TOURISM MANAGEMENT TO RESPOND THE CLIMATE CHANGE UNDER THE CONTEXT OF TOURISTS' BEHAVIOR ADAPTATION : CASE STUDY OF KHAO YAI NATIONAL PARK

Yulada Supsomboon

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Yulada Supsomboon

The Graduate School of Tourism Management

Assistant Professor.....Major Advisor

(Kassara Sukpatch, Ph.D.)

The Examining Committee Approved This Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy (Integrated Tourism Management).

Instructor.....Committee Chairperson

(Pornchai Saksirisophon, Ph.D.)

Associate Professor.....Committee

(Therdchai Choibamroong, Ph.D.)

Assistant Professor.....Committee

(Kassara Sukpatch, Ph.D.)

Assistant Professor.....Committee

(Rugphong Vongsaroj, Ph.D.)

Instructor.....Committee

(Worarak Sucher, Ph.D.)

Associate Professor.....Dean

(Therdchai Choibamroong, Ph.D.)

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ABSTRACT

Title of Dissertation	Tourism Management to Respond the Climate Change Under the Context of Tourists' Behavior Adaptation : Case Study of Khao Yai National Park
Author	Miss Yulada Supsomboon
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This research has the objectives to 1) study the behavior of the tourists who travel to Khao Yai National Park 2) analyze and categorize the factors that affect the tourism behavior for responding to climate change and the tourists who travel to Khao Yai National Park 3) study the tourism management that responds the climate change of Khao Yai National Park and, 4) suggest the tourism management guideline that responds the climate change under the context of tourists' behavior adaptation : case study of Khao Yai National Park, by using the integrated research methodology to collect quantitative data from a questionnaire with a sample of 600 Thai tourists visiting Khao Yai National Park, and collect qualitative data from in-depth semi-structured interviews with four main group of informants, consisting of government sectors, specialists, tourism business entrepreneur, and community/ local leader.

From the research, it is found that knowledge factor is positive and has the highest effect towards tourism behavior in support of climate change. Therefore, providing the knowledge of climate change and its impacts for tourists continuously, the improvement of behavior of tourists will be increased as well. Moreover, it is found that the motivation to visit the tourist attraction, factor towards the awareness on climate change, attitude factor towards the climate change, and the factor on sense towards the climate change towards the tourism behavior to respond the climate change positively as well. It means that the increasing of the above mentioned factors will affect the change of tourism behavior to respond the change of the climate certainly.

For tourism management guidelines to respond the climate change of Khao Yai National Park, it consists of three main approaches such as 1) Spatial Management-Transport management by promoting the use of public transport in the National Park seriously. The campaign for tourists to reduce the use of private car, the systematic waste management, the use of renewable energy, the development of personnel to understand climate change and its impacts, the training to provide knowledge to the tourists and general people around the area to have knowledge and understanding about the change of climate, 2) the tourist management-limiting the numbers of tourists, providing knowledge to tourists about the climate change, and 3) the community participation management-empowering the community to participate in tourism management, supporting organizations / foundations to participate for the conservation of the National Park. Thus, all above mentioned 3 aspects about the tourism management must be mainly cooperated with the tourists as well as other relevant people to improve the behavior to be suitable to the context of climate change by promoting the knowledge and understanding of the climate change and its impacts from the change of climate continuously and strictly in order to raise the awareness and good attitudes towards the tourism behavior in respond of climate change that will affect the development of Khao Yai National Park in a sustainable way.

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ABBREVIATIONS

Abbreviations	Equivalence
CSIRO	Commonwealth Scientific and Industrial Research Organization
GIZ	German Technical Cooperation/ Deutsche Gesellschaft für Internationale Zusammenarbeit
GWPs	Global Warming Potentials
IPCC	Intergovernmental Panel on Climate Change
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UNWTO	United Nation World Tourism Organization
WMO	World Meteorological Organization

CHAPTER 1

INTRODUCTION

1.1 Statement and Significance of the Study

Presently, Thailand encounters the crucial challenge to its sustainable development. Owing to the climate change or global warming, which is the problem of the world and is the most urgent issue to humanity. It has the great impact on the human's living and the ecology in every area of the world.

The science data confirm that the temperature in Thailand after the recent 55 years (1955-2009) increases significantly. The water level in the gulf of Thailand in average tends to be higher with the rate at 3.0-5.0 mm. per year. The annual quantity of rain in Thailand tends to slightly decrease (Wikanda Wannawiset, 2015). Thus, the climate change affects Thailand in terms of ecological system and biological system, agriculture, water resources, and health. The increase of sea water level impacts on the settlement of the community and tourism (Anon Sanitwong na Ayutthaya et al., 2009)

From the current climate change problem that affect every sector including the tourism sector which is the pillar of Thai economy in this day and in the future (Public Policy Studies Institute, Chiang Mai University, 2009), the impact issue of the climate change is inclined to be more violent and deteriorate the natural resources and the environment more. As we can see in the news about disasters from the climate change, it affects and damages many areas in Thailand and the world, which occurs more often (Ministry of Tourism and Sports, 2013).

Hence, the climate change has the direct and indirect impacts to the tourism sector because the weather factors are the elements that help promote the tourism, especially nature tourism which is very fragile and sensitive to the changing climate. Moreover, it might result in shorter cold season and longer and hotter hot season in the future Thailand. For the rain season, it might still exist as same as today but the

chance of heavy rainfall increases. These changes might affect Thai tourism sector under the more and longer risk. The direct impact from the climate change may cause the unattractiveness to the tourists, for example, when winter is not cold enough, some tourists decide not to visit or if the winter duration becomes shorter, the chance to tourism business also decreases (Supakorn Chinwanno, 2014).

With the reason that the tourism industry in Thailand must depend on the natural resources and the environment as the resource base of the main tourism, we can say that the climate change smashes into the resources of nature tourism, tourists' behavior, and tourism spots (Uyarra, Cote, Gill, Tinch, Viner & Watkinson, 2005). Particularly in the national park and the conservative areas that have a lot of natural resources and fragile ecologic system, it might change due to the temperature and humidity that affects some plants not to survive or some flowers might not bloom in the tourism season. This results in the less attractiveness of the place. The change of rain quantity or the diffusion of rain may change the waterfall and tourism activities to be more limited. These changes also affect the satisfaction and decision of the tourists and also the limits to do the tourism activities in the future. Finally, it may decrease the amount of the tourists in the future (Supakorn Chinwanno, 2014).

According to the tourism source service of Tourism Department in 2009, there are tourist places in Thailand 2,150 places in total. 820 are the natural resources of nature tourism (Office of the Nation Economic and Social Development Board, 2012: 112). Especially, Thailand today has 128 places announced as the national park with the total size of approximately 39.01 million rai, and 22 national parks that are during the process (Department of National Park, Wildlife and Plant Conservation, 2016). In every year, the national park will welcome a lot of visitors, Thais, and foreigners, especially, Khao Yai National Park, located with much popular natural entertainments. Due to being the conserved place that is large, containing fruitful natural resources, plants and wild animals, beautiful entertainments, and not too far from Bangkok. The access to the place is convenient. The visitors can travel one day trip or stay there. Moreover, the area can support several entertainment activities. With these reasons, in every year, there are a lot of Thai and foreign visitors (Apichaya Poolsawat, 2013).

From the 10-year-old data since 2001-2010, Khao Yai National Park has welcomed the 724,039 visitors in average in every year (Department of National Parks, Wildlife, and Plant Conservation, 2011). It is regarded as the most visited place in the top ranks of the country. In 2013, Department of National Parks, Wildlife, and Plant Conservation reported that, according to the number of the visitors, Khao Yai National Park became the first top place that the tourists love to visit and there were 1,077,857 people, an increasing number from the year 2012 that has 852,722 visitors. Thus, Khao Yai National Park is important as the first national park of Thailand, found on 18 September 1962, located in Phanom Dong Rak Mountain covering 4 provinces: Prajinburi, Nakhon Nayok, Nakhon Ratchasima, and Saraburi. Its size is 2,165.55 km^2 (1,353,471.53 rais). In 1972 and later on 14 July 2005, it has been registered as the part of the natural heritage "Dong Phayayen-Khao Yai Forest Complex" with the size as the second largest national park of Thailand. The tourism management in the national park adheres to the ecotourism management which mainly rests on the natural resources. In consequence, the current climate change impacts on the national park directly and indirectly. The impacts also work on the entertainment experience of the tourists to decide to visit the national park in the future. Frequency, duration, and tourists' behavior change, due to the climate change causing the effect to the entertainment planning process of the park and the community's income (Richardson & Loomis, 2004).

On the other hand, though Thai tourism sector sees the impact from the climate change as the main problem (Faculty of Environment and Resource Studies, 2008), the research in the climate change and its impact has been studied in a small number, also the research to give suggestion and encourage the change in the policy level, the application of the guideline and related policy for the real practice. Moreover, there is no connection for applying the knowledge to the operational step (Forestry Research Center, 2009). It can be seen that Khao Yai National Park is the tourism spot that has been popular among many tourists, especially during the holidays (public holidays) or long holidays that a number of tourists increases double. This is the reason why it is crowded and the areas cannot support the demands of tourists. Their behavior is the other reason that affects the climate change in the tourism spots. Therefore, there should be the study on the relationship between the climate change and the tourism in Khao Yai National Park.

The researcher becomes aware of the significance of the study “Tourism Management to respond the climate change under the context of Tourists’ Behavior Adaptation: Case Study of Khao Yai National Park”. Due to the significance of Khao Yai National Park area which represents the main natural resources for tourism of Thailand, it becomes the risk to receive the climate change or global warming impact without avoidance. Moreover, the tourists’ behavior also causes the climate change problem. For mutual perception, consciousness, and adaptation of tourists towards this problem, the studies will be the major basic information and benefits to plant the tourism management in order to respond the climate change of Khao Yai National Park.

1.2 Research Objectives

The 4 purposes of this study are as follows:

1.2.1 To study the behavior of the tourists who travel to Khao Yai National Park

1.2.2 To analyze and categorize the factors that affect the tourism behavior for responding to climate change and the tourists who travel to Khao Yai National Park.

1.2.3 To study the tourism management that responds the climate change of Khao Yai National Park

1.2.4 To suggest the tourism management guideline that responds the climate change under the context of tourists’ behavior adaptation: a case study of Khao Yai National Park.

1.3 Research Questions

1.3.1 How is the tourists’ behavior to respond the climate change of Khao Yai National Park?

1.3.2 Which factor that relates to the tourists’ behavior to respond the climate change of Khao Yai National Park?

1.3.3 How the tourism management respond the climate change of Khao Yai National Park?

1.3.4 How the tourism management guideline to respond the climate change of Khao Yai National Park should be?

1.4 Expected Results of the Study

1.4.1 To realize the Thai tourists' behavior to respond the climate change of Khao Yai National Park.

1.4.2 To realize the factors relating to the Thai tourists' behavior to respond the climate change of Khao Yai National Park.

1.4.3 To suggest the tourism management guideline respond the climate change under the context of tourists' behavior adaptation for Khao Yai National Park.

1.5 Expected Benefits of the Study

1.5.1 Khao Yai National Park acknowledges the information and tourists' behavior and applies the data in the planning of tourism management in order to respond the climate change that conforms to their behavior. Also, regulates the pattern and suitable tourism activities so that the park will be the place for environmental-friendliness.

1.5.2 The national parks and the other similar tourism places are able to plan the tourism management in order to respond the climate change as the model and plan the policy that relates to the tourism management for each national park and tourism place later.

1.5.3 The knowledge from this research can be used as the database and reference and to further the ideas for students, academicians, and those who are interested and want to search more or do the in-depth study about this research.

1.6 Scope of the Study

1.6.1 Scope of Contents

The content in this study covers the contents that relate to the purpose of this research: the behavior of the tourists who travel to Khao Yai National Park, under the

context of the climate change, the tourism management of Khao Yai National Park to respond the climate change.

1.6.2 Scope of Demography

The researcher studied the stakeholders of Khao Yai National Park who are 1) Khao Yai National Park and the related state units; 2) Thai tourists who travel to Khao Yai Nation Park; 3) The experts in the climate change and tourism; 4) The tourism entrepreneurs; and 5) The community leaders and the communities around Khao Yai National Park.

1.6.3 Scope of Area

In this research, the researcher selected Khao Yai National Park due to the fact that it is the popular natural spot among many tourists, which covers 4 provinces and 11 districts that are Muak Lek District, Kaeng Khoi District, Saraburi Province, Pak Chong District, Wang Nam Khiao District, Nakhon Ratchasima Province, Na Di District, Kabin Buri District, Prachantakham District, Mueang Prajinburi District, Pak Phli District, Ban Na District, Mueang Nakhon Nayok District, Nakhon Nayok Province.

1.7 Definition of Terms

1) Climate change means the air characteristic that turns away from the normal direction for a long time. The climate change can happen in several patterns such as the change of rainfall, the bad weathers e.g. storm, flood, and drought, the change of temperature, and the increase of sea water. The climate change also alters the natural disaster in frequency, violence, duration, and duration of the disaster (ISET, 2013).

2) Global warming means the increase of temperature on the global surface due to air pollution or greenhouse gas emission to the atmosphere (ISET, 2013).

3) The management to respond the climate change means the operation to solve the climate change which consists of 2 main sections that are adaptation and mitigation of GHG emission (Office of Natural Resources and Environmental Policy and Planning, 2015).

4) The tourism management responding to climate change means refers to the management of tourism that recognizes climate change and carbon dioxide emissions from the production process of tourism services and tourist activities by managing the utilization and development of tourism resources to mitigate the effects of climate change.

5) Adaptation means the self-adjustment to survive or to operation the regular activity or to live under the climate change situation which refers to the new way or method to reduce the fragile condition of the system or the sectors, including the human society towards the impact and the result from the climate change (IPCC, 2007).

6) Mitigation means the intervention to reduce the cause or to increase the absorption of the greenhouse gas, including the use of the appropriate technology for the tourism management of Khao Yai National Park.

7) Thai tourists mean Thai males and females who travel to Khao Yai National Park with ages equivalent or over 15 years old.

8) Tourist Motivation means the inspiration of a person to travel due to the external factors of the destination that provoke the decision to travel.

9) The behavior or the tourists to respond the climate change means the expression of tourists' behavior when they travel to Khao Yai National Park. It is about the behavior adaptation to reduce the climate change or global warming problem in Khao Yai National Park.

10) Perception of the climate change means the perception of Thai tourists towards the climate change at Khao Yai National Park through their sight and senses, to see how the real situation is.

11) Awareness means the priority giving of the tourists who travel to Khao Yai National Park, determining to reduce the climate change or global warming problem by several methods and being ready to collaborate. This includes their attitude and thinking towards the climate change.

12) Attitude means the thinking and feeling, including the idea after receiving the knowledge by learning, good and bad experiences, and their own errors from their attitude. The attitude of a person can change all the times. This research aims to study to the attitude of the tourists towards the climate change.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this research, the researcher collects ideas, theories, documents, and related researches including 1) relationship between climate change and tourism 2) climate change control measures 3) perception of climate change 4) awareness on climate change 5) attitudes towards climate change 6) tourists' behavior to respond climate change 7) Tourism management guidelines for climate change 8) theories about the relationship between knowledge, attitude, and behavior. Details are as follows:

2.2 Relationship between Climate Change and Tourism

2.2.1 Climate Change and Tourism

The climate change greatly relates to tourism industry which has been affected directly by the weather and the climate, especially outdoor tourism. Outdoor tourism or Nature tourism also receive the indirect effect from the climate change in terms of biological resources such as forest, lake or beach (Smith, 1993). This represents that the climate change really connects to tourism management. People began to study the relationship between climate change and tourism since 1970 (Burnet 1970; Mieczkowski 1985; Besancenot, 1989; Scott, Jone et al., 2005).

The earlier researches on tourism and climate change pay interest in the climate change threats towards the tourism destinations, especially towards tourism activities (Koenig and Abegg, 1997; Wall, 1998; Breiling & Charamza, 1999), including the global climate change towards tourism seasons and the tourism flow (Maddison, 2001; Gössling & Hall, 2006; Amelung, Nicholls & Viner, 2007). The relationship between tourism and climate change has not only one way but also impact on tourism industry directly as well.

The climate is not the only factor that the tourists give priority to but it is a major factor to join tourism activities that have been created to build satisfaction to the tourists. The climate change affects nature tourism due to its effect towards natural resources which are the main resource base of this tourism type (Scott, Jones & Konopek, 2007).

The climate changes in the Himalayas results in the decrease of tourists due to the change of the attractive environment. This environment differs from the man-made tourism location such as theme parks, shopping malls and historic locations such as historical museums, archaeological remains, historical monuments, folklore, and traditions and festivals. It is found that the nature tourism is very sensitive to the climate change (Smith, 1993).

Maddison (2021) stated that the climate is an important factor in selecting a tourism destination and duration of travel. Some American retirement tourists head to the south of Mexico in winter while some Australian retirement tourists head to the north of Queensland and Gold Coast.

Additionally, Lohmann and Kaim (1999) surveyed the sample German tourist group who traveled in summer by evaluating the importance of weather factors that affect their destination selection. They found that the weather is the third importance and inferiors to landscape and travel expense. Regarding the decision making criteria to rank 10 tourism destinations, the most popular weather is during summer holidays: sunlight, blue sky, warm climate, gentle wind.

According to the opinion survey of tourists by Hu and Ritchie (1993), the climate is ranked in the second from 16 types of tourism destination selection: Hawaii, Australia, Greece, France, and China. It also accords to the survey of Japanese tourists traveling in Hong Kong to by Heung, Hailin and Raymond (2001) in order to study the importance hierarchy of tourism inspiration and they discovered that the inspiration to experience the warm climate is on the 14^{th} from 25 aspects. The tourists who travel to Hong Kong first time will give priority to the climate more than those who have been visited (Heung et al., 2001).

Moreover, the climate also specifies the activities of the travelers at the tourism spots, for example, no hiking in rain season and visiting an island during monsoon season. The tourism program planner should have the knowledge of the

overall global climate so that they can organize an appropriate program. However, before the travel, we should check the weather at the destination place because the weather can change all the time, such as rain in mid-winter. (Wichai Thiannoi, 1993)

Rayamajhi (2012) studied the relationship between tourism and climate change resulting in the realization of the stakeholders in the tourism industry of Nepal, who are accommodation staffs, guides, and tourists for Annapurna Trekking Trail. 69% of the accommodation owners and guides said about the change of tourism season that some year, the season begins faster and sometimes it delays. 59% of the key informants said that the climate change relates to their works. However, 34% regarded that there is no relation while 17% are not certain if the climate change relates to their works or not.

In regards to the aforementioned researches, tourism directly relates to climate change in every season, tourism activity, and tourism location. In Thailand, the tourism season is from November to May (high season) or after monsoon season to cold season. The most visited locations are around high hills in the northern region and north-eastern region of Thailand. In the hot season, the popular places are the east coast of Thailand or gulf of Thailand or Andaman.

Besides the suitability of tourism places and seasoning activities, every tourism activity type is differently appropriate to each climate (The International Institute for Sustainable Development, 1997 as cited in More, 1988). In Table 2.1 and Table 2.2, the appropriate climate for every activity has been presented. It also demonstrates the impact of global climate change to the appropriateness of tourism season and activities, causing the change of patterns and satisfaction of tourists.

Table 2.1 Criteria of Appropriate Climate for Outdoor Activities

Activity	Temperature (^{0}C)	Visibility (Km)	Fog (1:10)	Wind Speed (Km/Hr)	Depth of Snow	Rain Quantity
Sightseeing	-24 to 32	> 4.8	-	< 42.8	-	None
Ski	-14.4	> 0.8	-	< 25.7	25.4	None
Sleigh	> -21.1	> 0.8	-	< 25.7	> 25.4	None
Inactive Activities	>12.2	> 1.6	< 8	< 33.8	-	None
Active Activities	12.8-31.7	> 3.2	< 8	< 33.8	-	None
Beach Activities	> 17.8	> 1.6	< 8	< 25.7	-	None

Table 2.2 Appropriate Climate for Summer Activities

Climate	Water Activities				
	Boating	**Water Ski**	**Sailing**	**Fishing**	**Swimming/Sunbath**
Air Temperature (^{o}C)	15 to 35	18 to 35	10 to 35	15 to 30	15 to 30
Wind Speed (KM/Hr)	< 50	< 15	15 ถึง 50	< 15	< 15
Water Temperature (^{o}C)	2 to 20	10 to 20	10 to 18	< 18	15 to 20
Rain Quantity	None	None	None	None	None
Size of Water Resource					
- The smallest (Hectare)					
- The largest (Hectare)					
Water Depth (Meter)	1.5 2.5	> 2.0	1.5 to 2.0	0.5 to 1.0	0.5 to 2.0
Carrying Capacity (Hectare: vehicle)	1	5	10	-	-
Water plant quantity	Above the surface Very few	Underwater Very few	Underwater Very few	Above the surface Very few	-
Climate	Land Activities				
	Camping	Picnic	Golf		
Air Temperature (^{o}C)	> 10	10-25	10-30		
Wind Speed (KM/Hr)	< 10	< 20	< 20		
Rain Quantity	Fewest to no rain	None	None		

2.2.2 Impact of the Climate Change to Tourism

Climate Change causes from the heat on the globe increases or global warming. During 1850-1899 to 2001-2005, the world temperature increase around 0.76^{o}C but the rate of the climate change expansion in the 21^{st} century is higher than the present day or increasing approximately $1.8\text{-}4.0^{o}$C. The global warming is the result of the release of Greenhouse Gas (GHG) to the air. Normally GHG exists in the atmosphere that contains carbon dioxide, methane, and nitrous oxide. They absorb the heat to warm up the world and allow living things to live. Nonetheless, the human activities in the past, specifically after the industrial revolution, energy and heat from industrial factories, transport system, and living routine activities increasing, these results in the more GHG release to the atmosphere. When the atmosphere absorbs excess heat, the global warming will change the global climate. As this problem becomes more violent, it greatly impacts human living and becomes the urgent problem of the world. The current climate changes are the increase of arctic ice melt and water level, the decrease of snow on the mountain, the variance of the climates and environments around the world (UNWTO, 2008).

For tourism industry that closely connects to the climate, due to the air setting the tourism elements such as tourism season, tourists' inspiration, decision-making, the climate change, therefore, affect tourism as follows (Pradech Phayakvichien & Rachaporn Chansawang, 2012)

1) Direct Impact from Climate Change

As the air is the basic factor of tourism, it has the collaborative factors to specify the appropriateness of tourism places, activity organization for tourists and tourism season setting. Furthermore, the climate also influences the expense in the tourism and hotel business such as heating/cooling, supplies of food and water, and insurance. The change of climate in the tourism areas that depends on seasons may affect the decision of tourists, for instance, the consideration to move the destination if the climate changes at the place. With this effect, it may affect the tourism and hotel business too.

The climate change leads to climate variability and crisis situations such as hotter weather, drought, flood, cyclone, snow storm. All of these impact on tourism and hotel business and also causes damages to the infrastructure and preparation for

the emergency that requires a higher cost for the tourism and hotel business, for example, insurance, water and food supplies, energy system management, tourist transfer, and ceasing of business.

2) Indirect Impact from Climate Change

Apart from the direct impact, the climate change also impacts on tourism indirectly. Due to the fact that the environment around us is the setting of human life while the human is the key to the environmental change, natural environment, and man-made environment. Consequently, the environment is very important to tourism while the climate that consists of temperature, rain, storms, and light are the precipitating factor that causes the change of tourism places. In addition, the climate change relating to tourism causes the change of water, the decrease of ecology, the destruction of landscape, the deterioration of natural resources such as beach erosion and diffusion of the epidemic from insects. The indirect impact from climate change is a significant factor that causes the change of tourism environment. The forecast of the change including quantity and violent levels are as follows:

(1) Temperature: The highest temperature in the hot weather day and the increasing heat wave cause sickness, stress, and death to the living things, humans, animals, and plants, including the higher demand of electricity.

(2) Rain: The high quantity of rain and frequency cause disasters from flood and landslide.

(3) Tropical storm: The frequency of tropical storm causes the dangerous risk of living things, epidemic, and ecological damages.

(4) Flood and drought: Due to El Nino Phenomena/La Nino Phenomena, the affected environment will encounter flood and drought that impact on agricultural products, electricity generation capacity by water energy, violent wildfire, and coral bleaching.

For indirect effects to the social change that might cause the climate change are as follows:

(1) The decrease of GDP: As we know that GDP is the indicator the economic growth. Due to the climate change, the decision in traveling reduces and also causes the negative effect. The government must spend a lot of money to solve the problem or for an emergency such as drought, flood, and Tsunami.

(2) Politic Security: The climate change might affect the politic security in some countries as it causes national economic depression. Every country, therefore, must compete for each other to own international resources as much as possible and this leads to the international conflict. Moreover, when the country encounters the climate change, a large number of people evacuate from the area, challenging the countries to the group to each other that face the higher of seawater level, etc. The related factors may lead to the international political conflict if they cannot negotiate.

(3) Safety risk: In general, tourists pay attention to the safety if there is any unrest situation in the tourism places. They may avoid travel to that city or that country. In consequence, the unceasing effects from climate change result in the social changes, people's life in terms of economy, politic security, and safety. And they affect tourism too.

Furthermore, mitigation policies still have indirect effects on tourism. Due to the fact that these policies change the cost of transportation and types of traveling, meaning that the mitigation policies tend to raise the cost of the flight ticket. Although the today advancement of transport system especially by air encourages people to travel far away and more frequently, the use of carbon dioxide still produces more GHG problems. As a result, the airlines in the developed countries multiply their ticket prices in order to use the income to reduce GHG. If every airline needs to fundraise for global warming solution by increasing their ticket price, a number of tourists may reduce or they may change their travel type by shortening the distance. If it might be so, Thailand, as the tourism spots located far from American and European tourists, might get impact from the reduction of tourists that also affects the national tourism economy.

2.2.3 Climate Change Impact on Tourism

As tourism is an activity that emits GHG into the air resulting in global warming, the growth of tourism and hotel industries exploits higher energy, especially, service business such as transportation, food and drinks, tourism, hotels, and technology (Pradech Phayakvichien & Rachaporn Chansawang, 2012).

Intergovernmental Panel on Climate Change (IPCC) has evaluated the average of carbon dioxide emission by tourism industry; it is 5% of the total GHG in the world. Even though the figure is not big, the expansion of tourism industry and the increase of tourists and international travels are the reasons to produce more carbon dioxide.

UNWTO (2008) evaluated GHG emission from the activities in the tourism sector in 2005 as follows: air transport at 40%, land transport at 32%, other transports at 3%, hotels at 21%, and tourism activities at 4%. Thus, the overall transport system, hotels, accommodations, and tourism activities emit GHG at 1,302 million ton or 5% as mentioned. Specifically, air transport emits almost 512 million tons. If the economic system is still like this in the future, the number of tourists will increase 4% a year, which increases the amount of carbon dioxide emission to 161% in 2035. The mean of GHG emission from tourism are as follows: air transport at 52%, land transport at 16%, other transports 1%, hotels 25%, and tourism activities 7%.

With this tendency, the tourism sector has been pressured by the society that its activities exploit energy and is one factor that causes global warming. As a result, there should have the adaptation to reduce the emission in terms of technology and distance reduction. This adaptation has an impact on the tourism sector certainly. Besides, when people become aware of the climate change problem more, their decision will be affected too which probably affects to number and pattern of travel similarly.

2.2.4 Concept of Climate Change Impact on Thai Tourism

Tourism is very significant for Thai economics. In 2014, Thai tourism generated 1.7 trillion baht to economic system. Comparing with the national revenue ratio, it was found that tourism revenue was 14.2% of total national revenue: 1.2 trillion baht from foreign tourists (10.3% of total tourism revenue) and 0.5 trillion baht (3.9% of total tourism revenue) from Thai tourists. The direct significance of tourism is that it is the employment source in hotel and food service sector, 2.6 million vacancies. The indirect significance is that it is the downstream industries, 3.1 million vacancies. It can be seen that tourism sector is the mechanism that drives the economics of Thailand apart from exporting and domestic consumption.

The simulation of climate change of SEA START RC cooperating with Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia imitated the climate of Thailand in the future using CCAM Climate Model under the condition that carbon dioxide in the atmosphere increased from 360 ppm. to 540 ppm. (the report studied the case of carbon dioxide was 720 ppm. as well). It was found that (Supakorn Chinwanno, 2007):

1) Rainfall increased in all regions of Thailand.

2) Maximum and minimum temperature in Thailand did not change much, only increased or decreased 1-2 ^{o}C.

3) Number of days with cold weather in a year decreased noticeably (lower than 15^{o}C) or winter was shorter. In a long-term, cold weather in most areas of Thailand would be shorter to 4-8 weeks per year.

4) Number of days with hot weather in a year increased (higher than 33^{o}C) or summer would be longer.

5) Variance or difference of season of year was higher. which the impact would be different in each area such as (Supakorn Chinwanno, 2006)

6) In Chiang Mai, there were currently 119 hot days and 118 cold days. The prediction of the next 80 years showed that there would be 160 hot days and only 11 cold days.

7) In Ubon Ratchathani, there were currently 104 hot days and 28 cold days. The prediction of the next 80 years showed that there would be 130 hot days and only 1 cold day.

8) In Chonburi, there were currently 99 hot days and 16 cold days. The prediction of the next 80 years showed that there would be 147 hot days and none of cold day (Most provinces in the east such as Prachinburi, Chonburi and Rayong would no longer have cold day in the next 80 years).

It was obvious that tourism, particularly one concerns with climate had been affected unavoidably. Each region of Thailand had the following impacts.

2.2.4.1 Impacts on Tourism in the North

Northern Thailand was affected by many impacts of the climate change, especially from the change of temperature. This was because tourism in the North mainly depended on climate. Most tourists would like to experience the cold weather.

From the prediction using the model of SEASTART, it was found that the maximum and minimum temperature of the North were likely to increase. Besides, when considering the number of days, the hot days seemed to increase while the cold days seemed to decrease in the northern area (such as Mae Hong Son, Tak and Chiang Rai, especially near the border). It possibly decreased to 1-2 month. However, number of cold days in the central area of the North would did not change. The average rainfall was likely to increase slightly.

Eco-tourism and winter tourism in the northern provinces such as hot spring and National Park or sanctuary that was the mixed forest or deciduous forest and had the risk of wildfire, in dry season in particular, would be drier and hotter about 2-3^{o}C. For the northern provinces that cold weather was the attractive factor to attract tourists, global warming affected tourism in long-term because the number of cold day with the temperature lower than 15^{o}C decreased for 5-10 days per year in the next 20 years and more than 20 days in 50 years. Even in the mountain zone of Mea Hong Son, Chiang Mai and Chiang Rai, the number of cold days would not exceed 60 days per years. Although the number of rainy day would change slightly, the overall rainfall that increased 200 mm. per year in some northern provinces caused the risk of flood in the lowland because of the increasing water and the lack of drainage management as well as the good city planning (Anon Sanitwong na Ayutthaya et al., 2009).

From this prediction, it could be seen that the change of temperature and rainfall had the negative impact on tourism in the North, particularly the natural-based tourism which highly related to climate. In this regard, the concerned person should adjust oneself to be ready for the change.

However, the change of rainfall might be the positive factor of tourism that concerned with the water activities such as rafting, waterfall or damn visiting which was the tourism to add value of the area. Furthermore, there were other tourist patterns that had not received any impact such as art and cultural tourism which actually should have more promotion.

2.2.4.2 Possible Impact on the Tourism in the Central Region

For the Central region, the maximum average temperature and the number of hot days increased obviously than the other regions. Although the number

of cold days decreased in Bangkok Metropolitan Region, the Central region would have the increasing cold days while the rainfall varied in each area.

Most tourism in the Central region was the art and cultural tourism without any concern with climate. Thus, the climate change would not affect tourism. However, the change might affect the entire ecology and made the change in the area, so some tourist attractions lost its attractive point such as rare animal resource. Moreover, some areas faced serious coastal erosion problem that put some tourist attractions in the high risk such as Samut Prakarn area (Phra Samut Chedi or Phra Pradaeng).

2.2.4.3 Possible Impact on the Tourism in the Northeastern

Maximum and minimum temperature was quite constant with few changes. However, the number of cold days in most of area, except Khon Kaen and Nong Khai, decreases and the rainfall slightly increased.

Tourism in the Northeastern was similar to those in the Central region, that was art and cultural tourism. Therefore, the impact of climate change on tourism was the indirect impact; it may had impact on ecology, except from the provinces that had natural-based tourism such as Loei or Nakorn Ratchasima that might be affected from the climate change.

2.2.4.4 Possible Impact on the Tourism in the East

It was predicted that the average rainfall increased and the maximum and minimum temperature increased more than other regions. Number of cold days decreased obviously.

The important tourism in the East was beach, marine and islands travel which was not affected by the temperature change. Agricultural tourism in the eastern provinces, orchards and agricultural garden which were the tourist attractions in Rayong, Chantaburi and Trat might have the benefits from the increasing rainfall. However, the cold weather in winter which was the main factor of the growth of fruits did not have much change (Anon Sanitwong na Ayutthaya et al., 2009). However, the increase of rainfall might be the problem of tourism. In addition, another main problems from the global climate change that might have serious impact on the tourism in the East were the increase of seawater level and the coastal erosion, the risk of sudden flood in the slop area and drainage flood in the plain area (Anon Sanitwong na Ayutthaya et al., 2009) as well as the change in marine resources (such as corals).

There were few researches on these problems. Regarding other tourisms such as mountain and forest tourism and other services might not be affected much by the climate change.

2.2.4.5 Possible Impact on the Tourism in the West and the South

The impact on the West was similar to those in the East. It was to say beach, marine and islands travel might be affected from the increase of seawater, coastal erosion, the change of marine resource and the risk of extreme events. It was predicted that during 2020-2029, the marine travel in the Andaman Coast in Phang Nga, Phuket and Krabi might have benefits from the shorter rainy season because the tourists would have 4 more weeks for outdoor activities. However, the tourism entrepreneur and service sector in these provinces might have to encounter the water shortage problem if they did not have good management which should consider the decrease of water resulted from the global warming (Anon Sanitwong na Ayutthaya et al., 2009).

Besides, trekking and adventure travel in the lower southern part where the tourist attractions were forest. For example, the mountain slope and the foot of mountain in Bantad Mountain and Sangkhla Khiri faced the frequent heavy rain and had risk of sudden flood and land slide, particularly in Nakorn Sri Thammarat, Trung, Satun, Yala and Pattani (Anon Sanitwong na Ayutthaya et al., 2009). All these impacts had not been studied and they had high uncertainty so it was difficult to evaluate the trend. The change of temperature had small impact.

Anon Sanitwong na Ayutthaya et al. (2009) studied the evaluation of impact of climate change on the tourism which reported in the complete report of the evaluation of impact of climate change in the future on cluster: Thai Tourism proposing to Ministry of Tourism and Sports. It stated that tourism was the most important sector of Thai economics that had been affected from the climate change in various ways such as the change of rainfall and annual rain dispersion as well as the temperature and the oceanography factor.

However, though there was no evaluation on the impact of climate change on the tourism of Thailand in full version, Ministry of Tourism and Sports evaluated the risk of climate change and the fragility of the 14 tourism clusters which had different risk (Anon Sanitwong na Ayutthaya et al., 2009) based on the topography, physical characteristics and tourism activities. The condition of different

tourism cluster made them have the different risk and fragility to the change of climate. The evaluation of the sensibility to the risk and the risk of tourism clusters on climate and climate change in the future applied meteorology data which were maximum temperature, minimum temperature, total annual rainfall and rain dispersion, annual rainy day, wind and waves as well as topography, physical characteristics and tourism activities to evaluate the risk of 14 tourism clusters. Anyway, strategy and plan had been determined to prepare for the risk resulted from the climate change in the future, which emphasized on the increase of flexibility of cluster to the impact and the appropriate condition to remain the tourist attraction.

Table 2.3 Analysis of Risk of Climate Change and the Fragility of Tourism Clusters

Tourism Cluster	Risk of Climate		Fragility of Cluster		Conclusion	
	2020	2050	Topography	Tourism Activities	2020	2050
Hot spring	Low	High	High	High	Moderate	High
Ecotourism and Adventure	Low	High	High	High	Moderate	High
Lanna Heritage	Low	High	Low	High	Low	Low
World Heritage connecting with Ecotourism	Low	High	Moderate	Moderate	Low	Moderate
Tropical ecology	Low	Moderate	High	High	Moderate	High
Lifestyle on the River Basin in the Central Region	Low	Low	Moderate	Moderate	Moderate	High
The Khong River Basin	Low	Low	Low	Moderate	Moderate	Moderate
Dinosaur Path	Low	Low	Low	Low	Low	Low
Pilgrimage	Low	Low	Low	Low	Low	Low
Northeastern Civilization	Low	Low	Low	Low	Low	Low
Jewel route and Agro-tourism	Low	High	High	Low	Low	High
Active beach	Low	High	High	High	Moderate	High
Royal coast	Low	Moderate	High	High	Moderate	High
Two-Oceans Wonder	Low	Low	High	High	Moderate	High

Source: Anon Sanitwong na Ayutthaya et al., 2009.

The above problems indicated that global warming had both negative and positive impacts on tourism sector. Direct impacts were the change of natural tourist attractions, the destroyed natural resources and the natural disasters. All factors led to the less revenue of tourism sector that relied on natural resources and tourist attractions as they affected the tourism experience of tourists and the decision making of tourist to visit Thailand. Moreover, it decreased the number of tourists who travelled to Thailand, which was the indirect impact. Therefore, tourism sector should preserve environment and realize the solution of global warming in order to continue tourism in Thailand.

2.2.5 Impacts of Climate Change on National Parks and Other Conservation Areas

Travelling to National Park was very popular among Thai and foreign tourists. This was because the government gave importance and supported tourism as a tool for generating national revenue, especially when most natural-based tourism resources were in National Park areas and other conservation areas. Therefore, the officers of National Park had an additional role from their regular responsibility to preserve natural resource, manage the area and prepare to welcome tourists. However, tourism in National Park area had different management from other tourism patterns. Tourism and recreation management in National Park emphasized on tourist resources management, resources user or tourists and management system.

That was to say National Park and conservation areas had significant roles in natural-based tourism, which was part of the tourism sector that was important and growing. Natural-based tourism was to travel to the under-developed area to enjoy the nature (Goodwin, 1996) and do activities such as trekking, bird watching, camping, hunting, fishing, rock climbing and rafting (Blamey, 2001). These activities allowed the tourist to be themselves, escape from the pressure in routine life, experience the nature, mountain, plants, and wild animals. Climate was the component of natural-based tourism that both attracts and disappoints tourists (Gomez, 2005). Moreover, it had direct impact on the activity selection that was the result of time and area limitation of tourism activities.

In 1996, it was found that there were National Parks and Conservation areas established in 225 countries, 13 million km^3 in total area or 8.8% of the entire land on earth (Eagles, 2003). Physical resource was the key component of tourism and recreation activities in National Park that might be affected from the climate change. This was because almost activities relied on nature such as ecotourism that has high influence of climate. Thus, period of time and quality of tourism and recreation activity had changed.

In regard to the impact of climate change on the natural-based tourism in mountain area, it was found that climate was the most significant factor of tourism in the mountain. It was the indicator of the appropriateness of the tourism activity resource. Tourism depended on the reasons, in terms of period of time and quality of climate and climate change. Consequently, the temperature increased, the natural disaster was more extreme and frequent and finally caused the less motivation to travel to the mountain and the higher expenses of preparing for the natural disaster. Besides, the changing environment resulted from the climate change affected tourism at the different level such as the limitation on the use of water, the loss of biodiversity, the less of scenery beauty, decrease of agricultural products, the increasing natural danger, coastal erosion, the damage of facilities and the dispersion of germs. Additionally, climate change might affect the economic growth and decision making on traveling which finally affected the economics of local region when the tourism income decreased (Office of Natural Resources and Environmental Policy and Planning, 2015).

The climate change that was the result of the Greenhouse gas released to the atmosphere caused the higher temperature and seawater level. This was because the change of rainfall dispersion and the change of forestry condition that finally affected the biodiversity, especially the area with weak ecology such as wetland, mangrove, coral reefs, cloud forest and montane rain forest. It was predicted that if there was no solution, ecological structure and function would disappear within 2-3 decades and there would no longer have services from this ecology. From the use of climate change model UK89 to find the risk area resulted from global warming, it was found that there are 32 National Parks and Conservation areas in total that were in the risk area as shown in Table 2.4 (Kansri Boonpragob, 2005).

Table 2.4 National Parks and Conservation Areas in Total that Were in the Risk Area

National Park	Province	Wildlife Sanctuary	Province
1. Doi Suthep-Pui	Chiang Mai	1. Chiang Dao	Chiang Mai
2. Doi Khuntan	Lamphun	2. Doi Pha Muang	Lamphun, Lampang
3. Mae Yom	Phrae	3. Doi Luang	Phrae
4. Si Satchanalai	Sukhothai	4. Phu Miang-Phu Thong	Uttaradit, Phitsanulok
5. Phu Rua	Loei	5. Phu Luang	Loei
6. Ram Kamhaeng	Sukhothai	6. Phu Wua	Nong Khai
7. Phu Kradueng	Loei	7. Umphang	Tak
8. Phu Kao - Phu Phan Kham	Khon Kaen	8. Thungyai Naresuan	Kanchanaburi, Tak
9. Phu Chong Nayoi	Ubon Ratchathani	9. Phanom Dong Rak	Si Sa Ket
10. Kaeng Tana	Ubon Ratchathani	10. Yot Dom	Ubon Ratchathani
11. Chaloem Rattanakosin	Kanchanaburi	11. Khao Khiao - Khao Chomphu	Chon Buri
12. Khao Khitchakut	Chanthaburi	12. Khao Soi Dao	Chanthaburi
13. Laem Son	Ranong	13. Sadejnaikrom Kromlaung Chumphon	Prachuap Khiri Khan, Chumphon, Ranong
14. Khao Sok	Surat Thani	14. Khlong Nakha	Ranong, Surat Thani
15. Khao Luang	Nakhon Si Thammarat	15. Khlong Saeng	Surat Thani
16. Khao Phanom Bencha	Krabi	16. Khlong Phraya	Krabi, Surat Thani

Source: Kansri Boonpragob, 2005.

Table 2.4 showed that apart from the Land National Park that was the area of high risk, Marine National Park was also the area that was possibly affected by the climate change. The impacts were the loss of island area, the coral bleach, the damage area from the natural disaster and the low quality of water causing the weed in the sea (Soraya Homchuen, 2007).

