

ASSESSMENT OF TOURISM DEVELOPMENT POTENTIAL BASED ON TOURISM COMPONENTS IN BUFFER ZONE OF HUAI KHA KHAENG WILDLIFE SANCTUARY, UTHAI THANI PROVINCE

Sangsan Phumsathan^{1,*}, Panita Panyo², Nantachai Pongpattananurak³,
and Sommai Udomwitid⁴

Abstract

The objectives of this study were to 1) explore tourist attractions in the buffer zone of Huai Kha Khaeng Wildlife Sanctuary, Uthai Thani Province, 2) determine indicators for tourism development potential and assess tourism potential in accordance with tourism components, and 3) propose guidelines for tourism development in and around the buffer zone area. This study was conducted in April 2021 through February 2022, applying a mixed methods model. An on-site survey within the study area, revealed a total of 17 active tourist attractions. A set of indicators was developed for assessing the tourism development potential. This comprised of 32 indicators based on five tourism components (attraction, accessibility, amenity, accommodation, and activity) and local participation. In accordance with the tourism components, the results indicated that in general the tourism development potential of the study area was at moderate level with accessibility receiving the highest score, followed by activities, attractions, accommodation, and local participation, respectively. Based on these results, in relation to tourism development, nature-based tourism should be considered as the major attraction of the site. For effective tourism development, priority should be given to the development of facilities and the provision of quality services. Additionally, promoting community participation in tourism management is an important issue.

Keywords: Tourism Development, Buffer Zone Area, Huai Kha Khaeng Wildlife Sanctuary

1. INTRODUCTION

A buffer zone is an area designated as a barrier between a protected area and the adjacent areas, as is characterized as an area

of protection through sustainability of human activities and concern for the environment. In general, the boundaries of protected areas are often settled by local communities and their economic activities such as resource

^{1,*} Asst. Prof. Dr. Sangsan Phumsathan (corresponding author) is currently working as an Assistant Professor in the Parks, Recreation, and Tourism Program, Department of Conservation, Kasetsart University, Thailand. She obtained a Ph.D. in Recreation, Parks, and Tourism Sciences from Texas A&M University, U.S.A. Her research is focused on tourism management and nature-based tourism. Email: fforssp@ku.ac.th

² Panita Panyo is a master student in the Master's Degree Program in Parks, Recreation, and Tourism, Department of Conservation, Kasetsart University, Thailand. Currently she is working as forestry officer (operational level) in Department of National Park Wildlife and Plant Conservation, Thailand.

³ Asst. Prof. Dr. Nantachai Pongpattananurak is currently working as an Assistant Professor in the Department of Forest Biology, Faculty of Forestry, Kasetsart University, Thailand. He obtained a Ph.D. in Forest Sciences from Colorado State University, U.S.A.

⁴ Asst. Prof. Dr. Sommai Udomwitid is currently working as an Assistant Professor in the Department of Economics, Kasetsart University, Thailand. He obtained a Ph.D. in Agricultural Economics from Kasetsart University, Thailand.

utilization that can cause negative impacts on the protected area (Bhusal, 2012). Government agencies that are responsible for managing buffer areas must set guidelines for the management of the buffer area, such as defining the area's boundaries, policy formulation for proper management, and promoting the participation of stakeholders (Kaewsang, 2017). Nevertheless, at present, buffer areas still face problems of inefficient management which lead to conflicts between government officials and surrounding communities, human and wildlife conflict, resource degradation, and land ownership rights issues, as well as other concerns (Nikornkul, Wichotsikkhakit, & Indhapanno, 2020). Therefore, various agencies have proposed proactive management strategies to solve these problems, such as forest plantation, agroforestry, community forest management, forest rehabilitation, forest product assessment, and creating alternative jobs for local communities (Phonsen, 2008).

In many buffer areas, tourism development projects have been proposed as a significant tool to support the sustainable management of the area, in reference to both the buffer zone and the protected areas, with the expectation that tourism can provide sustainable economic benefits while supporting conservation and improving the livelihoods of local villages in the buffer zone. Additionally, tourism can be used as a tool for managing conflicts between government agencies and communities or communities and wildlife, and reduces the pressure on communities located around protected areas (Phumsathan et al., 2017). Many countries around the world have adopted tourism as a tool for buffer zone management, such as Tadoba-Andhari Tiger Reserve and Sariska Tiger Reserve (India) (Lyngdoh, Mathur, & Sinha, 2017; Udaya Sekhar, 2003); Nanda Devi Biosphere Reserve, in the Himalayan Mountains in northern India (Maikhuri et al., 2000); Beeshazari Tal, the significant buffer area of Chitwan National Park in Nepal; and the Amboseli Biosphere Reserve, the buffer zone of Amboseli National Park, Kenya

(Lamichhane et al., 2019). In Thailand, tourism is also used as a tool to manage buffer zones, as can be seen in many areas that have developed tourism, such as Wang Nam Khiao-Pha, Khao Phu Lung National Reserve Forest (Nakorn Ratchasima Province), Hin Sam Wan (Bueng Kan Province), and Mae Kampong (Chiang Mai). In these areas, tourism development has been based on resource potential. Many case studies have proved that tourism could reduce conflicts between people in the community and between the community and government officials, reduce reliance on forest resources, and support community development (Mwakima, 2013; Phumsathan et al., 2017).

Huai Kha Khaeng Wildlife Sanctuary is part of Thailand's most important biodiversity areas, the Huai Kha Khaeng-Thung Yai Naresuan World Heritage Site. This protected area is considered by the government of Thailand as a critical tiger conservation landscape in Thailand. Huai Kha Khaeng Wildlife Sanctuary is a natural forest World Heritage Site with a diversity and abundance of natural resources including plants, wildlife, and water resources. It contains the habitat of wild animals that have become locally extinct such as wild water buffalo (*Bubalus arnee*), Banteng (*Bos javanicus*), Malayan tapir (*Tapirus indicus*), and tiger (*Panthera tigris*). The buffer area of Huai Kha Khaeng Wildlife Sanctuary is still significant wildlife habitat, but there are many local communities located in area as well. Presently, the buffer forest of the Huai Kha Khaeng World Heritage Site faces various threat factors, due to the management of government agencies and utilization of communities in the surrounding area, including forest resource utilization, hunting, logging, and illegal agriculture. These activities could affect the sustainability of the world heritage site (Nikornkul et al., 2020; Phumsathan et al., 2017). For these reasons, government agencies have introduced the idea of tourism development in the buffer area, to support the sustainable management of the Huai Kha Khaeng World Heritage Site. The expectation of the project is that tourism will enable

sustainable economic benefits while also supporting conservation and improving the livelihoods of local villages in the Huai Kha Khaeng buffer area through environmentally friendly economic activities. Additionally, tourism in the buffer area will provide the opportunity for visitors to enjoy, learn about and appreciate the value of this Natural World Heritage Site. However, there is no information to support tourism development in this area. The tourism development potential of this site is yet to be identified.

In the initial process of tourism development, it is necessary to assess the potential of tourist attractions. This contributes important information for a tourism management planner to know about the uniqueness and constraints of the sites, including both physical factors and social factors, in order to analyze the appropriateness in determining activities that enhance the strength of the area and provide the guidelines for further development of tourism suitable for the area. More importantly, tourism management in protected areas focuses on the ecological impacts of tourist activities. In this manner, this information would help a tourism planner to identify precautions that could prevent or mitigate the negative impacts and other such unfortunate consequences from tourism development.

Following the rationale mentioned above, the specific objectives of this research were to 1) explore tourist attractions in the buffer zone of Huai Kha Khaeng Wildlife Sanctuary, Uthai Thani Province, 2) define indicators and assess the potential of tourist attractions according to tourism components and community participation, and 3) present guidelines for tourism development in and around the buffer zone of Huai Kha Khaeng Wildlife Sanctuary, reducing conflicts between government agencies and local communities living in the surrounding areas, and reducing other threat factors in the area. The results of this study will provide an assessment path to predict sustainable tourism development that will be beneficial to decision-making in relation to tourism development in the buffer zone area of this

this World Heritage Site.

