

Sustainable Development in the Nigerian Housing Sector: Challenges and Opportunities of Achieving the Green Initiative

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ABSTRACT

For some years now, the world has been experiencing negative changes in the climatic conditions. In order to overcome the problems of climatic change, the entire world met in Brazil in 2010 to find a way out. This has resulted into the green initiative intended to save the planet from human destruction. One of the cardinal principles of the Green initiative and Green Economy is Sustainable Development. To achieve this, Greening the Housing Sector has become imperative. This is because the housing sector has been identified as one of the major sources of GHG emissions. Amidst global calls and campaign for environmental protection and sustainability through greening initiatives coupled with concerted efforts at bridging the millions of housing demand-supply gaps in Nigeria, both private and public sector operators in the nation's built environment should consider and encourage green building as a global standard with immense benefits.

Keywords: Green Economy, Green Housing, Sustainable Development Green Initiative, Housing Sector.

INTRODUCTION

The Nigerian economy is today structured into different sectors. Some of these sectors are; the education, agriculture, industrial/manufacturing, transport, energy and petroleum, financial, housing, etc. Apart from the above, classifications or structuring, one of the basic necessities of life is shelter.

According to Akewusola (2014), "shelter is universally, acknowledged as one of the most basic human needs alongside food and health, with profound impact on lifestyle, clothing, happiness as well as the productivity of the individual. Furthermore, that, "Developments have overtaken the idea of shelter by now. What people need now is housing. Housing therefore encompasses all ancillary services and community facilities that are necessary to human well-being. It is indeed a package of services, land utilities and access to employment and special amenities as well as the structure of the house itself".

With the above in mind, one will appreciate the fact that housing is a very important necessity of modern living, hence governments all over the world have initiated numerous policies and programmes towards the development and sustainability of the housing sector with particular reference to the issue of climate change and the need to refocus on the type of houses that are built taking into consideration the global attention on environmental protection, Uroko (2014) opined that, "in today's world of changing climatic conditions and rising household energy cost due to growing sophistication and changing tastes, greening is increasingly becoming a phenomenon and a veritable index in global initiatives for measuring standards of the built environment. This fact was also attested to by Alitheia (2010) who stated that "environmental sustainability, global warming and green have become common terms in discussions on the subject matter about the effects of our economic and social activities on the environment".

The housing sector is therefore one of the important sectors of an economy that will no doubt help in the sustenance of the environment through the application of the Green initiative. This paper will therefore examine the need to refocus and reappraise policies towards the provision of housing to the Nigerian population by taking into consideration the sustainability of the environment. Efforts will also be made by the paper to examine the challenge, opportunities and the way forward. This, the paper believes will help in the overall sustainable development of Nigeria.

THE HOUSING SECTOR

According to Jiboye (2011), the Nigerian Housing Sector has evolved over the years starting from the pre-colonial period to the colonial period and from the colonial period to the present. Between these periods, efforts were made by the authorities to provide decent and affordable houses to the people. Hence, he opined that, housing is one of the most important sectors of the Nigerian economy that needs much attention.

Apart from the above, among the several endemic social problems in most countries of the world, including crime, health, education, housing, etc, much attention has not been paid to the issue of housing sustainability in Nigeria. In the same vein, the provision of houses for the greater majority of the people in Nigeria is one of the very few social programmes that result in the production of a commodity that has economic, cultural and environmental components of the society. In fact, according to Erguden (2001) and UN-HABITAT (2006), housing is generally known to fulfill basic need for shelter and has a profound impact on the quality of life, health, safety, security, welfare as well as productivity of man. It also plays a crucial role in

integrated physical and economic development, environmental sustainability, natural disaster mitigation and employment". What is implied by here is that housing has a very huge significant influence on all aspects of human life at home, work or recreation.

Still on housing, it is important to note that the provision of housing for the masses is aimed at providing quality and environmentally friendly homes that will help to ameliorate or improve poor housing conditions and thus contribute to enhancing people's standard of living and the general quality of physical environment (Choguill, 2007). In his own contribution, Chiu (2000) noted that housing can also assist in achieving some macro political, economic and social objectives. Hence, Rossi, Lipsey and Freeman (2004) identified housing as one of the social intervention programmes designed, planned, organized and implemented to ameliorate a social problem or improve on social condition.

