



**THE EFFECT OF CLIMATE CHANGE ON SUSTAINABLE TOURISM: A PERCEPTION
OF THE TOURISM INDUSTRY IN UGANDA**

Submitted by

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DECLARATION

This project is my ORIGINAL work and has not been presented for a degree in any other University.

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ABSTRACT

Climate change involves variations in temperature and other weather conditions in a given environment over a period of time. Climate change and sustainable tourism are correlated, and both have drastic effect on each other. Poor environmental practices within the tourism industry can alter climatic conditions and result into changes like global warming. The general objective for this study was to establish the perceptions of tourism industry on the effect of climate change on sustainable tourism in Uganda. The study applied a descriptive design, and the methodology of data collection was based on both questionnaires and interviews. The population for the study was based on stakeholders of the tourism industry in the country using a conceived sampling design with the sample size of 100 members consisting of government officials, tour operators, guides, and hoteliers. The findings indicated that the perception of the tourism industry on climatic changes that affect sustainable tourism in Uganda is that they are majorly caused by deforestation and ignorance concerning the diverse effects of climate change. Other causes include agricultural practices, air pollution, and natural changes. The study also determined the perception of the industry regarding the effects of climate change on Uganda as a tourism destination. These included difficulty in transportation, property destruction, wildlife interruption, livelihoods of the host communities and influenced quality of destinations, among others. The final objective of this study was to analyse the initiatives to mitigate the effects of climate change on tourism. A number of measures were suggested by the respondents of the study. Among them were implementation of policies concerning climate and environmental protection, eco-friendly tourism activities, prioritizing host communities, consulting climate experts and sensitization of both locals and foreigners. The findings of this study also indicate that the government has not played its role as a major stakeholder in the matter considering the fact that policies are installed but not appropriately managed in order to reflect their purpose. It is also important to note that other stakeholders depend on governmental approval to ensure sustainable tourism and work towards mitigating the effects of climate change in the country.

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CHAPTER ONE

INTRODUCTION

1.1. Background Information

Climate change involves variations in temperature and other weather conditions in a given environment over a period of time (Trawöger, 2014). Research indicates that it has a major impact on various sectors of the economy, including the tourism industry (Torres-Bagur, Ribas-Palom, & Vila-Subirós, 2019). The negative impacts of climate can be both direct and indirect, but all require the installation of initiatives to be mitigated (Irina, Surugiu, Surugiu, & Frenț, 2014). Many researchers have provided a different knowledge set and motivation to the other stakeholders like hotel owners who have been able to evaluate likely strategies and limits to tackle climate change effects (Morrison & Pickering, 2013).

There are various issues caused by climate change affecting the hotel and tourism industry including the destruction of animal habitats, variation in water levels, planning issues as a result of unreliable forecasts, high temperatures and crop damage, among others (Orlove, Roncoli, Kabugo, & Majugu, 2010). Countries in Europe, North America, and others that experience winter, activities like skiing, snowboarding and other snow sports are affected by ongoing warming trend. This is evident in the Alpine regions of Switzerland, Italy, France and Austria (Jantarasami, Lawler, & Thomas, 2010). According to (Trawöger, 2014), the focus on snow-related activities for tourism in the Alpine region has made Austria prone to the cons of climate change. However, in countries that experience warmer temperatures, like those in East Africa, there are several pros and cons of climate change concerning tourist activities in Africa (Gravari-barbas, 2019).

Climate change in the world is mainly fuelled by human activities (Schuldt, Konrath, & Schwarz, 2011). Especially pollution, through the disposal of waste in form of non-biodegradable materials and deforestation (Orlove et al., 2010). This change is sometimes referred to as global warming and occurs as a result of poor environmental management systems. The purpose of these systems is to coordinate people, policies, plans, review mechanisms, and procedures to effectively manage environmental issues including climate change. However, it has been noted that climate change adaptation is more often discussed than pursued and that institutional barriers within agencies limit what can be accomplished (Jantarasami et al., 2010).

Tourism activities have significantly contributed to this change. For example, tour cruise ships dispose of wastes into water bodies like the Indian and Pacific oceans. In Uganda, boat cruises on Lake Victoria have encouraged this as well (Hughes, Greenbaum, & Behangana, 2014). Another activity is deforestation that involves the clearing of land for the development of facilities such as hotels and theme parks resulting in the depletion of flora and fauna (Sandom et al., 2020). Sports tourism activities contribute as well and this is through ventures like diving and hiking that cause erosion and damage to

fragile environments like coral reefs that influence the climate of a given region (Morrison & Pickering, 2013).

Climate change has affected tourism businesses and communities in various ways. The change involves variabilities in weather conditions in form of high and low temperatures. Extremes of both can be disastrous in various aspects including tourism (Matczak, 2011). For example, in the U.S, there have been cases of the extreme rise of temperatures and this has led to increases in the frequency and extent of forest fires, insect outbreaks and reduced snowpack, glaciers, permafrost, and sea ice (Jantarasami et al., 2010). Forest fires lead to loss of animal life as well as the destruction of recreational spots for tourists that indulge in activities like nature walks and birding. Insect outbreaks are harmful to both animal and human life, whereas the effect on snow, frost and ice is that winter tourism, especially snow-based activities (Trawöger, 2014) has to be maintained by artificial means which is less authentic.

In Uganda, floods and droughts are extreme climate events that have always caused substantial damage to the environment, economic losses in various sectors, damage to infrastructure, loss of life and/or livelihood (Ogwang & Tan, 2012). Many hotels located in areas of low elevation and on the shores of Lake Victoria have been flooded including Serena Kigo, Speke Resort Munyonyo and the Ruboni Community Hotel in Bwindi Impenetrable National Park (Hughes et al., 2014). Also, some animal habitats have been affected and this has threatened animal life which affects wildlife tourism in the long run (Jantarasami et al., 2010). For example, a chimpanzee orphanage, the Ngamba Island on Lake Victoria in Uganda experiences flooding. The floods in the country are due to a rise in seawater levels that is caused by heavy rainfall (Ampaire et al., 2017).

Many adaptation strategies are being implemented at different tourism destinations all over the world. Areas that have experienced the destruction of animal habitats as a result of climate change have resorted to translocation of the species with a greater chance of survival to new areas where they did not exist before (Jantarasami et al., 2010). However, it is difficult to install measurements to curb the disastrous effects of climate change without studying the data on past trends. It is therefore very important to have a good understanding of previous climate events and their impacts to make reliable and accurate forecasts to minimize the impact of these extreme occurrences of climate (Ogwang & Tan, 2012).

According to (Ampaire et al., 2017), even though there has been considerable progress towards building governance systems for climate change adaptation in Africa, implementation levels are still low and hence limiting positive outcomes. Also, differences in the perception and governance of adaptation to climate change and extreme weather events are related to sets of beliefs of different people and their sense of understanding the environment (Matczak, 2011). The mitigation process for these issues may involve various steps that include, identifying the causes of climate change, analysing its effect,

researching to get a better understanding, educating stakeholders like locals and tourists, and installing solutions to the negative effects (Trawöger, 2014).

In many African countries including Uganda, there is poor planning concerning environmental measures. Despite efforts at the national level, very few plans have been put into action at local levels even after being launched (Jantarasami et al., 2010). Therefore, solutions require a combined effort from various sectors and application of technological, economic, institutional, and policy interventions across the impact pathway (Ampaire et al., 2017). The purpose of this study is to establish the perceptions of the hotel industry on the effect of climate change on sustainable tourism in Uganda.

1.2. Problem Statement

Climate change and sustainable tourism are correlated and both have drastic effects on each other (Torres-Bagur et al., 2019). The basic criteria for sustainable tourism is characterised by sufficient profits by operators, customer satisfaction in terms of experience, involvement of the host community and minimal negative impact on the environment (Mkono, 2019). Therefore, one of the main elements of sustainable tourism is impact on the environment.

