Significance of climate change at coastal tourism sites: A case study of East Coast, Peninsular Malaysia.

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Abstract

In the study of tourism, coastal and island destinations are probably most affected by the climate change issues. Effects of climate change such as warmer sea temperature, sea level rises and extremities in weather have significant impacts on the local tourism industry operating by the coasts. This paper presents some preliminary empirical findings from a study along the East Coast of Peninsular Malaysia on the significance of climate change impacts. This paper draws on to reveal the adaptation measures by the stakeholders in coping with such exposures. Interviews were conducted with the local community and tour operators. The initial findings reveal that while climate change may have impacts on the local tourism industry, its significance cannot be clearly identified and segregated from the environmental impacts contributed by tourism business to these ecological sensitive sites, which then affects the local tourism industry.

Keywords: Coastal tourism, ecological sensitive sites, adaptation measure, stakeholders

Introduction

Having coastline totaling 4,675km, Malaysia offers some very outstanding coastal features, the ‘3S’ properties to tourists. In particular, the eastern coast of Peninsular Malaysia that is well-connected with excellent transportation network (road, air and rail), considerably short distance traveling from Kuala Lumpur and the relatively unspoiled environment as compared to west coast which experiences tremendous urbanization and development pressure, packaged with several offshore islands, is the main coastal tourism destination in the country. Most importantly, nearly 90% of its coasts have beaches (Swan 1968 in Wong [1]).

Today, the focus of tourism activities is found along the coast stretching from Kuantan, north up to Kuala Terengganu. Tracing back the history, tourism activities along the eastern coast took place since the 1970s. Despite of this, east coast is considered as late comer to beach resort development. This considerably late development as compared to the west coast was mainly resulted by the lack of ready access in the early years and the influence of annual north-east monsoon from November to February (Wong [2]). With the efforts by the Malaysia Tourism Development Corporation, resorts were developed along the east coast started in the mid 1970s until the 1980s. Accommodation facilities range from the village houses in Cherating to resort complexes Desaru. Similar to other forms of tourism development, coastal tourism could benefit the local population through providing job opportunities such as working in resorts, operating budget accommodation, providing boat service, catering facility, etc. This is especially for the east coast states, which are often associated with issues of poverty and under development.

Being one of the most vulnerable sectors subject to the climatic influence, coastal tourism receives substantial concerns in light of the critical projections of climate change on the environment. This paper intends to identify the impacts of climate change on the tour operators along the east coast, particularly from Kuantan to Kuala Terengganu (Figure 1). The adaptation measures by the stakeholders are also discussed. Initially interviews were conducted with the tour operators and local communities.
Coastal tourism at a glance

A coast is ‘a junction of seascape and landscape (Mieczkowski [3]). As emphasized by Wong 1994 (in Hamilton [4]) that coastal tourism mostly takes place on sandy coasts. Thus it combines the unique resources, e.g., sun, water, beaches, rich biodiversity (corals, birds etc), outstanding scenery, at the border of land and sea environment. According to Hall [5], the concept of coastal tourism covers a full range of tourism, leisure and recreational activities taking place in the coastal zone and offshore coastal waters. These include attractions, accommodation, transportation and catering facilities as well as infrastructure to support coastal tourism development.

Coastal tourism is among the oldest and largest segments of world tourism industry, started in the 18th and 19th centuries when tours to the coasts of Italy, France and Spain were made by the aristocrats across the Europe (Honey and Kratz [6]). With time, travels to the seaside increased with the advancement in transportation network and technology. During the industrial revolution, holidays by railroad was popular among tourists within Europe and the United States. Ocean liners and cruises then become the important mode of transportation that took the affluences across the Atlantic. Nonetheless, mass international tourism significantly began with the introduction of commercial airplane routes between the United States and Europe in the late 1940s. It is until the 1970s that developing countries became within reach of tourists from the West. The statistics of tourist arrivals from the West to developing countries were recorded at 8% in the mid 1970s, to 17% by the mid 1990s and further increased to 20% after 2000. Between 1992 and 2004, the number of international tourists increased from 463 million to 763 million and is estimated to continually grow to 1.56 million in 2020. The enclave resort development model demonstrated in Florida spread around the world in the 1950s. In terms of tourist number, the beaches of California for instance, are visited by an estimated 567 million visitors and Miami, 21 million every year. This number is more than the total of visitor statistic to all the national parks in the country (Honey and Kratz [7]).
Tourism, climate and climate change

