Affordable Hosuing and Urban Revitalization in Nigeria through Adaptive Reuse

Schola, Eburuoh[1]

[1]Harvard University, Graduate School of Design, Cambridge, Massachusetts, USA, (Seburuoh@gmail.com, Seburuoh@gsd.harvard.edu)

Abstract

Nigeria faces a critical housing crisis, exacerbated by rapid urbanization and population growth in its urban centers. This study investigates the potential of adaptive reuse of abandoned public buildings as a solution for affordable and social housing. Through a review of literature on urban development and policy implementation, the research highlights the social, economic, and environmental challenges and benefits associated with adaptive reuse in Nigeria's cities.

The study addresses key issues such as land title disputes, rising construction costs, inflation, and the need for sustainable development practices in line with United Nations and global climate action goals. Case studies of adaptive reuse projects both globally and within Nigeria illustrate the challenges and opportunities of this approach.

Findings suggest that adaptive reuse is a promising strategy for addressing Nigeria's affordable housing needs, offering potential solutions to the current housing deficit. The study concludes with strategic recommendations and identifies areas for further research to enhance the effectiveness of adaptive reuse in urban development.

Keywords: adaptive aeuse, affordable housing, Nigeria, sustainable housing, abandonment

Introduction

The housing deficit is among the most prominent social challenges across the globe and Nigeria is no stranger to the ever-increasing need for additional housing units. There is an approximate need for 17,000,000 to 20,000,000 additional dwellings across the territory (CAHF, 2023). The housing need is further exacerbated by the rapidly urbanizing population growth rate (National Bureau of Statistics, 2023), projecting that the population of Nigeria will almost double by 2050, making it the third most populous country after India and China (National Bureau of Statistics, 2023; Chambers and Partners, 2022). This increase in human capital demands housing solutions, particularly within the country's urban centers.

Lagos, Nigeria is among Africa's densest cities (National Bureau of Statistics, 2023), and experiences the effects of the rising housing need (CAHF, 2023). At the same time, Lagos is home to over 2,000 abandoned public and private buildings (Akande et al., 2021). This high number of abandoned structures is not uncommon for Nigeria's urban centers, particularly the abandonment of public structures (Ugwuonah, 2022). Whether it be abandoned hospital structures across Imo State (Ikechukwu and Ozuzu, 2021), public institutions of Osun State (Alao et al., 2019), or office structures of Abuja, the nation's capital city (Sule, Abdulmumin, and Osu, 2023), these buildings are incomplete or unoccupied due to several seemingly debilitating circumstances, such as government turnover, irresponsible abroad or foreign ownership, improper allotment of federal funds–the list goes on (Estate Intel, 2023).

Such idle structures bring increased blight, safety hazards, and economic decline, among other detriments (Bottero, et. al, 2022). Adaptive reuse development projects have appeared as viable solutions to challenges such as the recent office vacancy post COVID-19 Pandemic and preservation of historic structures by changing the interior use (Tsenkova, 2023). Defined as the adaptation of a building's use and interior configuration, adaptive reuse seeks to solve a host of challenges that stifle the implementation of affordable housing (Gupta, 2021).

Sustainable, economic, and social responsibility are important aspects of the housing deficit discourse. Adaptive reuse provides a solution to the social need for affordable housing within

city centers where jobs are available to the lower to middle-working class, public transportation is more readliy available, and amenities are attainable (Tsenkova, 2023). Furthermore, adaptive reuse allows for existing infrastructure to be utilized to support the housing need within urban centers. The impending global need to environmentalize development practices for the benefit of societies (United Nations, 2015) is also integrated into the practice of adaptive reuse. By its very definition, adaptive reuse allows for the reduction of environmentally degrading practices neccessary in new construction projects. By accessing the structural integrity of each building and its viability for adaptation, this environmental need is at least partially met. In light of the inconsistency of adaptation, this paper also explores the social, economic, and environmental benefits of adaptive reuse of building types and of the land itself.

Literature Review

Affordable Housing Efforts Nationally

Several efforts are being made to relieve the demand for affordable housing across Nigeria. For example, the Federal Ministry of Housing and Urban Development (FMHUD) leads the charge with initiatives like the Renewed Hope Housing Agenda, aimed at developing habitat and affordable housing for Nigerians (Federal Ministry of Works and Housing, n.d.). The Federal Housing Authority (FHA) complements this effort by administering the provision of affordable housing and supporting the broader housing sector's growth (Federal Housing Authority, 1973).

Partnerships among these agencies are crucial. The Federal Mortgage Bank of Nigeria (FMBN), for instance, provides long-term mortgage lending, linking the capital market with the housing industry, while also supporting the growth of mortgage institutions and administering the National Housing Fund (Federal Mortgage Bank of Nigeria, 1958). Additionally, agencies like the Surveyors Registration Council of Nigeria and the Office of the Surveyor General ensure regulatory standards in land and property measurement, which are vital for effective land management and housing development (Surveyors Registration Council of Nigeria; Office of the Surveyor General of the Federation).

