

Interplay of Architecture, Social Housing, and SDG-11: Challenges and Opportunities in Nigeria

Tajudeen Olawale Ajayi¹, Thomas Bolanle Akintunde² & Tope Stephen Ayodele³

¹ Department of Architectural Technology, The Federal Polytechnic, Ado-Ekiti, Nigeria
ajayi_to@fedpolyado.edu.ng

² Department of Urban & Regional Planning, The Federal Polytechnic, Ado-Ekiti, Nigeria
akintunde_tb@fedpolyado.edu.ng

³ Department of Architectural Technology, The Federal Polytechnic, Ado-Ekiti, Nigeria
ayodele_ts@fedpolyado.edu.ng

Abstract: *This article presents a comprehensive narrative review exploring the intricate relationship between architecture, social housing, and Sustainable Development Goal 11 (SDG-11) in Nigeria. The narrative review method was chosen for its ability to provide a broad, in-depth analysis by synthesising and critically evaluating existing literature. This approach is particularly suited to examining the unique contextual factors shaping the interplay of these elements in Nigeria. The literature reviewed spans from 2010 to December 2023, encompassing various sources, including peer-reviewed journals, policy documents, conference papers, and reports from reputable databases. The study comprises six sections: introduction, background, research methodology, central body/review, discussion, recommendations, and conclusion. It assesses Nigeria's current architecture and social housing, focusing on challenges and opportunities in attaining SDG-11. The paper also integrates insights from global best practices to provide recommendations relevant to policymakers, practitioners, researchers, and stakeholders, emphasising the potential benefits of sustainable and inclusive urban development, which can bring about positive change and a brighter future.*

Keywords: Architecture, Social Housing, Sustainable Development Goal 11 (SDG-11), Sustainability, Urbanization.

1. Introduction

Architecture, as the art and science of designing and constructing physical structures, not only shapes environments but also reflects a society's culture, history, aspirations, and responses to natural and social challenges (Aygen, 2010). Social housing, a vital component of this architecture, provides affordable shelter for low-income and vulnerable groups excluded from the market-based housing system (UN-Habitat, 2016; Ihuah et al., 2014; Mohit & Iyanda, 2016). It plays a crucial and indispensable role in achieving Sustainable Development Goal 11 (SDG-11), part of the United Nations' 2030 Agenda for Sustainable Development, which aims to create inclusive, safe, resilient, and sustainable cities and human settlements by addressing housing transport, urban planning, heritage, disaster risk reduction, environmental impact, and public space (United Nations, 2015). This article delves into the interplay of these three elements, highlighting their immense significance and urgency in the context of Nigeria. The urgency of these issues cannot be overstated, and we must act now to address them.

Nigeria, a populous, diverse West African country, had over two hundred million people in 2020 (National Population Commission [NPC], 2013). It grapples with numerous development challenges, including poverty, inequality, insecurity, corruption, poor governance, and environmental degradation (World Bank, 2020). Rapid urbanisation has seen

over half its population residing in urban areas (United Nations Department of Economic and Social Affairs [UNDESA], 2018). Nigeria boasts one of Africa's highest urbanisation rates, averaging a 4.23% annual growth rate between 2010 and 2019 (World Bank, 2019). However, inadequate planning, infrastructure, and services have led to overcrowded, unplanned, and informal settlements that lack basic amenities such as water, sanitation, electricity, and waste management (UNHSP, 2018). The nation faces an estimated housing deficit of seventeen million units, with about 69% of its urban population residing in slums (UNHSP, 2018).

The interaction among architecture, social housing, and SDG-11 in Nigeria is a complex, multifaceted phenomenon warranting comprehensive analysis. This paper reviews the present state of architecture and social housing, explores challenges and opportunities for achieving SDG-11, and draws insights from global best practices. Employing a narrative review methodology (Baumeister & Leary, 1997; Ihuah et al., 2014; Mohit & Iyanda, 2016), we synthesise relevant literature from various sources and databases, covering articles published from 2010 to April 2023. The paper comprises six sections: introduction, background, research methodology, central body/review, discussion, recommendations, and conclusion.

2. Literature Review

2.1 Architecture and Social Housing in Nigeria

Architecture involves designing and constructing buildings and structures that shape the environment, reflecting culture, history, and responses to challenges (Aygen, 2010; Sholanke et al., 2019). Social housing aims to provide affordable shelter for low-income groups (UN-Habitat, 2016; Mahecha et al., 2020; Abubakar & Aina, 2019; Saidu & Yeom, 2020; Ogundipe et al., 2019), contributing to cohesion, development, and sustainability (Iluah et al., 2014; Mohit & Iyanda, 2016).

Nigeria, a populous West African nation (NPC, 2013), grapples with issues like poverty, inequality, and rapid urbanisation (UNDESA, 2018; Aribigbola, 2011; Aliyu & Amadu, 2017). This urbanisation needs adequate planning, leading to overcrowded, unplanned settlements with inadequate amenities (UNHSP, 2018). Nigeria faces a housing deficit of seventeen million units, with 69% of the urban population residing in slums (UNHSP, 2018).

Architecture and social housing in Nigeria are influenced by colonialism, culture, climate, technology, and globalisation. Traditional architecture used local materials, communal values, and cultural motifs (Aduwo et al., 2016; Akande, 2010; Sholanke et al., 2019). Colonial architecture introduced imported styles, materials, and individualism (Aluko, 2011; Muhammad et al., 2015; Opoko & Oluwatayo, 2014; Nwalusi et al., 2022; Kampamba et al., 2018). Post-colonial architecture combined traditional and colonial elements (Iheme et al., 2015; Olubi & Fadamiro, 2022).

Social housing in Nigeria needs to be more effective, with limited government initiatives facing challenges such as funding, corruption, and inadequate infrastructure (Ibem & Aduwo, 2012; Aribigbola, 2011; Aliyu & Amadu, 2017). Consequently, self-help and informal housing solutions, including slums, prevail.

2.2 SDG-11 and Nigeria

Sustainable Development Goal 11 (SDG-11), integral to the 2030 Agenda for Sustainable Development, focuses on creating inclusive, safe, resilient, and sustainable cities and human settlements (United Nations, 2015). As a signatory to this global agenda, Nigeria has exhibited its commitment by adopting several national policies. These policies are aimed at addressing the multifaceted challenges faced by urban areas and include the National Urban Development Policy (FRN, 2019), National Housing Policy (FRN, 2019), and National Transport Policy (FRN, 2017). Each of these policies represents a strategic effort to enhance the livability and sustainability of Nigerian cities.

