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Rethinking Affordable Housing in Nigeria: Sustainable and Culturally Responsive Architectural Strategies

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Abstract

Housing is a fundamental human right and an essential driver of social stability, health, and economic development. Yet Nigeria faces one of the world's most severe housing crises with a deficit of over 28 million units despite a booming real estate market. Existing interventions have struggled to meet the needs of low and middle-income households due to high construction costs, dependence on imported materials, weak mortgage systems and inadequate policy implementation. While most debates have centered on economic and policy perspectives, this study places architecture at the forefront emphasizing sustainable design that reflects local traditions and community values as a pathway to affordable housing delivery.

The study carried out a rapid review of literature from 2000-2024, covering academic, policy, and grey sources. Searches were done on databases like Google Scholar, JSTOR, Scopus and web of Science using keywords such as "affordable housing," sustainability ,' "architecture,' and Nigeria." Studies chosen discussed sustainable and affordable housing within the Nigerian Framework. The results were grouped by themes, highlighting design strategies, policy frameworks and common challenges in implementation.

The findings reveal a broad spectrum of sustainable approaches ranging from vernacular

housing traditions, incremental and self-help construction, community-led models to green building principles, alternative materials, mixed-use and inclusionary developments, low-cost rentals and emerging technologies such as prefabrication and 3D printing. Vernacular strategies demonstrate cultural relevance and climate sensitivity, aligning with studies that emphasize their enduring efficiency. Incremental housing reflects the realities of self-build culture but contrasts with more formalized Latin American models that have achieved better institutional integration. Community-led housing aligns with Nigeria's traditions of cooperative resource pooling, while mixed-use and inclusionary designs highlight the governance gap that contrasts with more structured international experiences. Meanwhile, advanced technologies hold promise but face cost, expertise and regulatory challenges in the Nigerian context. The evidence accentuates that isolated approaches are insufficient; integration of strategies refined to local cultural, environmental, and socio-economic realities offers the most viable pathway forward.

The conclusion reinforces that sustainable delivery of affordable housing in Nigeria requires a multi-pronged approach: embedding vernacular wisdom in codes and standards, formalizing incremental housing through secure tenure and micro-finance, strengthening cooperatives and community-led initiatives, mainstreaming low-cost passive green strategies, and piloting modern technologies through public–private partnerships. Ultimately, the study argues that by blending traditional practices with innovative solutions under supportive institutional frameworks, Nigeria can move toward affordable housing that is not only accessible but also sustainable, dignified, and culturally resonant.

Keywords : *Affordable housing; Nigeria; Sustainable architecture; Vernacular housing;*

Incremental housing; Community-led housing; Urbanization; Prefabrication; 3D printing.

1.0 Introduction

Housing is one of the most fundamental human needs and remains central to individual well-being, societal stability and national development. Beyond its function as shelter, it encompasses economic, social, psychological and environmental dimensions that influence human existence and quality of life. Adequate housing provides not only privacy, security and comfort, but also shapes access to education, health, employment and community life (Adenubi & Windapo, 2007). Its importance is globally recognized as a basic human right, enshrined in international instruments such as the Universal Declaration of Human Rights (Article 25) and the International Covenant on Economic, Social and Cultural Rights (Article 11), both of which affirm the right to adequate living standards, including housing (United Nations, 2019).

It served also as a vital economic asset and one of the largest lifetime investments for households, constituting a critical component of national wealth. According to the European Commission (2005, as cited in Henilane, 2016), housing contributes approximately 10–20% of a country's total economic activity and represents the largest fixed asset owned by households. It is therefore directly linked to macroeconomic indicators such as GDP, employment, and inflation, while also serving as a measure of equity, health, safety, and productivity (AbdulLateef *et al.,* 2016).