In the forum "Effect of Global Warming on Coastal Tourism in Thailand" on 23 July 2007, the representatives of Department of Marine and Coastal Resources presented the effects on the marine and coastal resources, which were the important tourism resources. He stated that beaches and coastal area of Thailand were the sources to absorb carbon dioxide. In particular, the mangrove area, sea grass, plankton and small plants that helped on photosynthesis and used carbon dioxide in water and air to produce cells and tissue, when they died and sunk to the bottom of the sea, they still accumulated carbon dioxide.

However, the continual study showed that the temperature of seawater in Andaman Sea increased 0.13 ^{o}C in every 10 years. It would increase at 1^{o}C in the next 50 years. If the temperature reached 33 ^{o}C, it would have serious impact; there would have coral bleach and they would finally die. Further, the increasing water temperature on the seawater surface would cause severe storm with more frequency. Previously, tourists were able to travel to dive in the island during the mid-November to mid-May. Currently, there was harsh wave after April so the tourism period in Andaman Sea shortened.

The above information was the result of the climate change on the natural-based tourism resources which mostly were in National Park areas, from land ecology to marine and coastal ecology. This was in line with the research and academic report of other countries that mentioned the effects on tourism resources. Browne and Hunt (2007) studied the climate change and the natural-based tourism, outdoor recreation and forestry in Ontario, Canada. Tourism activities in summer and winter that might be affected from the climate change had been predicted for short-term 50 years (present to 2049) and long-term for more than 50 years. In short-term, there would be both positive and negative effects since tourism activities in Ontario operating in summer and winter. The increasing temperature prolonged the tourism season in summer which was good for many activities such as camping, golfing, water

activities, horse riding and bird watching. However, in winter when the temperature increased, the thickness of snow reduced and made the shorter winter. Moreover, it was found that the effect on tourism resources caused the disease outbreak, the higher wildfire rate, the decrease of value and beauty of scenery resulted from smoke which affected the tourism experience of tourists. Regarding long-term effect, positive effects generated the advantage of tourism activities in summer as same as the short-term effect. However, there were some slight difference in negative effect, particularly on ecological system, hydrological system, plant and animal species that could not adjust themselves to the climate change. Finally, they would extinct.

The research of Browne and Hunt (2007) was consistent with the study of the International Institute for Sustainable Development (1997) on the effect of climate change on the recreation and tourism in the North America where most resources were natural-based tourism resources. Results illustrated that climate change had positive effect on the decreasing spread of plants because of the draught and exceeding rainfall. Moreover, it was difficult to predict what type of plant that had quick or slow adjustment as it depended on various factors such as soil type, number of days (sunlight for photosynthesis), hunter type or competition. Besides, if they could not have quick adjustment, they would disappear eventually. Wild animal was another group that had been affected directly. This was because the food resources decreased and the habitation had change. With this reason, they had to relocate and this affected the physical condition of natural-based tourism resources (Daniel, Jones & Konopek 2006). Tourists recognized the change of resources from the changing physical condition.

In Thailand, there were number of researches on the impact of climate change on tourism in National Park and Conservation areas as follows.

Wanvicechanee Tanoamchard and Sangchan Limjirakan (2012) studied on the impacts of climate change on water resource that affecting tourism industry in Koh Chang, Thailand. Result showed that Koh Chang faced the problem of water shortage because of the climate change. The change of rainy season affected water quantity for consumption and there was the saltwater intrusion whereas people and tourists had the increasing need for the use of water. This was the ongoing effect on the tourism revenue and quality of life of people. Government and private sector should cooperate

to determine strategy and practical guidelines for sustainable water management in the area in order to create sustainable tourism.

Similarly, the research of Onanong Cheablam and Rajendra P. Shrestha (2014) examined the impacts of climate change in Marine National Park, Mu Koh Surin National Park, Phang Nga that was encountering the problem of climate change: higher temperature, the change of rainfall, increasing seawater surface temperature and the higher level of seawater. The increasing temperature caused lots of coral bleach and the coastal erosion 0.38 meter per year. However, water source was sufficient for tourist activities. Impacts of climate change affected the beauty of coral reefs and the less fertility of living things. Some tourist spots for water activities such as scuba diving and diving had to be closed. Therefore, the adjustment was required to be ready for the climate change as well as the sustainable tourism management was necessary.

For Khao Yai National Park which was the studied area in this research, Anon Sanitwong na Ayutthaya et al. (2009) grouped Khao Yai National Park in tropical wet ecosystem cluster which had the fertility and biodiversity, including the beautiful scenery. Therefore, it was the charming and attractive point for tourists. When analyzing the risk of climate change and fragility of tourism cluster, it could be concluded as follows.

1) Risk of Climate

Result of the simulation of the change in meteorological variable indicated that in 2020, rainfall and temperature would have slight change when comparing with the base year. Therefore, there was low level of risk on the change of meteorological factor.

In 2050, result of the model of rainfall showed no change from the base year, except from the variable of temperature that was higher than the base year. Thus, the tourism cluster had moderate level of risk of the change of meteorological factor.

2) Fragility of Cluster

Since it was the natural-based tourism, the variable of topography related to the climate change directly. Moreover, tourism activities related to natural-based tourist attractions. Therefore, there was the risk of climate change.

Table 2.5 Risk Level of Climate Change and Fragility of Tropical Wet Tourism Cluster

Variables of Meteorology and Oceanography	Risk of Climate		Fragility of Cluster	
	2020	2050	Topography	Tourism Activities
Average monthly rainfall	Low	Low	High	High
Rainy day > 35mm./day	Low	Low	High	High
Rainy day > 10 mm./day	Low	Low	High	High
Rainy day > 3 mm./day	Low	Low	High	High
Maximum temperature	Low	High	High	High
Number of day with temperature higher than 35°C	Low	High	High	High
Minimum temperature	Low	High	High	High
Number of day with temperature higher than 15°C	Low	High	High	High

Source: Anon Sanitwong na Ayutthaya et al., 2009.

Besides, Anon Sanitwong na Ayutthaya et al. (2009) evaluated the fragility of tourism cluster, which Khao Yai National Park was part of tropical wet tourism cluster. Results showed that currently, forest was plentiful and had no disturbance from human activities. Disaster found was the draught resulted from the climate change. There was the shallow water source problem some years such as Lam Takhong which implied that the groundwater level was higher than the soil surface. Thus, the use of surface water and groundwater from the expansion of city, resorts, industries and agricultural areas surrounded Khao Yai National Park was the key factor of this circumstance. It made the forest area lacked of ability to absorb water to supplant the groundwater as normal. As a result, water level in the reservoirs, waterfall and streams was very low.

Regarding the risk level of climate change, it was found that Khao Yai National Park which was grouped in the tropical wet tourism cluster had high level of risk as it was the natural-based tourist attraction and had high sensibility to climate change. Result of the climate change simulation found that the important factor of tourist attractions were number of rainy day with the rainfall more than 35mm./day and the temperature. When considering the topography, tourism activities and the risk of climate, Khao Yai National Park might have the risk of sudden flood, fire forest or landslide.

In regard to the ability to deal with the problems, Khao Yai National Park had not been disturbed much so there was still the fertility. Thus, without the continual disturbance from the utilization of land and natural disaster, although the National Park had high level of risk of climate change as temperature was importance for the existence of living things, when there was unavoidable problem, it was capable to adjust itself to restore to normal condition. However, impacts and level of severity of disaster or circumstance resulted from the climate change in the future were difficult to predict and there was no measure to deal with it directly. There only had the supportive factors that helped to reduce the fragility of the area such as protection and surveillance, deforestation and reforestation. However, since the surrounding area utilized the huge amount of water resource, forest area had less potential in maintain the balance of system. Therefore, the supportive factors to reduce the impacts were water resource management without any conflict. Besides, water resource areas had the key role in maintain the fertility of forest, water cycle, the utilization of surrounding areas and the support for the flood effect such as being the catchment area. With these factors, they helped to reduce the risk of sudden flood in the tourist attractions.

In addition, Niti Sukumal (2010) studied on the climate change affecting the wild animal behavior. The analysis on area utilization and habitation of Siamese fireback and Silver pheasant in the semi-hill evergreen forest at Khao Yai National Park showed that the $2^{o}C$ increase of average temperature in Khao Yai National Park forced the Siamese fireback to relocate to other higher place. Additionally, the change of rainfall affected the ecological system and water amount in waterfalls surrounding the National Park. It was obvious that all these changes affected Khao Yai National Park unavoidably.

The research of the Office of Natural Resources and Environmental Policy and Planning (2015) on the impacts of climate change on the tourist attractions in Khao Yai National Park found that Wang Haew Waterfall was the area that had the decrease rainfall in high level. The maximum and minimum temperature increased in moderate and high level which made this waterfall was on risk of the decrease of water amount in the the stream above the waterfall or at the waterfall in the future. Moreover, there was the impact from the high rate of evapotranspiration because of the increasing maximum and minimum temperature. Haew Suwat Waterfall was the area with the decrease of rainfall was in moderate level. The maximum and minimum temperature increased in the moderate and high level which caused the waterfall in this cluster had the risk of decreasing water amount in the stream above the waterfall or at the waterfall in the future. There was also the higher rate of evapotranspiration because of the increasing maximum and minimum temperature.

2.2.6 Climate Change Impact and Tourists in the National Park

Impacts of the climate change normally affected natural resources that were the basic tourism resources of National Park. However, it had very few impacts on the quantity, number and tourism behavior of tourists. Since the tourism pattern was the short travel during the weekend, to select tourism activity depended on the tourist to choose location and type of various activities by avoiding the impacted sites or those they were not satisfied with. In some countries, where the majority of people travelled to other countries to avoid cold weather, there was the decreasing rate of departure which was good for domestic tourism (Browne & Hunt, 2007).

Likewise, the research of Daniel et al. (2006) investigated the climate and environmental change on the natural-based tourism on Rocky Mountains in Waterton Lakes National Park applying linear equation to analyze the retrospect number of tourist in each month during 1987-1999 and using climate factors to predict the influence of climate affecting the number of tourist both in high and low tourist season. It was found that in 2020, number of tourist increased 7-20% or it could be said that the climate change only had few impact on tourist behavior.

Considering the cause of climate change in terms of tourism, especially in National Park, one of the most important causes was the tourist activities and the

tourism operator. To reduce the impact the realization of responsibility and behavior adjustment in energy, oil and electricity saving was required. All activities should focus on tourism for learning and natural resource conservation, reduction of pollution and waste and water saving. In regard to the operator, the business size should be smaller and gave less importance to the quantity which would help to reduce the use of energy and waste quantity. Moreover, the practice should be operated under the environmental standard such as Ecolef, Energy Star and Green Globes. Besides, these standards were the strength for the marketing in the future (Soraya Homchuen et al., 2008).

The study on the global climate change and the tourism in Thailand conducted by Sittidaj Pongkijvorasin (2010) focusing on the relationship between number of tourist and the temperature in Khao Yai National Park (Figure 2.1) clearly indicated that number of tourist increased when the temperature and rainfall went down. Therefore, the climate change which was likely that the temperature and rainfall would increase might cause the decreasing number of tourist and the less tourism revenue. Finally, it affected the environment and economics.

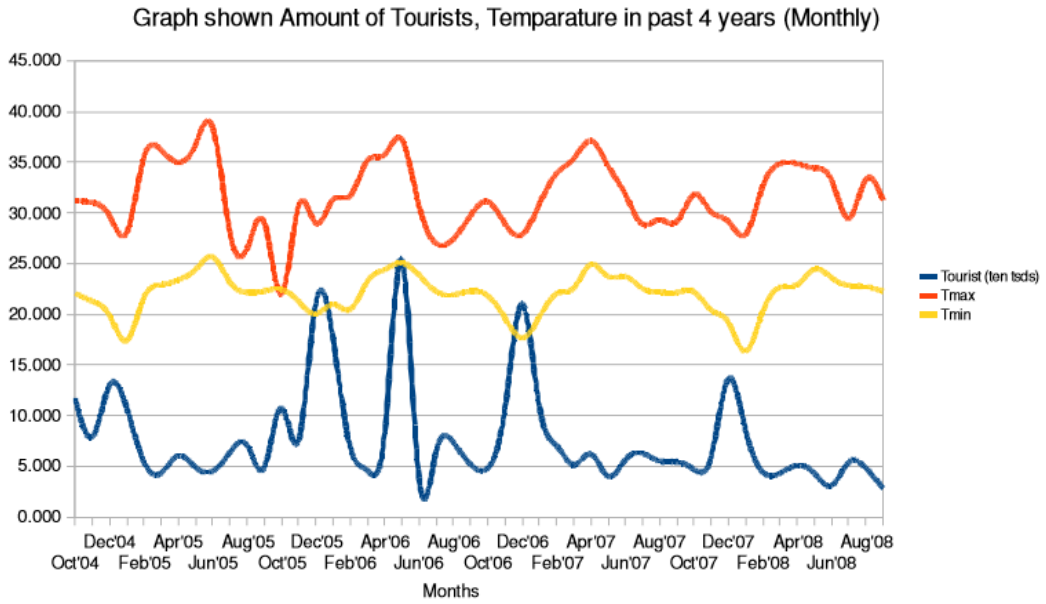

Figure 2.1 The Relationship Between Number of Tourist and the Temperature in Khao Yai National Park

Source: Sittidaj Pongkijvorasin, 2010.

Additionally, there was the survey on tourist opinion to study tourism behavior of tourist in Khao Yai National Park relating to the climate change. From the survey on opinion of 145 Thai tourists in Khao Yai National Park in January 2010 on the important factor for decision making to travel to Khao Yai National Park, it was found that the most important factor was the safety in the National Park (3.76%), followed by the fertility of plants (3.73%), temperature (3.63%) and rainfall (3.54%). It implied that environment in the National Park was the most important factor for making decision (rather than the convenience, activities, accommodation and others). Therefore, the climate change which had direct effect on the environment in Khao Yai National Park influenced tourism behavior of tourist obviously (Sittidaj Pongkijvorasin, 2010).

2.3 Climate Change Control Measures

Climate change control measures nowadays consist of two major operations which are the adaptation focusing on increasing the adaptation, building immunity to fight against the climate change, and reducing greenhouse gas mitigation (IPCC, 2001; UNEP, 2008; GIZ, 2010). These connect to the adaptation of the infrastructure to emit low carbon dioxide, to change behavior in human activities, and to add more carbon sinks, for example, reforestation.

As same as Stern (2006) said about the management of climate change on “The Stern Review on the Economics of Climate Change”, that there are types of the climate change management: 1) mitigation is to reduce the stimulus or causes of the climate change, for example, reduce the emission of toxic pollution to the air system; 2) adaptation is to adjust self and the environment to the changed climate and build immunity and infrastructure to prevent the effect from the problem.

It can be regarded that the climate change is the challenge that the tourism organization, related units, the state, and the public sector must cope with, due to this is a national, state, business, and people problem. Therefore, to manage the mitigation is important to everyone to collaborate and campaign to improve the tourism to the climate change, regulate mitigation measures, and cooperation among related units as the followings (Pradech Phayakvichien & Rachaporn Chansawang, 2012).

2.3.1 Adaptation

Adaptation comes from many factors. Tourism is the offender and the victim. Because of the two roles' close relationship, the climate change is the global problem that requires collaboration from every society around the world to solve in order to learn and adapt self to the situation and reduce GHG emission.

The adaptation means the adjustment of human's systems to deal with the precipitating factors in the climate that happens or about to happen. This method reduces the impact. The adaptation can be divided into several types such as adaptation in advance, adaptation in response to the change, personal adaptation or mutual adaptation of people in the society (UNDP, 2004).

For those have the roles in tourism, their adaptation capacities are different as follows:

1) Tourists, for them, have the high capacity of adaptation when the climate changes because they are independent to decide to visit any places and avoid the risk areas. They also are able to cancel or postpone the travel easily. However, it depends on their money, knowledge, and time.

2) Tourism entrepreneurs mean those who do the guide tour business and transport business such as airline, train, and ticket agency. These organizations have the potential to adapt themselves fewer than the tourists. If the climate changes, they may cancel the service or postpone the service or even change the route.

3) Tour agency business and people in the tourism areas mean those who do tour agency business that stays in the tourism spots and people who live there. If the climate change affects their environment, these people have the weak potential to adapt themselves because they have invested or lived in that area.

The adaptation to respond the climate change in the tourism sector has been operated in technology, management, policy, and changing behavior by the stakeholders. Details of the examples are presented in Table 2.6

Table 2.6 Examples of Climate Change Adaptation in Tourism Sector

Type of Adaptation	Tourism Operators/ Businesses	Tourism Industry Associations	Governments and Communities	Financial Sector (Investors/ Insurance)
Technical	1) Slope contouring 2) Rainwater collection and water recycling systems 3) Cyclone-proof building design and structure	1) Enable access to early warning equipment (e.g. radios) to tourism operators 2) Develop websites With practical Information on adaptation measures	1) Reservoirs, and desalination plants 2) Fee structures for water consumption 3) Weather forecasting and early warning systems	1) Require advanced building design or material (fi re resistant) standards for insurance 2) Provide information material to customers
Managerial	1) Water conservation plans 2) Low season closures 3) Product and market diversification 4) Regional diversification in business operations 5) Redirect clients away from impacted destinations	1) Snow condition reports through the media 2) Use of short-term seasonal forecasts for the planning of marketing activities 3) Training programmes on climate change adaptation 4) Encourage environmental management with firms (e.g. via certification)	1) Impact management plans (e.g., 'Coral Bleaching Response Plan') 2) Convention/ event interruption insurance 3) Business subsidies (e.g., insurance or energy costs)	1) Adjust insurance premiums or not renew insurance policies 2) Restrict lending to high risk business operations
Policy	1)Hurricane interruption guarantees 2) Comply with regulation	1) Coordinated Political lobbying for GHG emission reductions and adaptation mainstreaming 2) Seek funding to implement adaptation projects	1) Coastal management plans and set back requirements- 2) Building design standards	1) Consideration of climate change in credit risk and project finance assessments

Table 2.6 (Continued)

Type of Adaptation	Tourism Operators/ Businesses	Tourism Industry Associations	Governments and Communities	Financial Sector (Investors/ Insurance)
Research	Site Location	Assess awareness of businesses and tourists and knowledge gaps	Monitoring programs	Extreme event risk exposure
Education	Water conservation education for employees and guests	Public education campaign	1) Water conservation campaigns 2) Campaigns on the dangers of UV radiation	Educate/inform potential and existing customers
Behavioral	1) Real-time webcams of snow conditions 2) GHG emission offset programs	1) GHG emission offset programs 2) Water conservation initiatives	Extreme event recovery marketing	Good practice in-house

Source: United Nations Environment Programme, 2008.

2.3.2 Reduction or Mitigation

Reduction and mitigation or any GHG control measure is the process to change the climate by depending on modern technology, economic and social measures, and alternative energy. There are 2 aspects which are to reduce the greenhouse emission and to indicate the activity space as follows:

1) GHG mitigation includes eliminate, reduce, substitute, and offset.

(1) Eliminate is to get rid of the greenhouse emission activities that is avoidable without reducing the quality of tourism products or services, for instance, traveling walking to the destination that is not too far instead of taking the bus.

(2) Reduce is to decrease the greenhouse by using the energy as necessary, for example, setting the time to turn off the electricity in some accommodations.

(3) Substitute is to use alternative energy to reduce GHG emission. Using wind energy, solar energy, and recycling agricultural wastes to produce biological energy.

(4) Offset is the business unit can operate the compensation project, for example, Quantas airline and Jet Star Airline have organized Carbon offset Scheme collaborated with Australian Government as a part of the strategy to conserve the environment in full option. Quantas and Jet Star initiate the project in 2007 so that their customers will choose traveling with them without increasing carbon to the environment or carbon balance by donating money to compensate the carbon dioxide emission during the trip.

2) Activity space for the reduction of the greenhouse effect, according to the above examples, there are several methods. The activity space in this second aspect can be operated in the 3 following types:

(1) Internal Operations are the practice inside the company or institute. The unit can regulate or decide methods and measures to balance carbon.

(2) Supply Chain is the practice that the company or institute tries to do so that the members in the supply chain select the operation to balance carbon. The organization cannot control the decision of the alliance in their supply chain.

(3) Community Consumer is the operation that the company or institute tries to build the influence on the customer's decision and the community via activities and strategies in order to balance carbon.

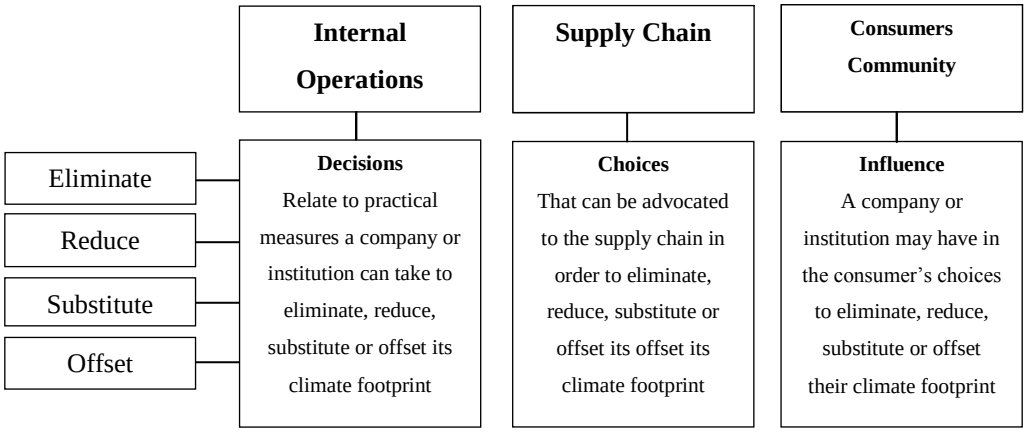

Figure 2.2 Climate Change Control Measures

Source: United Nations Environment Programme, 2008.

Adaptation and mitigation are combined to make the support plant to the climate change. The guideline to respond the impact must reduce the damages from the risk of climate change for tourists and people to be acknowledged, prepare evacuation policies in the case of disasters, city plan, and design buildings that tolerate to the bad climate, including shelters for emergency cases.

On the other hand, the ability of adaptation depends on the system capacity to respond it, including technologies and efficient strategies in the underdeveloped countries or island states that are sensitive to the climate change more than developed countries. Risk issues have been presented in Table 2.7. We can see that the change become dynamic, especially natural ecology that relates to tourism, to respond the unexpected situations such as an epidemic or natural disasters. All of these relate to the climate change.

Nevertheless, when we consider the nature tourism system which consists of tourist, management system, and natural resources, every part is able to adapt or prepare to respond the changing climate differently as seen in Figure 2.3.

Table 2.7 Factors Indicating the Sensitivity from the Climate Change of Underdeveloped Countries and Island States

Risk Countries	**Criteria**	**Relationship between Temperature and Risk of Climate Change in the Year 2100**
Africa	Distribution, Magnitude, Timing, Low Adaptive Capacity	0-2 ^{o}C– populations more than 10 million lack water and Malaria become the epidemic. > 2 ^{o}C– Populations more than 100 million lack water and Malaria become the epidemic more. The products from agriculture decrease due to the severe damages of ecology.
Asia	Distribution, Magnitude, Timing, Low Adaptive Capacity	0-??? ^{o}C– More than million millions populations face the lack of agricultural products and water and unexpected severe situations.

Source: Schneider et al., 2007.

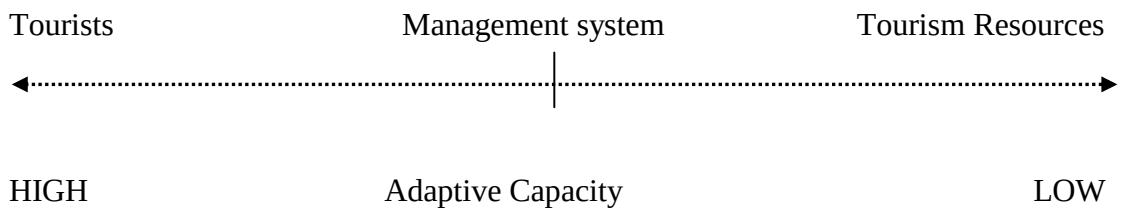

Figure 2.3 Adaptation Ability of Nature Tourism Elements
Source: United Nations Environment Programme, 2008.

From Figure 2.3, the tourists are able to adjust to the situations the best. The adaptation ability, part of it comes from receiving information of the impact or the situation so they can prepare. Therefore, the climate change information is important for every region to prepare how to deal with it and to regulate the appropriate policies.

Table 2.8 represents the relationship of realizations of the climate change information which is different in every tourist places of the world. It is clearly that knowledge and research studies relating to the climate change towards tourism are different and have a small amount in every region of the world. This is another piece that confirms the adaptation of the climate change will be different depending on the knowledge. However, it is knowledgeable that the related studies must be researched for a long period so we can predict or see the impacts clearly. In consequence, for some countries that have the education limits, those who have more knowledge must help the others. The strategies of adaptation include 8 factors: 1) Risk Management Plan 2) Connection with the other processes 3) Explicit Regulations and Control 4) Support Network 5) Financial Support 6) Good Information and Knowledge 7) Good Education and Communication and 8) Responsibilities to any developments.

Table 2.8 Realization Levels about the Climate Change and the Impact on the Tourism Places in the World Regions

Regions	Evaluation of Impact levels on Tourism	Knowledge Level in Climate Change
Africa	Medium to violent	Very Few
Asia	Medium to violent	Very Few
Australia and New Zealand	Medium to violent	Few to medium (Very high in Great Barrier Reef)
Europe	Low to medium	Medium (Very high in alpine)
Latin America	Low to medium	Few
North America	Low	Medium (Very high in the coast and ski areas)
Artic	Positive and Negative impact in the low level	Few
Islands	Violent	Medium (Very High in coral reef areas)

Source: Hall, 2008.

For Thailand, there is several types of research study the impact of climate change that may happen in the gulf of Thailand, which most people regard that it is about the future. But these problems can happen quickly and how can we adapt ourselves to the current situation?

Therefore, the tourism industry which depends on the natural resource needs to pay attention to the adaptation and the reduction of the climate change impacts on tourism, including the improvement of the development guideline, business operation, in order to reduce the impact on the climate. The examples are the use of technological innovation in the tourism development, the reduction of energy use by changing traveling methods, the use of energy to be more efficient, the increase of alternative energy uses, the tourism development for social and environmental responsibilities, and the business guideline that accords to global warming policies.

In addition, the change of tourist's behavior is another important factor that help reduces CO_2 emission from tourism activities, for example, the use of marketing

strategy to arrange green tourism program. In this present day, this kind of projects has been increased and the tourists begin to realize the climate change causing by tourism more. This is the good opportunity for the tourism industrial entrepreneurs to provide the activities in accordance with this tourist group. It is anticipated that this service will grow more in the future. Consequently, the stakeholders in the tourism industry must collaborate to save energy and change behaviors. This conforms to the research that focuses on the tourism management to respond the climate change under the context of tourist's behavior adjustment.

2.3.3 Related Research

Some researches in Thailand studied the behavior that helps reduce the climate change or global warming, for instance, the study of behavior in reducing global warming of students from Faculty of Management Science Silpakorn University by Suttama Sangwichien (2009), which found that the sample group has the behavior in reducing the global warming problem by saving energy as much as possible; the seconds are campaign and wastes reduction. The overall behavior to reduce global warming in 3 aspects is in the high level. Similar to Artit Thongnak (2009), who studied the behavior to reduce global warming of undergraduate students of Ramkhamhaeng University, the realization of global warming information is at the medium level. The overall knowledge in global warming solution is at the high level and the attitude towards global warming reduction is at the high level. The behavior to reduce global warming is at the medium level. Moreover, gender relates to behavior to reduce global warming with statistical significance at .05, while age, faculty and year of education have no relation to the behavior.

Suttama Sangwichien (2009) said that most of the samples who are students from Rajabhat University in Bangkok have the behavior in the participation to reduce global warming frequently, especially to change the routine behavior, for example, the use of fabric bag instead of plastic, saving water. Secondly, they search additional information about the reason, causes, effects of global warming, including arranging the campaign with college friends.

The foreign researches relating the adaptation and the reduction of climate change, Lund-Durlacher, Seltmann and Strasdas (2007) discovered that the studies

about the causes of the climate change from tourism and the appropriate strategies to reduce the problem are the quiet limit. Some information is not certain. The strategy to reduce the climate change connects to technology that will be applied to solve the problem for the change of tourism behavior or the building of green tourism products.

In the research direct topics about the climate change and tourism, it was found that the current problem of the climate change or the global warming works on many tourism places trying to adjust themselves and reduce the global warming problem that occurs in many places, for example, skiing on alps in Germany must encounter 9^{o}C temperature so there must be the snow-making machine to build the ski model for the tourists. In Switzerland, the tourists must get on the cable car to go to the higher level in order to do ski with the appropriate snow to play with. Most tourists make an effort to drive north so they can have the snow to play ski, resulting in traffic jam and over-crowding areas in the tourism spots. In France, the ski resorts must be innovated by expanding the zoo to please children who are disappointed when they could not play ski thought the zoo is the place for summer activities. We can see that these aforementioned methods are not only about self-adjustment and solving unexpected problems.

In Thailand, many tourism spots applied the idea of Low Carbon Tourism and Green Tourism to manage the tourism with the hope that it will decrease the global warming in the tourism places. The example is National Park for Wildlife and Plants arranging the project “Green National Park” with the purpose to develop the tourism and fundraising for the country. They support the activities that promote the nation conservation, no pollution, and global warming solution. During the pilot period, the target areas are 1 land national park and 1 sea national park, “Khao Yai National Park” that covers Prajinburi, Saraburi, Nakhon Nayok, and Nakhon Ratchasima, “Ao Phang Nga National Park”, operated under the principle of sustainable national park management, during October 2008 – September 2009. The activities include 4 aspects that are 1) Public Relation by organizing the brand and slogan creation competition and giving information in Tourism Service Center ; 2) Environmental management to promote the reduction of energy use such as water, electricity, including pollution control; 3) Services have been developed as equivalent to the service standard, providing in the park such as safety, accommodation, signs, and ecological tourism

development; and 4) Administration to scope the utility. Khao Yai National Park initiates this pilot project by using the non-pollution car for pick-up service in order to reduce the traffic jam, over-crowding car parks, and indicating smoking areas. This project supports the shops that have green food good taste brand. The project will be improved and applied in the other national parks in Thailand.

Apart from nature tourism, there is historic tourism place. The historic national park also sees the importance of the global warming measures for tourism. Sukhothai Historical Park in Sukhothai province reorganized the visit to the archeological place in order to prepare for low carbon tourism or pollution reduction (carbon dioxide) to the air inside the park areas. This purposes to elevate the historical park to be environmentally friendly, starting the pilot project at Sukhothai Historical Park as the first place. The place forbids tourists to bring vehicles that use fuel energy such as private cars, motorcycles, and Tuk-Tuk into the inner zone. They can park their private car on the park and walk or rent a bicycle or get on the tram to enter the archeological places as will (Chanipa Sakarat, 2017).

As we can see, the climate change control measure that consists of adaptation and mitigation are important to the tourism management. Due to the climate change problem nowadays continuing, it might have the impact on the tourism sector, especially, the main nature tourist locations such as national parks and other conservation areas. Therefore, every related sector: the state units, the private sector, the entrepreneurs, the local community, and the tourist should have the knowledge and understand about the climate change control measures in order to make plans/policies to manage the tourism and change the behavior to be appropriate to the changing climate.

2.4 Perception of Climate Change

2.4.1 Meaning

Schiffman and Kanuk (1991) stated that perception means “the personal process of a person to select to process and interpret the meaning of the stimulus and receive the image of the world of content.”

As same as Kast and Rosenzweig (1985), they said that perception is the interpretation of the stimulus and the body responds to it, which occurs differently in a person. It depends on the existing experience and it makes the difference to people's behavior. Every person will select the information that they want to know and please to know. Still, it depends on the basic process of a person about their needs, value, expectation, and other factors. Additionally, perception can be explained simply, that it means "the process of interpretation through the senses." Regarding this meaning, the word that defines to perception is the contact from the perception into the nerve and become the understanding or inner feeling of that person. In other words, the word perception means, "the interpretation of a person's mind results in perception and understanding."

Gossling et al. (2006) stated about the perception that it is the receiving and interpreting process of "information" through all senses that are sight, hearing, smell, taste, touch, including receiving experience. Perception is the foundation of knowledge receiving from memorization and understanding of stories, due to the experience and perception are the element of adaptation. The adaptation will occur when there are perception and stimulation (Wentling, 1993).

As a result, every perception must have a person related to the interpretation of something or situation or relationship as the thing that sense anything through the five senses. Every human knows everything in the world through their senses.

From the meaning of the word perception as a fore mentioned, it can be concluded that perception mean the thinking and mental process of human that demonstrate their knowledge, understanding, and feeling from the receiving and interpretation of stimulus that enters their senses. Owing to the difference of personal factor and experience, each person has a different perception and it affects the behavior of that person.

In regards to the tourist's perception, it might mean the perception process and understanding process of the tourist toward the world they live in. It depends on internal factors that are a belief, experience, emotion, etc. The external factors are the stimulus that reacts to the five senses: smell, hearing, sight, touch, and taste.

2.4.2 Perception Process

Perception is the situation that happens inside a person, which is invisible. Perception is the process that consists of these following steps.

Schcmenhorn, Hunt and Osborn (1982) stated about the perception process that it is the primary psychological process to interpret the stimulus that enters our senses in order to build the experience that is important to the knower. Perception is the thing that causes the difference of people when they process the perception and turn it into their experience that has the unique meaning.

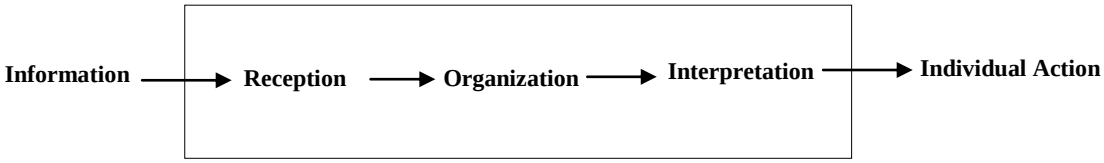

Figure 2.4 Perception Process
Source: Schcmenhorn, Hunt & Osborn, 1982.

There are 3 steps of the related perceiving process as follows (Juthamas Sithikhwa, 1999):

Step 1 Selection relates to intentional selection and unintentional selection. In other words, sometimes the decision will select to receive which stimulus; this depends on many factors such as Characteristic, Physical Location, Interest, and Past Experience

Step 2 Perception grouping; we always tend to group stimulus into a pattern of the collection, for example, gathering by considering proximity, resemblance, common fate, and continuation.

Step 3 Interpretation; it is the interpretation of receiving experiences. It contains many characteristics such as context, intent, and projection. In consequence, the perception of each person is different and this affects to the effectiveness of communication and expressive behavior. If two persons perceive the same thing or similar thing, the chance to understand and compromise to each other increases too. At the same time, if the perception of two people from the same thing goes into the opposite direction, it might cause conflict and problem at the collaborative works at last.

There are 4 steps of the perceiving process of tourists as follows:

1) The open to new selected data in a day, the tourists will receive the data from advertising, no matter which type of advertisings, from the newspaper, radio, television or others; but how many of them that the tourists selectively are willing to receive.

2) The intention to receive the selected data means the tourists intend to receive the stimulus when they already selected, received, and interested in.

3) The understanding of the selected data is the understanding and interpretation of the receiving data that matches to its meaning.

4) The collection of the selected data will happen when there is the memory of that product which will lead to the stimulation stage to causes the need and decision-making on the next occasion.

2.4.3 Influence Factors towards Perception

Influence factors towards perception can be divided into 2 characteristics (Juthamas Sithikhwa, 1999)

1) Stimulus characteristics: Stimulus is an external factor that provokes the interest to perceive or the error perception differing from the reality. Its characteristics must be interesting, large, moving, repetitive and different from another stimulus. These characteristics will stimulate the perception better and faster, public relation via radio and television, for example.

2) Characteristics of the perceiver which include physical factors and psychological factors:

(1) Physical factors are the condition of the sense organs such as ear, eye, nose, tongue, and skin, must be in the perfect condition. If the characteristics of the perceiver become abnormal, the perception towards the stimulus will be error or different from the reality. Moreover, gender, age, career, and education level also affect the perception.

(2) Psychological factors are the things that the perceivers decide to sense specifically with the purpose to interpret with themselves. Past experience or the existing experience, memory desire, emotion, attitude, value, culture, tradition, intention, and expectation relate.

2.4.4 Benefits of Perception

1) Impression; when we recognize someone at the first time, we should impress them. The impression among people at the first time will imprint in their feeling for a long time and it is hard to be removed easily, negative or positive perceptions and impression. Therefore, the first impression building is very important to people, especially if we anticipate their qualification and future relationship.

2) The media creation has been recognized well that there are 2 influence factors towards perception which are the qualification of stimulus and the qualification of the perceiver. We can exert these factors to help the service users or the target to realize the methods/steps of the service provided, including benefits from the service, need of testing, and behavior in selecting the service.

3) It is used as the supporter of some decision-making receiving from the perception. It can be applicable to support the decision-making, particularly when there is less time to make the decision or insufficient information to do so.

According to the above ideas, it can be concluded that perception is the inner process of a person to give a meaning. The data receiving from stimulus via our five senses with our brain, experience, and personal mental condition to give the meaning. The perceived thing is the stimulus that stimulates the behavior according to the perception. The behavior demonstrates action, thinking, and idea. (Juthamas Sithikhwa, 1999)

2.4.5 Related Research

The related research about the climate change perceptions stated to the related perceptions that consist of attitude, belief, thinking, opinion, and view, which receive the influence from sensory inputs, socio-cultural interactions and orientations, life history, and specific experiences. (Brody, Zahran, Vedlitz & Grover, 2008; Buzinde, Manuel-Navarette, Yoo & Morais, 2010; Etkin & Ho, 2007; Gardner & Stern, 2002; Graham, Stephenson & Smith 2009; Navratil, Picha, Rajchard & Navratilova, 2011; O'Connor, Bord & Fisher 1999; O'Riordan, 1995; Rachlinski, 2000; Stedman, Davidson & Wellstead, 2005)

In addition, according to the climate change around the world, there are many researchers give priority to the study of the perception of the worlds' climate change

and the additional climate problem issues (such as belief, opinion, and attitude). The example is the study of the American's opinion towards the climate change (Leiserowitz, Maibach, Roser-Renouf, & Smith, 2010; Maibach, Roser-Renouf, & Leiserowitz, 2009). The study includes the level of knowledge, attitude, and practice to mitigate the climate change problem. Regarding the evidence result of the study, the perception towards the climate change clearly relates to value orientations, world views, perceptions of risk, exposure to media messaging, the location of residency and political ideology. (Boyce & Lewis, 2009; Hulme, 2009; Weber, 2010; Weber & Stern, 2011)

Furthermore, the study of the perception leads to the other studies in many fields such as psychology, environment, human behavior, architecture, and education (Bechtel & Churchman, 2002). There are a lot of researches guide to the discovery of the influence factors towards perception including gender, education, social class, and economic class (Zebroski, 2007), belief and attitude (Fazio & Roskos-Ewoldsen, 2004), and knowledge and emotional stress (Bonnes, Lee & Bonaiuto, 2003). There is the research on the general perception found often in outdoor entertainment activity and education tourism (Chin, Moore & Wallington, 2000; Manning, 1999; Priskin, 2003).

The types of research on perception mentioned have 3 dimensions: perception of conflict, the perception of the crowd, and perception of environmental impact. The perception of conflict is the basic psychological impact that affects the experience of the visitor (Eagles, McCool, & Haynes, 2002). The perception of crowd mentions about the unique characteristic of the area that the visitor is able to perceive (Bonnes et al., 2003). The perception of the environmental problem relates to the visitor who perceives the climate change (Symmonds, Hammitt & Quisenberry, 2000).

The understanding of the perception of the environmental impact of the visitor is important to build the quality tourism experience. The research has been applied to develop strategies that can improve the visitors' behaviors to be friendly to the environment more. According to the recent researches that pay attention to the education in 3 issues: 1) the ability of the visitor to be conscious of and understand the impact; 2) the perception of the impact importance that relates to the setting in many characteristics; and 3) the situation evaluation of satisfaction and dissatisfaction (Graefe et al., 1984). Moreover, there are the studies on the perception of the related

impact on the acceptability of impacts and satisfaction towards the undesirable climate change (Deng, Qiang, Walker & Zhang, 2003; Floyd, Jang & Noe, 1997).

Regarding many researches, in conclusion, the knowledge of the tourists, especially the knowledge and the perception of the biological impact of the settings due to tourism entertainment activities, levels of entertainment experience, and inspiration to visit to the place of the visitors, it might affect the behavior in using resources as well (Pearce & Stringer, 1991; Manning, 2007; Marion & Reid, 2007; Pickering and Hill, 2007). It might be said that knowledge and understanding about the climate change and the tourism affect the tourism behavior to cope with the climate change problem.

In respect to the research of Rutty and Scott. (2010); Scott et al. (2008), the tourists from the different culture and climate will perceive the climate and the climate change impact differently, for example, when the social-demographic variables, gender or family status, are different. The tourists in the young adult group from several countries will be satisfied with the weather at the beach differently (Rutty & Scott, 2010; Scott et al., 2008). At the same time, the young adult group and the German, Dutch, Canadian senior group have the different satisfaction toward the weather (Hewer & Scott, 2011; Moreno, 2010).

Ceron et al. (2009) studied the French tourists' perception of the climate. It was found that their satisfaction toward the changed temperature in the regions of France differently depending on the age groups. The old tourists (ages over 60) is sensitive to the hot weather more than the teenage tourists (ages 18-24). The perception of the appropriate climate and the climate risk during the travel is different depending on the family status (Limb & Spellman, 2001), which demonstrates the tourists' perception change in compliance with the variables of ages, culture, and society-demography.

Gossling et al. (2006) created the study on the tourists' perception towards the climate change in Zanzibar, Tanzania. According to the study result, the climate at the destinations plays the big role in the traveling decision. The weather variables such as rain, storm, and high humidity impact on the traveling decision more than the higher temperature. Regarding the research, this represents that the tourists spend most of the

free time in Zanzibar and most are not aware of the impact they have one to the environment. This reflects through their behavior to travel by air.

Sakurai, Komatsu, and Kobori (2014) studied the perception of climate change during the peak of Sakura season and the intention to travel to impress Sakura festival in the future. They used the questionnaires to ask 266 tourists in 3 Sakura festivals. Most tourists (>60%) think that the global warming is happening while less than 30% think that the global warming effects Sakura blossom. Around 30% of the tourists want to travel during the Sakura festival though the flowers begin to fall. Regarding the analysis of the relationship between the tourists' perception and social-demographic factors (age, gender, and distance of travel), and the intention to visit the 3 Sakura festivals, by multiple regression, the tourists who stayed near the Sakura festival wanted to impress the flower blossom even though they began to fall. The study demonstrates that the higher temperature from global warming affects the blossom of Sakura (Higuchi, 2008). At the same time, the climate change around the world still continues and the duration of Sakura blossom changes, resulting the limitation of Sakura blossom areas of Japan in the future and the tourist group will be smaller (Primack & Higuchi, 2007; Primack et al., 2009).

