crude oil is what began the rapid urbanization in different developing parts of the country. This is because the main source of income in the rural areas was from agricultural produce but since the government now relied mostly on crude oil for the countries source of income, these rural dwellers have little to live on in the rural areas and therefore migrate to the cities in search of jobs to earn a salary or wage.

As of 2007, Nigeria was the 15<sup>th</sup> largest producer of petroleum in the world, and of date has one of the fastest growing telecommunication markets in the world, and contains cities with grand avenues which shout out comfort and vitality with pleasing aesthetics and infrastructural facilities. This level and type of development is what makes the people in the rural areas to move to the developing parts of the country, hoping to live a better life.

Due to the vast increase in population in developing parts of the country, different mass housing schemes have been developed and are still in construction around the country.

Private investors embark on the construction of flats, duplexes and apartment blocks, while the government develop different mass housing environments to cater for the ever increasing population.

The provision of this mass housing by the government is an answer to providing shelter for its inhabitants, but in most cases, after a while, these mass housing developments deteriorate and become slums which also degrade the urban face of the city. This is because the housing policies and legal framework for housing in the country are insufficient and in cases where there are housing policies, these policies are not adequately implemented.

### **3.1.1 Legal Framework for Housing in Nigeria**

The Federal housing Authority (FHA) is Nigeria's public sector development agency and was established by law, under Decree No. 40 in 1973, and started operations in 1976. it operates across the country and is a parastatal under the Federal ministry of Environment, Housing and Urban Development.

Since its establishment, it has developed a number of estates around the country and it has also been involved in the formation of housing policy for the country.

The FHA has a board of directors, with an executive management team, which oversees its day to day operations. The executive management team comprises of four executive directors in charge of the four main departments of the authority. These four main departments include:

- Projects
- Estates
- Finance, and
- Management services.

The FHA has a strengthened mandate to:

- Develop and manage estates on commercial basis in all states of the country, including the Federal Capital Territory
- Provide sites and services for all income groups, with special emphasis on the low income group
- Provide low income and rural housing in all the states of the country, and the federal capital territory from funds provided by the federal government and other sources.

The functions and responsibilities of the Federal Housing Authority include:

- The preparation and submission of proposals for national housing programs to the Government from time to time
- To execute housing programs as may be approved by the government
- Develop and manage real estates on commercial and profitable basis nationwide
- To provide site and service schemes for the benefit of all income groups
- To make recommendations on aspects of urban and regional planning, electricity, sewage and water supply, as may be relevant to the execution of approved housing programs, to the government.

The offices of the Federal Housing Authority is seen to be a very active place when visited on a daily basis, but when it comes to the execution of policies in the housing environments, there is little or no attention given to such developments. Housing policies, legal frameworks and rules and regulations which have been implemented by the Federal Housing Authority are half hazardly followed up to ensure that they are strictly adhered to. Due to this, individuals have an opportunity to work around such policies without obeying / abiding by them and as such, housing environments are developed without proper specifications. And in the case of contractors developing mass housing environments for the FHA, because of lack of proper supervision / inspection, the developments are half hazardly done with inferior / insufficient building materials.

There is absence of a comprehensive legal framework to support delivery of government housing objectives in the country.

### **3.1.2 Problems of Housing in Nigeria**

The Nigerian Government, in the past few years, has made the provision of housing for its inhabitants an important issue. One of the most significant efforts is that they have co – worked with private organizations in the design, construction and implementation of housing projects throughout the country.

Despite their efforts to improve the housing situation of the country, about 90%of urban housing is produced by private investors.



In Nigeria, like in any other developing country, when we talk about provision of housing, it is usually for the middle class (most times the lower middle class) and the lower class inhabitants of the urban mass, and this in most cases lead to the construction of different mass housing schemes to help solve the housing shortage, and come with certain problems.

There are several problems associated with the housing in Nigeria, and these include:

- Safety and Security
- Affordability
- Accessibility
- Lack of infrastructures and support facilities
- Quality of housing
- Variety of housing types
- Location of housing
- Inadequate supply of housing

**Safety and security** – As identified by Plessis (1999) in the previous chapter, “One of the requirements of a sustainable environment is that it should be safe for all who use it. Just as it should not pose health threats to its inhabitants, people should not have cause to fear for their personal safety and the safety of their possessions”. In Nigeria, one of the most problems with housing is the issue of security and safety. Where an individual lives determines the safety and security of that person and his/her family. There are safe and

secure housing environments in the country but the cost of housing in a well situated environment is so high that only people in the upper class and upper middle class can afford to stay in safe environments, while the low income earners reside in houses located in areas isolated from the rest of the city, coupled with the fact that the wealthy people in the environment can afford security in their housing environments even when the situation is neglected by the authorities in charge and the low income earners cannot. The provision of security in one part of a city to eradicate/restrict crime usually redistributes it and therefore redistributes it from the housing environments of the elite, the high income earners and the upper middle class earners, to the housing environments of the lower middle class and the low income earners.

**Affordability** – housing, as we see it today, is like any other commodity in the market. It is produced, and can be sold and bought by individuals or organizations. This notion tends to exclude the poor from the housing market. Due to this, and the fact that most of the housing stocks in the country are owned and produced by private investors, they are usually of a high cost. As John Logan and Harvey Molotch explained in their essay, “The City as a Growth Machine”, these private investors, who are place entrepreneurs, usually attempt, through collective actions and in most cases in alliance with other businessmen, to create conditions that will intensify future land use in an area. Therefore, due to the intensification of land use in such areas, there is difficulty for acquiring land for new construction and the price of housing is usually at a rate which is affordable by the elite and the upper middle class citizens in the country. Due to this, most people in the lower

middle class and practically everyone in the lower class move to satellite towns around the major cities in search of affordable housing.

Most Nigerians are tenants, which mean that they stay in houses owned by other individuals or organizations and the increase in their annual rent and rate is as the landlord or house owner sees fit.

