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RESEARCH ARTICLE

PERSPECTIVES ON SUSTAINABLE HOUSING DEVELOPMENT IN NIGERIA

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ABSTRACT

Nigeria holds the record as the most populous, fastest urbanizing and largest economic nation in Africa. Nevertheless, multidimensional effects of mounting population growth, marked internal rural-urban migration and widespread use of inappropriate housing development approaches have resulted in the emergence of urban sprawls, slums and squatter settlements in and around the country's cities. The Sustainable Housing Development (SHD) initiative remains a welcome panacea to ameliorating the intricate problems hindering housing development in Nigeria. The success of the application of the actions and plans of the SHD initiative significantly depends on sustainable planning, design, financing, construction and cultural blending. This study identified the government, the private sector and the citizenry as major drivers and the Land Use Act (1978) as the most significant factor hindering SHD performance in Nigeria. Other highlighted barriers are housing affordability and accessibility, lack of sustained political will to consistently prosecute coherent policy frameworks and enablers as well as the poor state of dependable, in-country research and development data. In spite of these hurdles, the prospects of SHD are considered high as evidenced by Government's interest in engaging construction industry professionals in line with the provisions of the National Integrated Infrastructure Master Plan for improved service delivery in the housing sector.

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INTRODUCTION

The term sustainable development was first proposed by the Bruntland Commission in the eminent draft paper, "Our Common Future", also known as the "Bruntland Report" of 1987. The foremost report defines sustainable development as a development that meets the needs of present generations without jeopardizing the capacity of future generations to meet theirs (Brundtland, G. *et al.*, 1987). The concept may be seen as the facilitator towards zero or neutral carbon use by balancing the conservation of nature's resource with the needs for development through the conscious improvement of the overall quality of human life while living within the carrying capacity of supporting ecosystems. Mounting population growth, an exhausting debt burden, marked internal rural-urban migration and extreme poverty driven by climate change, consequential natural and manmade catastrophes, conflicts and an exponentially expanding jobless youth demographic coupled with an unprecedented upsurge in the consumption of available resources over the years have resulted in the emergence of urban sprawls, slums and squatter settlements (Udoh, Essien & Etteh, 2020).

Though the housing question is a universal one as most nations are confronting the challenge of providing sufficient, safe, healthy and affordable accommodation for their people, the situation is more critical in many cities of Nigeria and most parts of Sub-Sahara Africa where a whopping 413 million of the global 736 million people surviving in extreme poverty live. In fact, of the 211,400,708 population in Nigeria, 40.1% is the poverty rate (World Bank, 2021). Based on the emerging data and the need to make the necessary improvements prior to the target year of 2030, the United Nations and over 190 signatory nations ratified the motion to establish the Sustainable Development Goals (SDGs) at the United Nations Conference on Sustainable Development in 2012. The main objective was to develop and adopt comprehensively applicable goals around people, planet, prosperity, peace and partnership for ensuring sustainable social, environmental and economic development around the globe. The subsequent adoption of the SDGs on 25 September, 2015 paved the way for the establishment of 17 Goals and 169 targets aimed at addressing poverty, food, health, illiteracy, gender equality, energy crises, homelessness, disease, land degradation and the

effects of climate change particularly in developing countries like Nigeria by 2030 (United Nations Development Programme, 2016). Figure 1 presents an illustration of the 17 Sustainable Development Goals (SDGs).

Figure 1. Sustainable Development Goals (SDGs) (United Nations Development Programme, 2016)

Interestingly, Sustainable Housing Development (SHD) has a relationship with all of the 17 SDGs and is deemed by the United Nations as a significant contributor to economic growth and social development on a global scale. SHD generates millions of direct, indirect, induced and catalytic employments; engenders human interactions and communications; facilitates economic transactions; enables tourism; and supports other indices of sustainable development especially where there are designed to be culturally-responsive, environment-friendly, safe, reliable and cost-effective. Goal 11 of the Sustainable Development Goals (SDGs) specifically seeks the upgrading basic services in slums and shanty towns around the world through the stimulation of global policy debates on the sustainable planning, financing, construction and management of human settlements (UN-HABITAT, 2012; UN-HABITAT, 2012b; United Nations Development Programme, 2016). It is therefore in furtherance of the above that this paper aims to identify the core drivers and domains, x-ray the barriers, prospects and bring to the fore the recipe for Sustainable Housing Development in Nigeria.

