

# Assessing the Potential of Thailand's National Forest Reserves for Tourism Development and Sustainable Recreational Use

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## ABSTRACT

This research aimed to evaluate the potential of Thailand's national forest reserves for promoting sustainable recreational activities. Research tools included a comprehensive tourism potential assessment form for evaluating tourism development. Additionally, semi-structured interviews and focus group meetings with key informants were conducted to gain insights into local perspectives, challenges, and opportunities related to tourism. Site surveys were conducted during January - August 2021. The study initially conducted an assessment of 122 destinations located within 85 national forest reserves across the country to determine their tourism development potential. Subsequently, 16 national forest reserves exhibiting high potential were selected for on-site surveys. These revealed a diverse range of recreational resources within the national forest reserves, including waterfalls, rapids, rivers, viewpoints, ecotourism sites, nature trails, hot springs, caves, geographic landscapes, and archaeological sites. The assessment of tourism development potential identified six areas with high potential, eight areas with medium potential, and two areas with low potential within the national forest reserves. To effectively promote recreation and sustainable tourism in Thailand's national forest reserves, the Royal Forest Department, responsible for overseeing these areas, should prioritize the following key considerations: 1) development of interpretive programs that align with the unique features and highlights of each area to enhance visitors' learning experiences, 2) active involvement of local communities in tourism development initiatives, and 3) provision of basic service facilities to support visitor activities. This is a normative assessment, and future studies should focus on the ways that tourism is reshaping these landscapes and livelihoods.

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## KEYWORDS

National Forest Reserves; Recreational Potential Assessment; Tourism Development; Recreational Use; Thailand.

## 1. INTRODUCTION

Thailand's National Forest Reserves are important for conservation and sustainable use of forest resources. National forests are governed by the National Reserved Forest Act (1964) and managed by the Royal Forest Department (RFD) (Royal Gazette, 1964). These forests cover a significant portion of the country's land area. As of 2023, there are 1,221 forest reserved areas, covering 230,280.4 square kilometers accounting for 44.88% of the country's land (Forest Land Management Office, 2023). These forests contribute significantly to the nation's economy and enhance the quality of life for Thai citizens through various environmental, cultural services, and economic contributions. National forest reserves provide crucial environmental benefits, including carbon sequestration, which plays a vital role in mitigating climate change. They act as carbon sinks, while international climate finance mechanisms, such as carbon credits and forest conservation projects, offer additional economic benefits to the country. Furthermore, the forests are sources of rich biodiversity, supporting numerous wildlife species and wild flora that are critical for maintaining ecological balance. Forests also

hold spiritual and cultural significance for many communities, being intertwined with traditional beliefs and practices, thus preserving the cultural identity of various ethnic groups in Thailand. From an economic perspective, the forestry sector—including both timber and non-timber forest products—contributes an estimated 0.4–0.6% to Thailand's GDP. The timber market is valued at approximately THB 120 billion (USD 3.3 billion) annually. Additionally, non-timber forest products generate around THB 10–15 billion (USD 300–450 million) annually, providing essential income to rural households that rely on forest resources. Thailand also has approximately 59,000 square kilometers of planted forests, which offer employment opportunities in the forest product industry and contribute to sustainable timber harvesting practices (Forest Land Management Office, 2023; RFD, 2023).

However, the sustainability of national forest reserves is threatened by issues such as encroachment and competing demands for land use. Local communities engage in activities like agriculture and settlement, while public and private sectors seek permission for specific purposes, leading to conflicts with the RFD (Phumsathan et al., 2022). Thus, the RFD has proactively pursued management strategies aimed at facilitating stakeholder participation. These strategies are designed to enhance the comprehensive understanding of the various obstacles and challenges faced, as well as to recognize the intrinsic value associated with Thailand's national forest reserves (RFD, 2017).

As presented in many countries, tourism development can serve as a significant tool in the management of national forest reserves, facilitating the achievement of the objectives underlying their establishment which focus on conservation, sustainable management, and the utilization of forest resources. When tourism is appropriately planned and implemented, it can reduce the unsustainable exploitation of forest resources by providing local communities with income-generating opportunities, while also fostering responsible environmental behavior (Baloch et al., 2023; Brandt & Buckley, 2018; Zhou et al., 2022). For instance, the Dadia-Lefkimi-Soufli Forest Reserve in Greece applies ecotourism to raise awareness of raptor conservation and support local economies (Schindler et al., 2015; Svoronou & Holden, 2005). In Uganda's Budongo Forest Reserve, involving communities in tourism management has created sustainable livelihoods and reduced dependence on forest resources (World Bank, 2018). Similarly, Australia's Kuitpo Forest Reserve demonstrates how tourism development can provide a viable economic alternative for locals, reducing their reliance on the forest and preserving the ecosystem (Kuitpo Forest, 2022). Similarly, Australia's Kuitpo Forest Reserve demonstrates how tourism development can provide a viable economic alternative for locals, reducing their reliance on the forest and preserving the ecosystem (Kuitpo Forest, 2022). In Africa and South Asia, countries like Kenya and Botswana benefit significantly from wildlife tourism, which contributes to GDP while supporting conservation efforts. These initiatives stimulate local economies, improve infrastructure, and enhance both natural and cultural heritage (Bhusal, 2012; Narain, 2021; World Bank, 2018).

