

RESEARCH ARTICLE



# Key Factors to Consider When Selecting a Site for Building a House in Northern Thailand

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## Abstract

Selecting an appropriate site for building a house is a critical decision that impacts the long-term satisfaction, safety, and financial investment of homeowners. This paper explores the key factors that should be carefully evaluated during the site selection process. These factors include direction and location of house, neighborhood, topography and soil quality, climate and environmental consideration, utilities and infrastructure, access and transportation, cost of land and budget, aesthetic and lifestyle preferences, privacy and noise levels, and cultural and traditional beliefs. By systematically considering these factors, prospective homeowners can make informed decisions that align with their lifestyle needs and future aspirations, ensuring a harmonious and sustainable living environment.

**Keyword:** key factors, selecting a site, building a house, northern Thailand

## Introduction

Selecting the perfect site for building a house is a decision fraught with significance, as it lays the foundation for not just a structure, but for the lifestyle and experiences that will unfold within its walls. Every plot of land carries its own unique characteristics, from geographical features to environmental considerations, all of which can profoundly influence the comfort, convenience, and long-term value of a home. In this study, I delve into the key factors that should be meticulously weighed and considered when undertaking the task of site selection for building a house. Beyond mere aesthetics or proximity to amenities, the process of site selection demands a holistic assessment encompassing geological, climatic, regulatory, and personal lifestyle factors (Fell et al., 2008). The interplay of these variables necessitates a careful balance between practicality and aspiration, ensuring that the chosen location not only accommodates the immediate needs of its inhabitants but also fosters a sustainable and harmonious relationship with its surroundings (Kellert, 2012).

As I navigate through the intricacies of site selection, I explore the nuanced considerations that can often be overlooked in the excitement of envisioning one's dream home. By illuminating the significance of each factor and offering practical insights into their evaluation, this study endeavors to empower prospective homeowners with the knowledge and foresight necessary to make informed decisions that will shape the very essence of their dwelling.

Previous research on site selection for residential construction has primarily focused on individual factors such as topography, soil quality, or climate (Fell et al., 2008). However, there has been limited comprehensive analysis of how these factors interact holistically and affect overall decision-making in the context of modern, diverse homeowner needs. Existing studies often address these factors in isolation or within specific regional contexts, potentially overlooking the integration of multiple factors and their combined impact on long-term homeowner satisfaction.

This research addresses this gap by proposing a systematic approach to evaluating a broader range of site selection factors,

including not only traditional elements like location and infrastructure but also newer considerations such as lifestyle preferences and cultural beliefs. By integrating these aspects into a unified decision-making framework, this study aims to provide a more nuanced understanding of how to select a site that accommodates diverse needs and future aspirations, thus contributing to a more holistic approach in site selection research.

In this study, I will delve into the pivotal aspects of site selection, ranging from direction, location, culture, belief, neighborhood, topography and soil quality, climate and environmental considerations, utilities and infrastructure, accessibility, and privacy and noise levels. Through a comprehensive examination of these factors, I aim to equip homeowners with the tools and understanding needed to navigate the complexities of site selection with confidence and clarity. Ultimately, our endeavor is to facilitate the realization of not just a house, but a sanctuary that seamlessly integrates with its environment and enriches the lives of those who call it home.

## The purpose of this study

The purpose of this study was 1) to study the direction that humans select to build houses in the northern Thailand. 2) to study the characteristic of houses in northern Thailand and 3) To study factors related to selecting the location of houses in northern Thailand.

## Methodology

The methodology of this study are as follows: 1) I collect the data on the locations for building houses by human in the northern Thailand. Data was collected from 8 villages, 655 houses, and studied the direction/ location of house construction from 8 villages include: 1) Ban Mueang Kuet, 2) Ban Mae Taman, 3) Ban Sop Kai, 4) Ban Ton Kham, 5) Ban Huai Nam Dang, 6) Ban Pa Khao Lam, 7) Ban Thung Lakhon and 8) Ban Pa Pu Chom, Chiang Mai, in Northern Thailand. In addition, I also explored factors related to select a site for building a house in northern Thailand and study the characteristic of houses in northern Thailand in northern Thailand. 2) Focus Group Interview Guide, Focus Group Interview Guide was designed to explore factors related to select a site for building a house in northern Thailand. Ten people who live in 1) Ban Mueang Kuet, 2) Ban Mae Taman, 3) Ban Sop Kai, 4) Ban Ton Kham, 5) Ban Huai Nam Dang, 6) Ban Pa Khao Lam, 7) Ban Thung Lakhon and 8) Ban Pa Pu Chom, Chiang Mai, in Northern Thailand attended group meetings. Focus group discussions were used to evaluate factors related to select a site for building a house in northern Thailand. Each discussion took 30 to 45 min. The qualitative data were analyzed using content analysis.