Overview of Sustainable Housing Development Concept: The concept of sustainable housing is similar to the sustainable growth and development of settlements around the world. It is instructive to note that housing is not just a roof over one's head but the aggregation of the dwelling, the home, the immediate environment and the community as well as the dynamic process of providing and improving them (Bonnefoy *et al.,* 2004; WHO, 2004; Jinadu, 2007). As one of the 3 basic needs of man (others being food and clothing), housing offers essential shelter and allied environmental services like water supply, sewage and solid waste disposal and energy. While it also serves as the workplace for a significant section of the population especially in developing countries, housing provides a range of other locational returns in the form of household wealth, health, education and recreation resulting in improved life quality and opportunity for social mobility (Udoh, 2016).

Sustainable Housing Development (SHD) implies the deployment of policies, programmes and initiatives designed to deliver affordable, accessible and adaptable housing for individuals within or across hamlets, villages, towns, cities, states, regions, nations or continents. The concept adopts sustainable social, economic and environmental considerations with minimal impacts on future generations and the environment in the deployment of nation-based housing initiatives for the masses (Priemus, 2005; Olotuah & Bobadoye, 2009). Characteristically, the principles of SHD cuts across various professions such as urban and regional planning, construction management, sustainable building materials and waste valorisation, green building techniques and smart technologies as well as sustainable energy solutions. Suffice to mention that SHD involves all the processes, systems and players engaged in the planning, design, financing, construction and management of cities around the world (OECD, 2001; de Groot, 2006; Williams & Dair, 2007; Akadiri, Chinyio and Olomolaiye, 2012).

Housing constitutes a significant component of the interdependent and mutually reinforcing pillars of sustainable development, and its adequacy in terms of quantity and quality plays a dominant role in gauging the level of development as well as a people's standard of living (Nair, *et al*., 2005; Jiboye, 2009). Therefore, the need for sustainable housing development is imperative especially in developing countries. Moreover, it is pertinent to urgently address the pervasiveness of unsustainable housing environments particularly due to its effects on health, water, sanitation, security and climate. According to research, successful sustainable housing development often requires public-private partnerships with long term planning and strategic investments in public transportation, primary health care, telecommunications accompanied by green spaces (Abdul-Aziz & Kassim, 2011; Kjosev and Eftimov, 2015; United Nations Development Programme, 2016).

In cognizance of this, the UN thus advocated the global adoption of Goal 11 target as a holistic approach to housing provision for viable progress across the many other goals that encapsulate the 2030 Agenda for Sustainable Development (United Nations Development Programme, 2016). Study scope generously focuses on both the rural and urban components of housing. Data analysis is based on textual and qualitative enquiry using key informants' interviews, extensive literature reviews as well as secondary data from journals, government publications and other documents on housing. Succeeding sections of the paper seeks to identify and highlight the principles, challenges and prospects of SHD in Nigeria.

Recipe for Sustainable Housing Development in Nigeria: The realization of the goals of Sustainable Housing Development (SHD) requires all stakeholders to align with the recipe/ principles of SHD as outlined in this paper. These principles include sustainable planning; housing design; housing financing; housing construction; and culture/ traditions.

Sustainable Planning: Changes in population size, as well as shifts in the age structure and spatial distribution of a population, are largely foreseeable, having been shaped by demographic processes that already occurred in the past. Efforts towards sustainable development to be undertaken as a part of the 2030 Agenda should therefore take full cognizance

of the demographic shifts projected to unfold over the next 9 years. The need for policymakers to incorporate both present and future demographic dynamics to inform development planning and to identify areas where programmes must be scaled up to reach growing numbers of people in need as well as areas where the shifting demographic profile offers opportunities to accelerate progress towards sustainable development cannot be overemphasized (OECD, 2001). The Environmental Planning Management (EPM) process presents a veritable tool for the measurement of the usefulness, effectiveness and efficiency of individual and group elements of sustainable planning. Described as the steps needed to carry out and implement environment management plans for the purpose of ensuring that achievements in social, economic and physical development last for the benefit of the present and future generations, it is an analytical framework as well as a prescriptive mechanism which facilitates better understanding of the dynamism of urban development and environmental issues and helps to identify urban environmental issues before they become uncontrollable and too expensive to deal with; to agree to strategies and actions to resolve identified environmental issue among all those whose cooperation is required; and to implement strategies through coordinated public and private actions (Jacob, Bayonle & Yekeen, 2017).

