

# **THE UNIVERSITY OF NAIROBI**

**INSTITUTE OF DIPLOMACY AND INTERNATIONAL RELATIONS**

**THE IMPACT OF CLIMATE CHANGE ADAPTATIONS ON CONFLICT  
PREVENTION IN THE 21ST CENTURY: A COMPARISON OF EASTERN AND  
WESTERN AFRICA EXPERIENCES**

**PAUL KAMWERU NDUNG’U**

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Master of Art (M.A) Degree in International Studies at the Institute of Diplomacy and  
International Studies (IDIS), University of Nairobi.**

**AUGUST 2021**

## DECLARATION

This project proposal is my original work and has never been presented to any other university or institution for purposes of an academic award.

Signature:  Date: 26<sup>th</sup> MAY 2021

**PAUL KAMWERU NDUNG'U**

**REG. No: R50/35807/2019**

This project proposal has been submitted for examination with my express approval in my capacity as the university supervisor.

Signature:  Date: 03/12/21

**Dr. Mumo Nzau**

**Supervisor**

**Institute of Diplomacy and International Studies (IDIS)**

## **DEDICATION**

This research is dedicated with love and gratitude to my loving wife Alice and the entire family.

## **ACKNOWLEDGEMENT**

I appreciate the Almighty God above all for allowing me to go this far in my studies. I am also very grateful to and indebted to my supervisor, Dr. Mumo Nzau, who has read every sentence in this project report and has relentlessly, critiqued my work after so many errors, while also providing me with fresh ideas on how to enhance my research. Am indeed greatly humbled by the level of support received and will forever be grateful to him.

## **ABSTRACT**

The purpose of this study was to examine the theoretical relationship between Climate Change Adaptation on Conflict Prevention in the Twenty-First Century International System, assess the impact of Climate Change Adaptation on Conflict Prevention in Twenty-First Century Africa, and compare and contrast the Impact of Climate Change Adaptation on Conflict Prevention in Eastern and Western Africa. The study employed a mixed-methods case study strategy that encompassed both qualitative and quantitative techniques. The qualitative methodology was used to collect and manage the descriptive data. Qualitative method was used to evaluate qualitative elements such as the respondents' attitudes and views, which do not have standard metrics. The quantitative method, on the other hand, was used to collect and manage numerical data that was used to quantify disparities, predict relationships, and identify characteristics. The study discovered that in the twenty-first century international system, there are theoretical links between climate change adaptations and conflict avoidance. According to a growing consensus, climate change has already become a global risk multiplier in a variety of ways, including increasing unpredictability, exacerbated inequality, and rising tensions, all of which lead to the emergence of new risks of violent conflict. According to several studies, climate warming increases the likelihood of state conflict. Existing ties between climate change adaptation, conflict prevention, and other associated topics like food security, disaster management, humanitarian response, and health are also being strengthened. This demonstrates how climate change and conflicts are inextricably linked, as well as the significance of integrating adaptation, mitigation, and conflict prevention strategies to achieve long-term solutions to global vulnerabilities. As a result of these challenges, the study discovered that climate change may block the fulfilment of many of the SDGs, including those linked to environmental sustainability, poverty reduction, child mortality, and the eradication of malaria and other diseases. Existing environmental and societal issues may lead to migration over and within country borders, heightening the continent's conflict risk. As a result, climate change is not only an environmental issue, but also a socio-economic one with major socio-economic ramifications that could lead to violent and non-violent conflicts in many parts of Africa. The study has noted that the Eastern and Western regions of Africa have implemented a number of climate change adaptation initiatives all geared towards preventing climate induced conflicts. Climate change has long been projected to have a range of direct and indirect effects on food security, water availability, people's health and well-being, and regional stability in Eastern Africa. Rain-fed agriculture, for example, is the primary source of income for a large portion of the population in several Eastern African countries. The study recommends that there is need for increased political commitment to climate change adaptation on conflict prevention, improved identification mechanisms for climate change and assessment of conflict risks, enhanced knowledge management of climate change adaptation on conflict prevention, improved governance of security institutions, and integration of climate change adaptation measures into emergency conflict prevention response. In order to avoid climate-related violence, regional cooperation through regional economic communities like as ECOWAS, IGAD, and EAC must focus on adopting policies that focus climate change adaptation measures.

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## CHAPTER ONE

### 1.1 Background of the Study

One of the factors that has been highlighted as increasing the likelihood of violent conflict in the twenty-first century is climate change. Climate change-related threats have frequently harmed state stability in many places of the world. It is indeed cited as a major threat due the severity of its consequences on socio-economic wellbeing for communities and states and its impact is already being felt around the globe while some ramifications are projected to emerge in the foreseeable future.<sup>1</sup>

Climate alteration is disturbing people in several countries around the world in different ways, with some scientists already warning that it poses a serious threat to population health, natural resource availability for subsistence, vital economic infrastructure, and, in some cases, the entire state system. Unfortunately, the world's less industrialised nations have been identified as the most susceptible to and unable of adapting to climate transformation. This is due to the fact that the majority of them lack the financial, technical, and institutional resources needed to establish resilience.<sup>2</sup>

Bodansky, for example, posits that due to the probable implications of climate change, state rivalry over shared resources will undoubtedly intensify.<sup>3</sup> Specifically, concern has been growing over an emerging rivalry on the access to resources in trans-boundary river basins and the Arctic. The effectiveness of international institutions intended to manage resource sharing relationships is

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<sup>1</sup> Kameyama, Y., & Kanie, N., (2016). *Climate change in Africa: Perspective of future climate regime*. Tokyo, Japan: UNU Press. P-21.

<sup>2</sup> Shaw, R., & Pereira, J., (2017). *Climate change adaptation and conflict prevention: Issues and challenges*. UK: Emerald. P-3.

<sup>3</sup> Bodansky, D. (2014). *Climate Change, Environmental Stress and Conflict*. Tyndall Centre for Climate Change Research, Working Paper No. 7 Norwich. P-26.

being tested by the effect of environment modification. Scientific evidence also tends to suggest that increased rivalry between states in the future may likely lead to both direct and indirect conflict between states. According to current data, international institutions' ability to manage disputes over trans-boundary resources may be overwhelmed if the impact of climate change is not addressed immediately.<sup>4</sup>

Due to its high sensitivity to droughts, flooding, and storms, which have already devastated Africa's agricultural sector, affecting both natural resources and human health, the Global Climate Risk Index now ranks Africa as the utmost climate risk affected continent in the world. The impacts of gradual change on climate are extremely harming the continent's destitute households and their water and food security due to a considerable reliance on natural resources for livelihoods, a lack of social safety nets, and poorly formed coping mechanisms.<sup>5</sup>

Turner for instance, contend that the idea of vulnerability is at the crossroads of climate change and conflict risk.<sup>6</sup> Vulnerability constitutes relationships and configurations between various factors that can influence a situation to evolve into violent conflict. Climatic changes can therefore have an impact on a region's level of vulnerability through exposure with devastating consequences for people and their livelihoods. An acute vulnerability of a states' population, especially the poor, the elderly and children tends to exacerbate the risk of conflict. A number of states have therefore prioritised adaptation measures in order to minimize vulnerability and thereby prevent violent conflicts.

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<sup>4</sup> Ibid.P-2.

<sup>5</sup> Ibid. pp. (4-5).

<sup>6</sup> Turner, B., Kasperson, P., Matson, J. (2012) *A Framework for Vulnerability Analysis in Sustainability Science*. Proceedings of the National Academy of Sciences of the United States of America. 100(14), 8074-8079.

According to Sneyers, adapting to change in climate to lessen the danger of vicious battle needs changes and adjustments at all levels, including communal, national, regional, and global.<sup>7</sup> To enable effective and workable adaptation measures for the prevention of violent conflict, governments would therefore need to consider integrating climate change in all levels of decision making. National coping strategies would need to be in synergy with regional and international interventions. African states specifically may need to prioritise adaptation strategies that are in harmony with regional interventions since most of their resources are trans-boundary. As a result, this research will compare the impact of climate transformation adaptation on conflict avoidance in twenty-first century in Eastern and Western Africa.

## **1.2 Problem Statement**

The implications of climate change have become both significant and observable not only in individual countries but also on a regional scale. Changes in climatic conditions are already causing huge problems for communities to the extent that they are increasingly associated with increased insecurity and conflict in Africa. The African continent is already under tremendous socioeconomic stress emanating from changes in the climate and its consequences on the ecology, particularly biodiversity and water supply. Studies suggest that socio-economic challenges such as large-scale migration and the struggle for food and water could pose serious security risks in Africa, with the potential to aggravate conflicts and destabilise regions. According to a study conducted by De Waal in West Africa, the emergence of violent conflict in specific places is linked to the region's annual rainfall patterns.<sup>8</sup> Another study by Gleditsch in Sub-Saharan countries of East Africa found that countries which experienced sustained periods of drought were more prone

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<sup>7</sup> Sneyers, R., (2013). *Adaptation Options to Climate Change: A Typology*. Department of Geography, University of Guelph, Ontario, Canada. P-5.

<sup>8</sup>De Waal (2007) *Is climate change the culprit for the dry Sahelian region?* African Arguments 45(1-3)

to civil unrests because their economic grievances were more pronounced.<sup>9</sup> As a result, the professor believes that unless climate adaptation measures are undertaken, the felt results on change of climate will persist to generate conflict. According to Brooks, conversely, the consequences of change on climate adaptation techniques on conflict prevention are highly contextual, which means that while West Africa may be more effective in preventing conflicts in that region; the same benefits may not be found in East Africa.<sup>10</sup> In light of the foregoing findings, the current study will evaluate the influence of climate variation adaptation techniques on conflict avoidance in East and West Africa.

### **1.3 Research Questions**

1. What is the theoretical relationship between Climate Change Adaptation on Conflict Prevention in the 21<sup>st</sup> Century International System?
2. What are the impacts of Climate Change Adaptation on Conflict Prevention in 21<sup>st</sup> Century Africa?
3. What is the comparison or contrast between the Impact of Climate Change Adaptation on Conflict Prevention in Eastern and Western Africa?

### **1.4 Objectives of the study**

The study's overall goal is to compare how climate change adaptation affects conflict prevention in Eastern and Western Africa.

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<sup>9</sup> Gleditsch, N (2013) *Whither the weather? Climate change and conflict*. Journal of Peace Research 49(1): 3-9. P-7.

<sup>10</sup> Brooks, N. (2003). *Vulnerability, Risk and Adaptation: A Conceptual Framework*. Working Paper 38, Tyndall Center for Climate Change Research. P-3.

## **1.5 Specific Objectives**

1. To examine the theoretical relationship between Climate Change Adaptation on Conflict Prevention in the 21<sup>st</sup> Century International System
2. To assess the impacts of Climate Change Adaptation on Conflict Prevention in 21<sup>st</sup> Century Africa
3. To compare and contrast the Impact of Climate Change Adaptation on Conflict Prevention in Eastern and Western Africa.

## **1.6 Rational (Justification of the Study)**

This research proposes three major justifications: policy, scholarly, and public value.

### **1.6.1 Academic Justification**

While the study accords with earlier research on some aspects of climate change, it is notable for aiming to enhance academic inquiry and build on previous studies on the connection between change on climate adaptation and war in Africa. Subsequently, the study will ascertain and applaud topics for further research in the debate over variation in climate adaptation and war prevention in Eastern and Western Africa. A lack of awareness of the influence of due to change in climate adaptation on conflict prevention in Eastern and Western Africa is also revealed by the literature assessment. As a result, the purpose of this inquiry is to bridge the existing gap.

### **1.6.2 Policy Justification**

Policymakers have remained unwilling to properly appreciate the impact of climate change adaptation on conflict avoidance, according to a review of the literature. This research intends to provide policymakers with a enhanced knowledge of how climate adaptation influences conflict prevention in various parts of Africa, including Eastern and Western Africa. Finally, the study's value in terms of policy formation and implementation may be heavily influenced by how the findings are used. Nonetheless, the outcomes of this research will provide a solid foundation for policy formation, planning, and implementation by decision-makers.

## 1.7 Literature Review

### 1.7.2.1 On the Theoretical relationship between Climate Change Adaptation and Conflict Prevention in the 21<sup>st</sup> Century International System

Human actions are substantially to blame for global climate change, according to a huge body of scientific evidence. Desertification, land degradation, agricultural growth retardation, sea-level rise, floods, and hurricanes are all anticipated to be negative consequences of climate change in rainfall and temperature, particularly extremes.<sup>11</sup> Climate change has already become a global threat multiplier in a diversity of means, as well as amplified volatility, exacerbated inequality, and rising tensions, all of which lead to the construction of new hazards of ferocious battle, according to a growing agreement.<sup>12</sup> According to Brown the accelerated rate of alteration in climate in the twenty-first century will intensify its effects on peace and security in the future decades, and might potentially lead to new risks not currently considered by the international system.<sup>13</sup>

In recent years, adaptation has emerged as answer to climate transformation in order to deal with its repercussions. According to Peterson, adaptation involves changes in people and ecological structures as a solution to projected and real climate stresses that attenuate consequences or take advantage of beneficial opportunities.<sup>14</sup> Adaptation is increasingly being viewed as a technique for averting vicious skirmish. As a result, identifying and implementing climate change adaptation actions has the potential to lessen the probability of violent conflict significantly.

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<sup>11</sup> Ibid, pp, 9-10.

<sup>12</sup> Barnett, J and Adger, W (2007). *Climate change, human security and violent conflict*. Political geography 26(6): 639-655.

<sup>13</sup> Brown, O., Hammila, A., & McLeman, R., (2013) *Climate change as the 'new' security threat*. International Affairs 83:1141-1154.

<sup>14</sup> Peterson, J (2011) *Are we adapting to climate change?* Global Environmental Change 21:25-33.

According to Adger, climate change adaptations on conflict prevention interrelate in three main ways.<sup>15</sup> First, climate change adaption measures can act as peace building agents that serve as catalysts for peaceful conflict resolution. Countries can better withstand a variety of economic and social pressures while at the same time avoiding the destabilisation of their social structures and governing institutions. Strengthening a state's ability to adjust to climate variation might help disadvantaged groups become more resilient by providing them with new sources of income and putting them in a better position to resolve conflicts peacefully. Participatory adaptation measures have particularly been found to be well suited in building resilient communities as they offer marginalised groups an opportunity to voice existing concerns. Second, if climate change adaptation measures encounter resistance they can contribute or cause friction and conflict. The emergence of resistance usually arises from individuals or states not accepting adaptation-related measures. Third, conflicts, whether short-term or long-term, might stymie climate change adaptation. Adaption programmes can be interrupted by the destruction and chaos unleashed by conflict leading to the destruction of resources and gains made by adaption measures. Climate variation is expected to have stimulus on all continents, as well as many states' limited adaptation capability and vulnerability has been connected to their economic and socio-cultural circumstances.<sup>16</sup>

### **1.7.2.2 The Impact of Climate Change Adaption on Conflict Prevention in the 21<sup>st</sup> Century**

#### **Africa**

Africa is seen as a continent that is already under enormous stress due to significance of climate transformation and its consequences. Due to to conserve key natural resources, the continent faces

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<sup>15</sup> Adger, W. (2010). *Climate change, human well-being and insecurity*. New Political Economy, 15(2), 275-292.