Yet, the global housing sector faces mounting pressures from rapid urbanization, population growth and environmental change. Affordable housing as defined by UN-Habitat (2011) as adequate in quality, accessible in location and not so costly that it prevents households from

meeting other basic living need has become increasingly out of reach. Hilber and Schöni (2022) similarly define affordability in terms of households not spending more than 30% of gross income on housing. With over one billion people currently living in slums or inadequate housing, particularly in the Global South (UN-Habitat, 2022) and the urban population projected to reach five billion by 2030 (Founoun & Hayar, 2018), the strain on housing systems is intensifying. These realities have made affordable housing central to the global development agenda, most clearly reflected in Sustainable Development Goal (SDG) 11, which seeks to "make cities and human settlements inclusive, safe, resilient and sustainable," including ensuring universal access to adequate, safe, and affordable housing.

Nigeria exemplifies this crisis with a population of about 234 million in 2024 projected to exceed 400 million by 2050 (United Nations, 2023), the country is undergoing one of the fastest rates of urbanization globally. Over 54% of Nigerians already reside in cities, where the housing deficit is most acute (Federal Government of Nigeria, 2009). Despite its vast land area of 910,802 km², Nigeria faces a housing deficit estimated at over 28 million units, with less than 20% homeownership and a real estate market valued at over $2 trillion (CBN, 2019). The supply of housing remains grossly inadequate to meet demand, particularly for low- and middle-income earners who make up the majority of the population. While successive governments and private developers have attempted various housing initiatives, progress has been undermined by high construction costs, dependence on imported materials, poor mortgage systems, weak governance, and institutional inefficiencies (Syed et al., 2018; Ajayi et al., 2020). Furthermore, the few "affordable" housing schemes that exist are often plagued by poor quality, lack of scalability, and cultural disconnects in design and implementation,

forcing millions into overcrowded and substandard housing (Okpala & Okoye, 2020; Ebie, 2020).

At the heart of this persistent crisis is a neglect of the architectural dimension. Nigeria's housing discourse has focused heavily on economics, policy, and land management, while overlooking the potential of architecture to directly influence affordability and sustainability. Design choices affect material selection, spatial efficiency, environmental responsiveness, and cultural appropriateness, yet much of architectural practice in Nigeria remains oriented toward aesthetics and elite markets, detached from the socio-economic realities of the majority (Adedeji, Deveci & Salman, 2023). Conventional and imported models often prove environmentally unsustainable, culturally inappropriate, and economically inaccessible (Nubi, 2008). This reveals a knowledge and practice gap: the integration of local materials, environmental design, and innovative construction methods in affordable housing remains underutilized.

This study therefore rethinks affordable housing in Nigeria by centering architecture as a critical component of solutions that combine affordability, sustainability, and cultural relevance. It examines global and local housing trends, reviews the evolution of Nigerian housing policies and practices, and interrogates the role of architecture in shaping housing for low-income urban populations. It further considers the challenges and limitations in delivering low-cost housing and proposes context-sensitive, environmentally sustainable, and culturally appropriate design strategies to address Nigeria's deficit.

The justification for this study lies in the urgent need to realign architectural practice with national development priorities and global sustainability goals. Inadequate housing

contributes directly to poverty, ill health, insecurity, and inequality, undermining progress toward SDG 1 (No Poverty), SDG 3 (Good Health and Well-being), and SDG 11 (Sustainable Cities and Communities). Poor housing conditions, including overcrowding, lack of ventilation, and inadequate sanitation, are prevalent in Nigerian informal settlements and present severe health risks (Adeyemi & Ademiluyi, 2019). By emphasizing architecture not merely as a technical discipline but as a socially responsive tool, this research provides a fresh perspective that complements existing policy and economic approaches. Its contribution is both academic and practical, offering actionable insights for architects, urban planners, policymakers, and developers. Ultimately, by bridging affordability, sustainability, and cultural relevance, the study positions architecture as a transformative force for addressing Nigeria's housing crisis and achieving inclusive urban development.