Sustainable Housing Design: In line with the SDGs, whereas sustainable planning regulates and guides all building and rebuilding operations in, on and under the land as well as seek to ensure ordered growth of settlements, sustainable housing design principles are founded on compliance to stipulated codes and green building standards for all aspects of land use through the deployment of site microclimatic and topographical analyses; form, structure and functional design efficiency; energy, water, materials and other resource efficiency; indoor environmental quality enhancement; value engineering and life cycle assessment; operations and maintenance optimization; and waste valorization, to support a healthy community and improve the overall life quality of the people in line with the overall plan of the focus area (Pulaski, 2004).

It is instructive to note that a sustainable building is measured in terms of the impact and trade-offs of the use and management of readily available resources (Akadiri, Chinyio and Olomolaiye, 2012; Singh and Pandey, 2012; OECD, 2021). Hence, traditional Nigerian architectures are predominantly in sync with the ideals of sustainable housing development (SHD) as they take into account the dominant deployment of tropical climate-responsive local materials. However, professional indigenous Architects have to lead the discussions on the evolution of simpler forms of design prompted by the need to do away with over-designing and concentrate more on the generation and execution of climate-responsive or eco-friendly designs as contemporary hybrids (Poor, Thorpe and Goh, 2018; Qtaishat, Adeyeye and Emmitt, 2020; Attia, 2021). As the famous adage goes: "There is beauty in simplicity". A more cost-effective design over the structure's life cycle is highly desirable at this point in time if affordable, accessible, adaptable and durable social housing based on the SHD template is to be assured (Akadiri, Chinyio and Olomolaiye, 2012; UN-HABITAT, 2012; Ifije & Aigbavboa, 2020).

Sustainable Housing Finance: According to Weinrich (2012), finance for housing is said to be sustainable if, based on transparent and predictable terms as well as affordable cash flows, it can enable majority of a target population to fund property development within an adequate period of time, thereby creating stable housing markets with a minimum risk of private or corporate failure and public involvement while unfailingly lowering the emission of greenhouse gases. By its very nature, housing finance is capital-intensive and especially requires slow and tedious accumulation of decades of savings where personal financial resources are in focus. However, since sustainable housing provides benefits over many years, long-term credit financing of usually front-loaded expenditure is a more logical option as it will spread the repayment burden alongside the gains from a more efficient system of use of water, energy and other resources over the whole life cycle of the development (Oladokun and Komolafe, 2017). Yet, even this suggested approach must be placed side by side with the realities that though conventional deposits do not pass sustainability thresholds but are an available and relatively cheap source of funding hence their likelihood to continue to be the backbone of housing finance, and that contractual savings schemes are the more attractive and sustainable form of deposit-based housing finance, a single channel of funding for SHD is not sustainable (Weinrich, 2012; Atamewan, Eyo & Effanga, 2017).

Taking into cognizance the fact that other infrastructure accounts for at least thirty percent of housing cost in housing development and that several interventions from government alone over the years have ordinarily failed to resolve the country's huge housing deficit in the urban sector as well as fix the peculiar problem of inadequate and substandard housing in the rural sector (Akeju, 2007; Abdullahi, 2010; Budget Office of the Federation, 2019), the situation thus calls for an innovative approach to financing Sustainable Housing Development (SHD). The wide ranging impact dimensions of sustainable finance for housing on households, namely: physical capital in terms of the physical assets of households; human capital implying the well-being, performance and productivity of households; social capital which incorporates the social networks and structures of households; financial capital, that is the financial or income generating capacity of households; and their participation in the formal financial system gives further momentum to its weight of necessity (Dauskardt, R. and van der Windt, N., 2006). It is instructive to note that without a sustainable housing finance system, no SHD can be implemented both to substantially increase the housing stock to the level of established needs and to extend housing finance services to majority of the population at affordable proportions (Ganiyu, Fapohunda and Haldenwang, 2017; Atamewan, Eyo & Effanga, 2017). It is such a framework which facilitates financial intermediation for housing finance that will effectively reconcile the affordability limitation of households with the viability requirements of existing financial channels like direct budgetary appropriations, commercial/ merchant banks, insurance companies, State housing corporations as well as the Federal Mortgage Bank of Nigeria (FMBN) and its accredited Primary Mortgage Institutions.