<sup>16</sup> Ibid. p-11.



enormous socioeconomic and environmental concerns. Agriculture, biodiversity, coastal zones, water resources, ecosystems, and human health have all been influenced by climate change on the continent. Due to the difficulties and repercussions of climate change, regional institutions have emerged to implement appropriate adaptation measures in order to avoid crises and conflicts.<sup>17</sup>

Several studies have examined the consequences of climate variation adaptation on conflict prevention in Africa, as well as the outcomes demonstrate that the impact of climate variation adaptation on conflict prevention has varied throughout time and context, leading to key milestones. A range of institutional, cultural, and political elements in Africa, according to Artur and Hilhorst, moderate the nexus concerning climate alteration and war.<sup>18</sup> The proper implementation of adaptation measures in some African countries has helped reduce tensions and catalysed processes that have promoted both stability and peace. Adger and Barnett note that climate change adaptation has had a central role in informing conflict mitigation policies aimed at minimizing African state's vulnerability to climate change driven conflicts.<sup>19</sup>

Butler and Gates posits that many and clear connections exists both socially, politically and in terms of climate when comparing conditions in Africa with factors that are known to increase the potential for conflict and the preconditions for violent conflicts to occur.<sup>20</sup> Because conflict potentials are social repercussions of climate change, adaptive approaches should increase social structures' ability to cope with it. According to Hendrix and Salehyan, many African places which are susceptible to climate variation are similarly under pressure from other factors such as resource

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<sup>17</sup> Ibid,pp-78.

<sup>18</sup> Artur, L and Hilhorst, D. (2012) *Everyday realities of climate change adaptation in Africa*. Global Environmental Change, 22(2), 529-536.

<sup>19</sup> Adger, W. and Barnett, J. (2009). *Four reasons for concern about adaptation to climate change*. Environment and Planning 41(12), 2800-2805.

<sup>20</sup> Butler, C., and Gates, S (2012) *Climate, conflict, and property rights*. Journal of Peace Research 49: 23-34.

depletion as well as population increase.<sup>21</sup> Moreover, the occurrence of socio-economic disruptions because of climate change has linkages to other conflict constellations that are not directly impacted by climate change.

### **1.7.2.3 Comparison and Contrast of the Impact of Climate Change Adaptation on Conflict Prevention in East and West Africa**

East and West Africa have been the most conflict-prone regions in Africa, according to Collier, for a variety of reasons.<sup>22</sup> Both regions have a complex network of mixed ethnic communities with a history of occasional flare ups to violent conflict. For example, the researcher points out that East and West Africa have distinct ethnic, geographical, and human capital characteristics, resulting in a significant gap in availability of primary services, as indicated by wellbeing, malnutrition, and education statistics. The similarities in the significant gap in access to essential amenities can be attributed in part to both regions' lengthy histories of terrible violence and violent conflict.<sup>23</sup> Similarly, many developmental and environmental problems in both regions have further been exacerbated by climate change. Understanding the potential and actual connections amongst climate variation, the environment, and battle avoidance is critical for these regions, which are increasingly seen as susceptible to the consequences of climate alteration. Existing socioeconomic, political, and environmental conditions have produced vulnerabilities, making inhabitants in both regions more exposed to climate variation's expected repercussions.

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<sup>21</sup> Hendrix, C and Salehyan, I (2012) *Climate change, rainfall and social conflict in Africa*. Journal of Peace Research 49:35-50.

<sup>22</sup> Collier, P. (2008) *Climate change and Africa*. Oxford Review of Economic Policy, 24(2): pp,337-353.

<sup>23</sup> Ibid, pp 30,31

Climate change, according to Dabelko, is projected to increase temperature, rainfall, and sea level variability.<sup>24</sup> The role of climate in precipitating social conflicts, particularly inter-state, non-state, and community conflicts, is garnering a lot of attention in light of such expected changes. A study by De Waal in Sahelian countries of West Africa found that the eruption of violent conflict was correlated to changes in rainfall patterns that was witnessed in the previous year.<sup>25</sup> Another study by Gleditsch in Sub-Saharan countries of East Africa found that countries which experienced sustained were more prone to civil unrests because economic grievances were more pronounced.<sup>26</sup> Hendrix and Salehyan argue that a combination of climatic changes and demographic trends like economic and political dynamics are more likely to create greater risks of violent conflicts both directly and indirectly.<sup>27</sup>

Several other studies have also examined conflict in both East and West Africa regions from an environmental and climate lens aiming to identify suitable adaptation strategies. For example, according to Bodansky, implementing suitable interventions and policies that are responsive to context-specific concerns and dynamics requires conflict-sensitive adaptive ability of a country.<sup>28</sup>

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<sup>24</sup> Dabelko, G (2009) *Planning for climate change: The security community's precautionary principle*. *Climatic Change* 96(1-2); 13-21.

<sup>25</sup> De Waal (2007) *Is climate change the culprit for the dry Sahelian region?* *African Arguments* 45(1-3)

<sup>26</sup> Gleditsch, N (2013) *Whither the weather? Climate change and conflict*. *Journal of Peace Research* 49(1): 3-9.

<sup>27</sup> Hendrix, C and Salehyan, I (2012) *Climate change, rainfall and social conflict in Africa*. *Journal of Peace Research* 49:35-50.

<sup>28</sup> Bodansky, D. (2014). *Climate Change, Environmental Stress and Conflict*. Tyndall Centre for Climate Change Research, Working Paper No. 7 Norwich. p-2.

## **1.8 Research Gap**

Associations amongst climate change impacts and additional stresses like desertification, water shortage, and population increase, according to the study, enhance the chance of violent conflict. The nexus amid climate variation adaptation, other stressors, and the deterrence of fierce conflict is understudied.

## **1.9 Theoretical Framework**

The consequences of climate variation adaptation on conflict avoidance in the twenty-first century will be investigated using Climate Change Adaptation Theory. Climate change adaptation theory was first proposed by Klaus Eisenack and Rebecca Stecker when they sought to find the link between biophysical factors arising out of climate change and their implications on societies.<sup>29</sup> The theory encourages contextual analysis on how climate change adaptation measures have impacted on various regions. In the case of this study, East and West Africa are the locations of interests for contextual analysis. The theory is also designed to be flexible and iterative to allow for initiated activities to respond to political, social and natural environment. This makes the theory an indispensable tool in evaluation and monitoring as well as climate change adaptation planning and programmes which need to accommodate emerging and dynamic conditions.

The theory is found to be the most robust approach in evaluating inherently complex and multifaceted programs like climate change adaptation and conflict prevention. The theory conceptualizes adaptation as an action and offers a framework to design adaptation assessment and analyse actual adaptation actions. According to the theory, the implications arising out of climate

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<sup>29</sup> Eisenack, K. and Stecker, R. (2011) *A Framework for Analyzing Climate Change Adaptations as Actions*. Potsdam Institute for Climate Impact Research.

change are complex and precluding simple predictions, possess highly uncertain developments for the future. The biggest question concerning climate change is how societies and individuals will react to the predicted consequences. More conflicts and security threats are predicted to arise as a result of the socioeconomic stresses that societies are going to face. As a result, adaptation programs need to be established to improve the acceptance of the effects of climate change and how communities might avoid the possible security consequences of climate change.<sup>30</sup>

### **1.10 Research Hypotheses**

The hypothesis provides an empirically testable variable that serves as a reference for the data gathered to meet the study's objectives. As a result, the following hypothesis was included in the data collection:

H1: There is theoretical relationship between Climate Change Adaptation on Conflict Prevention in the 21<sup>st</sup> Century International System

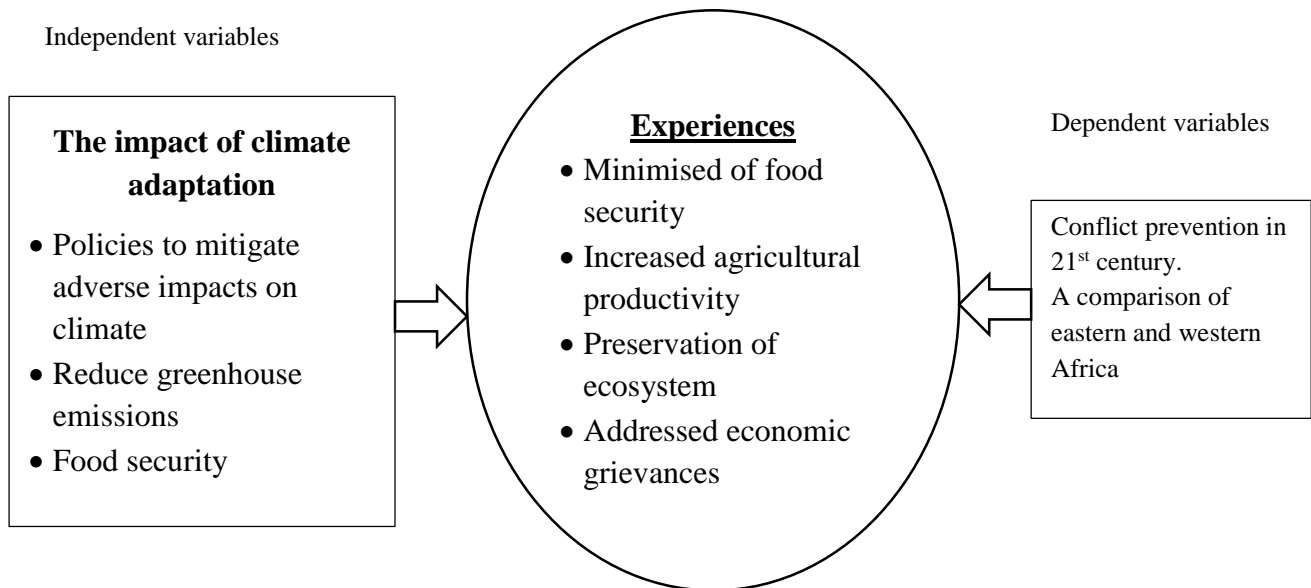
H2: There are impacts of Climate Change Adaptation on Conflict Prevention in 21<sup>st</sup> Century Africa.

H3: There is comparison and dissimilarity on the Impact of Climate Change Adaptation on Conflict Prevention in Eastern and Western Africa.

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<sup>30</sup> <sup>30</sup> Eisenack, K. and Stecker, R. (2011) *A Framework for Analyzing Climate Change Adaptations as Actions*. Potsdam Institute for Climate Impact Research.

## 1.11 Conceptual Model



## 1.12 Study Methodology

Under the study's methodology, a detailed explanation of how the research objectives were investigated is provided.

### 1.12.1 Research Design

A "research design" is a set of criteria or sets of criteria, as well as the techniques and procedures for gathering and analyzing data on the variables indicated in the study topic. The study employed a mixed-methods case study strategy that encompassed both qualitative and quantitative techniques. The qualitative methodology was used to collect and manage the descriptive data. Qualitative method was used to evaluate qualitative elements such as the respondents' attitudes and views, which do not have standard metrics. The quantitative method, on the other hand, was used to collect and manage numerical data that was used to quantify disparities, predict relationships, and identify characteristics.

### **1.12.2 Study Location**

East Africa is the continent's eastern sub region. This area is one of hardest hit by climate change because of its relative poverty, large and growing populations, and fragile ecological status. As a result, the ecology suffers as natural resources become scarce, resulting in environmental conflict in the area.<sup>31</sup> West Africa is Africa's westernmost region. West Africa is experiencing gradual climate change, and this trend is predicted to continue, with the Sahel seeing the most rapid warming.<sup>32</sup>

### **1.12.3 Target Population**

The Target respondents were individuals within the following organizations National Environment Management Authority (NEMA) in Kenya and Uganda, United Nations Environmental Programme (UNEP), Ministry of Environment and Forestry in Kenya, Ministry of Water and Environment in Uganda, USAID Environmental Programme in West Africa, SERVIR West Africa and Stockholm Environment Institute.

### **1.12.4 Sampling Size of Population**

West Africa's population is expected to be around 381,981,000 people, whereas Eastern Africa's population is estimated to be around 454,461,677.<sup>33</sup> In practice, gathering data on such a vast population is difficult, time-consuming, expensive, and inconvenient. In this circumstance, selecting a sample to act as a representation of the complete population becomes necessary.

When the population is greater than 10,000, the number of respondents was computed using the formula developed by Mugenda & Mugenda (1999).

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<sup>31</sup> Ibid, pp,50-55

<sup>32</sup> Ibid,pp-8.

<sup>33</sup> Population, total – Ghana World Bank 24<sup>th</sup> November 2019. p-3.

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n = the respondent size required

z = the standard normal deviation

p = Estimated fraction of the target population with attributes to be measured

q = 1-p

d = numerical implication

$$n = \frac{(1.96)^2 (.50) (.50)}{(0.5)^2}$$

$$= 384.$$



**Table 1.1 Research Populations and Sampling Technique**

<b>Respondents</b>	<b>Number of Respondents</b>	<b>Sampling technique</b>
National Environment Management Authority (NEMA) in Kenya	100	Random sampling
National Environment Management Authority (NEMA) in Uganda	100	Random sampling
United Nations Environmental Programme (UNEP)	52	Simple Random
Ministry of Environment and Forestry in Kenya	32	Simple Random
Ministry of Water and Environment in Uganda	20	Simple Random
USAID Environmental Programme in West Africa	30	Random sampling
SERVIR West Africa	20	Random sampling
Stockholm Environment Institute	30	Random sampling
<b>TOTAL</b>	<b>384</b>	

**Source: Researcher, 2021.**

The four categories listed in table 1.1 made up the sample. As shown in the table above, different sample approaches were used for each category.

#### **1.12.5 Data Sources and Data Collection Methods**

Both primary and secondary data were used in the investigation. Questionnaires were used to collect primary data. Academic books, journals, periodicals, papers, and online sources were all used as secondary data. The use of print media and significant nongovernmental organization publications were pursued.

### **1.12.6 Data Analysis**

The qualitative figures were examined by the following means: observing patterns and distributions; coding data; assigning numerical values; recording for analysis; and finally, analyzing the data. Tables, graphs, and figures are used to display data. The study used statistical program tools such as Excel and the Statistical Package for Social Sciences to aid in data processing (SPSS). Graphs, pie charts, and tables were utilized to present and analyze quantitative data. To evaluate the link between the independent and dependent variables, the study used standard deviation and mean as statistical models. The study used excels to code and track main themes from questionnaires. This involved creation of excel worksheet tab for each question in order to make the data stay organized and be manageable. The dependent variables were graphed on the vertical Y-axis then under input X Range, the study selected the range for independent variables.

### **1.12.7 Ethical Considerations**

The research undertook all reasonable precautions to protect the confidentiality of participants' information and identities. A research license was sought for the project. As a result, the study was be governed by Kenyan research legislation.

### **1.13 Chapter Outline**

The topic is introduced and background information is provided in the first chapter. It also establishes the problem statement, justification, theoretical framework, literature review, hypothesis, and technique, as well as the general background of the research project. The study's first goal, to research the theoretical relationship between climate change adaptation and conflict prevention in the twenty-first century international system, was the subject of the second chapter.

The third chapter examines the impact of climate change adaptation on conflict prevention in twenty-first-century Africa: A Comprehensive Assessment. The influence of climate change adaptation on conflict prevention in Eastern and Western Africa: A Comparative Analysis was discussed in Chapter four, and the Summary of Findings, Conclusions, and Recommendations were presented in Chapter five.