2. LITERATURE REVIEW

2.1 Assessment of Tourism Development Potential

The assessment of tourism development potential is an essential foundation for tourism destination management, helping related agencies and other stakeholders to rationally allocate tourism resources that are suitable for the area (Phumsathan et al., 2016). Tourism development potential refers to the capacity of tourism resources in the development of tourism activities. This includes the attractiveness of the destination in appealing to tourists who might visit the location, and the availability of tourist attractions which can support the development, or improvements and changes that will occur from the development of tourism. In potential assessment, indicators must be determined in order to demonstrate the attributes of tourist attractions in each aspect, consistent with the resource type and management objectives (UNWTO, 1996). Generally, there are four key elements in indicating the criteria or indices applied in evaluating potential (Diamantis, 2004; Zhan, Liu, & Shao, 2015).

Firstly, the area component is an important factor for attracting tourists to visit the area. This component can be determined by the characteristics of tourism resources in the area, such as natural resources, historical uniqueness, landscape, religious significance, and local culture. The second component is sustainable management which refers to tourist safety and security, facility development, managing the number of tourists based on the site's carrying capacity, and tourism impact management. The third component is tourism activities and learning processes for visitors, which incorporates the variety of tourism activities, environmental awareness, and education. The fourth component is the involvement of the host community or the participation of the local peoples (Hoang, Truong, Nguyen, & Hens, 2018). The factors

affecting the potential for success of tourism development has been analyzed in many research studies. Nguyen et al (2020) presented 11 factors that impact the development of sustainable tourism on the South-Central Coast. These included 1) institutions and policies for tourism development, 2) infrastructure development, 3) tourism resources, 4) human resources for tourism, 5) diversity of tourism services, 6) relevant support services, 7) diversity of tourism activities, 8) tourism promotion and encouragement, 9) tourists' satisfaction, 10) local community participation, and other factors. The results also confirmed that institutions and policies for tourism development, infrastructure, tourism resources, and local community participation, strongly impact the development of sustainable tourism in the region.

Regarding Thailand, there are various sets of indicators and criteria for tourism development that have been developed. The Department of Tourism (2013) has defined criteria and indicators for the assessment of tourism potential in three main categories. These include 1) resource potential such as the uniqueness of the local lifestyle, wisdom and knowledge, beauty of the landscape, diversity of ecosystems, and the abundance of natural resources, history, culture, and traditions, 2) the potential for tourism development such as improvement of basic facilities, safety and security management, and the potential for tourism development according to external factors, and 3) the tourism management potential, such as participation of local communities, proper management of tourism activities, and maintenance of utility systems. Similar to Phumsathan et al. (2022), this research objected to assessing the potential of national forest reserves of Thailand in an aim to promote tourism and recreational use. The set of 17 indicators was set based on 1) resource predominance, 2) the potential for tourism development, 3) the potential for tourism development according to external factors, and 4) opportunities to promote community participation.

For natural attractions that have potential, but have not yet undertaken tourism

development, indicators are commonly used in two main areas. These include 1) site potential, such as the uniqueness of the site's ecosystems and natural resources, which may include a collection of distinctive, rare, endangered, or abundant flora or fauna, the physical allure and landscape of the natural site, the presence of appealing tourist attractions, and the risk of the area being destroyed by humans, and 2) the potential for tourism development such as accessibility to tourist spots, tourist safety, and the potential to organize adequate tourism activities (Phumsathan et al., 2016). The assessment of tourism potential has considered indicators related to area management and local community participation. In this manner, involvement of the local people is the driver of the tourism development potential of an area. In addition, effective tourism management and fair allocation of benefits to the community will help to reduce the conflicts that arise in the future (Bonzanigo, Giupponi, & Balbi, 2016).

2.2 Tourism Components

Generally, the tourism industry is comprised of at least five specific components (Buhalis, 2000; Dickman, 1997). Firstly, attraction is the pull factor of tourism resources that can attract tourists to travel to the destination. Attractions can be natural attractions (mountains, waterfalls, islands, rivers, beaches, etc.) or cultural attractions. Secondly, accessibility is one of the crucial elements, due to playing a role in transferring tourists to various attractions. Thirdly, amenities refer to the things which are organized to facilitate visitors. These include infrastructure and facilities developed in order to facilitate tourists, such as restaurants, entertainment venues, banks, post offices, and hospitals. Fourthly, accommodation is an important factor that supports tourists, while it is also a factor that influences the scale of tourism development. The other component is tourism activity, which refers to tourism products provided for the purpose encouragement and increasing the appeal of an

excursion in tourist attractions in addition to visiting them only. The type of activities would differ according to the type of attraction. Additionally, based on the goals of sustainable tourism development, local participation is also a significant factor in the achievement of this goal, such that a tourism manager must take into account in every process of operation. This is because the local community is a supplier of tourism, bringing the resources available in the local area to support tourism development (Ritchie & Inkari, 2006). Additionally, local communities are aware of the problem and are affected by tourism developments. Therefore, the role and importance of local people in participating will be the starting point for sustainable tourism development in the future (Mrksa & Gajić, 2014).

3. METHODOLOGY

3.1 Research Areas

The targeted area covers the edge of Huai Kha Khaeng Wildlife Sanctuary, known as the buffer zone area. This area consists of nine villages, namely, Khao Kheow Village, Huai Kha Khaeng Village (Phai Ngam), Bueng Charoen Village, Ban mai Samakkhi Village, Huai Pao Village, Sai Ngam Village (Ariyothai 1), Ang Huai Dong Village, Pong Makha Village, and Khao Hin Theun Village. Additionally, Huai Kha Khaeng Wildlife Breeding Station and Huai Thap Salao-Huai Rabam Non-Hunting Area were also included. The target area of this study is presented in Figure 1.

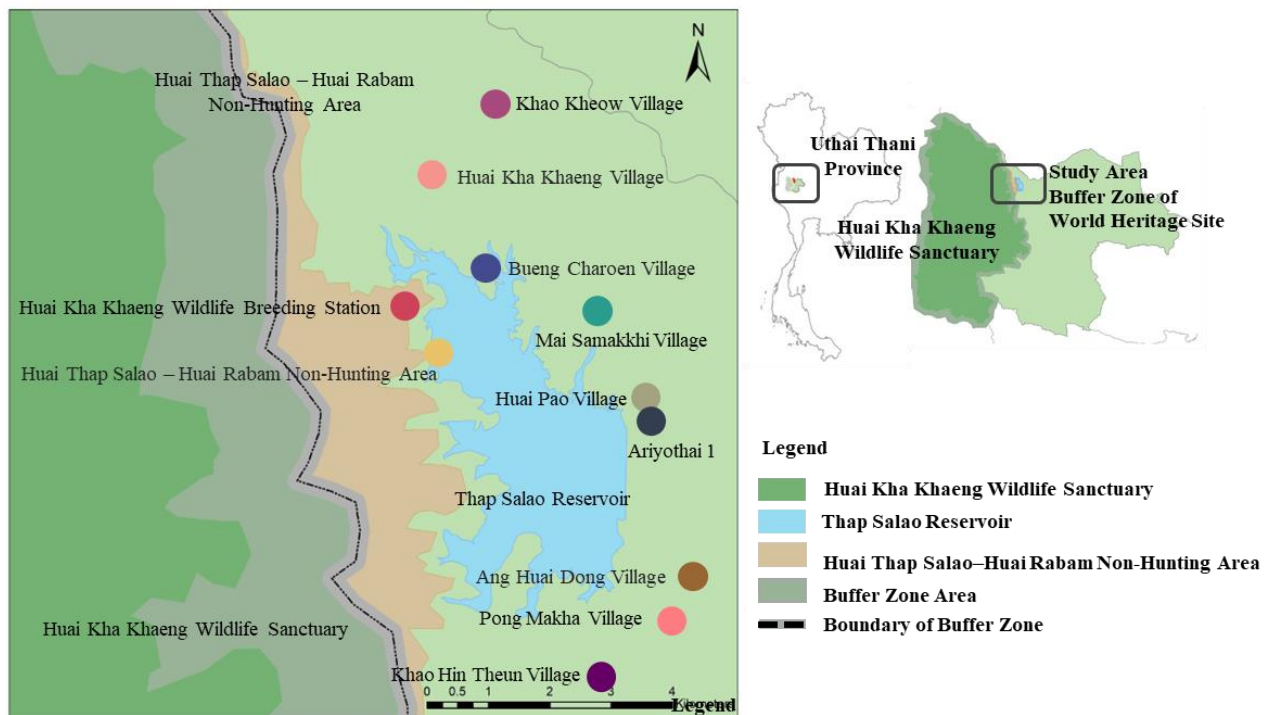


Figure 1 The Study Area for the Assessment of Tourism Development Potential Based on Tourism Components in the Buffer Zone Area of Huai Kha Khaeng Wildlife Sanctuary, Uthai Thani