Also, in most urban parts of the country, even public housing is too expensive for low income groups caused by a wide spread privatization of the state's housing stock. This leads to overcrowding in individual houses and some housing environments as a whole.

**Accessibility** – another problem of housing in Nigeria is the accessibility of the housing environments to infrastructures and support facilities. Because of the cost of housing in the major parts of the city, people move towards the outskirts of the city in search of affordable housing. Most of these areas are usually in an isolated location away from the jobs in the center and are linked to the city centers usually by a single route. For access to places of work, schools and health facilities, people who live in these areas have to go all the way to the city center. This increases the everyday cost of living of the already low income earners and also the traffic congestion on these routes at certain times of the day.



Figure 8: A mass housing development in Nig. all the buildings are houses with no provision for health, educational or recreational facilities.  
(<http://afordablehousinginstitute.org/blogs/us/2009/02/nigeria-the-disabling-environment-part-1-no-law-no-money.html>)

**Lack of infrastructures and support facilities** – most housing environments lack infrastructures and support facilities. In most public housing, especially the mass housing environments, there is little or no water supply and electricity. Mass housing environments lack the provision of schools, health facilities, public parks and gardens.

**Quality of Housing** – Not only is the quality of housing a problem in Nigeria. The quality of the housing environment is also a problem. Most housing environments lack maintenance, especially in rental housing and mass housing environments. Sanitation has long been forgotten about in most parts of the country even in environments where the elites reside. The only difference is that the elite have the capital to afford private companies to take care of this problem while the low income earners do not. The lack of maintenance of housing environments leads to environmental degradation which in turn poses as a health hazard to the people in that environment. The state of a person's home and environment touches deep chords in the human spirit, so it is therefore important to maintain a well maintained hygienic housing environmental quality



Figure 10: Quality of housing in one of the mass housing developments in Nigeria located at the outskirts of the city (Personal archive)



Figure 9: Quality of housing of an apartment building developed by private investors located in the central area of the city (Personal archive)

**Variety of Housing Types** – there is a lack of a broad range of housing types and price levels when it comes to mass housing in Nigeria, and even if there is a variety in price range, it usually starts from a price which is above the affordability level of low income earners. A broad range of housing types usually brings people of diverse ages, races and income into daily interaction but because most housing environments in Nigeria lack this, people of different statuses are highly segregated, especially when it comes to income level.

**Location of housing** in Nigeria also comes with a social stigma. When an individual lives in a mass housing environment, he /she is seen as a different individual from those who live in private houses or houses located in the more expensive parts of the city. This is usually caused by the unhygienic and overcrowded nature of the environment of most of these mass housing developments.

**Inadequate supply of housing** is also a serious problem. This is because there is a shortage of qualified and experienced tradesmen in the field of housing, and has therefore made it impossible for the building industry to meet housing demands. The shortage is caused by the lack of competent and teachers in technical education. The oil boom in the country also contributed to its lack of prestige as young people in the country turned away from skilled manual trade towards more education as a means of upwards mobility. Now, most tradesmen in the building industry are either under qualified, gain experience as an apprentice, or work under big construction companies.

For low income individuals, there is also difficulty in acquiring land for new construction because of the cost. This highly reduces the amount of housing owned by private individuals of low income groups and therefore leaves most of them as tenants. Also, acquiring housing loans by these low income earners is also usually difficult because of the lack of collateral, experience and familiarity.

Also, due to the high level of crime in the country, houses are usually fenced if given the opportunity, because most housing environments do not have mixed use services and are therefore ghost towns when the people who live there go for their daily activities. This, coupled with the segregation of income groups in the society leads to a high level of alienation of neighbors.

### **3.2 The City of Abuja**

On February 4<sup>th</sup> 1976, the Federal Military Government of Nigeria, led by Gen. Murtala Mohammed, established Abuja as Nigeria's new Federal Capital Territory (FCT). This decision was made to move the capital to the inner part of the country. It was selected by the federal government strategically to be placed centrally in the country. This was done to relocate the Federal Capital Territory to a safer part of the country instead of its former location (Lagos) which is at the coast of the country.

It occupies a total land mass of about 800 square kilometers, and is bounded by Kaduna State on the North, on the South West by Kogi state, on the west by Niger state and on the east and south east by Nassarawa state.

It experiences two seasons annually, they include:

- The rainy season, which begins in April and ends in October, with an annual total rainfall which ranges between 1100mm and 1600mm.
- The dry season, which begins in October and ends in March.

In-between the two seasons, there is a brief harmattan season that occurs occasionally, brought in by the north east trade winds and is characterized with dust, increased cold and dryness.

It has a savannah vegetation of the West African sub region, with some patches of rain forest.

Abuja is a city with a master plan, which was developed by International Planning Associates, and a more detailed design of the central area, particularly its monumental core, was accomplished by Kenzo Tange, a renowned Japanese Architect, along with his team of city planners.

It houses the head quarters of the Economic Community of West African States (ECOWAS) and had the regional headquarters of the Organization of Petroleum Exporting Countries (OPEC).

Abuja, as the new Federal Capital Territory of Nigeria, is a city which houses the head quarters of Governmental offices, organizations, parastatals and ministries, including embassies of foreign countries, and head offices of some banks and private organization, Non Governmental Organizations (NGOs), e.t.c.

Because of its status in the country as the FCT, it has undergone and is still undergoing a vast amount of development in terms of commercial, residential, industrial, social and political growth, with the Federal Capital Development Authority (FCDA) charge with the responsibility of its spatial planning and development. The level of development in the city and the amount of offices and head quarters offices located in the FCT makes it a city where urbanization is at a high pace.



### **3.3 Housing in Abuja**

Abuja, being the Federal Capital Territory of Nigeria houses most of the headquarters and head offices of Government parastatals, quite a number private firms, foreign organizations and investors, offices and companies. It is an area undergoing a vast amount of development, with majority of these offices, headquarters and firms are located in an areas which is referred to as the federal capital city.

