A CRITICAL EXAMINATION OF CLIMATE CHANGE REGULATORY AND POLICY FRAMEWORKS OF SOUTH SUDAN: A COMPARATIVE ANALYSIS WITH KENYA

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DECLARATION

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I, Dr. Kariuki Muigua, as the Supervisor at the University of Nairobi, hereby affirm that this dissertation has been completed and submitted under my guidance.

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DEDICATION

This work is dedicated to my late Grandmother, Amiir Akot Pariak, for her tireless encouragement, motivation, and inspiration to me before her sad demise in 2012. Without her, my life could have been so different. I would not have arrived to where I am today. I will forever be grateful to her, and she will always be in my heart.

This work is also dedicated to my late Grandfather, Sultan Ruop Mayen, for his blessings to me when I was 7 days old. Before he died, he raised me up, and said that I will grow with good health, no evil will ever take my life, and concluded by saying that I will be the greatest man in my family, clan, community, and the whole world. He spent two days, and passed on. His words played a big role in my life.

This work is also dedicated to my parents, Arek Kuc Bil, Mangok Ruop Mayen, and to my beloved siblings, Mary Nyaruon Mangok, Daniel Monychinrin Mangok, Asunta Achut Mangok, and Luke Lual Mangok, your constant encouragement, love, and support made it possible to reach this stage.

My creator, rock, and source of wisdom, insight, and understanding is the Almighty God, to whom I offer this work in dedication. He is the reason I have been able to persevere through this program; I could not have soared without Him.

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LIST OF STATUTES

South Sudan

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Investment Promotion Act, 2009

Land Act, 2009

Mining Act, 2012

Petroleum Act, 2012

Transitional Constitution of the Republic of South Sudan of 2011

Kenya

Climate Change Act, 2016

Constitution of Kenya of 2010

Energy Act, 2019

Environment and Land Court Act, 2011

Environment and Management Co-ordination Act, 1999

Forest Conservation and Management Act, 2016

Tax Laws (Amendment) Act, 2020

Water Act, 2016

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Environmental Policy Bill, 2012

Forest Bill, 2009

Water Bill, 2013

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Paris Agreement, 2015

UN Convention on Biological Diversity, 1993

UN Convention on Combat Desertification, 1996

United Nations Framework Convention on Climate Change, 1994

Sustainable Development Goals (SDGs), 2030

LIST OF CASES

Kibos Distillers Limited & 5 Others vs Benson Ambuti Adega & 2 Others [2020] eKLR

Benson Ambuti Adega & 2 Others vs Kibos Distillers & 5 Others [2021] eKLR

Kenya Association of Manufacturers & 2 others v Cabinet Secretary - Ministry of Environment and Natural Resources & 3 others [2017] eKLR

ABBREVIATIONS

AfDB	Africa Development Bank Group
ASEAN	Association of Southeast Asian Nations
CBOs	Community-based organizations
CCVI	Climate Change Vulnerability Index
CCWG	Climate Change Working Group 2019
EMCA	Environment and Management Co-ordination Act 1999
ESAs	Environmentally Sensitive Areas
FAO	Food and Agriculture Organization
GCMs	General Circulation Models
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gases
ICPALD	IGAD Center for Pastoral Areas and Livestock Development
IGAD	Intergovernmental Authority on Development
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
LAC	Latin American Countries
MEAs	Multiple International Agreements
MGCSW	Ministry of Gender, Child, and Social Welfare
MHADM	Ministry of Humanitarian Affairs and Disaster Management
MoED	Ministry of Electricity and Dams
MoEF	Ministry of Environment and Forestry
MoFAIC	Ministry of Foreign Affairs and International Cooperation
MoFEP	Ministry of Finance and Economic Planning
MRV	Monitoring, Reporting and Verification
MWRI	Ministry of Water Resources and Irrigation
NAPA	National Adaptation Program of Actions 2016
NCCAP	National Climate Change Action Plan
NDA	National Designated Authority
NDCs	Nationally Determined Contributions

NECC	National Environmental Complaints Committee
NEMA	National Environmental Management Authority
NGOs	Non-Governmental Organisations
NUPI	Norwegian Institute of International Affairs
PWDs	Persons with Disabilities
SDGs	Sustainable Development Goals
SIPRI	Stockholm International Peace Research Institute
SSEC	South Sudan Electricity Corporation
SSMS	South Sudan Meteorological Service
SSRRC	South Sudan Relief and Rehabilitation Commission
SSWS	South Sudan Wildlife Service
UN	United Nations
UNCBD	UN Convention on Biological Diversity
UNCCD	UN Convention on Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
USAID	United States Agency for International Development

ABSTRACT

This project paper conducted a thorough analysis of the system of laws, policies, and regulations pertaining to changes in the climate in South Sudan, while also doing a comparative assessment with Kenya. This analysis rigorously assesses the legal, institutional, and policy frameworks in South Sudan that regulate climate change. It emphasizes the consequences of climate change and identifies the most effective strategies that South Sudan might adopt by drawing lessons from Kenya's experience in decreasing the severity of the changing climate's negative impacts. An in-depth analysis of South Sudan's legal structures, both organizational and policy, indicates a lack of sufficient laws and regulations to effectively control climate change in the country. The Transitional Constitution, Mining Act, Petroleum Act, and Land Act encompass environmental legislation in a broad sense, but do not directly address climate change. The impacts of the changing climate in South Sudan encompass a range of detrimental consequences, spanning socio-economic and health domains. It also emerges that South Sudan can learn various lessons from Kenya which has progressive environmental laws, policies, and institutions for governing the environment and climate change. Several recommendations are proposed including the enactment of legislation, making of policies and establishment of institutions in South Sudan that specifically govern climate change. The overall conclusion is that for South Sudan to effectively combat the detrimental consequences of changing climate, there is an urgent need to enact progressive climate change specific laws, make policies, and establish institutions.

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CHAPTER ONE: INTRODUCTION

1.1 Background

Undoubtedly, climate change presents a worldwide peril, and South Sudan, as one of the most impoverished nations on the planet, confronts substantial difficulties in mitigating its effects.[1] While the South Sudan Transitional Constitution emphasizes environmental protection as one of its governing principles,[2] it lacks a specific provision dedicated solely to climate change. The Constitution implicitly acknowledges climate change concerns by highlighting the dedication of all tiers of the South Sudanese government to encourage long-term growth and prosperity. This commitment is focused on implementing necessary legal measures and other initiatives to protect the ecosystem.[3]

The Constitution's Article 41 emphasizes the crucial significance of environmental factors affecting the well-being of South Sudanese citizens.[4] The document guarantees the entitlement of all individuals and communities to an unpolluted and salubrious environment, with an explicit instruction to safeguard this entitlement for the advantage of both current and future cohorts. The objective is to ensure protection by implementing the right laws along with additional actions to stop environmental degradation and pollution, promote efforts to preserve the environment, guarantee ecologically sound growth, and use earth's resources responsibly. Furthermore, it underscores the need of maintaining a harmonious equilibrium between economic and social progress, while simultaneously safeguarding genetic stability and biodiversity.

South Sudan's Constitution, although it does not directly mention climate change, establishes a structure for safeguarding the environment and promoting sustainable development. This framework may be utilized as a basis for tackling the difficulties presented by climate change in the country.

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[1] UNDP, 'Scaling up Climate Action to Achieve the SDGs' (23 January 2017) <https://www.undp.org/publications/scaling-climate-action-achieve-sdgs> accessed 21 December 2023.

[2] Andrew E Yaw Tchie, Anab Ovidie Grand and Kheira Tarif, 'Climate, Peace and Security Fact Sheet: South Sudan (2021)' (*SIPRI* 1 March 2021) <https://www.sipri.org/publications/2021/partner-publications/climate-peace-and-security-fact-sheet-south-sudan-2021> accessed 21 December 2023.

[3] Transitional Constitution of the Republic of South Sudan, 2011 (as amended), Art. 41(1)-(3) (hereinafter the 'Transitional Constitution').

[4] Ibid, Article 41

South Sudan, as a recently established nation, is now in the stage of formulating its legal and legislative structures to tackle climate change. Although the government has made significant attempts to integrate climate change issues into many programs, there is now no distinct, independent policy, statute, or plan that expressly focuses on tackling climate change. To successfully face the difficulties set by climate change, it is imperative for South Sudan to give priority to the implementation and development of targeted policies, laws, and regulations that specifically address both mitigation as well as adaptation in response to changes in the climate.

The Environmental Policy Bill of 2012 has been drafted but remains pending in Parliament, without being enacted into law. Furthermore, South Sudan has yet to create precise legislation, rules, or standards on mitigation as well as adaptation in response to changes in the climate. It is essential to create laws and regulations that specifically address climate change. These measures can help to decrease the release of greenhouse gases, strengthen the nation's climate change adaptation and mitigation capabilities, and institute legislative measures against behaviors that worsen climate change.

South Sudan has acceded to several international agreements related to climate change, including the United Nations Framework Convention on Climate Change (UNFCCC), UN Convention on Biological Diversity (UNCBD), the Paris Agreement, and UN Convention on Combat Desertification (UNCCD). Nevertheless, the nation must adhere to its international commitments by implementing domestic legislation, policies, and strategies designed to tackle the unavoidable repercussions of changes in climate. Implementing these domestic measures is crucial for South Sudan to synchronize its actions with its obligations under international accords and successfully tackle the difficulties presented by climate change inside the nation.

Hence, this study looked to gauge the extent to which environmental concerns, specifically climate change, are considered in the formulation of national, local, and sector-specific growth-related regulations, and legislation, as well as the level of financial investment and action taken within this framework.

1.2 Problem Statement

Although Sudan South Sudan has ratified numerous international treaties on changes in the climate, including the UNFCCC, the country has not yet implemented practical measures, laws, and policies to address mitigation as well as adaptation because of the effects of climate change.

As a result, Sudan South Sudan is experiencing various climate change impacts, and there is a significant deficiency in its legal and policy framework. The South Sudan Transitional Constitution upholds environmental protection as a fundamental principle of governance. It guarantees that that every person has an inherent right to live in an environment free from pollution, and that we must all do our part to protect the planet for the sake of the generations to come.[5]

The Transitional Constitution also sets an obligation on government agencies to fully guarantee the protection of the people and the environment.[6] Nevertheless, the Transitional Constitution of 2011, together with its amendments, as well as the Petroleum Act of 2012 and the Mining Act of 2012, do not explicitly reference the term "climate change" or include specific provisions for addressing its implications. Unlike South Sudan, many jurisdictions that have achieved mitigation as well as adaptation in response to changes in the climate have proper laws, policies, and institutions in place.

Therefore, the above-highlighted gap in the climate legal, policy, and institutional frameworks has resulted in various climate change catastrophes in South Sudan. The aforementioned factors, including increasing temperatures, flooding, and droughts, have greatly upset the established ways of life and food security, leading to the widespread relocation of individuals in Warrap State, Upper Nile State, Jonglei State, Unity State, and certain areas of Lakes State.[7] These shocks have led to weaknesses and reduced the adaptability and durability of these people, which rely heavily on agriculture. The effects of changes in the climate on livestock has led to the emergence of community disputes, cow theft, population relocation, and the proliferation of violent youth groups.[8]

However, South Sudan lacks a historical record of legal principles and academic writings about the environment, specifically concerning adjusting to and lessening the impact of changes in the climate. Furthermore, as previously said, South Sudan has not implemented any viable ways to tackle the difficulties caused by changes in the climate. This is in spite of ratifying multiple

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[5] Transitional Constitution, Art. 41(1)-(3).
[6] Ibid.
[7] Supra n 2.
[8] Nhial Tiitmamer and others, 'Climate Change and Conflicts in South Sudan' [2018] SSHAP <https://www.socialscienceinaction.org/resources/climate-change-and-conflicts-in-south-sudan/> accessed 21 December 2023.

international accords that pertain the ecological system and its changing climate. This paper examines this challenge to identify legal remedies for addressing the worldwide problem of climate change specifically in South Sudan. This study conducts a thorough analysis of the legal, policy, and regulatory frameworks of the country to determine if relevant environmental concerns are adequately considered in the decision-making institutional processes that mold growth-related policies, regulations, investments, and activities at the state, regional, and municipal levels. The paper does a comparative comparison between Kenya and South Sudan, focusing on Kenya's exemplary approaches to addressing climate change. It suggests that South Sudan might adopt these practices to mitigate the consequences of climatic changes. The previously mentioned policy and legal void must be addressed soon, failure will result in environmental deterioration and more livelihoods will be negatively affected.

1.3 Objectives

1.3.1 General

The primary aim of this research is to thoroughly analyze South Sudan's legal, institutional, and policy structures in relation to climate change governance and mainstreaming.

1.3.2 Specific

The study specifically examined the following objectives:

1. To critically examine South Sudan’s legal, institutional, and government policies regarding climatic changes.
2. To highlight the effects of climatic changes in South Sudan.
3. To highlight the best practices South Sudan can adopt from other jurisdictions and draw lessons from Kenya in combating the negative impacts of climate.

1.4 Research Questions

1. Whether South Sudan’s climate change policy, institutional, and legal frameworks are sufficient enough in terms of response to the consequences of climate change?
2. How does climate change affect the environment in South Sudan?

3. What environmental protection approaches have other jurisdictions such as Kenya adopted in their policy, institutional, and legal structures pertaining to changes in the climate, and what best practices can South Sudan adopt in the mitigation of climate change catastrophes?

1.5 Hypothesis

South Sudan's laws and policies are wanting in regard to any framework on the climate change governance and mainstreaming. This dissertation is premised on the hypothesis that, South Sudan lacks proper legislation, policies, and institutional framework on climate change governance and mainstreaming.

1.6 Study Justification

The study was imperative to be conducted as it would assist readers in developing a discerning comprehension of the South Sudanese legal and policy structure of climate change, as well as the potential ramifications resulting from the existing deficiency in legislation and policy. The study will enhance readers' comprehension of the level to which climatic changes impacts the ecosystem in South Sudan.

Moreover, this study will assist readers in comprehending the most effective adaptive strategies for climate change, based on examples from other regions such as Kenya. South Sudan can consider adopting these techniques to enhance its climate change adaptation and resilience. Moreover, the research carried out in this study will be beneficial to the South Sudanese Government and policymakers, such as the Ministry of Environment, Water Resources, Agriculture, Forestry, and Animal Production, and the Parliament. It will provide them with valuable understanding regarding the effects of climatic changes, deficiencies within the preexisting systems of law, policy, and institutions concerning climate change, and the necessary lessons they should acquire from other jurisdictions, such as Kenya.

Academic academics and researchers will scrutinize the findings of this investigation, extracting new topics for their own research projects and incorporating the findings into their own work.

Ultimately, this research project aims to enhance raising consciousness about the impacts of climatic changes and the steps that should be avoided to promote acclimatization and resilience in South Sudan.

1.7 Theoretical Framework

The theories that support this study are: the Legal Flexible capacity Theory and the Environmental Mainstreaming Theory with the former theory being the most preferred in guiding the study. The following theories will be used throughout the study as a roadmap for project journey.

1.7.1 Environmental Mainstreaming Theory

Mainstreaming refers to the process of incorporating a certain aim from one area of focus into other areas where it has not yet been adequately handled.[9]

The notion of environmental mainstreaming, as defined by scholars like Persson and Runhaar, alludes to the incorporation of green initiatives into certain policy areas that are not specifically related to the environment.[10]

The idea advocates for the implementation of actions and long-term measures, such as regulations and legislation, with the goal of preventing many forms of environmental harm. These include deterioration of the environment, pollution, erosion of soil, deforestation, changes in the climate, the decline of biodiversity, degradation of the ozone layer, extinction of species, and depletion of water supplies, among other issues.[11] The theory has been critiqued by the scholars as a notion that stems from Western intellectual and scientific evolutionism, that is, it brings nothing new to the table and therefore fails to address the concerns of developing states.[12] Sustainable development does not take into account that different states do not have the same capacity to develop at the same pace.