Table 1: Agencies Necessary in Collaborative Efforts for Attaining Affordable

Agency	Mandate	Source

Federal Ministry of Housing and Urban Development	Develops habitat and affordable housing for Nigerians and drives economic growth through initiatives such as the Renewed Hope Housing Agenda.	Federal Ministry of Works and Housing (n.d.) *Mandate*. Available at: https://fmhud.gov.ng
Federal Housing Authority	Administers the provision of a sector in Nigeria.	Federal Housing Authority (19 http://fha.gov.ng/
Federal Mortgage Bank of Nigeria	Proved long-term mortgage lending, connecting the capital market with the housing industry. Supports the growth of primary and secondary mortgage institutions and administers the National Housing Fund	Federal Mortgage Bank of Nigeria (1958). Available at: http://www.fmbn.gov.ng/
Surveyors Registration Council of Nigeria	Regulates the practice of surveying in Nigeria, ensuring standards in land and property measurement.	Surveyors Registration Council of Nigeria. Available at: http://surcon.gov.ng/

Office of Surveyor General of the Federation	Manages and oversees land survey and mapping activities at the federal level.	Office of the Surveyor General of the Federation. Available at: http://osgof.gov.ng/
Ministry of Finance Incorporated (MOFI), 1959	Supports initiatives such as the Family Homes Fund through the Social. Creates policy and provides subsidies and incentives to private developers and manages financial, debt, and budget oversight and planning	Ministry of Finance Incorporated (2023) *Overview of MOFI's Functions and Activities*. Available at: https://www.mofi.gov.ng/overview
Federal and State Ministries of Lands and Urban Development	The federal-level handles overarching policy while the state-level handles land management as propagated by the Land Use Act of 1978	Federal Ministry of Housing and Urban Development, 2024. *Land Use Act Administration*. [online] Available at: https://fmhds.gov.ng

Source: Author's construct based on relevant sources (2024)

Table 1 provides a detailed overview of the key agencies involved in Nigeria's efforts to address the affordable housing shortage, showcasing their specific mandates and contributions. These

findings emphasize the collaborative nature of Nigeria's approach to expanding affordable housing.

Adaptive Reuse Nationally and Internationally

There are various benefits and opportunities associated with adaptive reuse of public buildings. As illustrated by Table 2 this approach can address hyper-local challenged while also meeting global standards. The preceding paragraph emphasizes that while adaptive reuse projects often focus on preserving historical structures, their potential for housing development remains underexplored.

Table 2: Benefits and Opportunities of Adaptive Reuse of Public Buildings

Geography	**Author(s), year**	**Benefits Listed**
Nigeria	Akande, I., Sowemimo, D., Oyedele, O. and Abass, A. (2021). 'Potentials and viabilities of abandoned public buildings in Nigeria', International Journal of Innovative Research and Development, 10(5). doi: 10.24940/ijird/2021/v10/i5/MAY21031.	(1) Cost Savings, (2) Reduced Environmental impact, (3) Preservation of Cultural Heritage, (4) Economic Revitalization, (5) Efficient Land Use
Global South	Ugwuonah, C., 2022. 'COVID Ruins, Tomorrow's Homes? Analysis of an Adaptive Re-use Approach to Affordable Housing for Metropolitan Cities in the Global South'. *Journal of Research in Architecture and Planning*, 32 (2), pp. 1–12. doi:10.53700/jrap3222022_1.	(1) Cost Efficiency, (2) Sustainability, (3) Cultural Preservation, (4) Urban Regeneration
Global	Bullen, P.A., and Love, P.E.D., 2010. *The role*	(1) Environmental

	of adaptive reuse in sustainable urban development. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 3(3), pp.243-256. doi:10.1080/17549175.2010.525515.	Sustainability, (2) Economic Efficiency, (3) (1) Preservation of Cultural Heritage, (4) Urban Regeneration, (5) Efficient Land Use
Europe	Schultz, M., and Heggerud, E., 2021. *Adaptive reuse in post-industrial cities: Lessons from Europe*. *Sustainable Cities and Society*, 64, pp.102-113. doi:10.1016/j.scs.2020.102113.	(1) Urban Regeneration, (2) Sustainability, (3) Economic Development, (4) Cultural Preservation, (5) Community Engagement
South Africa	Moore, K., 2020. *Sustainable Urban Regeneration through Adaptive Reuse: Case Studies from Johannesburg*. *International Journal of Urban and Regional Research*, 44(3), pp.423-439.	(1) Environmental Sustainability, (2) Economic Revitalization, (3) Preservation of Heritage, (4) Urban Regeneration, (5) Community Benefits
Nigeria	Ogunshola, M., 2018. *Preserving Architectural Heritage through Adaptive Reuse: Lessons from Nigerian Case Studies*. *Journal of Built Environment and Design*, 14(1), pp.21-35.	(1) Cultural Preservation, (2) Sustainable Development, (3) Economic Benefit, (4) Urban Regeneration, (5) Community Engagement
Ecuador	Valencia, J., 2021. *Architectural Heritage and Urban Development: Case Studies from Quito*. *Ecuadorian Architecture Review*, 8(3),	(1) Cultural Preservation (2) Economic Revitalization, (3) Sustainable Development, (4)

	pp.22-38.	Urban Renewal, (5) Community Engagement

Source: Author's construct based on relevant sources (2024)

