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Improving Thai Ethnic Residential Spaces to Develop Sustainable Community-Based Tourism: A Case Study of the Northwest Region of Vietnam

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Abstract In the Northwest region of Vietnam, the development of community tourism is currently negatively affecting the housing space of the Thai ethnic group as well as the preservation of traditional indigenous cultural and architectural values because people are renovating and expanding their housing space to provide services and accommodation for tourists. Balancing the preservation of traditional cultural and architectural values and the development of community tourism is one of the important challenges. Therefore, the study focuses on determining the value of traditional architecture, thereby proposing solutions to organize the housing space of the Thai ethnic group in the direction of using traditional architectural values to meet the needs of community tourism development. This study provides a comprehensive understanding of the spatial structure characteristics of housing at all three levels, including housing space, housing campus space and public space of the village. Primary and secondary data were collected through field survey methods such as measurement, recording, drawing and photography; the inheritance method; surveying the needs of residents and tourists using the sociological investigation method in the form of questionnaires. Data were also processed with synthesis, statistics, analysis, comparison and contrast methods.

Keywords Traditional Residential Spaces, Village Spatial Configuration, Thai Ethnic Group, Community-Based Tourism

1. Introduction

According to the World Tourism Organization (UNWTO), sustainable tourism is the development of tourism activities to meet the current needs of tourists and local people while still paying attention to the preservation and restoration of resources for the development of tourism activities in the future. From there, it can be understood that sustainable community tourism development is the process of tourism development associated with economic benefits as well as the responsibility to participate in management, the responsibility to preserve and maintain traditional culture, and local resources of local people and communities, ensuring both meeting the needs of tourists and ensuring the preservation and development of tourism in the future.

The area of the Northwest region of Vietnam covers about 50,670.337 square kilometers, including 6 provinces of Hoa Binh, Son La, Dien Bien, Lai Chau, Lao Cai and Yen Bai with 21 ethnic minorities. The area's population in 2022 was about 5 million, and approximately 25% of them were the Thai ethnic people (over 1.2 million). The Northwest is a place that has a lot of magnificent

landscapes, a clean natural environment, and many natural reserves with diverse and abundant flora and fauna. Besides that, this region also has large and diverse cultural spaces with many traditional cultural values in terms of daily living activities (such as eating, wearing, music, dances, customs, and festivals), housing architecture, village spatial structure and traditional production activities (e.g. terraced fields). These things make the Northwest one of the most famous and extraordinary tourist attractions. In 2018 (before the COVID-19 pandemic), the number of tourists visiting this region was estimated at 20.2 million, of which the number of international visitors reached 1.9 million [1]. This is contributing significantly to the development of the local economy. However, besides the economic benefits, the development of community-based tourism brings about a lot of significant challenges, such as environmental pollution, decreased traditional cultural values, especially traditional housing architecture and village space structures, which have been increasingly disrupted [2, 3, 4, 5, 6]. Having more tourists has led to a larger need for residential and cultural spaces; moreover, visitors also want to have much more experience in daily living activities such as eating, accommodation, entertainment and other cultural activities in the same houses or spaces with local people [5]. These have led to the quickly increasing number of arbitrary construction, expansion and renovation activities of traditional houses and other residential spaces. It is important that such traditional cultural and architectural values need to be preserved under the pressures of tourism and economic development [7]. Obviously, this is very much contingent on the participation of related stakeholders such as local government and community in conservation and tourism due to a reciprocal relationship between the system of values and humans living inside [8, 9, 10].

Renovation of traditional residential spatial settings in ethnic villages to scale up community-based tourism in Vietnam in general and the Thai ethnic in the Northwest, in particular, has not yet received appropriate attention. In order to fill the research gaps, the purpose of the present study is twofold: (1) it seeks to better understand outstanding characteristics of the Thai ethnic group's traditional residential spaces, and (2) to propose directions to organize and restructure the residential space for sustainable community-based tourism but still preserve the traditional values with considering local inhabitants' desires and tourists' demands in the Vietnam Northwest.

To solve the above existing problems, the research paper starts from the overall work of reorganizing the residential space to meet tourism services, and the tool can be in the existing traditional village space structure, adding tourism service functions and arranging tourism service functions between production space products and community living space (at the level of village space); adding and rearranging the house analysis space to serve tourism (at the level of identification space); arranging the interior space in the house (at the level of indoor space). From there, it helps to create a living environment, eating, staying, living and producing for Thai people to meet community tourism services.

The study also focuses on exploiting the traditional cultural and architectural values of the Thai ethnic village in developing community tourism. It focuses on the following values: village spatial structure; campus spatial structure; the spatial and architectural forms of houses; construction structure and local materials; cultural lifestyle, customs; living environment and natural ecological landscape.

The study also introduces the concept of adaptive reuse of traditional houses for community tourism, which is the conversion of the purpose of using houses from the function of eating, living and activities of the people to combining with the purpose of serving community tourism to develop livelihoods, while preserving and conserving traditional indigenous cultural values.

To achieve these objectives, the study used both questionnaires and field surveys to collect data. Although this study focused on the specific context of the Thai ethnic group in Vietnam Northwest, it is still expected that its findings might be useful for policymakers and architects to organize and restructure the residential spaces in other similar contexts. Therefore, it is believed that this study will considerably contribute to the body of knowledge on the preservation of cultural and architectural values of traditional residential spaces for ethnic minorities in general.

In addition to the two sociological investigation methods through questionnaires and field surveys mentioned above, the study also used the document analysis method to analyze and evaluate scientific arguments on theory and practical situations as well as published research results to make recommendations for objective research, avoiding duplication, thereby finding gaps for research as well as raising questions for research. This method also helped to inherit secondary data and documents from previous research, thereby serving as a basis for research proposals. Document analysis was carried out through the following 3 steps: 1) Collecting and synthesizing relevant documents; 2) Analyzing and evaluating documents; 3) Using data and documents in research.

2. Literature Review

Although in the 1970s tourism was seen as a way to promote local economic development [8], the definitions of community-based tourism, cultural tourism, and ethnic tourism emerged in the literature in the 1980s as tourism activities in which local communities participate, occurring on their lands, and based on their cultural heritage and natural attractions and assets [11, 12]. The literature has been paying much more attention to community-based tourism from different perspectives, such as models or definitions of community-based tourism [12, 13, 14, 15],

community participation [16, 17], the relationship between local factors and community-based tourism [18, 19], influential factors, successful factors and challenges to community-based tourism [20, 21, 22, 23, 24, 37].

Residential spaces are understood as a combination of spaces serving human living functions such as eating spaces, accommodation spaces, sports, cultural and spiritual spaces and production spaces, etc. Simultaneously, the structure of residential space can also be divided into different spatial levels, including (1) hamlets, villages, production and farming spaces, (2) house precinct spaces, and finally (3) housing spaces. Until now, there have been a few studies on the ethnic minorities' residential spaces in Vietnam at different levels and from various perspectives. At the housing spatial level, Tung [25] has studied, categorized and introduced the various kinds of traditional houses of the ethnic minorities, including the Thai group in the Northwest. Additionally, Van [26] focused on investigating and introducing the space layout and architectural formations of traditional houses of the Thai people in the Mai Chau district, Hoa Binh – one province of the Northwest. Trong [27] also summarized the spatial structure of housing of both the Black Thai and the White Thai ethnic groups. Bao [28] studied the characteristics of traditional Thai houses, identifying the differences between the traditional houses of the Black Thai group and the traditional houses of the White Thai group. Cuong PH [29] conducted a study on the transformation of traditional Thai stilt house architecture in Yen Bai province in the Northwest region. Bao [28] also conducted a study on the development of community tourism in Vang Pheo ancient village in Lai Chau province - a province with many Thai people living in the Northwest region, as well as the transformation of traditional Thai stilt houses here in the process of tourism development. It can be said that there have been very few studies at the village spatial level; an exception for the study by Tru [30] studied and introduced the different architectural models of traditional ethnic hamlets and villages across Vietnam.

However, there have been only a few previous studies from the perspective of organizing and restructuring residential spatial settings of the local community to develop community-based tourism.