Moreover, the aims of sustainable development, environmental protection, and economic progress are paradoxical. Economic progress is heavily backed by capitalism which is an age-old ideology. Environmental protection, which is a new phenomenon, is expected to be promoted alongside economic progress which at its core is an ideology that is structured in a way that economic progress cannot accommodate environmental protection. Hence, it is imperative to achieve a

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[9] Sylvia Karlsson-Vinkhuyzen and others, 'Mainstreaming Biodiversity in Economic Sectors: An Analytical Framework' (2017) 210 BC 145.

[10] Åsa Persson and Hens Runhaar, 'Conclusion: Drawing Lessons for Environmental Policy Integration and Prospects for Future Research' (2018) 85 ES&P 141.

[11] Ibid.

[12] John E McDonnell, Helle Abelvik-Lawson and Damien Short, 'A Paradox of "Sustainable Development": A Critique of the Ecological Order of Capitalism', *The Emerald Handbook of Crime, Justice and Sustainable Development* (Emerald Publishing Limited 2020).

harmonious equilibrium between environmental sustainability and economic progress, ensuring that one does not hinder the other. Thus, this theory to be effective enough, and ensure economic progress together with environmental protection, the social and environmental impact assessment is needed.

1.7.2 Theory of Legal Flexible Capacity

According to proponents like Camacho and others, the legal flexible capacity refers to a country's ability to adapt its laws, policies, and regulations to counter the emerging issues brought by climatic changes. The Intergovernmental Panel on Climate Change (IPCC) defines flexible capacity as the capability or prospective for a system to effectively acclimatize to variations in the climate and transformation. This adaptation involves modifications in both conduct and the utilization of resources and technology.[13]

Climate change researchers have determined that implementing efficient adaption strategies can mitigate the disasters caused by changes in the climate.[14] Throughout history, scholars have examined how many elements, including money, education, health, knowledge, technology, and organizations, impact societies' adaptability to changing climate threats.[15] Nevertheless, the impact of legal regimes' adaptability on climate change adaptability has been mostly ignored by researchers.

Therefore, this theory is highly relevant to this project study because legal flexible capacity is one of the ways in which South Sudan can alleviate climate change challenges through the formulation of climate laws, policies, and regulations with strong enforcement mechanisms. However, the theory has been critiqued by many scholars for its ineffectiveness to function in countries without a rule of law like South Sudan whereby law implementation is challenging.

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[13] IPCC, 'AR4 Climate Change 2007: Impacts, Adaptation, and Vulnerability' (2019) <https://www.ipcc.ch/report/ar4/wg2/> accessed 21 December 2023.
[14] Ibid.
[15] Ibid.

1.8 Literature Review

1.8.1 Effective Institutions, Laws And Policies As Tools For Climate Adaptation And Resilience

This literature review explores the works of different scholars on the use of laws, policies, and institutions for effective governance and mainstreaming of climate change. The gaps, shortcomings, and biases are highlighted in those findings and recommendations for future study. Wenta, McDonald and McGee[16] studied environmental justice and climate adaptation capacity in Australia. They concluded that the legal system, laws, and policies are central to achieving environmental justice and climate change adaptation and resilience. This finding strongly concurs with the current research in the sense that lack of feasible laws and policies formulated by South Sudan resulted in adverse effects of climate change. However, the methodology used by the researchers could not be tested in South Sudan given the wider socio-economic, political, and cultural differences between Australia and South Sudan. In addition, the study was conducted based on the Australian context, while the current study is based on the South Sudanese context. Ladan[17] sought to find out whether there is a link among the three striking issues, issues related to human rights, climate change, and the Sustainable Development Goals (SDGs), as well as whether or not the basic standards of legislation and policy will result in the achievement of these goals, as well as resilience also adjusting to the changing climate, particularly in terms of Africa. The study concluded that the state would only achieve SGDs only if climate change is fully addressed because the latter is an impediment to the realisation of the former. The study further stressed the central role played by the regulatory framework for attaining SDGs and adapting to and surviving climate change. The findings strongly agree with the current study because no nation on earth can achieve sustainable Development Goals (SDGs) without properly alleviating the climate change catastrophes, and for that country to achieve the above motive, legal, regulatory and policy formulation is prominent.

[16] Joseph Wenta, Jan McDonald and Jeffrey S McGee, 'Enhancing Resilience and Justice in Climate Adaptation Laws' (2018) 8 TEL 89.
[17] Muhammed Ladan, 'Achieving Sustainable Development Goals through Effective Domestic Laws and Policies on Environment and Climate Change' (2018) 48 EP&L 42.

Peel and Osofsky,[18] in their paper on comparative studies of Australia and the USA about the litigation's regulatory role as a mechanism of climate change governance, concluded that litigation is critical in governing climate change both in USA and Australia. However, the problem with their finding is that it could not apply to South Sudan because the regulatory, policy, and legal framework is weak. In addition, the judiciary is not independent. Therefore, formulation of feasible legal and policy measures coupled with functioning independent judiciary is crucial in achieving climate change effective governance. This study interrogates the legal and regulatory frameworks and whether litigation is a viable tool for climate change governance in regards to South Sudan.

Salamanca and Nguyen,[19] in their paper on how various ASEAN Countries can adopt plans and policies for climate change readiness, concluded that plans, policies, rules, and regulations funding of local communities is central in achieving climate change readiness in the ASEAN Countries. However, the methodology could not work out in South Sudan as climate change readiness mechanisms vary from one geographical context to another. This research interrogates how various South Sudan can adopt laws, plans, and policies for climate change readiness.

He,[20] in his paper on comparative analysis about climate change adaptation laws, policies, and litigations between China, the USA, and Australia, concluded that effective legislation of laws, policies, and environmental litigation is one of the fundamental ways of achieving climate change adaptation. Further,[21] it is opined that climate change laws, policies and litigation varies due to variation in the legal environments, economic, cultural, and climate politics in those three different countries. Therefore, this paper strongly agrees with the findings of the above scholar because climate change adaptation laws, policies, and litigation cannot work out in South Sudan due to variation in climate change politics, legal, and policy frameworks. However, South Sudan is yet to formulate special laws, rules and policies for adapting to climate change.

Ganesh and Smith,[22] in their paper sought to critically examine California's climate change, health, and policy, concluded that climate change mainstreaming is crucial in enhancing climate change

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[18] Jacqueline Peel and Hari M Osofsky, 'Climate Change Litigation's Regulatory Pathways: A Comparative Analysis of the United States and Australia' (2013) 35 L&P 150.

[19] Albert Salamanca and Ha Nguyen, 'Climate Change Adaptation Readiness in the ASEAN Countries' (*JSTOR* 2016) <https://www.jstor.org/stable/resrep02771>.

[20] Xiangbai He, 'Legal and Policy Pathways of Climate Change Adaptation: Comparative Analysis of the Adaptation Practices in the United States, Australia and China' (2018) 7 TEL 347.

[21] Ibid.

[22] Chandrakala Ganesh and Jason A Smith, 'Climate Change, Public Health, and Policy: A California Case Study' (2018) 108 AJPH.

adaptation and mitigation. However, the findings could not well work out in South Sudan due to geographical, cultural, political, and social differences. Zhao[23] examined China's policy change and legal development in response to climate change, and key strategies in Greenhouse Gases (GHG) mitigation. The study concluded that China has taken a significant step in climate change moderation. In addition,[24] the formulation of climate change laws has been ongoing in China. However, the implementation of laws is questionable because China remains one of the biggest emitters of gas. Therefore, this study will address the execution of climate change laws as the important means of climate change adaptation and resilience.

McDonald's article[25] examined climate change adaptation from an Australian perspective but most adaptation strategies have been on spatial and land use planning. The paper concluded that climate change adaptation through laws and policies are crucial in climate change governance. However, the paper only talked about spatial and land use planning rather than all the sectors affected by climate change. Verschuuren[26] analyzed the legal, policy, and regulatory obstacles and impediments to the changing climate adjustment and explored strategies for their effective management. The book's conclusion asserts that adaptation is needed in order to mitigate the consequences arising from the Earth's atmospheric warming, a phenomenon that is already inevitable owing to previous emissions.[27] Therefore, this study agrees with his finding because effective laws, policies, and regulations could result in climate change adaptation.

Ramlan[28] provides valuable perspectives on the application of Islamic environmental law in Indonesia, Singapore, and Malaysia. This is done by utilizing fatwas (Islamic legal opinions) and khutbahs (sermons) to promote environmental justice and facilitate adjustment to climate change. It has been determined since within this specific situation, the law does not necessitate reform to the same extent as the religious institutions' method of administering Islamic environmental legislation necessitates contemplation and modification.[29] However, the problem with these

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[23] Yuhong Zhao, 'Climate Change Mitigation – Law and Policy Development in China' (2015) 12 JEEP&L 305.
[24] Ibid.
[25] Jan McDonald, 'A Short History of Climate Adaptation Law in Australia' [2014] CL 150.
[26] JM Verschuuren, 'Legal Aspects of Climate Change Adaptation' (2013) in EJ Hollo, K Kulovesi and M Mehling (eds), *Climate Change and the Law* (Ius Gentium: Comparative Perspectives on Law and Justice, No. 21, Springer 2013) 257-285.
[27] Ibid
[28] Shazny Ramlan, 'Implementing Islamic Law to Protect the Environment: Insights from Singapore, Malaysia, and Indonesia' (2020) 23 APJEL 202.
[29] Ibid

findings is that not only the Islamic law implementation can lead to achieving climate justice but the entire environmental legal regime. In addition, these findings cannot succeed in South Sudan due to geographical and religious differences. Lyster and Verchick's[30] research states that the global and local legal system is essential to enhancing climate change adaptation and addresses the role of law in tackling climate change acclimatization. Therefore, this study agrees with their findings, however, the problem with those findings in South Sudan is poor implementation of laws and regulations.

Doelle and Seck,[31] examines how major carbon companies can be held accountable in court for loss and damage from their emissions into the environment and concluded that carbon major companies are not properly regulated in terms of their contributions to climate harms at the transnational level. In addition, Anglo-American corporate law is blind to climate change and resulting in incidents of loss and damage. Therefore, this paper agrees with their finding in the sense that South Sudan has no proper laws and polices regulating giant oil companies such as DAR Petroleum, Petronas, and OVL that are polluting the environment in the oil producing region of Upper Nile. However, climate change litigation is difficult to be achieved in South Sudan, unlike the USA given the differences in the status of legal systems and courts between the two countries.

Camacho and Glicksman[32] examine the significance of legal flexible capacity as a driving force for climate change coping. They determine that the extent to which an agency engages in adaptation to climate changes is impacted by the initiative's lawful flexible capability, which refers to the ability to change the objectives explored under its authorized legal structure. Therefore, this study agrees with this conclusion because legal flexible capacity is crucial to South Sudan in alleviating climate change effects.

McDonald[33] and other researchers examined the function of law in adapting to changes in climate and determined that legislation should be formulated to effectively address the challenges posed

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[30] Rosemary Lyster and Robert RM Verchick, *Research Handbook on Climate Disaster Law : Barriers and Opportunities* (Edward Elgar Publishing Limited 2018).

[31] Meinhard Doelle and Sara L Seck, *Research Handbook on Climate Change Law and Loss & Damage* (Edward Elgar Publishing 2021) 404.

[32] Alejandro E Camacho and Robert L Glicksman, 'Legal Adaptive Capacity: How Program Goals and Processes Shape Federal Land Adaptation to Climate Change' (10 July 2015) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2629363> accessed 21 December 2023.

[33] Jan McDonald and Phillipa C McCormack, 'Rethinking the Role of Law in Adapting to Climate Change' (2021) 12 WIREs Climate Change.

by changes in the climate. Liu, Liu, and Gao[34] conducted an analysis of the gaps and strategies for coping with changes in climate in Central Asia. They found that legal and regulatory improvements are one of the primary methods for adapting to changes in climate, among other approaches. Addaney[35] conducted an analysis of the African Union's climate change legal adaption measures, specifically examining the consequences of China's Belt and Road Policy. The study concluded that African populations are susceptible to adverse impacts of climate variation as a result of their reliance on agro-business economic growth, inadequate infrastructure, and industrial growth. It is further opined that African Union and governments need to revise their climate change policy frameworks. The aforementioned findings align with the present research in South Sudan, as they highlight the vital function of policies and laws in climate change adaptation.

1.8.2 Climate Change's Impact on the Agricultural Sector

This review of the literature examines the research conducted by various experts on the effects of climate change on agriculture in different regions. The gaps, shortcomings, and biases will be highlighted in those findings and recommendations for future study will be made. While the findings show that climate change affects agriculture primarily, it also spreads to other sectors, severely impacting the economy as a whole, via many routes, as the data reveal. Many academics believe that families, especially those in rural areas, would suffer the most as a result of a decrease in real consumption. According to Galindo and other researchers,[36] as well as Field and other scholars,[37] the diverse demographic, economic, and geographic features of Latin American Countries (LAC) are likely to result in a very varying influence on agriculture.

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[34] Wanlu Liu, Lulu Liu and Jiangbo Gao, 'Adapting to Climate Change: Gaps and Strategies for Central Asia' (2020) 25 MASGC 1439.
[35] Michael Addaney, 'Strengthening Africa's Adaptive Capacity to Climate Change: African Union Law and Implications of China's Belt and Road Policy' [2020] CCM 481.
[36] Miguel Galindo Luis and Reyes Orlando, 'Climate Change, Irrigation and Agricultural Activities in Mexico: A Ricardian Analysis with Panel Data' (2015) 7 JDAE 261.
[37] Christopher B Field, 'Climate Change 2014: Impacts, Adaptation, and Vulnerability-Summary for Policymakers' (2014) www.researchgate.net/publication/272150376_Climate_change_2014_impacts_adaptation_and_vulnerability_-_IPCC_WGII_AR5_summary_for_policymakers/references> accessed 23 January 2022.

Over the next 15 years, productivity in Central America is expected to decline, whereas in South America it is expected to remain stable or perhaps rise. Ponce and others[38] and Vargas and others[39] also discovered that climate will have adversely affect LAC. Andersen and others,[40] further discovered that changes in climate will have adverse impact not only on agriculture but the entire Bolivian economy as a whole. Jemio and others,[41] Viscarra,[42] and Kogo and others[43] also arrived at similar conclusions with other scholars that climate change has enormous adverse effects on the economy of agriculture. Yet, not one of the aforementioned research examined consequences of climate change on other demographic segments; their concentration was only on the agricultural economy. Climate change has an impact on other factors such as water and temperatures which have effects on agricultural production. Furthermore, the studies focused on Latin American Countries which could not be proved in other regions like Africa in particular the Republic of South Sudan.

Aryal and his colleagues,[44] as well as Donattia and her colleagues,[45] aim to determine the climate change's implications on agriculture in South Asia and Central America. Based on the adaptation strategies employed in smallholder production systems in South Asia, Central America, and Mexico, it has been shown that agriculture in these countries is very susceptible to the effects of climatic changes. To ensure the continuity of agricultural output, lessen susceptibility and improve the agriculture system's capacity to withstand climatic changes, it is necessary to implement

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[38] Roberto Ponce, Maria Blanco and Carlo Giupponi, 'The Economic Impacts of Climate Change on the Chilean Agricultural Sector. A Non-Linear Agricultural Supply Model' (2014) 74 CJAR 404.