3.2 Conceptual Framework

This research focused on assessment of potential tourism development based on various tourism components. The conceptual framework of this research was designed by applying the concept of tourism components (5A's) generated by Buhalis (2000) and Dickman (1997). The tourism development potential of the Huai Kha Khaeng buffer zone was analyzed based on five components including attractions, accessibility, amenities, accommodation, and activities together with community participation in the determining indicators. The results in this part of the study led to recommendations for tourism development in the buffer area of Huai Kha Khaeng World Heritage Site (Figure 2).

3.3 Research Methods

This study applied a mixed research method, integrating both quantitative and qualitative approaches. The research study comprised of four main parts (Figure 3).

1) The first phase of this research study involved the collection, review, and analysis, of secondary data from related documents, research, books, websites, and online media, in order to determine the indicators and criteria for assessing tourism potential and community participation in cooperating with tourist attraction management standards set by the Department of Tourism, Ministry of Tourism and Sports (Department of Tourism, 2013; Phumsathan et al., 2016).

2) The second phase involved setting the appropriate indicators for assessing the potential for tourism development in the buffer zone of the Huai Kha Khaeng Wildlife Sanctuary in accordance with tourism components for analysis. Subsequently, Item-Objective Congruence (IOC) was used to evaluate the indicator items, while the Delphi technique was applied to investigate the appropriateness of the indicators.

3) The third phase involve the application of an exploratory sequential design and situation analysis to examine the internal and

external conditions that might affect the tourism development situation in the buffer zone. The first step consisted of an on-site survey, conducted by eight participants including researchers, community leaders, local villagers, and local government agencies. The second step focused on assessing tourism development potential based on the set of indicators that had been developed to confirm the results.

4) The fourth phase focused on in-depth interviews with key informants, i.e., community leaders, local people from each village, and government officers. A total of 44 people were selected for the interviews using a purposive sampling method and snowball technique.

3.4. Research Tools

A tourism potential assessment form, based on tourism components (5A's) and community participation, was developed for assessing the potential for tourism development. The form comprised of six parts, including one part for each of the five aspects indicating tourism potential (attractions, accessibility, amenities, accommodation, and activities) and one part measuring the level of local participation. The Delphi method is commonly used to determine the validity of an assessment form, with experts' input. Additionally, in-depth interviews with key informants were conducted via a semi-structured approach. The questions consisted of two sections including 1) information on the characteristics of attractions based on tourism components and community participation and 2) key informants' opinions about tourism developments that will take place in the future, and their attitudes and perceptions towards tourism impacts.

3.5 Data Analysis

For assessing the potential for tourism development according to the tourism components, a Weighting Score Equation (WSE) was applied to determine the potential

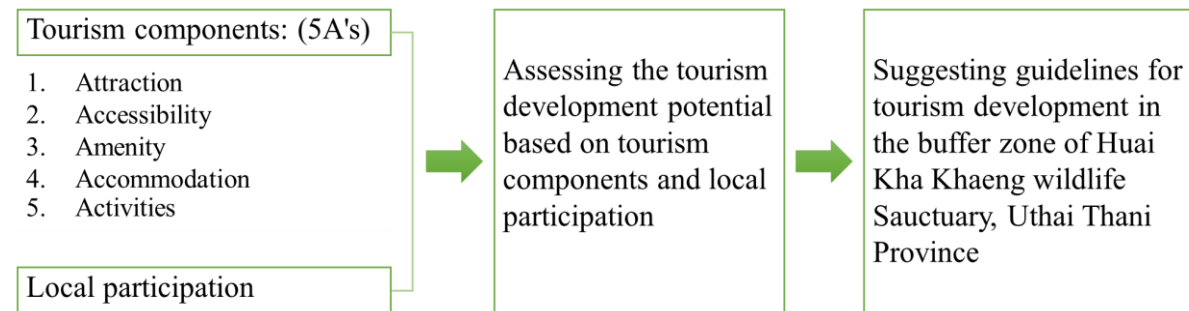


Figure 2 Conceptual Framework of the Study “Assessment of tourism development potential Based on tourism components in the buffer zone area of Huai Kha Khaeng Wildlife Sanctuary, Uthai Thani Province.”

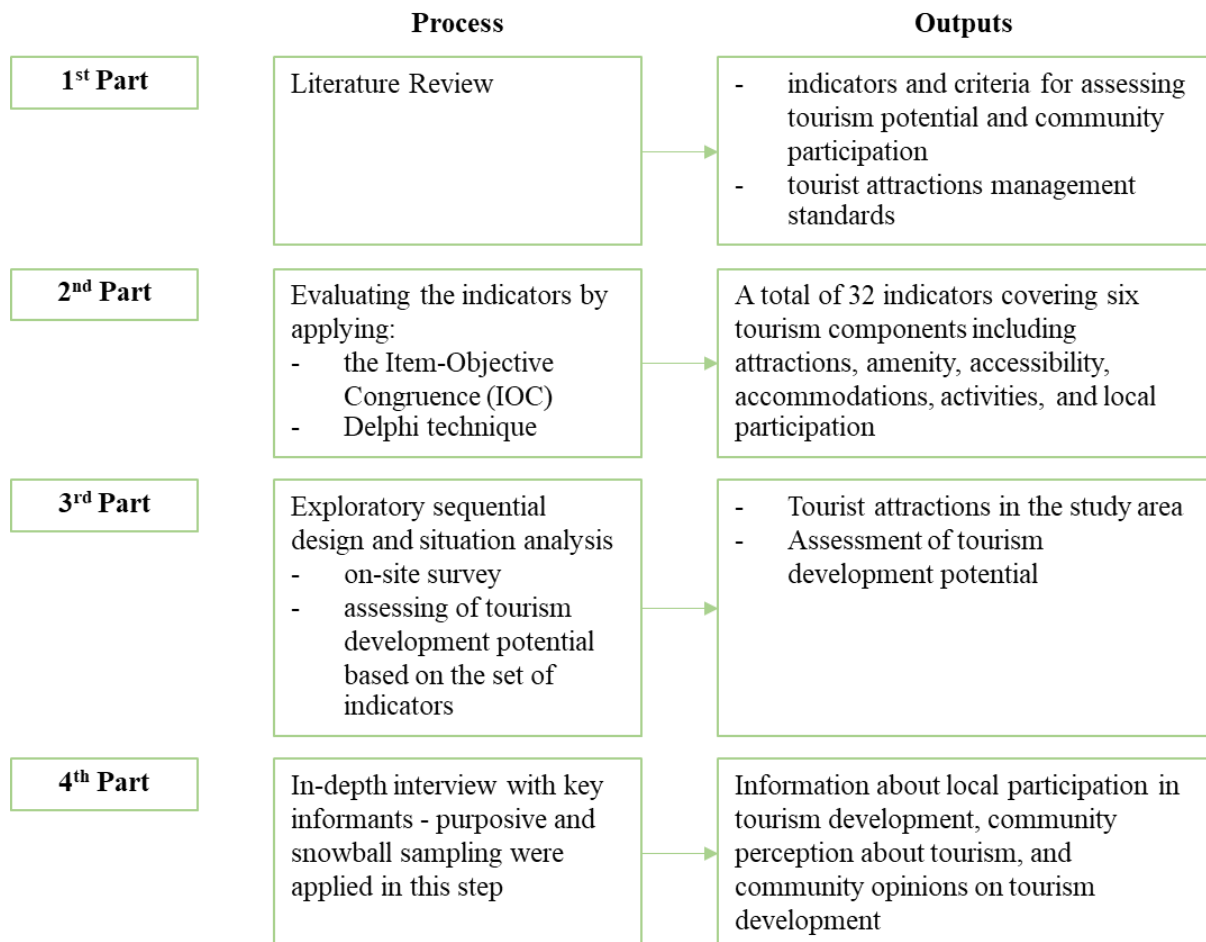


Figure 3 The Research Process for Assessment of Tourism Development Potential in Buffer Zone of Huai Kha Khaeng Wildlife Sanctuary, Uthai Thani Province