Sustainable Housing Construction: Sustainable construction implies the use of construction methods and materials that are resource efficient and that will not compromise the health of the environment or the associated health of the building occupants, builders, the general public or future generations.

Materials for use in sustainable housing construction are required to be readily available and useable; non-toxic; recycled and recyclable; renewable; local; of standard size, modular or pre-cut to reduce wastages; and durable and long lasting (UN-HABITAT, 2012b). Pre-Independence Nigeria witnessed an absolute dependence on earth building techniques in construction such as the use of compressed stabilized laterite bricks and compressed earth bricks – techniques which seemed adequate at the time and sufficiently accessible to meet the smaller population's housing needs. The techniques were also sustainable since they neither depleted the natural resources in the environment nor do their production processes lead to emissions that could cause notable shifts in territorial or global climate (Alagbe, 2011; UN-HABITAT, 2012; Qtaishat, Adeyeye and Emmitt, 2020). Due to procurement and maintenance costs over a project's life cycle, the acquisition, development and deployment of home-honed building materials is still a veritable option in contemporary times. However, apathy towards their appropriateness and largescale use for the construction of millions of houses in deficit comes from the dearth of knowledge about their physical and socio-economic properties as well as their process demands when compared to the widely adapted, more developed, unhealthy options (Sourani and Sohail, 2005; Tunji-Olayeni, *et al.,* 2018; Ifije & Aigbavboa, 2020; Liu, *et al.,* 2020).

Suffice to mention that indigenous building materials and technologies also lack institutional acceptability in most settings hence the non-evolution of associated building codes and performance standards for them. This in part is what is driving the craze for smart technologies in buildings which though great is beyond the reach of the majority because of their huge cost burden at initiation (Yilmaz & Barkiş, 2015; Esezobor, 2016). It is pertinent to note that most of the locally sourced materials like pumice stone, palm kernel shell, periwinkle shell, murex dye shell and atile seed (*Canarium schiveinfurthi*) for aggregates as well as rice husk ash, saw dust ash and acha husk (hungry rice) ash for binders are presently only adequate and limitedly used for non-structural concrete works (Alagbe, 2011; UN-HABITAT, 2012; Qtaishat, Adeyeye and Emmitt, 2020; UN-HABITAT, 2012b). This is despite their other advantages of comparatively low cost, possibility of being designed to be earthquake-resistant, excellent heat-reducing, cooling and sound insulating properties, fire-resistant capabilities as well as freedom from insect and weather damage if duly protected.

Sustainable Culture and Traditions: Researchers agree that the paradox of prevalent poverty in developing nations is the fact that the indigenous peoples and local communities often have highly sophisticated knowledge which could easily be adapted to manage the sustainability of their ecosystems (Viriri, 2009; Odebiyi, 2010; UN-HABITAT, 2012b; Makinde, 2015). In the same vein, since knowledge is the cornerstone of every form of development, home-grown knowledge viewed from an indigenous philosophy of a given community cannot be divorced from any form of developmental planning if a truly sustainable development must be attained. Simply put, culture and traditions therefore have a huge role to play in all forms of development and especially within the domain of sustainability. Africa's rich and diverse culture presents a veritable opportunity to teleguide its socio-cultural system into enhancing development. The United Nations Conference on Trade and Development (UNCTAD) (2009) further advocated that the continent's share of multi-diversified cultural values could promote developmental initiatives, and that development should generally begin under traditional auspices with unarguable respect for tradition because the extent of development in a community is tied to the degree of value accorded its cultural system and practices. The application of this perspective in SHD thus implies that a country like Nigeria should aggregate its multi-ethnic strength to promote technological alignments and growth while possibly gleaning foreign cultural values for enhanced modifications without totally abandoning its viable and sustainable architectural values as founded in culture (Oladokun and Komolafe, 2017; Estika, *et al.,* 2020). An envisaged hybrid of both the traditional approaches and contemporary practices to pursue projects tailored to established local needs, climate and way of life in communities should definitely complement the United Nations Sustainable Development Goals. The benefit of incorporating culture in development is immense, aside from the fact that the shared practice of using indigenous, eco-friendly potentials is given a popularly sanctioned and publicly recompensated expression (Hays, 2017; Sokienah, 2020). Such an added value to a people's cultural system in turn makes the society proud of their viable and sustainable ways of living. This revitalizing awareness further sponsors the society's advances into productive and profitable ventures using such green, home-honed techniques and traditions (Postalcı & Atay, 2019; Qtaishat, Adeyeye and Emmitt, 2020; Attia, 2021).