[39] Renato Vargas and others, 'Climate Risk and Food Availability in Guatemala' (2018) 23 E&DE 558 <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/61561B914103A2B95A007356A241150F/S1355770X18000335a.pdf/climate_risk_and_food_availability_in_guatemala.pdf> accessed 21 December 2023.

[40] Andersen and others, 'The Economics of Climate Change in Bolivia: Impacts on the Agricultural Sector' (2014) <https://publications.iadb.org/es/publicacion/13762/la-economia-del-cambio-climatico-en-bolivia-impactos-en-el-sector-agropecuario> accessed 23 January 2022.

[41] Jemio and others, 'The Economics of Climate Change in Bolivia: Estimation of Impacts in General Equilibrium' (2014) <www.cepal.org/es/publicaciones/39830-la-economia-cambio-climatico-bolivia-estimacion-impactos-equilibrio-general> accessed 23 January 2022.

[42] Viscarra Riveros and Federico Ernesto , 'Climate Change Impacts and Efficient Adaptation Options in the Bolivian Agriculture : From Crop Models to Integrated Assessments' (20 January 2014) <http://hdl.handle.net/10579/3966> accessed 21 December 2023.

[43]Benjamin Kipkemboi Kogo, Lalit Kumar and Richard Koech, 'Climate Change and Variability in Kenya: A Review of Impacts on Agriculture and Food Security' (2020) 23 ED&S 23.

[44]Jeetendra Prakash Aryal and others, 'Climate Change and Agriculture in South Asia: Adaptation Options in Smallholder Production Systems' (2019) 22 ED&S.

[45] Camila I Donatti and others, 'Vulnerability of Smallholder Farmers to Climate Change in Central America and Mexico: Current Knowledge and Research Gaps' (2018) 11 C&D 264.

adaptation strategies. The findings agree with the current study. However, the methodology could not work well in the context of South Sudan due to geographical variations with South Asia, Central America, and Mexico.

1.8.3 Climate change and conflict

This literature review explores the works of different scholars on the effects of climatic changes on triggering conflicts in various jurisdictions. The gaps, shortcomings, and biases are highlighted in those findings and recommendations for future studies. Koubi[46] analyzes the part of climate change in conflict and concluded that climate change causes conflict due to the fact scarcity of resources, water, and food for the agricultural-dependent communities leading to the conflict. This finding is in strong agreement with the current study. Nevertheless, the circumstances in South Sudan diverge in that climate change instigates conflict among pastoralist groups as a result of the limited availability of water and sustenance for livestock.

Mai,[47] Detges,[48] and Ruttinger,[49] Tiitmamaer,[50] Salehyan,[51] Uexkull,[52] and Scheussner and others[53] studied the effect of climatic changes on the triggering of conflicts and determined that a direct outcome of climate change is depletion of natural resources such as food, water, which causes communities to raid each other leading to conflict. Their finding strongly agrees with the study in the sense that persistent communal conflicts in South Sudan among pastoral communities are a product of climate change.

Adamo and others,[54] explore climatic changes effects on the Iraq's environment and concluded that climate has several adverse socio-economic effects such as rising sea levels, temperatures, agriculture, livelihood, and food security. These findings strongly agree with these studies in the

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[46] Vally Koubi, 'Climate Change, the Economy, and Conflict' (2017) 3 CCCR 200.
[47] Supra n 8
[48] Adrien Detges, 'Local Conditions of Drought-Related Violence in Sub-Saharan Africa' (2016) 53 JPR 696.
[49] Ruttinger, 'A New Climate for Peace: Taking Action on Climate and Fragility Risks' (2014) https://climate-diplomacy.org/magazine/conflict/new-climate-peace accessed 24 January 2022.
[50] N Tiitmamer and others, 'Land Tenure in South Sudan: Does it Promote Climate Change Resilience?' (2017) https://www.socialscienceinaction.org/resources/land-tenure-in-south-sudan-does-it-promote-climate-change-resilience/ accessed 24 January 2022.
[51] Idean Salehyan, 'Climate Change and Conflict: Making Sense of Disparate Findings' (2014) 43 PG 1.
[52] Nina von Uexkull, 'Sustained Drought, Vulnerability and Civil Conflict in Sub-Saharan Africa' (2014) 43 PG 16.
[53] Carl-Friedrich Schleussner and others, 'Armed-Conflict Risks Enhanced by Climate-Related Disasters in Ethnically Fractionalized Countries' (2016) 113 Proceedings of the National Academy of Sciences 9216 <https://www.pnas.org/content/113/33/9216> accessed 24 January 2022.
[54] Nasrat Adamo and others, 'Climate Change: Consequences on Iraq's Environment' (2018) 8(3) JES&GE 43-58.

sense that climate change has negatively impacted the livelihood in South Sudan. However, the methodology could not work in South Sudan because of geographical differences with Iraq.

Based on the literature review surveyed above, there is a considerable number of scholarly literature on the effective institutions, laws, and policies as tools for climate adaptation and resilience; climate change's impact on agriculture, alongside its relationship to conflicts in Australia, the US, ASEAN countries, China, Muslim jurisdictions such as Singapore, Malaysia, Indonesia; African Union in general, Central Asia, Iraq, South and Central America, Mexico, and Kenya, amongst others. However, the same cannot be said of South Sudan. There is a scarcity of scholarly literature in South Sudan on environment in general and specifically on climate change, a gap that this this research intends to fill. It is firmly believed that this research shall provide a useful contribution to this area of law through the critical examination of climate change regulatory and policy frameworks of South Sudan and a comparative analysis with Kenya.

1.9 Research methodology

Due to the absence of field research, this study was carried out exclusively through document evaluation and analysis. It was based upon the assessment of the available literature on the topic with information collected from the laws, policy papers, reports, and court decisions from the Republic of South Sudan and Kenya and the relevant information from other countries.

1.9.1 Data collection methods

The study was largely desktop or armchair research. The research employed a combination of secondary and primary data sources. The secondary sources of data encompass a wide range of published and unpublished resources, including books, journals, reports, seminar papers, and conference papers. These materials are sourced from private as well as public libraries, websites, and speeches. Additionally, the analysis also involves evaluating international and local legal systems. The primary data comprises of Constitution of Kenya and South Sudan, Acts of Parliament, Government Reports and subsidiary legislations.

1.9.2 Data analysis methods

The data collected was properly summarized, paraphrased, analyzed, and synthesized in an attempt to successfully achieve the project objectives and aims. Therefore, in coming up with the

conclusions and the recommendations, comparative analysis of South Sudan and Kenya's legal, policy and regulatory frameworks was used. Furthermore, content analysis of both secondary and primary data was also used.

1.10 Chapter breakdown

Chapter one covers the topic of the research, provides a brief background to the study, and states the research problem to be investigated by the researcher. The chapter also contains the research objectives, the aims the researcher intends to achieve at the end of the project, and the research questions the researcher intends to answer. The chapter also reviewed the previous relevant literature conducted by the previous studies to point out strengths and weaknesses in their studies and finally highlight the legal and policy gaps left out by those studies which the researcher intends to remedy. The chapter also contains the testable legal assumption (hypothesis) that the researcher wished to prove or disprove at the end of the project. Finally, the chapter contains the research methodology that was adopted for data collection and analysis.

Chapter two critically analyzed the South Sudan's legal, policy, and institutional frameworks on climate change. It examines the climate change law and policies in place to investigate the level of protection accorded to the environment.

Chapter three explores the effects of climate change on the various sectors of South Sudan including agriculture, biodiversity, ecosystems, conflict, food security, displacements, migration, and rainfall.

Chapter four highlights and explores the best practices deployed in other countries like Kenya to achieve climate change resilience and adaptation, and the lessons South Sudan can learn from Kenya in their climate change adaptation and management.

Chapter Five covers the conclusion, summarization of findings and actionable recommendations that South Sudan can embrace to achieve climate change resilience and adaptation.

CHAPTER TWO: LEGISLATIVE, INSTITUTIONAL, AND POLICY FRAMEWORKS GOVERNING CLIMATE CHANGE

2.1 Introduction

The South Sudanese Constitution lays down the country's climate change and environmental legislation, which are further supported by a number of niche-specific policies and legislation. Additionally, it includes global agreements about the environment and climate change. In compliance with Article 9(3) of its constitution, South Sudan has integrated treaty law into its legal framework. According to this article, every liberty and freedom specified in global human rights treaties, covenants, and agreements that South Sudan adopted or consented to shall be regarded as a fundamental part of South Sudan's legal system.

Therefore, this chapter examines the domestic and international instruments on the environment and climate change. The gaps and weaknesses in the law are pointed out, and recommendations made for future improvement. The chapter also highlights the administrative or institutional and policy arrangements on climate change.

2.2 Domestic legal instruments

The establishment of South Sudan's legislative and policy frameworks to deal with climate change is now underway, as it is a relatively new nation. To lessen and acclimatize to the effects of climate change, the government has demonstrated commendable resolve by integrating climate change concerns into a multitude of initiatives. There isn't yet a unique, exclusive policy, regulation, or plan aimed solely at combating climate change. Additionally, there are no clear provisions regarding climate change in the Transitional Constitution. But by pledging to promote sustainable growth, ensuring that the proper legislative measures are adopted, and encouraging other activities to protect the environment, it indirectly addresses climate change issues.[55] The major weakness of the domestic legal instruments is there insufficiency in enabling efficient operation of climate change support activities. There is need to borrow more from developed jurisdictions.

[55] https://unfccc.int/news/south-sudan-submits-its-climate-action-plan-ahead-of-2015-paris-agreement as accessed on 26th September, 2023.

2.2.1 Transitional Constitution of 2011

The Transitional Constitution requires every tier of government to give priority to environmentally friendly growth in order to protect the environment for the well-being of generations to come as well as current ones. This will be accomplished via the implementation of comprehensive laws and other regulations.[56] The statement clearly highlights the acknowledgment of the South Sudanese people on the significance of supportable management of natural resources, eradication of poverty, and achievement of the SDGs.[57] In addition, the Constitution ensures that every community has the right to a pristine and salubrious environment, and individuals are obligated to preserve it for the advantage of future generations as well as the present.[58] It specifies that every individual has the right to environmental protection via suitable laws and other regulations that aim to prevent pollution, ecological decline, promote conservation, support environmentally friendly growth, and responsible utilization of earth's resources. These efforts also aim to foster weighed economic and social progress, all with the goal of preserving genetic stability and biodiversity.[59]

2.2.2 Petroleum Act, 2012

The Act sets out the principles and goals of petroleum ownership and administration in South Sudan in an environmentally sound way. In particular it states that the petroleum shall be handled in an efficient, ethical, open and responsible way on the basis of ecologically, economically, and socially environmentally friendly values.[60] Furthermore, it obliges the oil operating companies to adopt the best technology and international practices in petroleum activities to eliminate or minimize destruction to the environment.[61] However, it is necessary to synchronize this action with the ongoing worldwide discourse on transitioning to alternate fuel sources such as LPG, electricity, and solar energy.

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[56] Transitional Constitution, Art. 41(2).
[57] Ibid, Art. 41(1) and (2
[58] Ibid, Art. 41(3) and (4).
[59] Ibid, Art. 41(3) and (4).
[60] Petroleum Act 2012, s 7(3) (hereinafter the ‘Petroleum Act’).
[61] Ibid, s 7(6).

2.2.3 Mining Act 2012

The Mining Act establishes a comprehensive system for governing the mining industry, which adheres to global norms. This system include licensing procedures, standards for safeguarding the environment, and the utilization of advanced technology. Its primary goal is to take full advantage of the extraction of resources from the earth.[62] The act is yet responsive to sustainable mining operations and this poses a risk for the mineral wealth in the country.

2.2.4 Investment Promotion Act 2009

Any corporation that invests in South Sudan is required by this Act to adhere to and enforce environmentally-friendly commercial regulations and rules. These rules and regulations serve the following purposes: (i) protecting the top soil, surface and underground water, riverbank flora and fauna, and biodiversity of the ecosystem; (ii) restoring or fixing the land to its natural state after mining operations have ceased or expired; (iii) managing waste materials responsibly and disposing of garbage, trash, and hazardous materials in designated landfills or through reuse, composting, or decomposition; and (iv) managing noise and ensuring clean water in a responsible manner.[63] The investor who failed to establish and enforce ecologically sustainable norms and regulations is subject to liability for fines, paying of damages, or the need to dispose of or clean up trash.[64]

2.2.4 Land Act 2009

The objective of the Land Act is to foster an eco-friendly atmosphere, ensuring the preservation and safeguarding of nature and the environment in order to achieve sustainable growth in South Sudan.[65]

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[62] Mining Act 2012, s 121(1) and (2).
[63] Investment Promotion Act 2009, First Schedule, C(A) (hereinafter 'the Investment Promotion Act').
[64] Ibid, First Schedule C(B).
[65] Land Act 2009 s 5(g).

2.3 Bills of Parliament on climate change

2.3.1 National Environmental Bill 2012

The Bill was established to establish a legal context encompassing all aspects and apprehensions pertaining to South Sudan's environment. This legislation authorizes the Ministry of Environment and Forestry to serve as the primary authority accountable for executing various environmental policies, which include those addressing the environment, climate change, pollution , and ways in which land is used to determine how they affect both the amount and the value of natural resources.[66] The main goal is to safeguard South Sudan's environment and encourage sustainable growth, which will eventually raise people's standard of living. The legislation also requires the creation of a comprehensive national plan to address environmental issues and the assignment of Environmentally Sensitive Areas (ESAs) that include habitats where environmentally vulnerable species reside or may potentially reside. This is necessary to fulfill the government's commitments under multilateral environmental agreements (MEAs).[67]

2.3.2 Forest Bill 2009

The Bill's objective is to put into practice the Forest Policy, addressing all aspects related to South Sudan's forest reserves and woodlands.[68] The governance framework establishes guidelines for managing all of the nation's forests. It includes national standards for managing forests sustainably, accreditation mechanisms, and programs. It also covers private and free standards, methods, decision-making protocols, and mechanisms for handling grievances and appeals.

2.3.3 Water Bill 2013

The purpose of the Bill is to shield water supplies from deterioration, pollution, and other negative impacts. It does this by establishing safe zones in reservoirs or drainage basins that extend to or above any water establishment within the water supply system. These zones also include catchment areas, lakes, reservoirs, aquifers, wetlands, springs, and other water sources.[69]

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[66] Environment Protection Bill, 2012
[67] Government of South Sudan and Ministry of Environment and Forestry, 'Government of South Sudan Initial National Communication to the United Nations Framework Convention on Climate Change' (2018).
[68] Ibid
[69] Ibid

Moreover, its objective is to conserve current resources for water, supervise water purity, avert the contamination of underground and surface fluids, regulate droughts and floods, and alleviate water-related catastrophes. It also seeks to establish suitable management structures that facilitate inter-sectoral coordination and engage stakeholders. Regrettably, these bills have not yet received approval in Parliament.[70]

2.4 Policy framework on climate change

2.4.1 National Environment Policy (2015-2025)

Concentrating especially on coping and minimizing damage, the initiative aims to offer strategy guidance and coordination for tackling climate change challenges in South Sudan. It mandates the creation of a comprehensive plan for addressing changes in the climate through mitigation and adaptation measures, the establishment of a specific South Sudan's climate change policy, and further assistance to enhance public resilience against changes in the climate and variation.