From the foregoing analysis, it is not surprising that housing is a very important sector of an economy that helps in the socio-economic development of a nation.

CHALLENGES OF HOUSING IN NIGERIA

Just like every other sector of the Nigerian economy, the housing sector is also faced with lots of problems. These problems range from the high level of corruption in the country to mismanagement, etc. To this extent therefore, the Nigerian housing sector is faced with numerous challenges. These challenges can be articulated as follows;

According to Abiodu (1997b), one major challenge militating against the housing sector in Nigeria and most other developing countries is that of spontaneous and controlled urbanization. It has been observed that rapid growth in urbanization has led to inadequate housing for the growing urban population that is as a result of rural-urban migration

Apart from the above, Housing Corporation (2003), Abiodu (1983), and Oniboku (1985) opined that another major challenge facing the Nigerian Housing sector is that of acute shortage problems expressed in both quantitative and qualitative terms. They continued that, while decent housing can be regarded as the right of every individual, a large proportion of the population in Nigeria lives in substandard and poor housing. The reality of this scenario according to Awotona and Ogunshakin (1994) is that many houses in Nigeria, especially those in the urban centers accommodate extended families living with many inconveniences, while spatial congestion and infrastructure overloads cause problems in living comfort.

In support of the above statement, Oladunjoye (2005) and Olotuah (2000) asserted that, these housing inadequacies, particularly for the low-income group, have been complicated by high rate of population growth, inflated real estate values, influx of rural immigrants, deplorable services and infrastructures and a lack of implementation of planning policies".

Apart from the acute shortfall in housing supply in relation to demand according to Abiodu (1977a) and Oduwaiye (2009), the majority of dwellings in the hinterland – mostly owned by the indigenous, remain unplanned", To this extent therefore, since housing remains a social responsibility to every government and to a large extent, the health of the country and well being of its people depends on the quality, condition, sustainability of the housing sector, H.C (2000) and Oduwaiye (2009).

Since housing, has been identified as one of the social responsibility of every government, social programmes are usually initiated and implemented towards addressing the problems. Such social programmes and policies are usually born out of experience, research and development, professional lore, logical reasoning of how it can address the identified needs, and are also based on goals, objectives, outcomes and impacts (Weitzman, 2007, Brickmaye and Weiss, 2000). Also Savaya, Spiro and Eiran – Barak (2008) opined that social policies and programmes of the government are expected to meet the identified needs of the housing sector. Hence, housing policies and programmes should generally be based on a set of assumptions and beliefs that the housing need of targeted population would be met and their socio- economic status and physical living conditions will improve.

Based on the above Ibem, Anosike and Azuh (2011) observed that housing policies and programmes are conceived as involving the use of public resources in providing housing and related services to target population. Hence, the multi-faceted components and impact of housing suggests that the issue of sustainability is central to the production and consumption of houses in Nigeria and elsewhere in the world; and thus can contribute significantly to sustainable development. Hence, the question arises as what is the meaning and implications of sustainable development viz-a-viz the housing sector.

SUSTAINABLE DEVELOPMENT AND SUSTAINABLE HOUSING DEVELOPMENT IN NIGERIA

An attempt will no doubt be made at this point by the paper to examine the meaning and implications of sustainable development in the context of the housing sector of the Nigerian economy. The early and standard definition of Sustainable Development by the World Commission of Environment and Development (The Brudtland Commission) in 1987 shows that sustainable development is development that meets the needs of the

present without compromising the ability of future generations to meet their own needs. (WCED, 1987). This widely accepted definition according to Ibem and Azuh (2011), highlights three fundamental components of sustainable development; environmental protection, economic growth and social equity". Drawing from the above assertion, Chiu (2002) submitted that "sustainable development aims at delivering built environment (houses) that enhances quality of life, satisfaction, flexibility and has the potential to cater for user changes in the future as well as provides and supports desirable natural and social environments that maximize the efficient use of resources". This implies that the ultimate goal of sustainable development is to protect, improve and sustain the quality of life and environment in such a way that meeting the needs of the present generation will not compromise or jeopardize the prospects of succeeding generations in meeting their own needs. Marcause (1998) in his own contribution was of the opinion that it is a reminder to all generations to conduct every activity on the planet earth with the highest degree of caution and restraint by making it sustainable. The conclusion that can be made from the statements above is that sustainable development is an all encompassing construct, covering a large part of people's way of life, livelihood and continuity on the surface of the planet earth.

