

Climate Change Patterns And Development Of Tourism Industry In Uganda, A Case Study Of Murchison Falls National Park

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Abstract

Climate change posed significant challenges globally, affecting ecosystems and human activities. This study focused on understanding the impact of climate change on tourism development in Murchison Falls National Park, Uganda. The research investigates the causes, effects, and challenges associated with climate change in the park, aiming to provide insights for sustainable management and mitigation strategies. The causes of climate change, as identified by respondents, included infrastructure development, poverty, population growth, poor vegetation, animals, and research activities. The effects encompassed habitat destruction, limited tourist influx due to animal migration, and increased dependency of nearby communities on the park for food and income. Challenges faced by park management include inadequate pastures for animals, increased poaching, and the rising costs of implementing mitigation measures. The study adopted a case study approach, employing both quantitative and qualitative methods for data collection. A sample size of 40 respondents from various park departments was targeted using simple random sampling. Data was gathered through questionnaires, interviews, and observation, then analyzed thematically using SPSS. Findings indicated a consensus among respondents on the critical role of climate change in altering Murchison Falls National Park's ecosystem. The study concluded that urgent measures are needed to address the identified causes, effects, and challenges. Recommendations included reviewing and updating park governance, raising awareness, engaging local communities, implementing climate-resilient infrastructure, and strengthening wildlife conservation efforts. These proposals aim to safeguard the park's biodiversity, enhance community livelihoods, and ensure sustainable tourism in the face of a changing climate.

Key words: Climate change patterns and Tourism industry.

Background to the study

Climate change is causing several changes in temperature which in turn affects people socially and economically. Soon after the industrial revolution, Carbon dioxide (CO₂) gas has shown a sharp increasing trend, compared to the pre industrial era (Elifaazi et al., n.d.). This increased CO₂ is caused by a global greenhouse phenomenon (Christopher, 2022b). The shift in climate pattern and changing global temperature in response to the greenhouse phenomenon in general is termed as climate change (Derick et al., n.d.). The

Intergovernmental Panel on Climate Change (IPCC) (2014) defines climate change as “Any change in climate over time, whether due to natural variability or as a result of human activity”. Globally, observed major impacts of climate change are: floods, drought sea level changes. In 2016, the tourism and travel industry accounts for 10.2% of the GDP worldwide, and 6.6% of world's total export every year with 11.4% forecasted rise by 2027 (Frank et al., 2023). Tourist's destination choice and time of travel widely depend on climate (Ivan

Received: 11.12.2023

Accepted: 17.12.2023

Published on: 30.12.2023

& Florence, 2023; Ronald et al., n.d.). Due to the importance of this connection, the impacts of climate change to tourism are studied on a global scale, country scale, and destination type scale (like coastal areas, Islands, Ski areas and parks) (Bridget & Crispus, 2023). Studies suggested that the choice of destination, season and length of stay of a tourist is determined by various climate-related factors. Different methodologies are developed to simplify the climate indices and develop ecotourism (Wilber et al., 2023). Extreme weather events (sea level rise (SLR), flood, drought, wildfire, infectious disease, etc.) as a fallout can influence tourist activity as well as their safety (Lawrance & Alex, n.d.). Some of the major changes

due to the climate change studied in India are the rate of increase in minimum temperature (Tmin) was higher than the maximum temperature (Tmax) over the last decades of the 20th Century (Christopher, 2022a). The increase of Tmin can influence the hydrologic cycle and can affect future water resource management in India. One of the major rivers, the Mahanadi River Basin also received attention recently as a result of five consecutive floods. Other than major River basin including Brahmani, Ganga, Godavari, and Cauvery basins studied with Climate Change Scenario suggested that, the projected increased precipitation rate for these basins doesn't corresponds with increase in run-off or water flow downstream.