Due to its level of development, it is undergoing a vast amount of urbanization by people not only migrating in from rural areas, but also by individuals moving in from other parts / states of the country in search of a better wage or salary.

As the economy of the city continued to improve over time, people got and are still getting wealthier. Coupled with the continuous influx of people from different parts of the country, housing and land was seen by the wealthier individuals as a commodity and therefore bought and built in most areas in and around the central city. As identified by Logan and Molotch (1976), land entrepreneurs, which include: Landlords, Businessmen Developers, Transportation and Utility Companies, Banks and Corporations, etc, see homes as not just places that are lived in, but also as commodities in the real estate market, that can be bought and exchanged, hereby providing use and exchange values for producers (entrepreneurs) and customers (users), and therefore attempt, through collective actions and in most cases in alliance with other businessmen, to create conditions that will intensify future land use in an area.

Because of this, Abuja is now a city with beautiful buildings, scenarios, offices, organizations, parks, public open spaces, etc, but also a city whose housing is way too costly even for people who work in the city, with the exception of those who are in the upper class and some individuals in the upper middle class of the society.

There are several housing types in the city, which ranges from mansions, to duplexes, to bungalows and apartment blocks but all of which are at a very high cost.

Due to the continuous influx of people into the city, the Government and some private investors have constructed and are still constructing estates and housing developments in the FCT to cater for the ever increasing population.

The Master Plan contains recommendations for a housing program that, combined with subsidies to the housing sector, offered a strategy to improve on housing conditions in other urban areas of Nigeria. The program was built on the following principles:

- Efficient plot layout and appropriate standards of infrastructure permitting upgrading of standards as economic capability increases
- A range of housing options for all income groups, from detached housing, to flats, to traditional multi-family compounds, or rooming houses and shared-services accommodations

- Increased reliance on local construction materials, reduced levels of finish and careful management controls to assure that costs of construction are reduced and maintained at lowest possible levels
- Sites and services approaches, use of shared services and self-help/self-contracted construction to lower costs.

The Centre on Housing Rights and Evictions & Social and Economic Rights Action Center (COHRE & SERAC, 2008)

Today, the housing developments in Abuja have completely diverted from the recommendations of the master plan for a housing program that offered a strategy to improve the housing conditions in urban areas in Nigeria.

The ranges of housing options in the city do not support all income groups. Even though there are different house designs, they have been developed by private individuals and investors who have obtained parcels of land at very high rates from the government and therefore cost of rent for these buildings are on the high side, coupled with the cost of construction and finishing of the residents.

There was suppose to be an increased reliance on local construction materials and the use of self help and self contracted services / modes of construction. Today, in the central area of Abuja, construction of so many buildings and houses are done by multi – national and foreign construction companies, an example of which is Julius Berger, and with the

use of foreign building materials, which in turn makes housing more expensive and unaffordable by the low middle and low income earners. Because of this, and the high influx of people from other parts of the country in search of a better source of income, the government have undertaken several mass housing projects to cater for the growing population of the Federal Capital Territory.



Figure 12: An Apartment building at ministers hill,. Abuja

<http://www.skyscrapercity.com/showthread.php?t=872070&page=3>



Figure 11: A residential building at Wuse, (Personal archive)



Figure 13: A residential building at Utako, Abuja

<http://abujahouses.com/hot-jabbi-house-abuja/>

### **3.4 Mass Housing in Abuja**

There are several Mass Housing Schemes being developed in Abuja at the moment, most of which have either been sold off part by part by the federal Government to private individuals, or to private investors.

The different Mass Housing Schemes have been grouped into three categories according to the initial idea of construction. These include:

- Initial Government Schemes
- Re – settlement Schemes
- Private intervention schemes

**The initial Government Schemes** includes different mass housing schemes which were started up from its offset by the Government, all the way through the construction stage, up to the finishing, but of recent have been contracted off by the Government to private firms. Mass housing area under this include:

- Gwarimpa Housing Estate – This housing estate is the largest single housing estate in Nigeria, and is said to be the largest of its kind in Africa. It has different housing units. It has semi detached duplex, detached duplex, apartment buildings, and also detached bungalows.

- Federal Housing, Lugbe – This housing estate contains bungalows only and they range from two bedroom semi detached flats, two bedroom flats and three bedroom flats.
- Kado Estate – Kado estate comprises of only semidetached duplex houses. All of which are three bedroom duplex.
- Games Village – Games village was originally built for the 8<sup>th</sup> All African Games which was held in Nigeria in 2003.

**Re – Settlement Schemes** – Nigeria is a country with many diverse cultures of over 200 but with three major ethnic groups (Hausa, Yoruba and Igbo). The areas which had been selected by the government for development of the city of Abuja was already inhabited by the Gbagys, who are the original settlers. Due to this, the settlers had to be displaced from their place of origin, and the FCT Act of 1976 placed the entire land mass of the FCT under the control of the Federal Government. The idea was to create a Capital which did not have a particular cultural tie, and was ethically neutral. The federal government, after this, decided to construct different housing units in different parts of Abuja for these original settlers to be relocated and re – settled.

The Master Plan provided the following options for the relocation of existing residents:

- Relocation outside the FCT. This option would probably incur greater expense, having the potential to create greater socio-cultural impacts on the people involved. This option has been discarded by FCDA.
- Relocation within the FCT. Although this may be the most straightforward solution, it will probably not be applicable to all the residents being relocated. Given that virtually all of the population to be relocated presently live in rural areas, it seems likely to assume that most, if not all, may prefer less urban accommodations.
- Relocation within the FCT, to villages which already have some of the basic community facilities. This is probably the most reasonable option, since it might better address the potential socio-cultural preferences of the population involved, and might increase the numbers of people who could potentially be served through existing community facilities.

