



Impact of Climate change on Stakeholder's' Perspectives towards Diving and Snorkeling: A Case Study of Similan islands, National Park, Phang-Nga Province

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Thesis Title Impact of Climate change on Stakeholder's' Perspectives towards Diving and Snorkeling: A Case Study of Similan islands, National Park, Phang-Nga Province

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ชื่อวิทยานิพนธ์	ผลกระทบจากการเปลี่ยนแปลงสภาพอากาศที่มีผลต่อทัศนคติของผู้ประกอบการท่องเที่ยวในส่วนของกิจกรรมการดำน้ำตื้นและการดำน้ำลึก กรณีศึกษาอุทยานแห่งชาติ หมู่เกาะสิมิลัน จังหวัดพังงา
ผู้เขียน	นางสาวศิจิตรา ทรงเจริญ
สาขาวิชา	การจัดการการบริการและการท่องเที่ยว (หลักสูตรนานาชาติ)
ปีการศึกษา	2556

บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาผลกระทบจากการเปลี่ยนแปลงสภาพอากาศที่มีผลต่อทัศนคติของผู้ประกอบการท่องเที่ยวในส่วนของกิจกรรมการดำน้ำตื้นและการดำน้ำลึกในหมู่เกาะสิมิลัน จ.พังงา ประเทศไทย ซึ่งเป็นการท่องเที่ยวประเภททางทะเล ต้องอิงกับสภาพอากาศและทรัพยากรทางทะเลที่อุดมสมบูรณ์ในการดึงดูดนักท่องเที่ยว นอกจากนี้ยังมุ่งศึกษาถึงแผนการปรับตัวสำหรับวิกฤตการณ์การเปลี่ยนแปลงของสภาพภูมิอากาศด้วย

การศึกษาเรื่องนี้เก็บรวบรวมข้อมูลโดยการสุ่มเลือกกลุ่มตัวอย่างแบบมีวัตถุประสงค์แบบสโนว์บอลหรือลูกโซ่ซึ่งมีการใช้คำถามเชิงลึกและในรูปแบบกึ่งมีโครงสร้าง เพื่อการศึกษาวิธีการปรับตัวภายใต้สถานการณ์การเปลี่ยนแปลงของสภาพภูมิอากาศ ในการสัมภาษณ์โดยแบ่งออกเป็นสามกลุ่ม ได้แก่ ข้าราชการท้องถิ่น ประชากรที่อาศัยในชุมชนตำบลมุและผู้ประกอบการที่ให้บริการท่องเที่ยวภายในหมู่เกาะสิมิลันทั้งจังหวัดในภูเก็ตและจังหวัดพังงา

ผลการศึกษาพบว่า ผู้มีส่วนได้ส่วนเสียรับรู้ถึงการเปลี่ยนแปลงของสภาพภูมิอากาศในหมู่เกาะสิมิลัน ซึ่งส่งผลให้เกิดความเปลี่ยนแปลงของระบบนิเวศน้ำใต้ท้องทะเล ส่วนใหญ่ของผู้มีส่วนได้ส่วนเสียไม่มีแผนปรับตัวภายใต้การเปลี่ยนแปลงของสภาพอากาศเนื่องด้วยการรับมือกับธรรมชาติเป็นสิ่งที่เป็นไปได้ยาก อีกทั้งผู้มีส่วนได้ส่วนเสียบางกลุ่มก็ยังไม่มีความรู้เกี่ยวกับการเปลี่ยนแปลงของสภาพอากาศอย่างถูกต้อง จึงทำให้ผู้มีส่วนได้ส่วนเสียไม่มีแผนในการปรับตัวที่มีประสิทธิภาพในการปรับตัวภายใต้สถานการณ์การเปลี่ยนแปลงนี้ ในทางตรงกันข้ามกลุ่มผู้มีส่วนได้ส่วนเสียได้มีการจัดโครงการอนุรักษ์ธรรมชาติในพื้นที่ในหมู่เกาะสิมิลันหรือพื้นที่ในรับผิดชอบของตน ซึ่งมีส่วนในการช่วยฟื้นฟูทรัพยากรทางธรรมชาติ โดยเฉพาะปะการังจำนวนมากในหมู่เกาะสิมิลันที่ถูกทำลายจากเปลี่ยนแปลงในครั้งนี้

งานวิจัยนี้เสนอแนะให้ผู้มีส่วนได้ส่วนเสียในเขตอุทยานแห่งชาติสิมิลันเล็งเห็นความสำคัญในการให้ความรู้เกี่ยวกับการเปลี่ยนแปลงสภาพอากาศ ซึ่งส่งผลต่อการใช้แผนปรับตัวสำหรับธุรกิจการท่องเที่ยวให้สอดคล้องกับสภาพอากาศในปัจจุบันรวมถึงอนาคต นอกจากนี้ยังเสนอแนะผู้มีอำนาจการสั่งการ เร่งตระหนักถึงปัญหาการเสื่อมโทรมของสิ่งแวดล้อมทั้งเกิดจากธรรมชาติและจากน้ำมือของมนุษย์ เพื่อดำรงรักษาความอุดมสมบูรณ์ของทรัพยากรในหมู่เกาะสิมิลันและภาคธุรกิจการท่องเที่ยวในหมู่เกาะสิมิลัน

คำสำคัญ: การเปลี่ยนแปลงของอากาศ คำน้าดินและค่าน้ำลึก ผู้มีส่วนได้ส่วนเสีย ทัศนคติ หมู่เกาะสิมิลัน

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ABSTRACT

The purpose of this study for study the impact of climate change toward tourism part in Similan islands National Park of Phang-Nga Province in Thailand which is marine tourism, depends on weather and wealth of marine resource to attract tourists. Further, this study investigate show the stakeholders adapt into climate change scenario.

The data collection of the study was used purposive and snowball sampling techniques. Both open-ended and semi structured question were used in population sampling for an in-depth understanding of the stakeholder's experience and their adaptation in climate change consequence, three groups; local governments, local community and tour operators who provide Similan islands tour packages in Phuket and Phang-Nga province.

The study found that stakeholders aware to climate change issue which has affecting to marine ecosystem. The most majority of stakeholders do not have climate change adaptations. Because of nature issues cannot dial with. Furthermore, some stakeholders have not climate change knowledge enough, thus cannot use the effective climate change adaptation. Whereas, stakeholders have arranging preservation projects in Similan islands area or themselves responsible areas, can rehab natural resources particularly coral reef in Similan islands those was damaged by this change.

The study recommends those stakeholders in Similan islands National Park area aware to educate the climate change critical that relate to tourism adaptation in the present and the future. Moreover, recommendation to the governments aware the environmental degenerations those

were occurred from the nature made and man-made causes to preserve Similan islands maintain its attractive.

Key words: Climate change, Snorkeling and diving activities, Stakeholders, Perspective, Similan islands.

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LIST OF ABBREVIATION AND SYMBOLS

EPA	United States Environment Protection Agency
IPCC	Inter Government Panel on Climate Change
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
TAT	Tourism Authority of Thailand
TGO	Thailand Greenhouse Gas Management Organization
UNEP	United Nations Environment Program
UNWTO	World Tourism Organization

CHAPTER 1

INTRODUCTION

1.1 Statement of the Problem

The tourism industry is the largest revenue producer that affects the global economy and this prompts countries to promote tourism as a source of income to subsidize income from other sources (Scott and Lemieux, 2010). However, in order to do this, tourism relies on its environment to provide attractions for tourists who come to visit. Thailand is no exception, as it depends heavily on tourism however with tourism promotion, comes many challenges both socially and environmentally. One of the most challenging encounters the world is faced with today is climate change and it has become a worldwide concern in recent years and many countries are experiencing the negative effects and impacts of climate change on the environment.

Climate change is defined as a long term change in the earth's climate, especially due to an increase in average atmospheric temperature. Factors contributing to these changes are atmospheric gases such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), water vapor and human activities. These activities have a direct impact on tourism because their effects on the atmosphere will continue to be felt for many more years to come (Todd, 2003).

Nowadays, humans are faced with eco-marine system decadence. There are many factors which affect the eco-marine system such as marine dumping, sewage and wastewater, industrial waste, radioactive waste, oil pollution, underground storage leakages, atmospheric deposition, global warming, and eutrophication (Gambhir, Kapoor, Nirola, Sohi and Bansal, 2012). At the same time, climate change is a topic that stimulates fierce debate. Climate change has many effects on the lives of humans e.g. agriculture, season changing, and tourism. This change might be due to a rise in global sea levels, a change in vegetation zones, an increase in disease levels or a change in ecosystems.

Marine tourism has the highest commercial value of tourism revenue. Many countries that are well known for marine tourism are facing climate change issues e.g. The Maldives is facing climate change barriers. Since 80% of its 1,200 islands are no more than 1 meter above sea level, within 100 years the islands might become uninhabitable (Bryant, 2004). In addition, There are flooding has occurred in many areas and as well as coral bleaching. Due to the greenhouse

effect concentrations of CO₂ has radiated into the atmosphere, increasing sea temperatures. Hence, it has affected the environment around the world and consequentially the tourism of The Maldives, (Viner and Agnew, 1999). Concurrently, there were many climate changes that affected the Mediterranean basin e.g. Spain's revenue from tourism was directly affected by flash floods and heat stress (extremely high temperature). These impacts saw a re-surface of malaria and increased incidences of forest fires.

According to (Voice TV News, 2011) there were 12 countries severely affected by climate change, and Thailand falls within the top 12. The effects of these gases on climate change further contributed to increases of the storms, weather uncertainty, eco-marine system destruction and beach erosion. Furthermore, Voice TV News (2011) warns that Thailand will lose some of its coastal areas to climate change in 4 provinces namely: Phuket, Trang, Krabi and Phang Nga, a total area of 13,000 Rai (5,139.76 hectares) in the next five years if precautions are not taken to protect these areas. Amongst Thailand's islands, the Similan islands, in Southern Thailand, has been most affected by the climate change phenomenon.

It is not only The Maldives, Thailand and Spain that are facing climate change barriers. Many countries are encountering similar climate changes issues. Climate change has a direct impact on decision making when choosing where to travel.

There are many avenues for tourism such as sport tourism, business tourism, and marine tourism. Within marine tourism, snorkeling allows observation of the marine environment. The snorkeling industry has felt the effects of climate change as marine eco-systems fail to thrive. Coral bleaching is when the water temperature is higher than 30 C° causing the coral to lose its color exhibiting a whitish appearance and then eventually dying. Hence, the beautiful fishes which attracted tourists will abandon their habitat because the coral that offered camouflage has bleached. Thus, it became an issue with the stockholders who ran snorkeling businesses centered on tourism in Thailand. The chairman of the Tourism Industry of Satun Province forecasted a revenue decrease of approximately 1 million baht from tourism income in 2011. There might be an effect on hospitality businesses; tour operators, tour agencies and hotels. A climate change conference held in (Davos, 2008) also, suggested that tourism has to reduce its Greenhouse Gases (GHG) if it is to practice sustainable tourism for the future by:

1.1.1 Mitigating its GHG emission especially those derived from transport and accommodation activities,

1.1.2 Adapt tourism businesses and destinations to changing climate conditions,

1.1.3 Apply existing and new technology to improve energy efficiency, and

1.1.4 Secure financial resources to help poor regions and countries

The Similan islands area paradise of underwater marine life. There are many varieties of aquatic systems. On the Similan islands, the main tourist attraction is snorkeling and diving, an activity that enables tourists to view marine life - coral, colorful fish and the wonders of sea life on the ocean floor such as nudibranch (sea worms) and shells.

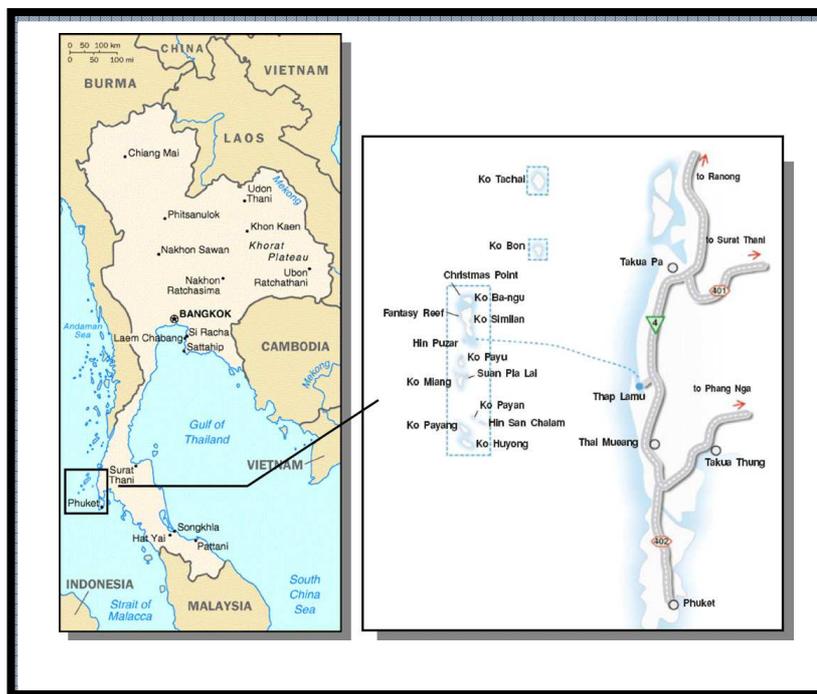
With these issues occurring in this area, the question arises as to climate changes impact on the snorkeling tourism, how it impacts businesses and the various stakeholders who depend and make their livelihood from this venture.

What are the direct effects on businesses and what are the foreseen effects in the future if the impact caused by climate change continues? What is the relationship between climate change, diving and snorkeling activities?

Diving is defined as *“the sport of swimming under water with special breathing equipment”* (dictionary.cambridge.org/dictionary/british/scuba-diving, 2012). Since, the invention of underwater breathing equipment humankind has been allowed to breathe underwater and discover underwater worlds. It has facilitated a changing of attitudes about the marine world. Thus, scuba diving changed the image of the sea from mysterious to a place that is enjoyable and captivating. The Similan islands are well known as within the top 100 most popular international diving and snorkeling sites in the world, (Scuba Travel, 2007). If you compare the cost, the Similan islands are cheaper than most over sea destinations although full of environmental richness. Therefore, there are many diving tourists who would like to visit the Similan islands.

Snorkeling is defined as *“to swim while breathing by means of a snorkel”* (www.definitions.net/definition/snorkel, 2011). Snorkeling is a popular recreational activity that does not use expensive, complex equipment and does not need specialist training. Hence, it is not unusual that there are many Thai and international tourists who pay for snorkeling trip in the Similan islands.

Figure 1.1 Map of the Similan islands



Source: Adjaye and S.Tapsuwan, (2008)

1.2 Geographical Features and Weather Conditions

The Similan Islands are located in the southern part of Thailand. The Similan Islands or Mu Koh Similan is in Tam Bon Lam Kaen, Tai Mueang District, Phang Nga Province. Mu Koh Similan National Park covers a total area of about 80,000 Rai and was proclaimed a National Park on 1st September, 1982. Similan is the Yawi or Malay word which means Kao or nine, referring to the total number of islands, (Hu Yong island, Pa Yang island, Pan Yang island, Miang island, Ha island, Pa Yu island, Hua Ka-lok island, Similan island and Ba Ngu island). The Similan islands consist of numerous islands with high and steep mountains, sandy beaches and granite rocks of many shapes. There are no population settlements on the Similan archipelago. As Similan islands are national park area. Summer begins in mid February until May. Rainy season is mid-May ending in October. The most appropriate period for traveling to these islands is from November to April. From May until October it is monsoon season making it dangerous for sea transportation to the islands. The national park is closed between May 16 until October 30 every year (TAT, 2010).

1.3 Marine and Wildlife

Similan National Park is rainforest. The majority of wildlife is coral (soft coral and hard coral), closely related sea anemones and invertebrate animals. There are several factors that support a good environment for the reef i.e. temperature, salinity, light, wave and tide, sedimentation and nutrient. Hence, healthy coral reef can be found easily in the Andaman Sea compared with the Gulf of Thailand. In the Andaman Sea, coral reefs are classified as deep water and medium water. For the deep water coral reefs, coral grows down to 30 m. For this the water visibility needs to be sufficient enough to allow light for the algae to grow. This reef type is mostly found in the Similan and Surin islands. For the rest, medium water coral reefs grow between 8-15 m beneath the surface.

In the Similan National Park there are deep water coral species such as staghorn coral types (*Acropora* spp.) and the smaller cauliflower shaped types (*Seriatopora* spp.). Many other species of marine life co-exist within the coral reef; Gorgonian sea fans, flower-like soft coral, and several species of crabs, spiny painted lobsters, squid, sponges, sea cucumbers and giant clams. Moreover a survey conducted in 1992 revealed that 39 species of birds can be found on the nine islands. The species include the Brahminy Kite, and the White-breasted Waterhen, while migratory species include the Pintail Snipe, and Grey Wagtail. Temporary migratory species include the Barn Swallow, Cattle Egret, Watercock, and the Roseate Tern. The most commonly seen species on the islands are the Pacific Reef-Egret, Nicobar Pigeon, Pied Imperial Pigeon, White-bellied Sea-Eagle, and the Collared Kingfisher. There are 27 species of mammals within the national park – the black-beared tomb bat, the lesser false vampire bat, the intermediate horse shoe bat, the lesser bent-winged bat, and the hairless bat. There are 3 species of squirrels that can be found including the gray-cheeked flying squirrel. There are 4 species of rats; the yellow Rajah Rats, the Rice field Rats, roof rat and noisy rat. Finally, fairly common residents include the bush tailed porcupine, common palm civet, flying lemur and the bottle-nosed dolphin. There are 22 species of reptiles; amphibians varieties that can be found in the park include the banded krait, reticulated python, white-lipped pit viper, common pit viper, garden blue lizard, hawksbill turtle, leather turtle, Bengal monitor lizard, common water monitor lizard, ornate froglet, Common Asiatic frog, marsh frog, and the common bush frog. The most interesting species in the Similan island is called the hairy leg mountain land crab (www.park.dnp, 2012).

1. Koh Paet or Similan island is the largest island of the Similan archipelago. It has a horse-shoe curved bay with a powdery sand beach and clear visibility sea for swimming. There are many biologically diverse marine eco systems that include stag horn coral, leaf coral, brain coral, large mushroom coral, sea fan, lobster and various kinds of colorful fish. This island offers ideal spots for both snorkeling and scuba diving. To the north, there are large rocks of fascinating shapes such as boot or head of Donald Duck, (TAT, 2010).

2. Koh Pa Yu island which is well known in East of Eden. There are plentiful coral and sea fans which also serve as a habitat for several kinds of fish, such as ribbon eels, silvertip shark, brown spotted grouper, sand goby, and mantis shrimp, (TAT, 2010).

Moreover, the Marine and Coastal Biology and Ecology Unit, in Phuket's Marine Biological Center have discovered coral bleaching in the Andaman Sea. In addition, they suggested that some tourism destinations will close for coral rehabilitation. The result of their research shows that sea water temperature was increasing and bringing about bleaching occurrences in many areas, (Mcot, 2010). Especially within Surin island and the Similan islands in Phang Nga province, Pee Pee island in Krabi province and Racha island in Phuket province. Furthermore, a tourism review website reported that the Thai authorities have decided to save local dying coral by closing many dive sites for an unlimited time period. Thailand has an abundant and breathtakingly diverse aquatic environment which has attracted divers and snorkeler from all over the globe. The authorities were alarmed as some sites recorded as much as 80% bleaching of the coral. The Thai National Park's Wildlife and Plant Conservation Department has decided to act swiftly and has closed down the affected dive sites. Tourism officials believe the tourism industry will not be affected in any way as there are many other dive sites in Thailand. Many diving operators strongly voiced their disapproval. They believed that divers are not the cause of coral bleaching; assuming that increased temperatures (30-31C°) was the main cause which was aligned with the national park information. The national park staffs concluded that main cause of coral bleaching is El Nino phenomenon, temperatures increasing in Andaman sea area.

There are still many dive sites closed for coral rehabilitation. For a tourist destination to recover its condition can take more than 20 years. The Similan national park generates quite high income compared to other marine national parks in Thailand. The reveal the revenue of Similan

islands between October 2011 to September 2012 was approximately 13.5 million baht. The three main revenues streams came from entrance fees, service charges (scuba diving and snorkeling fees) and accommodation charges (Adjaye and Tapsuwan, 2008). Therefore, there were effects on tour operators and travel agencies who provided Similan Island tours to tourists.

Table 1.1 The revenue of Similan islands

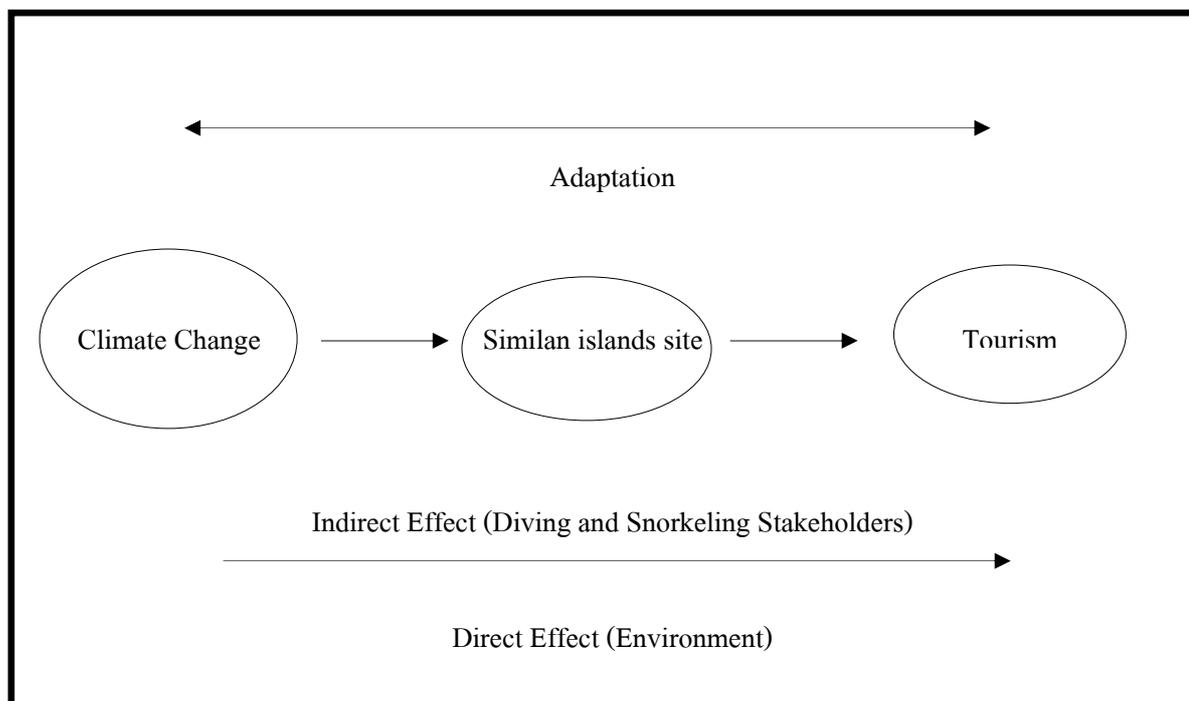
Year	Revenue
October 2011 - September 2012	฿13,462,876.87
October 2011-September 2010	฿15,595,468.65
October 2011-September 2010	฿10,870,640.00
October 2009- September 2008	฿29,801,540.07
October 2008 - September 2007	฿16,217,516.34

Source: dnp, 2012

The researcher chose to address the effects of climate change on snorkeling and scuba diving tour operators business. Thus, using verbal communication to gain information from tour operators who mentioned that climate change has many effects on the snorkeling tour operator stakeholder's business. The main target markets of tourists who travel to Thailand were Europeans who conserved and appreciated the aquatic system of the Andaman zone. Since the effects of coral bleaching has been discovered in the Andaman Sea it has followed a change in the trend of tourism as Russians tourists began to travel in more numbers to the Similan islands. Thus, there was an effect on snorkeling tourist operators. Stakeholders had to change how they managed their businesses as diving sites were closed in the Similan islands which contained the most beautiful snorkeling site, and was the most attractive location for tourists who travelled to the Similan islands.

1.4 Problem Statement

Figure 1.2 Variables of global climate change and tourism are affecting diving and snorkeling on Similan island stakeholders and adaptation.



Source: Sitthidech Pongkitworrasin (2553).

From figure 1.2 shows how tourism was affected by climate changing. There consist of 3 main sub topics – Direct Effect, Indirect Effect and Adaptation. Firstly, a direct effect was climate change issues are affecting tourism. Some destinations were affected by season. Especially, the destinations or based natural tourisms dependent on weather. For instance, it was not appropriate to travel to coastal destinations in raining season, (Hamilton, 2005). Additionally, the ski resorts depend on seasons as well. Some ski tourists expect to travel to ski resort destinations in winter. Nowadays, many ski resorts are affecting by climate change issues - less snow in winter. From here, some resorts have to move higher up the mountain (Scott, Jones and Konopek, 2006). This issue might affect the number of tourists and the more importantly revenue. Therefore, climate change issues directly affect tourists and indirectly affect the tourism destination. The indirect effect might cause many factors. For example, the rising sea level might cause erosion problems by destroying attractive destinations - losing some beaches and causing coral bleaching.

In addition, the most interesting point of focus by stakeholders was the adaptation that occurred from climate change issue. The tourism industry needs to adjust and address this situation. Therefore, there are a lot of effects on the tourism industry and some negative effects on Thailand's economic. Especially as tourism revenue is the huge income to Thailand (NESDB, 2012)

Stakeholders in diving and snorkeling: The study aims to identify stakeholder's perceptions and how they intend to confront the issue of sustainability in the future. In case of stakeholders will include local governments, community and tour operators who provide or responsible in Similan islands.

Marine tourism has been rapidly increasing. This general interest in nature, marine settings and experiences based upon them is reflected in an increasing demand and value being placed on relatively undisturbed coastal environments and in particular, animals. Climate change has a direct effect on a variable consist of the environment. Referring to an introduction, climate partially becomes a destination dream in the tourist's perception. Therefore, a climate change will increasingly damage the marine life cycle and force to major drop on the snorkeling activities on the island, Orams (1999).Climate change issues might bring up obstacles – such as the number of tourists to the Similan islands when the aquatic environment quality is not plentiful, how do the stakeholders deal with this issue? And how do they do business future?

However, climate change is not negative at all. There are positives as well. Especially, the countries established towards North Pole. The temperature there will be higher and appropriate for travel. For instant, Canada, Northern of Europe could gain great benefit from this change, (Ehmer and Heymann, 2008).

1.5 The impacts of climate change

1.5.1 Climate is an essential resource for tourism, and especially for the beach, nature and winter sport tourism segments. Changing climate can affected to tourist to decision making about tourist destination. Especially, coastal destinations and ski resorts. Changing demand patterns and tourist flows will have impacts on tourism businesses and on host communities, as well as attributed effects on related sectors, such as agriculture, handicrafts or construction.

1.5.2 In small island states and developing countries, where tourism is a major economic activity, any significant reduction in tourist arrivals will have serious employment impacts and generate further poverty (UNWTO, 2011).

With these issues occurring in this area, the question arises as to climate changes impact on diving and snorkeling tourism, how it impacts businesses and the various stakeholders who depend and make their livelihood from this venture. What are the direct effects on businesses and what are the foreseen effects in the future if the impact caused by climate change continues.

Impact of climate change on social, environment and economic

Environment - There is scientific evidence that indicates to climate change's impact. For the causes of changing scenarios human activities play on critical roles in these changes. This research will focus on natural causes. There is very high confidence that coasts will be increasingly exposed to climate change risks, including coastal erosion and sea-level rises (IPCC, 2013).

Sea-level rise: loss of coastal wetlands and mangroves, and increasing damage from coastal flooding in many areas compound deterioration of coastal conditions, for example through erosion of beaches reducing the value of these destinations for tourism. Sea level rises can increase damage to vital infrastructure, settlements and facilities that support small communities (arno.unimaas, 2012).

Changes in the water cycle; drought-affected areas will likely grow in extent. Heavy precipitation events, which are very likely to increase in frequency, will augment flood risks, (sciencedaily, 2012).

Increases in global average temperature; major changes in ecosystem structure lead to more frequent coral bleaching events that will have detrimental effects to tourism as the main purpose of diving and snorkeling is to observe, watching the marine life. Thus, it became an issue with the stockholders being those who run diving and snorkeling businesses in coastal area, (eearth, 2012).

Social - (EPA, 2014) pointed that Climate change has affected to human in many factors. Such as, it could affect to transportation, health of human and infrastructure. Furthermore, the huge people are suffering from coastal storms, rising of sea level and drought. Moreover, some industries could have negative effect from this barrier such as agriculture or tourism.

Economic - Tourism is a highly diverse economic sector. There are many people directly involved in the tourism sector or whose livelihoods are affected by tourism (government ministries, local government, and tourism industry stakeholders). Moreover, it might affect other sectors who are not related to tourism directly (e.g., agriculture – those who provide agri-product to tourism industries, transportation industries) (UNEP, 2012).

1.6 Aims of the study

1.6.1 Aim of the study:

The purpose of this study is to focus on the effects of climate change on diving and snorkeling tourism. Secondly, the study wants to understand the perception of stakeholders on the current situation of climate change that occurred since the beginning of 2011 and its effect on their businesses, and the community at large. How they adapted to the current situation and the plans they have for the future of the Similan islands.

1.6.2 Research objectives

1.6.2.1 To identify stakeholder's perception on the current situation of climate change on the Similan islands.

1.6.2.2 To study how the stakeholders adapt their business in current situation on climate change challenges.

1.6.2.3 To investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future.

1.6.3 Research Questions:

1.6.3.1 What is the perception of stakeholders relating to climate change issues and its effects?

1.6.3.2 How do the stakeholders are holding on this situation and it is affected to their business?

1.6.3.3 How do stakeholders adapt to these challenges and what plans are they putting in place to sustain these resources in the future?

1.6.4 Significance of the Study

The research's significance is to contribute academically and socially for tourism practitioners by addressing: The effects and impacts of climate change and what tourism practitioners can do to work towards sustainable solutions in diving and snorkeling activities in the Similan islands.

Proposing measures that tourism operators can put in place for the future and how to effectively manage the activities to avoid damage to the environment. The climate can change the pattern of nature, capacity of the tourist attraction and season.

Encourage the consciousness and responsibility of the stakeholders on the importance of environment and tourism and to urge the Government to support the stakeholders who are working towards conserving the environment to perform more diligently, and to encourage those who are not to get on board and do so.

The Government Sector can adapt the results of this research to other areas in Thailand and develop measures and policies for combating climate change.

1.7 Scope of the Study

1.7.1 Scope of time

The research is expected to take about ten months to complete. Secondary data and questionnaire will be researched from November to end of February 2012. Primary qualitative data will be collected from September to October 2012. The following time will be occupied by data analysis and writing up the thesis report.

1.7.2 Scope of Geography

The case study will be conducted on the Similan islands, the most famous diving and snorkeling area in Phang-nga Province Thailand.

1.7.3 Scope of Demography

The research will focus primarily on stakeholders namely government officials, tour operators, tour agencies and the community of Moo 5 or Tam La Mu village in Lam Kaen district.

1.7.4 Area of research

This research centre mainly on the magnitude of climate change and its impact on diving and snorkeling tourism by outlining the perception of the various stakeholders and the future plans they plan to employ in order to help with the future sustainability of diving and snorkeling tourism on the Similan islands.

1.8 Definition of Key Terms

Climate

Climate - the long-term weather pattern of an area, including temperature, precipitation, and wind (UNWTO, 2011).

“In short, climate is the description of the long-term pattern of weather in a particular area. Some scientists define climate as the average weather for a particular region and time period, usually taken over 30 years. It is really an average pattern of weather for a particular region. When scientists talk about climate, they're looking at averages of precipitation, temperature, humidity, sunshine, wind velocity, phenomena such as fog, frost, and hail storms, and other measures of the weather that occur over a long period in a particular place.” (NASA, 2011).

Global warming

Global warming is the observed and projected increases in the average temperature of Earth's atmosphere and oceans. Nowadays, the Earth's average temperature rose about 0.6° Celsius (1.1° Fahrenheit.), (timeforchange, 2011).

Greenhouse effect

The Greenhouse effect is the gaseous constituents of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wave lengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. This property causes the greenhouse effect. Water vapor (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), and ozone (O₂) are the primary greenhouse gases in the Earth's atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine and bromine-containing substances which are dealt with under the Montreal Protocol. Beside CO₂, N₂O, and CH₄, the Kyoto Protocol deals with the

greenhouse gases sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), UNEP (2008).

