

Sustainable Development of Traditional Settlement Space of Thai People in Northwest Vietnam: A Case Study of Vang Pheo Village

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Abstract The traditional settlement space of the Thai ethnic group in the Northwestern region of Vietnam embodies distinctive cultural values, spatial organization, and architectural features, which have been shaped through a long process of adaptation to natural conditions and indigenous social structures. However, these traditional villages are currently facing significant challenges posed by modernization, urbanization, and uncontrolled tourism development. This study focuses on analyzing the development process of traditional Thai settlements in the Northwest, taking Vang Pheo village (Lai Chau Province) as a representative case study. By employing an interdisciplinary approach that integrates field surveys, spatial analysis, stakeholder interviews, and comparative studies with similar models, the research clarifies strategies for preserving heritage values while meeting modern living needs. The findings highlight key factors essential for balancing preservation and development, including community participation, the maintenance of cultural identity, integration with the natural environment, and the establishment of appropriate policies. On this basis, the paper proposes a sustainable spatial development model that harmonizes tradition and innovation, thereby contributing to orientation for policy makers, planners, and local communities.

Keywords Traditional Settlement Space, Thai People in Northwest Vietnam, Sustainable Development, Rural Spatial Planning, Cultural Heritage, Vang Pheo Village, Modern Adaptation

1. Introduction

The Northwestern region of Vietnam is a distinctive mountainous area characterized by high elevations, deeply dissected terrain, narrow valleys, and a dense network of rivers and streams. Its climate is classified as subtropical monsoon, with cold, dry winters and prolonged rainy seasons, directly shaping the living conditions and spatial organization of indigenous communities [1]. Factors such as steep slopes, landslide risks, and limited accessibility have given rise to unique adaptive models in village planning and architecture, particularly among the Thai ethnic group—one of the largest ethnic communities in the region with a distinct cultural identity [2].

The Thai people traditionally reside in clustered villages situated along streams or at the foothills of mountains, with stilt houses designed flexibly to accommodate the terrain and climate. Their settlement

spaces not only illustrate ecological adaptability but also profoundly embody cultural, social, and spiritual values. However, in the contemporary context, traditional villages such as Vang Pheo (Phong Tho Commune, Lai Chau Province) are facing growing challenges from infrastructure development, tourism, urbanization, and climate change. These forces are reshaping spatial structures, disrupting local ecosystems, and threatening the sustainability of traditional settlement models [3].

The study, conservation, and sustainable development of traditional settlement spaces in the modern context is not merely a matter of preserving cultural heritage but is also closely tied to socio-economic development and climate change adaptation. In response to this demand, the present research seeks to identify the distinctive values, challenges, and potentials of traditional Thai settlements, thereby proposing a sustainable development model suitable for local conditions.

The objective of this study is to establish an analytical framework and propose a sustainable development model for traditional Thai settlements through the case study of Vang Pheo village. Based on the outlined context and objectives, the study seeks to address the following research questions:

1. What are the structural and organizational characteristics of the traditional Thai settlement in Vang Pheo village?
2. What factors are influencing changes in the traditional settlement space?
3. What principles and solutions are necessary to ensure the sustainable development of the traditional settlement space in Vang Pheo?

By employing an interdisciplinary approach and a case study analysis, this research aspires to provide a practical framework for balancing the preservation of indigenous cultural heritage with sustainable development in the spatial planning of ethnic minority communities in Northwestern Vietnam.

2. Review of literature

2.1. Traditional Settlement Spaces of Ethnic Minority Communities: Insights from Domestic and International Studies

In recent years, the conservation and sustainable development of traditional settlement spaces of ethnic minority communities have attracted considerable attention from the academic community. Related studies have primarily focused on three aspects: (1) the relationship between natural and cultural conditions and the organization of living spaces; (2) architectural characteristics and village structures; and (3) the role of indigenous architecture in contemporary sustainable development.

(1) Impacts of natural and cultural factors on traditional settlement spaces: Traditional settlement spaces of ethnic minority groups, particularly in Northern Vietnam, have been shaped through long-term interactions between local communities, natural conditions, and indigenous cultural values. Factors such as steep terrain, harsh climate, and diverse ecosystems directly influence village organization, housing forms, and communal spaces.