There have been a few studies on the same topic in other countries such as China, Nepal, Thailand, and Indonesia. From the perspective of housing renovation, Mai et al. [31] and Oranratmanee [32] focused mainly on the re-utilizing spatial layout solutions in renovating traditional houses to promote community-based tourism in Jiaju, Tibetan village and Northern Thailand. In Nepal, Lama [33] focused on assessing the difficulties and challenges in implementing homestays to develop community-based tourism. The Association of Southeast Asian Nations (ASEAN) has developed a set of standards to standardize homestays and set a basic minimum standard for ASEAN countries in building homestays for community tourism [34]. In order to develop the tourism sector, Atiek Suprapti et al. [35] focused on the spatial concepts of cultural heritage villages formed by economic, cultural and religious factors. At the housing spatial level, Hessari and Chegeni [7] focused on identifying the differences between structural patterns and spatial configuration in traditional housing in Iran. At the housing campus level, Naseri and Farsani [36] focused on analyzing and evaluating the geometry and proportions used in the courtyards of traditional housing campuses in Iran.

In general, Vietnamese authors have conducted in-depth studies on the architectural forms, characteristics and cultural values in the organization of traditional residential spaces of the Thai people in the Northwest. However, there has been no research on solutions for organizing residential spaces with 3 spatial levels, from village spaces to school and housing spaces, in order to develop sustainable community tourism on the basis of preserving and promoting the cultural values of the Thai people in the Northwest. The studies of some Asian authors have also mentioned some solutions to reorganize the space of traditional houses into homestays serving tourists, and solutions to promote tourism with the participation of the community. However, the village spaces and the spaces around the houses have not been mentioned. In addition, the compatibility between tourists' needs and local people's desires in changing and preserving their residential spaces has not been addressed in studies in Vietnam as well as in Asian countries. Therefore, there has not been a study on solutions to reorganize the residential space of the Thai ethnic group in Northwest Vietnam in a comprehensive and synchronous manner associated with sustainable community tourism development.

3. Research Methodology

3.1. Field Survey

The field survey was conducted in June and July 2023 in three Thai villages in the Northwest region, including Ngoang village (Lao Cai province); Vang Pheo village (Lai Chau province) and Men village (Dien Bien province). These villages were chosen due to their population, which still maintain high homogeneity with nearly 100% Thai ethnic people. Furthermore, these sites are among the most unique natural, historical and cultural relics, attracting a large number of tourists every year and representing three provinces that are suffering from the negative impact of tourism on the living space of Thai people. During the first survey trip, the research team conducted a direct observation to understand the overall spatial architecture of the villages. In subsequent trips, the research team visited all 288 houses in the three villages (Figure 1) to collect data about building architectural form, structure and materials, and the architectural layout of housing campuses. The data

collection techniques included measurement, documentation, sketches, and photography. Additionally, computer-aided design drawings were generated to accurately depict the architectural features of these villages. Furthermore, the collected data were systematically organized to identify and classify the traditional architectural and cultural values of the villages. When surveying the field of these 3 villages, due to the small perimeter of the villages and the convenience of observing from above along the mountain slopes, the research team used commonly available methods to directly observe and analyze the village space, combined with measurement techniques using electronic total stations, GNSS RTK machines, laser levelers and flycam cameras.

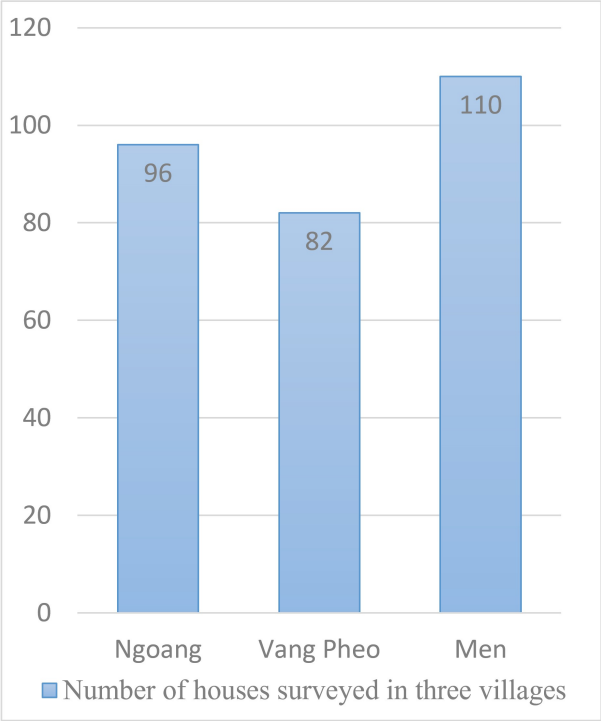

Figure 1. Number of surveyed houses

The field survey was carried out in 5 steps as follows: 1) Selecting 3 representative villages in 3 provinces in the research area; 2) Selecting appropriate tools, means and human resources to conduct the survey; 3) Conducting the field survey; 4) Deploying redrawing the current status of the project on the computer and process images taken in the field in the computer room; 5) Using the drawings and images in research and presenting the research report.

3.2. Questionnaire Survey

In this study, the data about the demands of tourists and the opinions of local inhabitants on residential spaces and community-based tourism were collected through a questionnaire survey. The content validity of the questionnaire's items was assessed by an expert panel. The questionnaire consisted of three main sections. The first section introduced the objectives of the research and assured confidentiality and anonymity. The second section consisted of the questions to collect the respondents' profiles. The third and fourth sections contained questions about the tourists or local inhabitants' opinions of "agreement" or "disagreement" on the statements. Before distributing the final questionnaire, a pilot study was conducted to test and refine the quality of the questionnaire.

The survey was carried out in June and July 2023 in three Thai villages in the Northwest region (also the locations chosen for the field survey mentioned above). The questionnaire survey was conducted directly using a random sampling technique. The first research survey sample included adults in these three villages, with questions asking for local people's opinions on living space and community tourism as well as the ability to serve community tourism. The second research survey sample included tourists who visited these villages during the survey period, with questions asking for opinions on tourists' needs. The surveyors randomly asked any visitors or local inhabitants they met during their survey walks. In the end, there was a total of 75 tourists and 156 local people participating in the survey. The demographics of the samples are presented in Figure 2 and Figure 3. In addition, the majority of local respondents (about 79.5%) were household heads and four out of 156 local respondents were employed in public agencies. This suggests the reliability and validity of the survey data.

Conducting interviews through questionnaires was carried out in 5 steps as follows: 1) Selecting a group of interviewees; 2) Developing a questionnaire; 3) Conducting interviews with groups of interviewees at the site; 4) Processing the results of the interview survey data using a computer; 5) Using the interview survey results in research.

