

Modernization of Timber House in Felcra Changkat Lada, Perak

Nur Adilah Jama¹, Rohaslinda Ramele Ramli^{1,*}

¹ College of Built Environment, Universiti Teknologi MARA, Shah Alam, Selangor 40450, MALAYSIA

*Corresponding Author: rohaslinda@uitm.edu.my

DOI: <https://doi.org/10.30880/rmtb.2024.05.02.042>

Article Info

Received: 30 September 2024

Accepted: 1 November 2024

Available online: 1 December 2024

Keywords

FELCRA Village, FELCRA Changkat Lada, Timber House, Modernization, Urbanization

Abstract

The Malaysian government intends to develop rural areas as the primary focus of the nation's economy, strengthen the agricultural sector, increase the quality of life, and reduce the difference between urban and rural residents' standard of living. With an effect on the rural economy, social structure, environment, and technology, it works to modernise the village while also enhancing the standard of living for rural residents. Rapid economic and urbanisation led to modernization of the timber housing sector. The development of new housing typologies in the various medium and high densities housing categories within the townships was carried out to meet new social and economic needs. The housing structures were utilising modern materials and technology in the functionalism architectural style, adjusted for the tropical environment. Therefore, this study aims to identify urbanization happened in one of the planned rural settlements in Malaysia: FELCRA Changkat Lada, Perak, by revealing the modernization of the timber houses, factors influencing the modernization, and strategies to preserve the identity of FELCRA village houses, while supporting the rural development efforts by the government. The study found that majority of timber houses in the village had practically demolished all of the original structures, and many timber houses have been losing their original characters and identities as a FELCRA village house, due to current demands, changes in way of life, and challenges in maintenance.

1. Introduction

Over Southeast Asian nations, dealing with urbanization driven by migration and industrialization, have responded with the creation of new towns, particularly in Malaysia (Ju *et al.*, 2011). The Malaysian government's rural development strategy aims to boost economic growth, improve living standards, and reduce urban-rural disparities. This approach modernizes rural villages and uplifts residents' well-being, leading to a broader understanding of "modernization" with diverse applications and evolving concepts (Fadzil *et al.*, 2021).

Following independence, the timber housing sector modernized in response to rapid economic and urban growth. This modernization aimed at optimizing land use and introduced new housing types within townships to meet changing social and economic demands (Seo & Omar, 2018). Simultaneously, urbanization has transformed rural regions by expanding land use, economic development, and transportation infrastructure, leading to new settlement centers and altering rural settlement patterns, affecting land use activities such as housing, commerce, and industry (Ghapar Othman *et al.*, 2021).

The pilot study highlighted rapid economic growth in FELCRA Changkat Lada has led to housing modernization, causing the demolition of timber houses and challenges in preserving their distinctive features. Considering these problems, the study's aim is to discover urbanisation that happened in one of Malaysia's

planned rural settlements: FELCRA Changkat Lada, Perak. The objectives of this research are to identify the modernization of timber houses, the factors supporting modernization, and solutions for preserving the unique features of FELCRA village houses while supporting the government's rural development activities.

2. Literature Review

2.1 Planned Settlement in FELDA and FELCRA

Settlements are crucial for civilization, providing present and future living spaces with a blend of natural, cultural, urban, and suburban elements in traditional settings. Modernization and development have affected local culture and daily life, eroding cultural and natural landscapes, particularly in Malay settlements, leading to the disappearance of villages and hometowns. (Harun & Jaffar, 2018). In the late 1990s, Malaysia initiated human development projects, including the creation of "new villages" to relocate people from various rural areas, primarily to enhance security and prevent support for communist terrorists. These new villages were designed with better organization and infrastructure compared to traditional villages (Ngah *et al.*, 2010).

In addition, Ngah *et al.* (2010), stated that between 1970 and 1990, regions overseen by Regional Development Authorities (RDAs) in a national plan for rural development experienced significant growth. RDAs implemented comprehensive regional rural plans, addressing agriculture, new settlements, infrastructure, and institutions in resourceful areas. Additionally, agencies like the Federal Land Development Authority (FELDA) were responsible for designing future settlements, with FELDA seeking guidance from the Federal Town and Country Planning for physical layout. Expert-driven design processes predominate, with limited input from the public.