2.4.2 South Sudan Vision 2040

The goal of "Vision 2040 Towards Freedom, Equality, Justice, Peace and Prosperity for All" is to make the nation a major force in the economy by developing a diverse economy fueled by, among other things, manufacturing, tourism, mining, and other industries.[71]

2.4.3 Mining Policy

This policy acknowledges the necessity of conducting mining activities in a manner that is both ecological and socially conscious by minimizing the negative effects of mining and preserving the needs of the local populations.

2.4.4 Comprehensive Agriculture Master Plan (2015–2040)

The overarching objective of this comprehensive strategy is to eliminate hunger, attain food security, and improve nutrition. It encourages sustainable agricultural practices for managing livestock, crops, forests, fisheries, water resources, irrigation, energy, and dams.[72]

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[70] Ibid
[71] Ibid
[72] Ibid

2.4.5 National Adaptation Program of Actions (NAPA), 2016

This program establishes goals and provides overarching principles for adaptation efforts aimed at tackling South Sudan's urgent and crucial climate change challenges. The NAPA will provide a structure and specific procedures for dealing with susceptibility and functions as the official national climate change adaptation strategy and action plan.

2.5 International legal Instruments

South Sudan has actively participated in MEAs since attaining independence in 2011. It has been a Party to many Conventions, demonstrating its commitment to global efforts in addressing environmental issues.[73]

2.5.1 Paris Agreement, 2015

The goal of the 2015-ratified Paris Agreement is to intensify the worldwide attempt to address climate change by limiting the rise in the world's temperature this century to no more than 2°C over pre-industrial levels.[74] The accord also aims to boost the ability of nations to address the consequences of changes in the climate by facilitating sufficient funding, establishing a novel technological system, and bolstering capacity development efforts.[75]

On 22 April 2016, South Sudan officially approved and accepted the Paris Agreement. The Agreement requires all parties to present their most favorable and advantageous efforts through nationally determined contributions. Regarding South Sudan, this encompasses both assimilation and modification. Hence, the nation's endorsement of the Paris Agreement reinforces the obligation to commence the NAP process.

2.5.2 UN Framework Convention on Climate Change (UNFCCC), 1994

On May 18, 2014, South Sudan joined worldwide efforts to tackle ecological issues by joining the UNFCCC.[76] The assembling and creation of the NAPA is South Sudan's initial effort to meet its

[73] Ibid
[74] Ibid
[75] Ibid
[76] Ibid

responsibilities and duties under the UNFCCC and attain full membership in the Global Environment Facility (GEF).

The potential impact of climate change on economic growth in South Sudan is significant and might have serious consequences. Therefore, this NAPA is crucial for the creation and execution of adjustment to climate change regulations that are essential for achieving equitable growth. However, limited action has been taken to effect the 28 projects identified in the NAPA.[77]

2.5.3 UN Convention on Biological Diversity, 1993

Its primary objectives are threefold: first, the preservation of biodiversity; second, the responsible and ecologically sound use of its elements; and third, the just and fair distribution of the advantages that come from genetic materials. The purpose of this initiative is to create comprehensive plans at the national level to protect and responsibly utilize biological variety. It is widely regarded as the primary reference for sustainable growth.[78]

South Sudan formally approved and agreed to the Convention on 17 February 2014, and it became legally effective on 18 May 2014. This nation sustains significant animal populations in Africa and serves as the site for one of the most extensive wildlife migrations globally. Boma National Park, located to the west of the border of Ethiopia, together with the Southern National Park near the Congo border, and the Sudd wetland serve as habitats for abundant populaces of elephants, kob and topis, buffaloes, hartebeests, giraffes, and lions. The forest reserves in South Sudan provide as habitats for several species including chimpanzees, bongo, forest elephants, red river pigs, giant forest hogs, and forest monkeys.[79] Regrettably, the government has not developed a comprehensive national strategy for biodiversity nor a specific plan of action for the Convention. This lack of planning has posed significant challenges in carrying out the terms of the Convention.

2.5.4 UN Convention to Combat Desertification, 1996

Combating desertification and reducing the effects of drought are the goals of this Convention. It does this via the implementation of national action programs that include strategies for the long haul, with the backing of global partnership and collaboration agreements. South Sudan joined the UN Convention to Combat Desertification on 19 May 2014, becoming the 194th party to do so.

[77] Ibid
[78] Ibid
[79] Ibid

This happened after the completion of a 90-day period after the submission of its declaration of accession to the UN Secretary-General on 17 February 2014. The government still faces the difficulty of lacking a comprehensive national strategy to address desertification.

2.5.5 Sustainable Development Goals (SDGs) 2030

As a worldwide effort to finally put a stop to global destitution, safeguard our planet, and make sure that everyone may enjoy material wealth and social stability by the year 2030, the UN ratified the SDGs in 2015. South Sudan, along with other nations, has pledged to emphasize advancements for individuals who are the most marginalized.

Goal 13 mandates nations to promptly tackle the problem of global warming and its consequences by implementing regulations on pollutants and fostering advancements in energy sources that are renewable. It sets the following targets to be achieved by countries in the year 2030.[80]

Goal 13.1: Fortify resistance to and adaptation to climate change and catastrophes in all nations.

Goal 13.2: Combine climate change initiatives with domestic policies, plans, and strategy.

Goal 13.3 aims to enhance education, raise understanding, and strengthen the knowledge and capabilities of individuals and organizations with regard to the global warming issue adjustment, mitigation, minimizing impacts, and early alert systems.

Target 13.a: Fulfill the pledge made by developed nations under the UNFCCC to mobilize a total of $100 billion per year by 2020 from different avenues. This funding will be used to support nations that are developing in their efforts to mitigate climate change and ensure openness regarding execution. Additionally, the Green Climate Fund should be completely operationalized by promptly providing the necessary funding.

Target 13.b aims to enhance the ability of countries that are least developed and tiny island developing nations to effectively prepare for and handle climate change by implementing systems that prioritize women, youth, and local and disadvantaged populations. Nevertheless, South Sudan's government has made limited commitment to achieve those targets.

[80] Ibid

2.6 Regulatory or administrative structure

The federal system in South Sudan includes federal, state, and local levels of governance. Governments at the federal, state, and county levels as well as at the boma, town council, and payam levels within each of South Sudan's ten states are all part of the system that is responsible for carrying out the country's policies. Each organization is given distinct roles and duties in relation to managing and protecting ecosystems, biodiversity, and forestry. It's important to remember that many organizations charged with combating climate change are still in their infancy. The important organizations and their respective roles and duties in the fight against climate change are examined in the section that follows.[81]

2.6.1 Ministry of Environment and Forestry (MoEF)

This is the primary organization tasked with tackling the complexities of climate change upon both the immediate and distant futures.[82] MoEF has the responsibility of coordinating and implementing actions related to the UNFCCC. It also acts as the country's pivotal centre for the National Designated Authority (NDA) to the GCF.[83] MoEF houses many crucial agencies that are pertinent to the growth and execution of South Sudan's strategy in addressing climate change. The following items are included:

(a) The Directorate of Climate Change and Meteorology is responsible for creating and executing initiatives to tackle climate change problems. It also oversees the fulfillment of South Sudan's commitments in the UNFCCC. It has the primary responsibility for climate change adaptability and is required to: (i) enhance the capabilities of institutions; (ii) foster cooperation and partnerships with all parties involved at the national and local levels to tackle change in the climate; (iii) develop national plans to address the issue; and (iv) enhance the capability of national weather services.

(b) Improving capacity growth, developing the National Environmental Strategic Plan, conducting research and development, producing the State of the Environment reports for South Sudan, fostering cooperation and partnerships with stakeholders, creating the National Environmental Management Action Plan, organizing South Sudan's

[81] Ibid
[82] Ibid
[83] Ibid

participation in MEAs, and putting together the financial plan for the Ministry are all tasks that fall under the purview of the Directorate of Environmental Planning and Sustainable Development.

(c) Both the Department of Education and the Department of Information make up the Directorate of Environmental Education and Information. These agencies have the responsibility of advocating, creating awareness, and providing training and education. They also have duties regarding the procedure for NAP that are in line with these tasks.[84]

2.6.2 Climate Change Working Group (CCWG) 2019

The stakeholder organization is crucial for reviewing ideas and guaranteeing they match with national goals and regulations, as stated by the MoEF in 2019. The consortium serves as a platform for around 80 participants from various sectors such as line ministries, partners in development, NGOs, investigation and educational organizations, and private sector interested parties. Its purpose is to facilitate active engagement, idea exchange, and discussions on lessons acquired and optimal procedures to improve their efforts in addressing climatic changes. The Department of Climate Change, which acts as the secretariat and chief executive officer of the CCWG, is housed under the MoEF. The committee convenes every three months and performs a significant role in promoting the exchange of knowledge and assets between government agencies at the national and state levels, as well as with global NGOs and development partners involved in climate change matters. The consortium aims to improve the durability of the most susceptible groups in South Sudan by facilitating enhanced collaboration of climate change reactions and efforts. Nevertheless, the specific duties and obligations of the CCWG in relation to the NAP have not been established and made official. An important goal in the next years (2020-2022) is to construct and institutionalize the ad-hoc coordination and consultation procedures that were used to develop the INC, NAPA, and NDC (to the UNFCCC, which has not yet been constituted).

2.6.3 Ministry of Wildlife Conservation and Tourism

This is the leading organization responsible for safeguarding, preserving, and overseeing the management of South Sudan's wildlife resources through the South Sudan Wildlife Service

[84] Ibid

(SSWS),[85] which was created to handle preservation of safeguarded places, such as wildlife reserves and national parks. Nevertheless, the Ministry has not yet created an institutional structure to support initiatives for animal, ecosystem, and climate change conservation.[86]

2.6.4 Ministry of Agriculture and Food Security

The Ministry is tasked with formulating and implementing goals, policies, and tactics with the purpose of fostering the growth of the agricultural industry in South Sudan. Its primary objectives are to enhance food security, foster economic growth, and ensure environmental sustainability.[87] Additionally, the Ministry plays a crucial role in facilitating and promoting fair and sustainable development with the overarching goal of improving source of revenue. It comprises two directorates: the Directorate of Agriculture and Extension Services and the Directorate of Research and Training.[88] The directorates have jurisdiction over several areas, such as agricultural cultivation, plant preservation, gardening, activities after harvesting, domestic economics, mechanization, extension programs, as well as research and education.[89]

2.6.5 Ministry of Finance and Economic Planning (MoFEP)

This Ministry is liable for distributing funds to state ministries and agencies, enabling them to effectively address calamities like as droughts and floods. It has a significant impact on adapting to climate change. The Ministry plays a key role as a stakeholder of the Climate Change Finance Inter-Ministerial Steering Committee. It also acts as a guarantee for any funding provided by growth partners, such as the GCF, for the purpose of implementing environmental projects and climate change. The Ministry is responsible for overseeing and recording the financial allocations and spending of climate-related projects within their public budgetary framework.

2.6.6 Ministry of Electricity and Dams (MoED)

This Ministry is liable for creating the required laws and regulations for managing the infrastructure involved in generating and distributing power. This includes conducting assessments of the effects on society and the environment. Additionally, MoED is in charge of developing and

[85] Ibid
[86] Ibid
[87] Ibid
[88] Ibid
[89] Ibid

executing policies and strategies related to energy generation and dissemination. The Ministry has a dedicated department, known as the Directorate of Renewable Energies, which provides assistance for initiatives aimed at mitigating climate change. The South Sudan energy Corporation (SSEC), which is liable for implementing the MoED's policies, goals, and plans, is tasked with ensuring that energy is readily available, easily accessible, and affordable. In addition, it strategizes and offers power production infrastructure, transmission, and dissemination services to both industrial and residential customers.[90]

2.6.7 Ministry of Water Resources and Irrigation (MWRI)

This Ministry is in charge of administering and enhancing the water resources. It supervises the execution of guidelines, policies, and the formulation of strategic regulations and plans for water resource improvement. It is furthermore accountable for conserving water and is assigned with incorporating the water resource management to enhance water accessibility and availability for South Sudan’s denizens. The Ministry consists of directorates responsible for executing initiatives that measure and adjust methods to manage water to tackle the effects of variability in the climate. These directorates also gather crucial climatological and weather-related information that is necessary for the conservation and management of water resources.

2.6.8 Ministry of Animal Resources and Fisheries

This Ministry is accountable for the legislative, policy, and institutional advancement of livestock and fisheries sectors. Its primary responsibility is to enhance the production of livestock and fishery commodities, while also ensuring a sustainable growth in fish and livestock production, as well as a steady supply of milk, meat, and fish on the market. The Ministry's objective is to enhance the well-being of South Sudan's livestock-keeping and fishing populations and guarantee a sufficient supply of food. This is achieved by fostering robust and commercially-driven fisheries and livestock farming, while also establishing favorable conditions and responsible handling of natural resources. The establishment includes many Directorates, one of which is the Directorate of Veterinary Services. This Directorate is responsible for formulating and implementing regulations that guarantee the food products' safety obtained from animals. Additionally, it

[90] Ibid

oversees the control and eradication of illnesses in livestock. This includes monitoring animal diseases that can be transmitted to people and controlling domestic animal disease.[91]

2.6.9 Ministry of Gender, Child, and Social Welfare (MGCSW)

The main responsibility of the MGCSW is to advance gender equality and safeguard the rights and welfare of marginalized groups such as children, women and people with disabilities (PWDs). The Ministry is in charge of developing and enacting policies and laws to advance gender parity, elevate women, and ensure social well-being and security in South Sudan. The Ministry consists of five directorates, one of which is the Directorate of Gender. The primary responsibility of this directorate is:

(a) Collaborating with the Department of Climate Change and research institutes in academia to establish a research initiative that specifically examines the diverse effects of climate change on different social groups, including gender-specific impacts. This program will also provide decision-making assistance to stakeholders from the government and NGOs, in accordance with the outcomes of the studies.

(b) Delivering capacity building initiatives and training for leaders on gender and climate change matters as requested by the Department of Climate Change.

(c) Collaborating with the Department of Climate Change to contribute to the development of risk and vulnerability evaluations, with a focus on including gender and social equality issues.

2.6.10 Ministry of Humanitarian Affairs and Disaster Management (MHADM)

This ministry is tasked with the coordination of humanitarian aid to those in need, the prompt response to disasters, the mitigation of risks, and the oversight of disaster risk mitigation programs. Its objectives are to preserve lives, reestablish dignity, foster growth, and empower communities that are resilient in South Sudan to effectively handle disasters and hazards. The Ministry is tasked with creating an action plan or legislative and organizational framework for humanitarian aid. Through the South Sudan Relief and Rehabilitation Commission (SSRRC), the Ministry is connected to a global organization. The SSRRC is the Ministry's operational unit and is in charge of carrying out national-level directives issued by the Directorate of Disaster Management within

[91] Ibid

the Ministry. The SSRRC also has representatives at the county and state levels. It works on developing systems for early warning at the state and federal levels.[92]

2.6.11 Ministry of Petroleum and Mining (MPM)

The South Sudan Transitional Constitution assigns the responsibility of negotiating all oil contracts for oil drilling and extraction to the MPM. It also mandates the Ministry to verify that these contracts align with its values, policies, and standards. The Ministry is responsible for enacting legislation, regulations, and rules pertaining to the petroleum and mining industry. It oversees the government's interactions with gas and petroleum organizations that are active in South Sudan and develop strategies and plans for the expansion and management of the mining, gas, and petroleum industries. Additionally, the Ministry works with nearby communities to ensure that all mining, gas, and petroleum-related activities undergo thorough assessments of their social and environmental effects. Oil exploration is one of this ministry's key responsibilities; it primarily takes place in the Lakes, Jonglei, and Upper Nile States' central floodplains. A petroleum bill was created by the ministry to direct the industry.[93]

2.6.12 Ministry of Foreign Affairs and International Cooperation (MoFAIC)

This Ministry promotes collaborative efforts across multiple countries to tackle the difficulties posed by climate change. This is achieved via the establishment of collaborations with regional organizations and neighboring nations, with the aim of resolving the specific concerns outlined in the section on Transnational Considerations in Climate Change Adaptation Planning. The center of political influence for international environmental agreements. Consequently, it serves as a link between the South Sudanese government and global efforts to combat climate change.