Numerous domestic studies emphasize the close relationship between traditional architecture and its adaptability to terrain and climate, while also highlighting the central role of community participation in maintaining spatial identity. For the Thai people in the Northwest, the model of “streamside villages, stilt houses, wet rice fields, and upland cultivation” represents the harmony between nature and social organization [1,4,5,6]. Traditional residential spaces reflect both ecological and spiritual-cultural elements of the community, such as the layout of villages along water axes, the orientation of houses in accordance with customary practices, and the division of interior spaces based on gender roles and functional uses [7].

At the international level, Rapoport [8] asserted that residential spaces are the result of complex interactions between climate, available materials, and social structures; Knapp [9] viewed traditional Southeast Asian villages as “cultural ecosystems,” where ritual elements, community relations, and ethnic identities are closely integrated into the structure of living spaces.

In the context of modernization, traditional village spaces are under increasing pressure from rural urbanization, tourism development, and climate change. These factors have transformed settlement structures, disrupted cultural continuity, and threatened the sustainability of traditional settlement models.

In Vietnam, Do [10] noted that the trend of replacing traditional housing with concrete structures, together with changes in village organization under the influence of tourism development, has significantly diminished the indigenous characteristics of living spaces. Factors such as post-disaster resettlement, infrastructure investment through the New Rural Development Program, and the commercialization of cultural heritage have also contributed to the distortion of traditional spatial structures [3]. More recently, Nguyen [11] observed that newly built houses in the Northern mountains diverge significantly in form, materials, and spatial organization from traditional models. This not only leads to changes in village layout and housing areas but also causes the loss of cultural values associated with living spaces.

At the regional level, studies in Thailand and Laos have similarly reported the phenomenon of “loss of traditional space” caused by uncontrolled tourism development. This has led to cultural homogenization and weakened the connections between local communities and their original

living environment connections that once formed the foundation of distinctive spatial structures in ethnic minority villages [12,13].

(2) Vernacular Architecture and Sustainable Development in the Contemporary Context

In the context of globalization, urbanization and climate change, the role of vernacular architecture in sustainable development is increasingly emphasized.

Recent studies have shown that the spatial organization principles of traditional settlements not only possess heritage value but also offer feasible solutions to contemporary challenges. Fu, Zhou, and Deng [14] analyzed the relationship between spatial structure, cultural factors, and natural conditions in ancient villages in Hunan, China, demonstrating that traditional architecture embodies the accumulation of local knowledge in environmental adaptation. Lee, Cheon, and Han [15] investigated modernized Hanok housing models in Korea and proposed quantitative criteria for balancing vernacular identity with comfort in contemporary living conditions. Complementing this argument, Fernandes et al. [16,17] conducted comparative analyses of vernacular architecture in southern Portugal and northern Egypt, emphasizing the role of local materials, traditional construction techniques, and climate adaptation in shaping sustainable living environments. Collectively, these studies concur that vernacular architecture is not only an expression of culture but also a foundation for architectural models that respond to climate change and foster long-term sustainability.

In the planning and conservation of traditional villages, studies focus on a sustainable development approach—moving beyond static preservation to emphasize flexible adaptation to modern contexts. UNESCO [18] highlighted the central role of local communities in maintaining and managing living spaces, while encouraging the promotion of ecotourism and community-based tourism rooted in cultural heritage and vernacular spatial structures. Salazar [12] and Harrison [13] proposed methods for integrating traditional spaces into contemporary rural development planning, while also warning of the risk of cultural erosion if genuine community participation is lacking. In the same spirit, UNESCO [18] and the United Nations [19] affirmed that culture-based development is the key to achieving sustainability, particularly in areas with distinct ethnic identities.

In Vietnam, Le & Nguyen [5] and Bui [20] proposed an integrated conservation framework between tangible and intangible elements, combining spatial planning, ecological design and community governance models to ensure long-term sustainable development. This approach aligns with the United Nations Sustainable Development Goal 11 (SDG 11), which aims to build sustainable cities and communities [19].