However, poor environmental practices within the tourism industry can alter climatic conditions and result into changes like global warming. Such practices include pollution of water bodies by water vessels like cruise ships and dumping of toxic wastes by hotels and tourists, clearance of land which depletes vegetation cover, deforestation and continuous activities like hiking and diving in coastal areas that result into erosion and damage of fragile environments after a long period of time (Mkono, 2019). These activities eventually result into the effects of climate change which include associated dry spells, drought, and storm surges in extreme conditions of rising and lowering temperatures respectively, erosion and landslides due to environmental degradation. Overtime the tourism industry ends up being affected by conditions it led to. This is evident in Tunisia where excessively warm temperatures at times stop tourists from sightseeing because it is too hot and uncomfortable. There is also reduction of vegetation which is a habitat and provides food for wildlife in Kruger National Park. As a result of drought, there is a reduction of rain leading to bird migration thus affecting bird watching in Botswana as well as wildlife migration patterns in Kenya and Tanzania like the Wildebeest migration. Besides, there is also a threat of sea-level rise in Kenya and Uganda especially on Lake Victoria that has led to floods in surrounding areas (Ogwang & Tan, 2012) including hotels like Serena Kigo.

Climate change in Uganda is partly influenced by tourism and vice-versa (Hughes et al., 2014). However, the main issue is poor environmental management by stakeholders such as tour operators, hoteliers, locals, and the tourists themselves. These are all involved in poor practices within the industry that affect climate change. To curb the diverse effects it is, therefore, necessary to install climate change adaptation strategies including installation of an environmental management strategy (Ampaire et al., 2017). This involves policies, planning, implementation, operation, corrective action and reviews of

environment-related practices (Sutawa, 2012). It also does not only help to reduce the impacts on climate and the environment but integrates environmental programs into the mission, helps maintain compliance and increases the involvement of the stakeholders.

Notably, the perception of the tourism industry regarding the effects of climate change on sustainable tourism has to be incorporated in the effort to install adaptation strategies. This involves finding out the industry's take on the causes and effects of climate change, comparison to other expert opinions like meteorologists (Orlove et al., 2010), analysing the initiatives that have been put in place to mitigate the effects of climate change on tourism and coming up with more effective adaptation strategies. The current state of climate change in Uganda is that its risks have not been efficiently addressed and conservation planning is insufficient, resulting into the natural environment and tourism activities being affected and this will worsen if the situation is not addressed as global climate is expected to continuously change (Okurut, Bosco, Okullo, Waiswa, & Muyizzi, 2020).

1.3. General Objective

To establish the perceptions of the tourism industry on the effect of climate change on sustainable tourism in Uganda.

1.4. Specific Objectives

- i. To establish the perception of the tourism industry on climatic changes that affect sustainable tourism in Uganda.
- ii. To determine the perception of the tourism industry on the effect of climate change on Uganda as a tourism destination.
- iii. To analyse the initiatives to mitigate the effect of climate change on tourism in Uganda.

1.5. Research Questions

- i. What is the perception of the tourism industry on climate change variabilities that affect sustainable tourism in Uganda?
- ii. How does the tourism industry perceive the effect of climate change on Uganda as a tourism destination?
- iii. Which initiatives are being put in place to mitigate the effect of climate change on tourism in Uganda?

1.6. Justification

It is important to study the effect of climate change on sustainable tourism to effectively come up with adaptation strategies and may be effective environmental management approaches. At a time where global warming is on a high, the environment is at risk and this necessitates preparedness by both the tourism sector and others including agriculture, economy, and transport, among others. Therefore the perspectives of stakeholders of these sectors are crucial for understanding, planning and implementation of matters concerning the study (Jantarasami et al., 2010).

Currently, some tourism activities in Uganda are affected by climate change including flooding of major tourist sites like the Ngamba Island Chimpanzee Orphanage and accommodation facilities like Serena Kigo hotel as a result of sea level rise on Lake Victoria. Towns like Kasese, a major tourist destination in the country has also been affected by lives and property being destroyed. This study is aimed at capturing perspectives on disaster preparedness for such occurrences and identifying the loopholes in the mitigation measures that have been put in place as a responsive strategy.

Focus on the perspectives of the tourism industry comprised of hoteliers, tour operators and guides among others will help in the establishment of the causes, effects, challenges and strategies to deal with climate change and sustainable tourism (Matczak, 2011) globally and particularly in Uganda.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical Review

A theory is an idea that has not been proved, whereas a scientific theory is an idea that has been observed and widely accepted (Gould, 2013). It is important to study existing theories concerning the causes and effects of climate changes as well as perceptions on these changes and establish the relationship between these theories. This involves determining the extent to which they have been investigated and applied to various activities including those practiced by the tourism industry. These theories include, the theory of change, scientific theory of change and the cultural theory of risk for climate change adaptation.

2.1.1. Theory of change

One of the greatest challenges for stakeholders is that there is no single definition for this theory and therefore it can mean different things to different people (Pringle & Thomas, 2019). For the case of this study, the theory of change can be defined as a model of expectation of change towards environmental sustainability which influences climate. It consists of three main components and these include; perceived environmental benefits and burden, the causal pathways of environmental and social injustice, and visions for positive change (Hornik, Cutts, & Greenlee, 2016).

The theory relates to this study in various ways through its components. The expectation of change towards environmental sustainability entails the perceptions of stakeholders and these perceptions help to influence climate as decisions are made based on them. For example, environmental benefits can be achieved through the application of sustainable practices (Stange & Brown, 2010). Practices should contribute to social, cultural, economic and most importantly for this case environmental development (Lufumpa, Nyarako, & Papitto, 2018). They include reforestation and afforestation, supporting and incorporating traditional laws and institutions regarding land, water and forest resource use and management into formal systems. These practices are put in place to fight the burden of environmental damage on climate caused by injustices such as pollution and deforestation as well as negligence, bureaucracy and corruption by responsible government bodies (Pringle & Thomas, 2019).

This theory consists of four parts, namely; rigorous scientific testing, prediction and explanation, consistency and parsimony (Gould, 2013). The National Institutes of Health define scientific rigor as the strict application of the scientific method to ensure robust and unbiased experimental design, methodology, analysis, interpretation and reporting of results (Hofseth, 2018). Whereas parsimony refers to the effective utilisation of resources on a specified project. This theory therefore involves the systematic study of climate so as to predict future changes, determining causes of the changes and examining the methods of adaptation towards it as well as the consistency of stakeholders and the rate of parsimony in terms of environmental sustainability.

The above theory is directly related to this study because it helps to determine the causes and effects of climate changes. These are further used to come up with strategies of adaptation to the adverse effects of the changes. In addition, scientific theory of climate change also rates the consistency of stakeholder involvement in the matter. For example, Uganda's vision 2040 strategy acknowledges climate change as a challenge and states a number of strategies (Mkono, 2019). These include to mitigate it such as; development of existing policies like the Uganda Forestry Policy 2001 and National Policy for the Conservation and Management of Wetland Resources 1995, strengthening coordination of systems both at national and local levels; and capacity building of local communities through local government representatives (Ampaire et al., 2017).

2.1.2. The cultural theory of risk for climate change adaptation

People's perceptions, including those on climate change and its effects or risk are influenced by social cultural factors like beliefs and myths based on nature. Cultural theory of risk helps to clarify how social organizations and institutional cultures frame risks differently and the way totally different framings produce several "voices" regarding temperature and or climate change risks and responses in various public forums (McNeeley & Lazrus, 2014). Unfortunately, many people are still unaware of human-caused adverse effects on climate change. This is why sensitization is necessary especially among the youth as they are able to spread awareness across generations. It is also an opportunity to create a culture of urban environmental stewardship and civic engagement and respond to historically embedded patterns of environmental injustices that affect the climate and economies (Hornik et al., 2016).