2.6.13 Universities and other training institutions

These institutes provide academic programs at the undergraduate and graduate levels in diverse areas like as agriculture, natural resource management, forestry, and fishing, among others. The Upper Nile University, the University of Juba, and the Dr. John Garang Memorial University of Science and Technology are among of the universities that offer these programs. Furthermore,

[92] Ibid
[93] Ibid

there exist specialized educational establishments like the Kagelu Forestry Training Centre and the Padak Fisheries Training Centre, which provide diploma and certificate programs. The fisheries center's primary objective is to improve fishing resources via comprehensive training and advanced research. Conversely, the forestry center aims to provide persons with practical expertise in sustainable handling of forests. However, these institutions face challenges related to insufficient financial, technical, and human resources capacity.[94]

2.6.14 South Sudan Meteorological Service (SSMS)

South Sudan relies on this initiative to effectively respond to climate change by collecting and providing the necessary information and data for informed decision-making. The initiative has also set up climate stations to provide accurate forecasts, current weather conditions, seasonal outlooks, and climate information.[95] Nevertheless, because of the nation's continual war and political unrest since December 2013, the institution has been unable to function effectively. It faces numerous debilitating limitations such as insufficient funding, obsolete equipment, and untrained personnel. Consequently, it is incapable of delivering essential weather and climate information to the general population.

2.6.15 Community-based organizations (CBOs)

As per the National Environment Policy, CBOs are anticipated to have a crucial function in promoting the sustainable conservation of ecosystems and biodiversity. This involves educating and mobilizing the local population, as well as ensuring that the requirements of the disadvantaged are considered in national growth strategies.

2.7 Institutional capacity assessment

The Government of South Sudan is limited by certain institutional capacity constraints that impede its ability to address and lessen susceptibility to climate change. First off, being a newly constituted nation, there are a number of environmental management and agricultural laws and programs that are still in the development stage and do not directly address climate variability and change. Furthermore, the effective planning, coordination, and execution of climate change adaptation

[94] Ibid
[95] Ibid

measures are hampered by the absence of appropriate organizational structures at the federal, state, and local levels. Additionally, some institutions experience diminished capabilities as a result of insufficient technological proficiency and financial means. Consequently, there is a scarcity of active programs aimed at reducing climate change vulnerability. A review of the national budgets over recent years reveals that numerous government ministries in South Sudan lack dedicated budgetary allocations for mitigation as well as adaptation in response to changes in the climate efforts.[96]

2.7.1 Institution-specific weaknesses

MoEF: Despite the establishment of an office for climate change in the Ministry, it operates below its full potential due to resource limitations, both in terms of both monetary and personnel resources.

Ministry of Agriculture and Food Security: More over 80% of the populace in South Sudan depends on agriculture for their primary source of income, hence the Ministry is essential to the country's ability to adapt to climate change. Although the Ministry actively conducts research through its research institutions on crops that can endure floods and droughts, it lacks departments or divisions specifically tasked with improving the resilience of fisheries, crops, and animals to the consequences of the changing climate.

MWRI: In order to anticipate and brace for floods, the Ministry's Directorate of Irrigation and Drainage is essential for keeping track of water levels. Nevertheless, the Directorate's ability is hindered by the destruction of several hydrology stations during the conflict, as well as the scarcity of hydrological monitoring and testing gear and inadequate personnel and funding. South Sudan's irrigation schemes are inadequately established to utilize the copious water resources, despite their promise in climate change adaptation for droughts and lower rainfall.

MPM: Considering the fact that fossil fuels contribute significantly to the release of greenhouse gases, it is imperative for this Ministry to perform a crucial part in both adapting to and reducing the effects of climatic changes. Currently, it does not have specialized departments for the purpose

[96] South Sudan, Ministry of Environment, 'Republic of South Sudan's National Adaptation Programme of Actions (NAPA) to Climate Change' (24 November 2016) Available <https://unfccc.int/files/adaptation/application/pdf/.south_sudan_napa_2016_15feb2017.pdf> accessed on 22 September 2022.

of mitigating and adapting to climate change, and it lacks affiliations with pertinent climate change organizations.

MoFEP and Ministry of Commerce, Industry, and Investment: These ministries have the capacity to raise funding for climate change adaptation. Nevertheless, there is no dedicated allocation of finances or budget lines specifically designated for battling climate change, even though emergency and catastrophic plans are in place.

SSMS: The weather and seasonal climate forecasting capabilities of SSMS are crucial for climate change adaptation. Regrettably, it encounters obstacles with the insufficiency of technology for weather and climate change prediction, poor office facilities, limited international network connections, and a scarcity of educated workers. Most of the 43 stations spread around South Sudan were destroyed in earlier conflicts.

SSRRC: The SSRRC is now in the course of creating a pre-emptive technical division at the state and federal levels. September 2013 marked the beginning of this procedure, which is currently ongoing.

SSWS: As climate change poses threats to wildlife species and their habitats, SSWS holds significance in mitigation as well as adaptation in response to changes in the climate. Nevertheless, the institution lacks dedicated departments or units focused on climate change resilience.

2.8 The weaknesses of the legal framework

The legal framework discussed above provides South Sudan's climate change governing framework and set an obligation on government and private agencies to fully guarantee the protection of the people and the environment. However, the Transitional Constitution, the Petroleum Act, the Mining Act, Land Act, and the Investment Promotion Act do not bring up the subject of climate change or potential solutions of climate change. Unlike South Sudan, many jurisdictions that have achieved mitigation as well as adaptation in response to changes in the climate have proper laws, policies, and institutions in place that put strong provisions to battle the catastrophes of climate change.

2.9 Conclusion

While South Sudan’s legal, institutional, and policy frameworks on climate change are not so developed, the existing regulatory atmosphere is not quite effective in enhancing climate adaptation and resilience due to poor implementation of policies. As a nascent nation, several policies and initiatives concerning the management of the environment and agriculture are presently growing, although they do not clearly incorporate climatic variability and change. On the other hand, some of policies, strategies, and plans on climate change lack proper monitoring and enforcement, hence ineffective and fail to achieve the desired results. A couple of Bills have been formulated but never proceeded from the reading stage, and never passed laws, hence not effective.

There is a lack of effective institutional frameworks at the national, state, and county levels to arrange, organize, and carry out climate change adaptation initiatives. Finally, a lack of technical expertise and financial resources has undermined many institutions. As a result, there aren't many programs in place that are designed to lessen vulnerability to climate change.

CHAPTER THREE: EFFECTS OF CLIMATE CHANGE

3.1 Introduction

Sudan, which includes South Sudan, tiered 176th out of 181 states, making it the 14th most ill-prepared nation and very exposed to the impacts of climate change. South Sudan was included in the evaluation of the Climate Change Vulnerability Index (CCVI) and was placed as the 5th most vulnerable country out of 191 nations in terms of climate change susceptibility.[97] The CCVI assesses the susceptibility of individuals, the geographical vulnerability of nations, and the governmental ability to adjust to climate change in the coming three decades. The ranking indicates that South Sudan is expected to have substantial economic consequences as a result of climate change in the next years. Despite having very low global emissions and little historical or contemporary responsibility for climate change, South Sudan is still quite vulnerable to its effects. The population of the nation is exceedingly reliant on natural resources susceptible to climate for their daily needs, which gives rise to this vulnerability. South Sudan is primarily focused on adapting to climate change, despite the problems it has in terms of restricted financial resources, suitable technology, and institutional and technical skills.[98]

The minimal infrastructure and governance systems that were in place before the long battle were destroyed. As one of Africa's least developed nations, South Sudan is therefore extremely vulnerable to climate change.[99] This chapter explores the negative effects of climatic changes on farming, temperature, biodiversity, water resources, food security, displacement, and conflicts.

3.2 Geographic and climatic profiles

Situated between latitudes 3°N and 13°N and longitudes 24°E and 36°E, South Sudan is a landlocked nation. The nation's territory has an area of 644,329 square kilometers, including tropical rainforests, swamplands, and grasslands. Water originating from the highlands of the CAR, the DRC, Ethiopia, and Uganda joins the Nile catchment region in South Sudan. A

[97] Verisk Maplecroft Climate Change Vulnerability Index CCVI, 2017.
[98] USAID, 'Climate Risk Profile: South Sudan' (July 2016) <www.climatelinks.org/resources/climate-change-risk-profile-south-sudan> accessed 15 September 2022.
[99] South Sudan Intended Nationally Determined Contribution (INDC) (Juba, 2015).

significant portion of this water flows into the Sudd Wetland, which is recognized as the biggest swamp in the world, before eventually merging with the White Nile.

The climate in the north is characterized as Tropical Semi-Humid with a brief rainy season, while the south has Tropical Wet-Dry and Tropical Rainy climates with more extended periods of rainfall. Annually, South Sudan has around 1 billion cubic meters of precipitation, which may be categorized into two main types of rainfall patterns: unimodal and bimodal. In the northern region, there is a period of heavy rainfall lasting six months, from May to October, characterized by a single peak in precipitation. The southern area of the nation has a bimodal rainfall pattern, characterized by significant rainfall during 7-8 months of the year. The amount of rainfall ranges from 500-600 mm to 1500 mm. The occurrence of rainy seasons is determined by the yearly movement of the Inter-Tropical Convergence Zone and the change in wind direction to the south and southwest. This results in elevated temperatures and humidity, along with more cloud formation.[100] Significant fluctuations in precipitation and the duration of the arid period are observed. Nevertheless, there is minimal temperature fluctuation over the entire nation or throughout each season. The yearly mean temperatures range from 26°C to 32°C.[101]

3.3 Temperature

South Sudan has had a substantial increase in temperatures in comparison to other locations in Eastern Africa in recent decades. The central and southern portions of South Sudan are experiencing rapid warming, making them one of the fastest-warming locations in the world. Station temperatures in these regions have been rising at a pace of 0.4°C per ten years throughout the previous thirty years. Between 1951 and 2000, there was an average yearly temperature increase of 1.3°C per century. According to all forecasts, it is expected that South Sudan would see a rise in temperature by the year 2060, with somewhat less significant rises in the southern regions. The projections for 2060 suggest that there would be a temperature increase of 1.5°C to 3.1°C in August and 1.1°C to 2.1°C in January. General Circulation Models (GCMs) indicate that South Sudan's average temperatures have increased during the 1960s and are expected to climb from 2020 levels by 1°C by 2060. In comparison to the 1961–1990 GCM baseline, temperatures

[100] Ibid.
[101] Ibid.

are predicted to rise by 0.6–1.7°C by the 2030s and by 1.1–3.1°C by the 2060s. These forecasts indicate that the frequency of days and nights categorized as 'cold' will significantly decrease in the future climate of the region.

3.4 Agriculture

Agriculture is the foundation of South Sudan's economy. Agricultural activities, including crop farming, animal rearing (cattle, goats, and sheep), and fishing, engage around 80% of the population. Sorghum, finger millet, maize, groundnuts, rice, sesame, cassava, fruits, beans, and vegetables are the principal crops grown in South Sudan. In addition, the area grows important products including sugar, cotton, tea, and coffee. In 2019, South Sudan's gross domestic product (GDP) exceeded $1 billion, with 9.6% of that derived from the sectors of agriculture, forestry, and fisheries. Based on the data from Jonglei and Warrap, the country possesses around 2.76 million hectares of cultivable land, which accounts for 4 percent of the total land area. Approximately 50% of this territory is located in the Upper Nile region.[102] Agriculture is a crucial sector for socio-economic growth, but it is also very susceptible to the results of global warming. Most of the individuals residing in the Republic of South Sudan rely on livestock and crops for their sustenance. Therefore, it is imperative to have a robust and resilient agricultural sector in order to ensure long-term peace and progress. Hence, the inclusion of climate change deliberations into the preparation and investment of the agriculture sector indirectly fosters reconciliation and tranquility in South Sudan. The agriculture industry possesses significant potential for enhanced productivity due to the country's excellent soil and ample water resources, enabling the expansion of output. South Sudan was formerly a country that exported more food than it imported, mostly due to its abundant natural resources. Nevertheless, as a result of prolonged hostilities, the nation currently relies on Kenya and Uganda for up to 50 percent of its food supply, incurring an approximate yearly expenditure ranging from $200 to $300 million.[103] Presently, the level of production in the agriculture sector is exceedingly deficient. Significant obstacles encompass insufficient resources, inadequate land administration resulting in salinization, runoff, erosion, and diminished fertility, absence of agricultural advisory services, and a lack of meteorological data. In addition, although

[102] FAO, 'Special Report: FAO/WFP Crops for Security Assessment Mission to South Sudan' (16 March 2016).
[103] UNEP, 'South Sudan: First State of the Environment and Outlook Report,' (2018).

there is a large amount of surface and (predicted) groundwater resources, the main obstacle to enhancing agricultural output is the limited water availability. This is because the majority of farmers rely on rainfall during specific seasons.[104] Nonetheless, the government acknowledges that, in the medium to long term, agriculture has the potential to develop significantly and is aggressively seeking to attract investors to promote the development of industrial farming.

3.5 Crop farming

The majority of agricultural activities in South Sudan rely on rainfall and are thus susceptible to climatic fluctuations, which can impact crop yields. Prolonged periods of arid weather (droughts) and rising fluctuations in rainfall have adverse effects on the economy and the nutritional well-being of individuals who depend on agriculture for their sustenance. It is probable that sorghum output, which is a primary grain for a majority of the population, would decrease by 5-25 percent from 2000 to 2050.[105] The impact of change in the climate on agricultural cultivation encompass a wide array of consequences, comprising of but not restricted to:[106]

(a) The rise in evapotranspiration rates in plants, coupled with a decrease in soil moisture levels, has resulted in an increased water demand for crops. Simultaneously, the combination of decreased precipitation and rising temperatures has rendered rain-fed agriculture unsustainable in several regions of the country.

(b) The heightened fluctuation in rainfall patterns, which impacts the timing and duration of the rainy season, has resulted in postponed planting and accelerated harvesting. Consequently, this has caused a limited period for crop growth, leading to diminished yields and potential crop failure. Seasonal fluctuations have grown unpredictable and are anticipated to worse in the future.

(c) The combination of wildfires and harsh weather conditions has led to an increase in soil degradation, resulting in decreased agricultural output and a decline in long-term sustainability.

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[104] AS Qureshi and others, 'Farmers' Perceptions, Practices and Proposals for Improving Agricultural Productivity in South Sudan' (2018) 13(44) Afr J Agr Res 2542-2550.

[105] A Taha, TS Thomas and M Waithaka, 'Sudan' in M Waithaka and others (eds), *East African Agriculture and Climate Change: A Comprehensive Analysis* (International Food Policy Research Institute 2013).

[106] Ministry of Environment and Forestry, 'South Sudan's Second Nationally Determined Contribution' (2021).

(d) Elevated temperatures have biophysical effects on several plant species that are significant in terms of both economy and nutrition. Crops such as wheat, sorghum, and maize experience their highest temperatures, which leads to reduced yields.