(COHRE & SERAC, 2008)

The idea of which was to accommodate the Gbagy people who are the original settlers of the area (Abuja), and include:

- Kubwa
- Apo
- Galuwi/Shere
- Wasa

- Anagada

**Private Intervention Schemes** – The private intervention schemes are those which from the offset of construction have been handed over to private firms by the federal Government. In this case, the federal government selects an area and sells off plots of land to these private firms at a subsidized rate, after which the firm designs and constructs the housing units. These include:

- Sun City – Sun City comprises of apartment buildings, duplex and bungalows. The apartment buildings are two bedrooms, there are four bedrooms duplex, detached, two bedroom semi detached bungalows and three bedroom detached bungalows.
- Sunny Ville
- Prince and Princess
- Katampe Housing Estate – The housing estate at Katampe is made up of houses with 2 bedroom flats, 3 bedrooms, 4 bedrooms detached and also 4 bedrooms semi detached buildings.

The private intervention schemes usually concerns private investors and corporations who want to see a big return / profit from their developments and therefore ensure that their environments are well taken care of, provided for and a certain level of comfort



maintained. This in return is a reason for the high cost of housing in such areas, because these services are lacking in governmental schemes and are therefore seen as a plus in housing developments. It is because of the situation or the state of which the governmental housing schemes are in that they have been selected for analysis.

### **3.5 An Analytical Review on Selected Case Studies in Abuja**

As has been stated in the previous chapter that sustainability is important to mass housing environments because it creates social opportunity, economic development and environmental conservation; in this section of this study, to analyze the situation of mass housing developments in Abuja, Nigeria, three mass housing schemes in Abuja have been selected, studied and analyzed under the three main dimensions of sustainability, by the use of the design considerations of sustainable mass housing developments, and the comments done according to their advantages and disadvantages.

#### **3.5.1 Selection Criteria of Exemplary Cases**

The selection criteria of the exemplary cases have been done on the bases that they were all developed by the Government. This is because most of the housing developed by private individuals / firms are more of single or double blocks, or a few houses in form of gated communities, whereas those developed by the government are for the general public and involve a large area selected for the purpose of housing.

The three case studies include:

- The Gwarimpa estate, which was developed to cater for the middle and upper income groups in the city,
- The Lugbe estate, which was developed to cater for the low and middle income groups of the city, and
- The Re-Settlement scheme, which was developed as an idea to move original inhabitants of the area to alternative housing environments to replace their former habitat.

The case studies have been carefully selected because when analyzed together, the first two include all the income groups, and the third one has a unique case of socio – cultural identity.

The selection criteria puts the study in a position to analyze the mass housing developments in Abuja under the three dimensions of sustainability, which include: the Socio – Cultural dimension, the Economic dimension and the Environmental dimension, by the use of the Design Considerations for Sustainable mass housing developments

### **3.5.2 Methodology of Analysis**

The analysis of the chosen case studies will be done according to the design considerations for sustainable mass housing developments which have been identified and explained in previous chapters. These are:

- Density
- Land use
- Housing types
- Public outdoor spaces and their spatial quality
- Public transportation and pedestrian friendly streets
- House design
- Provision of infrastructure
- User participation, and
- Safety

All these design considerations have been analyzed for each case and the comments for each design consideration have been done in terms of their advantages and disadvantages.

The tools and techniques to be used in the analysis of the selected case studies is by investigation and observation (site survey), study of existing data in books, journals, articles, published and unpublished papers, and field work.

After the analysis of the case studies under the topics listed above, the advantages and disadvantages of the different mass housing schemes will be identified in a comparative way, and the positive and negative effects of these different schemes on their users and the city as a whole will be drawn out.

### 3.5.3 The Cases

The cases include: The Gwarimpa estate, which was developed to cater for the middle and upper income groups in the city; The Lugbe estate, which was developed to cater for the low and middle income groups of the city; and The Re-Settlement scheme, which was developed as an idea to move original inhabitants of the area to alternative housing environments to replace their former habitat.

The **Gwarimpa Estate** in Abuja is one of the residential estates which was developed (with some parts still under construction) by the Federal Housing Authority (FHA) to cater for the accommodation needs of the medium and high income groups in Abuja. It is bounded by the kado, life camp and the Kaduna express way, occupies a total land mass of about 500 hectares (5 square kilometers), and is at a distance of about 15km from the city center.



Figure 14: Aerial map showing the gwarimpa estate (Google earth)

The **Lugbe Estate** in Abuja was developed by the Federal Housing Authority (FHA). It is one of the residential estates developed by the FHA under the national housing program to cater for the accommodation needs of the low and middle income groups in Abuja. It is situated some kilometers from the city center on the airport road, occupies a total land mass of approximately 520 hectares (5.2 square kilometers), and is at a distance of about 19km from the city center.



Figure 15: Aerial map showing the lugbe estate (Google earth)

For the **Re – Settlement Scheme**, Kubwa is the oldest resettlement scheme within the FCT, dating back to 1980, and is now considered to be a ‘satellite town’. The early resettlement initiative, which also included the enumeration of households in the villages

from 1976, was abandoned, apparently due to cost. Reportedly, the indigenes resettled at Kubwa never received papers to document their rights to the plots they had been allocated.

The most recent resettlement scheme in the FCT is that of the Garki New Village, with plots of land and houses already being sold off to the general public.

As stated by the United Nations Human Settlement Program,

*'At worst, resettlement is little better than forced eviction with no attempt at consultation or consideration of the social and economic consequences of moving people to distant, often peripheral, sites with no access to urban infrastructure or transport'.(UN-HABITAT, 2005)*

Others sites selected for the resettlement scheme include those located at:

- Wasa
- Anagada, and
- Galuwi / Shere,

Which as of present are still far from being completed. Because of the incomplete development of some of the resettlement schemes, and the characteristics of Kubwa which has been integrated and developed to form a satellite town, the **Garki New Village** is the case which has been analyzed in terms of site survey for the resettlement schemes.



