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HOUSING DEVELOPMENT TRANSITIONS IN TSE-AYU VILLAGE, BENUE STATE, NIGERIA

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Abstract
As peri-urban regions undergo urbanisation, there arises a need to scrutinise the influence of modernization and urban expansion on traditional housing within these areas. This study delves into the web of spatial evolution within the housing development of Tse-Ayu village in Makurdi, Nigeria over 18 years. Employing a qualitative research methodology, this investigation seeks to delve deeply into spatial transformation in housing development within the study area. The research collected diachronic data from 2004 to 2022 utilising Google Earth's historical imagery feature. This comprehensive data compilation enabled the observation of gradual shifts in housing development, building materials, and building typologies throughout this temporal spectrum. Additionally, the study conducted interviews with five key informant interviewees (KII), each with over 18 years of residency, to provide insight. Contextual analysis was subsequently conducted to decipher the emerging patterns and trends associated with the evolution of housing development. Findings unveiled a transformation in the housing landscape, characterised by an upsurge in housing density and a transition from traditional structures to contemporary buildings and materials. Changes were primarily motivated by practical considerations, including termite damage mitigation and the dwindling availability of thatch for roofing, alongside aspirations for enhanced living conditions and security.

Key Words: *Housing transition, Modernisation, Housing typologies, Traditional architecture, Peri-urban*

Introduction

Housing, beyond offering shelter and safety, shapes individual identity, ownership, and a sense of "being at home" through satisfaction and emotional connection to space, people, and quality of life (Preece *et al*., 2020*)*. It serves as an extension of residents, manifesting their distinct personalities and expressing a society's cultural, social, and economic ideals (Henna and Mani, 2022*)*. This historical phenomenon has evolved from ancient caves and bone huts to contemporary shipping containers and 3D-printed homes, impacting human life universally across cultures and times (Kayode *et al.,* 2021). The evolution of housing responds to cultural, social, and

environmental factors and has become a focal point of contemporary research.

The global shift from rural to urban living, with over 54% of the world's population residing in cities, has given rise to peri-urban zones as primary habitats for urban residents, posing challenges in providing affordable and adequate housing (Izar, 2022; Olubi and Aseyan, 2022). In Africa, with a 5000-year history, dwellings reflect cultural adaptations, emphasizing human resilience in crafting shelter that aligned with needs and circumstances (Ezennia *et al*., 2021; Henna and Mani, 2022; Ohiaeri, 2020).

In recent decades, significant transformation in housing development patterns characterizes spatial transitions in traditional African peri-urban settlements, dating back to the colonial era (Cividino *et al*., 2020; Henna and Mani, 2022).The emergence of Nigerian traditional architecture, influenced by indigenous and British styles, led to a transition from traditional to contemporary architectural styles, inducing changes in housing patterns and incorporating modern amenities (Wanjiku and Maina, 2020). The evolving peri-urban housing stock reflects the dynamic adaptation of human settlements to socioeconomic shifts, necessitating a delicate balance between modernization and cultural heritage preservation.

African countries are in the early stages of peri-urbanization, presenting an opportunity for inclusive development through strategic policies and investments (Anane, 2022; Henna *et al*., 2021; Tusting *et al*., 2019), The literature highlights key processes and spatial changes, revealing a marked transformation in African housing between 2000 and 2015, influenced by factors like land demand, speculation, commodification, and infrastructural projects. The peri-urban process involves modernization, urban restructuring, and individual home aspirations.

Rapid spatial growth brings unplanned transitions in housing development, risking the loss of authenticity in architectural elements. Despite the predominantly sub-Saharan data on housing transitions, this study focuses on Tse-Ayu village, a peripheral settlement in Makurdi, tracing spatial transitions and addressing the gap in knowledge. Tse Ayu, historically agricultural, undergoes a transition from agricultural to residential land use, driven by peripheral urbanization (Iortyom *et al*., 2020, 2022; Sunday *et al*., 2020).