1.2 Study Area

Nigeria, located in West Africa, is the most populous country on the continent and the sixth most populous in the world. With an estimated population of 234 million in 2024 and an annual growth rate of 2.2%, the figure is projected to exceed 400 million by 2050 (United Nations, 2023). Covering about 923,768 km², the country is bordered by Niger, Chad, Cameroon, Benin, and the Atlantic Ocean, and is divided into 36 states and a Federal Capital Territory, Abuja. Urbanization has been one of Nigeria's most significant socio-economic shifts. While only 15.4% of the population lived in cities in 1960, more than 54% resided in urban areas by 2022 (Federal Government of Nigeria, 2009). Major cities such as Lagos, Abuja, Port Harcourt, and Kano now face rising demand for housing and services, yet supply has lagged behind. The housing deficit is estimated at over 28 million units, and despite a real

estate market valued above US$2 trillion, housing remains largely unaffordable for low- and middle-income households (CBN, 2019; Oyebode & Daniel, 2023).The problem is aggravated by high construction costs, inefficient mortgage systems, dependence on imported materials, and weak institutional frameworks. Private developers, who provide nearly 90% of urban housing, often target high-income markets, while public housing efforts are constrained by poor planning and weak implementation (Ajayi et al., 2020; Syed, Mahayuddin, & Hamid, 2018). These shortcomings have fueled the growth of informal settlements, especially in Lagos and Port Harcourt, where millions live in overcrowded and substandard housing (Ikiriko, Enwin, & Obinna, 2023; Adeyemi & Ademiluyi, 2019).

Nigeria is thus selected as the study area due to the scale and urgency of its housing crisis, as well as the potential for sustainable and culturally responsive architectural strategies to offer practical solutions. Its rapid urban growth, diverse cultural context, and alignment with Sustainable Development Goal 11—universal access to adequate, safe, and affordable housing make it an important setting for rethinking affordable housing in Africa.