Climate change

A change of climate which is attributed directly, or indirectly to human activity that alters the composition of global atmosphere which is in addition to natural climate variability observed over comparable time periods (Ramkhamhaeng University, 2011).

Climate is the description of the long-term pattern of weather in a particular area. Some scientists define climate as the average weather for a particular region and time period, usually taken over 30-years. It's really an average pattern of weather for a particular region. When scientists talk about climate, they're looking at averages of precipitation, temperature, humidity, sunshine, wind velocity, phenomena such as fog, frost, and hail storms, and other measures of the weather that occur over a long period in a particular place (NASA, 2011).

Stakeholders

A stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization's objectives (boxesandarow, 2011). In this study, stakeholders consist local governments, community and tour operators in Phang Nga province.

Marine tourism

There are a number of activities that are obviously within the marine tourism realm; examples include scuba diving, deep-sea fishing and yacht cruising (Orams, 1999).

Sustainable tourism

"Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic, and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability" (UNEP, 2012).

Perspective

Perspective is one process to understand humans thinking, attitudes or the way they do (Education Portal, 2014).

CHAPTER 2

LITERATURE REVIEW

This chapter outlines the basic concepts and theories that are related to climate change and its impact, the greenhouse effect, marine tourism management, tourism impacts, sustainable tourism and development, and environmental responsibility. In addition, this chapter illustrates previous research on climate change and its effect on tourism. The following areas will form focus for the literature review of this research.

2.1 Green House Effect

2.2 Climate change and impact

2.3 Marine tourism, diving and snorkeling tourism

2.4 Stakeholders

2.5 Tourism Impacts

2.5.1 Economic Impacts

2.5.2 Socio-Cultural Impacts

2.5.3 Environmental Impacts

2.6 Coastal and island resources management

2.7 Sustainable Tourism and development

Human is main cause of global warming. Global warming phenomenon cause from gases in the atmosphere. E.g. CO₂, fossil fuels combustion. These gases made greenhouse gases when effect from the sun, will create phenomenon called greenhouse effect. Finally, the result of this effect will create climate change. Changing climate has many effects to our global. For example, increase or decrease rainfall, influence agricultural crop yields, affect human health - increasing diseases (EPA, 2013). In this study the researcher will focus on tourism sector. Climatic changes have strongly affects tourism. As the most of majority of tourists prefer spending time outdoor and appreciate to enjoy the sun or landscape (Hamilton and Tol, 2007). There are several varieties of tourism were affected by climatic changes. Especially natural tourism categories based which are strongly effects by climate change: Ski resorts are facing trouble problems – temperature increasing has influencing on decrease snow-cover reduction in several well-known winter

tourism destinations. Most winter resorts had snow problems during this time. Thus, they come up with artificial snow making became popular (Mishev and Mochurova, 2008).

Tourist destination is affected by the expected weather rather than the actual weather is the main factor in decision making. Especially, costal tourism, marine tourists enjoy and appreciate with sea, sun, sand, landscape and outdoor activities. The weather influenced to tourists about comfortable and feel free while they are traveling.

For marine tourism in Thailand was well known. Because of Thailand has a good condition sites for snorkeling and scuba diving. For the reason that researcher focus on snorkeling, because snorkeling is simply tourism marine activities, not expensive package. If compare between scuba diving.

Related Literature

2.1 Greenhouse gases

According to EPA or United States Environmental Protection Agency, 2014 point that greenhouse gases consist carbon dioxide (CO_2) - fossil fuels burning will occur carbon dioxide in the atmosphere (oil, natural gas and coal). Moreover, trees, solid waste, wood products and cement manufacture also create carbon dioxide too.

Methane (CH_4) - transportation and production which used coal, natural gas and oil could emit methane in the air.

Nitrous oxide (N_2O) - agricultural, industrial activities and fossil fuels combustion and solid waste are the reason of Nitrous oxide diffusing in the atmosphere.

Fluorinate gases - Hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride come from industrial part. Even though, emitted in smaller quantities could increase the powerful of greenhouse gases, sometime these gases referred as are High Global Warming Potential gases.

In 2008, (McIntyre, 2012) stated that global warming of the climate system was “unequivocal” and was inevitably “very likely” anthropogenic (human-made) during the mid20th Century. Greenhouse gas (GHG) has been discovered to facilitate global temperature rises. McIntyre also stressed that human-induced climate change has only just begun and that the rate of climate change is “very likely” to change. Based on future greenhouse gas emission trajectories, McIntyre Steve predicts that by 2100 the global average surface temperature will increase 1.8°C

reaching 40°C (Yunis, Urosevic, Gutierrez, Lemaistre and Calvente, 2009). NASA also refer to greenhouse effect is

“Gases in the atmosphere such as carbon dioxide do what the roof of a greenhouse does. During the day, the Sun shines through the atmosphere. Earth’s surface warms up in the sunlight. At night, Earth’s surface cools, releasing the heat back into the air. But some of the heat is trapped by the greenhouse gases in the atmosphere.”

In term of, the global warming phenomenon cause from gases in the atmosphere. E.g. CO₂, fuel combustion (e.g. fossil fuels) while industrial revolution from 1750 to 1850 while, human combusted more fossil fuels to atmosphere. These gases made greenhouse gases when reflect infrared radiate from the sun, will create phenomenon called greenhouse effect. From the effect will increase global atmosphere. Finally, the result of this effect will create climate change (The United Kingdom Environmental Change Network, 2012).

Climate change has potentially significant implications for Thailand. Globally climate change is already having an impact on biodiversity (e.g. increasing carbon dioxide in ocean water, making more like acid. Marine creatures are allergic acid. Thus, bleached out of coral). And is expected to exacerbate challenges arising from other human activities like changes in land-use, pollution, habitat loss, fragmentation in (forest) landscape and introductions of non-native species. Changes in Phenology have already been observed. The habitats of many species will move to higher elevations or pole ward; whether they can migrate or not depends on rates of change and species attributes. Species with restricted ranges, for example, on islands or mountaintops will often be at even greater risk of extinction.

In Thailand, monsoons have a major influence on current distributions of forest trees and plants. Shifts in amounts and patterns of rainfall could have major implications for species which often have restricted ranges because of impacts of human land-uses, for instance, conversion to agriculture (Pongkitworrasin, 2010).

The likely effects increases in the mean global temperature on freshwater systems results in higher water temperatures lower dissolved oxygen levels and higher toxicity of pollutants. The evolution of freshwater fish means that they have particularly low regimes and temperatures and therefore likely to be impacted. Characteristic adaptation measures, for example, water storage and diversion, could make the demand of shifting ranges and meeting requirements even more

difficult. The impacts of climate change on fisheries and aquaculture are likely to be important with both positive and negative impacts. Additional impacts on fisheries, due to the importance of feeds, would also affect aquaculture (Regional climate change adaptation knowledge platform for Asia: Scoping assessment for National Implementation in Thailand, 2010).

Global warming in respect to numerous small islands, coral atolls and low lying coasts that will be affected by small increases to sea levels, an increase in frequency and strength of storms, increased coastal erosion and inundation will therefore introduce saline into soils. In A decrease in coral cover and abundance of biodiversity will be the result of coral bleaching and its resultant mortality. These impacts are easily observed by tourists to the region (especially snorkelers and SCUBA divers) and can be used to educate or strengthen furtherance of sustainable environmental practices (Crabtree, 2007).

From discussion on Greenhouse gases, it is apparent that Greenhouse effect is a global warming phenomenon from greenhouse gases in atmosphere were combusted, CO₂, fossil fuels and so on in transportation part and industrial part. The gases which are produce greenhouse effect such as carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O) and Fluorinated gases. These gases made greenhouse effect when its radiated from the sun, going to be greenhouse effect. The temperature going to be increase continuously and climate change was occurred by greenhouse effect phenomenon.

2.2 Climate change and impact

The NOAA National Weather Service defined climate change as a long-term change in the statistics of the weather (NOAA, 2007). (Hamilton, 2005) and (The United Kingdom Environmental Change Network, N/D) and (National Academies, 2005) supported in the same opinion about the cause of climate change. Human activities are the main anthropogenic causes of air temperature change. The major of these is the use of fossil fuels. Recent human activities such as the combustion of fossil fuels - for example gas, coal, crude oil, dioxide, methane and nitrous oxide. This group of gases made greenhouse gases and reflect infrared radiation, which is create an effect called greenhouse effect. As the concentration of gases increase in the atmosphere made temperature warmer. However, there is justifiable evidence that considerable global warming is occurring. The evidence retrieved from measurements of rising air temperatures, surface ocean

temperatures. Increasing temperature not only affects the climate it affects the sea level as well. Glaciers dissolution and ice cap shrinkage increase the sea level as well. Moreover, many changes are occurring such as a change in vegetation zones, an increase in disease level and biological systems change.

2.2.1 The result of climate change affect to global

2.2.1.1 Global temperature rise

NASA refer to global surface temperature has warmed since 1880. Most of global warming has occurred since the 1970s. The 20 warmest years having occurred since the 1981. While 2000s witnessed a solar output decline resulting in an unusually deep solar minimum in 2007-2009. The surface temperature still continues to increase.

2.2.1.2 A rise in global sea levels

NOAA (2007) refer to the heat from the sun has to penetrate the earth's atmosphere for the ice at the north and south poles to start melting. NASA refer that in the previous century, global sea level increased about 17 centimeters (6.7 inches).

Moreover, NOAA also refer to in 1998, 46 million people lived in areas at risk of flooding. If sea levels raised this amount could increase rapidly. Scientists calculate that a rise in sea level of only 50 centimeters would increase the number of people at risk to 92 million. A 1 meter rise in sea level would put 118 million people at risk. Scientists consider that there will be a sea level rise of 50 centimeters over the next 40 to 100 years. For example, many millions of people would be homeless with valuable farmland ruined in the Nile Delta if the world's oceans rose by 1.5 meters and Republic of Maldives those vulnerable sea level rise.

2.2.1.3 A change in vegetation zones

NOAA (2012) mention to a change in the climate would affect the world's vegetation zones. A change would be seen in the boundaries between grassland, forest and shrub land. This change in vegetation zones could cause famine in arid areas such as Africa that depends on a certain type of crop. Changes in vegetation could cause the mass movement of people away from arid regions, in turn causing over-crowding in larger towns and cities.

2.2.1.4 An increase in disease levels

Scientists believe that temperature rises by 3-5 degrees, could cause the number of people potentially exposed to malaria from mosquitoes to increase from 45 to 60% of the world's population. This could lead to an additional 50-80 million cases of malaria a year.

2.2.1.5 A change in ecosystems

Ecosystems could be affected by a change in temperature. It has been predicted that an increase in temperature would affect species composition. Beside, ocean acidification is occurred. (NOAA, 2013) have defined that “*a reduction in the pH of the ocean over an extended period, typically decades or longer, which is caused primarily by uptake of carbon dioxide from the atmosphere, but can also be caused by other chemical additions or subtractions from the ocean. Anthropogenic ocean acidification refers to the component of pH reduction that is caused by human activity. Over the last 250 years, the atmospheric concentration of carbon dioxide has increased from 280 parts per million to over 394 parts per million due to the burning of fossil fuels (e.g., coal, gas, oil) and land use change (for instance, conversion of natural forest into crop production). Ocean acidification has potentially devastating ramifications for all ocean life; from the smallest, single celled algae to the largest whales.*”

There are many negative effects to marine biology. As, billion people around the world accept that food from ocean as primary source of protein. Many jobs depend on fishes and shells in the ocean. (NOAA, 2013) notes that marine organisms that produce calcium carbonate shells or skeletons are negatively impacted by increasing CO₂ levels and decreasing pH in seawater. Coral reefs also will suffered from acidic ocean have reduced ability of rehabilitation. There negative effect is included shells and fishes were trouble about fertilization.

The climate and natural environment both are important to tourism, especially natural tourism as primary source for travel. Climatic changes affect to tourists making decision to choose destinations for holiday.

Hamilton, Maddison and Tol (2005) mention about the relationship between tourism and climate (change) in 2 different ways:

“firstly, at tourists, what they (should) prefer or how they behave, or secondly, at destinations and how their attractiveness changes with climate and management.”

In addition, (Fotiou, Simpson, Assis, Cabrini, Vereczi, Malone and Kolli, 2009) refer that tourism is highly climate sensitive economic sector same like agriculture, insurance, energy and transportation. There is becoming evident at destinations around the world as climate is influencing decision-making in tourism field. Beside, changing climate affect to four categories: influencing tourism destinations, decision-making, their competitiveness and sustainability.

Moreover, Hamilton, Maddison and Tol also refer to climate change and tourism attractions tourism destinations and tourism operators are affected in a number of ways by climate instability and changes. All tourism destinations are climate-sensitive to a various extents, as they are influenced by natural seasonality in demand. Inter annual climate variability that brings heat waves, unseasonable cold, drought, storms and heavy rain can affect tourism destinations positively or negatively. Extreme weather can affect not only tourists comfort and safety (and thereby satisfaction), but also the features that attract tourists for example snow cover, coral reefs or wildlife, (Scott and Lemieux, 2010). (Scott, Jones and Knopek, 2006) also mention that climates directly affect nature-based tourism limiting recreation and tourism activities (Scott, Jones and Knopek, 2006). In addition to this, there is other climate change and tourism's influencing. (Ehmer, 2008) mention the effect of climate change to tourism industry more than other researchers.

2.2.2 The new challenge of climate change

In terms of global tourism industry, climate change brings more risks than opportunities. Seasonal changes in tourist flows. Thus, in this situation there are winners and losers. Nevertheless, the tourism industry is still continually growing in weather change issue.

2.2.2.1 Countries on the losing side

Outside Europe, many countries will face from climate change, even though difference of degrees. Particularly, poor countries those tourism revenue as a driver of development. Thus, have more burdens. Outside Europe those countries whose winning in this situation are Canada, New Zealand and USA.

2.2.2.2 High economic dependence aggravates the problem.

Negative climate always have seriously effects. Especially, the countries those have great benefit from tourism. In Europe this applies to Malta, Cyprus, Spain, Austria and Greece. In the Caribbean, E.g. the Bahamas and Jamaica are some affecting. In Asia, Thailand and Malaysia. For Africa is Tunisia and Morocco.

There are example tourism attractions those effect to climate change – Likewise, (Hamilton, 2005) has a difference reason from other researchers; there are two perspectives of changing climate that concern to tourism: the first reason is as the others – the climate facilitates or hinders the tourist activities. On the other hand, the difference reason from others is the aesthetic perspective of climate - the quality of light, appearance of the sky or the body of water (Hamilton, 2005).

Pongkitworrasin (2010) refer that in this climate change scenario, this is effect was occurred from climatic change and the important of tourism in each countries. Get benefit countries are top area in the figure. On the other hand, half of figure in the bottom side countries are lose in this changing of climate situation (Included Thailand). Horizontal chart has shown that the important of tourism that affect to economic sector, right side countries are rely on tourism highly. Meanwhile, left side countries are rely on tourism lowly. In case of Thailand suffers negative impact form climatic change scenario quite high and Thai economic depends on tourism as well.

Pongkitworrasin also mentioned to Thai tourism revenue in 2007, this part of revenue is export 12.6% of GDP of country. It should be more expand to 1.8 trillion baht in 2017. In addition, increase revenue to Thailand. There is extremely influence to employ jobs, increased job to 1.9 million positions (from 5.3% the total job hiring in Thailand) and also forecast to increase to 4.76 million persons of job hiring in 2017.

From climate change of (SEA STARRC and Commonwealth Scientific and Industrial Research Organization (CSIRO), N/D) Australia modeled Thailand's climate in the future. The result shows that

- The temperature will be increased and decreased a few degrees.
- The extremely high temperature area will expand.
- The high temperature period will be increase.

- Rainy season still the same period but average annual rainfall will be increased.

As, researcher could find some articles that related about impact of climate change has affected to Southern part of Thailand, (Shinwanno, 2007) accepted the same point of views that some climatic changes barriers those have affected to Southern part of Thailand.

- Rainfall changing: Droughts or floods
- Increasing of sea level: coastal flooding and erosion, saline intrusion into freshwater aquifers
- Increasing of temperature: coral bleaching, heat stress, biodiversity changing (especially marine biodiversity), increased emergence of vector borne diseases (specially Malaria)
- Increased extremely storms: damage infrastructure, highly risk (particularly marine tourism)

Ordinary, the most majority tourism activities in south of Thailand is marine tourism, sea such primary source tourism there must base on natural. It could not predict and less education in this field. Thus, hardly to evaluate climatic change situation. By the way, (UNEP, 2008) climate change adaptation refers that an adjustment in natural or human systems in answer to actual or anticipated climatic stimuli or their effects, which moderates damaging or exploits beneficial opportunities. Adaptation was proceed by societies, institutions, individuals, governments and can be motivated by economic, social or environmental drivers through many mechanisms. It will be include adaptation in both behavior, in resources and technologies. As, adaptive capacity shows and bring up the implementation of negative outcomes from climate change. For the benefit of adaptation is longer growing season or increased potential for tourism.

From overall majority, there are two climate change impacts effect to tourism destination - seasonal changing: heavy rain in summer period which is has more effect to coastal tourism. Thus, tourists will making decision uncertainly to choose tourist destination. Conversely, changing of climate hinder to definitely tourist activities – wind and rain will make a sunbathing day at the beach impossible. Secondly, tourism attractive changing might influence to tourism's impression. Finally, possibly affects to tourism perspective to come back in the future.

2.3 Marine tourism, Diving and Snorkeling tourism

There are many definitions that refer to marine tourism.

Orams, (1999) *'stated the definition of marine tourism as recreational activities that are based on a marine environment. For example, scuba-diving, snorkeling, surfing, fishing, sailing, water skiing, sea kayaking, windsurfing, and yacht cruising, also included are whale watching or watching a professional surfing competition.'*

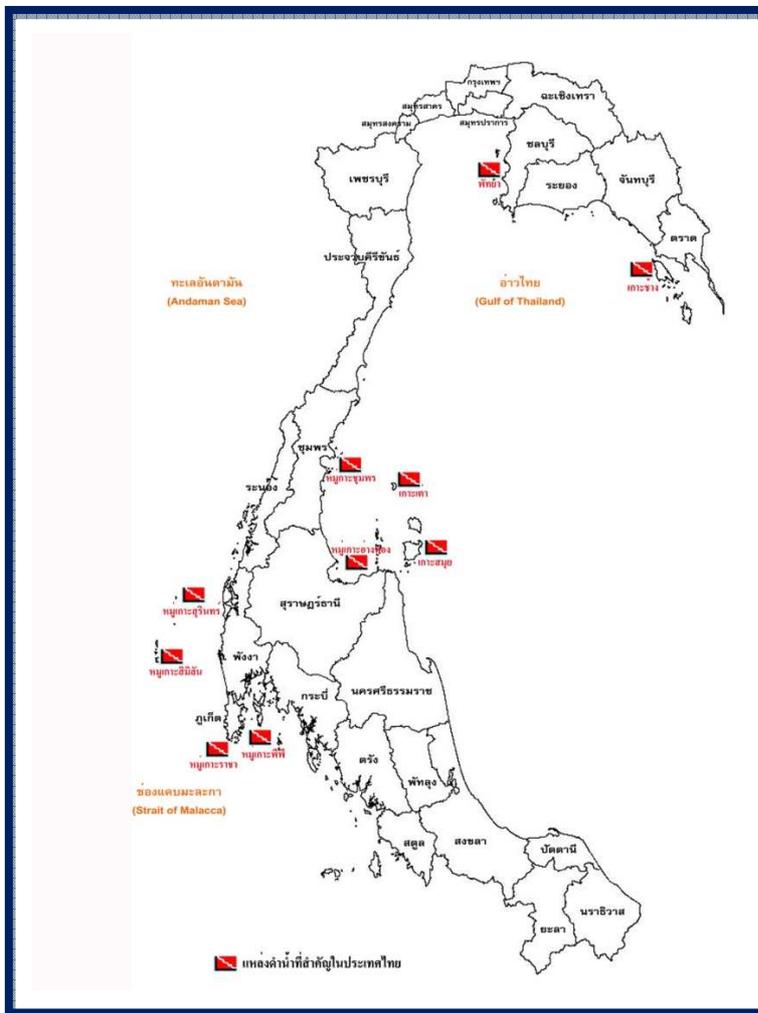
Hall (2001) referred to the concept of coastal tourism as of the result of recreationally oriented activities that take place in the marine zone and the offshore coastal waters such as cruises, swimming, recreational fishing, snorkeling and diving.

Thus, marine definition is marine activities participation or activities those are based on marine environment. E.g. snorkeling, driving, surfing, fishing, sailing, yacht cruising, even though walking on the beach.

As, researcher give some examples of related articles about the historical marine tourism. (Oram, 1999) mentioned that the first time the marine sceneries have appeared in eighteen century. Although, wild area such as coastal and sea were not interesting in that time. Early 1700 the medical professions made marine tourism become popular, suggested patients to travel to marine for their health. However, after mid nineteen, there are some marine tourism revolutions which are combined activities center - theaters, music halls, amusement parks and shopping. By another way (Hamilton, 2005) referred to history of marine tourism differentiate with (Orams, 1999) that marine travel is a fashion in 1920s, suntan skin or glow skin which is shown wealth and higher social status. Suntan skin or glow skin is still one of the main motivations for take vacation.

The sea has a strong attraction for people and also gives a source of food and transport. Coastal and marine tourism is a huge business a sub of whole tourism industry. (Orams, 1999) mention as it is growing at a faster than other tourism industry, extremely competition in the business and also many negative impacts to environment and social. As this study, research will be focus on snorkeling and diving because of the both of activities was popular in whole marine recreations. (Marine Knowledge Hub, 2010) referred that the important marine recreation should be diving and snorkeling. Because, it is appropriate for marine lover. Certainly, divers appreciate to be closed with marine nature, blue sky and clear water.

Figure 2.1 The important diving and snorkeling sites in Thailand.



Source Marine Knowledge Hub bascedited as Thailand Scuba Diving, Thailand Dive Center, Scuba Dive Travel Information, PADI Scuba Diving)

In term of snorkeling definition many writers define many definitions. E.g. use less equipment, as (Dimmock, 2007) refer to *“snorkeling use less equipment, as they only require the assistance of a mask to see clearly underwater, a snorkel to breathe on the water surface, and fins to enable propulsion.”* Snorkelers swim on the water surface face down, searching and discovering the marine world below.

And (Dimmock, 2007) also refer to the growth in global dive and snorkel activity has seen a shift in the profile of the contemporary recreational diver. The international recreational diving market was formerly the domain of experienced, rich or intrepid,

predominantly male divers. However, with a growing number of people traveling for the purpose of experiencing scuba diving or to snorkel.

Dimmock (2007) referred to snorkeling as a water-based activity to breathe on the water surface, with fins to enable propulsion. Snorkelers' start by swimming on the surface of the water faced down, observing and discovering the marine world beneath. Therefore, snorkeling gives an opportunity to be more implicit with the marine location and to observe marine wildlife. Snorkeling requires less equipment and only introductory mental and physical involvement. As a result, many people prefer the freedom of snorkeling do diving. Snorkeling is something that everyone can do. Moreover, requires less financial involvement because there is no need to service or rent large amounts of equipment. Similarly, the investment in terms of time and cost for training and education is reduced for snorkelers.

Garrod and Gössling (2008) supported by Dimmock expressed that snorkeling is rather more accessible as a recreational activity due to the lower expectations on equipment and training. In addition, snorkeling often encourages enthusiasm in marine environments that leads to a dive certification. Furthermore, it is suggested that countries that are particularly popular for marine recreation such as diving and snorkeling consisted Egypt, Australia, South Africa and Thailand where are richness of aquatic biology: fishes, coral reefs and under water scenery. As, the researcher mentioned before that coastal or marine tourism based on natural. Thus, depends on natural condition. When climate change phenomenal is occurring and also affected on tourism sector, specially, tourism types based on natural. Snorkeling and diving have affected by climate change, coral reefs, fishes and beautiful scenery of underwater attracts divers or tourists to explore and enjoy the sea, (Orams, 1999). Nowadays, aquatic environmental decaying from overfishing, pollution, sedimentation from near shore erosion, dragging of ship anchors and plundering for souvenirs. In addition, previous years ago, mass bleaching on worldwide coral reefs were occurred which is affected to snorkeling and diving business and also might influence to business running of stakeholders, (Gable, 1997). It is an impact of climate change to diving and snorkeling directly. In the another hand, seasonal changing, increasing storms, sea-level rise are indirectly impact that affect to tourist destinations and is already influencing decision making about destinations of tourists (UNEP, 2008) and (UNWTO, N/D).

In case of Red sea, (Marshall et al, 2009) result their study found that some of tour operators in Red sea thought that mass coral bleaching were occurring, that the result of temperature increasing. From this cause made mass coral bleaching to 60% and decrease their revenues. 71% of tour operators believe that the coral reefs condition in Red Sea were not great condition. Most operators, 64% thought that loss of half of the coral and most of the coral in the region would detract from a tourist's experience But 61% of 35 tour operators did think that fishes were impressive diver or snorkeler.

Other impacts of climate change include coastal erosion, land submergence, seasonal changing, increased storms flooding, coral reef bleaching and ocean acidification. From these causes could be influence to tourists to decision making to choose destination. Especially, natural based tourism or recreation was affected by climatic changes more than other types of tourism, when tourist destination condition changed may influence to choosing destination of tourists. Whilst, diving and snorkeling activities are depends on aquatic environments – coral reefs, fishes were trouble from climate change scenario. In the point of view of tour operators who provide diving or snorkeling activities to tourists were affected by this situation.

2.4 Stakeholders

Freeman (2001) mentioned that *“Stakeholders are a group of individuals who have to adapt their collaboration with companies changing management strategies as to achieve their organization's objectives”*.

Carroll and Buchholtz (2006) referred to stakeholder definition that an individual or a group that various kinds of stakes in a business. Stakeholders were affected by actions, decision makings, policies or practices.

Rukendi (2011) cited as Buhalis that identified stakeholders of tourism destinations – governments, tour operators, tourism enterprises, hosts, tourists. In this stage, climate change was an environmental issue that has actively coveted business awareness during the course of the 1990s, when a range of stakeholders, including governments, started to pay consideration to the potentially detrimental consequences, and to the demand to take action.

Kolk and Pinkse (2007) suggested that in changing of climate state, the corporate position on differential. As, local companies have to abide by many regulations. Public pressure

to take action on climate change scenario. Especially, it often relates to the reputation that a company has built up over the years. Some companies are affected by climate change cause weather changing or government policy.

In terms of alternative transport arrangements were used by some tour operators. For instant, German tour operator offers “Anreisemit der Bahn” (travel to the destination by train). This tour operator has worked with 10 German holiday destinations to tourists by developing and marketing carbon free packages. The company was successful from this project and expands to cover travel distances of more than 1000 km. Stakeholders should concern about energy emission of their activities in marketing materials to influence travel characteristic. By provide some carbon emission knowledge to travelers and to choose low carbon products. There are some processes to reduce carbon emission on tourism industry:

1. Re-think their choice of destinations - Stakeholders can give suggest when tourists offer by replacing place that closer ones where is appropriate, similar attraction value.

2. Avoid promoting long-transportation destinations - The short time transportation destinations will be reduce carbon free emissions.

3. Support low-carbon vacation choice - Stakeholders should recommend to customers. If all packages reduce carbon emissions. This process will support customer’s determine toward low carbon tourism.

4. Develop new low-carbon products - Stakeholders should find some strategies to attractive low-carbon packages. The new customers would be attracted by low carbon packages increasing.

Thus, stakeholders are a group that collaborate for achieve their group’s goals. Stakeholders influence to destinations directly which can generate positive or negative impacts. The good relations and good collaboration of management could bring to positive to destinations- environmental impact reducing, more profit increasing and so on. For this study will classify stakeholders such as local governments who responsible in tourism field of Phang Nga province: TAT of Phang Nga province, Ministry of Tourism and Sport in Phang Nga province, Lam Khean Administrative Officer and Similan island National park staffs. Another group of stakeholders will be tour operators who provide Similan islands tour package and community in Tub La Mu village in Lam Kaen area which is near the Tub La Mu port.

2.5 Tourism impact

As, the growth of tourism has become expand, several reports show that related environment, economic and social and cultural. Overload of tourists could ruin tourist destinations, could be affected to local environments and can create some change in local communities - even though positive or negative impacts to social. Particularly, tradition, life styles of local community. By the way, tourism can generate income to hosts as well. Thus, it related to considerable volumes of foreign currency inflows and has urged local economy to be in a positive way which is involved in an economic impact part. This topic outlines some of positive and negative impacts of tourism.

2.5.1 Economic Impacts

Tourism is an enormous business. The Commerce Department of U.S. reports that tourism is the most growing industry worldwide, (Gable, 1997). The most economic scenario of tourism is beneficial. These benefits include the effects of price and income, and also the economic consequences of tourism spending, including the generation of foreign exchange. The basic impact of tourism to economic sector could evaluate from tourism enterprises, construction of tourism infrastructure development of supportive activities and employee increasing volume (Soukhathammavong, 2010).

Moreover (Orams, 1999) mentioned as the similar like Soukhathammavong that the local residents get benefit from business, services and infrastructure that these tourists. Furthermore, increasing of career opportunities to local residents and improve local public service to be a good standard: hospitals, transport, schools, universities and department stores. Moreover, tax revenues of governments were generated by tourism. For example sale tax on goods or services. Governments no need to take care these people in a long term and also these people who is the best to develop the local economies.

In terms of negative impact consequences are price inflation. (Orams, 1999) noted that the increased demand that results tourists visiting leads increase in prices for goods and services. It affects to host communities, in case that they do not receive greater incomes as the result of the tourism. The lack of spending in local communities when the money spent on visiting that goes somewhere else. This is common in marine tourism consequences, because often visitors are on boats and tour operators prepare everything by supplies elsewhere. Generally, some of tour

operators are not locals but are seasonal businesses that base elsewhere. Much money spent on outside communities, little money is spent on food, accommodation and transport.

As, the world environments have changed cause human evolution. A climatic change is also result from industrial evolution in the past. In climate change stage has many affect to economic sector. Especially, some countries that tourism is great revenues about tourism and also depends on natural as a primary source of tourism - marine tourism, skiing tourism, ecological tourism and so on.

In case of marine tourism that based on natural condition, coral reefs are an incredibly valuable ecosystem. They are very important to the natural environment and have a very high value for humankind, supporting millions of people whose lives depend on for example, food and income when changing of climate are occurred stage, water temperature increasing going to damage coral reefs linked with El Niño phenomenon. Coral reefs compare as the natural source that attract under water lovers to visit the sea.

Millions of tourists worldwide who come to dive and snorkel amongst coral reefs are attracted to the aesthetic beauty of these natural treasures. Reef tourism is increasing rapidly and is estimated to contribute potential annual net benefits of US\$ 9.6 billion (Cesar, Burke and Pet-Soede, 2003).

The main tourism revenue in South of Thailand is marine tourism. In 2012, tourists visited to Thailand 5.7 million, increased to 7.1 compare with last year. In terms of tourism revenue was 258,102 million baht, increased from 235,348 million as the same quarter of last year or increased 9.7% (Economic Outlook, 2012).

Cesar, Burke and Soede (2003) stated that countries with coral reefs attracted millions of scuba divers annually, yielding substantial economic benefits to their recipient country. Globally, tourism is estimated to provide US\$ 9.6 billion in annual net benefits, this amount does not include additional income from tourism spending.

Global climate change and its impact on coral bleaching advance the degradation of coral reefs. In 1998, 75% of reefs worldwide were affected by bleaching and 16% experienced dying. Current studies suggest that bleaching could become an annual event within the next 25 to 50 years. The study indicates calculations on the net present value of prospective losses during the subsequent 50 years at a 3% discount rate. In a scenario where 'severe' coral bleaching has

occurred with mass coral mortality it is estimated that the resultant costs of approximately US\$ 83 billion. In regards to a ‘moderate’ scenario where bleaching of coral reefs results in reduced mortality, costs are estimated to be approximately US\$ 21 billion. Other attributed impacts of global climate change that has negative effects on coral reefs are the increased frequencies of storms and hurricanes. As recent research indicated climate change will cause the loss of US\$ 109.9 million in the Caribbean due to increased water temperatures, sea level rise and loss of species, among others, (Cesar, Burke and Soede, 2003). Furthermore, the Caribbean attracted 57% of the world’s 10 million active divers and it has been estimated that by the year 2005, diving will be an industry that generates \$1.2 billion annually. In the Indian Ocean, socio-economic conditions impacted on 1998 extensive bleaching events estimated at a loss of US\$ 700 - 8,200 million in net present value terms. The tourism value is highest with almost US\$ 40 billion in the ‘severe’ bleaching case.

