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AN ASSESSMENT OF POST CONFLICT DESIGN STRATEGIES FOR TRANSITIONAL-TRANSFORMABLE RELIEF HOUSING IN POST-CONFLICT ZONES IN NORTHEASTERN NIGERIA

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Abstract
The ongoing displacement crisis in Northeastern Nigeria, particularly in the conflict-affected towns of Borno State, has exposed the fundamental inadequacy of short-term emergency shelters for addressing the realities of protracted displacement. For nearly two decades, internally displaced persons (IDPs) have relied on temporary solutions that deteriorate rapidly under harsh Sahelian conditions, leading to overcrowding, poor sanitation, and significant socio-psychological distress. This research explores the feasibility and design strategies for Transitional-Transformable Housing (TTH) as a sustainable alternative. Employing a qualitative, theoretical, and conceptual methodology grounded in protracted displacement, resilience, and systems theories, the study synthesizes multidisciplinary data to evaluate the structural, social, and economic viability of modular and prefabricated construction techniques. Findings indicate that modular systems using materials such as Interlocking Stabilized Soil Blocks (ISSB), lightweight concrete panels, and steel-framed units can reduce construction timelines compared to traditional masonry methods. However, the adoption of these technologies is hindered by a significant "perception barrier" associating earth-based materials with poverty, despite their superior thermal performance. The study advocates for a multi-stakeholder integration of architectural innovation and policy reform, aligning with the 2026–2029 strategic pivots of the UNHCR and IOM toward self-reliant, durable urban integration. Ultimately, the research concludes that TTH provides a dignified, resilient, and culturally responsive pathway for long-term recovery, ensuring that the built environment facilitates social cohesion and economic vitality.
Keywords: Architecture, Post-conflict housing, Internally Displaced Persons (IDPs), Transitional-Transformable Housing (TTH), Modular construction, Resettlement strategies, North-Eastern Nigeria.

Introduction

The geopolitical and humanitarian crisis in Northeastern Nigeria, specifically within the Lake Chad Basin, represents one of the most persistent displacement challenges of the twenty-first century. Characterized by the systematic destruction of housing and the erosion of social networks, the region continues to host over 2.2 million internally displaced persons (IDPs) as of 2026, many of whom have remained in precarious displacement for over a decade (Elkahlout, 2019; UNHCR, 2025). Historically, the architectural response has been confined to a "crisis-response paradigm," prioritizing rapid deployment and minimal initial expenditure over long-term durability. This has

resulted in the proliferation of settlements physically inadequate for prolonged habitation and socially disconnected from the urban fabric. Comprising the states of Borno, Adamawa, and Yobe, the region faces harsh Sahelian conditions where temporary structures, often made of tarpaulin and untreated timber, deteriorate within months, rendering them unsuitable for the decades of residence actually required (Olanrewaju *et al*., 2018). In 2024 and 2025 alone, severe floods destroyed hundreds of thousands of these fragile shelters, highlighting an urgent need for a more resilient architectural typology (IOM, 2025; UNHCR, 2025).

The core architectural problem is the profound disconnect between the temporal nature of humanitarian shelter and the permanent reality of displacement. Recent government-led closures of urban IDP camps in Borno State have forced thousands into congested host communities or the "skeletal" remains of dismantled sites, heightening risks of gender-based violence and systemic poverty (Arslan, 2007). Furthermore, the temporary label assigned to these settlements acts as a regulatory barrier to essential infrastructure, trapping residents in a cycle of vulnerability (McKinsey, 2025). This study aims to investigate sustainable design strategies for Transitional-Transformable Housing (TTH) to bridge the gap between relief and long-term stability. The primary objectives are to assess long-term housing needs in conflict zones, evaluate existing strategies and their limitations, identify design strategies for adaptable modular housing, and assess the feasibility of these strategies across social, economic, and environmental lenses (NBRRI, 2025; Adebayo and Agunbiade, 2021).

