

Impacts of Climate Change on Tourism in Kenya

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Abstract

Kenya is facing climate change induced challenges, such as variation in weather patterns, unpredictable water levels in lakes and rivers, frequent and prolonged droughts and flash floods. The country's wild life and other tourist attractions, which are major contributors to the nation's economy, are vulnerable to the impacts of climate change. The paper discusses how tourist destinations are affected by climate change. Specific examples include: flash floods associated with El Niño rains and their impact on infrastructure especially in Masai Mara and Lake Nakuru, prolonged droughts in major national parks, the shifts in wildebeest migration in response to rain fall patterns, melting of snow caps on Mount Kenya due to increase in temperature.

1. Introduction and Objectives of the Paper

The United Nations Framework Convention on climate change (UNFCCC, 2005) defines climate change as “change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods”. Climate change looks at the shifts in climatic conditions either upwards or downwards from the average. These shifts include: “The start or end of the rainfall season, the length of the season, the number of rain days, the number, length and intensity of dry spells or changes in the total rainfall (UNFCCC, 2005)”.

Climate change is one of the most serious global challenges of our time. In many parts of Africa for instance, rainfall has become irregular and unpredictable, some regions particularly the Sudano-Sahelian belt experience frequent droughts. In other parts, severe floods are being experienced during the short rains.

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The present paper looks at the impacts of climate change on tourism. However, it must be noted that the connection between climate change is a two way process: tourism industry contributes to climate change through the burning of fossil fuels, but at the same time, it is impacted by it. According to the UNWTO, transportation causes around 75% of the CO₂ emissions generated by tourism with aviation representing the bulk of it (40%).

Some of the specific impacts to be discussed include those associated with:

1. El Niño events
2. The adverse impacts of drought
3. The rise in temperature

The paper will provide background information on tourism and then proceed to the impacts of climate change.

I. Background Information

i. Importance of Tourism in Kenya

Tourism is a major employer, contributing 18% of total foreign exchange earnings and 12% of Gross Domestic Product (GDP) – as such, the sector is very important to the country's economy (Figure 1). This sector is estimated to have supported approximately 11.9% of Kenya's total employment in 2011.

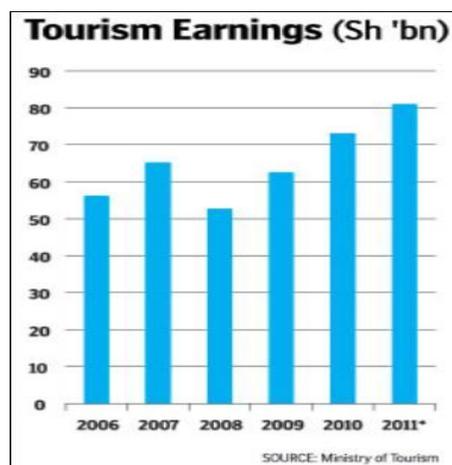


Figure 1

The tourism sector recorded the highest number of arrivals ever at 1,205,136 tourists in December 31, 2011. This was a 15.4% growth compared to tourist arrivals in 2010. During this period, the sector brought Kenya shillings KES 97.9 billion, a significant increase of 32.9% compared to KES 73.7 billion in 2010 (Manyara, 2005).

ii. Major Tourist Attractions

- a. Wild-Life – The number of visitors to the national parks and game reserves in 1993 was 1.4 million, and half of the earnings from tourism industry can be attributed to wild-life (Viner, 1999). Eight out of ten visitors come to Kenya for wild-life Safari.

The major national parks and game reserves are shown on Figure 2. Masai Mara game reserve is Africa's greatest wildlife sanctuary and the world's most famous safari destination. All the big five (elephant, rhino, buffalo, leopard and lion) can be seen here as well as more than 500 species of birds. The greatest wildebeest migration takes place in the Masai Mara between July and October each year as these animals cross from Serengeti Park in Tanzania.