Observing these transitions, modernization theory provides insights into spatial shifts in housing development across peri-urban areas in most African cities. Originating in the late 20th century, this theory describes processes leading from traditional settlements to modernized communities, emphasizing the incorporation of Western social, economic, and political systems (Power, 2018). Transitions in the built environment, marked by changes in practice, design, and construction materials, characterize the shift from traditional to modernized styles influenced by global and socio-cultural factors (Henna and Mani, 2022).This transformation leads to the evolution of once-familiar traditional building configurations into Westernized characteristics, denoted as 'transitions' in the literature (Gong *et al*., 2022)

Historically marked by agriculture and rural identity, peri-urban settlements undergo rapid transformations into diverse development zones, introducing

new housing typologies in response to modernization (Anane, 2022). These housing transitions deviate from established indigenous typologies and materials, impacting traditional settlements that once reflected local values, customs, and architectural diversity (Feng and Xiao, 2021; Mai and Khalil, 2019). Traditional African architecture, inherently sustainable, varied across regions due to climatic elements, terrain, cultural beliefs, and local material availability (Feng and Xiao, 2021; Mai and Khalil, 2019).

The ongoing evolution from traditional to modern housing underscores the impact of global trends on local building practices and cultural expressions. Henna and Mani (2022), and Udoudoh and Bassy (2021) identify three distinct materials used in traditional African construction—stone, straw, and earth. On the contrary, Ikudayisi and Odeyale (2021) note contemporary African traditional architecture's modernization in style and construction material. Ezennia *et al*. (2021), Wanjiku and Maina (2020) affirm that traditional African architecture evolves and is influenced by foreign cultures, affecting building typology and construction materials. Scheer (2019) confirms changes in African building typology as evidence of transitions.

Notably, Ohiaeri (2020) highlighted the traditional dwelling type "Ate" among the Tiv people in Benue State, Nigeria, while Jaiyeoba (2021) noted controversy over the existence of distinct African architecture. Transitions are prominent in Asia and Africa, marked by rich local culture, colonization, and post-independence industrialization. The colonial era introduced foreign structures in urban areas, disregarding native customs (Igwe, 2021). Post-independence, linear growth models emulated the West, influencing urban, peri-urban, and rural areas.

Therefore, this study aims to examine the transition of housing development in Tse-Ayu village. In a view to provide a comprehensive understanding of how housing has evolved in this settlement over the last 18 years. Hence the objective of this study is to (i) observe and analyse the evolution of housing development from 2004, 2009, 2012, 2016 and 2022; (ii) investigate the transitions in building material and building typology over the years. This research is necessary to offer important insights into the dynamics and development trends of peri-urban settlements in Makurdi and throughout Africa.

Methodology

The study adopted a qualitative research approach to deepen the understanding of the phenomenon of spatial transition in housing development in the study area. First, the study used Google Earth's historical imagery feature to collect diachronic data from 2004, 2009, 2012, 2016 and 2022 for the study location to capture the spatial changes that have occurred in housing development, building materials and building typology over time. The choice of these five periods was to trace spatial transition over time in Tse-Ayu as a comparison of a single place at intervals of many years can show the patterns of how that place evolved and can be useful in understanding why that place evolved the way it did (Scheer, 2019).

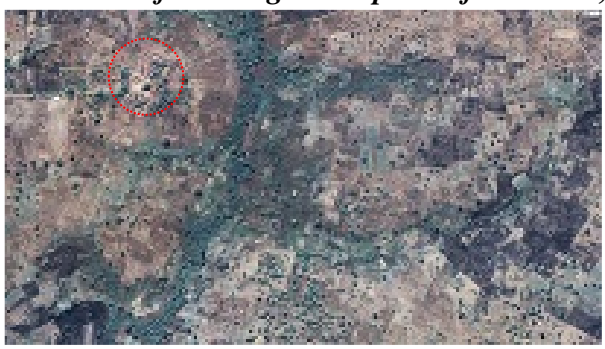
Secondly, 5 long-term residents who have lived in the study location for over 20 years were purposively and conveniently selected to participate in guided