From what the paper has so far reviewed, it can be appreciated that sustainable development's definition has its main concept as sustainability. What then is the meaning of sustainability? The term "Sustainability" literally implies, "ability to be maintained" No doubt, many authors have used it in different contexts. No wonder Marcause, (1998) noted that, "this term which literally means the "ability to be maintain' has been used by several authors in different contexts to the extent that it has become a highly debated construct". In his own contribution to the concept, Rotmanus (2006) noted that, "Sustainability is a contested concept because it is inherently complex, normative, subjective and ambiguous". To Chiu, (2006), "Sustainability has environmental roots". What is evident from the literature so far reviewed is that the notion of environmental sustainability implies a concern for social equality between generations and has economic and cultural implications with respect to future generations (WCED, 1987).

In relation to housing sustainability, Turcott and Ken (2010) argued that most literature on sustainable housing focuses on environmental aspects. Hence, Chiu (2003) and Ibem and Azuh (2011) opined that "sustainability has become a valuable issue in developing housing projects for obvious reasons". The first is that given the multi-faceted nature of housing as the paper has earlier stated, the environmental, economic, social and cultural dimensions of sustainability can find less expression than in the production and consumption of housing (Turcotee and Ken 2010). The second is the essential role of housing in enhancing global and local sustainability and environmental protection.

GREEN ECONOMY, GREEN HOUSING AND SUSTAINABLE DEVELOPMENT: THE NEXUS.

According to Alitheia (2010) the issues of environmental sustainability, global warming/climatic change and greening the world economy have become terms in discussions on the subject matter about the effects of our economic and social activities on the environment. To this extent therefore, the issue of Climatic Change, Sustainable Development and a Green Economy (Green Housing) are all related to one another.

It is important at this point to note that since the past ten years or more, the world has been battling with the problems of climatic change and its attendant consequences. Uwazie and Odii (2010) opined that the issue of climatic change should be addressed by the entire human community or else, humans will eventually end up in destroying itself". In order to address the challenges and environment hazards of climatic change, experts under the United Nations Climatic Change Committee have advocated that nations should go green, hence the concept of Green Economy (Odebiyi 2010).

According to Uroko (2014), Greening the environment by way of landscaping, planting trees and ornamentals, creating gardens and parks are no longer enough, hence the need for sustainable energy efficient structures commonly called green buildings and not just for residence alone but also for business, commerce and sundry purposes". Generally, the concept of Green Economy according to Ocampo (2011) is that "there is no unique definition of the concept Green Economy, but the term underscores the economic dimension of sustainability". He went further to state that the concept "Green Economy" has become a centre of policy debates in recent years and provides a response to the multiple crises that the world has been facing in recent years – the climate, food and economic crisis – with alternative paradigm that offers the promise of growth while protecting the earth's ecosystem". In this sense, the transition to a green economy will entail moving away from the system that allowed, and at the same time generated these crises to a system that proactively addresses and prevents them.

Still on the concept of Green Economy, UNEP in its 2011 report' *"Towards a Green Economy – Pathways to Sustainable Development and Poverty Eradication"* defined the Green Economy as one" that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities". This report by the UNEP responds to the growing recognition that achieving sustainability rests almost entirely on getting the economy right. It also emphasizes the crucial point that economic growth and environmental stewardship can be complimentary strategies, challenging the still common view that there are

significant tradeoffs between these two objectives – in other words, that the synergies prevail over the benefits (see also Ocampo 2011).

Furthermore, Alitheia (2010) was of the opinion that, “going Green is the phrase referring to corporate and individual actions consciously taken to curb the harmful effects on the environment through consumer habits and lifestyles”. From the foregoing, one can appreciate that a Green Economy in its simplest expression is low-carbon, resources efficient and socially inclusive. In a green economy, growth in income and employment are driven by public and private investments that reduce carbon emissions and prevent the loss of biodiversity and ecosystem services.

An analysis of the statements above will reveal the fact that going Green implies a process towards economic growth and development without any environmental degradation but rather with an improvement in the ecosystem (Uwazie, Ebomuche, Ihugba & Ezeonye, 2008) This understanding no doubt agrees with the definition of sustainable development. At this point, it is important to re-emphasize the fact that sustainable development on its own implies the development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). The question one will tend to ask here is what is the connection or nexus between Green Economy, Sustainable Development and Sustainable Housing?