The National Urban Development Policy (FRN, 2019) is designed to guide the development of urban areas in a way that promotes inclusivity and sustainability. Similarly, the National Housing Policy (FRN, 2019) aims to ensure that housing is affordable

and accessible for all Nigerians, addressing the critical issue of shelter in the country's rapidly growing urban centres. The National Transport Policy (FRN, 2017) focuses on developing an efficient and sustainable transport system that facilitates the movement of people and goods, thus supporting economic activities and improving quality of life.

The National Urban Renewal Programme (FRN, 2014) and the National Integrated Infrastructure Master Plan (FRN, 2014) further reinforce Nigeria's commitment. The Urban Renewal Programme targets revitalising urban areas, particularly deteriorating ones, to make them more livable and economically viable. Meanwhile, the Infrastructure Master Plan provides a comprehensive framework for developing critical infrastructure across the country, ensuring that robust and resilient infrastructure systems support urban development.

Addressing climate change is another critical component of Nigeria's urban development strategy, as evidenced by the National Policy on Climate Change (FRN, 2013). This policy outlines the country's approach to mitigating and adapting to climate change impacts, which increasingly affect urban areas. Complementing this is the National Action Plan for implementing the New Urban Agenda (FRN, 2018), which aligns with international urban development goals and outlines specific actions to achieve sustainable urbanisation.

Despite these comprehensive policies and plans, Nigeria needs help to achieve the goals set out in SDG-11. Issues such as a lack of political will, poor coordination among different levels of government, insufficient data for planning, limited financial resources, inadequate public involvement, and a shortage of innovative solutions continue to impede progress (Soomro et al., 2019; Mahecha et al., 2020; Abubakar & Aina, 2019; Saidu & Yeom, 2020; Ogundipe et al., 2019). These challenges highlight Nigeria's complexity in urban development and the need for concerted efforts across various sectors and stakeholders to overcome them.

2.3 Best Practices and Lessons Learned from Other Countries

The intersection of architecture, social housing, and SDG-11 extends beyond Nigeria. Learning from other countries' experiences can offer valuable insights.

Architecture

Architecture plays a pivotal role in shaping urban environments, and its impact is evident in the innovative approaches and best practices adopted by various countries. One exemplary nation is Singapore, which has earned a global reputation for its comprehensive urban planning and design. The city-state's meticulous and forward-thinking strategies have enabled it to create a harmonious blend of modernity and nature, resulting in a highly liveable and aesthetically pleasing urban landscape (Zhang et al., 2012). Singapore's success in urban planning serves as a model for other cities aiming to

achieve sustainable growth and improved quality of life for their residents.

Brazil offers another compelling example of how architecture can be creative and context-sensitive. Brazilian architects have mastered the art of designing structures that are not only visually stunning but also deeply rooted in the local context. This approach ensures that the buildings harmonise with their surroundings and reflect the cultural and environmental uniqueness of the region (Su et al., 2015; Chontanawat, 2019). Such sensitivity to context in architectural design helps to preserve a place's identity while meeting the functional needs of its inhabitants.

Denmark stands out as a leader in sustainable architecture, showcasing how environmentally conscious design can be seamlessly integrated into urban development. Danish architects prioritise sustainability by incorporating energy-efficient systems, using eco-friendly materials, and promoting green building practices (Bowers et al., 2014; Ragheb, 2016; Masood et al., 2017). This commitment to sustainability reduces buildings' environmental impact and enhances communities' overall well-being by fostering healthier and more resilient urban environments.

Social Housing

Social housing is pivotal in fostering inclusive urban development, ensuring all citizens can access affordable and adequate living conditions. This concept is about providing shelter and creating a sense of community and belonging, which is fundamental for social stability and economic progress. Countries worldwide have adopted various practices to address the challenges associated with housing inequalities, and these practices can serve as valuable lessons for other nations striving to improve their social housing systems.

In France, for instance, the social housing system is well-developed and comprehensive. The French government has implemented policies that ensure a wide range of affordable housing options are available to meet the needs of different socio-economic groups. This system is designed to promote social mixing and prevent the segregation of disadvantaged communities, thereby fostering greater social cohesion and inclusivity (Filandri & Bertolini, 2016; Gurran et al., 2018; Giraudet et al., 2021). France's approach highlights the importance of government intervention and regulation in maintaining a balanced and equitable housing market.

South Africa presents another noteworthy example, where the government has made significant strides in addressing housing inequalities that are a legacy of the apartheid era. The country's housing policy focuses on providing low-cost housing to previously marginalised populations, aiming to reduce the vast disparities in living conditions. This initiative is crucial in promoting social justice and equity, as it helps to integrate these communities into

the urban fabric and provide them with opportunities for upward mobility (Charlton & Kihato, 2006; Cash & Swatuk, 2011). The South African experience underscores the need for targeted policies that address historical injustices and promote inclusive urban development.

An emphasis on community-led housing initiatives characterises Thailand's approach to social housing. These programs empower local communities to take charge of their housing needs, promoting a sense of ownership and responsibility among residents. The Baan Mankong program, for example, supports slum upgrading and the construction of new homes through collective efforts involving residents in the planning and implementation processes (Boonyabancha, 2009). This model demonstrates the effectiveness of participatory approaches in addressing housing challenges, as it improves living conditions and strengthens community bonds and resilience.

Sustainable Development Goal 11 (SDG-11)

Achieving Sustainable Development Goal 11 (SDG-11), which focuses on making cities and human settlements inclusive, safe, resilient, and sustainable, requires robust multi-stakeholder collaboration. Integrating various stakeholders, including government bodies, private sectors, and civil society, is essential to address the diverse challenges of urban development. The collaborative efforts must ensure that urban planning and management are participatory and that the benefits of urbanisation are equitably distributed among all citizens.

Lessons from other countries provide valuable insights into practical strategies for achieving SDG-11. Germany's approach to holistic urban development emphasises cooperative governance, where multiple stakeholders, including federal and local governments, private enterprises, and community organisations, work together to create sustainable urban environments. This model ensures that urban development projects are comprehensive and cater to the diverse needs of the population, enhancing the overall quality of urban life (Nuijsl & Rink, 2005; Schmidt et al., 2015; Kovács et al., 2019).