Tourism development in forest reserves serves multiple objectives. First, it promotes accessible recreational activities for all visitors. Second, it helps mitigate conflicts between government agencies and local communities, particularly in developing countries where people rely on forest areas for settlement and subsistence, such as agriculture and livestock rearing (Bushell & Bricker, 2016; Lamichhane et al., 2019). Additionally, the development of tourism in forest reserves provides an opportunity to alleviate the demand for tourism in ecologically fragile areas, particularly in cases where popular destinations experience levels of use that exceed

their carrying capacity. This reduces the strain on popular destinations and allows for ecosystem restoration and preservation of natural integrity (U.S. Forest Service, 2008; Phumsathan et al., 2022). Moreover, it contributes to infrastructure improvements, job creation, reduced unemployment, and enhanced quality of life for local communities. These benefits stimulate local economies, encouraging investment in infrastructure and service-oriented businesses. Finally, tourism development drives enhancements in product and service quality, further boosting economic growth and community well-being (Baloch et al., 2023; Narain, 2021).

Generally, nature-based tourism in Thailand predominantly takes place within the country's main protected areas, including national parks and forest parks, which are managed by the Department of National Parks, Wildlife, and Plant Conservation. Recognizing the significance of recreation and tourism within national forest reserves, the RFD has adopted a new paradigm for their development and established the Office of Recreational Forest Management to support their development in 2021 (RFD, 2021). However, a significant gap exists: there are currently no comprehensive guidelines for developing recreational activities in national forest reserves (Somton, 2022). This gap raises critical research questions: 1) What is the recreational and tourism potential of national forest reserves? and 2) How can tourism be effectively developed within these areas? To address these questions, it is essential to assess the potential of recreational resources in national forest reserves. This potential includes the inherent characteristics of resources that influence the suitability of recreational activities in a specific area. Key elements involve the attractiveness of the recreational site, which affects visitors' decisions to visit, the availability of supporting resources for recreational development, and any necessary enhancements to facilitate these activities (Gamidullaeva et al., 2022; Musin et al., 2020; Phumsathan et al., 2016).

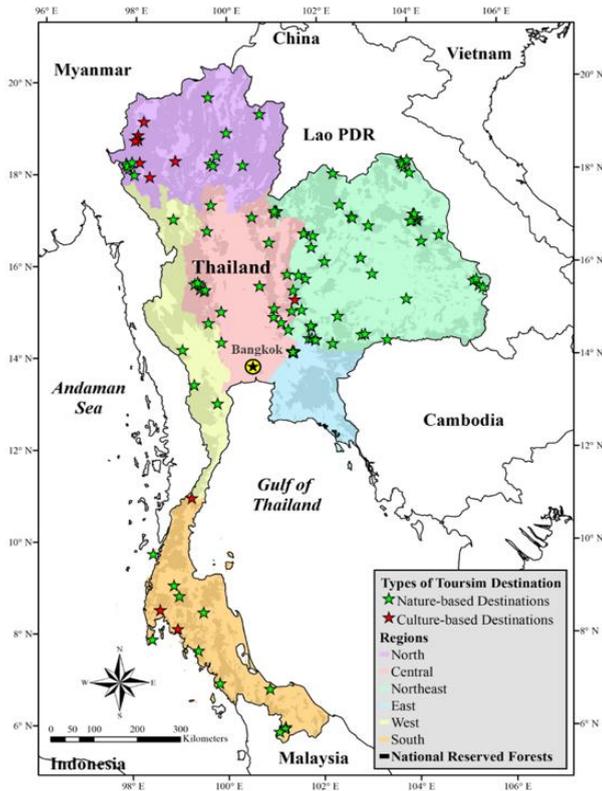
During the initial stages of developing a recreation area or tourist attraction, evaluating the area's potential is crucial. This assessment allows management planners to identify the unique strengths and limitations of the area, enabling a thorough analysis of its development potential and the formulation of suitable activity plans and guidelines that align with the specific characteristics of the area. The primary objective of this research is to provide support for the development of recreational activities and tourism within national forest reserves in Thailand, taking into consideration the unique potential of each area. The research framework encompasses the following key components: 1) the establishment of criteria for evaluating the recreational and tourism potential of national forest reserves, 2) the assessment of the recreational and tourism potential of national forest reserves, and 3) the proposal of guidelines for the development of recreational activities and tourism in national forest reserves, grounded in the potential of the recreational resources. The outcomes of this study will contribute to the formulation of appropriate tourism development guidelines that align with the unique potential of forests. Furthermore, these guidelines will contribute to addressing the issue of unsustainable utilization of forest resources within the current context. Additionally, they will promote greater involvement of tourists and local communities in the conservation of natural resources and the environment through active participation in recreational activities.

## **2. METHODOLOGY**

### **2.1 Study area**

A study was conducted to evaluate the potential of Thailand's National Forest reserves for sustainable recreational use. The assessment covered a total of 122 sites, which were spread across 85 National Forest Reserves located throughout the country. These

sites were distributed as follows: 49 sites in the Northeastern region, 31 sites in the North, 25 sites in the Central Region, and 17 sites in the South (Figure 1).



**Figure 1.** Map of 122 Sites located in 85 National Reserved Forests of Thailand for Assessing Potential for Sustainable Recreational Use

**2.2 Development of indicators and standard criteria for assessing the potential of national forest reserves as recreation areas**

To establish a comprehensive framework for determining these indicators, three primary conceptual frameworks were considered: 1) The conceptual framework for sustainable tourism development, as outlined by the United Nations World Tourism Organization (UNWTO), aims to balance the economic, social, and environmental aspects of tourism. This framework ensures that tourism benefits both current and future generations while addressing the needs of visitors, the industry, the environment, and host communities (UNWTO, 1995); 2) The objectives of tourism development in Thailand's National Forest Reserves, as specified by the RFD, are threefold: a) to reduce conflicts between local communities and the government, b) to meet the growing demand for recreational activities in forested areas, and c) to mitigate the impacts of tourism and recreation in ecologically sensitive areas, and 3) A set of quality standards indicators for evaluating natural tourist attractions developed in collaboration with the Department of Tourism, Ministry of Tourism and Sport, Thailand. The established quality standards for assessing natural tourist attractions included the evaluation of resource value, tourism development potential, and sustainable

management (Department of Tourism, Ministry of Tourism and Sport, 2013). Additionally, this study drew insights from the Global Sustainable Tourism Council (GSTC) criteria for destinations, which provide a framework for sustainable tourism practices by addressing environmental, social, and economic aspects (GSTC, 2019). Relevant case studies of national forest reserves both within Thailand and internationally were also examined to inform this framework.