The cultural theory is therefore applicable in determining how the views of organizations, cultures and individual groups differ regarding climate change and its effect on sustainable tourism. This is evident because climate change impacts and the performance of adaption intervention can be affected by location specific social and economic systems, such as property rights structures and specific norms and institutions (Matczak, 2011). One of the adaptation strategies to deal with this is investing in human capacity development, through use of decentralization which was introduced in Uganda in the mid-1990s, to quantify socio-economic impacts, and use of participatory and more inclusive approaches in multi scale adaptation planning (Ampaire et al., 2017). In addition, people perceive climate change risk influenced by social interactions and cultural beliefs about society and nature, just like the rural Alaska native communities believe that humans are in an exceedingly delicate balance with nature, and this pattern of mistreating nature results in 'bad luck' in harvest and even the likelihood that starvation or death will occur. Therefore, food security and overall human well-being are predicated on correct, moral behaviour toward nature (McNeeley & Lazrus, 2014).

2.2. Empirical Review

This section focuses on the factors that lead to climate change, its effects on the sustainability of the tourism industry and an evaluation of the perception of the industry on the climatic changes and adaption strategies.

2.2.1. Causes of climate change

Climatic change often referred to as global warming predominantly occurs as a result of man-made gases, mainly carbon dioxide and has been experienced for the past 50 years (Bast, 2013). The carbon dioxide and other greenhouse gases including water vapor, methane, nitrous oxides, and chlorofluorocarbons (CFCs), are released into the atmosphere through burning of fossil fuels such as oil and coal (NASA/Goddard Space Flight Center Conceptual Image Lab & Mann, 2014).

There are a number of other ongoing changes that could be fuelling the global warming, and these are mainly based on human activities. One of them is agricultural practices such as the use of chemicals like nitrogen fertilizers and pesticides in the production of crops and livestock resulting into water pollution. The chemicals also contribute to global greenhouse gas emissions, for example, the nitrogen fertilizers are a major anthropogenic source of nitrous oxide (Erbas, 2017). In Uganda, when heavy rains are experienced, surface overflows occur, as well as fluid erosion and the mobilization of agricultural fertilizers, pesticides, manure and animal waste into surface water resources ends up affecting stream and ecosystems health (Nsubuga & Rautenbach, 2018). The depletion of these water resources like Lake Victoria results into global warming due to the increased levels of nutrients in the water that eventually vaporize into the atmosphere. In addition to use of fertilizers, slash-burn agriculture is responsible for the loss of around 50 acres of land every hour worldwide and although done intentionally, can unintentionally spread of land and forests resulting into destruction of plant cover and forest canopies which exposes them to sunlight and smoke hanging over the land cover thus suppressing rainfall formation (Gorte & Sheikh, 2010).

Another human activity leading to climate change is deforestation. The activity is associated with increased atmospheric carbon dioxide and alterations to the surface energy and mass balances that can lead to local and global climate changes (Longobardi, Montenegro, Beltrami, & Eby, 2016). It involves the conversion of non-agricultural land such as rain forests into plantations for commercial crop growth by cutting down trees is dangerous. In Europe, the cutting down of trees in addition to merging of fields into large plots for the convenience of land cultivation has proven to be one of the main causes of weather-related stressors, making extremes of droughts and soil desertification more severe (Matczak, 2011). In Uganda, on the other hand, people are poor and they resort to cooking using charcoal as the cheapest means and with increased populations, the trees have to be cut down to have enough charcoal for people's livelihoods (Komukama, 2018).

There are also investors in the country considering clearing forests to make room for plantations and crop production factories. Conservation authorities have applied to the forest district authorities to be granted permission to conserve some of these areas, like Kafuga forest but the politicians want it for tea growing arguing that tea shall contribute more to poverty reduction than conservation will (Nyakaana, Ahebwa, & Gwokyalya, 2019).

Air pollution through factories that deal in the production of metallic, chemical, plastic, and mineral materials, household waste burning and tourism activities like travel using vehicles, air crafts and water vessels. These also produce carbon dioxide that gets trapped in the atmosphere resulting into rising in temperatures. Many areas in the world are baring an environmental burden on this kind of pollution. In Kampala, the urban capital of Uganda, the majority of the population burn their waste which includes a lot of plastics and results in toxic smoke releasing hazardous emissions since there is no mandatory garbage collecting system (Schwander et al., 2014). Air travel is another one of the major contributors (Komukama, 2018) and this is evident because carbon emissions from flights are expected to double in the next 25 years due to the growth of the tourism industry whose success greatly depends on air transportation (Gravari-barbas, 2019).

Aside from human activities, some natural changes are responsible for climate change as well. These changes include volcanic eruptions, earth orbital changes and solar variations. With volcanic eruptions, there is a mixed warming and cooling effect of the gases produced by explosion. For example, the carbon dioxide produced leads to warming, whereas the volcanic ash and dust with sulphur dioxide reflect sunlight away from the earth resulting into cooling. The volcanic ash also disrupts growth of vegetation cover in surrounding areas which affects ecosystems and climate patterns and this is evident near the Semeru, Bromo and Welirang mountains of Romania (Emilia, Zeeland, Emilia, & Kingdom, n.d.). Also, since atmospheric electrical potential moderates cloud formation, large eruptions may have abrupt effects on climate through radiative forces caused by the release of significant quantities of charged ash into the ionosphere, resulting in disturbance or collapse of the global electrical circuit (Genge, 2018). Solar variations, on the other hand, involve movements of the sun and heat levels which are natural changes resulting into the depletion of ozone layer and temperature increases as well as the melting of glaciers (Komukama, 2018).

There is also still ignorance among some people in Uganda, regarding the effects of these human activities on climate change and environmental conservation. People have little knowledge about climate change originating from air travel and also possess negative attitudes concerning air travel reductions in order to mitigate climate change and these views are also enhanced by unrealistic cultural values (Komukama, 2018).

2.2.2. Effect of climatic changes on the tourism industry

The effect of climate on sustainability of tourism can be both positive and negative but varies depending on the type of establishment and geographical location (Torres-Bagur et al., 2019). However, the positive influence is evidently outweighed by the negative. A number of issues result from climate change and these include excessively warm temperatures and associated dry spells, affected wildlife migration patterns, threat of sea level rise. These affect the tourism industry both directly and indirectly. For example, extreme weather events which are attributed to climate change destroy tourism infrastructure and alters the attractiveness of tourist destinations (Dube & Nhamo, 2020).

Floods are one of the disastrous results of climate change affecting the industry. In Africa, many countries have been hit, for example, the disaster in the northern Algeria resulted in about 800 deaths and economic loss of about \$400 million (Emilia et al., n.d.). Whereas in South Africa, The year 2000, 2012 and 2013 flood incidents are reported to have caused one of the most expensive damages, as these floods resulted in the extensive up-to-the-roof flooding of a school in the Skukuza Camp, leaving tourist and staff accommodation at the Camp destroyed as well (Dube & Nhamo, 2020).

In addition to the above, severe rainfall events disrupt transport by making some roads especially in parks and to accommodation facilities inaccessible. For example, one of the lodges in Kruger National Park with a head office in Johannesburg, where it gets food supplies using road transport, have to rely on airlifting supplies during flood incidents which is very expensive (Dube & Nhamo, 2020).