## **CHAPTER TWO**

### **THEORETICAL RELATIONSHIP BETWEEN CLIMATE CHANGE ADAPTATION AND CONFLICT PREVENTION IN THE 21<sup>ST</sup> CENTURY INTERNATIONAL SYSTEM**

#### **2.0 Introduction**

Climate variation has been identified as one of the most serious dangers to human security in the global system of the 21<sup>st</sup>c. According to the IPCC, climate change hazards to human security can be seen in both catastrophic weather patterns and slow-onset consequences such as rising temperatures, ocean acidification, sea level rise, glacier retreat, and land degradation. Climate change is already affecting livelihoods and provoking violent skirmish in several regions of the world, particularly in communities that rely on consistent rainfall and temperature, as well as the availability of arable land and safe drinking water. Due to their dependence on climate-sensitive areas, low incomes, and topographical disclosures, poor developing countries have been highlighted as the most susceptible to climate alteration implications. Because of their weak adaptation potential, such countries are also vulnerable to climate-related disasters and conflicts. The present chapter examines existing theoretical relationship between climate change adaptations on conflict prevention in the 21<sup>st</sup> century international system.

#### **2.1 Theoretical relationship between Climate Change Adaptation on Conflict Prevention**

The connection between climate variation and the danger of violent conflict has gotten a lot of attention recently. Climate change, according to several studies, increases the likelihood of state conflict. According to Adger et al., worldwide progress has been made in recent decades to aid in guiding and driving national and regional processes on climate change adaptation and conflict avoidance in the twenty-first century international system. During the 16th Conference of the

Parties to the UNFCCC, Parties committed to a global goal of reducing greenhouse gas emissions to bring global average temperature below 20 degrees Celsius. This agreement was borne out of the recognition that environmental changes that could result even from 2<sup>0</sup> Celsius of warming could pose significant negative social outcomes for some social systems.<sup>34</sup>

A number of inter-governmental agreements exist that support and deliver adaptation and conflict prevention outcomes as ‘co-benefits’. These include the United Nations Convention to Combat Desertification, the United Nations Convention on Biological Diversity, the Beijing Declaration and Platform for Action, the Ramsar Convention, and the Committee on World Food Security, all of which emphasize the importance of preserving healthy ecosystems that increase local resilience and support livelihoods and economic growth. Haddad notes that even though several global frameworks currently exist that address matters pertaining to climate change adaptation and conflict prevention, implementation efforts are also being made at the national and sub-national levels.<sup>35</sup> Implementation efforts are being realised through joint working groups, comprehensive activities, integrated plans and policies which have mainly focused on climate change adaptation and conflict prevention. Existing links between climate change adaptation, conflict avoidance, and other related issues such as food security, disaster management, humanitarian responses, and health are also being strengthened. This demonstrates how climate change and conflicts are inextricably linked, as well as the significance of integrating adaptation, mitigation, and conflict prevention strategies to provide long-term solutions to global vulnerabilities. Christoplos contends

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<sup>34</sup> UNFCCC (2010). *Report on the Conference of the Parties on its 16<sup>th</sup> Session*. Addendum. Part Two: Action Taken by the Conference of the Parties. (FCCC/CP/2010/16/ADD 1) pp-31-32.

<sup>35</sup> Haddad, B., (2005). *Ranking the Adaptive Capacity of Nations to Climate Change when Socio-Political goals are Explicit*. Global Environmental Change Part A, Volume 15, Issue 2, pp. 165-176.

that with these existing interconnections, more opportunities exist for climate change adaption measures and conflict prevention efforts.<sup>36</sup>

According to Liverman, current climate change models must be matched with the changing reality for it to handle the ramifications of climate variation and the risk of war. Addressing the interrelated and twin challenges of climate alteration and fight risk is most important needs of the 21<sup>st</sup>C international system. Climate variation is complex and difficult to solve in a single adaptation model. Conflict prevention is also a cross-cutting issue that is intertwined with several environmental factors. As a result, tackling climate change and increasing conflict resilience necessitates a multi-stakeholder and multi-sector methodology. To address the important causes of climate alteration, which inevitably lead to conflict in the twenty-first century, all actors in key sectors must be involved. These actors include those in the sectors of environment, communications, health, agriculture, ICTs, energy, land use planning, academia, civil society, scientific community, private sector and public authorities.

According to Eriksen and Kelly, embracing climate change adaptation strategies directed toward an integrated approach in conflict avoidance across nation states has a good logic. The researchers do warn out, however, that there is a dearth of communication and coordination across countries on effective climate variation adaptation programs targeted at reducing violence. These observations include the development of parallel climate change adaptation efforts in different countries, as well as the independent development of institutional frameworks, funding mechanisms, political processes, and information exchange between states; the lack of evidence of a systematic integration of climate variation adaptation and conflict prevention between states

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<sup>36</sup> Christoplos, I., (2008). *Incentives and Constraints to Climate Change Adaptation and Conflict Prevention*. Report for the Commission on Climate Change and Development p.36

in terms of solid project activities; and the development of parallel climate change adaptation efforts in different countries. Certain international policy processes on conflict prevention and climate change adaptation measures, according to Eakin and Luers, are to blame for the lack of coordination among diverse governments.<sup>37</sup> Despite the necessity and applicability of conflict prevention mechanisms in climate change adaptation methods, approaches, and agreements, conflict prevention has generally been incorporated haphazardly into UNFCCC climate change adaptation decisions. The reason for this has been partly because key donor institutions and governments still struggle to ensure good collaboration and communication between their own conflict management units and climate change adaptation departments, thus affecting their ability at influencing UNFCCC processes.

Dessai and Hulme observes that the lack of co-ordination between countries on climate change adaptation and conflict prevention can increase government administrative burdens and prevent the efficient use of natural, human and financial resources that reduce the overall effectiveness of efforts geared towards conflict prevention.<sup>38</sup> The scholar points out that the practical task of conflict prevention is difficult enough without the extra burden of unnecessary government administrative inefficiencies. Other inefficiencies include complicated policy frameworks, competing agendas rather than complementary ones, and missed opportunities in sharing strategies, approaches and methodologies. One key global concern is related to the development of parallel efforts geared towards climate change adaptation on conflict prevention. For example, global climate transformation adaptation actors might assume that the emergence of climate variability issues may be predominantly rectifiable by means of new mechanisms that build

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<sup>37</sup> Eakin, H., and Lemos, M. (2006). *Adaptation and the State: The Challenges of Capacity-building under globalization*. Global Environment Change, Volume 16, Issue 1, pp.7-18.

<sup>38</sup> Dessai, S., and Hulme, M., (2004). *Does Climate Adaptation Policy need Probabilities?* Climate Policy, Volume 4, Issue 2, pp. 107-128.

resilience.<sup>39</sup> However, many tools exist that are effective in conflict prevention should conflict be exacerbated by climate change. Climate adaptation methods based on present and previous experiences are likely to fall short of their goal of averting future conflict if they do not address and account for climate change impacts. Adaptation methods, while intended to lessen the danger of conflict, may instead contribute to the escalation of conflict. For example, a food security initiative designed to address unpredictable availability of food without adequate attention to climate change.

Despite the fact that several studies claim that climate change adaptation and conflict inhibition are not the same thing, the two have key traits that can be used to link them in a global framework.<sup>40</sup> Firstly, both are primarily concerned with minimizing people's vulnerability to changes and shocks. Vulnerability is the product of many financial, social, biophysical, economic and individual factors together. These are particularly related to people accessing different kinds of resources that are social, natural, economic or personal. Both climate change and conflicts have the power of increasing vulnerability by creating new problems or exacerbating the current ones.<sup>41</sup> This means that climate change adaptation and conflict prevention responses should consider how to effectively prepare people for a varied range of changes in the future as well as reducing exposure to specific high-consequence hazards. Practices involving both climate change adaptation and conflict prevention therefore mean that concerted efforts are required to understand those who are vulnerable in order to determine responses that would be most effective.

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<sup>39</sup> Few, R., Brown, K., and Tomkins, E. (2007). *Public Participation and Climate Change Adaptation: Avoiding the Illusion of Inclusion*. *Climate Policy*, Volume 7, Issue 1, pp.46-59

<sup>40</sup> Few, R., Brown, K., and Tomkins, E. (2007). *Public Participation and Climate Change Adaptation: Avoiding the Illusion of Inclusion*. *Climate Policy*, Volume 7, Issue 1, pp.46-59

<sup>41</sup> Barnett, J., and Adger, W., (2007). *Climate Change, Human Security and Violent Conflict*. *Political Geography*, Volume 26, Issue 6, pp. 639-655.



Secondly, both climate change adaptation and conflict prevention measures are usually implemented with a high degree of uncertainty. Projections about future changes in climate have proven to be more and more robust on a global scale. However, the magnitude and the type of impacts that were observed in some locations in the future are still uncertain. On the conflict side, the magnitude and type of future conflict events are difficult to predict. Uncertainty and unpredictability increases the prospects of decisions being made now to not only have the potential of being redundant in the future, but also in the worst case scenario, increases the vulnerability of systems and people, or compromises their capacity to make changes. Due to the ambiguity and unpredictability of future situations, it is fair to base climate alteration adaptation and conflict prevention policies on the development of global capacity founded on sound long-term decisions.<sup>42</sup>

Overall, shared characteristics means that it is essential that climate change adaptation and conflict prevention needs are in tandem, especially when integrating them to development planning. According to Eriksen and Kelly, if planning for vulnerability and risk is conducted in an integrated manner, it can ensure synergies for both climate change adaptation and conflict prevention outcomes.<sup>43</sup> It also offers a good opportunity for mainstreaming other cross-cutting issues like social inclusion. Berkhout elucidates that climate change adaptation and conflict prevention should not consist of a set of separate priorities or activities.<sup>44</sup> The building of resilience means the integration of vulnerability goals into the design, planning and implementation of key policies and activities. Climate change adaptation and conflict prevention efforts necceciate to be designed in

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<sup>42</sup>Few, R., Brown, K., and Tomkins, E. (2007). *Public Participation and Climate Change Adaptation: Avoiding the Illusion of Inclusion*. Climate Policy, Volume 7, Issue 1, pp.46-59

<sup>43</sup>Eriksen, S., and Kelly, P., (2007). *Developing Credible Vulnerability Indicators for Climate Adaptation Policy Assessment*. Mitigation and Adaptation Strategies for Global Change, Volume 12, pp. 495-534.

<sup>44</sup>Berkhout, F. (2005). *Rationale for Adaptation in EU Climate Change Policies*. Climate Change, Volume 5, Issue 3, pp. 377-391

a way that encourages effective and efficient resource utilisation and where possible maximizes on the creation of co-benefits for environmental sustainability and development.

Six concepts identified by Barnett and Adger can be used to drive global considerations for climate alteration adaptation and skirmish avoidance actions.<sup>45</sup> One, rather than focusing solely on specific climate/conflict threats, attempts to cope up with climate change and prevent conflict must address the underlying reasons that render regions vulnerable. Two, the perspectives of most vulnerable people need to be incorporated into priority setting and planning. This entails allowing potentially vulnerable communities to participate in planning for climate change adaptation and conflict prevention. Such a principle would prompt planning and decisions making processes to consider what might make people vulnerable in one particular context and prevent the assumption that vulnerability is evenly distributed. Therefore climate change adaptation and conflict prevention measures must be connected and reinforced with environmental and developmental agendas, with the goal of maximizing co-benefits. Strengthening sustainable environmental and developmental health can help improve global capacity of coping with and adapting to future risks arising due to climate change and conflicts.<sup>46</sup>

Four, responses need to be integrated across all sectors and this means responding in a more coordinated manner and not concentrating exclusively on sector specific risks. Education-related activities, for example, can be useful tools for achieving water or health-related goals, and water-related activities can result in considerable energy security benefits. A high degree of coordination and communication between countries can thus be essential during planning and implementation

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<sup>45</sup> Barnett, J., and Adger, W., (2007). *Climate Change, Human Security and Violent Conflict*. Political Geography, Volume 26, Issue 6, pp. 639-655.

<sup>46</sup> Barnett, J., and Adger, W., (2007). *Climate Change, Human Security and Violent Conflict*. Political Geography, Volume 26, Issue 6, pp. 639-655.

of activities. Five, potential indirect effects that could emerge due to the introduction of climate policies internationally need to be considered. International institutions involved in planning have to put into consideration the potential for indirect risks. Sixth, in order to lessen the uncertainty of future climate change, institutions, communities, and individuals must work together to increase their potential to respond effectively to future changes. Certain adaptation measures have been found to more effective than others in tackling specific risks of conflict. However, because of the uncertainty of the future, individual states need to be able to react to unexpected changes. This can also be referred to as unplanned adaptation because it means providing support to individual nation's ability to access different resources they need to adapt effectively and prevent conflict.<sup>47</sup>

Climate change is reshaping the modern world in different ways. The new research conducted by environmental peace building organization illustrates there exists a nexus between some of global wars and change in climate. Based on NASA's recent analysis, it was confirmed that 2020 was the warmest year in history. This resulted in storming seasons and wildfires, which were closely connected to anthropogenic warming. In January 2021, the UNDP, in collaboration with the University of Oxford, conducted a global survey on climate change. From their findings, 64% of the respondents in 60 sample countries believed that climate change leads to global emergencies and conflicts. Day argues that this is justified by the fact that climate change is negatively affecting; global food security, increasing population movements and threatening densely populated areas inhospitable for human survival.<sup>48</sup> In this case, climate crises are becoming a major global issue that calls for the international relations' system to handle the issue based on the relationship between political institutions, human behavior, and changing natural world.

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<sup>47</sup> Barnett, J., and Adger, W., (2007). *Climate Change, Human Security and Violent Conflict*. Political Geography, Volume 26, Issue 6, pp. 639-655.

<sup>48</sup> Day, A., & Caus, J. (2020). *Conflict Prevention in the Era of Climate Change: Adapting the UN to Climate-Security Risks*. United Nations University. p-42.

Currently, the international relation is focused on the traditional issues affecting security such as nuclear proliferation, competition based on great power, and interstate wars. According to Zhang, climate change affects conflict prevention in the 21<sup>st</sup> century by threatening global security and military infrastructure and operations. According to the Worldwide Threat Assessment of the U.S. Intelligence Community, climate change accelerates the competition for resources, social discontent, and economic distress. From this perspective, international organizations are called to channel the finances for climate mitigation as a way of responding to natural disasters and maintaining global peace.<sup>49</sup> The major organizations with the mandate of maintaining peace through controlling climate change are; UN Security Council, USAID, and other international NGOs.

There have been efforts from the international system to raise private donations, which may assist in activities relating to climate changes and which may lead to global conflicts. Zartman uses the example of Syria's refugee crises, where more than \$200 million were raised from private donations in a single year. Recently, the Gates Foundation has pledged over \$350 million that targets the climate adaptation research benefiting the small-scale farmers. Financing the global climate changes helps the less developed countries to be able to handle the security issues in their own.<sup>50</sup> For example, in Syria, a lot of crises were associated with climate issues. Here, the country had failed to address the climate issues since they lacked enough finances. After the involvement of international bodies, which raised more than \$5 billion to mitigate the same, there were fewer conflicts in the country.<sup>51</sup>

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<sup>49</sup> Zhang, G. (2021). "A community of shared future for mankind" and implications for conflict prevention. In *New Paths and Policies towards Conflict Prevention* (pp. 129-138). Routledge. p-67.