interviews which were conducted to gather information about the residents' experiences and perceptions regarding transitions in housing development in the area. The 5 key informant interviewees (KII), residents who were selected for the interview are statistically adequate as also adopted by Knapik (2006). The five participants possessed adequate knowledge in addition to their ability to discuss issues about the spatial transition in housing development in Tse Ayu. The questions focused on their observations of changes in building materials and building typology over the past two decades. The interviews were conducted in Tiv, which is the indigenous language of the people in the study area, though the interview schedule was structured in English. The spoken words were written down and a context analysis was carried out by transcribing the written words to identify patterns and trends related to the evolution of housing development, building materials, and building typology in the study area. Ethical considerations were prioritised because the initial point of contact was always to obtain informed consent from respondents, inform them about the goal of the study, and protect those who preferred to remain anonymous. As a result, no respondent has been identified by name.

Results and Discussion

The data collected analyses the spatial transition of housing development in Tse-Ayu village over 18 years by looking at diachronic data from 2004 to 2022 and also looking at the lived experiences of residents who have spent over 18 years in the study location and have first-hand experience of the spatial transition in housing development in Tse-Ayu village in a bid to addresses the aim of this study: what is the pattern of transition in housing development in Tse-Ayu village. Data will be presented based on the diverse parameters used in studying spatial transitions such as changes in housing density, building material and building typology over the years.

Evolution of housing development from 2004, 2009, 2012, 2016 and 2022



a

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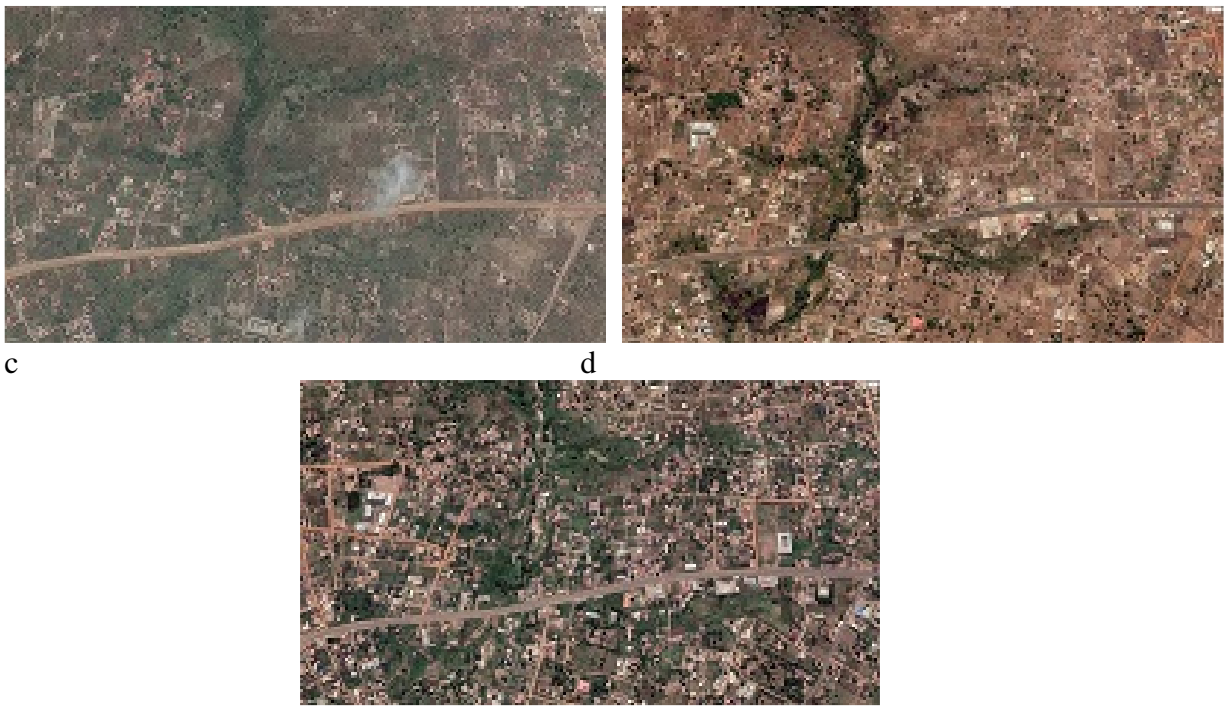