In Uganda, one of the areas that usually suffers due to flooding is Kasese in Western Uganda, a major tourist destination for the country. The floods are a result of heavy rains coupled with human activity. For example, the slopes of Mt. Rwenzori suffered flash floods which were caused by diverging the pathway of river Nyamwamba to build hospital infrastructure during heavy rain season (Katutu, Nyamweha, Kabaseke, Koojo, & Kervyn, 2019). In addition, variations in water levels coupled with the low lying nature of areas on the shores of Lake Victoria have also resulted into flooding during heavy rains (Ampaire et al., 2017). Tourist accommodation facilities such as Serena Kigo and Speke Resort Munyonyo on the shores of the lake and the Ruboni Community Hotel in Bwindi Impenetrable National Park have also been affected with destruction of property and buildings by the floods (Hughes et al., 2014).

High temperatures also rise as a result of climate change. Although Uganda's temperatures are predominantly determined by heat emission from the earth's surface because of its geo-location, that is, on the equator (Nsubuga & Rautenbach, 2018), climate pattern changes also contribute. One of the activities that leads to rising temperatures is poor waste management that exposes toxic material into the environment. For example, through chemical treatment which involves heating the waste and mixing it with reagents (Godswill, 2017).

A number of tourist destinations have noticeably warm temperatures due to this factor. For example, in Tunisia the heat gets too hot and uncomfortable for sightseeing.

Drought and extreme heat have also led to the loss of flora and fauna and infrastructure that supports tourism and has disrupted tourists' activities like in the Kruger National Park of South Africa (Dube & Nhamo, 2020). There are also indications that drought has become more frequent in Uganda as a result of climate changes, for example, the Karamoja region located in the north-east of the country, along the border with Kenya and Sudan (Nsubuga & Rautenbach, 2018). Kasese is also experiencing this issue coupled with the fact that it is located in lee ward side of the Rwenzori mountain and in close proximity to the equator so this contributes to the severity of droughts (Katutu et al., 2019). It is also attributed to human activities like bush burning that involve removal of vegetation cover that absorbs water thus altering the climate patterns. Wildlife is vulnerable to the harsh conditions of drought, this affects tourism in a way that during such seasons the animals are less visible during the daytime since they are sheltered from heat or in water cooling off (Katutu et al., 2019).

Landslides are attributed to heavy rains and triggered by loosening soil through cultivation and road construction along slopes, and with this in states of earthquake lines of weakness are created causing sheets of land to slide off (Katutu et al., 2019). The dangerous events affect tourism sites and infrastructure such as airports and hotels, and lead to increased insurance costs, both for individual tourists and for tourism businesses (Gravari-barbas, 2019). The Dominican Republic and Haiti are some of the countries that have experienced this (Gorte & Sheikh, 2010). Major Ugandan tourist destination, the inhabited zone of the Rwenzori mountains is affected by landslides, frequently causing loss of life, damage to infrastructure and loss of livelihood (Liesbet et al., 2018).

Wildlife migration due to climate change. As a result of rising temperatures and changes in amount and pattern of rainfall in East Africa, both ecosystems and biodiversity conservation have been affected , for example, green grass intake and protein content both play a key role in determining the movement and distribution patterns of wildebeest migration in the Serengeti National Park of Tanzania (Selemani & Sangeda, 2012). In the Bwindi Impenetrable National Park of Uganda, extreme precipitations and landslides are clearly on the rise and gorillas may be at risk from changes in vegetation affecting food availability causing them to move (Gravari-barbas, 2019). This affects the tourism industry in Uganda as its major attraction is wildlife with gorillas being the top seller (Nyakaana et al., 2019).

Climate change can also impact the safety, quality of experience and number of visitors to sites, and the tourism sector itself is affected and threatened by climate change (Gravari-barbas, 2019). This is evident in rainy situations where clients assume that Uganda being a tropical country, does not experience cold periods and pack light clothing. Its tour operators' duty to inform them on such issues.

2.2.3. Mitigation measures to the effects of climate changes

The tourism industry has come up with various measures to mitigate the effects of climate changes on sustainability. In East Africa, various policies have been installed wholly as a region and individually by countries like Uganda, to effectively manage climate changes and create awareness based on the negative effects. The East African climate change policy stresses climate change adaptation and mitigation of emissions by members of the sub-regional member states, whereas the Ugandan national climate change policy is based on adaptation, mitigation, research and observation which includes monitoring, detection, attribution, and prediction to promote effective implementation (Okaka & Nagasha, 2018). These policies are in line with some strategies which are necessary for effective sustainability of the environment as well as tourism activities in the country. The strategies include direct community involvement in tourism enterprises like craft businesses, outreach programs for protected areas like national parks and partnerships between communities, private and public organisations (Nyakaana et al., 2019).

Community involvement as a form of sustainable tourism at a local level can help make World Heritage sites like the Bwindi Impenetrable National Park more resilient to climate change. Despite the fact that there aren't many scientific studies on direct climate risks in this area, extreme precipitations and landslides are clearly on the increase. And this can be achieved through development of a flexible and adaptive community based conservation system involving a diverse set of stakeholders ranging from community level to region levels (Selemani & Sangeda, 2012). For example, the Ugandan NGO, Conservation Through Public Health, is working to increase community health and promote sustainable tourism and agriculture at the park, one of three Africa forests where mountain gorillas still survive by training volunteers from local communities in avoiding human-gorilla conflicts, since the forest is surrounded by densely populated cultivated lands (Gravari-barbas, 2019). There is also Nkuringo Conservation and Community Development Foundation on the Southern Fringes of the same park, Bwindi National Park in Kisoro District, which adopted the Community-Based Natural Resource Management model where communities benefit both financially and socially from conservation and both human beings and wildlife benefit (Nyakaana et al., 2019).

Prioritizing climate change through proper planning. This is administered through the installation of measures to avoid and reduce the adverse effects of climate on tourism and other sectors. For example, In 2013 and 2014, South Africa's government increased the budget allocation to its national parks as part of its infrastructural investment spending plan and this money was to be used for the restoration of damages caused by persistent flooding as well as infrastructural maintenance and upgrade, to meet the required climate-resilient standards (Dube & Nhamo, 2020).

2.2.4. Perception on climatic change adaptation strategies

To understand the effects of climate change on sustainable tourism, stakeholders including the hotel industry must be involved. Given the vulnerability of national parks and other tourism assets to climate change, there is a further need for increased efforts in adapting to and mitigating climate change. One way to achieve this is through environmental conservation practices. Tourists being core stakeholders in the matter, should be involved in making the necessary changes for the efforts to become a (Dube & Nhamo, 2020)

Tourism operation businesses in the country such as hotels, tour companies and restaurants have a great influence on how the industry is managed and therefore they need to ensure that tourism is developed in line with the Sustainable Development Goals and various investments need to be made so as mitigate and adapt to a changing climate (Gravari-barbas, 2019). For example, hotels and restaurants should avoid the use of charcoal for cooking and tour companies should minimize vehicle tours and encourage community walks and forest trails as activities for their clients.

Airlines provide the benefit of swiftness for air travellers hence many people are not willing to give up the mode of transport, even for shorter distances, regardless of their awareness concerning the climate change effects associated to it. Also, the public perceive that airlines already have measures of climate change like using biofuels and therefore they do not need to input their effort towards the same (Komukama, 2018).

Technological innovations to promote conservation have increased adaptation options in various areas such as; freshwater resources, efficient management of existing supplies and infrastructure, institutional arrangements to promote conservation, improved monitoring and forecasting systems for floods and droughts through construction and upgrade of watersheds and reservoirs (Okaka & Nagasha, 2018). However, the costs involved in these activities are high, meaning conservation fees must be raised (Dube & Nhamo, 2020).