In Thailand, there are some studies about the perception towards the climate change or global warming. Like Sukanya Chiengek (2007) who studied "Perception of People on Global Warming in Laemchabang Municipality Chonburi Province". According to the study, most have the perception on global warming at the medium level. Moreover, she found that the reception of information about global warming, the value giving to the environment, gender, age, career, education level, and average family income per month affect the people's perception on the global warming with statistical significance. The problem and obstacle about the perception on global warming found are the too difficult and academic content of the information and the non-continuity of the content, insufficient PR from the state sector and the private sector, the limit diffusion of the information, the inappropriate time of supporting career to deal with the perception of global warming, and the lack of basic education to understand the global warming problem, respectively.

Additionally, there is the study about the perception of climate change of diving tourism industry in Thailand by using the mixed method and Protection

Motivation Theory (PMT) to test the hypotheses and search the answer for the research. The research selected the structural and in-depth interview with the experts at Koh Tao in Surat Thani Province in order to do the content analysis. The research found that most entrepreneurs are knowledgeable and understand the climate change at the medium level. They regard the problem as the future issue and believe that the problem can be solved by reducing the greenhouse effect emission. They often think that their business pattern in the present day conforming to the climate already; therefore, they see no necessity to request any measures or more investment for the business adaptation to the climate change in the area. Thus, the state sector must urge to build the right knowledge and understanding and open the opportunity to the tourism sector to join the policy planning in order to deal with the climate change problem. This also includes the enhancement of the local entrepreneurs' ability to accurately manage the risk of the climate change later (Wansiri Rongrongmuang, 2010; Sorada Tapsuwan & Wansiri Rongrongmuang, 2015).

The climate is regarded as one of the major environmental element of tourism. As for the climate change problem that happens in the tourism spots around the world, especially in the natural locations, influence the traveling experience of the visitors. How to understand that human should prepare themselves the deal with the problem, it needs more studies of people's perception of the climate and the environmental issues (Vedwan & Rhoades, 2001). Hence, this is to help to improve the related policy such as the natural resource allocation, the environmental decision, and the media to the mass (Gardner & Stern, 2002), including the presentation of the good management to support the climate change.

2.5 Awareness of Climate Change

Awareness is a psychological approach combined with behavior science. Several scholars defined this word; and gave importance, principles, concepts, and theories about awareness as follows:

2.5.1 Definitions of Awareness

Bloom (1971) stated that awareness is pondering that something needs to be done, agreed, or complied with until it is expressed in the form of action. It is the lowest stage of emotions and feelings. It is nearly close to knowledge, but both are not stimuli. Awareness does not need to emphasize on a phenomenon or a certain thing. It usually takes place when it is motivated.

Good (1973) pointed that awareness refers to feelings of perception or when a person expresses conscience towards problems.

Koffka (1978) suggested that awareness shares the same meaning of consciousness, which is the state of mind presenting that a person obtains knowledge, perception, or experiences before the evaluates their values or awareness of his/her own significance towards them. It is a psychological attentiveness towards certain situations or conditions. This means periods or experiences as well as environments or outer stimuli are factors that cause awareness.

To conclude awareness implies expression of internal feelings due to experiences and perception, depending on time, experiences, and environments that leadto awareness (Arpavate Wimonphan & Chantana Papattha, 2011). In this research, awareness of tourists towards climate change and tourism will be focused based on experiences of news exposure, joining campaigns, and involving in climate change.

2.5.2 Process of Awareness

Good (1973) viewed process of awareness as the consequence of cognitive process. To clarify, when a person is motivated by stimuli or feel them, s/he will obtain knowledge and understand them. This means concepts will occur and then lead to learning. Or it can be said that the person will acknowledge that matter, and then awareness emerges finally. Both knowledge and awareness will bring about actions or behavior of that person towards those stimuli afterwards.

To sum up, process of awareness arises when a person is motivated by stimuli in environments and then perceive them. The perception creates learning and awareness, respectively. And both of them initiate readiness to take actions or behave afterwards.

2.5.3 Importance of Awareness

Bloom (as cited in Sirikarn Sirilek, 2008) divided the behaviors into 3 categories; Cognitive Domain, Affective Domain, and Psychomotor Domain. Therefore, the study was related to all three types of behaviors as mentioned above. Such behaviors were manifested in 3 aspects: Knowledge, Attitude and Practice, respectively. In terms of awareness which was one of the behaviors of attitudinal behavior, the relation was in all 3 types. The Cognitive Domain was the behavior that was expressed and observable. It must be based on Cognitive behavior and Affective Domain as elements (Prapapen Suwan, 1983). It was possible that the awareness was one of the factors associated with person's practice. When the person was stimulated by stimuli such as knowledge, facts, and experiences; those persons would become aware and have attitudes leading to the actions eventually.

Chuchat Leesuwan (as cited in Sirikarn Sirilek, 2008) stated that the education for solving the problem of natural resources and environment. The objectives were to help the individuals or groups or persons are cultivated with the awareness of problem of natural resources and environment as follows:

1) Awareness to make the individuals or groups or persons becomes aware and sensitive on the entire system of environment including relevant problems.

2) Knowledge to help people or social groups have basic knowledge on the environment and related issues and show responsibilities to face the problem.

3) Attitude to help people or social groups have social values, have the stable sense on the environment, and have motivation to actively give the cooperation in the prevention and resolution of environmental problems.

4) Skill to provide the individuals or societies with skills to solve environmental problems.

5) Evaluation Ability to allow the individuals and societies to be able to evaluate the environmental tools and educational programs in the form of ecological, political, economic, social, ethical, and educational factors.

6) Participation for the individuals and social groups to develop the sense of responsibility and consider the urgent environmental problems to ensure that they have the right behaviors in solving those problems.

2.5.4 Factors Affecting the Awareness

Bandit Chulasai (1985) mentioned 3 factors that influence the perception of the individuals as follows:

1) The perception experience based on the past experience and in everyday life. The perception on any story depends on the relevance to such event. The direct experience will have direct impact causing the awareness in various levels.

2) Paying attention to and valuating to the awareness can be varied in various levels from the needs, demands, expectations, and interests to the emotions.

3) The features of the subjects to be perceived apart from the perception of the individuals are based on the experience, attention, and valuation on the subjects to be perceived and are also based on the patterns of things or subjects to be perceived. This is because the individual awareness depends on the perception of the individual. The factors affecting the perception then affect the awareness. It can be concluded that the factors affecting the awareness are:

(1) Experience on the perception

(2) Familiarity to the environment which will result in making people not to be aware of what happened

(3) Paying attention to and valuation which will make more awareness on that.

(4) The appearance and style of interesting stimuli will make the individuals have more perception and awareness.

(5) Duration and frequency of awareness. If human is recognized frequently or for a long time, they will be more aware.

It can be concluded that the factors that influence the awareness can be classified into 2 categories as mentioned by Sathit Wongsawan (1982) as follows:

1) External factors include the nature of the stimulus causing people to be interested to perceive leading to the awareness.

2) Internal factors include the nature of the persons. The individuals will be aware of any one of the phenomena depending on 2 factors as follows:

(1) Physical factors include the performance of the sensing organs; ear, nose, and mouth.

(2) Psychological factors include original knowledge, observation, attention, and readiness to perceive and appreciate, etc. These will influence the different awareness.

Therefore, the factors that affect human awareness can be classified into 2 types; 1) external factors that include various stimuli causing people to be interested to perceive leading to the awareness on such things, and 2) internal factors arising from the five senses of the human being and lead to the attention, observation, and consideration that will result in the awareness.

2.5.5 Measurement of Awareness

Awareness is the behavior related to the Conscious of something and Recognition which is the delicate behavior related with feelings and emotions. Thus, in measuring and evaluating, the principles and methods including specific techniques are needed as follows (Chawal Paerattakul, 1983):

1) Interview may be the structure item interview with the questions and answer options similarly to the questionnaires and the questions must be set before as well as ordering well. It may be the unstructured item which is the interview with only the main topics giving the key informants a lot of freedom in answering. The questions are based on the opportunity and the moment of conversation.

2) Questionnaire may be open-ended or close-ended or the combination between open-ended and close-ended.

3) Checklist is the measuring tool to check whether agreeing or disagreeing, with or without. The items in the list can be marked as yes or no.

4) Rating Scale: This tool is ideal for measuring the emotions and feelings of knowing how much the intensity is in such matter.

5) Semantic Differential Technique (SD) is the measuring technique using the signs of language of Charles E. Osgood. It is one of the comprehensive measurement tools.

2.5.6 Related Research

The study of tourists' awareness on the climate change is part of this research in order to know that the awareness of tourists on climate change influences the behavior of tourists. The researchers studied the related issues are as follows:

Becken (2007) studied the knowledge and awareness of tourists on the effects of climate on air travel, the sense of personal responsibility, and the reaction of tourists to climate change policy. The study was conducted by using the focus group approach on foreign tourists departing from New Zealand. The tourists had the opinions that social change can change the behavior helping to reduce air travel which caused the climate change.

Waraporn Srisuphan (1996) found that in managing the impacts from the operation of recreational activities in protected areas, visitor management was the important issue. Raising the environmental awareness is one of the proactive approaches being effective in the long run. The management by such method focuses on generating and promoting the environmental awareness to visitors in various ways to raise the awareness of the value of natural resources. When the visitors become aware of and are concerned about environmental issues, the visitors will be more likely to show environmentally responsible behaviors in the protected areas, for example, the separation of waste or the removal of waste outside the area more (Ainhoa, María, & Claudia, 2013; Thompson & Barton, 1994). Therefore, the visitors should be encouraged to love and cherish the existing natural resources and tourist attractions leading to the cooperation and compliance with the rules of such tourist attractions.

In addition, over the past years, the researches related to environmental awareness have been conducted continually. The scope of research can be summarized into 2 groups. The first group is to study the factors influencing the environmental awareness. According to several researches, it can be concluded that factors affecting the environmental awareness are caused by demographic factors such as attitudes towards the environment which can be divided into 2 groups; Anthropocentric with the belief that human has power over all things in the environment and ecocentric with the belief that living things (including human beings) are interrelated in dependence on one another. Erik, Chenyang, and Aaron

(2014) found that the environmental attitudes contributed to increasing awareness on the environmental issues. Moreover, there are also the knowledge on the environmental and the level of education also affecting the environmental awareness by the educated persons with high level of education. The higher knowledge and level of education they have, the more awareness they have. The higher knowledge makes human have more environmentally friendly behaviors. The factors related to activities in the area are such as participation in the activities related to the environment, the duration in doing the recreational activities, etc. The second group focused on analyzing the influence of environmental awareness on the behaviors related to the environment, such as resource consumption behavior and environmental impact reduction behavior (Thidarat Suphap, 2005; Banchon Klahan & Rungtip Klahan, 2002; Azucena, Isabel, & Julen 2013; Bedrous, 2008; Henk, 2003; Sangsan Phumsathan, 2013; Thompson & Barton, 1994).

Setthaphong Appameya (2015) found that among the students in Home Economics, Suan Dusit Rajabhat University, all levels of undergraduate students, most of them are aware of the impacts of global warming on home economics. They agree to choose the clothes to wear suitably for the climate. The second is to choose natural food packages instead of using foam boxes and the selection to grow large trees in the house area. In comparing the awareness when classified by sex and grade level, it was found that different genders were significantly related to the effects of global warming on home economics. This was similar to Pariyada Wanthai (2010) conducting the study on the awareness of students in Bangkok area to global warming. It was revealed that the demographic characteristics of the sample group with different income have different awareness. The people with different genders, ages, and educational institutions have no difference in the awareness regarding global warming. It is also found that the awareness related to global warming is not related to behaviors related to global warming.

Moreover, Suttama Sangwichien (2009) also conducted the similar study on the awareness to help reducing the global warming of the students of Rajabhat Universities in Bangkok area. The research revealed that most of the sample groups have a lot of awareness in solving the global warming issues. They agree with the issues that most of the incurring global warming problems are caused by human. The

less agree that raising the awareness and campaigning on the reduction of global warming to people is necessary and should be conducted continually along with paying attention to growing the trees in the buildings, houses, and places in order to help conserving the environment, respectively.

Sirikarn Sirilek (2008) studied on the awareness of global warming problems among the students Mahidol University. The study indicated that most students of Mahidol University are aware of the global warming problem in the medium level. The factors influencing the classification of awareness are gender and the valuation to the environment influencing the awareness of global warming problem among the students Mahidol University with the statistical significance of .05. However, when considering the details in some issues, they are noted that most students give the answers in the agreement very less on the issues related to themselves which must be directly involved in tackling global warming problems. This may mean that even the students have the awareness of global warming, the awareness of their roles in solving global warming problems is at the relatively low level. At the same time, it was found that, for the factors of information perception, although they have no significant influence on the classification of awareness, it is noted that most students are aware of global warming problems from public media while learning from media related to the teaching and learning systems both formal and non-formal such as teachers' perceptions is quite less.

2.6 Attitudes towards Climate Change

Attitude is the feeling and inclination of the mind toward surrounding people, objects, situations, or something in support or non-supporting way, satisfaction or dissatisfaction, agree or disagree, or feel dormant. The attitude is based on the beliefs that possibly affect the future behaviors. The attitude is only the readiness to respond to stimuli and attitudes are also the link between knowledge and behavior.

2.6.1 Definitions of Attitudes

For the definitions of attitudes, there are many persons defining as follows:

Kiesler, Collins, and Miller (1969) stated that the attitudes were the strong mental feelings in positive or negative ways or against anything inside the mind. These may be in the forms of symbols, words or ideas.

Rogers (1978) stated about the attitude as the index indicating how a person thinks and feels about those around him / her. The situation is based on the beliefs that possibly affecting future behavior. The attitude is only readiness to respond to stimuli and is the dimension of evaluation to show the like or dislike on any issue. It is considered the Interpersonal Communication which is the effect of receiving the messages affecting the next behaviors.

Rosenberg and Hovland (1960, p. 1) gave the meaning of attitude that is the motivation on the tendency to respond specifically to what happens. This is in accordance with Kendler (1963, p. 572) stating that the attitude means the state of readiness of person to behave in supporting or against the individuals, institutes, situations or ideas.

In addition, Carter (1959, p. 48) defined that the attitudes are readiness to express in a certain way supporting or against certain situations, persons, or things. Newcomb (1854, p. 128) stated about attitudes that they are the thongs only existing in such persons depending on the environment. They may be expressed in the behaviors and are possible in two ways: preferable or satisfied making other people to love or want to get close to such thing or the other one to show the dislike, disgust, or dissatisfaction on such thing. Similarly, Murphy G., Murphy L., and Newcomb (1973, p. 887) defined that the attitudes are the like, dislike, satisfaction, or dissatisfaction which are expressed by the persons on the things.

Munn (1971) stated that the attitudes are the feelings and opinions that the persons have about persons, situations, institutes, and any proposal to accept or deny causing the persons ready to react with the same behaviors all the time.

The attitudes influence the behaviors and expressions of the individuals. It can be concluded that the attitudes of people have 4 characteristics as follows (Chattayaphorn Samerjai, 2007):

1) Attitude is a feeling for one thing.

2) Attitude is a matter of accumulation in a person's mind. Attitude is the result, the perception and processing of the received information to be expressed in behavioral forms as the result of attitude.

3) The attitude is quite stable and does not easily change. This is the gradual accumulation of feeling stably. When it happens, it does not change easily. However, it does not mean not to be able to change. The change in attitudes takes time and depends on the reversing techniques of the occurrence of attitudes in changing.

2.6.2 Components of Attitude

Katz and Scotland (1959) distinguish the components of attitudes into 3 components:

1) Components of thought or understanding called Cognitive Component which are the ideas being the component of human's thinking. This idea will be in one of the different forms.

2) Affective Component the stimulus of thought. If the persons have good or bad feelings, they will express themselves in a different way while thinking of such things. For example, the positive feeling called "positive affective component" will have the positive feelings in a good way. On the other hand, people who have negative feelings called "negative affective component" will have negative feelings in a bad way.

3) Behavioral components tend to focus on actions or behaviors in the way that when there is a stimulus, there is a reaction. For example, when a person feels good about a non-global warming activity in the national park, the behaviors which are expressed will be in a good way that is likely to follow.

2.6.3 Occurrence of Attitudes

Likert (1932) studied the causes of occurrence of people's attitudes that the attitudes come from learning from various existing sources of attitudes. The important sources that cause people to have attitudes are:

1) Specific Experience: When the persons experience one thing in a good and bad way, they will have the attitudes towards such things in the good or bad way which is the direction already experienced.

2) Communication from others: In being communicated from other people, the attitude will occur from perceiving the news from the others such as receiving the information from the Head of Khao Yai National Park who is credible person being trusted by the tourists and general people will generate the good attitude in receiving the information.

3) Model: The imitation of the others will create the attitudes such as mimicry of children to their parents to follow the instructions to reduce global warming inside the tourist attractions.

4) Institutional Factors: Many people's attitudes occur from the relevance of institutes such as schools, agencies, and institutes. These institutes are the sources and support for certain attitudes.

2.6.4 Features of Attitudes

1) The attitude is the result of each person's learning or experience. It is not inborn.

2) The attitude is the mental state that influences the thinking and action of the persons very much.

3) The attitude is the permanent mental condition as each person is experienced and learned. The attitudes may change due to the environmental influences.

The change of attitudes is based on knowledge. If there is knowledge, the attitudes can change. When the attitude changes, the behaviors will change as well. These 3 things have the interrelation. Thus, in order to accept or reject something, the attitude must be changed by educating.

People's attitudes can be changed in several ways. It may use the method of person getting the news. This news may come from other people or from other media equipment resulting in the changes in the components of knowledge attitudes or perceptions. It is believed that if one component changes, other components are likely

to change as well. If the components of knowledge attitudes change, the emotional components and operational components are also likely to change. (Likert, 1932)

2.6.5 Type of Attitudes

People can express their attitudes in 3 ways as follows:

1) Positive attitude is the attitude that induces the persons to express their feelings or emotions from the state of mind to interact well with other people or stories including the agencies, organizations, institutes, and the operations of the organizations and so on.

2) Negative attitude is the attitude that creates the sense of humiliation without trust or reliability. It may be suspicious including hatred towards particular person, story, or issue, agency, organization, institutes and the operation of organization, institutes and so on.

3) The attitude that the persons do not comment on the stories or any problem for persons, agencies, institutes, organizations, and so on.

For these 3 types of attitudes, the persons may only have one or several depending on the stability of beliefs, feelings, or other values to the persons, objects, actions, or situations, etc. If the individual's attitude is motivated to act in the form of a consensus, then it is a “referendum”.

2.6.6 Changes of Attitudes

McGuire (1969) describes the process of changing attitudes consisting of 5 stages: 1) Attention, 2) Comprehension, 3) Yielding, 4) Retention, and 5) Action.

What will cause the change of attitude starting with the key elements which are the sources of attitude changes. This may be a single person, group of persons, newspaper, radio, television, or something that creates a direct attitude. In general, different news sources will have different characteristics, such as abilities, attractiveness, familiarity leading to the attractiveness, and authority resulting in the change of attitudes more than the unqualified sources.

In addition, other components such as news contents, methods of sending, and the recipients are also the components in changing attitudes, changing attitudes giving different results. Some people change their attitude easily. Some people change their

attitudes difficultly. It depends on many factors including physiology, objects, society, etc. For example, the age affects the attitudes of persons. The adults often adapt to the changing environments opposite to the teenagers who are ready to change the society.

2.6.7 Components of Attitudes

The 3 key components of the attitude are:

1) Cognitive Component consists of the beliefs and values of persons on one thing. These beliefs and values will prevail before one's attitudes towards one thing.

2) Affective Component consists of the individual's feelings towards one thing due to the beliefs and values that people have on such thing. The feeling is the true attitude of the persons.

3) Behavioral Component consists of the person's intentions to show one's behavior according to the person's feelings. The occurring intention of this is due to the attitudes of the person on such things. It can be seen that if people do not understand or have the concept on something, they cannot have attitude towards such thing. The person's attitude toward one thing is different because the person has an understanding or concept differently so the components of ideas or knowledge, understanding are the basic components of attitudes. This component is related to the feelings of the person expressing in different forms both positive and negative depending on the experiences and learning of the feelings that occur on the object or phenomenon.

From the concepts about attitudes which are the feelings of person’s learning from one thing both positive and negative, they may affect the behaviors of tourists traveling to Khao Yai National Park as various stimuli will stimulate the attitudes and will result in the knowledge, feelings and behaviors.

2.7 Tourists’ Behavior to Respond Climate Change

Tourism is an important industry for the global economy and for the well-being of people. In the future, tourism is not only in the framework of adaptation and mitigation of global warming, but it will also be environmentally friendly. However,

the real challenge of eco-friendly tourism is overlooking the framework of energy efficiency or the use of fossil fuel to behavior's adjustment, which is important to reduce greenhouse gas emissions in the tourism industry.

Proper travel behavior under current climate change or global warming conditions is consistent with the Seven Greens Concept of Tourism Authority of Thailand, with the following adaptation and implementation guidelines:

1) Learn, study, and plan information from tourism documents and during the period in the attractions to assist in limiting the number of tourists both in natural and environmental resources including activities, impacts and problems of management.

2) Follow the rules and regulations of tourist attractions and obey the staff strictly in the care of natural and environment resources.

3) Respect and comply with the rules relating to the conservation of the environment in tourist attractions and local beliefs on the environment.

4) Study for information of the attractions and plan before traveling to decide the forms of the trips and find the best way for the trips including help increase the trip's effectiveness e.g. choosing a route from tourists' residence to a short-haul destination, or using the least amount of fuel, avoiding traffic-congested roads and finding the right route to reduce the distance of the trip as much as possible. Traveling by plane to any attractions should be the final choice for each of the trip because in each flight, there is the emission of greenhouse gases into the atmosphere in large quantities. Moreover, tourists should select the tour programs from the travel agencies that affect the environment or resources least. Likewise, they should choose to use public transportation instead of private vehicles with environmentally-friendly cars by saving energy or renewable energy, or bioenergy in driving, such as biodiesel and ethanol. Furthermore, tourists may reduce the number of the trips per year, but extend the length of each trip by traveling with their friends on a car pool, which helps reduce the number of vehicles traveling and save fuel with the carbon dioxide emission reduction. In the same way, the alternative route provided by the attractions should be used by tourists while the shortcuts should not be used because they may trample seedlings leading to the soil erosion that is too early. Lastly, the tourists

should always check the maintenance of their cars' engines for their maximum performance and minimal power consumption.

5) Do not do activities that destroy natural resources and the environment within a tourist attraction such as throwing flowers or bringing some animal parts for souvenirs since those actions may cause the extinction of some plants and animals. In addition, ignoring the feeding of all kinds of wildlife, as a result of unnatural alterations, ignoring touching or touching animals, ignoring buying animals or antiques or items made of rare or endangered animals or plants and finally, reporting the violation of regulations by the other tourists to the responsible officers to acknowledge.

6) Use water and electric resources reasonably and non-luxuriously, such as shutting off the water and turning off the lights when leaving room or when not in use, setting the air conditioner at 25 degree Celsius and showering instead of using the bathtub.

7) Reduce the amount of waste and garbage within tourist destinations, such as the use of cloth bags or baskets instead of plastic bags or the use of handkerchiefs instead of tissues.

8) Buy products with environmental labels or products and services that meet environmental standards.

9) Participate in programs or activities related to environmental protection and reduction of greenhouse gas emissions such as reforestation to reduce global warming and beach waste collection, etc.

10) Bring the approaches and guidelines for the preservation or rehabilitation of the environment and find ways to reduce the greenhouse gas emissions of the organization or the company to practice at home as appropriate.

11) Start a campaign for individuals and organizations to donate some money or devote physical or mental energy to the activities or projects relating to the preservation or rehabilitation of the environment and greenhouse gas emission reduction, such as contributions to tree planting or reforestation along the sources of water source that is degraded. Besides, planting crops that feed the wildlife in national parks and wildlife sanctuaries helps absorb carbon dioxide gas as well as garbage collection and waste sorting in the attractions or helping donate materials that are

useful in carrying out activities relating to preservation and restoration of the environment and greenhouse gas emission reduction for all types of attractions.

12) Encourage and support special tourism activities to assist the disadvantaged local communities or those in the backcountry, or those affected by natural disasters, such as donating resources to improve the quality of life, donating clothing, bedding, canned food or dried food, etc.

13) Practice with the goals to maximize the social and economic impacts to surrounding communities with the least negative impact like to shop locally as much as can be done with a fair price, including not showing or using nonverbal gestures or words that imply disrespect to the culture and lifestyle of the local people.

In addition, appropriate tourism behavior to cope with climate change has the same characteristics as practice guidelines for responsible tourism by focusing on environmental responsibility, community cultural responsibility and local economy responsibility by applying the concepts of tourism responsibly to all forms of tourism by advising on the activities of tourists on three occasions as follows (Thosapol Decha, 2010)

1) Before the trip, choose to book tours from travel agencies that have a policy to support responsible tourism for the community and the environment. The tourists should have the lightest package, not take unnecessary things to reduce energy, read and study history in advance including the traditions and cultures of the attractions as well as the biodiversity of the destinations to go to.

2) During the trip, buy local products made by locals, do not buy products made from endangered species or coral products, use public cars instead of private cars to reduce pollution, eat local food instead of imported food, use water and electricity economically and most valuably, reduce the use of plastic bags and bottles and try to recycle them.

3) After the trip, (when returning home), write down the experience of the trip and provide advices on responsible tourism to provide information to travel agencies for further product development. Besides, donation should be done to support local community development projects in the area you take a trip to.

2.8 Tourism Management Guidelines for Climate Change

Climate change is taking place in many areas of the world and damaging the most popular tourist attractions as well as it is the main reason taking away the opportunity to discover the splendor and excitement of travelers seeking freedom of travel. It happens in many forms, such as rising global temperatures or more rainfall. Besides, some areas suffer from floods, long time of droughts and also geographical changes, and so on.

Tourism is another sector that is affected by climate change. Even today, finding ways to manage climate change in tourism is new to Thailand and worse than that there is still no tangible action for that. However, many of Thailand's tourist destinations have already begun operations to support climate change, such as Koh Chang, Koh Samui, etc.

From the study of Kirathakon Boonrod (2016), it has proposed a series of preparations for the impacts of climate change on the coastal tourism industry with 2 related agencies that are tourism industry entrepreneurs and government agencies.

The tourism industry entrepreneurs have the following operations:

1) Creating a network of tourism operators to share information on the impacts of climate change and sharing solutions for entrepreneurs themselves to share information, strategies, measures and new approaches to tackle the problems arising from the impacts of climate change at present and in the future. If there is a database for tourism operators themselves, it will also help tourism development of coastal Thailand to the global tourism. Therefore, promoting the behavior of knowledge sharing is urgent and essential for organizations to manage to appear to be substantial.

2) Green Coast Tourism: A green strategy is created to mitigate the main reason of climate change that is global warming. In doing so, the development of national tourism strategies is adjusted as a part of more or less problem reduction. Entrepreneurs serving all branches of tourism have developed or improved systems of business management and services friendly to the environment as well the emissions of various types of greenhouse gas reduction. The initial strategy will be to involve operators in whatever sector of the tourism industry. If they are able to do so, they cannot only impress tourists and can reduce global warming arising from the climate

change, but they can also upgrade the tourism of the province as a Green Tourist Attraction. Green Tourism Routes, Green Tourism activity patterns and Green Service are in line with the concept of tourism in Thailand (2015) about Seven Green Tourism Strategies in helping reduce global warming, namely Green Heart, Green Activity, Green Community, Green Logistics, Green Service, Green Attraction and Green Plus towards the city with the sustainable development as a "Green city" as well as capacity building in planning and preparation for the city to tackle climate change properly.

The involvement of government agencies is a very important element in driving tourism to prepare for the impacts of climate change. Government policies or government solutions are like support with the following details:

1) Establishment of a climate change information center for tourists, the tourism industry entrepreneurs: It is the center of important information about the climate change of the province where tourists or entrepreneurs can easily access information to prepare for, respond, or prevent, such as having a climate change website for the province for tourism. This website will specify various kinds of impacts and situations, etc. In addition, there may be the Applications on mobile phones for the access of tourists, entrepreneurs, students and the general public to access simple information so that all sectors are aware of this issue seriously.

2) Establishment of a warning center to assist victims: Government agencies have a warning and assistance center for the victims of the effects of climate change to alert and assist tourists, tourism entrepreneurs and the general public in traveling to a safe place or avoiding a disaster that may happen. The Warning Center provides assistance in coordinating with the tourism industry sector seriously to build confidence in the safety for tourists.

3) Establishment of a prevention and mitigation unit: This agency is established to coordinate with the Warning Center to find how to protect and find ways to mitigate the impacts of climate change. The government agencies have a huge share in supporting research grants or budgets to prevent disasters and mitigate impacts such as coastal erosion effects that there must be protection and correction at the community level, provincial and national levels. For example, there must be a measure to prevent and correct the natural conditions by restoring and conserving

mangrove forests, beach forests, sources of seagrass and coral reefs to reduce the severity of coastal waves. It is a way to prevent erosion by imitating nature and engineering methods using the groin and wave energy decay as the engineering structures. Furthermore, the creation of beach nourishment is another way to protect and preserve coastline by academic principles. In doing so, the government agencies must do the study covering all aspects and support the budgets. For flood disaster mitigation in the context of climate change, there must be an early warning and preparation, emergency management, update flood disasters and their vulnerability. Moreover, there must also be the preparation for sharing results of risk assessment as well as investing and improving infrastructure for drainage to help reduce risk like the drainage system. Likewise, investing and improving infrastructure for drainage must be operated to help reduce risks that may happen to the ecosystem and natural phenomena to mitigate and respond to climate change. In addition, government agencies must be responsible for structured and coordinated work for all parties to understand their roles and their responsibilities about the implementation and management of coral reefs affected by bleaching. They should promote the natural recovery of coral in ways such as avoiding any activities that disturb the coral as well as increasing caution in taking advantages of coral reefs.

4) The related policy of government promotion measures at the provincial level as well as the national level: There must be policies or measures to encourage other organizations, organizations and entrepreneurs to implement projects to reduce the impacts of climate change. For educational institutions, the government should seriously promote the curriculum to study the impacts of climate change on the tourism industry to build human capital with talented planning with the policies to reduce the impacts or to manage the impacts of climate change on the tourism industry sector.

In addition, Designated Areas for Sustainable Tourism Administration (Public Organization), (2012) has proposed ways to manage climate-friendly destinations, including coordinating the cooperation of all sectors to work together in an integrated manner, strengthening of selling promotional channels and enhancing of brand awareness of tourist attractions by converting the approach to managing climate-friendly destinations into a holistic marketing communication strategy in each

organization and encouraging communities and / or stakeholders to participate in energy efficiency and renewable energy projects / activities. All mentioned above can help protect the climate and reduce greenhouse gas emissions. What's more, not only supporting community goods can generate direct income for the community, but it also can reduce carbon dioxide emissions in the transport sector. In the same way, the development of climate-friendly tourism products offers new travel experiences and inspires tourism alongside climate protection or some new innovation in the development of tourism products and maintaining the quality of service continuously that are always created. All mentioned above must expand cooperation to the international level to share experiences and get other support in the future in conservation of natural heritage that is an important resource in the tourism industry.

The master plan for climate change since 2015-2050 (Office of Natural Resources and Environmental Policy and Planning - ONEP, 2015) was presented to support the management of tourism in support of climate change by focusing on the development and promotion of ecotourism and sustainable tourism in order to preserve the integrity and the capabilities to adapt to the climate change of ecosystems and natural resources in tourist attractions as well as reducing the risk of the tourism sector to climatic factors that may change in the future with the following guidelines and measures:

1) The development and promotion of ecotourism and sustainable tourism

(1) Accelerate the development and certification of ecotourism attractions and attractions with the sustainable management including pushing them towards regional certification in ASEAN and internationally recognized.

(2) Develop a tourism development plan to meet the standards of the number of tourists, infrastructure and preservation of the physical condition of the tourist area by considering of the carrying capacity of the area such as the tourist season determination and control the number of tourists, etc. Moreover, the effective management of waste and pollution from tourism activities must be operated.

(3) Encourage entrepreneurs to develop and manage standards-based tourism, such as the establishment of environmentally-friendly products and services for the procurement of environmentally-friendly product, the privilege of

bringing awareness to the international and the application of Payment for ecosystem Services : PES to promote the conservation and restoration of ecosystems and so on.

(4) Develop the capacity of local administrative organization and tourism entrepreneurs and promote community participation in the development and management of eco-tourism and sustainable tourism.

(5) Develop research and investment promotion programs to develop and support sustainable eco-tourism and tourism, such as the development of biotechnology in waste management from tourism, the development of material technology for environmentally-friendly products and packages in the tourism sector and so on.

(6) Accelerate the rehabilitation and improvement of tourist attractions that has degraded to a complete reversibility.

2) Risk reduction from the climate factor

(1) Develop the weather forecasts, warning systems, and evacuation plans, as well as developing infrastructure and management to address natural disasters at tourist sites.

(2) Develop the studies and forecasts the impacts of climate change on natural resources as a major source of tourism in the country, and mapping out natural environment sources that are risky and vulnerable for the change of climate factor for the benefits of an appropriate management plan.

(3) Assess the efficiency of the use of water in the tourism and services sector, particularly in watershed areas that are vulnerable to water shortages for the benefits in the measure to optimize the appropriate use of water by participation process from associated sectors.

(4) Raise awareness for relevant stakeholders to understand the impacts, risks and future opportunities of climate change, particularly in areas at risk of climate change, and to develop knowledge about selections and diversities of tourism activities patterns suitable for locals to reduce dependence on climate factors such as building learning center of exhibitions or virtual reality experience model with climate factor control and promotion in cultural and tradition tourism and so on. Similarly, the development of the potential of community entrepreneurs, business organizations in the areas, local administrative organization must be supported to

adapt and integrate the climate change in Provincial Development Plans and Strategies.

(5) Study and analyze the impacts of climate change on global tourism, which may have significant implications for changing tourism demand, leading to the adjustment plan determination of Thailand's tourism sector.

In the management of tourism for climate change or global warming in each tourist destination, there may be different procedures and practices to take according to the contexts of each area. It is therefore the responsibility of those responsible for each tourist attraction to find suitable tourism management for the locals to ensure successful tourism management and to cope with the climate change issue both at present and in the future.

2.9 Theory of Relationship between Knowledge, Attitudes and Behaviors

This theory focuses on 3 variables; Knowledge, Attitude, and Practice of the recipients that may have an impact on society from receiving the messages. All three types of change will happen in a continuous manner, i.e., when the recipient receives the messages, they will have acknowledgement. When the acknowledgement occurs, it will lead to the attitudes and lastly the actions. This theory describes the communication or the media as the independent variable that can lead to the development into a community by using KAP as the dependent variable to measure the success in communication for development.

Thus, it can be seen that the media plays an important role in bringing news to the public so that people in the society are aware of what happens in the society. When people get to know the information, it will cause the attitudes and behaviors. It is widely accepted that communication plays an important role in achieving the goals set forth. That the pedestrians have the behavior of conformity to traffic rules is based on the communication as an important tool in increasing knowledge, creating positive attitudes and changing the behaviors in the right way through different media to the target group of people including:

Knowledge is the perception which most individuals experience through learning by responding to stimuli (S-R) and then systematically forming a knowledge-

based structure that combines the memories (information) with psychological state. Therefore, knowledge is the memory selected to be consistent with the mental state and is the internal process. However, knowledge may affect human's expressive behaviors as well.

Knowledge generation at any level is surely related to the feelings associated with the person's exposure to the information including the experiences and demographic characteristics (education, gender, age, etc.) of each person who is the recipient. If the persons are well prepared in all aspects such as education, exposure to information about traffic rules, there is a chance to have this knowledge and that can be linked to the environment. They can remember, gather the important contents on traffic rules, and can also analyze, synthesize, and evaluate. When people learn about traffic rules at any level, what happens next is the attitude or opinions in various ways.

Roger (1971) mentioned that the attitude is an indicator of how a person thinks and feels about other people, the environment, as well as the situations, based on the beliefs that may affect behaviors in the future. The attitude is only the readiness to respond to stimuli and the dimension of evaluation to show the like or dislike in one of the issues which is considered Intrapersonal communication affected by exposure to the information which will affect the behaviors further.

2.9.1 Relationship between Knowledge, Attitudes and Behaviors

Zimbardo, Ebbesen, and Maslach (1977) concluded that one's attitude towards one thing is based on his or her knowledge. If a person is well-informed, the attitude is usually good. When the attitude is good, it is likely to result in the person's behaviors in a good way. Consequently, knowledge, attitudes, and behaviors are interrelated.

Somprat Chomtet (1973) stated that the attitudes of people are the result of mental sensations that encourage one's inclination toward the behavior. It is abstract that reflects the behavior of people. Thus, human behavior is the expression of his good attitude. This results from the experiences, knowledge, ideas, beliefs and learning including this person's backgrounds. When the backgrounds of each person are different, the same behavior will be expressed in a different way.

It can be said that any action or behavior of most individuals is the expression of a person based on his or her knowledge and attitudes. The person's behavior is different because of the person's knowledge and attitudes. The differences in knowledge and attitudes may be due to differences in information perception and the difference in the interpretation of the substance they receive gives rise to different experiences affecting the different behaviors.

2.9.2 Gaps of Knowledge, Attitudes and Practice

Rogers (1971) describes the gaps of knowledge, attitudes and practices or KAP-GAP. The attitudes and behaviors of the individuals are not always related. When there is the communication, it generates positive knowledge and attitudes towards published news. However, in the acceptance for practicing, the results may be opposite. Although mostly when people have an attitude, they tend to follow their own attitudes, this behavior is not always. This is because in some cases, KAP-GAP can occur. It can be concluded that in the general case, when the person has the knowledge and attitude, they will behave according to their knowledge and attitudes; K-Knowledge, A-Attitude, P-Practice. This will occur consistently or reliably. But it will not happen in all cases.

To close the gap of knowledge, attitudes and practice, Rogers (1971) proposed 4 solutions:

1) Educate on the way things are done more. This is to educate the target groups on how to truly understand on the methods in using or practicing of such published things.

2) Provide practical advice which can be done by using the supporting staffs to get in touch with the members who want to get innovation with close guidance.

3) By rewarding those who accept the innovation or accepting the practices to motivate other members who have not accept.

4) The use of strategies for persuasion by means of using personal media as the supporting staffs and the thought leaders to contact the group of members or friends to convince the members to adopt the practice.

Based on the theory of relationship between knowledge, attitude and behavior (KAP), the researcher will provide a framework for the study by studying the relationship of attitudes towards climate change and practices or the expression of the behaviors of tourists in response to climate change correlating with one another.

2.9.3 Related Research

Kanchana Sukbua (2008) studied the knowledge and behaviors of global warming reduction of Chaiyaphum Rajabhat University students. The results showed that 1) students had high level of knowledge about global warming and moderate global warming behaviors. 2) students with current habitat. The participation in environmental conservation activities and the types of media cause students receive the information about global warming differently. They had knowledge on global warming differently with statistical significance at the level of .05, 3) Students with gender, grade level, and participation in different environmental conservation activities were significantly different at .05 level, 4) The knowledge and behaviors in global warming reduction of the students had statistical significant at .05 level and had the positive correlation and low correlation (r = .275) with statistical significance at the level of .05.

Similarly, Udom Sayaphan and Sutti Chaiyapruek (2008) studied the knowledge and behaviors of people in Bangkok to tackle global warming problems. The study revealed that most key informants in Bangkok metropolitan area had moderate level of knowledge about global warming and they thought that global warming has a huge impact at present. They have the opinion that the fuel consumption of the public transport system and the use of cars are the factors most contributing to global warming of Bangkok, followed by the dumping of waste causing the water to be polluted, the electricity consumption in Bangkok, the too less trees or green areas in Bangkok, the reduction of energy consumption of the air transport system, respectively. Most key informants contributed to reducing global warming by turning off the electricity before leaving the room and the energy consumption of the air transport system, respectively. The key informants contribute to reducing global warming by turning off the electricity before leaving the room and turning off the unused electrical appliances, shutting down the computer screen,

unplugging after using the electrical appliances, selecting to use the renewable products, buying the products with green labeled labels / energy-saving level 5, using both sides of paper or saving the use of paper, etc.

Riruengrong Ratanavilaisakul (2009) studied the participatory behaviors of people in Bangkok Metropolitan in reducing global warming. The study revealed that the sample group had much knowledge and understanding on global warming in the participatory behaviors in saving of water, electricity, oil, plastic bag usage reduction, and the materials hard to destroy, planting, reducing waste and cooperation in activities or the campaign to reduce global warming. It was also found that the practices were relatively high. The factors affecting the level of participation in helping to reduce global warming of Bangkok people were statistically significant at .01 level which are the feeling of warmer weather, receiving the information about global warming from television and internet media, reading newspapers or journals about global warming, talking about global warming with family members, friends, and the acquaintances, attending the conferences or academic seminars on global warming and understanding of global warming condition.

Suttama Sangwichien (2009) studied the exposure to information, knowledge, awareness, behaviors, and participation in reducing global warming among Rajabhat university students in Bangkok. The study revealed that the most concerned about global warming problem of the sample group is the approach or method of preventing and solving global warming problems, followed by press releases on the campaign activities to reduce the global warming, causes and effects, and the situations about global warming worldwide, respectively.

For the knowledge of global warming as a whole, most of the sample groups have high level of knowledge about global warming and the questions with the right answers most are to know that burning fuel from vehicles in transportation and carrying the goods generate carbon dioxide which causes global warming. The questions with the right answers less or having least knowledge are that the rising global temperature will result in rapid growth and the spread of various diseases.

For the awareness of global warming problems on various issues as a whole, the majority of the sample groups are aware of the problem of global warming very much. They agree on the issue that the global warming problem is largely the result of

human actions. Secondly, they agree that raising the awareness and campaign to reduce global warming to all people is needed and should be done continuously. They also agree that helping to grow trees in buildings and places will help conserving the environment, respectively.

Udom Sayapunt and Sutti Chaiyapruk (2008) studied on the Cognition and Behavior of People in Bangkok Metropolitan Area on Global Warming Solutions. The results of study revealed that most people in Bangkok area have knowledge on the global warming in the moderate level and they have the opinions that the global warming causes severe impacts nowadays. They have the opinions that the fuel consumption of the mass transport system and the use of cars of people are the factors causing the global warming most in Bangkok Metropolitan, followed by the disposal of waste polluting the water, the electricity consumption in Bangkok Metropolitan, trees or green areas in Bangkok Metropolitan are less, and the fuel consumption of the air transport system, respectively.