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The direction that humans select to build houses was analyzed using descriptive statistics, including frequencies, percentages. Qualitative data were analyzed using content analysis. Method of Content Analysis are included:

1. Define Objectives: Clearly define the objectives of content analysis. Trying to discover or understand from the focus group responses. Objectives might include identifying common themes, patterns, or trends in participants' answers.

2. Prepare the Data

Transcribe the focus group discussion verbatim to ensure all responses are captured accurately. Read through the transcripts multiple times to become familiar with the content and context of the responses.

3. Develop a Coding Scheme

Develop preliminary codes based on the research objectives of this study and key topics discussed during the focus group. These codes should represent concepts or themes relevant to this study.

Refine these codes as analyze the data to ensure they capture the nuances of participants' responses.

4. Code the Data

Systematically apply the coding scheme to the focus group transcripts. Label segments of text with appropriate codes to categorize the responses.

Ensure coding is applied consistently across all transcripts. Multiple coders might be involved, so establish guidelines for consistent application of codes.

5. Analyze Patterns and Themes

Identify Themes: Group related codes into themes to identify patterns in the responses. Themes should reflect significant trends, common viewpoints, or differences in opinions.

Quantitative Analysis: Count the frequency of specific codes or themes to understand their prevalence.

Qualitative Insights: Examine the context and nuances within each theme to gain deeper insights into participants' perspectives.

6. Interpret Findings

Integrate findings to form a coherent understanding of the data. Look for overarching patterns or key insights that address the research objectives and then relate findings back to the research questions and objectives to ensure they provide meaningful answers.

7. Report Results

Document the results of content analysis in a clear and organized manner. Include examples from the transcripts to illustrate key themes and patterns. Highlight how the insights gained from the content analysis can inform decisions.

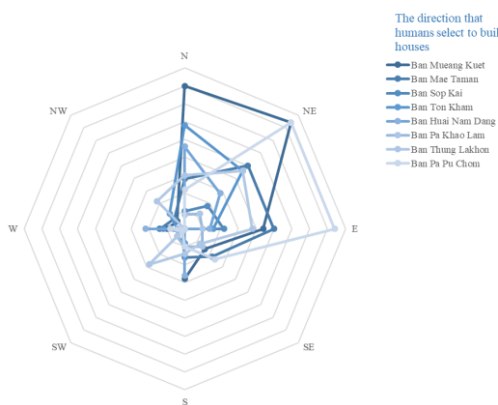
**Results and Discussion**

**A. Result 1: The direction that humans select to build houses in the northern Thailand.**

In this study, I collected data from 8 villages, 655 houses. I found the direction that humans select to build houses in the northern Thailand, are as follow: Northeast (NE) = 28.09 %, North (N) = 21.53%, East (E) = 21.22%, South (S) = 9.77%, Southeast (SE) = 6.72%, West (W) = 5.65 %, Northwest (NW) = 3.66%, Southwest (SW) = 3.36%, respectively (Table I).

