



The Impact of Climate Change on Adventure Tourism in Egypt: Policies and Strategies

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Abstract

Climate and natural conditions are significant factors in choosing many tourist destinations. The natural environment including beaches, forests, rivers, lakes, deserts, and many other landscapes is already suffering from climatic change. Hence, tourism will be affected by climate change, especially adventure tourism, as it depends mainly on natural resources. Recently, adventure tourism has gained a lot of attention and attracted many tourists who want to have challenging, adventurous, and exciting experiences. Therefore, this study aims to highlight the significant role that the natural environment plays in adventure tourism, explore the influence of climate change on adventure tourism in Egypt and propose a set of practices that can mitigate the effects of climate change. This study depends on a qualitative approach by conducting interviews with government officials from both the Ministry of Tourism and Environment in Egypt to explore potential climate change impacts on adventure tourism in Egypt and to define their policies and action plans in response to these impacts.

Keywords: Climate change, Adventure tourism, Impacts, Policies, and Strategies.

Introduction

The climate is a major factor in choosing tourist destinations and has a significant impact on the environmental conditions that can prevent tourists from traveling or practicing certain tourism activities (Conrady and Baken, 2008). Therefore, the tourism sector is considered the most sensitive sector to climate change, as it depends mainly on natural resources, which in turn are very sensitive to climate changes and fluctuations (IPCC, 2007; Rogerson, 2016).

Many types of tourism such as leisure, sport, and adventure are highly dependent on climate, so these types are affected by climate change due to their dependence on natural resources (Gössling and Hall, 2006; Buckley, 2008a; Buckley, 2008b; Gössling et al., 2012; Becken, 2013; Day et al., 2013; Buckley and Shakeela, 2014; Hall, 2015; Buckley, 2017), where climate change will effect on natural environment including beaches, forests, rivers, lakes, deserts, mountains as well as biodiversity, wildlife productivity, water levels and quality and thus the loss of natural beauty (Buckley, 2017).

Moreover, Climate changes will influence environmental conditions that prevent tourist from visiting certain tourist destinations, including infectious disease, wildfires, insect or water-borne pests (e.g., jellyfish, algae blooms), and extreme events such as tropical cyclones, which affects tourism movement and tourist spending. (UNWTO, 2008)

Consequently, climate change has become an important issue due to its impact on natural resources, which affects the tourism sector and various tourism activities such as diving, mountaineering, and other activities that are important factors in attracting tourists to various destinations. Therefore, this study aims to highlight the significant role that natural resources play in adventure tourism, explore the influence of climate change on adventure tourism in Egypt and propose a set of practices that can mitigate the effects of climate change.

Adventure Tourism

The term 'adventure' is a type of experience that includes personal excitation (Kandari and Chandra, 2004), which generates a feeling of great enthusiasm and eagerness. According to the Oxford Dictionary, adventure is an unusual, exciting, and usually hazardous experience or activity. (Oxford University, 2017). According to Hall (1992), adventure tourism is a wide range of tourism activities that involve interaction with the natural environment and contain elements of danger. Adventure tourism is also defined as a trip that includes at least two of the following elements: physical activity, natural environment, and cultural immersion, or three elements together, that would provide tourists with an integrated tourist experience full of adventure (ATTA, 2010).

Adventure tourism is divided into two types' hard adventure and soft adventure (Williams, 2017). Firstly, hard adventure refers to dangerous activities with high risk such as surfing, horseback riding, snowboarding, mountaineering, and diving in hard-to-reach places (Kane, 2010; Tracey McKay, 2014). Secondly, Soft adventure is a type of adventure that refer to less risky activities (WTO, 2014) such as trekking, hiking, camping, safaris, cruises, bird watching, hunting, Cultural activities, and interaction with local people (Kane, 2010; Tracey McKay, 2014). This type of adventure tourism is safe and easy for tourists (Swarbrooke et al., 2003; Arquinez et al., 2020).

Recently, adventure tourism has grown significantly, as tourists travel to undiscovered destinations looking for authentic experiences (UNWTO, 2014,) for adventure, exploration, recreation, sport, or sightseeing. Therefore, the natural environment plays an important role in adventure tourism which is a major attraction for outdoor activities. As we mentioned before that adventure tourism relies heavily on nature, so climate changes will greatly affect adventure tourism, and this is what will be presented in the next part.

The impact of Climate change on adventure tourism

The climate is an essential element for tourism (UNWTO, 2008), as it determines the appropriateness of tourist destinations for the practice of certain activities. The climate also plays a major role in the competitiveness between tourist destinations. Therefore, climate change affects tourists' choice of tourist destinations and tourism activities within these destinations (Forsyth et al., 2007).