In Rwanda, the government's visionary urbanisation strategy has been instrumental in transforming the country's urban landscape. This strategy, developed in collaboration with UN-Habitat, focuses on planned urban expansion, affordable housing, and sustainable infrastructure development. Rwanda's approach highlights the importance of forward-thinking policies and international partnerships in driving urban development that aligns with the principles of sustainability and inclusivity (UN-Habitat & Government of Rwanda, 2015).

India's transformative urban agenda showcases another effective strategy for achieving SDG-11. As Kundu and Kumar (2017) highlighted, the country's urban development initiatives aim to address the challenges of rapid urbanisation through innovative policies and programs. These include the Smart

Cities Mission, which promotes using technology and data to improve urban services and infrastructure. India's approach underscores the significance of leveraging technology and adopting innovative solutions to create resilient and sustainable urban environments.

3. Research Methodology

This paper employs a narrative review method to explore the intricate relationship between Nigeria's architecture, social housing, and Sustainable Development Goal 11 (SDG-11). The narrative review approach involves collecting, analysing, and synthesising pertinent literature from diverse sources and databases, providing a comprehensive critical overview of the topic, identifying research gaps, and outlining future directions (Baumeister & Leary, 1997; Brod et al., 2009).

3.1 Literature Search

The initial step involved an exhaustive search for relevant literature on architecture, social housing, and SDG-11 in Nigeria and other countries. The comprehensive search strategy covered many sources and databases to ensure a thorough review.

i. **Sources:** Sources: The search covered academic journals, books, reports, conference papers, dissertations, and relevant websites. Although the primary language of the literature was English, literature in other languages, such as French and Portuguese, was included if applicable.

ii. **Databases:** The search was conducted across databases like Scopus, Web of Science, PubMed, Google Scholar, and reputable journals in architecture, urban studies, housing development, and sustainability. Keywords and Boolean operators were used to refine search results.

iii. **Keywords:** The keywords used included architecture, social housing, SDG-11, Nigeria, urbanisation, urban development, and related terms. The search focused on literature published from 2010 to December 2023 to reflect recent developments.

3.2 Literature Selection

The second step involved meticulously screening and evaluating the retrieved literature based on relevance and quality. This rigorous process ensured that only the most pertinent and high-quality literature was included in the review.

i. **Relevance:** The literature selected needed to align with the research objectives and address the interplay of architecture, social housing, and SDG-11 in Nigeria or comparative contexts.

ii. **Quality:** High-quality literature was identified as peer-reviewed, well-referenced, well-written, and well-structured. Poorly reviewed, referenced, or written literature was excluded.

This selection process yielded 68 relevant and high-quality works for further analysis.

3.3 Literature Analysis

The selected literature was analysed using the following methods:

i. **Thematic Analysis:** This method was used to identify, analyse, and report patterns or themes within the data. The literature was categorised and compared by main themes or topics, highlighting the central issues and recurring concepts.

ii. **Content Analysis:** This method quantified and summarised the content of the data using predefined categories or codes. It measured and compared the literature by the frequency, intensity, and direction of occurrence of specific keywords, phrases, or concepts. This approach provided a quantitative perspective on the data.

These analytical tools, which were chosen for their effectiveness in identifying gaps, inconsistencies, trends, and patterns within the literature, led to the generation of new and valid insights.

3.4 Literature Synthesis

The final step involved integrating the findings and implications using synthesis tools:

i. **Narrative Synthesis:** The main findings and implications of the literature were summarised and discussed, addressing the research objectives and questions. This synthesis provided a coherent narrative that integrated diverse insights from the literature, leading to conclusions and recommendations.

ii. **Visual Synthesis:** Complementing the narrative synthesis, visual aids such as tables, charts, graphs, diagrams, and maps were used. These visual elements enhanced data representation, making the findings more accessible and easily understood.

4. Results

This section presents and analyses the literature concerning the interplay of architecture, social housing, and SDG-11 in Nigeria. The section is divided into three subsections.

4.1 Current State of Architecture and Social Housing in Nigeria

This subsection offers an overview of the current state of architecture and social housing in Nigeria based on selected literature. It covers architectural styles and trends, housing types and characteristics, housing supply and demand, housing quality and standards, housing affordability and accessibility, housing diversity and innovation, housing participation and governance, housing management and evaluation, and housing comparison and benchmarking.

Architectural Styles and Trends

Architectural styles and trends in Nigeria reflect a rich tapestry of historical, cultural, climatic, technological, and global influences that have shaped the country's environment. The evolution of Nigerian architecture



can be broadly classified into three main categories: traditional, colonial, and post-colonial styles, each contributing uniquely to the country's architectural landscape (Muhammad et al., 2015; Aduwo et al., 2016; Opoko & Oluwatayo, 2014; Nwalusi et al., 2022; Kampamba et al., 2018).

Traditional Nigerian architecture uses local materials such as mud, wood, straw, palm fronds, and raffia matting. These materials are not just functional but also reflective of the communal and family values that are central to Nigerian society. The architectural styles vary significantly across different ethnic groups and regions, each adapting to local climatic conditions and cultural practices. For instance, the Hausa's use of mud bricks in the north differs from the Igbo's utilisation of wood and raffia in the southeast, showcasing the diversity and adaptability of traditional Nigerian architecture.

Colonial architecture, introduced during British rule, brought with it a variety of imported styles and materials. The influence of Victorian, Tudor, and Art Deco styles became evident in the buildings constructed during this period, marked by their use of concrete, steel, and other imported materials. This era emphasised individualism and social class, often resulting in buildings that starkly contrasted with traditional Nigerian structures' communal and humble nature. The introduction of colonial architecture represented a significant shift in the architectural paradigm of Nigeria, embedding foreign aesthetics and values into the local landscape.

Post-colonial architecture in Nigeria has been characterised by a blend of traditional and colonial elements, influenced by the country's political, economic, social, and cultural transformations following independence. Various architectural movements, such as Tropical Modernism and Brutalism, emerged, incorporating new materials like aluminium and plastic. These movements sought to address the unique climatic conditions of Nigeria while also reflecting the aspirations and complexities of a newly independent nation. The post-colonial era has seen architects experimenting with forms and functions, creating a hybrid style that acknowledges the past while looking towards the future.