In Uganda, according to (Nyakaana et al., 2019), the successful implementation of Community Based Natural Resource Management requires changes at the national level through policies and legal framework to establish an enabling environment to make it attractive to local communities, whereas at the intermediate level, there is need for decentralization of a natural resource management authority to elected local governments, line agencies, and authorizing districts to delegate management authority to local communities and at local level, this management should create economic incentives for managing and conserving the resources where community members experience net gains.

2.2.5. Factors affecting adaptation to climate change by stakeholders in the tourism industry

Lack of capital is a major issue, especially for the local communities. Coupled with low levels of entrepreneurship and marketing skills, attempts to gain profits from sustainable tourism related activities yield lower benefits as compared to those of their foreign company competitors (Mkono, 2019). For example, the use of solar power for electricity in local hotels and restaurants is expensive causing them to resort to use of gas emitting generators and charcoal stove cooking as a cheaper alternative in the absence of hydroelectric power.

In addition to the above, many Ugandans are aware that deforestation contributes to the adverse effects of climate change but the booming wood selling business is beneficial especially to the uneducated and as result more than a quarter of Ugandan citizens are self-employed in logging of trees since the business doesn't need a lot of capital hence many trees are being cut without replacement (Komukama, 2018).

Quality of destinations in terms of climate adaption practices in line with sustainability is not up to expected or desired standards and this is partly due to lack of capital as well (Komukama, 2018).. For example, there is need for water sanitation and limits in hotel rooms as well as universal switches for lighting (Gravari-barbas, 2019). Minimal use of water will reduce the effect on water bodies like Lake Victoria and George, whereas the regulation on lights will help curb the issue of high electricity bills that prompt reliance to less sustainable means. Also, the materials used in the construction of tourism facilities like lodge cottages and food packaging in restaurants can be environmentally friendly (Gravari-barbas, 2019).

The livelihoods of some people depend on natural resources responsible for climate processes (Emilia et al., n.d.). For example, forests trees are cut down to obtain wood that is sold for income or used for cooking in local households, and this affects the distribution of biodiversity due to changes in rainfall patterns, water availability and temperature. Eventually, the tourism industry is affected as animal habitats are destroyed in the process, limiting activities like forest walks, hiking and birding that are facilitated by these natural resources.

Gaps in policies are evident as there is still ignorance in some communities, lack of money-making alternatives and reluctance by the responsible authorities. This shows that government's encouragement of voluntary attitude change is unsuccessful and therefore there is need to formulate policies to mitigate climate change in a clearer and more relatable way (Komukama, 2018).

2.3. Conceptual Framework

The conceptual framework is an illustration of the relationship between variables of interest in the study (**Figure 1**). These variables include causes of climate change, its effect on sustainability of tourism, the adaption strategies and perception of the industry.

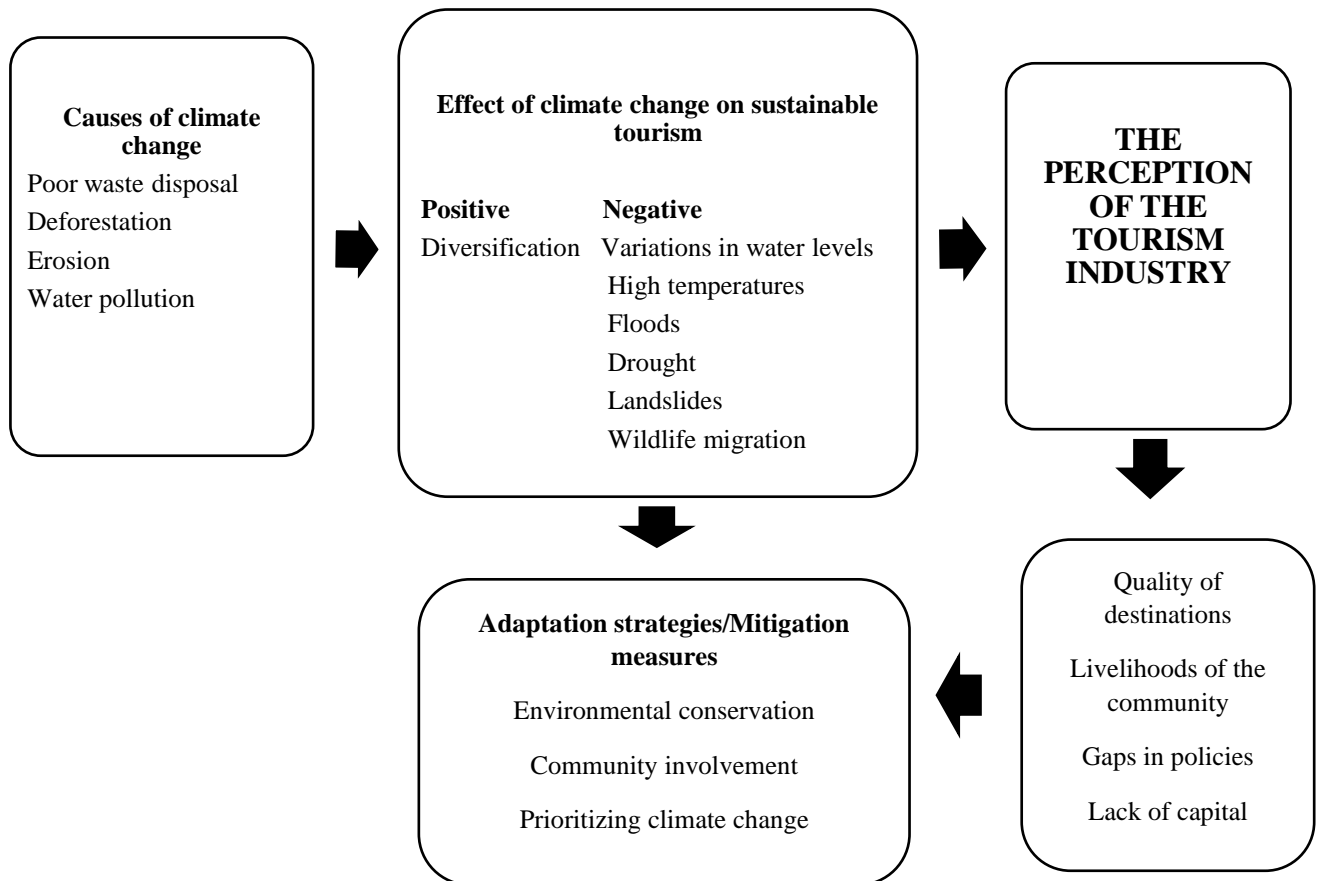


Figure 1: An illustration of the relationship between the variables of interest in this study

CHAPTER THREE

METHODOLOGY

3.1. Research design

The research design and strategy applied in this study was descriptive. The design involved collecting information concerning the current status of the effect of climate change in Uganda. This design also helped answer questions of the individual respondents involved, what can be done, where the effects are being experienced, when and how they can be dealt with to promote sustainable tourism in the country.

3.2. Study area, Population and Sample size

The study area was the tourism industry of Uganda whereas the target population for this study were the industry's major stakeholders. These include tour operators, tour guides, hoteliers, tour site proprietors as well as the government. However, the study area was too wide, hence application of a sample size of 100 individuals were taken into consideration for the purpose of higher accuracy of data, consuming less time and convenience.

3.3. Sampling design

Convenience sampling method was adopted for this study as it was more practical, in comparison to other methods considering the fact that population of the industry was too big. The sample size of 100 stakeholders was clustered into 4 different categories based on the different sections of the tourism industry as stated above. This method divided the entire population into smaller groups, increasing feasibility of the process.

