

RESEARCH IN CLIMATE CHANGE AND TOURISTS' TRAVEL DECISION: AN OVERVIEW

Awangku Hassanal Bahar Pengiran Bagul, Andy Lee Chen Hiung,
Datu Razali Datu Eranza, Toh Pei Sung

*School of Business and Economics
Universiti Malaysia Sabah
Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia*

hbagul@ums.edu.my

ABSTRACT

Climate change in Malaysia is usually associated with extreme weather and seasonality. Extreme weather variables include rainfall, temperature and wind while seasonality is always associated with dry and wet (monsoon) seasons. This paper provides insights to a research in climate change and tourists' travel decision. The research was conducted in Sabah, one of the states in Malaysia. The literature review analysis suggested that climate change impacted tourists' decision-making in traveling to their destination. The research started with establishing the dimensions of climate change and tested them on the tourists. The approach of this research is a mixed method where qualitative approach is used to establish the climate change dimension, while the quantitative approach is used to decide the existence of decision-making related to climate change. The research suggested that there are five dimensions of climate change, which are humidity, rainfall, sea level, vegetation and activity. The survey result suggested the tourists have sufficient knowledge on climate change and thus affecting their travel decision-making. The output is expected to provide insights to the academic and policy makers to strategize for future adaption planning.

Keywords: climate change, tourism, dimensions, perception, sustainable development

1. INTRODUCTION

There is a need to identify anticipated climate change impacts affecting tourism destination by the United Nations World Tourism Organization (UNWTO) with World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), the United Nations Convention to Combat Desertification (UNCCD), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Government of Tunisia at the First International Conference on Climate Change and Tourism in Djerba, Tunisia in 2003.

Tourism is deemed to be a highly climate-sensitive economic sector due to its dependencies on environment and climate itself. According to UNWTO-UNEP-WMO (2008) there are four main categories of climate change impacts that will affect tourism destination, which are 1) Direct climatic impacts; 2) Indirect environmental change impacts; 3) Impacts of mitigation policies on tourism mobility; and finally 4) Indirect societal change impacts.

The Malaysian climate is strongly dominated by Southeast Asia Maritime Continent Monsoon as part of a larger Asia-Australia monsoon system, which largely influenced by two monsoon regimes namely the Southwest monsoon and the Northeast monsoon. The region is usually wetter during the Northeast monsoon, which usually commences in November and ends in February the following year. Since Malaysia is geographically located in between two large oceans, i.e. the Pacific Ocean to the East and the Indian Ocean to the West, therefore, its climate is also strongly influenced by natural climate variability associated with these oceans (Tangang 2012). The tourism seasonality is likely to be affected by these two monsoon regimes and to some extent the perception of the tourist when making decision to visit Malaysia.

A change in climate would have given impact on Malaysia's tourism industry, which is one of the national economic key resource areas. The indicators of climate change such as temperature, geographical location and rainfall are perceived as the potential threats to the tourism activities and resources. The arrival of tourists would be affected when touristic destinations such as highlands, beaches and diving resorts that banked in to its natural beauty has been reduced and changed for the worse. Pristine environment and favourable weather conditions are crucial to visitors' satisfaction and the fundamental of the sustainability to the tourism industry. Therefore, this paper outlines the experience in researching climate change and tourists' decision making while highlighting the development of the climate change dimensions at the earlier stage of the reesearch.

2. LITERATURE REVIEW

Climate change has always been a concern to worldwide organizations, developed and developing countries and non-governmental organizations (NGOs). It is perceived as a growing crisis affecting economic, health and safety, food production, security, and other dimensions. Shifting weather patterns, for example, may threaten food production through increased unpredictability of precipitation, rising sea levels that could contaminate coastal freshwater reserves, and increase the risk of catastrophic flooding. A warming atmosphere also aids the pole-ward spread of pests and diseases once limited to the tropics. Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. It can also be referred as a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period typically decades or longer. Climate change may be due to natural processes or external forcing, or a persistent anthropogenic change in the composition of the atmosphere or in land-use. Climate impact is the consequence of climate change on natural and human systems (IPCC 2001).

