***Review Article***

# Climate Change in Kenya: Understanding Major Threats and Government Policies for Resilience


**ABSTRACT**

This article aims to describe and highlight major climate threats found in Kenya and climate change policy implemented by the government of Kenya from 2010 to 2022. Climate change poses a severe threat to the living conditions of citizens and wildlife worldwide. Numerous studies have demonstrated that in the absence of implemented policies, living conditions can be further deteriorated. While Africa may not contribute significantly to air pollution, there are other human activities that pollute the environment and need to be eliminated, as African people are already suffering from the impacts of climate change. African countries must take necessary steps to initiate sustainable development policies that ensure a better life for their citizens. In the case of Kenya, droughts and floods have resulted in the loss of human and animal lives and have negatively impacted the country's economy. Consequently, the government has implemented necessary measures since 2010 to address the issue of climate change. Various policies such as the National Climate Change Response Strategy (2010), the National Environment Policy (2013), Kenya National Adaptation Plan 2015-2030, Climate Change Bill (2014), National Climate Change Action Plan (NCCAP 2013-2017), National Climate Change Action Plan (2018-2022), and National Drought Management Authority (2016) have been enacted in response to climate change. These policies demonstrate the government's genuine concern for climate change issues. Overall, this study aims to contribute to the understanding of climate change policy in Kenya and raise awareness about the global threat posed by climate change.



*Keywords: Climate change, floods, drought, Kenya*


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## 1. INTRODUCTION

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For a long time ago, climate change has become a threat to human life and the environment. Humans and wild animals are facing new challenges for survival because of climate change.

Climate change has caused substantial damages, and increasingly irreversible losses, in terrestrial, freshwater and coastal and open ocean marine ecosystems. Global warming, reaching 1.5°C in the near-term, would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans [1].

Since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like oil, gas and coal. According to the United Nations (UN) experts, climate change can affect our health, ability to grow food, housing, safety and work. UN experts stated also that some of us are already more vulnerable to climate impacts, such as people living in small island nations and other developing countries. According to them, conditions like sea-level rise and saltwater intrusion have advanced to the point where whole communities have had to relocate, and protracted droughts are putting people at risk of famine. In the future, the number of "climate refugees" is expected to rise.

Today, therefore, the world is on alert to find possible solutions in order to be able to reduce or eradicate human activities which are at the root of the bad consequences on the environment and climate change. For example, [2] revealed that electricity and heat production (natural gas and oil for electricity, burning of coal and heat) was the major source of global greenhouse gas emissions with 25% of global greenhouse gas emission. Industry (emissions from chemical, metallurgical, mineral transformation processes, fossil fuels burned on site at facilities for energy, etc.) represents 21% of greenhouse gas emission and transportation sector 14%.

Regarding the issue of climate change, African countries are projected to experience clear detrimental macroeconomic consequences from climate change over the coming decades. Across Eastern and Western Africa, climate change in the high-warming scenario would reduce GDP per capita by around 15% by 2050 [3]. According to the African Development Bank's findings, African countries' limited resilience against the negative impacts of today's climate are already resulting in lower growth and development, highlighting the consequences of this lack of resilience and adaptive capacity. Furthermore, with such climate-related disasters expected to slow GDP per capita growth, African governments are likely to experience increasing pressure on budgets and fiscal balances. This is because for instance climate-related disasters have caused 2.6 million of internal displacement in Africa in 2018 [4]which compel governments to adjust budget. In Kenya, UN officials estimate that among 300,000 refugees in Dadaab refugee camp are climate-related [5].

As for today, nearly all African countries have approved and ratified the Paris Agreement, committed to enhancing climate action through reducing their greenhouse gas emissions and building resilience. However, adaptation to the adverse impacts of climate change is urgent in Africa.

Over the year of 2021, 37.7%of population within the Middle Africa was in the situation of food insecurity while the Sub-Saharan Africa region reached 29% of population encountered food insecurity in the same year [6].

Despite the fact that the continent is suffering at this stage, countries are now facing a lack of funding, their capacity to handle climate change crisis is so limited which hampers the process of addressing climate change. Obviously, that's why during COP27 held in Egypt in 2022, African countries prioritized their negotiations on funding for adaptation, loss and damage among their top demands.