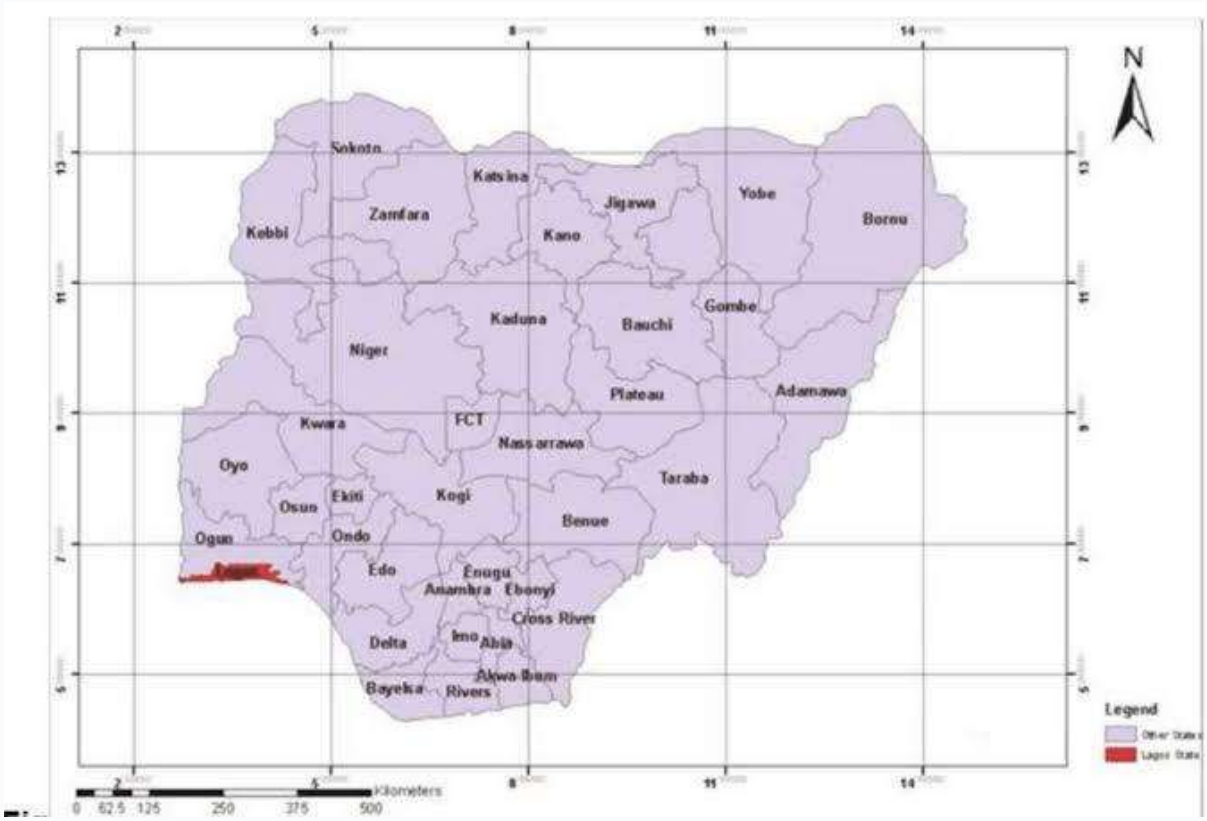

Figure 1.0: Map showing Federal Republic of Nigeria
Source : United Nations cartograhic section (2025**)**

2.0 Literature review

2.1 Housing Concept, Importance, and Human Right

Housing is more than a physical shelter; it serves social, cultural, and economic purposes, while also providing a sense of identity and security. The United Nations (2020) defines adequate housing as not only the dwelling itself but also access to services, infrastructure, and secure tenure. The World Health Organization (2018) further links housing to health, emphasizing that poor housing conditions contribute to disease, overcrowding, and psychological stress. Economically, housing stimulates GDP growth and employment through real estate and construction industries (Leishman et al., 2013). Socially, it stabilizes families, fosters community cohesion, and reduces inequality (Evans *et al.,* 2000; Marx *et al.,* 2013).

Globally, housing is also regarded as a human right, recognized in Article 25 of the Universal Declaration of Human Rights (1948) and Article 11 of the International Covenant on Economic, Social and Cultural Rights (1966). UN-Habitat (2009) identifies seven elements of adequacy security of tenure, habitability, accessibility, affordability, availability, location, and cultural adequacy. Despite these frameworks, millions in developing countries continue to lack access to safe and affordable housing (Rolnik, 2013).

2.2 Global Housing Trends and Their Implications

Worldwide, housing provision is shaped by urbanization, technology, and sustainability imperatives. Over 56% of the world's population now lives in urban areas, a figure projected to reach 68% by 2050 (United Nations, 2019). This rapid growth has intensified demand for housing, particularly in developing regions. At the same time, innovations such as modular construction, Building Information Modeling (BIM), and 3D printing are transforming housing delivery and reducing costs (Zhou & Yang, 2021). Sustainability trends such as passive design, renewable energy integration, and green buildings are increasingly central to housing discourse as climate change accelerates (Gou et al., 2013; Attia, 2018). These global shifts highlight the need for Nigeria to rethink its housing strategies in line with affordability, climate responsiveness, and cultural identity.

2.3 Housing in Nigeria: Evolution and Contemporary Challenges

Historically, traditional Nigerian housing reflected local materials, communal lifestyles, and adaptation to climate for instance, Yoruba courtyard houses, Hausa Tubali earthen compounds, and Igbo obi compounds (Agboola, 1998; Ojo, 1968). Colonialism introduced grid layouts, bungalows, and segregated staff quarters, which marginalized vernacular

systems (Olotuah & Bobadoye, 2009). Post-independence housing policies, such as the Shagari Low-Cost Housing Scheme of the 1980s and the National Housing Fund (1992), sought mass provision but failed due to corruption, poor planning, and lack of affordability (Ibem, 2011).