Climate change is defined as any significant, long-term change in weather conditions that occurs in a specific area. Weather conditions can include average temperatures, precipitation rates, and wind conditions. The pace and magnitude of global climate changes over the long term lead to enormous impacts on natural biological systems and ecosystems (IPCC, 2007). Thus, climate change will affect the rise of sea levels which affects the coasts and increases the risks of coastal disasters and floods. In addition, climate change will also increase temperatures, acidity, and salinity, which are the biggest threats facing coral reefs. Climate change also affects biodiversity and hinders the cultivation of affected areas in the future (Scott et al., 2007; Hannah, 2008; Nyaupane and Chhetri, 2009; Steyn and Spencer, 2012; Hambira et al., 2013; Becken and Job, 2014). Hence, the tourism sector is the most affected by climate change, as it mainly depends on natural resources. Therefore, risk reduction is a needful condition not only for minimizing impacts but also for ensuring long-term sustainability (Mkiramweni et al., 2016).

Adventure tourism activities depend on the natural environment such as mountains, seas, rivers, deserts, and other natural resources. These natural resources are already witnessing the impact of climate change in varying degrees, which affects adventure tourism. Hence, there are five categories of climate change impacts that will affect adventure tourism and its competitiveness as well as its sustainability, which are (Buckley, 2017):

First, Climate change affects snowfall and precipitation; and affects wind movement and wave intensity, which are the major natural resources for adventure tourism activities.

Second, Climate change leads to many natural disasters such as avalanches, floods, fires, heavy rains, and droughts, which also affect adventure tourism.

Third, in the long term, climate change affects the coasts including rising water levels and temperatures, which affects coral reefs and marine organisms. Hence, climate change affects the value of tourist destinations for adventure tourism.

Fourth, climate change can alter human factors, such as access to specific destinations. For example, high-altitude airstrips or airports may become unusable due to increased cloudiness and fog as well as deny access to certain locations due to the increased risk of fire; or access roads may be closed by floods or landslides.

Fifth, Permafrost thaw and retreating glaciers lead to increased natural hazards which affect adventure tourism. Moreover, mountain hazards threaten safe routes, paths, and trails. Hence, the reconstruction and the maintenance of exposed routes require high expenditures and steadily increasing legal risks (Kocholl, 2007).

Moreover, Climate change affects a wide range of natural resources that are vital attractions for tourists, for example, wildlife productivity and biodiversity, water levels, and quality. (Becken and Hay, 2007; IPCC, 2007; Gossling and Hall, 2006; Scott, 2006 and Shaaban and Ramzy, 2010) as well as loss of coral cover, reduced reef aesthetic (Lemelin and Johnston, 2008; Lemelin et al., 2010), retreating glaciers, escalating natural hazards, and falling rock (Kocholl, 2006a) which lead to affect adventure tourism and various outdoor sports (Meyer, 2007).

The impact of climate change on adventure tourism in Egypt

Adventure tourism is considered one of the most promising types of tourism because of its sustainable economic returns. Adventure tourism also enhances the growth of the tourism market. Therefore, tourist destinations focus great attention on this type of tourism (Saudi, 2020). Adventure tourism in Egypt is concentrated in the Red Sea and South Sinai governorates, as these regions are characterized by many natural ingredients such as mountains, beaches, valleys, and deserts that are suitable for adventure tourism activities, such as diving, mountaineering, safari and many water sports (Khalil, 2019).

Egypt is one of the countries highly affected by climate change, especially the Red Sea region. This region is the most vulnerable to sea level rise, increased water salinity, and sandy winds, which affects adventure tourism and tourism investment in this region (Batan, 2009). Climate change will also lead to a rise in water temperature - especially in the Red Sea. This will affect coral reefs and the escape of marine organisms, which will affect fishing and diving activities (El-hoseny, 2008). Hence, Climate change will harm the ecosystem in general and the tourism industry in particular, as it negatively affects tourism services, leading to deterioration and decline in tourism rates, as well as an increase in unemployment rates (Shaaban and Ramzy, 2010).

Egypt realizes that it is one of the countries most affected by climate change; and that climate change will affect the sustainability of the environmental, social, and economic systems, and thus will affect the tourism industry (Khalil, 2019). Therefore, Egypt is among the first Arab countries to join the global collaborative efforts to face the dangers of climate change (BD, 2008).