Challenges of Sustainable Housing Development (SHD) in Nigeria: Sequel to the ever-growing population of Nigeria and its associated demands as earlier mentioned, the country is in pressing need of sustainable solutions for its development and advancement. Leading among these effects are poverty, insecurity, unemployment and the economic ravages that came with the Covid-19 era – all having a bearing in the inadequacy of social infrastructure. Challenges such as the workability of the controversial Land Use Act and other subsidiary legislations, housing affordability issues, among others will be concisely highlighted in such a way as to mitigate manifestly poor housing conditions and their effects on the population's health, water and sanitation.

Land Use Act: The sustainable growth and development of a nation like Nigeria is guided and determined by laws, policies and legislative frameworks. According to the constitution of the Federal Republic of Nigeria (1999), every citizen possesses an incontrovertible right to acquire and possess fixed property. In line with the importance of housing provision to socioeconomic development, successive regimes in the country since independence in 1960 have initiated various housing policies and programmes to ensure sustainable housing development (SHD). The most important yet controversial policy related to SHD is the Land Use Act. Land tenure in Nigeria is governed by the Act as amended in 2014 under which all land in the urban sector of the federation is vested in one State Governor or the other, and their proxies at the local level for rural lands. Access to land is thus by way of a right of occupancy granted by the government. Whereas Land Use and Allocation Committees of the different States dispense urban land and grant of Certificates of Occupancy (C-of-O), rural lands are managed through the Land Allocation and Advisory Committees at the Local Government level. Interestingly, the Act stipulates that the C-of-O does not entitle or grant the holder ownership of the land but statutory occupancy only (Federal Republic of Nigeria, 2004).

This proviso has led to a lot of controversies in the categorization, acquisition, ownership, disposal, use and administration of land both in the rural and urban sectors coupled with the sheer bias of political patronage, an unnecessarily lengthened, winding and corruption-engendering process and ultimately short leaseholds. The implications of this form of ownership for land development, sustainable housing provision and access to decent living are as daring as they are worrisome. It should be noted that sustainable economic, environmental and social development requires the pivot of a sound land administration system. Put more succinctly, successful implementation of SHD in Nigeria rests on the workability of the controversial Land Use Act and other subsidiary legislations to inspire investors' confidence and bolster the acutely needed multi-level cooperation.

Affordability, Accessibility and Adaptability Issues: Affordable, accessible and adaptable housing is a long-term asset that provides a safe, quality living environment for whole families and connects them to a broad range of communities of opportunity. As Udoh & Etteh (2020) put it, these issues are what "questions the efficacy of these government housing programmes in view of the rising anxiety and crises of shelterlessness among the teeming Nigerian population". The challenge for the building and construction sector is to create affordable, accessible, attractive, comfortable and sustainable infrastructure that should enable the end users to mitigate carbon and other greenhouse gas emissions, reduce excessive material consumption as well as seamlessly engage the principles of reuse throughout the life cycle of such developments (Rode and Burdett, 2011). While access and affordability are hinged on ensuring the availability of land at inexpensive cost and with minimum encumbrances as well as the lowering of the cost of conventional building products and that of the labour for assembling them whether for new constructions, upgrade and routine maintenance, the cost of adapting services and changing the internal layout of a large residential complex can be more expensive than the initial cost of the building in the first 50 years of its life. Making buildings more adaptable from the start can thus reduce these costs and also make other changes possible, given that time as a design contingency relies on placing architecture in context and making it both responsive to its temporal reality and its biggest fear of change (UN-HABITAT, 2012b; Etteh, 2016).