Table 2 details the literature reviewed concerning adaptive reuse practices globally and notes the primary benefits highlighted within each research paper. Each study listed similar benefits, such as Cost Savings, Reduced Environmental impact, Preservation of Cultural Heritage, Economic Revitalization, Efficient Land Use, and Community engagement. Distinctions were made based on location, the viability of projects, and use type pre- and post-redevelopment. Thus, while the projects themselves may not transfer across boundries, the practice of adapting formerly idle structures is transferable across urban municipalities (Bullen and Love, 2010).

Schultz and Heggerud (2021), Ogunshola (2018), and Valencia (2021) note the community engagement benefits of adaptive reuse globally and in Nigeria. Particularly such projects can foster community involvement and support by creating spaces that serve various public needs, such as cultural venues, public parks, or mixed-use developments. Valencia's study of Casa de la Cultura in Quito, Ecuador's redevelopment into an arts and culture space, in particular, details the dynamics of public engagement (Valencia, 2021). Through participatory planning such as public consultations, workshops, and surveys, as well as local partnerships and educational and awareness programs, communities became a part of the rehabilitation efforts. This supports a key social concept for social benefit of urban practices– Carlos Moreno's 15-minute city and Jane Jacobs' walkable city and denizen ownership of the city (Jacobs, 1993; Moreno, Gehl, and Thorne, 2024).

Akande, et. al. (2021) incorporated the importance of efficiency in land use. As one of the key social barriers listed in Nigeria's affordable housing deficit (CAHF, 2023), this proved to be an apt addition to the list. Reusing existing buildings makes effective use of land in urban areas, reducing the pressure to develop new sites and promoting more sustainable urban growth.

The United Nations Sustainable Development Goal (SDG) 11 emphasizes the need to make cities and human settlements inclusive, safe, resilient, and sustainable. Adaptive reuse practices, which repurpose abandoned buildings for affordable housing, align with this goal by promoting sustainable urban development, reducing the environmental impact of new construction, and addressing the housing crisis in urban areas (United Nations, 2015).

Methods

This research employs a literature review methodology, supplemented by case studies of completed and attempted projects within the fields of design and development as it relates to the practice of adaptive reuse, and policy implementation as it relates to affordable and social housing in order to make an argument for the reuse of public buildings within Nigeria's urban centers for social housing. The process involved systematically searching for relevant articles, books, and reports. Criteria for inclusion were based on relevance, publication date, and peer-reviewed status. Key information from the selected literature was extracted and analyzed thematically to identify common themes, trends, and gaps.

Additionally, urban concepts were employed in order to define the relative success of case study projects. Such frameworks include Jane Jacaob's perception of the walkable city (Jacobs, 1993), Carlos Moreno's concept of the 15-Minutre city (Jacobs, 1993; Moreno, Gehl, and Thorne, 2024), and the United Nations Sustainable Development Goals (SDG) (United Nations, 2015). Such concepts and standards expand upon the need for social, economic and environmental targets to implement urban revitalization. Specific examples of completed and attempted projects, were examined through literature review to provide practical insights into the challenges and successes of implementing adaptive reuse for affordable and social housing. These case studies offer valuable context and highlight the interdisciplinary connections between adaptive reuse strategies and the need for affordable housing. They are further analyzed in terms of their social, economic, and environmental impact within their respective urban environments.

The findings from the literature review and case studies were synthesized to provide a comprehensive understanding of the topic, emphasizing interdisciplinary insights and identifying potential areas for future research.

Findings and Discussion

1. Overview of Nigeria's Housing Market

Familiarity with Nigeria's real estate development practices is necessary for engaging with this study. Assessing the viability of adaptive reuse requires research into the market, legislation, and planning restrictions. Thus, this research first defines the problem of affordable housing in Nigeria.

1.1 Economic Barriers of Housing Affordability

Housing burden is commonly defined across the globe as spending over 30% of one's income on housing (Nwaba and Kalu, 2018). In Nigeria, 80% of civilians pay 50% or more of their household income on housing (CAHF, 2023). In Lagos, Nigeria, the country's densest state, a majority of residents spend at least 70% of their household income on housing (Adegoke and Agbola, 2020). Several socioeconomic factors begin to explain this phenomenon of impoverishment throughout the country, including the growing urbanization rate amidst a lack of employment for this growing population; corrupted government practices such as neo-patrimonial systems; and weak institutions creating insufficient infrastructure, financial solutions to effective demand, and incentives for private developers (CAHF, 2023: Adedeji, Deveci and Salman, 2023)