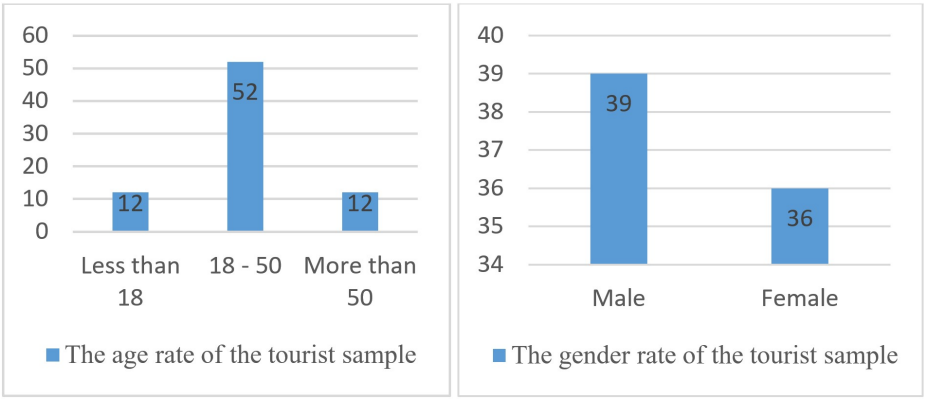

Figure 2. The demographic of the tourist sample

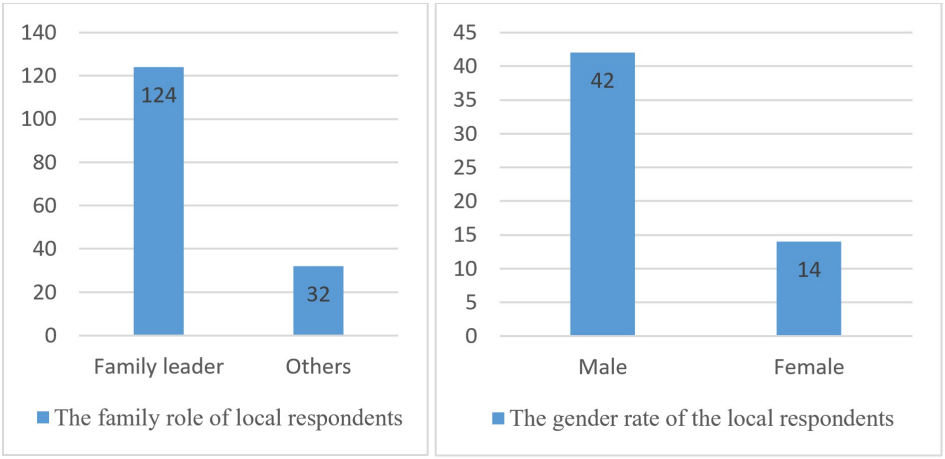

Figure 3. The demographic of the local respondent sample

4. Data Analysis Result and Discussion

4.1. Traditional Characteristics of Residential Space of the Thai Ethnic Group

The creation of the Thai ethnic minority's residential space in Vietnam is strongly influenced by topographic, climate and cultural factors [30]. Due to the Northwest region combining high mountains with small and narrow valleys along the banks of rivers and streams, the villages of the Thai ethnic minority are usually arranged in small, long residential clusters following the mountainsides and hillsides along the forest. Each village usually includes from 30 to 100 houses, cultural and spiritual land, wet rice land, upland fields for maize cultivation, forest land, livestock rearing lawns, cemetery land and a wharf to take water for the daily life of the whole village. The traffic structure in the village is based on the terrain and the location of the houses; so it curves freely with the dirt roads, including the roads to the village, the roads to the wet rice field, to the upland fields, to the cemetery, to the streams and to the village's water station (Figure 4). Along the paths to the streams or in the gardens, there are usually several small stilt houses standing on four columns and having 2 sloping, thatched roofs; inside there is an incense burner to worship the daughters-in-law's parents in the village. The cultivation spaces are often located on the border between the villages and the hilly forest areas and they also have different levels according to the topography. On the house premises, the spaces are also arranged according to the terrains; accordingly, the main house, and the front and back yards are often located in higher areas to avoid rainwater and flood, the outbuildings such as livestock barns and toilets are often located in lower areas. The main houses all face one direction, overlooking the stream, the fields, the valley and their backs to the hills.

Figure 4. A Thai village in Lai Chau province

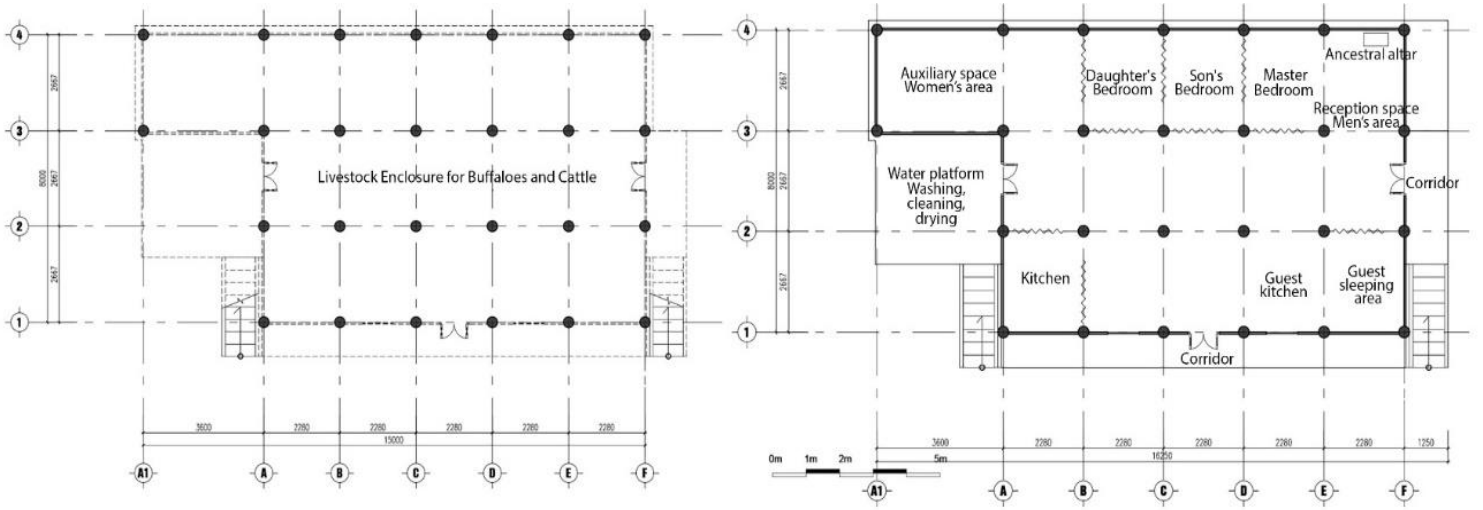

Figure 5a. Floor plan of Traditional Thai Ethnic Housing

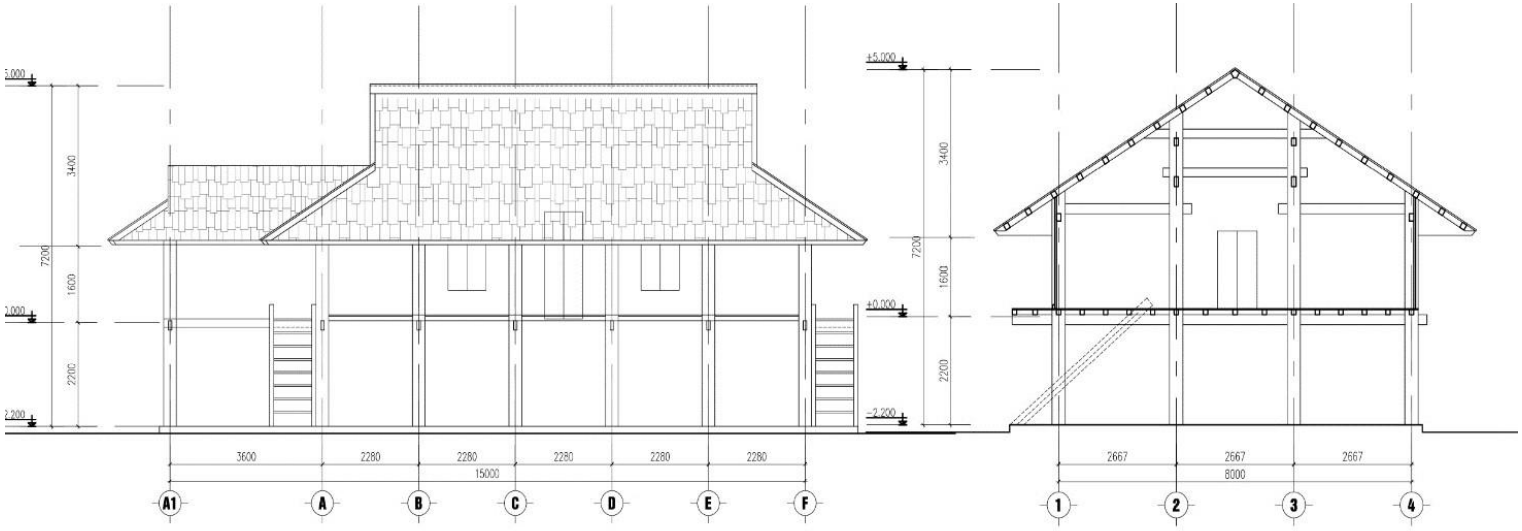

Figure 5b. Front Elevation and Section of Traditional Thai Ethnic House

Since the Northwest climate is tropical, wet in the rainy season, and cold in the winter, the traditional main houses of the Thai ethnic group are wooden stilt houses with a pillar base made of stone to resist moisture, coldness, and wind, against the harsh climate as well as against wild animals [27]. Such a house is covered by a five-layered, thatched roof, external walls made of wooden planks or bamboo and a wooden floor. The floor plan of the house has a rectangular shape; the stilt floor is used to keep livestock and store firewood and agricultural tools. The floor spatial layout is arranged into individual parts along the length of the house, including a common living space, common hallway spaces, the ancestral worship space and bedrooms. The common living space consists of the reception space, the main kitchen space located in the middle of the house for men and guests (called Tang quan), the kitchen and dining space, and the wet area (area for washing, drying, knitting, embroidery). The ancestral worship space is arranged right behind the reception space; to the right of the worship area is the guest bedroom, to the left is the homeowner's bedroom; next is the son and wife's bedroom; and finally is a girl's bedroom. Each traditional house usually has 3 rooms and two wings, 2 doors and 5 windows; spiritually, the total number of doors and windows in each house must be odd. The bedrooms are surrounded by bamboo or wooden panels and in front is a cloth curtain (Figure 5).