### 1.1 Aim and objective of this paper

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Developing countries like Kenya, with low adaptive capacity and high vulnerability to climate change, are disproportionately affected. Climate change in Kenya is increasingly impacting the lives of its citizens and the environment. It has caused extreme weather damages such as longer droughts, irregular and unpredictable rainfall, flooding, and increasing temperatures.

These climatic changes have exacerbated existing challenges with water security, food security, and economic growth. Harvests and agricultural production, which account for a total of 33% of Kenya's Gross Domestic Product (GDP), are also at risk.

This paper focuses on Kenya because among other countries in Africa, especially in the East African region, Kenya has been significantly affected by the impact of climate change. The government of Kenya is making efforts to respond to climate change effects and serves as an example for other African countries in the fight against its impact. The Kenyan authorities have implemented programs and initiatives to raise awareness of climate change at all levels.

While scholars have focused on the issue of climate change in Kenya, they have not adequately described the policies being implemented by the government to address it. This study aims to outline these policies and serve as an example for other countries.

Kenya has taken environmental issues seriously and has incorporated environmental studies into its education system to equip young people with environmental skills. The country's constitution attaches considerable importance to climate change, and the government invests significantly in environmental recovery and the fight against climate change challenges.

To respond to the needs of climate change, the government of Kenya has implemented several initiatives and strategies, including but not limited to National Climate Change Response Strategy (2010) and the National Environment Policy (2013).

This study aims to provide readers and leaders with an understanding of how climate change has become a global threat that everyone must address. Specifically, it examines Kenya's policy towards climate change.

### 1.2 Literature review

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As already mentioned above, the subject of climate change is today a topic that is widely debated all over the world. Researchers and academics are constantly interested in it. In connection with Kenya, scholars are gradually writing articles on this very important subject which, if ignored, could potentially harm human life and the lives of other living beings on Kenyan soil.

Responding to the effects of climate change is a responsibility that falls on everyone in a community. In practical terms, it is the government's role to set an example and implement policies that citizens must follow and obey. However, the population must also be cooperative. However, [7] stated that mobilizing collective action to cope with climate change is difficult at any level, because the larger the 'community' the more difficult the task. According to him, leaders are encouraged to find a way to cooperate with citizens to achieve cooperation in the common interest without imposing excessive governmental coercion in order to motivate them.

As stated by [8], the negative impacts of climate change are more likely to affect the poor people in the developingcountries and least developed countries more seriously and Kenya is in that category.

According to its geographical position, Kenya is very affected by the effects of climate change compared to other countries in East Africa. In this regard, Julius and Francis (2013) reported that global climatic models predict that climate change in Kenya will lead to increased temperatures of up to 48ºC and cause rainfall variability by up to 20 percent by the year 2100. It's scary, right?

Indeed, studies have shown that Kenya could, in the future, encounter the drought and intense floods that could affect the coastal regions of the country. Research conducted by [9] has shown that poverty and lack of information hinder households from taking the most important adaptive measures, such as water management.

As the majority of the country (80%) consists of drylands, some scholars are concerned that the country is at risk of experiencing drought as the effects of climate change become more apparent. If no action is taken, failing to adapt to climate change could have a significant impact on the country's economy, as the key sectors of the economy are closely tied to the environment.

So far, Kenya has already recorded many losses caused by climate change. Adapting to the impacts of climate change is hence critical to reduce vulnerability to floods and droughts and maintain rural, natural resource-based livelihoods [10].

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For a long time ago, adaptation to climate change was considered as a task that only concerns decision-making bodies from developed countries. Many observers have criticized globally uniform and top-down approaches to managing climate change risks, showing that such approaches have overlooked the contextual nature of risks, livelihoods, and the root causes of vulnerability to climate change [11]. For Kenya, it is noteworthy to see that the government has been successful in educating citizens about the fact that responding to climate change is a collective responsibility.

Referring to [12], low-input farming systems, such as subsistence agriculture in marginal areas, are unsustainably depleting the natural resource base and also demonstrably ineffective at alleviating rural poverty. The adaptation to climate change and climate variability by poor rural farmers however, can substantially reduce the vulnerability (including food insecurity) of these farmers [13].