Both the supply and demand side of housing deficiency is necessary to explore. In regards to supply, approximately 90% of urban housing throughout the country is provided by private developers (Adedeji, Deveci and Salman, 2023). With over 40% of Nigerians living in poverty in the midst of high construction, material, and land costs, there is a need for a multifaceted approach to affordable housing development (CAHF, 2023; Anyanwu, 2024). In other words, the answer to Nigeria's housing challenge is quite multifaceted and the collaboration of government

intervention is neccessary to support the private sector in meeting the need for affordable housing. In regards to demand, weak buying power and insufficient funding deters homeownership throughout the country. The Federal Mortgage Bank of Nigeria (FMBN) is a central player on the demand side of this housing deficit. Claiming to provide up to 90% of funding for housing needs, the Federal Bank also hosts the lowest available interest rate as compared to primary mortgage banks (Federal Mortgage Bank of Nigeria, n.d.), however increasting rates deter homeownership among the middle-lower working class (CAHF, 2023).

1.2 Social Barriers to Housing Affordability

Two additional barriers to alleviating the housing crisis include its focus on rental and permanent housing solutions outside of urban areas and land titlement issues and constraints. In social housing that has been provided, the government has focused on rental housing located on the outskirts of the city, at a distance from places where residents make their livelihood (CAHF, 2023; Aul, 2019). This is seen in public and private projects alike, such as the Renewed Hope Housing project, which has a mandate to deliver 100,000 homes across the country for love-middle income residents (Federal Ministry of Works and Housing, 2024). The Family Fund project has also had similar drawbacks leading to vacancy. This creates an additional expense of transportation which creates additional monetary burden on denizens (African Development Bank, 2024). The opportunity for the 15-minute city, as propagated by Carols Moreno, is a concept for city making which emphasises the need to locate essential services such as food, housing, work and leisure, within walking distance of the city center (Moreno et al., 2024). This concepts supports the social wellbeing of denizens by ensuring diversity, density and proximity to one's livelihood, similar to the concept of walkingbility as a necessary condition of urban life, as noted by Jane Jacobs (1993).

The current market and institutional factors in Nigeria's real estate development practice provide three categories of focus for creating affordable housing:

1. Social: Addressing market demand for housing and the shortage of available dwellings in city centers.
2. Economic: Leveraging demand and supply-side subsidies and incentives for homeownership and private development, while reinforcing cross-sector

collaboration to achieve market equilibrium.

3. Sustainability: Incorporating development and design strategies that prioritize environmental responsiveness, as further discussed in the following section.

These three points are discussed further in light of the opportunity for adaptive reuse through abandoned buildings.

2. Defining Adaptive Reuse

Adaptive reuse was coined by New York Architect Georgio Cavaglieri (1974) during the preservationist movement in the United States. It is generally defined as the redesign and redesignation of a structure for an alternative use than what was existing (Gupta, 2021). Adaptive reuse has also been seen as an opportunity to "remake history" or preserve it for heritage maintenance and an enduring sense of place for a given community. Tsenkova defines it as a more holistic approach to urban regeneration practices (Tsenkova, 2023) and many well-known examples exist worldwide. One such example is the Turtle Bay Towers in New York City. This unprecedented project was completed in 1970, converting the 26-story loft office into affordable housing (RKTB Architects, P.C., n.d.).

1.1 Case Studies

In the developing world, adaptive reuse has also played an important role for the revitalization of city centers (Bullen and Love, 2010). There is ample opportunity for such practice in the global south (Ugwuonah, 2022), such as the redevleopement of the Chancery Building, an office building in Johannesburg, South Africa into a mixed use space (Moore, 2020), or Casa de la Cultura in Quito, Ecuador into an arts and culture space (Valencia, 2021). In order to do so, it is important to first acknowledge the challenges and opportunities associated with adaptive reuse.

1.2 Percieved Challenges

Land occupancy and ownership within Nigeria is a necessary first hurdle to engaging in adaptive reuse projects within distinct municipalities. Summarized in the Land Use Act of 1978, individual state governments own the land in their respective territories, thus common land disputes make acquisition cumbersome (Federal Ministry of Housing and Urban Development, 2024). Absolute ownership of the real estate is unfounded in Nigeria, instead, one must obtain a

certificate of occupancy (CofO) from the state. Formalized government structure was placed over the indigenous practice of absolute ownership or "free-hold interest," where local chiefs were the trustees of land (Ogbuabor, Ajah and Nwafor, 2021). Usufructuary interest was the secondary ownership type, and the third was land leasing. Within the overlay of these systems, there are often disputes about government reparations to indigenous owners and squatter occupation of what would be inherited land (Lawanson and Agunbiade, 2018). This system has also crystallized in the elitism of government officials, neopatrimonial deals where public land is treated as private entities to be shared among relatives, along with incessant middlemen collecting bribery or "dashes" (Smith, 2022). These social infrastructures are vital to understanding land transactions with the Nigerian government. Adaptive reuse of abandoned public property and land, thus must first be vetted from litigation and infringements to certificates of occupancy. For simplicity, this paper speaks of the benefits of adaptive reuse for abandoned government-owned or public structures.