scores, from 0 to 5. The higher score, the better the tourism development potential. The scores were subsequently converted to a tourism development potential level, from very low potential to very high potential, so as to explain the assessment results in relation to tourism development. The details of the

assessment for tourism potential using WSE are as follows:

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

TRP = Tourism Resource Potential

- $R_{1...n}$ = Rating score of tourism potential for each indicator, rated from 0 (no potential) to 5 (very high potential)
- $W_{1...n}$ = The importance of each indicator from 1 to 3 with 1 being low importance, 2 being moderately important, and 3 being very important

The potential score values for comparison of the specified criteria were divided into 5 levels according to the following specifications:

A potential score of 0.00 - 1.00 refers to	Very low potential for tourism development
A potential score of 10.1 - 2 00.refers to	Low potential for tourism development
A potential score of 20.1 - 3 00.refers to	Moderate potential for tourism development
A potential score of 30.1 - 4 00.refers to	High potential for tourism development
A potential score of 40.1 - 5 00.refers to	Very high potential for tourism development

Information obtained from the in-depth interviews were analyzed via the application of content analysis to determine the social perceptions related to tourism development in order to support the assessment of the potential for tourism development as well as to propose guidelines for tourism development.

4. RESULTS AND DISCUSSION

4.1 Tourist Attractions in the Study Area

The on-site survey revealed 17 tourist attraction sites (Figure 4). These could be classified into three categories based on tourism resources.

1. Nature-based attractions: The tourist attractions in this group are unique in terms of

ecosystems, natural landscapes or wildlife, such as the Asiatic black bear (*Ursus thibetanus*), gibbon (*Hylobates pileatus*), tiger (*Panthera tigris*), brow-antlered deer (*Rucervus eldii*), sambar deer (*Rusa unicolor*), wild boar (*Sus scrofa*), green peafowl (*Pavo muticus*), or wild elephant (*Elephas maximus*), which can be main attraction factors. In these sites, tourists can engage in various activities such as game drives, wildlife watching, bird watching, nature trails, or a boat tour with beautiful scenery. There are seven sites in this group of attractions, namely Huai Kha Khaeng Wildlife Breeding Station, Khao Kheow Community Forest Nature Trail, Huai Thap Salao - Huai Ra Bam non-hunting area, the viewpoint deck located in the Huai Thab Salao - Haui Kok Kwai Recreational Forest, the wildlife observation deck located in a wildlife food plot of the Huai Thap Salao - Huai Rabam non-hunting area, Bueng Charoen village, and Thap Salao Reservoir (Figure 5).

2. Culture-based attractions: The tourist attractions in this group are outstanding in terms of the local culture and way of life of the community which has been handed down from generation to generation and which is unique to the area. There are three sites in this group (Figure 6). Firstly, the tie-dye-making learning center presents the techniques and processes of tie-dyed cloths, applying natural dye preparations and fabric tying techniques created by local wisdom. Secondly, the Reed Mat Weaving Group - OTOP Tourism Community of Mai Samakkee Village is a learning group for handicrafts by people in the community that allows tourists to visit and study the process of preparing cloth and weaving reed mats. Thirdly, Mr. Sombat's Broom House is a learning point for making grass brooms from the cultivation process to the completion of a broom.

3. Agricultural attractions: There are many agricultural activities in the community, such as visiting agricultural plantations, permaculture garden, fruit picking, and cultivation studies, which can be developed into creative tourism activities. According to the

field survey conducted in the area, seven tourist attractions were found (Figure 7). 1) Chompoorin agricultural garden, Khao Kheow Village, is a large agricultural farm with an area of over 9.88 acres that is open for tourists to visit. This site includes a mixed crop where visitors can engage in activities related to the production of medicinal

products. 2) PhiTao agricultural garden, Khao Kheow Village, carries out mixed cropping of agricultural plants across approximately 7.9 acres in accordance with the royal initiative project of H.M King Bhumibol Adulyadej the Great. 3) The Phi Kham agricultural garden, Huai Kha Khaeng Village, is an agricultural farm of approximately 1.18 acres, focusing on

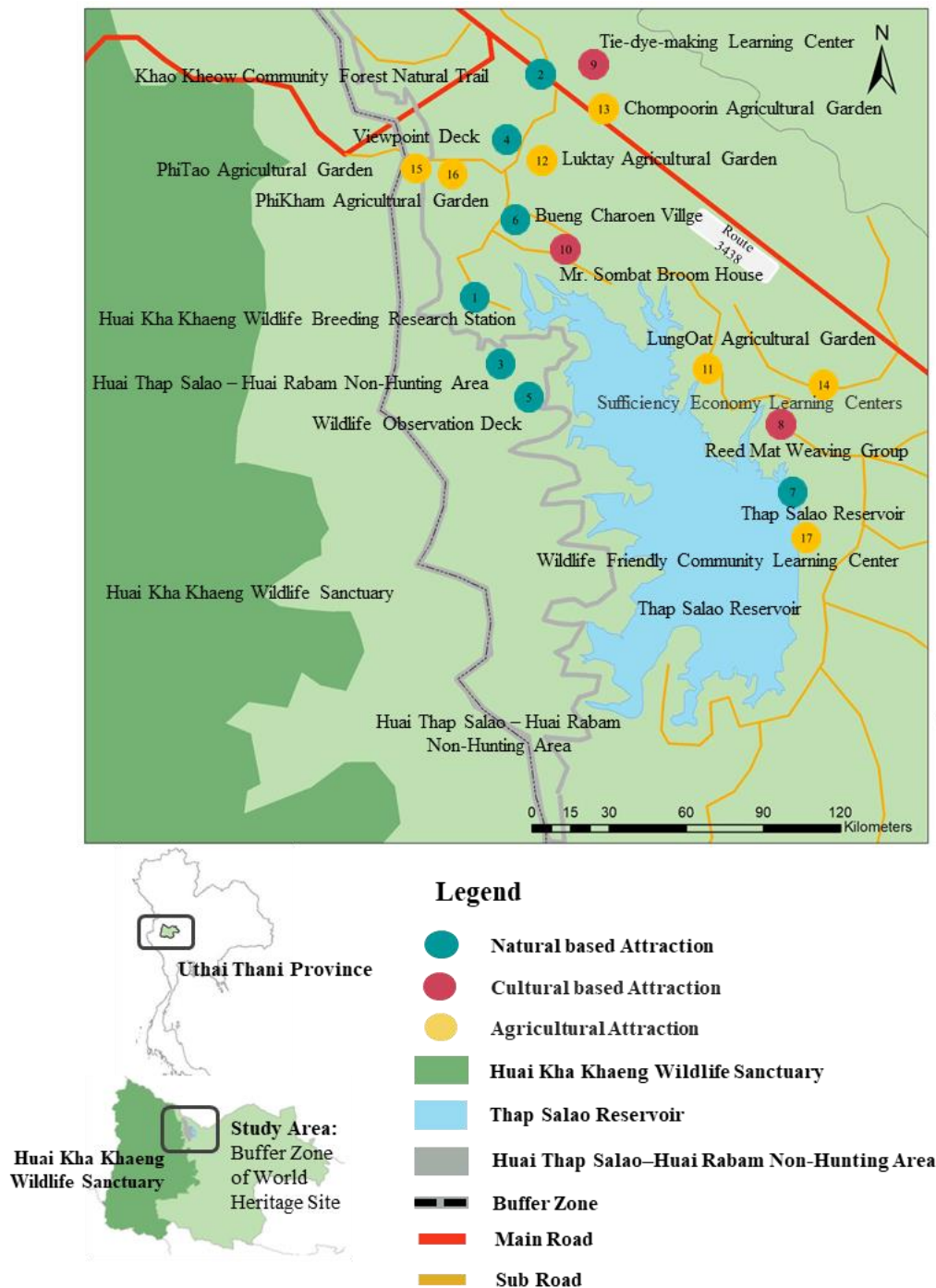


Figure 4 Map Presenting Tourist Spots in the Study Area.