**Table 1. The direction that humans select to build houses**

Village Name	Number of houses	Direction							
		NE n (%)	N n (%)	E n (%)	S n (%)	SE n (%)	W n (%)	NW n (%)	SW n (%)
Ban Mueang Kuet	134	42 (31.34%)	40 (29.85%)	22 (16.42%)	14 (10.45%)	8 (5.97%)	5 (3.73%)	3 (2.24%)	0 (0.00%)
Ban Mae Taman	95	25 (26.32%)	14 (14.74%)	25 (26.32%)	8 (8.42%)	11 (11.58%)	7 (7.37%)	4 (4.21%)	1 (1.05%)
Ban Sop Kai	39	9 (23.08%)	5 (12.82%)	11 (28.21%)	8 (20.51%)	0 (0.00%)	6 (15.38%)	0 (0.00%)	0 (0.00%)
Ban Ton Kham	75	23 (30.67%)	29 (38.67%)	8 (10.67%)	4 (5.33%)	0 (0.00%)	2 (2.67%)	6 (8.00%)	3 (4.00%)
Ban Huai Nam Dang	68	14 (20.59%)	23 (33.82%)	7 (10.29%)	13 (19.12%)	0 (0.00%)	11 (16.18%)	0 (0.00%)	0 (0.00%)
Ban Pa Khao Lam	32	6 (18.75%)	4 (12.50%)	5 (15.63%)	5 (15.63%)	7 (21.88%)	2 (6.25%)	0 (0.00%)	3 (9.38%)
Ban Thung Lakhon	95	23 (24.21%)	15 (15.79%)	19 (20.00%)	7 (7.37%)	6 (6.32%)	0 (0.00%)	11 (11.58%)	14 (14.74%)
Ban Pa Pu Chom	117	42 (35.90%)	11 (9.40%)	42 (35.90%)	5 (4.27%)	12 (10.26%)	4 (3.42%)	0 (0.00%)	1 (0.85%)
Total	655	184 (28.09%)	141 (21.53%)	139 (21.22%)	64 (9.77%)	44 (6.72%)	37 (5.65%)	24 (3.66%)	22 (3.36%)



**Fig 1. The direction that humans select to build houses in the northern Thailand**

Based on the result of this study, the site for building a house in northern Thailand is consistent with “theory building” indicated that humans build houses in areas that are safe place, stable, and can easily find food (Binford, 2019). In addition, the direction of sunlight is another important factor for choosing the location of a residence (Wang & Li, 2006), which is consistent with the previous study about sunlight related to site selection for building a house of humans in architectural theory (Ralegaonkar & Gupta, 2010).

**B. Result 2: The characteristic of houses in northern Thailand.**

In this study, I found that the characteristics of house construction in northern Thailand are included: Wooden house 285 houses (43.51%), Brick house 223 houses (34.05%), and Half-timbered house 147 houses (22.44%) (Table 2).

**Table 2. Characteristics of house construction, Kuet Chang Subdistrict, Mae Laeng District, Chaing Mai province, Thailand**

Characteristics of house construction	Mean	%
Wooden house	285	43.51
Brick house	223	34.05
Half-timbered house	147	22.44
<b>Total</b>	<b>655</b>	<b>100.00</b>



(a) Wooden house



(b) Brick house



(c) Half-timbered house

**Fig 2. The direction that humans select to build houses in the northern Thailand**

### C. Result 3: Factors related to selecting the location of houses in northern Thailand.

The qualitative findings from the focus group discussions are presented below.

#### Category 1: Direction and Location.

Ensure the site is conveniently located near essential services such as schools, hospitals, shopping centers, and public transportation. Additionally, direction or the positioning of a house to receive minimal sunlight can help keep the house cooler (Ralegaonkar & Gupta, 2010). In addition, cultural and traditional beliefs are associated with the direction of a house. The northeast direction is also linked with spiritual growth and enhance spiritual well-being (Greenfield, Vaillant, & Marks, 2009).

*"Positioning the house in the northeast direction can help keep it cooler and protect it from the afternoon sunlight. I believe that it also enhances the spiritual well-being of the family members."*

*"Selecting a site for building a house was very challenging for me. I wanted a location that was conveniently near essential services like schools, hospitals, shopping centers, and public transportation."*

#### Category 2: Neighborhood

The neighborhood is a crucial factor to consider when selecting a site for building a house (Shin, Shin, & Lee, 2019). A neighborhood with low crime rates is generally more desirable. Safety is a primary concern for families and individuals, affecting their peace of mind and the overall quality of life. When considering safety as a primary concern, it's essential to thoroughly assess various aspects of the neighborhood, including crime rates, access to emergency services, community engagement, environmental factors, and infrastructure.