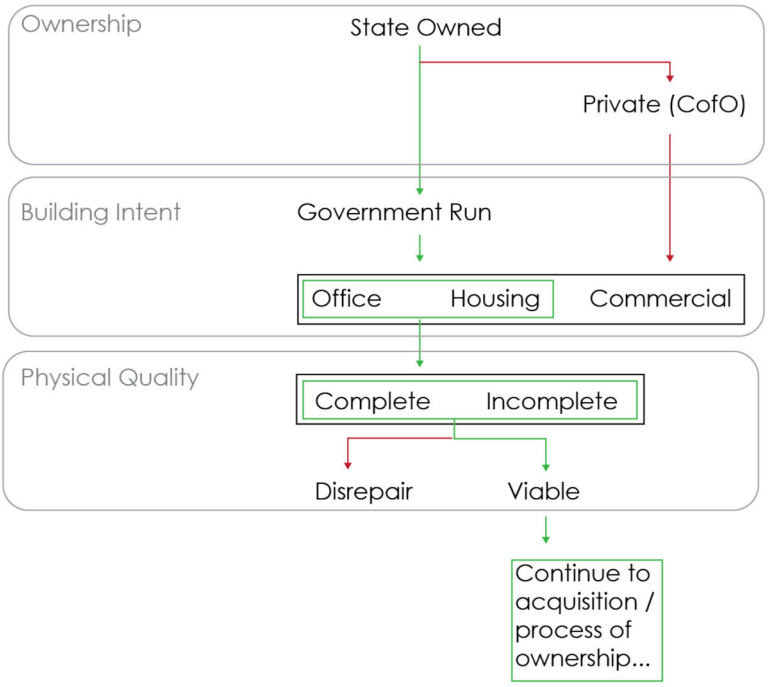
3. Abandoned Structures in Nigeria Today

3.1 Evaluating Nigeria's Abandoned Buildings for Adaptive Reuse

The adaptive reuse process must incorporate a thorough investigation into building typology and original intent. This notes the program of the building in order to understand the intended use and diagnose what led to failure (Ikechukwu, 2021; Sule, 2023; Akande, Sowemimo, Oyedele,and Abass, 2021; Estate Intel, 2023). The common reasons for abandonment are as follows:

1. Government Turnover: Frequent changes in government can disrupt project continuity.
2. Financial Instability: Economic shifts during a project can cause delays, often due to lengthy approval processes for permits.
3. Cost Overruns: Project costs may exceed budget due to dependence on imported materials.
4. Material Shortages: Insufficient local resources can lead to delays and increased costs.
5. Market Misalignment: Projects may fail to meet actual demand due to limited local market data.
6. Land Disputes: Conflicts, often arising from indigenous vs. formal land ownership, are common, particularly in cases of inheritance.

Image 1: Framework for Evaluating Abandoned Building Use



Source: Author's construct (2023)

Abandoned public structures are peppered throughout Nigeria's urban lanscape. Some notable abandoned typologies include hospital structures as studies by kechukwu and Ozuzu in Imo State (2021), public institutions of Osun State (Alao et al., 2019), and many office structures located in Lagos and Abuja, the nation's capitol city (Sule, Abdulmumin, and Osu, 2023), these buildings are incomplete or unoccupied due one or multiple reasons stated above.

Table 3: Challenges Associated with Abandoned Public Buildings

S/N	**Author, year**	**Challenges**
1	Alao, O., Jagboro, G., Opawole, A. and Kadiri, D. (2019).	**Security Risks**: May become hotspots for vandalism, theft, and illicit activities. This poses risks to the security of the buildings and the surrounding areas.

2	Sule, J., Abdulmumin, M. and Osu, A.S. (2023).	**Health and Safety Hazards**: Abandoned structures can become health hazards due to the accumulation of waste, the presence of hazardous materials, or structural instability. This can pose risks to public health and safety.
3	Uche, J. (2021).	**Financial Loss**: Abandoned properties, valued at approximately N230 billion. S substantial economic asset that is not being utilized, leading to lost potential revenue and investment.
4	Akande, I., Sowemimo, D., Oyedele, O. and Abass, A. (2021).	**Reduced Quality of Life:** Blight in such areas created a decline in social and economic activities within the surrounding area.
5	Ikechukwu, U. F. and Ozuzu, J. C. (2021).	**Increased Law Enforcement Costs**: May strain local law enforcement resources, which may be diverted from other important community services.

Source: Author's construct based on relevant sources (2024)

Table 3 details the negative affects of leaving adaboned structures idle and is not limited to security risk, health and safety hazards, financial loss, reduced quality of like not increased costs of law enforcement.