<sup>50</sup> Zartman, I. W. (2020). *Conflict Prevention and Management. Peacebuilding Paradigms: The Impact of Theoretical Diversity on Implementing Sustainable Peace*, p- 94.

<sup>51</sup> *Ibid*, p-49.

The United Kingdom's government has proposed a discussion on climate change and security at the UNSC in 2019 based on Ramchaman's study to preserve world peace and security. According to the UK government, countries that are unable to adapt to climate variation are further expected to be implicated in violent conflict with their neighbours and the world community.<sup>52</sup> In addition to that, they argued that the cost of civil wars is a bit higher than the cost of climatic adaptation. In this case, the climate adaptation for the poor countries in the international communities would require the intervention of the developed nations. In a broader perspective, the world that does not care about coming together to fight the issue of climate change is the one that would always want conflicts. In other words, the climate risks facing the world lead to increased insecurity unless there is enhanced cooperation in the international system.<sup>53</sup>

In support of sustainable development, the international community has already acknowledged that if they do not take climate change seriously, achieving the international development goals of poverty reduction and improved health will be impossible. Von adds that if the international system does not pay attention to the climate issues, peace building activities may worsen due to tensions over the resources hence increasing the violence risks.<sup>54</sup> A good example is in Liberia, where the United Nations-led programs have invested in training ex-combatants agricultural capabilities hence motivating them to be farming communities. This means that the climate change adaptation relates to conflict prevention in that where there are climatic crises, it risks fights to the neighbouring states and also to the international community. For that matter, the international system should ensure that there is climate adaptation.<sup>55</sup>

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<sup>52</sup> Ramcharan, B., & Ramcharan, R. (2020). Conflict Prevention in the UN's Agenda 2030: Development, Peace, Justice and Human Rights. Springer Nature.p-22.

<sup>53</sup> Ibid, p-4.

<sup>54</sup> von Uexkull N., & Buhaug, H. (2021). Security implications of climate change: A decade of scientific progress. p-52.

<sup>55</sup> Ibid, p-31.

## **2.2 Conclusion**

This chapter critically examines the existing theoretical relations amid climate change adaptations and conflict avoidance in the twenty-first century international system. There is a compelling justification for applying climate change adaptation measures in the settings of conflict avoidance, according to one of the primary points made there. This is especially true given how climate change is already disrupting livelihoods and provoking violent conflict in numerous regions of the globe, predominantly in communities that rely on consistent rainfall, temperature, and the obtainability of arable land and clean water.

Second, impoverished developing countries have been highlighted as the utmost susceptible to the effects of climate alteration as a result of their large dependence on climate-sensitive sectors, low incomes, and topographical exposures. It's becoming clear that neither climate change adaptation nor conflict prevention are about tackling problems on their own, but rather about confronting the global context in which they arise. To address the significances of climate alteration and the threat of war, present climate change ideologies must be linked to changing realities. One of the most critical aspects of the twenty-first century international system should be addressing the interconnected and twin challenges of climate change and war risk.

## **CHAPTER THREE**

### **IMPACT OF CLIMATE CHANGE ADAPTATION ON CONFLICT PREVENTION IN 21<sup>ST</sup> CENTURY AFRICA: A COMPREHENSIVE ANALYSIS**

#### **3.0 Introduction**

The overarching goal and expected consequence of climate alteration adaptation on conflict prevention in Africa is to lessen existing and future threats to people's and the environment's well-being and safety. The goal of this chapter is to examine the impact of climate change adaptation on conflict avoidance in 21st-century Africa.

#### **3.1 Climate Change and Conflict in Africa**

Africa is regarded as the world's greatest climate-vulnerable regions. Evidence of climate alteration in Africa is quite widespread and it includes changes in precipitation patterns, rising sea levels along the coastal regions, and overall temperatures having risen from 1<sup>0</sup> to 3<sup>0</sup> Celsius in the last 50 years. By 2050, one of the critical issues for the continent will be the availability of clean water for more than 1 billion people.

Furthermore, climate change is already having an influence on all parts of the economy, as well as food production capacity, infrastructure, ecosystem health, economic development patterns, national security, and people wellbeing, and will endure for unpredictable time. In fact, the most serious challenges to Africa's sustainable development are yet to come, as climate change adds to the pressures already present owing to the effects of fast industrialization, urbanization, and economic development on the continent's natural resources.<sup>56</sup> As a consequence of these issues,

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<sup>56</sup> IPCC, (2007). *IPCC Fourth Assessment Report*. IPCC (Intergovernmental Panel on Climate Change), Geneva, Switzerland. p-3.

climate alteration may block the attainment of several SDGs, including those relating to environmental sustainability, poverty reduction, child mortality, and the eradication of malaria and other diseases.<sup>57</sup> The consequences arising out of such a phenomenon could trigger severe economic shocks that may easily lead to popular disaffection, civil unrests and intra-state and inter-state conflicts. Existing environmental and societal problems may also lead to migration over and within country borders, worsening the continent's conflict risk. As a result, climate alteration is not just an ecological issue, but also a socio-economic one with major socio-economic ramifications that could lead to ferocious and nonaggressive wars in many parts of Africa.<sup>58</sup>

Shaw and Pereira are correct in claiming that the link between climate alteration and conflict in twenty-first century has been recognised as a major cause of concern in Africa.<sup>59</sup> Extreme climate events are also expected to occur across Africa, posing a threat to people's capability to adapt to environment variations and increasing the possibility of conflict. According to FAO estimates, 489 million Africans are food insecure, with the vast majority residing in countries that are either at high risk of violence or are currently experiencing it. Furthermore, Africa has a much greater proportion of stunted children, with about 122 million stunted kids below the age of five living in conflict-affected nations and a nine-percentage-point difference in frequency between non-conflict and conflict-affected countries.<sup>60</sup> Human migration is another result of climate change, and it is

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<sup>57</sup> World Bank. (2010). *Managing climate risk: Integrating adaptation into World Bank group operation*. Washington DC, USA: World Bank. P-7.

<sup>58</sup> Eckstein, D., Kunzel, V., & Schafer, L., (2017). *Global climate risk index 2018: Who suffers most from extreme weather events? Weather-related loss events*. (pp. 18-40).

<sup>59</sup> Shaw, R., & Pereira, J., (2017). *Climate change adaptation and conflict prevention: Issues and challenges*. UK: Emerald. p-1

<sup>60</sup> WHO Report 2017: The State of Food and Nutrition in the World-<http://www.fao.org/state-of-food-security-nutrition/2017/en/>. p-45.



thought to be a major factor to war in Africa due to struggle over limited resources such as water, pasture, and land.<sup>61</sup>

Due to climate change's far-reaching consequences that have a considerable impact on Africa's economy. Current temperature extremes in Africa are anticipated to rise by 20 degrees Celsius by 2050, with temperatures in the Sahel and tropical western Africa anticipated to increase by 40 to 60 degrees Celsius by the end of the century. Changes in rainfall patterns are also expected to be further unclear as a consequence of climate alteration, with modelling studies predicting that western and eastern Africa will receive more precipitation over time, while southern Africa will become drier. According to a UNDP research, there is considerable underlying proof connecting extreme climatic occurrences to conflict through a wide variety of time scales and in all of Africa's major regions. Because important parts of Africa are expected to warm by up to 4 to 60 degrees Celsius by the close of the 21<sup>st</sup> C, anthropogenic climate alteration is predicted to pose a substantial effect on human conflict.<sup>62</sup>

According to Kameyama & Kanie, Africa's food production system is among the most fragile in the world due to its considerable reliance on high inter-seasonal climate variability and rain-fed crop production, limiting their ability to adapt.<sup>63</sup> Consequently, farming systems in many African countries may have to contend with climatic conditions that are above the current trends by 2050 and this will negatively impact on major cereal crop yields across Africa. According to estimates, maize crop losses will be 22 percent across Sub-Saharan Africa, with losses in southern Africa exceeding 30 percent. Other estimates based on sustained high emissions levels indicate a

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<sup>61</sup>Eckstein, D., Kunzel, V., & Schafer, L., (2017). *Global climate risk index 2018: Who suffers most from extreme weather events? Weather-related loss events.* (pp. 18-40).

<sup>62</sup> UNDP (2018). Human Development Report 2017/2018: Fighting Climate Change: Human Solidarity in a Divided World. UNDP, NY, USA.

<sup>63</sup> Kameyama, Y., & Kanie, N., (2016). *Climate change in Africa: Perspective of future climate regime.* Tokyo, Japan: UNU Press.

reduction in fishery yields of up to 40 percent in the tropics by the year 2055 and a reduction in fish stocks in Lakes Kivu, Tanganyika, Malawi and Victoria, where already small variations in climate is causing changes in aquatic ecosystems and nutrient dispersion.<sup>64</sup> The fundamental underlying point is that climate alteration is expected to heighten baseline stresses that most of the time will be a primary driver of vulnerability and conflict. For example, population, land use change, urbanization, and agricultural growth may be subject water resources to much larger pressures. Deficits in financial and human resources, as well as insufficient access to safe water and basic sanitation, are all likely to have a substantial impact on health outcomes. By the year 2050, food shortages will almost certainly end in high food costs as a consequence of climate change. If such forecasts come true, rising competition for resources could generate and perpetuate human conflicts.

Climate change is extremely sensitive in dealing with conflict concerns on the African continent, according to the African Centre for the Constructive Resolution of Disputes (ACCORD), which concluded at the 17th conference of parties in Durban. According to ACCORD's research, there is a connection of climate change and conflict in Africa, which has had an impact on social, economic, and political activity. According to Vivekananda, the Africa continent has been said to be at danger of climate change because most of its countries are less developed.<sup>65</sup> Africa is currently one of the utmost exposed regions to climate alteration in terms of security. The common environmental threat to conflict prevention is greenhouse emissions. Even though the content is the not answerable for greenhouse releases, it is considered the continent most at risk of climate-induced conflict. According to the 2019 report of the commission of Africa, it was confirmed that

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<sup>64</sup> Ibid. p-22.

<sup>65</sup> Vivekananda, J., Day, A., & Wolfmaier, S. (2020). What Can the UN Security Council Do on Climate and Security? Oxford. p-35.

Africa is experiencing more violent conflict than any other continent in the last two decades. In Sub-Saharan Africa, where there are many climate disasters, there are many wars. According to Von, around the turn of the twenty-first century, this region had more killings than any other portion of the world. In 2019, there were 27 major armed conflicts on the African continent, according to the United Nations. This confirms that the climatic crises in Africa are making it hard for conflict prevention.<sup>66</sup> Ramcharan writes that the conflicts associated with violence are not only devastating in human terms but also affect the long-term goals of the whole region. As per the 2020 estimate, more than \$18 billion US dollars have been used in solving the risks associated with climate change adaptations.<sup>67</sup> Another study conducted by the Human Security Report conducted in 2020 found out that 95% of the armed conflicts are fought within and not between the states, and they particularly take place in areas poor regions like Sub-Saharan Africa.

Climate change adaptation's impact on conflict prevention in Africa is examined from various angles, including social, political, and economic systems. According to the 2020 Human security report, climate change has widely affected the social interactions among African countries. According to statistics, farming is the main basis of revenue for 40% of Africa's population. Global climate change has affected the agricultural industry leaving many people in poverty. Due to the overreliance on sensitive climatic activities such as fishing and agriculture, Africa has so far experienced substantial losses in food production. This has forced the countries to violate the border rules in an attempt to have their ends meet. According to a United Nations report released in April 2021, most parts of Africa are facing security challenges such as water and food scarcity, disease outbreaks, state power contests, and border conflicts, among others. This means that when

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<sup>66</sup> von Uexkull, N., & Buhaug, H. (2021). Security implications of climate change: A decade of scientific progress. p-97.

<sup>67</sup> Ramcharan, Bertrand, and Robin Ramcharan. Conflict Prevention in the UN's Agenda 2030: Development, Peace, Justice and Human Rights. Springer Nature, 2020. p-4.

such issues occur frequently across the African continent, the government's capacity to provide the basic requirements of its inhabitants is overwhelmed. In this case, when the social interactions among the African countries are positive, it would be simple to solve the issues associated with climate change. The African Union is standing firm to ensure that Africa is unified to enhance climate change adaptation as a way of mitigating its impact on people.<sup>68</sup>

Climate change creates constraints on resources and new food challenges for human security. The global body in charge of climatic changes has predicted that Africa is likely to experience an increase in average temperatures that will be a bit higher than the worldwide normal. Furthermore, in most regions of Africa, yearly rain is anticipated to decline. In this case, there would seriously impact on agricultural production in Sub-Saharan. This would subject the majority of the people in Africa to poverty hence threatening peace. Due to climate shocks and stressors, most African countries are believed to be at high threat of climate change.<sup>69</sup>

In the instance of Darfur in Sudan, a good example of the influence of climate change adaptation on conflict avoidance. During the last decade, Sudan has experienced more than average conflicts, particularly in Darfur. The statistics show that more than 350,000 people were displaced in the year 2019 that saw the nearby IDPs in Darfur rise by 2 million people. The Darfur conflict involves two major parties, Rapid Support Forces and Darfur -joint Resistance Forces. Here, the RFS forces, which are led by Mohamed Hemedi' Hamdan, have been accused of targeting the civilians and fighting against the actions of the opposition. In this case, conflicts in Darfur have been labelled to have their base from climatic crises. Meynard asserts that before 2010, the climate changes in

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<sup>68</sup> Ibid,p-1.

<sup>69</sup> Ibid, p-20.

Darfur led to the decrease of the average rainfall with 20%.<sup>70</sup> In addition to that, the temperatures increased by 1 degree Celsius in this region over the same time. As per Adeola, in around 2017, international climate control bodies focused started supporting the climate control programs in Darfur that have seen most of the conflicts reduce.<sup>71</sup> From this perspective, it can be concluded that climate change adaptation impacts conflict prevention based on the agricultural shocks and social interactions among the Africans. In this case, the more there are climatic issues, the more it would be difficult to prevent the conflicts and the more the climatic issues are mitigated, the more it would be simple to prevent the conflicts.<sup>72</sup>

### **3.2 Climate Change Adaptation on Conflict Prevention in Africa**

Poorer developing countries in Africa have been found to be more susceptible to the consequences of climate alteration due to their strong reliance on climate-sensitive industries and geographic exposure. Climate change's associated repercussions, such as resource-based conflicts, have been shown to be particularly harmful to African countries with limited adaptive capacity. As a consequence, the potential usefulness of climate change adaptation measures in conflict prevention is becoming more widely acknowledged, and it has become one of Africa's top concerns in the twenty-first century.<sup>73</sup> Various types of people and geographical locations in South Africa, according to Matthew, are particularly vulnerable to climate change's effects. The requirement of placing ladies and other susceptible people at the core of adaptation measures is stressed in both the 2017 Draft National Adaptation Strategy and the 2011 White Paper, which set the South

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<sup>70</sup> Meynard, C. N., Lecoq, M., Chapuis, M. P., & Piou, C. (2020). On the relative role of climate change and management in the current desert locust outbreak in East Africa. *Global change biology*, 26(7), 3753-3755.