*"Absolutely, Neighborhood is a critical factor to prioritize when choosing a site to build a house. A secure neighborhood not only provides peace of mind but also contributes to the overall well-being and quality of life."*

#### Category 3: Topography and Soil Quality.

The land's slope can impact construction costs and drainage. Sites with gentle slopes are generally preferable for ease of building and water management (Strom & Nathan, 1985).

*"I prefer to choose sites with gradual slopes for easier construction and better water management."*

#### Category 4: Climate and Environmental Considerations.

Evaluate the local climate, including temperature extremes, rainfall, and wind patterns, as these factors influence building design (Givoni, 1998) material selection, costs, and energy efficiency. Additionally, assess the risk of natural disasters such as floods, earthquakes, or wildfires to ensure safety and minimize costs.

*"I assess the likelihood of natural disasters like floods, earthquakes, hurricanes, or wildfires to select a location with reduced risk, promoting safety and cost."*

#### Category 5: Utilities and Infrastructure.

The availability and quality of essential utilities such as water, electricity, gas, and sewage systems are crucial considerations (Akadiri, Chinyio, & Olomolaiye, 2012). Additionally, it's important to evaluate the cost and feasibility of extending these services to the site if they are already present nearby. Access to reliable internet and mobile network services should also be assessed.

*"I prioritize access to reliable internet and mobile network services when selecting a site for building a house."*

#### Category 6: Access and Transportation.

The site has good road access and is not too isolated. Good connectivity to major roads and highways is crucial for convenience and emergency access (Millard-Ball, West, Rezaei, & Desai, 2022).

*"I am concerned about the availability and proximity of public transport options, which can add convenience and value to the property when selecting a location for building a house."*

#### Category 7: Cost and Budget Considerations.

The cost of the land is relative to its size, location, and the amenities it offers. Ensure it fits within budget while leaving room for construction and other expenses (LaGro Jr, 2011).

*"I am concerned about the cost of land and additional costs such as land clearing, grading, the installation of utility and unexpected expenses."*

#### Category 8: Aesthetic and Lifestyle Preferences.

Choose a site that offers pleasing views and an environment that aligns with lifestyle preferences. Natural beauty and tranquility can enhance quality of life (Rubiyanti, 2023).

*"I am concerned about views and scenery: Choose a site that offers pleasing views and an environment that aligns with lifestyle preferences. Natural beauty and tranquility can enhance quality of life when selecting a site for building a house."*

#### Category 9: Privacy and Noise Levels.

Privacy and noise levels are factors to consider when selecting a site for building a home (Ning, Qi, Wu, & Wang, 2019).

*"I am concerned about privacy and noise from nearby roads."*

## Discussion

### A. The direction that humans select to build houses in the northern Thailand.

In this study, I found that the direction that humans select to build houses in the northern Thailand, are as follow: Northeast (NE) = 28.09 %, North (N) = 21.53%, East (E) = 21.22%, South (S) = 9.77%, Southeast (SE) = 6.72%, West (W) = 5.65 %, Northwest (NW) = 3.66%, Southwest (SW) = 3.36%, respectively. Humans particularly select to build the house in northeast or north, can be influenced by various factors, including cultural beliefs, geographical

considerations, and environmental factors. These are some reasons why people might choose these directions for building a house: cultural, and personal factors, with considerations ranging from energy efficiency and comfort to cultural beliefs and urban planning considerations (Pandiangan, 2022). According to the result of previous studies, the details are as follows: 1) sunlight and ventilation: In some regions, orienting a house towards the northeast or north can optimize natural light and airflow. For instance, in hot climates, positioning a house to receive minimal direct sunlight can help keep it cooler, while still allowing for ample natural light and ventilation from other directions (Tantasavasdi, Srebric, & Chen, 2001). 2) cultural and traditional beliefs: In certain cultures, there may be traditional beliefs or superstitions associated with the direction of a house (Luo, Liu, & Zhang, 2009; Rihong, 2018; Sinambela & Slamet, 2021). For example, in Vastu Shastra (an ancient Indian system of architecture), the northeast direction is considered auspicious for various reasons related to energy flow and harmony (Chandra et al., 2020). 3) geographical considerations: In areas prone to specific weather patterns, such as prevailing winds or extreme temperatures, the orientation of a house can be planned to mitigate these factors (Lee, 1969). Building with the front facing away from prevailing winds, for instance, can help reduce heat loss or gain and improve energy efficiency. 4) astrological reasons: In some cultures, astrology and celestial alignments play a role in determining the orientation of buildings. Certain alignments may be considered more favorable or auspicious, leading to the selection of specific directions for building orientation. 5) urban planning and infrastructure: In urban areas, the layout of streets and existing infrastructure can influence the orientation of buildings. Plots of land may be designed or allocated in a way that encourages buildings to face certain directions for consistency or to optimize land use. and 6) privacy and security: a house away from busy streets or neighboring properties can enhance privacy and security (Kawash, 2000). By facing the house towards less accessible areas or away from potential sources of noise or disturbance, occupants may enjoy a quieter and more secure living environment.