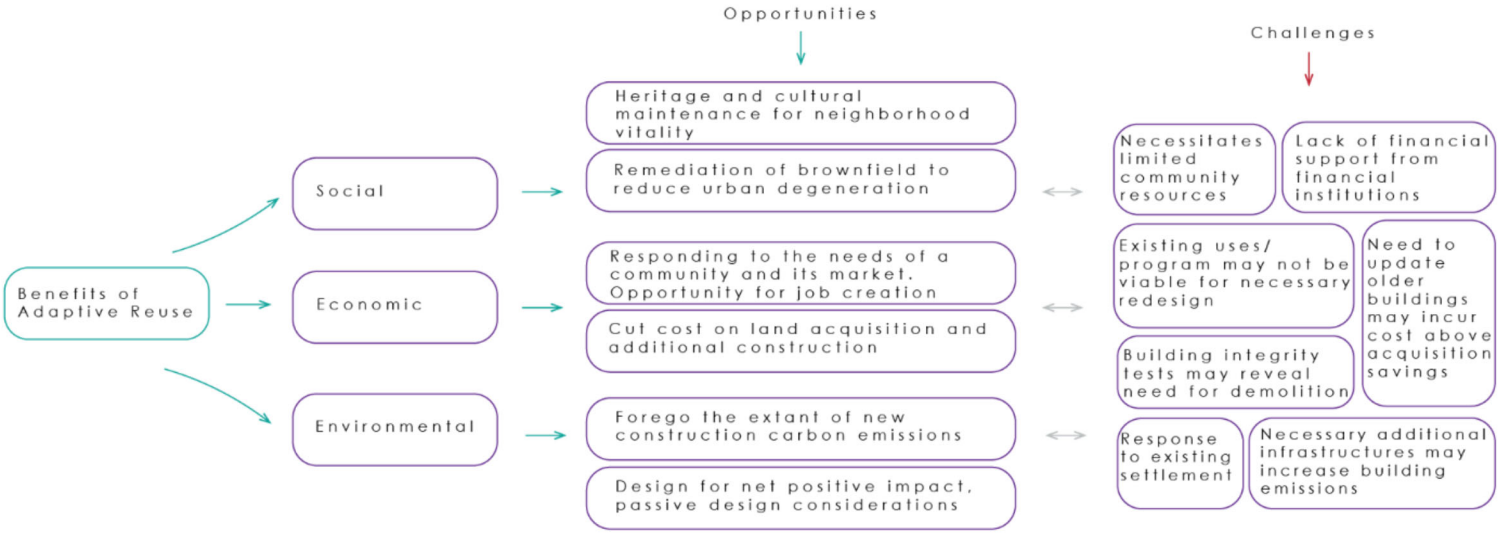
3.2 Abandoned Buildings in Nigeria Today

The subsequent challenges of abandoned structures across Nigerian cities can be quite dire. For example, decrepit structures risk collapse and security threats for nearby residents. The unused structures also act as havens for illegal activity and squatters, lessening the character of the urban landscape (Uche, 2021; Akande, Sowemimo, Oyedele, and Abass, 2021; Ikechukwu,

and Ozuzu, 2021). In light of these issues, headway has been made to resolve such issues. In late 2022, Nigeria's Minister of State for Budget and National Planning approved the formation of the National Capital Projects Information System (Elumoye, n.d.). This team will review existing abandoned structures throughout the country and organize opportunities and funding for repurposing them. This is a positive first step in making up for the significant opportunity cost of abandoned buildings and shows that the time is ripe to capitalize on the growing number of abandoned properties, accounting for 230 billion naira of lost revenue for the country (Uche, (2021). With productive collaboration with the Federal Capital Territory Administration (FCTA), the opportunity to track vacancies and redevelop will save the nation billions.

Engaging key stakeholders–the government, city officials, private developers, locals, and patrons–is necessary to implement adaptive reuse into a developer's business model. A term vital to this work is "people, public, private, partnership," emphasizing the necessary understanding of individual interests within the scope of a project. The discussion below details this principle in light of the three overarching benefits of adaptive reuse– social, economic, and environmental.

Image: Opportunities and Associated Challeneges in Adaptive Reuse Projects



Source: Created by researcer

3.3 Social Implications for Adaptive Reuse

The opportunity to respond to the needs of the existing community and the current market of a city, not only benefits the economy but revitalizes the character of the urban site. Adaptive reuse projects have the ability to reenvision blight. Engaging in intentional conversation when repurposing structures ensures residents' safety from insecure structures and from the crime that typically occurs in unkept urban corridors. The retrofitting and reuse of a building reengage that community and adds aesthetic benefits, the safety of the street, and supply a demand within the community (Akande, et. al, 2021). In the case of squatters or settlers, such communities may be engaged as future building tenets as the user types specify affordable housing for low-income individuals. This allows these individuals and others with informal means of income or living in muti-dimensionality of poverty to be located within the fabric of the urban community. This is a novelty of affordable housing structures, typically outside the existing city.

3.4 Economic Implications for Adaptive Reuse

Costs of obtaining land, labor, and construction materials are where adaptive reuse could help solve affordability challenges in Nigeria. As discussed above, capital is limited in the country; thus, innovative monetary strategies and partnerships are necessary for an adaptive reuse development project.

The land acquisition process, as noted above, is not only a time-consuming task but can incur a great amount of fees. One solution is to partner with the government to acquire this land and the existing property at no cost as well as provide tax credit or abatement. This equity partnership could save 20-30% of the project cost and will likely be approved if the existing property has been in disuse for several years. Land transaction is a vital step for mitigating costs due to the government’s current irreticence to incentivize affordable development.