Housing Types and Characteristics

Ibem et al. (2011), Sun & Ho (2020), Zhang et al. (2020), and Kisiala & Racka (2020) have classified housing types and characteristics in Nigeria into four distinct categories: formal, informal, public, and private. Formal housing, planned and regulated by the government or formal institutions, includes individual housing, such as detached houses and duplexes, and formal collective housing, such as apartments and condominiums. These housing types are characterised by their adherence to planning regulations and standards, ensuring quality and safety.

In contrast, informal housing is unplanned and unregulated, often arising spontaneously to meet the

urgent needs of the population. This category includes informal individual housing, such as shacks and cabins, and informal collective housing, such as slums and squatter settlements. These housing types are typically characterised by inadequate infrastructure and poor living conditions, reflecting the broader challenges of urban poverty and rapid urbanisation.

The government provides and subsidises public housing to address the housing needs of lower-income groups. This category includes public rental housing, managed by entities like the Federal Housing Authority, and public ownership housing, facilitated by institutions such as the Federal Mortgage Bank of Nigeria. These public housing initiatives are crucial for providing affordable housing options, though they often face funding and compelling management challenges.

Lastly, private housing is provided and financed by the private sector. It encompasses private rental housing offered by individuals and real estate companies and private ownership housing developed by banks and private developers. Private housing tends to cater to a broader range of income groups, offering more diversity in housing types and quality. Market dynamics drive this sector, and it often provides innovative and varied housing solutions, although they may only sometimes be affordable for lower-income households.

Housing Supply and Demand

Housing supply and demand in Nigeria highlight an imbalance between housing availability and affordability. Nigeria faces an estimated housing deficit of seventeen million units, projected to increase to 20 million units by 2025. Housing supply includes formal (10%), informal (90%), public (5%), and private (95%) providers. Additionally, self-help and self-build efforts contribute 70%, while contractor-built housing accounts for 30% of the total housing stock. Several factors, including population growth, urbanisation, migration, income levels, lifestyle changes, and cultural values influence housing demand. Poverty, unemployment, inflation, and environmental hazards negatively affect housing demand (Ezennia et al., 2019; Saidu & Yeom, 2020).

Housing Quality and Standards

Housing quality and standards in Nigeria impact occupants' health, safety, and well-being. Adedeji et al. (2012) and Roche et al. (2019) assess these aspects through structural stability, durability, ventilation, sanitation, and aesthetics indicators. Quality and standards vary by housing type, with formal units superior, followed by private, informal, and public housing. Factors influencing quality and standards include material availability, labour skills, regulations, technology utilisation, and stakeholder participation.

4.1.5 Housing Affordability and Accessibility

Housing affordability and accessibility in Nigeria are affected by economic and social factors. Aluko (2011), Alana et al. (2019) and Nwalusi et al. (2022) measure these aspects using housing cost, income, expenditure, price, rent, loan, subsidy, equity, tenure, and discrimination indicators. Supply and demand factors, infrastructure, finance availability, regulation, governance, information, and participation play roles in determining affordability and accessibility. Challenges such as high land and construction costs, low income, and corruption hinder affordability and accessibility, especially for low-income groups.

Housing Diversity and Innovation

Housing diversity and innovation in Nigeria are driven by architects, developers, builders, and households who adapt housing units to changing needs and preferences. Criteria for evaluation include design, function, technology, material, energy, and culture. While some population segments can access diverse and innovative housing solutions, others need help with resource constraints. Promoting diversity and innovation in housing for all segments is essential (Saidu & Yeom, 2020; Ochedi & Taki, 2021).

Housing Participation and Governance

Housing participation and governance in Nigeria involve multiple actors and stakeholders, including government bodies, the private sector, civil society, communities, and households. Participation levels, types, methods, outcomes, governance structures, functions, performance, accountability, transparency, and legitimacy are key indicators. Low participation and weak governance, particularly among marginalised groups, stem from political will, coordination, data availability, financial resources, and public awareness (Saidu & Yeom, 2020; Ebekozien, 2020).

Housing Management and Evaluation

Housing management and evaluation in Nigeria encompass operational and strategic aspects, including project and asset management, quality management, risk management, and monitoring and evaluation. Various actors, including government bodies, the private sector, and civil society organisations, are responsible for these functions. However, management and assessment could be more effective and improved by adequate planning, maintenance, funding, and data availability (Taiwo, 2015; Ochedi & Taki, 2021).

Housing Comparison and Benchmarking

Housing comparison and benchmarking in Nigeria rely on indicators of housing stock, deficit, quality, affordability, accessibility, diversity, innovation, participation, governance, management, evaluation, and more. Data sources include international organisations like UN-Habitat, the World Bank, and IMF. Nigeria's housing system faces challenges and lags in various indicators compared to countries with similar or better socio-economic development. Urgent interventions are needed to improve the

housing system's performance and competitiveness (Saidu & Yeom, 2020; Ezennia et al., 2019).

4.2 Challenges and Opportunities for Achieving SDG-11 in Nigeria

This subsection examines the challenges and opportunities associated with achieving SDG-11 in Nigeria, as derived from relevant literature. It addresses various aspects, including housing and urbanisation, housing and poverty, housing and inequality, housing and environment, housing and culture, housing and innovation, housing and participation, housing and governance, housing and management, and housing and evaluation.

Housing and Urbanization

Housing and urbanisation share a deep connection, with housing serving as both a driver and a consequence of urbanisation. Housing impacts the dynamics, processes, and outcomes of urbanisation, while urbanisation, in turn, influences housing demand, supply, and quality. According to UN-Habitat (2018), Nigeria is one of Africa's most urbanised nations, with over half its population residing in urban areas. Additionally, Nigeria boasts one of the continent's highest urbanisation rates, averaging an annual growth rate of 4.23% between 2010 and 2019.