Subsequently, following successive campaigns on this subject, local communities have heard the importance of their role in protection and safeguarding of the environment.

According to the study done by [14], adaptation to climate change had positive but insignificant correlation with crop productivity in Kenya. This result was, as they stated, expected as there is an assumed direct and positive link between adaptation and agricultural production. Furthermore, they found that this correlation however masks the differences between adapters and non-adapters to climate change which is brought to the fore after the estimation of the endogenous switching regression model results which shows that adapters produce 33.6% more output than non-adapters.

However, adaptation to climate change has proven to be the most important tool for improving environmental conditions. In addition, due to the climate adversities [15], small-scale farmers generally adopt various mitigation strategies in Kenya. One of the most debated and widely practiced strategies is crop diversification, defined as increasingthe number of crops or varieties of a crop [16]; [17]; [18]; [19].

Given that rural households in Kenya depend on rain-fed small-scale farming as the main source of livelihood [20], exposure to the negative effects of climate change is a consequence they face [21]. Adapting to climatic fluctuations requires that farmers notice first that the climate has altered. Farmers then should make identification of potentially valuable adaptations and implement them. [22]

While the authors have made a commendable effort to outline the multifaceted challenges associated with this subject, it is truly disheartening to witness the lack of recognition bestowed upon the government's tireless initiatives. So, I will first outline the major climate change threats found in Kenya then I will show government policies towards climate change. Kenya, like many other countries in Africa, is facing significant challenges due to climate change. From extreme weather events such as droughts and floods to rising temperatures and changing rainfall patterns, the impacts of climate change are already being felt across the country. It is imperative to shed light on the comprehensive actions undertaken by the government in response to the pressing issue of climate change. Therefore, my study serves as a valuable contribution by augmenting the existing body of research with a comprehensive analysis of the government's robust policy framework addressing climate change. This endeavor not only enriches the collective knowledge on the subject but also highlights the significance of governmental efforts in combating this global crisis.

## 2. METHODOLOGY

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In the process of preparing this paper, the chosen methodology is document review. The documentary method involves thoroughly reading and analyzing various documents that can offer valuable information pertaining to the specific study case.

To conduct this document review, a range of tools will be utilized. These tools include scholarly articles and publications, research conducted by international organizations, documents from civil society, and publications released by the government. By consulting these diverse sources, a comprehensive understanding of the subject matter can be achieved.

The purpose of this document review is to gather relevant and reliable information that will contribute to the overall research and analysis conducted in the dissertation. By utilizing a variety of sources, a well-rounded perspective can be obtained, ensuring a thorough examination of the study case.

## 3. RESULTS AND DISCUSSION

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### 3.1 Major climate threats in Kenya

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Kenya has been impacted by climate change for a significant period of time. The country has experienced human casualties, environmental degradation, and the loss of animal life due to adverse climatic conditions.

As stated by [23], climatic conditions are important drivers of migration and displacement with migration responses to climate hazards strongly influenced by economic, social, political and demographic processes. However, most climate-related migration and displacement observed currently is within countries or between neighboring countries, rather than to more geographically distant high-income countries [24].

According to [25], there is a lack of data on the number of persons displaced as a result of climate change and environmental degradation in Kenya, which particularly affects pastoralists, but anecdotal evidence suggests that pastoralists have to move further from traditional grazing areas and for longer periods of time in order to find pasture and water for their livestock.

Kenya, like other developing countries of the world, has her populace vulnerable to disaster risks resulting in deaths and loss of property worth millions. About 70% of the disasters are hydro-meteorological in nature particularly droughts and floods [26].

The majority of countryside families in Kenya depend on rain-fed small-scale farming as the main source of livelihood [27]. This exposes them to the negative effects of climate change [28] such as drought and floods. Understanding how to build livelihood resilience to the impacts of climatic fluctuations like floods and droughts is important because livelihood systems must adapt to global and local changes [29].