Amboseli National Park has a large elephant population and is also home to the Big Five and numerous plains animals. It offers a spectacular view of Mount Kilimanjaro, Africa's highest mountain. Lake Nakuru National Park is one of the top tourist attractions in Kenya. Over a million flamingoes and pelicans can be seen here. It is also a sanctuary for the endangered Black Rhino and Rothschild Giraffe. The Aberdares National Park is located in the central highlands of Kenya.

The park has spectacular waterfalls and rain forests. Black Rhino, elephants and a host of other animals visit the waterholes located by the hotels. In Samburu National Park, all the Big Five can be seen as well as more than 450 species of birds. Tsavo National Park is the largest park in Kenya divided into Tsavo East and Tsavo West. It is known for the large elephant population as well as other animals. Mount Kenya National Park is situated in the Kenya highlands. Tourists are able to watch animals from the balcony as they come to drink water in waterholes located next to the lodges.

- b. Indian Ocean beaches – Visitors are attracted to the Indian Ocean beaches which contain beautiful resorts which offer amenities for relaxation. According to Viner (1999), tourism in coastal Kenya contributes 60% of the country's tourism revenues and over 60% of the total hotel bed nights.
- c. Other tourist attractions include beautiful scenery including the Great African Rift Valley which contains lakes and volcanos, historic sites, museums, cultural attractions and city tours.

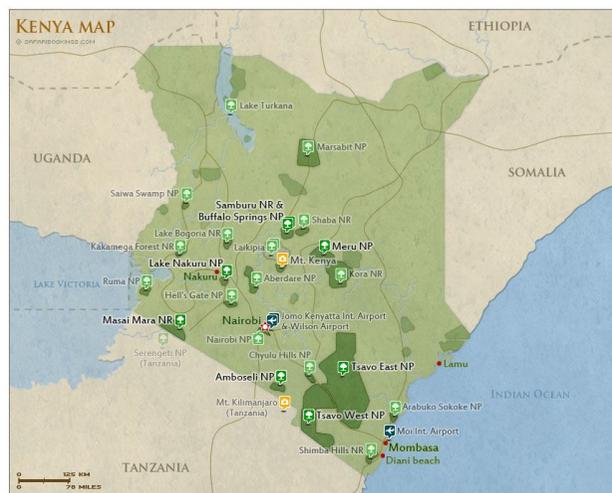


Figure 2

II. Climate Change

Changing climates are illustrated by shifts in climatic factors such as rainfall and temperature patterns. These are discussed below:

a. Changes in rainfall patterns

The climate of Eastern Africa has undergone changes with respect to rainfall as shown on Figure 3. Rain fall has been decreasing during the past few decades and there have been serious droughts (Manyara, 2005). There has been a 5-10% decrease of precipitation from June – August dry months. On the other hand, there has been a 5-20% increase in precipitation from December – February wet months (Manyara, 2005).

Consequently, by 2020 75-250 million people will be water stressed, there will be a 50% reduction in rain fed agricultural production which will lead to increase in food insecurity, low lying coastal areas will be vulnerable to sea level rise, an increase of 5-8% of arid and semi-arid land is projected by 2080 in Africa, drought in key national parks such as Masai Mara and Amboseli, the drying up of rivers such as the Mara River, the lakes such as Elmentaita during the dry season (Manyara, 2005).

b. Changes in Temperature

There has been an increase in surface temperatures of the Indian Ocean attributed to global warming. Overall, there has been an increase in temperature throughout Kenya.