4.2. The Traditional Value Framework of Residential Spaces of the Thai Ethnic Group

Through the results of field surveys conducted in 2023, combined with studies on the residential space of the Thai ethnic group mentioned in the literature review, it is possible to identify the key traditional values of Thai ethnic villages on four methods of creation: (1) Architectural spaces and forms, (2) Building structure and materials; (3) Culture; and (4) Habitats and natural ecological landscape (Table 1) (Figure 6).

Table 1. The key traditional cultural and architectural values of Thai ethnic villages in the Northwest region

Creation methods	Spatial levels	Traditional architectural and cultural values
1) Creating architectural spaces and forms	Spatial setting of the village	- The village traffic structure is flexible, following the natural terrains; - All the houses in the village are facing the same direction, looking down at the valley where the landscape is spacious and panoramic and leaning against the hills and mountains; - Community cultural activities after the crops or holidays are usually held in a large area of land in the village or grazing cattle flat land or upland fields after harvesting the crop (at present, each village has a public cultural house); - The spaces of shifting cultivation and cultivation fields surrounding the village are the spaces connecting the villages with hills, mountains, and valleys.
	Spatial setting of the housing campus	- The houses are located on stilts in the middle of high and dry areas; - In front of and behind the stilt houses, there is a spacious yard, used as a drying place for agricultural products, funeral ceremonies, weddings, children's play or a place for people to do crafts such as knitting and embroidery in their leisure time; - The stilt floor is used to store firewood, raise chickens and ducks, buffaloes, cows, and farming tools (currently, the stilt floor is arranged as a warehouse, a toilet, a common place for children to play and a tourist reception place); - Timber trees and fruit trees are planted around the campus.
	Architectural space and form of the houses	- The floor space is clearly divided and coherent; the houses are divided into 3 parts along the vertical axis. The front part where the first staircase starts is the common space; the middle part is the traffic space; the innermost part is the private space, where the bedrooms are arranged. The common space is divided into two areas, the men's area - called "Tangguan" on the main stairs and the women's area - called "Tang chan" near the auxiliary stairs with a kitchen near the wet area extending to the outdoors to make it easy for food processing and preparing for cooking and the knitting and embroidery area for women; - The traditional Thai stilt house also has a fire stove where the elderly receive guests and it is located in the Tang quan area (for men). Thus, the traditional Thai stilt house usually has two fire stoves. - The houses on stilts have an odd number of compartments, usually 3-5 compartments, two wings.
		- The houses have two staircases; the stairs must be odd numbers; the main stairs at the front of the house go up to the "Tang chan" area for men and it has 7 steps (due to Thai beliefs that men have 7 souls). The secondary stairs at the end of the house go up to "Tang chan" area for women and it has 9 steps (due to Thai beliefs that women have 9 souls); - The shape of the floor plan and the roof are congruent rectangles. - Balustrades and bars or windowsills are decorated in motifs with bamboo or wooden slats crossed in an oval shape or a vertical bar cut in a very beautiful, serrated shape. - The total number of doors and windows must be odd. - The house has 4 flat slopes. - The height of the stilt floor is equal to the height of the house owner plus the height of one standing fist or two round fists of the owner.

Table 1 continued

2) Building structure and materials	Building structure and materials	- The houses on stilts are built using wooden truss sets on round or square wooden poles, resting on the stone pillars and then transferring the entire weight of the houses to the compacted ground. The sets are connected by very strong wooden beams and mortise and tenon joints. - The structure of the truss set has 4 columns to help divide the house space into 3 parts horizontally. - People build their houses mainly by hand, using the men labor in the village to help with the erection, and the women in the village to help with the cooking. Building a new house is usually fun and all villagers come together to participate in the construction as a communal job. - Houses on stilts are mainly made of wood, with wooden plank floors, wooden plank walls and thatched roofs. - All materials used to build houses such as wood, bamboo, cork, and paintings are locally available materials, friendly to the natural environment.
3) Creating culture	Culture	- Forming a community culture based on family and clan. - Their lifestyle based on the relationship between family and village community to serve as a basis for organizing residential spaces and building houses. - The house spaces are created based on their culture. - The spaces for worshiping parents and ancestors are arranged in two positions: The space for worshipping the man's - the house owner's parents and ancestors is arranged in the most solemn space of the house; Parents of the daughter-in-law - the host's wife are worshipped in the tent houses outside in the garden or gathered in a group of tents along the path down to the stream. - The architecture form and house decoration are also based on the traditional culture of the nation.
4) Creating habitats and natural ecological landscape	Habitats and natural ecological landscape	- The villages are a collection of one or more clans living together for a long time; - A village is a connecting space between family and community, connecting houses with production spaces, with water surface spaces, forest spaces and natural landscape spaces symbiotically to form the living environment; - The village spaces, the campus spaces and the houses have been created along with the undulating hills and mountains, the vegetation of the forest, and the fields combined with the water surface of rivers and streams, forming a natural landscape ecosystem.

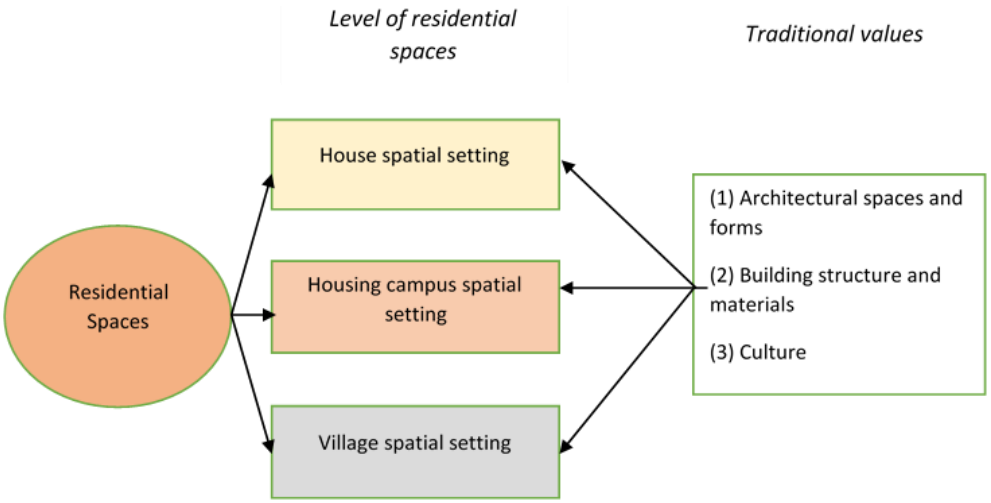

Figure 6. Framework of residential spaces and traditional values of the Thai ethnic group

4.3. Changes of the Residential Spatial Settings of the Thai Ethnic Group in the Northwest

Out of the 288 houses surveyed, only 79 houses (including 25 in Ngoang village, 24 in Vang Pheo village, and 30 in Men village) still keep mostly the original traditional architectural values (accounting for 27.4%). The 144 houses (equivalent to 50%) use new construction materials (e.g. tile, corrugated iron, fibrocement, concrete) for several elements such as, a wall, roof, floor, and column feet; but still maintain their traditional architectural forms and spaces. The remaining houses (about 22.6%) have been much changed in terms of architectural forms, construction materials, and functions of several internal spaces. For instance, some households still have the guest kitchen space, but it is no longer in use, just to be served as a traditional culture introduction to tourists; some have moved the kitchen space to the side of the main gable close to the wet area and built the toilets in the stilt floor. Finally, nearly 100% of houses surveyed are using new furniture instead of traditional ones; for example, rattan chairs and mats in the living spaces have been replaced by tables and chairs. The survey data showed that there seems an increasing trend in terms of the number of renovated houses over time in the three villages; except during the Covid-19 pandemic (2019-2022) in which the number of houses

renovated has sharply decreased. Notably, in the first six months of 2023, the number of houses renovated reached 56.