Furthermore, the nation's rapidly changing demographics - people living longer, an increasing number of formally unemployed youths, a higher fertility rate especially among the predominantly rural countrysides – demand a greater flexibility, creativity and awareness in home design and construction. Even in the design of spaces where everyday activities take place such as schools, markets, workplaces, libraries, community centres, promenades and arenas, it is the concept of an adaptable design that will enable any imminent rapid response to changing life needs in the short term or mid-term future which can be swift and unexpected (Poor, Thorpe and Goh, 2018). In fact, accessibility, affordability and adaptability are all inter-related as the latter increases the building's serviceable life span before remodeling with associated financial, energy and material savings using already established systems and could form a core part of incentives for uptakers.

Uncertain Policy Direction and Enablers: Lack of clarity in the direction of legislation and regulatory policies as evidenced in poor implementation drives and commensurate outputs is another major factor challenging sustainable development of the Nigerian economy. Similarly, enabling growth in the quantity and quality of the housing stock in the country remains poor despite government's rhetoric in the contrary due to their approach of chasing project cost minimization instead of product life cycle value maximization over the years. In addition, lack of cutting-edge regulatory bodies and an inexcusably non-existing national building code law have only served to expand the room for the proliferation of predominantly poor buildings (Federal Republic of Nigeria, 2020). Thus, any push towards SHD must first find answers to such nagging questions as: "What priority legislative measures and/ or structural reforms are required to stimulate growth in the sector as the nation zeroes in on the target year of 2030?" "Why can't the administrative and bureaucratic processes hindering housing development in Nigeria be streamlined and made more transparent from top to bottom?" "Are Nigeria's goals and targets on housing truly and factually aligned with the realities on ground?" "Is the country's short term, mid-term and long-term development objectives based on dependable data of empirical needs assessment and do they mirror the targets of Goal 11 of the SDGs? Suffice to mention that though the core responsibilities and activities of statutory planning agencies, are to enforce country physical development laws and housing policies, the extent of enforcement, however, depend on the nature, contents and level of domestication of the laws and regulations; public understanding and perception of the laws; upskill and reskill competencies of the enforcement teams; as well as the availability of up-to-date materials and equipment that should enable the prompt resolution of non-conformance issues.

Dearth of R&D Data: According to Aluko (2011), planning for housing through quality decomposition of seemingly laudable policy directions via the setting and monitoring of standards for the regulation of physical environment is an arduous task for relevant government agencies and other stakeholders in Nigeria. This is despite the operational context that there are existing local planning and physical development laws that provide for the preparation and approval of hierarchical Physical Development Plans such as regional, sub-regional, district, model city and urban/town plans as well as urban regeneration plans, development guide plans, and local layout and subdivision plans. Interestingly, the reason for the dearth of data for guided research and development is not farfetched as most town planners and data desk officers across all levels in planning agencies have left their core mandates to pursue quackery in other professions like architecture, transportation engineering, landscape design and building for quick illegitimate wins at the expense of proper environmental management for both the present and posterity. Nevertheless, the instrumentality of R&D in sustainable growth and development of housing as a sociotechnical innovation system cannot be kept at the backburner. This is instructively so because research on the social, economic, environmental and geopolitical aspects of housing can significantly stimulate reforms in the sector (Yilmaz & Barkiş, 2015). The real sector being one of the largest players in the Nigerian economic space requires trailblazing research into innovative technologies, techniques and policies for sustainable housing development. All educational institutions, research labs, data agglomerating and analytics agencies, professional boards and associations must arise to the task of solving the problems plaguing housing in both the urban and rural areas of the country in line with

their mandates. For emphasis, research into the use of affordable, renewable and sustainable building materials as well as sustainable practices in the construction industry can only boost SHD in the study area (Akadiri & Olomolaiye, 2012; Adewuyi & Odesola, 2016; Oladokun and Komolafe, 2017).