Riruengrong Ratanavilaisakul (2009) studied the participatory behaviors of people in Bangkok Metropolitan in reducing global warming. The study revealed that the sample group had much knowledge and understanding on global warming in the participatory behaviors in saving of water, electricity, oil, plastic bag usage reduction, and the materials hard to destroy, planting, reducing waste and cooperation in activities or the campaign to reduce global warming. It was also found that the practices were relatively high. The factors affecting the level of participation in helping to reduce global warming of Bangkok people were statistically significant which are the feeling of warmer weather, receiving the information about global warming from television and internet media, reading newspapers or journals about global warming, talking about global warming with family members, friends, and the acquaintances, attending the conferences or academic seminars on global warming and understanding of global warming condition.

Winaphorn Thupphae (2008) studied the “Knowledge Attitude Towards Preventive Behavior on Global Warming : A Case Study of Vocational Students in Suphanburi” according to the data collection by asking 2,000 persons of the sample group to fill in the questionnaires, analyzing the data by using the simple regression analysis, multiple regression analysis, and Stepwise multiple regression analysis.

The results of study revealed that the vocational students had average global warming behaviors of 15.11 points out of 24 points. The simple regression analysis found that the variables that significantly influenced global warming prevention behaviors at 0.05 were age, mean score, levels of years, sources for news receiving on global warming (friends, family, television, newspapers, posters, billboards). The fear is caused by the effects of global warming, family members' behavior on home environment management, communication among family members about global warming, study subjects related to global warming /environmental problems / participation in environmental activities / exhibitions, knowledge on global warming, and attitudes towards global warming.

Multiple regression analysis revealed that the 18 independent variables can explain the variance of global warming preventive behavior for about 21.5% with the statistical significance at the 0.05 level. After controlling all of other independent variables, the attitudes on global warming, and family members' behavior on home environment management, residential area, participation in environmental activities / exhibitions, and family communication about global warming and student performance measured by a cumulative GPA have influences on the global warming prevention behavior at the statistical significance of 0.05 level. The Stepwise multiple regression analysis revealed that the global warming attitudes can explain the variation in behaviors to prevent global warming best for 17.6 percent.

Suwasa Chaisurat and Patcharee Sakulrattanasak (2009) studied the "Saving energy behavior in reducing global warming problems of the Bachelor students at Ratchapruek College". The sample group are undergraduate students of Ratchapruek College who are the part of the world population have the behaviors in reducing global warming problems in order to find the ways to encourage the energy saving to reduce global warming problems among the students. The study revealed that most students have the knowledge and understanding in global warming and energy saving to reduce global warming problems in moderate level. However, the difference in the knowledge and understanding as well as the opinions on global warming affects the behaviors in energy saving of the students totally. The personal factors of the students which are genders, ages, styles of residing, and faculties / fields of study do not affect the behaviors in energy saving to reduce global warming problems.

Watcharintorn Somboonpong (2012) studied the “Knowledge, Attitudes to Global Warming and Behaviors Causing Global Warming of People in Sub district, Sampran District, Nakhon Pathom Province”by using the questionnaires as the research tools. The results of the research revealed that people have attitudes towards the global warming, knowledge, and understanding on the global warming entirely in the high level. They have knowledge in solving the global warming problems most, followed by the cause of global warming and legal environment, respectively. The behaviors causing global warming are that people have the levels of behaviors that cause global warming as a whole in moderate level. The attitude about global warming of people is not related to the behaviors that cause global warming. It may be because knowledge of global warming does not take part in any change or behavior resulting in the global warming. Even though most people are well aware of the problems and behaviors that cause global warming considered by the high level of perception, they behave or act causing the global warming. People who have different gender, age, education level, area and occupational group of the people in Bang Toei Sub-district, Sam Phran District, Nakhon Pathom Province, have different behaviors causing the global warming. This is because these personal factors do not affect the behavior or change in the behaviors that cause global warming in any way. No matter what the sex is, how old is, what level of education is, where the houses are located, or whatever occupation people have, the people still have the behaviors that cause global warming.

Wilailuck Chompoosi (2001) studied the exposure of information, knowledge, attitude and behaviors of ecotourism among Thai tourists and found that the ecotourism knowledge is positively correlated with the ecotourism attitudes of tourists, the ecotourism knowledge does not correlate with ecotourism behaviors of tourists and the ecotourism attitude is positively correlated with the ecotourism behaviors of tourists.

In foreign countries, there are researches related to knowledge, attitudes, and behaviors relevant to climate change or global warming as follows:

Gómez-Martín and Armesto-López (2014) conducted the study on "Assessing knowledge of social representations of climate change and tourism". The objectives were to study whether the students in the universities of Spain know that the climate

change and impacts on the industrial sector of Spain or not and how their attitude towards the problem are. This was conducted by submitting 400 questionnaires to the sample group of university students in Spain. The obtained data were analyzed for univariate descriptive procedures. The results revealed that the sample group showed the risks related to the climate change with low levels of awareness and low impact on the tourism sector. However, it affected the tourism in the long term and the wide impact. This research aimed to increase public understanding of the relationship between climate change and tourism. This shows that knowledge will improve the effectiveness of adaptation and mitigation strategies which can be used by both public and private tourism sectors.

For the researches related to tourist behaviors and climate change in Thailand, there are various topics of researches in related issues as follows:

Kultida Pengphol (2008) studied the Factors Correlated with Global Warming Reduction Behavior of Undergraduate Students in Bangkok. The study revealed that most university students in Bangkok consider that Bangkok's global warming policy is appropriate. The students have the frequency of participation in activities to reduce global warming in moderate level. Although Bangkok focuses on public relations through various media, especially on television, the students' global warming behavior has the frequency in moderate level.

Wimonphan Arpavate and Chantana Papattha (2011) found that people in Bangkok metropolitan areas had higher exposure of information on global warming through various media in moderate level. When considering the media most open to and accessible to the public, it is television. Most people agree that Thailand has public relations on the “global warming" in moderate level. From the overall picture, people are aware of their attitudes and behaviors towards global warming problems at the high level but contrary to public knowledge on global warming which is found that the knowledge is in the low level.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents research methodology applied in the research study entitled, "Tourism Management to Respond the Climate Change under the Context of Tourists' Behavior Adaptation: Case Study of Khao Yai National Park." It is a mixed methods research specifying research details: type of research, research procedures and conceptual framework.

3.2 Type of Research

This research study is a mixed methods research which consists of both quantitative research and qualitative research.

3.2.1 Mixed Methods Research

Tashakkori and Teddlie (2003) defined that the mixed methods research is a research using techniques of quantitative and qualitative data collection and analysis or using different types of research. Onwuegbuzie and Johnson (2004) also defined that it is a type of research mixing or combining several techniques, methods, approaches, concepts or languages of both quantitative and qualitative research in the same study by proposing logical and practical options with concepts of acquiring facts and knowledge of the research in both induction (setting model), deduction (theories and hypothesis testing) and best explanation finding to understand the rationale of the study.

Cresswell and Clark (2007) stated that the mixed methods research is a design of research related to methodology and methods. In terms of methodology, the mixed

methods research combines different research assumptions to be as a way of mixing between quantitative and qualitative methods in several procedures of the research. In terms of methods, this type of research emphasizes collection, analysis and combination of quantitative and qualitative data in the same research project or research program to answer research questions better than using a single method research.

The mixed methods research is a research enabling the research to answer research questions that cannot be answered by the single method research. Moreover, it also checks each other in terms of methodology helping the research to get answers covering all research points. It aims at investigating data consistency and problems study in several aspects and using both types of data to support each other, including investigation of unexpected finding conflicts and new interesting issues, which are research scope expansion in both application and in-depth findings.

3.2.2 Quantitative Research Method

Quantitative research method is a study of knowledge and facts emphasizing numerical data analysis. Its design controls the studied variables with valid and reliable instruments that can be statistically analyzed and processed from research conclusion causing least errors. It aims at explaining scientific phenomena called Positivism explaining phenomena in forms of statistic numbers such as percentage of population, mean and standard deviation.

3.2.3 Qualitative Research Method

Qualitative research method is a research finding out answers for naturalistic inquiry in holistic perspective by the researcher(s) to investigate relationship of interesting phenomena and environment. This type of research emphasizes interpretation for inductive analysis to have clear insights from holistic dimension that is absolutely similar to naturalistic research. The research is normally conducted without controlling or changing any natural conditions.

The qualitative research requires information from all aspects to understanding social contexts, basic research concepts studying in community or society, with collection of elaborate data towards environmental conditions, society, economy,

politics, government, belief and ceremony. Then the data will be used to analyze cultural and social data to study all social and cultural problems.

It can be concluded that qualitative research is a research focusing participatory observation and informal interview in all in-depth aspects for data collection for logical analysis, not numerical data.

According to all definitions above, it can be concluded that the mixed methods research is a research model using both quantitative and qualitative methods in the same research project or program. There are two ways of research methodology: 1) mixing quantitative and qualitative data, data collection techniques and quantitative and qualitative data analysis and 2) mixing quantitative and qualitative methods in several procedures or all procedures: methodology, research questions, research design, data collection, data analysis and conclusion. These two ways aims at finding out best answers for the research questions.

3.3 Research Methodology

The research methodology of this research study includes methodology, population and samples, research instruments, data collection and data analysis, which are based on research objectives as follows

3.3.1 Research Objective 1 and 2

To Study the Behavior of the Tourists Who Travel to Khao Yai National Park and to Analyze and Categorize the Factors that Affect the Tourism Behavior for Responding to Climate Change and the Tourists Who Travel to Khao Yai National Park

3.3.1.1 Population and Samples

Statistical data towards tourism at Khao Yai National Park in fiscal year 2008-2015 of the National Park, Wildlife and Plant Conservation Department indicates that the number of tourists visiting Khao Yai National Park has been dramatically increased (except in 2011). There are Thai tourists a lot more than foreign tourists. The researcher therefore selected only Thai tourists. In the fiscal year 2015, there were 1,179,806 Thai tourists visiting Khao Yai National Park (Table 3.1).

Table 3.1 Number of Tourists Visiting Khao Yai National Park in the Fiscal Year 2008-2015

Fiscal Year	Number of Tourists (Persons)		Total
	Thai Tourists	Foreign Tourists	
2008	634,564	37,005	671,569
2009	720,651	30,746	751,397
2010	793,419	30,133	823,552
2011	680,717	74,210	754,927
2012	824,060	28,712	852,772
2013	1,028,490	44,882	1,073,372
2014	1,099,075	43,764	1,142,839
2015	**1,179,806**	54,799	1,234,605

The curricula of Taro Yamane (1970) was used to specify sample size through Simple Random Sampling method as follows:

$$n = \frac{N}{1+Ne^2}$$

n = samples

N = population

e = permissible errors

$$n = \frac{1,179,806}{1+1,179,806\ (0.05)^2}$$

Sample size = 399.86 samples

After calculating following the curricula of Taro Yamane, the researcher got the sample size, 399.86 as a minimum; however, there were 600 samples in this research study. The increase of sample size causes reliability increase. There were two crucial conditions: 1) must be Thai tourist visiting Khao Yai National Park and 2) they must age at least 15 years old.

3.3.1.2 Research Instruments

A set of questionnaires was used to find out the answer for research question 1. It aims at investigating tourists' behaviors through the review of research, textbooks and related documents. The questionnaire consists of 6 sections:

1) Section 1: General Information

This section aims at studying basic information of the tourists: sex, age, educational level, occupation, income and country of residence. Questions asking about sex, marital status, educational level and profession were designed in the form of check list. While the key informants had to fill in the blanks for questions asking about age, income and country of residence.

2) Section 2: Visiting Experiences, Travel and Tourism Activities

The questions in this section are in the form of check list while the key informants had to fill the information in the provided blanks to present information about their traveling partners and needs to come back to visit Khao Yai National Park again. Another part of this section consists of 12 questions asking about tourists' motivation towards travelling at Khao Yai National Park in Likert Scale – 5 scales, 5 = very much, 4 = much, 3= moderate, 2 = less, 1 = least.

3) Section 3: Knowledge about Climate Change

The tourists' knowledge about climate change in this section consists of 12 multiple-choice questions, two choices – right or wrong. 'Right' choice was rated 1 mark and 'wrong' choice was rated 0 mark. Interpretation criteria for climate change was divided into three levels:

9.00-12.00 knowing about climate change very well

5.00-8.00 knowing about climate change well

0.00-4.00 knowing about climate change less

4) Section 4: Perceptions of Tourists towards Climate Change

This section consists of 5 parts:

(1) Perceptions towards effects of climate change and global warming on tourism in multiple-choice form (used to or never)

(2) Perceptions towards information resources expressing the effects of climate change or global warming on tourism (11 choices)

(3) Perceptions towards effects of climate change on Khao Yai National Park in multiple-choice form (Yes and No)

(4) Perceptions towards violence level of climate change effects on Khao Yai National Park (10 questions with 5 levels, 5=very much, 4=much, 3=moderate, 4=less, 5=least).

(5) Perceptions towards tourism management of Khao Yai National Park to respond the climate change effects (14 questions with 5 frequency level, 5=the most frequent, 4=much frequent, 3=moderately frequent, 2=less frequent, 1= least frequent

5) Section 5: Attitude of the tourists towards the climate change

This section consists of 7 rating-scale questions, 7 questions for asking about attitudes. The Likert Scale was used 5=strongly agree, 4=agree, 3=not sure, 2=disagree and 1= strongly disagree.

6) Section 6: Awareness of the tourists towards the climate change

This section consists of 7 rating-scale questions, 7 questions for asking about awareness. The Likert Scale was used 5=strongly agree, 4=agree, 3=not sure, 2=disagree and 1= strongly disagree.

7) Section 7: Behavior of the Tourists to Respond the Climate Change

This section consists of 14 questions towards behaviors-adaptation and climate change decrease in Likert Scale: 5=always, 4=often, 3=sometimes, 2=rarely, 1=never, to interpret tourism behaviors responding to climate change. The interpretation was processed based on the following criteria:

3.20-4.00	always
2.40-3.19	often
1.60-2.39	sometimes
0.00-0.59	rarely
0.00-0.79	never

Validation Process

To evaluate validity of quantitative instrument, tourism behaviors questionnaire responding to climate change, the researcher tested:

1) Content Validity

The questionnaire was evaluated by 5 experts to test validity of content and assess if it covers the studying issues completely to calculate Index of Item Congruency (IOC).

The research tool was presented to 5 experts comprising;

1) Assistant Professor Dr. Sangsan Phumsathan
2) Assistant Professor Dr. Prakobsiri Pakdeepinit
3) Dr. Pimlapas Pongsakornrungsilp
4) Assistant Professor Choosit Choochat
5) Assistant Professor Watanachai Chumak

to test for accuracy and content validity in order to make sure that the tool covered all the aspects to be studied and possessed validity and reliability. The IOC value of questionnaire in this research study is 0.96. (Appendix C)

2) Adjustment Process

The researcher adjusted the questionnaire based on experts' recommendations and proposed it to the thesis committees for completion of research questions.

3) Try-out

The researcher launched the adjusted questionnaire to 30 people in research population who were not research samples.

4) Reliability

The reliability of questionnaire was tested by internal consistency method, Cronbach's Alpha Coefficient (1970). The reliability test by internal consistency method, Cronbach's Alpha Coefficient is in rating scales such as attitude measurement (Bernard, 2000). In this research study, the test of Cronbach's Alpha has two parts: perceptions of climate change and tourism and attitude and awareness of tourists towards climate change and tourism. The test of reliability of questionnaire was also conducted with 20 people in the population group who were not research samples. The Cronbach's Alpha values are at 0.00-1.00. The closer value to 1.00 is, the higher reliability (Nunnally, 1967). The interpretation criteria are as follows:

0.00-0.20	very low reliability or none
0.21-0.40	low reliability
0.41-0.70	moderate reliability
0.71-1.00	high reliability

Accepted Alpha is at least 0.7 (George & Mallery, 2000; Nunnally, 1967). If it is unaccepted, it can be increased by adjusting questions or measurement form, increasing objectives, increasing number of questions, writing instructions and managing environment while collecting data probably affecting response (Boonthum Kijpreedaborisut, 1992). The result of Alpha = .8840 was achieved. (Appendix E)

Data Collection

The researcher collected the data by herself by distributing the adjusted questionnaires to Thai tourists visiting Khao Yai National Park for 600 people at six places, 100 questionnaires per each: Visitor Center, Chao Por Khao Yai, Heaw Suwat Waterfall, Pha Kuai Mai Waterfall, The 30th km View Point and Saisorn Reservoir (Morsingto).

Data Analysis

The data analysis steps analyzing 600 questionnaires towards tourism behavior responding to climate change of Thai tourists visiting Khao Yai National Park. The analysis steps are as follows:

1) Using descriptive statistics: frequency, percentage, mean and standard deviation to explain demographic data-sex, age, education, occupation, income, country of residence, information about knowledge, perception, attitude and awareness of tourists towards climate change, and tourists' behaviors responding to climate change. Then presenting the data in tables supporting explanation.

2) Inferential Analysis is the Exploratory Factor Analysis (EFA) to study the structures of variables and to reduce the number of existing co-variables by the fact that the number of available co-elements is less than the number of variables. As a result, the research can find what co-elements are involved and which variables are in those co-elements by using the varimax rotation to measure the elements by the fact that the factors are still perpendicular. Then, the Confirmatory Factor Analysis will be done to confirm the indicator of the observed variables' elements in the measurement model by considering the factors of knowledge,

perceptions, attitudes of tourists towards climate change including tourists' awareness of climate change that can be used to predict their behavior to respond climate change.

3.3.2 Research Objective 3 and 4

To Study the Tourism Management that Responds the Climate Change of Khao Yai National Park and To suggest the tourism management guideline that responds the climate change under the context of tourists' behavior adaptation: a case study of Khao Yai National Park.

3.3.2.1 Methodology

Quantitative methodology was used (Campell & Stanley, 1963; Meila, 1982, pp. 327-335; Benoliel, 1985, pp. 1-8). Secondary data were collected from documents such as strategic policies, study reports, documents, textbooks, as well as data from media such as newspapers, journals, and electronic data and primary data were collected from semi-structure in-depth interview informally interviewing key informants with general questions leading to participatory discussion (Burgess, 1984, p. 102). The interview questions are open-ended questions asking about key topics related to target group, stakeholders of tourism at Khao Yai National Park, including staff and experts in climate change and tourism. In the discussion, the informants expressed their opinions, gave information and details about the specific issues (Loftland & Lofland, 1995, p. 75) about causes of climate change, effects of climate change on tourism at Khao Yai National Park, adaptation and mitigation, ways to propose tourism management process to respond the climate change.

3.3.2.2 Population and Samples

Samples in this stage are 12 representatives of 4 groups of people, 3 people each: government organizations related to Khao Yai National Park, experts in climate change and tourism, tourism entrepreneurs and tourism community leaders. They are key informants (as shown in Table 3.2) selected by Purposive Sampling Method covering all groups of people and representatives of all stakeholders of tourism management at Khao Yai National Park so that the research could get direct and accurate data.

Table 3.2 Key Informants in the In-depth Interview

Key informants	Number
1. Government Organizations related to Khao Yai National Park	3
2. Experts in Climate Change and Tourism	3
3. Tourism Entrepreneurs	3
4. Tourism Community Leaders	3
Total	**12**

3.3.2.3 Research Instruments

Research instruments answering research objective 2 is semi-structured interview consisting of 3 sections: general information, effects of climate change on tourism and tourism management accommodating with climate change.

The in-depth interview asking questions key informants from 4 groups: 1) government organizations related to Khao Yai National Park, 2) experts in climate change and tourism, 3) tourism entrepreneurs and, 4) tourism community leaders.

3.3.2.4 Validation and Reliability

Semi-structured interview conducted with stakeholders of climate change and tourism at Khao Yai National Park testing reliability of qualitative data was tested by triangulation testing (Denzin, 1989) that is appropriate for reliability measurement of qualitative analysis to examine accuracy of information from several sources, methods and informants.

3.3.2.5 Data Collection

The in-depth interview was conducted with 4 groups of people: government organizations related to Khao Yai National Park, experts in climate change and tourism, tourism entrepreneurs and tourism community leaders.

3.3.2.6 Data Analysis

1) Analyzing data from the in-depth interview conducted with 12 key informants; then categorizing it to get information based on research objectives. After that the researcher interpreted, organized and analyzed it based on conceptual framework and did the typological analysis based on research objectives (Supang Chantavanitch, 2004).

2) Findings from in-depth interview was analyzed, categorized and summarized through content analysis process as important issues and accurate summary, including recommendations for tourism management adjustment to respond with climate change at Khao Yai National Park. The content analysis is descriptive analysis systematically specifying specific characteristics of messages or texts based on theoretical concepts, which were processed in 3 steps as follows:

(1) Data reduction-a selection of interesting points to be easily understood, summarized, adjusted, tested, categorized, which makes it clear in their categories, types and models, and to find out interesting point and decrease new data selection, finding sampled data and satisfied summary.

(2) Data display-selection management by finding sampled data or information from report, speech observation, or informants' actions, to be evidences of temporary proposed summary indicating and encouraging understanding towards what happened, why it happened, how it happened, leaning to steps of analysis and making conclusion.

(3) Conclusion and verification-a synthesis of sub-summary to be conclusion and confirmation of the final summary. The development of sub-summary to summary is a step of theoretical development from specific conditions to general conclusion, which is the process of evaluation physical data to abstract conditions based on ground theory by induction methods. To make the summary be reliable, the researcher tested it again while writing research report to confirm research conclusion using triangulation method, checking accuracy of data with key informants, testing differences and similarities of people who are related to it and not related to it.

Table 3.3 Research Methodology based on Research Objectives

Research Objectives	Methodology	Population	Samples	Sampling Method	Research Instruments	Data Analysis
Research Objective 1 To study the behavior of the tourists who travel to Khao Yai National Park	Quantitative	Thai tourists	600	Purposive Sampling	Questionnaire	- Descriptive Statistics - Exploratory Factor Analysis - Confirmatory Factor Analysis
Research Objective 2 To analyze and categorize the factors that affect the tourism behavior for responding to climate change and the tourists who travel to Khao Yai National Park						
Research Objective 3 To study the tourism management that responds the climate change of Khao Yai National Park	Qualitative	1) Government organizations related to Khao Yai National Park	3	Purposive Sampling	Semi-structured interview	Content Analysis
		2) Experts in climate change and tourism	3			
		3) Tourism entrepreneurs	3			
Research Objective 4 To suggest the tourism management guideline that responds the climate change under the context of tourists' behavior adaptation : a case study of Khao Yai National Park.		4) Tourism community leaders	3			

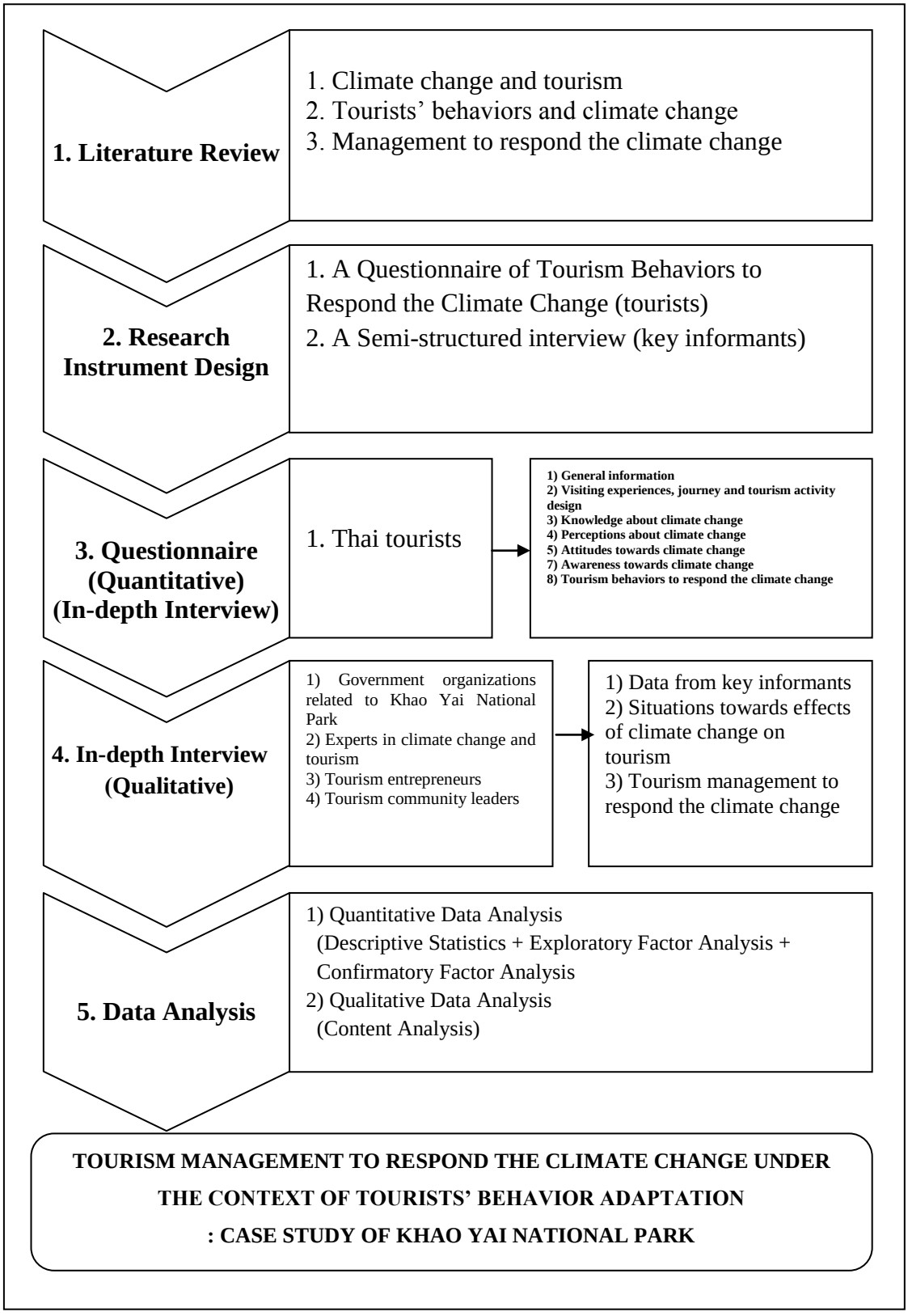

Figure 3.1 Research Process

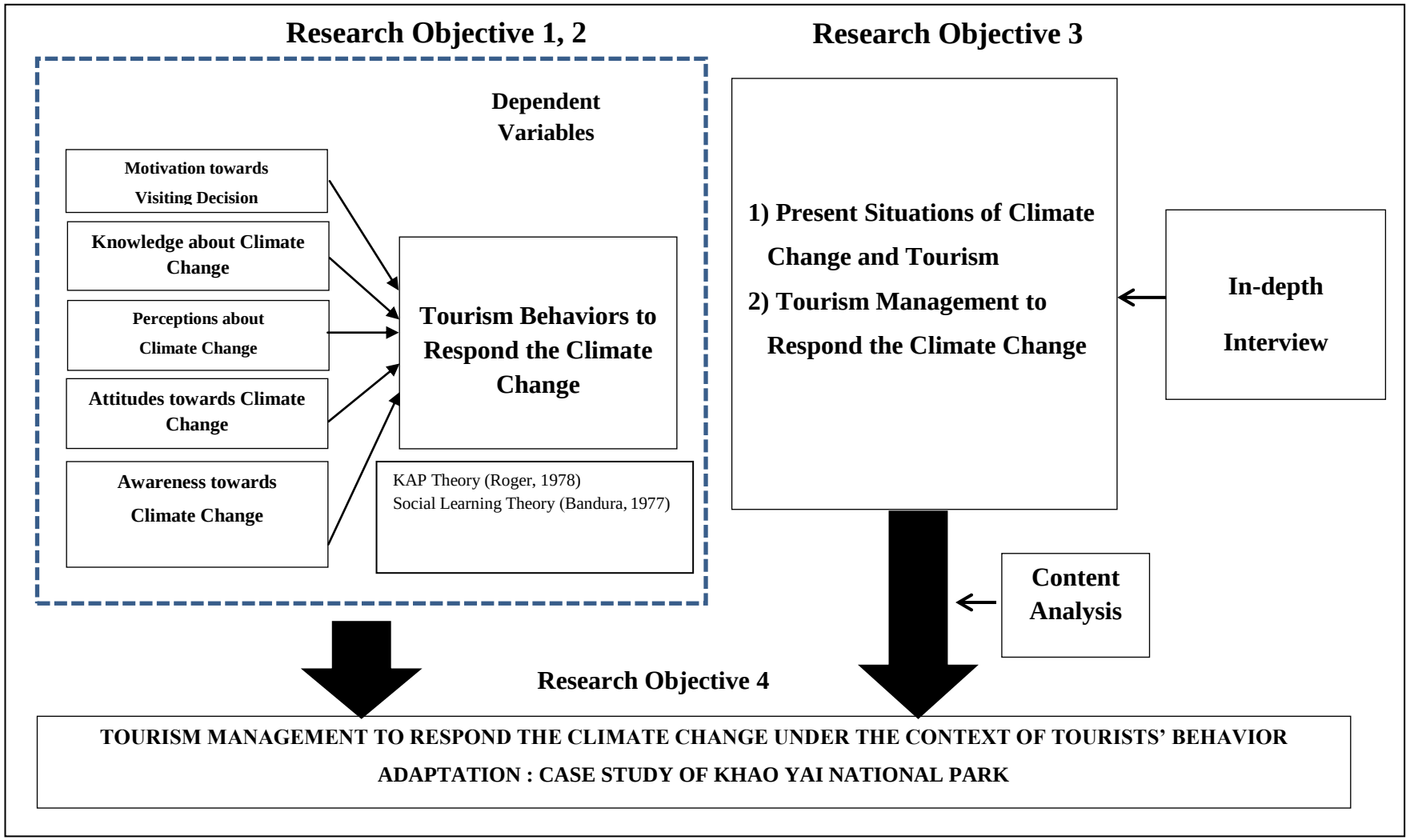

Figure 3.2 Research Conceptual Framework

CHAPTER 4

RESEARCH FINDINGS

4.1 Introduction

The research study entitle, "Tourism Management to Respond the Climate Change under the Context of Tourists' Behavior Adaptation : Case Study of Khao Yai National Park," aims at 1) studying the behavior of the tourists who travel to Khao Yai National Park 2) analyzing and categorizing the factors that affect the tourism behavior for responding to climate change and the tourists who travel to Khao Yai National Park 3) studying the tourism management that responds the climate change of Khao Yai National Park and, 4) suggesting the tourism management guideline that responds the climate change under the context of tourists' behavior adaptation : a case study of Khao Yai National Park.

4.2 Behavior of the Tourists who Travel to Khao Yai National Park (Research Objective 1)

4.2.1 Descriptive Statistical Analysis

To study of behaviors of Thai tourist visiting Khao Yai National Park, the researcher analyzed the data based on research objectives that is divided into 6 sections:

Section 1: General Information

Section 2: Visiting Experiences, Travel and Tourism Activities

Section 3: Knowledge about Climate Change

Section 4: Perceptions towards Climate Change

Section 5: Attitudes towards Climate Change

Section 6: Awareness towards Climate Change

Section 7: Tourism Behaviors to Respond the Climate Change

Section 1 General Information

Table 4.1 Demographic Information

Demographic Information		Number (persons)	Percentage (%)
Gender			
	Male	357	59.5
	Female	243	40.5
Age			
	Less than 21 years old	30	5.0
	21 - 30 years old	249	41.5
	31 - 40 years old	247	41.2
	41 - 50 years old	29	4.8
	51 - 60 years old	26	4.3
	More than 61 years old	19	3.2
Education			
	Lower than bachelor's degree	276	46.0
	Bachelor's degree	307	51.2
	Higher than bachelor's degree	17	2.8
Occupation			
	Government officer/ State enterprise staff	114	19.0
	Merchant/Self-employed	99	16.5
	Company's employee	189	31.5
	Student	97	16.2
	Freelance	65	10.8
	Retired	19	3.2
	Other	17	2.8
Monthly Income			
	Lower than 15,000 Baht	287	47.8
	15,001 - 30,000 Baht	231	38.5
	30,001 - 50,000 Baht	73	12.2
	More than 50,001 Baht	9	1.5

Table 4.1 (Continued)

Demographic Information	Number (Persons)	Percentage (%)
Country of residence		
The same province with Khao Yai National Park location (Saraburi, Nakhon Nayok, Prachinburi, Nakhon Ratchasima)	130	21.7
Bangkok	269	44.8
Central region	75	12.5
Eastern region	27	4.5
Western region	3	0.5
Northern region	9	1.5
Southern region	22	3.7
Northeastern region	65	10.8

Note: (n=600)

According to the study of demographic information with 600 Thai tourists, the majority of tourists are male, 59.5 percent, while 40.5 percent of them are female. They aged at 21-30 years old (41.5%) and 31-40 years old (41.2%), who graduated at bachelor's degree (51.2%), lower than bachelor's degree (46.0%) and higher than bachelor's degree (28%) respectively. Most of them are company's employees (31.5%), government officers/ state enterprise staff (19.0%), merchant/self-employed (16.5%) respectively. They earned lower than 15,000 Baht per month (47.8%), some of them earned 15,001-30,000 Baht per month (38.5%), and 12.2% of the tourists earned 30,001-50,000 Baht per month. The majority of research samples are from Bangkok (44.8%), the same area with Khao Yai National Park location (Saraburi, Nakhon Nayok, Prachinburi, Nakhon Ratchasima) (21.7%) and from central region (12.5%) respectively.

Section 2 Visiting Experiences, Travel and Tourism Activities

Table 4.2 Visiting Experiences, Travel and Tourism Activity

Visiting Experiences and Travel	Number (Persons)	Percentage
Visit		
First time	312	52.0
Used to come	288	48.0
Travel		
With friends	259	43.2
Alone	41	6.8
With family	177	29.5
With family and friends	59	9.8
With travel agency	59	9.8
Other	5	0.8
Number of Traveling People		
1-3 persons	191	31.8
4-6 persons	216	36.0
7-9 persons	76	12.7
More than 10 persons	117	19.5
Night Stay		
No	275	45.8
Yes	91	15.1
Vehicle		
Private car	479	79.8
Air-conditioning bus	26	4.3
Motorcycle	55	9.2
Bicycle	1	0.2
Van/taxi	13	2.2
Travel agency's car/bus	26	4.3

Note: (n = 600)

Table 4.2 presents tourists' visiting experiences, travel and tourism activity design. It confirms that 52.0 percent of the tourists visiting Khao Yai National Park for the first time and 48.0 percent of them are used to visit here before. The majority of samples came to Khao Yai with friends (43.2%), with family (29.5%) and with family and friends (9.8%) respectively. They usually travel in groups of 4-6 persons (36.0%), 1-3 persons (31.8%) and more than 10 persons (19.5%). The biggest group visiting Khao Yai National Park is 350 persons. Most of samples did not stay at Khao Yai National Park at night (45.8%) while 15.1 percent stayed there. Thai tourists usually use private car for their travel (79.8%), air-conditioning bus (4.3%) and travel agency's van/bus (4.3%)

Table 4.3 Travel and Tourism Activity

Travel and Tourism Activity	Number (Persons)	Percentage
Destination		
Khao Yai National Park is the major destination.	579	96.5
Khao Yai National Park is not the major destination.	21	3.5
Traveling Duration		
Weekday	13	2.2
Weekend	537	89.5
Holiday	44	7.3
Vacation	6	1.0
Traveling Month		
March-June	102	17.0
July-October	150	25.0
November-February	348	58.0
Activities participating every time coming here*		
Taking in the view	437	72.8
Walking through nature trail	106	17.7
Having a picnic	91	15.2
Swimming at waterfall	67	11.2

Table 4.3 (Continued)

Travel and Tourism Activity	Number (Persons)	Percentage
Shedding animals	49	8.2
Taking a rest	246	41.0
Observing butterflies	25	4.2
Watching birds	28	4.7
Cycling	67	11.2
Taking photos	369	61.5
Camping	20	3.3
Trekking	2	0.3
Other	8	1.4

Note: * Be able to answer more than one
(n = 600)

Table 4.3 presents tourist's travel and tourism activity. It found that 96.5 percent of tourists vising Khao Yai National Park since it is their destination. They came to Khao Yai National Park at weekend (89.5%), and some of them came to Khao Yai National Park on holiday (7.3%), weekday (2.2%) and vacation (1.0%) respectively. Most of them (58.0%) came her in winter (November-February), but some (25.0%) came here in raining season (July-October) and some (17.0%) same here in summer (March-June) respectively. Population activity among Thai tourists is taking a view (72.8%), taking photos (61.5%) and taking a rest (41.0% respectively. They rarely did trekking (0.3%), and another activity that is popularly done at Khao Yai National Park is taking pre-wedding photos.

Table 4.4 Visiting Reasons to Khao Yai National Park

Visiting Reason	Significance Level					$\overline{X}$	SD.
	Very much	Much	Moderate	Less	Least		
1. Being well-known and world heritage	47.0 (282)	31.8 (191)	17 (102)	4.0 (24)	0.2 (1)	4.21	0.87
2. Being closer the nature and being among	63.0 (378)	35.5 (213)	1.5 (9)	-	-	4.61	0.51
3. Safety at tourism destination	17.0 (102)	32.5 (195)	37.3 (224)	13.2 (79)	-	3.53	0.92
4. Weather	32.7 (196)	36.0 (216)	22.0 (132)	8.7 (52)	0.7 (4)	3.91	0.97
5. Convenience transportation	17.5 (105)	37.3 (224)	38.0 (228)	7.0 (42)	0.2 (1)	3.65	0.85
6. Facilities	19.2 (115)	29.7 (178)	40.8 (245)	10.0 (60)	0.3 (2)	3.57	0.92
7. Tourism activities	42.8 (257)	40.0 (240)	15.5 (93)	1.7 (10)	-	4.24	0.77
8. Opportunities to see the wild animals	31.7 (190)	54.8 (329)	12.7 (76)	0.8 (5)	-	4.17	0.66
9. Biodiversity and beauty of plants	39.0 (234)	50.8 (305)	10.0 (60)	0.2 (1)	-	4.28	0.64
10. Traveling expenses	19.3 (116)	36.7 (220)	41.5 (249)	2.5 (15)	-	3.72	0.79

Table 4.4 presents tourists' visiting reasons to Khao Yai National Park. The main reason of tourists coming to travel at Khao Yai National Parks is beautiful nature ($\bar{x}$ =4.61, S.D. =0.51), biological variety and beauty of plants ($\bar{x}$ =4.28, S.D. =0.64), a variety of tourism activities ($\bar{x}$ =4.24, S.D. =0.77), being well-known and world heritage ($\bar{x}$ =4.21, S.D. =0.87), high opportunities to see wild animals ($\bar{x}$ =4.17, S.D. =0.66), weather ($\bar{x}$ =3.91, S.D. =0.97), traveling expenses ($\bar{x}$ =3.72, S.D. =0.79), convenient transportation ($\bar{x}$ =3.57, S.D. =0.82) and safety in the tourist destination ($\bar{x}$ =3.53, S.D. =0.91) respectively (as shown in Table 4.4).

Section 3 Knowledge about Climate Change

Table 4.5 Tourists' Knowledge about Climate Change

Statements	Yes		No	
	Number	**Percentage**	**Number**	**Percentage**
1. Climate change means a phenomena of global warming causing a continuous increase of average temperature in the atmosphere and earth surface and climate variability.	516	86.0	84	14.0
2. Global warming is climate change.	503	83.8	97	16.2
3. Global warming happens when global temperature increases because of greenhouse effect.	581	96.8	581	96.8
4. Carbon Dioxide is a main cause of global warming.	582	97.0	18	3.0
5. Flood and storm have more violence because of climate change.	591	98.5	9	1.5
6. If the forest area is decreased, carbon dioxide is increasingly accumulated in the atmosphere causing an increase of heat at the earth surface and atmosphere.	578	96.3	22	3.7
7. Causes of disease growth is not related to climate changes.	19	3.2	581	96.8
8. Tourism is an accelerant of global warming.	335	55.8	265	44.2
9. Traveling by private car causes more effects than traveling by other vehicles.	83	13.8	517	86.2
10. Tourists' behaviors is a cause of global warming.	560	93.3	40	6.7
11. Prohibition of foam wares at the national park is a measure to decrease global warming.	592	98.7	8	1.3
12. Sorting out waste before throwing it to the bin is a way to decrease global warming.	588	98.0	12	2.0

Note: (n=600)

Table 4.5 presents tourists' knowledge about climate change. The first five statements tourists said 'yes' are "Prohibition of foam wares at the national park is a measure to decrease global warming," 98.7 percent, "Flood and storm have more violence because of climate change," 98.5 percent, "Sorting out waste before throwing it to the bin is a way to decrease global warming," 98.0 percent, "Carbon Dioxide is a main cause of global warming," 97.0 percent and "Global warming happens when global temperature increases because of greenhouse effect," 96.8 percent respectively.

Table 4.6 Knowledge Levels of Tourists towards Climate Change

Ranking Scores	**Number**	**Percentage**	$\overline{X}$	**S.D.**	**Knowledge Level**
Low level (0-4 scores)	-	-	9.21	0.857	High
Moderate level (5-8 scores)	94	15.7			
High level (9-12 scores)	506	84.3			
Total	**600**	**100.0**			

Table 4.6 presents that the tourists have high-level knowledge about climate change, that is, 506 tourists (84.3%) answered the questions correctly at 9-12 scores, $\bar{x}$ = 9.21. The lowest scores is 4 while the highest scores is 11.

Section 4 Perceptions towards Climate Change

Table 4.7 Perceptions of Information about Climate Change

Information Gaining	**Number (persons)**	**Percentage**
Used to	418	69.7
Not used to	182	30.3

Note: (n=600)

Table 4.7 shows tourists' perceptions of information about climate change. It found that most tourists are used to gain information about effects of climate change or global warming on tourism, 60.7 percent. However, 30.3 percent of them have never received any information about effects of climate change and global warming on tourism, 30.3 percent (as shown in Table 4.7).

Table 4.8 Perceptions of Information about Effects of Climate Change on Tourism based on Types of Media

Types of Media	Number (persons)	Percentage
TV programs	275	45.8
Tourism manual	27	4.5
Tourism program	40	6.7
Social media	222	37.0
Website	113	18.9
Guide	6	1.0
Leaflet	22	3.7
Newspaper	148	24.7
Friend	82	13.7
Public Relation sign	23	3.8
Others	-	-

Note: *Being able to answer more than one

Table 4.8 shows tourists' perceptions of information about effects of climate change on tourism based on types of media. It indicates that most of tourists receive information from TV programs (45.8%). Inferior to TV programs, they receive the information from social media (37.0 percent) and newspaper (24.7 percent), website (18.9%), friends (13.7 percent) and others at the similar level (as shown in Table 4.8).