Today, Nigeria faces a housing deficit of over 20 million units (UN-Habitat, 2022). Despite a real estate market valued at over US$2 trillion, supply is skewed toward high-income households, leaving low- and middle-income groups underserved (Oyebode & Daniel, 2023). Barriers include high construction costs, weak mortgage penetration (<1% of GDP), bureaucratic bottlenecks in land allocation, and inefficient policies like the Land Use Act of 1978 (Ikejiofor, 1999; Adeniyi *et al.,* 2020). These shortcomings have contributed to the expansion of informal settlements, such as Makoko in Lagos, where millions live in precarious conditions (Ajanlekoko, 2001).

2.3 Housing Typologies and Architectural Dimensions in Nigeria

Housing forms in Nigeria mirror its cultural diversity and socio-economic realities. Traditional forms like Yoruba courtyard compounds and Hausa Tubali houses offered climate adaptation and communal living (Agboola & Zango, 2014). Modernist and colonial typologies introduced bungalows and duplexes, while contemporary cities feature “face-me-I-face-you” tenements for low-income groups and apartments for elites (Jiboye, 2014; Olayemi, 2024).

Architecture plays a central role in addressing these challenges by mediating between culture, environment, and modern living needs. Vernacular strategies such as natural ventilation,

courtyards, and shading devices offer sustainable solutions for affordable housing (Jaiyeoba *et al.,* 2017). However, modern housing often neglects these lessons, leading to energy-inefficient, culturally alien forms. A blended approach, integrating traditional principles with modern technologies, is increasingly advocated as the pathway to affordable, sustainable, and culturally responsive housing (Adeyemo *et al*., 2020).

2.4 Affordable Housing in Nigeria

Affordable housing is defined as accommodation that costs no more than 30% of household income (UN-Habitat, 2020). In Nigeria, however, rent in urban areas often consumes 40–60% of household income, making affordability a critical concern (Adeogun & Taiwo, 2011). Low-cost housing schemes, often designed for the poor, have suffered from poor quality and limited reach (Arayela & Adam, 2003). Government initiatives like the NHF and PPP projects have made limited impact due to corruption, weak financing systems, and lack of alignment with household realities (Ogunleye, 2020).

Innovations such as interlocking stabilized earth blocks, modular housing, and cooperative housing models show promise (Agboola & Zango, 2014), but their adoption remains limited. Addressing Nigeria's housing crisis therefore requires strategies that combine sustainability, local building practices, and cultural sensitivity with policy reforms and inclusive financing mechanisms.

3.0 Methodology

This study adopted a rapid review methodology to systematically collect, analyze, and synthesize existing literature on sustainable design approaches to affordable housing in Nigeria. The choice of a rapid review was informed by its ability to consolidate evidence

efficiently while maintaining rigor, which is particularly relevant given the urgency of Nigeria's housing crisis. A comprehensive literature search was conducted across major academic and policy-oriented databases, including Google Scholar, JSTOR, Scopus, and Web of Science, using carefully selected keywords such as "affordable housing," "sustainability," "sustainable housing," "Nigeria," "urbanization," "green building," "architectural design," and "inclusive housing." The search was restricted to English-language publications between 2000 and 2024 to capture both historical background and contemporary innovations in housing design, urbanization, and sustainable construction practices. Selection criteria prioritized studies that directly addressed sustainable housing approaches relevant to affordability, accessibility, and environmental responsiveness within the Nigerian or comparable developing-country context. Sources included peer-reviewed articles, conference papers, government policy documents, reports from international organizations such as UN-Habitat and the World Bank, and credible grey literature from NGOs. Studies focusing exclusively on luxury or high-income housing, or those lacking theoretical or empirical grounding, were excluded. Data from the collected sources were examined using thematic analysis, beginning with close reading and coding of key ideas on sustainability, affordability, accessibility, and policy frameworks, before clustering them into broader themes such as design strategies, implementation challenges, and policy opportunities. Findings were then synthesized across multiple sources to ensure consistency, depth, and contextual accuracy. Although this study relied solely on secondary data and did not involve human subjects, strict ethical standards were observed, including proper citation, acknowledgement of intellectual property rights, and transparency in the review and interpretation process. The resulting

synthesis provides a structured understanding of sustainable design approaches for affordable housing delivery in Nigeria and highlights their potential role in addressing the country's growing housing deficit.