The significance of this research is underscored by the Borno State Government's 2026 "Budget of Sustained Recovery and Growth," which allocates N58.7 billion to the Ministry of Reconstruction, Rehabilitation, and Resettlement (Borno State Government, 2026). As the state facilitating the return of displaced persons, this study provides an evidence-based framework for ensuring that capital expenditure results in durable and sustainable housing. The research focuses geographically on conflict-affected towns in Borno State, including Maiduguri, Dikwa, and Konduga, and is guided by questions regarding the structural requirements for 20-year durability, the failure of current emergency models, and the potential of modular construction to overcome social and economic barriers.

The literature review surveys global and local studies on post-conflict housing, sustainability, and adaptability. Early housing models focused on rapid, temporary shelter deployment. Turner (1976) argued for incremental, resident-driven housing, emphasizing that refugees/builders should be empowered to improve shelters over time. However, traditional models often lack flexibility

and durability. By contrast, modern approaches stress adaptive and sustainable systems. For example, Elkahlout (2019) finds that prefabrication can speed construction but raises dependence on external inputs. Sustainable housing research stresses balancing environmental, economic, and social goals. Overall, a key gap is noted: many models fail to address long-term adaptability and cultural context.

The review outlines a conceptual framework integrating three theoretical lenses: (1) Protracted Displacement Theory – understanding the causes (e.g. insecurity, weak institutions) and effects (chronic vulnerability, aid dependency) of long-term displacement; (2) Resilience Theory – emphasizing the capacity of communities and infrastructure to adapt and recover; and (3) Systems Theory – viewing housing outcomes as embedded in broader socio-economic and political systems. Together, these suggest that effective housing solutions must be flexible (adaptive over time), sustainable (environmentally and economically), and integrated (coordinated across stakeholders).

Empirical evidence from institutional reports and sub-national case studies underscores the highly volatile and resource-constrained context of Northeastern Nigeria. Violent conflict driven by non-state armed groups has systematically destroyed large swaths of housing, local markets, and public infrastructure, rendering traditional, slow-paced reconstruction approaches unviable (IOM, 2020).

The scale of physical destruction is quantified in the joint Post-Insurgency Recovery and Peacebuilding Assessment (RPBA) led by the World Bank, European Union, and United Nations, which estimated total conflict-induced damages in Borno State alone at approximately $5.9 billion (N1.9 trillion) (World Bank, 2016). The assessment revealed near-total destruction in frontline areas like Bama and documented the severe destruction of the regional built environment, including 956,453 private houses (nearly 30% of Borno's total housing stock), 5,335 classrooms, 1,205 municipal structures, 201 health facilities, 1,630 water sources, and 726 power sub-stations or distribution lines (World Bank, 2016). On a wider regional scale, the damaged housing stock across Borno, Adamawa, and Yobe (BAY) states is estimated at 986,000 units (IOM, 2025).

Empirical analyses of internally displaced persons (IDPs) and returnees identify complex, layered needs that must transition from immediate emergency shelter to permanent homes, public utilities, and robust livelihood recovery programs (Anifowose and Raymond, 2022).

i. Immediate Shelter and Camp Overcrowding: Over 54% of BAY state IDP camps remain heavily congested, offering less than 15m² of space per capita, half of the internationally

agreed minimum standards (IOM, 2025). Standardized, non-durable tents constructed from flammable, low-quality materials degrade rapidly and fail to support dignity or privacy, worsening protection risks particularly for women and girls (IOM, 2020).

ii. Housing, Land, and Property (HLP) Rights: Upon attempting to return to ancestral lands, returnees face severe HLP disputes. A major study by the Norwegian Refugee Council (NRC) documented that 68% of returnees found their homes partially or completely destroyed, 41% had their properties occupied by armed groups or other actors, and 55% faced secondary occupants claiming adverse possession (Norwegian Refugee Council, 2024). The lack of title documents, which were destroyed or never issued prior to the crisis, severely complicates property restitution and locks families in a state of land tenure insecurity (Norwegian Refugee Council, 2024).

iii. Livelihood Disruption and Social Fabric: In Adamawa State, empirical assessments by Anifowose and Raymond (2022) demonstrated that conflict on housing has an average Mean Item Score (MIS) impact of 4.41, with housing reconstruction needs (MIS of 4.30) tightly linked to livelihood restoration (average MIS of 4.48). When reconstruction programs are treated as isolated "products" without community integration, housing units are routinely remodeled haphazardly, rejected, or completely abandoned by their occupants (Anifowose and Raymond, 2022).