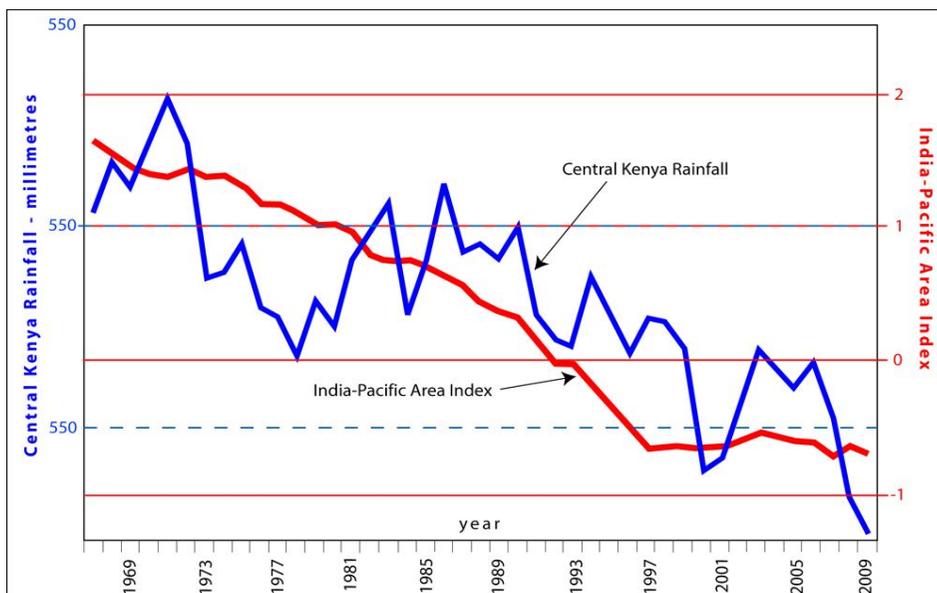


Figure 3

III. Impacts of Climate Change on Tourism

The NCCAP (2009) states that, "tourism is a highly sensitive industry because climate change affects a wide range of the environmental resources that are critical attractions for tourists, such as wildlife diversity, biodiversity, and water levels.

Furthermore, climate change has an important influence on the environmental conditions and incidents that can deter tourists such as very high temperature, infectious diseases wildfires, increased wildlife mortality and insects and waterborne pests”.

Some of the impacts of climate change on tourism are discussed below:

1) Impacts of changes in rainfall patterns

The changes in precipitation prompting species to move to more favorable habitats can negatively impact certain locations for wildlife based tourism. The altered rainfall patterns will influence the growth of grass and vegetation; hence migration shifts will also occur. Rainfall shifts can result either in floods or drought.

a) Impacts of flood episodes

Extreme events such as heavy El Niño rains negatively impacts wildlife and biodiversity resulting in fewer opportunities for tourism. For instance, the annual migration of more than a million wildebeests, zebras and gazelles in Kenya’s Masai Mara reserve saw the effect of climate change when record high levels in the Mara River in 2011/2012 took the lives of about 15,000 animals, rather than the usual thousand or so (Pulsipher, 2005).

In the past three years, the El Niño rains have also led to the rise in the water levels at Lake Nakuru National Park. According to Esipisu (2014), Lake Nakuru is home to millions of flamingos and other water birds that make one of the country’s most magnificent spectacles, watched by thousands of tourists from the 14 hotels overlooking the lake and giving jobs to thousands of Kenyans, as well as bringing in more than 3 billion Kenyan shillings (\$36 million) a year in revenue.

In recent years, millions of birds have migrated to other places because of pounding rains that have caused the lake to overflow. Excessive rains have affected the bird’s food supply. Lake Nakuru is a saline lake which makes it a perfect ecological environment for algae which is the favorite food of flamingos. When the lake overflows, the salinity is reduced thus affecting the growth of algae. This forces the birds to flee to other places in search of food. Only a few flamingos remain on the lake at the moment.

Extremely heavy rains have also encouraged the growth of invasive alien species that threaten to overwhelm the native vegetation on which local wildlife feed. This forces wild animals to stray into people's farmland, leading to growing conflict between animals and farmers (Esipisu, 2014).

Infrastructure crucial to tourism left roads in both Masai Mara Game Reserve and Lake Nakuru National Park impassable for long periods of time during the recent El Nino rains. The roads leading to, and those within the park deteriorated during the heavy rains, and some roads and bridges were temporarily closed due to flooding.

b) Climate shifts have contributed to worsening severe droughts which put strain on the ability of even the most adaptive wildlife to cope. Ngaruiya, G. (2013) reports that the populations of elephants, zebras and wildebeests suffered a huge loss following a drought episode in December 2009 in Masai Mara. Similarly, Esipisu, I. (2014) reports that in 2010, the Kenya Wildlife Service (KWS) had to provide water in artificial troughs for wild animals in several parks in order to rescue animals that were dying in numbers. At that time, the Kenya Wildlife Service also had to buy hay for the wild animals.