4.0 RESULTS AND FINDINGS

The review of literature revealed a diverse set of sustainable design approaches to affordable housing in Nigeria. These approaches, which range from traditional practices to cutting-edge construction innovations, include vernacular housing, incremental and self-help strategies, mixed-use and inclusionary developments, community-led housing, green building and climate-responsive design, upcycling and the use of alternative materials, low-cost rental schemes, and emerging technologies such as prefabrication and 3D printing. Rather than being mutually exclusive, these strategies often overlap and can be combined to address Nigeria's complex housing needs. The findings suggest that effective solutions require a multi-layered approach one that is technically sound, socially inclusive, and responsive to both cultural traditions and contemporary urban realities.

4.1 Traditional and Vernacular Housing

Nigeria's vernacular housing traditions, built with materials such as mud, laterite, and timber, have historically provided low-cost and climate-sensitive solutions (Oliver, 2006; Olotuah, 2005). Features such as courtyards, shaded verandas, and thick adobe walls reduce heat gain and enhance natural ventilation, offering lessons in sustainability long before the term became mainstream. Akadiri, Chinyio, and Olomolaiye (2012) similarly emphasize the cost and energy efficiency of indigenous systems, showing that traditional logics remain relevant even in today's urban environments.

Yet, these housing models face significant stigma. UN-Habitat (2011) notes that they are frequently dismissed as “backward” or “inferior,” while Ibem and Amole (2010) highlight the lack of codes to regulate or standardize their use. Unlike in some regions where vernacular practices have disappeared, many of these traditions survive in Nigeria, though increasingly sidelined by imported aesthetics. This suggests that their value lies not in wholesale revival but in selective integration: borrowing elements such as stack ventilation, shaded courtyards, and local materials while adapting them to modern layouts. In this sense, vernacular housing may serve as a bridge between cultural continuity and sustainable modern design.

4.2 Incremental and Self-Help Housing

Incremental housing, in which households build progressively as resources allow, has long been a survival strategy in the Global South (Turner, 1976; Habraken, 1972). In Nigeria, it remains one of the most common forms of housing production, as families construct “core” dwellings that expand over time. This method reduces financial pressure by spreading costs across years and allows households to tailor homes to their needs (Hamdi, 2010). Payne and Majale (2004) also highlight that incremental strategies strengthen ownership and resilience, particularly among low-income groups.

However, without secure tenure or adequate services, such practices can result in sprawling informal settlements with inconsistent building standards (Ibem & Aduwo, 2012). Aribigbola (2011) argues that formalizing this approach through serviced plots, micro-loans, and technical assistance could harness its strengths while addressing quality concerns. Compared to Latin American models where incremental housing has been successfully institutionalized, Nigeria lags behind. Still, the persistence of self-build culture demonstrates its potential:

incremental housing may not solve the crisis outright, but it offers a foundation for scalable, affordable solutions if properly structured.

4.3 Mixed-Use and Inclusionary Developments

Mixed-use housing integrates residential, commercial, and social functions within one development, reducing commuting time and creating more vibrant urban life (Cervero, 2009). When paired with inclusionary housing policies where developers are required or incentivized to provide affordable units this approach can help reduce spatial inequality and improve access to services (Calavita & Mallach, 2010; Mukhija et al., 2015).