To address these vulnerabilities, best-practice principles dictate that housing interventions must be flexible, sustainable, and participatory (Kronenburg, 2007). Integrated stabilization programs, such as the UNDP's Regional Stabilization Facility (RSF) in Monguno, have set a successful model by constructing 1,900 housing units (comprising 500 permanent homes, 900 semi-permanent shelters, and 500 state-funded units) while simultaneously providing 375 solar streetlights for protection, clean water systems, agricultural inputs, and vocational training for 4,000 individuals (United Nations Development Programme, 2022). This empirical background justifies the transition toward Transitional-Transformable Housing (TTH) as a process-driven mechanism that bridges the gap between temporary relief and permanent development, aligning with the State Action Plans on Durable Solutions and the United Nations Sustainable Development Goals (Borno State Government, 2025; UN-Habitat, 2025).

Conceptual Framework for Post-Conflict Housing

Post-conflict housing has evolved from a narrow focus on "shelter-as-product" toward a broader understanding of "housing-as-process" (Turner, 1976). The concept of Transitional-

Transformable Housing (TTH) seeks to operationalize this transition by providing a structural core that is both durable and adaptable. Unlike conventional shelters, TTH is designed with the explicit intent of evolving through user modification and incremental expansion, aligning with the principles of the "humanitarian-development-peace nexus" (IOM, 2025).

Theoretical Framework

The analysis is grounded in three primary theoretical pillars: the Theory of Protracted Displacement, Resilience Theory, and Systems Theory.

Theory of Protracted Displacement

The UNHCR (2024) defines protracted displacement as situations where 25,000 or more people from the same country remain in exile for five or more years (UNHCR, 2024). In Northeastern Nigeria, this condition is widespread, with over 58% of surveyed IDPs in 2025 having been displaced prior to 2019 (IOM, 2025). Crisp (2024) identifies this as a "persistent paradox" where camps designed for short-term relief become permanent settlements lacking the infrastructure and economic opportunities of formal cities.

Resilience Theory

Resilience Theory, introduced by Holling (1973), focuses on the capacity of a system to absorb disturbances and reorganize while maintaining its fundamental structure and function (Holling, 1973). In the built environment, resilience is conceptualized across absorptive capacity (withstanding immediate shocks), adaptive capacity (flexibility to modification), and transformative capacity (evolving into a permanent urban fabric) (Walker *et al*., 2004). For Northeastern Nigeria, this implies utilizing materials that are structurally robust and easily repairable by local communities.

Systems Theory

Systems Theory, articulated by Bertalanffy (1968), posits that complex phenomena are composed of interdependent elements whose interactions determine the behavior of the whole (Bertalanffy, 1968). A house is a fundamental component of a complex system comprising social, economic, and environmental subsystems (Ratti, 2004). This perspective ensures that housing design is coupled with the provision of basic services and the fostering of social cohesion, as reflected in the UN-Habitat Strategic Plan for 2026–2029 (IOM, 2025; UN-Habitat, 2025).

In summary, the theoretical studies section highlights that existing literature on post-conflict housing calls for transformable solutions. For example, Corsellis and Vitale (2005) define transitional settlement as a bridge between emergency relief and permanent housing –

implying shelters that can be upgraded. Sustainable design principles (energy efficiency, local materials, passive climate control) are emphasized in multiple sources. Studies on modular housing note that prefabrication reduces construction time and can incorporate sustainable materials, but must be culturally and logistically appropriate.