More frequent prolonged droughts may increase the pressure on the reserve by pastoralists, cultivators and wildlife as they compete for resources. The Kenya Wildlife Service (KWS) has claimed that the droughts are pushing lions closer to the waterholes adjacent to human settlements, fueling human – wildlife conflicts.

Competition for resources has led to land degradation in the parks located in Kenya's semi-arid lands. For instance, in Masai Mara, land use conflicts among cultivators, wildlife, and pastoralists have intensified land degradation. This is evident through denuded slopes and dry gullies particularly in Masai Mara (Narok district). If action is not taken to reduce land degradation, few wildlife will be supported by the existing game reserve and this will ultimately reduce the number of tourists to the park.

Increasing drought can also lead to increase in the incidence and transmission of wildlife diseases. An example of this was when the Grevy zebra population in Samburu National Reserve was placed under severe threat due to an outbreak of Anthrax caused by drought in northern Kenya.

2) Increase in the Average Annual Temperature

The increase in temperature is likely to compromise or eliminate certain ecologically sensitive destinations. These include:

- a) The depletion of glaciers on Mount Kenya and Mount Kilimanjaro at the border with Tanzania (IPCC, 2007; UNEP, 2009). According to Kinyuyu et al (2000) the snow cap depletion will adversely impact tourism, given that the two mountains are tourist attractions due to their position near the equator where no snow cover would be expected.
- b) Increase in temperature is likely to affect ecologically sensitive destinations such as coastal rain forests, marine ecosystems as well as endangered species associated with those ecosystems such as marine turtles (NCCRS, 2009). The 1997/98 coral bleaching observed in the Indian Ocean was associated with climate change induced ocean warming on coral reefs. "In the Western Indian Ocean region, a 30% loss of coral reefs reduced tourism in Mombasa and Zanzibar resulting in financial losses of about \$12-18 million (Viner, 1999)".

Summary and Recommendations

The relationship between climate change and tourism is two way because not only is tourism affected by climate change, but it also contributes to climate change through the burning of fossil fuels. The paper discusses how changing climates have impacted tourism.

Droughts are a sign of climate change which impacts tourism. Since tourism industry is mostly nature based, when prolonged droughts occur, the water bodies dry up and the vegetation withers away. This affects the National Parks and game reserves which are the main tourist attractions. Wildlife competes for water and other resources with humans and livestock. In extreme cases, wild animals will eventually die because of lack of water and food. This affects tourist arrivals in the country.

The other aspect of climate change which affects tourism is floods which affect infrastructure in the tourist destinations. A typical example occurred in Masai Mara during the rains associated with El Niño in 2011/2012. The road networks were destroyed by the floods making the park inaccessible to tourists.

The increase in temperature observed in Kenya in recent years has affected major tourist attractions thus reducing the number of visitors. For instance, the melting of glaciers on Mount Kenya and coral bleaching along the Kenyan Indian Ocean are both attributed to rising temperatures.

In order to alleviate some of the challenges facing tourism due to climate change, the paper makes the following recommendations:

- 1) There is need to create an awareness of the impacts of climate change on tourism and vice versa.
- 2) Continue initiatives in place such as training staff on climate change adaptations and mitigation strategies as well as general ecosystem management.
- 3) Emphasize development which enhances environmental sustainability
- 4) Promote the use of alternative energy including geothermal, hydropower, wind, solar, and improved stoves.
- 5) Low carbon actions can be encouraged. These include solar water heating, the use of energy efficient lighting and appliances, efficient passenger vehicles, use of extensive mass transit and light railway system. Airlines should make it a priority to use a more stable and low life cycle carbon alternatives to minimize CO₂ emissions.
- 6) Afforestation programs should be expanded since forests act as natural sinks for carbon dioxide.
- 7) Harvest and preserve water for wild animals in the parks just as it is done for human and domestic animals.

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