In terms of economic impact from tourism, positive impact is revenue generator to local residents, increase job and develop public utilities – hospitals, roads, airport, schools, universities and department stores. The local people life are better because, tourism. By the way, these are positive and also have negative impact: local people will leave traditional life when tourism becoming influence to destination. People will leave traditional careers to be hospitality careers in the highly compensation and new fashioned reasons. Furthermore, local people will be suffered by price inflation, in case that they do not receive high compensation. Thus, it is impossible to stay in tourist destinations, even though these areas are their home land.

2.5.2 Socio-cultural Impacts

Tourism can be positive and negative influence to local residents of tourist destination. The impact increase when tourism brings some changes in host community – traditional, life styles of local residents and ethics.

(UNEP, 2013) and (COASTLEARN, 2013) note the similar view of point. UNEP divided 4 groups of tourism’s changes As; COASTLEARN divided 3 group, by ethnicity changes included with authenticity changes, the topic standardization and adjustment to tourist demand as the same. It will be happen in host society in tourist destinations.

2.5.2.1 Ethnicity changes

Tourism could change traditional cultures into goods when traditional ethnics, religious rituals as tourist expectations. Reconstructed ethnicity is the result of this consequence. Tourist destinations always provide products that follow tourism demand – souvenirs, arts, entertainment and commodities begins.

2.5.2.2 Standardization

For the tourist's satisfaction reason, destinations have tried to provide familiar facilities. In terms of accommodation, food and drinks have to adjust to be more standard, not too strange or too new. Tourists feel free with familiar facilities more than unrecognizable environment - well known fast food restaurants, cafés and hotel chains.

2.5.2.3 Authenticity changes

Hosts might have to adapt their traditional culture to be tourist's taste even performing shows. Although, tourists glance down local atmosphere - local life without any knowledge or interested performance.

2.5.2.4 Adjustment to tourist demand

Most of tourist destinations provide goods as tourist taste – handicrafts goods, food and beverages, souvenirs, arts. Producers have tried to adapt to follow tourist's taste.

Moreover, the both of them also support that the criminal increasing in tourism destinations. The valuable of tourists will attract robbery and drug dealing as the cameras, jewelry and cash.

Increasing of careers going to bring up children labor, UNEP mentioned more about this barrier in tourism destinations as make more money underneath unfair conditions - long hours, unstable employment, low pay and little training. Some jobs are recruited young child as cheap and flexible employees. Furthermore, prostitutes and sex tourism of children and young women has growth with tourism sector. Easy money is the seduction of young people. In other stage children are trafficked into the brothels in tourist areas and sold into sex slavery, very rarely earning enough money to escape. UNEP cited as The United Nations has defined child sex tourism as *"tourism organized with the primary purpose of facilitating the effecting of a commercial sexual relationship with a child"*. *Certain tourism destinations have become centers for this illegal trade, frequented by paedophiles and supported by networks of pimps, taxi drivers,*

hotel staff, brothel owners, entertainment establishments, and tour operators who organize package sex tours. At the international level, there are agents who provide information about particular resorts where such practices are commonplace.

In case of impact of tourism on marine destinations, there have several changes in marine destinations social (Orams, 1999) notes that some scholars may disregard the classification of an attraction like “Body Beach”, “Muscle Beach”, as a cultural attraction. In regards to tourist attractions that focus on human diversity there are none. However, “People watching” is an incentive part activity on the beach areas. Many tourists frequent beach locations to observe scantily clad men or women. Many teenagers worldwide vacation over the summer months on the beach the preliminary reason is to meet the opposite sex with little clothes on.

In the another side, (Sawaddiraksa, 2010) mentioned that it is common to observe many pubs, bars and other type of entertainment businesses in tourism destinations to serve the demand of tourists all the same it could import new culture and new values to the destinations. Also, drug and alcohol consumption increases in these areas. In addition, labor from traditional occupations of host community convert to working in the tourism sector. The lifestyles of tourists are readily adjusted by local people e.g. dressing style or dining culture. Furthermore, some tourists bring behavior that is deemed unacceptable by host community and would provoke conflict. The traditional culture of host communities could be interfered. On the other hand, meeting people from different cultures brings cultural exchanges and creates a cross cultural society which leads to transfer and exchanges which are mainly positive. Moreover, natural resource using of locals, the creation of exclusive beach clubs and resorts in Antigua has stopped the locals from using the best beach of this island. Access for locals is only possible by purchasing expensive day pass (Orams, 1999). It shown the unfair to local people who tourism industry thieve their natural resource. All of conclusion between hosts and tourism sector as (Haley, Snaith and Miller, 2004) referred developing and attracting tourism to a community the objective is to achieve outcomes that best balance benefits and costs for all stakeholders, particularly residents, tourists and the industry.

Tourism has some positive impacts of tourism to local people - jobs increasing: could make more money, standard and get better utilities: increase of chain hotels, restaurants and cafes. Included public utilities: hospital, roads, schools and so on. By another way, negative impacts

also have to hosts - changing of traditional, unfair to assess primary resources in destinations: beaches, water or electric, sex tourism or prostitutes and drug going to have more in tourism destinations and so on. The best balance benefits and costs for all stakeholders, particularly locals, tourists and the industry is the best solution to deal with stakeholders in this stage.

2.5.3 Environmental Impacts

The mass tourism stages development, the tourism impact were largely viewed as positive, particularly economic development of the several countries which are tourism revenues as the main income. Thus, tourism was seen a desired target for development. By the way, there are many positive impacts, tourist attraction socials will inevitably be avoided negative impacts as well, for instance the impacts are related with the construction of unities infrastructure - roads, airports, tourism facilities (including hotels, resorts, souvenir shops, plazas, golf courses and marinas) that will be affect to environment impact sector of local.

Orams, (1999) pointed out that the first natural sites used for recreation by initial visitors who were attracted the unspoilt treasure nature, move on and are substituted by rapidly increased number of tourists with the lower expectations of environmental quality. It opposite to each other, increasing of infrastructures needs and degenerate the environmental quality. In detail, (UNEP, 2012) mention more detail about environmental impacts. For instance,

2.5.3.1 Water Supply - Tourism industry overuse water supply for hotels, resorts, swimming pools and golf courses. The most of tourists use water more than their usually day, especially on holiday. They use to 440 liters per day. From this stage, it will be lack of water in the future. Local resources - Tourism could be more force to local resources. For example energy, food and raw materials that could be in the short supply.

2.5.3.2 Land degradation - Include fuel gas, fertile soil, minerals, forests, wetland and wildlife. Increased constructions or recreational facilities those provide tourists. In terms of forests will be destroyed by wood fuel or clearing land to be resorts or hotels.

2.5.3.3 Air and noise pollution - The large tourists are cause of increase in air and noise pollution. UNEP cited as ICAO that in case of air emission of tourists traveling increase more than 60% of air travel. In Air pollution from tourist transportation consequence has impacts on the global barrier, especially from carbon dioxide (CO₂) emissions related to transportation energy use. And it could contribute the local air pollution. Some of these impacts are specific to

tourist activities. For example, especially in very hot countries, tour buses often leave their motors running for hours while the tourists go out for an excursion because they want to return to a comfortably air-conditioned bus. By the way, tourist transportations - cars, buses and planes are cause of noise pollution. It has affected to sensitive wildlife or local residents by changed of wildlife natural life pattern or make residents annoyed when planes take off or landed.

2.5.3.4 Pollution - tourism cause the pollution to tourist destinations for example air and noise pollution,

- Sewage - hotels or recreational facilities for tourist could be lead sewage pollution into seas and lakes surrounding tourist attractions, damaging the flora, fauna and serious damage coral reefs. Because of growth of algae which cover the coral reefs cannot survive. Moreover, some of sewage pollution can damage the health of humans and animals as well.

- Aesthetic Pollution - tourist constructions of decoration often structure and combine with the natural features. Resorts always desire to their rooms to appreciate natural scenery and may clash with the local constructions. Lack of land use planning and building regulations in some destinations have coastline areas, tourist facilities and supporting constructions. For instance roads, parking, waste disposal.

Gable(1997) cited as Porter, et al. pointed that in case of climate change has affecting to environmental problem in Caribbean coastal areas, there are recent discovered of mass bleaching in the Caribbean coral reefs may related to higher seawater temperatures cause from global warming and climate change. The environmental degeneration of coral reefs in the Caribbean Basin from overfishing, pollution, sedimentation from near shore erosion and dragging of ship anchors and marine material making for souvenirs those may reduce the capacity of coral reefs. Additional problems about Organotin compound that used in paints for yachts and other vessels for reasons to reduce the barnacles are attached at the substratum of the ships. Organotin present a serious environmental threat to shellfish populations and may be threat to humans to eat aquatic creature in Organotin used zones.

Gable cited as Tuchelshaus and Aubrey, et al pointed that the erosion and inundation during storms. The evidences of erosion mainly because construction of jetties, groins and break waters. Addition, the removal of sand from beaches and streams for use. Additional problems will

present sea level rising. While several environmental problems had occurring stakeholders need to become imperative to be sustainable tourism policies.

As (Orams, 1999) give a case study: Hawaii's Hanauma Bay about environmental impact to tourism. Hanauma is located on the Oahu island, Hawaii. In 1950s this bay was used by local Hawaiians for traditional food gathering and weekend campers. At that time coral reefs, fish and other aquatic life were plentiful and these resources was used as the small scales. Until 1970 Hanauma was declared as a marine park and promoted as a tourist destination. Tour operators began to run bus tours to the bay for tourists whom snorkeling and fish feeding became popular activities. The roads, parking, restrooms and picnic facilities was added, for support tourists. The majority opinion pointed that the rapidly growth of tourists number in Hanauma, infrastructure those support tourists increasing at the same time the ecosystem quality was reduced. Firstly, the tour operators spoiled tourists to feed fishes, not concentrate to reefs condition. Secondly, trampling on benthic of swimmers and snorkelers as destructive the coral reefs. Thirdly, the overload using of suntan lotion and urine entering the water, oil slick of sun tan lotion on the water.

Responsible persons or local people can help to improve local environment. For example, can be establishment of marine protected areas has been value as tourist destinations or the value of some species alive, as the tourist attractions. For instance whales, dolphins, seals, sea turtles, sharks and manatees. In addition, there are some foundations were established to take care environments as (Orams, 1999) gives some charities whom support and improve the environment- Earthwatch, World Wide Fund for Nature, the Pacific Whale Foundation, Marine Mammal Stranding networks and so on.

As stage, tourist and stakeholders can do activities support and improve the environments in tourist attractions.

2.6 Coastal and island resources management

(NOAA, 2013) mentioned to definition of coastal zone that

“the coastal waters (including the lands therein and there under) and the adjacent shorelands (including the waters therein and there under), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches.”

Furthermore, (Middison, 2013) also definite the coastal resources similar (NOAA, 2012) that the coastal waters of the state, their natural resources, related marine and wildlife habitat and close shorelands, both developed and undeveloped, that together form an combined terrestrial and estuarine ecosystem.

In additional, (Conlin and Baum, 1995) pointed about island tourism’s definition that islands were defined by geographer and academics. Those islands are the ‘most enticing form of land. Symbol of land and water those are endless. Symbol of the eternal contest between land and water. Islands could make people think about mystery and adventure. Their appeal may relate to the very real feeling of separateness and difference, caused in part by their being physically separate...and given people’s desires for the different while in pursuit of leisure, different climates, physical environments and culture can all be expected to further the attractiveness of islands as tourism destinations.

In terms of coastal and marine management, (Barrow, 2005) points the needs of environmental management of coastal zones and islands aims co-ordinate the diverse, occasionally conflicting, activities, which may include industry, tourism, aquaculture and fisheries, coastal erosion control, power generation, dredging of sand and gravel, seaweed collection, conservation, and waste disposal. (Orams, 1999) cited (Orams, 1995) that island tourism strategies were divided into 4 main categories: regulatory, physical, economic and educational.

2.6.1 Regulatory management strategies - regulatory management for controlling tourist activities in marine setting. Laws and rules will strict tourists actions, access, times and numbers. Polices, park rangers or other agents management authority about enforcement. For the punishment is common - For instant a warning at the first break rules, banning from the area at the second of rules breaking or fines in extreme case. The propose of regulation are to protect the

safety of the tourists, to reduce conflicts between tourists and to protect marine environment from negative impacts from negative tourist behavior to environment.

2.6.2 Physical management strategies - physical process to management are those human – made structures that control human activities. For instant snorkeling for coral reefs watching, mooring buoys using reduce to damage coral reefs. Human-made structures are useful for tourism sector. For example marinas, wharves, boat ramps and so on.

2.6.3 Economic management strategies - economic strategies use prices as motivation to modify behavior of people. For instant, higher entry fees for facilities during peak use times in an attempt to spread visiting. Permits that are auctioned to commercial tour operators can control number of operators. By the way, discount on entrance fee to marine parks can be provided if groups undertake a clean-up project or assist at researches during their visit. Fee could be more expensive when wildlife is more sensitive to disturbance and motivate tourists to go in another time.

2.6.4 Educational management strategies - the propose of education based management strategies are to reduce the incidence of negative tourist behavior and to increase visitor enjoyment, awareness and understanding. Educational management strategies have similarity to win-win situation for the both the island environment and tourists. For instant, there are many factors - different group size, age and education level. As the factors, the needs of each tourist are unique and difficult to design the educate program. Lack of island resource knowledge and lack of suitably trained and qualified personnel can be complicate efforts to implement an effective education programs.

According to regulations in Similan islands National Park area brochure such as do not build a campfire, do not cooking, do not light a candle in tents, do not make noise, do not bring pets and obey the park staffs' advices strictly. Moreover, Hu Young island (Neung island), Pa Yang island (Song island) and Pa Yan island (Sam island) are endangered sea turtles preservation area to protect the nesting turtles. Do not allow tourists to visit them. These regulations could assist park staff to control tourists while they are visiting in Similan islands National Park area for tourist safety and avoid disturb the animals in the islands reason.

For instant a case of tourist destination, (Orams, 1999) sited to Hawaii tourism to 7 million tourists per year or 540,000 per month and revenue from this part is 800 million dollar.

The most majority market of tourist is mass market tourism. Number of marine recreation business more than 1000 business and snorkeling and diving are 5th most popular among visitors from West. For the natural resource problems of Hanauma Bay in 1988 – huge number of tourists visit Hawaii 3 million per year. Thus, the average per day is 10,000 - 20,000 visitors per day and also feeding fish up more than 1/2 ton of bread per day. By the way, Hanauma in present can reduce number of visitors to 3,000 – 5,700 per day or 1 million per year. There are no commercial operations in weekends or holidays. Ban on fish feeding and park closed one day per week. From all action plans have shown the positive things – coral reef areas are increasing and low number of tourists. This is a good coastal management to limited capacity of tourist will be affected in the positive way for environments in island. Stakeholder should concern to local environments more than gain the benefits from the nature.

From the questionnaire on the impacts of climate change on water resources, and on adaptation strategies presented some adaptation processes identified some adaptation in climate change consequence, these could help the stakeholders to dial climate change barriers. For example climate change policy includes new legislation, government of acts, improving forecasting and information is a positive thing toward local community who make a living by fishery marine tour operators and so on, raising awareness of stakeholders or people or creates environmental preservation campaigns to rehab environment those have damaged by climate change consequence or tourism. As, (The Coastal Resources Center of University of Rhode Island & International Resources Group, 2009) mentioned that effective climate change adaptation should evaluate how they perform or do they meeting the expectations. If not achieve the goal must to adjusted. The adjusting based on evaluation results, new information and condition changes.

The rapidly growth of costal or island tourism is a worldwide phenomenon, becoming one of the main revenue of several countries. Some countries have valuable natural environment, supposed to have good management for costal natural environment. For opportunities of tourists in the sea and other demands, costal tourists should be encouraged, through the management strategies in place in a costal or island area, to reduce negative impact to environment and accident of tourists' reason.

2.7 Sustainable Tourism and Development

Sustainable development requires combining economic, social, cultural, political and ecological factors. One of the most pressing global issues confronting modern society is environmental degradation. An important goal of modern science is the investigation of the potential capacity of the complex system to cause environmental degradation (Afgan, 2005).

It has become evident that something needs to be done to save these precious resources and to preserve them for the future. Thailand has become a popular travel destination particularly for diving, snorkeling and many other water based tourism activities, but the Thai people, being the host country are not paying enough attention to the effects of tourism on these resources.

Drexhage and Murphy (2010) cited as WCED stated the original definition of sustainable development as *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”*.

In addition, (Hall, 2001) referred to using tourism as a mechanism for economic development, international agencies such as the World Bank have increasingly debated that although marine parks are usually established to help protect endangered ecosystems and maintain biological diversity, trade-offs occur between protection and use, and implication of procedures to produce economic benefits from marine areas without yielding protection benefits.

Brow and Essex (1997) defined tourism as that which is ecologically benign, economically feasible and socially acceptable – therefore environmental protection and reconciling tourism activities are contingent with local socio-economic values.

Furthermore, development-specific reports required by law in many Western countries, are often not required in the countries of the South Pacific, for example environmental impact statements on resort or tourism developments because environmental planning legislation is still being developed or is not adequately implemented.

Many areas lack information on the environmental impacts of tourism, and in island microstates in particular, it has arisen for several reasons. First, substantial business and political concern over environmental conditions has only emerged in recent years. Second, there are many governments with low development, health, welfare and education. Their limited financial resources compound the need for environmental monitoring or conservation. Third, and as a

partial consequence of the above two factors, resources and scientific expertise were not generally available to undertake the vast amount of research required.

Sloan, Legrand and Chen (2009) indicated customers changing unsustainable patterns of consumption are widely seen as an important catalyst to achieving sustainable development. Companies orchestrate an essential role by developing an honest and transparent relationship with consumers. There is a need for consumers to understand the links between an ethical local economy, and an attractive and sustained environment. An effective way to educate the customer is to advertise the message of sustainability in the overall ethos of the hospitality operation. Capacity should be made available for guests to take part, on a voluntary basis, in some community development projects and environmental programs. Options to raise money for social community development on the supported projects should be made available to customers.

Duarte (2007) summarized several factors contributing to the company's evolution on the conception of its social and environmental responsibility, such as:

1. Citizens, consumers, public authorities and investors have new concerns and expectations facing the environment.
2. The social criteria that influences strongly and increasingly the individual and institutional decisions on environmental investment.
3. The increasing concern facing the damages caused on environment, namely by industrial activities.
4. The transparency in company activities is due not only to the media but also to information and communication technologies.

The company's social responsibility shows an ethic management to stakeholders, especially to workers and families, suppliers, customers, investors, community and society.

Adjaye and Tapsuwan (2008) suggested that the economic benefits in the Similan Islands are concerned with decreasing coral reef damage by park visitors. A fee could be used as a tool to control the number of visitors in order to minimize further coral reef damage. If the current fee were to be increased funding for sustainable marine-tourism management programs would also be financially feasible. This would help solve problems of financial constraints that many national parks experience when budgeting for environmental conservation programs such as monitoring of illegal activities.

According as (Cabanban and The, 2007) suggested that biophysical, social and economic have to be reached via collaborative processes involving all stakeholders, and monitoring programs implemented to detect changes and react to those changes in a disciplined manner. On the other hand, absence of knowledge, particularly in the field of biophysical environment, restricts decision-making.

In conclusion, the importance of institutional support cannot be ignored. Governments have to play their role in providing adequate infrastructure, leadership, legislative, and financial support that will build the foundation for sustainable development in the future

CHAPTER 3

METHODOLOGY

This chapter will explain the methodology used in this research. Firstly, the researcher would like to discuss and understand the various methods and research instruments in order to make sure that the best research tools will be applied to this study. Furthermore, this chapter will also look at the possible stakeholders who will participate in the research and offer justification as to why the adopted method is the most suitable. In terms of tourists it is deemed those who travel to the Similan Island. The questionnaires are concerned with their satisfaction and perspective of the Similan trip, environment condition and so on.

3.1 Population, Sampling and Sampling Method

3.1.1 Population

The population for this research will be made up of the different stakeholders in the tourism industry who can be subdivided into the following categories:

Table 3.1 Possible informants for the study

Population Group	Characteristics	Number of Interviews
Government Officials	Similan Island National park staffs, Phang-nga Province office of Tourism and Sport, TAT of Phang Nga province, Mayor of Lamkaen Sub district Municipality	4 respondents
Tour Operators	Those who provide Similan program to tour agencies and other tour operator companies that have trips to the Similan Island in Phuket.	10 companies
Local Community	Those who live in the surrounding of Tab La Mu Port. - Lam Kaen district has moo 5 village that are concerned to fishery	10 respondents

The objectives of the research are firstly to identify stakeholders' perspective on the current situation of climate change on the Similan islands and secondly to investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future and tour operators perspective about environmental conditions, their knowledge about fundamentals of climate change (cause, impact those related with diving and snorkeling tourism). Hence, come up with develop the Similan Island suggestion those to be more sustainable tourism. Therefore, the researcher decided to use purposive method of sampling to collect data for this research.

3.1.2 Sampling Size

This study will focus on the impact of climate change toward stakeholders tourism who provide Similan islands package, responsible in Similan island area or responsible in tourism field in Phang Nga province. A first group of population targets would be the tour operators who provide Similan islands programs to tourists or travel agencies. The numbers of tour operators are 330 companies as Ministry of Tourism and Sports in Phuket branch in 2012 information. After, researcher try to contract tour operators for interview. There are 250 companies those still doing the business but this number includes travel agency companies and other tourism businesses such as yacht rented companies etc. These are 20 companies those willing to share information and experiences in this study. In case of local government this research is going to interview 4 government organizations who responsible in tourism field in Phang Nga province and Similan island National Park. For example Tourism Authority of Thailand in Phang Nga province, Ministry of Tourism & Sport of Phang Nga province, Mayor of Lamkaen Sub district Municipality and a staff of Similan islands National Park. The total of local government organizations are 4 respondents. Lastly is community group who stay in Tub La Mu village which located of Tub La Mu port who can answer these deep interview questions. Community will chosen 20 respondents.

The total of sample group is approximately 20 people. The researcher desires to use purposive method on the community in order to compare their perspective with that of the respective operators and other stakeholders.

3.1.3 Sampling Method

Non-probability sampling and within that purposive sampling will be the ideal methods to be used in this research as the researcher wants to know specific perceptions of those stakeholders (Government officials, tour operators and local community) involved in the tourism activities on the Similan Island. In terms of villagers the researcher will interview the head of Moo 5 and then, the researcher is going to use the snow ball method for sampling for the group of villagers as they are all residents of Moo 5. For the local government and tour operators the researcher proposes a structured interview by purposive sampling.

3.1.3.1 Government officials must be the staff of the Similan Island National Park, Phang-Nga Province office of Tourism, Sport and Mayor of Lamkaen Sub district Municipality and TAT of Phang Nga province.

3.1.3.2 Tour operators in Phang-Nga province and Phuket province must be the company that provides the Similan program to tour agencies in Phang Nga province and Phuket province.

3.1.3.3 Local Community who live in Moo 5 in Lam Kaen district.

Table 3.2 Stakeholders, Population and Methods

Content	Government Official	Tour operators	Community
Population	Head of TAT of Phang Nga province, Head of Tourism and Sport of Phang Nga province, Lam Khean Administrative office, Similan Island National park staffs	Several companies of tour operators in Phang-nga province and Phuket province.	Moo 5 or Tub La Mu village in Lam Kaen area which is near with Tub La Mu port
Sampling Method	Purposive sampling	Purposive sampling	Purposive sampling and snow ball method
Data Collection Method	In-depth interview	In-depth interview	In-depth interview

3.2 Area of research

The nature of this research is exploratory, in that the researcher is focusing on what is presently happening on the Similan islands. This method will expose and provide an insight and understanding to assess the current situation of climate change and its impacts on diving and snorkeling tourism. The researcher will perform exploratory research, by outlining three main principles to be taken into consideration: 1) a search of literature – which will provide information on what other researchers have found on the topic, 2) Interviewing experts in the subject – allowing interviewees to provide further input and insight and finally 3) conducting focus group interviews – which will provide alternative answers, or answers that experts might not have provided. Afterwards, the researcher will correlate the data to develop on weak points. Furthermore, exploratory research methods provide flexibility and is open to direction change should the researcher find factors that are worth pursuing although not originally considered in the study.

3.3 Research instruments

Qualitative research enables the study to use diverse methods of interviewing. Interviews can either be performed by structured interviews. This study has chosen to use in-depth interviews (with the Government Officials, Tour operators and community). In order to open discussions, there will be structured questions which will be supplemented by follow-up questions as the subjects respond.

In-depth Interviews

In order to get rich data from government officials, tour agencies and tour operators, one on one in – depth interviews by structure interview method will be implied and for the local people who satellite Tab La Mu port the snowball method will be used. The reasons for including government officials is to try and establish how aware they are of the impacts of climate change, their initial knowledge and ideas to preserve the local environment, and what measure they are putting in place to ease the situation. How are the operators adjusting their businesses to accommodate the current situation and also to make sure that they protect the industry in the process? The researcher chooses to conduct this research by in-depth interview. In addition, the

researcher have to confident to responders those have to knowledge on the research questions those will discuss.

3.4 Pilot Test

The pilot test is for validity check of question word, continuity and flow and timing. The size of pilot test was determined from previous research. The researcher has chosen 3 performs: 1 perform of local government, 1 perform of community and 1 of tour operator. All of them are sampling size for the total 20 performs in this research.

The question has 7 pages and consisted of 4 parts as follow:

Part 1 is General information of interviewees from Question 1 to Question 5. This statement is about sex, age, education, categories of interviewee and currently position.

Part 2 is Assessment of situation impact. There contained is the impact of climate change and how it has affected the Similan islands and how has it affected diving and snorkeling activities there. The researcher adopted the interview question from a previous research on coastal and tourism adaptation plans in climate change issue.

- What is the impact of climate change on the Similan islands was adopted from Ad hoc Core Group on Water and Climate, 2007.

Part 3 is about Current adaptation on their tourism business. The researcher adopted this question part from previous research on coastal and tourism adaptation plans in climate change issue.

- What the impact of climate change affected to Similan islands was adopted from Ad hoc Core Group on Water and Climate, 2007.

- The Coastal Resources Center of University of Rhode Island and International Resources Group, (2009)

Part 4 is Future adaptation. This addressed how do Similan stakeholders kept their tourism business sustained for the future in lieu of changing climate issues. Researcher adopted from

- Ad hoc Core Group on Water and Climate, (2007).
- The Coastal Resources Center of University of Rhode Island & International Resources Group, (2009).

After pilot testing, the researcher rectified the interview question. Questions were separated into 3 groups of interview questions: local governments, tour operators and local community. There are still 4 parts that are similar to prior to the pilot testing. Nevertheless, the researcher utilized further questions from the following sources: (Soukhathammavong, 2010).

The reasons those researcher has chosen Ad hoc Core Group on Water and Climate in this study are it can show the awareness concerning degree of stakeholders the issue in this impact and also understand their adaptations and measures strategies. Furthermore, Ad hoc Core Group's questions were separated 3 part such as demography, present impact and future impact. It can understand the results easily. In terms of other sources from interview questions such as The Coastal Resources Center of University of Rhode Island & International Resources Group and Soukhathammavong can show the way for cooperation of governments and stakeholders in tourist attractions area and understand the stakeholder's opinion towards governments.

3.5 Data Collection

The researcher determines to collect primary and secondary data as follows:

3.5.1 Primary Data

Primary data is data that which contains the bulk of the study. This data will be collected from subjects as previously stated: Government officials, tour operators and the local community. This data will be collected by means of qualitative method by means of interviews. This data will be distributed by means of quantitative method. The estimated time to collect this data will be from November to December 2012.

3.5.2 Secondary Data

The researcher is currently gathering information from other research to supplement this study. This information gathered from previous research (books and research articles from academic resources) on the topic is referred to as secondary data. The data that will then be collected here will include topics on climate change, sports tourism including diving and snorkeling and issues of perception. This data will be collected and revised between December 2011 to December 2012 it will also include setting up the necessary contacts and question guidelines.

3.6 Data analysis

Data analysis proceeded after collecting the interview forms and checking for accurate data interviews. Reliability of the study can be contributed to the dimensions. Initially all of interviews were recorded with some of respondents who were not comfortable with the some part of conversation those concern influential persons. In this case, the researcher paused record Qualitative analyze by content analysis.

CHAPTER 4

RESULTS

4.1 Introduction

The main objective of this study was to identify stakeholder's perception on the current situation of climate change on the Similan Islands, to study the stakeholder's adaption of their business in the current situation on climate change challenges, to investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future. This chapter will therefore present the results obtained from the research.

4.1.1 Profile of the respondents

The researcher gathered demographic information of the respondents by interviewing 14 males and 17 females from 3 groups: people in Moo 5 Lam Kean sub-district community, local governments and tour operators. Out of 10 tour operators which have Similan islands route these consist of 4 diving companies and 6 snorkeling companies. In terms of local government in Phang Nga province it is consisted of Lam Kean sub-district administrative organization, Tourism Authority of Thailand: Phang Nga branch, Phang Nga province office of tourism and sport and Similan islands National Park. Hence, the total number is 4 performance persons in Phang Nga. 17 respondents of people in Moo 5 Lam Kean sub-district community is the last categories.

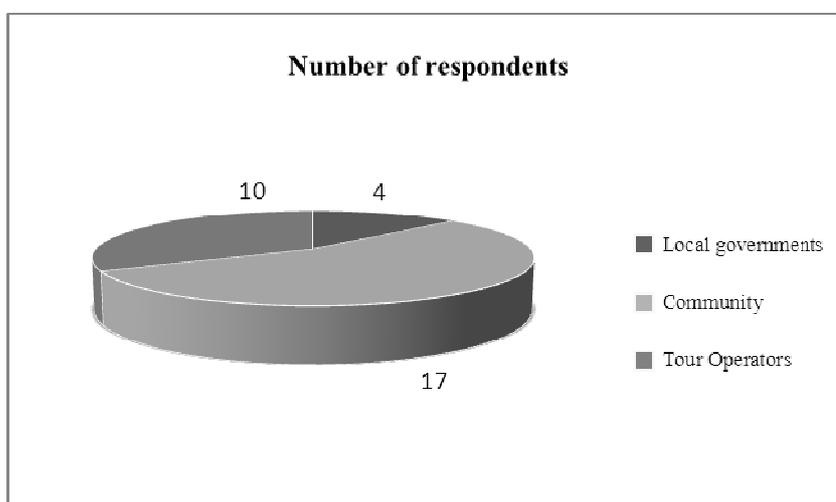
As the first part is general information of respondents who have different backgrounds in their field, career or experience. Respondents' age has many groups of age range, this indicates that there different in each categories of respondents and shown the variety of point of view and experiences. The second part related with climate change presently consequence solutions of stakeholders in Similan islands are the climate change solutions of stakeholders in the future. Table 1: gives more information about each respondent.

Respondents are dissimilar in education background: 10 have primary school, 4 have junior high school, 2 have senior high school, and 10 have diploma or bachelor's degrees and 5 have master degrees.

The positions of the respondents have various differences, indicating that they have many differences of point of view and experiences.

All the respondents are related with the Similan islands which are well-known tourist attractions in the Phang Nga province either directly and indirectly. Local governments are responsible for the tourism field in Phang Nga province, for example Lam Kean Sub district Administrative Organization who administers in Lam Kean sub district area, TAT of Phang Nga province, Tourism and sport of Phang Nga province, Similan islands National Park office, Local community who satellite in Moo 5, Lam Kean sub district area. Finally, tour operators who provide Similan islands program to tourism. As shown in the respondents information below.

Figure 4.1 Following is a characteristic of the respondents in this study



Source: Primary data respondents

In following section, the study will elaborate and discuss each objective based on the findings and responses of the respondents. At this point the study would like to emphasize that some simple sizes were small, however the respondents have provided important data for analysis.

4.2 Results – Objective 1

Objective 1: To identify stakeholder's perception on the current situation of climate change on the Similan Islands:

The first objective that all respondents mentioned as an opinion of stakeholder was about climate change and does changing of climate affect their business or not. In terms of local governments, they have the same opinion about climate change effects on the Similan islands; heavy rain has increased in several years – increasing numbers of storms and heavy rain has affected tourism directly. It is difficult to forecast the weather because, nature is hard to understand and foresee. In terms of tourism which is based on nature, for activities like snorkeling and diving there are quite negative impacts.