In the Nigerian context, mixed-use development reflects long-standing practices where living and trading spaces often coexist, particularly in traditional urban markets. Yet formal implementation has been slow, hindered by weak urban governance and limited incentives for developers. Calavita and Mallach (2010) observe that without density bonuses or tax relief, private actors often resist inclusionary measures. Nigerian studies (Ibem & Amole, 2010) suggest that integrating mixed-use design into affordable housing estates could not only reduce costs but also create local economic opportunities. Unlike vernacular or incremental approaches, this strategy requires stronger state involvement and planning capacity, making it as much a governance challenge as a design one.

4.4 Community-Led and Co-Housing Approaches

Community-led housing involves collective planning, financing, and management of homes by groups, often through cooperatives or faith-based associations (Patel, d'Cruz, & Burra, 2012). Co-housing, a related model, combines private dwellings with shared facilities, lowering per-household costs and fostering social interaction (McCamant & Durrett, 1994). In

contexts of limited state provision, such collective approaches can be powerful: Hamdi (2010) notes that pooling resources not only reduces financial risk but also strengthens community resilience.

In Nigeria, this aligns with existing traditions of communal resource-pooling in housing and land acquisition. Ibem and Aduwo (2012) argue that such practices, if formalized with technical support and access to serviced land, could significantly increase affordable supply. Yet, Payne and Majale (2004) caution that long-term governance is often a stumbling block, as successful co-housing requires strong management skills. Unlike incremental housing, which emphasizes individual agency, community-led housing stresses collaboration, positioning it as both a design and social strategy.

4.5 Green Building and Climate-Responsive Design

Green building emphasizes energy efficiency, water conservation, and environmentally friendly materials, while climate-responsive design adapts form to local climatic conditions (Olgyay, 2015; UNEP, 2021). In Nigeria, passive techniques such as cross-ventilation, deep overhangs, and reflective roofs can drastically lower energy demand. Akadiri et al. (2012) show that integrating such measures reduces life-cycle costs while improving occupant comfort.

However, Bala, Bustani, and Yakubu (2017) note that adoption is limited by perceptions of high initial cost and a lack of expertise. Unlike vernacular systems that embed sustainability naturally, green building often requires upfront investment and regulatory frameworks that Nigeria currently lacks. Nevertheless, Ibem and Amole (2010) demonstrate that even low-cost interventions such as courtyard designs and rainwater harvesting yield significant

affordability gains. Here, the challenge is not whether green strategies work, but how to make them accessible within Nigeria's low-income housing market.

4.6 Upcycling and Local/Alternative Materials

Upcycling and alternative materials offer another pathway to affordability by reducing reliance on conventional, expensive inputs. Materials such as stabilized compressed earth blocks, bamboo, and even recycled plastics have been promoted as cost-saving and environmentally responsible (UNEP, 2016; Adam & Agib, 2001). In Nigeria, research confirms that laterite blocks and cement extenders like pozzolans can perform effectively in housing projects (Akinkurolere, Jiang, & Olatunji, 2007; Olotuah, 2005).

The barrier lies largely in perception and regulation. Many households view such materials as inferior, while the absence of national standards limits wider adoption (UNEP, 2016). This contrasts with parts of Asia where bamboo and earth blocks are normalized in housing delivery. For Nigeria, the opportunity lies in pairing technical training with demonstration projects that can shift public perception. Unlike high-tech approaches such as 3D printing, upcycling relies on grassroots-level adaptation, making it highly scalable if properly supported.

4.7 Low-Cost Rental Housing

While much of the housing debate focuses on ownership, rental provision remains critical. Gilbert (2016) argues that low-cost rental schemes, including micro-rental units and rent-to-own options, provide immediate shelter for those unable to purchase. In Nigeria's urban centers, where renting dominates, this approach is especially relevant. UN-Habitat (2011) similarly identifies social rental as a key tool for inclusive urban development.