(3) Regarding the architectural characteristics and

village organization of the Thai people in the Northwest of Vietnam: Among Vietnam's ethnic minority communities, the Thai are one of the groups with a distinctive and relatively stable spatial organization of settlements. Studies by Pham & Tran [2] and Bui [20] have highlighted key features of Thai architecture and village structure in the Northwest, such as the preference for locations along streams, the use of elevated stilt houses adapted to topography and hydrological conditions, and the maintenance of strong community cohesion through clustered village layouts. A seminal work by Vuong Trung [21] provided a systematic study of traditional Thai stilt houses before 1954. This research described in detail the use of indigenous materials (wood, bamboo, rattan, thatch), traditional construction techniques, and the interior spatial organization closely tied to cultural and social life. It has supplied essential documentation for the restoration and preservation of traditional architecture, while also demonstrating the role of housing as a cultural symbol where both tangible and intangible elements of Thai community life converge.

2.2. Research Gap

A review of existing studies shows that the preservation and development of traditional settlement spaces cannot be separated from cultural factors and local contexts. However, existing studies on the traditional settlement spaces of the Thai ethnic group in Vietnam's Northwest region have primarily focused on architectural descriptions, cultural values, or heritage conservation, while there remains a notable lack of research approaching these settlements as integrated systems that link spatial structure, livelihoods, and sustainable development.

In this context, Vang Pheo, a Thai village in Northwestern Vietnam that has preserved a relatively intact traditional structure while also developing a community-based tourism model - serves as a representative case study. The novelty of this study lies in (i) applying an integrated spatial-cultural-livelihoods approach to the traditional settlement spaces of the Thai ethnic group; (ii) shifting from purely descriptive analysis toward proposing spatial development orientations aligned with sustainability principles and the contemporary socio-economic context; and (iii) providing empirical evidence through an in-depth case study of Vang Pheo village.

3. Theoretical Framework

The theoretical foundation of this study rests on three principal pillars: Traditional Architecture Theory (Rapoport, 1969), Sustainable Development Theory (UNESCO, 2011; United Nations, 2015; Sachs, 2015),

and Cultural-Spatial Theory (Knapp, 2003). By integrating these approaches, the research achieves a comprehensive framework for analyzing the processes of formation and transformation, as well as the sustainable development potential, of traditional settlement spaces within ethnic minority communities. This perspective is particularly significant in the context of mounting pressures from modernization, tourism, and climate change.

3.1. Traditional Architecture Theory

Traditional architecture theory views vernacular architecture not merely as a physical product designed to meet housing needs, but as a reflection of the social, cultural, and ecological values specific to each community within its local context. According to Rapoport [8], traditional housing embodies intangible elements such as customary practices, community structures, and belief systems, rather than serving simply as a passive response to climate or topography. Oliver [22] further emphasized that vernacular architecture often develops over long periods of time, is closely tied to livelihoods and social structures, and demonstrates a high capacity for adaptation to natural environments.

In the context of ethnic minority groups in Northern Vietnam, Knapp [23] and Bao et al. [24] also observed that the spatial settlement model and housing architecture reflect the deep interrelationship between humans, nature, and spirituality. A prominent example is the Thai model of “streamside villages - stilt houses - wet rice fields - upland cultivation,” which not only provides an efficient framework for organizing production and living space but also represents indigenous knowledge and the unique cultural–environmental connections of the community.

3.2. Sustainable Development Theory

Sustainable development theory provides a framework for balancing environmental conservation, economic growth, and social stability, especially important for ethnic minority communities under the pressure of modernization. According to the Brundtland Report, sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [25]. In the context of traditional spatial planning, this theory stresses the integration of culture into development, recognizing culture as the fourth pillar alongside economy, society, and environment [18,19].

Housing and villages are not only physical places of residence but also repositories of indigenous knowledge, customs, and social organization. Instead of preserving the status quo in the direction of “museumization”, sustainable development proposes a flexible approach, adapting to new contexts and involving local communities

[12,22]. This perspective is particularly relevant for traditional settlement spaces under transformation pressures in ethnic minority areas.

3.3. Cultural Spatial Theory

Cultural spatial theory emphasizes the two-way relationship between culture and spatial organization, arguing that living spaces are not only shaped by physical factors but also reflect systems of symbols, customs, and social relations. As Lefebvre [26] posited, space is a social product - a medium through which power, memory, and community identity are continually reproduced over time. In ethnic minority villages, residential space is deeply intertwined with rituals, spirituality, and social structures. Elements such as houses, village courtyards, water sources, and village boundaries all carry profound cultural significance. Low [27] further argued that the preservation of traditional spaces should be approached as a holistic socio-cultural entity. This theory helps explain the differences between village models and spatial changes under the impact of urbanization and tourism [1,5]. Space in this approach is not just a place to live, but a place to preserve memories, identities, and connect communities.