Moreover, many other types of tourism will be affected by climate change not only adventure tourism. **First**, Beach tourism is one of the types of tourism most affected by climate change, as it depends on the temperature, the sun, and, the sea, and in the case of high temperatures resulting from climate change rise, this will affect all beach activities, and it may also affect the exposure of tourists to diseases. Scientific studies also confirm that climate change will increase sea levels, affecting most beaches. Hence, tourism activities in coastal areas will be affected (El-Sayed, 2017). **Second**, the Red Sea region is characterized by coral reefs and many marine organisms. Coral reefs are more sensitive to climatic changes, especially with high temperatures, which leads to the bleaching of coral reefs and the death of many coral organisms such as algae, which affects diving and fishing activities (Hereher, 2015). **Third**, Eco-tourism will also be affected by climate change through the loss of biodiversity, changes in the vegetation type, drying up the wetland, etc, which increase the negative effect of eco-tourism (Shaaban and Ramzy, 2010). **Fourth**, Adventure tourism activities depend on the natural environment such as mountains, seas, rivers, deserts, and, other natural resources. These natural resources are already witnessing the impact of climate change in varying degrees, which affects adventure tourism (Buckley, 2017). Table (1) will show how climate changes affect adventure tourism in Egypt.

Table (1): The impact of climate change on adventure tourism in Egypt

The impacts of climate change	Type of adventure	Destination in Egypt
<ul style="list-style-type: none"> ▪ Increase in averaged mean temperatures ▪ The annual decrease in precipitation ▪ Raising sea levels ▪ snowmelt 	Mountains climbing	Sant Katrin mountains, Mousa mountains, El-Galala mountains (Saudi, 2020)
	Cycling	The rocky bike race in Sharm Elsheikh, Hurghada, and the western desert road that is in the city of Aswan in Egypt with a length of 110 kilometers (Saudi, 2020)
	Safari /Watching wildlife	Oases / Deserts
	Free fall (sky diving, rope jumping).	Fall from the high mountains of the coastal cities of Sharm El-Sheihk, Hurghada, and, Matruh (Saudi, 2020).
	Water sports (paddling-diving)	Scuba diving in the Red sea, which depends mainly on coral reefs and marine organisms (Hereher, 2015).
	Snowboarding	Sant Katrin mountains

Methodology

This study depends on a qualitative approach, where qualitative research focuses on exploring and understanding the meaning that individuals or groups ascribe to a social or humanitarian problem (Creswell, 2014). Qualitative research methods focus on discovering and understanding participants' experiences, perspectives, and ideas — it defines "... meaning, purpose, or reality" (Harwell, 2011, p148). Hence, talking to people would be one of the most effective ways to access and explore phenomena (Alshenqeet, 2014).

Therefore, interviews were conducted with eight officials in the Ministry of Tourism in the governorates of the Red Sea and South Sinai, and two officials in the Egyptian Ministry of Environment to explore the potential climate change impacts on the adventure tourism industry in Egypt, and define the practices and strategies that can mitigate the effects of climate change and support the tourism industry in Egypt. The study focused on collecting information on the impact of climate change in the Red Sea and South Sinai because these governorates have many natural attractions suitable for adventure tourism activities, such as diving, mountaineering, safari, and, many water sports. Moreover, previous studies also confirmed that the Red Sea region is one of the regions most affected by climate change.

The interview is divided into 4 sections, the first section focuses on the impact of climate change on the natural environment, the second section focuses on the impact of climate change on the tourism industry in general, the third section focuses on the impact of climate change on adventure tourism and its activities, the last section focuses on practices that can mitigate the impact of climate change and support adventure tourism in Egypt.

Results

The impact of climate change on the natural environment

100% of environmental officials emphasized that there are two points of view regarding climate change. The first view confirms that a very slight climate change will occur and will not have a significant impact. They also emphasized that climate change is a natural phenomenon that occurs every specific period of time. Regarding the other point of view, there will be severe global warming will occur, which will lead to the melting of snow and thus a rise in sea levels, which will lead to the sinking of some cities.

The officials agreed on the first point of view, which is the occurrence of a slight change in the climate due to technological development and changes in human behavior. They also agreed that climate change occurs every specific period of time, as it is considered a natural phenomenon.

As the first environmental official stated, "Once in a while, climate change must occur and it is considered a natural phenomenon."

As for the rise in water temperatures, 100% of environmental officials emphasized that the sea temperature will not rise significantly, and this will not affect the coral reefs as much as it will be affected by the oils of ships and boats and human behavior towards nature.

As a second environmental official stated, "Coral reefs are more affected by human behavior than by rising water temperatures"

Regarding sea level rise, the officials agreed that the rise in sea level will not be as serious as the torrential rains that may affect infrastructure and flood the tourist villages. Therefore, officials pointed out that tourist villages should not be built on lowlands and close to the sea.