Established in 1966, the Federal Land Consolidation and Rehabilitation Authority (FELCRA) aimed to boost rural economies. FELCRA's mission involved engaging rural populations in economic activities and constructing planned settlement housing to address demographic growth in rural areas. The entity transformed into FELCRA Berhad on September 1, 1997, becoming a government-owned corporation under the Ministry of Rural Development (KPLB). This transformation, governed by the Rehabilitation Board Act, Act 570, and the National Land Consolidation (Replacement & Dissolution) 1997, provided the legal framework for FELCRA Berhad.

2.2 Houses in Planned Settlement

Housing is recognized as a significant driver of equitable growth because it fulfills a fundamental need and reflects the lifestyles of its occupants, which, in turn, indicates the overall well-being of a country (Wong *et al.*, 2022). Moreover, Muwaffaq (2020) explains that housing encompasses the act of dwelling, the physical structures for habitation, and the environment in which it exists. Wong *et al.* (2022) indicates that Malaysia's housing sector has grown significantly. Initially led by the government, it later embraced private sector participation to meet rising housing demand. Government-funded affordable housing projects by FELCRA in Bandar Seberang Perak include low-cost complexes with a systematic layout in ten sections. This shift represents a move from government-driven initiatives to a diversified strategy, effectively addressing housing needs through well-planned development patterns.

2.3 Timber as Construction for Houses

Timber is an ideal building material due to its natural qualities. Timber structures can be easily modified, reshaped, and are also repairable if damaged, making it a versatile and practical choice in construction (Porteous & Kermani, 2007). Timber is a versatile resource for various structural elements and construction systems, including beams, trusses, and concrete formwork. When properly constructed and treated, timber structures can have impressive longevity, as evident in historic structures worldwide (Porteous & Kermani, 2007).

Therefore, Bahardin *et al.* (2022) assert that timber can perform effectively and durably in certain conditions, provided insect damage and fungal growth are managed. Timber's hygroscopic properties enable it to regulate moisture levels. According to Mohd Isa *et al.* (2021) define defects in buildings as failures or inadequacies in functionality, efficiency, regulatory compliance, or meeting customer specifications. Timber structures are susceptible to issues such as fungal infestation, insect damage, and general wear and tear.

2.4 Modernization of Timber House in Malaysia

According to Zaharani & Akhmetova (2021), modernization encompasses new structures, institutions, culture, and community mobilization capacity, expanding political, economic, and social aspects. Modernization, on the other hand, emphasizes building a capitalist economy, democratic governance, and a society that distances itself from tradition and heritage. Furthermore, Ghapar Othman *et al.* (2021) emphasized the population growth will increase the demand for housing, leading to the exploration of new areas, including agricultural regions and inland forests, for potential development. Figure 1 shows two examples of modernized timber houses in Malaysia.



Fig 1 Modernized Timber House (source: Ju *et al.*, 2012)

Modernization can take various forms, including alteration and renovation. According to Nur *et al.* (2021) defined alteration as renewing and changing a structure to enhance its effectiveness for future occupants, often requiring construction tasks like design preparation, demolition, and new installations. The preservation of traditional wooden structures faces several challenges. A shortage of skilled craftsmen and a decline in available tree species are major concerns (Ahmad *et al.*, 2022). Furthermore, homeowners find it financially burdensome and information-scarce to maintain their houses. Consequently, homeowners opt for more affordable brick construction to extend or renovate their house. (Yaman *et al.*, 2018). The lack of expertise and authentic materials compound these issues, making maintenance a challenge. Factors such as increasing family size, timber decay, termite damage, and poor drainage have led to alterations in traditional Malay houses, affecting their physical and spatial characteristics (Nur *et al.*, 2021).

3. Research Methodology

FELCRA Berhad Bandar Seberang Perak, established in 1981, is situated in Kampung Gajah Subdistrict, approximately 15 kilometers from Kampung Gajah Small Town. It has a population of around 7,657 (recorded in 2009), mainly Malay residents. Participants are provided with houses, paddy fields, and oil palm trees, which they must manage. The cost of the house is deducted from agricultural profits, with no initial payment required. Five timber houses were chosen for the case study, based on criteria emphasizing the preservation of their original structure with modern modernization. Interviews with homeowners or their representatives and on-site observations were conducted to understand the houses' history, patterns, modifications, and the factors influencing renovations in FELCRA villages.

