

Psychological Determinants of Low Carbon Tourism Activity Models in Satun UNESCO Global Geopark

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Abstract

This qualitative research aims to produce a model of low carbon tourism activity in Satun UNESCO Global Geopark. The key informants were the government officials, academicians, and tourism operators who had knowledge and were experienced in tourism and 17 community representatives. The tools used in the study consisted of semi-structured interviews, participant observations, and group discussions. The results of the study showed that the model of low-carbon tourism activities in geo-tourism sites “WECARE Model” was composed of 6 factors: Waste management (W), Efficiency in water consumption (E), Community lifestyle (C), Activity (A), Responsible (R), and Energy efficiency (E). This model relies on tourism resources, service and experience sharing, the management of tourism operators, the community participation in organizing tourism activities. In addition, receiving support from government agencies or related operations such as educational institutions are necessary. The development of tourism will help clearly and continually contribute to the promotion of low-carbon tourism activities.

Keywords: Low carbon tourism, Model of tourism activity, Satun UNESCO Global Geopark

1. Introduction

Presently, global warming is one of the major problems faced by countries worldwide. This phenomenon is mainly caused by an increase of greenhouse gas emissions from various human activities that eventually generate climate change, such as the severity of natural disasters. There is a loss of biodiversity [1], which has dramatically affected on the tourism industry. Thus, the tourism trends are inevitably turning its contribution through the environmental focus such the environmentally-friendly drives and sustainable tourism development. As the impact of the tourism industry on climate change leads to the global warming, which becomes is the world matter-of-fact problem. Furthermore, the rapid expansion of tourism, particularly the construction of facilities to cater to the increasing tourist demand, has had a significant impact on the resources of tourist attractions. Irresponsible behavior by tourists, insufficient awareness about environmental concerns, or the absence of an environmentally friendly management system can contribute to the degradation of tourism resources and environmental issues [2].

Reports have highlighted the threat of climate change to the tourism industry. This threat is manifested in the shortening of tourism seasons, the occurrence of climate variability, and the heightened impact of natural disasters. These factors collectively undermine the tourism sector. Given Thailand's strategic position as a high-quality tourist destination, local communities are increasingly vigilant and concerned about environmental issues. Consequently, this reality has directed Thailand's tourism industry towards prioritizing environmental sustainability and necessitating comprehensive environmental management efforts [3].

Satun Province is a destination with a wide range of tourist resources, including natural tourism resources, culture, traditions, and activities. It is also a place where Koh Tarutao, marine national Thailand first park and is famous among tourists, is located. Satun Geopark has been certified by UNESCO as the first global Geopark in Thailand since April, 2018. It is also the 5th Geopark in ASEAN and the 36th in the world [4]. The presence of the Geopark

has stimulated tourism activities in the region and made Satun province well-known province. There is a continuous preparation and development of tourist attractions to welcome the arrival of tourists. From statistics, the number of tourists increased by 8.43 percent, and tourism revenue increased by 13.34 percent in 2017 [5]. Geopark is significant in relation to geology in geology as well as archaeological, ecological, and cultural. Satun Geopark covers four districts: Thung-Wa District, Manang District, La Ngu District, and Muang District. It is outstanding in topography and the natural features of limestone mountains. There are large and small islands and beautiful beaches that provide possibilities for tourism destination. The developed model of natural world tourism activities in Satun province appears to benefit both the developers and many sectors in tourism and can be the model that have the least negative impact to tourist attractions.

The above data shows that tourism in the Satun Global Geopark requires efficient management. the development of low-carbon tourism activities should be applied in this area. It is classified as the creation of a form of tourism activity, taking into account the suitability and possibility of maintaining the standard of tourist attractions. This research was conducted with the objective to analyses the obtained data and develop the model of low carbon tourism activity in Satun UNESCO Global Geopark and generate the appropriate strategies to support or promote the suitable context of the next area.