Writing on *Encouraging Green Building as a Standard For Towards Built Environment*, Uroko (2014) opined that, “green buildings or green houses are those with increased efficiency in the use of energy, water and materials with capacity to reduce the impact of construction or operational activities on human health and the environment through better sitting, design, construction, operation, maintenance, renovation and demolition”.

Put differently, he stated that it can also be looked at as “structures that have been constructed, incorporating aesthetics, technologies and materials that are environmentally friendly, responsible and resource-efficient with less dependence on fossil fuels to minimize its negative environmental impact throughout its life-cycle (Uwazie, Odii & Nkwocha 2008).

Writing on “Sustainable Building/Houses” Sampson (2014), stated that, “the principles of Sustainable Development emphasizes the need for sustainability in every aspect of our lives, including the houses and environment we live in”. Furthermore, the global standard in housing development today is called “green” or sustainable houses. A green house or building is one that follows all laid-down environmental and construction rules and with limited footprints in the ecological environment.

Still on the nexus between Green economy, sustainable development and green houses, a report, submitted to the Californian ‘ Sustainable Building Task Force in 2002, rightly described ‘green or sustainable houses/buildings as that which are sensitive to the environment, resource and energy consumption, impact on people (quality and healthiness of work environment), financial impact (cost-effectiveness from a full financial cost-return perspective), the world at large (a broader set of issues, such as ground water recharge and global warming, that a government is typically concerned about”. Therefore, for a building or house to be certified as green, it must provide basic comfort, convenience, healthiness and security for the inhabitants, save costs in the long run, especially on energy consumption, waste and water management, among others, and also ensure the preservation of the surrounding environment, Sampson (2014). To this extent, one can only conclude that since a green house has the same objective with a green economy and that of sustainable development, there is a high and positive correlation between the three concepts. This can be seen from the fact that a green economy is an approach towards rescuing planet earth from man’s inhumanity to the environment. This very objective can be achieved if sustainable development approach is adapted. Housing and more importantly Green Housing is an approach towards actualizing Green Economy and Sustainable Development. This no doubt is the nexus.

CHALLENGES TOWARDS ACHIEVING GREEN AND SUSTAINABLE HOUSING

The question that one may ask at this point is whether it is possible and feasible to actualize and achieve Green and Sustainable Housing in Nigeria and other parts of the world? This paper wishes to state that nothing is impossible in this world in general and Nigeria in particular. Hence, it is possible if the political will and commitment of the private sector is there. This is because, since sustainable housing is the natural step towards correcting the effects of climatic change, then everything should be put in place to actualize, realize and achieve it.

In view of the above, the paper wishes to reiterate that the Nigerian economy apart from facing many challenges, there are also the challenge of Greening the economy with a view to achieving sustainable development through the Green Housing perspective. This fact was attested to by Alitheia Capital (2010) who stated that, “Nigeria is confronted with several peculiar challenges which make a green agenda appear unattainable. Top of these include the solutions that have been adopted because of inefficiencies in the energy and transportation systems, as well as waste management. The building sector has its own peculiar handicaps. Hence, the following can be said to be the major challenges facing the Nigerian Green Economy.

1. Resources needed for the Transition to the Green Economy.

2. Cost of Restructuring the Economy to Green as a result of numerous economic problems.
3. Developmental challenges facing the country.
4. Energy and environmental challenges
5. The challenges of rising poverty in Nigeria
6. Corruption and maladministration
7. Inconsistent Policies and Policy somersaults
8. Inability of Advanced Countries to cut down on green gas emissions\Availabilities of relevant technologies needed for the Transformation to a Green Economy.

The above mentioned challenges facing the Nigerian economy in its bid to achieve the Green Initiative can be said to be the general challenges facing the economy as a whole. But there are specific challenges facing the Nigerian Housing sector toward achieving the green status. Although, the paper has earlier mentioned them above, it is very important to discuss the vital ones.