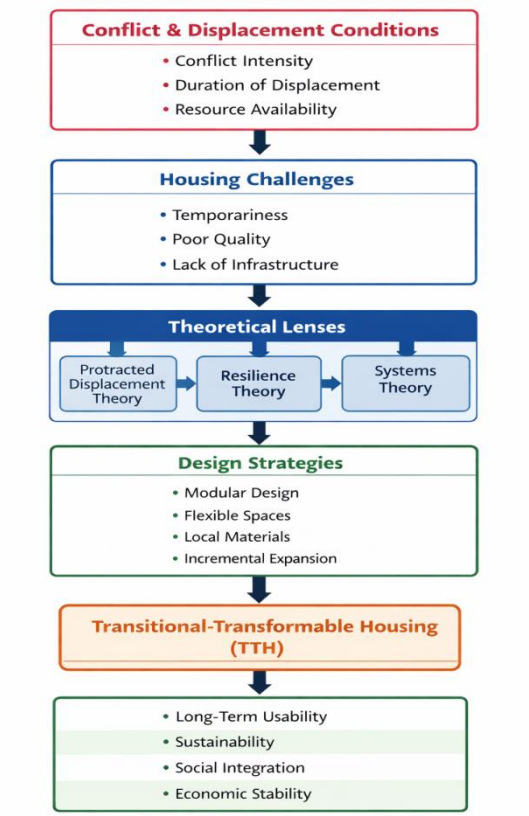


Fig 1: *Transitional housing framework for conflict regions*

Source: *Researchers' Synthesis 2026*

Methodology

Research Design: Conceptual Framework Analysis (CFA)

This study employs a qualitative, theoretical, and conceptual research design, utilizing Conceptual Framework Analysis (CFA) to map, deconstruct, and synthesize the architectural and socio-technical dimensions of post-conflict housing. Rather than relying on primary empirical field testing, statistical meta-analyses, or database search protocols, this qualitative approach employs iterative conceptual mapping to ground design strategies in established social, ecological, and systems theories (Creswell, 2014). The methodology operates by identifying core concepts from interdisciplinary literature, analyzing their systemic interrelationships, and integrating them into a cohesive design model, specifically, the Transitional-Transformable Housing (TTH) framework.

Theoretical Triangulation and Interdisciplinary Synthesis

To address the multifaceted nature of protracted displacement, this study employs theoretical triangulation, synthesizing three primary theoretical lenses to analyze and guide the housing design parameters (Bryman, 2016):

- **Protracted Displacement Theory:** Used to analyze the temporal and socio-political dimensions of long-term displacement, shifting the design focus from temporary, transient shelters to permanent, dignified, and enduring habitability (UNHCR, 2024; Crisp, Morris, and Refstie, 2024).
- **Resilience Theory:** Applied to translate absorptive, adaptive, and transformative capacities into specific, physical architectural parameters, ensuring that the structures are climate-resilient and structurally flexible (Holling, 1973; Walker, Holling, Carpenter, and Kinzig, 2004).
- **Systems Theory:** Applied to evaluate housing as an open, complex system interacting dynamically with social, environmental, infrastructural, and economic subsystems (Bertalanffy, 1968; Ratti, 2004). By integrating these distinct theoretical paradigms, the study synthesizes architectural concepts (modularity, prefabrication, incremental expansion) with socio-economic realities (local material stigmata, resource limitations, and land tenure) to address the relief-permanence paradox (Turner, 1976).

Conceptual Reliability and Construct Validity

In a theoretical and conceptual methodology, the traditional metrics of empirical reliability and validity are adapted to ensure conceptual and analytical rigor (Bryman, 2016):

- **Construct Validity:** Established by directly mapping the physical and spatial properties of Transitional-Transformable Housing (TTH) to the core tenets of the theoretical framework, ensuring that design recommendations are theoretically derived rather than arbitrarily selected (Creswell, 2014).
- **Content and External Validity:** Achieved by comprehensively synthesizing conceptual data from key institutional texts (IOM, UNHCR, UN-Habitat, World Bank) and peer-reviewed literature, ensuring that the theoretical model remains applicable across diverse Sahelian and post-conflict environments.
- **Conceptual Reliability:** Maintained through a transparent and systematic process of conceptual deconstruction, categorization, and synthesis, ensuring that the logic of the

theoretical integration is reproducible, internally consistent, and academically rigorous (Bryman, 2016).