Climate is the weather conditions expected at a time and a place. It is calculated from the average of 30 years of weather data. Weather describes the actual atmosphere which includes the temperature, humidity, levels and frequency of precipitation, wind, cloud cover and other features (Perry and Thompson 1997 in Hamilton [8]). There are three major aspects to reveal the relevance of climate with tourism. Firstly is related to the thermal aspects where weather influences human’s psychological functions. Our body temperature must be maintained to avoid discomfort. High air temperatures may lead to increased body temperature. Therefore, active activities will increase the heat stress than passive activities under the same weather conditions. Wind, on the other hand, once increases will enhance the rate of heat lost from human body. Hence, winds are welcomed at higher temperature whereas at colder temperatures, wind-chill causes the rapid heat lost which could result in discomfort.

Weather is also said to have neuro-biochemical effects on human well-being as sunlight promotes the production of serotonin in our body system (Lambert et al [9]). Normal to high levels of serotonin are associated with the feelings of happiness and relaxation. Secondly, is related to the physical aspects. The climate may facilitate or hinder tourist activities through rain, wind or snow. For instance, rain and wind will make sunbathing by the seaside and swim in the sea impossible, monsoon season will bring away tourists to a destination, but snow is needed for winter sports such as skiing. Lastly is the aesthetic and landscape aspect where climate influences the quality of tourism attraction appearance and landscape. The former includes the appearance of the sky, of the sea and the latter, flora and fauna found as well as crops cultivated in a particular area.

The impacts of climate on coastal tourism can be traced back to the Ancient Rome where countryside or coastal villas were the places for summer escape from the cities (Ryan [10]). Nonetheless, the coast was only popularized as a tourism destination in the 18th century due to the change of appreciation of coastal scenery with breeze and fresh air, away from heat in the cities, doctors’ prescription on cold and bracing seas, and the change in fashion where suntan replaced pale skin.

The projection on climate based on the evidence of the past has been very alarming to human existence. According to the scientific evidence from the 11th to 20th century, 1990s was the warmest decade and 1998 was the warmest year ever recorded in the history (McCarthy et al [11]). Other evidences include the shrinkage of the glaciers, the extension of seasons and in the shift in the rage of animal and plant species. It is also predicted that a temperature rise of 1.4°C to 5.8°C will occur in the 21st century. Model predictions estimate that snow cover and sea ice will decrease in the northern hemisphere and glaciers and ice caps continue to shrink. The frequency of extreme climate events will be altered. One of the causes of climate change is closely associated with the change in human activities since the industrial revolution. Urbanization and agricultural activities also affect the physical and biological properties of the earth’s surface. These human activities have caused global warming through the release of greenhouse gases. Global warming affects both the climate and sea level. The atmosphere warms the volume of the seas and oceans increases through thermal expansion. Glacier loss and ice cap shrinkage also contribute to the increase in sea level. In the 20th century, sea level increased by 10 to 20 cm and for 21st century, it is predicted to observe an increase of 9cm at the low emission and up to 88cm for highest emissions. Tectonic movements also affect the sea level rise at regional level. Climate change also affects ecosystems such as the glaciers, coral reefs, mangroves, tropical forests, polar and alpine ecosystem. The impacts of climate change on tourism may see its significance directly through the change of climate and indirectly through the environmental changes resulted by climate change.