Based on the conceptual framework, this study identified 30 indicators across three dimensions—economic, social, and environmental—reflecting the principles of sustainable tourism and the specific development goals of the RFD. To ensure the reliability and effectiveness of these indicators, an expert evaluation process using the Item-Objective Congruence (IOC) and Delphi techniques was employed (Bernard, 2000; Brunt et al., 2017). The IOC technique involves assessing each indicator by a panel of experts to measure how well the indicators align with the research objectives. Consequently, the Delphi method was implemented through multiple rounds of surveys to reach a consensus on the most appropriate and effective indicators for assessing tourism potential in national forest reserves. Experts from the RFD and scholars in relevant fields validated the indicators through a systematic process, gathering insights and achieving consensus on their relevance. Ultimately, 17 indicators were selected, including eight for site potential, six for tourism development potential, and three for local community management and participation. The comprehensive set of indicators is presented in Table 1.

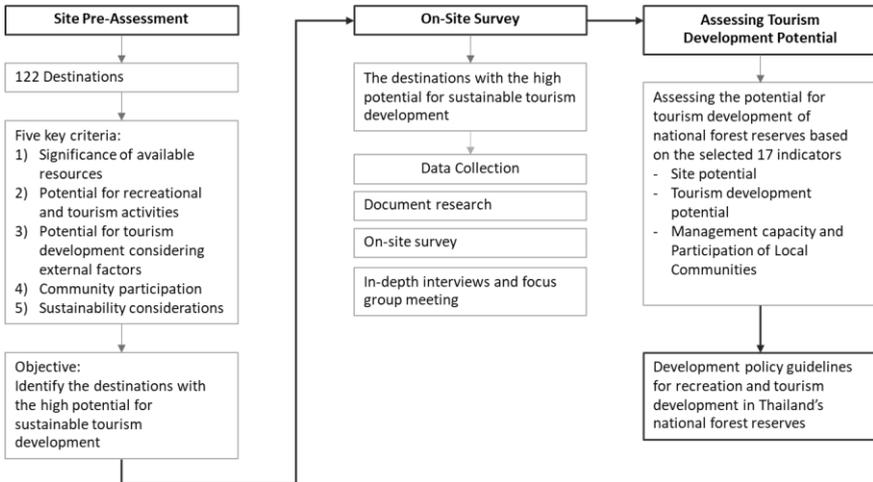
**Table 1.** Indicators for assessing the potential of the Thailand’s national forest reserves that are suitable for development as recreation areas

Dimension	Indicators
Site Potential	<ol style="list-style-type: none"> <li>1. Uniqueness of ecosystem in the destination</li> <li>2. Unique physical identity of tourist attractions</li> <li>3. Diversity of recreation and tourism resources</li> <li>4. Potential of nature interpretation and visitor learning about nature</li> <li>5. Value for the way of life of the local community</li> <li>6. Historical, tradition, and cultural values</li> <li>7. Risk of being destroyed by environmental conditions or natural disaster</li> <li>8. Risk of being destroyed by humans</li> </ol>
Tourism Development Potential	<ol style="list-style-type: none"> <li>1. Convenience to access tourist destination</li> <li>2. Linkage to other destinations</li> <li>3. Potential to develop basic facilities</li> <li>4. Accommodation development potential</li> <li>5. Providing tourism/recreation services to visitors</li> <li>6. Providing various tourism activities</li> </ol>
Management and Participation of Local Communities	<ol style="list-style-type: none"> <li>1. Participation of the local community</li> <li>2. Cooperation from other agencies and networking to support tourism development of the destination</li> <li>3. The readiness of personnel in managing tourism in national forest reserves</li> </ol>

**2.3 Assessment and classification of tourism development potential for national forest reserves to develop as recreation areas**

This study employed a comprehensive methodology to evaluate the tourism potential of national forest reserves in Thailand, encompassing site pre-assessments, on-site surveys, stakeholder engagement, and the formulation of development guidelines based on detailed assessments of recreational opportunities. The assessment process

to identify tourism development potential is presented in Figure 2.



**Figure 2.** Workflow for Assessing Tourism Development Potential in Thailand's National Forest Reserves

**Site pre-assessment:** Initially, a total of 122 destinations located across the country were identified. These sites were proposed by 23 Forest Resource Management Offices located throughout the country to ensure a diverse representation of regions and ecosystems. The pre-assessment process evaluated these areas based on five key criteria: 1) Significance of available resources—assessing the ecological, cultural, and recreational resources that could support tourism; 2) Potential for recreational and tourism activities—evaluating the types of activities that could be promoted, such as hiking, bird watching, and cultural experiences; 3) Potential for tourism development considering external factors—analyzing factors such as accessibility, existing infrastructure, market demand, and local government supports; 4) Opportunities for community participation—exploring how local communities could engage in and benefit from tourism initiatives; and 5) Sustainability considerations—examining the environmental impact of tourism development and the impact management. The selection of these sites involved a collaborative approach, engaging both RFD officers, including policy-making and field-level personnel, and researchers to ensure that both practical insights and academic rigor informed the assessment process. This comprehensive evaluation aimed to identify sites with the high potential for sustainable tourism development while preserving the integrity of the National Forest Reserves.