<sup>71</sup> Adeola, R. (2020). Climate change, internal displacement and the Kampala Convention. p-7.

<sup>72</sup> Ibid, p-44.

<sup>73</sup> Pettengell, C. (2010). *Climate change adaptation: Enabling people living in poverty to adapt*. OXFAM Research Report. London, UK. p-37.

African Government's strategic vision for a successful climate change response. However, little evidence of the differential efficiency of adaptation therapies amongst women in the country, or struggles to customize adaptation measures precisely to their requirements, was discovered in these materials. As a result of the preceding decades' delays in responding to climate change, human life and livelihoods have been jeopardized in South Africa. While slow progress on mitigation has vested a lot of consideration, notably in the energy sector, the emphasis is currently fluctuating to crafting tactics and structures to adapt to the consequences of climate alteration.<sup>74</sup> On the other hand Chanza argues that water distribution and food security are among the repercussions of climate alteration in Zimbabwe. Droughts have been increasingly common in the last two decades, making the country more vulnerable. Zimbabwe's tropical location makes it subject to changing rainfall patterns and the availability of water resources. As a result, adaptation methods to offset the effects of climate alteration are required, notably in agriculture. Unless adequate laws or adaptable strategies are in place, smallholder farmers may struggle to maintain bearable agricultural production structures in a setting with changing climatic situations.<sup>75</sup>

In terms of water resources, Egypt is a one-of-a-kind country. Outside of Egypt's boundaries, more than 95% of the state's water budget is created. Although the impacts of climate alteration on the Nile Basin cannot be foretold at this time, there are signals that they will be important. Any decline in overall water availability, along with the expected increase in consumption due to high population growth rates, will be terrible. As a result, water management is one of the most

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<sup>74</sup> Matthew, F. (2019). "Climate change adaptation in South Africa: a case study on the role of the health sector". *Globalization and Health*. p,16.

<sup>75</sup> Chanza, N. (2014) "Expected Impacts of Climate Change Vulnerability and Adaptation Assessments in Zimbabwe". p,12.

important adaptation responsibilities.<sup>76</sup> According to USAID, Eritrea is one of the most food insecure countries in Sub-Saharan Africa, with one of the worst rates of malnutrition; it also imports about half of the food it need to meet its basic needs. Food production and development investment have been harmed as a result of war and regular droughts, as well as population increase. Eritrea is vulnerable, with the greatest degree of food insecurity in Africa and severe malnutrition. Pastoralists are one of the most vulnerable groups on the planet. Pastoralists have developed a production system that responds to changes in feed and water supply availability throughout time. The dry season camp is formed by the major river basins and sections of the rangelands with substantially higher rainfall and soil fertility, whereas the wet season camp is formed by the open grazing land of the drier areas. Increasing conflicting land use demands, land degradation, and newly formed government policies, such as those on settling mobile populations, have all disrupted this ancient coping method.<sup>77</sup>

During the COP21 in Paris in 2015, world leaders signed a historic agreement that would establish a framework for shielding the planet from the worst outcomes of climate alteration. The Paris Agreement focused on the need to improve the international response on looming danger of climate alteration by limiting worldwide hotness escalation trends underneath 20 degrees Celsius and exploring steps to reduce temperatures even further to 1.50 degrees Celsius. Furthermore, the accord was expected to improve countries' capacity to address the effects of climate alteration. In order to achieve such aims, suitable monetary movements, a strengthened capacity structure, and

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<sup>76</sup> Ibid,p,3.

<sup>77</sup> USAID Report on “Climate Change Adaptation in EAST AFRICA”. 2018. p,13.

anew technology framework must be put in place to help poor and most vulnerable nations' adaptation efforts.<sup>78</sup>

A UNDP report noted that as of October 2017, a total of 54 African countries had signed the Paris Agreement with 43 nations from the continent ratifying the Intended Nationally Determined Contributions (INDCs).<sup>79</sup> The INDCs incorporates two targets, namely, an unconditional target that is to be met by African countries using their own resources, and conditional target that is to receive support from the international community. Despite the fact that the Paris Agreement establishes a global target for climate alteration adaptation for it to contribute to sustainable development, current efforts to implement INDCs, particularly in Africa, prioritize conflict prevention and resilience building.

Despite the fact that the Paris Agreement establishes a worldwide target for climate variation adaptation in order to contribute to sustainable development, current INDC implementation efforts, particularly in Africa, prioritize conflict prevention and resilience building.<sup>80</sup> Based on the volatilities linked with possible climate change situations and the likelihood of their effect, numerous financial projections in lieu of change of climate adaptation reveal a wide variety of results. According to the UNFCCC, reducing worldwide greenhouse gas releases to present heights by 2050 will necessitate yearly investment and financial flows of between US\$ 200 billion and US\$ 230 billion.<sup>81</sup> In Africa, the establishment of a continental financial mechanism for climate change adaptation is at its early stages. As part of a bigger push for sustainable development and

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<sup>78</sup> Eckstein, D., Kunzel, V., & Schafer, L., (2017). *Global climate risk index 2018: Who suffers most from extreme weather events? Weather-related loss events.* (pp. 18-40).

<sup>79</sup> UNDP (2018). *Human Development Report 2017/2018: Fighting Climate Change: Human Solidarity in a Divided World.* UNDP, NY, USA.0 p-68.0

<sup>80</sup> World Bank, (2008). *Development and climate change: A strategic framework for the World Bank group.* Washington DC, USA: World Bank. p-31.

<sup>81</sup> *Ibid*, pp 25-29



conflict prevention in the region, the process has to be supported and nurtured. The African Development Bank (ADB) is a great example of a regional institution that has embraced climate change adaptation as an important chunk of Africa's growth agenda by establishing bankrolling engagements for climate change adaptation in Africa, in addition to funding regional development. These funds do a diversity of roles comprising catalysing private capital towards adaptation, mobilising concessional resources, and maximizing market mechanisms.

### **3.3 Emerging issues and challenges on climate change adaptation on conflict prevention in 21<sup>st</sup> Century Africa**

The climatic situation of different countries in the African continent is varied not only by the nature of their responses but also in terms of adaptation measures on conflict prevention. Indeed, there is an increasing amount of evidence concerning the major relations of climate alteration and war in African countries, as well as a serious acknowledgment that the two issues are linked.<sup>82</sup> Unfortunately, long-term national planning documents and vision documents of most governments in the continent generally don't explicitly recognise such linkages. However, it is generally known that fundamental climate change elements that have a significant influence on African regions include an increase in air temperature and variations in rain forms, which cause flash floods, repeated droughts, and famines. It is also widely known that all countries in Africa will experience different climatic changes in both the long and short term. For example, severe droughts will heavily impact northern African countries, while heavy precipitation will cause flash floods in central African countries like Congo in the near future.<sup>83</sup> Long-term, a shortfall in water resources

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<sup>82</sup> Bodansky, D. (2014). *Climate Change, Environmental Stress and Conflict*. Tyndall Centre for Climate Change Research, Working Paper No. 7 Norwich. p-43.

<sup>83</sup> Eckstein, D., Kunzel, V., & Schafer, L., (2017). *Global climate risk index 2018: Who suffers most from extreme weather events? Weather-related loss events*. (pp. 18-40).

is expected, which will have a significant impact on the continent's socioeconomic development. Climate change is already inhibiting economic growth and disrupting the national development agenda of certain countries. At the same time, it is well recognised that preparedness and prevention are less costly than having to deal with the requisite responses to climate induced conflicts.<sup>84</sup>

Lack of technical and institutional capacity and awareness about threats posed by climate change, adequate policies, and adaptation measures are all key challenges on the road towards building a resilience in Africa's most vulnerable countries.<sup>85</sup> Unfortunately, African governments and policymakers are unaware of the severity or scope of the difficulties posed by climate change, as well as how this can jeopardize regional stability. There is also a dearth of accepting of the necessary climate alteration adaptation techniques, resulting in less attention being paid to the problem. On very rare occasions are climate adaptation components included in countries' strategic plans and documents of relevant government agencies. It is thus very necessary for state agencies to increase their awareness and integrate adaptation processes into national planning and budgeting for conflict prevention.<sup>86</sup> African countries have seen significant administrative, social, political, and economic changes in recent years, undermining their institutional capacity to prevent violence. For instance, the primary focus and challenge in restructuring conflict prevention measures in the continent has been the decentralization of civil protection services and the restructuring of many conflict prevention initiatives.<sup>87</sup>

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<sup>84</sup> Ibid. p-55.

<sup>85</sup> Collier, P. (2008) *Climate change and Africa*. Oxford Review of Economic Policy, 24(2): 337-353

<sup>86</sup> Ibid. p-5.

<sup>87</sup> Sneyers, R., (2013). *Adaptation Options to Climate Change: A Typology*. Department of Geography, University of Guelph, Ontario, Canada. p-9.

The major impediments to climate change adaptation in Africa, according to Turner et al., is a lack of methodologies for valuing the peril brought by climate change, such as loss and the potential for conflict, as well as a lack of data, such as statistical calculations, that would allow the continent's most vulnerable geographical regions to be defined and where investments should be made.<sup>88</sup> Lack of risk assessment for potential conflict and ensuing economic loss makes it challenging to develop national policies and practices that can be included in inter-jurisdictional plans and strategies for climate change adaptation. Regional and inter-agency integration is therefore necessary for the development of methodologies and approaches.<sup>89</sup>

According to Artur & Hilhorst, it is worth mentioning that certain improvements have been made by African governments and relevant authorities in understanding the urgency of actions related to climate change adaptation on conflict prevention.<sup>90</sup> However, it is unfortunate how poorly the relevant adaptation measures are being integrated into national policies and action plans. Apparently, a significant gap exist in terms of inclusion of adaption on conflict prevention into state planning and increasing awareness of policy makers at all levels of importance. Sneyers posits that a key gap for climate change adaptation on conflict prevention and response activities on the level of policy makers and state agencies in Africa is primarily located in the area of capacity building and awareness raising activities.<sup>91</sup> The missing activities include seminars, training workshops, working group meetings, conferences, and exchange visits.<sup>92</sup>

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<sup>88</sup>Turner, B., Kaspersen, P., Matson, J. (2012) *A Framework for Vulnerability Analysis in Sustainability Science*. Proceedings of the National Academy of Sciences of the United States of America. 100(14), 8074-8079. P-56.

<sup>89</sup> Ibid. p-8.

<sup>90</sup>Artur, L and Hilhorst, D. (2012) *Everyday realities of climate change adaptation in Africa*. Global Environmental Change, 22(2). pp,529-536.

<sup>91</sup>Sneyers, R., (2013). *Adaptation Options to Climate Change: A Typology*. Department of Geography, University of Guelph, Ontario, Canada. p-14/

<sup>92</sup>Eckstein, D., Kunzel, V., & Schafer, L., (2017). *Global climate risk index 2018: Who suffers most from extreme weather events? Weather-related loss events*. (pp. 18-40).

It's great to see that all of Africa's governments have expressed their desire and commitment to the Paris Agreement's goal of reducing climate-related risks. The conceptual thinking behind the Paris Agreement is that it will provide support to developing countries in response to an increasing deficit in resources. Because worldwide experiences suggest that the Paris Agreement could boost regional collaboration on climate change adaptation while also contributing to societal stability, this is a good thing. Climate change adaptation and conflict avoidance have seen an upsurge in government decrees and international cooperation agreements. It is however a big challenge to determine the extent or effectiveness of such activities in terms of how follow ups are done and how the activities help relevant agencies because systems that can help evaluate feedback and outcomes are still not in place in many countries. More importantly, the actions implemented by various national governments are restricted to planned preventive activities against climate change.<sup>93</sup> It's therefore not surprising that Turner et al. conclude that emergency response planning in various countries is still weak and does not delineate roles and responsibilities of response organizations in the event of climate induced conflict.<sup>94</sup>

### **3.4 Conclusion**

The preceding chapter argues that climate change adaptation in Africa has the overriding goal and intended impact of reducing current and future risks to people's well-being and safety, as well as to the ecosystem. This chapter covered the consequence of climate alteration adaptation on conflict prevention in Africa, and the link between climate alteration and African conflicts, climate change adaptation and conflict prevention, and other new issues and difficulties. It has been demonstrated

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<sup>93</sup> Eckstein, D., Kunzel, V., & Schafer, L., (2017). *Global climate risk index 2018: Who suffers most from extreme weather events? Weather-related loss events.* (pp. 18-40).

<sup>94</sup> Turner, B., Kasperson, P., Matson, J. (2012) *A Framework for Vulnerability Analysis in Sustainability Science.* Proceedings of the National Academy of Sciences of the United States of America. 100(14), 8074-8079. p-107.

that the climatic situation of different African countries varies, as do their reactions in terms of conflict preventive adaption methods. Climate change's linked effects, such as resource-based conflicts, have been found to be adversely harming several African countries with little adaptation potential. As a consequence, there is a rising realization that climate variation adaptation has considerable cause in conflict prevention, demanding its inclusion as one of the top priority issues for development in many African nations, whether they are in conflict, on the verge of conflict, or otherwise.

## **CHAPTER FOUR**

### **IMPACT OF CLIMATE CHANGE ADAPTATION ON CONFLICT PREVENTION IN EASTERN AND WESTERN AFRICA: A COMPARATIVE ANALYSIS**

#### **4.0 Introduction**

The Eastern and Western regions of Africa have implemented a number of climate change adaptation initiatives all geared towards preventing climate induced conflicts. Incidentally both regions happen to be occupied by complex mix of mixed ethnic communities, geographical and human capital profiles which reflect the differences and similarities on how climate change adaptation efforts on conflict prevention have impacted the regions. This chapter links and contrasts the effect of climate alteration adaptation on conflict avoidance in the Eastern and Western parts of Africa. Prior to the analysis, presentation, and interpretation, the chapter uses primary and secondary data.

#### **4.1 Demographic Characteristics**

The study obtained the primary data by asking the 384 respondents about their sex, age, education level and organization. The demographic data of the respondents is important in the study as it provides data about the participants and helps in determining whether individuals in the study are well represented for generalization purpose.

##### **4.1.1 Sex of the Respondents**

Using a primary questionnaire, the study attempted to determine the gender of the respondents. The respondents in this instance were either males or females. The gender breakdown of responders is depicted in the table below.

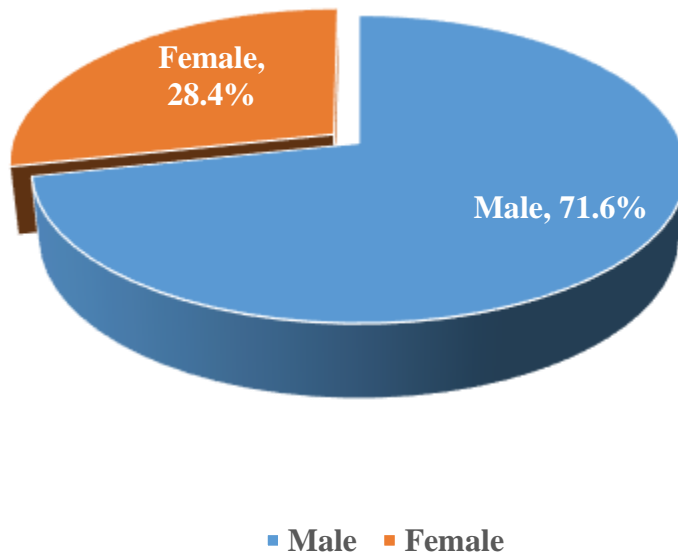
**What is your sex?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	275	71.6	71.6	71.6
	Female	109	28.4	28.4	100.0
	Total	384	100.0	100.0	

**Source: Researcher (2021)**

The survey discovered that 275 of the 384 responders were males, accounting for 71.6 percent of the total. Female respondents accounted for 28.4% of the total, with 109 out of 384 respondents being female. As shown in the pie chart below, the majority of the respondents who participated on identification of implications of climate change adaptation on conflict prevention in the twenty-first century were male.