Charter (2006) reported that generally, tourists are very keen in supporting environmental and social performances of the tourism industry, hence, affecting the decision making in their travel. His report entails that the German tourists considers it important to find environmentally friendly accommodation, while 65% of them enjoy clean beaches and bathing water. The reports also indicated that 85% of Dutch tourists are in favour of receiving sustainability-related information, while 35% of British tourists indicated that they would pay more for environmentally friendly holidays (CREM 2000).

It is not just the Europeans who have evolved into sophisticated travelers and demanding more sustainable travel products. The Nordic tourists are found to be supportive of these sustainable

travel products such as eco-labeled hotels (Jensen et. al. 2004) and clean nature (Ankre 2005; Zilinger 2005). Burns (2012) forecasted that the number of international tourists arrival in year 2020 is reaching 1.6 billion for South Asia, Middle East, Africa, East Asia Pacific, Americas and Europe, which is an increment of 60% compared to year 2000.

Burns quoted from OECD (2002) that “*Tourism decision making, like consumption decisions in general, is rarely characterized by a rational ranking of options based on perfect information. Many tourists may... make seemingly irrational decisions as emotions or other aspects of the psyche take the upper hand to logic...*”. This reflects the future of tourism that will also depend on the additional factors that are not related to climate change such as globalization, new technologies, war-like incidents, health risks and other environmental changes and these would strongly affect the travel behavior. The impacts of climate change on tourism zones include city tourism, alpine tourism, and rural tourism and this could extend to the tourism service providers like mountain railways, accommodation, and outdoor promoters.

Table 1. Interaction between tourism development and climate change

Direct impacts	Weather phenomena caused by warming: destruction Destruction wrought by floods, storms, fires, and drought, glacial lake overflows, and the disappearance of beaches
Indirect and long-term impacts	Resulting from a substantial and lasting alteration of the environment of a tourist destination that reduces its attractiveness Polluted waters, receding forests, decreased biodiversity, retreating glaciers, and snow caps
Lifestyle changes	The orientation of tourism flows both in winter and summer
Induced impacts	The efforts of individuals and public policies aimed at attenuating the effects of warming that produce a series of consequences for tourism activity

Source: Carmen and Iuliana 2009

Carmen and Iuliana (2009) tabled four complicated interactions between tourism development and climate change that comprise of direct impact, indirect and long-term impact, lifestyle changes, and induced impacts. Table 1 above simplifies the concepts of the four interactions.

The literature review revealed that there has been a lot of research on climate change and its effects to touristic locations/destinations specifically on the impact and adaptation of climate change to the tourism supply. However, there is a lack of literature on the tourists’ perception of climate change that affects their decision (demand) to the affected travel destination. However, there are other tourism demand studies in climate change that are using hypothetical modelling. The literature review has assisted in identifying several dimensions of climate change that relates to tourism for the purpose of this research.

3. METHODOLOGY

The research main purpose is to establish knowledge on how climatic dimensions affect tourists’ attitudinal and behavioral patterns in making their decisions while providing information on the future scenarios of tourism industry under the changing climate. The research aims that the

outcomes would help policy-makers to strategize future adaptation planning and responding to the potential threats of climate change in order to achieve sustainable tourism. In order to achieve these two outcomes, the research needed to establish the dimensions of climate change, which are the existing knowledge of climate change for the tourists, the causes of climate change and the tourism supply that would be affected by climate change.

This research employed both qualitative (i.e. literature review and semi-structured interview with key respondents/experts) and quantitative techniques (i.e. statistical analyses, questionnaires). Defining the dimensions and identifying their operational variables were done through library-based reviews and semi-structured interviews with expert respondents (academics and practitioners). The analysis for the survey was done with SPSS while the Delphi technique's analysis was done using thematic clustering. This set the foundations of the research. The methods and specific techniques used are summarized below in Table 2.