Secondly, loss of coastal areas as a result of sea water levels increasing because of the main cause; global-warming.

“Basically, the coastal area in Meang Island (four islands) is 60 meters wide and 12 meters long approximately. Nowadays, still leave the same width but the length is only 9 meters (3 meters lost).”

Finally, aquatic resources attract diver and snorkeler to visit the underwater world. Coral reefs are bleaching as a consequence of the current changes. El Niño is the main cause of this stage.

“Coral reefs in Similan islands were in poor condition because of El Niño. Bleached coral more than 80% in 2009”

The majority of local governments believed that it is a negative impact to them that affects their revenue and natural resources. Nevertheless, one of the local governments said that it may be our advantage in this stage, if it is impossible, Similan islands National Park would allow some tour operators to expand their program to bring tourists to visit coral bleaching site and provide the knowledge about coral bleaching. What is the coral bleaching? How corals have bleached and how do they prevent coral bleached? It was an opposite perspective given by the local government group.

In case of local residences in Moo 5 who lived near Tub La Mu port, 17 persons. Local residences came across almost the same perspective with local governments. First, storms increasing had affected some groups (8 persons) that are fishermen. It is so difficult to fish,

resulting from changes of flow. Increasing sea levels would change the flow of the sea and temperature of flow which has changed. 3 respondents of local residences pointed that

“Nowadays, the number of fishes was fished decrease because, changing of flow that more extremely flow and storms increasing. It was so difficult to fishing if compare in the past”.

Therefore, storms will increase with heavy rain and high wave levels. For the sailors’ safety reason it is impossible to fish in terrible weather. On the other hand, some residences (9 persons) that are merchants or other occupations have primary understanding of weather change. Changing of climate consequence, some local residence respondents quite not concern so much. It is because merchants could run their business even through terrible weather days as it depends on sale volume. Except for one respondent that was a food shop owner solely related with tourist, therefore could only get the revenues from tourists who were the guests of tour operator companies.

“In case of terribly weather days that would decrease destination attractiveness of tourists or tours were canceled. Number of tourists decreasing could affect my sale volume.”

In the case of tour operators, seasonal change is the first barrier that respondents concluded as the same barrier with run operations of them. They could not forecast weather exactly. These include extreme rain, higher waves and storms increasing. Thus, they have to deal with the tour package every day and inform weather forecasting to customers for the reason of safety. Uncertainly stage, some companies organized tour program, included food, beverages and filled gas for speed boats. If there was rain the next day, tour operators must cancel their program and refund money to customers. This is an example of a climate change barrier that affected operation of tour operators who provide Similan islands programs. As stated by one of tour operators the worst case was that they must stop for many days to run their business. *“When the storm came to southern Thailand we had to stop to operate tour such as last year we have to stop 2-3 times when it was heavy rain for 5 days our boat couldn’t go out or provide service to tourists. It effect to our customers that their came from other country theirs have book their tour in advance we have to check the weather first if it ok then we can go but if not then cannot some time we already paid for some cost and the customers want to refund money back this reason*

made us loss money. If it rains for long time like 5 days than we don't have to pay for anything that ok."

Climate change affects nature destinations directly. Water flow characteristic is one of several results of changing of climate. La Niña phenomenal has affected tour operators directly, as one of tour operator stated that

"Year 2007, there was the La Niña phenomenon but it was the positive phenomenon. The normal water temperature at Similan is 29 degree Celsius but the cold current from the South Pole flew to this area as consequence the water temperature here reduced to 22 degree Celsius the nutrients would come with the water and the deep-water animals will move to live in the more shallow water. Also it is easier to see the Plankton Bloom. The changing of weather and topography in that year influenced the tourism in the positive way. They could see the Manta ray, Whale sharks and rays. Two years ago, there was the El Niño phenomenon; the water in the Andaman Sea and in the gulf of Thailand was so hot for 2 - 3 months. Most of the corals near the surface, 80% of the hard corals at Surin and Similan Islands were died."

Thirdly, coral bleached. As a result of water temperature increasing could degenerate coral reefs condition. It was negative impact to aquatic ecosystem and marine tourism. Coral reefs bleached area; marine animals will be decreased because of fishes must habitant in coral reefs area, like a marine ecosystem. Coral reefs dead and fishes gone, snorkelers and divers would be not impress the aquatic condition and may not like to revisit at Similan islands in the next time and included tourists who never been there that would be were affected by word by word of tourists who ever been there before. As a tour operator stated that

"The objective of marine tourists who would like to snorkeling and diving is nature of underwater – coral reefs and marine animals. They do not want to come here for island watching or lay down on the beach only"

From Objective 1 all the respondents have similar perspectives in climate change situation. Local residence, local governments and tour operators were aware about climate change consequence. Overall discussions indicated that it was difficult to weather forecast by local governments and local community, and difficult to confirm for tour reservation of tour operators. Unexpected weather influences towards local governments receiving decreased taxes from tourism. Also, tour operators too greatly lost profit because, tours were cancelled in heavy rain,

high wave and storms days. Local community has lost from jobs and career. Especially those who are fishermen who cannot sail out in terrible weather days or who open shops provide goods for tourists their volume of sale might drop when tours were cancelled. Furthermore, some respondents add more perspectives. For example: increasing of storms, increasing of raining, decreased revenues and coral bleaching.

Increasing of storms and raining – There are heavy storms and increasing rain in the Similan islands tour period (November until May). Thus, would have an effect towards natural tourism, especially, marine tourism.

Coral bleaching - Rapidly changing of aquatic environments from bleached corals would have negative effects towards every respondent group. This result from climate change issue has an effect on the tourism sector and tourism stakeholders in Phang Nga province.

Objective 2: To study how the stakeholders adapt their business in current situation on climate change challenges.

Accordingly, the reason of all of local governments has not been climate change adaptation or any particularly operation plans on climate change scenario. In local governments 3 persons have becoming to change more concerned about environmental plan or have become more preservation forward tourism resources. For instant,

Plant growing project – local residences have been participating and grow plants which are nearby their community area annually. Especially, mangrove forest which is useful for marine ecosystem and attract marine organism from predators which is an advantage for fishing village.

Landfill – basically, local residences used burn trashes process. It could increase more air pollution and increase CO₂ which is increases greenhouse effect gas. Local community cannot control the pollution, from those problems have changed from burn to be landfill.

Growing Half flower or Rak Ta Lay trees on Meing or forth islands to be fence which is to reduce tourists to tread on small plants and reduce island erosion reason; this project still cannot evaluate the adaptation. Because of it need spend more time. By the way, Half flower trees would be occur some accidents to tourists cause from Half flower roof trading.

In terms of green plan of local government for other tourist destinations which are not concern to marine tourism in Similan islands - there is a green tourism plan about Hiking tourism that use natural equipment. Because of local government do not want to destroy nature around there too much. Furthermore, still have Tub La Mu port cleaning project and waterfall tourist destination development project to be future tourist destination.

Incidentally, 1 of 4 persons that not related to plan on climate change situation but, focused on marketing on destination changing in climate change consequence, have to present the true information from Similan islands National Park to agencies, tourists, mass media and TAT office each countries. Next, create public relation plan and produce media for Similan islands' tourism public relation. Finally, invite travel agencies to create attracted promotion packages to increase volume of tour package sale. From the total answer of local government they do not solve climate change issue directly. The most of them had just done the environmental resource preservation projects in other tourism destinations in Phang Nga province area, trying to preserve the environmental resource suffering from human activities. Except, Rak Ta Lay tree growing project which is do in Similan islands area that to reduce erosion of forth island or to protect tourists to tread on some small trees.

In case of local residences, all of majority of this group have to no plans on climate change. Even they can do that participate to environmental preservation projects in their village which were created by header of village. For example of environment preservations' village projects are plants growing project and landfill project. However, when you need people to attend some activities together, you would be getting in trouble relating to cooperation. Local residences must go to work for living reason. Thus, it is impossible to attend the environmental preservation projects – 12 local respondents had never attended the environmental preservation project of their village. Because, environmental preservation projects and work hours overlap and local respondents will choose to go to work for survival of their family reason. As a respondent of 12 local respondents said that

“I do not have time to attended village preservation project because of have to run my business. If I closed my shop, will not get revenues”

Next, 3 local respondents sometimes attended villages' environmental preservation projects, if they were available and did not overlap their work hours.

For another 2 local respondents always attended the environmental preservation projects. Cause, they are local governments positions in their village. Local respondents' work time overlapping with preservation projects time is the main barrier for local governments.

"We need cooperation from our local residents and foster and educate about environmental preservation in our area as well. Most majority of local residents have no time to attend our preservation projects because overlap with work hours, somebody have to sailor boat out in those days. If you ask about future with climate change issues, they do not know in this case."

Even though, who are fishermen, still not had plans for changing of climate. If raining, cannot sailor boat out and follow weather forecast daily. As one of local residences said *"Have no any plan because when raining still cannot. There is only weather forecasting following day by day and must adapt to situation in each day"*

Climate change dealing or solving seems so complicated for local residence in Tub La Mu village area because there is not enough primary knowledge of climate change. The best things that they could were environmental preservation attending. It is not answer the second objective directly. But environmental preservation projects are the best thing those people could do in climate change scenario.

In terms of tour operators, they could be divided into 2 groups: have no adaptation and have adaptations on this stage. 3 of 10 tour operators have no plans but will focus on marketing extremely.

"I have no plan and just do my best because the customers do not expect the best coral in the world. I always tell the customers that my package is expensive because I am faithful to pay the fees to the national park"

As, the tour operators who have plans on climate change consequence, for example tell the truth to guests and agencies: eco marine conditions, daily plan dealing with agencies and guests: confirm inform weather and make guest feel secured every day and expand to another activity business or expand another routes to another tourist destinations and had been adapting the board boat to be camping boat and kitchen boat for guest's company. As 1 of 10 in tour operator companies mentioned that

“We have effected toward our business from aquatic resource deterioration which are cause from human disturbance and nature damage. Human disturbance: rapidity of tourism growing would be increased number of tourist and overload capacity of tourist destination. Nature damage: Change of cold and warm currents in the sea, climate change. As I said natural resources of Similan islands were ruined and not plentiful like in the past. Thus, we must have adaptation to survive our business. Our company has 3 broad boats for diving group only. Normally, I will have approximately 2-3 groups in each year, during broad boats are available; we are going to adapt them to be camping boats. In the past we bring guests stay on national park accommodation, then, we will take guests to stay on our boat. Then, we still leave 1 boat for diving, 1 boat for camping and 1 boat for kitchen to provide food for our guests. So, we will decrease our food capital ฿100 from ฿200 if we bring guests have lunch with Similan national park sector. Assume that we gain ฿100 in the past. Now I only leave ฿40-50 for benefit.”

In the case of tour operators who still do the preservation projects present same as local residence in Tub La Mu village, for example annual big cleaning: garbage collecting, customer trending before trips.

Annual big cleaning project- tour operators whose have Similan islands route have been attending to Similan preservation projects with Similan islands National Park annually. The underwater and land garbage will be collected by tour operators in Similan islands National park area for preserve the tourist attractions where they run business, promote their companies as sustainable tour operator companies and to create a positive thinking of customers reasons. There is still lack of cooperation from some tour operators and also lack of divers who collect under water garbage because the persons who able collect the underwater garbage has to have personal skill such as able to dive in the deep water level, As one of ten tour operators give example about obstacles during your preserve Similan islands projects that

“It was ok when we participate with national park. Except one thing is rubbish collecting in the deep water, who can do like this have to be advance diving skill. So, there are a few people who can do this position. Normally, people can collect the garbage surface water level only. Luckily, our company does cover all: snorkeling, diving and camping. There are

a few Thai companies to do diving but the most are foreigner companies which run business about diving.”

There is some success for this project 80% approximately. They can observe from the garbage in Similan islands area, both underwater and lands have decreased. But, tour operators need support from government in terms of financial support and divers to collect garbage in deep level water. These are not enough if compare with area of Similan islands.

Customers’ training- All tour operators have customers training before beginning of tours for safety of customers and environmental preservation reasons. For example, do not feed the fish because of it changes fish behavior and effects to marine eco system, do not touch or kick coral reefs because of natural resources are sensitive and damage easily, do not leave garbage in the sea because it damages tourist attractions and hazard to marine creatures and so on. The most majority of tour operators are successful about environmental preservation projects and companies get some benefits from environmental preservation projects as well. For example, number of corals has been increasing, to be the first tour operator choices and positive side in customer opinion and volume of sale increased by the first choice about green tour operators in customer minds. As one of ten tour operators companies said that

“We are pretty successful. If we try to put ourselves into environment so it is a great push to put our name to be at first of touring choices.”

Furthermore, compared between snorkeling and diving activities, diving and snorkeling tour operators mention that diving has affected more than snorkeling. Because of diving equipment, investment and program tours are expensive more than snorkeling and program tours equipment. Thus, diving companies must find many snorkeling guests to coving a group of diving guests. By the way, most majority of diving tour operators are seriously concerned about illegal: blast fishing, trawl net smuggling in Similan islands national park which is damage fishes and coral reefs. There is still marine environments were threaten by blast fishing which is against the law in Similan islands area. Blast fishing using was taking fishing some fishes while, damaged marine ecosystem in blast fishing area.

In consequence, the result from Similan islands tour operators could be separated to be two groups: do have climatic change adaptations and do not have climatic change adaptation. The adaptation those tour operators plan to dial with climate change challenge are: honest to

tourists, negotiate with Similan islands National Park or change and expand to another activity business or other tourism attractions.

Honest to tourists – inform tourists about truth of currently situation in area and marine environmental conditions. The honest tour operators do not exaggerate about marine environmental condition or tourist attractions' situation.

Objective 3: To investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future.

The result of local governments groups, 2 in 4 local governments will have climate change adaptation plan for tourist attractions which in their responsibility area in the future but, the period of plans are not above 5 years. Moreover, there might be a change the tourism period in Similan islands to be suitable for present weather and also do the environmental preservation projects simultaneously.

“There might have plans on climate change situation but plan are not more than over 5 years about our new tourist attractions: waterfall, jungle preservation and develop the Tub La Mu port”

In the case of 2 local governments in 4 persons of this group focus on marketing strategies - informing of the related organizations about environmental preservation which are diving sites were closed in Similan islands National area: develop to be better condition of marine ecosystem, extremely publicize build in world wild TAT offices and informs the situation of each tourist destinations of Thailand. Next, promote to the new markets target to attract other tourists. In case, tourist destinations are not popular now, they must promote to the new market targets for tourism operators' sale of volume helping reason.

The results of local governments have shown that 2 local government organizations that have adaptations in climate change scenario but will not answer climate change solution in Similan islands area. Because, some natural disasters have occurred worldwide, it is so difficult to solve by tiny groups of people. There need cooperation of mankind to reduce effects. It cannot stop climate change effects by a group of people. Hence, the best things those local governments can do are environmental preservation projects, rehabilitate the poor condition environmental resources and make it to be better.

In terms of Tub La Mu community residence result, they still will not have any future adaptation in climate change scenario. Because they do not have background about climate change which is still the new things for them. Local residents focus on how to make money for living only. But 1 person of 17 persons from this group suggested that government sector should have climate change project for local communities, give climate change knowledge, how to change in long term, how effect to them and especially, who are fishermen.

“Government sector should start climate change project with local residence. The most people do not know any background with this problem and any adaptations on this situation.”

The result of local residence has shown that they do not have enough fundamental knowledge about climate change or adaptation. How is climatic change, what they should do in this situation or how do they help to stop this phenomenon. The government or local governments should educate local community for the better change ways.

In tour operators' part, their future adaptation to deal with this problem could separate to be two groups - have adaptations and no have adaptation. 8 of tour operators do not have adaptation to deal with climate change in the future and 2 of tour operators have adaptations. Because of they do not have adaptation in the future are unpredictable, cannot do anything about coral reefs are bleached still has been earning revenues even though, not much if compare in the past. Climate change issue is not kill tour business suddenly. The businesses of tour operators are alright now and they have been thinking that changing of climate is a long term phenomenon at least 100 – 200 years. Hence, there has changed weather (increasing storms, sea level and rain) or marine aquatic ecosystem decrease condition.

As one of 8 tours operators not have plans in future *“I have no any plans in future because I never felt that climate change problem going to kill business suddenly. Moreover, tourism business much more concern about outside factors, such as the currency. Sometime the European currency is very high as the year 2009, 1 Euro equal to 51 - 54 baht so that the tourists from German, England, French, Sweden and Scandinavia spent a lot of money as a king but now 1 Euro equal to 39 baht so they spend less money”*.

All of future adaptations were provided by tourism stakeholders are not climate change solving process directly. Conversely, the indirectly processes help them to preserve their businesses and smoothly run operations.

Intensive annual plan – plan for the future run business about what is going on happen in business, for example impact of climate change and adaptation, lack of experienced guides, global economy which are toward operation system annually. There is not solving the process of climate change issues towards tourism business directly. But, tour operators will have plans to deal with some problems would be effect to their business annually for flowingly business running reason.

Change slogan and extremely marketing – “Beautiful beaches, marine life and clear water” slogan will be changed to be “Relax on the beach and enjoy local animals in the Similan islands” that habitat in here only or create attracted tour package to be cheaper price. Because of environment condition has changed, not same like in the past and will find more new target customer groups. At the same time, tour operators will create some attractive tour packages for tourists to increasing of sale. For example discount providing or give some special offers.

Expand the new tour programs- 1 of tour operator will expand the new programs in other marine destinations in Thailand for gain more profit as the profit of previously years. For example, they provide Similan islands for marine interested tourists only. But, they will provide other well known marine destinations in Thailand: Phi Phi island, Maya island in Krabi province and so on, to make more revenues same like in the past and cover all the expenses.

Increase more Similan islands tour packages – The Company has been adapting live abroad ships to be floating kitchen to provide food the company’s tourists for food cost reducing and change live abroad ships to be camping ships because live abroad tourists have decreased. They can add more Similan islands tour packages and make more profit.

Negotiate with Similan islands National Park – Basically, opened on November 1 until May 15 and closed on May 16 until October 31 annually. Tour operators would like to open Similan islands on 15 October until April 30 annually. The weather on October can sail out to Similan islands safely. Because the weather changes annually, government should update the forecast weather data.

On the other hand, the Similan islands tour operators who do not have adaptations because of they have been thinking that climate change is difficult to deal with nature.

As, 1 of tour operator whose has no have plan will move destinations if Similan islands not plentiful of eco marine systems. It is a sad story that shows this tour operator are not aware as much as, concerns benefits taking from environment only and run business in other richness of environment places.

According of 2 tour operators who have further adaptation plan, For instance, will adapt the live aboard boats to be room floating for camping package and kitchen floating to serve foods for tourist's company and another plan is permitted period of Similan islands National park negotiation.

Live aboard boats to be guest rooms and floating kitchen adapting – this company has 4 live aboard boats and now growth of diving business is lower than the past. There is no lead to revenue if waiting for diving customers only. Thus, the owner of company has been determining to provide the general guests as well and for expand the company's package tour reason. The company can provide a camping package to guests who would like to stay overnight in Similan islands but prefer to stay on the boat more than on the islands. In this case, the company still makes profits.

Permitted period negotiation project - negotiate with Similan islands National Park about allowed period to run business in Similan islands National Park: Basically, there will be opened November 1 until 15 May. If it possible, to be opened October 15 until May 30 of every year. But, this project is still on government convention.

According to the both groups of tour operators had been done the same things are environmental preservation projects in Similan islands area that they do continuously. For example, annual big cleaning, customers trending before trips and so on. This is the best thing that they could do in this time for degenerated aquatic ecosystem or other natural resources reasons in climatic changing and sustain natural environments for our next generations.

4.3 Summary

The chapter presented views of stakeholders in Similan islands National Park area. The respondents came from different backgrounds and had diverse experiences. They offered different reasons for climate change and adaptation.

In terms of benefits, tour operators are offered benefits to Phang-Nga province in the forms of taxes and increased jobs for local people in Phang-Nga province that they give. Local governments would get tourism taxes from tour operator or income taxes from local people. Incidentally, local community would get revenues from tourism jobs and be a better quality of life. The drawbacks from not having enough fundamental knowledge about climate change of stakeholders and lack of plans to deal with climate change in the present and the future. Moreover, climate change adaptations of stakeholders have using in present and their further are not directly solving climate change processes. It can help them to keep their businesses and tourism jobs. Thus, preservation plans would have to be adapted while using climate change adaptations together for nature environments preservation reason. Do not damage them while nature environments rehabilitate their condition by themselves is the best way of the preservation.

Climate change barriers can hinder the proper, aquatic environment condition and full growth of Similan islands market. In the hospitality and tourism industry, word of mouth is a powerful tool; negatives can keep potential tourists from not choosing to visit the Similan islands. If tourists come, it means that there are more benefits and jobs increase.

In the next chapter is the conclusion, discussions and recommendations.

CHAPTER 5

CONCLUSIONS AND DISCUSSIONS

This chapter presents the conclusion, discussions and recommendations. The discussions are taken from each objectives and literature review. Hence, the chapter presents recommendations that provide toward stakeholders about climate change. Moreover recommendations will be used in other researches which are similar in other parts in Thailand.

5.1 Conclusion

This study focused on the impact of climate change to diving and snorkeling from stakeholder's perspective in Similan islands National Park. This study was separated into 3 groups of population groups: government officials group consist staff of Similan islands National Park, Phang-Nga Province office of Tourism and Sport, TAT of Phang-Nga province who responsible tourism in Phang-Nga province area and Mayor of Lamkaen Sub district Municipality (4 respondents). Furthermore, tour operators group consist tour operators who provide Similan islands tour packages to tourists in Phang-Nga province and Phuket Province area (10 companies). Finally, the community that resided in Tub La Mu village that is near Tub La Mu port (17 respondents). The total number of population groups is 31 respondents.

The study used a snowball method and a purposive sampling to collect the primary data. All of the population groups used the open discussions. There will be structured questions which will be extended by follow-up questions as the subjects respond. Nevertheless enough information to answer the objectives and came from diversity of stakeholders' backgrounds, age and education. Thus, there are differentiations of results from stakeholders who are affected from climate change scenario toward their tourism businesses. In this point, Similan islands stakeholders should have climate change adaptations for aquatic environment preservation reason.

The United Kingdom Environmental change Network (2012) notes that in the industrial revolution period, human have been releasing green house effect gases consists CO₂ and fossil fuel. These gases have created green house gases and transform to be greenhouse effect when reflects infrared radiate from the sun. Greenhouse effect scenario has been conducting climate change phenomenon. These many articles relate to climate change, the researcher would define

the meaning briefly as “the change of long period in weather statistics.” Change of climate has been leading to some effects to human. For example increasing of temperature, coastal erosion (coastal people will loss home and must move to satellite to somewhere else), rainfall changing, increasing of sea level, Increased extremely storms and increased emergence of vector borne diseases. Moreover, Hamilton et al. (2005) supported that climate change has affecting to tourism sector as well, tourist attractions were damaged the attractive tourist by climate change scenario, particularly tourist destinations which are based on the nature or sensitive climate. There has been influencing toward decision making of tourists about tourist destinations for holiday.

Similan islands were established a National Park in September 1, 1982. There consist 9 islands - Huyong island, Pa Yang island, Pan Yan island, Meiang island, Ha Island, Pa Yu island, Hua Ka Lok island, Similan island and Ba Ngu island. Currently the Similan islands have plentiful of marine ecosystem and no population settlements on the archipelago. Similan islands tourism must be based on sustainable aquatic ecosystem tourism otherwise stakeholders in Similan islands would suffer by climate change. Some marine environments have been damaged in this scenario. The chairman of the Tourism Industry of Sa Tun Province had forecasted that the Andaman tourism revenue dropped 1 million baht approximately in 2011 from 80% coral bleached and closed diving and snorkeling sites for coral rehabilitation reason in Andaman coastal areas. Additionally, the temperature had increased (30-31c^o) in the Andaman sea area. Some tourism employees might be affected by this situation.

Objective 1: To identify stakeholder's perception on the current situation of climate change on the Similan Islands:

All of stakeholders have accepted that the changing of climatic has negative effects toward them now. These include unexpected weather (include difficult to forecasting), difficult to confirm for marine tour reservation and difficult to fishing in case of fishermen in community. It is impossible to sail out from land in terrible weather days. Moreover, weather as the most influence towards tourists who would like to visit marine tourist destinations and the nature condition and weather as the main factors. In case that the numbers of tourists are decreased may affect towards local governments about decreased taxes from tourism revenue (entrance fee to National Park area) and tour operators might lose greatly revenues because of tourist cancelled in

terrible days. Furthermore, some respondents add more perspectives such as increasing storms, increasing of raining, erosion and coral bleaching.

Objective 2: To study how the stakeholders adapt their business in current situation on climate change challenges.

At this moment, the largest majority of stakeholders do not have climate change adaptation or any particularly operation plans on climate change stage. In the case of local governments they do not have climate change adaptations. But, the largest majority of local governments are becoming more concerned about environmental conservation plan in tourism resources. For example, plant growing project that help some environmental preservation projects in Similan islands and their responsible areas. For an organization of local government whom focus on marketing only such as inform the Similan island condition and situation for tourists by travel agencies or mass media. In the case of community, they do not have any directly climate change adaptation at this moment. Because the climate change problem is too big and out of control for them. The most important thing is lack of basic knowledge about climatic change. For tour operators can separate to be two groups such as tour operators have climate change adaptations; adapted their live aboard to provide the snorkeling group and camping tourist groups. Because of the number of low purchasing tourists (snorkeling and camping tourists) are much more than the high purchasing tourists (diving), thus, tour operators would adapt their business in this issue. Weather forecasting following daily as a process that they use in the present to confirm tour programs to their customers and travel agencies. Other groups of tour operators do not have climate change adaptation focusing on marketing only such as, telling the truth to guests and travel agencies and Similan islands' condition at this moment.

All stakeholders have established some natural resources preservation projects in tourist destination or their duty areas; plant growing projects that local governments and community have done. Growing Half flower trees in Meing island and mangrove forest in coastal community area could help to prevent erosion and support marine creature from predators or fishing. For tour operators environment preservation project such as, annual big cleaning project that collect some trashes in the islands and underwater in Similan islands area before allowing to run business period in every year. It seems like the symbol of tourism is the opening period in Similan islands National Park. Finally, some tour operators have been educating their customers

with training before beginning their trips. Guides will explain about regulations in Similan islands National Park and positive travel habits.

Objective 3: To investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future.

In terms of their future adaptation, stakeholders have been planning directly and indirectly in climate change barrier. 2 of local governments will have climate change adaptations about tourism destinations in Phang Nga province but not more than over 5 years. But, the local governments still cannot explain about plan because of it depend on the chief of sector and plan writers. Moreover, they might change the tourism period in Similan islands to be suitable for present weather. For other local governments organizations have concern on marketing strategies. For example, inform tourists about tourist destinations condition, focus on publicize build in the other TAT offices and expand new target of customers. In case local residence do not have any climate change adaptation in their future. Because of the most community do not have climatic change of primary knowledge enough. In terms of tour operators, the largest majority of tour operators do not have future adaptation. Because of they do not think that it earns money currently, even through less revenue than in the past. Importantly, they do not believe that climate change will damage their Similan island business suddenly. They use the intensive annual plans nevertheless those do not answer climate change adaptation directly. But this solving process will help tour operator companies solve the other problems which may affected towards their business. Change the slogan and extreme marketing that “Relax on the beaches, marine life and clear water” must change to be “Relax on the beach and enjoy local animals in islands” Because of the condition of tourist attractions are not same like in the past. At the same time, tour operators have to fine the new target customers and also create attractive tour packages for increase sale volume. In case of 2 companies of tour operators do have future climate change plans, live aboard boats adapting to be camp and floating kitchen for snorkeling tourists and camping tourists. According to another adaptation is Similan islands National Park negotiation about permitted tourism period in their respond area. Basically, there was permitted to do business in November 1 until May 15 to be October 15 until May 30 which is faster 15 days.

5.2 Discussion

Tourism, environment and human are such a complex relationship. Tourism is great revenue for people in the hospitality and tourism industry. Tourism is a main factor to generate income to people and also develop host people living to be better and more standard living. For example Gable, (1997) stated that tourism as a huge business in our world and come with enormous benefits those have included income from tourist spending, foreign exchange and tourism employee increasing. Furthermore, local people opportunity increasing about improvement of local public utilities, such as hospitals, transport, schools, universities and department stores. Thus, this is a positive thing of tourism to human or tourist attractions' societies. As the negative side towards to human in tourism social such as price of goods and service increasing cause host in tourism community do not have a great income if compare tourists and the finally is job increasing which can help local people have more choice get the better jobs.

In terms of environment impact, it involves human and tourism. According to Orams, (1999) referred that visitors were attracted by the natural attractions or pure treasure nature. Nowadays, mass tourism has grown continuous when the number of tourists over loads the capacity of destinations. There would occur some issues. UNEP pointed that tourism was the main cause of environment problems towards host and environment of destinations. For example water supply: there need to stock water for tourism providing. Swimming pools, golf courses hotels and resorts are used water much more than usual. For another environmental problem is air and noise pollution: transportation as a important thing for tourism business also increase carbon dioxide (CO₂) related from transportation energy and noise especially airlift transportation. This is the relationship between human, tourism and environment, tourism as a important part in touristic society, improve the quality of host life would be better and also generate a great revenues for host of community. On the contrary, there would create some environmental issues for example the capacity of tourist destinations which could degenerate tourist destination condition and create pollution in tourism destinations

Tourism as Climate change has been created some problems to mankind in many ways As tourism affected by climate change in the Similan islands are based on nature resources (Mishev and Mochurova, 2008) shown that many categories of tourism were affected by climate

change, especially, there is extremely strongly effects towards the natural tourism categories based. The natural environment and climate both are significant towards tourists' decision making for destinations examination. Because annual climate variability that brings heat waves, unseasonable cold, storms or extremely rain have affected positive or negative towards tourism destinations.

As the Similan islands tourism is a marine tourism type and affected from changes of climatic. Mcot, (2011) reported that sea water temperature was increased from climate change cause. The result of this situation degenerated corals in Andaman Sea. Some sites recorded as much as 80% bleached corals. Thus, Thai National Park's Wildlife and Plant Conservation Departments has been deciding to close some dive sites in Similan islands. This issue must spend too much time to coral rehabilitation; to recover its condition can take more than 20 years. These are direct effects on businesses and various stakeholders who depend and make their living from this scenario.

From the discussions focus on each objectives that have been set in this study.

Objective 1: To identify stakeholder's perception on the current situation of climate change on the Similan Islands:

Climate change has been emphasis involving for Thailand. Example increased storms, uncertainly weather, beach erosion and so on. Biodiversity has effected from globally climate change. These elements agree with literature review done by Hamilton, Maddison and Tol, (2005); Fotiou et al. (2007); Scott, Jones and Konopek, (2006); Ehmer, (2008). Weather has influenced tourists towards destination decision making, tourist destination conditions and affects nature-based tourism limiting recreation and tourism activities. Some stakeholders have accepted that there are some changes in Similan islands, for example

Seasonal changing (Heavy rain and increased storms) - some stakeholders have run business more than 10 years or settle in Tub La Mu village in their whole life pointed that there has been heavy rain and increased storms if compared with the season of previous years. It is unexpected weather because, nature is hard to understand and foresee. Some tour operators have sold tour packages. But booked day supposing it is heavily raining and extreme storms, tour programs must cancel for security and feeling of comfort and secure of tourists. Moreover, residents in Tub La Mu village who are fishermen are affected from change of season. It has a

negative effect on their career, cannot sail out the ships for security reason. In terms of local government pointed that it is the negative impact that affects their revenue and natural resources. In cases that tourists booked tour package already. Tour operators must pay entrance fee for Similan islands National Park to islands preservation reason and governments have been affecting to the revenues when tour programs were cancelled.

Losing of coastal areas- Because of global warming and increased temperature ice core dissolution in pole area from this stage has affected sea water increasing and erosion in coastal area. According Similan islands, Meang Island or Fourth Island has been losing 3 meters from wide 60 meters and length 12 meters. Thus, still leave a smaller area of beach if compare in the past which is effect to recreation area of tourists. According to Hamilton, (2008) pointed that climate change has affected tourism indirectly. For example increased beach erosion caused sea level rise and could make coastal tourist destinations less attractive.