**Data collection:** This research employed a mixed-method approach for data collection, consisting of three main components: document analysis, on-site surveys, and in-depth interviews along with focus group discussions.

**Document research:** In this study, document research was used to analyze data for each site by reviewing RFD strategic plans, governmental reports, conservation plans, tourism development strategies, and other relevant documents. This process provided insights into the management practices and development potential of the sites.

**On-site survey:** This process was conducted from January to August 2021. Based on the preliminary assessment, the destinations identified as having high tourism development potential were selected for further evaluation. To ensure objectivity and minimize bias in the evaluation process, the surveys were carried out in collaboration with relevant RFD officials from each area. At each site, a team consisting of three RFD

officers and researchers assessed and assigned scores based on 17 selected indicators (Table 1). Data collection involved systematic direct observation of the site's physical characteristics, including landscape features, accessibility, and existing recreational facilities.

**In-depth interviews and focus group meetings:** To gather comprehensive insights, in-depth interviews and focus group discussions were conducted with key stakeholders. Participants were purposively selected to represent a range of perspectives, including representatives from the RFD, local communities, local governments, and local entrepreneurs. For each site, at least five key informants were chosen based on their knowledge and involvement in the area's development. Distinctions were made between these groups to capture the diversity of viewpoints on the tourism development process. RFD representatives provided insights on forest resource potential, ecological sustainability and policy aspects, local community members shared their participation, socio-economic concerns and needs, local government officials contributed perspectives on governance and planning, and local entrepreneurs offered input on tourism-related business opportunities and their cooperations. These distinctions ensured a well-rounded understanding of the challenges and opportunities for tourism development. The discussions focused on analyzing current conditions, reviewing existing plans and projects, and exploring stakeholder perceptions of tourism development at each location. Additionally, participants identified potential challenges and obstacles affecting recreation and tourism development within the National Forest Reserves.

**Data analysis:** The data analysis for this study involved two main components, integrating both qualitative and quantitative approaches. The quantitative data, collected from on-site surveys and structured assessments, were analyzed using statistical methods to evaluate the sites based on the 17 selected indicators. The qualitative data, derived from in-depth interviews, focus group discussions, and document research, were analyzed. By combining these approaches, the study ensured a comprehensive evaluation of both subjective perceptions and measurable site characteristics, providing a well-rounded basis for assessing tourism development potential.

**Assessing the potential for tourism development:** To evaluate the potential for tourism development, the Weighting Score Equation (WSE) was applied to determine potential scores (Department of Tourism, 2013; Phumsathan et al., 2022). The WSE is generally used for multi-criteria decision analysis (MCDA). In tourism, the WSE has been applied in frameworks for evaluating tourism potential, environmental management, and resource planning (Brunt et al., 2017; Phumsathan et al., 2022). In this study, the potential score was assessed on a scale ranging from 0 to 5, where a higher score signifies greater potential for tourism development. These scores were then converted into levels of tourism development potential, ranging from very low to very high that reflect the area's suitability for tourism activities, such as natural attractions, accessibility, infrastructure, and community engagement. The following section provides a detailed overview of the tourism potential assessment methodology applying the WSE:

$$TRP = \frac{W_1R_1 + W_2R_2 + W_3R_3 + \dots + W_nR_n}{W_1 + W_2 + W_3 + \dots + W_n}$$

TRP = Tourism Resource Potential  
 R1...n = Rating score of tourism potential of each indicator from ranging from 0 (indicating no potential) to 5 (indicating very high potential)

W1...n = The importance of each indicator using a scale from 1 to 3: A rating of 1 signifies low importance, 2 indicates moderate importance, and 3 signifies high importance.

Subsequently, the potential score values will be classified into five distinct levels representing different levels of development potential as follows:

- Very low potential for tourism development: potential scores ranging from 0.00 to 1.00.
- Low potential for tourism development: potential scores ranging from 1.01 to 2.00.
- Moderate potential for tourism development: potential scores ranging from 2.01 to 3.00.
- High potential for tourism development: potential scores ranging from 3.01 to 4.00.
- Very high potential for tourism development: potential scores ranging from 4.01 to 5.00.

Qualitative data analysis: The qualitative data, derived from in-depth interviews, focus group discussions, and document research, were analyzed using a thematic approach. The interviews and discussions were recorded and transcribed verbatim to ensure accuracy in capturing their opinions and perceptions of the participants. The transcripts were then coded and organized into key themes and categories, based on recurring ideas and patterns. These themes included recent tourism development activities, community expectations, concerns regarding resource utilization, laws and regulations related to tourism development in National Forest Reserves, perceptions of the benefits and risks associated with tourism development, and marketing potential. To strengthen the validity and reliability of the findings, a triangulated approach was applied, involving the cross-verification of data from multiple sources specifically, RFD officers, local stakeholders, and researchers. By cross-referencing and integrating data from these diverse sources, the triangulated approach allowed for the identification of common patterns, inconsistencies, and discrepancies, ultimately enhancing the robustness and credibility of the findings. This method provided a comprehensive and nuanced understanding of tourism potential by integrating diverse perspectives and data types, minimizing bias and enriching overall analysis.

The study employed a mixed-methods approach, integrating quantitative and qualitative tasks in sequence. Initially, the quantitative data provided an overview, measurable understanding of the sites, which was then complemented by qualitative data offering deeper insights into subjective perceptions of stakeholders and socio-cultural dynamics. The findings from both components were integrated by comparing and contrasting patterns in the quantitative data with themes identified in the qualitative analysis. By combining these approaches, the study offered a comprehensive evaluation that incorporated both measurable site characteristics and potential and the perspectives of key stakeholders, providing a solid foundation for assessing the potential for sustainable tourism development in National Forest Reserves of Thailand.