3.6 Livestock

South Sudan boasts one of Africa's largest livestock populations, and these animals hold significant cultural importance within the country.[107] Nearly 80 percent of the populace relies on cattle, goats, and sheep as their main source of subsistence. The majority of herds, consisting mostly of cattle, are centered in Bahr el Ghazal states, Warrap, Lakes, Unity, and Jonglei.[108] The livestock of South Sudan have notable traits, such as a modest calving rate of around 30 percent, elevated death rates among young animals (from birth to weaning) ranging from 15 to 40 percent, and adult mortality rates fluctuating between 5 and 10 percent every year.[109] The impacts of climate change on livestock are multifaceted, encompassing several aspects, which include but are not limited to:[110]

a. The survival of livestock and the livelihoods of pastoralist people in South Sudan are under significant jeopardy due to climate change. The issue stems from the depletion of grazing areas and restricted availability of water supplies, which can instigate tensions among pastoralist groups, potentially resulting in fatal confrontations. Hence, the repercussions of climate change also engender apprehensions regarding national security.
b. Fluctuations in temperature and rainfall patterns have led to a rise in pest and disease infestations among agricultural crops and livestock.
c. The occurrence of a delayed or shortened rainy season, which results in crop failure or diminished water supplies, has therefore led to a decline in cattle well-being. Simultaneously, the escalation of flooding caused by intensified rainfall patterns resulted in the depletion of grazing lands for pastoralists, while the more frequent and prolonged droughts resulted in diminished availability of water for animals.
d. The convergence of aridity and elevated temperatures exacerbated wildfires, resulting in the devastation of pasture and agricultural ecosystems.

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[107] Supra n 67
[108] Ibid
[109] Ibid
[110] Supra n 106

e. Moreover, the consequences of climate change have escalated regional disputes about the allocation of land and resources among pastoralists and farmers.

3.7 Fisheries

The rivers, ponds, and wetlands of South Sudan primarily sustain subsistence and artisanal activity, serving as crucial protein sources for a significant number of South Sudanese. Around 17.3 percent of the population relies directly on fishing.[111] The amount of commercial fishing is quite modest, and the enhancement of fisheries and the commercial sector is specifically identified as a priority in Vision 2040. Post-harvest losses in fish output are expected to reach up to 60 percent. These losses are mostly caused by the absence of cold storage and refrigerated transport. Additionally, the limited quality of roads hampers the transportation of fish to markets located far from the Nile River.[112] Certain regions of the country offer great potential for the growth of aquaculture. Additionally, several projects by development partners have specifically aimed at constructing aquaculture ponds in villages. In order for these programs to achieve success, it is imperative that the government enhances its institutional capability.

The climate change effects on fisheries encompass a wide array of consequences, comprising of but not restricted to: [113]

(a) Diminished fish populations and decreased aquatic biodiversity resulting from decreased river flow and the desiccation of wetlands.
(b) Decline in aquatic biodiversity due to rising water temperatures.
(c) Reduced availability of fishing locations due to heightened occurrences of floods.
(d) The decline in precipitation has resulted in the extinction of several migratory fish species that are significant in terms of both economic and nutritional value. Five of the 15 known fish species have been reported to have vanished from the Lol River near Nyamlel, and the average size of the fish caught has also dropped.[114]

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[111] UNEP and Ministry of Environment, South Sudan: First State of the Environment and Outlook Report (2018).
[112] Ibid.
[113] Supra n 106
[114] Mutasim Bashir Nimir and Ismail A Elgizouli, 'Climate Change Adaptation and Decision Making in the Sudan' <www.wri.org/our-work/project/world-resources-report/climate-change-adaptation-anddecisionmaking> accessed 5 October 2022.

3.8 Biodiversity

South Sudan possesses a rich biodiversity, offering significant opportunities for socio-economic development and abundant biological resources with substantial economic, social, and intrinsic value.[115] The majority of South Sudan's people depends either directly or indirectly on this biological variety to fulfill their fundamental requirements and promote progress.

The White Nile and its tributaries offer ample freshwater and fertile soils, resulting in a wide range of habitats in the country. These habitats encompass lowland forests, montane forests, savannah woodlands, savannah grasslands, wetlands, floodplains, the expansive Sudd Wetland, and the semi-arid northern region.[116] These ecosystems provide a diverse range of animal and plant species. The Nile lechwe, Hoogstraal's striped grass mouse, Nile sitatunga, and the recently discovered climbing mouse Dendromus ruppi are among the notable indigenous animal species. The only country in Africa that has both the big eland (Taurotragus derbianus) and the common eland (Taurotragus oryx) is South Sudan.[117]

The biodiversity of South Sudan is under threat from several factors, such as climate change, insufficient environmental legislation, poor development planning, wildfires, and, most notably, vulnerability caused by instability, conflict, and security issues.[118]

3.9. Forests

The forest and woodland resources in the southern portion of the nation are crucial for supplying sustenance, fuel, timber, oils, and medicines and they also act as wildlife habitats. Although ecosystems of forests often exhibit resilience, many regions have seen damage as a result of uncontrolled wildfires, excessive grazing, and the unsustainable harvesting of valuable species.[119] Natural forests and woodlands in South Sudan once covered approximately 20.74 million hectares, or roughly 33 percent of the total land area, containing valuable commercial timber such as mahogany, ebony, and teak.[120] These forests provide not just immediate advantages like income

[115] South Sudan, South Sudan Environment Policy 2013.
[116] Supra n 67
[117] Ibid
[118] Ibid
[119] Ibid
[120] Ibid

and nourishment for wildlife and domesticated animals, but also crucial added-values such as preservation of the environment and greater agricultural productivity due to increased soil fertility.[121]

3.10 Water resources

South Sudan has significant water resources, however they are not evenly allocated and vary from year to year.[122] The escalating need for water for both household and economic activities is steadily rising, intensifying the strain on water resources. The nation's main freshwater supplies consist of the Nile River (comprising the White Nile and Blue Nile), its tributaries, and underground water reservoirs known as aquifers.[123] The Sudd Wetland, covering about 15 percent of the nation's total area and designated a RAMSAR site in 2006, dominates a large portion of the country.[124] Although South Sudan has various wetland systems, their safeguarding depends on their incorporation into national parks, wildlife reserves, or forest reserves, leaving several wetlands exposed to risks. The Umm Ruwaba formation has groundwater supplies that are replenished by seasonal rainfall and river floods. South Sudan possesses a total of around 49.5 cubic kilometers of renewable water resources annually, which equates to an average of 4,567 cubic meters per person per year.[125]
Despite having an abundance of surface and ground water resources, a sizeable portion of the South Sudan populace still does not have access to improved sanitary facilities and water supplies. Over 66% of people live in areas without access to better water supplies, while over 80% do not have access to better sanitation facilities. Insufficient knowledge about proper hygiene among individuals has led to the widespread occurrence of water-related illnesses such as diarrhea, cholera, and guinea worm. South Sudan has the greatest prevalence of guinea worm disease globally, which is spread by the ingestion of stagnant water infected with the parasite. The government acknowledged the significance of overseeing and protecting the nation's water

[121]AfDB, 'Sustained Strong Economic Growth' (Tunis-Belvedere, Tunisia, AfDB, 2013) <www.afdb.org/fileadmin/uploads/afdb/Documents/> accessed 17 September 2022.
[122] Global Forest Watch, 'South Sudan Deforestation Rates and Statistics' (2020) <https://rb.gy/6ksdxb> accessed 16 September 2022.
[123] UNEP, 'South Sudan Cracks Down on Charcoal Trade' (2 August 2018) <www.unep.org/news-andstories/story/south-sudan-cracks-downcharcoal-trade> accessed 16 September 2022.
[124] AA Salih, H Körnich and M Tjernström, (2013). 'Climate Impact of Deforestation Over South Sudan in a Regional Climate Model' (2023) 33(10) IJC 2362-2375.
[125] Ibid

resources in 2013, resulting in the creation of the Water Bill. This legislation is designed to preserve sources of water from erosion, pollution, and other detrimental impacts. The phenomenon of climate change is anticipated to have an effect on the availability of water, both in terms of the amount and the quality. This will manifest as a higher occurrence of floods and droughts, which will in turn damage the availability of freshwater resources. Rising competition for water resources may lead to conflicts between upstream and downstream users.[126]

3.11 Rainfall

The combination of less precipitation and higher temperatures will intensify the effects of droughts. A temperature increase of over 1°C leads to an additional 10-20 percent loss in rainfall due to amplified evaporation, further reducing water accessibility.[127] Both droughts and floods caused misery to a significant number of people, with roughly 7,900,000 and 1,140,000 individuals impacted, respectively, between 1996 and 2016.[128] If the present rainfall patterns continue, by 2025 the drying impacts might spread to the Central Equatoria, Warrap, Unity, Al Buhairat (Lakes), and Western and Northern Bahr al Ghazal areas.[129]

The nation has a period of abundant precipitation, then by a period of less rainfall. The solitary extended rainy season spans from March to November, with its highest point being from May to September, resulting in periodic floods. The precipitation zones of South Sudan extend beyond the nation's boundaries into Uganda to the south, Sudan to the north, and Ethiopia to the east.[130] In the southeast, there is 200 millimeters of precipitation each year, whereas in the forested areas of Western Equatoria and the Equatorian highlands, there are 1,200–2,200 millimeters. In the northern states, rainfall ranges from 700 to 1,300 millimeters.[131] Historical rainfall data indicates that the southwest region experiences the maximum amount of rainfall, while the northeast region, particularly the greenbelt areas that receive the least amount of rainfall are those that border

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[126] Ibid

[127] The Netherlands Ministry of Foreign Affairs, 'Climate Change Profile: South Sudan' (The Hague 2018) <https://reliefweb.int/report/southsudan/climate-change-profile-south-sudan> accessed 15 September 2022.

[128] Ibid.

[129] I Niang and others, 'Africa' in VR Barros and others (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability* (IPCC 5th Assessment Report, Cambridge University Press 2014).

[130] AfDB, 'South Sudan: National Climate Change Profile' (2018) <www.afdb.org/en/documents/southsudan-national-climate-change-profile> accessed 15 September 2022.

[131] USAID, 'Climate Risk Profile: South Sudan' (2016) <www.climatelinks.org/> accessed 16 September 2022.

Uganda, the DRC, and the CAR. The rainfall pattern has been significantly affected by climate change, resulting in variations in the timing and distribution of precipitation throughout the year, characterized by both bimodal and unimodal rainfall regimes.[132] Since the mid-1970s, the country has witnessed a decline of 10-20 percent in the amount of lengthy rains. The extent of regions with sufficient rainfall of over 500 millimeters to sustain the livelihoods of agro-pastoralists has decreased by 18 percent.[133] In addition, the projected rainfall forecasts for the period of 2010-2039 indicate a decrease of more than 150 millimeters in precipitation from June to September in many regions of the nation.[134] This would worsen the adverse effects on populations who rely on sectors that depend on the climate for their sustenance, including fishing and agriculture.

3.12 Conflicts

Climate change shocks, such as extreme heat, prolonged dry spells, and heavy rainfall, are closely linked to the occurrence of violent conflicts. These conflicts pose a significant danger to peace and security, especially in various regions of Africa, including the nations located in the Nile Basin. Although wealthy nations do not experience significant violent conflicts as a result of environmental shocks, African countries with inadequate institutions and rule of law, as well as a reliance on crops fed by rain and natural resources, are extremely vulnerable to conflicts triggered by climatic shocks. The state's inadequate response to the climate crisis leads to the escalation or initiation of conflicts in two primary ways: disputes arising from limited resource access and the practice of raiding livestock as a means of compensating for climate-related asset losses.

In South Sudan, groups with a history of conducting raids on neighboring communities are prone to engaging in such attacks when their livelihood assets, such as livestock, are destroyed by a drought or flood. Raiding is not a common occurrence in stable agricultural societies, even when they experience such disruptions. However, the existence of these communities remains at risk when pastoralist communities are compelled to relocate to their territories in pursuit of improved grazing lands subsequent to a flood or drought. For instance, persistent conflict resulting in violence has arisen between Dinka pastoralists who have relocated from Jonglei State, their

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[132] Ibid.
[133] Ibid.
[134] UNEP, *South Sudan: First State of Environment and Outlook Report* (Nairobi 2018) <https://wedocs.unep.orgh/handle> accessed on 12 September 2022.

traditional homeland, due to regular flooding, and have established in the agricultural towns of central Equatoria State.

In Jonglei State, located in South Sudan, the Dinka, Murle, and Nuer ethnic groups frequently engage in raids against one another in the aftermath of severe climatic occurrences. For instance, the floods in 2019 and 2020 were subsequently accompanied by large-scale looting conducted by several individuals. Climate catastrophes have frequently exerted impact on the conflicts between populations in Sudan and South Sudan, notably the Dinka and Nuer, as stated by Douglas Johnson, a renowned authority on the history of these regions. All four significant floods that occurred in the nineteenth century in the Upper Nile area were directly linked to disputes between the Dinka and Nuer communities.[135] Interviews done with the communities in the wider Bahr Al-Ghazal region in South Sudan have showed that conflicts arise among groups due to the scarcity of resources such as pastures, water points, fishing grounds, and farmland, following a climatic disaster.

Yearly, floods in Africa have impacted millions of individuals. In October 2020, the number of individuals impacted by floods in East Africa rose to six million, marking a fivefold surge compared to the 1.1 million persons affected in 2016. The magnitude of climate change effects has also varied throughout the continent, with the more susceptible nations such as South Sudan seeing more severe consequences than others. Out of the total of six million individuals impacted by floods in East Africa in 2020, around one million were residents of South Sudan. The rising frequency of climate disasters has resulted in extensive and persistent food shortages, mass displacement, and the initiation or intensification of lethal wars.

3.13 Food insecurity

As a result of the devastation of people's means of making a living, they are now experiencing a lack of access to sufficient food, making them food insecure. As detailed by Save the Children, around 7.2 million people in South Sudan have been at risk of experiencing famine in 2021. This is mostly due to a combination of climate shocks, violent wars, the COVID-19 epidemic, high pricing, and limited access to humanitarian resources. The current figure represents a 50 percent surge in the population affected by hunger compared to a decade earlier, which appears to align

[135] D Johnson, 'Briefing: The Crisis in South Sudan' (April 2014) 113(451) A*frican Affairs* 300-309.

with the escalation in both the frequency and intensity of climatic shocks, which interact with other factors to exacerbate the situation.

The situation of food insecurity in Africa is analogous, with over 250 million individuals experiencing severe food scarcity in 2019, as reported by the FAO. Out of them, around thirty-seven million individuals experienced food insecurity owing to war, while twenty-six million faced it as a consequence of climatic shocks. Given that several wars were instigated by climate change, tackling climate shocks is an additional approach to resolving conflicts.

The effects of climate shocks on food security in South Sudan, as well as Africa as a whole, encompass the devastation of crops, loss of animals, and scarcity of food supply, among other consequences. Scarcities in the food supply frequently result in price hikes, rendering it difficult for individuals to obtain and purchase food. Due to the extensive damage caused by the floods, a significant portion of the transportation infrastructure has been rendered inoperable, hence impeding the transportation of food to the areas impacted by the floods. In South Sudan, the floods have caused the destruction of highways and airstrips, leaving people stranded in flood-prone areas for the past three years. Consequently, they have been unable to acquire food.

3.14 Displacements and migration

According to the initial report from the IPCC, the momentous consequence of climate change will be its effect on human migration. Climate-related shocks have already caused the displacement of millions of people in Africa, with some relocating inside their own nations and others crossing borders and leaving the continent. Between 2012 and 2017, an estimated annual average of around twenty-seven million individuals were forcibly moved due to climate-related dangers. This situation will worse in the years to come. By 2050, climate change is projected to put around 86 million Africans at danger of internal displacement, as reported by the World Bank. By 2050, over 150 million individuals are projected to experience yearly displacement due to water scarcity, storms, floods, and other climate-related calamities.