2. Literature Reviews

A. Sustainable Tourism

The trend of sustainable development has played an important role in Thailand since 1992 when Thailand signed as a U.N. member to the World Master Plan for Sustainable Development at the Earth Summit (Rio Conference) of the UN Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil. At the meeting, actions for sustainable development were proposed as a framework for the country's development towards sustainability (Agenda 21), resulting the implementation of the concept of sustainable development in the national development planning process under the National Economic and Social Development Plan of Thailand in latest editions over two decades, resulting in over two decades, Thailand has implemented the concept of sustainable development in the national development planning process under the National Economic and Social Development Plan in many editions, with the essence of sustainable development being adopted to balance the three dimensions of Thai society, including economy, society, and natural resources and the environment. Furthermore, the establishment of the Ministry of Tourism and Sports since 2003, a multitude of quality and standards for tourism development have been developed. These standards have been incorporated into nearly every aspect of Thailand's tourism standards to safeguard both tangible and intangible tourism resources [6].

This reflects sustainable tourism management. The concept of sustainable tourism is in the line with the concept of sustainable development, which focuses on providing tourists with the opportunity to experience a real lifestyle and a different uniqueness from each locality. Sustainable tourism emphasizes the learning experience and impresses tourists, as well as presents stories for everyone in the community to participate in and think about together [7].

B. Low-carbon Tourism

Low carbon tourism started with the concept of global climate change, an increase in energy consumption and greenhouse gas emissions. The early stages of the study were about the low carbon economy, a concept in tourism development that focuses on reducing carbon emissions to reduce the impact of climate change. Low-carbon tourism is a new form of tourism rooted in the low-carbon economy concept that was first introduced in the conference "Our Future Energy" to create a British low-carbon economy in 2003 [8]. Low carbon tourism focuses on reduction of energy consumption and carbon dioxide emissions from tourism products and hospitality activities [9]. The tourism industry adopts the concept into action and accelerates the development of environmentally friendly tourism activities to standardize low-carbon tourism activity patterns. In addition, Zhang Qingqing and Liu Chunji [10] explained that low-carbon tourism is an extension of sustainable tourism and conservation tourism, as well as unique practices to support the development of sustainable tourism [11], [12]. Low-carbon

tourism is a type of tourism in which the community members coordinate easily. It is a form of ecotourism in every aspect. Carbon dioxide activities in tourist attractions lead to environmental integrity in specific areas.

C. Low-carbon Tourism Management

Low-carbon tourism management is a strategy that helps develop tourist attractions into quality tourist attractions, creating a positive image for tourism and reducing carbon dioxide emissions according to the guidelines for tourism management through the integration of all aspects of cooperation. Designated Area for Sustainable Tourism Administration (DASTA) [13] describes low-carbon management and services in tourism communities as follows:

1. The use of community alternative energy and community awareness: the community must be clear in supporting renewable energy, which is the energy that can be renewed, including biomass energy, solar energy, hydro, wind energy, and alternative energy such as natural gas energy. The factors that will lead to success are the awareness and attitudes of people in the community toward the problem of climate change. Providing knowledge and related information helps to stimulate consciousness and change the behavior of extravagant users.

2. Village planning and house design: there is a landscape design including various building structures in tourist attractions by applying environmentally-friendly design concepts or energy-saving concepts or green design because not only the city is already orderly management, setting up a waste disposal system, waste or sewage will be also easier to manage. Additionally, the use of energy-saving design is a fundamental principle in home design, for example, emphasizing on the use of natural light and wind can also be used for homestay services.

3. Low-carbon food service, low-carbon homestays, and low-carbon activities in communities: It is necessary that the communities reduce their energy consumption by limiting the food ingredients imported from outside the community and providing local low-carbon menus. A wide range of seafood products such as fish and shellfish and beverage ingredients such as coconuts and seasonal fruits can be found in the local community. Low-carbon activities in the community can be generated by the community members' adaptation of lifestyle that links to natural resources and the environment.

Also, the main policy framework for eco-friendly tourism or low-carbon tourism is the tourism model that has the least impact on the environment and community in four areas: 1) energy efficiency consumption and alternative energy consumption, 2) water efficiency, 3) waste management, and 4) maintaining community lifestyle. Therefore, low-carbon tourism management requires integrated management to meet the needs of tourists and establishments in order to balance nature and the environment. In other words, businesses must reduce carbon dioxide emissions into the atmosphere. Tourists must reduce recreational activities that require energy consumption. The entrepreneur will not lose income and must promote the tourists' understanding, love and cherishing of the natural resources. they want to experience, raise awareness about saving fertile natural conditions for the next generations to visit, as well as maintain the climate to achieve sustainable low-carbon tourism and drive low-carbon attractions in other areas in the future.