Development guidelines formulation: Based on comprehensive data analysis, policy guidelines for recreation and tourism development in Thailand's National Forest Reserves were formulated to address the unique characteristics and assessed potential of these areas. These guidelines provide actionable recommendations for RFD policymakers, taking into account both the ecological suitability of the forests for tourism and the social and economic needs of local communities. The primary objective was to establish sustainable tourism development plans that align conservation goals with community benefits. This rigorous analytical approach, combining empirical data derived from field studies, comprehensive stakeholder engagement, and alignment

with RFD and national policies, ensured that the guidelines were firmly rooted in local contexts, promoting responsible and sustainable tourism practices within Thailand's National Forest Reserves. Subsequently, the guidelines were presented to the RFD committee for further evaluation and feedback.

### 3. RESULTS AND DISCUSSION

#### 3.1 Assessing the potential of national forest reserves to develop as recreation areas

##### 3.1.1 Site pre-assessment

A comprehensive data collection was conducted, encompassing 122 tourist spots in National Forest Reserves, revealing a diverse range of recreational and tourism resources. These resources were classified into 11 distinct types, encompassing both natural and cultural attractions. Among the natural attractions, 97 sites were identified, including viewpoints, waterfalls, geographical landforms, nature trails, caves, ecotourism sites, rapids/rivers, and hot springs. Additionally, cultural, archaeological, and local way of life attractions, comprising community tourism, agricultural tourism, and archaeological sites, were found in 25 sites. Further details are provided in Table 2.

**Table 2.** The Number of Tourist Attractions in Thailand's National Forest Reserves Classified by Type of Tourist Attraction

Type of Tourist Attraction	Northern Region	Central Region	Northeastern Region	Southern Region	Total
Natural Attraction (97 sites)					
viewpoints	5	10	7	7	29
waterfalls	7	3	7	5	22
geographical landforms	3	1	11	-	15
Nature trails	-	3	8	-	11
Caves	5	2	-	1	8
Ecotourism destination	2	4	2	-	8
rapids/rivers	1	-	-	1	2
hot springs	1	1	-	-	2
Cultural, Archaeological, and Local way of life attractions (25 sites)					
Community Tourism	7	1	9	3	20
Agricultural Tourism	-	-	3	-	3
Archaeological Sites	-	-	2	-	2
Total	31	25	49	17	122

The assessment of tourism potential in Thailand's forest reserves revealed a diverse range of resources that can facilitate various recreational activities. Notably, the presence of caves, geographical landforms, hot springs, and archaeological sites were identified as prominent recreational resources with substantial potential for promoting recreation and tourism development within the National Forest Reserves. Based on the pre-assessment conducted using criteria such as resource significance, potential for recreational and tourism activities, consideration of external factors influencing tourism development, and opportunities for community involvement, the results indicated the presence of 21 sites with very high and high potential for recreation and tourism development. Additionally, 82 sites demonstrated moderate potential, while 19 sites were identified as having low potential (refer to Figure 3).

3.1.2 Assessment of recreation/tourism potential

Based on the site pre-assessment, a total of 31 sites within 16 National Forest Reserves were selected for further on-site survey and evaluation. These selected sites comprised one site with a very high potential for tourism development, 20 sites with high potential, and 10 sites with a moderate level of potential. The evaluation process applied 17 specified indicators to assess the tourism development potential of these selected sites. At this stage, the assessment of tourism development potential focused on the overall area level, specifically the National Forest Reserve to facilitate future planning and budget allocation for area management. The findings revealed that among these forests, 6 areas exhibited high potential, 8 areas demonstrated medium potential, and 2 areas displayed low potential. The summarized assessment results are presented in Table 3.

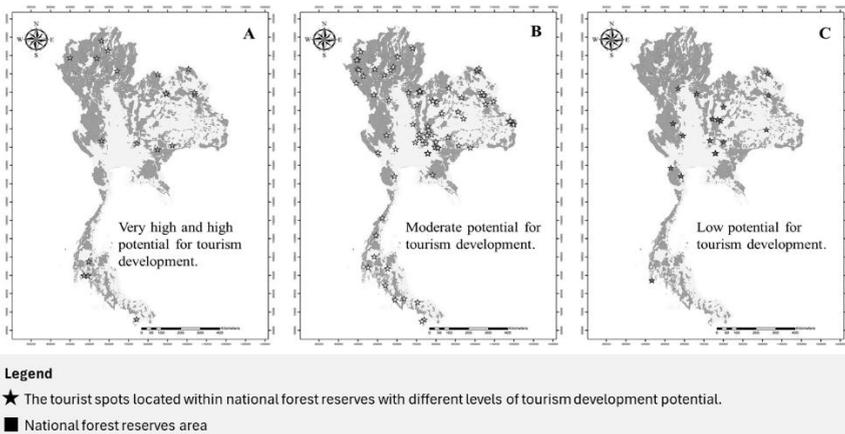


Figure 3. The map illustrated the tourism destinations within National Forest Reserves with different levels of tourism development potential.

- The 21 tourist spots located within National Forest Reserves assessed to have very high and high potential for tourism development.
- The 82 tourist spots located within National Forest Reserves that have been assessed to possess a medium level of potential for tourism development.
- The 19 tourist spots located within National Reserved Forests evaluated to possess low potential for tourism development.