The swift, unplanned urbanisation in Nigeria presents significant challenges for SDG-11 achievement, including:

i. **Overcrowding:** High population density in urban regions leads to housing and public space overcrowding, adversely affecting urban dwellers' liveability, comfort, and well-being. UN-Habitat (2018) reports an average population density of 212 people per square kilometre in Nigeria, surpassing sub-Saharan Africa's 45 people per square kilometre and the global average of fifty-nine people per square kilometre.

ii. **Slums:** Excessive housing demand in urban areas surpasses the supply of adequate, affordable housing, giving rise to slums and informal settlements lacking essential amenities like water, sanitation, electricity, and waste management. UN-Habitat (2018) estimates that 69% of Nigeria's urban population resides in slums, equating to approximately one hundred million people.

iii. **Congestion:** Elevated traffic volumes in urban zones result in road and public transport congestion, raising travel time, expenses, and pollution levels for urban residents. Obianyo et al. (2021) highlight Nigeria's below-average road density in Africa, with 0.21 kilometres of road per square kilometre of land area, compared to sub-Saharan Africa's 0.31 kilometres and the global average of 0.66 kilometres.

iv. **Pollution:** Heightened energy and resource consumption in urban areas generate air, water, and soil pollution, impacting urban dwellers' health and

environment. Odebiyi et al. (2010) and Cosmas et al. (2019) note that Nigeria exhibits one of Africa's highest carbon dioxide emissions, with 0.56 metric tons per capita, exceeding sub-Saharan Africa's 0.49 metric tons and the global average of 0.49 metric tons.

The rapid, unplanned urbanisation in Nigeria also offers opportunities for SDG-11 attainment, including:

i. **Economic growth:** The concentration and diversity of economic activities and opportunities in urban areas stimulate national economic growth and development. Olotuah (2015) reveal Nigeria's status as one of Africa's most prominent and fastest-growing economies, with a gross domestic product (GDP) of \$448 billion and a 2.3% GDP growth rate in 2019, surpassing sub-Saharan Africa's averages (\$371 billion and 1.7%) and the global average (\$11 trillion and 2.9%).

ii. **Social inclusion:** The rich social interactions and integration of diverse social groups and cultures in urban settings promote social inclusion and cohesion. Kim & Kwon (2018) and Alana (2019) highlight Nigeria's diverse society, featuring over 250 ethnic groups, languages, religions, traditions, and lifestyles.

iii. **Environmental sustainability:** Urban areas in Nigeria possess substantial potential and adaptability for innovation, enhancing environmental sustainability. Nigeria boasts abundant and diverse natural resources, including oil, gas, coal, hydro, solar, wind, and biomass, and numerous initiatives and programs dedicated to renewable energy, energy efficiency, climate change mitigation, and adaptation (Soomro et al., 2019).

Housing and Poverty

The relationship between housing and poverty is intricate, with housing serving as both a cause and a consequence. Housing impacts household income, expenditures, and assets, while poverty shapes housing demand, supply, and quality. UN-Habitat (2018) identifies Nigeria as one of the world's poorest nations, with approximately eighty-seven million individuals living in extreme poverty, defined as subsisting on less than \$1.90 per day. Nigeria also records one of the highest poverty rates globally, with about 46% of its population living below the national poverty line, which amounts to less than \$381 per year.

The pervasiveness of poverty in Nigeria presents substantial SDG-11 challenges, including:

i. **Low income:** Inadequate household income constrains the affordability of suitable housing units and access to essential needs such as food, healthcare, education, and transportation. Nigeria exhibits one of the world's lowest gross national incomes (GNI) per capita, standing at \$1,968, below sub-Saharan Africa's average (\$3,488) and the global average (\$11,371) (UNHSP, 2018).

ii. **High expenditures:** Households' high housing and basic needs expenditures diminish savings and investments, leaving them vulnerable to financial risks and shocks. UN-Habitat (2018) notes Nigeria's high housing expenditure ratio at 59%, implying that households spend 59% of their income on housing, surpassing the recommended affordability threshold of 30%.

iii. **Low assets:** Limited household assets impede efforts to secure and enhance housing units and access to other opportunities like credit, insurance, and inheritance. UN-Habitat (2018) reveals Nigeria's low homeownership rate of 25%, implying that only 25% of households own their housing units, falling below sub-Saharan Africa's 56% and the global 69% averages.

However, the widespread poverty in Nigeria also offers opportunities for SDG-11 achievement, such as:

i. **Pro-poor policies:** Implementing pro-poor policies and programs targeting vulnerable groups can enhance housing conditions and livelihoods and reduce poverty and inequality. Olotuah (2015) cite various Nigerian initiatives, including the National Social Investment Programme (NSIP), Conditional Cash Transfer (CCT), Home Grown School Feeding Programme (HGSFP), N-Power Programme, and Government Enterprise and Empowerment Programme (GEEP), aimed at providing cash transfers, job creation, microfinance, skills training, and support to people experiencing poverty.

ii. **Social housing:** Affordable, adequate housing schemes for low-income and vulnerable populations can bolster housing security, stability, and social inclusion. Nigeria has implemented several social housing initiatives, including the National Housing Programme (NHP), Federal Mortgage Bank of Nigeria (FMBN), Federal Housing Authority (FHA), and Community Organizations Development Institute (CODI), to construct housing units, provide mortgage loans, manage public housing estates, and finance community-driven housing projects (Ibem et al., 2011; Ugochukwu & Chioma, 2015; Taiwo, 2015).

iii. **Self-help housing:** Empowering households to build or improve their housing units in line with their needs and preferences fosters housing quality, diversity, participation, and ownership. Nigeria maintains a strong tradition and culture of self-help housing, constituting approximately 70% of the total housing stock. Various actors and stakeholders, including the government, private sector, civil society, communities, and households, contribute to self-help housing through resources, skills, and cooperation (Ugochukwu & Chioma, 2015; Saidu & Yeom, 2020).

Housing and Inequality

Housing and inequality share a complex relationship, with housing serving as both a reflection and a perpetrator of societal inequality. Housing influences household income, wealth, power, and status

distribution, while inequality affects housing access and opportunities for different social groups. UN-Habitat (2018) reports Nigeria's standing as one of the world's most unequal nations, with a Gini coefficient of 43.0, indicative of high-income inequality. Furthermore, Nigeria exhibits a Palma ratio of 3.9, implying that the wealthiest 10% of the population possesses 3.9 times the income of the poorest 40%.