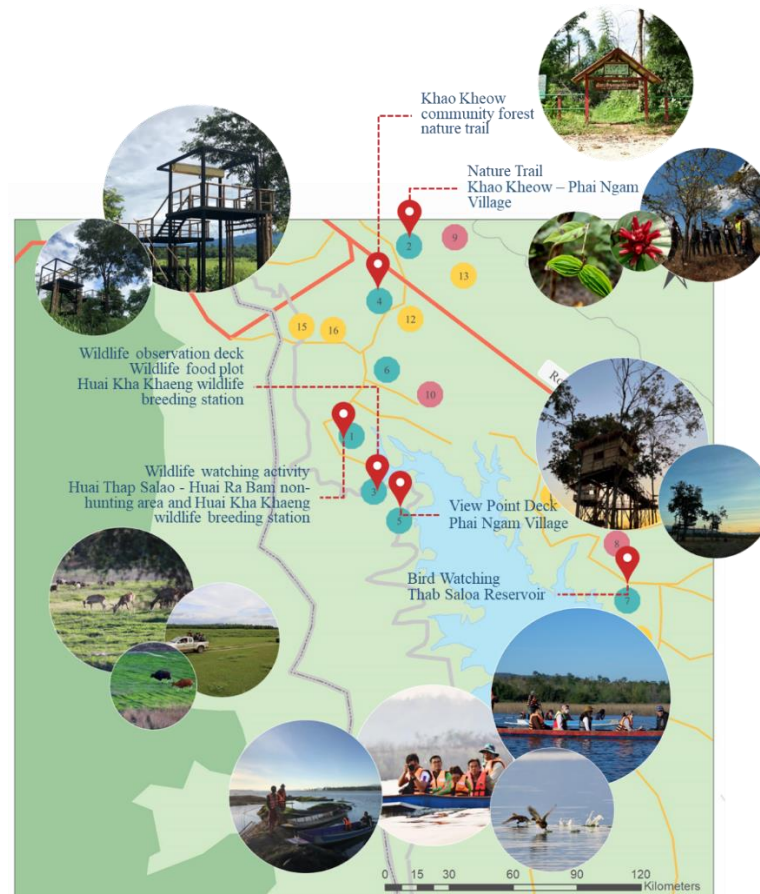


Figure 5 Nature-Based Attractions in the Study Area



Figure 6 Culture-Based Attractions in the Study Area

growing hot chili peppers. 4) The Luktay agricultural garden, located at Huai Kha Khaeng Village consists of approximately 3.95 acres. This garden focuses on mixed crops with a herb garden. 5) The Wildlife Friendly Community Learning Center, located in Ariyathai 1, is a model community with the concept of growing plants without implementation of chemicals and a wildlife-friendly lifestyle. 6) The Learning Center for Enhancement of Integrated Agricultural

Product Production and Sufficiency Economy Mr. Boonlert Tianchang, Mai Samakkhi Village, is a learning center for integrated agriculture with agro-forestry, that objects to collecting forest products from forest areas. 7) The Lung Oat Agricultural Garden, Mai Samakkhi Village, is a learning center of mixed agriculture covering an area of approximately 29.8 acres that has organic Uthai Thani rice fields.