## 3.2 Drought

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Various types of droughts have been suggested and can be broadly categorized as meteorological, hydrological and agricultural drought [30]. According to these authors, Meteorological droughts occur when the amount of rainfall received is below normal while Hydrological drought occurs following a prolonged period of precipitation shortfall that negatively impacts on water supply leading to water shortages. When precipitation shortfall results to soil water deficits affecting agricultural productivity, the drought is categorized as agricultural.

Kenya's National Drought Management Authority (NDMA) suggests significantly longer trekking distances, and reports suggest up to 1.5 million livestock, particularly cattle and sheep, have died between October 2021 and March 2022. Livestock milk production, a key source of food and cash income for pastoralists, is 10-80 percent below average. The overall decline in household access to food is driving up levels of acute malnutrition.

According to the NDMA, the drought situation continues to worsen in twenty (20) of the 23 ASAL counties. This is attributed to the four successive failed rains seasons. The number of people in need of humanitarian assistance currently stands at 4.35 million based on the 2022 long rains food and nutritional security assessment report.

NDMA (2022) indicated that drought has worsened the actual gaps and social deprivation of women and has caused displacement, with the majority of those displaced being women and children. Drought also places additional burdens on women in terms of their responsibilities around household food consumption, water collection, and household care responsibilities, which expose them to greater risks. The drought impact is reflected in the extent and nature of vulnerability and poverty and the increased risk of falling into poverty, losing autonomy, and facing increased discrimination and marginalization.

Research found that shortage of natural resources like water may be the cause of conflict in community. This can happen during drought period as people can fight for few water and grazing resources at their disposal. In addition, other conflicts may arise as nearby communities may want to enter the territory of their neighbor which is not affected by drought and grab their resource.

Obviously, a Kenyan digital news platform[31] categorized the effects of drought in three types: environmental, economic and social effects. For the first category, thisplatform outlined that when there is drought, rivers and lakes will dry up which leads to a shortage of water for human beings and animals which their everyday life depend on the existence of water. In addition, drought can cause poor soil quality since a prolonged absence of water will affect the soil which can no longer grow plants. The third effect of drought in the environment, according to Tuko platform, is the death of animals. In fact, water scarcity will cause death of animals as they cannot live long as their life conditions depend on the availability of water and grass.

Regarding the economic effects, Tuko noted that people who had not planted drought resistant crops might encounter loses of money and other means invested

in agriculture. Furthermore, drought can cause death of people whose source of living depend on livestock as they will no longer be able to sell their animals to get money or get milk to sell so that they can earn money for living. And there is a big number of people for such category in Kenya. Drought impact negatively also business as where there is drought, businessmen will no longer get farm supplies due to poor yields.

Kenya, as other African countries, depend on hydro-energy and when it's drought period, dams will face the lack of water to produce power. The shortage of electricity lead some business to fail as their activities depend on the availability of power.

Further, every time that businesses shut down, the government won't be able to collect taxes from them. Consequently, the government will have to use lots of resources such as digging boreholes and constructing dams so as to facilitate farmers to grow crops.

Concerning the social effects, Tuko mentioned that the biggest effects found in areas affected by drought are hunger, malnutrition and death. The lack of water will arouse lack of crops, and this will lead the lack of food. At the end people will face hunger which bring up malnutrition and diseases and people will eventually die.

The other social effect mentioned is animals and human migration. In Kenya, people whose life depend on breeding will consider to migrate when drought comes and it causes families to separate and children will grow up hopelessness as it will be hard even impossible to see some of their family members which will affect their education. In this case, women also are affected as it's up to them to stay home and watch out for the rest of family members, feed them and take care of them. It will cause anxiety and unsafe psychological state.

For instance, on 5th of October 2022, the ASAL Humanitarian Network (AHN) (which is a platform led by local and national NGOs promoting a humanitarian system that enables more locally-led responses) held a press release on the situation in the country. According to this platform, Kenya has suffered three severe droughts in the last decade (2010- 2011, 2016-2017 and 2020-2022) adding that the current drought (2020-2022) has been the most severe and longest with widespread livelihood loses and massive displacement of populations. According to AHN, more than 4.2 million of people who represent 24% of the ASAL population are facing high levels of acute food insecurity with about 2.7 million people in the crisis phase and 785,000 people are in the emergency state.