Table 3. Summary of Potential of the 16 National Forest Reserves

Indicators	W <sub>i</sub> *	R <sub>i</sub>	W <sub>i</sub> R <sub>i</sub>	Potential level**
<b>Site Potential</b>		<b>2.49</b>		<b>Moderate</b>
1 Uniqueness of ecosystem in the destination	3	2.22	6.66	Moderate
2 Unique physical identity of tourist attractions	3	2.37	7.11	Moderate
3 Diversity of recreation and tourism resources	3	3.09	9.26	High
4 Potential of nature interpretation and visitors learning about nature	3	2.42	7.26	Moderate
5 Value for the way of life of the local community	2	3.18	6.36	High
6 Historical, tradition, and cultural values	2	2.21	4.43	Moderate

Indicators	W <sub>i</sub> *	R <sub>i</sub>	W <sub>i</sub> R <sub>i</sub>	Potential level**
7 Risk of being destroyed by environmental conditions or natural disaster	2	1.41	2.82	Low
8 Risk of being destroyed by humans	2	2.93	5.87	Moderate
<b>Tourism Development Potential</b>		<b>3.36</b>		<b>High</b>
1 Convenience to access tourist destination	3	3.82	11.47	High
2 Linkage to other destinations	3	4.00	12.00	High
3 Potential to develop basic facilities	3	2.69	8.07	Moderate
4 Accommodation development potential	3	3.49	10.48	High
5 Providing tourism/recreation services to visitors	2	2.66	5.32	Moderate
6 Providing various tourism activities	3	3.29	9.86	High
<b>Management and Participation of Local Communities</b>		<b>2.38</b>		<b>Moderate</b>
1 Participation of the local community	3	2.21	6.62	Moderate
2 Cooperation from other agencies and networking to support tourism development of the destination	3	3.21	9.62	High
3 The readiness of personnel in managing tourism in National Forest Reserves	3	1.73	5.20	Low
<b>Tourism Development Potential of Thailand's National Forest Reserves: Overall</b>		<b>2.79</b>		<b>Moderate</b>
Remark: * W =	The importance of each indicator using a scale from 1 to 3: A rating of 1 signifies low importance, 2 indicates moderate importance, and 3 signifies high importance.			
**Score	1.01 – 2.00	Low potential for tourism development		
	2.01 – 3.00	Moderate potential for tourism development		
	3.01 – 4.00	High potential for tourism development		
	4.01 – 5.00	Very high potential for tourism development		

The assessment of potential scores for each dimension revealed that the site's potential score, which reflects the attractiveness of the site, averaged at a moderate level (2.49 out of 5). This score is significant, as it contributes to the overall tourism image and serves as a key factor influencing tourists' motivation to travel. The results indicate that Thailand's National Forest Reserves provide diverse resources for recreational activities, including nature-based pursuits and emerging trends in outdoor sports such as mountain biking and trail running. These forests are typically situated in buffer zones around protected areas, making them more resilient compared to national parks with fragile ecosystems. Promoting recreational activities and tourism in these forests can help mitigate negative impacts on the primary protected area system. Additionally, the forests provide educational opportunities for visitors, encouraging connections between natural environments, ecosystems, and local communities. This emphasis on community participation in tourism activities can bring both direct and indirect benefits, enhancing acceptance and cooperation among neighboring communities—one of the primary missions of tourism development within Thailand's National Forest Reserves.

While the overall site potential score indicates moderate attractiveness, the findings highlight a significant diversity of recreational and tourism resources within these forests, which enhances their potential for sustainable tourism development. The varied landscapes—including caves, geological formations, hot springs, and archaeological sites—serve not only to attract tourists but also to enrich the cultural heritage and identity of local communities. This diversity is critical for creating

compelling tourist experiences, as noted in recent tourism literature (Haukeland et al., 2023; Mihardja et al., 2023; Zannat, 2018). Moreover, the high potential for recreational activities in these forests acts as a vital resource for local communities, providing alternatives for economic development while preserving traditional lifestyles. Initiatives focused on nature-based and community-based tourism enable residents to engage with their environment and share their cultural heritage with visitors, fostering pride within the community and encouraging the preservation of local customs (Bramwell & Lane, 2011). This alignment with the objectives of tourism development set forth by the RFD emphasizes the importance of community engagement, which not only fosters a sense of pride but also contributes to the sustainability of their way of life and also promotes the responsible utilization of natural resources.

However, based on the results, there exists a risk of anthropogenic destruction due to local community activities such as the collection of forest products, agricultural practices, livestock grazing, and authorized special activities. When there are conflicts, these activities can lead to habitat degradation and biodiversity loss (Chankhao et al., 2022). Addressing these challenges through effective management, meaningful participation, and sustainable practices will be crucial in maximizing the tourism potential of Thailand's National Forest Reserves. Implementing community-based management strategies that involve local stakeholders in decision-making processes can enhance both conservation efforts and the economic viability of tourism initiatives (Berkes, 2017). Additionally, it is essential to develop comprehensive land-use plans that integrate conservation and tourism objectives, enforce regulations to mitigate destructive practices, and invest in infrastructure that supports sustainable tourism while minimizing environmental impacts.

It is crucial to evaluate the competitiveness of tourist destinations, particularly in Thailand's National Forest Reserves, which received an overall high score of 3.36 out of 5. This positive evaluation highlights key factors contributing to the tourism potential of these areas, such as convenient access to destinations, linkages to other tourist sites, accommodation development potential, and the availability of diverse tourism activities. These elements significantly influence tourists' decisions to visit, especially during the involvement and development stages of the Tourism Area Cycle of Evolution (Butler, 1980).