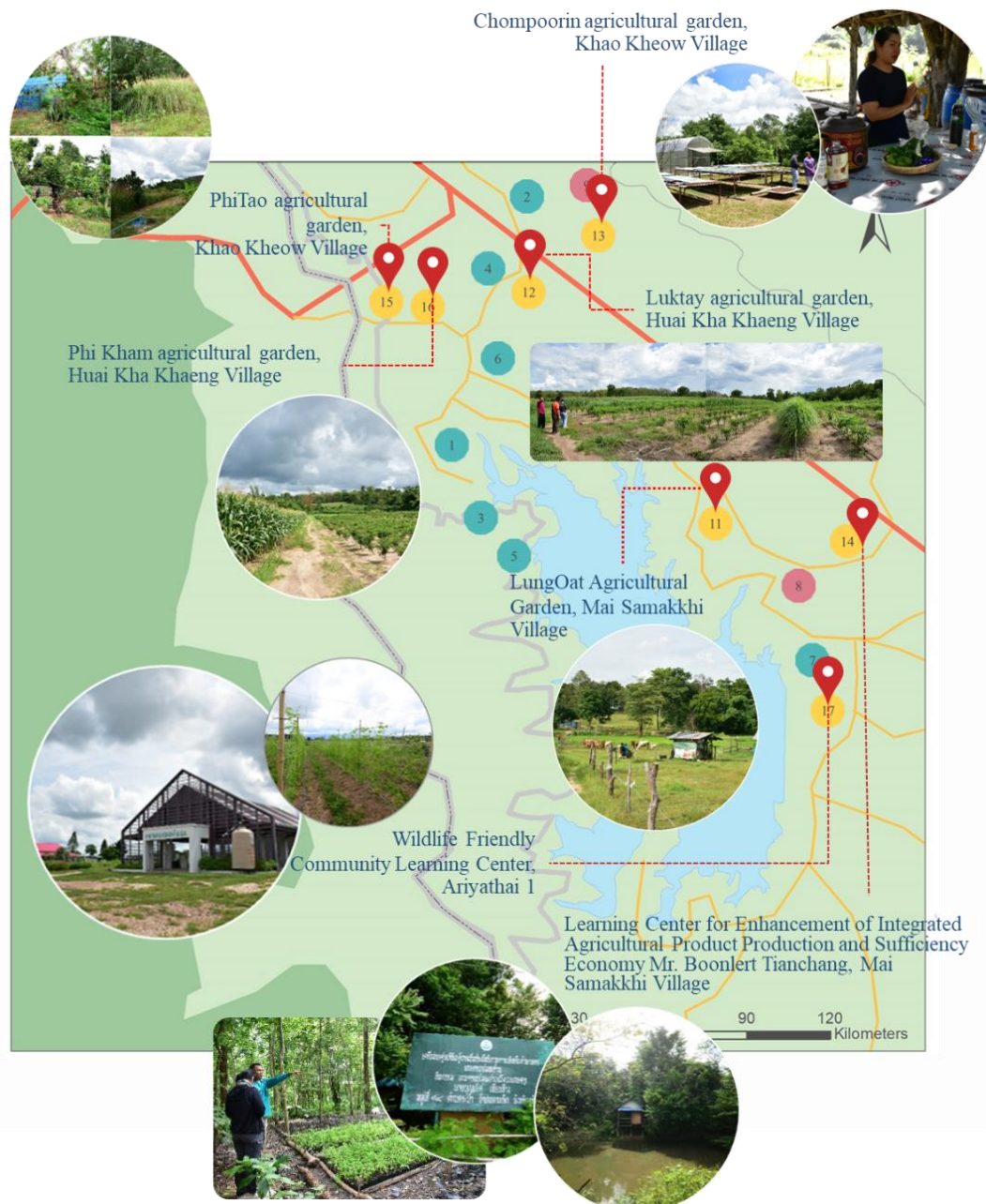


Figure 7 Agricultural Attractions in the Study Area

Table1 Indicators and Significant Scores of Tourism Components

Tourism Development Potential Indicators		
Dimension	Indicators	Weighting scores (W)
Attractions	1. Uniqueness of the ecosystem	3
	2. Unique physical identity of the tourist attractions	3
	3. Has plants or animals that are distinctive, rare, or endangered species	3
	4. Diversity of tourism resources	3
	5. Appeal of tourist destinations	3
	6. The physical and landscape conditions of the destination	3
	7. Integrity of natural/cultural resources	3
	8. Potential for natural interpretation and visitor learning	3
	9. Risk of being destroyed by humans	2
	10. Uniqueness of lifestyle, wisdom, and knowledge	3
	11. Historical, traditional, and cultural values	2
	12. Value for the way of life of the local community	2
Accessibility	1. Convenience in accessing the tourist destination	2
	2. Links to other destinations	3
	3. Safe access to tourist attractions.	3
Amenities	1. Availability of basic public utilities	2
	2. Potential to develop basic facilities	2
Accommodation	1. Accommodation development potential	3
	2. Maintenance of utilities in the accommodation	2
Activities	1. Provision of varied tourism activities	2
	2. Attractiveness of the tourism activities	3
	3. Safety in conducting activities	3
	4. Appropriate management of tourism activities	3
	5. Provision of services related to local guides or tour leaders	3
	6. Interpretation services	3
Local Participation	1. Preserving the identity of the local community	3
	2. Participation of the local community	3
	3. Cooperation from other agencies	3
	4. Networks to support tourism development of the destination	3
	5. Acceptance and cooperation with surrounding communities	3
	6. Revenue and income from tourism	3
	7. The potential for tourism development relating to external factors	3

4.2 Determination of Indicators for Assessing the Potential of Tourism Development in Accordance With Tourism Components in the Buffer Zone of Huai Kha Khaeng Wildlife Sanctuary

The indicator development process revealed 32 indicators for assessing the potential for tourism development based on the tourism components and community participation. The 32 indicators presented in Table 1 are categorized into six dimensions including attractions, amenities, accessibility, accommodation, activities, and local participation.

1. Attractions (12 indicators): Attractions are an important factor of tourism image and the major pull factor in any destination, significantly influencing tourists' motivation to travel. The indicators in this category consider the characteristics of the area in terms of biological features, physical features, the landscape, natural interpretation potential, and the potential of key resources for organizing tourism activities and promoting tourism experiences, as well as the importance of tourist attractions to the way of life of the local community, and the chance of the natural environment being destroyed by natural disasters or human use.

2. Accessibility (3 indicators): Assessing the potential of access to tourist attractions is based on the ease of access to tourism resources such as road conditions, slopes, safety and tourism infrastructure along the route in order to provide tourists with more opportunities to travel.

3. Amenities (2 indicators): Amenities are critical factors determining the competitiveness of a tourist destination. Assessment of the potential in this aspect considers the basic facilities such as water supply, electricity, and roads, which can meet the needs of tourists. Assessment of this aspect also includes consideration of any limitations in the development of basic facilities in the future.

4. Accommodation (2 indicators): Accommodation potential is determined by the potential to develop accommodation

facilities to accommodate and facilitate tourists, as well as the provision of other services and amenities provided to guests.

5. Activities (6 indicators): The availability of tourism activities is an important factor that can impress tourists or attract them to an area. A tourist attraction with a variety of activities can provide tourists with more opportunities to choose activities that interest them. In terms of the potential for tourism development, a variety of tourism activities in the site affects the ability to meet the needs of a more diverse groups of visitors. Additionally, the indicators in this category also include other services that support tourism activities, such as the availability of local tour guides.

6. Local Participation (7 indicators): Sustainable tourism development requires a certain degree of cooperation and participation from the local community. The indicators in this category consider the cooperation of various individuals in tourism development and tourism management encompassing various stakeholders in the surrounding area, participation of the local community, and the readiness of personnel for tourism management in the area.

Each indicator was assigned an importance score (W) of 1-3, with 1 being low importance, 2 being moderately important, and 3 being very important. The indicators have six scoring options representing the development potential, ranging from zero (no potential for development) to five (highest potential for development).

4.3 Potential of Tourism Development in Accordance with Tourism Components in the Buffer Zone of Huai Kha Khaeng Wildlife Sanctuary

Regarding the assessment of the potential for tourism development in the buffer zone of Huai Kha Khaeng Wildlife Sanctuary in accordance with the overall indicators, the calculated arithmetic mean was 2.37 (out of 5 score), which indicates a moderate level of potential. When considering each component, the results presented that the potential for

Table 2 Details of The Potential For Tourism Development Based on Tourism Components in The Buffer Zone of Huai Kha Khaeng Wildlife Sanctuary.

Assessment of Tourism Development Potential		
Dimension	Features/Details	Potential level
Attractions	<ul style="list-style-type: none"> The unique and beautiful natural (especially wildlife) and cultural resources are the main attractions This area has beautiful scenery due to its diverse landscapes, including mountains and plains, especially in late rainy season and early cool season. In Ariyathai 1, Pong Makha Village, and Bueng Charoen Village, land use has been changed from natural to community areas where agriculture and livestock are raised. The natural beauty has been destroyed, which affects the potential for tourism attractions in the community. 	moderate
Accessibility	<ul style="list-style-type: none"> Overall, the buffer zone area has a very high potential for accessibility due to the availability of convenient transportation. Additionally, there are two villages adjacent to road number 3438 that have easy access to nearby attractions. The Huai Thap Salao Non-Hunting Area has low potential as it is an area that is difficult to access. In order to develop the potential for accessibility, access routes to the area should be developed and maintained making travel easier and safe. This will help to attract more tourists to travel to the destination. 	High
Amenities	<ul style="list-style-type: none"> The area has developed facilities and basic utilities which can accommodate tourists and can be further developed. However, the survey found that the basic facilities and utilities in Khao Kheow village, Bueng Charoen village, and Ang Huai Dong village are only available to households, and are not sufficient to accommodate tourists. The area should develop and improve the infrastructure and facilities to be sufficient to accommodate tourists, in order to increase the potential and attract tourists to visit the area. 	low
Accommodation	<ul style="list-style-type: none"> In Mai Samakkhi village, Ariyothai 1, Huai Kha Khaeng Wildlife Breeding Station, and Khao Kheow village, accommodation developments are being prepared to facilitate prospective tourists. Other villages have low potential since these areas have not developed tourism activities yet and most of the area is adjacent to the conservation areas. 	moderate
Activities	<ul style="list-style-type: none"> There are various local activities such as weaving, mat weaving, agricultural gardening, and food production that could be developed for tourism activities in the future. Huai Kha Khaeng Wildlife Breeding Station and Huai Pao village have high potential as resources in the area can be easily developed into tourism activities, encouraging tourists to experience nature and the way of life of the community. The area has potential to develop tourism activities, especially outdoor sport activities such as running, cycling, canoeing, swimming, and fishing. 	moderate
Local participation	<ul style="list-style-type: none"> Most people in the community are involved in the management of tourist attractions. 	moderate

Assessment of Tourism Development Potential		
Dimension	Features/Details	Potential level
	<ul style="list-style-type: none"> Representatives of the community participated in the tourism development planning. Approximately 30% of the local people were not interested in participating in tourism activities as they did not perceive any benefit from tourism development. Based on the results of the in-depth interviews, in order to increase the capacity of community participation, it is necessary to create awareness among people in the community, allowing them to see the benefits that will be gained from tourism development, where tourism may become a supplementary occupation or an alternative career to generate income and help to improve the quality of life. In addition, the study also found that the community still lacks organization of participation and continuity in activities; networking should be created to support participation in activities. 	