Coral bleaching - as Hamilton wrote that destination physical was degenerated by climate change directly and indirectly way. Corals as the one of result increased sea water temperature that has been affecting marine ecosystem. Because of, the herbivorous marine life was attracted by healthy coral colonies for habitation, food and asylum. In case of coral bleached and dead coral reefs, fishes will have been abandoning coral colonies. Marine tourists would be not impressed by the aquatic condition and would not revisit to Similan islands again. Including those who have never been to Similan islands tourists would be cancel Similan islands choice holiday because word of mouth of visited tourists to reconsidering taking vacation in the Similan islands.

There are many climatic change issues that have been affecting Similan islands tourism stakeholders from their perspectives. There seems like negative effect towards them, seasonal change, erosion, coral bleaching (closed snorkeling and diving sites) and so on. Stakeholders must be aware of Thailand neighboring competitors who are similar environments and provide low prices.

Objective 2: To study how the stakeholders adapt their business in current situation on climate change challenges.

The largest majorities of stakeholders do not have at present climate change adaptations directly. Because the climate change phenomenon is beyond their control to solve by a tiny group of people in the world. While climate change was occurring, stakeholder did the environmental preservation projects more than the past to rehabilitate the environment condition reason from other factors damage. Nevertheless, preserved projects are not climate change solving ways directly. Unexpected problems solving processes were used as their ways. In terms of local governments have been informing the true Similan islands situation in this time to another countries by travel agencies or via mass media. But they have doing some environmental preservation projects in Similan islands and their responsible areas. In tour operators past, the largest majority of tour operators (3 companies) who did not have adaptation in climatic change stage have been focusing on marketing only; tell the truth to guests and travel agencies about Similan islands' condition at this time or deal with travel agencies and guests about weather. There are only 7 tour operator who has an adaptation on climatic change stage; adapted their live a board to provide the snorkeling groups and camping tourist groups. Because of the number of snorkeling group are more than diving groups now. Moreover, weather forecasting following is a process that stakeholders update daily. For the local residence, they do not have any indirectly climatic change adaptation in this moment. Because of, change of climate issue over control of them and lack of primary knowledge about climate change. Thus, weather forecasted up to dating as the one thing that local residence can do now, especially, the fishermen career.

All of stakeholders have created some natural resources preservation projects in tourist destinations and their duty areas; plants growing projects were done by local residence who live in Tub La Mu village and local governments who are duty on Similan islands directly. Growing the Half flower trees in Meing island or the forth island for reducing erosion issue and mangrove growing in coastal area of Tub La Mu village which is the best way to increase the marine creature. Because of mangrove forest as a support a wealth of life place from predators or fishing. Furthermore, 10 companies of tour operators have been doing some environment preservation projects; annual big cleaning project was arranged in the end of closed period in every year for underwater and land garbage collecting and prepare Similan islands for seasonal of

tourism propose. Another project is customer trending - many tour operator companies have been emphasizing customer trending before travel to the real situation. They will explain the rules of Similan islands National Park and the good travel habits.

Tourism stakeholders are starting to increase more awareness of the natural resources nowadays. There are many reasons to do environment preservation projects but, the one thing that they would like to see is environments that still have a good condition while, stakeholders gain benefits from them. According to some related literature review, Gable, (1997) and Orams, (1999) pointed that the climatic change scenario has affected natural resources; tourism impact has been damaging as well. For example, disturbance to nature resources or wildlife, a rapid boom in resort and hotel constructions and so on. Stakeholders must do environment preservation projects as a return way to benefit from taking from nature.

Objective 3: To investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future.

Furthermore, stakeholders have been planning directly and indirectly the climatic change solutions. As perspectives of local governments, there are opposite attitudes. According to had adaptation 2 local governments, It is going to appear the climatic change plans about tourism destinations in Phang Nga province strategic plan for 5 years period, basically the strategic plan is a triennial process plan or permitted tourism period adjustment in Similan islands National Park, from November 1 until May 15 to be October 15 until May 30. Furthermore, there are unexpected problems solving; marketing focusing that will present the truth of Similan islands condition at this moment and give some environment preservation advices to the Similan islands responsible sector directly. At the same time, to attend to the tourism road shows is extremely important for new target of tourist's reason. There are 2 of local governments are not concerned with tourist climate change adaptation but concern on marketing strategies. For instance, presently situation of tourist destinations informing tourists, focus on publicize build in world wild TAT offices and expand new target of customers. In terms of local residents they do not have any climatic change adaptation in their future. Because of the most majority of them do not have correctly primary knowledge about climate change enough. According to Orams, (1999) support with this educational management plan for stakeholders, it is win-win situation of environment and stakeholders. Because there can decrease the negative incidence of tourist

behavior, pleasure, awareness and understanding. In the case of tour operators, 8 companies of tour operators do not have future adaptation. Because they do not think that there still earns money from this stage, even through less than the past. Significantly, they believe that climate change does not damage their Similan islands tourism businesses suddenly. At less they must spend more time upto 100 to 200 years and the factors that will destroy their business suddenly are outside factors. For example the economic crisis, exchange rate. Tour operator who not have future adaptations, they have unexpected solving with operation running in the future. For example, intensive annual plans - These plans are not answer future climate change solution directly. But this solving process will help tour operator solve the other problems which are might affect towards their business for flowing of running business reason. Secondly plan, change slogan and extremely marketing - From the old slogan has shown that "Beauty of beaches, marine life and clear water" will replaced "Relax on the beach and enjoy local animals in islands". Because of the old symbol's condition will be changed from nature phenomenal changes not same like in the past. Tour operators must attract new customer targets and create attractive tour packages for increase volume of sale. Finally, new tour packages expanding - the new attractive tour packages where are the other well known marine tourist destinations in Thailand will help companies gain more benefits as the previously years profits (in case that the past could gain profit more than presently). In the case of 2 of tour operator who have future adaptation, one of tour operator have adapted already and will use this plan in the future as well, the live aboard boats for diving tourists only have provided to snorkeling tourists and camping tourists. And another live aboard boat has been0 adapted to be floating kitchen to serve food for tourists to save food budget and time. This is a good adaptation for dealing with climatic changes situation. Tour operator must find the way for save tourism businesses and try to gain more benefits equal as the past. According to another adaptation, Similan islands National Park negotiating about permitted tourism period in their respond area. Normally, there was permitted to do business in November 1 until May 15 to be October 15 until May 30 which is faster 15 days. It seems like the new permitted period is longer than the old one. It might have negative effects to natural resource in islands because tour operators will run operation every day. Because they have thought that Similan islands can run businesses 6 months only, to gain money as much as they can.

From the finding, the most majority of stakeholders have thought that climate change is not surrounding them. It must spend several hundred years, the results will occur clearly then than presently. Conversely, it is impossible to deal with the climate change issue in a tiny area only, we must cooperate with people globally to be changes of our world. Furthermore, they still earn money from this part. Thus, there is less careless to create marine tourism adaptations in climate change situation. As, the marine center data base, (2010) recorded sea water temperature increased from 29 C° to be 30 C° , because of climate change. Corals were bleached and some snorkeling or diving sites were closed to rehabilitate coral reefs. Thus, it has affected some tour operators in Similan islands when famous sites were closed, because beautiful sites have closed must find other site to provide for their tourists. Community residents shall suffer from this stage, especially those who are dependent on the tourism industry, the tourism companies may dismiss workforce to stay afloat or who are fishermen will be affected from increasing of storms, rain and so on. Local governments will gain lower taxes from tourism if compared to the past because of marine resources have change. Stakeholders should consider about climate change adaptation in present and future for the sustainability of resources. For climate change adaptations will be written in the recommendation part.

5.3 Recommendation

The impact of climate change could negatively affect countries in diverse ways, including agriculture, health, biodiversity and energy which can affect to tourism part. Hence, the climate change adaptation cannot be several countries, must cooperate with people in the world. This study identified a few tourism adaptations from stakeholders of Similan islands to dealing in climate change situations.

Firstly it is so important to educate sufficiently, develop climate change knowledge of stakeholders, collaboration and communication. Government and industry organizations are the top responsible people and are the powerful supporters to others. Tourism is crucial revenue for Thailand, even though, lack of good information, financial support, good science to deal the climate change issue and sufficiently tourism data base. Nature-based tourism is one category of popular tourism, especially marine destinations or eco-tourist destinations which are vulnerable to change of climate. Tourism has significant revenues for Thailand; its governments should invest

into this part more than this. Good financial support is the most important beginning of climate change solving. This budget will be used for good quality scientific equipments for weather forecasting accurately. Sufficient Touristic database has shown that effective process to management and development. At the same time, governments, authoritative employees or touristic organizations should educate people about climate change and impact, to be sufficient knowledge as the sustainable climate change solution.

Increase awareness, climate change has affected negatively to our directly subsistence. Government should educate and increase awareness of population on climate change adaptations simultaneously for increase the effective of climate change adaptations. Consequently, the powerful respondent men should emphasize the update climate change issue information for solving climate change problem as high priorities, will increase their awareness towards environments and people will very enthusiastic about climate change adaptations.

The nature resource conservation as the first priorities to be sustainable development and effective adaptation in climate change consequence, humans have damaged natural resources directly and indirectly. At the same time, climate change has destroyed our natural resources enormously as well, human should rehabilitate environments, and these are not positively affects towards tourism sector only. These still have an effect to human health, food industry and so on. Some tour operators agreed to create some wrecking ship diving sites that will help distribute the number of tourists who visit the Similan islands. Creating wrecked ship is the best way to preserve the marine resources. It is considered as a win to aquatic resources preventing damage reduction from tourists. It aids tourism as a way of increasing tourist capacity which helps to distribute the number of tourist to visit the real natural destinations. Furthermore, wrecking ships site will attract fishes and affect to fishermen in the positive way, no need to sail out so distant from land. Likewise, stakeholders should increase of environment conservation projects continuously. For example under water garbage collecting projects in Similan islands, do not allow tourists some islands (conserve area for turtles or other animals) or mangrove forest planting, will help to reduce the erosion of coastal, expand the habitat of primary animal from predators which are valuable to fishermen. Nevertheless, there will be affective climate change adaptation must depends on budget and cooperation from influential organizations harmonize in

the same direction. They support each adaptation process and will be effective climate change adaptation.

Finally, the Similan islands have a charm and beauty that attracts people to visit there which is why it is ranked top of Thailand's marine tourist destinations. It will be destroyed by overloading of tourist capacity or inefficiency of waste management. There are a few examples only of the cause from tourism damage, not including from human activities the cause has been global warming, water level increasing or overloaded fishery. Environment conservation is the best thing that people can do and not to aggravate nature as much as possible.

5.4 Area of further study

Recommendations in terms of further studies, from literature reviews, the researcher has studied in Similan islands in Phang Nga province only. Other studies could do climate change adaptation measures of stakeholders and effectiveness or another biological data to support aquatic environments condition. Finally, other studies can be in the other marine tourism destinations in Thailand: Krabi province or Trang province which are unspecified time period for tourism business operation.

5.5 Limitations

It will be more beneficial in the future if statistical information about some beneficial data for study: weather, water temperature records or Andaman erosion data that clear documents were provided. Because some information from Department of National Parks, Wildlife and Plant Conservation and Similan Islands National Park was not accurate.

Time was a barrier for this study, if had more time can be able exhaustively study and would gain more valuable and various answers.

Lastly, cooperation of stakeholders, some stakeholders feel fear and anxious to be interviewed. Additionally, they are afraid that they do not have sufficient knowledge and have no time for interviews because of their careers.

BIBLIOGRAPHY

BIBLIOGRAPHY

- (N/D) “Scoping Assessment for National Implementation in Thailand: Regional Climate Change Adaptation Knowledge PLATFORM for Asia.” Retrieved on December 12, 2011 from [https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCsQFjAA&url=http%3A%2F%2Fwww.sei-international.org%2Fmediamanager%2Fdocuments%2FPublications%2FBangkok%2FSEI-Scoping AssessmentReport-Thailand.pdf](https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCsQFjAA&url=http%3A%2F%2Fwww.sei-international.org%2Fmediamanager%2Fdocuments%2FPublications%2FBangkok%2FSEI-Scoping%2FAssessmentReport-Thailand.pdf) &ei=YQA3U-6CD4i6iQek84H4Cg&usq= AFQjCNF1aXXV-STMPoBVhzcxBZsseVeNw&sig2=0J0hawAyByD83kJbTqUow&bvm=bv.63808443,d.aGc
- Adjaye J.A. & Tapsuwan S. (2008). “A contingent valuation study of scuba diving benefits: Case study in Mu Ko Similan Marine National Park, Thailand.” *Tourism Management*, 29(6), pp.1122 - 1130. Retrieved on January 11, 2012 from <http://www.sciencedirect.com/science/article/pii/S0261517708000241>
- Ad hoc Core Group. (2007). “Guidance Towards Climate-Proofing of Water Management.” *Convention on the Protection and Use of Transboundary Watercourses and International Lakes Task Force on Water and Climate*. Retrieved on May 10, 2012. from <http://www.unece.org/fileadmin/DAM/env/water/meetings/Water.and.Climate/firstmeet/Draft%20GuidanceFinal.pdf>
- Afgan N.H. (2005). “*Sustainable Development of Energy, Water, and Environment Systems*.” New Jersey : World Scientific Pub Co Inc.
- Barrow C.J. (2005). “*Environmental Management and Development*.” London : Routledge
- Brown G. & Essex S. (1997). “Sustainable Tourism Management: Lessons from The Edge of Australia.” *Journal of sustainable Tourism*, 5(4). Retrieved on March 27, 2012. from <http://www.tandfonline.com/doi/abs/10.1080/09669589708667293#.UzfNio3iY10>
- Boutelle J. (2004). “Understanding Organizational Stakeholders for Design Success.” *Boxers and arrows*. Retrieved on December 16, 2011. from http://www.boxersandarrows.com/view/understanding_organizational_stakeholders_for_design_success

- Boxesandarrows. (N/D) "Stakeholder definition." Retrieved on December 16, 2011. from <http://boxesandarrows.com/understanding-organizational-stakeholders-for-design-success/>
- Bryant N. (2004). "Maldives: Paradise soon to be lost." *BBC NEWS*. Retrieved on December 25, 2011. from http://news.bbc.co.uk/2/hi/south_asia/3930765.stm
- Cabrini L. et al., (2009). "*From Davos to Copenhagen and Beyond: Advancing Tourism's Response to Climate change.*" (N/D) UNWTO.
- Cabanban A.S. & Teh L. (2007). "Planning for sustainable tourism in southern Pulau Banggi: an assessment of biophysical conditions and their implications for future tourism development". *Journal of Environmental Management*, 85(2007) pp. 999 – 1008.
- Cambridge. (N/D) "Scuba-diving definition." Retrieved on October 10, 2012. from <http://dictionary.cambridge.org/dictionary/british/scuba-diving>
- Carroll, A.B. & Buchholtz, A.K. (2006). *Business and Society Ethics and Stakeholder Management*. 8th edition. New York : Thomson.
- Central Database System and Data Stan for Marine and Coastal Resources. (N/A) "Coral reefs threaten" Retrieved on October 10, 2012. from http://marinegiscenter.dmcg.gov/th/km/coral_doc16/#.Uy8yBKisYSp
- Cesar H., Burke L. & Pet-Soede L. (2003). *The Economics of Worldwide Coral Reef Degradation*. Cesar Environmental Economics Consulting (CEEC) : Netherlands
- Coastlearn. (N/D). "Sustainable Tourism." Retrieved on May 06, 2013. from http://www.biodiversity.ru/coastlearn/tourism-eng/why_socioimpacts.html
- Conlin M. V. & Baum T. (1995). *Island Tourism Management Principles and Practice*. New York : John Wiley & Sons.
- Cook R.A., Yale L.J. and Marqua Joseph. (2010). *Tourism the Business of Travel*. 4th edition. New Jersey : Pearson Education.
- Crabtree A. (2007). "Coastal/Marine Tourism Trends in the Coral Triangle and Strategies for Sustainable Development Interventions." *Marine Program World Wildlife Fund Washington. DC*. Retrieved on December 29, 2012. from <http://www.responsibletravel.com>

org/resources/documents/reports/FINAL_REPORT_Alice_Crabtree_Jan_08.pdf

Definition. (N/A) “Scuba diving definition.” Retrieved on October 10, 2012. from

<http://www.definitions.net/definition/scuba%20diving>

Definitions. (2011). “Snorkeling Definition.” Retrieved on December 9, 2012. from <http://www.definitions.net/definition/snorkel>

Department of Marine and Coastal Resource. (2013). “Threatening of coral reef lines.” Retrieved on January 13, 2014. from http://marinegiscenter.dmcrc.go.th/km/coral_doc16/#.UzfaOI3iY10

Department of Marine and Coastal Resource. (2010). “รายงานเบื้องต้น ผลกระทบจากการเกิดปะการังฟอกขาวปี 2553.” Retrieved on September 21, 2010. from <http://www.dmcrc.go.th/marinecenter/coral-lesson6.php>

Department of National Parks, Wildlife and Plant Conservation. (2002). “Mu Ko Similan

islands.” Retrieved on March 26, 2012. from http://park.dnp.go.th/visitor/nationparkshow.php?PTA_CODE=1043&searchword=%CA%D4%C1%D4%C5%D1%B9&category=%CD%D8%B7%C2%D2%B9%E1%CB%E8%A7%AA%D2%B5%D4

Department of National Parks, Wildlife and Plant Conservation. (2002) “Income” Retrieved on

October 11, 2012. from <http://www.dnp.go.th/nprd/develop/income.php>

Dimmock K. (2007). “Scuba Diving, Snorkeling, and Free Diving” pp.128 – 148. *Water-based tourism, sport, leisure, and recreation experiences*. Oxford : UK.

Drexhage J. & Murphy D. (2010). “Sustainable Development: From Brundtland to Rio 2012.”

Retrieved on October 16, 2013. from https://www.google.co.th/url?sa=t&rct=j&q=&esrc=&source=web&cd=1&cad=rja&ved=0CC8QFjAA&url=http%3A%2F%2Fwww.un.org%2Fwcm%2Fwebdav%2Fsite%2Fclimatechange%2Fshared%2Fgsp%2Fdocs%2FGSP16_Background%2520on%2520Sustainable%2520Devt.pdf&ei=A7oJU6G3IamTiAehsYGIDA&usg=AFQjCNHv8HFmquxZLNWH95DyPvkehdr2Nw&sig2=92CSoV1eKF2eu0xIy18T3g&bvm=bv.61725948,d.aGc

Duarte. (2007). *Sustainable Development of Energy, Water and Environment systems*.

Singapore : World Scientific.

- Edugreen. (2007). "Cause of climate change." Retrieved on March 3, 2012. from <http://edugreen.teri.res.in/explore/climate/causes.htm>
- Ehmer P. & Heymann E. (2008). "Climate change and tourism: Where will the journey lead?", *Deutsche Bank Research* (April) Retrieved on February 14, 2012 from http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000222943.PDF
- EPA (United States Environment Protection Agency). (N/D) "Climate Change Impacts and Adapting to Change". Retrieved on July 01, 2013. from <http://www.epa.gov/climatechange/impacts-adaptation/>
- EPA (United States Environment Protection Agency). (2013). "Climate impacts on Society". Retrieved on June 17, 2014. from <http://www.epa.gov/climatechange/impacts-adaptation/society.html>
- EPA (United States Environment Protection Agency). (2014). "Overview of Greenhouse Gases". Retrieved on June 13, 2014. from <http://www.epa.gov/climatechange/ghgemissions/gases.html>
- Education Portal. (2014). "Socio cultural Perspective: Definition, Examples & Quiz". Retrieved on June 17, 2014. from <http://education-portal.com/academy/lesson/sociocultural-perspective-definition-examples-quiz.html#lesson>
- Eutrophication.(2003). "Water Pollution Guide." Retrieved on December 10, 2011. from <http://www.water-pollution.org.uk/eutrophication.html>
- Freeman. (2001). "Law and Ethics in information management." *Academy of Management*. Retrieved on March 20, 2012. from http://courses.washington.edu/ilis580/readings/Mitchell_et_al_1997.pdf
- FotiouS., SimpsonM.C., AssisH.R.de, CabriniL., Vereczi G., MaloneL.&KolliK. (2007). "Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, Tools and Practices." Retrieved on March 20, 2012. from <http://www.unep.fr/shared/publications/pdf/DTIx1047xPA-ClimateChange.pdf>

- Gable F.J. (1997). "Climate Change Impacts on Caribbean Coastal Areas and Tourism." *Journal of Coastal Research. Maritime Academy Bourne*. Retrieved on March 20, 2012. from <http://www.jstor.org/stable/25736087>
- Gambhir S. R., Kapoor V., Nirola A., Sohi R. & Bansal V. (2012). "Water Pollution: Impact of Pollutants and New Promising Techniques in Purification Process." *J Hum Eol*, 37(2): pp. 103 - 109. Retrieved on July 21, 2012. from <http://www.krepublishers.com/02-Journals/JHE/JHE-37-0-000-12-Web/JHE-37-2-000-12-Abst-PDF/JHE-37-2-103-12-2230-Gambhir-R-S/JHE-37-2-103-12-2230-Gambhir-R-S-Tt.pdf>
- Garrod B. and Gössling S. (2008). "New frontiers in Marine Tourism: Diving Experiences, Sustainability, Management." *Tourism Management*, 29(6) pp3-28. Retrieved on May 20, 2012. from <http://www.sciencedirect.com/science/article/pii/B9780080453576500012/pdf?md5=f636f8c50b10f6d0628a48a41b58606d&pid=3-s2.0-B9780080453576500012-main.pdf>
- Geographical: Magazine of the royal geographical society. (2014). "Climate change Here... Now." Retrieved on January 12, 2014. form https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=8&cad=rja&uact=8&ved=0CGgQFjAH&url=http%3A%2F%2Finfo.geographical.co.uk%2Findex.php%2Fdownload_file%2F%2F137&ei=I3c2U6XYHoewiQeQ44GYBw&usg=AFQjCNHUQqnFaF0LkYuKmWRQysb4UtsWRg&bvm=bv.63808443,d.aGc
- Giddings B., Hopwood B. & O'Brien G. (2002). "Environment, economy and society: fitting them together into sustainable development." *Wiley InterScience*, 2001(10), pp. 187 - 196.
- Global Hand.(N/D). "Corporate Social Responsibility: Overview and Case Studies." Retrieved on June 3, 2013. form <http://www.globalhand.org/en/browse/csr>
- Griffiee D. T. (2005). "Research Trips: Interview Data Collection." Retrieved on March 02, 2013. <http://www.eric.ed.gov/PDFS/EJ718580.pdf>
- Haley A.J., Snaith T. & Miller. (2004). "The social impacts of tourism: A case study of Bath, UK." *Annals of Tourism*, 32, pp. 647-668.

- Hall C.M. (1990). "The impact of tourism development in small Pacific Island states." New Zealand. *Journal of Geography*, 89, pp. 16-21. Retrieved on July 5, 2012. from <http://onlinelibrary.wiley.com/doi/10.1111/j.0028-8292.1990.tb00283.x/abstract>
- Hall C. M. (2001). "Trends in ocean and coastal tourism: the end of the frontier?". *Ocean & Coastal Management*, 44. pp. 601 - 618. Retrieved on July 10, 2012. from <http://www.sciencedirect.com/science/article/pii/S0964569101000710>
- Hamilton M.J. (2005). "Tourism, Climate Change and the Coastal Zone." (Doctoral Dissertation, Universität Hamburg, 2005). Retrieved on February 10, 2012. from http://www.fnu.zmaw.de/fileadmin/fnu-files/publication/.../Thesis_Hamilton.pdf
- Hamilton M., Maddison J. & Tol S.J. (2005). "Effects of climate change on international tourism: A simulation study." *Global Environmental Change*, 15(3), pp. 245 - 254. Retrieved on February 10, 2012. from <http://www.sciencedirect.com/science/article/pii/S0959378004000883>
- Hamilton M. and Tol S.J. (2007). "The impact of climate change on tourism and recreation." *Cambridge University*. Retrieved on November 20, 2012. from http://www.google.co.th/books?hl=th&lr=&id=sB1xIr9KKK8C&oi=fnd&pg=PA147&dq=The+impact+of+climate+change+on+tourism+and+++recreation+-+Hamilton+and+tol+-&ots=INTXsGWBID&sig=e9ZaHctx86WoL160isR1242Si-U&redir_esc=y#v=onepage&q=The%20impact%20of%20climate%20change%20on%20tourism%20and%20%20%20recreation%20-%20Hamilton%20and%20tol%20-&f=false
- Hémery G. & Mc Clanahan T.R. (2005). "Effect of Recreational Fish Feeding on Reef Fish Community Composition and Behaviour, Western Indian Ocean" *Journal of Marine Science*, 4(2). Retrieved on March 14, 2012. from <http://www.ajol.info/index.php/wiojms/article/view/28482>
- Inter Governmental Panel on Climate Change (IPCC). (2010). "Climate change." Retrieved on December 11, 2011. from http://www.eoearth.org/article/Climate_change

- Inter Governmental Panel on Climate Change(IPCC). (2013). "Climate Change 2013-The Physical Science Basis: Summary for Policymakers" Retrieved on 26 November, 2013. https://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5_SPM_brochure_en.pdf
- Komchadluek newspaper. (2010). "The hottest El Nino for 10 years." *Komchadluek*. Retrieved on July 14, 2012 from <http://www.komchadluek.net/detail/20100211/48018/%E0%B9%80%E0%B8%AD%E0%B8%A5%E0%B8%99%E0%B8%B5%E0%B9%82%E0%B8%8D%E0%B9%88%E0%B8%97%E0%B8%B1%E0%B9%88%E0%B8%A7%E0%B9%84%E0%B8%97%E0%B8%A2%E0%B8%A3%E0%B9%89%E0%B8%AD%E0%B8%99%E0%B9%81%E0%B8%A3%E0%B8%87%E0%B8%AA%E0%B8%B8%E0%B8%9410%E0%B8%9B%E0%B8%B5.html#.Uy8u36iSySo>
- Komchadluek newspaper. (2011). "Closed 7 diving sites for solve coral reefs bleached." *Komchadluek*. Retrieved October 4, 2012. from <http://www.komchadluek.net/detail/20110121/86436/%E0%B8%9B%E0%B8%B4%E0%B8%94%E0%B8%88%E0%B8%B8%E0%B8%94%E0%B8%94%E0%B8%B3%E0%B8%99%E0%B9%89%E0%B8%B37%E0%B9%81%E0%B8%AB%E0%B9%88%E0%B8%87%E0%B9%81%E0%B8%81%E0%B9%89%E0%B8%9B%E0%B8%B0%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%B1%E0%B8%87%E0%B8%9F%E0%B8%AD%E0%B8%81%E0%B8%82%E0%B8%B2%E0%B8%A7.html#.Uk8QStJmjrc>
- Kolk, A. & Pinkse, J. (2007). "Towards strategic stakeholder management? Integrating perspectives on sustainability challenges such as corporate responses to climate change." *Corporate Governance: International Journal of Business in Society*, 7(4) pp.372. Retrieved on July 18, 2012. from <http://www.emeraldinsight.com/doi/pdfplus/10.1108/14720700710820452>
- Lynes J.K. and Andrachuk M. (2008). "Motivations for corporate social and environmental responsibility: A case study of Scandinavian Airlines." *Elsevier Canada* 14, pp. 377-390. Retrieved on February 20, 2012. from <http://www.sciencedirect.com/science/article/pii/S1075425308000707>
- Marine Knowledge Hub.(2010). "Tourism and recreation." Retrieved on June 3, 2013. from <http://www.mkh.in.th/index.php/2010-03-22-18-05-14/2010-03-26-05-53-09>

- Marshall N.A., Marshall P.A., Abdulla A., Roupheal A. & Ali A. (2009). "Preparing for Climate Change in the Red Sea: Recognising early impacts through perceptions of dive tourists and dive operators in Egypt. IUCN, Gland, Switzerland." Retrieved on July 8, 2013. from <http://data.iucn.org/dbtw-wpd/edocs/2009-059.pdf>
- Mason P. (2005). "Tourism Impacts, Planning and Management." *Elsevier*. Retrieved on March 20, 2012. from <http://www.sciencedirect.com/science/article/pii/B9780750684927000284/pdf?md5=f4f1e7613f09762ed5f0092790677a5c&pid=3-s2.0-B9780750684927000284-main.pdf>
- McIntyre S. (2008). "The Greenhouse Effect." Retrieved on November 12, 2012. from <http://climateaudit.org/2008/01/07/ipcc-explains-the-greenhouse-effect/>
- MCOT. (2010). "Closed 7 diving sites in National Park area on the first day." Retrieved on January 21, 2010. from <http://www.mcot.net/site/content?id=4ff6732e0b01dabf3c025362#.Uy80FKiSySo>
- MCOT. (2011, July, 14). "Water Level of India Ocean threatens million people." Retrieved on October 10, 2012. from <http://www.mcot.net/site/content?id=4ff6716d0b01dabf3c008f2a#.UzffHY3iY10>
- Meteorological Department of Thailand. (2010). "Climate variability and Climate change Projection in Thailand." Retrieved on January 22, 2014. https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&ved=0CD4QFjAC&url=http%3A%2F%2Fwww.tmd.go.th%2Finfo%2Fclimate_future.pdf&ei=Ew_mUrSALqqiAfzkoGYBw&usg=AFQjCNEVNzG0X6HwURD-k9ml4dRqRnGESA&sig2=BmmSd5yS34Cb5Y44nfZCNQ&bvm=bv.59930103,d.aGc
- Middison. (N/D) "Coastal Definition" Retrieved on June 12, 2013. from [https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CCcQFjAA&url=http%3A%2F%2Fwww.madisonct.org%2Fplanning_zoning%2Fdocs%2Fcoastal%2520Resource%2520Definitions%2520\(3\).pdf&ei=hp4JU4iSLcjWrQfA8IGABA&usg=AFQjCNHdSsr7ktNCxnwpZ5cMfG67FDXNcw&sig2=8wo9AMngqeXsyOe-YWMPpw](https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CCcQFjAA&url=http%3A%2F%2Fwww.madisonct.org%2Fplanning_zoning%2Fdocs%2Fcoastal%2520Resource%2520Definitions%2520(3).pdf&ei=hp4JU4iSLcjWrQfA8IGABA&usg=AFQjCNHdSsr7ktNCxnwpZ5cMfG67FDXNcw&sig2=8wo9AMngqeXsyOe-YWMPpw)

- Mishev P. & Mochurova M. (2008). *Global Environmental Change: Challenges to Science and Society in Southeastern Europe*. NY : Springer.
- Najdovski, Blinc, Bekteshi, Kabashi, Šlaus and Zidanšek. (2007). *Sustainable Development of Energy, Water and Environment systems*. Singapore: World Scientific.
- NASA. (N/D) “Global climate change.” Retrieved on December 15, 2011. from <http://climate.nasa.gov/>
- NASA. (N/D) “Global climate change: National Aeronautics and Space Administration.” Retrieved on July 17, 2012. from <http://climate.nasa.gov/kids/bigQuestions/greenhouseEffect/#bg2>
- NASA. (N/D) “Global Climate Change: Vital Signs of the Planet.” Retrieved on July 17, 2012. <http://www.google.co.th/translate?hl=th&sl=en&tl=th&u=http%3A%2F%2Fclimate.nasa.gov%2Fevidence%2F&anno=2>
- NASA. (2005) “What’s different between Weather and Climate?” Retrieved on September 23, 2011. from http://www.nasa.gov/mission_pages/noaa-n/climate/climate_weather.html
- National Academies. (2005). “Joint science academies’ statement: Global response to climate change.” Retrieved on 12 November, 2011 from <https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CDkQFjAB&url=http%3A%2F%2Fwww.nationalacademies.org%2Fonpi%2F06072005.pdf&ei=xQI3U7upKqaUiAeMu4H4Ag&usg=AFQjCNGvOy5Tf8igNv mGfslpYG1hMzDtw&sig2=tPyAq-Nj-cPnJTGZz4zKLg&bvm=bv.63808443,d.aGc>
- Ninlasri Kongwat. (N/D). “Climate change and Thai marine water level changing” Retrieved on October, 4, 2013. from https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&ved=0CDIQFjAB&url=http%3A%2F%2Fwww.navy.mi.th%2Fnavedu%2Fad%2Fvdo_v adm_kongwat_neelasri.html&ei=DvVOUtW5OonprQe5tIGICg&usg=AFQjCNGefTry CBWr2TptX134jsG1lzDsMA&sig2=Y1GEkBaIvf9S8QGPA4jGVA

- NOAA (National Oceanic and Atmospheric Administration). (2007). "Climate change. NOAA National Weather Service." Retrieved on December 25, 2012. from <http://www.nws.noaa.gov/om/brochures/climate/Climatechange.pdf>
- NOAA (National Oceanic and Atmospheric Administration). (N/D) "Coastal Zone Management Act of 1972." Retrieved on November, 25, 2012. from <http://coastalmanagement.noaa.gov/about/czma.html#section304>
- NOAA. (National Oceanic and Atmospheric Administration). (N/D) "PMER Carbon Program." Retrieved on July 2, 2013. from <http://www.pmel.noaa.gov/co2/story/What+is+Ocean+Acidification%3F>
- NOAA. (National Oceanic and Atmospheric Administration). (N/D) "Ocean Acidification Program." Retrieved on July 2, 2013 from <http://oceanacidification.noaa.gov/>
- NOAA (National Oceanic and Atmospheric Administration). (N/D) "Ocean & coastal resource management." Retrieved on July 26, 2013. from http://coastalmanagement.noaa.gov/czm/czm_act.html,
- Orams M. (1999). *Marine tourism: development, impacts and management*. London : Routledge
- Rukendi C. (2012). "Destination Management of Urban Cultural Heritage Tourism from Perspectives of Stakeholders: A Case Study of Jakarta Old Town, Indonesia." *A Thesis submitted in Partial Fulfillment of the Requirements for the Degree of Master of Business Administration in Hospitality and Tourism Management* .Phuket :Price of Songkhla University.
- Sawaddiraksa S. (2010). "Social Impact Host Community Participation for Sustainable Tourism Development: The case Municipality of Tambon Karon, Amphur Muang, Changwat Phuket." *A Thesis submitted in Partial Fulfillment of the Requirements for the Degree of Master of Business Administration in Hospitality and Tourism Management* . Phuket : Price of Songkhla University.