c d

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Fig. 1: Evolution of housing development from 2004, 2009, 2012, 2016 and 2022
Diachronic data collected from Google Earth images of Tse-Ayu showing the evolution of housing development between 2004 and 2022. (a) 2004 image showing a cluster of traditional housing typology of the Tiv people; the "Ate" (b) 2009 image shows an ongoing process of modernisation (c) 2012 image, indicating an increase in modern housing density (d)2016 image, indicating an increase in modern housing density (e) 2022 image, showing a total transition in housing development

Table 1: Pattern in a housing development

Year	2004	2009	2012	2016	2022
Housing density	61	109	370	568	1052
Indigenous buildings	57	43	116	53	19
Modernised buildings	4	66	254	515	1033

(Source: Extracted from Google Earth images)

The pattern of change in housing development in Tse-Ayu village will be looked at under four subheadings; change in housing density; expansion of housing development; change in housing typology and building materials.

Housing Density

Figure 1 (a) shows Tse-Ayu village as of 2004, the indigenous home of the Ayu clan which began at this time was made up of five families, all members of the Ayu family. Table 1. Indicates that the housing density at this time was made up of 61 buildings in a cluster. 4 of which were of modern typology and 57 were made up of the Tiv indigenous housing typology, the "Ate" as shown in Figure 2. Data collected shows a progression in housing density from 61 in 2004 to 1052 in 2022.

Fig. 2: Tiv indigenous housing typology "Ate"

Expansion of Housing Development

The data collected also shows a horizontal expansion of residential areas as observed in Figure 1. (a-e). There has been a notable increase in the size and extent of residential areas in the study location. There has been an ongoing conversion of non-residential land to residential use, such as the transformation of agricultural land into housing developments. This data corroborates Iortyom *et al*. (2022) findings that urban sprawl had a negative impact on peripheral agricultural land in Makurdi town, as it significantly reduced peripheral agricultural land. This conversion raises concerns for the preservation of the livelihoods of the indigenous people of Tse-Ayu village. The result also indicates the ongoing urbanisation, with its twin process of peri-urbanisation (Carrilho and Trindade, 2022) in Tse-Ayu village which is transforming the rural and agrarian landscape of this settlement into an urban one as observed in many rural settlements across Africa.

Change in Housing Typology and Building Materials

Tse-Ayu has Over the last two decades, Tse-Ayu village has witnessed tremendous transitions in housing development from indigenous housing typologies to modernised housing typologies. In the year 2004, images retrieved from Google Earth (image "**a**" of fig.1) indicated that there were just 61 buildings in Tse-Ayu village of which 57 were of the Tiv indigenous typologies and 4 were of modernised typologies. By the year 2022, data retrieved indicated that out of the 1052 residential buildings in Tse-Ayu village, 1033 were of modernised housing typologies while 19 were of the Tiv indigenous typologies. Table 1: shows an interesting pattern of housing development in the year 2012 which indicated an increase in both indigenous and modernised housing typologies. This pattern of change was a result of the road construction which commenced in the same year as seen in image "**c**" of Fig. 1. The increase in indigenous housing typologies at this time is indicative of the disparity in socioeconomic characteristics of the residents in the study area. This finding gives credence to the heterogeneous nature of housing in peri-urban areas in Africa as noted by several other studies (Adedire *et al*., 2020;

Aguilar *et al*., 2022; Kanai and Schindler, 2022).