However, despite this high potential, several challenges must be addressed to fully maximize tourism in Thailand's National Forest Reserves, particularly in the areas of facility development and the provision of tourism and recreation services. Some forest areas lack adequate facilities to support tourism activities, both in terms of quality and quantity. Although many locations have established basic amenities, such as interpretation signs, rest areas, toilets, and parking lots, these often suffer from inadequate maintenance, resulting in deterioration and visual pollution. Interviews with stakeholders also revealed that there is no formal plan for facility maintenance. This issue is critical for enhancing tourist satisfaction and willingness to visit the destination (Zhang et al., 2022). Therefore, implementing effective maintenance plans is essential to ensure that existing facilities remain in good condition and continue to provide a positive visitor experience. Moreover, while current tourism development policies emphasize promoting visitors' understanding of nature and ecosystems, the lack of interpretive resources—such as visitor centers, nature trails, and trained interpreters—limits the effectiveness of these initiatives. This deficiency reduces visitors' educational experiences and their ability to engage meaningfully with the natural environment (Phumsathan et al., 2022).

In the dimension of management and participation of local communities, the score was found to be at a moderate level, with an average of 2.28 out of 5. While the moderate score for local community participation indicates room for improvement, the high potential for collaboration with external agencies presents a valuable opportunity for the RFD. The result reflects the need for improvement in local community engagement, cooperation from other agencies and networking to support tourism development received a notably high score. This presents a significant opportunity for the RFD to leverage strong support from other agencies or Destination Management Organizations (DMOs) in advancing tourism development initiatives.

Several challenges need to be addressed to enhance the RFD's capacity for sustainable tourism in National Forest Reserves. First, as tourism development is a relatively new responsibility for the RFD, there is an urgent need for human resource development. Staff training and capacity-building efforts are crucial for delivering high-quality tourism services that align with sustainable practices (GSTC, 2019). Second, coordination among government agencies, the private sector, and NGOs is vital to avoid conflicting interests and inefficiencies. Interviews highlighted that the RFD lacks clear policies on local participation, particularly in formal roles. Establishing clear operating frameworks, regulations, and guidelines can ensure a more effective and participatory approach to tourism management (Roengtam & Agustiyara, 2022). Third, community involvement is key to successful tourism development. Engaging local communities in tourism planning from the outset can boost economic benefits, promote resource conservation, and reduce unsustainable practices like illegal logging. The active participation fosters community ownership, leading to better resource management and cultural preservation (Friedman et al., 2020). Finally, inadequate waste management in some national forests contributes to environmental degradation, negatively affecting the visitor experience. Implementing strategies such as waste separation, recycling, and visitor education is essential for maintaining the sustainability of tourism and enhancing visitor satisfaction (GSTC, 2019; Phumsathan et al., 2022).

### **3.2 Suitable recreational and tourism activities based on site potential**

Recreational activities within National Forest Reserves are determined based on the available recreation resources in the area along with the analysis of recreation/tourism development potential using specific indicators. Through this research, suitable recreational activities based on the area's potential can be identified. The study categorizes these activities into nine groups. 1) Sightseeing and scenic routes involve activities centered around enjoying the natural beauty and picturesque views within the forest area. These activities attract nature-based tourists, who are concerned about a lower environmental impact compared to other types of tourism (Weaver, 2001; Ramchurjee, 2013). 2) Interpretation trails and nature study aim to educate and inform visitors about the flora, fauna, and ecological aspects of the forest through guided trails and nature study programs. These activities foster environmental education and awareness, which is critical for promoting conservation behavior among tourists (Ballantyne et al., 2011). 3) Geotourism activities provide opportunities for tourists to understand the geological features and formations within the forest area and the natural history of the region. These activities not only add educational value but also enhance the unique characteristics of the forest reserves, differentiating them from other destinations (Newsome & Dowling, 2017). 4) Historical and archaeology learning activities encourage visitors to explore and learn about the historical and archaeological significance of the forest area. This integration of history and nature aligns with cultural tourism trends, which have seen significant growth in recent years

(Richards, 2020). 5) Water-Based Activities comprise recreational activities that take place in or around bodies of water within the forest (waterfalls, reservoirs, rapid), such as swimming, jungle rafting, and boating. 6) Camping provides visitors with opportunities to stay overnight in designated camping areas within the forest and potential for stargazing activities, facilitating them with direct engagement with the natural environment. This experience allows tourists to forge a deeper connection with nature, fostering an appreciation for ecological systems and promoting environmental consciousness. The popularity of camping and stargazing also corresponds to the global rise in ecotourism, where visitors seek authentic, nature-based experiences (Peterson et al., 2020). 7) Adventure and outdoor sports recreation activities encompass various adventurous and physically challenging activities like hiking, rock climbing, zip-lining, trail running and other outdoor sports, catering to visitors seeking thrill, excitement, and fulfilling personal development potential (Ramchurjee, 2013). 8) Community-based tourism focuses on engaging local way of life in tourism activities within the forest area, promoting cultural exchange and sustainable tourism practices. This activity could encourage sustainable development and improve local livelihoods simultaneously (Peterson et. al., 2020; Ramchurjee, 2013). And 9) Pilgrimage tourism activities center around religious or spiritual sites within the forest, attracting visitors who seek spiritual fulfillment or religious experiences. This is a very popular activity for Buddhists.