This statement indicated that such situation is a 10% increase from the same period in 2021 when 2.1 million people were categorized as in emergency and crisis state.

### 3.3 Floods and landslide

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Floods have been defined as an overflow of a large amount of water beyond its normal limits, especially over what is normally dry land.

According the World Health Organization (WHO), inundations touched above two billion human beings worldwide, between 1997 and 2017.

WHO categorized floods in three types and are defined as follows:

- Flash floods: caused by rapid and excessive rainfall that raises water heights quickly, and rivers, streams, channels or roads may be overtaken;
- River floods: caused when consistent rain or snow melt forces a river to exceed capacity.
- Coastal floods: caused by storm surges associated with tropical cyclones and tsunami.

The National Severe Storms Laboratory (NSSL) in USA revealed that the most affected areas by floods are mostly populated regions. As stated by NSSL, the construction of buildings and other infrastructures increases runoff by reducing the amount of rain absorbed by the ground which increases the flash flood potential.

Other places that have the potential to be victim to floods are those near the rivers, dam failures as dam failures or rivers can pour abrupt destructive surge of water downstream. Furthermore, mountains and steep hills have been cited among the most affected areas as they produce rapid runoff, which causes streams to rise quickly.

Thus, the effects of floods are often similar to those caused by droughts. The instant impacts of flooding involve loss of human life, damage of property, destruction of crops, loss of livestock, and deterioration of health conditions caused by waterborne diseases. As communication links and infrastructure such as power plants, roads and bridges are damaged and disrupted, some economic activities may come to a standstill, people are forced to leave their homes and normal life is disrupted [32]

Same as drought, floods are severe threat to the lives of the Kenyan people. In Kenya, floods are the most common climatic disasters and the leading hydro-meteorological disaster in East Africa. During the last couple of decades, Kenya has experienced serious incidents of flood disaster, in different parts of the country and caused major disturbances, destroying property and resulting in loss of life [33]. In the last 2 decades, major floods in Kenya have occurred in 1997–1998, 2002, 2003, 2006, 2008, 2010, 2012 and 2015 [34]. [35] stated that floods have serious consequences on community health and household well-being.

The subsequent effects of flood are loss of lives, infrastructure, food reserves and erosion [36]. The 1997/98 El Niño floods remain the most remarkable floods in the history of Kenya. Over 1.5 million people were affected in different parts of the country.

As noted by [37], flash floods hit Kenya in April-May 2015 and had devastating effect on people and property: buildings collapsed, roads became impassable, and many people were injured and died. Another illustrative serious case is floods and

landslides that occurred in eastern of Kenya in April 2020 which took away the lives of over one hundred people whereas 1800 others became homeless. Ultimately, it is crucial for the government to protect people from these types of disasters.

Therefore, Kenya, as a victim of climate change-induced disasters, has established institutions and implemented measures to safeguard the environment and enhance the living conditions of those already impacted by its consequences. In the upcoming section, we will delve into the initiatives undertaken by Kenya to address these challenges.

### 3.4 Environmental policies established by the Kenyan government

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The Government of Kenya has proceeded with the development and implementation of policies for adaptation and mitigation. For this reason, several tools have been developed to provide guidelines for combating climate change. In this paper, I am going to talk about the Kenya National Adaptation Plan 2015-2030, the National Climate Change Response Strategy (NCCRS), the National Environment Policy (2013), the Climate Change Bill (2014), and more. These documents shed light on the governmental institutions responsible for climate change affairs and the guidelines for implementing climate change policies throughout the country.

For the government to work in a coordinated manner towards climate change, the Climate change Directorate which is a department of the ministry of environment is the first institution in charge of climate and environment affairs. However, the National Environment Management Authority (NEMA) is also another strong instrument of Government for the implementation of all policies relating to environment. After these two institutions, county governments are also the leading authorities for climate change at the county level.

### 3.5 National climatechange response strategy

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As a response to climate change and seizing the opportunities that may arise, Kenyan government has conceived the NCCRS. It has been made in the interests of identifying sectors that are most exposed to climate change impacts and suggests actions to be taken in order to reduce these impacts.