Figure 16: Garki New Village re - settlement scheme (Personal archive)

Following lines will present the characteristics of the cases in a comparative way, in terms of the sustainability issues put forward in the previous Chapter.

- **Density** – The Gwarimpa estate has a variety of housing types, with different number of floors. It contains duplexes, bungalows and three floor apartment buildings, which are in clusters of houses along the express ways. All the houses in the lugbe estate and the Garki new village on the other hand are bungalows. They are characterized with a low density in the vertical dimension and medium density when taking into consideration the horizontal dimension.



Figure 17: An over view of the gwarimpa estate, Abuja (Personal archive)

- **Land use** – The gwarimpa estate, lugbe estate and the Garki new village are all highly residential. Most buildings in the gwarimpa and the lugbe estate are designed as houses, with a few commercial, education and medical facilities developed by private individuals, while the Garki new village, as of the time of this research, contained no other functions apart from residences. The gwarimpa and the lugbe estate both have a filling station each located in the housing environment while the Garki new village has one located close to the housing development. Thus considering their land-use characteristics all of them are far from being mixed use areas
- **Housing types** – the gwarimpa estate comprises six different housing types, which include:
  - Three bedroom detached bungalows



- Three bedroom apartments on three floors
- Three bedroom semi detached duplexes
- Four bedroom semi detached duplexes
- Four bedroom detached duplexes, and
- Five bedroom detached duplexes,

The lugbe estate comprises of four housing types, which include:

- One bedroom bungalows in a row of four
- Two bedroom bungalows in a row of four
- Two bedroom semi detached bungalows with a courtyard, and
- Three bedroom detached bungalows with a courtyard,

While the Garki new village comprises two different housing types which include two bedroom detached bungalows, which are of the majority, and four bedroom detached bungalows. The housing developments contain a variety of housing types but cater for only two income groups each. A mix of housing types to include all income groups in all the developments is lacking.

- **Public outdoor spaces and their spatial quality** - The housing developments may have been designed to contain public outdoor spaces, but as of the time of this research, all the housing environments have none.
- **Public transportation and pedestrian friendly streets** – the gwarimpa estate has no particular major road, but contains streets which provide access to the estate at different points from the Kaduna expressway, and one more access from

the kado and life camp express way. The streets branch off and spread around and through the estate to provide access to houses in different parts of the estate. Some of the roads are wide while some are organic and narrow, while the lugbe estate has one particular major road which branches off the major road leading to the airport into the housing development and comes out at another end back to the airport road, and has streets which branch off the major road and spread into the housing areas to provide access, and is characterized to be organic and narrow, and finished with coal tar (tarmac), but most streets in the lugbe estate are dirt roads. There is no provision for pedestrians and cyclists, which places more emphasis for use on cars and motorcycles. There is one bus stop located on the Kaduna expressway bordering the estate, and another one located on the kado and life camp expressway close to the street which provides access to the estate on that side for the gwarimpa estate, while the lugbe estate has one bus stop located on the airport road opposite the estate. The buses which service these points do not have access to the estates. The public transportation in the developments are insufficient, and there is no provision for pedestrians and cyclists.

The Garki new village on the other hand has one particular major road and contains streets which branch off the major road to provide access to different parts of the development. All the streets are dirt roads, which implies that they are still under construction or to be finished.

- **House design** – All the houses in the Garki new village and the detached houses in both the gwarimpa estate and the lugbe estate have been designed to accommodate cross ventilation. However, the semi detached buildings in the gwarimpa and lugbe estate all have a façade that does not accommodate for ventilation on one side, and the houses designed in a row of four in the lugbe estate have one façade that does not accommodate cross ventilation for those at the two ends, and two facades that do not accommodate cross ventilation for the two houses in the middle. The detached houses are energy efficient to an extent, when it comes to cooling but none of the buildings have been constructed by the use of local building materials.
- **Provision of infrastructures** - Inadequate / lack of the provision of social and recreational facilities, health services, educational institutions, dirt / sewage disposal services, commercial areas and water supply. Most of these services are provided by private investors by converting houses, extending them, or by redevelopment of some spaces. Electricity is supplied to houses by the use of poles and cables that run overhead. Most of the streets have drainage systems but some of them still lack this provision. The situation of the infrastructure in these developments is bad.
- **User participation** - The buildings and the housing environment have been constructed by firms and construction companies without formal or informal participation of the users. They have been designed according to a general idea of

what is needed by certain income groups. None of the housing developments covers this design consideration.

- **Safety** - There are few guards and security posts attached to the gwarimpa estate, with a police station, while the lugbe estate has a police station but no security posts around the estate. The Garki new village has no security post or a police station location in or around. Therefore, there is some amount of security and safety in the lugbe and gwarimpa estate. But to ensure a higher level of safety, some residents prefer to fence their houses.

The analysis of the selected case studies can be summarized as in the table that follows:

Table 2: Analysis of the selected case studies

<b>Design Considerations for Sustainable Mass Housing Developments</b>	<b>The Gwarimpa Estate</b>	<b>The Lugbe Estate</b>	<b>The Re-Settlement Scheme</b>
Density	Low density on the vertical axis and high density on the horizontal axis	Low density on the vertical axis and high density on the horizontal axis	Low density on the vertical axis and high density on the horizontal axis
Land Use	Highly Residential	Highly residential	Highly residential
Housing Types	Variety of housing types Three bedroom detached bungalows Three bedroom apartments on three floors Three bedroom semi detached duplexes Four bedroom semi detached duplexes Four bedroom detached duplexes, and Five bedroom detached duplexes	Variety of housing types: One bedroom bungalows in a row of four Two bedroom bungalows in a row of four Two bedroom semi detached bungalows with a courtyard, and Three bedroom detached bungalows with a courtyard	Two housing types: Two bedroom detached bungalows Four bedroom detached bungalows
Public Outdoor Spaces and their spatial quality	Lack of public outdoor spaces	Lack of public outdoor spaces	Lack of public outdoor spaces
Public transportation and pedestrian friendly streets	Highly vehicular, insufficient public transportation, lack of provision / proper demarcation for pedestrians and cyclists	Highly vehicular, insufficient public transportation, lack of provision / proper demarcation for pedestrians and cyclists	Still dirt road, which indicates incomplete / further development
House design	Availability of cross ventilation for some buildings but all with pitched roofs	Availability of cross ventilation for some buildings but all with pitched roofs	Availability of cross ventilated indoor spaces and pitched roofs
Provision of Infrastructures	Inadequate / lack of infrastructures.	Inadequate / lack of infrastructures.	Lack of infrastructures
User Participation	Complete lack of user participation	Complete lack of user participation	Complete lack of user participation
Safety	Some level of safety	Some level of safety	Lack of safety

There are certain advantages and disadvantages of the housing developments from the analysis done. The **Advantages** include:

- They are all characterized with a low density in the vertical axis, and a medium density when taking into consideration the horizontal dimension and this type of construction usually has a shorter construction time than high – rise housing. Because of this, some individuals have designed and built extensions according to their needs with less sophisticated building techniques, materials and therefore minimum expense.
- There is a variety of housing types in each of the estate. This has brought together individuals from different classes to live in close proximity to each other and therefore breaks down social class segregation.
- The provision of ventilation in some houses provides for maximum utilization of trade winds for cooling of interior spaces and window openings allow for natural lighting the interior spaces. Pitched roofs also allows for proper rain water flow off the roof of buildings
- There is the provision for public transportation at two access points to the gwarimpa estate and one to the lugbe estate with bus stops. This provides individuals with transportation to the central area of the city at lower cost and with less private vehicular use, which in turn saves the individuals daily expenses and also reduces the amount of fuel used up.

- Drainage has been provided for along the major road in the lugbe estate, and for some of the streets in both the lugbe and the gwarimpa estates.

The **Disadvantages** of the housing development include:

- The housing developments are all highly residential. Because of this, there is little or no activity going on around the environment at periods of time when the residents have left for their daily jobs and activities. This has given the opportunity for crime in the estate at times certain times of the day.
- Since most residents work away from these housing environments, their daily transportation cost and also distance travelled everyday increases, giving rise to an increase in energy and resource use by driving vehicles, and therefore more pollution also.
- There is a variety of housing types in the housing environments, but the variety only satisfies the needs of people in the upper and upper middle income earners for the gwarimpa estate, and for the middle and low income groups in the lugbe estate. Because of this, there is segregation between the upper and upper middle income earners in the city from the lower middle and low income earners.
- Buildings which do not have cross ventilation and lack windows on some sides will therefore need to use artificial lighting and cooling systems, hereby

increasing the use of resources and therefore increases the cost of everyday expenses of the residents.

- There are only two public transportation bus stops located outside the estate at two access points for the gwarimpa estate and only one for the lugbe estate and are therefore inadequate. The buses that route through these bus stops are not allowed access into the estate which means that individuals who reside far into the estate still depend on private cars to get them to these stops. Also, the bus stops are made up of concrete slabs which branch off the road with no shade or covering.



Figure 18: Picture showing the type of bus stops which services the lugbe estate along the airport road (Personal archive)

- The roads are highly vehicular with no provision for cyclists or pedestrians. This places more emphasis on the use of cars and motor cycles, which in turn increases



the danger for cyclists and pedestrians, daily expense of residents and also pollution and the use of resources.



**Figure 19:** A street in the gwarimpa estate with no provision / demarcation for cyclists and pedestrians (Personal archive)

- There is inadequate / lack of provision of infrastructures and social amenities. Because of this, residential buildings have been converted, extended and / or redesigned by private individuals and investors to serve several needed functions such as schools, hospitals, shops, offices, etc, at a higher cost, and in some cases, some particular services like welding, car repairs, etc are provided by road sides, or markets on undeveloped land. Also, because there is no provision for proper dirt / sewage disposal, people dump their dirt on undeveloped land around the estate.



Figure 20: Refuse dumped on an undeveloped piece of land due to the lack of provision for proper disposal (personal archive)



Figure 21: A house which has been converted to a bookshop at the lugbe estate (Personal archive)

- There is total lack of user participation in the design, construction and finishing of all three housing developments. Because of this, the design and planning needs of most residents have not been met. Most individuals in the lugbe and gwarimpa estates have therefore redesigned and built extensions according to their needs at an extra cost, while individuals at the gwarimpa new village have sold off and are still selling the houses allocated to them.

- There are no public outdoor spaces available in any of the three housing environments. A comfortable environment outside buildings encourage people to sit out and therefore reduces their daily expense on heating and cooling, and are also necessary for the interaction of people in the environment and for community development. This lack of public outdoor spaces reduces the possibility of interaction between people in the estate since there is no provision of a neutral place where interaction is possible.
- There are few guards and one police station in the gwarimpa estate, and one police station at the lugbe estate, which for the size of the estate is inadequate. The Garki new village on the other hand has none. Because of this, individuals do not feel so safe at certain periods of the day, especially at night and therefore fence their houses for better protection, which again forms a kind of barrier between the people living a fenced residence from the rest of the residents in the estate.

For the re-settlement scheme, the disadvantages outweigh the advantages drastically. This is because, first and foremost, there is a complete lack of user participation in the design, construction and development of the environments. For the re-settlement of a particular culture, it is of paramount importance that people to be re-settled be involved in participatory processes to ensure that the environment follows their cultural believes and way of life, and that their environmental needs are met and their cultural heritage is preserved.