Within South Sudan, specifically, almost half of the one million individuals impacted by the flood from May to December 2020 experienced internal displacement. The act of displacement has resulted in homelessness, when individuals, particularly the elderly, children, and women, are forced to sleep outside in harsh weather conditions without any kind of protection, leaving them vulnerable to disease-carrying mosquitoes and other vectors. Certain individuals who were

compelled to abandon their homes have unfortunately fallen victim to waterborne and climate-related illnesses, including malaria, typhoid, and cholera. Other individuals have experienced hunger as a result of the loss of their means of making a living, as well as owing to limitations in the international humanitarian response caused by the destruction of infrastructure, instability, and insufficient food supply.

CHAPTER FOUR: COMPARATIVE ANALYSIS AND LESSONS FROM KENYA

4.1 Introduction

Kenya's environmental regulations are outlined in the 2010 Kenyan Constitution and are further supported by a number of niche-specific legislation and policies. Kenyan legislation dealing to the environment and climate integrates recognized principles of international law, especially those relevant to international environmental law, in addition to ratified treaties or conventions, in compliance with Article 2(5) and (6) of the Constitution. The worldwide environmental law framework has significantly influenced the formulation of Kenyan policies and legislation aimed at safeguarding the environment.

This chapter analyses Kenya's legal, policy, and institutional frameworks on climate change, it further makes a comparative study between Kenya and South Sudan's climate change best practices and finally makes recommendations on the best approaches and lessons that South Sudan can learn from Kenya.

4.2 Kenya's legal, policy and regulatory framework on climate change

4.2.1 Legislative framework

4.2.1.1 Constitution of Kenya, 2010.

The preamble of the Constitution asserts that Kenyans hold a deep regard for the environment, which is considered the nation's legacy, and are resolute in their commitment to preserve it for the welfare of generations to come. Article 10 delineates the basic principles and values of leadership at the national level, including sustainable development, which serve as a framework for the government's implementation of laws and policies. Article 42 ensures the entitlement to an unpolluted and salubrious environment and mandates the preservation of the environment for both current and generations to come.

Article 69 stipulates the responsible and efficient utilization, administration, and preservation of natural resources in order to guarantee fair distribution of the resulting advantages. Article 70 strengthens the entitlement to an unpolluted and salubrious environment and establishes mechanisms for implementing measures and providing reparation to those who are denied this entitlement.

The establishment of the Environmental and Land Court under Article 162 is highly significant. The specialized court in Kenya holds the same standing as a High Court and is responsible for handling cases related to environmental protection. The court possesses the authority to issue preventative, cessation, and compensating orders.

4.2.1.2 Environment and Management Co-ordination Act, 1999 (EMCA).

This is the primary legislation governing environmental concerns. This is Kenya's inaugural framework of environmental legislation. The text establishes overarching concepts, establishes administrative entities, defines environmental quality benchmarks, and outlines procedures for monitoring, enforcing, and penalizing environmental violations. It supplements existing legislation pertaining to land, water, mining, forest, and wildlife. The enactment of EMCA occurred in the presence of 78 sectoral laws addressing different aspects of the environment, the worsening condition of Kenya's environment, and the rising socio-economic disparities, all of which collectively had a detrimental effect on the environment. The primary goal of enacting EMCA was to provide coherence in the administration of the nation's environment.

4.2.1.3 Climate Change Act, 2016

The primary goal of the Act is to establish a set of regulations that will facilitate an effective rejoinder to climate change. It aims to implement procedures and policies that will boost the ability to endure the effects of climate change and encourage the growth of low carbon practices. The Act employs a mainstreaming strategy, gives a legal foundation for climate change initiatives via the National Climate Change Action Plan (NCCAP), and forms the National Climate Change Council and the Climate Fund.

Kenya has now joined the group of nations that have implemented the Paris Accord on Climate Change inside their own country. The principal aim of the Act is to facilitate the creation, management, implementation, and oversight of strategies aimed at enhancing climate change pliability and advancing low-carbon growth for Kenya's sustainable growth.[136]

[136] Climate Change Act 2016, s 3(1).

4.2.1.4 Energy Act, 2019

The Act has a wide jurisdiction, including all types of energy, ranging from conventional fossil fuels to sustainable renewable sources. According to the Act, the government must aggressively encourage the expansion and application of renewable energy sources, including hydropower, solar, wind, and biomass energy as well as biodiesel and bioethanol. The Act offers a valuable framework to facilitate the shift towards a sustainable economy, resulting in probable improvements in environmental preservation and mitigation of climate change.

4.2.1.5 Forest Conservation and Management Act, 2016

The purpose of this Parliamentary Act is to carry out Article 69 of the Constitution, which deals with forest resources. Its goal is to support the nation's socioeconomic growth by facilitating the equitable growth and oversight of all the country's forests, including their protection and sensible use. Any relevant matters are likewise covered by the Act.

Act Section 7 provides the framework for the establishment of the Kenya Forest Service. Its main responsibilities are to safeguard, preserve, and oversee all public forests in compliance with the Act's provisions. It is also responsible for developing and executing management plans for all public forests. Additionally, upon request, it may assist in the creation of management plans for community or private forests, in consultation with the respective owners. The Kenya Forest Service is authorized to receive and review requests for permissions or licenses pertaining to the management of forests or their resources, as well as other relevant matters outlined in the Act. Furthermore, it is responsible for establishing and implementing benefit sharing arrangements as specified in the Act.

4.2.1.6 Water Act, 2016

Under the Act, many regulatory systems were developed to support the administration and preservation of the water resource. Under the latter Act, the following bodies were established:

(a) Basin Water Resources Committee, whose main task was to advise Water Resources Authority on conservation of water resources, use thereof and licensing.
(b) The Act also established Water Resources Users' Association (WURAS) which is to act as a conflict resolution forum at the local level.

(c) The Act also created the Water Resources Management Authority, which is tasked to regulate water resource management and conservation activities.

The Act herein therefore constituted yet another environmental regime, whose aim was to deal with conservation water resources and to regulate the licensing of various bodies engage in the provision of water service.

4.2.1.7 UNFCC and the Paris Agreement

Kenya has officially approved and accepted both the UNFCCC and the Paris Agreement. As a result, Kenya has committed to fulfilling responsibilities to develop strategies, take necessary steps, and provide regular updates on efforts made to reduce the impact of global warming.[137]

4.3 Regulatory framework

4.3.1 National Environmental Management Authority (NEMA)

NEMA is created in accordance with EMCA.[138] The primary objective of this organization is to exert comprehensive oversight over all aspects pertaining to the environment and to execute environmental regulations.[139] The government relies on it as the primary tool for carrying out all environmental programs. The NEMA is a government agency that operates with a degree of independence inside the Ministry of Environment and Forestry.

4.3.2 Environment and Land Court

Section 4 of the Environment and Land Court Act of 2011 and Article 162(2) of the Constitution govern the establishment of this court. The court has supreme jurisdiction meaning it may hear cases involving environmental planning, issues related to climate change, and any other disputes involving land and environmental issues.[140] This jurisdiction encompasses both original and appellate jurisdiction. In most of situations, it allows the other tribunals to appropriate their mandate beforehand. This position was underscored in the case of *Kibos Distillers Limited & 5*

[137] Paris Agreement (adopted 12 December 2015, came into force 4 November 2016) 1771 UNTS 107, Art. 4.
[138] EMCA, s 7(1).
[139] Ibid, s 9(1).
[140] Environment and Land Court Act 2011, s 13.

Others vs Benson Ambuti Adega & 2 Others,[141] and was further ratified by the Supreme Court in the case of *Benson Ambuti Adega & 2 Others vs Kibos Distillers & 5 Others*.[142]

The Court in ***Kenya Association of Manufacturers & 2 others v Cabinet Secretary - Ministry of Environment and Natural Resources & 3 others*** emphasized that courts have a significant responsibility in environmental disputes. Whether it is during the preliminary stage or the main hearing, courts must consider their role in advancing the governance of the environment, upholding the rule of law and keeping a fair balance between different economic, social, ecological, and development concerns.[143] This statement confirms that courts, in conjunction with other participants in environmental governance, also possess a responsibility.

In the *Kenya Association of Manufacturers* case, the Court emphasized that Kenyan courts have a duty to follow and uphold the constitutional and legislative provisions related to the environment, specifically Articles 42, 69, and 70 of the Constitution and the EMCA.

4.3.3 National Environment Tribunal (NET)

This Tribunal, created by section 125 of the EMCA, has the authority to hear appeals from individuals who are dissatisfied with decisions made by NEMA. These decisions include the granting or refusal of licenses or permits, the transfer of licenses or permits, the imposition of conditions on licenses, the revocation, suspension, or modification of licenses, the fees required under the EMCA, and the imposition of environmental restoration or improvement orders by NEMA.

4.3.4 National Climate Change Council

The establishment of the Council is mandated by the Climate Change Act. Its primary purpose is to easen the incorporation of climate change responsibilities into the operations of both national and county governments. Additionally, the Council is responsible for supervising the execution of the NCCAP, along with other assigned duties. Additionally, the Council assures that plans, budgets, and programs at the federal and local levels will incorporate climate change functions. The fact that the President presides over the Council is indicative of its importance.

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[141] [2020] eKLR.
[142] [2021] eKLR.
[143] Ibid.

4.3.5 Climate Change Directorate

This entity is created according to Section 9 of the Climate Change Act. It serves as the primary organization responsible for developing and implementing strategies to address climate change, and it provides detailed plans to the Cabinet Secretary. It functions as the administrative body for the Climate Change Council.[144]

4.3.6 National Environmental Complaints Committee (NECC)

This Committee was created in accordance with Section 31 of the EMCA. It plays a crucial role in evaluating the state of the environment in Kenya. It has a significant impact on the facilitation of alternate methods for resolving disputes related to the environment.

The NECC provides recommendations to the Cabinet Secretary, playing a crucial role in shaping and advancing environmental policy. The NECC membership comprises influential participants in the administration of the environment. The Cabinet Secretary nominated the Committee's Chairperson, who satisfies the requirements to sit as a judge in Kenya's Environment and Land Court, and the Committee has seven members in total.

NECC's primary objective is to carry out studies in different regions of the country and provide suggestions to address specific environmental challenges in each area. NECC has facilitated the identification and implementation of local remedies to several environmental issues by the public.

4.3.7 National and county governments

The national government, via the environmental affairs Cabinet Secretary, retains ultimate responsibility for formulating policies to promote ecological sustainability and lessen the impact of climate change. Similar systems have been put in place by the county governments, wherein a member of the executive committee of the county is delegated certain duties concerning environmental and related matters. Several county governments have implemented measures to address their respective responsibilities on climate change. Notable examples comprise the Bomet County Climate Change Bill 2021, the Kajiado County Climate Change Bill 2020, the Kisumu County Climate Change Bill 2020, the Marsabit County Climate Change Fund Bill 2020, and the Turkana County Climate Change Bill 2020.

[144] Climate Change Act, s 9(9).

4.4 Policy framework

4.4.1 National Climate Change Action Plan (NCCAP)

The Cabinet Secretary is required under the Climate Change Act to create an NCCAP, and it must be reviewed every five years.[145] Through the implementation of plans and activities to promote low-carbon and climate-resilient growth, the NCCAP aims to further Kenya's development objectives.[146] The Plan establishes a structure for Kenya to fulfill its nationally determined contributions (NDCs) as outlined in the Paris Agreement.[147] The Plan highlights seven crucial areas of climate action that need government focus to ensure sustainable development with reduced carbon emissions and increased resilience. Disaster risk handling for droughts and floods, food and nutrition security, water and the blue economy promotion, forest, wildlife, and tourism management, well-being, hygiene, and human settlements advancement, manufacturing, and energy and transportation are the primary action areas.[148]

The Kenyan government's developmental policy framework, which incorporates the SDGs and Vision 2030, is in line with the NCCAP. These initiatives demonstrate the Kenyan government's dedication to achieving development that is both low-carbon and resilient to climate change.[149]

4.4.2 Vision 2030

Established in 2008 and spanning the years 2008–2030, Vision 2030 is Kenya’s plan for growth. The target was to have all Kenyans living in a middle-income, newly industrialized nation with a good standard of living by the year 2030. The goal of Kenya's Social Pillar of Vision 2030 is to achieve broad prosperity via the establishment of a fair and united society where all members enjoy equivalent social growth in a clean and benign environment. Improving pollution and waste handling, strengthening climate change adaptation capabilities, and harmonizing environmental laws with improved environmental governance and preparation are all necessary to realize the 2030 target of a hygienic and maintainable environment.

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[145] Ibid, s 13(8).
[146] Ministry of Environment and Forestry, National Climate Change Action Plan (Kenya): 2018–2022 (2018).
[147] Ibid.
[148] Ibid.
[149] Vision 2030 Delivery Board, ‘Towards 2030’ <**https://vision2030.go.ke/towards-2030/>** accessed 28 September 2022.

The Kenyan government has periodically employed extreme conservation tactics, such forcefully uprooting rural populations from ecologically vulnerable areas like the Mau Forest, which is a major supply of water, to show its commitment to this aim. This initiative is a component of the overarching strategy to restore the deteriorated ecosystem and attain a forested area that encompasses 10 percent of the entire country.[150] The aforementioned forest is the biggest remaining native forest in Kenya, encompassing the largest of the five water towers in the nation together with the greatest closed-canopy forest habitat. Notwithstanding partisan resistance and legal hurdles about the relocation's implementation strategy, this endeavor demonstrates the Kenyan government's redoubled commitment to environmental refurbishment and sustainability. Similarly, as of June 2020, the Kenyan government forbade the entry of any kind of plastic container, straw, or similar item into national parks, national reserves, or conservation zones.[151] Corporations that prioritize recycling are eligible for certain financial benefits. These include an exemption from VAT on the acquisition of construction-related gear and equipment, including any services provided to plastic recycling plants, and a fifteen percent reduction in corporation taxes for the first five years of operation.[152]

4.5. Contextual Differences with Kenya

Kenya has implemented a highly effective strategy to improve climate change adaptation and resilience, as seen in this chapter. The institutions are increasingly proactive in monitoring and addressing the repercussions of climate change. South Sudan may embrace excellent practices from Kenya to mitigate the devastating effects of climate change. Nevertheless, South Sudan has several contextual disparities that hinder its ability to fully embrace and replicate Kenya's accomplishments in combating climate change. These are contextual differences are discussed below;

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[150] Ministry of Environment and Forestry, 'Second phase of Mau evictions to kick off soon' (2020) <**www.environment.go.ke/?p=6844**> accessed 28 September 2022.
[151] Ministry of Environment and Forestry, 'Implementation Plan for the Ban of Single Use Plastics in Protected Areas' (February 2020) <**www.environment.go.ke/wp-content/uploads/2020/03/action-plan.pdf**> accessed 3 October 2022.
[152] Tax Laws (Amendment) Act 2020.

4.5.1 Political will

The capacity of responsible institutions and, most importantly, the government's endeavour to achieving climate change adaptation and pliability are necessary for the efficient execution of government plans and programs. In South Sudan, in contrast to Kenya, government officials demonstrate a lack of commitment or capability to implement measures that would effectively and promptly mitigate carbon emissions. Citizen activism is a significant factor in shaping the policymaking process, since it reflects the public's will. The probability of governments prioritizing climate change action is heightened by a significant surge in public demand.