The document (NCCRS) has been the first one to be developed in the country and it shows the importance that the government has attached to climate change and its related impacts as expressed by Lawrence Lenayapa, Permanent Secretary in the Ministry of Environment and Mineral Resources (2010).

Nevertheless, its mission is to strengthen and focus nationwide actions towards climate change adaptation and GHG emission mitigation whereas objectives are defined as follows:

- enhance understanding of the global climate change regime: the negotiation process, international agreements, policies and processes and most

importantly the positions Kenya needs to take in order to maximize beneficial effects of climate change,

- assess the evidence and impacts of climate change in Kenya,
- recommend robust adaptation and mitigation measures needed to minimize risks associated with climate change while maximizing opportunities,
- enhance understanding of climate change and its impacts nationally and in local regions,
- recommend vulnerability assessment, impact monitoring and capacity building framework needs as a response to climate change,
- recommend research and technological needs to respond to climate change impacts, and avenues for transferring existing technologies,
- recommend a conducive and enabling policy, legal and institutional framework to combat climate change, and
- provide a concerted action plan coupled with resource mobilization plan and robust monitoring and evaluation plan to combat climate change.

Stakeholders who contributed to the drafting of NCCRS assessed Kenya's key sectors and land use systems. These key sectors include: agriculture; rangelands which are the backbone of Kenya's pastoralism, wildlife and tourism sectors; forestry; water resources; aquatic and marine resources; health; as well as physical and social infrastructure [38].This has been achieved after realizing that climate change is already making negative impact by increasing the incidence and geographical spread of diseases like malaria as well as droughts, and erratic rainfall patterns.

Regarding the adaptation and mitigation needs, NCCRS has identified some adaptations actions to be implemented. These adaptations actions involve producing and promoting of drought-tolerant, diseases and pest resistant as well as early maturing crop varieties; promoting orphan crops (e.g. sorghum, cassava, pigeon pea, sweet potato); promoting agricultural produce post-harvest processing, storage and value-added; breeding of animals from various agro-ecological zones that adapt well to climatic variances, and providing special livestock insurance schemes to spread and transfer risks from climate change.

Further, mitigation actions include the advancement of energy performance and renewable energy technologies such as biomass, geothermal, solar, small hydro plants, wind, and geothermal, as well as a properly planned low-carbon public transportation system. The other mitigation strategy includes growing trees for rehabilitation and restoration of degraded landscapes.

**Comment [User0114]:** Corrected

The strategies adopted by the government in order to disseminate climate change awareness across the country have been the establishment of a National Climate

Change awareness campaign using print and electronic media to pass climate change information in various articles and programs on climate change in the media. In addition, Kenya has adopted a strategy of incorporating climate change information into schools and colleges' curricula and syllabuses in order to enable young generation to have skills about the issue. Other strategies adopted include online blogging on Facebook, Twitter, Google Groups, Yahoo Groups, for Climate etc., through which various topics on climate change could be discussed. Furthermore, eco-tournaments engaging in sporting events such as athletics, football and basketball to raise awareness, use of drama and performance arts, providing timely and accurate information on Kenya's climate change policy, position and issues to be discussed with Kenyan missions abroad and the Ministry of Foreign Affairs have proven to be the best strategies. The other powerful policies implemented by the government in response to climate change have been to encourage individual volunteers in raising awareness, and involving the corporate sector, especially the mobile telephone industry (e.g. to display 'airtime top-up messages' on climate change).

### 3.6 Nationalenvironment policy

Comment [User0115]: Corrected

The Kenyan National environment policy (NEP) was established in 2013 as a key policy that aims to providing a structure for an integrated method to sustainable management of the environment and natural resources of Kenya.

Therefore, the government has identified some drivers of environmental degradation which are high rates of population growth, inappropriate technology, unsustainable consumption and production patterns, and increased incidences of poverty and climate change [39]. In addition, the urban lifestyle through lack of appropriate waste management and sanitation systems, industry and transport-related pollution, adversely impact on air, water, soil quality and human health and well-being has been one of the drivers of environmental deterioration. So environmental degradation is one of the impacts of climate change and it causes human vulnerability and drain the country's economic means.