Prospects of Sustainable Housing Development in Nigeria: Despite the highlighted challenges, SHD has numerous prospects for the socioeconomic growth and sustainable environmental advancement of Nigeria. The prospects can be evaluated based on socioeconomic, environmental and geopolitical impacts. The social benefits of sustainable housing include the provision of affordable, resilient and sustainable homes for all citizens across all strata of society. Sustainable housing also provides the inhabitants with improved amenities and integrated social infrastructure like water, sanitation, waste management and security protection. In addition, it can potentially reduce social ills like rampant crime, juvenile delinquency, infant mortality, chronic diseases as well as poor quality living environments characteristic of slums and urban sprawls. The environmental benefits of improved standards of housing and living conditions on one hand include efficient municipal solid waste, waste water and sludge disposal management. Furthermore, improved soil and water quality can potentially stimulate agriculture, aquaculture as well as other opportunities for efficient land utilization. Employment generation, improved living standards and enhanced lifestyle choices are also long-term benefits of sustainable housing development. The third leg of prospective benefits of SHD is geopolitically as would be seen in the enshrinement of policy formulation strategies, legislative frameworks and long-term goals aligned with the creation of sustainable neighbourhoods, communities and cities. With improved living standards, citizens of nations can actively dedicate their time, resources and human capital to global debates and other productive ventures aimed at commendable growth, balanced development and collective prosperity. The prospects of SHD become even higher as evidenced by Government's interest in engaging construction industry professionals anchored on the provisions as espoused in the revised National Integrated Infrastructure Master Plan (NIIMP) 2020-2043 to enhance the nation's global competitiveness and improve life quality and overall living standards. Aside from taking stock of existing infrastructure, the document gives an integrated and updated view of infrastructure development with clear linkages across key sectors and governmental levels, identifies and elaborates on resource requirements for successful implementation in line with the current economic realities, and re-echoes Government's commitment to invest more on roads, electricity, housing, agriculture, water, healthcare and education. NIIMP specifically targets a 100% review of enabling laws related to SHD, the availability of 2 million secure land titles for SHD annually, an increase of the capital base of the country's foremost mortgage institution to 500 billion naira and to drive for the phasal development of modular housing across all the states of the federation by the target end year. Alongside training and certifying skilled labour within the entire SHD value chain, ensuring that 100% of new housing plans attain statutory approvals and capturing every housing unit in a single yet comprehensively reliable database, the Plan incorporates a novel partnership between the national government, sub-national governments and private sector-led initiatives that should deliver a minimum of 11.3 million new affordable housing units by 2030 and 26.6 million cumulatively by 2043 to irrevocably offset the present negative 5.79% of the gross domestic product for housing (Federal Republic of Nigeria, 2020). In the same vein, the categorization of SHD as part of the nation's critical infrastructure given the impact of large scale social housing and the proactive plans for the creation or expansion of new towns on other facets of national existence as Udoh & Etteh (2020) put it, and a commensurate commitment of substantial federal investment toward public and affordable housing in the mechanism of a functional National Housing Trust Fund should undoubtedly curry counterpart support from ready development partners, revitalize target communities, create new and gainful employment across the entire value chain, and help break the cycle of abject poverty without crossing to any significant extent the global warming threshold of 1.5 degrees Celsius.

Conclusion and Recommendations

The paper explored the concept, principles, challenges and prospects of sustainable housing development (SHD) in Nigeria using the foundational paradigms of design, planning, financing and construction. The paper also emphasizes the importance and critical role of cultural values as an anchor for sustainable housing development in Nigeria in particular and sub-Saharan Africa as a whole. From this perspective, Nigeria's indigenous architectures are sustainable as they focus on exploiting the potentials of available local resources for enhancement of developments tied to culture or evolved as traditions. The findings indicated that successful implementation of an innovative SHD initiative significantly depends on the galvanization of major stakeholders as well as the consistent alignment of relevant laws and policy enablers towards the deployment of this special purpose vehicle to mitigate the effects of poverty, insecurity, unemployment and the economic ravages that is characteristically amplified by the Covid-19 era which has reached epic proportions. Whereas it is has been established that planning authorities alone cannot applicate all the justifiable housing development perspectives that are to be implemented to achieve a desirable environment among other sundry challenges, and whereas it is therefore imperative for government officers in planning for instance to seek for team work and collaboration with other relevant field professionals in order to enhance capacity and improve functionality instead of dabbling into other bodies of knowledge for quick selfish aggrandizement to the detriment of sustainable epochal feats; a three-pronged approach of continuous sensitization of the population by relevant stakeholders, deliberate construction of and public access to model houses as well as improved funding of specific research on their processing and production to address apathy in the adoption of home-honed building materials and technology for sustainable housing development is also recommended. In summary, the indigenous architectures of Nigeria are synonymous with sustainable housing development as they take into account the ways of living of the peoples across generations and are distinguished in their extensively creative use of tropical climate-responsive yet mutable materials. Their contemporary hybrids should only be better.

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