In addition to the houses that have been renovated in a positive way, inheriting and promoting the value of traditional housing, there are also some houses that have been transformed in a negative way, which threatens to erode the value of traditional architectural heritage and indirectly erode the traditional cultural values of the Thai people. In the 3 surveyed villages, the research team found that there have been many changes in the houses of the Thai people today in both positive and negative directions. The main trends and contents of changes are shown in Table 2. The basis of the assessment is based on whether or not the values of traditional Thai houses are preserved.

The proportion of houses in groups 1 and 2 accounts for less than 30% of the total number of houses in the villages and is gradually decreasing due to the high price of wood for making house frames (columns and rafters). Also due to the above reason, the number of houses in groups 4 and 5 tends to increase. This affects the living space and environment as well as the cultural values of traditional house architecture, resulting in the precious traditional values of the Thai ethnic group being distorted and lost. However, in villages that are developing tourism, group 3 houses account for a significant proportion to serve tourists and tend to increase, while group 5 houses account for a small proportion.

Regarding the current state of the housing campus spatial setting, there have been many changes. Accordingly, 100% of the households have moved their livestock barns into separate livestock cages outside the houses; 23% of the families have built a new house next to the traditional stilt house for their children when they get married. Furthermore, there have been about 15% of the households that have built homestay-styled guest houses, and service houses for servicing community-based tourism activities (Figures 7 & 8).

Table 2. Trends and content of changes in Thai housing

Group	Trend	Content of changes	Assessment
1	Maintaining the shape, proportions, and interior space of the house. Repairing and changing some parts of the house.	- Replacing the thatched roof with a local tiled roof. - Maintaining the kitchen area, replacing the wood stove with a gas stove or electric stove. - Raising the floor and using the floor space for new purposes (parking space, agricultural machinery, etc).	Positive
2	Maintaining the shape, proportion of the house, changing part of the interior space. Repairing, and changing some parts of the house not according to the original.	- Replacing the thatched roof with corrugated iron roof, fiber cement - Moving the kitchen to the gable of the house - Replacing the wall material. - Raising the floor, possibly enclosing part of the space in the stilt floor. - Reducing the number of traditional decorative motifs.	Relatively positive
3	Building a house using new materials in the shape and proportions of a traditional stilt house	- Using reinforced concrete frame. - Using a tiled roof. - Maintaining the main interior space traditionally. - Adding a toilet. - Changing decorative materials but still keeping traditional decorative motifs.	Positive neutral
4	Building a house using new materials but not following the ratio of a traditional stilt house	- Using a house frame made of reinforced concrete or steel. - Using a roof covered with mechanical tiles. - Enclosing all or part of the space in the stilt floor with bricks. - Changing the entire function of the stilt floor (receiving guests, family activities, arranging the kitchen, toilet area...). - Changing the decorative materials but still keeping some traditional decorative motifs.	Negative
5	Building houses using new materials in the style of Kinh people	- Houses built with bricks or reinforced concrete frames with bricks have 1 to 2 floors. - Roofs covered with tiles, corrugated iron or reinforced concrete flat roofs. - Completely changing the functional spaces in the house. - Changing the materials and decoration style.	Very negative

Figure 7. A cultural house of Thai ethnic group at Ban Vang Pheo, Lai Chau province

Figure 8. A new house built next to a traditional house in Vang Pheo village, Lai Chau province

At the village spatial level, many new residential spaces have been built in these three villages, such as cultural houses for the community (Figure 9), spaces for sightseeing, areas for photography along rivers or streams and farming and afforestation spaces. The traffic structure has undergone significant upgrades; many roads have been extended to new residential areas and the village roads have been widened; nearly 100% main road surface is renovated with concrete material to make it easier for people to travel.

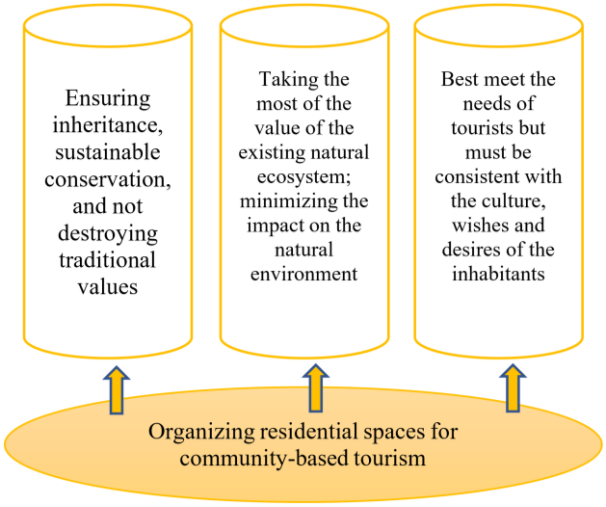

Figure 9. Key principles of Thai ethnic residential space organization and restructure

In summary, the residential spaces within the three Thai ethnic villages have been changed much or less as compared to their traditional characteristics in terms of village structure, housing space function, construction materials, architectural form and value. These changes have fragmentally happened with the main aim to be in order to meet individual local hosts' daily living needs; they were not done following any formal direction or guidelines. Besides that, within a few of the house campuses, new houses built (e.g. houses for their married children, homestay-styled guest houses, and service houses for community tourism activities) are potentially harmful to the structure and traditional spatial form of these house campuses. Moreover, upgrading and expanding village roads with concrete materials is also diminishing the natural beauty of the village landscape. It can be said that the current state of Thai ethnic residential spaces is increasingly losing its traditional cultural and architectural values. The result of investigating the number of changes indicates an increasing trend of house renovation activities in terms of function, space and material in the next years. This trend is necessary but appropriate mechanisms and guidelines to control and then eliminate the arbitrary, fragmentary renovation activities in the Thai ethnic villages should be established.

4.4. Demands of Tourists

In order to implement effective programs and solutions to boost the development of community-based tourism, it is important to get a better understanding of the demands of potential tourists in terms of cultural, historical, and architectural values [38]. The results of the data analysis are shown in Table 3. In general, the needs of tourists are quite diverse. With over 50% consensus on almost all listed needs of over 50% of tourists. However, a very small number, only 7%, of the tourists said that roads in the villages should be upgraded with concrete material. The data analysis result of both field and questionnaire surveys shows that there is a considerable difference between what has been renovated in the villages and the demands of tourists. It appears that the residential spatial settings of the Thai villages have not yet met the demands of tourists.

4.5. Opinions of Local Inhabitants

The development of sustainable community-based tourism depends heavily on the participation of the local inhabitants [5, 31]. It is not possible to effectively implement sustainable community-based tourism principles by excluding local people from tourism management processes [39]. Moreover, the residential spatial change in the villages is influenced by the evolving functions, needs, economic factors, and social life [40]. Therefore, in order to gain a holistic viewpoint in organizing and restructuring the village spatial settings, it is necessary to identify the opinions of local inhabitants

with respect to changing their traditional residential spaces as well as community-based tourism activities. The results of the data analysis are shown in Table 4.

Accordingly, there is a total of 114 families (equivalent to 40%) who expressed their desire to be involved in community-based tourism, but only a small number of Thai ethnic inhabitants (25%) allow tourists to live with them in their houses in order to be directly experienced daily living activities. Furthermore, there is a smaller number of respondents (15%) who answered that they are willing to upgrade their houses in order to improve the houses' indoor environment and provide better accommodation services for tourists. However, there was over a third of surveyed respondents (about 35%) who answered that building a new, separate house next to their traditional house is an acceptable solution to provide accommodation services for local hosts and give traditional houses to tourists. In addition, nearly 30% of the respondents said that they agree to renovate their houses, restructure housing spaces, change the function of some housing spaces in order to show/sell traditional products, perform cultural activities, and provide catering services based on the tourists' needs. However, these figures are now very different from the result of the field survey, when in fact only seven families (equivalent to 2.4%) have been involved in community tourism.