The Re-settlement schemes have nothing in common to the people, their culture or the environments they once lived in. The development is highly residential and there is a complete lack of infrastructure and support facilities in the environment and no public open space or even places where large parts of the community come together in common pursuit, celebration and observance.

Because of these reasons, most of the houses are being sold off to other individuals by the re-settlers. Also, land and some houses at the re-settlement site are being sold off by the government. All this is due to the fact that there are none / insufficient / lack of the implementation of policies to guide such type of housing developments.

From the analysis of the selected case studies above, the main disadvantages are on:

- The lack of user participation
- The lack of a variety of housing types to include all income groups
- An unsafe housing environment
- Lack of public oriented and pedestrian friendly streets
- The housing developments are highly residential which presents an environment which lacks a mixed land use
- Lack of public outdoor spaces with conforming spatial quality

Whereas, the main advantages include:

- A high density development when taking into consideration the horizontal dimension and a low density when taking into consideration the vertical dimension
- Some house designs oriented to utilize the benefit of local winds and sun light
- Provision of drainage along some streets for proper runoff water collection
- A variety of housing types to include at least two different income groups.

Regardless the different approaches in the design of these developments, in terms of sustainability, they all show a low level of sustainability because they have not been developed according to the design considerations of the sustainable housing criterion.

## **CHAPTER 4**

### **CONCLUSION AND RECOMMENDATION**

Housing is an important aspect when looking at the well being of any nation, but these developments are faced with different problems. The concept of Sustainability has been developed to provide a solution to the issues and problems which are faced by many developed and developing countries not only in terms of housing.

The situation of housing and mass housing in Abuja, Nigeria has been analyzed by the study of already documented data on housing, mass housing, sustainability, housing in Nigeria and Mass Housing in the city of Abuja, and by the analysis of selected case studies in Abuja, in trying to answer the question of why the mass housing schemes in Abuja are unsuccessful, by looking at its advantages and disadvantages through the use of the design considerations of sustainable mass housing developments.

#### **4.1 Research Findings**

Housing is concerned not only with the design of a single housing unit, but with the design of a whole environment which includes accommodation, jobs, education, health services, etc, in an environment which is safe, hygienic, aesthetically pleasing and also sustainable. But yet as important as housing is, the industrial revolution and the world wars are periods in time which would change the face of housing in a drastic way, and the idea of mass housing evolved.

In the aim to accommodate the ever growing population due to urbanization during the industrial revolution, and the people of war torn areas in search of shelter after the world war, the mass housing environments came with were done half hazardly and in a rush without considering its users or the support facilities and sanitary conditions which they needed. All that was considered was a roof over their heads and therefore most mass housing environments came to exist as places of gore and depression, with deteriorating buildings and unsanitary and unhealthy surroundings.

Sustainable development came to exist because of the sharp turn our environments was moving in the negative direction, coupled with the fact that the resources being used up by mankind was not ever lasting, and its concept has been developed to provide a solution to the issues and problems which are faced by many developed and developing countries, and has today become one of the most commonly used words and concept in every form of development today.

Towers (2005), has recognized that the intricacy involved in housing design is not based on the organization of the units of residents, but how they can communicate with each other. “it is the interaction that determines the nature of our towns and cities in terms of their vitality, security, community and not least, the quality of the external spaces where we lead the public part of our lives”. (Towers, 2005, P. 2)

From the principles of sustainable developments mentioned in previous chapters, and have been summarized as follows:

- To Protect and enhance the Environment
- To meet social needs
- To promote economic success,

Sustainable development is seen to be important to mass housing development because it provides:

- **Social Opportunities**, which include the interaction of people in the environment, equality and diversity, convenient access to facilities, affordable housing, a feeling of safety and the availability of infrastructures.
- **Economic Development**, which include job opportunities, reduction in every day cost of living,
- **Environmental Conservation**, which include the minimal use of environmental resources, reduction in pollution, use of minimum amount of water possible and also the use of recyclable materials.

To achieve a sustainable housing development, the following design considerations should be taken into consideration and adhered to:

- Density – high density in the horizontal dimension and low density in the vertical dimension
- Mixed Land use – a mixed land use to include overlapping zones of working, leisure, shopping, housing, etc



- Mixed housing types – a mix of housing types to include all income groups and different family sizes
- Public outdoor spaces and their spatial quality – comfortable green areas, soft and hard landscapes, children play areas and parks provided in a safe location with the proper spatial configuration should be designed and constructed
- House design – houses should be designed with the climate of the environment taken into consideration
- Public transportation and pedestrian friendly streets – streets should be designed firstly considering the pedestrians and the cyclists, then public transportation before the private vehicles
- Provision of infrastructures – housing developments should be provided for with adequate infrastructures such as schools, hospitals, recreational facilities, waste and sewage disposal facilities, etc
- User participation – users of the housing developments should be involved in the design, construction and finishing stages, especially in the re-settlement of individuals.
- Safety – residents should feel safe in their environments and therefore safety conditions to be provided.

From the analysis of the selected cases in the previous chapter, the problems of mass housing in Abuja, Nigeria can be summarized as follows:

- The mass housing environments are highly residential, which comes with a lot of disadvantage. It means when individuals who reside in these areas leave for their daily activities, which are located in the city center, their housing environments become ghost environments, leaving it more vulnerable to crime. Also, since offices are located far from these housing environments, people travel long distances to get to their places of work hereby increasing dependency on vehicles, time spent, which in turn increases the resources used in fueling vehicles and the amount of pollution which is released to the atmosphere on a regular basis.
- Even though there is a variety of housing types in some of the mass housing environments, there is always a strong segregation between individuals in the upper income group and those in the low income groups hereby reducing the chances of those in the low income group from having any direct interaction with those in the upper class. This in return reduces the chances of those in the low income group, who are in desperate need of a way to earn a wage or salary, from getting better paying jobs. Also, the safety and services which the upper class individuals provide in their environment cannot be enjoyed or shared with or by the individuals in the low income group who cannot afford such services, hereby leaving them in an unsafe and unsanitary environment.
- As regards to transportation, all the mass housing developments are car oriented and finished in tarmac. There is no provision or proper demarcation for cyclists and pedestrians. This, including the unsafe conditions for cyclist and pedestrians and the inadequate situation of public transportation places emphasis on the use of

cars, which increases the amount spent by individuals for their daily cost of living, the traffic on major roads which connects these mass housing environments to the central area of the city and also the pollution released to the atmosphere from these vehicles. It also increases the amount spent by the government in providing roads to accommodate the high traffic of vehicles that move to and from these housing environments daily.