Table 2. Research Methods and Techniques

TASKS	METHODS	SPECIFIC TECHNIQUES
Defining dimensions	Literature Review Expert opinion	Delphi technique
Developing operational variables	Cross-validating the literature review with key experts	Triangulation
Capturing primary data on the field (the interview)	Semi-structured interview	Questionnaire (using Likert Scale)

The research managed to capture 150 respondents, Asia (48%), America (7.4%), Europe (22.5%), Africa (1.3%) and Australasia (20.7%), through non-probability sampling with purposive sampling. The survey was done in two attractions sites in Kota Kinabalu namely Jesselton Point (also the gateway to the nearby islands) and Mari-Mari Cultural Village. The Delphi Technique was conducted during the BIMP-EAGA Conference 2012 at Pacific Sutera Hotel and through e-mail interviews with eight respondents.

4. FINDINGS

The development of climate change dimensions that was required for the starting point of this research was developed from both literature reviews and Delphi technique. There were three themes developed from the research, which are: 1) the knowledge of climate change, 2) the cause of climate change, and 3) tourism supply affected by climate change. The findings suggested that climate change was the change in humidity, rainfall, sea level, vegetation and activity (human and business). The causes of climate change were identified and categorized into three sub-themes, which are: 1) natural causes, 2) human causes, and 3) industrial causes. Finally, there were four categories of tourism supply identified that would be affected by climate change, which are: 1) natural resources and environment, 2) built environment, 3) transportation, and 4) hospitality and cultural resources. The summaries of the dimensions are outlined in Table 3.

Table 3. Dimensions of Climate Change

RESULTS THEME	RESULTS DETAILS
Knowledge of Climate Change	Humidity (<i>change of temperature, sunshine, drought, windfall</i>) Rainfall (<i>flood, rainy season</i>) Sea level (<i>beach erosion, salinity intrusion</i>) Vegetation (<i>change of landscape, change of habitat, migration of wildlife</i>) Activity (<i>human activity, business</i>)
Causes of Climate Change	Natural causes (<i>volcanic eruptions, ocean current earth orbital changes, solar variation</i>) Human causes (<i>energy usage, car, air travel</i>) Industrial causes (<i>oil drilling, coal mining, gas pipeline, greenhouse gas, animal farming</i>)
Tourism Supply Affected by Climate Change	Natural resources and Environment Built Environment Transportation Hospitality and Cultural Resources

The research suggested that the tourists had certain general knowledge of climate in Sabah and they were also aware of the issues of climate change. The survey suggested that they had certain knowledge of Sabah's climate, which they rated as good and sunny and could be cloudy, rainy and windy. The research suggested that the tourists made their decisions based on climate and any perceived climate change would also affect their decision-making. They indicated that factors such as rain, temperature, humidity, storm/wind, vegetation, sea level, human and business activities would affect their decision making in going to the affected destination. In the identification of tourism supply, i.e. 1) natural resources and environment, 2) built environment, 3) transportation, and 4) hospitality and cultural resources, helped to categorize what would be the affected elements of the travel destination. These findings are as outlined in Table 4.

Table 4. Decision Making Based on Climate Change

RESULTS THEME	RESULTS DETAILS
Climate	Rain, warm temperature, humid environment, storm/wind, vegetation, sea level increment, human and business activities
Safety	Perceived destination safety
Monetary	Travel budget, price promotion

The research also suggested that there were other factors that affected the decision-making, which could be categorized as the non-climate factors. These were safety factor and monetary factors (budget and price). When comparing both climate and non-climate based factors, the analysis results suggested that climate based factors has less influence on the decision to travel while the non-climate factors has more influence on the decision to travel.

5. CONCLUSION

The research has explored the behaviors of tourists toward their decision-making based on the perception of climate change in Malaysia. The findings provide deeper insights into the current knowledge on climate change in the field of social science by identifying the tourists' perception

of the effect of climate change on the tourism supply and how it can affect their travel decision-making.

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