Table 3. The survey of the needs of tourists

No	Needs	Percentage of "Agreement"
1	Live in traditional houses in order to be directly experienced the local inhabitants' daily living activities	75%
2	Need separate, comfortable spaces to have a chance to be easily experienced the inhabitants' daily living activities but also ensure the private	70%
3	Having chances to be experienced and self-performance the inhabitant' producing activities, such as wet rice plan, terrace farming, breeding activities, forestry activities, making traditional products, etc.	100%
4	Having a certain small space located within the house campus or in the first floor of each the traditional house in order to show, sell local farming products and souvenir, performance traditional cultural activities and provide catering services	52%
5	Having a public cultural centre set up within or next to each village in order to show, sell local farming products, memorable things, performance traditional producing or cultural activities, provide community and catering services	75%
6	Having cultural activities and local experiences in nighttime	100%
7	Having some "check-in" or photo spot points set up scattered within each village	90%
8	Having some information desks/booths located scatteredly within each village in order to provide notices, share the village' traditional cultural information and re-charge electronic devices	95%
9	Having some public toilets set up scattered within each village	100%
10	Having a rent service of motorcycles or bicycles for easily seeing landscape within the villages	95%
11	Having a separate parking space next to the villages	100%
12	Traffic roads should be upgraded wider and by concrete material instead of dirt roads	7%
13	Like pristine ecological landscapes and silent living environment	100%

Table 4. Desires of local inhabitants

No	Actions	Percentage of "Agreement"
1	Wish to involve in community-based tourism	40%
2	Accepting tourist to live in your traditional house	20%
3	Upgrade your house to make its indoor environment more comfortable in order to provide accommodation services for tourists	15%
4	Renovate your house, restructure spaces, change function of some housing spaces in order to show/sell traditional products, performance cultural activities, provide catering services based on the tourists' needs	30%
5	Build separate houses next to traditional houses to provide accommodation for local hosts; give traditional houses for tourists	35%
6	You accept night-time cultural activities organized in your village	30%

4.6. General Comments

Due to the influence of terrain and climate in the place where Thai villages were formed, and especially the influence of the traditional culture of the ethnic group, the traditional residential spaces of the Thai ethnic group have unique and distinct features, different from other ethnic groups living in the Northwest region of Vietnam.

The value of the traditional residential spaces of the Thai people is expressed through the methods of creation: Architectural spaces and forms; Building structure and materials; Culture; and Habitats and natural ecological landscape. The above methods of creation are expressed through spatial levels. From there, the architectural and cultural values can be clearly identified.

The residential spaces in Thai villages in the Northwest region of Vietnam have changed a lot to meet the housing needs of local people and develop community tourism. Besides the positive changes, the arbitrary changes have negatively affected traditional architecture and culture.

Most tourists want to experience the daily life of local residents in traditional houses or houses that have been rebuilt in the traditional style. Tourists also want to experience the production and cultural activities of local people in the village spaces and want more facilities to serve these activities.

A large number of people want to participate in community tourism. Some households are willing to upgrade their houses or build a new house next to their current house for tourists. Some households living along main roads agree to dedicate part of their house space to tourism activities.

Thus, the traditional residential spaces of the Thai ethnic group have unique values, reflecting the typical culture of the ethnic group and need to be preserved and maintained. However, due to the housing needs of local people and the development of community tourism, the residential spaces in Thai villages in the Northwest of Vietnam have changed a lot. If these changes are not guided, they can lead to negative impacts on traditional architecture and culture, so there needs to be synchronous organizational and restructuring solutions to orient changes in residential spaces in a positive direction, inheriting and promoting traditional values.

5. Proposed Directions to Organize and Restructure Simultaneously Three Levels of Residential Spatial Setting of Thai Ethnic to Develop Community-Based Tourism

5.1. Key Principles to Organize and Restructure the Thai Ethnic Residential Spatial Settings

Organizing the residential spaces of the Thai ethnic group in the Northwest of Vietnam for community-based tourism should be based on the following key principles (Figure 9):

- It needs to ensure inheritance, sustainable conservation, and not destroy traditional values (in terms of spatial structure planning, architecture forms and materials, culture, and natural landscape ecology) in a harmonious way from overall to detail, synchronously at all three spatial levels: housing spatial setting, campus spatial setting, and village spatial setting.
- It needs to take most of the value of the existing natural ecosystem while minimizing the impact on the natural environment;
- It needs to be oriented to best meet the needs of tourists but at the same time must be consistent with the culture, wishes and desires of the inhabitants; avoid creating a feeling of coercion and disagreement among local people.

5.2. Proposed Directions

Based on the mentioned principles, the following directions are proposed to organize and restructure simultaneously three levels of residential spaces of Thai ethnic for community-based tourism.

a) At the level of the house spatial setting

- Architectural spaces and forms
  - For families who accept to receive tourists to live in their older traditional houses, it is necessary to upgrade sleeping and living spaces to improve the indoor environment. This upgrade is prompted by tourists expressing their need for comfortable accommodation space. However, the organization of functional spaces must be kept the same as they were traditionally.
  - Change the function of the ground floor of older traditional stilt houses for the aim to show/sell local farming products and souvenirs, performing traditional cultural activities and providing catering services for tourists. This will ensure that it does not break the traditional houses' architectural spaces and forms but simultaneously meet the needs of tourists.
- Building structure and materials
  - Regarding the older traditional stilt houses, it is important to preserve their traditional building structure. When structural elements such as floor, wall, and roof need to be replaced due to their quality, environmentally friendly materials, for example, soil, stone, wood, bamboo, shingles, unburnt bricks, cement tiles, and black stone tiles should be given priority to use.

- When it is needed to build new houses for accommodation, it is necessary to build them following the traditional stilt house prototype with materials of wood and bamboo. In several specific cases, the reinforced concrete structure can be used instead of wooden structure; common wood planks or a combination with masonry walls could be used for walls; roofs could be covered with “yin” and “yang” tiles or colored cement tiles; the decoration of balustrades, windowsills, and window bars must necessarily follow the original traditional decorative archetypes.

b) At the level of the housing campus spatial setting

- For families who do not intend to receive tourists to live in their traditional houses, the housing campus should be totally preserved in terms of traditional architectural spaces and forms.
- For families who intend to receive tourists to live in their traditional houses, it is necessary to consider building new houses to add accommodation space. In this case, older traditional stilt houses will be used to provide homestay services for tourists, while new houses will be used to provide accommodation spaces for local inhabitants. The new houses should be located next to or behind the older traditional stilt houses. When constructing new accommodation spaces, it is important to ensure that the traditional stilt housing spaces remain intact.

c) At the level of the village spatial setting

- Adding and organizing functional spaces:

The following functional spaces should be considered to add to the village spaces: parking, tourist reception spaces combined with souvenirs and local products shops, communal spaces combined with markets, cultural houses (this space will supplement the functions of organizing festivals, cultural exchanges, commercial activities to introduce culture, customs, habits, cuisine, local products to tourists); eating and drinking spaces, souvenirs spaces, accommodation spaces, exhibition spaces for traditional craft production, homestay spaces for tourists.

Parking areas should be located at the village entrance adjacent to the main road leading to the village, together with a reception house, including a space for welcoming tourists, selling souvenirs and local products, and toilets. It is necessary to arrange a market with community spaces at the beginning of the village close to the reception house or combine with the cultural house to form a community cultural center. If it is possible, it should consider constructing an additional housing area next to the existing village, where it has a spacious, panoramic location, beautiful natural scenery, and is convenient for tourists to stay and enjoy the scenery.

- Organizing production spaces:

In order for tourists to experience agricultural production activities, it is recommended to organize traditional production spaces for shifting cultivation and afforestation. These spaces should be arranged vertically from the villages to the attractions and sightseeing spots. For villages with traditional occupations such as knitting and embroidery, production spaces should be arranged in traditional houses, in the "Tang chan" area or stilt floor areas for tourists to visit and experience the activities.

Thus, proposals for organizing and restructuring traditional Thai ethnic spaces to meet community tourism needs are mentioned at three levels: village space, housing campus space and house space. Proposals for changing and upgrading these spaces aim to meet the needs of tourists while still maintaining the unique identity of traditional spaces. Proposals for preserving indigenous cultural identity are what both tourists and local residents desire.