Developmental Challenges:

According to Rode, Burden and Goncalves (2011) and UNEP (2011), “developing countries such as Nigeria are urbanizing at a rate two to three times faster than developed countries”. This according to the UNEP, ILO, IOE and ITUC, (2008) is resulting into massive informal settlement and slums. In the majority of the developing world, the scale of informal and low-cost housing is vast, in some cities, such as Lagos, Abuja, Onitsha, etc; the informal city is bigger than the formal city (Adesoji 2011). In Indonesia, another developing country like Nigeria, an estimated 70 – 80 percent of housing construction is informal (Malholta 2003), while in Brazil, (UNEP – SBCI 2010b) opined that more than half of all low-cost homes are built by the informal sector. In this context, providing affordable green housing is a considerable challenge when so many already face major economic barriers to affordable conventional housing.

Energy and Environmental Challenges

Whether in the existing building or housing stock or that of the projected stock, the housing sector of the Nigerian economy and that of other countries of the world is the largest contributor to global green house gas emissions. According to IEA (2010a) and IEA (2009b), nearly 60 percent of the world’s electricity is consumed in residential and commercial buildings, although this usage varies widely according to geographical location, climate and consumption patterns. This implies that in some developed countries that are located in cooler regions of the world, space heating on average, represents 60 percent of residential energy consumption, followed by water heating at 13 percent (UNEP-SBCI, 2007a). With respect to Nigeria and other sub-Saharan African countries that are hot all round the year, they consume less energy in terms of heating and boiling of hot water.

Data Challenges

When considering the environmental credentials of buildings, the true measure of their performance only becomes evident with occupation, given the impact of factors such as behaviour (cultural habits, environmental expectations and life-style), climatic changes and particularities of the control of technical systems in buildings. The only realistic way to rate the energy efficiency of a building is by measuring how much energy has been consumed during a period of occupation, ideally, a minimum of two years. A dearth of accurate data is no doubt hampering the understanding of impacts such as occupation, design and technological components (Rode, Burden and Goncalves (2011).

OPPORTUNITIES AND BENEFITS OF GREENING THE HOUSING SECTOR

It has been established that a green economy is a sure way towards restoring the planet earth. There is therefore no doubt about the advantages inherent in a Green Economy. A Green Economy is also a process through which sustainable development of a nation can be achieved. There are therefore many opportunities and benefits that will accrue to a nation transiting to a Green Economy According to Rode, Burden and Goncalves (2011), the major opportunities for greening the housing sector are the relatively low cost of the process, be it retrofitting or new construction, the availability of technologies and the green evolution of energy supply and demand. These trends, they concluded are encouraging the efforts to transform the housing sector. The paper will first examine the opportunities before examining the benefits.

Opportunities: Low Net Cost

Although the housing sector is the largest contributor to human-related Green House gas (GHG) emissions, it also holds the greatest potential to reduce these emissions (IPCC 2007). On the basis of the IPCC report, there is a 29 percent projected reduction of emissions by 2020. This according to the report is achievable at a zero cost while further improvements could be made with relatively low levels of investment.

Equally, there is sufficient proof to show that ‘green’ sustainable housing projects do not have to be cost-prohibitive. There are many cost effective steps that can be taken to make Nigerian cities and communities’ better places to live and work.

Adapting Behaviour Patterns

Before addressing the technical, financial and regulatory potentials of green housing and their impacts on the green economy and sustainable development, it is important to recognize that profound changes in attitude and behavior will be required amongst policy-makers, investors, consumers and occupants in order to implement real change. As many people spend most of their time in the homes and offices (housing), understanding the economic and psychological rationale of decision made by individuals and institutions is increasingly recognized as fundamental to achieving energy-efficiency improvements in the housing (McDonough and Braungar 2002).

Design and Technology

The greatest opportunities to achieve a higher environmental performance for buildings can be found in the early stages of their design. An integrated design methodology of green housing combines environmental principles and technological inputs at various design stages. It requires a multidisciplinary approach and broadens conventional building design by including rigorous assessment procedures to comply with performance targets (Baker and Steemers, 1999).

Equally, greater attention is now given to the impact of sustainable environmental design solutions on the running costs of buildings and how much energy is embodied in construction materials and processes (McDonough and Braungar 2002).

Managing Energy Supply And Demand

Energy use and emission patterns are affected by housing’s environmental performance and its energy load or by the extent of its use of green sources of energy both on the demand and supply sides of energy respectively. Recent developments in design and technology offer significant potentials to change the way energy demand and supply is managed in buildings (Luhmann 2007).