Table 4.9 Opinions towards Effects of Climate Change on Tourism at Khao Yai National Park

Effects of Climate Change on Tourism at Khao Yai National Park	Number (Persons)	Percentage
Getting effects	432	72.0
Not getting effects	168	28.0
Total	**600**	**100.0**

Table 4.9 presents tourists' opinions towards effects of climate change at Khao Yai National Park. It found that 72.0 percent of tourists thought that the national park got effects from climate change. There were only some people, 28.0 percent, and thought that Khao Yai National Park does not get any effects from climate change.

Table 4.10 Perception Level towards Effects of Climate Change on Tourism

Perception Level	Very much	Much	Moderate	Less	Least	$\overline{X}$	S.D.
1. Season change such as higher temperature and drought in summer, shorter duration of winter.	36.7 (220)	22.5 (135)	10.8 (65)	2.0 (12)	-	3.09	2.05
2. Quantity of water in water resources decreases such as water fall running dry.	21.2 (127)	26.3 (158)	17.5 (105)	5.8 (35)	1.2 (7)	2.76	1.91
3. An increase of wildfire at the national park.	18.2 (109)	26.2 (157)	21.5 (129)	5.8 (35)	0.3 (2)	2.72	1.87
4. An increase of storms affecting tourism at the national park.	30.8 (185)	25.2 (151)	14.3 (86)	1.3 (8)	0.3 (2)	3.00	2.00
5. Extinction of seeds and local animals.	20.7 (124)	27.3 (164)	22.5 (135)	1.5 (9)	-	2.83	1.90
6. An increase of new plants and animals from other sources.	16.3 (98)	31.0 (186)	21.7 (130)	3.0 (18)	-	2.76	1.86

Table 4.10 (Continued)

Perception Level	Very much	Much	Moderate	Less	Least	$\overline{X}$	S.D.
7. Biological time duration change such as change of flower blossom	20.8 (125)	31.2 (187)	18.3 (110)	1.7 (10)	-	2.87	1.91
8. Tourism activities in different seasons such as inability to swim at the waterfall since it runs dry	19.5 (117)	30.3 (182)	17.8 (107)	3.8 (23)	0.5 (3)	2.80	1.90
9. A decrease of opportunities in seeing wild animals	18.7 (112)	26.7 (160)	23.0 (138)	3.8 (23)	0.3 (2)	2.77	1.86
10. A decrease of fertility and beauty of plants	20.0 (120)	26.3 (158)	23.7 (142)	2.0 (12)	0.5 (3)	2.80	1.88

Note: (n=600)

Table 4.10 presents tourists' perception level towards effects of climate change on tourism. It expresses that the majority of tourists are aware of effects from climate change on tourism at Khao Yai National Park in terms of season change such as higher temperature and drought in summer, shorter duration of winter ($\bar{x}$ = 9.21, S.D. = 2.05), an increase of storms affecting tourism at the national park ($\bar{x}$ = 3.00, S.D. = 2.00) and biological time duration change such as change of flower blossom ($\bar{x}$ = 2.87, S.D. = 1.91) respectively.

Table 4.11 Perceptions of Tourism Management to Respond with Climate Change

Perceptions of Tourism Management	Very much	Much	Moderate	Less	Least	$\overline{X}$	S.D.
1. Number of tourists limitation	39.2 (235)	29.3 (176)	27.0 (162)	4.5 (27)	-	4.03	0.91
2. Tourism activity support encouraging exercising such as cycling, trekking	23.8 (143)	54.8 (329)	20.3 (122)	1.0 (6)	-	4.01	0.69
3. Usage of natural energy such as solar energy and water energy from waterfall as renewable energy	18.7 (112)	25.2 (151)	43.5 (261)	11.3 (68)	1.3 (8)	3.48	0.96
4. Standard services of toilet and accommodation for ecotourism	20.0 (120)	32.7 (196)	41.0 (246)	6.3 (38)	-	3.66	0.86

Table 4.11 (Continued)

Perceptions of Tourism Management	Very much	Much	Moderate	Less	Least	$\overline{X}$	S.D.
5. Renovation of existing houses and buildings	17.8 (107)	43.2 (259)	35.5 (213)	3.5 (21)	-	3.75	0.78
6. Providing vehicle services such as electric cars servicing the tourists at service points to save energy and decrease pollution	13.7 (82)	31.5 (189)	36.2 (217)	16.0 (96)	2.7 (16)	3.37	0.99
7. Campaign of tree planting in the decadent areas and increasing green areas in the national park	15.8 (95)	40.7 (244)	39.2 (235)	4.0 (24)	0.3 (2)	3.67	0.79
8. Campaign of environmentally friendly products usage	16.0 (96)	26.5 (159)	36.7 (220)	19.2 (115)	1.7 (10)	3.36	1.01
9. Information services about effects of climate change and global warming to tourists	20.2 (121)	41.7 (250)	34.5 (207)	2.3 (14)	1.3 (8)	3.77	0.84
10. Information services towards how to decrease effects of climate change	18.5 (111)	41.7 (250)	35.5 (213)	3.0 (18)	1.3 (8)	3.73	0.84
11. Standard refuse disposal such as waste separation or bringing all wastes to outside areas	37.7 (226)	43.7 (262)	15.7 (94)	1.7 (10)	1.3 (8)	4.14	0.83
12. Transportation and vehicle management based on the least usage of vehicle to decrease air pollution	20.7 (124)	41.3 (248)	34.2 (205)	3.5 (21)	0.3 (2)	3.78	0.82
13. Motivation and rewarding measures to tourists helping decrease pollution	17.0 (102)	27.5 (165)	26.7 (160)	17.5 (105)	11.3 (68)	3.21	1.24
14. Clear service areas specification	27.0 (162)	44.3 (266)	26.7 (160)	1.7 (10)	0.3 (2)	3.96	0.79

Table 4.11 presents tourists' perceptions of tourism management to respond the climate change. It found that tourists were aware of standard refuse disposal such as waste separation or bringing all wastes to outside areas the most ($\bar{x}$ = 4.14, S.D. = 0.83), limitation of tourist number ($\bar{x}$ = 4.03, S.D. = 0.91) and tourism activity support encouraging exercising such as cycling, trekking ($\bar{x}$ = 4.01, S.D. = 0.69) respectively (as shown in Table 4.11).

Section 5 Attitudes towards Climate Change

Table 4.12 Attitudes towards Climate Change

Attitudes	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	$\bar{x}$	S.D.
1. People should worthily use resources at the national park to decrease global warming problems.	64.0 (384)	35.5 (213)	0.5 (3)	-	-	4.63	0.49
2. I am proud to participate in volunteering activities with the national park to decrease global warming problems.	58.7 (352)	38.3 (230)	3.0 (18)	-	-	4.55	0.55
3. There should be campaign giving information to tourists about global warming caused by tourism.	60.0 (360)	37.0 (222)	3.0 (18)		-	4.57	0.55
4. Deforestation causes climate change in the national park.	46.5 (279)	47.2 (283)	6.3 (38)	-	-	4.40	0.60
5. Decrease of private cars for tourism can decrease global warming at the national park.	44.3 (266)	51.8 (311)	3.8 (23)	-	-	4.40	0.56
6. I do not believe that strictly following rules and regulations of the national park helps decrease climate change and global warming problems.	45.8 (275)	50.5 (303)	3.7 (22)	-	-	4.42	0.56
7. Climate change or global warming effects problems should be mainly solved by related government sectors.	43.5 (261)	45.2 (271)	10.5 (63)	0.8 (5)	-	4.31	0.68

Note: (n=600)

Table 4.12 shows tourists 'attitudes towards climate change. They mostly agreed with worthy use of resources at the national park to decrease global warming problems ($\bar{x}$ = 4.63, S.D. = 0.49). Inferior to it, the tourists agreed with campaign giving information to tourists about global warming caused by tourism ($\bar{x}$ = 4.57, S.D. = 0.55). They were proud to participate in volunteering activities with the national

park to decrease global warming problems ($\bar{x}$ = 4.55, S.D. = 0.55), and they did not believe that strictly following rules and regulations of the national park helps decrease climate change and global warming problems ($\bar{x}$ = 4.42, S.D. = 0.56). Moreover, they thought that deforestation causes climate change in the national park ($\bar{x}$ = 4.40, S.D. = 0.60), and decrease of private cars for tourism can decrease global warming at the national park ($\bar{x}$ = 4.40, S.D. = 0.56). However, they believe that Climate change or global warming effects problems should be mainly solved by related government sectors ($\bar{x}$ = 4.31, S.D. = 0.68).

Section 6 Awareness towards Climate Change

Table 4.13 Awareness of Climate Change

Awareness	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	$\bar{x}$	S.D.
1. Global warming is a problem affecting tourism at the national park.	53.8 (323)	42.0 (252)	3.0 (18)	1.2 (7)	-	4.48	0.61
2. Tourists' behaviors also cause climate change or global warming.	42.5 (255)	45.3 (272)	10.7 (64)	1.5 (9)	-	4.28	0.71
3. The best solution for global warming problem at the national park is adjusting tourists' behaviors in using resources.	49.8 (299)	40.8 (245)	7.8 (47)	1.5 (9)	-	4.39	0.69
4. Nurturing tourists' conscious to give importance to global warming problem solving is a lifelong solution.	49.8 (299)	44.3 (266)	5.7 (34)	0.2 (1)	-	4.43	0.60
5. Climate change or global warming affect tourism activity design at the national park.	51.5 (309)	47.0 (282)	1.5 (9)	-	-	4.50	0.52
6. Economical use of energy is a way to decrease global warming problems at the national park.	57.8 (347)	40.3 (242)	1.8 (11)	-	-	4.56	0.53
7. Global warming affects a decrease of opportunities in seeing wild animals.	57.0 (342)	40.0 (240)	2.8 (17)	0.2 (1)	-	4.53	0.56

Note: (n=600)

Table 4.13 presents tourists' awareness of climate change and tourism. It indicates that tourists are aware of economical use of energy to decrease global warming problems at the national park ($\bar{x}$ = 4.56, S.D. = 0.53), global warming effects on a decrease of opportunities in seeing wild animals ($\bar{x}$ = 4.53, S.D. = 0.56), effects of climate change or global warming on tourism activity design at the national park ($\bar{x}$ = 4.50, S.D. = 0.52), effects of global warming on tourism at the national park ($\bar{x}$ = 4.48, S.D. = 0.61), nurturing tourists' conscious to give importance to global warming problem solving ($\bar{x}$ = 4.43, S.D. = 0.60), tourists' behaviors adjustment in using resources ($\bar{x}$ = 4.39, S.D. = 0.69) and effects of tourists' behaviors on climate change or global warming ($\bar{x}$ = 4.28, S.D. = 0.71) respectively.

Section 7 Tourism Behaviors to Respond the Climate Change

Table 4.14 Tourism Behaviors to Respond the Climate Change based on Behavioral Characteristics

Behaviors	Percentage (Amount)					$\bar{x}$	S.D.
	Always	Often	Sometimes	Rarely	Never		
1. Strictly following rules and regulations of the national park	43.8 (263)	50.0 (300)	6.2 (37)	-	-	4.37	0.59
2. Studying information about tourist destinations and planning before traveling	38.7 (232)	50.8 (305)	10.5 (63)	-	-	4.28	0.64
3. Doing activities that do not destroy national resource and environment	35.0 (210)	50.0 (300)	14.3 (86)	0.7 (4)	-	4.19	0.69
4. Participating volunteering activities to conserve national park such as keeping waste	16.3 (98)	43.0 (258)	27.0 (162)	9.5 (57)	4.2 (25)	3.57	1.00
5. Denoting money to environmental conservation and restoration activities in the national park	17.5 (105)	38.7 (232)	34.8 (209)	6.0 (36)	3.0 (18)	3.61	0.94
6. Economical using resources of national park such as water and electricity	17.5 (105)	42.3 (254)	35.8 (215)	4.3 (26)	-	3.73	0.79
7. Decreasing frequency of annual travel but expand time duration of each time to be longer	14.5 (87)	36.8 (221)	41.5 (249)	7.2 (43)	-	3.58	0.82
8. Traveling on provided nature trail	28.0 (168)	52.5 (315)	18.5 (111)	1.0 (6)	-	4.07	0.70
9. Using public services rather than private cars	17.5 (105)	37.3 (224)	23.7 (142)	18.0 (108)	3.5 (21)	3.40	1.08

Table 4.14 (Continued)

Behaviors	Percentage (Amount)					$\bar{x}$	S.D.
	Always	Often	Sometimes	Rarely	Never		
10. Staying at accommodation of the national park since it is more friendly to environment than luxury hotel	30.0 (180)	38.7 (232)	19.8 (119)	5.7 (34)	5.8 (35)	3.81	1.10
11. Eating local food and buying local products at the tourist destinations	31.0 (186)	38.5 (231)	22.2 (133)	7.0 (42)	1.3 (8)	3.90	0.96
12. Separating waste before throwing it at the provided areas in the national park	27.8 (167)	55.8 (335)	13.8 (83)	2.5 (15)	-	4.09	0.71
13. Trying to decrease amount of waste	23.2 (139)	56.3 (338)	19.5 (117)	1.0 (6)	-	4.01	0.68
14. Doing tourism activities releasing low carbon dioxide such as taking a view and cycling	24.7 (148)	52.2 (313)	19.0 (114)	3.3 (20)	0.8 (5)	3.96	0.80

Note: (n=600)

Table 4.14 presents findings towards tourism behaviors to respond the climate change of Thai tourists visiting Khao Yai National Park. It confirms that the most frequent behaviors done by Thai tourists is strictly following rules and regulations of the national park ($\bar{x}$ = 4.37, S.D. = 0.59), studying information about tourist destinations and planning before traveling ($\bar{x}$ = 4.28, S.D. = 0.64), doing activities that do not destroy national resource and environment ($\bar{x}$ = 4.19, S.D. = 0.69), separating waste before throwing it at the provided areas in the national park ($\bar{x}$ = 4.09, S.D. = 0.71), traveling on provided natural path ($\bar{x}$ = 4.07, S.D. = 0.70), trying to decrease amount of waste ($\bar{x}$ = 4.01, S.D. = 0.68), doing tourism activities releasing low carbon dioxide such as taking a view and cycling ($\bar{x}$ = 3.96, S.D. = 0.80), eating local food and buying local products at the tourist destinations ($\bar{x}$ = 3.90, S.D. = 0.96), staying at accommodation of the national park since it is more friendly to environment than luxury hotel ($\bar{x}$ = 3.81, S.D. = 1.10), economical using resources of national park such as water and electricity ($\bar{x}$ = 3.73, S.D. = 0.79), denoting money to environmental conservation and restoration activities in the national park ($\bar{x}$ = 3.61, S.D. = 0.94), decreasing frequency of annual travel but expand time duration of each time to be longer ($\bar{x}$ = 3.58, S.D. = 0.82), participating volunteering activities to conserve national park such as keeping waste ($\bar{x}$ = 3.57, S.D. = 1.00), using public services rather than private cars ($\bar{x}$ = 3.40, S.D. = 1.08) respectively.

4.3 The Factors that Affect the Tourism Behavior for Responding to Climate Change and the Tourists who Travel to Khao Yai National Park. (Research Objective 2)

To achieve the same understanding, the researcher would like to define the variables used in the research as follows:

Symbol used in research:

MTV1 means convenience motive

MTV2 means natural motivation

MTV3 means reputation motivation

KM1 means knowledge of pollution

KM2 means knowledge of materials that cause pollution

KM3 means knowledge of the phenomena that causes pollution

EFF means climate change awareness

PER means information awareness

KME1 means campaign management

KME2 means promotion management

KME3 means knowledge management

ATD1 means problem solving attitude

ATD2 means the use of resource attitude

AWN1 means awareness of energy use

AWN2 means awareness in consciousness

BHV1 means environmental rehabilitation behavior

BHV2 means the use of climate friendly material behavior

BHV3 means compliance behavior

MTV means the overall motivation

KM means the overall knowledge of climate change

BHV means the overall tourism behavior in respond the climate change

MNG means the overall management of climate change

AWN means the overall awareness of climate change

ATD means the overall attitudes towards climate change

4.3.1 Factor Analysis

Important motives for decision making to visit the National Park

Exploratory Factor Analysis (EFA) was an important motive factor for decision making to visit the national park. In doing so, the researcher used the principal component analysis method. And in order to examine the composition of the survey whether each of element was related or not, the researchers used a varimax rotation method to describe the results of the analysis of the survey elements with the KMO (Kaiser-Meyer-Olkin) (Chi-Square) and P-value statistics greater than Alpha = 0.05. It must accept the Ho assumption. That meant there was appropriate data much enough for the Factor Analysis, including Bartlett's Test of Sphericity that P-value was less than Alpha = 0.05. And it must reject Ho. That meant the data was sufficiently correlated to the factor analysis.

Table 4.15 The Statistics Obtained from the Results of the Factor Analysis of the Important Motives for Decision Making to Visit the National Park

KMO and Bartlett's Test	Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.784
Bartlett's Test of Sphericity Approx. Chi-Square	2218.262
d.f.	45
Sig.	.000**

From Table 4.15, the results of the analysis of the motive factors important to make decision in visiting the National Park found that the KMO (Kaiser - Meyer - Olkin) (Chi - Square) statistic was 2218.262 and P - value = .784 more than Alpha = 0.05. It must accept the Ho assumption, meaning that the data was appropriate for the Factor Analysis. Moreover, the results also showed that Bartlett's Test of Sphericity had P-value = 0.000 ** less than Alpha = 0.05. It must reject Ho, meaning that data was related enough for the Factor Analysis. And from the results of the analysis, the elements made up three new elements:

Table 4.16 The Factor Loading of the Motive Factor Analysis that was Important for Decision Making: Component 1

Item Code	Content	Factor Loading
Motive 3	3. Safety in tourism	0.863
Motive 4	4. Suitable climate for tourism	0.680
Motive 5	5. Convenient transportation	0.814
Motive 6	6. Facilities	0.840
Motive 10	10. Travel expenses	0.708
	Initial Eigen Values	3.605
	% of Variance	36.05
	% Cumulative	36.05

From Table 4.16, the results of the analysis of main components found that component 1 could be explained by five variables, with the factor loading ranging from 0.680 to 0.863, the Eigen Value equal to 3.605. All variables related to the safety in tourism, suitable climate for tourism, convenient transportation, facilities and travel expenses by a combination of the item-questions. Therefore, the researcher named the component that "convenience motive" with a variable code "MTV1".

Table 4.17 The Factor Loading of the Motive Factor Analysis that was Important for Decision Making : Component 2

Item Code	Content	Factor Loading
Motive 2	2. Being close, touching and surrounded by beautiful nature.	0.549
Motive 8	8. Opportunity to see wildlife animals.	0.772
Motive 9	9. Biodiversity and the beauty of plants.	0.806
	Initial Eigen values	1.88
	% of Variance	18.84
	% Cumulative	54.89

From Table 4.17, the results of the analysis of main components found that component 2 could be explained by three variables, with the factor loading ranging from 0.549 to 0.806, the Eigen Value equal to 1.88. All variables related to being close, touching and surrounded by beautiful nature, opportunity to see wildlife animals and biodiversity and the beauty of plants by a combination of the item-questions. Therefore, the researcher named the component that "nature motive" with a variable code "MTV2".

Table 4.18 The Factor Loading of the Motive Factor Analysis that was Important for Decision Making : Component 3

Item Code	Content	Factor Loading
Motive 1	1. Reputation and World Heritage	0.872
Motive 7	7. Variety of tourism activities	0.814
	Initial Eigen values	1.40
	% of Variance	14.08
	% Cumulative	68.98

From Table 4.18, the results of the analysis of main components found that component 3 could be explained by two variables, with the factor loading ranging from 0.841 to 0.872, the Eigen Value equal to 1.40. All variables related to celebrity and variety of tourism activities by a combination of the item-questions. Therefore, the researcher named the component that "reputation motive" with a variable code "MTV3".

Table 4.19 The Statistics Obtained from the Results of the Factor Analysis of the Knowledge of Climate Change

KMO and Bartlett's Test	Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.584
Bartlett's Test of Sphericity Approx. Chi-Square	980.871
d.f.	66
Sig.	.000**

From Table 4.19, the results of the analysis of the knowledge factors of climate change and tourism found that the KMO (Kaiser - Meyer - Olkin) (Chi - Square) statistic was 980.871 and P - value = .584 more than Alpha = 0.05. It must accept the Ho assumption, meaning that the data was appropriate for the Factor Analysis. Moreover, the results also showed that Bartlett's Test of Sphericity had P-value = 0.000 ** less than Alpha = 0.05. It must reject Ho, meaning that data was related enough for the Factor Analysis. And from the results of the analysis, the elements made up three elements:

Table 4.20 The Factor Loading of the Knowledge Factor Analysis of Climate Change : Component 1

Item Code	Content	Factor Loading
Kn3	3. Global warming meant that global temperatures rose due to greenhouse effect	0.379
Kn6	6. If the forest area was reduced, more carbon dioxide was accumulated in the atmosphere. Worse than that, it led to the heat energy accumulated on Earth and in the atmosphere	0.549
Kn9	9. Traveling with private cars resulted in global warming, rather than traveling with other vehicles	0.820

Table 4.20 (Continued)

Item Code	Content	Factor Loading
Kn10	10. Tourists' behavior was one of the causes of global warming	0.728
	Initial Eigen values	2.48
	% of Variance	20.71
	% Cumulative	20.71

From Table 4.20, the results of the analysis of main components of knowledge factors in term of climate change and tourism found that component 1 could be explained by four variables, with the factor loading ranging from 0.379 to 0.820, the Eigen Value equal to 2.48. Under component 1 of knowledge factors in terms of climate change and tourism, it was found that the item-question number 3 with Kn3 code had loading value = 0.379 that was less than 0.4. Therefore, the researcher cut that item-question from this analysis. Hence, there were 3 variables used in the research left in the questions. And they were related to the fact that the forest area was reduced, more carbon dioxide was accumulated in the atmosphere, traveling with private cars resulted in global warming, rather than traveling with other vehicles and lastly, tourists' behavior was one of the causes of global warming by a combination of the item-questions. Therefore, the researcher named the component that "pollution knowledge" with a variable code "KM1".

Table 4.21 The Factor Loading of the Knowledge Factor Analysis of Climate Change : Component 2

Item Code	Content	Factor Loading
Kn1	1. Climate change means a phenomena of global warming causing a continuous increase of average temperature in the atmosphere and earth surface and climate variability	0.617
Kn4	4. Carbon Dioxide is a main cause of global warming	0.681
Kn7	7. Causes of disease growth is not related to climate changes	0.674
Kn11	11. Prohibition of foam wares at the national park is a measure to decrease global warming	0.803
Kn12	12. Sorting out waste before throwing it to the bin is a way to decrease global warming	0.769
	Initial Eigen values	1.43
	% of Variance	11.95
	% Cumulative	32.67

From Table 4.21, the results of the analysis of main components of knowledge factors in term of climate change found that component 2 could be explained by five variables, with the factor loading ranging from 0.617 to 0.803, the Eigen Value equal to 1.43. All item-questions related to climate change, the fact that carbon dioxide was a major cause of global warming. And it led to climate variance, disease growth is not related to climate changes, prohibition of foam wares at the national park is a measure to decrease global warming and sorting out waste before throwing it to the bin is a way to decrease global warming by a combination of the item-questions. Therefore, the researcher named the component that "knowledge of pollution-causing materials" with a variable code "KM2".

Table 4.22 The Factor Loading of the Knowledge Factor Analysis of Climate Change : Component 3

Item Code	Content	Factor Loading
Kn2	2. Global warming is climate change	0.498
Kn5	5. Flood and storm have more violence because of climate change	0.789
Kn8	8. Tourism is an accelerant of global warming	0.787
	Initial Eigen values	1.23
	% of Variance	10.28
	% Cumulative	42.95

From Table 4.22, the results of the analysis of main components of knowledge factors in term of climate change found that component 3 could be explained by three variables, with the factor loading ranging from 0.498 to 0.789, the Eigen Value equal to 1.23.All item-questions related to the fact that global warming had the same meaning with climate change, floods and storms have intensified because a part of it was caused by climate change was part of the catalyst for global warming by a combination of the item-questions. Therefore, the researcher named the component that “knowledge of phenomena causing pollution” with a variable code “KM3”.

Table 4.23 The Statistics Obtained from the Results of the Factor Analysis of the Impact of Climate Change

KMO and Bartlett's Test	Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.572
Bartlett's Test of Sphericity Approx. Chi-Square	982.867
d.f.	66
Sig.	.000**

From Table 4.23, the results of the analysis of knowledge factors in term of climate change found that the KMO (Kaiser-Meyer-Olkin) (Chi-Square) statistic was 982.867 and P-value = .572 more than Alpha = 0.05. It must accept the Ho assumption, meaning that the data was appropriate for the Factor Analysis. Moreover, the results also showed that Bartlett's Test of Sphericity had P-value = 0.000 **less than Alpha = 0.05. It must reject Ho, meaning that data was related enough for the Factor Analysis. And from the results of the analysis, the elements made up only one element :

Table 4.24 The Factor Loading of the Knowledge Factor Analysis of Climate Change : Component 1

Item Code	Content	Factor Loading
V73	7. Biological time duration change such as change of flower blossom	0.977
V 71	5. Extinction of seeds and local animals	0.977
V 74	8. Tourism activities in different seasons such as inability to swim at the waterfall since it runs dry	0.975
V 69	3. An increase of wildfire at the national park	0.971
V 76	10. A decrease of fertility and beauty of plants	0.969
V 72	6. An increase of new plants and animals from other sources	0.966
V 67	1. Season change such as higher temperature and drought in summer, shorter duration of winter	0.965
V 68	2. Quantity of water in water resources decreases such as water fall running dry	0.962
V 75	9. A decrease of opportunities in seeing wild animals	0.962
V 70	4. A decrease of fertility and beauty of plants	0.961
	Initial Eigen values	9.38
	% of Variance	93.82
	% Cumulative	93.82

From Table 4.24, the results of the analysis of main components of knowledge in term of climate change found that component 1 could be explained by ten variables, with the factor loading ranging from 0.961 to 0.977, the Eigen Value equal to 9.38. All item-questions related to changing biological time duration change such as change of flower blossom, the fact that extinction of seeds and local animals, tourism activities during the various seasons changed; for example, people could not play in the waterfalls because of dry water, changing seasons, such as summer with higher temperatures and more arid and the increase of thunderstorms affecting tourism in the national park by a combination of the item-questions. Therefore, the researcher named the component that "knowledge of condition change" with a variable code "EFF".

Table 4.25 The Statistics Obtained from the Results of Factor Analysis of the Impact of Climate Change

KMO and Bartlett's Test	Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.911
Bartlett's Test of Sphericity Approx. Chi-Square	4495.222
d.f.	91
Sig.	.000**

From Table 4.25, the results of the analysis of impact factors in term of climate change found that the KMO (Kaiser-Meyer-Olkin) (Chi-Square) statistic was 4495.222 and P-value = .911 more than Alpha = 0.05. It must accept the Ho assumption, meaning that the data was appropriate for the Factor Analysis. Moreover, the results also showed that Bartlett's Test of Sphericity had P-value = 0.000 ** less than Alpha = 0.05. It must reject Ho, meaning that data was related enough for the Factor Analysis. And from the results of the analysis, the elements made up three new elements:

Table 4.26 The Factor Loading of the Knowledge Factor Analysis of Impact Management: Component 1

Item Code	Content	Factor Loading
Manage5	5. Improvements to existing buildings, no more new buildings.	0.790
Manage2	2. Encourage tourism activities that tourists could use their own strengths, such as cycling or trekking.	0.706
Manage4	4. There was a standard of toilet service and accommodation for eco-tourism.	0.667
Manage7	7. Campaign to plant in degraded areas and increase green areas within national parks.	0.666
	Initial Eigen values	6.63
	% of Variance	47.42
	% Cumulative	47.42

From Table 4.26, the results of the analysis of main components of impact management in term of climate change and tourism found that component 1 could be explained by four variables, with the factor loading ranging from 0.666-00.790, the Eigen Value equal to 6.63. All item-questions related to improvements to existing buildings, no more new buildings, encouragement of tourism activities that tourists could use their own strengths, such as cycling or trekking, the fact that there was a standard of toilet service and accommodation for eco-tourism and a campaign to plant in degraded areas and increase green areas within national parks by a combination of the item-questions. Therefore, the researcher named the component that “campaign management” with a variable code “KME1”.

Table 4.27 The Factor Loading of the Knowledge Factor Analysis of Impact Management: Component 2

Item Code	Content	Factor Loading
Manage1	1. Number of tourists limitation	0.829
Manage13	13. Motivation and rewarding measures to tourists helping decrease pollution	0.781
Manage3	3. Usage of natural energy such as solar energy and water energy from waterfall as renewable energy	0.685
Manage8	8. Campaign of environmentally friendly products usage	0.660
Manage6	6. Providing vehicle services such as electric cars servicing the tourists at service points to save energy and decrease pollution	0.600
	Initial Eigen values	1.36
	% of Variance	9.72
	% Cumulative	57.14

From Table 4.27, the results of the analysis of main components of impact management in term of climate change and tourism found that component 2 could be explained by five variables, with the factor loading ranging from 0.600 to 0.829, the Eigen Value equal to 1.36.All item-questions related to the fact that there were motivation and rewarding measures to tourists helping decrease pollution, usage of natural energy such as solar energy and water energy from waterfall as renewable energy, campaign of environmentally friendly products usage and Providing vehicle services such as electric cars servicing the tourists at service points to save energy and decrease pollution by a combination of the item-questions. Therefore, the researcher named the component that “promotion management” with a variable code “KME2”.

Table 4.28 The Factor Loading of the Knowledge Factor Analysis of Impact Management: Component 3

Item Code	Content	Factor Loading
Manage10	10. Information services towards how to decrease effects of climate change	0.801
Manage11	11. Standard refuse disposal such as waste separation or bringing all wastes to outside areas	0.798
Manage9	9. Information services about effects of climate change and global warming to tourists	0.674
Manage14	14. Clear service areas specification	0.651
Manage12	12. Transportation and vehicle management based on the least usage of vehicle to decrease air pollution	0.578
	Initial Eigen values	1.25
	% of Variance	8.97
	% Cumulative	66.12

From Table 4.28, the results of the analysis of main components of impact management in term of climate change and tourism found that component 3 could be explained by five variables, with the factor loading ranging from 0.578-0.801, the Eigen Value equal to 1.25.All item-questions related to provision of tourist information about how to perform to help mitigate the effects of climate change, the standard refuse disposal such as waste separation or bringing all wastes to outside areas, transportation and vehicle management based on the least usage of vehicle to decrease air pollution by a combination of the item-questions. Therefore, the researcher named the component that “knowledge management” with a variable code “KME3”.

Part 5 Factor Analysis: Tourists' attitudes to climate change

Table 4.29 The Statistics Obtained from the Results of the Factor Analysis of the Tourists' Attitudes to Climate Change

KMO and Bartlett's Test	Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.822
Bartlett's Test of Sphericity Approx. Chi-Square	1681.233
d.f.	21
Sig.	.000**

From Table 4.29, the results of factor analysis of the tourists' attitudes in term of climate change found that the KMO (Kaiser-Meyer-Olkin) (Chi-Square) statistic was 1681.233 and P-value = .822 more than Alpha = 0.05. It must accept the Ho assumption, meaning that the data was appropriate for the Factor Analysis. Moreover, the results also showed that Bartlett's Test of Sphericity had P-value = 0.000 ** less than Alpha = 0.05. It must reject Ho, meaning that data was related enough for the Factor Analysis. And from the results of the analysis, the elements made up two new elements :

Table 4.30 The Factor Loading of the Factor Analysis of the Tourists' Attitudes to Climate Change: Component 1

Item Code	Content	Factor Loading
ATT6	6. I do not believe that strictly following rules and regulations of the national park helps decrease climate change and global warming problems	0.801
ATT7	7. Climate change or global warming effects problems should be mainly solved by related government sectors	0.798

Table 4.30 (Continued)

Item Code	Content	Factor Loading
ATT5	5. Decrease of private cars for tourism can decrease global warming at the national park	0.777
ATT4	4. Deforestation causes climate change in the national park	0.751
	Initial Eigen values	3.61
	% of Variance	51.65
	% Cumulative	51.65

From Table 4.30, the results of the factor analysis of the tourists' attitudes to climate change found that component 1 could be explained by four variables, with the factor loading ranging from 0.751-0.801, the Eigen Value equal to 3.61. All item-questions related to the fact that you did not believe that strictly adhering to the regulations of the national park would help with the problem of climate change or global warming, addressing the impact of climate change or global warming on national parks should be the primary responsibility of relevant government agencies, reducing the use of private cars for traveling helped reduce global warming in the national park and deforestation causes climate change in the national park by a combination of the item-questions. Therefore, the researcher named the component that "problem solving attitude" with a variable code "ATD1".

Table 4.31 The Factor Loading of the Factor Analysis of the Tourists' Attitudes to Climate Change: Component 2

Item Code	Content	Factor Loading
ATT1	1. People should worthily use resources at the national park to decrease global warming problems.	.855
ATT1	2. I am proud to participate in volunteering activities with the national park to decrease global warming problems.	.855

Table 4.31 (Continued)

Item Code	Content	Factor Loading
ATT3	3. There should be campaign giving information to tourists about global warming caused by tourism.	.674
	Initial Eigen values	1.18
	% of Variance	16.87
	% Cumulative	68.52

From Table 4.31, the results of the factor analysis of the tourists' attitudes to climate change found that component 2 could be explained by three variables, with the factor loading ranging from .674-.855, the Eigen Value equal to 1.18. All item-questions related to the fact that utilizing national park resources effectively reduced global warming, you were proud to be involved in volunteer activities with the National Park to reduce global warming and national parks should campaign and educate tourists about global warming caused by tourism more than before by a combination of the item-questions. Therefore, the researcher named the component that "resource attitude" with a variable code "ATD2".

Part 6 Factor Analysis: The awareness of Tourists on Climate Change.

Table 4.32 The Statistics Obtained from the Results of the Factor Analysis of the Awareness of Tourists on Climate Change

KMO and Bartlett's Test	Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.827
Bartlett's Test of Sphericity Approx. Chi-Square	1808.736
d.f.	21
Sig.	.000**

From Table 4.32, the results of the factor analysis of the awareness of tourists on climate change found that the KMO (Kaiser-Meyer-Olkin) (Chi - Square) statistic was 1808.736 and P-value = .827 more than Alpha = 0.05. It must accept the Ho assumption, meaning that the data was appropriate for the Factor Analysis. Moreover, the results also showed that Bartlett's Test of Sphericity had P-value = 0.000 ** less than Alpha = 0.05. It must reject Ho, meaning that data was related enough for the Factor Analysis. And from the results of the analysis, the elements made up two new elements:

Table 4.33 The Factor Loading of the Factor Analysis of the Awareness of Tourists on Climate Change: Component 1

Item Code	Content	Factor Loading
AW6	6. Economical use of energy is a way to decrease global warming problems at the national park	0.906
AW7	7. Global warming affects a decrease of opportunities in seeing wild animals	0.874
AW5	5. Climate change or global warming affect tourism activity design at the national park	0.786
	Initial Eigen values	3.66
	% of Variance	52.36
	% Cumulative	52.36

From Table 4.33, the results of the factor analysis of the awareness of tourists on climate change found that component 1 could be explained by three variables, with the factor loading ranging from 0.786-0.906, the Eigen Value equal to 3.66. All item-questions related to the fact that economical use of energy is a way to decrease global warming problems at the national park**,** global warming affects a decrease of opportunities in seeing wild animals and climate change or global warming affect tourism activity design at the national park by a combination of the item-questions. Therefore, the researcher named the component that “energy awareness” with a variable code “AWN1”.

Table 4.34 The Factor Loading of the Factor Analysis of the Awareness of Tourists on Climate Change: Component 2

Item Code	Content	Factor Loading
AW3	3. The best solution for global warming problem at the national park is adjusting tourists' behaviors in using resources.	.786
AW1	1. At present, global warming was a problem that affected tourism in the national park	.771
AW4	4. Nurturing tourists' conscious to give importance to global warming problem solving is a lifelong solution	.708
AW 2	2. Tourists' behaviors also cause climate change or global warming	.554
	Initial Eigen values	1.03
	% of Variance	14.79
	% Cumulative	67.15

From Table 4.34, the results of the factor analysis of the awareness of tourists on climate change found that component 2 could be explained by four variables, with the factor loading ranging from .554-.786, the Eigen Value equal to 1.03. All item-questions related to the fact that the best solution for global warming problem at the national park is adjusting tourists' behaviors in using resources, at present, global warming was a problem that affected tourism in the national park, nurturing tourists' conscious to give importance to global warming problem solving is a lifelong solution and tourists' behaviors also cause climate change or global warming by a combination of the item-questions. Therefore, the researcher named the component that "awareness in consciousness" with a variable code "AWN2".

Part 7 Factor Analysis: The Travel Behavior to Respond the Climate Change

Table 4.35 The Statistics Obtained from the Results of the Factor Analysis of the Travel Behavior to Respond Climate Change

KMO and Bartlett's Test	Statistics
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.867
Bartlett's Test of Sphericity Approx. Chi-Square	4535.765
d.f.	91
Sig.	.000**

From Table 4.35, the results of the factor analysis of the travel behavior to respond the climate change found that the KMO (Kaiser-Meyer-Olkin) (Chi-Square) statistic was 4535.765 and P-value = .867 more than Alpha = 0.05. It must accept the Ho assumption, meaning that the data was appropriate for the Factor Analysis. Moreover, the results also showed that Bartlett's Test of Sphericity had P-value = 0.000 ** less than Alpha = 0.05. It must reject Ho, meaning that data was related enough for the Factor Analysis. And from the results of the analysis, the elements made up three new elements :

Table 4.36 The Factor Loading of the Factor Analysis of the Travel Behavior to Respond the Climate Change: Component 1

Item Code	Content	Factor Loading
BEH7	7. Decreasing frequency of annual travel but expand time duration of each time to be longer	0.835
BEH5	5. Denoting money to environmental conservation and restoration activities in the national park	0.801

Table 4.36 (Continued)

Item Code	Content	Factor Loading
BEH4	4. Participating volunteering activities to conserve national park such as keeping waste	0.792
BEH6	6. Economical using resources of national park such as water and electricity	0.792
BEH9	9. Using public services rather than private cars	0.785
	Initial Eigen values	5.50
	% of Variance	39.32
	% Cumulative	39.32

From Table 4.36, the results of the factor analysis of the travel behavior to respond the climate change found that component 1 could be explained by five variables, with the factor loading ranging from 0.785-0.835, the Eigen Value equal to 5.50.All item-questions related to reduction the number of trips per year but extension the duration of each trip longer, contribution to the conservation and restoration of the environment in the national park, using national park's resources (such as water and electricity) economically and always using public transport instead of private vehicles to travel to attractions by a combination of the item-questions. Therefore, the researcher named the component that "Environmental restoration behavior" with a variable code "BHV1".

Table 4.37 The Factor Loading of the Factor Analysis of the Travel Behavior to Respond the Climate Change: Component 2

Item Code	Content	Factor Loading
BEH13	13. Try to reduce the amount of waste that must be left as much as possible	0.779
BEH14	14. Choose to do low-carbon tourism activities (such as cycling or sightseeing)	0.764

Table 4.37 (Continued)

Item Code	Content	Factor Loading
BEH11	11. Choose to eat local food and buy the products from the community in the attractions	0.764
BEH10	10. Choose to go camping in the national park because there were more environmentally friendly accommodation than luxury hotels	0.759
BEH12	12. Waste sorting prior to disposal at the national park site	0.575
	Initial Eigen values	2.49
	% of Variance	17.79
	% Cumulative	57.12

From Table 4.37, the results of the factor analysis of the travel behavior to respond the climate change found that component 2 could be explained by five variables, with the factor loading ranging from 0.575-0.779, the Eigen Value equal to 2.49. All item-questions related to the fact to try to reduce the amount of waste that must be left as much as possible, **c**hoose to do low-carbon tourism activities (such as cycling or sightseeing), choose to eat local food and buy the products from the community in the attractions, choose to go camping in the national park because there were more environmentally friendly accommodation than luxury hotels and lastly, waste sorting prior to disposal at the national park site by a combination of the item-questions. Therefore, the researcher named the component that "Behavior-friendly materials" with a variable code "BHV2".

Table 4.38 The Factor loading of the Factor Analysis of the Travel Behavior to Respond the Climate Change: Component 3

Item Code	Content	Factor Loading
BEH2	2. Study travel information and plan before departure.	0.809
BEH1	1. Strictly follow the rules of the national park.	0.797
BEH3	3. Choose activities that did not destroy natural resources and the environment in the tourist attraction.	0.779
BEH8	8. Follow the nature trail provided by the tourist attractions.	0.663
	Initial Eigen values	1.36
	% of Variance	9.74
	% Cumulative	66.87

From Table 4.38, the results of the factor analysis of the travel behavior to respond the climate change found that component 3 could be explained by four variables, with the factor loading ranging from 0.663-0.809, the Eigen Value equal to 1.36.All item-questions related to study travel information and plan before departure, strictly follow the rules of the national park, choose activities that did not destroy natural resources and the environment in the tourist attraction and follow the nature trail provided by the tourist attractions by a combination of the item-questions. Therefore, the researcher named the component that “compliance behavior” with a variable code “BHV3”.