Table 3 The Results of the Analysis for Tourism Development Potential in the Buffer Zone of Huai Kha Khaeng Wildlife Sanctuary Based on Tourism Components.

Site	Tourism Development Potential Score							Potential Level*
	Attractions	Accessibility	Amenities	Accommodation	Activities	Local Participation	Average	
Khao Kheow Village	2.40	3.42	2.00	2.69	2.63	2.39	2.59	Moderate
Huai Kha Khaeng Village	2.52	3.25	1.00	1.31	2.38	1.16	1.94	Low
Bueng Charoen Village	1.29	3.25	1.63	1.88	1.88	2.56	2.08	Moderate
Mai Samakkhi Village	2.81	4.17	3.00	3.00	4.13	1.36	3.08	High
Huai Pao Village	2.90	4.25	2.88	2.00	3.19	1.43	2.78	Moderate
Ariyothai 1	1.92	3.00	2.13	2.81	2.88	1.5	2.37	Moderate
Ang Huai Dong Village	2.50	2.92	1.63	1.81	2.50	1.04	2.07	Moderate
Pong Makha Village	1.75	2.83	1.38	1.56	1.81	2.18	1.92	Low
Khao Hin Theun Village	2.21	3.00	1.38	1.63	2.06	3.00	2.21	Moderate
Huai Kha Khaeng Wildlife Breeding Station	3.17	3.42	2.88	2.81	3.56	2.71	3.09	High
Huai Thap Salao - Huai Rabam Non-Hunting Area	2.85	1.83	0.38	1.13	2.38	2.96	1.92	Low
Average score	2.39	3.21	1.84	2.06	2.67	2.03	2.37	Moderate

Remark:	Potential score	0.00 – 1.00	very low level of potential for tourism development
		1.01 – 2.00	low level of potential for tourism development
		2.01 – 3.00	moderate level of potential for tourism development
		3.01 – 4.00	high level of potential for tourism development
		4.01 – 5.00	very high level of potential for tourism development

accessibility had the highest potential value at 3.21, followed by tourism activities (mean = 2.67), destination attractions (mean = 2.39), accommodation (mean = 2.06), and community involvement (mean = 2.03). Regarding the amenities component, the results showed that the development potential was rated in lowest level with a mean of 1.84. The details of each component are described in Table 2, while the results of the assessment are presented in Table 3.

According to the assessment of potential for tourism development, although the overview of tourism development potential is at moderate level, it was discovered that tourism activities and attractiveness, which are important elements in showing the potential of tourism resources, are underlined in very high potential. Additionally, the assessment results revealed that the potential for accessibility, considering road conditions, safety, and the tourism infrastructure, are still at a high level, demonstrating the potential for tourism development in the future. Therefore, there is potential for the development of tourism activities in the buffer zone in the future. In the early stages, emphasis should be placed on developing the identity of the area, highlighting its strengths to enhance the tourism image of the area based on the uniqueness of the destination (diversity of natural landscape, wildlife, and cultural resources). Regarding the results of the assessment of the potential for tourism activities, promotion can be divided into three main groups. The first group of activities focuses on nature-based tourism which encourages visitors to learn about the forest resources, wildlife, and the ecosystems of the Huai Kia Khaeng World Heritage Site. For this site, wildlife tourism should be promoted according to the uniqueness of the area. Additionally, wildlife tourism can generate positive impacts in both the buffer area and local villages, such as financial contributions (e.g., entrance fees, visitor levies). Wildlife tourism is also a way to engage tourists to improve wildlife conservation by developing tourism activities that allow tourists to participate in wildlife conservation. Secondly,

cultural tourism activities are tourism activities with the potential for future development. Visitors can experience the way of life of the people through various learning centers in the community. Thirdly, agrotourism activities can be developed to encourage visitors to learn about the local agricultural way of life.

5. CONCLUSIONS AND RECOMMENDATIONS

This research aimed to explore the local tourist attractions, assessing the potential for tourism development according to the tourism components. A set of 32 indicators was developed for this assessment. Based on the results of an on-site survey in the buffer zone of Huai Kha Khaeng Wildlife Sanctuary, 17 tourist attractions were discovered. The results of the study on an overview of the potential of these tourist attractions indicated a moderate level. However, when considered individually, it was discovered that the potential for accessibility was in the highest level since the travel routes was easily accessible. The tourism development potential in the aspect of attractiveness was at a moderate level due to the uniqueness of the ecosystem, its physical identity, and wildlife. However, the area still has problems with environmental management, especially the collection and consumption of non-wood forest products in the buffer zone area which affects the integrity of the ecosystem. The potential for amenities was found to be at a low level as basic facilities and utilities were only available for the local community. The accommodation potential was at a moderate level, with the availability of basic tourism services including a visitor center. Homestay is provided for tourists. The potential for tourism activities was at a moderate level. The targeted site could provide various activities to visitors. Basic tourism services were provided. However, there are still some activities that cannot be held in certain seasons such as the game drive which cannot be carried out during the rainy season. The potential for participation of the local communities was also at a moderate

level, as there are still some villagers who do not understand the benefits of tourism development. However, the majority of the local people cooperated and were interested in the development of tourism within the area.

According to the results of the assessment of tourism development potential in accordance with tourism components in the buffer zone of Huai Kha Khaeng Wildlife Sanctuary, Uthai Thani Province, the following guidelines for developing sustainable tourism in the buffer zone are proposed.

1. Attractions: Tourism development should focus on preserving the identity and image of tourism that are distinctive in this World Heritage Site, especially the ecosystem and its wildlife species, which include both important and rare species. In addition, increasing conservation awareness among tourists, villagers, and youth in the area through activities that increase knowledge, understanding and awareness of the value of tourism resources is also essential. However, the area also has problems with the issue of natural areas that can be destroyed by community activities. Therefore, for the development of tourism, it is necessary to clearly define the tourism development zone and ensure a clear understanding among the local community.

2. Accessibility: Deteriorating public routes should be improved. Basic facilities should be provided such as an electrical streetlight system, direction signs, distance signs, warning signs, and speed limit signs, especially around the road adjacent to the edge of Huai Kha Khaeng Forest in order to avoid wildlife roadkill.

3. Amenities: The results indicated that the local amenities only support the use of villagers but are not ready to serve visitors. Therefore, the development of facilities to support tourism development is an important issue that must be solved. Public utilities and basic facilities such as the water supply system, electrical system, rest areas, rest-rooms, first aid centers, and security units, must be developed. The facility design must be appropriate and in harmony with the environment. An annual maintenance plan should be proposed in advance. Additionally, the early development stage must take into account the number of tourists the facility can accommodate.

4. Accommodation: From the field survey, community accommodation is being developed to serve tourists in the form of homestays in several villages, but this service still lacks standards. Thus, accommodation should be standardized for community enterprises to facilitate tourists, while more diverse accommodation should also be developed to accommodate different groups of tourists.

5. Activities: A variety of activities can be considered as important in the potential for tourism development in the area. Tourism programs should be created and offered to tourists at a reasonable price. Tourism programs should be developed to connect various tourist attractions in the area, that meet the needs of mainstream tourists. Enhancing the potential of personnel to be able to work as local tour guides and provide tourist services, is needed. In this manner, a potential tour (2 days, 1 night) is presented as follows:

Day 1 st	8.00 – 9.00 am.	Trip orientation and welcome drink (local herbal drinks for wellness)
	9.00 – 12.00 am.	Visit agricultural attractions in the community
	Lunch time:	Provision of a local menu made from local product ingredients.
	1.00 – 5.00 pm.	Visit cultural attractions in the community
	5.00 – 7.00 pm.	Boat tour around Thab Salao Reservoir with a local guide
	7.00 pm.	Dinner at homestay and experience the way of life of the local community

Day 2 nd	6.00 – 9.00 am.	Game drive activity in Haui Thab Saloa-Huai Rabam Non-hunting area to experience wildlife in the buffer zone area of HKK
	9.00 – 10.00 am	Local breakfast
	9.00 – 12.00 am.	Learn about and experience wildlife management and releasing wildlife after rehabilitation at Huai Kha Khaeng Wildlife Breeding Station

6. Local participation: To reduce conflicts between villagers and wildlife and also villagers and government, encouraging local participation in tourism development is a significant component of sustainable tourism in this area. The results identified that approximately 30% of the local people were not interested in participating in tourism activities as they did not perceive any benefit from tourism development. To increase the capacity of community participation, it is necessary to create awareness among people in the community allowing them to see the benefits that can be gained from tourism development, whereby tourism may become a supplementary occupation or an alternative career to generate income and improve quality of life. In the first step, government support, including provision of a budget, personnel, and policies, is absolutely necessary. Moreover, a consensus is needed to carry out activities that do not conflict with the local environment and to establish a network or community enterprise group in order to have systematic activities.