The findings on transitions in housing typologies as seen in Figure 3, are in line with Wanjiku & Maina, (2020) studies that Westernisation has altered and affected African architecture, yet, important components of African tradition persist and are evident. In the case of housing transitions in Tse-Ayu, the burnt bricks are an improvement over the mud blocks that were predominantly used as walling materials for the Ate.

Fig. 3: Housing typologies in Tse-Ayu village.

Transitions in Building Material and Building Typology Over the Years

Length of stay in Tse-Ayu village

Respondent 1 has lived in Tse-Ayu for 34 years, Respondent 2 for 60 years, Respondent 3 for 64 years, Respondent 4 for 49 years, and Respondent 5 for 39 years.

Description of Interviewee's current house typology and materials

All respondents currently reside in flats constructed with burnt bricks and zinc roofing. Respondent 1's flat was built in 2011, Respondent 2 in 2011, Respondent 3 in 2009, Respondent 4 in 2012, and Respondent 5 in 2017.

Description of Interviewee's old housing typology and construction materials

Respondent 1 lived in a circular Ate made of mud blocks with a thatched roof, featuring wooden-framed windows and doors. They had separate huts for cooking and sleeping. Respondent 2 resided in a mud-block Ate with no windows, using a guinea corn stalk door. They had one large Ate for both cooking and sleeping with animals. Respondent 3's family occupied a round hut with mud-block walls and a thatched roof, featuring doors made from guinea corn stalks. They had a single large hut for cooking, sleeping, and hosting visitors. Respondent 4 lived in a round mud-block hut with a wooden plank door, using separate huts for cooking and sleeping. Respondent 5 resided in a circular hut with mud walls and a thatched roof, wooden-framed windows and doors, and separate huts for cooking and sleeping.

Interviewees' reason for modernization

Respondent 1 noted that they constructed a new building due to termite damage causing frequent roof replacements. Respondent 2 explained that after selling heritage land due to government layout, they used the proceeds to build a modern house because of grass scarcity for the roof. Respondent 3, who also sold heritage land, mentioned building a modern house due to concerns about grass availability for the old structure's roof. Respondent 4 decided to change their building out of fear of fire incidents and perceived modern houses as more comfortable. Respondent 5 expressed the need for more living space.

Access to funds for modernization

Each respondent shared their source of funds for constructing their new buildings. Respondent 1 and 2 sold heritage land inherited from their parents, while Respondent 3 obtained funds from the sale of inherited land. Respondent 4 combined savings from a work scheme with money from selling a piece of land. Respondent 5 used proceeds from selling heritage land and earnings from their business for the construction.

Density in Tse-Ayu village up until 18 years ago

Respondent 1 mentioned "just about five families," while Respondent 2 stated, "There were only five families." Respondent 4 referred to "four large families," and Respondent 5 affirmed, "we had just four families here."

Housing typology in Tse-Ayu up until 18 years ago

Respondent 1; the buildings here were mostly the Ate. Respondent 2; there were only thatched buildings here. Respondent 3; every family had a thatched house. Respondent 4; thatched houses Respondent 5; all thatched houses.

Interviewees' thoughts on current housing typology

Respondent 1; the buildings here now are Westernised buildings. Respondent 2; the thatched homes have been outfaced we now have zinc buildings. Respondent 3; they are all modern buildings here now. Respondent 4; the buildings here now are all modernised houses because of development and the desire to keep up with modern design Respondent 5; all modern and zinc houses.

Interviewees' source of livelihood over the years

Respondent 1; *Back then I was a farmer, but since we sold our land, I am now a housewife.* Respondent 2; *I used to farm here before, but now I have to hire farmland elsewhere to farm.* Respondent 3; *I am a farmer, I used to farm here before, but currently I rent land to farm elsewhere.* Respondent 4; *I was a secondary school teacher then, but I am now a civil servant.* Respondent 5; *I was a farmer then, and I am still a farmer now*.