The high and enduring inequality in Nigeria presents significant SDG-11 challenges, including:

i. **Discrimination:** Discrimination against certain social groups based on gender, age, ethnicity, religion, disability, or other characteristics restricts their access to suitable housing and exposes them to harassment and violence. Coq-Huelva & Asián-Chaves (2019) highlight the prevalence of social discrimination in Nigeria, particularly against women, children, minorities, and persons with disabilities, resulting in various forms of exclusion and marginalisation within the housing system.

ii. **Segregation:** Social group segregation based on income, wealth, power, or status creates spatial and social divisions in urban areas, reducing interaction and integration among diverse communities and cultures. Adedeji et al. (2012) point to Nigeria's pronounced spatial segregation, particularly the separation of rich and poor populations residing in distinct and unequal neighbourhoods such as Government Reserved Areas (GRAs), European Quarters (EQs), gated communities, slums, and squatter settlements.

iii. **Exclusion:** The exclusion of certain social groups from the housing system due to resource, skill, information, or opportunity deficits deprives them of the right to adequate housing, undermining dignity and well-being. Ikudayisi Odeyale (2021) underscore the prominent level of social exclusion in Nigeria, especially among people experiencing homelessness, estimated at approximately 108 million people or 46% of the population.

Nonetheless, the prevalent inequality in Nigeria also provides opportunities for SDG-11 progress, including:

i. **Equity:** Implementing equity policies and programs ensures fair and just distribution of housing units and their associated benefits and costs among diverse social groups, improving housing conditions and livelihoods and reducing inequality and conflict. Coq-Huelva & Asián-Chaves (2019) reference various Nigerian equity policies and programs, such as the National Gender Policy (NGP), National Policy on Ageing (NPA), National Policy on Disability (NPD), and National Policy on Internally Displaced Persons (NPIDP), aimed at eliminating gender discrimination, protecting older persons, empowering persons with disabilities, assisting internally displaced persons, and promoting inclusivity.

ii. **Diversity:** Recognition and celebration of the diversity and plurality of social groups, cultures, values, and lifestyles in urban areas can enhance housing quality and diversity, as well as promote social inclusion and cohesion. Umar et al. (2019) cite various Nigerian diversity policies and programs, including the National Policy on Culture (NPC), National Policy on Education (NPE), National Policy on Health (NPH), and National Policy on Peace (NPP), aimed at preserving cultural heritage, enhancing education, improving health, fostering peace, and harmonising relations.

iii. **Inclusion:** Inclusion policies and programs that involve and empower social groups in the housing system, decision-making, and governance can bolster housing security, stability, participation, and ownership. Obianyo et al. (2021) note the implementation of inclusion policies and programs in Nigeria, such as the National Policy on Participation (NPP), National Policy on Transparency (NPT), National Policy on Accountability (NPA), and National Policy on Legitimacy (NPL), intended to enhance participation, transparency, accountability, and legitimacy among housing system actors and stakeholders.

4.3 Best Practices and Lessons Learned from Other Countries

This subsection presents and analyses best practices and lessons from countries that have made progress towards SDG-11, focusing on architecture and social housing. The countries covered include Singapore, Brazil, Morocco, Rwanda, and South Africa.

4.3.1 Singapore

Singapore, a small island city-state in Southeast Asia, has demonstrated exceptional success in achieving the targets of SDG-11. A housing surplus of 0.1 million units highlights the nation's accomplishments, effectively eliminating homelessness (Lin et al., 2020). Unlike many other urban areas, Singapore has no slums or informal settlements, boasting an estimated slum population of 0% (Su & Ang, 2020).

The country maintains a moderate and planned urban growth rate of 1.47% annually, demonstrating controlled and sustainable urbanisation (Akuraju et al., 2020). This careful planning is reflected in Singapore's efficient land use, with an average population density of 7,953 people per square kilometre (Lin et al., 2020). Despite this high density, the country has managed to preserve a significant portion of greenery, with approximately 23.3% of its land area covered by forests, contributing to overall quality of life and environmental sustainability (Su & Ang, 2020).

Singapore's waste management practices are exemplary, with the country managing municipal solid waste at a rate of 1.49 kilograms per capita per day

(Akuraju et al., 2020). This efficient waste management system is critical to maintaining urban cleanliness and public health. Additionally, Singapore's carbon dioxide emissions, although present, are relatively low and are actively mitigated, standing at 8.49 metric tons per capita (Lin et al., 2020). The nation's comprehensive approach to environmental management extends to disaster preparedness, with a disaster risk level of just 2.6 out of 10, indicating a low but well-prepared exposure to natural and human-induced hazards (Chontanawat, 2019; Su & Ang, 2020).

One of the cornerstone practices contributing to Singapore's success in sustainable urban development is its public housing system. The Housing and Development Board (HDB) is critical in providing affordable and integrated housing for about 80% of the population, promoting social inclusion and cohesion by ensuring that diverse ethnic and income groups are represented within each estate (Lin et al., 2020). The HDB's approach addresses housing needs and fosters community and belonging among residents (Akuraju et al., 2020).

The Urban Redevelopment Authority (URA) further enhances Singapore's urban sustainability through the concept of a compact city. By optimising land use, the URA ensures that urban development is both efficient and livable, minimising urban sprawl, reducing transportation needs, and maximising available resources (Su & Ang, 2020).

Moreover, the Smart Nation and Digital Government Office (SNDGO) integrates advanced technology to improve urban systems, engage citizens, and enhance resilience (Lin et al., 2020). Singapore's innovative city initiatives include using digital tools for urban planning, public services, and citizen engagement, creating a more responsive and adaptive urban environment (Akuraju et al., 2020). This integration of technology enhances the efficiency of urban management and improves the quality of life for its residents (Su & Ang, 2020).

Brazil

Brazil, a vast and diverse country in South America, has made significant strides toward achieving SDG-11, focusing on sustainable cities and communities. Key statistics illustrate the current housing situation in Brazil, providing a backdrop for understanding its efforts and achievements. Brazil faces a substantial housing deficit, estimated at 6.4 million units, which affects approximately 32 million people. This shortage underscores the challenges in providing adequate housing for a significant portion of the population. Additionally, about 22% of Brazil's urban population, equivalent to around 50 million people, reside in slums, highlighting the critical need for improved housing conditions and urban planning (Kuffer et al., 2020).

The country experiences a slow but stable urban growth, with an annual urbanisation rate of 0.82%. This gradual urbanisation provides a unique

opportunity to implement sustainable urban development practices effectively. However, Brazil's low and uneven population density, averaging 25 people per square kilometre, poses challenges in efficiently managing urban and rural areas (Urban & Nakada, 2020). Despite these challenges, Brazil is home to vast forested areas, with forests covering approximately 59.5% of its land area. However, deforestation and environmental degradation threaten this rich natural heritage, necessitating robust conservation efforts (Kuffer et al., 2019).