4. Research Methodology

This study employs a qualitative methodology with an interdisciplinary approach, combining field surveys, spatial analysis, secondary data research, and SWOT analysis. The aim is to explore the relationship between indigenous culture and the traditional settlement space of the Thai people in Vang Pheo Village (Phong Thổ Commune, Lai Châu Province), thereby proposing conservation strategies aligned with sustainable development objectives.

4.1. Research Approach

The research approach is grounded in a theoretical framework that integrates traditional architecture theory (Rapoport [8]; Oliver [22]), sustainable development theory (UNESCO [18]; United Nations [19]), and cultural–spatial theory (Knapp [9]; Bao et al., [24]). This analytical framework guides the identification of cultural, environmental, and community structural factors that influence the organization of traditional village spaces.

4.2. Data Collection Methods

Data for this study was collected through three primary methods. First, field surveys were conducted to examine the overall spatial layout of the village, including mapping spatial distribution, documenting housing architecture, household compounds, and their connections with natural

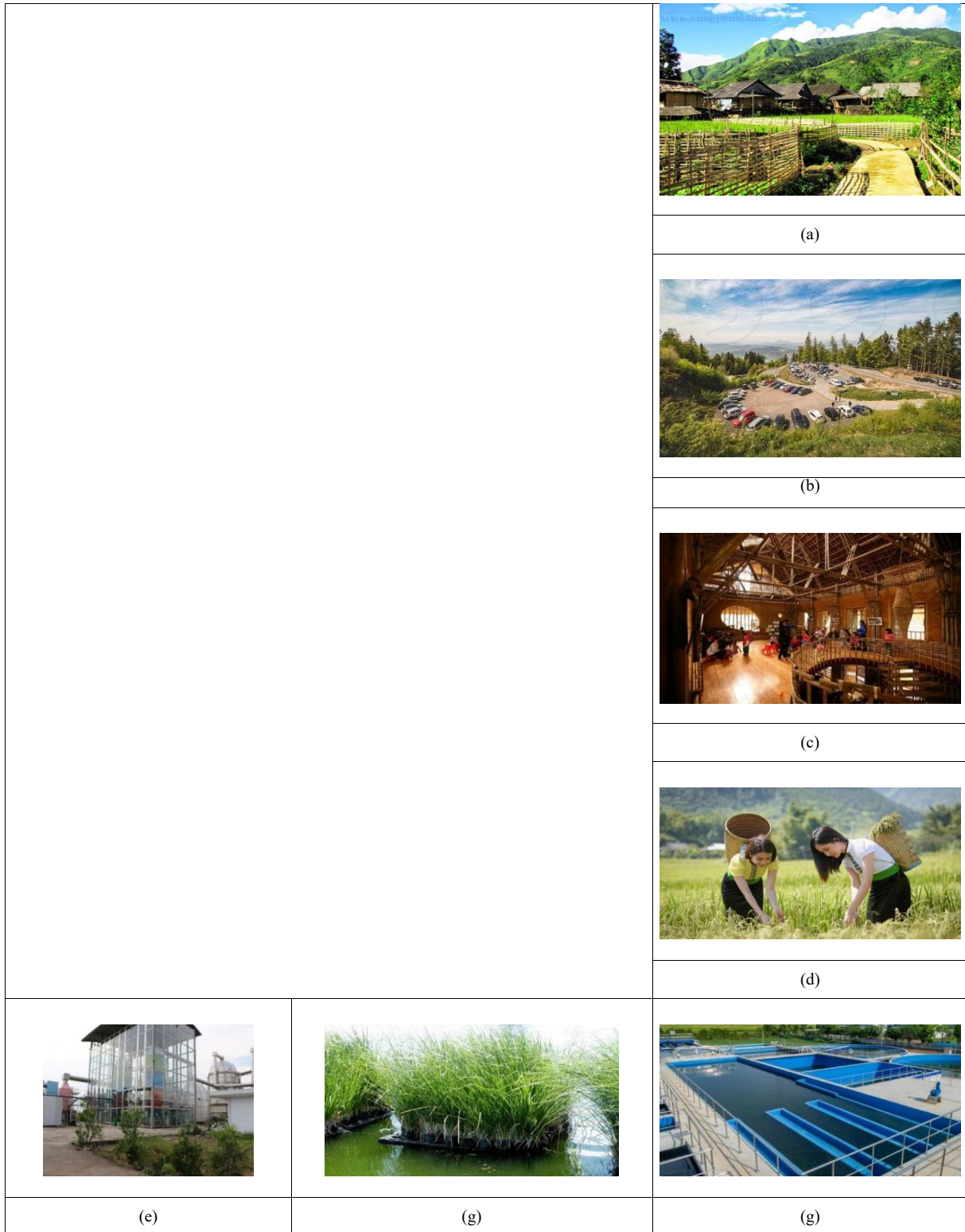


Figure 15. Proposed orientation for organizing public spaces in Vang Pheo village and illustrative images (a) Internal village traffic network (b) Reception space and parking area (c) Community festival space (d) Agricultural experience site (e) Waste management and environmental protection (g) Drainage and wastewater treatment system

8. Conclusions and Recommendations

8.1. Conclusions

The traditional settlement space of the Thai ethnic community in the Northwestern region of Vietnam represents a form of living heritage, reflecting the close interrelationship between people, culture, and the natural environment. Findings from the survey and analysis at Vang Pheo village (Lai Chau province) indicate that the preservation and development of this space require an integrated and flexible strategy, both respecting cultural identity and adapting to the requirements of contemporary life and the challenges of climate change. The proposed sustainable development model not only seeks to maintain village structures, traditional architecture, and intangible cultural values, but also introduces a new approach to creating livelihoods, improving the quality of life and promoting sustainable community tourism. At the heart of this process lies active community participation, multi-sectoral collaboration, and a supportive institutional framework to ensure continuity, feasibility, and long-term adaptability.

The key orientations include:

- Conserving traditional space and architecture combined with technical innovation to improve the quality and safety of different works.