3. Research Methods

A. Selection of Research Area

The researcher purposively selected Thung-Wa District in Satun Province as the study area because this site is one of four districts that have been declared as the Satun Global Geopark Area. It is the main resource that covers the ecology of the area and is home to the Museum of Geostool Park and Le Stegodon Cave, which received many awards, including the 12th Kinri Awards 2019, Thailand Tourism Awards 2019 by the Tourism Authority of Thailand, and Thai Tourism Industry Awards [3]. As a result, the area is highly popular among tourists. Also, there is a community gathering to conduct tourism arrangements and be able to serve tourists throughout the year.

B. Population and Samples

Seventeen key informants were identified using purposive sampling, in-depth interviews, and semi-structured interviews by selecting experts with knowledge and experience in tourism from government officials, academics, tourism entrepreneurs, and local community representatives.

C. Research Tools

The procedures as follows were carried out in order to collect the data.

1. Semi-structured interviews through in-depth interviews with key informants to collect data on low-carbon tourism activities in tourist attractions. Four areas of inquiry include 1) energy efficiency and alternative energy consumption, 2) efficient water use, 3) waste management, and 4) community lifestyle preservation [13].
2. Participatory observation was carried out by the researchers when staying and using the services of tourism activities within the area. The observation record form was created to obtain the information about the area context, tourism management conditions, including lifestyle, and participation of community representatives.
3. Group discussion on the issue of endorsing low-carbon tourism activities in geo-tourism sites was conducted to draw conclusions, opinions, and approvals from the key informants.

D. Data Collection

1. Primary data was obtained from in-depth interviews using semi-structured questions, group discussion, and field notes with the key informants from government officials, academics, tourism entrepreneurs, and local community representatives.
2. Secondary data was collected from studies on related concepts and theories.

E. Data Verification

1. Semi-structured interviews were conducted to collect primary data. This is to collect data from the study based on the concepts, theories, and related research papers by taking into account the sufficiency of information, the reliability, and the accuracy of the information. Additionally, several triangulation methods were applied to ensure the credibility and validity of this research, including allowing experts, researchers, and participants to check data at each step [14].
2. Participatory observation patterns were implemented by the observation record that was created to observe before deploying to enumerate the context of the area and travel management conditions.

F. Data Analysis

Data analysis was done after the group discussion had reached its conclusion using content analysis and triangular examination techniques. The group synthesized a model of low carbon tourism activity in Satun UNESCO Global Geopark through the approval of the key informants.

4. Results

The study of a model of low carbon tourism activity in Satun UNESCO Global Geopark focused on the learning process and engagement between locals and tourists in tourism development. This study found that most of tourists who arrived were educated tourists, which are from both public and private agencies. The Thung-Wa District is the unique geo-tourism of the area and the location of the Satun Geopark Museum, which is exhibited for the Thai elephants' history, lifestyle, local arts and culture. For instance, elephant and other fossils found in the Lestegodon Caves. Additionally, the research suggested the creation of tourism activities to exchange the knowledge between local people and tourists. By doing natural tie-dyeing activities, visiting insectivorous plants (Nepenthes), or staying in accommodation in the form of a homestay have been considered such good creative tourism activities to create a spectacular experience for tourists [5].

The analysis of the physical characteristics, environment, local community lifestyle showed that the Thung-Wa district has a potential to develop and implement the model of the tourist attraction in Thung-Wa district is ready to develop and encourage the model of low-carbon tourism activities. The results of the analysis of tourism activities in six areas reveals as follows:

Table 1: Low- carbon tourism approaches in Satun UNESCO Global Geopark

Low-Carbon Tourism	Effective/Potential Low- carbon tourism approaches in Satun UNESCO Global Geopark
1. Waste management	1) Introducing good environmental management to raise awareness 2) Educating people about waste reduction and waste recycling processes 3) Avoiding product and packaging waste 4) Producing biogas for household use from community wet waste
2. Efficiency in water consumption	1) Realizing the importance of clean water resources, fertility, or water quality in the area by concerning changes in climate and seasonal conditions. 2) Installing campaign signs around water spots to activate water treatment and recirculation by natural methods such as the use of microorganisms. 3) Reusing water for other activities, such as watering plants
3. Community Lifestyle	1) Choosing to present the strengths or identity of the community as a selling point by allowing people in the community to participate in tourism management such as being a food and beverage entrepreneur, organizing tourism activities, being a property operator, homestay, or souvenir product. This will increase the potential of people in the community as well.
4. Activities	1) Organizing tourism activities that are consistent with and related to the way of life of the community allowing tourists to learn, have real-life experiences in the community, and take actions or participate in activities that occur in the community 2) Organizing activities that display culture and identity of the community and appointing knowledgeable speakers to give information about them 3) Developing activities that can attract a number of tourists and organizing them in different time slot so everyone can fully take part in the activities 4) Organizing the tourism activities that emphasize the interaction between tourists and cultural host communities
5. Responsibility	1) Tour Operators in the area set fair and consistent prices with the quality of their products and services 2) Provide opportunities for people to participate in activities including promoting and supporting tourism activities in the community to benefit the community 3) Emphasizing on communicating the meaning of tourist attractions in various languages and producing a guide for community tourism activities. 4) Participating in building awareness of the value of local resources, traditions, and culture as well as creating responsible tourism behaviors 5) Using eco-friendly descriptive labels, cooperation on the proper use of tourist resources, resource awareness campaign, and increasing tree planting activities
6. Energy efficiency	1) Changing methods of transportation for tourism activities, relying more on walking, cycling, and using local vehicle services instead of personal cars, as well as focusing on modern engines with lower carbon dioxide emissions 2) Managing tourist attractions, planning energy savings by designing buildings, and using shade 3) Food service would start by <ul style="list-style-type: none"> - Choosing local menus and switching menus accordingly to the season. - Paying attention to the selection of reusable containers - Setting up table-style dining instead of buffet-style dining - Serving food in a shared dish to reduce food waste - Managing food waste with the bio-fermentation process for agricultural use in the area 4) Homestay Management where the members must understand the working methods, roles, duties, and preparation for being a service provider. There is a management knowledge of accommodation preparation

Low-Carbon Tourism	Effective/Potential Low- carbon tourism approaches in Satun UNESCO Global Geopark
	<ul style="list-style-type: none"> - Reducing the energy consumption - Encouraging guests to take part in reducing resource use by not changing sheets or towels during their stay - Using glass and glass bottles instead of plastic bottles - Turning off the air conditioner or electrical appliances when not in use

According to this information, it is obviously seen that tourist areas are ready to organize low-carbon tourism activities. The entrepreneurial awareness, food service, homestay, and tourism activities aim to develop low-carbon tourism activities to create an image of the places of interest as eco-friendly tourist attractions. The development of the model of low carbon tourism activity in Satun UNESCO Global Geopark, suggested the management of the activities as follows.

1. Tourism Resources

Tourism activities can be highlighted as the Green Tourism model by using the tourism model for spatial learning, and considering the allocation of utilization areas (zoning) and carrying capacity. There are activities such as mangrove planting to help restore nature and the activities can be promoted as a part of the tourism model in the area to conserve and rehabilitate tourism resources.

2. Service and Experience Provided for Tourists

There are some considerations about the tourism activities on raising awareness of climate change. Behaviors in relation to energy and vehicle behavior in the area could be improved by using local vehicles instead of personal vehicles. There are a pre-planning and local speed control to save energy. Importantly, environmentally friendly tourism activities, such as bicycle service, bird watching, trekking, and nature studies and activities with local communities, such as tie-dyeing activities and learning about nepenthes (tropical pitcher plants) should be promoted.

3. Tourism Operator Management

It is useful to select food services that are mainly cooked from the ingredients in the areas or seasonally harvested instead of raw materials from outside to reduce greenhouse gas emissions from transportation. The operators choose reusable containers such as water bottles, food containers as part of the service. Also, there are some actions the operators may encourage or request from the tourists to perform to save energy, such as unplugging electrical appliances, turning off unnecessary parts of the lights after 10 pm, and refraining from using air conditioning when the temperature is 25 C or below. The operators should provide room space with a good airflow system to reduce energy consumption. The guests may consider not changing the towels daily duration the stay. The operators may also need to prepare sticker labels to promote the knowledgeable use of resources. Sorting waste for reuse or fermenting wet waste into biogas for households, and defining bin service points that allow self-separation of waste may be needed.