**Percentage of the Respondents' Sex**



**Source: Researcher (2021)**

### 4.1.2 Age of the Respondents

The goal of the research also entailed the respondents' ages in order to determine which were the most productive in terms of providing info on the consequences of climate alteration adaptation on conflict prevention in the twenty-first century. The study's findings on respondents' ages are summarized in the table below.

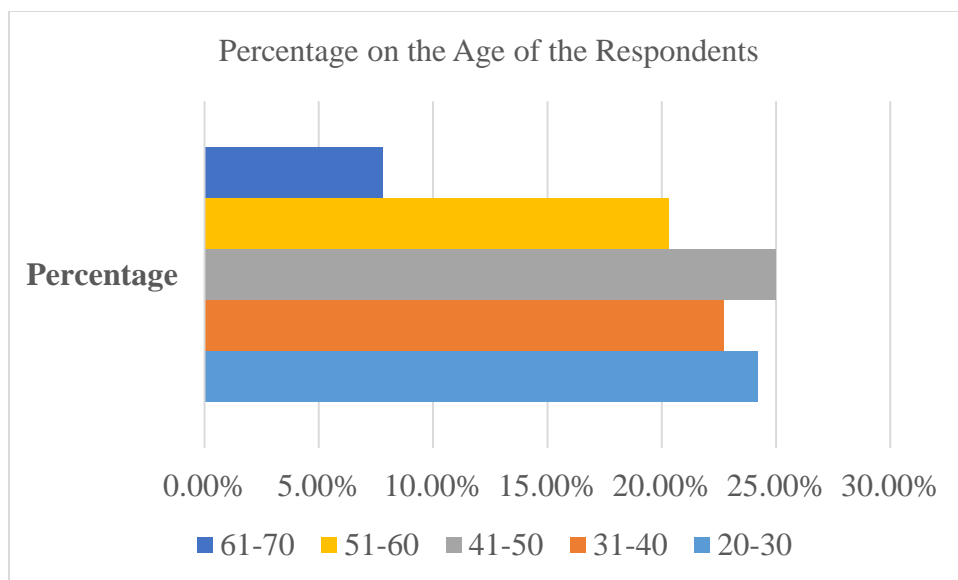
#### What is your age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	93	24.2	24.2	24.2
	31-40	87	22.7	22.7	46.9
	41-50	96	25.0	25.0	71.9
	51-60	78	20.3	20.3	92.2
	61-70	30	7.8	7.8	100.0
	Total	384	100.0	100.0	

**Source: Researcher (2021)**

From the table, the study identified the distribution of age of the respondents; (20-30 years=93, 31-40=87, 41-50= 96, 51-60=78, and 61-70=30). This implies that objectives of the study are well articulated and the findings are mostly provided by respondents of 41-50 year, 20-30, 31-40, 51-60, and finally 61-70 years as shown in the bar graph below;





**Source: Researcher (2021)**

#### **4.1.3 Formal Education Level of the Respondents**

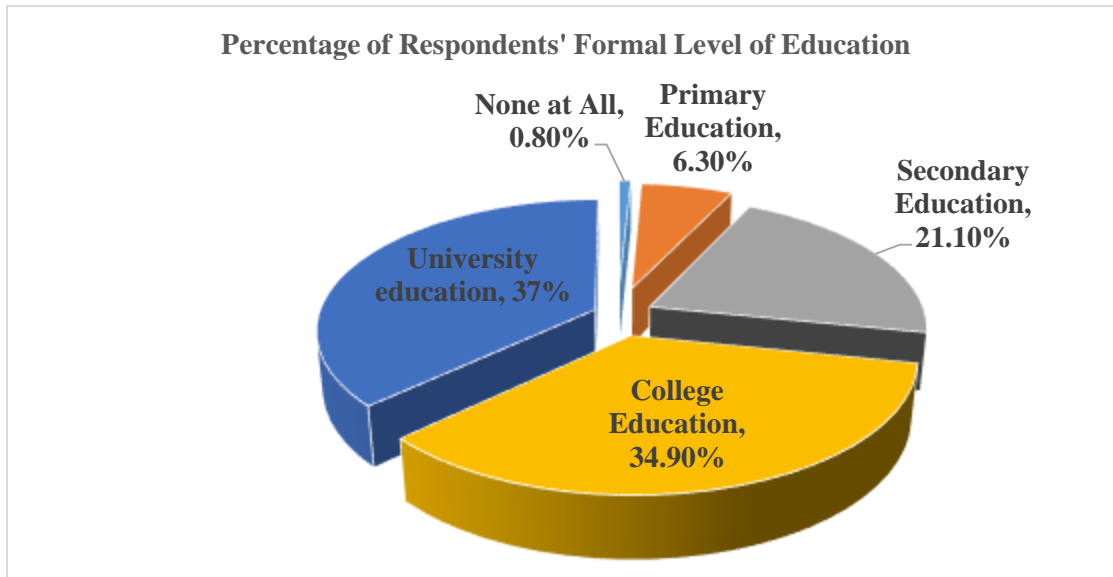
The purpose of the research was to establish the respondents' formal education level in order to assess the quality of information acquired on the outcomes of climate change adaptation on conflict avoidance in the twenty-first century. The table below shows the respondents' educational levels as determined by primary data.

##### **What is your level of formal education?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None at All	3	.8	.8	.8
	Primary Education	24	6.3	6.3	7.0
	Secondary Education	81	21.1	21.1	28.1
	College Education	134	34.9	34.9	63.0
	University education	142	37.0	37.0	100.0
	Total	384	100.0	100.0	

**Source: Researcher (2021)**

The study discovered that 142 respondents had received a university education, 134 had received a college education, 81 had received a secondary education, 24 had received a primary education, and three respondents had received no education. In this situation, it is apparent that the majority of respondents had the greatest level of education (university and college degree), and so gave high-quality data, as seen in the pie chart below.



**Source: Researcher (2021)**

#### **4.1.4 Organization of the Respondents**

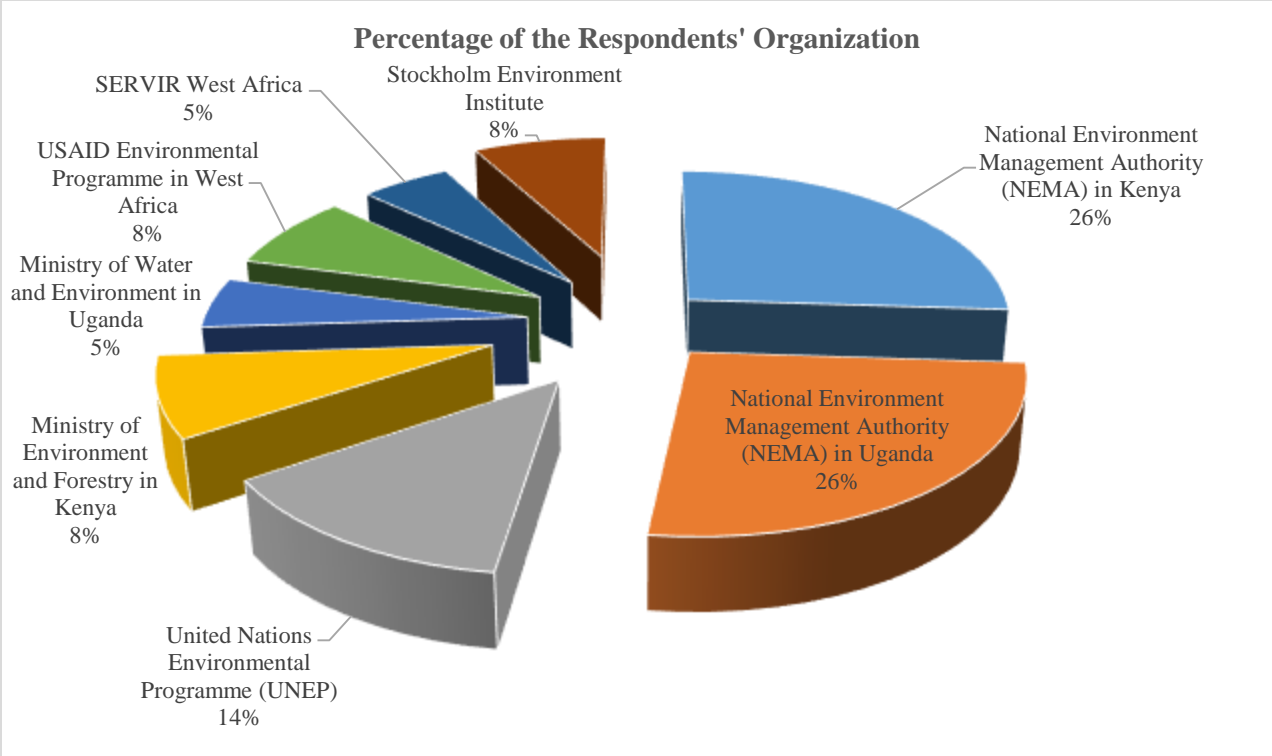
The purpose of the research was to categorise the organizations from which the respondents came. The results are displayed in the table below, which were obtained from a random sample of 384 respondents.

**What is your organization?**

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid	National Environment Management Authority (NEMA) in Kenya	Environment Authority	100	26	26	26
	National Environment Management Authority (NEMA) in Uganda	Environment Authority	100	26	26	52
	United Nations Environmental Programme (UNEP)		52	13.5	13.5	65.5
	Ministry of Environment and Forestry in Kenya		32	8.3	8.3	73.8
	Ministry of Water and Environment in Uganda		20	5.2	5.2	79
	USAID Environmental Programme in West Africa		30	7.8	7.8	86.8
	SERVIR West Africa		20	5.2	5.2	92
	Stockholm Environment Institute		30	7.8	7.8	100
	Total		384	100.0	100.0	

**Source: Researcher (2021)**

The table above indicates the organizations of the respondents obtained from a random sample of 384 respondents. It indicated that NEMA Kenya and NEMA Uganda were each 26% of the respondents, Ministry of Water and Environment in Uganda and SERVIR West Africa were each 5.2%, USAID Environmental Programme in West Africa and Stockholm Environment Institute were each 7.8%, UNEP was 13.5%, and Ministry of Environment and Forestry in Kenya was 8.3% as shown in the pie chart below;



**Source: Researcher (2021)**

**4.2 Impact of Climate Change Adaptation on Conflict Prevention in Eastern Africa**

The goal of the study was to see how climate change adaptation affects conflict inhibition in eastern Africa. This was done by gathering primary data from the 384 respondents and supplementing it with secondary evidence and explanation. Climate change impacts in Eastern Africa have long been projected to have a number of direct and indirect implications that affect food security, water availability, people's wellbeing and regional stability. according to the study's respondents. Rain-fed agriculture, for example, is the primary basis of revenue for a large portion of the population in several Eastern African countries. As a result, despite significant progress in improving their livelihoods and agricultural technologies, climatic changes, particularly frequent flooding, droughts, and famine, have continued to impoverish large swaths of their populations, posing a serious threat to their livelihoods and, regrettably, security and safety. In order to address such

critical challenges, the respondents added that a number of global and regional institutions, including the UN, the World Bank (IBRD), and the African Union (AU), have launched a number of climate change adaptation measures aimed at conflict prevention in the East African region.<sup>95</sup>

Representatives from the African Union (AU) and Africa's Regional Economic Communities (RECs) came together in 2010 to agree on a Roadmap for the Operationalization of the African Peace and Security Architecture, according to Adetula, Bereketeab, and Obi.<sup>96</sup> The adoption of this architecture was based on a 2008 Memorandum of Understanding (MOU) which sought to harmonize strategic approaches and enhance the coordination and cooperation between various countries in order to address major gaps in conflict prevention. As a result, Member States in Eastern Africa, particularly in the Horn of Africa, launched a regional Peace and Security Initiative under the Inter-Governmental Authority for Development's Conflict Prevention, Management, and Resolution Programme, which provided guidance to Member States in the region on matters of peace and security.

In reality, the respondents noted that as parties to the UNFCCC which has given an overall framework for the region's regimes to resolve climate change issues, all of the impacted states are also active at the national level. While several Eastern African countries have submitted Initial National Communications and National Adaptation Programmes of Action to the convention, those Initial National Communications are anticipated to cover climate change adaptation and mitigation measures, including information on adaptation measures, mitigation options, and greenhouse gas emissions, according to some of the respondents.<sup>97</sup>

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<sup>95</sup> Kebede, A., Kottek, M., Beck, G., (2015). *Impacts of Climate Change and Sea-Level Rise: A Preliminary Case Study of East Africa*. Journal of Coastal Research, 278:8-19. p-24.

<sup>96</sup> Adetula, V., Bereketeab, R., & Obi, C. (2021). Regional Economic Communities and Peacebuilding in Africa: Lessons from ECOWAS and IGAD (p. 256). Taylor & Francis.

<sup>97</sup> Kebede, A., Kottek, M., Beck, G., (2015). *Impacts of Climate Change and Sea-Level Rise: A Preliminary Case Study of East Africa*. Journal of Coastal Research, 278:8-19. P-3.

National Adaptation Programmes of Action (NAPA), on the other hand, assess a country's needs as well as the most susceptible areas to climate change in order to boost adaptation efforts, according to the study. NAPAs also give recommendations for programs, policies, stakeholders, and activities that can assist a country in dealing with climate change and unpredictability. According to Boko et al., most Eastern African countries' national adaptation objectives have concentrated on food security, water resources, forests, livelihoods, energy, health, disaster response, coastal zones, and conflict management.<sup>98</sup>

Capacity building is also an important aspect of climate change vulnerability and conflict risk assessments, according to the respondents. In Eastern Africa, capacity building has involved the establishment of training workshops for regional climate modelling. Working with the WCRP, GCOS, ICPAC in Kenya, the WMO has been in the forefront of the project's implementation. Participants from Djibouti, Burundi, Ethiopia, Kenya, Somalia, South Sudan, Uganda, Eritrea, and Tanzania learnt how to analyze extreme weather data and indices, use climate change models, and solve policy issues. Officials from national hydrological and meteorological agencies have been engaging with practitioners from different key sectors like as security, water resources management, agriculture, and so on.<sup>99</sup>

The respondents agreed with Matshenyego & Sarjoh by noting that the formation of the East Africa Community (EAC) was a bid to institutionalize a forum for integration through which member states would engage in diverse areas of cooperation especially those touching on trade, immigration, economics, and security.<sup>100</sup> While climate change adaptation and conflict prevention

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<sup>98</sup> Boko, M., Chechi, F., & Lizcano, G., (2018). *Impacts, Adaptation and Vulnerability*. Contributions of Working Group II to the Eight Assessment Report of the IPCC. p-11.