Housing density, building material and building typology over the years

Based on the transcribed interview data, here are some findings related to housing density, typology, and changes in building materials in Tse-Ayu village over the years:

Housing Density

Until 18 years ago, Tse-Ayu village had a small population, with only a few families residing there, aligning with the sparsely populated nature of other peri-urban settlements across Africa. Presently, although specific population numbers were not provided, it is inferred that the population has increased, likely contributing to higher housing density, as suggested by diachronic data. The comparison of the small population

mentioned in interviews against the 61 houses observed in 2004 raises a discrepancy. This incongruity may stem from the interviewees' long residence (34 to 64 years), indicating their perception of a small population dating back several decades. The observed 61-building cluster in 2004 may have resulted from the settlement's growth over time as families expanded, and new settlers moved in.

Housing Typology and Building Materials

Until 18 years ago, Tse-Ayu village predominantly featured traditional huts, notably the "Ate" and round huts constructed with mud blocks and thatched roofs, incorporating simple wooden frames for windows and doors, aligning with traditional Nigerian architecture (Henna and Mani, 2022; Ohiaeri, 2020). Presently, there has been a transition in housing typology, shifting from traditional huts to modern structures, mainly described as flats with zinc roofing and burnt brick walls (Wanjiku and Maina, 2020). The transition was motivated by the availability and durability of materials, with concerns about termite damage to thatched roofs and challenges in sourcing grass for roofing, echoing observations of Alagbe and Opoko (2013), on building methods among the Nigerian urban poor. Factors like a desire for comfortable living spaces, spaciousness, and concerns about fire incidents contributed to this shift, reflecting evolving human aspirations for safety and comfort as noted by Preece *et al*. (2020).

Reasons for Modernization

The primary motivations for modernizing houses in Tse-Ayu village included issues with termites damaging traditional thatch roofs, a scarcity of grass for roofing, and a desire for enhanced living comfort. Furthermore, some families opted for modern house construction after selling their heritage land, utilizing the proceeds for the building process.

Livelihood Changes

Over time, the interviewees' livelihoods have undergone changes, with shifts from farming to alternative occupations like civil service or housekeeping. Some individuals still engage in farming, although a few rent farmland elsewhere due to the sale of their heritage land. This aligns with the diachronic data's observation of the continuous conversion of non-residential land to residential use, highlighting the transformation of agricultural areas into housing developments. This trend raises concerns about preserving the livelihoods of indigenous people in peripheral settlements across Africa.

Perception of Current Housing Typology

Globalization often drives Westernization in developing societies, with a desire to emulate the developed Western civilization in building practices. This preference manifests in homes that blend global design with locally accessible construction aspects, overlooking indigenous practices (Henna and Mani, 2022). Interviewees in Tse-Ayu village acknowledge a shift from traditional huts to modern flats with zinc roofing and burnt brick walls. The findings reveal a significant transformation in housing density, typology, and materials over 18 years. Tse-Ayu has moved from traditional huts to contemporary flats due to practical reasons like termite damage and a scarcity

of roofing materials, reflecting the impact of modernization.

Conclusion and Recommendations

The study examined the spatial transition of housing development in Tse-Ayu village from 2004 to 2022, utilizing diachronic data from Google Earth images and transcribed interviews with long-term residents. Significant changes in housing density, typology, and building materials were observed, with the number of buildings increasing from 61 in 2004 to 1052 in 2022 due to ongoing urbanization and peri-urbanization. Factors such as termite damage, roofing material scarcity, and a desire for modern comforts influenced the shift from traditional huts to modernized flats with zinc roofing and burnt brick walls.

The study recommends adopting sustainable development practices to balance housing needs with agricultural land preservation and indigenous livelihoods. Local authorities are urged to implement land-use planning and zoning regulations to manage urban sprawl and protect agricultural areas. It emphasizes the importance of preserving cultural heritage by documenting and conserving traditional building techniques and materials.