6. Case Study of Vang Pheo Village

6.1. The Vang Pheo's Current Situations

Vang Pheo was established in 1889 with 100% of the White Thais who immigrated from Khong Tu village. The houses in the village are all leaning against the mountain and facing the Nam So and Nam Lum streams. Vang Pheo village is planned as a community cultural tourism village because it is preserving many tangible and intangible cultural values of the White Thai people. However, when surveyed, only 10% of households are doing commercial services and community tourism services, while the remaining 90% of households are still doing agricultural economic activities; the income level is low, only reaching an average of more than 2 million VND/month. The village has a total of 82 houses, of which 24 ones (accounting for 29%) still retain traditional architectural values with wooden and bamboo materials, 39 stilt houses are built according to traditional architecture but using new materials and adding additional functions (accounting for 47.5%), and the rest has changed both in architectural form and construction materials. The stilt houses have an average height of about 5-6m, with 3 or 4 rows of columns; use locally exploited materials such as wood, poplar, and bamboo; and have a 4-roof sloped roof and straight perpendicular gable, which are typical of the White Thai house shape. According to the survey, the housing spaces in the villages are arranged following the traditional structure as it used to be. Moreover, 100% of the ground floor is no longer used for raising livestock and poultry, but being used as a living place, and doing traditional crafts such as knitting, embroidery and agricultural tools storage. 50% of the households have bathrooms and toilets with septic tanks on the ground floor for convenient usage.

The traffic structure of Vang Pheo follows the route along Nam So and Nam Tun bank streams and along the

mountainsides, combined with several small alleys branching into houses to create a comb-type traffic structure (Figure 12). Currently, Vang Pheo has been organizing some activities to welcome tourists, but there is no parking lot, no reception space, and no market space to introduce and sell local cultural products, no space to organize festivals and show indigenous culture to tourists. Currently, there are only three families serving meals, homestay accommodation and one family serving coffee, sightseeing, and photo shooting along the stream for tourists. In short, Vang Pheo currently does not have enough space to serve community-based tourists.

6.2. The Proposed Solutions for the Vang Pheo Village

a) At the house spatial level

Housing architectural solutions and construction technology and materials: It is necessary to embellish and repair all traditional housing to meet the need for accommodation spaces, living and dining spaces for tourists. All roofing materials such as corrugated iron sheets, and fibrocement must be replaced with roofing tiles or shingles, materials must be environmentally friendly; For new construction housing projects, reinforced concrete materials can be used to replace scarce wood materials, colored cement tiles can be used to replace terracotta tiles, and industrial wood can be used to replace terracotta tiles and natural wood. However, the architectural form and living spaces must maintain the traditional architectural values of the Thai ethnic group.

b) At the level of the housing campus

For the small families who are willing to receive tourists for homestay, their traditional stilt houses should be upgraded to provide tourists with a more private and comfortable space to stay and experience. In the case of larger families with many members, it should consider building a new traditional-style stilt house for local hosts while the old traditional stilt houses are used as private homestay spaces for tourists. The newly built house needs to follow the traditional stilt house form so that it helps the village keep the traditional architecture of the Thai people (see Figure 10). Figure 11 presents a solution to arrange the new house within the traditional house campus.

Figure 10. A newly traditional-style stilt house

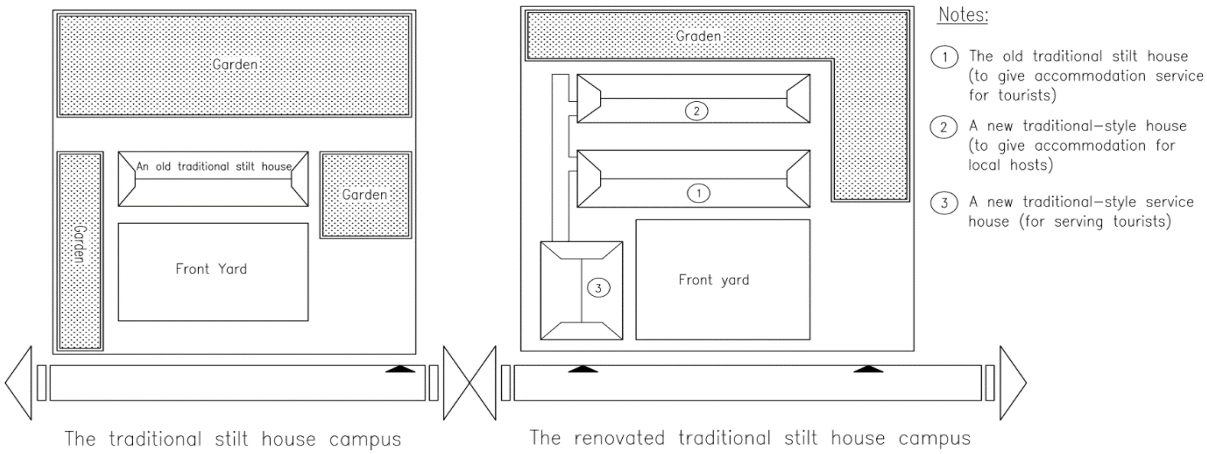

Figure 11. A solution to arrange the new house within the traditional house campus

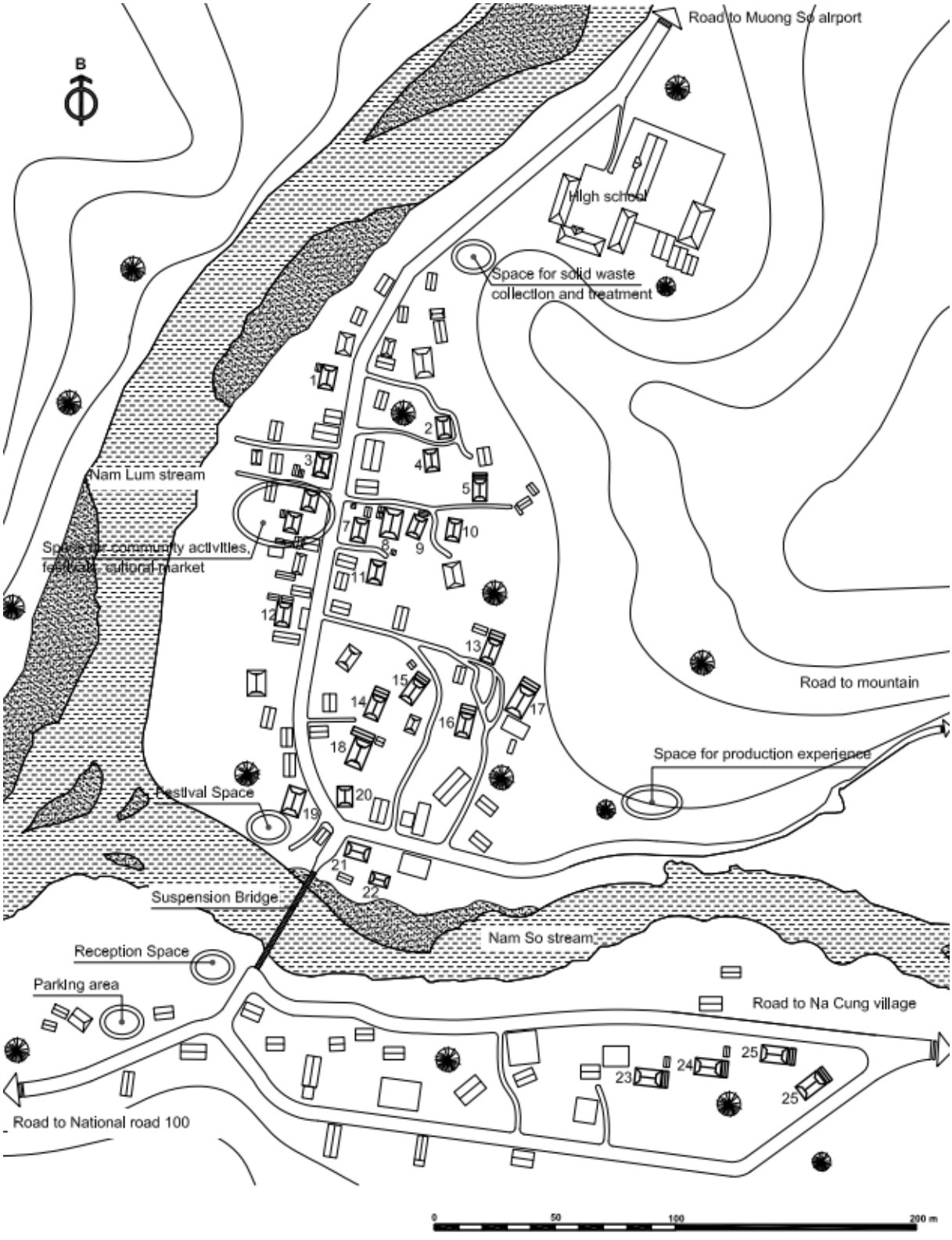

Figure 12. Renovating and embellishing Vang Pheo village's spatial configuration to serve community tourism. (Numbers 1-24 are traditional houses that still exist)

For families having traditional crafts such as knitting, embroidery, and brocade weaving, the ground floor of their stilt houses should be arranged to perform traditional craft activities, show and sell souvenirs, crafts and local products.

c) At the level of the village spatial layout

- Adding and organizing functional spaces: A parking area should be located at the entrance to the village, adjacent to the main traffic road. Next to the parking area, it should arrange a reception house to introduce sightseeing and experience travel programs and sell local cultural products and souvenirs.