In addition, Cultural and traditional beliefs regarding the positioning of houses vary widely across different cultures and regions. When it comes to the northeast direction, several cultural traditions ascribe specific meanings and benefits to orienting a house or certain parts of a house in this direction. Here are some examples: In Vastu Shastra, India, an ancient Indian science of architecture and building design, the northeast direction is considered highly auspicious (Dikshit & Dikshit, 2014; Kumar, 2005). The main beliefs associated with positioning a house or parts of a house towards the northeast include: 1) Prosperity and Wealth: The northeast corner is known as the "Ishan Kona" and is associated with prosperity and wealth. It is believed that having the main entrance or an open space in this direction can attract positive energies and bring financial success. 2) Spirituality and Purity: The northeast direction is also linked with spiritual growth and purity. Placing a prayer room or meditation space in the northeast can enhance spiritual well-being. 3) Health and Well-being: The northeast corner is thought to promote health and overall well-being. Ensuring this area is kept clean and free of clutter is considered beneficial for the occupants' health.

Additionally, in Feng Shui, China, a traditional Chinese practice that focuses on harmonizing individuals with their environment, the orientation of a house is crucial for ensuring good fortune and health (Fazeli & Negarestan, 2023). The northeast direction is associated with different elements and aspects: 1) Knowledge and Wisdom: The northeast relates to the "Ken" trigram, symbolizing knowledge, wisdom, and self-cultivation. It is favorable to have study areas or libraries in this part of the house to promote learning and intellectual growth. 2) Seasonal Influence: The northeast direction corresponds to the transition between winter and spring. As such, it represents new beginnings and fresh energy. Aligning parts of the house in this direction can invigorate residents and support personal growth.

Moreover, Some Native American cultures also have beliefs related to the cardinal directions. While specific beliefs can vary between tribes, the northeast direction may hold particular significance in rituals and the layout of dwellings (Claassen, 2015; Nabokov & Easton, 1990). The northeast direction can be associated with certain spiritual practices and ceremonies. In some traditions, it might be the direction for placing significant objects or altars. These

beliefs are deeply rooted in the cultural and spiritual frameworks of different societies and continue to influence modern architectural practices in many parts of the world.

### ***B. The characteristics of house construction in northern Thailand***

The study on the characteristics of house construction in Northern Thailand sheds light on the prevalent architectural styles in the region, offering insights into the cultural and environmental influences that shape housing choices. The data presents a breakdown of the types of houses found, with wooden houses comprising the majority at 43.51%, followed by brick houses at 34.05%, and half-timbered houses at 22.44%.

Wooden houses dominating the landscape reflect a deep-rooted tradition in Thai architecture, where natural materials are favored for their abundance, affordability, and suitability to the tropical climate (VAHALOVÁ, 2016). Wood offers excellent insulation against the region's heat and humidity, making it a practical choice for building in Northern Thailand's environment. Additionally, wooden houses often carry cultural significance, connecting residents to their heritage and creating a sense of warmth and coziness.

Brick houses, while less prevalent than wooden ones, signify a shift towards modernization and urbanization in the region. Brick construction offers durability and resilience, standing up better to environmental factors such as heavy rains and occasional earthquakes (Schroder & Ogletree, 2010). The choice of brick may also reflect socio-economic factors, with wealthier residents opting for more substantial and long-lasting structures.

Half-timbered houses, though the least common in this study, contribute to the architectural diversity of the region. This style, characterized by a wooden framework filled with clay or brick, combines elements of traditional and modern construction techniques. Half-timbered houses may appeal to those seeking a blend of rustic charm and structural stability, offering a unique aesthetic that stands out amidst the predominantly wooden and brick buildings (Watson, 1957).