Following the reduction in land cost is the reduction in construction costs. Because there is at least a viable foundation for the project, construction, and material costs are in turn lower, yet not all costs are disregarded. Completing the building will require additional material and retrofit costs for internal plumbing and electricity. The cost of procuring building materials is another cost that has increased between 35% and 75% in 2022, particularly due to the interest incurred

by importing building materials (Chambers and Partner, 2022). The ability to retrofit the building allows designers and developers to innovate new construction and procurement methods. One such method is using building technology to modulate structures for on-site assembly. A design technique is retrofitting the building to accommodate higher density and thus incur greater return.

Labor costs and the lack of job opportunities for the ever-growing workforce in Nigeria open the door for welcomed development that works holistically with the community. The Affordable Housing Company Ltd (TAHCo) is a private limited liability registered in Nigeria attempting to do just this. Focusing on affordable housing investment and management, the company has engaged the Nigerian market by training local builders. This strategy ties in employment demand: the opportunity to work with locals in job creation is vital to the success of the affordable housing project.

The ability to scale capital for affordable housing is another challenge. Nigeria's current public financial institutions are not enough to sustain affordable housing development. Thus cross-subsidies are a viable option. This financial technique creates a mixed-income development, which allows the market rate housing to fund the low-income properties. The building remains as initially designed, though the income structure changes.

Finally, the explicit social, economic, and sustainable benefits of this adaptive reuse for affordable housing also create opportunities to secure international funding for development. For example, projects aligning with the United Nation's Sustainable development goal to end poverty are eligible for the United Nations Democracy Fund (UNDEF) (United Nations. (n.d.). Creating a synergy of innovation and partnerships is vital to reducing the cost of this development.

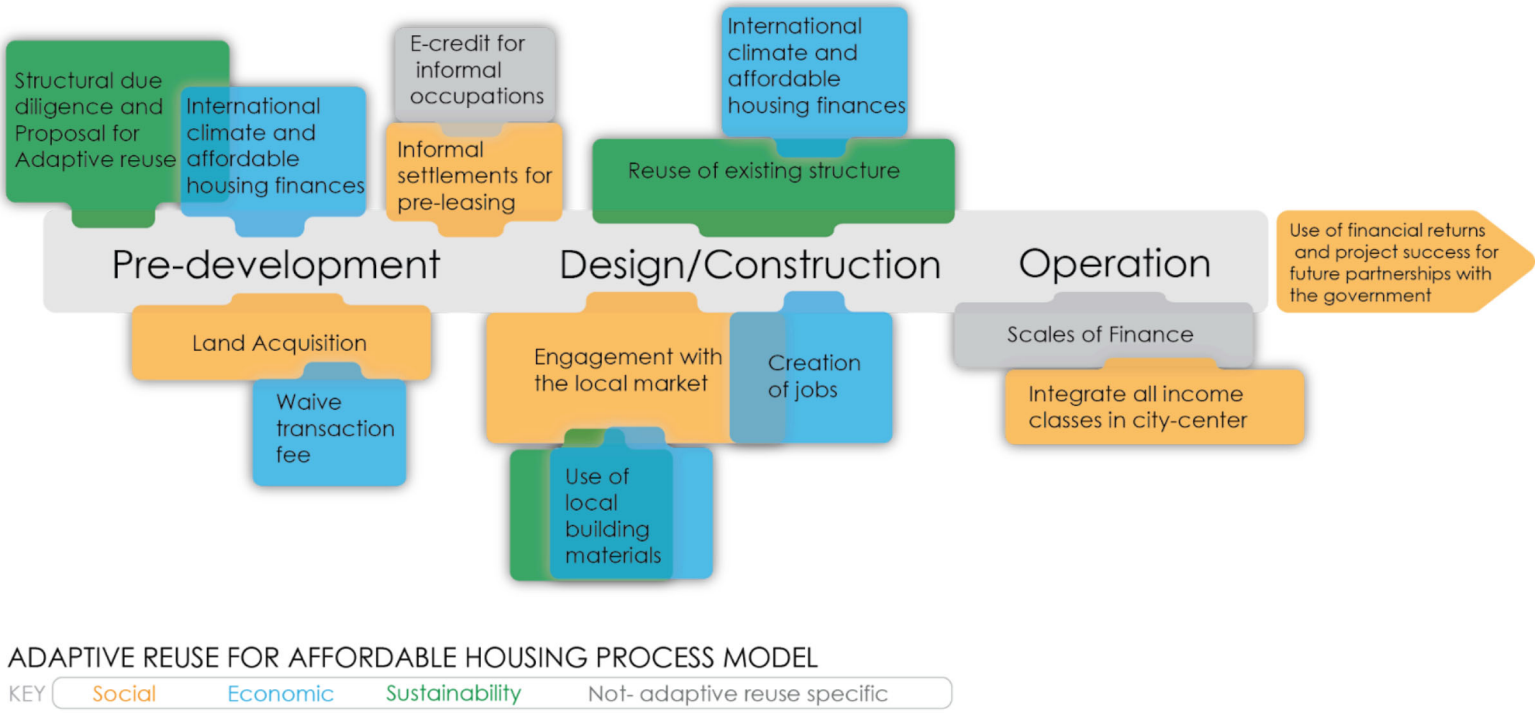
3.5 Sustainable Implications of Adaptive Reuse