Further research is suggested to explore the socio-economic impact of the housing transition on Tse-Ayu village residents, including assessments of livelihood patterns, income levels, and overall quality of life. Understanding these influences can aid policymakers in designing targeted interventions for sustainable development. Additionally, studying social sustainability aspects, such as the preservation of cultural heritage, social cohesion, and community resilience, can provide insights into the long-term implications of the housing transition on the village's social fabric.

References

Adedire, F., Adebamowo, M. and Iweka, A. (2018). Typological Analysis of Housing Development in Lagos Peri-Urban. *Journal of Research in Architecture and Planning*, 24(1): 10–18. https://doi.org/10.53700/jrap2412018_2

Aguilar, A.G., Flores, M.A. and Lara, L.F. (2022). Peri-Urbanization and Land Use Fragmentation in Mexico City. Informality, Environmental Deterioration, and Ineffective Urban Policy. *Frontiers in Sustainable Cities*, 4(March): 1–19. https://doi.org/10.3389/frsc.2022.790474

Alagbe, O.A. and Opoko, A. (2013). Housing Nigerian urban poor through self-build housing concept using compressed stabilized laterite bricks. *International Journal of Research in Social Sciences*, 2(4): 13–18.

Anane, G.K. (2022). Continuity in transition: spatial transformation in peri-urbanisation in Kumasi. *Research Square*, 1–22. https://doi.org/https://doi.org/10.21203/rs.3.rs-1677351/v1 License:

Cividino, S., Halbac-Cotoara-Zamfir, R. and Salvati, L. (2020). Revisiting the "City Life Cycle": Global urbanization and implications for regional development. *Sustainability (Switzerland)*, 12(3): 1–18. https://doi.org/10.3390/su12031151

Ezennia, I.S., Onuorah, M. and Uwajeh, C.P. (2021). Understanding the

Influence of Culture-Based Experiences on Urban Housing Fabric: Example of the Igbo Area of Nigeria. *Home*, 8(2): 139–148. www.erjournal.net

Feng, H. and Xiao, J. (2021). Dynamic authenticity: Understanding and conserving mosuo dwellings in china in transitions. *Sustainability (Switzerland)*, 13(1): 1–18. https://doi.org/10.3390/su13010143

Gong, J., Jian, Y., Chen, W., Liu, Y. and Hu, Y. (2022). Transitions in rural settlements and implications for rural revitalization in Guangdong Province. *Journal of Rural Studies*, 93(April): 359–366. https://doi.org/10.1016/j.jrurstud.2019.10.037

Henna, K. and Mani, M. (2022). Transitions in traditional dwellings. *Current Science*, 122(1): 29–38. https://doi.org/10.18520/cs/v122/i1/29-38

Henna, K., Saifudeen, A. and Mani, M. (2021). Resilience of vernacular and modernising dwellings in three climatic zones to climate change. *Scientific Reports*, 11(1): 1–14. https://doi.org/10.1038/s41598-021-87772-0

Igwe, A. (2021). Pre-Colonial Architecture and Urbanism in Africa Scanned by CamScanner. In *Architecture and Urbanism Research Hub* (Issue February).

Ikudayisi, A.E. and Odeyale, T.O. (2021). Designing for Cultural Revival: African Housing in Perspective. *Space and Culture*, 24(4): 617–634. https://doi.org/10.1177/1206331218825432

Iortyom, E.T., Semaka, J.T. and Abawua, J.I. (2020). Spatial Expansion of Urban Activities and Agricultural Lands Encroachment in Makurdi Metropolis. *European Journal of Environment and Earth Sciences*, 1(6). https://doi.org/10.24018/ejgeo.2020.1.6.89

Iortyom, E.T., Semaka, J.T. and Kargbo, P. (2022). The Effect of Urban Expansion on Peripheral Agricultural Lands in Makurdi City. *European Journal of Development Studies*, 2(4): 100–108. https://doi.org/10.24018/ejdevelop.2022.2.4.145