Problem Statement

Uganda has critically changed from its state of appearance right away from its previous years of stiff development, the situation has observingly changed the climate of the country (Ivan & Kazaara, 2023), statistical analysis done on climate of Uganda shows that temperatures have increased per decade in January and February (Derick et al., n.d.). Then why Uganda is in agony, majorly are human activities like deforestation, Farming, charcoal burning, lumbering, constriction processes and mining as oil mining in Murchison falls region. This has worsened the environmental conditions more especially in the park, the animals are perishing due to limited pastures, water banks draining lip, aquatic life disappearing, it is for the reason why the researcher seeks to establish the impact of climate change in Uganda and Murchison falls national park (Aisha et al., 2023).

Main objective

To find out the impact of climate change on tourism development in Murchison falls national park.

Specific objectives

1. To examine the causes of climate change in Murchison falls national pack.
2. To find out the effects of climate change to flora and fauna in Murchison falls national park.
3. To examine the mitigation strategies for climate change in Murchison falls national park

Research questions of the study.

1. What are the causes of climate change in Murchison falls national park?

Received: 11.12.2023

Accepted: 17.12.2023

Published on: 30.12.2023

2. What are the effects of climate change in Murchison falls national park?
3. What are the challenges of climate change to the management of Murchison falls nationalpark?

Methodology.

The topic employed a case study of Murchison falls national park and involved collecting empirical data, generally from the park. The case study provided rich details about climate change of predominantly both quantitative and qualitative nature. The case study provides information that created new experience about climate change. Under Quantitative design, the researcher used observation which is of major two category that is; experimental and general survey design analyzed climatic change and Tourism development as an inter-related variable whereas qualitative design involved the use of questionnaires and interviews to obtain information from the respondents. The study targeted 100 respondents in Murchison falls national park as a sampled frame. The categories of respondents were selected from Tourism department, Conservation department. The Sample size was obtained using the solvin's formula. The researcher targets a population of 100 respondents and the sample size shall be 40. The researcher employed simple random sampling. The data collection tools used by the researcher included open

ended questionnaires and interviews. Data was collected from both primary and secondary sources. Secondary data was got by extracting information regarding entrepreneur education and job creation by reading newspapers, journals, textbooks plus the already existing information on internet and magazines concerning climate change. Primary data was collected from the field through interviewing the respondents and use of observation methods. The researcher analyzed data using the Thematic Analysis (TA). This is the process of identifying patterns or themes within the data collected qualitatively (Braun& Clarke 2016). The commonest ideas from the respondents made up themes which helped to have a detailed understanding about the topic understudy. All analysis was performed under SPSS (Nelson et al., 2022). The validity of the instruments in this study was established by setting question items in the interview guide, self-administered questionnaires and checklist in conformity with the study's objectives.

Results.

Table 1: Shows the causes of climate change in Murchison falls national park.

Major causes of climatechange	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
High rates of poverty to nearby communities.	8	5		2	3

Population growth around Murchison falls national park.	8	6		3	2
Activities of research like in Bulidongo research Centre.	7	9	4	2	2
Animals like elephants, buffaloes that remove plantspecies	5	8	4	2	2
Poor vegetation types.	8	6	2	3	3
Infrastructure development like hotels. roads. ferry and lodges.	10	5		9	2

According to the respondents in Murchison falls national park, the majority strongly agreed that the development of infrastructures like roads, lodges, hotels, ferry, is major cause of climate change in the park, the majority were 10 who strongly agreed on this cause, followed by 8 respondents that strongly agreed on the poor vegetation types, 8 strongly agreed on population growth and other 8 on poverty in the nearby communities, 7 strongly agreed on researchactivities, and lastly 5 strongly agreed that animals also cause climate change (Christopher & Felex, 2022). The least numb of the respondents disagreed, others strongly agreed but the majority agreed and strongly agreed on the above as major causes of climate change in Murchison falls national park.

Table 4: The effects of climate change in Murchison falls national park.

Major effects of climate change	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree.
Soil changed where erosionand acidity led to poor vegetation.	5	6	4	3	2
Reduction in water table of the falls and wetlands.	6	4	2	3	2

Loss of unique plant species and insects like tse-tse flies.	7	8	2	4	3
Habitat destruction like aquatic life when swamps dry.	8	10	3	3	2
Climate change limited tourists due to animal migration to new territories.	8	6	4	3	
Forced nearby communities to depend on food and income					

Source: Primary Data 2022.