Yet, the Nigerian rental market is plagued by high costs, upfront rent demands, and inadequate stock (Ibem & Amole, 2010). Aribigbola (2011) notes that without subsidies or public intervention, private developers rarely supply affordable rentals. Compared with incremental housing, which relies on household effort, rental schemes require robust institutional frameworks. However, structured micro-rentals, such as student housing or rooming with shared services, could rapidly expand supply if linked to public land and performance-based subsidies.

4.8 Innovative Construction Technologies (Prefabrication & 3D Printing)

Technological innovations such as prefabrication and 3D printing offer radically different approaches to affordability. Prefabrication reduces costs and time by manufacturing components off-site, while 3D concrete printing allows entire walls or homes to be produced through automation (Buswell et al., 2018). Barbosa et al. (2017) highlight the scalability of these methods, particularly for mass housing.

However, as Oladapo (2007) and Ibem & Aduwo (2012) note, Nigeria faces barriers including high equipment costs, lack of trained personnel, and absence of regulatory standards. Unlike incremental or vernacular strategies that draw on existing practices, these technologies demand heavy upfront investment and systemic support. Nevertheless, pilot projects and hybrid models where prefabricated cores are combined with local infill materials could create pathways for gradual adoption.

4.9 Integrated Strategies for Maximum Impact

Across the literature, one theme emerges consistently: no single approach can address Nigeria's housing crisis. Hamdi (2010) and UN-Habitat (2011) argue for integration

combining incremental housing with green building, or pairing community-led models with inclusionary zoning. The strength of Nigeria's context lies in its diversity: vernacular traditions, a strong culture of self-build, and emerging private sector innovation. The challenge lies in weaving these threads into a coherent framework that is affordable, scalable, and environmentally responsible.

5.0 Conclusion and Recommendations

This study has shown that addressing Nigeria's housing deficit requires more than simply producing more units; it demands a thoughtful re-examination of how homes are designed, built, and delivered in ways that remain both affordable and sustainable. The literature reviewed highlights that while traditional and vernacular housing practices already embody principles of climate responsiveness and cost-efficiency, they have been undervalued in contemporary practice. Similarly, incremental and self-help models reflect how households in Nigeria already navigate affordability constraints, yet their potential is undermined when they are left unstructured and unsupported by formal policies. Modern innovations such as prefabrication, 3D printing, and green building technologies present new opportunities, but they remain largely experimental in Nigeria due to cost barriers, regulatory gaps, and limited technical expertise.

The findings suggest that no single approach is sufficient on its own. What emerges instead is the importance of integration: combining the cultural relevance of vernacular practices, the adaptability of incremental housing, the social cohesion of community-led models, and the efficiency of technological innovations. These design approaches will only succeed, however, if backed by stronger policy frameworks, improved financing mechanisms, and a shift in

perception that affordable housing must not be equated with low quality.

Based on these insights, several recommendations can be made. First, policymakers should support the revitalization of vernacular strategies such as courtyard housing, cross-ventilation, and shading devices by embedding them into building codes and design guidelines. Second, incremental housing should be formalized through secure land tenure, provision of serviced plots, and micro-financing schemes that enable households to build progressively without falling into informality. Third, community-led housing initiatives should be encouraged, particularly through cooperatives and faith-based associations that already pool resources, with technical and institutional support provided to strengthen their delivery capacity. Fourth, the adoption of green building principles should be promoted using a tiered approach: starting with low-cost passive strategies that require little to no additional investment, and gradually scaling toward advanced technologies as awareness and capacity improve. Finally, experimental technologies such as prefabrication and 3D printing should be introduced through pilot projects, backed by public–private partnerships, to test their feasibility in the Nigerian context while building local expertise.

In essence, the sustainable delivery of affordable housing in Nigeria will depend not only on technical innovation but also on cultural sensitivity, institutional reform, and broad social acceptance. By weaving together traditional wisdom, community resilience, and modern techniques, Nigeria can chart a pathway toward housing that is affordable, dignified, and responsive to both its people and its environment.

Conflict of interests

The authors have not declared any conflict of interests.

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