4. Analysis And Discussion

4.1 Factors of Modernizing Timber House

The analysis highlights the renovation reasons, which are primarily from space limitations, discomfort, and the need for additional rooms. The majority of respondents cited a desire for more space due to their homes being too small. House 1, for instance, needed to relocate the outside bathroom inside. Houses 1, 4, and 5 expanded to accommodate extra rooms, as the original single-bedroom layout of FELCRA timber houses was insufficient for larger families. Renovations were driven by a quest for comfort and functionality in response to the initial architectural constraints.

4.2 Issue and Common Defects Leads to Modernization of Timber House

The use of timber as the primary building material in FELCRA houses gave rise to various challenges, including faded paint, rotten timber, safety concerns, noise, and damaged floors. Timber rot, a pervasive issue, affected houses 1, 2, and 3 and was often linked to insect attacks, especially termites. The original timber and structural elements in FELCRA houses displayed multiple defects due to over 40 years of use, potentially resulting in reduced timber strength.

Peeling or faded paint was a common problem, affecting the houses' aesthetic appeal. While some homeowners, like those in house 1, diligently repainted their homes every five years to maintain their appearance, others struggled with faded paint due to age. Noisy floors were another issue, particularly reported by the residents of house 4, caused by loose or squeaky timber floors that generated noise when stepped on. Furthermore, aged houses experienced gradual timber damage, necessitating replacements. House 5 noted that most original timbers from the initial construction were no longer suitable for prolonged use due to their current condition, signifying the challenges of using timber as a long-term building material in FELCRA houses.

4.3 The Advantages and Disadvantages of Modernization

Renovation efforts in FELCRA Changkat Lada enhanced living comfort, with residents generally perceiving the benefits of modernization to outweigh the disadvantages. Comfort and a high quality of life were considered paramount in residents' housing preferences, consistent with research by Molina *et al.* (2021). Many residents experienced increased comfort and space, particularly when hosting visitors. Renovations were also seen as cost-saving measures, as they reduced maintenance expenses.

However, some concerns were voiced by a few residents regarding the diminishing uniqueness and design cohesion of FELCRA timber houses due to modernization. Respondent 3 noted a decline in traditional character, and Respondent 4 mentioned a disconnect in housing design. Despite these reservations, the majority of residents appreciated the improvements in their living conditions and cost-saving aspects brought about by the renovations, suggesting that overall, the advantages of modernization in FELCRA Changkat Lada homes outweighed the drawbacks.

4.4 Usage of Materials after a Modernized Timber House









In FELCRA Changkat Lada, residents have undergone various renovations, particularly related to their house materials and structures as shown in table 1. Some residents chose to replace the original timber walls with concrete, essentially rebuilding their houses entirely. Others opted for partial renovations, replacing timber walls in the kitchen area while keeping the front side unchanged. A significant modernization aspect was the shift from timber windows to casement and louvre windows, allowing improved sunlight and ventilation. House 1, for instance, replaced all windows with casement windows. Houses 2 to 5 commonly used louvre windows as a cost-effective alternative for window replacement, gaining popularity among FELCRA residents.

Regarding roofing, the original asbestos material used in FELCRA houses has been largely replaced with zinc due to the decreasing use of asbestos in construction. House 2 and 3 retained their original asbestos roofs but added zinc roofing to refurbished sections, while other houses entirely replaced the asbestos roofs with zinc. Asbestos, once widely used, has faced restrictions in Malaysia, particularly in government buildings since 2005, but its use in private structures remains unregulated by specific laws.

4.5 Spaces Involved in the Renovation of a Timber House

Through observations and interviews, all of the participants have renovated their bedrooms, kitchens, and bathrooms. The original kitchen structure, in particular, has seen major modifications, with entire demolitions or flooring replacements to expand the cooking space, add bedrooms, and relocate toilets indoors. Furthermore, three out of every five participants have renovated their *anjung depan* and storage spaces, while two have extended their renovations to include the living room, garage, and balcony. Table 2 illustrates a resident's timber layout with dotted lines for brick walls and straight lines for timber walls.