From the respondents in Murchison falls national park, the majority of the respondents strongly agreed that habitat destruction like aquatic life when swamps dry, communities forced to depend on animals for food and income, then limited tourists due to animal migration to new territories are the major effects of climate change in the park as strongly agreed by 24 respondents, followed by loss of unique plant species and insects as strongly agreed by 7 respondents, 6 strongly agreed on the reduction of water table and lastly 5 strongly agreed on the soil changed where erosion and acidity led to poor vegetation. The least number of the respondents disagreed, others strongly disagreed but the majority strongly agreed and agreed on the above effects were the major causes of the climate change in the park (Nicholas et al., 2023).

The challenges of climate change on management of Murchison falls national park.

Table 5: Challenges of climate change.

Major challenges of climate change.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
In adequate pastures for animals	7	5	3	3	2
Death of animals	5	6	3	3	2
Inaccessibility of some animals	8	10	2	4	3
Climate change increase poaching	10	8	2	3	2

Animals fall sick, which cost for vaccination.	6	4	3	3	2
Costly to implement mitigation measures.	8	6		4	3

Sources: Primary Data 2022.

According to the respondents in Murchison falls national park, the majority strongly agreed that increase of poaching activities is major climate change challenge to the management of the park as 10 respondents strongly agreed, this was followed by 8 respondents who strongly agreed that there is inaccessibility of animals as a challenge to the park management, 7 respondents strongly agreed on the inadequate pastures of animals, other 8 strongly agreed that there is a challenge of costs to implement mitigation measures, 6 strongly agreed on the animals fill sick which cost for vaccination and 5 strongly agreed on the death of the animal in the park. The least number of the respondents disagreed and strongly disagreed but the majority of the respondents strongly agreed and agreed on the above challenges as the major in Murchison falls national park while as others were neutral.

Summary of the findings

The study revealed that climate change is real in Murchison falls national park, according to the respondents in the park, the majority strongly agreed that infrastructure development, poverty, animals, activities of research, population growth and high rate of poverty are the major causes of climate change in the park. However, the least number of the respondents disagreed, others strongly agreed but the majority strongly agreed and agreed on the above as major to occur climate change in the park. The study revealed, that the majority of the respondents suggested that habitat destruction limited tourists due to animal migration, and forced communities to depend on the park as source of food and income were the major effects of climate change in Murchison falls national park this is where by the swamps dry and aquatic life loose habitat, animals migrate to new territories which limits tourists, the near communities are also forced to depend on the animals as food and income since poverty and famine are high around the park. The study revealed that the majority of the respondents in Murchison falls national park expressed that increased climate change in the park led to inadequate pastures for animals, high costs to implement mitigations measures, death of animals which are not resistant to climate change conditions, inaccessibility of some animals, increased poaching activities and animals fall sick which cost for vaccination.

Conclusion

This study therefore concluded that respondents have given the overall views to each criterion in the study. Most of the respondents believe that infrastructure development, poverty, population growth, poor vegetation, animals and research activities are major causes of climate change in Murchison falls national park. More so, tourists have been in Murchison falls National Parks though there are increased climate change harsh conditions like heavy sunshine in months of Jun and

Received: 11.12.2023

Accepted: 17.12.2023

Published on: 30.12.2023

July, but if not reduced in time, the number of tourists will end up decreasing since climate change destroy habitants of animals and destruct plant and animal species which greatly attract tourists in Murchison falls national park.

Recommendation

There is a need to provide and review programme to the individuals and update law, policies, and regulations that govern Murchison falls National Parks in order to increase standards of the Park and reduce climate change both inside and around Murchison falls National Park.

The Park area Management should create awareness, train individuals and ensure profit sharing and creating job opportunities to the individuals around Murchison falls National Parks in order to reduce climate change.

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