Results and Discussion

Long-Term Housing Needs in Conflict Zones and Existing Limitations

The systematic review confirms that housing needs in conflict-affected regions of Northeastern Nigeria extend far beyond immediate shelter provision. Protracted displacement has transformed emergency needs into demands for durability, safety, privacy, and livelihood integration. Analysis shows that existing temporary structures lack sufficient "absorptive capacity," failing to withstand repeated Sahelian environmental stressors like extreme heat and seasonal windstorms (IOM, 2020). Furthermore, overcrowding and standardized designs often ignore cultural norms regarding family privacy and social interaction, leading to reduced quality of life (Weisman, 1981). Current interventions remain fragmented, often treating housing as a physical object isolated from essential services like water grids and sanitation (Oyesiku, 2001).

Existing Design Strategies and Their Limitations

Existing strategies include low-cost durable materials and incremental housing, but these often suffer from fragmented responses where housing is provided in isolation from infrastructure. Furthermore, there is significant cultural resistance to "earth-based" materials, which are viewed as inferior despite their superior thermal performance (NBRRI, 2025).

Design Strategies for Transitional-Transformable Housing

Transitional-Transformable Housing (TTH) is identified as a vital mechanism for bridging the gap between relief and permanence.

- **Modularity and Prefabrication:** Off-site manufacturing allows for simultaneous site preparation and module fabrication, reducing project timelines by 30–50% (Smith, 2010; Pérez-Valcárcel *et al.*, 2021).
- **Adaptable Design Principles:** The "Core House" concept provides a high-quality structural frame and "wet block" (sanitation core), allowing families to expand incrementally using local materials as they gain financial stability (Kronenburg, 2007). This aligns with the principle of "adaptive capacity," where housing evolves along a "continuum of permanence".
- **Incremental Growth:** By enabling user-driven modifications, TTH supports long-term functionality and livelihood integration, as residents often modify shelters for home-based enterprises (Turner, 1976).

Material Analysis for the Sahelian Context

The choice of materials is critical for longevity and thermal comfort in Northeastern Nigeria:

- **Interlocking Stabilized Soil Blocks (ISSB):** These offer excellent thermal mass and can last 30–50 years. They are cost-effective as they utilize local soil with minimal cement stabilization (Patrick *et al*., 2024).
- **Steel-Framed Systems:** Resistant to termites, rot, and fire, these systems allow for rapid assembly (5–10 days) and provide the structural security needed in volatile environments (Elkahlout, 2020).
- **Concrete Panel Systems:** While requiring heavy lifting equipment, they provide high security and a lifespan of 40–70 years (UNHCR, 2019).
- **Lightweight Insulated Panels (LIPs):** Ideal for rapid emergency installation (5–10 days) with excellent thermal efficiency (Patel and Stone, 2019).
- **Sustainable Alternatives:** Bamboo and Compressed Earth Blocks (CEB) are eco-friendly options suited for the local dry climate, supporting job creation and environmental stewardship (Adier *et al*., 2023; Obaje *et al*., 2022).

Feasibility Considerations: Social, Economic, and Environmental

- **Social Feasibility:** Success depends on community participation to ensure housing reflects local traditions and fosters a sense of identity (Zaki, 2021). A profound "perception barrier" must be addressed, as earth-based materials are often stigmatized as "buildings for the poor".
- **Economic Feasibility:** Modular TTH is cost-effective due to reduced labor costs and shorter timelines. Life Cycle Cost Analysis (LCCA) reveals that modular projects improve Internal Rate of Return (IRR) by 200–400 basis points due to schedule contraction (McKinsey, 2025).
- **Environmental Feasibility:** These systems promote resource efficiency, generate less waste, and can integrate climate-smart technologies like solar panels and rainwater harvesting (Ng and Akintoye, 2018; Sani and Abubakar, 2021).