<sup>99</sup> Kebede, A., Kottek, M., Beck, G., (2015). *Impacts of Climate Change and Sea-Level Rise: A Preliminary Case Study of East Africa*. Journal of Coastal Research, 278:8-19. Pp,29-30.

<sup>100</sup> Matshenyego, L., & Sarjoh, S. (2011). *Assessing Regional Integration in Africa III: Rationalizing Regional Economic Communities*, Addis Ababa. p-39.

are not explicitly stated goals of the EAC, respondents noted that the regional organization recognizes that dealing with the effects of climate change and conflict management are critical to fulfilling its mandate of promoting regional development and integration. At the centre of the newly revised EAC treaty is the emphasis on the notion that regional cooperation and integration can help address common challenges like climate change and help prevent negative impacts like conflict.<sup>101</sup> Collier avers that given the trans-boundary nature of a number of Eastern Africa's river basins, lakes, forests, marine, and coastal ecosystems, coordination at a regional level has been critical in ensuring sustainable management of the resources.<sup>102</sup> The development of a regional strategy has been important in clearly laying out and defining agreed regional priorities as well as implementing activities to support them.

The study through the respondents found that the climate change has impacted different parts of Africa differently. The common factor that accelerates conflicts in Eastern Africa is the global climate system. According to the respondents, climatic changes affect the availability of natural resources for human survival. Many scholars who write about the relationship of climatic changes with conflict prevention in Eastern Africa hold that it contributes to changes in rainfall patterns, changes in vegetation cover, droughts, and increased resource scarcity.<sup>103</sup> Eastern African is one of the major regions in Africa, highly affected by drought and poverty. This has seen its countries like Kenya and Somalia get involved in conflicts. Here, this chapter analyses the case of Kenya and Somalia's conflicts over the livestock herders.

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<sup>101</sup> East Africa Community Secretariat, "The EAC Peace, Security, and Good Governance Initiatives and Strategies for a Sustainable Integration," New York, 18 October 2010, available at [http://www.un.org/africa/osaa/speeches/EAC\\_Presentation\\_18Oct2010.pdf](http://www.un.org/africa/osaa/speeches/EAC_Presentation_18Oct2010.pdf).

<sup>102</sup> Collier, P. (2008) *Climate change and Africa*. Oxford Review of Economic Policy, 24(2): 337-353

<sup>103</sup> Al-Gamal, S. A. (2020). Climate change and integrated water resources management to prevent water disputes in Africa. *Water Productivity Journal*, 1(2), 59-70.

The respondents pointed out that 20% of the Kenyans and Somalians depend on livestock as their sources of living. This is evident on the current climatic trends that have seen the decline of the pastures where the Kenyans and Somalians livestock farmers can graze. As a result, many pastoralists from Kenya and Somalia have encountered losses in the last three years whereby almost 14% of their livestock have died of starvation. The respondents agreed with Pas that the pastoral communities in Kenya and Somalia are currently going against governmental regulations to graze their livestock in restricted areas<sup>104</sup>. For example, in Kenya, the Kipsigis and Pokot communities have been involved in conflicts for a long time. Eckert argues that each community accuses another of invading their lands to feed their livestock. In this case, it is clear that climate change has led to the dryness of water catchment areas and pastures needed for livestock production.<sup>105</sup> The same case applied in Somalia, where 12% of the pastoralism communities are affected by global climate change. Currently, the East African Community, in association with the other climate control authorities, has initiated climate control programs that would see the pastoralists enjoy the green pastures and water for their livestock. In the last three weeks, it was reported that the conflicts associated with livestock farming among the Kenyans and Somalian communities had reduced by around 5%.<sup>106</sup> This shows that when there are fewer climate change impacts, it would be simple to solve prevent the conflicts at the regional and national levels.

In Western Africa, climate change has been one of the major sources of conflict because of increased poverty. According to the respondents, almost 60% of the Sub-Saharan populations depend on agriculture for surviving. In the last decade, this region has been highly affected by food

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<sup>104</sup> Pas, A. (2018). Governing grazing and mobility in the Samburu lowlands, Kenya. *Land*, 7(2), 41.

<sup>105</sup> Eckert, S., Hamad, A., Kilawe, C. J., Linders, T. E., Ng, W. T., Mbaabu, P. R., ... & Schaffner, U. (2020). Niche change analysis as a tool to inform management of two invasive species in Eastern Africa. *Ecosphere*, 11(2), e02987. p-33.

<sup>106</sup> Day, A. (2020). Climate Change and Security: Perspectives from the Field. p-24.



insecurity that has been brought by disruptions in rain cycles, harvests, and planting seasons.<sup>107</sup> West Africa is considered one of the most affected countries by the global warming effects. According to the report published by Igarapé Institute, between 2010 and 2020 was the hottest decade that has ever been recorded in history. The most affected area, as per the report, was Sahel- the vast zone of semi-arid grassland that is situated in the South of the Sahara Desert that was 1.5 more than any other part of the world. According to Eckert, across the West Africa region, almost 17 countries are experiencing prolonged droughts and rainfall, which in turn affects the farmers' patterns, herders, and also their livestock.<sup>108</sup> The World Bank holds that when the environment deteriorates, it leads to weak governance that could tip fragile countries easily to get into conflicts. McGuirk argues that almost 70% of the Sun-Saharan countries have been categorized by the World Bank as fragile. As a result, the respondents highlighted that some countries in the Coastal parts of Western Africa are likely to experience total drought and decline of the water bodies. This means that the region would be subjected to poverty hence increasing the dependability and crime activities which may, in turn, lead to conflicts. In fact, the study shows that the influence of climate change in West Africa is making it tougher to avert conflicts owing to rising poverty levels.<sup>109</sup> The table below highlights the effects of climate change adaptation on conflict avoidance in Eastern Africa, based on primary and secondary sources.

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<sup>107</sup> Eckert, S., Hamad, A., Kilawe, C. J., Linders, T. E., Ng, W. T., Mbaabu, P. R., ... & Schaffner, U. (2020). Niche change analysis as a tool to inform management of two invasive species in Eastern Africa. *Ecosphere*, 11(2), e02987. p-7.

<sup>108</sup> McGuirk, E. F., & Nunn, N. (2020). Transhumant Pastoralism, Climate Change, and Conflict in Africa (No. w28243). National Bureau of Economic Research. p-43.

<sup>109</sup> Ibid

Impact of Climate Change Adaptation on Conflict Prevention in Eastern Africa	
i.	Climatic changes, particularly frequent flooding, droughts, and famine, have continued to impoverish large swaths of their populations, posing a serious threat to their livelihoods and, unfortunately, their security and safety
ii.	Increased poverty
iii.	Capacity building is an integral part of climate change vulnerability and conflict risk assessments
iv.	Climatic changes affect the availability of natural resources for human survival.
v.	Some countries in the Coastal parts of Western Africa are likely to experience total drought and decline of the water bodies
vi.	Climate change has led to the dryness of water catchment areas and pastures needed for livestock production

**Source: Researcher (2021)**

### 4.3 Impact of Climate Change Adaptation on Conflict Prevention in Western Africa

The goal of the study was to see how climate change adaptation affects conflict prevention in Western Africa. According to Paeth et al., many countries along West Africa's coastline have found it difficult to adapt to changing maritime ecosystems.<sup>110</sup> This is evident when respondents said that flooding, coastal erosion, and sea level rise has often affected coastal West Africa region, particularly the coast of Senegal, Liberia, Gambia, Ghana, Sierra Leone, and Nigeria, and this has therefore demanded the development of new concepts for climate change adaptation and conflict risk assessment. The respondents agreed with Few, Brown, and Tomkins that most of the climate change adaptation activities have been developed and implemented around climate vulnerability management, including modelling for risk of coastal flooding, strengthening vulnerability

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<sup>110</sup> Paeth, H., Capo-Chichi, A., Endlicher, W., (2008). *Climate Change Adaptation and Food Security in Tropical West Africa. A Dynamic-Statistical modelling Approach*. *Erdkunde*, 62, 101-115

modelling expertise of government officials, and the development of a prevention financing mechanism for the risk of conflict.<sup>111</sup>

According to Sneyers, many West African countries have collaborated with regional monetary organizations such as the ADB, UNEP, the UNDP, and the UNFCCC to establish a number of funds for climate change adaptation and conflict prevention.<sup>112</sup> The WB Climate Investment Funds has developed one such program, the PPCR.

The grants include PPCR, which focuses on Niger, Mali, Togo, Chad, Guinea, and Cameroon, according to the responses. The World Bank has approved the countries in order to enhance climate change cooperation and assist progress in conflict prevention in collaboration with regional development banks. The PPCR has already completed its first phase of implementation and is assisting countries in making major investments to make their development plans more conflict-resistant. The pilot efforts, according to the respondents, are based on the NAPA as well as other pertinent country plans and studies.<sup>113</sup> An excellent example is Nigeria, where the respondents mentioned that the objective of the Living on the Edge Project implemented by the Nigerian Conservation Foundation (NCF) has been to conserve and restore natural dryland and wetland habitats and improve people's livelihoods. Also, the project has aimed at preventing and reversing land degradation, focusing majorly on gully erosion that threatens livelihoods, infrastructure, environmental assets, and security. The project applies an integrated approach to watershed and landscape management issues.<sup>114</sup>

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<sup>111</sup> Ibid. p-47.

<sup>112</sup> Sneyers, R., (2013). *Adaptation Options to Climate Change: A Typology*. Department of Geography, University of Guelph, Ontario, Canada. pp, 79-80.

<sup>113</sup> Ibid. p-1.

<sup>114</sup> Eguavoen, I., Wahren, J., (2015). *Climate Change Adaptation in West Africa*. ZEF Working Paper 140, Center for Development Research: Bonn, Germany. p-35.

In Burkina Faso and Senegal, the Ecosystems Protecting Infrastructure and Communities (EPIC) project, has been implementing and documenting the role of ecosystem management for conflict prevention.<sup>115</sup> Since its establishment in 2013, the initiative has worked with native communities to act on the effects of climate change and to restore arable lands that have been degraded due to drought, erosion, flooding, and salinization. It is evident from the respondents that community resilience has been established through the program's building of local capacities and implementation of best practices, as well as the promotion of good policies for integrating climate change, environmental management, and conflict prevention. In each country where the initiative is being implemented, endogenous land practices that rehabilitate the land and boost agricultural productivity have been established. Anti-salt bunds, for example, have been erected to help Senegal restore more than 180 acres of agricultural land by minimizing salt intrusion and aiding soil retention of fresh water. More than 150 hectares of land in Burkina Faso have been restored thanks to traditional practices such as stone lines that preserve water. In both countries, assisted reforestation and natural regeneration has also been carried out to improve soil quality and increase tree cover.<sup>116</sup>

The study was supported by Holmgren & Oberg report that in Burkina Faso, *Faidherbia albida* is one of the species used to improve soil quality and is also utilised in Mali and Niger.<sup>117</sup> The species is planted in both countries through assisted natural regeneration which has improved yields of sorghum and millet.<sup>118</sup> The Alliance Mondiale Contre le Changement Climatique (AMCC) has

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<sup>115</sup> Eguavoen, I., Wahren, J., (2015). *Climate Change Adaptation in West Africa*. ZEF Working Paper 140, Center for Development Research: Bonn, Germany. p-134.

<sup>116</sup> Ibid. p-16.

<sup>117</sup> Holmgren, K., & Oberg, H., (2013). *Climate change in Western Africa during the Millennium and its Implications for Societal Development*. Environment, Development and Sustainability 8: 185-195

<sup>118</sup> Masumbuko, B. and Somda, J., (2014). *Analysis of the links between Climate Change, Protected Areas and Communities in West Africa*. UNEP-WCMC technical report. p-23.

been implementing in Benin an 8 million euros project targeted at forests in the country. According to the respondents, the programme has promoted the sustainable use of forests in the country and helped reduce flooding effects in downstream areas, thus contributing to not only adaptation outcomes but also conflict prevention. Some respondents said that the programme is assisted by the collection of new GIS data in order to increase local capacities in land management and conflict prevention. The respondents further recognised the importance of early warning systems and mapping for improving capacity to respond to conflicts, involvement of communities, and promoting local forest management to guarantee conservation and sustainable management.<sup>119</sup>

The Programme for the Sustainable Development of the Inner Niger Delta (PDD-DIN) was implemented in Mali between 2013 and 2015 with the goal of improving beneficiaries' resilience through integrated natural resource management, including addressing climate change, its implications, and adaptation measures that can be taken to prevent conflict, according to the respondents. The impacts of climate change adaptation on conflict avoidance in Western Africa are summarized in the table below.

Impact of Climate Change Adaptation on Conflict Prevention in Western Africa	
<b>i.</b>	Through climate change adaptation, countries have found it difficult to adapt to changing maritime ecosystems
<b>ii.</b>	Let to the establishment of several funds for such as ADB, UNEP, UNDP, and UNFCCC.
<b>iii.</b>	Through climate change adaptation, the pilot activities build on National Adaptation Program for Action (NAPA) and other relevant country strategies and studies
<b>iv.</b>	Established community resilience and capacity building of the local communities

<sup>119</sup> Holmgren, K., & Oberg, H., (2013). *Climate change in Western Africa during the Millennium and its Implications for Societal Development*. Environment, Development and Sustainability 8: 185-195

<b>v.</b>	It has promoted good policies for integrating climate change, environmental management, and conflict prevention
<b>vi.</b>	Climate change adaptation has promoted the sustainable use of forests in the country and helped reduce flooding effects in downstream areas
<b>vii.</b>	Modification of duration of growth season
<b>viii.</b>	Modification of breeding periods
<b>ix.</b>	Modification of species distribution.

**Source: Researcher (2021)**

#### **4.4 Lessons to be drawn to Guide Policy on the Impact of Climate Change Adaptation on Conflict Prevention between East and West Africa**

The goal of the study was to determine what lessons could be derived to help policymakers know the influence of climate change adaptation on conflict avoidance in East and West Africa. The implemented programmes and activities towards climate change adaptation has seen significant strides towards conflict prevention across both regions of Eastern and Western Africa. According to the respondents the economic performance of many of the countries in both regions has improved, alongside their capacity to invest in climate adaptation measures for conflict prevention is still limited. They further added that individual countries' initiative on climate change adaptation measures in both regions is competing with other demands in sectors such as infrastructure, health, trade, and education. As a result, climate change's disproportionate impact in East and West Africa is anticipated to grow in scale and frequency throughout time.<sup>120</sup>

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<sup>120</sup> Nikulin, J., Jones, H., Asrar, M., (2013). *How is Climate Change Adaptation Perceived in Africa?* Journal of Life Sciences, 77: 71-78.