3.4. Methods of data collection

The main method of collecting data for this study was interviewing using a questionnaire generated via Google forms. These forms were distributed on various communication platforms on the internet such as e-mail and WhatsApp. These channels were considered appropriate for a number of reasons including flexibility given the ongoing COVID-19 pandemic which required and still involves protocol that minimizes physical contact through social distancing. In addition, the speed of response and costs involved in finding out information were also considered.

3.5. Scope and Limitation of the study

The scope of this study was based on stakeholders in the tourism industry of Uganda and their perceptions on climate change and its effect on sustainable tourism in the country. It focused on a few stakeholders including government bodies, tour operators, guides, and hoteliers. However, the study was limited by characteristics of the method of data collection. For example, it was difficult to acquire responses of officials from government bodies like the Uganda Tourism Board due to bureaucracy, despite the fact that necessary telephone call numbers, and email addresses were readily available.

3.6. Data analysis

In this study, the analysis method that was applied in collecting data from the target population was categorization of various themes through quantifying the information into percentages. This was based on the specific objectives of the research. To establish the perception of the tourism industry on climatic changes that affect sustainable tourism in Uganda, opinions of certain categories of stakeholders were documented, for example, Ministry of Water and Environment's opinion as a government body. To determine the perception of the tourism industry on the effect of climate change on Uganda as a tourism destination. This information was mainly obtained from industry participants like hoteliers and tour guides who are directly affected. To analyse the initiatives to mitigate the effect of climate change on tourism in Uganda, all stakeholder opinions were analysed by studying the variations in perceptions in terms of percentages and a conclusion drawn from the findings helped determine the best ways to adopt to climate change and ensure appropriate mitigation measures for sustainable tourism in Uganda.

CHAPTER FOUR

FINDINGS

4.1. Introduction

This chapter presents the analysis and findings from primary data gathered from respondents of the study. The response rate was over 100% as the questionnaires were administered online with stakeholders distributing the form to fellow colleagues.

4.2. Profile of the Respondents

This section was categorised into different clusters that stakeholders in the tourism industry belong to in terms of the section of the industry, type of tourism business and the level of experience working in the tourism industry of Uganda.

4.2.1. Categories of stakeholders in the tourism industry

Out of 103 total respondents, 52.4% of the stakeholders were tour operators like tour company managers and guides, 16.5% were domestic tourists, 9.7% hoteliers and the remaining 21.4% consisted of other stakeholders such as government bodies, tourism scholars and service providers to the industry from sectors such as transport, agriculture, media, and civil society (Figure 2).

As a stakeholder in the tourism industry of Uganda, in which category do you belong?
103 responses

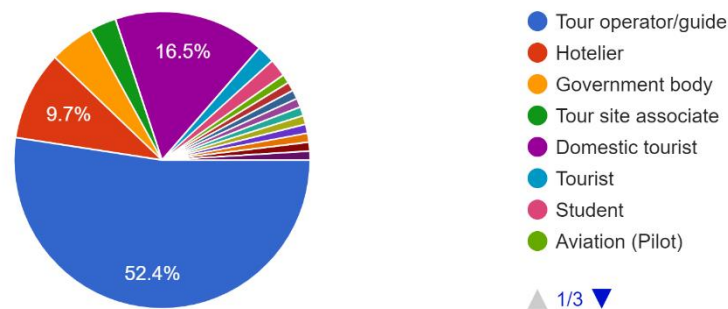


Figure 2: Categories of stakeholders in the tourism industry of Uganda

4.2.2. Affiliation to the tourism industry

In addition to the core stakeholders of the tourism industry of Uganda, some of the respondents included members from government bodies like The Uganda Wildlife Authority and Uganda Media Centre, hoteliers from various accommodation facilities such as Kingfisher lodge and Kyangabi Crater resort, tour site associates from Ngamba Chimpanzee Island and Sipi falls among others, local tourism scholars, aviation and climate specialists, travel photographers and tourism product exporters.

4.2.3. Experience of the Respondents

The level of experience of stakeholders in the tourism industry of Uganda was determined using period of time in terms of years spent working in or with tourism related facilities and businesses. 43.7% of the sample size were in the industry for less than 5 years indicating that the tourism industry in Uganda is still growing whereas 36.9% worked in or with the industry for 5 to 10 years and the minority 19.4% are best experienced with over 10 years in the industry (Figure 3).

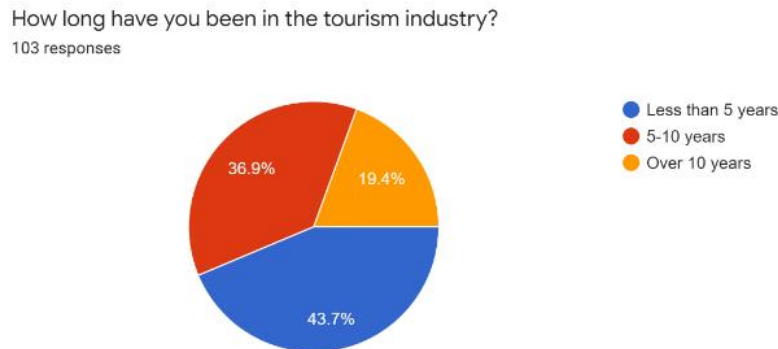


Figure 3: Level of experience of the respondents

4.3. Level of incorporating sustainability in the industry

All the stakeholders mentioned above were asked to indicate whether or not their businesses support the sustainability of tourism in Uganda. Most of the respondents indicated to have been supportive of sustainable tourism through their work or activities (Table 1).

| Does your business or sector support sustainable tourism? | | |
|---|--|-------|
| Yes | | 77.7% |
| No | | 5.8% |
| Maybe | | 16.5% |

Table 1: Level of support for sustainable tourism in the industry

Table 1 shows that majority of the respondents, that is, 77.7% indicated that their businesses are in support of sustainable tourism in Uganda, whereas 16.5% were unsure and the remaining 5.8% was not in support. 75 of the total respondents stated a number of ways in which they are ensuring that sustainability of tourism is made possible.

These ways include; tour companies offering re-useable branded water bottles to reduce waste littering by clients, alternating between Agri-tourism and wildlife tourism packages to tackle the issue of seasonality, initiating conservation projects and grassroots community initiatives, CSR projects, environmental awareness, plastic recycling, use of solar energy at tourism facilities, farming to produce

organic foods, giving back to the communities through outreach programs and corporate social responsibility, and frequent pre-briefing of international visitors on the significance of responsive tourism among others.

4.4. Perceived causes of climate change

The respondents were also given options and requested to indicate what their perceived causes of climate change were amongst the given options. 76 respondents indicated deforestation as the major perceived cause of climate change at 73.8%, 65% ignorance concerning diverse effects of climate of climate change, 45.6% air pollution, 41.7% agricultural practices and 40.8% natural changes (Figure 4).

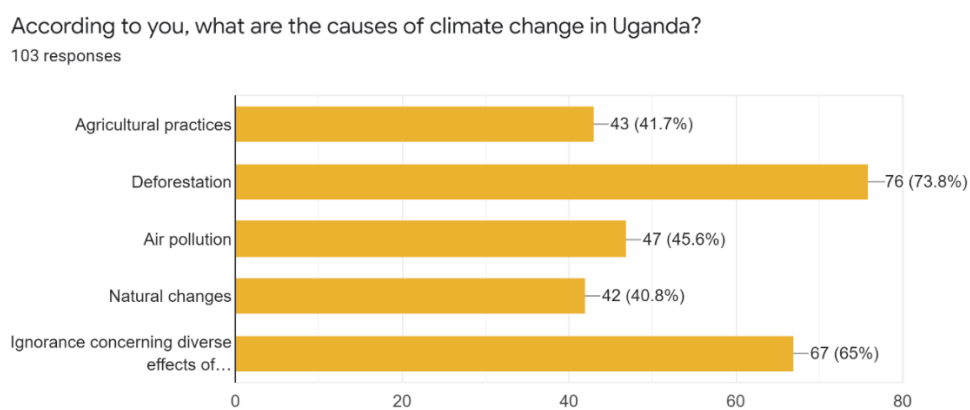


Figure 4: Perceived causes of climate change

4.5. Perceived effect of climate change on tourism businesses in Uganda

The respondents were asked to gauge the level of effect of climate change on tourism in Uganda. This was done by indicating whether or not their business or line of work has been affected. 78.6% of the 103 respondents agreed with being affected, 14.6% disagreed whereas the remaining 6.8% were unsure (Table 2). This indicates that majority of tourism businesses have been affected and yet there is still need for awareness among the ignorant individuals in the industry who are represented among the unsure respondents.