It is important to equally note that the pattern of energy use in buildings varies considerably among regions and countries; according to geographical location, climate, consumption patterns and state of development and urbanization (IPCC 2007).

Retrofitting and New Construction

In developed countries opportunities for greening the housing sector are found mainly in retrofitting existing houses to render them more environmentally efficient by reducing energy demand and using renewable energy sources. Many countries in Europe and North American are as of today not increasing their housing stock as it is obtainable in Nigeria and many other developing nations. Ravetz (2008) stated that in UK for example, 75 percent of the existing housing stock is expected to be in use in 2050. In such circumstance, retrofitting existing buildings becomes a critical area of intervention to reduce energy demands and thus GHG emissions”.

GREEN ECONOMY, GREEN HOUSING AND SUSTAINABLE DEVELOPMENT: THE WAY FORWARD.

Achieving a green economy through the construction of green houses so as to achieve sustainable development is not doubt the way forward towards developing a nation’s economy and at the same time preserving the planet for future generations. Hence, achieving a green or sustainable housing is not rocket science; neither does it entail an out of this world model or technique. Rather, it is the construction of houses the way we have always done, but with enhanced concerns and provisions for the humans that would live there and the entire neighborhoods (Sampson, 2014).

On the bases of the above, the paper suggests the application of “the triple bottom line approach” and compelling compliance” by the government as the way forward towards achieving a Green Economy through Greening the housing sector for sustainable development.

Triple Bottom-Line” Approach.

According to Sampson (2014), “the triple bottom-line of sustainable development emphasizes the social, economic and ecological wellbeing of the environment. This is what green houses are designed and built to achieve”. In Nigeria, many people are still living in poor houses that are characterized by poor sewage and sanitary conditions, lack of portable water, etc. Good quality houses housing on the other hand, must also be safe, secure, accessible, loosely populated and with proximity to healthcare facilities, schools, recreational parks, etc.

From the tripe bottom line, the United States Environmental Protection Agency (2010) as quoted in

Sampson (2014) identified the expectations of green and sustainable housing to include;

- **Environmental**
 - Enhance and protect biodiversity and ecosystems.
 - Improve air and water quality
 - Conserve and restore natural resources
- **Economic**
 - Reduce operating cost
 - Create, expand and shape markets for green products and services
 - Improve occupant productivity
 - Optimize life-cycle economic performance
- **Social**
 - Enhance occupant comfort and health
 - Heighten aesthetic qualities
 - Minimize strain on local infrastructure
 - Improve overall quality of life.

Compelling Compliance

In developed and many other developing countries of the world, stakeholders such as governments (at all levels), investors, developers, tenants and even the entire population are getting increasingly aware of the new environmental standards that housing construction must meet. According to Sampson (2014), “several indexes and indicators have been developed to check, measure and certify the sustainability of today’s housing and construction projects. And stakeholders now weigh the value for their money using these sustainability indexes. It is no longer business as usual.

Also, the Global Real estate Sustainability Benchmark (GRESB) has been adopted by several property and real estate developers around the world and they are required to report to stakeholders and the general public on their performance in applying these benchmarks. These will also help to check the frequency in building collapses that has become a recurring decimal in Nigeria. These are no doubt the way forward.

CONCLUSION AND RECOMMENDATIONS.

The fact that Nigeria is late in keying into the Green Initiative does not mean we cannot get there. This is the time to start leveraging on the advantage of Green Economy, Green Housing and Sustainable Development. This will no doubt help the country to avoid a continuation of the old unsustainable trends in housing construction. To effect the much needed transition and change, government must develop a sustainable housing roadmap and put indicators and checks in place to guide construction of new houses. There should also be in place effective regulation, incentives for compliance and punitive measures for defiance.

Governments, at all levels must also take up the responsibility of developing the desired Sustainable Green Houses and Communities, rather than the current practice of leaving housing development at the unguided discretion of individual builders and developers.

Finally, the paper is of the opinion that this is the time to ensure adequate funding for the development of sustainable housing for the Nigerian people. Green houses and housing coupled with global concern with climatic change and how best to tackle the consequences imply the application of the Green Initiative in the housing sector. This will definitely enable Nigerian to attain the much desired sustainable development.

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