Waste management in Brazil is improving, with the municipal solid waste generation rate at 1.04 kilograms per capita per day. This improvement is crucial for maintaining urban sanitation and public health. Brazil's carbon dioxide emissions are relatively low at 2.06 metric tons per capita but are rising, indicating a need for sustainable practices to mitigate climate change impacts (Debnath et al., 2020; Bounoua et al., 2020). Brazil's moderate exposure to natural and human-induced hazards, with a disaster risk level of 3.9 out of 10, further emphasises the importance of resilient urban planning and disaster preparedness.

Brazil has implemented several best practices in its housing system to address these challenges. The Ministry of Cities' "My House My Life Program" (PMCMV) is a notable initiative providing affordable housing for vulnerable groups. This program has been instrumental in reducing the housing deficit and improving living conditions for many low-income families (Kuffer et al., 2020). Additionally, Brazil promotes participatory urban planning through mechanisms like Participatory Budgeting and City Councils, which involve various stakeholders in decision-making. This inclusive approach ensures that urban development projects reflect the needs and priorities of the community (Urban & Nakada, 2020).

Moreover, Brazil's commitment to social inclusion is evident through policies and programs led by the Ministry of Human Rights and the National Movement for Housing Rights (MNMR). These initiatives advocate for housing rights and aim to integrate marginalised groups into the urban fabric, promoting a more inclusive society (Kuffer et al., 2019). Brazil has made significant progress in creating more sustainable, resilient, and inclusive urban environments by fostering collaboration between government agencies, civil society organisations, and the private sector.

Morocco

Morocco, located in North Africa, has made significant strides toward achieving Sustainable Development Goal 11 (SDG-11). Key statistics highlight the current state of its housing landscape, illustrating the challenges and progress made in recent years. The country faces an estimated housing deficit of 0.4 million units, impacting around 2 million people (Kuffer et al., 2020). Additionally,

approximately 8% of Morocco's urban population lives in slums, translating to about 4 million individuals who experience inadequate housing conditions (Kuffer et al., 2019; Echendu, 2020). Despite these challenges, Morocco has managed moderate and planned urban growth, with an annual urbanisation rate of 1.66%, demonstrating a balanced approach to urban development (Debnath et al., 2020; Bounoua et al., 2020).

Morocco maintains a moderate population density of 81 people per square kilometre, which supports efficient land use and resource management (Kuffer et al., 2020). The country is also committed to environmental sustainability, with forests covering 12.3% of its land area, reflecting moderate but balanced preservation efforts (Abubakar & Aina, 2019). Waste management practices in Morocco are relatively effective, with a municipal solid waste generation rate of 0.77 kilograms per capita per day, indicating moderate waste management efficiency (Bjegović-Mikanović, 2019).

Regarding climate impact, Morocco's carbon dioxide emissions are low but effectively mitigated, at 1.64 metric tons per capita (Kookana et al., 2020). The nation also exhibits a low but well-prepared exposure to natural and human-induced hazards, with a disaster risk level of 3.6 out of 10, showcasing its resilience and preparedness in facing potential disasters (Urban & Nakada, 2020).

Morocco's housing system incorporates several best practices that can serve as lessons for other countries. One notable practice is the extensive and diverse social housing programs implemented by the Ministry of Housing and Urban Policy, which comprehensively target various population segments to address housing needs (Kuffer et al., 2019). Furthermore, Morocco's approach to sustainable urban development integrates economic, social, environmental, cultural, and institutional dimensions, promoting a holistic perspective on urban sustainability (Kuffer et al., 2020; Debnath et al., 2020). This integration helps ensure that urban growth is balanced and inclusive.

Innovation and technology play a crucial role in Morocco's urban development strategy. Various actors, including the Ministry of Industry, Trade, Investment, and Digital Economy, actively foster innovation and the integration of new technologies to enhance urban development processes (Kuffer et al., 2019). These efforts contribute to creating innovative cities better equipped to meet the demands of a growing urban population while promoting sustainable practices.

5. Discussion

This review has examined the intricate interplay between architecture, social housing, and Sustainable Development Goal 11 (SDG-11) in Nigeria. The key themes identified in the study include the challenges and opportunities inherent in

attaining SDG-11 and the implications for various stakeholders, including policymakers, practitioners, and researchers. This section delves deeper into specific challenges and opportunities discussed in the study, providing a comprehensive understanding of their implications.

One of the significant challenges identified is the urgent and escalating housing deficit in Nigeria due to rapid urbanisation. The review highlights that over 69% of Nigeria's urban population resides in slums, reflecting the inadequate housing infrastructure to meet the needs of the growing urban population. This situation is exacerbated by insufficient urban planning, lack of affordable housing, and deficient infrastructure, which pose significant barriers to achieving SDG-11's goals of making cities inclusive, safe, resilient, and sustainable. Another critical challenge is the high level of poverty and inequality in Nigeria, which severely limits access to adequate housing. The study notes that approximately 87 million Nigerians live in extreme poverty, which restricts their ability to afford decent housing. This economic disparity is also reflected in the housing market, where the high cost of land and construction materials further exacerbates the housing crisis, particularly for low-income and vulnerable groups. Environmental sustainability is also a significant challenge in Nigeria's urban development. The review points out that rapid and unplanned urbanisation has led to ecological degradation, including deforestation, pollution, and increased carbon emissions. The lack of effective waste management and urban planning policies prioritising ecological sustainability further compounds these environmental issues.

Despite these challenges, the study identifies several opportunities that could be leveraged to achieve SDG-11 in Nigeria. One notable opportunity is the potential for economic growth driven by urbanisation. The review suggests that urban areas could be harnessed with their concentration on financial activities to stimulate national economic growth and development. By strategically planning and managing urbanisation, Nigeria could improve infrastructure, create jobs, and enhance urban dwellers' overall quality of life. The study also highlights the role of social housing as a vital tool for addressing the housing deficit and promoting social inclusion. Various government initiatives, such as the National Housing Programme (NHP) and the Federal Mortgage Bank of Nigeria (FMBN), are identified as essential mechanisms for providing affordable housing to low-income and vulnerable populations. If effectively implemented, these programs could significantly reduce the housing deficit and improve living conditions for millions of Nigerians. Innovation in housing design and construction is another opportunity identified in the review. The study emphasises the importance of adopting sustainable building practices and utilising local materials to reduce construction costs and environmental impact.