Part 8 Confirmatory Factor Analysis (CFA): The Important Motives for Decision Making to Visit the National Park

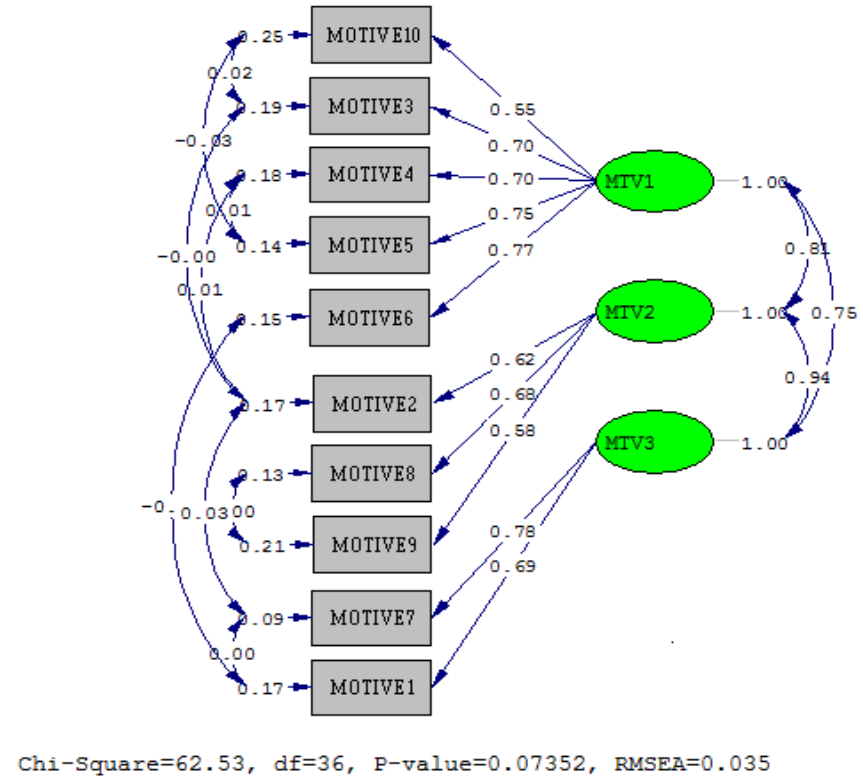

Figure 4.1 Confirmatory Factor Analysis (CFA) of the Important Motives for Decision Making to Visit the National Park Obtained from the Factor Analysis

From Figure 4.1, the results of the confirmatory factor analysis made three subcomponents of motive factor important to make decision to visit the national parks by considering the statistics:

Chi-Square	= 62.53 (P = 0.07352)		Pass the threshold
NFI	=	0.99	Pass the threshold
NNFI	=	0.98	Pass the threshold
PNFI	=	0.57	Pass the threshold
CFI	=	0.99	Pass the threshold
IFI	=	0.99	Pass the threshold

CN	=	463.18	Pass the threshold
RMSEA	=	0.035	Pass the threshold
RMR	=	0.017	Pass the threshold
GFI	=	0.95	Pass the threshold
AGFI	=	0.92	Pass the threshold

From the results of the confirmatory factor analysis caused a group of motive factor important to make decision to visit the national parks obtained from the factor analysis that was according to statistical criteria with the following measurement equation:

LISREL Estimates (Maximum Likelihood) Measurement Equations

MOTIVE1 = 0.69*MTV3, Error var.= 0.17 , R^2 = 0.74

(0.027) (0.014)

25.64 12.36

MOTIVE2 = 0.62*MTV2, Error var. = 0.17, R^2 = 0.70

(0.025) (0.012)

24.62 13.79

MOTIVE3 = 0.70*MTV1, Error var. = 0.19 , R^2 = 0.72

(0.028) (0.015)

25.14 13.19

MOTIVE4 = 0.70*MTV1, Error var. = 0.18 , R^2 = 0.73

(0.028) (0.014)

25.56 12.91

MOTIVE5 = 0.75*MTV1, Error var. = 0.14, R^2 = 0.80

(0.027) (0.013)

27.49 10.62

MOTIVE6 = 0.77*MTV1, Error var. = 0.15, R^2 = 0.79

(0.028) (0.014)

27.17 10.92

MOTIVE7 = 0.78*MTV3, Error var. = 0.088, R^2 = 0.87

(0.027) (0.014)

29.06 6.45

MOTIVE8 = 0.68*MTV2, Error var. = 0.13, R^2 = 0.78

(0.026) (0.014)

26.09 9.13

MOTIVE9 = 0.58*MTV2, Error var. = 0.21, R^2 = 0.61

(0.025) (0.015)

22.63 14.13

MOTIVE10 = 0.55*MTV1, Error var.= 0.25 , R^2 = 0.54

(0.026) (0.016)

21.18 15.87

Part 9 Confirmatory Factor Analysis: CFA Knowledge Related Tourism and Climate Change

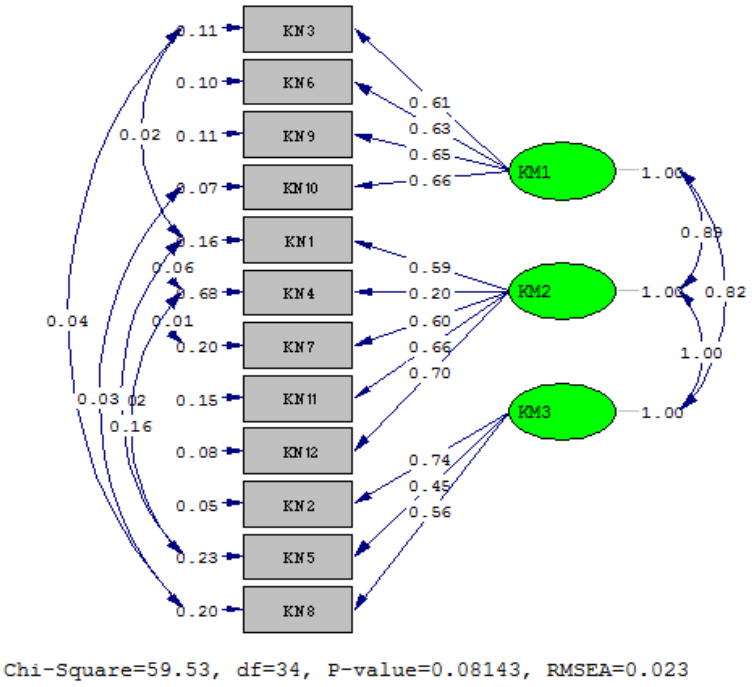

Figure 4.2 Confirm Factor Analysis: CFA on Knowledge Related to Tourism and Climate Change Obtained from Factor Analysis

According to Figure 4.2, the result of Confirmatory Factor Analysis: CFA makes the sub-elements of knowledge related to tourism and climate change to have 3 factors, by considering from statistics

Chi-Square	=	59.53 (P = 0.08143)	Pass the threshold
NFI	=	0.99	Pass the threshold
NNFI	=	0.99	Pass the threshold
PNFI	=	0.53	Pass the threshold
CFI	=	0.99	Pass the threshold
IFI	=	0.99	Pass the threshold
CN	=	427.52	Pass the threshold
RMSEA	=	0.023	Pass the threshold
RMR	=	0.013	Pass the threshold
GFI	=	0.96	Pass the threshold
AGFI	=	0.93	Pass the threshold

According to the result of Confirmatory Factor Analysis: CFA, the factors of knowledge related to tourism and climate change are obtained from the analysis of factors under the statistics criteria with measurement equation as follows:

LISREL Estimates (Maximum Likelihood) Measurement Equations

KN3 = 0.61*KM1, Errorvar.= 0.11 , R^2 = 0.77

(0.029) (0.0099)

20.88 10.89

KN6 = 0.63*KM1, Errorvar.= 0.097 , R^2 = 0.80

(0.029) (0.0092)

21.41 10.60

KN9 = 0.65*KM1, Errorvar.= 0.11 , R^2 = 0.79

(0.030) (0.010)

21.19 10.77

KN10 = 0.66*KM1, Errorvar.= 0.074 , R^2 = 0.86

(0.029) (0.0080)

22.66 9.16

KN1 = 0.59*KM2, Errorvar.= 0.16 , R^2 = 0.68

(0.031) (0.013)

18.82 12.38

KN4 = 0.20*KM2, Errorvar.= 0.68 , R^2 = 0.054

(0.045) (0.051)

4.34 13.23

KN7 = 0.60*KM2, Errorvar.= 0.20 , R^2 = 0.65

(0.033) (0.016)

18.14 12.53

KN11 = 0.66*KM2, Errorvar.= 0.15 , R^2 = 0.74

(0.033) (0.013)

20.17 12.08

KN12 = 0.70*KM2, Errorvar.= 0.077 , R^2 = 0.87

(0.031) (0.0076)

22.99 10.12

KN2 = 0.74*KM3, Errorvar.= 0.055 , R^2 = 0.91

(0.031) (0.0089)

23.81 6.16

KN5 = 0.45*KM3, Errorvar.= 0.23 , R^2 = 0.47

(0.031) (0.018)

14.39 12.74

KN8 = 0.56*KM3, Errorvar.= 0.20 , R^2 = 0.61

(0.032) (0.016)

17.40 12.44

Part 10 Confirmatory Factor Analysis: CFA Perception about the Impact from Climate Change

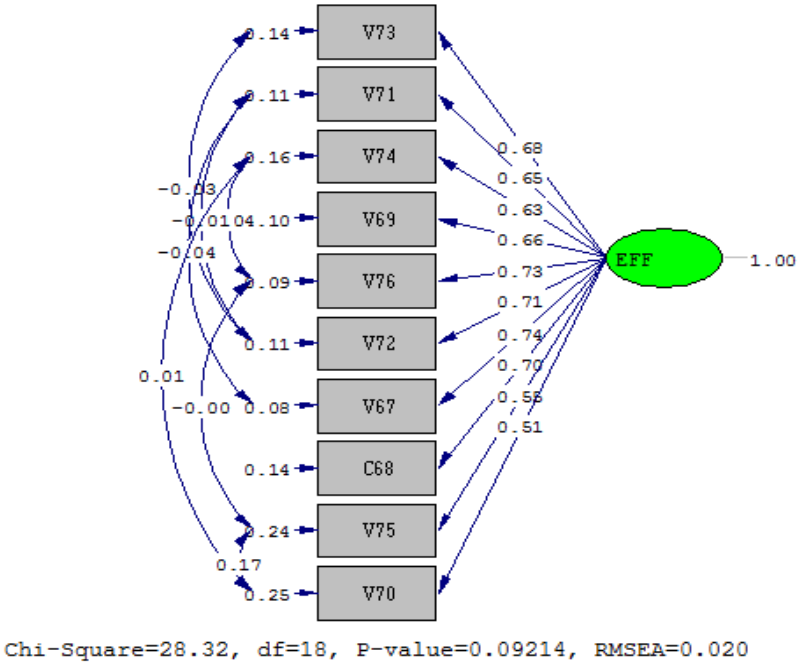

Figure 4.3 Confirmatory Factor Analysis: CFA on Perception about the Impact from Climate Change

According to Figure 4.3, the result of Confirmatory Factor Analysis :CFA makes the sub-elements of knowledge related to the perception about the impact from climate change to have 3 factors, by considering from statistics

Chi-Square	=	28.32 (P = 0.092145)	Pass the threshold
NFI	=	0.99	Pass the threshold
NNFI	=	0.99	Pass the threshold
PNFI	=	0.51	Pass the threshold
CFI	=	0.99	Pass the threshold
IFI	=	0.99	Pass the threshold
CN	=	346.52	Pass the threshold
RMSEA	=	0.023	Pass the threshold
RMR	=	0.013	Pass the threshold
GFI	=	0.97	Pass the threshold
AGFI	=	0.95	Pass the threshold

According to the result of Confirmatory Factor Analysis: CFA, the factors of perception about the impact from climate change are obtained from the analysis of factors under the statistics criteria with measurement equation as follows:

LISREL Estimates (Maximum Likelihood) Measurement Equations

V73 = 0.68*EFF, Errorvar.= 0.14 , R^2 = 0.77

(0.033) (0.011)

20.83 12.20

V71 = 0.65*EFF, Errorvar.= 0.11 , R^2 = 0.80

(0.031) (0.0096)

21.37 11.38

V74 = 0.63*EFF, Errorvar.= 0.16 , R^2 = 0.72

(0.032) (0.013)

19.67 12.42

V69 = 0.66*EFF, Errorvar.= 0.095 , R^2 = 0.82

(0.030) (0.0079)

22.00 12.03

V76 = 0.73*EFF, Errorvar.= 0.089 , R^2 = 0.86

(0.032) (0.0079)

22.81 11.36

V72 = 0.71*EFF, Errorvar.= 0.11 , R^2 = 0.82

(0.032) (0.0098)

21.91 11.38

V67 = 0.74*EFF, Errorvar.= 0.078 , R^2 = 0.88

(0.032) (0.0073)

23.27 10.77

V68 = 0.70*EFF, Errorvar.= 0.14 , R^2 = 0.78

(0.033) (0.011)

21.12 12.30

V75 = 0.55*EFF, Errorvar.= 0.24 , R^2 = 0.56

(0.034) (0.019)

16.37 12.87

V70 = 0.51*EFF, Errorvar.= 0.25 , R^2 = 0.51

(0.033) (0.020)

15.32 13.00

Part 11 Confirmatory Factor Analysis: CFA Perception on the Impact Management

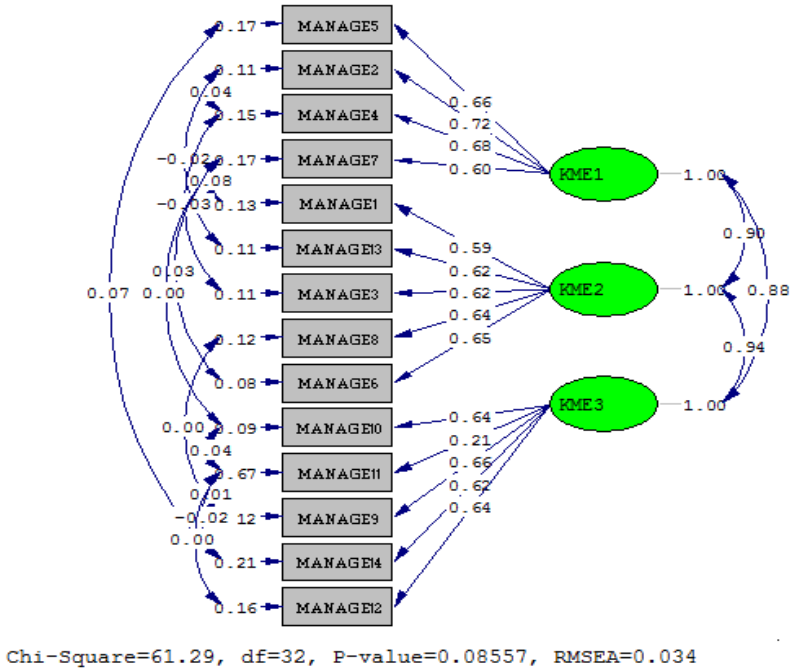

Figure 4.4 Confirmatory Factor Analysis: CFA on Perception on the Impact Management

According to Figure 4.4, the result of Confirmatory Factor Analysis :CFA makes the sub-elements of knowledge related to perception on the impact management to have 3 factors, by considering from statistics

Chi-Square	=	61.29 (P = 0.08557)	Pass the threshold
NFI	=	0.98	Pass the threshold
NNFI	=	0.98	Pass the threshold
PNFI	=	0.52	Pass the threshold
CFI	=	0.99	Pass the threshold
IFI	=	0.99	Pass the threshold

CN	=	452.71	Pass the threshold
RMSEA	=	0.034	Pass the threshold
RMR	=	0.017	Pass the threshold
GFI	=	0.97	Pass the threshold
AGFI	=	0.94	Pass the threshold

According to the result of Confirmatory Factor Analysis: CFA, the factors of perception on the impact management are obtained from the analysis of factors under the statistics criteria with measurement equation as follows:

LISREL Estimates (Maximum Likelihood) Measurement Equations

MANAGE5 = 0.66*KME1, Errorvar.= 0.17 , R^2 = 0.72

(0.034) (0.016)

19.53 10.89

MANAGE2 = 0.72*KME1, Errorvar.= 0.11 , R^2 = 0.83

(0.033) (0.013)

21.79 8.09

MANAGE4 = 0.68*KME1, Errorvar.= 0.15 , R^2= 0.75

(0.034) (0.016)

20.02 9.54

MANAGE7 = 0.60*KME1, Errorvar.= 0.17 , R^2 = 0.68

(0.032) (0.015)

18.69 11.48

MANAGE1 = 0.59*KME2, Errorvar.= 0.13 , R^2 = 0.72

(0.030) (0.011)

19.80 11.91

MANAGE13 = 0.62*KME2, Errorvar.= 0.11 , R^2 = 0.78

(0.029) (0.0095)

20.98 11.47

MANAGE3 = 0.62*KME2, Errorvar.= 0.11 , R^2 = 0.79

(0.029) (0.0092)

21.14 11.41

MANAGE8 = 0.64*KME2, Errorvar.= 0.12 , R^2 = 0.78

(0.031) (0.010)

20.96 11.49

MANAGE6 = 0.65*KME2, Errorvar.= 0.078 , R^2 = 0.84

(0.029) (0.0075)

22.50 10.41

MANAGE10 = 0.64*KME3, Errorvar.= 0.095 , R^2 = 0.81

(0.030) (0.0095)

21.64 10.01

MANAGE11 = 0.21*KME3, Errorvar.= 0.67 , R^2 = 0.064

(0.048) (0.051)

4.48 13.11

MANAGE9 = 0.66*KME3, Errorvar.= 0.12 , R^2 = 0.78

(0.031) (0.011)

20.96 10.56

MANAGE14 = 0.62*KME3, Errorvar.= 0.21 , R^2 = 0.65

(0.034) (0.017)

18.14 11.91

MANAGE12 = 0.64*KME3, Errorvar.= 0.16 , R^2 = 0.71

(0.033) (0.014)

19.46 11.42

Part 12 Confirmatory Factor Analysis: CFA Attitude of Tourists Related to Climate Change

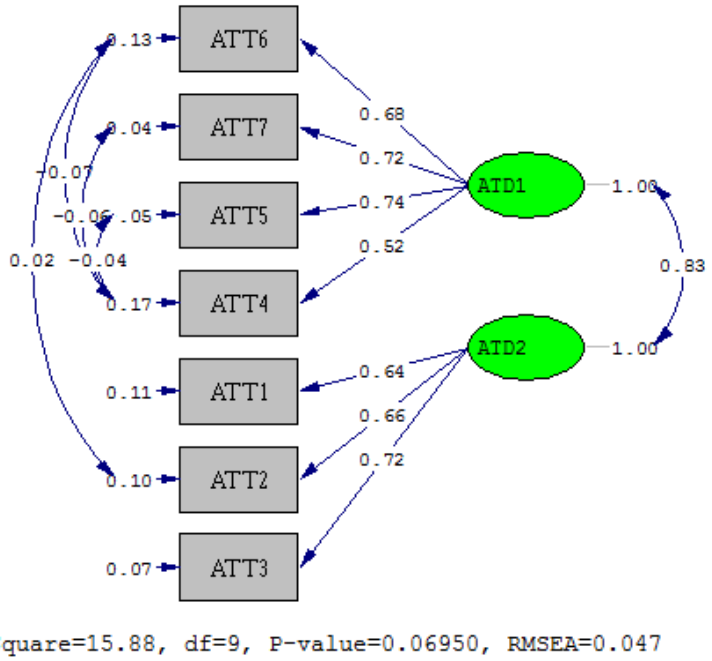

Figure 4.5 Confirmatory Factor Analysis :CFA on Attitude of Tourists Related to Climate Change

According to Figure 4.5, the result of Confirmatory Factor Analysis: CFA makes the sub-elements of knowledge related to the attitude of tourists related to climate change to have 3 factors, by considering from statistics

Chi-Square	=	15.88 (P = 0.06950)	Pass the threshold
NFI	=	1.00	Pass the threshold
NNFI	=	1.00	Pass the threshold
PNFI	=	0.53	Pass the threshold
CFI	=	0.99	Pass the threshold
IFI	=	0.99	Pass the threshold
CN	=	512.71	Pass the threshold
RMSEA	=	0.047	Pass the threshold
RMR	=	0.018	Pass the threshold
GFI	=	0.98	Pass the threshold
AGFI	=	0.96	Pass the threshold

According to the result of Confirmatory Factor Analysis: CFA, the factors of attitude of tourists related to climate change are obtained from the analysis of factors under the statistics criteria with measurement equation as follows:

LISREL Estimates (Maximum Likelihood) Measurement Equations

ATT6 = 0.68*ATD1, Errorvar.= 0.13 , R^2 = 0.78

(0.032) (0.011)

21.14 11.46

ATT7 = 0.72*ATD1, Errorvar.= 0.044 , R^2 = 0.92

(0.030) (0.0065)

24.30 6.77

ATT5 = 0.74*ATD1, Errorvar.= 0.050 , R^2 = 0.92

(0.031) (0.0070)

24.16 7.15

ATT4 = 0.52*ATD1, Errorvar.= 0.17 , R^2 = 0.61

(0.036) (0.024)

14.56 7.06

ATT1 = 0.64*ATD2, Errorvar.= 0.11 , R^2 = 0.79

(0.030) (0.011)

21.14 10.16

ATT2 = 0.66*ATD2, Errorvar.= 0.099 , R^2 = 0.81

(0.030) (0.010)

21.65 9.66

ATT3 = 0.72*ATD2, Errorvar.= 0.071 , R^2 = 0.88

(0.031) (0.0095)

23.10 7.41

Part 13 Confirmatory Factor Analysis: CFA Awareness of Tourists Related to Climate Change

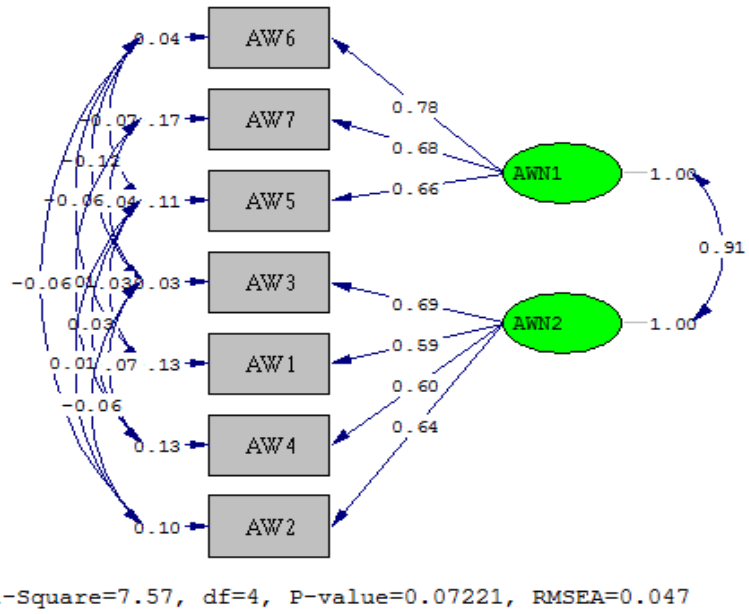

Figure 4.6 Confirmatory Factor Analysis: CFA on Awareness of Tourists Related to Climate Change

According to Figure 4.6, the result of Confirmatory Factor Analysis: CFA makes the sub-elements of attitude of tourists related to climate change to have 3 factors, by considering from statistics

Chi-Square	=	7.57 (P = 0.07221)	Pass the threshold
NFI	=	0.99	Pass the threshold
NNFI	=	0.99	Pass the threshold
PNFI	=	0.52	Pass the threshold
CFI	=	0.99	Pass the threshold
IFI	=	0.99	Pass the threshold
CN	=	472.35	Pass the threshold
RMSEA	=	0.047	Pass the threshold
RMR	=	0.017	Pass the threshold
GFI	=	0.97	Pass the threshold
AGFI	=	0.95	Pass the threshold

According to the result of Confirmatory Factor Analysis: CFA, the factors of attitude of tourists related to climate change are obtained from the analysis of factors under the statistics criteria with measurement equation as follows:

LISREL Estimates (Maximum Likelihood) Measurement Equations

AW6 = 0.78*AWN1, Errorvar.= 0.035 , R^2 = 0.95

(0.036) (0.024)

22.05 1.47

AW7 = 0.68*AWN1, Errorvar.= 0.17 , R^2 = 0.74

(0.035) (0.019)

19.30 8.87

AW5 = 0.66*AWN1, Errorvar.= 0.11 , R^2 = 0.81

(0.033) (0.018)

20.26 5.76

AW3 = 0.69*AWN2, Errorvar.= 0.026 , R^2 = 0.95

(0.031) (0.019)

22.14 1.37

AW1 = 0.59*AWN2, Errorvar.= 0.13 , R^2 = 0.73

(0.030) (0.013)

19.70 10.00

AW4 = 0.60*AWN2, Errorvar.= 0.13 , R^2 = 0.73

(0.031) (0.014)

19.50 9.53

AW2 = 0.64*AWN2, Errorvar.= 0.10 , R^2 = 0.80

(0.031) (0.013)

20.78 7.91

Part 13 Confirmatory Factor Analysis: CFA Tourism Behavior for Responding to Climate Change

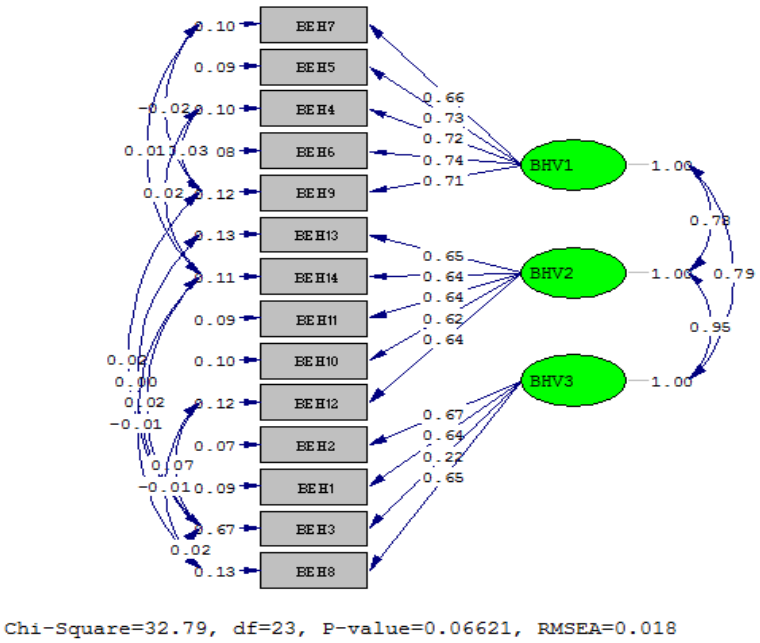

Figure 4.7 Confirmatory Factor Analysis: CFA on Tourism Behavior for Responding to Climate Change

According to Figure 4.7, the result of Confirmatory Factor Analysis: CFA makes the sub-elements of knowledge related to the touring behavior for responding to climate change to have 3 factors, by considering from statistics

Chi-Square	=	32.79 (P = 0.06621)	Pass the threshold
NFI	=	0.99	Pass the threshold
NNFI	=	0.99	Pass the threshold
PNFI	=	0.57	Pass the threshold
CFI	=	0.98	Pass the threshold
IFI	=	0.98	Pass the threshold
CN	=	441.92	Pass the threshold
RMSEA	=	0.018	Pass the threshold
RMR	=	0.019	Pass the threshold
GFI	=	0.95	Pass the threshold
AGFI	=	0.93	Pass the threshold

According to the result of Confirmatory Factor Analysis :CFA, the factors of tourism behavior for responding to climate change are obtained from the analysis of factors under the statistics criteria with measurement equation as follows:

LISREL Estimates (Maximum Likelihood) Measurement Equations

BEH7 = 0.66*BHV1, Errorvar.= 0.097 , R^2 = 0.82

(0.030) (0.0090)

21.82 10.76

BEH5 = 0.73*BHV1, Errorvar.= 0.086 , R^2 = 0.86

(0.032) (0.0081)

22.90 10.66

BEH4 = 0.72*BHV1, Errorvar.= 0.096 , R^2 = 0.84

(0.032) (0.0094)

22.45 10.23

BEH6 = 0.74*BHV1, Errorvar.= 0.079 , R^2= 0.87

(0.032) (0.0077)

23.21 10.29

BEH9 = 0.71*BHV1, Errorvar.= 0.12 , R^2 = 0.82

(0.033) (0.012)

21.70 10.00

BEH13 = 0.65*BHV2, Errorvar.= 0.13 , R^2 = 0.76

(0.031) (0.011)

20.61 11.53

BEH14 = 0.64*BHV2, Errorvar.= 0.11 , R^2 = 0.79

(0.030) (0.0098)

21.22 11.17

BEH11 = 0.64*BHV2, Errorvar.= 0.091 , R^2 = 0.82

(0.029) (0.0083)

21.82 10.90

BEH10 = 0.62*BHV2, Errorvar.= 0.10 , R^2 = 0.79

(0.029) (0.0090)

21.30 11.22

BEH12 = 0.64*BHV2, Errorvar.= 0.12 , R^2 = 0.78

(0.031) (0.010)

20.94 11.31

BEH2 = 0.67*BHV3, Errorvar.= 0.071 , R^2 = 0.86

(0.029) (0.0078)

22.80 9.07

BEH1 = 0.64*BHV3, Errorvar.= 0.092 , R^2 = 0.82

(0.030) (0.0090)

21.81 10.29

BEH3 = 0.22*BHV3, Errorvar.= 0.67 , R^2 = 0.066

(0.046) (0.051)

4.77 13.20

BEH8 = 0.65*BHV3, Errorvar.= 0.13 , R^2 = 0.77

(0.031) (0.011)

20.76 10.91

Part 14 Testing hypothesis

According to hypothesis test, it was found that:

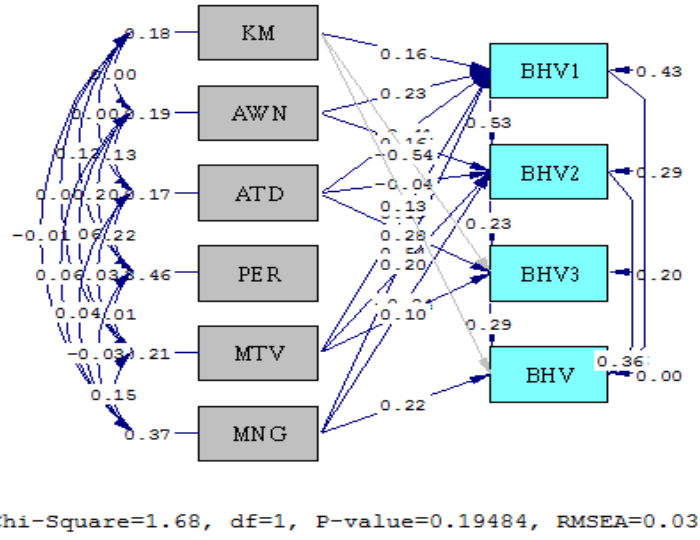

Figure 4.8 Confirmatory Factor Analysis: CFA on Factors that Affect Tourism Behavior for Responding to Climate Change

According to Figure 4.8, result of the Confirmatory Factor Analysis: CFA on factors that affect tourism behavior for responding to climate change

Chi-Square	=	1.68 (P = 0.19484)	Pass the threshold
NFI	=	1.00	Pass the threshold
NNFI	=	0.99	Pass the threshold
PNFI	=	0.022	Pass the threshold
CFI	=	1.00	Pass the threshold
IFI	=	1.00	Pass the threshold
CN	=	2362.53	Pass the threshold
RMSEA	=	0.034	Pass the threshold
RMR	=	0.0020	Pass the threshold
GFI	=	1.00	Pass the threshold
AGFI	=	0.97	Pass the threshold

From the hypothesis test, it can be seen that all values used as considerations in statistics through criteria under statistics theory point out that the model is consistent with empirical data. Therefore, the researcher could show the equation of structure of factors that affect factors that affect tourism behavior for responding to climate change as follows:

LISREL Estimates (Maximum Likelihood) Structural Equations

BHV1 = 0.16*KM + 0.23*AWN + 0.41*ATD + 0.043*PER + 0.19*MTV + 0.54*MNG, Errorvar.= 0.43 , R^2 = 0.39

(0.065) (0.096) (0.099) (0.015) (0.073) (0.053) (0.025)

2.39 2.41 4.12 2.78 2.59 10.22 7.22

BHV2 = 0.53*BHV1 + 0.16*AWN + 0.20*MTV + 0.24*MNG, Errorvar.= 0.29 , R^2 = 0.36

(0.034) (0.079) (0.060) (0.047) (0.017)

15.81 1.99 3.38 5.08 17.22

BHV3 = 0.23*BHV2 + 0.28*ATD, Errorvar.= 0.20 , R^2 = 0.24

(0.029) (0.068) (0.011)

7.93 4.11 7.19

BHV = 0.36*BHV1 + 0.36*BHV2 + 0.29*BHV3, Errorvar.= 0.00 , R^2 = 0.47

(0.0021) (0.0022) (0.0026) (0.0025)

17.82 16.50 11.53 3.22

BHV = 0.63*KM + 0.20*AWN +0.18*ATD + 0.017*PER + 0.22*MTV + 0.23*MNG, Errorvar.= 0.21, R^2 = 0.48

(0.046) (0.068) (0.070) (0.011) (0.052) (0.038) (0.052)

1.97 2.99 2.51 1.98 4.35 6.26 1.94

According to all research results, the researcher can reveal the pattern of factors that affect tourist behavior for responding to climate change in diagram as follows:

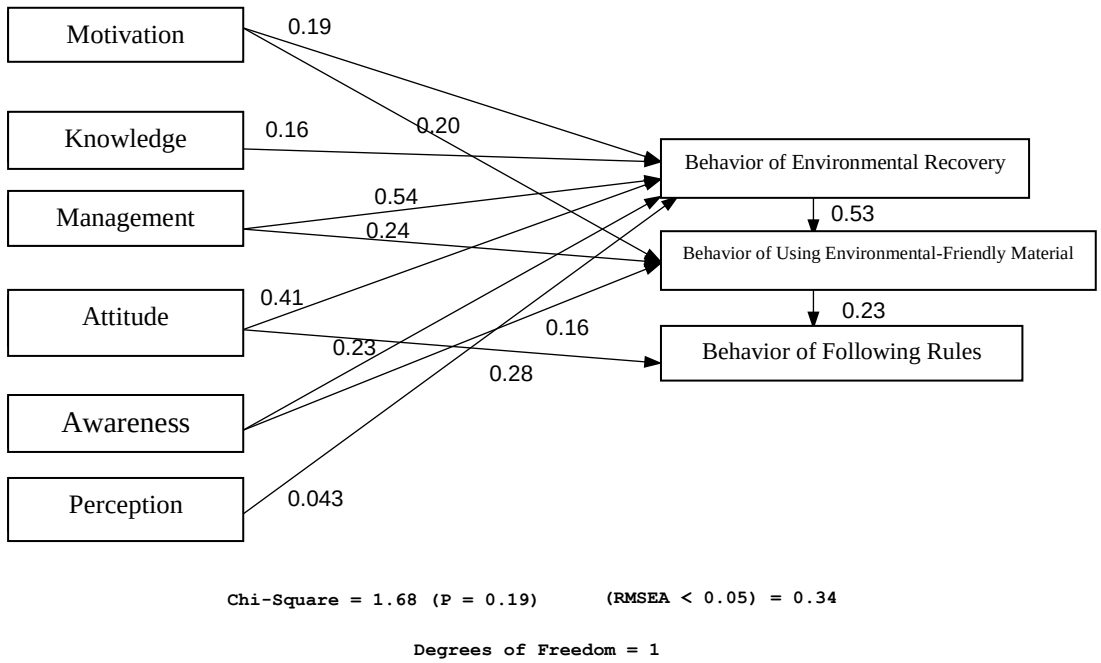

Figure 4.9 The Pattern of Factors that Affect Tourism Behavior for Responding to Climate Change

According to Figure 4.9, it is found that after factor analysis, the factors of touring behavior can be divided into 3 elements including behavior of environmental recovery, behavior of using environmental-friendly material, and behavior of following rules; it is found that factors that affect the behavior of environmental

recovery include factor on management with maximum weight of element of 0.23, motivation with weight of element of 0.19, and lastly on knowledge with weight of element of 0.16. All factors mentioned together predict the touring behavior for responding climate change for 39 percent; on behavior of using environmental-friendly material, it is found that factors that have an effect are factor on management with weight of element of 0.24, secondly it is factor on motivation with weight of element of 0.20, and lastly factor on awareness with weight of element of 0.16. These 3 factors together predict the behavior of using environmental-friendly material for 36 percent.

Finally, the behavior of following rules; there is only one factor that has impact that is on attitude with weight of element of 0.28, with predictor power of 24 percent.

When considering the touring behavior for responding to climate change in overall, it is found that factor that affect the knowledge does affect mostly with the coefficient weight of 0.63 and with positive direction that is, if the knowledge on touring is added to the tourist, the change of behavior would increase as well. Besides, it is found that factors on awareness, attitude, motivation, management and perception on information also affect touring behavior for responding to climate change in positive direction, that is, the increase of these factors as mentioned would affect the touring behavior for responding to climate change definitely. Furthermore, all factors can predict the touring behavior for responding to climate change for 48 percent.

4.4 The Results of the Study of Tourism Management to Respond the Climate Change in Khao Yai National Park (Research Objective 3)

The analysis of the data by in-depth interviewing those involved with tourism in Khao Yai National Park, classified into 4 groups (12 people), including government agencies, (Key Informant 1, 2, 3), climate change and tourism experts (Key Informant 4, 5, 6) tour operators (Key Informant 7, 8, 9) and local community leaders (Key Informant 10, 11, 12) to obtain the data in proposing the way of tourism management to respond the climate change in Khao Yai National Park to relate with the Thai

tourists' behavior who came to Khao Yai National Park with the involved issues as follows: 1) The current situation of climate change on tourism 2) Tourism management to respond the climate change 3) Recommendations to tourism management to respond the climate change. As described below.

1) The Current Situation analysis of Climate Change on Tourism

(1) The Impacts of Climate Change or Global Warming in Thailand in the Present Day

The interview results showed that most key informants had a similar opinion that Thailand was currently experiencing widespread climate change or global warming as it appeared from the media, including the global catastrophe or severe variation of weather. Besides, they could also be manually exposed to the rising temperatures and hotter weather affecting their living conditions.

> Changed dramatically...how does it change? First thing is that the global temperature is higher than ever before. The second is the severe variation of weather. The natural disasters we see more severe than ever. And the third, for the adaptation of plants and animals to the heat of the weather in the future, if the global keeps warming, some animals that cannot be adaptive may be extinct from this world. (Key Informant 4)
>
> There have been dramatic changes like this year that the southern provinces had uncertain rainy season, there were more storms and flood with periodic effects, especially from Chumphon down that transportation was cut off. Moreover, Koh Samui flood which was unlikely. (Key Informant 6)

The local community leaders commented that climate change has affected farmers throughout Thailand from drought such as dry dams causing the agricultural sector's lack of water or the rain for a long time.

> Local farmers faced with drought. Perhaps we will find that the precipitation will be a large amount of rain. In short, if the creek streams cannot keep up, the water flowing into the underground will be less. In the dry season, the groundwater that flows down to nourish the Lam Takong is less. (Key Informant 11)

> The problem at the upstream of the Lam Takong on Khao Yai National Park starts impacting the central water because there are also sandy shoals in the water that flows into the community. In addition, the tree emerges in the middle of the river. And if there is no water bud, the Lam Takong will suffer heavy drought. (Key Informant 12)
>
> In the whole, there is worldwide global warming, including Thailand, we have heard, most of the news will talk about drought and hotter weather every year affecting people's livelihood, especially the agricultural sector. And for the service industry, they also use electricity, especially air conditioning and water consumption of tourists in higher volumes. (Key Informant 9)

(2) Climate Change or Global Warming Affected Tourism in Thailand.

The impact of climate change or global warming has affected tourism in many areas, such as more storms, monsoons and severe flood. The rising sea level caused coastal erosion and saltwater movement into the land and finally it led to freshwater saline problems affecting the communities that relied on freshwater resources. In addition, the rising sea level also directly affected tourists due to the fewer beaches according to key informant 5 that explained...

> Must be affected, such as hot and dry weather can cause forest fires and smog easily. Besides, hot weather affects the mood in tourism management. Germs have adapted to new species such as the new flu. Or, the hot weather that is clearly affecting tourism is a lack of incentive for people traveling in the tropics. Therefore, people in the cold zone have no incentives to travel the same way. (Key Informant 5)

In addition, climate change or global warming also affected the behavior of tourists. It made tourists have to change their plans of travel or worse than that, they may cancel travel.

> Greatly affected. As you may notice, travelers who already plan to travel may cancel their trip. Traveling is more difficult due to seasonal changes, especially in the beach areas such as the beaches in the south like Phuket, Krabi, Trang and Samui. They are beautiful beaches with bright sunshine usually during January but it appears that most of the areas in southern Thailand are flooded. And because of flood news in the South, there is misunderstanding that the water will flood the whole sector. So, travelers who plan to travel to the southern Thailand may move to travel to other competing countries such as Bali, Indonesia, etc. (Key Informant 7)

Part of climate change affected the health of tourists, such as food becoming easier to rot, travelers suffering food poisoning including the danger to tourists caused by wildlife animals. For example, very hot weather caused elephants' aggression. Tourists may be attacked and harmed by them. Therefore, in the tourist attractions must have more security measures for tourists.

> When the weather is hotter, it will affect the behavior of wildlife. In the natural attractions that are easy to see wildlife such as the Khao Yai National Park, often seeing wild elephants walk down the street. And the visitors may be harmed by those elephants. (Key Informant 9)

Just like key informant 1, mentioning climate change that changed wildlife behavior, it can also cause harm to tourists. Therefore, for safety, tourists should strictly follow the instructions of the staff.

> The park is always trying to provide information to tourists who visit Khao Yai that elephants and Khao Yai are together. The hotter weather, the more number of tourists and cars, the more effects on wild elephants' behavior that may be more aggressive. Tourists should strictly follow the instructions of the staff for their safety. (Key Informant 1)

(3) Tourism Affected Climate Change or Global Warming in Thailand

In addition to climate change that affected tourism; on the other hand, tourism industry itself has resulted in climate change as well in terms of the expansion of the tourism industry, increasing number of tourists, or traveling by various kinds of vehicles, especially by plane. The tourists who have come to live in one area would cause a lot of natural resource consumption to support their needs. In addition, the construction of hotel accommodation or facilities that occurred in the attractions was another effect on the environment and global warming. In each construction, it needed many natural ingredients such as wood, stone, water and soil. Moreover, during construction, there must be transportation, which required a lot of energy. Worse than that, such construction would often occur in areas prone to impact the environment in accordance with the opinion of the key informant 5 and key informant 8.

> Certainly affected. Firstly, tourism uses more fossil's energy like gas, coal and oil. And the results from that consumption cause the CO_2 and the greenhouse effect. Secondly, tourism results in more production from animals. And cattle's dung and the degradation of animal carcasses cause NH_4 gas leading to the global warming. And thirdly, the use of foam and freezers causes CFCs affecting the leakage in the atmosphere that is another cause of global warming. (Key Informant 5)
>
> I see that tourism has both direct and indirect impacts. The more travel, the more vehicles used like planes, cars, boats and other vehicles. These vehicles have fuels that are important in increasing carbon dioxide, the main reason why the world is getting hotter. Moreover, if more tourists come to visit, the creation of hotels, restaurants, and other facilities will be more and of course, more energy is needed. This directly affects the rising world temperature. (Key Informant 8)

In addition, the behavior of tourists was another factor that contributed to global warming. From the observation of tourists' behavior, it was found that most often chose to travel by private cars for their convenience and speed.