- There is inadequate / lack of provision of infrastructures and social amenities. This places more pressure on areas which have these facilities and also the distances people travel to get to those areas. In most cases, such facilities as schools, hospitals, shops, etc are provided by private individuals / organizations and services are given at a considerably high cost.
- There is a complete lack of user participation in the design of housing environments. This is very important especially in the re-settlement scheme. Because of this lack of user participation, individuals who were re-settled have sold off and are still selling the houses which were given to them. This is because the development has nothing in common with their former community or even their cultural ties, and therefore lacks cultural identity. For the other housing developments, most individuals re-design, and in some cases demolish and rebuild their houses due to preference and bad quality construction.
- Lack of public outdoor spaces; which reduces the possibility of interaction between people in the environment, and play area for children, which in turn makes community development difficult. It also reduces the amount of time spent

by individuals outdoors and increase the time they spend indoors. This in turn increase the amount of energy used by heating and cooling systems to provide a comfortable atmosphere indoors.

- Inadequate safety measures. Therefore houses are fenced at any chance to have a better level of safety, which therefore increases the level of segregation between individuals in the environment.

All these, coupled with the absence of a comprehensive legal framework to support delivery of government housing objectives in the city of Abuja creates a housing environment which is rated below the required qualification of a sustainable housing development.

## **4.2 Recommendations for a Sustainable Housing Development in Abuja, Nigeria**

From the quality of the mass housing developments in Abuja, Nigeria, it is necessary for these developments to be reviewed and improved on. To create a sustainable housing development in Abuja, professionals and development authorities, which include the Federal Housing Authority (FHA) and the Federal Capital Territory Administration (FCTA), should improve on the policies legal framework for housing and housing developments and also ensure that they are strictly adhered to by all individuals and construction companies. The improvements in the housing environments should be done in line with the design considerations for mass housing developments in areas which are lacking. These improvements suggested as an output of this research include:

- A mixed land use development, which integrates a variety of uses in the environment should be designed. This integrates different use in the environment and therefore reduces the need to travel long distances
- Improvement of security measures, which enhances the safety of individuals in the developments and therefore encourages investments in the area
- Infrastructures and support facilities should be integrated into the design of these environments to create a development which caters for itself and is self supporting
- Mixed housing types, which includes individuals in all classes, designed in a way that all classes are properly integrated without segregation of any kind
- User participation should be integrated into the design and construction stage, which reduces cost of construction and provides an environment which is made by the people for the people
- Houses should be designed with appropriate building materials and construction techniques and oriented in such a way that they utilize the climatic conditions in a positive way.

- Optimum carrying density of the land area should be used and not excess. Optimum meaning the highest possible useable and not everything. This brings spaces closer together and therefore reduces the need to travel long distances.
- Pedestrian and cyclist oriented modes of transportation should be given more consideration and attention in the design of housing environments. This increases the possibility of interaction between people walking around the development which in turn increases a sense of community development and also reduces the dependency on automobile. Public transportation services should also be improved on so as to provide individuals with a conducive, comfortable and reliable mode of transportation, which makes them feel safer to come out without private vehicles.
- Comfortable public outdoor spaces and green areas should be provided to increase the amount of time spent by individuals outdoors and areas safe for children to play. This creates a comfortable atmosphere for individuals to sit and relax and also creates a form of partial surveillance in the environment.
- Continuous research, which involves a post occupancy evaluation of the housing developments, should also be carried out in order to draw out the positive and negative aspects of the design on its users.

The Constitution of the Federal Republic of Nigeria (1999) states in Article 16 (2) that:

The State shall direct its policy towards ensuring:

- The promotion of a planned and balanced economic development;
- That the material resources of the nation are harnessed and distributed as best as possible to serve the common good;
- That the economic system is not operated in such a manner as to permit the concentration of wealth or the means of production and exchange in the hands of few individuals or of a group; and
- That suitable and adequate shelter, suitable and adequate food, reasonable national minimum living wage, old age care and pensions, and unemployment, sick benefits and welfare of the disabled are provided for all citizens

However, Article 6(6)(c) of the 1999 Constitution declares that the Chapter Two provisions are non-justifiable, and thus cannot be enforced by the courts. Nevertheless, the Federal Government has legislative powers, by virtue of Item 60(a) of the Exclusive Legislative List, to “promote and enforce the observance of the Fundamental Objectives and Directive Principles contained in this Constitution”.(COHRE & SERAC, 2008), and should therefore ensure that legal framework for housing in the country should be strictly abided to in order to maintain a well managed housing development.

This puts the government in the position to provide decent housing not just for the elite in the society but for all individuals ranging from the upper class, to the upper middle

income individuals in the society, to the low middle income earners and finally the lower class individuals in the society.

It is believed that sustainability in Urban design, and particularly in mass housing, can be seen as a renaissance (re-birth) of housing development, which includes an effective way of articulating socio-cultural, economical and environmental thoughts/analysis/findings by Architects, in order to have a development, which successfully provides for the present generation without compromising the ability of future generations meeting their own needs. With the articulation of sustainability in housing developments, a conducive housing environment which includes accommodation, jobs, education, health services, etc., in a context which is accessible, safe, hygienic and aesthetically pleasing, which is lacking in environments where low income earners reside, will be achieved.



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