The impact of climate change on the tourism industry

75% of tourism officials emphasized that the tourism industry will not be affected by climate change. On the contrary, climate change can be used to promote other types of tourism in Egypt such as adventure tourism and sports tourism and attract a large number of tourists.

Moreover, one of the tourism officials confirmed that the whole world will be affected by climate change to varying degrees, while Egypt will not be greatly affected. Thus, tourists will continue to visit Egypt, especially European tourists, as a result of their lower temperatures compared to Egypt. Hence, tourism in Egypt will not be affected.

As tourism official 5 stated "Climate changes can be an opportunity to promote new types of tourism and attract a large number of tourists"

While 25% of tourism officials confirmed that there will be a slight change in tourism for example the high temperature and the increase in the number of hours of sunshine, which lead to the cessation of all beach activities. In this case, the seasonal variation will increase and the tourists will increasingly avoid the summer months; while preferring to visit Egypt in the winter.

As tourism official 3 stated, "Climate change will not affect the number of tourists, but rather the seasonality of tourist visitation".

The impact of climate change on adventure tourism and its activities

62% of tourism officials emphasized that adventure tourism will not be affected by climate change. On the contrary, it is possible to benefit from climate changes in promoting adventure tourism in Egypt, for example, increased snow in St. Catherine Mountains helps to promote skiing, as it is considered one of the most important adventure tourism activities and attracts a large number of tourists. Moreover, High Mountains can also be exploited to enhance mountaineering.

As tourism official 7 stated "St. Catherine Mountains will be an important ski attraction due to the increase in the snow"

While 38% of the tourism officials confirmed that some adventure tourism activities may be affected in the case of a rise in water temperature, coral reefs, and some marine organisms will be affected. Hence, diving and fishing may also be affected. Officials also confirmed that other tourism activities may be affected by climate changes such as safari and camping, as a result of the increase in dust and sand storms accompanied by high wind speeds.

Finally, all of the tourism officials emphasized that the winter and autumn seasons are the most suitable for adventure tourism activities in the Red Sea and South Sinai due to the high temperatures in the summer, which affects the comfort of the tourist.

Recommendations

Based on the findings, the adaptation strategy must be followed which is a variety of actions that are meant to reduce or compensate for or adapt to the adverse impacts that arise from changes in the earth's climate, one of these actions is to raise public awareness. Moreover, a mitigation strategy must be also followed which is actions or changes in societal behavior taken to reduce or eliminate greenhouse gas (GHG) emissions and /or to remove GHGs from the atmosphere to prevent significant adverse climate effects.

Raising public awareness

- Raising awareness is a great way to help to mitigate the climate change effects, such as decreasing climate literacy among young people, helping them change their attitudes and behavior, enhancing adaptive capacity, and helping them adapt to the impacts of global warming.
- Implement climate change awareness campaigns aimed at achieving long-term behavioral changes that lead to positive impacts and are generated through audience participation
- The usual routine must be changed to be environmentally friendly and reduce the actions that can have negative consequences for the climate.

Green practice

- Reducing emissions by using sustainable modes of transportation, such as cycling, or public transportation. In terms of long-distance travel, it is better to use trains instead of planes to reduce harmful emissions.
- Saving energy by being careful in the use of appliances, which positively affects the climate.
- Reducing welfare, especially in Arab countries, to reduce emissions
- Recycle the accumulated waste to reduce the negative impacts on the climate
- Using renewable energy and avoiding fossil fuels significantly, reduces the climate footprint
- Greener Infrastructures and Equipment, as the most efficient (energy-wise) and sustainable (regarding the origin or manpower criteria) ones.

Recommendations related to adventure tourism

- Climate change can be exploited to promote adventure tourism in Egypt, for example, increased snow in St. Catherine Mountains helps to promote skiing, as it is considered one of the most important adventure tourism activities and attracts a large number of tourists
- The need to create promotional programs for adventure tourism in Egypt in line with potential climatic changes
- The need to carry out promotional campaigns to attract tourists from countries most affected by climate change, such as European countries and the Arab Gulf states.
- It is necessary to create an integrated database of potential climate changes and the effects of these changes on the tourism sector to develop appropriate plans to deal with these changes.
- The tourism sector must cooperate with climate officials to determine the most appropriate times for tourism activities.
- Encouraging scientific research related to climate change and its impact on the tourism sector.
- It is necessary to use adventure guides' and their practices, as play a role in helping to alleviate the environmental crisis through visitor education, interpretation, and sustainable travel practices.
- The need to carry out awareness campaigns to preserve the environment and rationalize consumption to modify human behavior that negatively affects the environment as well as the tourism sector.
- It is necessary not to build tourist villages on lowlands and close to the sea, taking into account the possibility of a rise in sea levels or heavy rains.

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