- Scott D. & Lemieux C. (2010). "Weather and Climate Information for Tourism". *Elsevier, Canada*. 2010(1) pp146-183. Retrieved on June 3, from <http://www.sciencedirect.com/science/article/pii/S1878029610000125/pdf?md5=edcbb75c4b43d05370598d163a940&pid=1-s2.0-S1878029610000125-main.pdf>
- Scott D., Jones B. & Konopek J. (2006). "Implications of climate and environmental change for nature-based tourism in the Canadian Rocky Mountains: A case study of Waterton Lakes National Park." *Elsevier*. 2006(28) pp570-579. Retrieved on August 3, 2012 from <http://www.sciencedirect.com/science/article/pii/S0261517706000756>
- Scuba Travel.(2007). "100 Top dive sites of the world." Retrieved on September 10, 2012. from <http://www.scubatravel.co.uk/topdiveslong.html>
- SEI International Organization. (2010) "Regional climate change adaptation knowledge platform for Asia: Scoping assessment for National Implementation in Thailand." Retrieved on May 10, 2013. from <http://www.sei-international.org/mediamanager/documents/Publications/Bangkok/SEI-ScopingAssessmentReport-Thailand.pdf>
- Sloan P., Legrand W. & Chen J.S. (2009). "Sustainability in the hospitality industry." Great Britain: *ElsevierCanada*. from <http://www.sciencedirect.com/science/article/pii/B9780750679688000144/pdf?md5=d2952276fc431520ffbc1c36b40889db&pid=3-s2.0-B9780750679688000144-main.pdf>
- Soukhathammavong, (2010). "Ecotourism Development in Lao PDR: A Case Study of Khammouane Province." *A Thesis submitted in Partial Fulfillment of the Requirements for the Degree of Master of Business Administration in Hospitality and Tourism Management*. Phuket : Price of Songkhla University.
- Standeven J.(1998). *Sport tourism*. USA: Human Kinetics.
- Stylidis D. and Terzidou M. (2007). "Island tourism and its socio-economic impacts." *University of Surrey*.
- TAT (Tourism Authority of Thailand). "Mu Koh Similan National Park."(N/D). Retrieved February 26, 2010. from <http://www.tourismthailand.org/See-and-Do/Sights-and-Attractions-Detail/Mu-Koh-Similan-National-Park--590>

- TAT (Tourism Authority of Thailand). (2012). "Diving tourism." *e-TAT*. Retrieved on June 3, 2013. from <http://etatjournal.com/web/etat-journal/2012/2012-apr-jun/441-22555>
diving
- TAT(Tourism Authority of Thailand). (N/D). "Weather." Retrieved on July 3, 2013 from www.worldtravelguide.net/Thailand/weather
- TGO (Thailand Greenhouse Gas Management Organization). (N/D) "Level of sea water." Retrieved on July 30, 2013. From http://www.tgo.or.th/index.php?option=com_content&view=article&id=71:sea-level&catid=37:effect-of-global-warming-in-thailand&Itemid=59
- Thailand National Park ."Similan islands". Retrieved on November 10, 2012. from http://dnp.go.th/nprd/develop/data/stat55/M_47-55.pdf
- Thailand Greenhouse Gas Organization.(N/D). Retrieved on October 3, 2013. from http://www.tgo.or.th/index.php?option=com_content&view=category&id=37:effect-of-global-warming-in-thailand&Itemid=59 [Online version]
- Thaiways. (2002). "Top Dive Sites in Thailand." Retrieved on December 12, 2011. from http://www.thaiwaysmagazine.com/thai_article/31_01_top_dive/top_dive.html
- Time for change. (N/D) "Comparing the table length." Retrieved on December 16, 2012. from <http://timeforchange.org/definition-for-global-warming-what-is-global-warming>
- The Coastal Resources Center of University of Rhode Island & International Resources Group. (2009). "*Adaptation to Coastal Climate Change: A Guidebook for Development Planners*" Retrieved on December 10, 2013. from [http:// www.usaid.gov/our_work /environment/climate/policies_prog/vulnerability.html](http://www.usaid.gov/our_work/environment/climate/policies_prog/vulnerability.html)Retrieved
- The Encyclopedia of Earth. (N/D) "Climate change." Retrieved on January 22,2012. from <http://www.eoearth.org/climatechange>
- The United Kingdom Environmental Change Network. (N/D). "Climate change." Retrieved on November 4, 2011. from <http://www.ecn.ac.uk/what-we-do/education/tutorials-weather-climate/climate/climate-change-impacts/climate-change-impacts>

- The United Kingdom Environmental Change Network. (N/D) "Greenhouse gases." Retrieved on December 10, 2012. from <http://www.ecn.ac.uk/what-we-do/education/tutorials-weather-climate/climate/greenhouse-gas-effect>
- Thairath newspaper. (2010, January, 16). "Closed Surin island, Similan islands, Phi Phi island and Racha island." *Thairath*. Retrieved on August 16, 2012 from <http://www.thairath.co.th/content/edu/141866>
- The United Kingdom Environmental Change Network. (N/D) "Climate change and Impact" Retrieved on May 1, 2012. from <http://www.ecn.ac.uk/what-we-do/education/tutorials-weather-climate/climate/climate-change-impacts/climate-change-impacts>
- TNA. (2011). " Department of National parks, wildlife and plant conservation closed 7 diving sites in first day." Retrieved on May, 20, 2012. from <http://www.mcot.net/site/content?id=4ff6732e0b01dabf3c025362#.Uk8Ch9Jmjrc.MCOT>.
- Tourismmart. (N/D) "Phang Nga Province Map" Retrieved on February 2, 2013. from <http://www.tourismmart.net/storefront/maximages/PIPicNo1527.GIF>
- UNEP (United Nations Environment Program). (N/D) "Environment Impacts." Retrieved on May 6, 2012. from <http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/FactsandFiguresaboutTourism/ImpactsofTourism/EnvironmentalImpacts/tabid/78775/Default.aspx>
- UNEP(United Nations Environment Program). (N/D) "Negative Socio-Cultural Impact Tourism: Change or loss of indigenous identity and values." Retrieved on May 6, 2013. from <http://www.unep.org/resourceefficiency/business/sectoralactivities/tourism/factsandfiguresabouttourism/impactsoftourism/socio-culturalimpacts/negativesocio-culturalimpactsfromtourism/tabid/78781/default.aspx>
- UNEP (United Nations Environment Program). (N/D). "Resource Efficiency and Sustainable Consumption and Production." Retrieved on July 10, 2013. from <http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/FactsandFiguresaboutTourism/ImpactsofTourism/Socio-CulturalImpacts/NegativeSocio-CulturalImpactsFromTourism/tabid/78781/Default.aspx>

- UNEP (United Nations Environment Program). (N/D) "Resource Efficiency and Sustainable Consumption and Production." Retrieved on July 17, 2013. From <http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/TheTourismandEnvironmentProgramme/FactsandFiguresaboutTourism/ImpactsofTourism/EnvironmentalImpacts/TourismsThreeMainImpactAreas/tabid/78776/Default.aspx>
- UNEP (United Nations Environment Program). (2012). "Sustainable and tourism: definition." Retrieved on May 1, 2012. from <http://www.unep.fr/scp/tourism/sustain/>
- UNEP (United Nations Environment Program), University of Oxford, UNWTO (United Nations World Tourism Organization) & WMO (World Meteorological Organization). (2008). *"Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, Tools and Practices."* Retrieved on February 19, 2014. from <http://www.unep.fr/shared/publications/pdf/DTIx1047xPA-ClimateChange.pdf>
- United Nations Environment Program. (N/D) "Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, Tools and Practices." Retrieved on June, 23, 2013. from <http://www.unep.fr/scp/publications/details.asp?id=DTI/1047/PA>
- University of Wisconsin. (N/D) "Climate change definition." Retrieved on December 12, 2011 from <https://www4.uwsp.edu/natres/nres743/Definitions/Climate.htm>
- UNFCCC (United Nations Framework Convention on Climate Change). (N/D) "Green House Effect." Retrieved on December 19, 2012. from http://unfccc.int/files/documentation/text/html/list_search.php?what=keywords&val=&valan=g&anf=0&id=86
- UNWTO (World Tourism Organization is a specialized of the United Nations). (N/D). "Climate change and tourism." Retrieved on December 16, 2011 from <http://http://sdt.unwto.org/en/content/climate-change-tourism>
- Viner D. & Agnew M. (1999). "Climate Change and Its Impact on Tourism." University of East Anglia Norwich, UK. Retrieved on March 5, 2012. from http://awsassets.panda.org/downloads/tourism_and_cc_full.pdf

- Weed. (2009). "Progress in sports tourism research? A meta-review and exploration of futures." *Tourism Management*, 30(5), pp 615 - 628. Retrieved on March 5, 2012. from <http://www.sciencedirect.com/science/article/pii/S026151770900017X>
- Wilber R.J. (1987). "Plastic in the North Atlantic." *Oceanus*, 30(3), pp61-68. Retrieved on March 6, 2012 from <https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CBsQFjAA&url=http%3A%2F%2Fwww.sea.edu%2Fplastics2010%2Fimages%2FOceanus%2520Plastic%2520article%2520Wilber%25201987.pdf&ei=fObyU629OdWTuASizoLQBg&usg=AFQjCNHqjCdKxxVZ8vTVZYTJ3n9CGHqwhw&sig2=6RZTpBnOrFxJquHgvVkk4A>
- Woodside A. G., Martin D.(2007). "Management: Analysis, Behavior and Strategy." Retrieved on February 20, 2014. from http://books.google.co.th/books?id=fMFx-ssVmZYC&pg=PA472&lpg=PA472&dq=Brown+et+al.+define+tourism+sustainable+tourism+%2B+1997&source=bl&ots=st17QTOv6E&sig=4ZrHWMP_YE0tZZgW85Lg6WWJUNM&hl=en&sa=X&ei=USkvU4e6N-vMiAfjvIGgCw&ved=0CDAQ6AEwAA#v=onepage&q=Brown%20et%20al.%20define%20tourism%20sustainable%20tourism%20%2B%201997&f=false
- World Travel Guide. (N/D) "Maldives Weather, climate and geography." Retrieved on February 01, 2012 from <http://www.worldtravelguide.net/maldives/weather-climate-geography>
- WTO (World Tourism Organization).(N/D)"Climate change and tourism." Retrieved on December 13, 2011 from <http://www.unwto.org/climate/bkg/en/bkg.php?op=1>
- WTO (World Tourism Organization) and UNEP (United Nations Environment Program). (2008). "A Climate Change and Tourism: Responding to Global Challenges." Retrieved on December 20, 2011. from <http://www.econ-pol.unisi.it/opts/climate2008.pdf>
- Yunis, E., Urosevic Z., Gutierrez S. Lemaistre P.&Calvente A., (2009). "From Davos to Copenhagen and Beyond: Advancing Tourism's Response to Climate Change." Retrieved on December 12, 2012 from http://www.unwto.org/pdf/From_Davos_to%20Copenhagen_beyond_UNWTOPaper_ElectronicVersion.pdf

กรมทรัพยากรทางทะเลและชายฝั่ง. (2553). “ผลกระทบจากการเกิดปะการังฟอกขาว ปี 2553.”

สืบค้นเมื่อ 10 กรกฎาคม 2556. จาก <http://www.dmcr.go.th/marinecenter/coral-lesson6.php>

กิติรุช ช่างเจริญ. (2012). “การคุกคามหลากหลายทางชีวภาพ.” *สำนักความหลากหลายทางชีวภาพ.*

สำนักนโยบายทางธรรมชาติและสิ่งแวดล้อม. สืบค้นวันที่ 27 มกราคม 2557.

จาก http://chm-thai.onep.go.th/chm/data_province/pungnya/IBA2.html

มหาวิทยาลัยรามคำแหง. (2550). “ความหมายของการเปลี่ยนแปลงสภาพภูมิอากาศ.” สืบค้นวันที่

10 ตุลาคม 2555. จาก <http://www.ru.ac.th/climate-change>

ศุภกร ชินวรรณ โฉ. (N/D). “การเปลี่ยนแปลงสภาพภูมิอากาศของประเทศไทยในอนาคต.”

ศูนย์เครือข่ายงานวิเคราะห์วิจัยฝึกอบรมการเปลี่ยนแปลงของโลกแห่งเอเชียตะวันออกเฉียงใต้. จุฬาลงกรณ์มหาวิทยาลัย. สืบค้นวันที่ 10 ตุลาคม 2555 จาก

https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CBsQFjAA&url=http%3A%2F%2Fstartcc.iwlearn.org%2Fdoc%2FDoc_thai_4.pdf&ei=IQnzU6GnN4q2uASpwoHABg&usg=AFQjCNEgu2bgv9F49aW4ydEs9c0TDP15IA&sig2=2SM6sTppNxtIvVaewvLA8g&bvm=bv.73231344,d.c2E

สกว.(สำนักงานกองทุนสนับสนุนการวิจัย). (2552). “ประเทศไทยและพื้นที่ข้างเคียง.” สืบค้นวันที่

7 สิงหาคม 2556. จาก http://www.trf.or.th/index.php?option=com_wrapper&view=wrapper&Itemid=233

สิทธิเดช พงศ์กิจวรสิน. (2553). “Climate change and Tourism in Thailand การเปลี่ยนแปลงสภาพ

ภูมิอากาศโลกกับการท่องเที่ยวในประเทศไทย” วารสารวิชาการอิเล็กทรอนิกส์การ

ท่องเที่ยวไทยนานาชาติ สืบค้นเมื่อ 24 กรกฎาคม 2556. จาก <https://www.google.co.th/>

[url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CBsQFjAA&url=http%3A%2F%2Fwww.rea.ru%2Fhotel%2FTeachers%2FSample%2F10a.pdf&ei=gAv0U8vQKcijugSc_oHIBA&usg=AFQjCNHdSEw4BDUyrtq53Gh2Xc8Zp-2NOQ&sig2=zbkbvOVVVBZyV0fB47KQPQ&bvm=bv.73373277,d.c2E](https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CBsQFjAA&url=http%3A%2F%2Fwww.rea.ru%2Fhotel%2FTeachers%2FSample%2F10a.pdf&ei=gAv0U8vQKcijugSc_oHIBA&usg=AFQjCNHdSEw4BDUyrtq53Gh2Xc8Zp-2NOQ&sig2=zbkbvOVVVBZyV0fB47KQPQ&bvm=bv.73373277,d.c2E)

สำนักงานคณะกรรมการพัฒนาการเศรษฐกิจและสังคมแห่งชาติ. (N/D). “การนำเข้าส่งออก

ส่งเสริมการท่องเที่ยว.” สืบค้นเมื่อ 19 มิถุนายน 2556. จาก <https://www.google.co.th/>

[url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0CD0QFjAC&url=http%3A%2F%2Fwww.nesdb.go.th%2FPortals%2F0%2Fnews%2Fplan%2Fp4%2F](https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0CD0QFjAC&url=http%3A%2F%2Fwww.nesdb.go.th%2FPortals%2F0%2Fnews%2Fplan%2Fp4%2F)

2Fm3_4.doc&ei=mZI2U6eYOYesiAfm_4Eg&usg=AFQjCNHzBsVjpQJpWzsGUN3
WdvPmz-tnA

สำนักยุทธศาสตร์และการวางแผนเศรษฐกิจมหภาค. “Economic Outlook: ภาวะเศรษฐกิจไทย
ไตรมาสแรกและแนวโน้มปี 2555.” สืบค้นวันที่ 8 สิงหาคม 2556. จาก

http://www.nesdb.go.th/Portals/0/eco_datas/economic/eco_state/3_55/Press%20Thai%20Q3-2012.pdf

หนังสือพิมพ์คมชัดลึก. (2012). “เอลนีโญ” ทั่วไทยร้อนแรงสุด 10ปี. สืบค้นวันที่ 10 ธันวาคม 2556.

จาก <http://www.komchadluek.net/detail/20100211/48018/%E0%B9%80%E0%B8%AD%E0%B8%A5%E0%B8%99%E0%B8%B5%E0%B9%82%E0%B8%8D%E0%B9%88%E0%B8%97%E0%B8%B1%E0%B9%88%E0%B8%A7%E0%B9%84%E0%B8%97%E0%B8%A2%E0%B8%A3%E0%B9%89%E0%B8%AD%E0%B8%99%E0%B9%81%E0%B8%A3%E0%B8%87%E0%B8%AA%E0%B8%B8%0%B8%9410%E0%B8%9B%E0%B8%B5.html>

หนังสือพิมพ์ไทยรัฐ. (2554). “เสนอปิดหมู่เกาะสุรินทร์-สิมิลัน-พีพี-ราชาปะการังฟอกขาวรุนแรง.”
สืบค้นวันที่ 22 มกราคม 2554. จาก <http://www.thairath.co.th/content/edu/141866>

องค์การบริหารการพัฒนาพื้นที่พิเศษเพื่อการท่องเที่ยวอย่างยั่งยืน. (2553). “เอกสารประกอบการ
ฝึกอบรมหลักสูตรการท่องเที่ยวเกี่ยวกับภาวะโลกร้อนสำหรับเจ้าหน้าที่ของรัฐ.” สืบค้นวันที่
7 กรกฎาคม 2556. จาก http://www.dasta.or.th/upload/friendly_proact/download/441-2024-0.pdf

APPENDIXES

APPENDIX A



ผลกระทบของการเปลี่ยนแปลงสภาพภูมิอากาศกับกิจกรรมการท่องเที่ยวประเภทดำน้ำลึกและน้ำตื้นจากมุมมองของผู้มีส่วนได้ส่วนเสียกรณีศึกษา: อุทยานแห่งชาติหมู่เกาะสิมิลัน: ข้าราชการท้องถิ่น

เรียน ผู้ตอบแบบสัมภาษณ์

คำถามสัมภาษณ์เป็นส่วนหนึ่งของงานวิจัย ในหัวเรื่อง ผลกระทบของการเปลี่ยนแปลงสภาพภูมิอากาศกับกิจกรรมการท่องเที่ยวประเภทดำน้ำลึกและน้ำตื้นจากมุมมองของผู้มีส่วนได้ส่วนเสียกรณีศึกษา: อุทยานแห่งชาติหมู่เกาะสิมิลันงานวิจัยเล่มนี้อยู่ในยินยอมของมหาวิทยาลัยสงขลานครินทร์ วิทยาเขตภูเก็ต คณะกรบริการและการท่องเที่ยว หลักสูตรบริหารธุรกิจสาขาการบริการและการท่องเที่ยว คำถามในการสัมภาษณ์จะเกี่ยวกับความคิดเห็นของผู้มีส่วนได้ส่วนเสียของกิจกรรมการดำน้ำลึกและน้ำตื้นภายใต้สภาวะผลกระทบของการเปลี่ยนแปลงของสภาพอากาศในพื้นที่หมู่เกาะสิมิลัน ข้อมูลที่ถูกให้สัมภาษณ์มานั้นจะถูกเก็บเป็นความลับและไม่มีการเผยแพร่ในสาธารณะแต่อย่างใด

ขอขอบพระคุณสำหรับความร่วมมือของท่าน สำหรับข้อมูลเพิ่มเติมเกี่ยวกับงานวิจัยและคำถามสามารถติดต่อผู้จัดทำได้ที่ sijitra@live.com

ศิริตรา ทรงเจริญ

นักศึกษาปริญญาโท สาขาบริหารธุรกิจ: การบริการและการท่องเที่ยว
คณะกรบริการและการท่องเที่ยว มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตภูเก็ต

ส่วนที่ 1: ข้อมูลทั่วไป

เพศ

เพศชาย เพศหญิง

ระดับอายุ

20-29 30-39 40-49 50-59 60-69
 71-79 81-89

การศึกษา

- มัธยมต้น มัธยมปลาย อาชีวศึกษา/ปริญญาตรี
- ปริญญาโท ปริญญาเอก

ตำแหน่งปัจจุบัน

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ส่วนที่ 2A: ประเมินสถานการณ์ของปัญหา

1. การท่องเที่ยวมีความสำคัญต่อจังหวัดพังงาอย่างไร เพราะเหตุใด
2. ท่านมีความคิดเห็นเกี่ยวกับการเปลี่ยนแปลงของสภาพเปลี่ยนแปลงของสภาพภูมิอากาศอย่างไร อธิบายพอสังเขป
3. ปัจจุบันมีปัญหาการเปลี่ยนแปลงของสภาพอากาศที่มีผลกระทบต่อสถานที่ท่องเที่ยวและสถานการณ์ท่องเที่ยวในหมู่เกาะสิมิลันหรือไม่ อย่างไร

คำตอบนี้อ้างอิงจาก

- ประสบการณ์โดยตรง งานวิจัยทางการศึกษา อื่น ๆ.....

ส่วนที่ 2B: การรับมือกับปัญหาในปัจจุบัน

1. ท่านมีนโยบาย โครงการหรือแผนพัฒนาในการรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศในขณะนี้อย่างไรบ้าง กรุณาอธิบายอย่างละเอียด
 - ถ้ามี ท่านมีนโยบาย โครงการหรือแผนพัฒนาใดที่ใช้จัดรับมือกับปัญหา
 - ถ้าไม่ เหตุใดท่านจึงไม่มีนโยบาย โครงการหรือแผนพัฒนาเพื่อรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศ กรุณาอธิบายโดยสังเขป
 - 1.1 ท่านใช้นโยบาย โครงการหรือแผนพัฒนาเพื่อรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศมานานเท่าไร
 - 1.2 นโยบาย โครงการหรือแผนพัฒนาข้างต้นประสบผลสำเร็จหรือไม่ เพราะเหตุใดและถ้าประสบผลสำเร็จ ท่านใช้เกณฑ์อะไรในการวัดความสำเร็จของนโยบาย โครงการหรือแผนพัฒนาข้างต้น
 - 1.3 ท่านประสบปัญหาใดบ้างระหว่างการดำเนินนโยบาย โครงการหรือแผนพัฒนา กรุณาอธิบายโดยสังเขป
 - 1.4 ท่านมีวิธีรับมือกับปัญหาที่เกิดขึ้นในระหว่างการดำเนินนโยบาย โครงการหรือแผนพัฒนา กรุณาอธิบายโดยสังเขป
2. ท่านมีการดำเนินโครงการหรือแผนเกี่ยวกับการอนุรักษ์สิ่งแวดล้อมในสถานที่ท่องเที่ยวภายใต้ความดูแลของท่านหรือในชุมชนท่านในปัจจุบันอย่างไร

3. ท่านได้มีการสนับสนุนให้ความรู้เกี่ยวกับการท่องเที่ยวและผลกระทบจากการเปลี่ยนแปลงสภาพอากาศที่มีผลต่อการดำเนินธุรกิจในท้องถิ่นกับประชาชนหรือไม่ อย่างไร
4. ตามความคิดของท่าน ท่านคิดว่าการท่องเที่ยวอย่างยั่งยืนหมายถึงอะไร
 - 4.1 ภายในจังหวัดพังงา (หมู่เกาะสิมิลันหรือสถานท่องเที่ยวอื่น ๆ)มีการนำการท่องเที่ยวอย่างยั่งยืนเข้ามาปรับใช้บ้างหรือไม่
5. ในฐานะที่ท่านเป็นข้าราชการท้องถิ่น ท่านมีความคิดเห็นอย่างไรกับการร่วมมือจากคนในชุมชนหรือผู้ประกอบการด้านการท่องเที่ยวในส่วนของ การแก้ไขปัญหาการเปลี่ยนแปลงของสภาพภูมิอากาศ
6. ท่านคิดว่ารัฐบาลควรเพิ่มความใส่ใจในเรื่องปัญหาการเปลี่ยนแปลงของสภาพภูมิอากาศที่มีผลต่อสถานที่ท่องเที่ยวหรือไม่อย่างไร

ส่วนที่ 2C: การรับมือกับปัญหาในอนาคต

1. ในอนาคต ท่านมีนโยบาย โครงการหรือแผนพัฒนาในการรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศอย่างไรบ้าง กรุณาอธิบายอย่างละเอียด
 - ถ้ามี ท่านมีนโยบาย โครงการหรือแผนพัฒนาที่ใช้จัดอยู่ประเภทใด
 - ถ้าไม่ เหตุใดท่านจึงไม่มีนโยบาย โครงการหรือแผนพัฒนาเพื่อรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศ กรุณาอธิบายโดยสังเขป
 - 1.1 นโยบาย โครงการหรือแผนพัฒนาในอนาคต ท่านคาดว่าจะประสบความสำเร็จหรือไม่ เพราะเหตุใด และถ้าประสบความสำเร็จ ท่านใช้เกณฑ์อะไรในการวัดความสำเร็จของนโยบาย โครงการหรือแผนพัฒนาข้างต้น
 - 1.2 ท่านคาดว่าจะประสบปัญหาใดบ้างระหว่างการดำเนินนโยบาย โครงการหรือแผนพัฒนาในอนาคต กรุณาอธิบายโดยสังเขป
2. ท่านมีการดำเนินโครงการหรือแผนเกี่ยวกับการอนุรักษ์สิ่งแวดล้อมในสถานที่ท่องเที่ยวภายใต้ความดูแลของท่านหรือในชุมชนท่านในอนาคตอย่างไร
3. ท่านคิดว่าสามารถนำการท่องเที่ยวอย่างยั่งยืนมาประยุกต์ใช้กับสถานที่ท่องเที่ยว (หมู่เกาะสิมิลันหรือสถานที่ท่องเที่ยวอื่น ๆ ในท้องถิ่น) ในอนาคตอย่างไร
4. ท่านมีข้อเสนอแนะเพิ่มเติมหรือไม่

APPENDEXIES B



ผลกระทบของการเปลี่ยนแปลงสภาพภูมิอากาศกับกิจกรรมการท่องเที่ยวประเภทดำน้ำลึกและน้ำตื้นจาก
มุมมองของผู้มีส่วนได้ส่วนเสียกรณีศึกษา: อุทยานแห่งชาติหมู่เกาะสิมิลัน: กลุ่มชุมชน

เรียน ผู้ตอบแบบสัมภาษณ์

คำถามสัมภาษณ์เป็นส่วนหนึ่งของงานวิจัย ในหัวเรื่อง ผลกระทบของการเปลี่ยนแปลงสภาพภูมิอากาศกับกิจกรรมการท่องเที่ยวประเภทดำน้ำลึกและน้ำตื้นจากมุมมองของผู้มีส่วนได้ส่วนเสียกรณีศึกษา: อุทยานแห่งชาติหมู่เกาะสิมิลันงานวิจัยเล่มนี้อยู่ในยินยอมของมหาวิทยาลัยสงขลานครินทร์ วิทยาเขตภูเก็ต คณะกรบริการและการท่องเที่ยว หลักสูตรบริหารธุรกิจสาขาการบริการและการท่องเที่ยว คำถามในการสัมภาษณ์จะเกี่ยวกับความคิดเห็นของผู้มีส่วนได้ส่วนเสียของกิจกรรมการดำน้ำลึกและน้ำตื้นภายใต้สภาวะผลกระทบของการเปลี่ยนแปลงของสภาพอากาศในพื้นที่หมู่เกาะสิมิลัน ข้อมูลที่ถูกให้สัมภาษณ์มานั้นจะถูกเก็บเป็นความลับและไม่มีการเผยแพร่ในสาธารณะแต่อย่างใด

ขอขอบพระคุณสำหรับความร่วมมือของท่าน สำหรับข้อมูลเพิ่มเติมเกี่ยวกับงานวิจัยและคำถามสามารถติดต่อผู้จัดทำได้ที่ sijittra@live.com

ศิจิตรา ทรงเจริญ

นักศึกษาระดับปริญญาโท สาขาบริหารธุรกิจ: การบริการและการท่องเที่ยว
คณะกรบริการและการท่องเที่ยว มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตภูเก็ต

ส่วนที่ 1: ข้อมูลทั่วไป

เพศ

เพศชาย

เพศหญิง

ระดับอายุ

20-29

30-39

40-49

50-59

60- 69

71-79

81-89

การศึกษา

- ประถมศึกษา มัธยมศึกษาตอนต้น มัธยมศึกษาตอนปลาย อาชีวศึกษา/ปริญญาตรี
- ปริญญาโท ปริญญาเอก

อาชีพ

.....

ส่วนที่ 2A: ประเมินสถานการณ์ของปัญหา

1. การท่องเที่ยวมีความสำคัญต่อจังหวัดพังงาอย่างไร เพราะเหตุใด
2. ท่านและครอบครัวของท่านได้รับผลประโยชน์จากการท่องเที่ยวหรือไม่ เพราะเหตุใด
3. ท่านมีความคิดเห็นเกี่ยวกับการเปลี่ยนแปลงของสภาพเปลี่ยนแปลงของสภาพภูมิอากาศขณะนี้อย่างไร อธิบายพอสังเขป
4. ปัจจุบันมีปัญหาการเปลี่ยนแปลงของสภาพอากาศที่มีผลกระทบต่อสถานที่ท่องเที่ยวและสถานการณ์ท่องเที่ยวในหมู่เกาะสิมิลันหรือไม่ อย่างไร

คำตอบนี้อ้างอิงจาก

- ประสบการณ์โดยตรง งานวิจัยทางการศึกษา อื่น ๆ.....