7. There should be a marketing plan for sustainable tourism development, combined with the tourism development plan of Uthai Thani province to enhance the tourism of the province and increase the revenue from tourism so that it can be developed concretely. Additionally, the tourism brand identity for this site should indicate the naturalness, presence of iconic species (e.g., banteng, tiger, elephant, gaur, sambar deer and muntjac), identity, and physical and ecological uniqueness of the resource-based, beautiful landscape and scenery, and the local way of life which are core to the identity of the area.

ACKNOWLEDGMENTS

This research was partially supported by the National Science and Technology Development Agency (NSTDA), Thailand, under the research project “Research for strengthening the government policy in buffer zone management in establishing area of Huai Thab Salao - Huai Ra Bam Non-Hunting Area, Uthai Thani Province”.

REFERENCES

- Bhusal, N. P. (2012). Buffer Zone Management System in Protected Areas of Nepal. *Nepal Journals*, 11-12, 34-44. doi: <https://doi.org/10.3126/ttp.v11i10.11558>
- Bonzanigo, L., Giupponi, C., & Balbi, S. (2016). Sustainable Tourism Planning and Climate Change Adaptation in The Alps: A Case Study of Winter Tourism in Mountain Communities in The Dolomites. *Journal of Sustainable Tourism*, 24(4), 1-16. doi:<http://dx.doi.org/10.1080/09669582.2015.1122013>
- Buhalis, D. (2000). Marketing The Competitive Destination of The Future – Growth Strategies for Accommodation Establishments in Alpine Regions. [5 January 1999]. *Tourism Management*, 21(1), 97-116. doi:[https://doi.org/10.1016/S0261-5177\(99\)00095-3](https://doi.org/10.1016/S0261-5177(99)00095-3)
- Department of Tourism. (2013). Guide to the Natural Quality Standard Assessment. Retrieved from <https://dl.parliament.go.th/handle/lirt/569289>

- Diamantis, D. (2004). *Ecotourism: Management and Assessment*. Cengage Learning; New edition
- Dickman, S. (1997). *Tourism: An Introductory Text*. Sydney: Hodder Headline.
- Hoang, H. T. T., Truong, Q. H., Nguyen, A. T., & Hens, L. (2018). Multicriteria Evaluation of Tourism Potential in the Central Highlands of Vietnam: Combining Geographic Information System (GIS), Analytic Hierarchy Process (AHP) and Principal Component Analysis (PCA). *Sustainability*, 10(9), 1-20. doi:10.3390/su10093097
- Kaewsang, W. (2017). Sustainable Conservation Guidelines for Management and Utilization of Nong Han Kumphawapi Wetland. (Master degree), Silpakorn University. Retrieved from <http://www.sure.su.ac.th/xmlui/handle/123456789/21061>
- Lamichhane, B., Persoon, G., Leirs, H., Poudel, S., Subedi, N., Pokheral, C., Iongh, H. (2019). Contribution of Buffer Zone Programs to Reduce Human-Wildlife Impacts: The Case of the Chitwan National Park, Nepal. *Human Ecology*, 47, 95-110. doi:10.1007/s10745-019-0054-y
- Lyngdoh, S., Mathur, V., & Sinha, B. (2017). Tigers, Tourists and Wildlife: Visitor Demographics and Experience in Three Indian Tiger Reserves. *Biodiversity and Conservation*, 26. doi:10.1007/s10531-017-1352-6
- Maikhuri, R. K., Nautiyal, S., Rao, K. S., Chandrasekhar, K., Gavali, R., & Saxena, K. G. (2000). Analysis and Resolution of Protected Area-People Conflicts in Nanda Devi Biosphere Reserve, India. *Environmental Conservation*, 27(1), 43-53. doi:10.1017/S0376892900000060
- Mrksa, M., & Gajić, T. (2014). Opportunities for Sustainable Development of Rural Tourism in The Municipality of Vrbas. *Ekonomika poljoprivrede*, 61, 163-175. doi:10.5937/ekoPolj1401163M
- Mwakima, W. M. (2013). Determinants of the Biodiversity Conservation-tourism Nexus in The Buffer Zone of Amboseli Biosphere Reserve, Kenya. (Degree of Doctor), Kenyatta University, Nairobi, Kenya Retrieved from <https://ir-library.ku.ac.ke/bitstream/handle/123456789/9061/Mwakima%20C%20Margaret%20Wawuda.pdf?sequence=1&isAllowed=y>
- Nguyen, C. D., Ngo, T. L., Do, N. M., & Nguyen, N. T. (2020). Key Factors Affecting Sustainable Tourism in the Region of South Central Coast of Vietnam. *The Journal of Asian Finance, Economics and Business*, 7(12), 977-993. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO12.977>
- Nikornkul, P., Wichotsikkhakit, P., & Indhapanno, K. P. (2020). Joint Buffer Zone Forest Management of the Community Area in Huai Kha Khaeng Wildlife Sanctuary. *ACADEMIC REVIEW*, 19, 128-142.
- Phonsen, N. (2008). The Way to Apply Sufficiency Economy Philosophy in Creating Sustainable Security for Buffer Zone in Preservation Forest: The Case Study of Huay Kha Khaeng. Retrieved from NDC, Science and Technology.
- Phumsathan, S., Udomwitid, S., Pongpattananurak, N., Chaisawatree, T., & Tantiwat, W. (2016). Assessing Potential of the Wang Nam Khiao-Pha Khao Phu Luang Forest Reserve for Development of Sustainable Tourism Model. Retrieved from The Thailand Research Fund (TRF). http://tourismlibrary.tat.or.th/medias/RD/G5850039V02_full.pdf
- Phumsathan, S., Udomwitid, S., Pongpattananurak, N., Chaisawatree, T., & Tantiwat, W. (2017). How to Use Tourism to Support Sustainable Forest Management: A Case Study of the Pha Wang Nam Khiao - Pha Khao Phu Luang Forest Reserve, Thailand. *Journal of Tourism and Hospitality Management*,

- 5(3), 126-134. doi:10.17265/2328-2169/2017.06.003
- Phumsathan, S., Pongpattananurak, N., Udomwitid, S., & Chaisawataree, T. (2022). *Development of Recreation and Tourism Management System in the National Reserved Forest of Thailand*. Bangkok: National Research Council of Thailand (NRCT).
- Ritchie, B., & Inkari, M. (2006). Host Community Attitudes Toward Tourism and Cultural Tourism Development: The Case of The Lewes District, Southern England. *International Journal of Tourism Research*, 8(1), 27-44. doi:10.1002/jtr.545
- Udaya Sekhar, N. (2003). Local People's Attitudes Towards Conservation and Wildlife Tourism Around Sariska Tiger Reserve, India. *Journal of Environmental Management*, 69(4), 339-347. Doi:<https://doi.org/10.1016/j.jenvman.2003.09.002>
- UNWTO. (1996). *Indicators of Sustainable Development for Tourism Destinations A Guidebook (English version)*: Madrid: UN World Tourism Organization.
- Zhan, H., Liu, S., & Shao, Q. (2015). Evaluation of Eco-tourism Resources of Forest Nature Reserves Based On Grey Cluster Model. *Journal of Grey System*, 27, 249-258.