The studies on climate change on tourism can be grouped into qualitative and quantitative study. The former provides information about vulnerabilities and the likely direction of change and the latter focuses on estimating the changes in the demand and supply of tourism services. The change of climate affects coastal tourism in terms of sea level rises, increasing storm frequency and warmer sea temperatures. Sea level rises will cause erosion along the coast and beach. Furthermore, water tables rise and the ecosystem of coast may degrade. One of the conclusions through qualitative study conducted by Perry [12] in the Mediterranean was the indirect effect of enhanced beach erosion caused by sea level rise which would subsequently reduce demand and increase the need for planning restrictions in the coastal zone. Gable [13] also highlighted the risk of losing beach which would then cause a drop in tourism demand in Caribbean coastal areas. The present resorts located in the eastern Mediterranean are also expected to have less demand due to the increase in temperature and humidity and summer holidays would become
more popular to take place in temperate countries. In conjunction with the rise of sea levels, the increased storm frequency will damage the sea defenses, mangrove swamps and beach buildings, cause beach erosion and contribute to damage to coral reefs (Hodgson and Liebeler 2002 in Reef Check [14]). Warmer sea temperature up to 2°C could cause coral bleaching and dying. It is foreseen that the intensity and frequency of coral bleaching will occur in the Caribbean and South East Asia annually by 2020 and in the Pacific by 2040 (Hoegh-Guldberg [15]). This will definitely have a great impact on the socio-economic activities in the coastal zones where the communities depend on divers and snorkelers for tourism business.

A case of East Coast Malaysia

Respondents’ profile and business trend

A total of 64 accommodation operators (also local communities) were interviewed during the field trip, spreading along the area of Kuantan, Batu Hitam/Balok, Cherating, Rantau Abang, Marang and Kuala Terengganu but focused at Batu Hitam/Balok, Cherating and Marang as the key attraction areas. These accommodation operators were located within 1km away by the sea which had direct access to the beach, rather than separated from the sea by major roads. Of this, 75% were budget operators and 69.8% of these accommodation establishments were individually owned both in terms of buildings and land. Many bought over the land in the early days when tourism started to take place, in Cherating for instance, since the 1980s. Kuala Terengganu and Kuantan catered mainly the urban travelers coming for business and a small portion of holiday makers, as compared to another four areas. Kuantan, in particularly, had been a very popular recreational spots among the locals rather than servicing as a tourist destination.

Packaged holidays and conferences were not popular business for the accommodation providers where only 22% who have at least 25% of their tourists were on holiday packages and 51.5% said they did not receive tourists who were on packaged holidays. Similarly, 56.3% of the respondents did not involve in conference, seminars and workshops. For those who involved in hosting, 65% were the budget accommodation providers. Relatively, the respondents who did not receive tourists with holiday package were lesser compared to 5 years ago. 78% of the accommodation operators reported that they did not have tourists coming in as packaged holiday makers. Relatively, if compared with the business scenario five years ago, there was a significant increase in terms of accommodation providers involved in conferences, seminars and workshops (five years ago 84.4% were entirely not involved). Peak seasons at these coastal zones were March, June then again from August to early November. School and public holidays were also the peak days of weeks. Low seasons include the Muslim fasting month and also from November until December due to the arrival of annual northeast monsoon. In terms of occupancy rate, one-third that their business was better five years ago while another 50% said there was no change and only 18% said their business became better. 85.4% of the respondents indicated that at least 75% of their guests were domestic tourists and 43.6% were almost fully depend on the domestic tourists for business (95% or 100% of guests were domestic tourists).

Issues and challenges

Key issues addressed by the accommodation providers include sewerage management, coastal erosion, littering and debris on the beaches as well as declining tourist arrivals. 64.1% of the respondents highlighted the issues of beach erosion. Erosion was particularly significant at Batu Hitam/Balok and Marang area. The intensity of erosion reached its peaks during the monsoon season. As some of these operators were located near to the sea (<30 meter away), the respondents were worried about the existence of their chalets if beaches were to disappear slowly. At Batu Hitam, the local authority had stepped in to build the concrete retaining wall against the erosion. Another key highlight of issues was pertaining to littering (65.6%). Despite of the regular cleaning and collecting efforts by the local authority and the accommodation providers, the rubbish were carried from elsewhere by the waves to the beach. This was especially significant during and after weekends and public holidays. Debris was also observed at the beach, despite of only limited to a small patch and occasionally due to the proximity to Sungai Marang where the fishery and local business activities took place. The location of jetty for those leaving to Pulau Kapas at Marang may have the impacts on the debris on beach. The issue of sewerage management was also raised by the respondents (51.6%). This was especially related to the small and individual owned chalets operated by the seaside which did not have the proper discharge system in place.
54.7% of the respondents concerned about the issue of declining tourist arrival to the coastal area. Despite of the absence of statistics, many noted that the number of tourists had been reducing especially the foreign tourists, notably at Cherating. As for Marang, most foreign tourists made only a stopover to catch the ferry to Kapas Island. Concerning the decrement, respondents were in the opinion that the environmental degradation was the main causes. The issues of littering, the disappearance of leatherback turtles which were once the key attraction to Rantau Abang area for instance, poor sewerage management had collectively contributed to the environmental degradation. Rantau Abang was once the prime location for leatherbacks’ landing and egg laying. Unfortunately the number of landings declined sharply since the 1960s (thousands were recorded) and there was no detection of eggs. Today, only the green and hawksbill turtles still came to the beach. On the other hand, beach erosion could be threatening for the chalets’ existence by the seaside. A few local residents cum accommodation operators who had been residing in the area of Marang for the past three decades observed the rise of seawater over the years, and significantly after the 2004 tsunami. ‘The water level was about 20m away compare to the current’, described by one of the residents at Marang.