After realizing these issues, the government adopted to initiate measures and actions responding to key environmental issues and challenges.

### 3.7 Climate change bill

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After stakeholders who participated in NCCRS suggested that it would be crucial to have a legal framework to enhance government's actions towards climate change issues, the National Assembly endorsed a Parliament act to provide for the legal and institutional framework for the mitigation and adaption to the effects of climate change; to facilitate and enhance response to climate change; to provide for the guidance and measures to reach low carbon climate resilient growth and for connected purposes [40].

The purpose of establishing this act was to create a government body known as National Climate Change Council (NCCC). According to this act, some of the tasks entrusted to NCCC are as follows:

- advise the national and county governments on legislative and other measures necessary for mitigating and adapting to the effects of climate change;

- provide coordination between and amongst various governmental and non-governmental stakeholders dealing with matters related to climate change;

- advise the national and county governments on regional and international conventions, treaties and agreements on climate change to which Kenya is a party or should be a party to and follow up the implementation of the conventions, treaties and agreements to which Kenya is a party;

- prepare reports on Kenya's adherence to its international obligations relating to climate change;

- coordinate gender-responsive public education and awareness programs on climate change and facilitate gender-balanced public participation in climate change programs at the national and county governments;

- coordinate the conduct of research on climate change including the collation and dissemination of information relating to climate change to the national and county governments, the public and stakeholders;

- stablish and manage a national registry for appropriate mitigation actions by public and private entities;

- serve as the national information and management centre for collating, verifying and disseminating information on greenhouse gases and managing Kenya's quantity of greenhouse gases emitted and absorbed;

- coordinate the design of programs to provide for incentives relating to matters of climate change including incentives for reduced emissions from deforestation and degradation;

- publish, regularly update and disseminate national and county climate change strategies, action plans and other information;

In order to ensure the diversity of ideas and to act better, this text suggests that the members composing this Council must come from different fields and must have knowledge in the field of climate change.

As the NCCC is likely to be the high government entity to deal with climate change issues, it is noted that all government entities responsible for climate change shall provide annual reports to the Council indicating progress in implementing their mandates and actions taken and progress made since the last monitoring report.

**3.8 Kenya National Adaptation Plan 2015-2030**

**Comment [User0117]:** Corrected

Since climate change has been revealed as the most threat to Kenya, the efforts to address to it has been increased by the government. After having established the National Climate Change Response Strategy in 2010, and the National Climate Change Action Plan (NCCAP 2013-2017) in 2012, the Kenyan government through the ministry of environment set up National Adaptation Plan (NAP) from 2015 to 2030 in order to boost its efforts towards climate change action.

As it has been done for the other texts, the NAP was conceived with the participation of different actors from the Government, the private sector, and the civil society; with the support of international development agencies [41]

Having such all of these documents is an obvious sign that demonstrates how the country is determined to address climate change. The Government of Kenya is fully committed to addressing climate change domestically, as well as demonstrating leadership at a global scale in fighting against the impact of climate change [42].

According to information from the NAP, this document was developed with a view to operationalizing the NCCAP 2013-2017 by incorporating adaptation across all sectors in the national planning, budgeting and implementation processes.

The aim of this NAP is to consolidate the country's vision on adaptation supported by macro-level adaptation actions that relate with the economic sectors and county level vulnerabilities to enhance long term resilience and adaptive capacity that cover the time frame 2015-2030 (NAP 2016).

The objectives of the NAP are to:

- Highlight the importance of adaptation and resilience building actions in development;
- Integrate climate change adaptation into national and county level development planning and budgeting processes;
- Enhance the resilience of public and private sector investment in the national transformation, economic and social and pillars of Vision 2030 to climate shocks;
- Enhance synergies between adaptation and mitigation actions in order to attain a low carbon climate resilient economy; and
- Enhance resilience of vulnerable populations to climate shocks through adaptation and disaster risk reduction strategies.

Taking into account sectors that are most affected by climate change, the proposed sectoral adaptation actions have been oriented in the agriculture, livestock, water, environment, infrastructure, sustainable livelihoods, energy infrastructure and tourism sectors. However, as the above-mentioned priorities have been identified at national level, counties level have been encouraged to set up their priorities taking into account their context after making vulnerability assessments.