Izar, P. (2022). Meanings of Self-Building: Incrementality, Emplacement, and Erasure in Dar es Salaam's Traditional Swahili Neighborhoods. *Urban Planning*, 7(1): 305–320. https://doi.org/10.17645/up.v7i1.4849

Jaiyeoba, E.B. (2021). On the Search for Identity in African Architecture. In *Pathways to Alternative Epistemologies in Africa* (pp. 141–163). https://doi.org/10.1007/978-3-030-60652-7

Kanai, J.M. and Schindler, S. (2022). Infrastructure-led development and the peri-urban question: Furthering crossover comparisons. *Urban Studies*, 59(8): 1597–1617. https://doi.org/10.1177/00420980211064158

Kayode, S.J., Muhammad, M.S. and Bello, M.U. (2021). Effect of Socio-Economic Characteristics of Households on Housing Condition in Bauchi Metropolis, Bauchi State, Nigeria. *Path of Science*, 7(7): 2001–2013. https://doi.org/10.22178/pos.72-6

Knapik, M. (2006). The Qualitative Research Interview: Participants' Responsive Participation in Knowledge Making. *International Journal of Qualitative Methods*, 5(3): 77–93. https://doi.org/10.1177/160940690600500308

Mai, M.M. and Khalil, S.I. (2019). Sources of Nigerian Architecture in the 21st Century. *Journal of Civil Engineering and Architecture*, 13(6): 401–407. https://doi.org/10.17265/1934-7359/2019.06.006

Ohiaeri, M. (2020). *A Multi-criteria Analysis of Adapting the Tiv Traditional Hut to Climate Change : A Case Study of the Kanshio Community , Makurdi , Benue*. *May*.

Olubi, A.R. and Aseyan, B.S. (2022). Sustainable Housing Delivery for The Urban Poor in Nigeria. *International Journal of Civil Engineering, Construction and Estate Management*, 10(1): 21–34. https://doi.org/10.37745/ijcecem.14/vo10.n1pp2134

Power, M. (2018). Modernization Theories of Development. *The International Encyclopedia of Anthropology*, 1–8. https://doi.org/10.1002/9781118924396.wbiea1888

Preece, J., Crawford, J., McKee, K., Flint, J. and Robinson, D. (2020). Understanding changing housing aspirations: a review of the evidence. *Housing Studies*, 35(1): 87–106. https://doi.org/10.1080/02673037.2019.1584665

Scheer, B.C. (2019). Urban Morphology as a Research Method. *Planning Knowledge and Research*, December 2017, 167–181. https://doi.org/10.4324/9781315308715-11

Sunday, A., Abdulkadir, A. and Anene, N.C. (2020). Simulation and Prediction of Urbanization in Makurdi City , Nigeria using CA-Markov Technique. *FUTY Journal of the Environment*, 14(1): 12–21.

Tusting, L.S., Bisanzio, D., Alabaster, G., Cameron, E., Cibulskis, R., Davies, M., Flaxman, S., Gibson, H.S., Knudsen, J., Mbogo, C., Okumu, F.O., von Seidlein, L., Weiss, D.J., Lindsay, S.W., Gething, P.W. and Bhatt, S. (2019). Mapping changes in housing in sub-Saharan Africa from 2000 to 2015. *Nature*, 568(7752): 391–394. https://doi.org/10.1038/s41586-019-1050-5

Udoudoh, F. and Bassey, L.E. (2021). *Traditional Building Materials in Housing Construction : Usage and Maintenance Strategy*. X(iv): 1–20.

Wanjiku, M.W. and Maina, S.M. (2020). From Vernacular to Modern : Transitioning East African Traditional House Design to Contemporary. *Africa Habitat*, 14(3): 2081–2093. https://uonjournals.uonbi.ac.ke/ojs/index.php/ahr/article/view/677/678