- Developing sustainable community-based tourism based on the rational use of intangible cultural values.
- Protecting the environment and ecological landscape in connection with the reasonable management of natural resources.
- Strengthening interdisciplinary cooperation and mobilizing resources from stakeholders.
- Applying technology in promoting, managing and monitoring the development process.

From an academic perspective, this study contributes to the body of knowledge on the preservation of living heritage and the development of traditional settlements in the mountainous region of Northwest Vietnam, while also proposing an integrated framework that can be applied to other indigenous communities with similar conditions. From a practical perspective, the proposed solutions can support policymakers, development organizations, and local communities in orienting conservation–development programs toward sustainability and long-term adaptability.

8.2. Recommendations

For policymakers and local authorities

- Developing programs for the preservation of traditional villages that are harmoniously integrated with local economic and tourism development strategies.

- Improving the legal framework and financial support mechanisms to promote integrated conservation models in ethnic minority areas.
- Prioritizing the integration of cultural conservation goals with policies on infrastructure development, poverty reduction and climate change response, ensuring consistency and sustainability.

For communities and social organizations

- Establishing and strengthening self-governing institutions (such as village councils, conservation groups, youth and women’s associations) to enhance the community’s leading role in planning, monitoring, and operating development models.
- Encouraging the preservation and transmission of indigenous knowledge, the revival of traditional festivals, and the organization of community spaces based on traditional forms to ensure the continuity of living culture.

For researchers, training institutions, and international organizations

- Promoting research, technical consultancy, and support for the implementation of on-site conservation-development models, particularly those with strong potential for replication.
- Collaborating in designing innovative housing prototypes and developing digital tools (GIS, VR, 3D, etc.) for the documentation, restoration, and promotion of traditional architectural heritage.

For technology applications and communication

- Utilizing digital technology platforms (social networks, websites, digital maps, etc.) to promote village images, tourism products, and indigenous knowledge, in order to expand market access.
- Developing a comprehensive digital database on traditional architecture, culture, and landscapes to simultaneously serve conservation work and sustainable tourism development.

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