4.5.1. Level of effect of climate change on tourism activities

The level of effect of climate change on tourism activities in Uganda was also determined by the sample size by requesting respondents to indicate whether or not they have experienced negative effects of climate change especially in relation to tourism activities. 97 individuals representing 94.2% of the respondents agreed to having experienced negative effects, 4 disagreed whereas 2 were unsure (Table 2).

| Has your business or line of work been affected by climate change in Uganda? | | |
|--|----|-------|
| Yes | 81 | 78.6% |
| No | 15 | 14.6% |
| Maybe | 7 | 6.8% |
| Have you experienced negative effects from climate change in Uganda? | | |
| Yes | 97 | 94.2% |
| No | 4 | 3.9% |
| Maybe | 2 | 1.9% |

Table 2: The level of effect of climate change

4.5.2. The negative effects of climate change experienced by tourism stakeholders in Uganda

Respondents were also given a list of negative effects of climate change experienced in Uganda by the industry and findings indicate that most stakeholders are affected by floods at 63.1%, 59.2% difficulty in transportation, 53.4% drought and high temperatures, 49.5% wildlife migrations and interruptions, 37.9% affected safety and change in number of visitors, 35.9% affected livelihoods of the host community and 32% for both property destruction and quality of destination respectively (Figure 5).

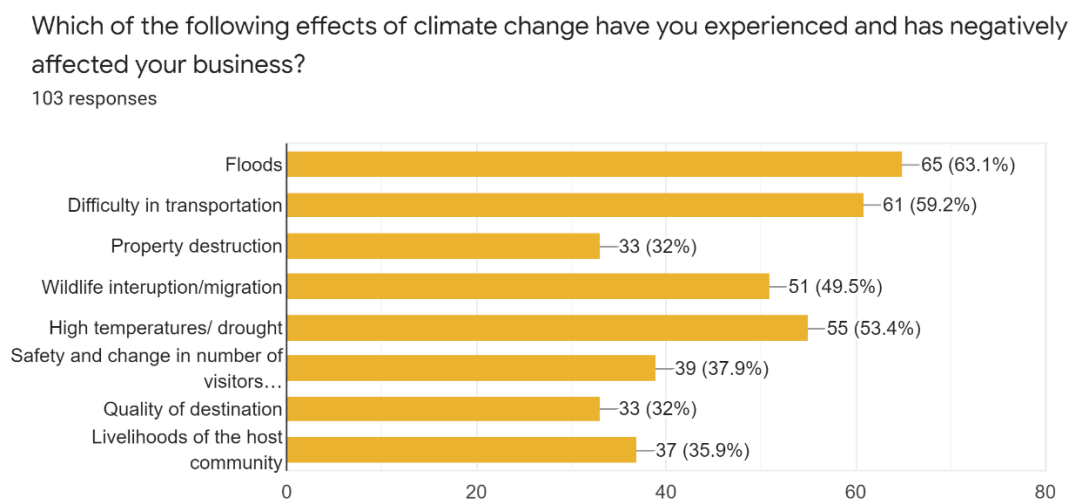


Figure 5: Negative climate change effects as experienced by stakeholders

4.6. Perception of the tourism industry concerning responsibility for mitigation measures

According to the findings of this study, the perceived responsibility for mitigation measures amongst stakeholders is 47.6% expected from the government of Uganda, 28.2% from host communities, 27.2% from tourism industry core members such as tour operators and hoteliers, 11.7% visitors and 52.4% all the above mentioned parties (Figure 6).

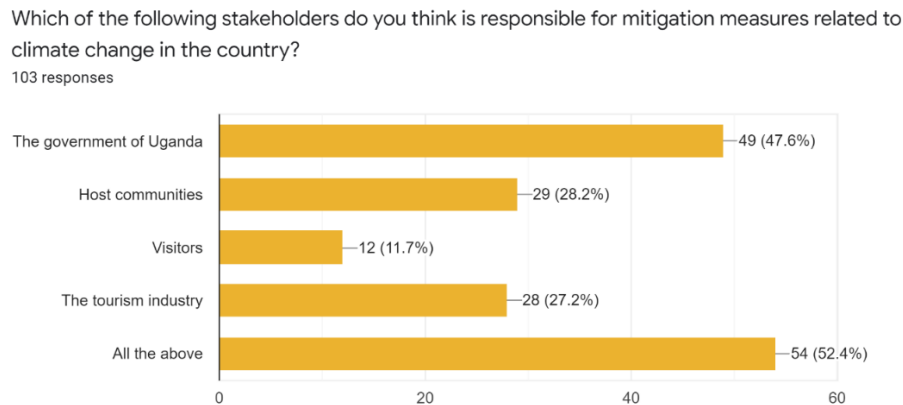


Figure 6: Perceived responsibility for mitigation measures

4.7. Mitigation measures to ensure sustainable tourism in Uganda

The last section of the study involved determining the stakeholders' perception on mitigation measures that should be put in place to ensure sustainable tourism in Uganda. A number of measures were generated from the study regarding the various perceived groups of people responsible for these measures in the tourism industry of Uganda (Table 3).

| MITIGATION MEASURES | TOTAL | PERCENTAGE |
|---------------------------------|-------|------------|
| Policy implementation | 3 | 3% |
| Eco-friendly tourism activities | 5 | 5% |
| Prioritizing host communities | 12 | 12% |
| Funding | 14 | 13% |
| Consulting climate experts | 30 | 29% |
| Sensitization | 39 | 38% |

Table 3: Mitigation measures needed as expressed by stakeholders

As shown above, majority of the stakeholders indicated that there is need for sensitization and consultation of climate experts. Other measures needed include funding, prioritization of host communities, provision of eco-friendly tourism activities and implementation of existing policies.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1. Introduction

In line with the analysis of data collected from responses of stakeholders in the tourism industry of Uganda, this chapter compares the collected data to interpretation of theoretical and empirical review of Chapter 2 of this study. In addition to comparison, the chapter covers recommendations, limitations and suggestions for further study are stated.

5.2. Discussion

The focus of this study was based on the perception of the tourism industry of Uganda regarding the climate changes that affect sustainable tourism in the country, the effect of these changes and the initiatives to mitigate the negative effects of these changes. Various stakeholders are involved including government bodies, tour operators, hoteliers, domestic tourists, transport suppliers, climate experts and tourism scholars, among others.

Based on the results, there are various climate changes that affect sustainable tourism in the country. These include; poor agricultural practices, for example, fertilizers, pesticides, manure and animal waste disposed of into surface water resources end up affecting stream and ecosystems health (Nsubuga & Rautenbach, 2018) , deforestation whereby land is cleared for the development of tourism facilities such as hotels and theme parks resulting in the depletion of flora and fauna (Sandom et al., 2020) , air pollution as a result of air travel (Komukama, 2018) and burning of waste materials like plastics in urban centres that results in toxic smoke releasing hazardous emissions. This is in addition to the issue of absent mandatory garbage collecting systems in some areas (Schwander et al., 2014). Natural changes also occur, involving movement of the sun and heat levels lead to depletion of the ozone layer thus rise in temperatures (Komukama, 2018) .Ignorance concerning the diverse effects of climate change on tourism and other activities.