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### 3.9 Other government entities related to climate change response

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Recognizing the threats posed by climate change, the government of Kenya continues to take measures to protect the country from its impacts. In addition to the mechanisms mentioned above, the government has also established the National Climate Change Action Plan (NCCAP) for the periods 2013-2017 and 2018-2022. The NCCAP enables the government to take decisive action in responding to the challenges faced by the country.

Both NCCAP 2013-2017 and 2018-2022 encourage people-centered development, ensuring that climate change actions support Kenya's achievement of development goals. It also supports efforts towards the continued attainment of Vision 2030 (NCCAP 2013). In order words, the NCCAP is among other plans that has been already set to operationalize the NCCRS launched in 2010.

The NCCAP introduce detailed actions that Kenya is incorporating to address climate change, during the 2013-2017 and 2018-2022 medium-term planning period.

Furthermore, in 2016, the government of Kenya established the National Drought Management Authority (NDMA). The NDMA is a public body that has been tasked with exercising overall coordination over all matters related to drought risk management. Its primary objective is to establish mechanisms, either independently or in collaboration with stakeholders, that will effectively address and mitigate drought emergencies in Kenya.

The NDMA plays a crucial role in closely monitoring the situation and providing monthly reports on drought conditions. This proactive approach enables the government to anticipate and make informed decisions regarding drought response and management.

In addition to the NDMA, the government of Kenya also recognizes the importance of involving civil societies in the sector of climate change. The government actively facilitates and encourages the participation of civil society organizations working in this field. By fostering collaboration between the government and civil society, Kenya aims to enhance its climate change response efforts and promote sustainable development.



### 3.10 Advantages of these policies

Comment [User0120]: Number subsection added

Establishing climate-related policies presents many advantages. It provides the government with a legal framework for mitigating and adapting to the effects of climate change on various sectors of the economy. For instance, the Climate

Change Bill (2014) was established to facilitate and enhance the response to climate change. It aims to provide guidance and measures to achieve low carbon, climate-resilient growth and address related purposes.

Additionally, climate-related policies enable the country to identify and address climate-related issues in a well-coordinated manner. These policies allow climate actors to ensure a synchronized response to climate challenges.

Moreover, such policies serve as a proactive measure, helping stakeholders predict and prepare for upcoming climate events. They provide recommendations for actions that can be taken to prevent the country from experiencing climate calamities.

By having dedicated entities responsible for climate issues, the government can allocate the necessary budget for addressing climate change and mobilize resources from different partners. Climate actors also assist the government in identifying the most vulnerable territories and determining the actions needed to be implemented.

In Kenya, climate policies have played a significant role in educating citizens about climate change through climate education initiatives. The government has facilitated the creation of organizations focused on climate advocacy and mobilization, spreading climate change-related information across the country. These strategies have successfully raised awareness about the impact of climate change on people's living conditions.

## 4. CONCLUSION

Comment [User0121]: Corrected

This study focuses on climate change policy in Kenya. The aim was to highlight major climate change related threats found in Kenya and the policies implemented by the government to address climate change. From the branches that have been set up by the government, we can see that Kenya has taken the problem of climate change seriously. For this reason, I found that the Kenyan government is determined to deal with the consequences of climate change. Adaptation and mitigation policies have been implemented to protect citizens efficiently against the effects of climate change.

The initiatives undertaken by the government are clear indications of the leaders' commitment to addressing climate change. What is even more interesting is that the population is mobilized and understands that climate change issues are not just the government's responsibility, but a common issue that everyone must participate in addressing. The government has conducted various trainings and campaigns to raise awareness among citizens about climate change and has infused them with climate change related skills.

As a result of these trainings, there are now several associations and organizations working in the environmental sector in Kenya, and the population is courageous and committed to fighting against the effects of climate change.

In the East African region, Kenya is leading the way in addressing the issue of climate change. It is possible that in the near future, other countries may follow Kenya's lead as the consequences of climate change are inevitable and affecting every country.

## COMPETING INTERESTS

Authors have declared that they have no known competing financial interests.

Comment [User0122]: Section added

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