By definition, adaptive reuse implements sustainability into its development plan. The extant of carbon emissions typical for new construction are significantly reduced through recycling a building core or lengthening a building's lifecycle. The revitalization of brownfield sites is also among the most potent benefits of adaptive reuse. Remediation efforts are vital for obtaining

global environmental goals. The ability to adapt a structure could thus result in net-zero or net-positive impact through passive design considerations as simple as window placement.

Image 3 summarizes the social, economic, and sustainability techniques aforementioned. The visual expresses the interconnected nature of these categories and their integration into the typical development process. Although this is not an exhaustive list, it shows the need for due diligence in integrating adaptive reuse. It serves as a basis for further research into the particulars of such initiatives.

Image 3: Adaptive Reuse for Affordable Housing Process Model



Source: Author's construct (2023)

4. Limitations and Suggestions for Further Study

There are significant limitations and opportunities for further exploration of the practice of adaptive reuse for affordable housing. A critical concern is the scalability of adaptive reuse projects for affordable housing in Nigeria. For these projects to be successful on a larger scale, government incentives are essential to ensure sustained affordability. However, as noted by

Adedeji, Deveci, and Salman (2023), the current political and social infrastructure in Nigeria poses challenges that are unlikely to be addressed without substantial reforms..

The first trajectory involves the creation of a comprehensive repository of information on existing abandoned structures. This could complement the efforts of the National Capital Projects Information System in Abuja, as suggested by the precedent set by the Dutch Atlas of Vacancy (Archive - Studio Joost Grootens, n.d.). Such a repository would serve as a geographical, design, and artistic tool, crucial for the systematic redevelopment of these structures.

The second trajectory focuses on developing an in-depth model or proposal for an adaptive reuse project. This involves identifying the most viable types of abandoned structures for reuse, particularly those that are structurally sound and capable of integrating essential infrastructure like water and electricity (Akande et al., 2021). Although this paper does not delve into specific building programs or layouts, the standard office building in Nigeria, typically a reinforced concrete structure with specific column spacing, presents unique challenges and opportunities for adaptive reuse. Existing abandoned housing projects, as well as other typologies, are also viable candidates for completion and reuse, as supported by the work of Sule, Abdulmumin, and Osu (2023).

5. Conclusions and Reccomendations

This research began by analyzing the existing market dynamics, growth trends, and institutional and physical factors influencing development in Nigeria. It highlighted the conditions necessary for implementing affordable housing, emphasizing the critical need for such initiatives in response to widespread poverty and urban blight. By exploring the potential of adaptive reuse of abandoned properties, the paper identified key benefits, including environmental sustainability and economic revitalization. However, challenges such as capital constraints, corruption, and land acquisition issues persist within the integrated adaptive reuse model. Despite these challenges, innovative development strategies and strategic partnerships can mitigate some barriers, making the adaptive reuse approach more viable for affordable housing.

Recommendations

1. **Holistic Approach**: A comprehensive strategy is essential for addressing affordable housing needs, particularly when incorporating adaptive reuse for environmental sustainability. Policies such as tax abatements, subsidies for environmental projects, and demand-side approaches like mortgage programs should be further examined to ensure the economic stability of affordable housing projects. This is crucial to avoid high vacancy rates, such as those observed in Family Homes Fund projects, or the disproportionate purchase of properties by high-income groups (Family Homes Funds Limited, n.d.).
2. **Systemic Issues**: Addressing systemic issues, such as the complexities of land title registration and the need to revise the Land Use Act, is crucial for the successful implementation of adaptive reuse practices. For example, fixing GIS boundary discrepancies, as seen in Abuja, and increasing transparency in land transactions are necessary steps (Akunne, 2022; Lawal, 2023). Additionally, states should focus on increasing their internally generated revenue and establishing clear tracking systems in partnership with institutions like the World Bank to enhance the implementation of these practices (African Development Bank, 2024).
3. **Mixed-Income Development**: Adopting mixed-income development policies, similar to the Inclusionary Development Policy in Boston, Massachusetts, can promote social equity and ensure a diverse resident base in redeveloped areas. This approach can be instrumental in creating inclusive communities and preventing the concentration of wealth in certain areas (Boston Planning & Development Agency, n.d.).

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ORCID: https://orcid.org/0009-0009-4877-3946

Notes on Contributors

Schola Chioma Eburuoh holds a bachelors degree in the science of architecture from the Catholic University of America and is currently pursuing her master's degree in Design Studies (Publics) at Harvard's Graduate School of Design. Her research interests include housing markets, real estate development and affordable housing policy and implimentation.

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