Additionally, based on an examination of recreational activities, physical characteristics, and supporting facilities within the targeted National Forest Reserves, a discussion in this part was conducted to determine the types of nature-based tourists suitable for each recreation area. In accordance with Lindberg's (1991) classification, tourists were categorized into five distinct groups based on their behavior and interest in natural tourism activities. Hard-core nature tourists consist of scientific researchers and specialized tour groups dedicated to intensive study and exploration. Dedicated nature tourists are nature enthusiasts, including those interested in studying nature, local history, and culture, along with adventurous tourists. Mainstream nature tourists are the majority and seek popular natural attractions, valuing comfortable feeling and convenience. Casual nature tourists prioritize comfort and familiarity, incorporating nature tourism into their itinerary, but may not be the major destinations. Outdoor sport recreationists engage in physical activities in natural environments, driven by health-consciousness and a desire to escape urban routines. By understanding these tourist segments, the RFD can provide appropriate facilities and services to enhance experience and respond to specific interests within the National Forest reserves.

The analysis of suitable nature-based tourist segments for each recreation area reveals the following findings. Sightseeing activities and camping are well-suited for mainstream nature tourists, while nature study, geotourism, and historical and archaeological tourism activities appeal to both dedicated nature tourists and mainstream natural tourists. Water-based activities cater to both mainstream natural tourists and casual nature tourists, with easily accessible attractions and community-provided facilities. Adventure and outdoor sport activities meet the needs of adventure groups and outdoor sport-focused tourists. Community-based tourism activities attract dedicated nature tourists and mainstream natural tourists, despite the destinations being located in remote areas. Pilgrimage tourism accommodates both mainstream natural tourists and casual nature tourists, although some sites may have accessibility challenges. These findings inform targeted strategies for visitor experiences and sustainable tourism management in national forest reserves.

Understanding the potential of recreation resources and analyzing the nine groups of activities, The RFD can effectively plan and manage recreational activities within National Forest Reserves and also provide some ideas for marketing plans. This knowledge could support decision making and provide the idea for facility development that caters to the diverse preferences and motivations of nature-based tourist groups, enhancing visitor experiences and promoting sustainable tourism practices. By considering the suitability of different recreational activities for specific segments, each site can develop targeted strategies to optimize visitor experiences, preserve natural resources, and provide enriching and memorable experiences in National Forest Reserves.

## **4. CONCLUSION AND RECOMMENDATIONS**

### **4.1 Conclusion**

This study aims to inform the development of guidelines for recreational and tourism activities within Thailand's National Forest Reserves, representing a significant shift in the RFD conventional practices. An evaluation of 122 sites across 85 national forests identified 31 sites for further surveys based on factors such as resource significance, the potential for recreational activities, feasibility of tourism development, and opportunities for community involvement. The comprehensive assessment employed 17 indicators to determine the suitability of each site. Through the assessment of 16 National Forest Reserves, it has been determined that Thailand's national forests exhibit a wide range of recreational resources, encompassing both natural and cultural elements. Nine categories of suitable recreational activities were identified, including sightseeing, nature study, geotourism, historical and archaeological tourism, water-based activities, camping, adventure sports, community-based tourism, and pilgrimage tourism. These resources support a wide range of tourist and recreational activities, catering to different visitor groups. The forests also show potential for outdoor sports activities like trail running, mountain biking, and rock climbing, which can help reduce pressure on more ecologically vulnerable protected areas. Additionally, the forests provide educational opportunities that connect visitors with nature, ecosystems, and local lifestyles. This study indicates a high level of potential, influenced by the development and maintenance of recreational facilities and services that meet the required standards, particularly basic facilities and those that promote nature-based learning. Local community management and participation are also vital, necessitating investment in human resource development across the RFD, local communities, and government entities. Establishing clear rules and guidelines will be essential for promoting community involvement in tourism development.

### **4.2 Recommendations for recreation and tourism development within Thailand's national forest reserves**

Overall, these findings emphasize the need for the development of appropriate guidelines for recreational activities and tourism within Thailand's National Forest Reserves. Such guidelines should aim to promote sustainable practices, encourage collaboration among the RFD, local communities, and other relevant stakeholders, and foster the active participation of all sectors in the development of tourism within national forest reserves. Based on the findings, several key recommendations emerge:

#### 1) Recreation and Tourism Development:

- Create recreational activities and interpretive programs that highlight the unique natural and cultural features of each forest.
- Implement an impact monitoring and management program for ecologically

- sensitive areas.
- Develop a comprehensive database of recreational and tourism activities to support the effective planning, regulation, and promotion of sustainable tourism practices.
- 2) Facility and Service Development:
- Develop a detailed action plan for the development and maintenance of facilities, with an allocated annual budget.
  - Prioritizing the use of locally-sourced materials and constructing small-scale structures that harmonize with the natural environment.
  - Improve accessibility by enhancing transportation systems and signage.
- 3) Participation of Local Communities:
- Establish clear guidelines and mechanisms to facilitate stakeholder participation and cooperation with forest management.
  - Address ambiguities in agreements and regulations to prevent disruptions and conflict in the management of the RFD.
  - Provide training programs for local communities on tourism management, covering topics such as local ecology, tourism development concepts, community-based tourism principles, service standards, tour programming, and also waste management.
  - Engage communities in collaborative monitoring activities and sustainable tourism practices, fostering stronger partnerships between the RFD and local residents.
  - Encourage public-private partnerships to enhance infrastructure, marketing, and conservation efforts.
- 4) Capacity Building for RFD Staff:
- Develop training programs for RFD staff on sustainable tourism management, environmental monitoring, and collaboration with local communities to ensure the RFD team is equipped with the necessary skills to support tourism development in National Forest Reserves.

These recommendations serve as crucial implementation guidelines to guide policymakers, key stakeholders, and practitioners involved in the development of recreational activities within Thailand's National Reserved Forests. Embracing these recommendations is essential for achieving a harmonious balance between the conservation of natural resources and ecosystems and the provision of meaningful experiences for visitors. Additionally, these guidelines emphasize the importance of prioritizing the development and empowerment of local communities as an integral aspect of sustainable tourism objectives.

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