ส่วนที่ 2B: การรับมือกับปัญหาในปัจจุบัน

1. ในปัจจุบัน ท่านมีแผนในการรับมือกับปัญหาสถานะการเปลี่ยนแปลงของสภาพอากาศอย่างไรบ้าง กรุณาอธิบายอย่างละเอียด
 - ถ้ามี แผนในการรับมือกับปัญหาสถานะการเปลี่ยนแปลงของสภาพอากาศหรือไม่อย่างไร
 - ถ้าไม่มี เหตุใดท่านจึงไม่มีแผนเพื่อรับมือกับปัญหาสถานะการเปลี่ยนแปลงของสภาพอากาศ กรุณาอธิบายโดยสังเขป
 - 1.1 ท่านใช้แผนในรับมือกับปัญหาสถานะการเปลี่ยนแปลงของสภาพอากาศมานานเท่าไร
 - 1.2 แผนข้างต้นประสบผลสำเร็จหรือไม่ เพราะเหตุใดและถ้าประสบผลสำเร็จ ท่านใช้เกณฑ์อะไรในการวัดความสำเร็จแผนข้างต้น
 - 1.3 ท่านประสบปัญหาใดบ้างระหว่างการดำเนินแผน กรุณาอธิบายโดยสังเขป
 - 1.4 ท่านมีวิธีรับมือกับปัญหาที่เกิดขึ้นในระหว่างการดำเนินแผน กรุณาอธิบายโดยสังเขป
2. ในปัจจุบันท่านมีส่วนในการช่วยหรือกิจกรรมที่อนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันและสิ่งแวดล้อมบริเวณชุมชนอย่างไรและประสบความสำเร็จหรือไม่ อย่างไร
 - ถ้าไม่ เพราะเหตุใดถึงไม่มีโครงการอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันและสิ่งแวดล้อมในชุมชน
 - 2.1 ท่านมีสิ่งใดเป็นตัวชี้วัดความสำเร็จในการทำกิจกรรมอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันและสิ่งแวดล้อมในชุมชนเพราะอะไร

- 2.2 ท่านประสบปัญหาในระหว่างการทำกิจกรรมอนุรักษ์สิ่งแวดล้อมในหมู่เกาะลันตาหรือไม่ อย่างไร
3. ท่านมีความคิดเห็นอย่างไรกับการท่องเที่ยวอย่างยั่งยืนในท้องถิ่นของท่าน
4. ในฐานะของประชาชนในชุมชน ท่านคิดว่าการมีส่วนร่วมของภาคข้าราชการหรือผู้นำท้องถิ่นและผู้ประกอบการท่องเที่ยว ในส่วนของการหาแนวทางแก้ไขปัญหามาจากการท่องเที่ยว รวมไปถึงปัญหาผลกระทบจากสภาพอากาศเปลี่ยนแปลงที่ผลต่อการท่องเที่ยวสำคัญหรือไม่ อย่างไร

ส่วนที่ 2C: การรับมือกับปัญหาในอนาคต

1. ในอนาคต ท่านมีแผนในการรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศอย่างไรบ้าง กรุณาอธิบายอย่างละเอียด
 - ถ้ามี กรุณาอธิบายแผนของท่าน
 - ถ้าไม่ เหตุใดท่านจึงไม่มีแผนเพื่อรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศ
 - 1.1 แผนในอนาคต ท่านคาดว่าจะประสบผลสำเร็จหรือไม่ เพราะเหตุใด และถ้าประสบผลสำเร็จ ท่านใช้เกณฑ์อะไรในการวัดความสำเร็จของแผนข้างต้น
 - 1.2 ท่านคาดว่าจะประสบปัญหาใดบ้างระหว่างการดำเนินแผนรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศในอนาคต กรุณาอธิบายโดยสังเขป
2. ในอนาคต ท่านมีโครงการหรือกิจกรรมใหม่ ๆ ซึ่งเกี่ยวกับการอนุรักษ์สิ่งแวดล้อมในสถานที่ท่องเที่ยวและสิ่งแวดล้อมในชุมชนของท่านอย่างไร
3. ท่านมีความคิดเห็นอย่างไร ถ้ามีการนำรูปแบบการท่องเที่ยวอย่างยั่งยืนมาปรับใช้กับสถานที่ท่องเที่ยวในชุมชนของท่าน
4. ท่านมีข้อเสนอแนะเพิ่มเติมหรือไม่

APPENDEXIES C



ผลกระทบของการเปลี่ยนแปลงสภาพภูมิอากาศกับกิจกรรมการท่องเที่ยวประเภทดำน้ำลึกและน้ำตื้นจาก
มุมมองของผู้มีส่วนได้ส่วนเสียกรณีศึกษา: อุทยานแห่งชาติหมู่เกาะสิมิลัน: ผู้ประกอบการ

เรียน ผู้ตอบแบบสัมภาษณ์

คำถามสัมภาษณ์เป็นส่วนหนึ่งของงานวิจัย ในหัวข้อเรื่อง ผลกระทบของการเปลี่ยนแปลงสภาพภูมิอากาศกับกิจกรรมการท่องเที่ยวประเภทดำน้ำลึกและน้ำตื้นจากมุมมองของผู้มีส่วนได้ส่วนเสียกรณีศึกษา: อุทยานแห่งชาติหมู่เกาะสิมิลันงานวิจัยเล่มนี้อยู่ในยินยอมของมหาวิทยาลัยสงขลานครินทร์ วิทยาเขตภูเก็ต คณะกรรการบริการและการท่องเที่ยว หลักสูตรบริหารธุรกิจสาขาการบริการและการท่องเที่ยว คำถามในการสัมภาษณ์จะเกี่ยวกับความคิดเห็นของผู้มีส่วนได้ส่วนเสียของกิจกรรมการดำน้ำลึกและน้ำตื้นภายใต้สภาวะผลกระทบของการเปลี่ยนแปลงของสภาพอากาศในพื้นที่หมู่เกาะสิมิลัน ข้อมูลที่ถูกให้สัมภาษณ์มานั้นจะถูกเก็บเป็นความลับและไม่มีการเผยแพร่ในสาธารณะแต่อย่างใด

ขอขอบพระคุณสำหรับความร่วมมือของท่าน สำหรับข้อมูลเพิ่มเติมเกี่ยวกับงานวิจัยและคำถามสามารถติดต่อผู้จัดทำได้ที่ sijitra@live.com

ศิจิตรา ทรงเจริญ

นักศึกษาปริญญาโท สาขาบริหารธุรกิจ: การบริการและการท่องเที่ยว
คณะกรรการบริการและการท่องเที่ยว มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตภูเก็ต

ส่วนที่ 1: ข้อมูลทั่วไป

เพศ

เพศชาย

เพศหญิง

ระดับอายุ

20-29

30-39

40-49

50-59

60- 69

71-79

81-89

การศึกษา

- มัธยมศึกษา มัธยมปลาย อาชีวศึกษา/ปริญญาตรี
- ปริญญาโท ปริญญาเอก

ตำแหน่งปัจจุบัน

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ส่วนที่ 2A: ประเมินสถานการณ์ของปัญหา

1. การท่องเที่ยวมีความสำคัญต่อจังหวัดพังงาอย่างไร เพราะเหตุใด
2. ท่านมีความคิดเห็นเกี่ยวกับการเปลี่ยนแปลงของสภาพเปลี่ยนแปลงของสภาพภูมิอากาศขณะนี้อย่างไร อธิบายพอสังเขป
3. ปัจจุบันมีปัญหาการเปลี่ยนแปลงของสภาพอากาศที่มีผลกระทบต่อสถานที่ท่องเที่ยวและสถานการณ์ท่องเที่ยวในหมู่เกาะสิมิลันหรือไม่ อย่างไร

คำตอบนี้อ้างอิงจาก

- ประสบการณ์โดยตรง งานวิจัยทางการศึกษา อื่น ๆ.....

ส่วนที่ 2B: การรับมือกับปัญหาในปัจจุบัน

1. ท่านมีแนวทางการรับมือกับปัญหาที่เกิดจากสภาพอากาศเปลี่ยนแปลงกับกิจกรรมการท่องเที่ยวประเภทค้ำน้ำลึกและค้ำน้ำตื้นหรือไม่ กรุณาอธิบายโดยสังเขป
 - ถ้ามี กรุณาอธิบายถึงนโยบาย โครงการหรือแผนพัฒนาของท่านโดยสังเขป
 - ถ้าไม่ เหตุใดท่านจึงไม่มีนโยบาย โครงการหรือแผนพัฒนาของกิจกรรมการท่องเที่ยวประเภทค้ำน้ำลึกและค้ำน้ำตื้นขึ้นเพื่อรับมือกับปัญหาสภาวะการเปลี่ยนแปลงของสภาพอากาศ กรุณาอธิบายโดยสังเขป
- 1.1 ท่านใช้นโยบาย โครงการหรือแผนพัฒนาของกิจกรรมการท่องเที่ยวประเภทค้ำน้ำลึกและค้ำน้ำตื้นขึ้นเพื่อรับมือกับปัญหาสภาวะการเปลี่ยนแปลงสภาพมานานเท่าไร
- 1.2 ท่านประสบปัญหาใดบ้างระหว่างการดำเนินนโยบาย โครงการหรือแผนพัฒนาสำหรับกิจกรรมการท่องเที่ยวประเภทค้ำน้ำลึกและค้ำน้ำตื้นและมีวิธีการรับมืออย่างไร กรุณาอธิบายโดยสังเขป
- 1.3 นโยบาย โครงการหรือแผนพัฒนาของกิจกรรมการท่องเที่ยวประเภทค้ำน้ำลึกและค้ำน้ำตื้นข้างต้นประสบผลสำเร็จหรือไม่ เพราะเหตุใดและถ้าประสบผลสำเร็จ ท่านใช้เกณฑ์อะไรในการวัดความสำเร็จของนโยบาย โครงการหรือแผนพัฒนาข้างต้น
- 1.4 ใครคือผู้ตัดสินใจในการปรับใช้นโยบาย โครงการหรือแผนพัฒนาของกิจกรรมการท่องเที่ยวประเภทค้ำน้ำลึกและค้ำน้ำตื้น ภายใต้สภาวะปัญหาสภาพอากาศเปลี่ยนแปลง

2. ในปัจจุบันองค์กรของท่านมีส่วนช่วยหรือกิจกรรมในการช่วยอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันอย่างไรและประสบความสำเร็จหรือไม่ อย่างไร
 - ถ้ามี เป็นกิจกรรมอนุรักษ์สิ่งแวดล้อมในด้านใด กรุณาอธิบายโดยสังเขป
 - ถ้าไม่ เพราะเหตุใดถึงไม่มีโครงการอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลัน
- 2.1 องค์กรของท่านได้รับประโยชน์จากการทำกิจกรรมอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันอย่างไร
- 2.2 องค์กรของท่านเคยแจ้งข่าวสารเกี่ยวกับกิจกรรมอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันให้กับแขกได้ทราบหรือไม่และมีผลอย่างไรต่อการดำเนินธุรกิจ
- 2.3 ท่านมีสิ่งใดเป็นตัวชี้วัดความสำเร็จในการทำกิจกรรมอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันเพราะอะไร
- 2.4 ท่านประสบปัญหาในระหว่างการทำกิจกรรมอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันหรือไม่ อย่างไร
3. ความหมายของการท่องเที่ยวอย่างยั่งยืน ในมุมมองของท่านหมายถึงอะไร
4. ท่านคิดว่าผู้ประกอบการสามารถนำการท่องเที่ยวอย่างยั่งยืนมาปรับใช้ในการท่องเที่ยวธุรกิจการค้าปลีกและค้าปลีกได้หรือไม่ อย่างไร
5. ท่านมีความต้องการความช่วยเหลือจากหน่วยงานของภาครัฐ เกี่ยวกับผลกระทบจากการเปลี่ยนแปลงของสภาพอากาศต่อธุรกิจการท่องเที่ยวหรือไม่ อย่างไร
6. ท่านคิดว่าความร่วมมือของภาครัฐหรือผู้นำท้องถิ่นและประชาชนในท้องถิ่น ในส่วนของการหาแนวทางแก้ไขปัญหาค่าสำคัญหรือไม่ อย่างไร

ส่วนที่ 2C: การรับมือกับปัญหาในอนาคต

1. ท่านมีนโยบาย โครงการหรือแผนพัฒนาของกิจกรรมการท่องเที่ยวประเภทค้าปลีกและค้าปลีกเพื่อรองรับกับปัญหาสภาพอากาศเปลี่ยนแปลงในอนาคตอย่างไร
 - ถ้ามี ท่านมีนโยบาย โครงการหรือแผนพัฒนาที่คาดว่าจะมีในอนาคตนั้นอย่างไร
 - ถ้าไม่ เหตุใดท่านจึงไม่มีนโยบาย โครงการหรือแผนพัฒนาเพื่อรับมือกับปัญหาสภาพอากาศเปลี่ยนแปลง เพราะอะไร
- 1.1 นโยบาย โครงการหรือแผนพัฒนาในอนาคต ท่านคาดว่าจะประสบผลสำเร็จหรือไม่ เพราะเหตุใดและถ้าประสบผลสำเร็จ ท่านใช้เกณฑ์อะไรในการวัดความสำเร็จของนโยบาย โครงการหรือแผนพัฒนาข้างต้น
- 1.2 ท่านคาดว่าจะประสบปัญหาใดบ้างระหว่างการค้าปลีกนโยบาย โครงการหรือแผนพัฒนาการค้าปลีกและค้าปลีกในอนาคต กรุณาอธิบายโดยสังเขป
2. ท่านมีแผนในการอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันในอนาคตหรือไม่ อย่างไร
 - ถ้าไม่ เพราะเหตุใดถึงไม่มีแผนในการอนุรักษ์สิ่งแวดล้อมในหมู่เกาะสิมิลันในอนาคต
3. ท่านมีแผนในการปรับการท่องเที่ยวอย่างยั่งยืนมาใช้ในธุรกิจการท่องเที่ยวของท่านหรือไม่ อย่างไร
4. ท่านมีข้อเสนอแนะเพิ่มเติมหรือไม่

APPENDEXIES D



Impact of climate change on diving and snorkeling activities from stakeholder's perspective: A case study of Similan islands National Park: local governments part.

Dear Respondent

The question is part of a research project titled impact of climate change on snorkeling tourism from stakeholder's perspective: A case study of Similan islands National Park. The thesis is granted by MBA program, Faculty of Hospitality and Tourism of Prince of Songkhla University Phuket campus. This thesis concern about how the stakeholder's perspective about impact of changing climate on snorkeling tourism in Similan islands and adaptation strategies. The information given in this interview will be treated rigorously confidentially and your information will not be used in any publish way.

Thank you very much for your kind assistance. For additional information about the thesis, please do not hesitate to contact me at sijitra@live.com.

Sijitra Songcharoen

MBA. Student

Faculty of Hospitality and Tourism, Prince of Songkhla University Phuket Campus

Part 1: General Information

Sex

Male Female

Age Range

20-29 30-39 40-49 50-59 60- 69
 71-79 81-89

Education

Primary School Secondary School Diploma/ Bachelor's Degree
 Master Degree PhD

Career

.....

Part 2A: Assessment of situation impact

1. How important of tourist to Phang nga province?
2. How do you think about climate change presently?
3. What impacts of climate change might affect to destinations about tourism sector on the Similan islands? Could you explain more?

This answer is based on

Expert knowledge resh study Other..........

1. At this stage, what adaptation responses are integrated in to relevant development plans those you have done?
 - If yes, what is your adaptation for climate change issue and explain more?
 - If not, why do you have not adaptation for climate change issue?
 - 1.1 How long have you been using climate changing adaptation?
 - 1.2 Has the climate change adaptation been a success, partial success or failure? Could you explain the reasons? How to evaluate for adaptive management?
 - 1.3 Has the climate change adaptation (snorkeling and diving) been a success, partial success or failure? Could you explain the reasons? What the obstacles that you are facing? How to evaluate for adaptive management?
 - 1.4 How do you dial with obstacles during your plan? Could you explain more?
2. In term of environment conservation, do you have the ways to preserve environment of your responsible area or local's environment? How?
3. Do you supporting about tourism and climate change impact those are facing to tourism operation business to people in community? How?
4. According to your opinion, how do you feel about sustainable tourism in your community?
 - 4.1 Do you adjust the sustainable tourism into your responsible area or Similan islands? How?
5. In term of environmental and climate change problems dialing those effect to tourism in community, what is your opinion about corporate between tour operators and the leader of village?
6. According to your opinion, should the government focus and pay more attention about climate change problems dialing that effect to tourist attractions or not? How?

Part 2C: Future Adaptation

1. What climate change adaptation responses are integrated in to relevant development plans for the future?
 - If yes, what is your adaptation for climate change issue and explain more?
 - If not, why do you have not adaptation for climate change issue?
- 1.1 How is it effectiveness? What the reasons to assist the future adaptations are successful and how to evaluate for future adaptive management? Could you explain more?
- 1.2 Shall you forecast that have any obstacles during your plan in the future? Could you give the example and explain more?
2. Shall you have new conservation projects in your responsible area or your community in the future?
3. According to your opinion, how do you feel about stainable tourism adaptation in your responsible area or your community tourist attractions?
4. Do you have any suggestions?

APPENDEXIES E



Impact of climate change on diving and snorkeling activities from stakeholder's perspective: A case study of Similan islands National Park: Community part.

Dear Respondent,

The question is part of a research project entitled Impact of climate change on snorkeling tourism from stakeholder's perspective: A case study of Similan islands National Park. The thesis is granted by the MBA program, Faculty of Hospitality and Tourism of Prince of Songkhla University Phuket campus. This thesis is concerned with how the stakeholder's perspective about the impact of changing climate on the snorkeling tourism in the Similan islands and therefore adaptation strategies. The information given in this interview will be treated as confidentially and your information will not be used in any published way.

Thank you very much for your kind assistance. For additional information about the thesis, please do not hesitate to contact me at sijitra@live.com.

Sijitra Songcharoen

MBA. Student

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Part 1: General Information

Sex

Male Female

Age Range

20-29 30-39 40-49 50-59 60- 69
 71-79 81-89

Education

Primary School Secondary School Diploma/ Bachelor's Degree
 Master Degree PhD

Career

.....

Part 2A: Assessment of situation impact

1. How important is tourism to the Phang Nga province?
2. Do you got receive benefits from tourism? How?
3. In your opinion, what do you think of climate change presently?
4. How does the impact of climate change affect destinations within the tourism sector on the Similanislands? Could you explain more?

This answer is based on

- Expert knowledge A research study Other.....

Part 2B: Currently adaptation

1. At this stage, what adaptation responses are integrated into relevant development plans that you have implemented?
 - If yes, what are your adaptation methods for climate change issues, please explain?
 - If not, why have you not adapted to climate change issue?
 - 1.1 How long have you been using climate changing adaptation?
 - 1.2 Has the climate change adaptation been a success, partial success or failure? Could you explain the reasons? How to evaluate for adaptive management?
 - 1.3 Did you have any obstacles during your plan? Could you explain?
 - 1.4 How do you dial with obstacles during your plan? Could you explain?
2. In terms of environmental conservation, do you have ways of preserving the environment of the Similan islands or the local's inhabitant environment? How?
 - If not, why are there not ways to preserve environment of Similan islands or local's environment?
 - 2.1 How to evaluate the environment conservation process?
 - 2.2 Did you face obstacles while implementing an environmental conservation process on the Similan islands and the local environment?
3. In your opinion, how do you feel about sustainable tourism in your community?
4. In terms of environmental and climate change problems affecting tourism and the community, what is your opinion on the co-operation between local governments, the leader of the village or tour operators and tour agencies?

Part 2C: Future Adaptation

1. What climate change adaptation responses are integrated into relevant development plans for the future?
 - If yes, what is your future adaptation for climate change issue and can you explain more?
 - If not, why do you not have future adaptation for climate change issue?
 - 1.1 How is its effectiveness? What are the factors that will make future adaptations successful and how can you evaluate future adaptive management? Could you explain more?
 - 1.2 Do you foresee obstacles for your plans for the future? Could you give the examples and explain more?
2. Are you going to implement new conservation projects in your local environment or on the Similan islands?
3. In your opinion, how do you feel about sustainable tourism adaptation in tourism?
4. Do you have any suggestions?

APPENDEXIES F



Impact of climate change on diving and snorkeling activities from stakeholder's perspective: A case study of Similan islands National Park: Tour operator part.

Dear Respondent

The questionnaire part of a research project titled impact of climate change on snorkeling tourism from stakeholder's perspective: A case study of Similan islands National Park. The thesis was granted by the MBA program, Faculty of Hospitality and Tourism of Prince of Songkhla University Phuket campus. This thesis is concerned with the stakeholder's perspective on the impact of changing climate on snorkeling tourism in Similan islands and adaptation strategies. The information given in this interview will be treated as confidential and your information will not be used in any published way.

Thank you very much for your kind assistance. For additional information about the thesis, please do not hesitate to contact me at sijittra@live.com.

Sijittra Songcharoen

MBA. Student

Faculty of Hospitality and Tourism, Prince of Songkhla University Phuket Campus

Part 1: General Information

Sex

Male Female

Age Range

20-29 30-39 40-49 50-59 60- 69
 71-79 81-89

Education

- Primary School Secondary School Diploma/ Bachelor's Degree
 Master Degree PhD

Position

.....

Part 2A: Assessment of situation impact

1. How important is tourism to the Phang Nga province?
2. What do you think about climate change presently?
3. What impacts of climate change might affect destinations in the tourism sector on the Similanislands?
 Could you explain more?

This answer is based on

- Expert knowledge A research study Other.....

Part 2B: Currently adaptation

1. At this stage, what adaptation responses are integrated into relevant development plans concerning diving and snorkeling activities that you have implemented?
 - If yes, what the adaptation have you used and explain more?
 - 1.1 How long have you been using climate changing adaptation related to snorkeling and diving activities?
 - 1.2 Did you have any obstacles during your plan about snorkeling and diving activities? Could you explain more?
 - 1.3 Has the climate change adaptation (snorkeling and diving) been a success, partial success or failure? Could you explain the reasons? How do you evaluate for adaptive management?
 - 1.4 How do you deal with obstacles during your plan? Could you explain more?
2. In terms of environmental conservation, do you have ways to preserve the Similan islands or the local inhabitants environment? How?
 - If not, why are there not ways to preserve Similan islands or local's environment?
 - 2.1 What are the benefits you get from Similan islands environmental preservation?
 - 2.2 Has your organization ever introduced customers Similan islands environmental preservation?
 - 2.3 How do you evaluate the environment conservation process in climate change situation? Why?
 - 2.4 Did you face obstacles while implementing a environmental conservation process?

3. In your opinion, what is the definition of sustainable tourism?
4. In your opinion, how do you adapt to sustainable tourism in diving and snorkeling programs?
5. Do you need to get government assistances to deal with the impact of climate change on the tourism business?
6. In terms of environmental barriers, what is your opinion on the co-operation between the local governments, the leader of the village or tour operators and tour agencies?

Part 2C: Future Adaptation

1. What climate change adaptation responses are integrated into relevant development plans about diving and snorkeling activities for the future?
 - If yes, what the climate change adaptation that you do in the future?
 - If not, why do you not have climate change adaptation in the future? Could you explain more?
 - 1.1 How is its effectiveness? What are the reasons to assist the adaptations to be successful and how do you evaluate adaptive management? Could you explain more?
 - 1.2 Do you assume that there are obstacles during your plans in the future? Could you give an example and explain more?
2. Do you have an environmental preservation plan in Similan islands in the future? Could you explain more?
 - If no, why do you not have an environmental preservation plan in the future?
3. Do you have a sustainable tourism plan to adapt for the tourism business?
4. Do you have any suggestions?

APPENDIXES G





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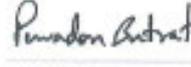
TO

SIJITRA SONGCHAROEN

PAPER TITLED

**IMPACT OF CLIMATE CHANGE ON DIVING AND
SNORKELING ACTIVITIES FROM STAKEHOLDER'S
PERSPECTIVE: A CASE STUDY OF SIMILAN ISLANDS
NATIONAL PARK**


(DR. WACHARAWADEE LIMSAWA)
CONFERENCE CHAIR


(ASSOC. PROF. PURINDON BUTRAT)
VICE PRESIDENT FOR PHUKET CAMPUS

14 - 15 November 2013
Prince of Songkla University, Phuket Campus



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Impact of climate change on diving and snorkeling activities from stakeholder's perspective: A case study of Similan islands National Park

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Abstract

This article briefly outlines the impact of climate change on diving and snorkeling activities from stakeholder's perspective in the Similan islands National Park in Thailand. The main focus is on climate change impacts affecting diving and snorkeling stakeholders. Firstly, the aim of this study consists in identifying stakeholder's perception on the current situation of climate change on the Similan Islands. Secondly, to study the feasibility of stakeholders adapting their business to the current situation of climate change challenges. Thirdly, to investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future. The methodology, divided into 3 sample groups: tour operators, local governments and local people show findings that local people lack basic climate change knowledge and adaptation to climatic changes. The research delivered three important conclusions:

Tourism in the Similan islands is heavily dependent on natural beauty and proper ecological functioning,

Protecting natural resources is not sufficient to ensure adaptation to climate change,

Economic development is required as an important basis for investment, where the role of the private sector and stakeholders need to be emphasized.

Keywords: Impact of climate change, diving and snorkeling, stakeholder, perspective, Similan islands National Park

1. Introduction

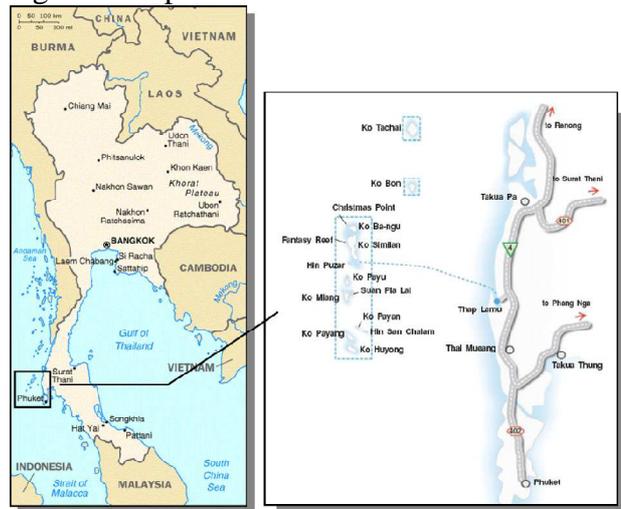
The tourism industry is the largest revenue producer that affects the global economy and this prompts countries to promote tourism as a source of income to subsidize income from other sources (Scott and Lemieux, 2010). However in order to do this, tourism relies on its environment to provide attractions for tourists who come to visit. Thailand is no exception, as it depends heavily on tourism, however with tourism promotion, comes many challenges both socially and environmentally. One of the most challenging encounters the world is faced with today is climate change and it has become a worldwide concern in recent years and many countries are experiencing the negative effects and impacts climate change has on the environment.

Climate change issues are directly affecting tourism. Some destinations were affected by season. Especially, the tourist destinations those based on natural tourism and weather. For instance, it was not appropriate to travel to coastal destinations in raining season (Hamilton Maddison J. and Tol S.J., 2005).

This issue might affect the number of tourists and more importantly revenue. Therefore, climate change issues directly affect tourists and indirectly affect the tourism destination. The indirect effect might cause many factors. For example, the rising sea level might cause erosion problems by destroying attractive destinations– losing some beaches and causing coral bleaching.

The Similan Islands are a paradise of underwater marine life. On the Similan Islands, the main tourist attraction is snorkeling and diving, an activity that enables tourists to view marine life. From table 1 Similan national park generates high income, was approximately 13.5 million baht. The three main revenues streams came from entrance fees, service charges (scuba diving and snorkeling fees) and accommodation charges (Adjaye J.A. and Tapsuwan S., 2008). Therefore, there were effects on tour operators and travel agencies who provided Similan Island tours to tourists.

Figure 1 Map of the Similan islands



Source: A.Adjaye and S. Tapsuwan, (2008)

Table 1: The revenue of Similan islands

Year	Revenue
2012	฿20,786,482.06
2011	฿13,462,876.87
2010	฿15,595,468.65
2009	฿14,489,698.15
2008	฿29,801,540.07

Source: dnp.go.th

Research Objective

1. To identify stakeholder’s perception on the current situation of climate change on the Similan Islands.
2. To study if the stakeholders need to adapt their business in the current situation on climate change challenges.
3. To investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future.

2. Literature Review

2.1 Green House Effect

The United Kingdom Environmental Change Network (12/10/12) mentioned that the global warming phenomenon caused from gases in the atmosphere such as CO₂ was due to the combustion of fossil fuels began during the industrial revolution from 1750 to 1850. CO₂ and combusted fossil gas made greenhouse gases when reflect infrared radiate from the sun, will create phenomenon called greenhouse effect. The effect will increase harmful gases in the atmosphere globally. Finally, the result of this effect will create climate change. Globally climate change is already having an impact on biodiversity (e.g. increasing carbon dioxide in ocean water making it more acidic, coral becoming bleached, and loss of habitat through erosion through sea temperatures increasing (Crabtree, 2007). TGO referred to Thailand as an agriculture country and well known as a tourist destination is affected by the greenhouse effect such as the instance floods, drought, decrease of agriculture products, increasing of temperature and increasing of sea level (TGO, 2013). The Similan islands are a tourism attraction in Phang nga province which has been affected by the green house effect. Increased atmospheric temperatures have made the water temperature increase and increased the water level in The Similan islands area. Between 1995 until 2007, sea water levels have increased 3 -6 mm per year in the Andaman coastal area (Ninlasri, 2013). This is evidence that The Similan islands are affected by the green house effect issue. Moreover, there are other environmental issues, for example bleached coral reefs in The Similan diving sites from 2011 to erosion.

2.2 Climate change and impact

The NOAA National Weather Service defined climate change as a long-term change in the statistics of the weather (NOAA, 2007).

Hamilton cited Perry and Thompson that the weather consists temperature, humidity, levels and frequency of precipitation, wind cloud cover and other weather features (Hamilton, 2005). As this study define climate change as a change of weather in statistical weather patterns in decades ago, consists temperature, levels and frequency of precipitation and storms. The majority of these are from the use of fossil fuels. Recent human activities such as the combustion of fossil fuels – for example gas, coal, crude oil, dioxide, methane and nitrous oxide. This group of gases made greenhouse gases and reflect infrared radiation, which is created an effect called greenhouse effect. The results of climate change are global: Global temperature rise, a rise in global sea levels, a change in vegetation zones, an increase in disease levels, a change in ecosystems. Hamilton, Maddison and Tol (2005) mention the relationship between tourism and climate (change) in 2 different ways:

“Firstly, at tourists, what they (should) prefer or how they behave, or secondly, at destinations and how their attractiveness changes with climate and management.”

The attractiveness of The Similan islands as a tourist destination area has been reduced due to climate change. There were some bleached coral reefs in 2011 from the La Niña phenomenon which lead to increased water temperatures and damage to coral reefs. The Similan islands have no access to diving sites until the coral reefs condition has been rehabilitate (TNA, 2011).

2.3 Marine tourism, diving and snorkeling tourism

Orams, (1999) *‘stated the definition of marine tourism as recreational activities that are based on a marine environment. For example, scuba-diving, snorkeling, surfing, fishing, sailing, water skiing, sea kayaking, windsurfing, and yacht cruising, also included are whale watching or watching a professional surfing competition.’*

Furthermore, Marine Knowledge Hub (2010) and e-tat (2012) referred that the

important marine recreations should be diving and snorkeling. Because, it is appropriate for marine lover. Certainly, divers appreciate to be close with marine nature, blue sky and clear water. Dimmock (2007) referred to snorkeling as a water-based activity to breathe on the water surface, with fins to enable propulsion. Snorkelers' start by swimming on the surface of the water faced down, observing and discovering the marine world beneath. The most popular reason tourists visit The Similan islands are due to marine life appreciation. From the beginning of 2011 the Department of National parks, wildlife and plant conservation closed 7 diving sites in Thailand, included diving sites in The Similan islands area, (TNA, 2011).

There might be effects on the tourism business there if the beauty of the destination changes. This is because the main purpose to visit The Similian islands is for aquatic life appreciation, (Komchadluek, 2011).

2.4 Stakeholders

Rukendi, (2011) mentioned that *“Stakeholders are a group of individuals who have to adapt their collaboration with companies changing management strategies as to achieve their organization’s objectives”*. In addition, (Carroll and Buchholtz, 2006) referred to the definition of stakeholder as an individual or a group that various kinds of stakes in a business. Stakeholders were affected by actions, decision makings, policies or practices. Stakeholders should concern about energy emission of their activities in marketing materials to influence travel characteristic. Stakeholder should provide some carbon emission knowledge to travelers and to choose low carbon products. There are some processes to reduce carbon emissions in the tourism industry Re-think their choice of destinations, avoid promoting long-transportation destinations, and Support low-carbon vacation choices and develop new low-carbon products. Thus, stakeholders are a group that collaborates to achieve their group’s goals. Stakeholders influence to destinations directly which can generate positive or negative impacts. The

good relations and good collaboration of management could be positive to destinations, environmental impact reducing, and more profit increasing. Komchadluek referred to diving closure in Similan islands as having an effect on tourism stakeholders in Similan island area. For example local governments (who gain benefits from tourism taxes), local people (who are the labor in tourism sector), tour operators (who provide Similan islands tour) and hotels in Phang nga province will be experience a reduction in revenue (Komchadluek, 2011).

2.5 Tourism Impacts

Tourism is such a huge positive economy consequence: in the case of employment in hospitality and tourism field. Nevertheless, tourism is a complicated industry many stakeholders desire valuable and limited resources. Thus, good tourism management could be positive role in the economical, socio-cultural and environment of destination. On the other hand, careless management will lead to a negative impact to the destination as well.