Table 2: Summary of Findings

Strategy	Key Benefits	Limitations/Challenges
Modular / Prefabricated Housing	Rapid assembly and deployment; built-in potential for future expansion	High upfront costs; dependency on supply chains and logistics; may conflict with local construction traditions
Incremental Housing (Core-Shell)	Affordable initial shelter; aligns with local building practices; empowers households to build-up	Requires long-term planning and support; risk that upgrades stall due to resource constraints

Community-Driven / Participatory Housing	Culturally appropriate design; builds local capacity; increases owner satisfaction	Dependent on community organization; potential delays if coordination is weak
Temporary Shelters (with upgrade path)	Immediate relief; can provide basic security while other solutions develop	Often not durable (risk of collapse or decay); without follow-up, can become semi-permanent slums
Sustainable Design (Green Features)	Reduces long-term costs (energy, water); uses local materials; improves comfort	May require specialized knowledge; initial investment (e.g. solar panels) can be higher

Source: Researchers' Synthesis 2026

Conclusion

This study examined the complex housing needs of displaced populations in North-Eastern Nigeria and evaluated design strategies to meet those needs over the long term. It found that conventional emergency shelters are inadequate for protracted displacement because they do not address future growth, resilience, or community context. The systematic review shows that modular and prefabricated systems, combined with sustainable materials and community participation, offer a promising alternative. In particular, the thesis advances a Transitional-Transformable Housing (TTH) concept that explicitly bridges immediate shelter and permanent housing. TTH envisages shelters that initially serve as emergency dwellings but are constructed so they can be upgraded into full homes (for example, by adding insulated panels or expanding rooms). This concept integrates theory (protracted displacement, resilience) and empirical best practices into a coherent framework for housing reconstruction.

The research contributes to scholarship by highlighting architecture's role in humanitarian contexts. It emphasizes that addressing housing in post-conflict settings is not just an engineering task but a social one that must account for livelihoods, culture, and governance. By reviewing a wide range of sources, the study underscores that effective post-conflict housing is multi-disciplinary: it lies at the intersection of design, policy, and community development.

Recommendations

Drawing from these findings, the thesis proposes the the recommendations outlined below to improve long-term housing outcomes for displaced Nigerians:

1. Adopt Modular/Prefabricated Housing Systems: Governments and aid agencies should support modular construction programs. Prefabricated units (with steel frames, insulated panels, etc.) should be manufactured (potentially using local factories) and deployed rapidly.

These units should be designed for upgradeability (e.g. removable panels, space for future rooms) so that as communities stabilize, structures can evolve into permanent homes.

2. Use Local Materials and Labor: Wherever possible, construction should leverage materials sourced in the region (e.g. compressed earth blocks, bamboo, local timber). This reduces costs and logistics challenges, and provides livelihoods for displaced and host community workers. Training IDPs to build with familiar materials fosters ownership and ensures maintenance of the housing stock.
3. Design for Long-Term Sustainability: Housing designs should prioritize durability and energy efficiency. This includes proper foundation work, resilient roofing, and passive cooling/heating design. Renewable energy (solar panels, rainwater harvesting systems) should be integrated into housing units to improve self-sufficiency and reduce dependency on external aid.
4. Enhance Community Participation: Planning and implementing housing should be a community-centered process. Displaced persons' representatives and local leaders must be involved in decision-making to ensure cultural appropriateness (e.g. courtyard spaces, gender-appropriate layouts). This participatory approach improves the social relevance of housing and promotes cohesion.
5. Strengthen Stakeholder Coordination: Local and national policymakers should create dedicated frameworks for post-conflict housing. This could include multi-agency councils or public–private partnerships (PPPs) that coordinate funding, technical standards, and land tenure issues. Clear policies (e.g. on property rights and subsidies) will make long-term reconstruction more effective.
6. Plan Post-Construction Support: After building shelters, programs should extend support (training, microfinance, infrastructure) to help families improve their homes over time. For example, linking housing projects with livelihood programs ensures that residents have the resources to upgrade structures and avoid new displacement.

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