Tourism did not use only energy of communication because the tourists who have come to live in one area would cause a lot of natural resource consumption to support their needs and their number. It was also found that air conditioners were the most energy consuming appliances, especially the air conditioners of hotels and resorts that mostly turned on their air conditioners all the time in the hallway. And the more number of rooms, the more consumption of air conditioners used.

> Most tourists use their private cars for travel. For example, in the park, there are many problems during the festival. We have to use a lot of staff to facilitate tourists. (Key Informant 1)
>
> Our department tries to do the public relations to educate tourists on global warming and encourage them to use less energy in the tourist attractions to reduce climate change problem. (Key Informant 2)
>
> In the hotel itself, there is a charge for electricity in the hotel. For the use of air conditioners during very hot weather, guests usually spend a lot of time in their rooms. Sometimes the air conditioner is always on. The hotel is trying to get people off the air when they leave and to find measures to save energy, such as using key cards. Gladly, many hotels are beginning to pay more attention to Green Leaf Hotel. (Key Informant 9)

(4) Impacts of Climate Change or Global Warming on Tourism in Natural Attraction of "National Park" (Khao Yai National Park)

National parks throughout Thailand suffered from climate change or global warming that was an uncontrolled phenomenon, such as the amount of water within the waterfall that was insufficient for tourists' recreation. If tourists did not know before, they may not be satisfied.

> The national park is definitely affected because global warming is spreading across all parts of the world. Although the forest will cause cold and moist, tropical warming rays spread throughout the world. Khao Yai National Park is affected by the same situation, such as the case of dry water in Haew Suwat and Haew Narok waterfalls that visitors are not impressed…" (Key Informant 5)

Just like Key informant 1 commenting that the forest area in Khao Yai National Park was still fertile but due to global warming or climate change, the amount of water in tourist attractions decreased. However, when entering the rainy season, the amount of water would increase.

> Forests in the area of Khao Yai National Park are still complete. The lost water is not caused by the forest destroyed but because of the global warming and the climate changed leading to drought without water along the stream. Therefore, Haew Suwat waterfall becomes dry. (Key Informant 1)

Currently, National Park is a natural tourist attraction that tourists use to access services due to government policies that promote tourism as the main income of the country. Thus, the tourism industry has grown significantly while the impact of tourism on various destinations has a clear increase on local resources.

> Definitely affected. Many people escape the bustle of other tourist attractions to approach more naturally, especially in the winter that many national parks hardly have no places to stand. There are traffic jams. Worse than that, some are like the slums caused by the crowding of the tent. Driving up to the park during the long time of traffic jams will emit toxic gases inevitably and it also causes the rising global temperature. (Key Informant 7)

Another factor contributing to the problem of climate change or global warming was the waste from tourism. In tourism activities, there were many types of waste such as food waste, waste from plastic bottles, waste from toilet paper and waste from packaging, etc. The accumulation of that solid waste produced Methane, which contributed to the greenhouse effect and was also a major cause of global warming.

2) Tourism Management of the National Park to Respond the Climate Change

(1) Management to Respond the Impact of Climate Change or Global Warming on the Tourism of Khao Yai National Park in the Present Day

From the overview, the key informants commented that Khao Yai National Park was significantly managed to respond the impact of climate change in terms of waste sorting project, forest plantation project, campaign to stop using foam boxes in the park, training for knowledge as well as creating tourism activities that focused on reducing energy consumption such as cycling.

> I think the National Park managed it as we have seen like waste sorting project, forest plantation project, training for knowledge or preparation of forest fire protection. This is likely to be part of reducing climate change. (Key Informant 5)
>
> Area-level tourism management should consider the environmental tourism. For example, the creation of activities with low levels of greenhouse effect or marketing of public relations to tourists that, "if you come to the National Park, how will you reduce the global warming...? (Key Informant 8)

The entrepreneurs also contributed in promoting the change of tourists' behavior to help mitigate the problem of climate change by offering energy-saving tourism activities, according to key informant 7 saying that:

> Our agencies try to avoid or offer tourist activities that affect climate change. For example, we are promoting the bicycle activities or bicycle tour which is popular among European tourists and/or walking tour as well as a campaign to use more public buses. (Key Informant 7)

In addition, Khao Yai National Park, Nakhon Ratchasima saw the importance of the climate change problem. The project has been set up so that local governments and stakeholders had the knowledge, understanding and awareness of global warming.

> In the past, the provincial government had organized a low carbon city project to encourage local organizations to have solid waste management activities such as sorting waste in the community, bringing waste to use to provide knowledge, insights and awareness to help reduce global warming due to urban activities and to promote policy change and the practice of the departments, Sub-district Administrative Organization (SAO) and Municipality concretely leading to an environmentally friendly way of life. All are operated by Volunteer Network for Natural Resources and Environment (TAT). (Key Informant 11)

However, some informants, such as key informant 8, commented that the national park has not managed tourism to respond the climate change systematically due to the lack of rigor with tourists in complying with the rules and regulations of the park.

> I do not see much organized matter. On the other hand, there are also activities that are more likely to speed up global warming, such as no limits of tourists and cars coming to the park, organizing music or arranging motorcycle caravan into the park or nearby area. (Key Informant 7)

(2) Problems, Obstacles or Constraints to Tourism Management of Khao Yai National Park to Respond the Climate Change or Global Warming and Solutions

People involved in tourism in Khao Yai National Park commented that the major issues that affected the management to respond the climate change were the lack of knowledge about climate change and its impacts both from the personnel who owned tourist attractions, the tourists as well as local communities surrounding the tourist areas. This was because the data on climate change and its effects were academic data difficult to understand. Therefore, information providers must have the abilities and skills much enough to convey information to general tourists and people for their easier understanding according to key informant 5, key informant 7, key informant 6, and key informant 11 stating that:

In general, most tourists do not have any knowledge about global warming that affects tourism. But part of them are aware that climate change or global warming is caused by feelings such as hotter weather, not comfortable condition or from the news of worldwide natural disasters Including in Thailand. Therefore, if tourists do not have any knowledge, they always behave inappropriately and their behavior can affect the global warming without knowing it. (Key Informant 5)

The major obstacle is that officials do not yet have adequate knowledge about climate change and impacts. The main duty of the staff is conservation. Global warming is still viewed as far away. So they do not pay any attention to it. (Key Informant 7)

Providing information on climate change and global warming often uses academic language. This is elusive and it does not appeal people. (Key Informant 6)

For the travel entrepreneurs, the barriers to managing for climate change are lack of information, lack of funding, lack of understanding and access to resources or agencies that support behavior change as well as the presence of so many small entrepreneurs that the sponsoring agencies will be able to clarify thoroughly. (Key Informant 8)

The villagers themselves have no knowledge of this. If they do not know the information from the national park or other associated agencies, they will face more difficulties in participation. This is because the villagers are usually involved in tourist spots at the low levels. (Key Informant 11)

I myself have no knowledge about this. If I do not have the opportunity to participate in the program from the province, I do not know anything about it and neither do the villagers as it is quite difficult to understand. As we all know, climate is warming up, more arid, often severe storms when it rains, something like that. (Key Informant 10)

This corresponded to Key informant 1, which considered that management to cope with climate change required a basic understanding. It also

required long-term planning and took a longer time to see results that was a major obstacle to continuous operation.

> We have to admit that the staff of the park still has a little knowledge about this. So, conveying to tourists the understanding and awareness of the impacts is very difficult. It does not include management and other practices that are a long-term plan. In practice, it may be difficult. (Key Informant 1)

In addition, the fact that the national parks were popular among tourists in traveling a lot often led to the problem that tourists did not always follow the rules and regulations. In addition, the lack of officials' strictness in controlling tourists' behavior, which may be due to their small number that was not enough to care for and provide services to tourists thoroughly. The behavior of some tourists may affect climate change because of those things. Therefore, the authorities must strictly adhere to the regulations. For example, …

> The first thing is National Park staff's neglect letting tourists do activities that affect global warming due to their use of energy materials. The second is to allow too many tourists to visit the park during the New Year or Songkran Festival. This certainly causes a traffic jam as well as global warming. (Key Informant 4)
>
> The problem is not following the rules strictly. The park needs to be careful of deforestation for land without any neglect. (Key Informant 7)
>
> Visitors to Khao Yai not less than 1 million people per year do not follow the rules of the park. And this affects the park. So, the campaign for tourists must be done for their more responsibilities in each visit. (Key Informant 12)

As mentioned above, some tourist behavior may affect climate change. This was due to the fact that modifying the behavior of tourists was difficult and it took time to build understanding, recognizing and raising awareness of the issue of climate change caused by their traveling.

> The problem of climate change partly comes from the behavior of the tourists. They need time to change their behavior. Besides, in motivating people not to use private cars on the trip, it is also quite difficult because many of them have less time and want to fully relax. Mostly, there is a constant need for travel and speed that affects the global warming. (Key Informant 6)

(3) Recommendations for Appropriate Tourism Management in Respond to Climate Change or Global Warming in Khao Yai National Park

Before traveling to each source, tourists needed to plan a trip in advance to get a good travel experience, especially in the National Park, which was a natural attraction with rules and regulations that tourists must strictly follow for their convenience and safety without any effects on the tourist attractions.

> To come here, please have an intention first. You have to plan a trip, listen to news, do homework about what to do and where to go to manage the right time. This will help reduce the problem. (Key Informant 2)

Thailand's national parks, which were popular in tourist destinations, often suffered from congestion, especially during the festival. Nowadays, many national parks are considering the carrying capacity of the area such as tourist season determination and control of tourist volume. For Khao Yai National Park, which was ranked as the national park with many tourist arrivals each year, when there were many tourists, it would affect the environment and the nature of the tourist attractions as well. In addition to the impact on the environment, the behavior of tourists also affected the climate change as well, as Key informant 5 stating that:

> I agree with the limited number of tourists but it must be a true referendum without any outcry. Everyone must respect the rules. But in fact, it is difficult. The park will be hit by the public. Some tourists curse the staff that they have to go far and already pay their money, then why are they prohibited to enter the park? (Key Informant 5)

Khao Yai National Park has been trying to solve the problem of tourist congestion with the system of booking in advance or informing tourists of the condition of the park to let tourists decide on other destinations that may be nearby the park. It helped to spread tourists to surrounding tourist attractions until the final measure, closing the park, which corresponded to Key informant 1, Key informant 2, Key informant 8 and Key informant 4 saying that:

> During the festival season, the number of tourists will be constantly surveyed including the number of overnight accommodations both the lodge and the tent. We have to check in every entrance with the sign stating that there are traffic jams to allow tourists to make decisions. And if it is found that the tourists are not able to respond due to the full area, the entrance will be closed. (Key Informant 1)
>
> Limiting the number of tourists is quite important to help reduce various effects in popular tourist destinations. There are often problems with tourist congestion, especially during the tourist season. The behavior of tourists when they come together becomes a major problem that each of attractions must face just like Khao Yai National Park that greatly focuses on limiting the number of tourists. (Key Informant 2)
>
> We have to limit the number of tourists visiting the park with pre-registration system. (Key Informant 8)
>
> Limiting the number of tourists should be the main measure to control the impact of tourist attractions popular among tourists such as Khao Yai, if there is good enough systematic and standardized management for tourists to understand and accept this system, it is likely to be beneficial to the environment and will continue to lead to a reduction in climate change. Therefore, I agree with the pre-registration system. (Key Informant 4)

Khao Yai National Park has developed a variety of bungalows, camps and tents that were adequate to meet the needs of tourists during the normal tourist season, but were not sufficient during the winter and continuous holidays. However, there were still limited number of accommodations, which may not be

enough to welcome eco-tourists or eco-campers, such as students. Nevertheless, the accommodations in the park needed to improve their quality and management. So, the guidelines to solve the problems should focus on the development of accommodation around the area of the private sector. In addition, the park should encourage tourists to enter the park but to stay overnight outside the park. This was very important in reducing the impact on the park. Besides, the surrounding communities had the benefit of providing accommodation to tourists and there should be the distribution of tourists to the surrounding area of the park.

> The park should support entrepreneurs around the park in persuading tourists to stay outside the park to reduce the impact on the park, such as the problem of garbage caused by too many tourists. Tourists are not responsible for the environment. They bring in the waste but do not bring it out. During the tourist season, the park has to cope with the problem of waste disposal. It's really a problem of a famous tourist destination. (Key Informant 4)
>
> There should be the tourist distribution to attractions nearby to reduce the impacts on the park. In the present day, there is the creation of new attractions around the park to attract tourists to travel. This would be good for the park in order not to burden itself with too many tourists. (Key Informant 3)

Khao Yai National Park faced garbage problem and a lot of waste because every year more than 800,000 tourists visited the Khao Yai National Park. There were many problems caused by tourism activities such as waste laying scattered around the area. As a result, the waste disposal did not reach the amount of garbage. Moreover, animals in the park like monkeys and wild deer seeking for food in the bins caused the scattered garbage. Therefore, the staff needed to seek cooperation from tourists and Sub-district Administrative Organization in the area to develop efficient waste management system. When the number of tourists increased with not enough staff to take care of, the staff will be flexible because they had no time and effort much enough to be strict with tourists. Therefore, Khao Yai National Park faced the problem of safety and regulatory treatments in the eyes of tourists. In doing this, the park crated a project in waste reduction to reduce the impact on the environment and climate change.

> In Khao Yai National Park, there is a campaign to reduce waste and quit feeding in Khao Yai National Park through the 4 Mor rehabilitation of the Khao Yai area, which is the operation that Khao Yai National Park cooperates with Khao Yai Conservation Group. (Key Informant 11)
>
> National parks have a waste restoration program by organizing public relations campaigns in bringing the waste to the area provided by the national park. And that "waste restoration activity" is organized by the park for tourists to bring rubbish to redeem the reward every month. (Key Informant 1)

In the National Park, there were not only tourists who played roles in managing climate change, but there were also entrepreneurs or local communities who played important roles in mitigating or relieving climate change. For example, tourism operators should develop low carbon tourism programs that did not focus on the amount of tourist attractions or tourist activities but focused on experience, memory and fun by quality guides. That kind of tourism program must specify carbon dioxide emission volume and offer carbon offsetting for tourists.

Encouraging the national parks to carry out activities or projects that were environmentally friendly and reduced greenhouse gas emissions, such as the use of bicycles within the tourist destinations and reduction the use of non-biodegradable products like plastic bags was another option to reduce climate change from tourism activities in the national parks. Just like key informant 1 mentioning the Green Park Project, Khao Yai National Park has been selected as a pilot park to reduce the environmental impact and help reduce global warming in the park.

> In the past, Khao Yai was selected as a pilot park for the Green Park Project, which at that time it has implemented some measures, such as tourists having to deposit wet waste and dry waste at the entrance of the 100 baht as a result of the survey that each of them visiting Khao Yai generated waste 0.48 kilograms, and changing the tourists' behavior to use the cloth bag. Moreover, the park asked for cooperation from hotels and communities around Khao Yai to campaign on this. (Key Informant 1)

> For the bike trail on Khao Yai, the park constructed a bike lane of 10 kilometers distance that was a circular route around the park starting from the Sai-Sorn reservoir or Mor Singto along the way of Pong Toong Kwang, tent put up location, Khao Yai Golf Club, the Lam Takong headwater and Surassawadee Youth Camp. Throughout the route, there will be a signpost and a study station for knowledge on the park with the goal to reduce the use of cars as much as possible to take care of the environment in the area. (Key Informant 1)

Just like key informant 11 saying that:

> The construction of the bike lane parallel to the road is good, especially the green color painted on the road for motorcyclists' clear observation that it is a lane for bicycles to prevent the cyclists from accidents. But the good thing is that it is a safe road because it's not the main road where many cars are running. (Key Informant 11)

Promoting cycling activities in Khao Yai National Park to reduce global warming has been popular among many tourists. In the future, the park may develop more bike lanes to reduce the use of cars.

> After the bike lane getting a lot of attention from tourists, they bring their own cars to park at their accommodation and then rent out bikes prepared in front of the park office to spin. Or visitors who have their own bicycles ride their bikes down to nature and exercise, especially during the holiday evenings. This is another way to promote eco-tourism, nature and the environment. In the future, the park may extend further way of bike lane. But we have to look for the route with the least cars running. (Key Informant 1)

> Tourists are more aware and more conscious to cooperate in the waste collection from the area according to the waste restoration program. They do not use foam containers, do not light balloons, do not fire guns or fireworks. But one thing is unlikely to happen is that wildlife come out on the street

whether by feeding monkeys or dumping the garbage laying scattered until the animals come down to eat and maybe hit by the cars. Next year, we will promote more, especially the campaign not to feed animals. (Key Informant 3)

The measures were necessary for the National Park to reduce the problem of changing the environment. It was also necessary to have the cooperation of tourists to adjust their tourism behavior appropriately according to Key informant 6 stating that:

The measures of limiting the number of cars and tourists will not work if there is no change in their tourism behavior along with. Human beings try to adjust nature to themselves. It's time for us to adjust ourselves to nature. (Key Informant 6)

Khao Yai National Park tries to find ways to reduce the impact. For example, the campaign staff educated travelers on how to conserve the environment properly, there were 2-3 entrepreneur training sessions per year, the government and private agencies used Khao Yai National Park as a place for training and seminars and creating environmental consciousness for the youth and employees, cooperation with the Khao Yai Foundation, entrepreneurs, Sub-district Administrative Organization and municipalities to provide training on conservation of the park including military collaborations in patrolling hunting, and police helped take care around the area.

We have to cultivate ecotourism behavior for our children from a very young age. (Key Informant 10)

We have to provide knowledge about global warming to tourists by a demonstration or practice pattern. Officials must strictly supervise and warn them to strictly follow the regulations along with limitation the number of tourists and services according to the park's Carrying Capacity. (Key Informant 4)

It is important to educate the impact of climate change on the relevant sectors, people and communities since most people do not yet have the

information and the impact of global warming by focusing on communication easy to understand and to be touchable. And it can start from themselves and work together with government agencies. (Key Informant 2)

Our company has a warning sign on the door, like "world conservation" and the cars will start and turn on their air conditioners when everyone is ready to leave. (Key Informant 7)

The fact that the tourists can change their habits and reduce the comfort in many things, such as choosing public transport, can reduce all the greenhouse gas emissions. Travel guides, as they work closely with tourists, can communicate and educate tourists with greater global warming caused by the greenhouse gas emissions. They can also persuade travelers to change their habits affecting the increase of greenhouse gas. (Key Informant 6)

Currently, the exposure behavior of tourists on sustainable tourism development is likely to be higher. That is to say tourists will respond to the policy and have a positive attitude towards sustainable tourism development, tourism attraction executives should publish background and causes of the measures, activities as well as the projects to the tourists' awareness. In doing that, tourists are ready to dedicate and participate in all activities, such as donations to preserve tourism and planting trees to reduce global warming.

The television media is used to promote and to educate what the global warming is and how it affects everyday life as well as dissemination information to those involved in the travel industry including communities. (Key Informant 4)

The tourists' behavior today is likely to change as a result of the media's presentation of the violence and the effects of natural disasters caused by climate change. (Key Informant 6)

Raising people's awareness of the obvious effects, such as examples of visible and actual impacts of attractions destroyed by climate change like the higher sea level making some tourist sites vanish; for example, if the beach loses, the number of tourists will also lose. (Key Informant 5)

> The park needs to promote awareness of the impact of climate change on tourism. And there may be a warning of climate change. (Key Informant 6)
>
> In fact, all parties involved in the conservation of tourist attractions, such as entrepreneurs having important roles to play in preserving the natural state and providing accurate information to tourists, especially taking care of the garbage problem. Besides, NGOs and foundations should educate the youth and the general public to create environmentally friendly activities such as reforestation and garbage collection. (Key Informant 2)

Khao Yai National Park had problems with smoke and noise from cars going up to the park, from the park's accommodations itself and from the resorts in the park. The large number of accommodations around the park area disturbed the forest. Therefore, during the rainy season, the forest area has absorbed much less water compared to 20 years ago. It caused hotter weather on Khao Yai National Park than in the past including burning weeds or stubble in agricultural areas around the National Park also caused more air pollution.

> There should be an adjustment to use various vehicles such as the provision of parking lots below the park and letting the tourists use the park's car service. (Key Informant 7)
>
> In the past, Energy Policy and Planning Office considered that Khao Yai National Park was ready to provide public transport because there were both routes for public transport and public bus operators interesting in joining the project as well as being unique in eco-tourism. According to the travelers' opinion, it was found that more than one in three of them commented that if there was a public bus service with an appropriate scheduled bus and fare, they would turn to use public transport to travel. Moreover, if 50% of all tourists chose public transportation, they would help save energy, preserve environment and reduce natural disruption. (Key Informant 5)
>
> Khao Yai is very important as the first national park of Thailand. There is a policy to improve Khao Yai National Park to upgrade to a world class. Today, there is a threat like other World Heritage Sites. Originally, the

park had problems cutting wood fragrant but that problem was already solved. Today, there are a lot of rosewood problems and the growth of tourism business around the Khao Yai area that the park is finding the way to protect. For the Khao Yai area supporting the ASEAN Community, the park will focus on limiting the number of tourists, traffic control as well as setting strict forest conservation measures. At the same time, it will be improved to respond tourists. Private sectors may operate the park's bungalows and Tourist Center to alleviate the burden of about 400 forest guards currently that more than half of them also have to take care of tourism service. The green park development is proceeding to reduce waste and reduce pollution. In the future, the park may not allow the cars into the park area because of the park's sky train service. All of what mentioned above will reduce the impact on Khao Yai as the World Heritage of Thailand. (Key Informant 1)

Thailand should be in control of the automobile conditions and the lifetime determination of all types of the cars including their size. In many countries, the rules are applied and they work. Thailand should consider at this point to reduce global warming. (Key Informant 6)

During the festival, the road to Khao Yai is very crowded traffic. If the tourists park their cars below and use public cars, it will also help reduce congestion on the park. Moreover, villagers will have more income from driving public cars. (Key Informant 11)

All public and private agencies must cooperate because different agencies having different roles and they should help each other work together effectively, especially in term of reduction the global warming. For example, the Tourism Authority of Thailand (TAT) understanding the behavior of tourists most may help communicate information to both entrepreneurs and tourists to get to know the concept of green tourism to raise more awareness to the relevant sectors. (Key Informant 2)

There should be an information hub for research on global warming with all sectors working together as a team. (Key Informant 9)

There should be a teamwork like a network because the various agencies having different expertise need to coordinate their work together. It

> may be necessary to see which of the tourism industry affects most on global warming by finding the best solution starting at this point and then expanding on it. (Key Informant 8)

In summary, it was found that most of the key informants had the same comments on the issue of climate change or global warming affecting all parts of Thailand. Tourism in the national park, which was a natural attraction, may be greatly affected by climate change, including the behavior of more tourists who preferred to travel to the natural attractions caused more impacts on tourist spots. Consequently, all parties involved needed to find appropriate ways to manage climate change.

4.5 Tourism Management Guidelines to Serve the Climate Change under the Context of Tourist Behavior Adaptation: Case Study of Khao Yai National Park (Research Objective 4)

After having studied and gathered the quantitative data related to the knowledge of climate change, motivation in visiting Khao Yai National Park, acknowledgement on climate change, attitudes towards climate change, and awareness of climate change of Thai tourists visiting Khao Yai National Park including qualitative data gained from the in-depth interviews on the key informants related to Khao Yai National Park tourism, the guidelines and recommendations on the tourism management to serve the climate change obtained from the research and provides the guidelines for managing tourism in response to climate change in the context of adjusting tourist's behaviors: Case study of Khao Yai National Park.

1) Area Management

(1) Transportation Management

Khao Yai National Park has two activities of transportation facilities; activity of transportation route arrangement and activity of vehicle management by arranging transportation routes based on the use of least vehicles to be able to go on foot to approach a lot of tourist attractions. The second activity is vehicle management to allow the officers and tourists to travel to the park and travel

to various destinations as well as being used for animal viewing. As the car is one of the factors that affect the management of Khao Yai National Park that is the noise disturbing the animals or the cars hit the wild animals to injure or die, the travelers travel alone always violate the rules such as parking the cars to feed animals, driving at high speed, causing the car accident, etc. The big problem that happens continually is the climate change or global warming caused by cars. Therefore, in order to reduce such problems, the National Park should provide public transportation for visitors to get into Khao Yai National Park. The service should be available at the entrance of the Khao Yai National Park area which is at the two checkpoints. The tourists will park the cars at both checkpoints. In the case that the tourists want to bring their vehicles to Khao Yai National Park, they can do by paying the fee at reasonable rates. The regulations and rules for the use of cars on Khao Yai National Park must be strictly regulated to conserve the natural resources. The use of fee rates must be considered as a measure of vehicle traffic control in the National Park. The speed of vehicles allowed on Khao Yai National Park must be defined up to 60 km/h as well as having the campaign to persuade the tourists to use fewer private cars.

(2) Systematic waste management: Khao Yai National Park encounters the problem of a lot of waste caused by tourism activities especially during the festival. The wastes and residues are found to scatter in the tourist attractions. This is because of the garbage collection not be able to serve the amount of waste. The presence of wildlife such as the monkeys and deer to scatter the trash is also the cause. Consequently, the National Park should categorize the garbage such as fresh garbage, reusable waste, general waste and hazardous or toxic waste. Such waste should be arranged for external removal (The landfill should not be used in this area). The officers disposing the garbage outside the National Park must be in the place where there is the sanitary waste management system and there must be the continuous collection of waste in order to have no residues. The waste bin must be designed not to allow the wildlife to scatter. Meanwhile, there should be the campaign for tourists to bring back the waste by using the black bags to collect garbage into the tourist's car to dump outside in order to help reducing the amount of waste residue. The systematic waste management of the National Park will help reducing the impact of climate change and global warming partly.

(3) Renewable energy management such as using solar energy to take advantage seriously to reduce the use of electricity in the National Park by designing the system sufficiently to meet the needs of tourist energy use as needed. The tourists should be encouraged to use energy economically and cost-effectively. The tourists need to adapt by abandoning the comfort they have had in traveling as well as utilizing the resources as needed in order to reduce the environmental impact and impact of climate change.

(4) Arranging the tourism activities that promote the reduction of energy consumption or environmentally friendly projects and activities related to the conservation of natural resources, for example, providing bicycle routes to encourage tourists to use more bicycles for traveling, arranging the volunteer activities to provide the opportunities for tourists and general people to participate in the activities to help reducing the impact on the environment and the global warming in the National Park.

2) Visitor Management

(1) Defining the Carrying Capacity: Due to the rapidly increasing number of tourists, the congestion is caused in the tourist attractions causing impact on the ecosystems and the environment deteriorating the natural resources to affect the satisfaction of tourists. The key point is to build the capacity as the instruments in preserving ecosystems, environment and tourism resources. It will be the instrument used for determining the number of tourists to suit the area and travel experience. This can be used as the guidelines to manage the tourists and tourist destinations leading to sustainable tourism. The appropriate capacity building for the management of the Khao Yai National Park area to mitigate climate change. The appropriate number of tourists will make the National Park be able to control the tourist behavior more easily.

(2) Educating tourists about climate change and its impacts caused by tourism activities can make the tourists be aware of the importance of compliance to the rules of the National Park, behaviors that will help restoring the environment of the National Park, and the behavior of choosing products friendly to the tourist environment.

3) Community Participation Management

(1) To give the opportunities for the community to participate in tourism management or to encourage the community to have a better understanding on ecotourism and sustainable tourism development in order to develop tourist attractions inside the communities surrounding the National Park. This will help spreading the tourists from the National Park to neighboring tourist sites. It will help reducing the impact on the environment to the National Park. People in the participating community will be proud to be a part of the National Park care. The community feedback and suggestions in various steps will be heard and taken into consideration and treated for better management of the National Park. Meanwhile, the communities, community organizations, and the officers of the National Park will learn together to encourage self-development, organizational development, and network development eventually.

(2) To promote the activities or projects organized by the organizations/foundations to help preserving the environment of the National Park to have the common sense in conserving natural resources and the environment affecting the climate in the National Park.

CHAPTER 5

CONCLUSION

5.1 Introduction

At present, the problem of climate change is an urgent problem that is very important. Tourism, an important economic sector in Thailand, is likely to be affected by global climate change. And part of the problem of climate change is the result of tourists' behavior, especially in the national park area, which is a natural tourist attraction and is the main tourist resource base of Thailand. It is found that each year there will be a lot of tourists. The national park that is popular among tourists is Khao Yai National Park, Thailand' s first national park, with its importance of being part of the Natural World Heritage of "Dong Phayayen-Khao Yai Forest Complex". It can be said that Khao Yai National Park is the prototype of the management of the National Park of Thailand. As a result of the popularity of tourist arrivals, this definitely affects the natural environment and may lead to climate change.

Therefore, the study of tourism management for climate change is very necessary. This is a way to respond to and adapt to the climate change of natural tourist sites in a timely manner. The researcher studied "Tourism management for climate change under the context of adaptation of tourists' behavior in the case study of Khao Yai National Park with the objective 1) to study the behavior of Thai tourists traveling to Khao Yai National Park 2) to analyze and identify factors affecting tourism behavior to cope with climate change of Thai tourists traveling to Khao Yai National Park 3) to study tourism management in support of climate change in Khao Yai National Park, and 4) to propose tourism management guidelines for Khao Yai National Park to cope with climate change under the context of adaptation of tourists' behavior in the case study of Khao Yai National Park. The samples were 600 Thai tourists traveling to Khao Yai National Park and those involved in the Khao Yai National Park tourism including government agencies, private sectors, climate change

and tourism experts, tourism entrepreneurs and 12 local community leaders using a mixed research method in the data analysis of descriptive statistics and qualitative data presented by content analysis.

5.2 Research Conclusion and Discussion

5.2.1 Results from the Research According to the Objective

To study the behavior of Thai tourists traveling to Khao Yai National Park

5.2.1.1 General Tourist Information

Most of the samples were male (59.5%) and female (40.5%). Most of them were between 21-30 years old (41.5%), followed by those aged between 31-40 years (41.2%) and under 21 years (5.0%). 51.2% of the samples were the most common bachelor's degree, followed by the lower bachelor's at 46.0% and higher than the bachelor's degree at 2.8%, respectively. Most of the samples were company employees (31.5%), followed by government employees (19.0%) and private traders (16.5%) with the monthly income lower than 15,000 baht (47.8%). It was followed by the samples with the monthly income of 15,001-30,000 baht (38.5%) and of 30,001-50,000 baht (12.2%). Most of the samples were Bangkok metropolis (44.8%), followed by the samples in the same location of Khao Yai National Park (Saraburi, Nakhon Nayok, Prachin Buri, Nakhon Ratchasima) (21.7%) and followed by the samples in the Central Part (12.5 %), respectively.

Based on the results of a sample of 600 people, overall, the number of Thai tourists was more male than female with the ages range from 21 to 30 years, close to the ages range from 31-40 years. The education was at the bachelor or equivalent level and most of their occupations were company employees with the monthly income lower than 15,000 baht. They could earn themselves, so they could travel to relax and enjoy the new experience, according to Sasiwimol Lertwirat and Sombat Kanjanakij (2012) and Sukhothai Thammathirat University (2001), saying that the need to discover new things was the destruction of monotony in life and that most tourists were domiciled in the central region and were employed by private companies. As a result, they traveled conveniently. In this study, the majority of the samples were domiciled in Bangkok, followed by those who lived in the same

location of Khao Yai National Park (Saraburi, Nakhon Nayok, Prachin Buri, Nakhon Ratchasima).

5.2.1.2 Experience in Visiting the Tourism Area and the Pattern of the Sample's Activities

The majority of the samples visited Khao Yai National Park for the first time (52.0%), followed by already visited Khao Yai National Park (48.0%). Most of them visited with their friends (43.2%), followed by family group (29.5%) and groups mixed with friends, family and tour companies at the same rate of 9.8%. The members traveling were 4-6 people most (36.0%), followed by 1-3 members (31.8%) and more than 10 members (19.5%). Most of the group members reached 350 people. Most of the samples did not stay in Khao Yai National Park (45.8%), followed by the samples staying in the park (15.1%) They used private vehicles in traveling at 79.8%, followed by air-conditioned buses and the tour company' coaches (4.3%). Khao Yai National Park was their main destination for traveling (96.5%). Period time to visit most areas were weekends (89.5), followed by those visiting during festival holidays (7.3%), during weekdays (2.2%), and the samples often chose the trips to Khao Yai National Park during the winter (November to February) (58.0%), followed by the rainy season (July to October) (25.0%) and summer (March-June) (17.0%), respectively. The most popular tourist activity was the scenic/scenery (72.8%), followed by photography (61.5%) and relaxation in peaceful atmosphere (41.0%). The motives for the samples in choosing Khao Yai National Park as their destination were to touch the beautiful nature (average= 4.61, S.D. = 0.51), followed by biodiversity and beauty of plants (average = 4.28, S.D. = 0.64) and various tourism activities (average = 4.24, S.D. = 0.77), respectively.

From experience in visiting the tourism area and the pattern of the sample's activities, it was found that most tourists visited Khao Yai National Park for the first time and often traveled with friends in line with Mathieson and Wall's (2003) saying that tourists tended to travel more privately, with between 4-6 traveling members and to arrive in the mornings and be back in the evenings mostly. Moreover, they often chose to travel by private cars with Khao Yai National Park as their main destination for traveling. Period time to visit most areas were weekends. And most would choose to visit in the winter (November to February) with the samples' most

popular tourist activity was the scenic / scenery. On the other hand, the least popular recreational activity was trekking. The motives for the samples in choosing Khao Yai National Park as their destination were to touch the beautiful nature, consistent with Boonyapak (1986) stating that values of the attractions were the beauty and unique characteristics in itself attracting tourists to travel. Besides, the surrounding area of Khao Yai National Park was also a famous tourist destination known and popular with a large number of tourists.

5.2.1.3 Knowledge of Climate Change

The 5 messages that the samples correctly answered the most were: the prohibition of the use of foam containers within the National Park as part of helping to reduce global warming (98.7 %), followed by more severe floods and storms partly due to climate change (98.5%) and the waste sorting before disposals in the provided areas by the park was one way to reduce global warming (98.0 %), respectively. Most of the samples had high level of climate change knowledge with their correct answers of the questionnaires rating at 9-12 points (84.3%) and the average score was 9.21. The correct answers of the questionnaires were the lowest of 4 points. On the other hand, the correct answers were the highest of 11 points.

Overall, the level of knowledge about climate change on the samples was high. It showed that most of the samples had a good understanding of climate change that may partly come from a lot of public relations from various agencies at present about global warming, including worldwide disasters such as drought and floods. This was consistent with Watcharintorn Somboonpong (2012)' s research saying that most of the samples used to receive information about the impacts of climate change on tourism. And television was the type of media where the samples received information about the effects of climate change or global warming on tourism.

5.2.1.4 Awareness about Climate Change

Most of the key informants had received information about the effects of climate change (69.7%) and never received information about the effects of climate change (30.3%). The type of media most of the samples used to receive information of climate change was television (45.8%), followed by social media (37.0 %) and newspapers (24.7%), respectively. Most of the samples commented that Khao Yai

National Park was affected by climate change (72.0%) and that Khao Yai National Park was not affected by climate change (28.0%). 432 people from the samples (72.0%) recognized the impacts of climate change on Khao Yai National Park in the terms of changing seasons. For example, hotter summers and more arid but shorter winters in the highest levels ($\bar{x}$ = 3.09, S.D. = 2.05), followed by more thunderstorms that affected tourism in the national park ($\bar{x}$ = 3.00, S.D. = 2.00), and the change in biological time (eg. blooming of flowers was different) ($\bar{x}$ = 2.87, S.D. = 1.91), respectively. For tourists' awareness towards tourism management to cope with the climate change of Khao Yai National Park, it was found that the samples were aware of Khao Yai National Park's well-managed waste disposal systematic program such as waste sorting and bringing waste out of the areas at the most average of 4.14, S.D. = 0.83), followed by limited number of tourists ($\bar{x}$ = 4.03, S.D. = 0.91), and the promotion of tourism activities that tourists could use their own strengths, such as cycling and trekking ($\bar{x}$ = 4.01, S.D. = 0.69), respectively.

5.2.1.5 Attitudes of Tourists to Climate Change

The majority of the samples found that messages tourists agreed that the average maximum was that the worthy use of the resources of the National Park helped reduce global warming ($\bar{x}$ = 4.63, S.D. = 0.49), followed by the fact that the national park should do more campaigns to educate tourists about global warming caused by tourism ($\bar{x}$ = 4.57, S.D. = 0.55) and they felt proud to be parts of the voluntary activities with the National Park to reduce global warming ($\bar{x}$ = 4.55, S.D. = 0.55), respectively.

It was also found that the attitudes towards climate change of the samples as a whole were at the high level. It showed that the majority of the samples recognized the importance of climate change or global warming, and realized their bad consequences that may arise from behavior that caused global warming. Therefore, they had attitudes towards global warming at the high level. (Watcharintorn Somboonpong, 2012)

5.2.1.6 Tourists’ Awareness of Climate Change

The fact that most of the samples were aware that energy saving was one way to reduce global warming in the national park was at the highest level ($\bar{x}$ = 4.56, S.D. = 0.53), followed by that global warming that occurred affected the

decreasing of chances in spotting wildlife in national parks ($\bar{x}$ = 4.53, S.D. = 0.56) and climate change or global warming affected tourism activities in the national park ($\bar{x}$ = 4.50, S.D. = 0.52), respectively.

Overall, it was found that tourists' awareness of climate change was correlated with tourism behavior in support of climate change. The results of this study were in line with those of Treechada Loakaewnoo (2015); Bunchon Klaharn and Rungtip Klaharn (2002); Ainhoa, María, and Claudia (2013) studying on the relationship between environmental awareness and environmental behaviors. The research findings suggested that environmental problem awareness led to human understanding and appreciation of environmental values leading to more positive behavior involving environment. Henk (2003) and Sangsan Phumsathan (2013) studied that environmentally responsible behavior derived from environmental values, environmental awareness, and perception of environmental impacts. All of them led to environmentally responsible behavior. Just like the tourism behavior in support of climate change that the samples were aware of climate change and its impacts on tourism. Therefore, the tourism behavior to cope with climate change was initiated.

5.2.2 Results from the Research According to the Objective

To analyze and identify factors affecting tourism behavior to adapt with climate change of Thai tourists traveling to Khao Yai National Park

The research found that factors relating to tourism behavior in support of climate change of tourists could be classified into 3 elements: Environmental rehabilitation behavior, Use of environmentally friendly material behavior and compliance behavior.

Factors affecting environmental rehabilitation behavior were the awareness of climate change management in Khao Yai National Park ranking the highest, followed by climate change attitudes, awareness of climate change, motivation to visit Khao Yai National Park and knowledge of climate change, respectively. All these factors mentioned above together predicted 39% of tourism behavior in support of climate change

Factors affecting the use of environmentally friendly material behavior included awareness of climate change management in Khao Yai National Park,

followed by motivation for visiting Khao Yai National Park and awareness of climate change, respectively. These three factors together predicted the use of environmentally friendly material behavior by 36 %.

Factors affecting compliance behavior included climate change attitudes with the prediction power of 24% of compliance behavior.

When considering tourism behavior in support of climate change of Thai tourists visiting Khao Yai National Park, as a whole, it was found that knowledge factor affected tourism behavior in support of climate change most and in the positive direction. That was to say if given the knowledge of climate change and its impacts to the tourists continued, behavior adjustment to cope with climate change would be also high. Besides, it was also found that awareness factor of climate change, attitudes towards climate change, motivation to visit the park, awareness of climate change management in Khao Yai National Park and awareness of information in climate change also affected tourism behavior in support of climate change in a positive direction. That was to say, adding all these factors would result in the adjustment of tourism behavior of tourists certainly. It was concluded that all factors predicted 48% of tourism behavior in respond the climate change.

5.2.3 Results from the Research According to the Objective

To study tourism management in support of climate change in Khao Yai National Park

Most of the key informants commented that Thailand was facing climate change. Moreover, there was also the opinion that climate change affected tourism. Similarly, tourism itself also affected climate change, especially from the tourists ' behavior. Climate change affected national parks. And certainly, Khao Yai National Park was unavoidably affected by climate change.

Today, Khao Yai National Park has an effort to solve the climate change problem, such as public transport trials for tourists to reduce the energy consumption and traffic congestion within the park during the tourist festival. Furthermore, Khao Yai National Park also attaches extreme importance to waste disposal management since the park has to face the problem of waste caused by tourism activities like remains of garbage found in tourist spots that were scattered due to garbage collection

that does not reach the amount of garbage. A waste restoration program, a campaign for tourists to collect garbage, waste sorting, limited number of tourists with the pre-registration system, educating tourists and the general public about climate change to build knowledge, understanding and awareness to lead to tourists' behavior adjustment. However, some of the key informants said that Khao Yai National Park was not strict if some tourists did not follow the rules of the park. As a result, their behavior definitely affected the environment.

5.2.4 Results from the Research According to the Objective

To propose tourism management guidelines for Khao Yai National Park to cope with climate change under the context of adaptation of tourists' behavior in the case study of Khao Yai National Park

Based on a study of tourism management in response to climate change under the context of adaptation of tourists' behavior in the case study of Khao Yai National Park, it could be concluded that Khao Yai National Park should have a set of management guidelines for mitigating climate change in three main issues as follows : 1) Spatial Management 2) Visitor Management 3) Community Participation Management

1) Spatial Management

(1) Khao Yai National Park had to carry out the waste disposal seriously since garbage problem was one thing that affected climate change or global warming. There should be waste sorting as fresh garbage and general waste (classified into 2 categories: recycle or reuse waste and general waste). For toxic waste or hazardous waste, the park should provide containers to support only hazardous waste to facilitate the gathering and disposals. In addition, the park also should educate and start a campaign for visitors about how to separate the waste properly as well as a campaign to encourage tourists to use products that were environmentally friendly.

At present, the Pollution Control Department is trying to push forward Khao Yai to be the first prototype park free of waste and waste water. Initially, there was the joint design of trash and garbage collection to suit local conditions and to protect wildlife from scrabbling for food. Besides, giving knowledge to tourists as well as the waste and wastewater management system in the whole area were also applied.

(2) Khao Yai National Park needed to have transportation systematic management since in the past, the park faced a lot of problems from cars' toxic smoke going up to the park. Furthermore, many surrounding accommodations also disturbed forest condition. As a result, during the rainy season, the forests absorbed less water compared to 20 years ago, causing the hotter weather on Khao Yai National Park than in the past. Worse than that, the burning of stubble or weeds in agricultural areas around the park also caused more air pollution and impacts on climate change. Therefore, Khao Yai National Park had to encourage the use of public transportation in the park seriously and continuously to reduce traffic congestion problem during the tourist festival. What's more, visitors should be encouraged by the park to change their behavior in decreasing the use of private cars in order to save energy as well as helping reduce the number of wildlife car accidents. Similarly, the provision of tourist coaches to major tourist attractions, publicity of the vehicle use and their parking areas in the park, speed limits on driving, the determination of the vehicles' size and the appropriate parking spots should be put into practice.