Table 1 Usage of Material (source: author, 2023)

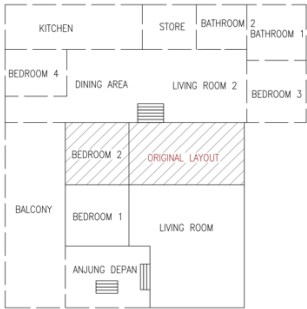



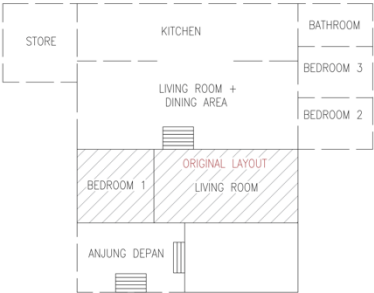





No	Original Material	New Material	Remarks
1	 <p>Material used for wall (original)</p>	 <p>Concrete used for new structure</p>  <p>Timber for extension</p>	With the exception of house 4, every selected house incorporates a combination of timber and concrete walls.
2	 <p>Original timber window for FELCRA's house</p>	 <p>Casement window</p>  <p>Louvre window</p>	Except for house 1, every selected house used changed to louvre window.
3	 <p>Asbestos roof</p>	 <p>Zinc used</p>	Retained asbestos roof (House 2 & 3). Zinc roof (House 1,4 & 5).

4.6 Opinion on Modernization and Strategies Preserving Timber House

The majority of respondents in FELCRA Changkat Lada support the modernization of timber houses due to the numerous benefits it offers residents. However, there are concerns that this could lead to the loss of the houses' distinctive characteristics. One respondent maintains a neutral stance, accepting renovation but also respecting those who choose not to renovate. Most respondents do not recommend the original design of FELCRA timber houses, citing reasons such as the current expense of timber, the inadequacy of a single bedroom, declining timber quality, and the suitability of brick construction. One respondent suggests preserving timber while updating the design.

Potential solutions involve preserving the houses' unique features while modernizing their design to meet contemporary needs, possibly incorporating brick elements, adding more bedrooms, and ensuring the use of high-quality timber. Engaging professionals and conducting research are vital for developing comprehensive recommendations. Furthermore, it is recommended that the FELCRA local government provides funds to assist residents in preserving the original timber structure, as some lack the resources to do so. Lastly, timber house owners should recognize the importance of preserving FELCRA's identity and make efforts to retain parts of the original timber structure, even as the houses age beyond 40 years.

Table 2 Alteration of Timber House (source: author, 2023)

House	Notes	Layout Plan	Photo
1	The original living area and bedroom were retained, while the kitchen was expanded with concrete and new rooms added. The front of the house was renovated with timber, creating additional living spaces.		
2	The original structure of living area and bedroom remained. A back extension was constructed using a combination of timber and concrete for the dining area, kitchen, bedroom, bathroom, and store.		
3	The living area and bedroom remained unchanged. A rear extension, mixing timber and concrete, expanded the house with dining, kitchen, bedroom, bathroom, and storage. The front featured a wooden-walled living room.		
4	The original structure of living area and bedroom remained. Extensions were made at the back and front sides of the house. The back extension included a living room, dining area, bedroom, bathroom, and kitchen, all walled in timber.		
5	The original structure of living area and bedroom remained. A backside extension was added for the dining area, bedroom, kitchen, and store, using concrete walls. The front area of the house underwent renovation, with a living room constructed using wooden walls.		

5. Conclusion

This research aims to enhance the performance of timber houses in planned settlements, with a specific focus on FELCRA village in Perak, Malaysia. Changes in construction materials and elements in FELCRA timber houses were observed, influenced by factors like cost and safety regulations, leading to the adoption of casement and louvre windows and a shift from asbestos to zinc roofs. Interviews and observations indicated that modernization aimed to provide increased comfort and space, although concerns about losing the houses' distinctive characteristics were raised. Timber defects, including weakened timber, peeling paint, rotten wood, and damaged floors, were identified. Respondents generally supported modernization but had reservations about the original design, citing cost, limited bedrooms, timber quality, and a preference for brick construction. A proposed solution was to preserve distinctive features while modernizing designs, potentially incorporating bricks, expanding the number of bedrooms, and ensuring the use of high-quality timber. The research seeks to strike a balance between cultural preservation and modernization, addressing challenges faced by FELCRA timber houses in planned settlements.