The distribution of these house types underscores the dynamic interplay between tradition, modernity, and practical considerations in Northern Thailand's built environment. As the region continues to develop and evolve, understanding the factors driving housing choices is crucial for sustainable urban planning, preservation of cultural heritage, and ensuring the well-being of communities amidst changing climatic conditions. Further research could delve deeper into the socio-cultural, economic, and environmental factors influencing housing preferences, providing valuable insights for policymakers, architects, and residents alike.

### ***C. Factors related to selecting the location of houses and to study the characteristics of the construction of habitats of humans.***

Choosing the right location for building a human home involves considering several important principles to ensure safety, comfort, and sustainability (Gallooly, 1974). Several studies indicated that the factors related to selecting the location of houses are included: 1) safety: safety should be the foremost consideration when selecting a location (Kawash, 2000). Assess the risks of natural disasters such as floods, earthquakes, hurricanes, wildfires, or landslides in the area. Ensure that the chosen location is not prone to such hazards or take necessary precautions to mitigate risks. 2) accessibility: the location should be easily accessible by road or other means of transportation (Chen, Chen, & Timmermans, 2008; Wakuma, 2019). Consider the proximity to essential services such as hospitals, schools, grocery stores, and workplaces. Accessibility also includes factors like proximity to public transportation and major highways. 3) infrastructure: check for the availability and reliability of basic infrastructure such as water supply, electricity, sewage systems, and internet connectivity. 4) environmental impact: assess the environmental impact of buildings in a particular location. Consider factors such as habitat disruption, water usage, energy consumption, and waste management. Choose a site that minimizes environmental harm and promotes sustainability. 5) climate and weather: consider the local climate and weather patterns when selecting a location. Choose a site that offers comfortable living conditions year-round and minimizes the need for excessive heating or cooling. Pay attention to factors such as temperature extremes, precipitation levels, and seasonal variations. 6) topography and geology: evaluate the topography and geology of the site to ensure stability and

suitability for construction. Avoid areas with steep slopes, unstable soils, or geological hazards such as sinkholes or seismic activity. Conduct thorough soil testing and geo-logical surveys before building. 7) natural amenities: consider the natural amenities and features of the location, such as scenic views, proximity to parks or natural reserves, and access to outdoor recreational activities. These factors can enhance the quality of life for residents and contribute to their well-being. 8) community and neighborhood: evaluate the surrounding community and neighborhood to ensure compatibility with lifestyle and preferences. Consider factors such as crime rates, school quality, noise levels, and proximity to amenities like shopping centers and restaurants. 9) future development: anticipate future development and growth in the area. Consider how nearby construction projects or zoning changes could impact the value and livability of homes. Research local development plans and consider their potential effects on the chosen location. 10) legal and regulatory considerations: familiarize themselves with local zoning regulations, building codes, and permit requirements before selecting a location. Ensure that the chosen site complies with all legal and regulatory standards for construction and development. 11) Cultural and traditional beliefs regarding the positioning of houses vary widely across different cultures and regions (Al-Ban, 2016; Chandra et al., 2020). In conclusion, the preference for specific house orientations in northern Thailand is influenced by a blend of cultural beliefs, environmental factors, and practical considerations. The study's approach, while effective in highlighting these preferences, would benefit from additional validation to ensure the applicability of the method across diverse contexts. This comprehensive understanding of house orientation preferences provides valuable insights for homeowners, urban planners, and researchers alike.

## Conclusions

Selecting the optimal site for constructing a home is a multifaceted decision that significantly influences homeowners' long-term satisfaction, safety, and financial well-being. This paper underscores the importance of a comprehensive evaluation of various critical factors—including house orientation, neighborhood dynamics, topography, soil quality, climate, infrastructure, accessibility, land costs, aesthetic and lifestyle preferences, privacy, noise levels, and cultural considerations. By adopting a systematic approach to these factors, prospective homeowners can make well-informed decisions that align with their personal needs and future goals. This holistic approach not only enhances the likelihood of a harmonious and sustainable living environment but also ensures that the investment in a new home meet both practical and emotional criteria.

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