Discussion

The preliminary analysis results reveal the relatively insignificance of climate change along this stretch of east coast impacting tourism, as compared to environmental degradation which was caused mainly due to the tourism development. Tourism development had intensified the development and increased the crowds to the beach; poor waste management had hampered the efforts of maintaining the quality of the beach and seawater, which together was a key asset of the coastal tourism. The disappearance of leatherback turtles along the Rantau Abang beach was closely associated with the tourist crowds in the earlier days, declining seawater quality and the disturbed environment for hatching as well as the local culture where turtle eggs were a main source of protein for the locals. Despite of the 14km of the beach which had become a protected turtle sanctuary in 1961 and the passing of new laws in the 1990s to ban the consumption of leatherback turtle eggs, it was unable to stop the declining number of the reptiles landing and hatching rate. On the other hand, the population of leatherbacks was also associated to climate change according to researcher from Australia’s James Cook University (Cosmos [16]). Another explanation that would relate the declining of leatherbacks to climate change was cooler temperature tends to produce males and direct sunlight or warmer temperature produces females (APF/Hazlin Hassan [17]). Global warming might contribute to the imbalance of genders which subsequently lead to no fertilization or mating process take place due to the lack of males. Beach erosion and seawater rising probably were the impacts of climate change to the study area. While these have not reach the alarming level, it may threaten the existence of the local business along the coast if the rate of global warming would expedite in long term. The loss of beach may also further contribute to the decline of tourists. The retaining wall constructed at Batu Hitam, despite of its function to fight against further coast erosion, it has thwarted the access to the beach and the visual quality.

Notwithstanding the cause of decline in tourist arrival number, the reducing statistics especially among the foreign tourists had actually shifted the business of many chalets to cater for local market, which including the walk-in tourists and also business packages such as conference. Furthermore, some budget chalets had targeted school students as their guests for motivational courses. The strategies had helped to cope with the changing trend of tourist arrival and to survive despite of the decrease of foreign tourists. Terrorism attack in 2001 was also said to be one of the major cause that had reduced the arrival of foreign tourist number to the study area, apart from the environmental degradation. Some of the resorts that previously solely depended on foreign tourist market had shut down the business, e.g., Marang Resort and Safarisi.

Conclusion

The preliminary results of the study indicate the relatively insignificant of climate change in the study area. Nonetheless, tourism development along the coast was affected by the environmental degradation which, would have contributed indirectly to the current state of climate change in larger context. The change of marketing strategies to target on domestic market as an adaptation measure was closely related to environmental degradation. Significant observation over the impact of climate change was the presence of beach erosion and the rising water level, which may threaten the local livelihood in long run. Furthermore, the construction of retaining wall against the rising water and beach erosion may thwart the quality of tourism attraction along the coast. On the other hand, environmental education is essential to enhance the public awareness about environmental impacts resulted by
human activities. In particular, it is very essential to ensure the survival of the remaining greens and hawksbills to the coast of Rantau Abang, not only for tourism but also for conservation purpose. Littering issue may able to be reduced through increasing public awareness. Enforcement of the local authority on the sewage management is also important to ensure the discharge to the sea is stopped.

This preliminary study reveals some issues at the east coast tourism development. Further investigations will focus into two directions. Firstly, identifying the effective environmental education to promote public awareness and secondly, to identify the state of environmental degradation and the impacts of climate change at the offshore marine parks which have now received more significant tourists.

References