According to the findings these climate changes cause a number of negative effects such as floods that result into destruction of lives and property (Ogwang & Tan, 2012) and also cause difficulty in transportation especially on tours to remote areas like the Bwindi Impenetrable forest (Hughes et al., 2014). Wildlife interruption in terms of habitat disturbance leading to migrations (Gravari-barbas, 2019) like the mountain gorillas in South-Western Uganda. Drought is another effect which also influences soil desertification (Matczak, 2011) affecting crop growth and feeding of both human and wildlife. These all affect livelihood of host communities and degrade the quality of local tourism destinations.

The perception of respondents in this study indicates that the following measures should be put in place in order to mitigate the effects of climate change on tourism sustainability. Policy interventions by the

government and various stakeholders (Ampaire et al., 2017). Sensitization, education and empowerment to create a culture of urban environmental stewardship (Hornik et al., 2016). Measures can only be effective with combined effort and mutual respect amongst stakeholders.

In regard to the government of Uganda, a number of suggestions were made by other stakeholders. One of them was to create strong policies (Sutawa, 2012) and ensure they are implemented since a number are already in place, for example, concerning deforestation in Kibale forest, but still are not being followed and penalized for. Funding to encourage alternate tourism options, for example, art and handicraft tours as opposed to the common wildlife tourism. Emphasis on laws concerning climate, for example, the polythene bag ban was only implemented for a few months before people went back to using them. Education (Trawöger, 2014), awareness, and empowerment especially in the rural areas still needs to be boosted, since dangerous practices like excessive bush burning and cutting down of trees for charcoal that is used domestically and sold for a living are still taking place. In addition, the government needs to prioritize the immediate communities especially those near national parks and other tourism related sites. For example, compensation of communities in Kasese affected by the floods. And to appropriately carry out these duties, the government needs to seek expert advice from tourism and climate organizations (Orlove et al., 2010). Conducting Environmental Impact Assessment (EIA) is also necessary to adequately ascertain the climate change causes, effects and mitigation measures.

Host community involvement is also crucial (Mkono, 2019). Findings of the study show that there is need for locals to be further sensitized and supported especially for the communities within the proximity of wildlife and tour site perimeters like Mt.Rwenzori and Kibale forest. They should be encouraged to be directly involved in activities (Ampaire et al., 2017) like planting trees and direct employment like administering local tours like village walks and guiding through the heritage and experienced climatic conditions of given areas.

Visitors' participation is another factor necessary for the sustainability of tourism (Dube & Nhamo, 2020). This is also the case in Uganda as indicated in the findings. They need to take on eco-friendly initiatives for example, by participating in planting of trees during their stay and also spending a limited amount of time while at sites to reduce pollution levels. This can be solved through allocation of slots and time management schedules by the visit planners.

The tourism industry, tour operators and hoteliers in particular as core members need to provide the facilities for visitors and local tourists to enjoy tourism activities without harming the environment and leading to climate change and its diverse effects in the long run (Gravari-barbas, 2019). The private sector therefore needs to provide eco-friendly solutions like farming for organic foods in restaurants, use of well-maintained vehicles on tours to protect the carbon footprint and also provide alternate tourism activities like museum visits as opposed to those that affect the environment like cruises involving water pollution.

All stakeholders in the industry including the groups mentioned above as well as support service organisations such as the Uganda Tourism Board, Ministry of Water and Environment, Uganda Media Centre, Climate Change Department and the Africa Climate Reality Project for awareness, sensitization, and collaborative work to tackle the issue of effects of climate change on sustainable tourism in the country.

5.3. Conclusion

The effects of climate change on sustainable tourism in Uganda are diverse and widely experienced across the country. In order to come up with mitigation measures for this problem, the causes of climate change in the country must first be identified and studied. The sustainability of tourism in Uganda can be ascertained by promoting further awareness through sensitization of local tourists and host communities, providing eco-friendly packages for visitors, implementing policies related environmental protection and encouraging mutual respect for all stakeholders in the industry. For example, direct employment and compensation of local guides in the host communities. These measures will help in the control of effects of climate change on tourism and its sustainability, especially in the long run.

5.4. Recommendation

Even though there are various environmental policies concerning climate change installed by the government of Uganda through bodies like NEMA, Nature Uganda and The National Forest Authority, the findings of this study indicate that although all stakeholders are responsible for climate change and its effects on sustainable tourism, the government has not done as much as is expected of it.

5.5. Limitations of the study

The sample size of this study was inclusive of major stakeholders such as tourism and climate involved government bodies and established hoteliers as well as tour operators. The researcher had a challenge in obtaining some of these contacts. Many of the respondents were hesitant to open the link to the questionnaire due to fear of being scammed online or downloading viruses. In addition, Ugandans conventionally conduct their research mainly through face-to-face interviews and therefore many respondents were caught off-guard despite the ongoing corona virus pandemic and its associated prevention measures. The researcher therefore had to carefully explain the situation and justify the means being used to collect data.

5.6. Suggestions for further study

The subject of this study was perception of stakeholders in the tourism industry of Uganda. Therefore, a wide scope of individuals to study. This resulted into delays in replies, difficulty in follow-ups and an overload of inquiries especially since everything was conducted remotely. The researcher therefore urges individuals interested in studying similar topics to narrow down the scope of stakeholders or specified group of respondents.

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APPENDIX
QUESTIONNAIRE

SECTION A: BACKGROUND INFORMATION

- 1. As a stakeholder in the tourism industry of Uganda, in which category do you belong?**
 - A. Tour operator/guide
 - B. Hotelier
 - C. Government body
 - D. Tour site associate
 - E. Domestic tourist
 - F. Foreign tourist
 - G. Tourism scholar/student
 - H. Other
- 2. Please specify the tour company, hotel, site, or government body you work with.**
.....
- 3. How long have you been in the tourism industry?**
.....
- 4. Does your business or sector support sustainable tourism?**
.....
- 5. If yes, how have you ensured that sustainability in tourism is made possible?**
.....
- 6. Has your business or line of work been affected by climate change in Uganda?**
 - A. Yes
 - B. No
 - C. Maybe
- 7. If yes, how have you been affected by the climate change?**
.....

**SECTION B: THE PERCEPTION OF THE TOURISM INDUSTRY ON CLIMATE CHANGE
VARIABILITIES ON SUSTAINABLE TOURISM IN UGANDA**

- 1. According to you, what are the causes of climate change in Uganda?**
 - Agricultural practices
 - Deforestation
 - Air pollution
 - Natural changes
 - Ignorance concerning diverse effects of climate change

2. Have you experienced negative effects from climate change in Uganda?

- A. Yes
- B. No
- C. Maybe

3. Which of the following effects of climate change have you experienced and has negatively affected your business?

- | | |
|---|--|
| <input type="radio"/> Floods | <input type="radio"/> Safety and change in number of visitors received |
| <input type="radio"/> Difficulty in transportation | <input type="radio"/> Quality of destination |
| <input type="radio"/> Property destruction | <input type="radio"/> Livelihoods of the host community |
| <input type="radio"/> Wildlife interruption/migration | |
| <input type="radio"/> High temperatures/drought | |

SECTION C: MITIGATION AND ADAPTATION STRATEGIES

1. Which of the following stakeholders do you think is responsible for mitigation measures related to climate change in the country?

- A. The government of Uganda
- B. Host communities
- C. Visitors
- D. The tourism industry
- E. All the above

2. What do you think should be done by the responsible stakeholder(s)?

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