Regional organizations such as the AU, ECOWAS, the EAC, and others, the respondents agreed with O'Donnell, have played an important role in pressing for collaboration and the implementation of climate change adaptation measures.<sup>121</sup> Food security, agriculture, water resources, livelihoods, forestry, conflict prevention, and disaster management have all been identified as regional climate change adaptation priority. Some adaptation actions have also centered on evaluations and initiatives that assist mainstreaming climate change adaptation into development plans, strategies, and policies, as well as raising awareness of vulnerabilities including conflicts and natural disasters. The respondents further pointed out on other adaptation activities in both Eastern and Western Africa that have sought to address non-climate stresses but are equally important for explicitly monitoring and evaluating adaptation. Such regional adaptation activities have included development of early warning systems networks, vulnerability mapping and information systems, and capacity strengthening in individual countries.<sup>122</sup>

As if that is not enough, the respondents responded that the AU has in the past emphasised on the importance of strengthening regional cooperation for capacity building and has particularly embraced programmes with regional focus. In this case, areas that have benefited particularly from regional cooperation include research and development, which has aided in the creation of high-level capacities, for example, in the areas of remote sensing for early warning systems and mapping climate hazards and impacts through collaboration with research institutions and universities. In addition, the African Union and other regional organizations wield enormous mobilization and

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<sup>121</sup> O'Donnell, I. (2017). Regional Organisations Doing Disaster Risk Reduction Including Climate Change Adaptation. In the Routledge Handbook of Disaster Risk Reduction Including Climate Change Adaptation (pp. 317-329). Routledge.

<sup>122</sup> Jones, R. and Mearns, L. (2016). *Assessing Climate Change Adaptation Policy Frameworks for Climate Change: Developing Strategies, Policies and Measures*. UNDP and Cambridge University Press. p-10.

convening power over their member states. As a result, a number of national policies on climate change adaptation have been connected with regional initiatives.

The following are some of the lessons that should be drawn to guide policy on the influence of climate change adaptation on conflict avoidance in East and West Africa. Respondents pointed out on the need for increased political commitment to climate change adaptation on conflict prevention, improved identification mechanisms for climate change and assessment of conflict risks, enhanced knowledge management of climate change adaptation on conflict prevention, improved governance of security institutions, and integration of climate change adaptation measures into emergency conflict prevention response.<sup>123</sup> Regional collaboration through regional economic communities such as ECOWAS, IGAD, and EAC has also been crucial in the study's efforts to develop a number of climate change adaptation activities aimed at conflict avoidance. The aforementioned lessons should primarily aid regional and national activities, as well as provide strategic options for specific countries depending on their unique circumstances. Such lessons are summarized in the table below;

Lessons to be drawn to Guide Policy on the Impact of Climate Change Adaptation on Conflict Prevention between East and West Africa	
i.	Increased political commitment to climate change adaptation on conflict prevention
ii.	Improved identification mechanisms for climate change and assessment of conflict risks
iii.	Enhanced knowledge management of climate change adaptation on conflict prevention
iv.	Improved governance of security institutions
v.	Integration of climate change adaptation measures into emergency conflict prevention response

**Source: Researcher (2021)**

<sup>123</sup> IPCC. (2017). *Climate Change Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the third assessment report of IPCC. Cambridge University Press, Cambridge. p-58.



#### **4.4 Chapter Summary**

This chapter found that implemented climate change adaptation programs and activities have made important contributions to conflict prevention in both Eastern and Western Africa after studying the influence of climate change adaptation on conflict prevention in Eastern and Western Africa. The study discovered that regional groups such as the AU, ECOWAS, EAC, and others have played a vital role in lobbying for collaboration and the implementation of climate change adaptation strategies based on primary and secondary data. Most regional climate change adaptation priorities, on the other hand, have been insufficient to prevent conflict from reoccurring, according to the respondents, because they have focused more on food security, agriculture, water resources, livelihoods, forests, and conflict management, with insufficient attention paid to preventative measures as part of climate change adaptation for such vulnerable African regions.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **5.0 Introduction**

The study examined the theoretical relationship between Climate Change Adaptation on Conflict Prevention in the Twenty-First Century International System, assess the impact of Climate Change Adaptation on Conflict Prevention in 21<sup>st</sup>C Africa, and compare and contrast the Impact of Climate Change Adaptation on Conflict Prevention in Eastern and Western Africa. As a result, this chapter includes a review of the significant findings, as well as conclusions and recommendations derived from the study's three main objectives.

#### **5.1 Summary of the Findings**

This section summarizes the important findings from each of the study's objectives.

##### **5.1.1 The theoretical relationship between Climate Change Adaptation on Conflict Prevention in the 21st Century International System**

The study discovered that in the twenty-first century international system, there exists theoretical nexus between climate change adaptations and conflict avoidance. This is based on primary data collected from 384 respondents in a random sample. Climate change, according to the respondents, has already become a global risk multiplier in a range of means, comprising increasing unpredictability, exacerbated inequality, and rising tensions, all of which lead to the emergence of new risks of violent conflict. This is based on a growing consensus by different stakeholders. Secondly, climate change increases the chances of intra-state and inter-state strife. Existing links between climate change adaptation, conflict avoidance, and other related issues such as food

security, disaster management, humanitarian responses, and health are also being strengthened by in the study by randomly sampled respondents. This illustrates the interconnected nature of climate change and conflicts, as well as the importance of integrating adaptation, mitigation, and conflict prevention methods to enable long-term solutions to global vulnerabilities.

Conflict prevention, according to the study, is a cross-cutting matter that is intricately linked to several environmental factors. As a consequence, dealing with climate change and creating conflict resilience necessitates multi-stakeholder and multi-sectorial methods. To resolve the fundamental origins of climate change, which inevitably lead to conflict in the twenty-first century, all actors in key sectors must be involved. These actors include those in the sectors of environment, communications, health, agriculture, ICTs, energy, land use planning, academia, civil society, scientific community, private sector and public authorities.

### **5.1.2 On the impact of Climate Change Adaptation on Conflict Prevention in 21<sup>st</sup> Century Africa**

As a result of these challenges, the study discovered that climate change may block the fulfilment of many of the SDGs, as well as those linked to environmental sustainability, poverty reduction, child mortality, and the eradication of malaria and other diseases. Existing environmental and societal issues may eventually lead to migration over and within country borders, worsening the continent's conflict risk. As a result, climate change is not just an environmental issue, but also a socio-economic one with major socio-economic ramifications that could lead to fierce and nonaggressive conflicts in many parts of Africa.

Climate change's far-reaching impacts have a substantial impact on Africa's growth. Current temperature extremes in Africa are anticipated to rise by 20 degrees Celsius by 2050, with

temperatures in the Sahel and tropical western Africa projected to increase by 40 to 60 degrees Celsius by the end of the century. Changes in rainfall patterns are also projected as a consequence of climate change. It's predicted that this will likely be more uncertain with modelling exercises projecting that western and eastern Africa will experience greater precipitation over time and with southern Africa becoming drier. Climate change has linked-effects, such as resource-based conflicts, which have been found to be adversely harming several African countries with little adaptation potential. As a result, there is a rising acknowledgement that the role of climate change adaptation in conflict prevention has significant potential, necessitating its inclusion as one of the top priority issues for many African countries' development, whether they are in conflict, on the verge of conflict, or not.

### **5.1.3 Impact of Climate Change Adaptation on Conflict Prevention in Eastern and Western Africa**

The study has noted that the Eastern and Western regions of Africa have implemented a number of climate change adaptation initiatives all geared towards preventing climate induced conflicts. Climate change has long been estimated to have a range of direct and indirect effects on food security, water availability, people's well-being and regional stability in Eastern Africa. Rain-fed agriculture, for example, is the primary basis of revenue for a large portion of the population in several Eastern African countries. As a result, despite significant progress in improving their livelihoods and agricultural technologies, climatic changes, particularly frequent flooding, droughts, and famine, have continued to impoverish large swaths of their populations, posing a grave danger to their livelihoods and, unfortunately, their security and safety on the other hand. In collaboration with regional financial institutions like the ADB, UNEP, UNDP, and the UNFCCC

many West African countries have established several funds for climate change adaptation and conflict prevention.

## **5.2 Conclusion**

The study concludes that it is becoming progressively strong that neither climate change adaptation nor conflict prevention can be solved on its own, and that both phenomena must be confronted within the global environmental contexts in which they occur. To address the implications of climate change and the hazards of war, contemporary climate change paradigms must be linked to changing realities. Addressing the interrelated and simultaneous distresses of climate change and war threats should be one of the most crucial features of the twenty-first century international order. As a result, climate change adaptation in Africa has the overarching goal and intended effect of reducing current and future risks to people's well-being and safety, as well as to the environment. The impact of climate change adaptation on conflict prevention in Africa, as well as the nexus between climate change and conflicts in Africa, including climate change adaptation and conflict prevention, and other new topics and challenges, has been extensively discussed in this chapter. It has been established that the climatic conditions in various African countries vary, as do their responses in terms of conflict prevention strategies.

### **5.3 Recommendations**

As a result, the study recommends increased political commitment to climate change adaptation for conflict prevention, improved climate change identification mechanisms and risk assessments, improved knowledge management of climate change adaptation for conflict prevention, improved security institution governance, and integration of climate change adaptation measures into emergency conflict prevention and response. In order to avoid climate-related violence, regional cooperation through regional economic communities such as ECOWAS, IGAD, and EAC must prioritize the development of policies focusing on climate change adaptation measures.

### **5.4 Areas for Further Research**

More research is needed to assess the effectiveness of regional organizations like the IGAD and ECOWAS in mitigating the effects of climate change and establishing the appropriate policy measures to adapt to it. In addition, further research is needed to understand the effects of climate change on individuals in the HoA's socioeconomic well-being. Finally, this paper recommends that study be conducted to identify the impact of climate change on African state stability as a whole, so that the severity of the problem may be assessed as it develops.

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## APPENDICES

### Appendix I: Questionnaire

University of Nairobi  
Institute of Diplomacy and International studies

Dear Respondents,

#### **RE: DATA COLLECTION.**

I am a Master's student in the Department of Diplomacy and International Studies at the University of Nairobi. I'm currently working on a research project to meet the requirements for a Master of Arts in International Studies. **“The Impact of Climate Change Adaptation on Conflict Prevention in the 21<sup>st</sup> Century: Comparison of Eastern and Western Africa Experiences.”** is the name of the project I'm working on. Your participation in this study has been chosen for you; nevertheless, it is entirely voluntary. I humbly request that you complete the questionnaire completely and truthfully. Thank you very much for your cooperation.

**Paul Kamweru Ndung’u**  
**M.A. Student at the University of Nairobi.**

**SECTION A: BIO DATA.**

**Please tick [√] as appropriate**

- i) Sex:  Male  Female
- ii) Age:  20 – 30  31 – 40  41 – 50  51 – 60  61 – 70
- iii) Level of formal education:  None at all  Primary education  
 Secondary education  College education  University education
- iv) Organization:  
 National Environment Management Authority (NEMA) in Kenya  
 National Environment Management Authority (NEMA) in Uganda  
 United Nations Environmental Programme (UNEP)  
 Ministry of Environment and Forestry in Kenya  
 Ministry of Water and Environment in Uganda  
 USAID Environmental Programme in West Africa  
 SERVIR West Africa  
 Stockholm Environment Institute

**SECTION B: Questionnaire**

1. What is the relationship between climate change and conflict in Africa's East and Horn?-

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2. What impact does climate change adaptation have on conflict prevention in Africa in the twenty-first century?

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3. What is the comparison on Impact of Climate Change Adaptation on Conflict Prevention in Eastern and Western Africa?

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4. What is the difference on Impact of Climate Change Adaptation on Conflict Prevention in Eastern and Western Africa?

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5. What are some of pertinent policy solutions and actions on the place of climate change adaptation in conflict prevention in Africa?

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6. What are some of climate change adaption measures in East Africa?

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7. What are some of climate change adaption measures in Western Africa?

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8. How effective are the climate change adaption measures in Western Africa and Eastern Africa?

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9. Why is Africa the most climate risk affected continent in the world?

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10. Do you think climate change adaptation in Eastern and Western Africa will prevent conflict in those regions?

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## Appendix II: IDIS Approval Letter



**UNIVERSITY OF NAIROBI**  
Faculty of Social Sciences  
**Department of Diplomacy and International Studies**

Tel : 00254 20 338000  
Telefax : 254-20-2450000  
Fax : 254-20-2450000  
Website : www.uonbi.ac.ke  
Telex : 220593 Faculty Ke Nairobi, Kenya  
E-mail : director@uonbi.ac.ke

P.O. Box 30197  
Nairobi  
Kenya

August 2, 2021

TO WHOM IT MAY CONCERN

RE: PAUL KAMWERU NDUNGU- R50/35807/2019

This is to confirm that the above-mentioned person is a bona fide student at the Institute of Diplomacy and International Studies (IDIS), University of Nairobi pursuing a **Master of Arts Degree in International Studies**. He is working on a research project titled, **"THE IMPACT OF CLIMATE CHANGE ADAPTATION ON CONFLICT PREVENTION IN THE 21<sup>ST</sup> CENTURY: A COMPARISON OF EASTERN AND WESTERN AFRICA EXPERIENCES"**.

The research project is a requirement for students undertaking Masters programme at the University of Nairobi, whose results will inform policy and learning.

Any assistance given to him to facilitate data collection for his research project will be highly appreciated.

Thank you in advance for your consideration.

A circular official stamp of the University of Nairobi, Faculty of Social Sciences, Department of Diplomacy and International Studies. The stamp contains the text "UNIVERSITY OF NAIROBI", "FACULTY OF SOCIAL SCIENCES", "DEPARTMENT OF DIPLOMACY AND INTERNATIONAL STUDIES", and "IDIS". A handwritten signature in blue ink is written across the stamp.

**Professor Maria Ngunjiri,**  
Ag. Chair, DDIS  
&  
Professor of International Relations and Governance

Appendix III: Research Permit

Republic of Kenya  
Ministry of Science, Technology and Innovation  
National Commission for Science, Technology and Innovation

Ref No: **848438**

Date of Issue: **01/October/2021**

**RESEARCH LICENSE**



This is to Certify that Mr. Paul Kamwera Nding'u of University of Nairobi, has been licensed to conduct research in Kilnsha, Nairobi, Tharaka-Nithi on the topic: **The Impact of Climate Change Adaptation on Conflict Prevention in the 21st Century: A Comparison of Eastern and Western Africa Experiences**, for the period ending : **01/October/2022**.

License No: **NACOSTI/P/21/12149**

**848438**  
Applicant Identification Number

Director General  
**NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION**

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## Appendix IV: Turnitin Report

PROJECT			
ORIGINALITY REPORT			
<b>11</b> %	<b>9</b> %	<b>6</b> %	<b>2</b> %
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
<b>1</b>	<a href="http://erepository.uonbi.ac.ke:8080">erepository.uonbi.ac.ke:8080</a> Internet Source		<b>1</b> %
<b>2</b>	<a href="http://new.esp.org">new.esp.org</a> Internet Source		<b>1</b> %
<b>3</b>	Handbook of Climate Change Adaptation, 2015. Publication		<b>1</b> %
<b>4</b>	"Nigeria-South Africa Relations and Regional Hegemonic Competence", Springer Science and Business Media LLC, 2019 Publication		<b>1</b> %
<b>5</b>	<a href="http://i.unu.edu">i.unu.edu</a> Internet Source		<b>&lt;1</b> %
<b>6</b>	<a href="http://ar5-syr.ipcc.ch">ar5-syr.ipcc.ch</a> Internet Source		<b>&lt;1</b> %
<b>7</b>	Submitted to Mount Kenya University Student Paper		<b>&lt;1</b> %
<b>8</b>	<a href="http://www.gfdr.org">www.gfdr.org</a> Internet Source		<b>&lt;1</b> %