4. Community participation in organizing tourism activities

Government agencies should act as a medium for coordination, awareness-raising and understanding of everyone involved. It is also necessary that they participate in low-carbon tourism activities in the area, creating a learning process with strong community leaders. They can build consciousness, service models for stakeholders and local communities, and set direction that allows communities to co-own resources by using locally available resources as a part of tourism activities and adopting a low-carbon tourism activity model to further create a new identity for local tourism routes. The overview of the model activities and participation is presented below.



Figure 1: A Model of Low Carbon Tourism Activity in Satun UNESCO Global Geopark

The data analysis in this study shows that a model of low carbon tourism activity in Satun UNESCO Global Geopark relies on the tourism resources, services, and experience provided to tourists. Also, the tourism operator management, and community participation in organizing tourism activities should be evaluated. Moreover, receiving support from government agencies or related agencies, such as educational institutions, in tourism development will contribute to the promotion of a clear and continuous model of low-carbon tourism activities.

5. Conclusion and Discussion

The tourist attractions in Thung-Wa District, Satun Province, are ready to develop and implement the model of low-carbon tourism activities. The area is ready to attract tourists because it has natural resources that are unique. It has a history, a lifestyle, local arts and culture, as well as elephant fossils that were found in Lestegodon Cave. Furthermore, tourism activities focus on creating a shared learning exchange between locals and tourists, making it a great creative tourism activity to create a special experience for tourists. However, the availability of tourist attraction potential in the area alone is not enough to promote low-carbon tourism activities. The support from low-carbon tourism activities is essential from government agencies or other relevant agencies. People in the community must take part in promoting it to be truly ready to accommodate, impress tourists and become a tourist attraction that will continue to generate income for the community.

A model of low carbon tourism activity in Satun UNESCO Global Geopark “WECARE Model” was composed of 6 factors: Waste management, Efficiency in water consumption, Community lifestyle, Activity, Responsible, and Energy efficiency. The successful implementation of the model depends on tourism resources, service and experience provided to tourists, management of tourism operators, and community participation in tourism activities. Finally, receiving support from government agencies or related agencies such as educational institutions will help clearly and continually contribute for the promotion of low-carbon tourism activities. In addition, the low carbon tourism model that takes into account the reduction of carbon dioxide and covers the energy consumption in different forms of tourism activity from start to finish in each activity. Low-carbon tourism is a new form of eco-friendly tourism that concerns every activity that generates carbon dioxide in tourist attractions [11]. Low Carbon tourism management will succeed since it requires support and focuses on creating a low carbon tourism environment emphasizing style and environment to enhance the direct experience for tourists [15]. Yuan who proposed OiFu [16] concept argues that an interesting way to manage low-carbon tourism is to maintain ecology, design low-carbon products, and reduce daily energy consumption, such as vehicle management, facilities, and food services. These are all about reducing carbon and finding it interesting and complex to create low-carbon tourism that requires the cooperation of communities and tourists. In order to make it truly low-carbon tourism, Aksornpradit [17] found that community participation would reduce carbon dioxide emissions, and the community should support the practice.

Additionally, the model of low carbon tourism activity will be an option that communities can adopt to benefit tourist destinations that aim to organize low-carbon tourism activities, but it is necessary to consider the conditions of implementation, such as the context of areas with differences in tourism routes and their uniqueness. The model of low carbon tourism activity in Satun UNESCO Global Geopark presented in this research may be an approach or an alternative that can be applied to other attractions with similar contexts.

6. Recommendations

1. Network parties in the model of low carbon tourism activity in Satun UNESCO Global Geopark need working in harmony and cooperating with all sectors to promote and support tourism. Moreover, people in the community need to be trained to become good hostages and then they will have the potential and knowledge of service, volunteering, and readiness to represent tourist attractions to localities and communities with the ability to answer questions or provide information on promoting local tourist attractions.
2. The government can fulfil the knowledge of low carbon and order to make the public reaching out the model of low carbon tourism activity for tourists to know better about the potential benefits and inform tourists how to behave when traveling to tourist attractions that adapt a model of low carbon tourism.

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