Integrating innovative technologies and practices in housing development could also enhance housing quality, affordability, and sustainability.

The challenges and opportunities discussed in the study have significant implications for various stakeholders. For policymakers, the need to develop and implement integrated urban development policies that address the multifaceted challenges of housing, urbanisation, and environmental sustainability is paramount. These policies should be inclusive, targeting the needs of low-income and vulnerable groups while promoting sustainable urban growth. For practitioners, particularly architects and urban planners, there is a critical need to innovate and adapt to the changing dynamics of Nigeria's urban landscape. This includes designing housing solutions that are not only affordable and accessible but also environmentally sustainable and culturally relevant. For researchers, the study underscores the importance of continued research into the complex interplay between architecture, social housing, and SDG-11. Further empirical studies are needed to explore the effectiveness of existing policies and practices and identify new strategies for overcoming the challenges identified in the study. The need for ongoing investigation and improvement is crucial for the future of sustainable urban development in Nigeria.

6 Conclusion, Recommendations and Limitations

6.1 Conclusion

This review has established a robust and dynamic interplay between architecture, social housing, and Sustainable Development Goal 11 (SDG-11) in Nigeria. These elements are deeply interconnected and influence each other across multiple dimensions. Architecture shapes the physical and aesthetic aspects of housing, while social housing policies directly impact the accessibility and quality of living conditions. Together, they contribute significantly to developing inclusive, safe, resilient, and sustainable urban environments as envisioned by SDG-11.

The study has highlighted the pressing need and immense potential for improving and transforming architecture and social housing in Nigeria. These sectors' current state presents challenges and opportunities for achieving SDG-11. On the one hand, inadequate infrastructure, financial constraints, and policy gaps hinder progress. On the other hand, there are significant opportunities for innovation and improvement through strategic planning, effective policy implementation, and adopting sustainable practices. Addressing these challenges and leveraging the opportunities can drive substantial progress toward sustainable urban development in Nigeria.

Moreover, the review underscores the value of learning from other countries' best practices and

lessons. International examples provide numerous models and strategies for achieving SDG-11, particularly concerning architecture and social housing. Countries like Morocco have successfully integrated sustainable development principles into their urban planning and housing policies. By studying these examples, Nigeria can adopt and adapt effective strategies to enhance its efforts in achieving SDG-11.

In conclusion, a concerted effort to improve architecture and social housing in Nigeria, guided by insights from international best practices, can significantly advance the country's progress toward achieving SDG-11. Such efforts will improve the quality of life for millions of Nigerians and contribute to creating more resilient, sustainable, and inclusive urban environments. This integrated approach promises to foster a future where urban development aligns with the overarching goals of sustainability and inclusivity, benefiting current and future generations.

6.2 Recommendations

Based on the findings and conclusions of this review, the following recommendations are proposed. These recommendations are crucial for enhancing the well-being and quality of life in Nigeria, particularly in the context of architecture, social housing, and Sustainable Development Goal 11 (SDG-11):

- i. **Development of Inclusive Housing Policies:** The government plays a pivotal role. It should prioritise the development of inclusive housing policies that address the needs of low-income and vulnerable groups. These policies should ensure affordable housing is accessible to all, particularly those in slums and informal settlements. By integrating inclusive design principles and community participation, these policies can foster social cohesion and enhance the quality of life for marginalised communities.
- ii. **Promoting Sustainable Urban Development Practices:** To align with SDG-11, promoting sustainable urban development practices is crucial. This includes the adoption of green building standards, the use of eco-friendly materials, and the implementation of energy-efficient systems in housing projects. Encouraging the use of renewable energy sources and water conservation techniques can also contribute to reducing the environmental footprint of urban areas, thereby improving residents' health and well-being.
- iii. **Enhancement of Urban Infrastructure and Services:** There is an urgent need to enhance urban infrastructure and services, particularly in rapidly urbanising areas. This includes improving access to basic amenities such as clean water, sanitation, electricity, and waste management services. Upgrading transportation networks and public spaces can also improve mobility and the overall urban experience, making cities more livable and resilient to future challenges.



iv. **Investment in Research and Innovation:** To address the complex challenges of Nigeria's social housing and urban development, research and innovation is essential. This includes exploring new construction technologies, such as modular housing, and innovative financing models that make housing more affordable. Collaboration between academic institutions, industry stakeholders, and government bodies can lead to the development of context-specific solutions that enhance the sustainability and inclusivity of urban environments.

v. **Strengthening Institutional Capacity and Governance:** Effective governance and institutional capacity are key to achieving the goals of SDG-11. Enhancing the capacity of local governments and urban planning authorities to manage urban growth, enforce building regulations, and implement housing policies is crucial. Additionally, fostering transparency, accountability, and public participation in the decision-making process can build trust and ensure that urban development projects meet the needs of all residents.

vi. **Leveraging International Best Practices:** Nigeria can benefit from leveraging international best practices in social housing and urban development. Learning from countries successfully implementing sustainable housing initiatives, such as Singapore's public housing model or Brazil's participatory urban planning approach, can provide valuable insights. Adapting these practices to the Nigerian context can help overcome existing challenges and promote the creation of more inclusive and resilient cities.

vii. **Fostering Public-Private Partnerships (PPPs):** Public-Private Partnerships (PPPs) should

be encouraged to mobilise resources, expertise, and innovation in the housing sector. Such partnerships can facilitate the development of affordable housing projects, enhance service delivery, and promote economic growth. By aligning the interests of both public and private entities, PPPs can significantly contribute to achieving sustainable urban development goals, offering a promising future for housing in Nigeria.

6.3 Limitations

The review has some limitations and challenges that need to be acknowledged and addressed, such as:

i. The review is based on a limited and selective sample of literature that may not represent the entire and diverse range of sources and perspectives on the interplay of architecture, social housing, and SDG-11 in Nigeria and other countries or regions. Therefore, the review may need to capture and reflect the complexity and variability of the topic and its context and conditions.

ii. The review is based on a descriptive and analytical approach that may need to provide more rigorous evidence and explanation for the interplay of architecture, social housing, and SDG-11 in Nigeria and other countries or regions. Therefore, the review may need to address and answer the underlying causes and effects of the topic and its challenges and opportunities. Thus, the review may need to provide and suggest adequate and feasible recommendations and directions for future research and practice.

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