2) Khao Yai National Park required the appropriate visitor management that was the strict carrying capacity like the implementation of tourist season, control the number of tourist arrivals, the pre-registration system, educating tourists and creating a consciousness for them such as within the tourist center, there should be the information provided to educate tourists about climate change and its impacts including recommendations or instructions for tourists to reduce the impacts of climate change. Also, there should be media for various public relations and knowledge about climate change suitable for tourists of different ages, both in Thai and English as well as educating tourists on energy saving and waste disposal in a proper way.

3) Community Participation Management in Khao Yai National Park should provide opportunities for local communities to participate in tourism management and to recognize the impacts of climate change to enable the community to participate in the care and conservation of natural resources in national park. Khao Yai National Park should support organizations or conservation programs initiated by local communities in order to have alignment in conservation of natural resources.

Khao Yai National Park must campaign to educate local communities to conserve the environment in the right way, to train and educate entrepreneurs around the national park including letting government and private agencies use the Khao Yai National Park area as a place for training and seminars in creating the conscious mind in environmental conservation for youth and employees. In addition, the cooperation between organizations, foundations, entrepreneurs and local government in training to educate the conservation of national parks to develop the potential of local government and tourism entrepreneurs including promoting the participation of communities in the development and management of eco-tourism and sustainable tourism should be operated.

5.3 Recommendations

5.3.1 Recommendations for the National Park and Related Agencies

1) Due to the limited parking area, the National Park should concern about the carrying capacity by limiting the amount of car allowed to park in the certain area and identify the period of in and out time. In addition, tourists should have encouraged to use public transportation to respond the climate change issues.

2) The National Park should apply the efficiency electricity car for the internal transferring around the area to minimize personal car usage.

3) The National Park should adapt the natural energy usage, for example, solar energy and waterfall power as renewable energy.

4) The National Park should develop the interpretation system to educating tourists especially for about the impacts of climate change. Additionally, the minimum energy usage of tourism activities should by applied. Also, encouraging tourists to use environmental-friendly products and to follow rules and regulations of the park, including behavior of environmental recovery.

5) The National Park should encourage and publicize for the tourists' acknowledgement in rules and regulation of the area usage for the behavior adaptation to respond climate change.

6) The National Park should educate tourists about climate change and its impacts continuously to make tourists perceive and aware of the effects of climate change and change their tourism behavior.

7) The National Park should develop the capacity of personnel to have a better understanding of climate change and its impact to convey knowledge to tourists and the general public.

8) In adaptation to climate change, the national park should have clear tourism management guidelines for climate change and in the same direction with other agencies or sectors associated.

9) The national park and various related agencies will have to pay attention to the implementation of the plans, policies and measures to cope with climate change that have been defined seriously and continuously.

10) Government agencies such as the Tourism Authority of Thailand, Nakhon Ratchasima Office as well as Tourism and Sports in Nakhon Ratchasima must play an important role in giving education and understanding the impacts of climate change on tourism. Moreover, there should be public relations and tourism activity/project creation to help reduce global warming in tourist destinations for tourists' or communities' awareness and participation continuously.

5.3.2 Recommendations for Future Research

1) Research on tourism management should be undertaken to respond the climate change in other national parks different from the study area of Khao Yai National Park to compare the results in case of different characteristics and types of national parks and to make the information more diverse.

2) Foreign tourists should be further studied in the research as the population and samples to be aware of the factors that influence their behavior in support of climate change. As a result, there will be a plan for tourism management to cope with climate change that encompasses all types of tourists.

3) Continuous and serious dissemination of knowledge about climate change and its impacts to tourists and the general public should be continued. Due to the results of the study finding that knowledge about climate change was correlated with tourism behavior to cope with climate change, knowledge of climate change is an important factor in making tourists aware of and have a positive attitude towards their behavior adjustment in support of climate change.

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APPENDICES

APPENDIX A

QUESTIONNAIRE

QUESTIONNAIRE

Tourism Management in Response to the Climate Change under the Context of Tourists' Behavior Adaptation: Case Study of Khao Yai National Park

This questionnaire is a part of the data collection for the dissertation of Yulada Supsomboon, a student Doctor of Philosophy Program in Integrated Tourism Management, Faculty of Management and Tourism, National Institute of Development Administration. The purpose is to present "tourism management guideline to respond the climate change under the context of behavior adaptation of the tourists: case study of Khao Yai National Park."

The research hopes that you will give the complete information that benefits to the research. In addition, your information and opinion will be kept confidential by the research and it will be used for the research purpose only.

Part 1 General Information

Part 2 Visiting Experiences, Travel and Tourism Activities

Part 3 Knowledge about the climate change

Part 4 Perception of the climate change

Part 5 Attitude of the tourists towards the climate change

Part 6 Awareness of the tourists towards the climate change

Part 7 Behavior of the tourists to respond the climate change

The researcher would like to thank you for spending your precious time to respond this questionnaire.

Direction: Please fill the empty space and/or checking ✓ in ❑ that matches your opinion

Part 1 General Information

1. Gender

❑ 1) Male ❑ 2) Female

2. Age

❑ 1) Less than 21 years old ❑ 2) 21 - 30 years old

❑ 3) 31 - 40 years old ❑ 4) 41 - 50 years old

❑ 5) 51 - 60 years old ❑ 6) More than 61 years old

3. Education

❑ 1) Lower than bachelor's degree ❑ 2) Bachelor's degree

❑3) Higher than bachelor's degree ❑ 4) Other (Please indicate).....

4. Current Job

❑ 1) Student ❑ 2) State Officer

❑ 3) State Enterprise Officer ❑ 4) Commerce/Business Owner

❑ 5) Employee ❑ 6) Housewife/Househusband

❑ 7) Self-employment ❑ 8) Retirement

❑ 9) Other (Please indicate).....

5. Monthly Income

❑ 1) Lower than 15,000 Baht ❑ 2) 15,001 – 30,000 Baht

❑ 3) 30,001 – 50,000 Baht ❑ 4) More than 50,001 Baht

6. Country of residence

❑ 1) In the areas of Khao Yai National Park (Saraburi, Nakhon Nayok, Prachinburi, Nakhon Ratchasima

❑ 2) Bangkok ❑ 3) Central Region

❑ 4) East Region ❑ 5) Western Region

❑ 6) Northern Region ❑ 7) Southern Region

❑ 8) North-Eastern Region

Part 2 Visiting Experiences, Travel and Tourism Activities

1. Have you ever visited Khao Yai National Park?

❑ 1) Never ❑ 2)Yes, ...times

2. Is Khao Yai National Park your highlight destination of this travel?

❑ 1)Yes ❑ 2) No

3. When you mostly love to visit Khao Yai National Park? (Please select only one)

❑ 1) Weekday ❑ 2) Weekend

❑ 3) Holiday ❑ 4) Vacations

❑ 5) Other please indicates.....

4. Which month have you mostly visited? (Please select only one)

❑ 1) Mar-Jun ❑ 2) Jul-Oct ❑ 3) Nov-Feb

5. Please indicate the type of your travel group (Please select only one)

❑ 1) Friends ❑ 2) Travel Agency

❑ 3) Family ❑ 4) Alone

❑ 5) Family & Friends ❑ 6) Other please indicate.....

6. Number of your traveling group.....people (including yourself)

7. During this visit at Khao Yai National Park, do you stay there or one-day trip?

❑ 1) One-day trip ❑ 2) Night stays

8. Which vehicle do you use to visit Khao Yai National Park?

❑ 1) Private Car ❑ 2) Air-conditioning bus

❑ 3) Motorcycle ❑ 4) Bicycle

❑ 5) Van/taxi ❑ 6) Tour agency bus

❑ 7) Other please indicates.....

9. Which activity you join during your trip at Khao Yai National Park (Please select from your real plan)

❑ 1) Sightseeing ❑ 2) Walking through nature trail

❑ 3) Having a picnic ❑ 4) Swimming at waterfall

❑ 5) Camping ❑ 6) Observing butterflies

❑ 7) Taking a rest ❑ 8) Watching birds

❑ 9) Shedding animals ❑ 10) Taking photos

❑ 11) Trekking ❑ 12) Cycling

❑ 13) Rafting ❑ 14) Other please indicate.....

10. Which level of your motivation that is important to the decision to visit a national park?

Motivation to visit Khao Yai National Park	**Level of Importance**				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
1) Being well-known and world heritage					
2) Being closer the nature and being among					
3) Safety at tourism destination					
4) Weather					
5) Convenience transportation					
6) Facilities					
7) Tourism activities					
8) Opportunities to see the wild animals					
9) Biodiversity and beauty of plants					
10) Traveling expenses					

Part 3 Knowledge about the Climate Change

Question	**Answer**	
	Right	**Wrong**
1. Climate change means a phenomena of global warming causing a continuous increase of average temperature in the atmosphere and earth surface and climate variability.		
2. Global warming has the same meaning as climate change.		
3. Global warming happens when global temperature increases because of greenhouse effect.		
4. Carbon Dioxide is a main cause of global warming.		

Question	Answer	
	Right	**Wrong**
5. Flood and storm have more violence because of climate change.		
6. If the forest area is decreased, carbon dioxide is increasingly accumulated in the atmosphere causing an increase of heat at the earth surface and atmosphere.		
7. Causes of disease growth is not related to climate changes.		
8. Tourism is an accelerant of global warming.		
9. Traveling by private car causes more effects than traveling by other vehicles.		
10. Tourists' behaviors is a cause of global warming.		
11. Prohibition of foam wares at the national park is a measure to decrease global warming...		
12. Sorting out waste before throwing it to the bin is a way to decrease global warming.		

Part 4 Perceptions of Tourists towards Climate Change

1. Have you ever received the news about the impact of the climate change towards tourism?

❑1) Yes ❑2) Never (Skip to No. 3)

2. Where have you received the news about the impact of the climate change towards tourism? (You can choose more than one)

❑ 1) TV programs ❑ 2) Tourism manual

❑ 3) Tourism program ❑ 4) Social Media

❑ 5) Website ❑ 6) Guide

❑ 7) Leaflet/Brochure ❑ 8) Newspaper

❑ 9) Friends ❑10) Public Relation sign

❑11) Other please indicates.....

3. Do you think that Khao Yai National Park receives the impact from the climate change or not?

❑1) Yes, it does. ❑2) No, it doesn't. (Skip to No.5)

4. If Khao Yai National Park receives the impact from the climate change, do you think which level of it?

Perception of the climate change	**Level of Impact**				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
1. Season change such as higher temperature and drought in summer, shorter duration of winter					
2. Quantity of water in water resources decreases such as water fall running dry					
3. An increase of wildfire at the national park					
4. An increase of storms affecting tourism at the national park					
5. Extinction of seeds and local animals.					
6. An increase of new plants and animals from other sources					
7. Biological time duration change such as change of flower blossom					
8. Tourism activities in different seasons such as inability to swim at the waterfall since it runs dry					
9. A decrease of opportunities in seeing wild animals					
10. A decrease of fertility and beauty of plants					

5. Do you think which level Khao Yai National Park can manage its tourism to respond the climate change?

Perception of management	**Level of Awareness**				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
1. Number of tourists limitation					
2. Tourism activity support encouraging exercising such as cycling, trekking					
3. Usage of natural energy such as solar energy and water energy from waterfall as renewable energy					
4. Standard services of toilet and accommodation for ecotourism					
5. Renovation of existing houses and buildings					
6. Providing vehicle services such as electric cars servicing the tourists at service points to save energy and decrease pollution					
7. Campaign of tree planting in the decadent areas and increasing green areas in the national park					
8. Campaign of environmentally friendly products usage					
9. Information services about effects of climate change and global warming to tourists					
10. Information services towards how to decrease effects of climate change					

Perception of management	Level of Awareness				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
11. Standard refuse disposal such as waste separation or bringing all wastes to outside areas					
12. Transportation and vehicle management based on the least usage of vehicle to decrease air pollution					
13. Motivation and rewarding measures to tourists helping decrease pollution					
14. Clear service areas specification					

Part 5 Attitude of the Tourists towards the Climate Change

Attitude	Level of Attitude				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
1) People should worthily use resources at the national park to decrease global warming problems.					
2) I am proud to participate in volunteering activities with the national park to decrease global warming problems.					
3) There should be campaign giving information to tourists about global warming caused by tourism.					

Attitude	Level of Attitude				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
4) Deforestation causes climate change in the national park.					
5) Decrease of private cars for tourism can decrease global warming at the national park.					
6) I do not believe that strictly following rules and regulations of the national park helps decrease climate change and global warming problems.					
7) Climate change or global warming effects problems should be mainly solved by related government sectors.					

Part 6 Awareness of the Tourists towards the Climate Change

Awareness	Level of Awareness				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
1) Global warming is a problem affecting tourism at the national park.					
2) Tourists' behaviors also cause climate change or global warming.					
3) The best solution for global warming problem at the national park is adjusting tourists' behaviors in using resources.					

Awareness	Level of Awareness				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
4) Nurturing tourists' conscious to give importance to global warming problem solving is a lifelong solution.					
5) Climate change or global warming affect tourism activity design at the national park.					
6) Economical use of energy is a way to decrease global warming problems at the national park.					
7) Global warming affects a decrease of opportunities in seeing wild animals.					

Part 7 Behavior of the Tourists to Respond the Climate Change

Behavior	Level of Behavior				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
1) Strictly following rules and regulations of the national park					
2) Studying information about tourist destinations and planning before traveling					
3) Doing activities that do not destroy national resource and environment					
4) Participating volunteering activities to conserve national park such as keeping waste					

Behavior	Level of Behavior				
	Very much	**Much**	**Neutral**	**Few**	**Very Few**
5) Denoting money to environmental conservation and restoration activities in the national park					
6) Economical using resources of national park such as water and electricity					
7) Decreasing frequency of annual travel but expand time duration of each time to be longer					
8) Traveling on provided nature trail					
9) Using public services rather than private cars					
10) Staying at accommodation of the national park since it is more friendly to environment than luxury hotel					
11) Eating local food and buying local products at the tourist destinations					
12) Separating waste before throwing it at the provided areas in the national park					
13) Trying to decrease amount of waste					
14) Doing tourism activities releasing low carbon dioxide such as taking a view and cycling					

Thank you for your time

APPENDIX B

INTERVIEW FORM

Interview Form for Government Organizations/Experts

Part 1 Personal Information of Interviewees

1. Name of informant .....
2. Position .....
3. Agency affiliated …….....

Part 2 Current Situation of Climate Change and Tourism

1. At present, is Thailand experiencing the problem of climate change or global warming? How?
2. Do you think that climate change or global warming is affecting tourism in Thailand? How?
3. Do you think that tourism affects Thailand's climate change or global warming? How?
4. Do you think that tourism in nature attractions like "the national park" is affected by climate change or global warming? How?

Part 3 Tourism Management of the National Park for Climate Change

1. Do you think that in the present Khao Yai National Park manages to cope with the effects of climate change or global warming on tourism? How?
2. What do you think is the problem, obstacle or constraint to tourism management of Khao Yai National Park in response to climate change or global warming? And how should there be a solution?
3. What suggestions do you have for appropriate tourism management in response to climate change or global warming in Khao Yai National Park?

Interview Form for Tourism Entrepreneurs

Part 1 Personal Information of Interviewees

1. Name of informant .....
2. Position .....
3. Agency affiliated …….....

Part 2 Current Situation of Climate Change and Tourism

1. At present, is Thailand experiencing the problem of climate change or global warming? How?
2. Do you think that climate change or global warming is affecting tourism in Thailand? How?
3. Do you think that tourism affects Thailand's climate change or global warming? How?
4. Do you think that tourism in nature attractions like "the national park" is affected by climate change or global warming? How?

Part 3 Tourism Management for Climate Change

1. In the present, is your organization managed to cope with the effects of climate change or global warming on tourism? How?
2. What do you think is the problem, obstacle or constraint to tourism management in response to climate change or global warming? And how should there be a solution?
3. What suggestions do you have for appropriate tourism management in response to climate change or global warming in Thailand?

Interview Form for Tourism Community Leaders

Part 1 Personal Information of Interviewees

1. Name of informant .....
2. Position .....
3. Agency affiliated …….....

Part 2 Current Situation of Climate Change and Tourism

1. At present, are Thailand and your community experiencing the problem of climate change or global warming? How?
2. Do you think that climate change or global warming is affecting your ways of life and tourism in your community? How?
3. Do you think that your livelihood affects Thailand's climate change or global warming? How?
4. Do you think that the attractions in your community are affected by climate change or global warming? How?

Part 3 Tourism Management for Climate Change

1. In the present, are your attractions in your community managed to cope with the effects of climate change or global warming on tourism? How?
2. What do you think is the problem, obstacle or constraint to tourism management in response to climate change or global warming? And how should there be a solution?
3. What suggestions do you have for appropriate tourism management in response to climate change or global warming in your community?

APPENDIX C

ITEM-OBJECTIVE CONGRUENCE RESULTS

Item-Objective Congruence Results

[1 = Consistent, 0 = Do not confirm, -1 = Inconsistent]

Items, Experts, Scores	1	2	3	4	5	Total	Mean
Part 1 General Information							
1. Gender	1	1	1	1	1	5	1
1) Male	1	1	1	1	1	5	1
2) Female	1	1	1	1	1	5	1
2. Age	1	1	1	1	1	5	1
1) Less than 21 years old	1	1	1	1	1	5	1
2) 21 - 30 years old	1	1	1	1	1	5	1
3) 31 - 40 years old	1	1	1	1	1	5	1
4) 41 - 50 years old	1	1	1	1	1	5	1
5) 51 - 60 years old	1	1	1	1	1	5	1
6) More than 61 years old	1	1	1	1	1	5	1
3. Education	1	1	1	1	1	5	1
1) Lower than bachelor’s degree	1	1	1	1	1	5	1
2) Bachelor’s degree	1	1	1	1	1	5	1
3) Higher than bachelor’s degree	1	1	1	1	1	5	1
4) Other (Please indicate).....	1	1	1	1	1	5	1
4. Occupation	1	1	1	1	1	5	1
1) State Officer	1	1	1	1	1	5	1
2) Commerce/Business Owner	1	1	1	1	1	5	1
3) State Enterprise Officer	1	1	1	1	1	5	1
4) Student	1	1	1	1	1	5	1
5) Employee	1	1	1	1	1	5	1
6) Housewife/Household	1	1	1	1	1	5	1
7) Other	1	1	1	1	1	5	1
5. Monthly Income	1	1	1	1	1	5	1
1) Lower than 15,000 Baht	0	1	1	1	0	3	0.6
2) 15,001 – 30,000 Baht	1	1	1	1	1	5	1
3) 30,001 – 50,000 Baht	1	1	1	1	1	5	1
4) More than 50,001 Baht	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
6. Country of residence	1	1	1	1	1	5	1
1) The same province with Khao Yai National Park location (Saraburi, Nakhon Nayok, Prachinburi, Nakhon Ratchasima)	1	0	0	0	1	2	0.4
2) Bangkok	1	1	1	1	0	4	0.8
3) Central region	1	1	1	1	1	5	1
4) Eastern region	1	1	1	1	1	5	1
5) Western region	1	1	1	1	1	5	1
6) Northern region	1	1	1	1	1	5	1
7) Southern region	1	1	1	1	1	5	1
8) Northeastern region	1	1	1	1	1	5	1
Part 2 Visiting Experiences, Travel and Tourism Activities							
1. Have you ever visited Khao Yai National Park?	1	1	1	1	1	5	1
1) Never	1	1	1	1	1	5	1
2) Yes,.....times	1	1	1	1	1	5	1
2. Is Khao Yai National Park your highlight destination of this travel?	1	1	1	1	1	5	1
1) Yes	1	1	1	1	1	5	1
2) No	1	1	1	1	1	5	1
3. When you mostly love to visit Khao Yai National Park? (Please select only one)	1	1	1	1	1	5	1
1) Weekday	1	1	1	1	1	5	1
2) Weekend	1	1	1	1	1	5	1
3) Holiday	1	1	1	1	1	5	1
4) Vacations	1	1	1	1	1	5	1
5) Other please indicates.....	1	1	0	1	1	4	0.8
4. Which month have you mostly visited? (Please select only one)	1	1	1	1	1	5	1
1) Mar-Jun	1	1	1	1	1	5	1
2) Jul-Oct	1	1	1	1	1	5	1
3) Nov-Feb	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
5. Please indicate the type of your travel group (Please select only one)	1	1	1	1	1	5	1
1) Friends	1	1	1	1	1	5	1
2) Travel Agency	1	1	1	1	1	5	1
3) Family	1	1	1	1	1	5	1
4) Alone	1	1	1	1	1	5	1
5) Family & Friends	1	1	1	1	1	5	1
6) Other please indicate.....	1	1	1	1	1	5	1
6. Number of your traveling group .....people (including yourself)	1	1	1	1	1	5	1
7. During this visit at Khao Yai National Park, do you stay there or one-day trip?	1	1	1	1	1	5	1
1) One-day trip	1	1	1	1	1	5	1
2) Night stays	1	1	1	1	1	5	1
8. Which vehicle do you use to visit Khao Yai National Park?	1	1	1	1	1	5	1
1) Private Car	1	1	1	1	1	5	1
2) Air-conditioning bus	1	1	1	1	1	5	1
3) Motorcycle	1	1	1	1	1	5	1
4) Bicycle	1	1	1	1	1	5	1
5) Van/taxi	1	1	1	1	1	5	1
6) Tour agency bus	1	1	1	1	1	5	1
7) Other please indicates.....	1	1	1	1	1	5	1
9. Which activity you join during your trip at Khao Yai National Park (Please select from your real plan)	1	1	1	1	1	5	1
1) Sightseeing	1	1	1	1	1	5	1
2) Walking through nature trail	1	1	1	1	1	5	1
3) Having a picnic	1	1	1	1	1	5	1
4) Swimming at waterfall	1	1	1	1	1	5	1
5) Camping	1	1	1	1	1	5	1
6) Observing butterflies	1	1	1	1	1	5	1
7) Taking a rest	1	1	1	1	1	5	1
8) Watching birds	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
9) Shedding animals	1	1	1	1	1	5	1
10) Taking photos	1	1	1	1	1	5	1
11) Trekking	1	1	1	1	1	5	1
12) Cycling	1	1	1	1	1	5	1
13) Rafting	1	1	1	1	1	5	1
14) Other please indicate.....	1	1	1	1	1	5	1
10. Which level of your motivation that is important to the decision to visit a national park?	1	1	1	1	1	5	1
1) Being well-known and world heritage	1	1	1	1	1	5	1
2) Being closer the nature and being among	1	1	1	1	1	5	1
3) Safety at tourism destination	1	1	1	1	1	5	1
4) Weather	1	1	1	1	1	5	1
5) Convenience transportation	1	1	1	1	1	5	1
6) Facilities	1	1	1	1	1	5	1
7) Tourism activities	1	1	1	1	1	5	1
8) Opportunities to see the wild animals	1	1	1	1	1	5	1
9) Biodiversity and beauty of plants	1	1	1	1	1	5	1
10) Traveling expenses	1	1	1	1	1	5	1
Part 3 Knowledge about the Climate Change							
1) Climate change means a phenomena of global warming causing a continuous increase of average temperature in the atmosphere and earth surface and climate variability	1	1	1	1	1	5	1
2) Global warming has the same meaning as climate change.	1	0	1	1	1	4	0.8
3) Global warming happens when global temperature increases because of greenhouse effect.	1	1	0	1	1	4	0.8
4) Carbon Dioxide is a main cause of global warming.	1	1	1	1	1	5	1
5) Flood and storm have more violence because of climate change.	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
6) If the forest area is decreased, carbon dioxide is increasingly accumulated in the atmosphere causing an increase of heat at the earth surface and atmosphere.	1	1	0	1	1	4	0.8
7) Causes of disease growth is not related to climate changes.	1	1	1	1	1	5	1
8) Tourism is an accelerant of global warming.	1	1	1	1	1	5	1
9) Traveling by private car causes more effects than traveling by other vehicles.	1	1	1	1	1	5	1
10) Tourists' behaviors is a cause of global warming.	1	1	1	1	1	5	1
11) Prohibition of foam wares at the national park is a measure to decrease global warming.	1	1	1	1	1	5	1
12) Sorting out waste before throwing it to the bin is a way to decrease global warming.	1	1	1	1	1	5	1
Part 4 Perceptions of Tourists towards Climate Change							
1. Have you ever received the news about the impact of the climate change towards tourism?	1	1	1	1	1	5	1
1) Yes	1	1	1	1	1	5	1
2) Never (Skip to No. 3)	1	1	1	1	0	4	0.8
2. Where have you received the news about the impact of the climate change towards tourism? (You can choose more than one)	1	1	1	1	1	5	1
1) TV programs	1	1	1	1	1	5	1
2) Tourism manual	1	1	1	1	1	5	1
3) Tourism program	1	0	1	0	1	3	0.6
4) Social Media	1	1	1	1	1	5	1
5) Website	1	1	1	1	1	5	1
6) Guide	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
7) Leaflet/Brochure	1	1	1	1	1	5	1
8) Newspaper	1	1	1	1	1	5	1
9) Friends	1	1	1	1	1	5	1
10) Public Relation sign	1	1	1	0	0	3	0.6
11) Other please indicates.....	1	1	1	0	1	4	0.8
3. Do you think that Khao Yai National Park receives the impact from the climate change or not?	1	1	1	1	1	5	1
1) Yes, it does.	1	1	1	1	1	5	1
2) No, it doesn't. (Skip to No.5)	1	1	1	1	0	4	0.8
4. If Khao Yai National Park receives the impact from the climate change, do you think which level of it?	1	1	1	1	1	5	1
1) Season change such as higher temperature and drought in summer, shorter duration of winter.	1	1	1	1	1	5	1
2) Quantity of water in water resources decreases such as water fall running dry.	1	1	1	1	1	5	1
3) An increase of wildfire at the national park.	1	1	1	1	1	5	1
4) An increase of storms affecting tourism at the national park.	1	1	1	1	1	5	1
5) Extinction of seeds and local animals.	1	1	1	1	1	5	1
6) An increase of new plants and animals from other sources.	1	1	1	1	1	5	1
7) Biological time duration change such as change of flower blossom.	1	1	1	1	1	5	1
8) Tourism activities in different seasons such as inability to swim at the waterfall since it runs dry.	1	1	1	1	1	5	1
9) A decrease of opportunities in seeing wild animals	1	1	1	1	1	5	1
10) A decrease of fertility and beauty of plants	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
5. Do you think which level Khao Yai National Park can manage its tourism to respond the climate change?	1	1	1	1	1	5	1
1) Number of tourists limitation	1	1	1	1	1	5	1
2) Tourism activity support encouraging exercising such as cycling, trekking	1	1	1	1	1	5	1
3) Usage of natural energy such as solar energy and water energy from waterfall as renewable energy	1	1	1	1	1	5	1
4) Standard services of toilet and accommodation for ecotourism	1	1	1	1	1	5	1
5) Renovation of existing houses and buildings	1	1	1	1	1	5	1
6) Providing vehicle services such as electric cars servicing the tourists at service points to save energy and decrease pollution	1	1	1	1	1	5	1
7) Campaign of tree planting in the decadent areas and increasing green areas in the national park	1	1	1	1	1	5	1
8) Campaign of environmentally friendly products usage	1	1	1	1	1	5	1
9) Information services about effects of climate change and global warming to tourists	1	1	1	1	1	5	1
10) Information services towards how to decrease effects of climate change	1	1	1	1	1	5	1
11) Standard refuse disposal such as waste separation or bringing all wastes to outside areas	1	1	1	1	1	5	1
12) Transportation and vehicle management based on the least usage of vehicle to decrease air pollution	1	1	1	1	1	5	1
13) Motivation and rewarding measures to tourists helping decrease pollution	1	1	1	1	1	5	1
14) Clear service areas specification	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
Part 5 Attitude of the Tourists towards the Climate Change							
1) People should worthily use resources at the national park to decrease global warming problems.	1	1	1	1	1	5	1
2) I am proud to participate in volunteering activities with the national park to decrease global warming problems.	1	1	1	1	1	5	1
3) There should be campaign giving information to tourists about global warming caused by tourism.	1	1	1	1	1	5	1
4) Deforestation causes climate change in the national park.	1	1	1	1	1	5	1
5) Decrease of private cars for tourism can decrease global warming at the national park.	1	1	1	1	1	5	1
6) I do not believe that strictly following rules and regulations of the national park helps decrease climate change and global warming problems.	1	1	1	1	1	5	1
7) Climate change or global warming effects problems should be mainly solved by related government sectors.	1	1	1	1	1	5	1
Part 6 Awareness of the Tourists towards the Climate Change							
1) Global warming is a problem affecting tourism at the national park.	1	1	1	1	1	5	1
2) Tourists' behaviors also cause climate change or global warming.	1	1	1	1	1	5	1
3) The best solution for global warming problem at the national park is adjusting tourists' behaviors in using resources.	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
4) Nurturing tourists' conscious to give importance to global warming problem solving is a lifelong solution.	1	1	1	1	1	5	1
5) Climate change or global warming affect tourism activity design at the national park.	1	1	0	1	1	4	0.8
6) Economical use of energy is a way to decrease global warming problems at the national park.	1	1	1	1	1	5	1
7) Global warming affects a decrease of opportunities in seeing wild animals	0	1	0	1	1	3	0.6
Part 7 Behavior of the Tourists to Respond the Climate Change							
1) Strictly following rules and regulations of the national park	1	1	1	1	1	5	1
2) Studying information about tourist destinations and planning before traveling	1	1	1	1	1	5	1
3) Doing activities that do not destroy national resource and environment	1	1	1	1	1	5	1
4) Participating volunteering activities to conserve national park such as keeping waste	1	1	1	1	1	5	1
5) Denoting money to environmental conservation and restoration activities in the national park	1	1	1	1	1	5	1
6) Economical using resources of national park such as water and electricity	1	1	1	1	1	5	1
7) Decreasing frequency of annual travel but expand time duration of each time to be longer	1	1	1	1	1	5	1
8) Traveling on provided nature trail	1	1	1	1	1	5	1
9) Using public services rather than private cars	1	1	1	1	1	5	1

Items, Experts, Scores	1	2	3	4	5	Total	Mean
10) Staying at accommodation of the national park since it is more friendly to environment than luxury hotel	1	1	1	1	1	5	1
11) Eating local food and buying local products at the tourist destinations	1	1	1	1	1	5	1
12) Separating waste before throwing it at the provided areas in the national park	1	1	1	1	1	5	1
13) Trying to decrease amount of waste	1	1	1	1	1	5	1
14) Doing tourism activities releasing low carbon dioxide such as taking a view and cycling	1	1	1	1	1	5	1
Total	**180**	**179**	**176**	**178**	**177**	**890**	**0.96**

APPENDIX E

RELIABILITY TEST

Reliability Test

```
****** Method 1 (space saver) will be used for this analysis ******
  R E L I A B I L I T Y  A N A L Y S I S  - S C A L E (A L P H A)
Reliability Coefficients
N of Cases =    30.0                    N of Items =125
Alpha =    .8840
```

Reliability: Important Motives for Decision Making to Visit the National Park

```
****** Method 1 (space saver) will be used for this analysis ******

  R E L I A B I L I T Y A N A L Y S I S  -  S C A L E (A L P H A)
```

		Mean	Std Dev	Cases
1.	MOTIVE1	4.2150	.8775	30.0
2.	MOTIVE2	4.6150	.5169	30.0
3.	MOTIVE3	3.5333	.9239	30.0
4.	MOTIVE4	3.9133	.9733	30.0
5.	MOTIVE5	3.6500	.8536	30.0
6.	MOTIVE6	3.5733	.9216	30.0
7.	MOTIVE7	4.2400	.7703	30.0
8.	MOTIVE8	4.1733	.6689	30.0
9.	MOTIVE9	4.2867	.6443	30.0
10.	MOTIVE10	3.7283	.7972	30.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	39.9283	20.6042	4.5392	10

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
MOTIVE1	35.7133	18.8158	.1338	.7819
MOTIVE2	35.3133	20.3157	.0046	.7794
MOTIVE3	36.3950	15.5449	.5773	.7158
MOTIVE4	36.0150	15.8846	.4862	.7312
MOTIVE5	36.2783	15.6302	.6289	.7090
MOTIVE6	36.3550	15.1175	.6471	.7039
MOTIVE7	35.6883	18.2917	.2609	.7612
MOTIVE8	35.7550	17.7713	.4230	.7413
MOTIVE9	35.6417	17.8964	.4205	.7420
MOTIVE10	36.2000	16.0735	.6093	.7140

```
Reliability Coefficients
N of Cases =    30.0                    N of Items = 10

Alpha =    .7602
```

Reliability: Knowledge about the Climate Change

```
****** Method 1 (space saver) will be used for this analysis ******

 R E L I A B I L I T Y   A N A L Y S I S   -   S C A L E (A L P H A)

                            Mean        Std Dev       Cases

 1.     KN1                .9000          .7051        30.0
 2.     KN2               1.0000          .0000        30.0
 3.     KN3               1.0000          .0000        30.0
 4.     KN4               1.0000          .0000        30.0
 5.     KN5               1.0000          .0000        30.0
 6.     KN6                .9667          .6826        30.0
 7.     KN7                .8000          .7051        30.0
 8.     KN8                .7333          .6074        30.0
 9.     KN9                .8333          .6457        30.0
10.     KN10              1.0000          .0000        30.0
11.     KN11              1.0000          .0000        30.0
12.     KN12              1.0000          .0000        30.0

  * * * Warning * * *  Zero variance items

                                                      N of
Statistics for       Mean   Variance    Std Dev  Variables
     SCALE         9.6333      .3782      .7149         12

Item-total Statistics

               Scale          Scale      Corrected
               Mean         Variance       Item-            Alpha
             if Item        if Item       Total           if Item
             Deleted        Deleted    Correlation        Deleted
KN1           8.7333          .3402        .1550           .6277
KN2           8.6333          .3782        .0000           .7353
KN3           8.6333          .3782        .0000           .7353
KN4           8.6333          .3782        .0000           .7353
KN5           8.6333          .3782        .0000           .7353
KN6           8.6667          .3678        .1038           .6844
KN7           9.5333          .3954        .2876           .6006
KN8           9.1000          .3690        .4028           .6891
KN9           9.5000          .2586        .0000           .9289
KN10          8.6333          .3782        .0000           .7353
KN11          8.6333          .3782        .0000           .7353
KN12          8.6333          .3782        .0000           .7353

 R E L I A B I L I T Y  A N A L Y S I S - S C A L E (A L P H A)

Reliability Coefficients
N of Cases =     30.0                    N of Items = 12

Alpha =   .7300
```

Reliability: Perception of the Climate Change

```
****** Method 1 (space saver) will be used for this analysis ******


  R E L I A B I L I T Y  A N A L Y S I S  -  S C A L E (A L P H A)

                              Mean        Std Dev       Cases

  1.     PERCEPIM          3.1000         2.1870        30.0
  2.     V68_A             2.8667         2.0297        30.0
  3.     V69_A             2.8333         1.9841        30.0
  4.     V70_A             2.9333         2.0500        30.0
  5.     V71_A             2.8667         2.0466        30.0
  6.     V72_A             2.7000         1.9325        30.0
  7.     V73_A             2.8333         1.9841        30.0
  8.     V74_A             2.7667         1.9241        30.0
  9.     V75_A             2.7333         1.9464        30.0
 10.     V76_A             2.7667         1.9597        30.0
                                                      N of
Statistics for       Mean   Variance    Std Dev  Variables
     SCALE       28.4000   386.1793    19.6514         10

Item-total Statistics
               Scale          Scale      Corrected
               Mean         Variance       Item-           Alpha
              if Item        if Item       Total          if Item
              Deleted        Deleted    Correlation        Deleted
PERCEPIM      25.3000       307.3897        .9651           .9953
V68_A         25.5333       311.9126        .9785           .9947
V69_A         25.5667       313.0126        .9861           .9946
V70_A         25.4667       310.6023        .9878           .9945
V71_A         25.5333       312.0506        .9673           .9951
V72_A         25.7000       317.4586        .9437           .9957
V73_A         25.5667       313.5644        .9774           .9948
V74_A         25.6333       315.1368        .9857           .9946
V75_A         25.6667       314.7816        .9789           .9948
V76_A         25.6333       313.7575        .9879           .9945
Reliability Coefficients
N of Cases =     30.0                    N of Items = 10

Alpha =    .9954
```

Reliability: Perceptions of Tourism Management

```
****** Method 1 (space saver) will be used for this analysis ******
  R E L I A B I L I T Y  A N A L Y S I S - S C A L E (A L P H A)

                              Mean        Std Dev       Cases

  1.     MANAGE1           3.8667          .8996        30.0
  2.     MANAGE2           3.9000          .6618        30.0
  3.     MANAGE3           3.3667          .7184        30.0
  4.     MANAGE4           3.6000          .6747        30.0
  5.     MANAGE5           3.6667          .7581        30.0
  6.     MANAGE6           3.3000          .9879        30.0
```

7.	MANAGE7	3.8667	.7761	30.0
8.	MANAGE8	3.4333	.9353	30.0
9.	MANAGE9	3.9000	.7120	30.0
10.	MANAGE10	3.8667	.6814	30.0
11.	MANAGE11	4.3000	.7022	30.0
12.	MANAGE12	3.7000	.7497	30.0
13.	MANAGE13	3.3333	.9942	30.0
14.	MANAGE14	3.9667	.8087	30.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	52.0667	51.1678	7.1532	14

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
MANAGE1	48.2000	44.7172	.4689	.8870
MANAGE2	48.1667	48.4195	.2509	.8937
MANAGE3	48.7000	45.5276	.5286	.8835
MANAGE4	48.4667	43.6368	.7938	.8733
MANAGE5	48.4000	44.1103	.6438	.8785
MANAGE6	48.7667	41.9782	.6417	.8784
MANAGE7	48.2000	42.7862	.7662	.8729
MANAGE8	48.6333	40.7920	.7953	.8698
MANAGE9	48.1667	44.0057	.7046	.8763
MANAGE10	48.2000	44.5103	.6811	.8777
MANAGE11	47.7667	48.8057	.1905	.8964
MANAGE12	48.3667	44.4471	.6161	.8797
MANAGE13	48.7333	42.7540	.5711	.8825
MANAGE14	48.1000	46.4379	.3698	.8906

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Reliability Coefficients
N of Cases = 30.0 N of Items = 14

Alpha = .8893

Reliability: Attitude of the Tourists towards the Climate Change

****** Method 1 (space saver) will be used for this analysis ******

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

		Mean	Std Dev	Cases
1.	ATT1	4.8333	.3790	30.0
2.	ATT2	4.7000	.4661	30.0
3.	ATT3	4.6667	.4795	30.0
4.	ATT4	4.4000	.6215	30.0
5.	ATT5	4.5000	.5085	30.0
6.	ATT6	4.5667	.5683	30.0
7.	ATT7	4.4333	.6261	30.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	32.1000	6.0931	2.4684	7

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
ATT1	27.2667	5.6506	.1658	.8163
ATT2	27.4000	5.0759	.3809	.7902
ATT3	27.4333	4.8057	.5030	.7703
ATT4	27.7000	4.0103	.6816	.7319
ATT5	27.6000	4.4552	.6425	.7443
ATT6	27.5333	4.1195	.7155	.7259
ATT7	27.6667	4.2989	.5402	.7649

Reliability Coefficients
N of Cases = 30.0 N of Items = 7

Alpha = .7932

Reliability: Awareness of the Tourists towards the Climate Change

****** Method 1 (space saver) will be used for this analysis ******

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

		Mean	Std Dev	Cases
1.	AW1	4.5667	.5040	30.0
2.	AW2	4.5000	.6297	30.0
3.	AW3	4.4333	.5683	30.0
4.	AW4	4.5333	.5713	30.0
5.	AW5	4.6333	.4901	30.0
6.	AW6	4.5333	.5074	30.0
7.	AW7	4.5667	.5683	30.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	31.7667	8.5989	2.9324	7

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
AW1	27.2000	6.9241	.5356	.8765
AW2	27.2667	6.1333	.6633	.8627
AW3	27.3333	6.1609	.7496	.8499
AW4	27.2333	6.3230	.6784	.8595
AW5	27.1333	6.7402	.6359	.8652
AW6	27.2333	6.4609	.7290	.8539
AW7	27.2000	6.3724	.6634	.8615

Reliability Coefficients

N of Cases = 30.0 N of Items = 7

Alpha = .8789

Reliability: Behavior of the Tourists to Respond the Climate Change

****** Method 1 (space saver) will be used for this analysis ******

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

		Mean	Std Dev	Cases
1.	BEH1	4.5333	.5074	30.0
2.	BEH2	4.3000	.6513	30.0
3.	BEH3	4.2000	.6644	30.0
4.	BEH4	3.5333	1.1059	30.0
5.	BEH5	3.7667	1.0400	30.0
6.	BEH6	3.8667	.8193	30.0
7.	BEH7	3.6667	.8841	30.0
8.	BEH8	4.0667	.8683	30.0
9.	BEH9	3.4667	1.0743	30.0
10.	BEH10	3.7667	1.0063	30.0
11.	BEH11	3.8000	1.0306	30.0
12.	BEH12	4.2667	.5833	30.0
13.	BEH13	4.1333	.6288	30.0
14.	BEH14	3.9333	.9444	30.0

Statistics for	Mean	Variance	Std Dev	N of Variables
SCALE	55.3000	67.8724	8.2385	14

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Alpha if Item Deleted
BEH1	50.7667	65.0816	.3094	.9130
BEH2	51.0000	63.1034	.4199	.9105
BEH3	51.1000	63.6793	.3538	.9124
BEH4	51.7667	55.0126	.7093	.9008
BEH5	51.5333	56.3954	.6655	.9026
BEH6	51.4333	58.0471	.7332	.9001
BEH7	51.6333	56.1713	.8240	.8961
BEH8	51.2333	58.8057	.6242	.9040
BEH9	51.8333	54.6264	.7615	.8982
BEH10	51.5333	56.2575	.7023	.9008
BEH11	51.5000	55.2931	.7515	.8986
BEH12	51.0333	65.5506	.2098	.9156
BEH13	51.1667	61.0402	.6551	.9042
BEH14	51.3667	55.8954	.7850	.8973

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Reliability Coefficients
N of Cases = 30.0 N of Items = 14

Alpha = .9105

BIOGRAPHY

NAME	Miss Yulada Supsomboon
ACADEMIC BACKGROUND	Master of Sciences (Park and Recreation) Kasetsart University
PRESENT POSTION	Lecturer Faculty of Management Sciences Thepsatri Rajabhat University Lopburi