2.5.1 Economic Impacts

Tourism is a big business. The Commerce Department of United States reports that tourism is the fastest growing industry worldwide (Gable, 1997). Most economic scenarios of tourism are beneficial. These benefits include the effects of price and income, and also the economic consequences of tourism spending, including the generation of foreign exchange. The basic impact of tourism to economic sector could evaluate from tourism enterprises, construction of tourism infrastructure development of supportive activities and employee increasing volume (Soukhathammavong, 2010). Moreover,

Orams, (1999) mentioned that local residents get benefits from business, services and infrastructure from these tourists. Furthermore, increasing of career opportunities to local residents and improving local public service to be a good standard: hospitals, transport, schools, universities and department stores. Moreover, tax revenues of governments

were generated by tourism. For example sale tax on goods or services. Governments no longer need to take care of these people for the long term also these people are the best to develop their local economies. In terms of a negative impact consequence is price inflation. Orams, (1999) noted that the increased demand that results in tourists visiting leads to an increase in prices for goods and services. It affects the host communities, in case that they do not receive greater incomes as the result of the tourism. The lack of spending in local communities when the money spent on visiting that goes somewhere else. This is extremely common in marine tourism situations, because often visitors are on boats and tour operators prepare everything by supplies elsewhere. Generally, some tour operators are not locals but are seasonal businesses that are based elsewhere. Money is spent outside the communities; therefore little money is spent on food, accommodation and transport.

Cesar, Burke and Pet-Soede, (2003) pointed that the climate change stage has many effects to the economic sector. Especially, as some countries where tourism brings great revenues are dependent on nature as their primary source of tourism income— marine tourism, skiing tourism, and ecological tourism. In the case of marine tourism that is based on natural conditions, coral reefs are an incredibly valuable ecosystem. For example, ocean provides food and income in food industry or tourism industry when changing of climate are occurred stage, water temperature increasing going to damage coral reefs linked with El Niño phenomenon. Coral reefs compare as a natural source that attracts under water lovers to visit the sea. Cesar, Burke and Soede, (2003) presented the case of the Caribbean that attracted 57% of the world's 10 million active divers and it has been estimated that by the year 2005, diving will be an industry that generates \$1.2 billion annually. In 1989 within the Indian Ocean, socio-economic conditions impacted on extensive bleaching events estimated at a loss in tourism of US\$ 700 - 8,200 million in net present value terms.

The highest tourism value is almost US\$ 40 billion in the 'severe' bleaching case.

2.5.2 Socio-Cultural Impacts

Tourism can be a positive and negative influence to local residents of a tourist destination. The impact increase when tourism brings some changes in host communities – traditional, life styles of local residents and ethics. As, (Cook, Yale and Marqua, 2010) pointed out that a society is a community or group of people who have the same traditions, institutions, activities and interests. Culture shows the practices of a society – beliefs and social roles from generation to generation. In terms of benefits of tourism – It bring people from a varieties of places and cultures together. Tourists and locals learn from each other, the similarities or the differentiations. Next, locals can generate income from native crafts or performs which longer be seen means income. Moreover, tourism can improve standards of living and better education opportunities on women or young people. At the same time, tourism provides income and creates jobs for locals, can develop to a higher standard of living. (Sawaddiraksa, 2010) pointed that negative parts for local societies - drug and alcohol increases in tourism areas, crime increasing because wealth of tourists. They always use all cash for all vacation period to spending or valuable accessories of women tourists that can take easily. Unfortunately, when there is success about tourism and will come up promiscuity, prostitution and drug issues.

2.5.3 Environmental Impacts

The mass tourism stages development, the tourism impact were largely viewed as positive, particularly economic development of the several countries which are tourism revenues as the main income. Thus, tourism was seen a desired target for development. By the way, there are many positive impacts, tourist attraction socials will inevitably be avoided negative impacts as well, for instance

the impacts are related with the construction of unities infrastructure – roads, airports, tourism facilities (including hotels, resorts, souvenir shops, plazas, golf courses and marinas) that will be affect to environment impact sector of local. Orams, (1999) pointed out that the first natural sites used for recreation by initial visitors who were attracted the unspoilt surrounds, move on and are replaced by multiply number of tourists with the lower expectations of environmental quality. It is opposite to each other, increasing of infrastructure of tourist needs environmental quality. In detail, UNEP mentions more detail about environmental impacts. For instance,

Water Supply - Tourism industry overuse water supply for hotels, resorts, swimming pools and golf courses. The most of tourists use water more than their usually day, especially on holiday. They use to 440 gallons per day. From this stage, it will be lack of water in the future. Local resources - Tourism could be more force to local resources. For example energy, food and raw materials that could be in the short supply.

Land degradation – Include fuel gas, fertile soil, minerals, forests, wetland and wildlife. Increased constructions or recreational facilities those provide tourists. In terms of forests will be destroyed by wood fuel or clearing land to be resorts or hotels.

Air and noise pollution – The large number of tourists are cause of increase in air and noise pollution. UNEP cited ICAO that in case of air emission of tourists traveling increase more than 60% of air travel. In Air pollution from tourist transportation consequence has impacts on the global barrier, especially from carbon dioxide (CO₂) emissions related to transportation energy use. And it could contribute the local air pollution. Some of these impacts are specific to tourist activities. For example, especially in very hot countries, tour buses often leave their motors running for hours while the tourists go out for

an excursion because they want to return to a comfortably air-conditioned bus. By the way, tourist transportations – cars, buses and planes are cause of noise pollution. It has affected to sensitive wildlife or local residents by changed of wildlife natural life pattern or make residents annoyed when planes take off or landed.

Pollution – tourism cause pollution to tourist destinations for example air and noise pollution,

Sewage – hotels or recreational facilities for tourist could be lead sewage pollution into seas and lakes surrounding tourist attractions, damaging the flora, fauna and serious damage coral reefs. Because of growth of algae which cover the coral reefs cannot survive. Moreover, some of sewage pollution can damage the health of humans and animals as well.

Aesthetic Pollution - tourist constructions of decoration often structure and combine with the natural features. Resorts always desire to their rooms to appreciate natural scenery and may clash with the local constructions. Lack of land use planning and building regulations in some destinations have coastline areas, tourist facilities and supporting constructions. For instance roads, parking, waste disposal.

Responsible persons or local people can help to improve local environment. For example, can be establishment of marine protected areas has been value as tourist destinations or the value of some species alive, as the tourist attractions. For instance whales, dolphins, seals, sea turtles, sharks and manatees.

2.6 Water, coastal and island resources management

NOAA mentioned to definition of coastal zone that “*the coastal waters (including the lands therein and there under) and the adjacent shorelands (including the waters therein and there under), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and*

includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches.”

In additional, (Conlin and Baum, 1995) pointed about island tourism's definition that islands were defined by geographer and academics. Those islands are the 'most enticing form of land. Symbol of land and water those are endless. Island can make people feel to mystery, adventure and recreation.

Orams (1995) that island tourism strategies were divided into 4 main categories: regulatory, physical, economic and educational. Regulatory - Regulatory management for controlling tourist activities in marine setting. Regulatory - Regulatory management for controlling tourist activities in marine setting. Laws and rules will strict tourists actions, access, times and numbers. Polices, park rangers or other agents management authority about enforcement.

Physical - physical process to management are those human -made structures that control human activities. For instant snorkeling for coral reefs watching, mooring buoys using reduce to damage coral reefs.

Economic management strategies – economic strategies use prices as motivation to modify behavior of people. For instant, higher entry fees for facilities during peak use times in an attempt to spread visiting. Permits that are auctioned to commercial tour operators can control number of operators.

Educational management strategies – the propose of education based management strategies are to reduce the incidence of negative tourist behavior and to increase visitor enjoyment, awareness and understanding.

The growth of costal or island tourism is a worldwide phenomenon, becoming one of the main revenue of several countries. Some countries have valuable natural environment, supposed to have good management for costal natural environment. For the opportunities of tourists in the sea and other demands, coastal tourists should be encouraged, through the management strategies in place in a costal or

island area. To reduce negative impact to environment and accident of tourists reason.

2.7 Corporate Social Responsibility

(Lynes and Andrachuk, 2008) cited European Commission 2002 defined in primary parts as the voluntary responsibility of a company to contribute to social and environmental objective. Furthermore, (Global Hand The PartnerShip People) pointed out that this program related with unfair labor, poverty, environment issues. The corporations get involved to communities to get well known their image in the eyes of consumer. The indeed goal for CSR is to grow profits. The fields of CSR related poverty reduction, arts, culture, education and environment and especially, their program always focus on issues that their business related.

More coastal resource were used, environmental problem would be occur in this consequence while often fulfill the economic sector of poor communities. This stage, increasing resistance from coastal communities have occurred. (Simpson, Gossiling, Scott, Hall & Gladin, 2008.) pointed that diving and snorkeling are similar with other business, that could generate negative and positive impacts on local communities. In tourism business has required high skill of education and can speak more than one language tourists speak labors. But not realistic consequence, local people in area where low standard education was required foreign languages, life save skill (diving and snorkeling), customer service skills, knowledge of computers and so on by expected job. Businesses that would like run operation for a long term can provide in education and training for the future.

Businesses must find the balance point between responsible to environment and growing profit of their business. Because of the real CSR goal is growing profit and make customer familiar with products of companies. Furthermore, developing good relations with local people is a good way to reduce conflict with them. There are many ways that business owners can do.

2.8 Sustainable tourism and development

Sustainable development requires combining economic, social, cultural, political and ecological factors. One of the most pressing global issues confronting modern society is environmental degradation. An important goal of modern science is the investigation of the potential capacity of the complex system to cause environmental degradation, (Afgan, Bogdan, Duić & Guzović, 2005).

Many areas lack information on the environmental impacts of tourism, and in island microstates in particular, it has arisen for several reasons. First, substantial business and political concern over environmental conditions has only emerged in recent years. Second, there are many governments with low development, health, welfare and education. Their limited financial resources compound the need for environmental monitoring or conservation. Third, and as a partial consequence of the above two factors, resources and scientific expertise were not generally available to undertake the vast amount of research required.

Sloan, Legrand and Chen, (2009) indicated customers changing unsustainable patterns of consumption are widely seen as an important catalyst to achieving sustainable development. Companies orchestrate an essential role by developing an honest and transparent relationship with consumers. There is a need for consumers to understand the links between an ethical local economy, and an attractive and sustained environment. An effective way to educate the customer is to advertise the message of sustainability in the overall ethos of the hospitality operation. Capacity should be made available for guests to take part, on a voluntary basis, in some community development projects and environmental programs. Options to raise money for social community development on the supported projects should be made available to customers. In conclusion, the importance of institutional support cannot be ignored. Governments have to play their

role in providing adequate infrastructure, leadership, legislative, and financial support that will build the foundation for sustainable development in the future.

2. Methodology

The population for this research will be made up of the different stakeholders in the tourism industry who can be subdivided into the following categories: local governments in Phang Nga province 4 respondents, Tub La Mu community 17 respondents and tour operators who provide Similan islands tour 10 respondents.

Sampling Size

The research is looking to interview 3 groups - Government Officials in the Phang-nga Province area, Tour Operators in Phang-nga Province and Phuket Province who are operating directly on the Similan Islands and the local community in Moo 5 Tub La Mu village. The total of sample group is approximately 31 respondents. The researcher desires to use purposive method on the community in order to compare their perspective with that of the respective operators and other stakeholders.

Sampling Method

Non-probability sampling and within that purposive sampling will be the ideal methods to be used in this research as the researcher wants to know specific perceptions of those stakeholders (Government officials, tour operators and local community) involved in the tourism activities on the Similan Islands. In terms of villagers the researcher will interview the head of Moo 5 (Tub La Mu Village) and then, the researcher is going to use the snow ball method and structured interview for sampling for the group of villagers as they are all residents of Moo 5 Tub La Mu village. For local government and tour operators the researcher proposes a structured interview by purposive sampling.

Area of research

The nature of this research is exploratory, in that the researcher is focusing on what is presently happening on the Similan islands. This method will expose and provide an insight and understanding to assess the current situation of climate change and its impacts on diving and snorkeling tourism. The researcher will perform exploratory research, by outlining three main principles to be taken into consideration: 1) a search of literature – which will provide information on what other researchers have found on the topic, 2) Interviewing experts in the subject – allowing interviewees to provide further input and insight and finally 3) conducting focus group interviews – which will provide alternative answers, or answers that experts might not have provided. Afterwards, the researcher will correlate the data to develop on weak points. Furthermore, exploratory research methods provide flexibility and is open to direction change should the researcher find factors that are worth pursuing although not originally considered in the study.

Research instruments

Qualitative research enables the study to use diverse methods of interviewing. Interviews can either be performed by structured interviews. This study has chosen to use in-depth interviews (with the Government Officials, Tour operators and community). In order to open discussions, there will be structured questions which will be supplemented by follow-up questions as the subjects respond.

In-depth Interviews

In order to get rich data from government officials and tour operators, one on one in – depth interviews by structure interview method will be implied and for the local people who satellite Tab La Mu port the snowball method will be used. The reasons for including government officials is to try and establish how aware they are of the impacts of climate change, their initial knowledge and ideas to preserve the local environment, and what

measure they are putting in place to ease the situation. How are the operators adjusting their businesses to accommodate the current situation and also to make sure that they protect the industry in the process? The researcher chooses to conduct this research by in-depth interview. In addition, the researcher have to confident to responders those have to knowledge on the research questions those will discuss.

4. Result

The purpose of this chapter is to conclude the collected data of climate change impact on snorkeling and diving on perspective of stakeholders in Similan islands, explored perspective of stakeholders about climatic changing affect to business. Hence, the research was conducted by qualitative process using.

Objective 1: To identify stakeholder's perception on the current situation of climate change on Similan islands. The first objective that all respondents mentioned as perspective of stakeholders about climate change and do changing of climate affected to their business or not.

Table 4.1 Following is a characteristic of the respondents in this study (as below)

Respondents	Categories	Gender	Age	Education	Career
1	Local government	M	30-39	Bachelor's Degree	Government employee
2	Local government	M	30-39	Bachelor's Degree	Government employee
3	Local government	M	50-59	Master Degree	Government employee
4	Local government	F	40-49	Master Degree	Government employee
5	Tour Operator	M	40-49	Master Degree	Dive Master
6	Tour Operator	M	40-49	Bachelor's Degree	Owner
7	Tour Operator	M	20-29	Bachelor's Degree	Management department
8	Tour Operator	M	20-29	Master Degree	Sale and marketing manager
9	Tour Operator	M	40-49	Bachelor's Degree	Owner
10	Tour Operator	M	30-39	Bachelor's Degree	Sale and marketing manager
11	Tour Operator	M	40-49	Bachelor's Degree	Manager
12	Tour Operator	M	50-60	Master Degree	Manager
13	Tour Operator	F	40-49	Bachelor's Degree	Owner
14	Tour Operator	F	30-39	Bachelor's Degree	Manager
15	Community	F	20-29	Junior high school	Fisherman
16	Community	F	40-49	Primary school	Fisherman
17	Community	F	50-59	Primary school	Fisherman
18	Community	F	20-29	Senior high school	Fisherman
19	Community	F	30-39	Primary school	Merchant
20	Community	F	30-39	Primary school	Merchant
21	Community	F	50-59	Primary school	Merchant
22	Community	F	40-49	Primary school	Merchant
23	Community	F	30-39	Primary school	Merchant
24	Community	F	30-39	Junior high school	Merchant
25	Community	F	30-39	Bachelor's Degree	Merchant
26	Community	F	40-49	Primary school	General employee
27	Community	F	30-39	Junior high school	General employee
28	Community	M	50-59	Primary school	General employee and merchant
29	Community	M	60-69	Junior high school	Fisherman
30	Community	M	40-49	Primary school	Local politician and merchant
31	Community	M	30-39	Senior high school	Village headman assistant and merchant

In terms of local governments, they have the similar perspective together. Heavily rain increasing in several years – hardly to forecasting, will influence to choose destinations of tourists. In raining day booked tours were canceled by tour operators for safety of customer reason. Local government have affected about revenues when tours were canceled – entrance fee. Secondly, losing of coastal is the result of the sea water level is increasing because of global warming main cause.

In the case of the tour operators, seasonal change is the first barrier that respondents concluded as the same barrier with operation running. The weather cannot be forecast and storms increase. Thus, they must dial tour packages in a day by day process and inform guests day by day as well for safety of guest reason. Unfortunately stage, some companies organized tour program, include

food, beverages and full-filled of gas for speed boats. In day raining day, tour operators must cancelled their program and refund money to customers. This is an example of climate change barrier have affecting to tour operators who provide Similan islands programs. As one of tour operators that worst case that must stop many days to run their business. Next, El Niño and La Niña phenomenon, as one of tour operator talked thoroughly that

“In 2007, there was the La Nina phenomenon but it was the positive phenomenon. The normal water temperature at Similan is 29 degree Celsius but the cold current from the South Pole flew to this area as consequence the water temperature here reduced to 22 degree Celsius the nutrients would come with the water and the deep-water animals will move to live in the more shallow water. Also it is easier to see the Plankton Bloom. The changing of weather water in the topography in the positive way. They could see the Manta ray, Whale sharks and rays. Two years ago, there was the El Niño phenomenon; the water in the Andaman Sea and in the gulf of Thailand was so hot for 2-3 months. Most of the corals near the surface, 80% of the hard coral at Surin and Similan islands were died.”

Thirdly, coral bleached, it was negative impact to aquatic ecosystem and marine animals will be decrease of fishes must habitat in coral reefs area, like a marine ecosystem. As, fishes and coral reefs disappear, snorkelers and divers will not impress the aquatic condition and may affect to revisit at Similan islands in next time and included tourists who never been there that would be affected by word by word of tourists who ever been there before. As, one of tour operator said that

“The objective of tourists is nature of underwater – coral reefs and marine animals. They do not want to come here for island watching or lay down on the beach only”.

In case of local residents in Moo 5 Tub La Mu village, total number is 17 respondents. Firstly, storms increasing have affected to some persons who are fishermen and bring up some issues – heavily raining and

high wave levels and changing of flow has affected fishing hardly. Increasing of sea level would affect the flow of sea and sea water temperature those have affected to marine ecosystems. On the other hand, some are local respondents (7 persons) who are merchants. They do not know enough and do not concern them. Because of climate change is not concern much in their routine and they could run business even though terrible weather days.

Objective 2: To study do the stakeholders adapt their business in current situation on climate change challenges. All of local governments have been solving unexpected problem and do not have particularly operation plan on climate change stage. 3 persons of local governments have becoming to change more concerned about environmental plan. For instant,

Plant growing project, Landfill and Growing Half flower or Rak Ta lay trees on Meing.

In terms of a green plan of other tourist destinations which are not concerned to marine tourism in Similan islands – there is a green tourism plan about Hiking tourism that use natural equipment. Furthermore, still have Tub La Mu port cleaning project and waterfall tourist destination development project for future tourist destination.

By the way, 1 of 4 persons that not related to plan on climate change situation but, focused on marketing on destination changing in climate change consequence, have to present the truth information from Similan islands National Park to agencies, tourists, mass media and TAT office each countries. Next, create public relation plan and produce medias. Finally, invite agencies to create attracted promotion packages for each groups of tourists.

In case of local residences, all of majority of this group have to no plans on climate change. Even they can do that participate to environmental projects in their village which is creased by header of village. As, who are fishermen, not have plans for changing of climate. If raining, not sailor boat out and follow daily weather forecast.

As one of local residences said “*Have no any plan because when raining still cannot. We have to follow the daily weather forecasting and must adapt to situation in each day*”

In term of tour operators, there divided to be 2 groups: have no any plan and have plans on this stage. 3 of 10 tour operators have no plans but will focus on marketing extremely. If cannot keep business, one of respondent will move destination to which is more plentifully than Similan islands. The tour operators have plans on climate change as a consequence. For instant, they tell the truth to guests and agencies: such as Eco-marine conditions, Day by day dialing with agencies and guests: confirm inform and make guest feel secured, Negotiate with Similan National Park: Basically, there will be opened 1 November to 15 May. If it possible, to be opened 1 November to 30 May of every year, change and expand to another activity business or expand other route of tour and has adapting the board boat to be camping boat and kitchen boat for guest’s company.

As one in ten tour operators said that “*I have 3 broad boats for diving group only. Normally, I will have approximately 2-3 groups in each year, during broad boats are available, we are going to adapt its to be camping boats. In the past we bring guests stay on national park accommodation, then, we will take guests to stay on our boat. Then, we still leave 1 boat for diving, 1 boat for camping and 1 boat for kitchen to provide food for our guests.*”

Furthermore, if compared between snorkeling and diving, diving and snorkeling tour operators mention that diving has affected more than snorkeling. Because of diving equipment, investment and program tours are expensive more than snorkeling and program tours equipment. Thus, diving companies must find many snorkeling guests to coving a group of diving guests).

By the way, most majority of diving tour operators are seriously concerned about illegals: blast fishing, trawl net using in

Similan islands national park which is damage fishes and coral reefs.

Objective 3: To investigate measures stakeholders are putting in place to sustain diving and snorkeling tourism for the future.

As the local governments groups, 1 in 4 local governments *“There might be have plans on climate change situation but plan are not more than over 5 years about our new tourist attractions: waterfall, jungle preservation and develop the Tub La Mu port”*

Next, 3 local governments in 4 local governments have sustainable plans for endeavor to preserve the environment. For example establish stainable tourism on Similan islands National Park and provide some environmental knowledge to tourists. By the way 1 local government in 4 persons of this group focus on marketing strategies – inform to related organizations about environmental reservation which diving sites were closed in Similan islands National area: develop to be better condition of marine ecosystem, extremely publicize build and promote to new target markets.

Out of 17 local residences in total, 17 local residences have not had plans. Total of local residences mentioned that *“I have no idea about climate change now. Because it could be the new thing for us. So, have not had any knowledge about them. If government center can ask some academicians to provide any climatic changing knowledge for dialing with these issues”*

Finally, 5 tour operators have no plan in their future. Because they are still earning revenues even though, not much if compare in the past. Another reasons are climatic changing stage do not predicable - depends on situations in each days, have not felt that the effect have occurred by climate change. It would be occurred by external economy issues: Europe economy crisis 1 of 3 local operators pointed out that

“Outside factors such as the currency. Sometime the European currency is very high as the year 2009, 1 Euro equal to 51 - 54 baht so that the tourists from German, England,

French, Sweden and Scandinavia spent a lot of money as a king but now 1 Euro equal to 39 baht so they spend less money.”

5 tour operators plan to do extremely marketing “Relax and lay down on the beaches and offering to provide another program which is local animals in Similan islands that habitat in here only”. 1 of tour operator will expand the new programs in other marine routes for gain more profit as the profit of previously years.

As, 1 of tour operator will move destinations if Similan islands not plentiful of eco marine systems and the final plan is day by day dialing with agencies and guests will used by 1 tour operator in 10 tour operators.

5. Conclusions

This study focused on the impact of climate change to diving and snorkeling from stakeholder’s perspective. In conclusion, the finding of the researcher concluded that in the case of local governments knowledge of phenomena of climate change has been gradual. . In adaptation to climatic changing consequences, local governments have known about climate change through changes in the local area, for instance, heavy rain increased over several years also increases of storms. Heavy rain affected tourism directly and affected their revenues (entrance fee to National Park area). Nevertheless, for present adaptation, they do not have any abstract adaptations for climate change. In terms of their future adaptation, the focus will be on developing more sustainable tourism and marketing to build new target groups of customers. There is still no climate change adaptation for future.

As the majorities of tour operators have known about the climate change phenomenon and mentioned that climate change issues are barriers to operation running, such as not forecasting weather exactly. Present adaptation of tour operators are divided into 2 groups: - have plans (tell the truth to guests and agencies and daily dialing with agencies and

guests), and have no plan to deal with climate change scenarios (focus on marketing or move to another destinations).

For adaptation in the future, five tour operators have no plan because it is an unexpected situation, hard to control and still make profits. The planned tour operators are using – daily dealing, honesty to guests and agencies about environmental conditions, negotiate the period of operated days with The Similan islands National park and adapt diving equipment uses to support other activities in the company (to be a camping boat and kitchen boat).

Some of tour operators do not accept the damage effect occurred from climate change only. Human could be the strongly effect variable to marine ecosystem. Because some illegally fishermen have used dangerous fishing process to environment – blast fishing or fishing in National Park area.

For local residences who have known about changing of climate results. Particularly, who are fishermen career but still lack of truly climate change knowledge. Furthermore, groups of local residences know about climate change simply from merchants. In terms of dealing with climate change, they presently do not have any climate change adaptations, still solving unexpected problems case by case. For the future, local residences will not have any plans because they do not have background relating to climate change.

Research findings of the current study provide awareness of environmental changing from climate change to stakeholders in Similan islands National Park. On the other hand increase awareness and responsible of stakeholders there. Thus, stakeholders should increase their staffs and guest's awareness and responsible to environment of tourist destinations.

6. References

Adjaye J.A. and Tapsuwan S. (2008). *A contingent valuation study of scuba*

diving benefits: Case study in Mu Ko Similan Marine National Park, Thailand. Elsevier. 29: 1122-1130.

Administrator. (2010). Tourism and recreation. *Marine Knowledge Hub*. Retrieved June 3, 2013, from <http://www.mkh.in.th/index.php/2010-03-22-18-05-14/2010-03-26-05-53-09>

Afgan N.H., Bogdan Ž, Duić N & Guzović Z. (2005). SUSTAINABLE DEVELOPMENT of ENERGY, WATER and ENVIRONMENT SYSTEMS. *World Scientific*. NJ.

Carroll, A.B. and Buchholtz, A.K. (2006). *Business and Society Ethics and Stakeholder Management*. United States: Thomson, South Western.

Cesar H., Burke L.& Pet-Soede L. (2003). The Economics of Worldwide Coral Reef Degradation. *Cesar Environmental Economics Consulting (CEEC)*: 3 rd. edition.

“Climate Change”. (2007). NOAA National Weather Service. <http://www.nws.noaa.gov/om/brochures/climate/Climatechange.pdf>

“Climate change”. The United Kingdom Environmental Change Network. Retrieved from <http://www.ecn.ac.uk/what-we-do/education/tutorials-weather-climate/climate/climate-change-impacts/climate-change-impacts>

Conlin M. V. & Baum T. (1995). *Island Tourism Management Principles and Practice*. WILEY. NY.

Cook R.A., Yale L.J. and Marqua Joseph. (2010). *Tourism the Business of Travel*. (4th ed.). NY: Pearson Prentice Hall.

Crabtree A. (2007). *Coastal/Marine Tourism Trends in the Coral Triangle and*

- Strategies for Sustainable Development Interventions*. Marine Program World Wildlife Fund Washington, DC. [Electronic version]. 2007 39, 6-11, from http://www.responsibletravel.org/resources/documents/reports/FINAL_REPORT_Alice_Crabtree_Jan_08.pdf
- Dimmock K. (2007). Water-based tourism, sport, leisure, and recreation experiences. *Elsevier*. MA. 128 – 148.
- Diving tourism. (2012). *e-TAT*. Retrieved June 3, 2013, from <http://etatjournal.com/web/etat-journal/2012/2012-apr-jun/441-22555-diving>
- Freeman. (2001). Law and Ethics in information management. *Academy of Management*. NY. http://courses.washington.edu/ilis580/readings/Mitchell_et_al_1997.pdf, 20/03/2012.
- Gable F.J. (1997). Climate Change Impacts on Caribbean Coastal Areas and Tourism. *Journal of Coastal Research*. MA. 24. Retrieved from <http://www.jstor.org/discover/10.2307/25736087?uid=2&uid=4&sid=21102553121817>
- Global Hand. (n.d.). Corporate Social Responsibility: Overview and Case Studies. Retrieved June 3, 2013, from <http://www.globalhand.org/en/browse/csr>
- Hamilton M.J. (2005). *Tourism, Climate Change and the Coastal Zone*. Dissertation. Universität Hamburg. Retrieved February 10, 2013, from www.fnu.zmaw.de/fileadmin/fnu-files/publication/.../Thesis_Hamilton.pdf
- Hamilton M., Maddison J. & Tol S.J. (2005). *Effects of climate change on international tourism: A simulation study*. Elsevier. PA. 2004(29): 245-254. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.175.5233&rep=rep1&type=pdf>
- Lynes J.K. and Andrachuk M. (2008). Motivations for corporate social and environmental responsibility: A case study of Scandinavian Airlines. *Elsevier*. Canada 14: 377-390.
- Mason P. (2005). Tourism Impacts, Planning and Management. *Elsevier*. Great Britain, 56.
- Ninlasri Kongwat . (n.d.). Retrieved October, 4, 2013, from https://www.google.co.th/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&ved=0CDIQFjAB&url=http%3A%2F%2Fwww.navy.mi.th%2Fnavedu%2Facd%2Fvdo_vadm_kongwat_neelasri.html&ei=DvVOUtW5OonprQe5tIGICg&usg=AFQjCNGefTryCBWr2TptX134jsG1lzDsMA&sig2=Y1GEkBaIvf9S8QGPA4jGVA
- NOAA: National Oceanic and Atmospheric Administration. (n.d.). Ocean & coastal resource management. Retrieved July 26, 2013, from http://coastalmanagement.noaa.gov/czm/czm_act.html, 26/07/13
- Orams M. (1999). Marine tourism: development, impacts and management. 1. *Routledge*. New York.
- Rukendi C. (2012). *Destination Management of Urban Cultural Heritage Tourism from Perspectives of Stakeholders: A Case Study of Jakarta Old Town, Indonesia*. Unpublished master's thesis, Prince of Songkhla University, Thailand.

Scott D. & Lemieux C. (2010). *Weather and Climate Information for Tourism* [electronic Version]. Canada. Elsevier. 2010(1): 146-183.

“Similan islands”. Thailand National Park. Retrieved from November 10, 2012 dnp.go.th/nprd/develop/data/stat55/M_47-55.pdf

Simpson M.C., Gossiling S., Scott D., Hall C.M. & Gladin E. (2008). Climate change and adaptation and Mitigation in the Tourism Sector: Frameworks,

Sloan P., Legrand W. & Chen J.S. (2009). Sustainability in the hospitality industry. Great Britain: *Elsevier*. Canada.

Soukhathammavong, (2010). Ecotourism Development in Lao PDR: A Case Study of Khammouane Province. *Hospitality and Tourism Management*. Thailand.

Thiland Greenhouse Gas Organization. (n.d.). Retrieved October, 3, 2013, from http://www.tgo.or.th/index.php?option=com_content&view=category&id=37:effect-of-global-warming-in-thailand&Itemid=59

TNA. (2011, January 21). Department of National parks, wildlife and plant conservation closed 7 diving sites in first day. [Electronic version]. *MCOT*. Retrieved May, 20, 2012, from <http://www.mcot.net/site/content?id=4ff6732e0b01dabf3c025362#.Uk8Ch9Jmjrc>

Tools and Practices. *UNEP*, France. Retrieved January 3, 2013, from <http://www.unep.fr/scp/publications/details.asp?id=DTI/1047/PA>

UNEP: United Nations Environment Programme. (n.d.). Resource Efficiency and Sustainable Consumption and Production. Retrieved July 10, 2013, from <http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/FactsandFiguresaboutTourism/ImpactsofTourism/Socio-CulturalImpacts/NegativeSocio-CulturalImpactsFromTourism/tabid/78781/Default.aspx>

UNEP: United Nations Environment Programme, (n.d.). Resource Efficiency and Sustainable Consumption and Production. Retrieved July 17, 2013, from <http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/TheTourismandEnvironmentProgramme/FactsandFiguresaboutTourism/ImpactsofTourism/EnvironmentalImpacts/TourismsThreeMainImpactAreas/tabid/78776/Default.aspx>

(...). (2011, January 21). Closed 7 diving sites for solve coral reefs bleached. [electronic version]. *Komchadluek*. Retrieved October 4, 2013, from <http://www.komchadluek.net/detail/20110121/86436/%E0%B8%9B%E0%B8%B4%E0%B8%94%E0%B8%88%E0%B8%B8%E0%B8%94%E0%B8%94%E0%B8%B3%E0%B8%99%E0%B9%89%E0%B8%B37%E0%B9%81%E0%B8%AB%E0%B9%88%E0%B8%87%E0%B9%81%E0%B8%81%E0%B9%89%E0%B8%9B%E0%B8%B0%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%B1%E0%B8%87%E0%B8%9F%E0%B8%AD%E0%B8%81%E0%B8%82%E0%B8%B2%E0%B8%A7.html#.Uk8QStJmjrc>

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