It is considered to renovate the existing culture and community house and use its courtyard to perform traditional cultural activities such as singing and dancing in the evenings. This space should also be used to re-enact ancestor worship ceremonies, rain praying ceremonies on weekends and organize Spring Opening festivals, New Year's shampoo festivals, Hoa Ban festivals, and harvest celebrations. Particularly, the New Year's Washing Hair festival will be held at Nam So stream, where the foot of the suspension bridge leads precariously to the village. Surrounding this area, several sightseeing and photo spots should be arranged for tourists.

- Organizing production spaces: To allow tourists to experience agricultural activities, it is recommended to establish traditional production spaces along the route to the southern upland fields. These spaces should include areas for planting trees and rice cultivation, providing tourists with an authentic experience. These spaces should be arranged vertically from the villages to the attractions and sightseeing spots.

Based on the characteristics of Vang Pheo village discovered through surveys here, and the proposed directions presented in section 5, the study has proposed specific solutions for Vang Pheo village at 03 levels: village space, housing campus space and house space. These solutions aim to meet the needs of tourists but still maintain the unique identity of the traditional residential space in Vang Pheo village.

7. Discussion

The study identified the values of traditional residential spaces and proposed solutions to reorganize the village space, housing campus space, and residential architectural space of the Thai people in the Northwest of Vietnam. Proposals for necessary renovation, improvement, and addition are aimed at meeting the needs of tourists while still ensuring the preservation and maximization of traditional residential space values.

The missing component of earlier research on the traditional residential spaces of the Thai people in the Northwest has been filled in by the identification of the values of residential spaces. One issue that has been brought up for the first time in Vietnam is the need to propose solutions to reorganize traditional residential spaces in order to meet the needs of community tourism development [1, 8, 18].

- *Theoretical implications:*

This study has two notable theoretical contributions. First, it develops and empirically validates the 3-level framework of residential spaces and traditional values of the Thai ethnic group in the Northwest. This framework can be adopted and/or adapted to study the residential space contexts of ethnic minorities across Vietnam as well as others around the world. Second, it provides empirical evidence to support cross-country comparative studies in order to broaden the theoretical framework for community-based tourism in the minority ethnic groups.

- *Practical implications:*

The study offers helpful guidelines in order to sustainably organize and restructure the residential spaces of the Thai ethnic groups for community tourism. Firstly, both inhabitants and local governments must cooperate and collaborate to implement a holistic and integrated approach at the three levels of residential spaces, focusing on preserving and inheriting the four groups of traditional cultural and architectural values. Secondly, sustainable solutions for organizing and restructuring the residential spatial settings for community-based tourism need to take into consideration the needs of tourists and the opinions of local inhabitants. This aims to avoid subjective management decisions and unexpected conflicts among relevant stakeholders. Thirdly, the study provides practical recommendations to improve the residential spaces for community tourism in the specific context of the Vang Pheo village. Finally, for renovated or upgraded houses/structures that are unsustainable and break traditional values, local governments need to implement appropriate policies or programs to recover these structures with the aim of preserving traditional cultural and architectural values. All these recommendations can be considered for adoption in the equivalent contexts across Vietnam.

The practical significance is also reflected in bringing many economic, social and cultural benefits such as creating jobs for the Thai community, especially jobs for women such as introducing and guiding tourists, experiencing daily life and agricultural production; weaving brocade, embroidery, sewing, knitting; selling souvenirs to serve tourists, etc., thereby improving living standards and creating an environment of gender equality. Developing community tourism also helps people have a more correct and complete view of preserving and maintaining traditional cultural values as well as scenic spots and natural landscapes because it brings economic benefits and jobs to the local community. The development

of community tourism is also in line with the guiding policies of authorities at all levels on promoting tourism development along with preserving national cultural identity. This is considered an economic development policy in the direction of "green industry" in Vietnam.

However, there are still challenges and difficulties that hinder the development of community tourism in Thai villages, which are in the financial mechanism. Difficult financial resources are a huge obstacle for households who want to do community tourism. Although the government is trying to find financial support, it still cannot meet the borrowing needs of the people. Another difficulty is that the role of local authorities has not yet shown its true role in leading, guiding, and opening up tourism development directions, but still relies on people, businesses, and travel agencies to exploit and implement on a small, spontaneous basis. The abuse of exploiting cultural heritages and natural resources to serve tourism is also making it difficult to preserve and maintain the value of national cultural identity as well as traditional architectural values.

- *The drawbacks and limitations of the study:*

Within the framework of a research paper, the group of authors tried to focus on identifying the values of traditional indigenous architecture to form an argument for proposing solutions to organize the residential spaces of the Thai ethnic group to meet the requirements for serving community tourism in a sustainable manner on the basis of preserving and inheriting traditional architectural cultural values. It is recommended that there should be more in-depth research on social behavior in preserving indigenous cultural values and research on preserving the indigenous cultural values of the Thai ethnic group.

8. Conclusions

Based on the 3-level framework of residential spaces, this study employed a combination of field survey and questionnaire survey data to better understand the current state of the Thai ethnic residential spatial settings and proposed sustainable and resilient solutions to organize and re-structure their villages for community-based tourism in the Vietnam Northwest. The study's findings can be summarized as follows:

- There has been an increasing trend of new construction and renovation of existing buildings and residential spaces in the Thai ethnic group villages in recent years, and they have been conducted in an unplanned and subjective way. These activities are potentially very harmful to the traditional architectural values of the villages, thus declining the attractiveness to tourists. In reality, the current accommodation space of Thai villages still does not meet the needs of tourists for functional space at all three levels and the number of households participating in community tourism services is still small.
- The four groups of traditional architectural and cultural values of Thai ethnic residential spaces are identified including (a) architectural spaces and forms of a village, housing campus and houses, (b) building structure and materials, (c) culture, and (d) habitats and natural ecological landscape.
- As a result, the study proposed three critical principles in general including (a) sustainably preserving the structure of the Thai ethnic residential spaces through the inheritance of traditional architectural values, (b) effectively and sustainably using the natural ecosystem, (c) best meeting the needs of tourists but must be consistent with the culture, lifestyle, and traditional customs of the local people.
- Regarding the proposal to organize the Thai ethnic residential spaces to serve community tourism, at the house space level, it is necessary to pay attention to the organization of space and architectural form, structure as well as construction materials of the house. At the housing campus space level, it is proposed to keep the traditional house intact or expand the area by building a new house next door to serve tourism. At the village space level, it is recommended to (a) add more functional spaces for tourism, (b) organize production spaces to serve tourists, (c) organize technical infrastructure and environmental sanitation systems, (d) use local and environmentally friendly materials.
- Practicable recommendations are proposed in organizing and restructuring the residential spaces of the case study of Vang Pheo village in particular for community-based tourism at the three levels of residential spaces with respect to architectural form, architectural spatial layout, and construction structure and materials.

Although the study achieved the original research objectives, the generalizability of the study's results is limited due to the focus on Thai ethnic residential spaces in the Northwest. Moreover, the sample size is quite small, as it was collected from only three villages. Future research should expand the scope of investigation to validate and generalize the current findings.

Finally, the organization and restructuring of traditional Thai ethnic housing space in the Northwest region is facing many challenges, especially issues of support for community tourism training, financial support and especially the need to preserve and maintain traditional cultural values to serve community tourism development. Future research should focus on important and necessary solutions to overcome these challenges.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

All authors are publicly responsible for the content of the work submitted for peer review. All authors' contributions are made to the article.

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