Acknowledgement

The authors would like to acknowledge the cooperation of the residents of FELCRA Changkat Lada, Perak, and Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia for providing supporting data needed for this research.

Conflict of Interest

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Nur Adilah Jama, Rohaslinda Ramele Ramli, **data collection:** Nur Adilah Jama; **analysis and interpretation of results:** Nur Adilah Jama; **draft manuscript preparation:** Nur Adilah Jama, Rohaslinda Ramele Ramli. All authors reviewed the results and approved the final version of the manuscript.

References

- Askari, K. B., Amir, H., & Dola. (2009). Influence of building facade visual element on its historical image, case of Kuala Ahmad, S., Yetti, A. E., Ali, N. E., Sanusi, M. S., & Samsudin, P. Y. (2022). Adaptation of traditional Malay house design towards housing comfort and satisfaction. *Malaysian Journal of Society and Space*, 18(3). <https://doi.org/10.17576/geo-2022-1803-14>
- Bahardin, N. F., Baharuddin, M. N., Azwan Azman, M. A., Khairul, M., Hafiz Bakhari, A., Sabrizaa, M., & Rashid, A. (2022). Assessing A Condition Of Timber Defect For Perak Traditional Malay's Architecture: An Initial Step To Creating Entity Relationship (Er) Model In Databased Management System (Dbms). In *Journal of the Malaysian Institute of Planners* (Vol. 20).
- Fadzil, M., Rashid, A., Muhamad, A. K., Rashid, K., Ahmad, A. L., Azrul, M., & Azman, A. (2021). Formulation Of A Malaysia Modern Rural Development Framework: Synergising Rural For Change. In *Journal of the Malaysian Institute of Planners* (Vol. 19).
- Ghapar Othman, A., Hj Ali, K., Yin, I., Mou Leong, T., & Hanisah Mohd Jizan, N. (2021). Urbanization and Land Use Changes in Rural Town. In *Journal of the Malaysian Institute of Planners VOLUME* (Vol. 19). Guar Cempedak.
- Harun, N. Z., & Jaffar, N. (2018). Enhancement for Rural Livability: Changes and impacts on the traditional Malay settlement. *Environment-Behaviour Proceedings Journal*, 3(9), 127. <https://doi.org/10.21834/e-bpj.v3i9.1544>
- Ju, S. R., Zaki, S. A., & Choi, Y. K. (2011). Contextual modernization; New town planning in Petaling Jaya, of Malaysia. *Journal of Asian Architecture and Building Engineering*, 10(1), 93-100. <https://doi.org/10.3130/jaabe.10.93>
- Muwaffaq, U. A. (2020). *Housing: Concept, Definition and Components*.
- Ngah, I., Preston, D., & Azman, N. (2010). *Current Planning Priorities In Rural Villages In Malaysia Learning From The New Malaysian Village Action Plans*.

- Nur, Y., Yaman, A., Ramele, R., & Ariff, R. M. (2021). *Modernization of Traditional Malay House in Heritage Village of Malacca*. In *Built Environment Journal* (Vol. 18, Issue 1).
- Official Portal of FELCRA (2023). Property Development, Land Management and Construction. <https://felcra.com.my/business-pillars/property-development-land-management-and-construction/>
- Porteous, J., & Kermani, A. (2007). *STRUCTURAL TIMBER DESIGN to Eurocode 5*.
- Seo, R. J., & Omar, S. (2018). *A Typology of Modern Housing in Malaysia*.
- Wong, S. Y., Low, W. W., Wong, K. S., & Kan, F. K. (2022). Sustainable Rural Housing Development in Sarawak: A Preliminary Conceptual Framework. *IOP Conference Series: Earth and Environmental Science*, 1067(1). <https://doi.org/10.1088/1755-1315/1067/1/012078>
- Yaman, Y. N. A., Ramele, R., & Muhamadariff, R. (2018). *The Alteration on The Spatial Elements of Traditional Malay House At Heritage Village of Malacca*.
- Zaharani, N. F., & Akhmetova, E. (2021). Islam, Modernity and the Concept of Progress (Islam, Pemodenan dan Konsep Kemajuan). *Journal of Islam in Asia (E-ISSN 2289-8077)*, 18(3), 205–230. <https://doi.org/10.31436/jia.v18i3.1087>