The IPCC has published a study highlighting that the obstacles to achieving advancements in climate change are mostly political rather than scientific.[153]

The report, focused on examining the remedies for climate change, concluded that, as a result of extensive efforts by scientists, the global community possesses the scientific knowledge, technological advancements, and a significant portion of the engineering expertise required to reduce emissions and secure a habitable planet. The absence of the necessary element lies in the determination of the political sphere to implement those necessary modifications.[154]

4.5.2 Reliance on oil & gas for government income

Another important difficulty for South Sudan in adopting Kenya's measures on climate change is South Sudan's over-reliance on petroleum resources for government revenues compared to Kenya. This increases fossil fuel emissions which have enormous impact on climate change. The IPCC claims that GHGs are released into the atmosphere when fossil fuels are burned, which is the main cause of change in climate. The majority of the carbon dioxide emissions in 2018 came from industrial processes and the burning of fossil fuels. A large amount of carbon is released during the burning of oil, making up approximately one-third of all carbon emissions worldwide.

4.5.3 Contextual priorities

While the Government of Kenya puts high priority in the environmental protection and preservation, South Sudan counterparts over years since gaining the independence, have always

[153] Zoya Teirstein, (April 8th 2022), "Scientists identify the missing ingredient for climate action: Political will'', https://grist.org/politics/scientists-identify-the-missing-ingredient-for-climate-action-political-will/.
[154] Ibid

put low if not no attention on the issues of climate change viz a' viz environmental protection. Kenya is leading the way in combating climate change and was one of the first nations in Africa to enact a thorough set of laws and policies that aimed to guide national and local efforts to solve the problem. The NCCAP and the Climate Change Act provide guidelines for promoting development that is both low-carbon and climate resilient. Kenya's primary areas of concentration, as conveyed through several channels, are climate-smart agriculture, energy efficiency, reforestation and afforestation, terrain rehabilitation, drought and flood risk management, and geothermal and renewable energy development.

Meanwhile, South Sudan, climate change is not a government priority over the years rather the government have been investing resources on weapons to fight the dissident forces of Dr. Machar who rebelled in 2013 after falling out with President Kiir. It is difficult for a country engaged in the civil war since its independence to put climate action at the forefront of government policy.

4.6 Overview of findings and insights from the perspective of Kenya

The rationale for choosing Kenya for comparison research is rooted in the presence of more comprehensive legal, legislative, and institutional frameworks on climate change in the country. Furthermore, and importantly, the researcher was motivated to select Kenya for analysis over other East African countries due to the fact that Kenya is the Regional Power and South Sudan being the youngest nation in the region, must admire and looks up to her fellow advanced economies like the Republic of Kenya. Kenyan laws, policies, and institutions especially on climate change have come of age, though not perfectly, the climate change adaptation and resilience is by far achieved in Kenya more than any other East African country.

Unlike South Sudan, Kenya has implemented more comprehensive and efficient legal and policy frameworks to address the difficulties presented by climate change. In South Sudan, a nascent nation, the establishment of policy and legal structures pertaining to climate change is still in its incipient phase. The South Sudanese government has implemented measures to integrate climate change concerns into many policies, with the goal of facilitating the nation's endeavors in both reducing climate change and adjusting to its repercussions. However, there is presently no distinct, independent policy, legislation, or approach that expressly deals with climate change. Furthermore, the 2011 Transitional Constitution lacks specific provisions addressing climate change. However, it indirectly addresses climate change issues by emphasizing sustainable development and the

obligation of all government levels in South Sudan to enact reasonable legislative measures and other actions to safeguard the environment.

South Sudan has not established a dedicated court to handle cases linked to environmental and climate change topics, unlike Kenya. This court would have the authority to handle cases involving environmental planning, conflicts relating to climate change, and any other disputes involving the environment and climate change.

Contrary to South Sudan, GHG emissions from all sectors are properly monitored and regulated in Kenya. The National Climate Change Council in Kenya is mandated under the Climate Change Act 2016 to set targets for reducing GHG emissions.[155] The Act further mandates the NCCAP to establish metrics and systems for evaluating the amounts and patterns of GHG emissions.[156] The Act mandates that sectoral GHG emissions be reported for the national inventory by all state departments and federal government agencies.[157]

As specified in section 17, NEMA is authorized to supervise, enforce, and keep an eye on compliance with the greenhouse gas emission standards in lieu of the National Climate Change Council. Individuals connected to an organization may face a five-year prison sentence and a fine of up to one million Kenyan shillings for noncompliance.

The Climate Change Act also offers enticements to individuals and organizations who promote and implement strategies to combat climate change, such as reducing GHG emissions and adopting renewable energy sources. The NCCAP offers comprehensive directives about greenhouse gas emissions. There will be a decrease in emissions relative to the baseline projection if the six areas of mitigation mentioned in the UNFCCC (agricultural, energy, forestry, industry, transportation, and waste) are implemented, according to the NCCAP. Kenya has committed to, relative to the status quo, reduce emissions of GHGs by 30% by 2030; these steps will help achieve this goal.

The data shown above also show that South Sudan has a long way to go before it can be considered a climate change mitigation success story. There is need to develop robust legal framework and support it with progressive political discourse. This discourse will inform policy formulation and sensitize policy enforcers on the importance of achieving the goals set in the policy.

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[155] Climate Change Act 2016, s 6.
[156] Ibid, s 13.
[157] Ibid, s 15.

Climate change remains a pain for South Sudan looking at some of the effects such as frequent droughts and extreme rainfalls causing floods, unhealthy competition between the pastoralists and farmers, livestock losses, increased cattle raiding which can escalate to community conflict, displacement and even formation armed group. These negative effects create a ripple effect that slows down economic growth making South Sudan remain behind in terms of development.

Finally, this chapter has discovered that there are a number of contextual differences that make it difficult for South Sudan to adopt and implement the measures and approaches taken by the Republic of Kenya in enhancing climate change adaptation and resilience. They include lack of political will from South Sudan Government compared to Kenya's Government, too much reliance on oil & gas in South Sudan as opposed to Kenya, illiteracy and lack of necessary skills and knowledge for South Sudan rural populations in adapting to climate change.

4.7 Conclusion

This chapter establishes that Kenya has used a significantly more efficient strategy to improve climate change adaptation and resilience. The institutions are displaying increased vigilance in monitoring and promptly addressing the repercussions of climate change. Nevertheless, the unique circumstances of South Sudan provide challenges in adopting and executing the strategies and methods employed by the Republic of Kenya to improve climate change adaptation and resilience. Hence, to mitigate the effects of climate change, South Sudan should embrace Kenya's exemplary approaches, institutions, and procedures pertaining to climate change.

CHAPTER FIVE: CONCLUSIONS, SUMMARY OF FINDINGS AND RECOMMENDATIONS

5.1 Introduction

This concluding chapter presents the suggestions that South Sudan should implement in order to effectively address the impacts of climate change, as determined by the conducted study. This chapter has three objectives, namely, general conclusion based on each chapter, the summary of findings and lessons South Sudan can borrow from Kenya, and recommendations aimed at combating climate change consequences to achieve climate resilience and adaptation in South Sudan.

Climate change adaptation, sustainable development, and the reduction of GHG emissions across several sectors and enterprises are not supported by legislative frameworks and incentives in South Sudan, in contrast to Kenya. Therefore, specialized climate change agencies must be established to monitor the control of greenhouse gas emissions in all economic activities. National Climate Change Council, Climate Change Directorate, NEMA, and NET should be established in South Sudan to govern climate change-related issues, same like in Kenya.

5.2 Conclusion and summary of findings

Having carried out research on the climate change in South Sudan, the research made the several findings.

The research findings have proven the hypothesis in that South Sudan's laws and policies are wanting regarding any framework on the climate change governance and mainstreaming. The research has clearly and categorically demonstrated that the country lacks proper legislation, policies, and institutional framework on climate change governance and mainstreaming.

The research findings have also proven the objectives and questions in the following ways;

(i) The research examined South Sudan's legal, policy, and institutional frameworks on climate change; and has the discovered that there is an institutional gap and weaknesses in governing the climate change. Furthermore, there is lack of proper legislations and policies on climate change governance and mainstreaming.

(ii) The study also investigated the impacts of climate change and found that it has severely harmed the environment, the population, and the overall ecosystem. Droughts, floods, and wars are the defining characteristics of climate change catastrophes in South Sudan.

(iii) The research evaluated the experiences of other jurisdictions in particular, Kenya in an attempt to learn about their lessons and their best practices in governing climate change. The research discovered that Kenya has proper laws, policies and much more stronger institutions compared to South Sudan. The research paper has recommended that South Sudan adopts Kenya's best practices and measures in governing the climate change.

There is to a large extend, legal, policy and institutional gap on climate change in South Sudan. Unlike Kenya, South Sudan has not yet established specialized institutions and laws on climate change. The Parliament is yet to enact Climate Change Act, Environmental Management Authority Act, and Water Act. The young nation has not yet established Environmental Authority equivalent to NEMA in Kenya, the Climate Change Board, Climate Change Council, and Environmental and Land Court.

South Sudan faces a significant legal, legislative, and institutional deficiency in tackling climate change. The current regulatory and policy framework is mostly inefficient in fulfilling the goal of climate change adaptation and resilience. Although there are some laws and regulations in place, they are not sufficiently successful in addressing the impacts of climate change in South Sudan. The institutions such as the Ministries of Environment, Forestry, Water and Irrigation, and Agriculture of South Sudan are not taking aggressive measures to fulfill their responsibilities in addressing the adverse effects of climate change. This is because these institutions have insufficient technological, financial, and human resources.

Kenya offers excellent insights derived from their successful implementation of climate change resilience and adaptation strategies. Kenya's legal, legislative, and institutional frameworks are far more robust and efficient in addressing the challenges posed by climate change, unlike South Sudan.

The contextual disparities between South Sudan and the Republic of Kenya provide challenges in the embracing and execution of climate change resilience and adaptation strategies.

5.3 Recommendations

Considering the lessons South Sudan may learn from Kenya's approach to climate change adaptation and resilience, as well as the findings from the overall research, the following particular recommendations are proposed.

The recommendations may be implemented gradually and can thus be categorized into short, medium, and long term as outlined below:

5.3.1 Short-term

5.3.1.1 Establishment of climate change specific institutions

Promoting adaptation to climate change, sustainable growth, and the reduction of GHG emissions across all sectors and industries is hindered by the absence of legal frameworks and incentives. Therefore, specialized climate change agencies must be established to monitor the control of GHG emissions in all industries. It is imperative that South Sudan follows Kenya's lead and sets up NET, NEMA, the Climate Change Directorate, and the National Climate Change Council.

5.3.1.2 Promulgation of climate change specific laws

The enactment of a climate change specific law is vital as it will serve as a legal structure for the purposes of mitigation as well as adaptation in retort to changes in the climate. As it is done in Kenya, South Sudan needs climate change specific laws such as Climate Change Act, Environmental Management Act, and Water Act.

5.3.1.3 Defined pathways for adapting to climate change in various policy and regulatory frameworks

An analysis of policies related to industries impacted by climate change highlights the pressing necessity with the purpose of enhancing the government's capacity to formulate policies in response to climate change. Inadequate preparation of energy infrastructure and the population for climate change-induced events like floods and severe weather phenomena like storms is evident in the current South Sudan National Electricity Policy, which lacks specific measures for adaptation or mitigation. In addition, there are no rules on climate change or its mitigation in the Electricity Corporation Act, which governs the operations of South Sudan's energy generation and

transmission networks. Crucial policy actions and policies that can improve the government's capacity to respond to climate change at the policy level include:

(a) Incorporating additional measures or regulations for adapting to climate change into current and future policies, allowing sectors including agriculture, energy, forestry, tourism, livestock, and fisheries to strengthen their ability to withstand droughts and floods caused by climate change.

(b) Advocating for the integration of widely accepted climate change adaptation ideas into policies across all sectors.

(c) Implementing policies and methods, as well as identifying inducements, to encourage climate change adaptation, sustainable development, and the mitigation of greenhouse gas emissions, especially across all sectors and industries.

(d) Developing climate change funding policies that facilitate the acquisition of domestic, international, and private money by South Sudan, while also establishing a dedicated climate change fund to support the government's endeavors in adapting to climate change.

5.3.1.4 Facilitating the allocation of climate funds in South Sudan to enhance adaptation and build resilience.

South Sudan's attainment of its climate change adaptation objectives is contingent upon securing access to climate funding. Multilateral organizations and bilateral development partners are the main sources of public funding for international projects. It is complex to overcome this obstacle. Being a young nation with inadequate policy frameworks, South Sudan has limited access to carbon financing, local and international public and private sources of climate funding, and international and domestic sources of climate assistance. South Sudan faces obstacles in obtaining the required finance for efficient climate change solutions due to institutional and capability hurdles. The ministries in various nations have a crucial role in mobilizing climate finance by creating processes and tools for funding mitigation as well as adaptation in response to changes in the climate. These ministries are responsible for finance and planning. National climate change funds, loans, grants, debt swaps, markets for carbon, and insurance products are all part of the processes and tools. The MoFEP in South Sudan has the potential to play a vital role in formulating and fulfilling the criteria for these processes and tools. The creation of county adaptation funds at the county level is a significant chance to address the implications of climate change, particularly

in counties that are prone to climate risks. These funding allow counties to strengthen their ability to withstand and adapt to the effects of climate change. In addition, the Ministry of Finance and Economic Planning must incorporate various government proclamations concerning climate change into their planning and budgeting procedures. This includes the Sudan People's Liberation Movement's (SPLM) platform, which calls for a green economy to be set up.

5.3.1.5 Formulation and implementation of strategies, policies, and plans to address the impacts of climate change

Along with the ongoing creation of the Irrigation Development Master Plan, South Sudan has already completed the NAPA and niche-specific plans like the Comprehensive Agriculture Master Plan. Collectively, these programs aid in climate change adaptation. If these measures are successfully carried out, the government will be able to alleviate certain implications of climate change. Nevertheless, South Sudan has failed to formulate distinct climate change policies, strategies, or a coherent action plan. In order to establish a comprehensive and efficient framework for managing climate change, it is crucial to develop a climate change policy and strategy that facilitates collaboration and adaptation across different sectors. Additionally, this framework would fulfill the government's legal commitments regarding climate change while also provide technical direction for the implementation of policy. To make South Sudan more appealing to climate financiers, it is also crucial to have a comprehensive strategy for combating climate change and/or a green growth strategy. These frameworks will offer tactics for tackling climate change issues in the country and fostering growth that is robust to climate impacts. South Sudan will showcase its commitment to the Paris Agreement via the development and execution of climate change policies, strategies, and plans. The Paris Agreement, established at COP21, provides a comprehensive strategy to mitigate catastrophic climate change by limiting global warming to a level much below 2°C. The Paris Agreement holds significant relevance in the context of South Sudan due to the substantial role played by the oil industry in carbon emissions.

5.3.1.6 Mainstreaming established adaption strategies in national planning

Planning for climate change adaptation must take into account the use of conventional methods of coping with its effects. Communities in South Sudan have long struggled with issues like droughts, floods, and a lack of water. Because of the risks to their resource base, many communities have created methods to maintain their resilience. To administer their socioeconomic activities, such as

farming, raising livestock, and fishing, many communities have set up traditional governing institutions. For instance, among the Dinka and Nuer people, political authority and governance traditionally reside in tiny social groups, often in the form of clans and territorial structures. The Shilluk, in contrast, have a centralized monarchy with chiefs who are responsible for managing resources and governing sections and clans. In accordance with the Local Government Act of 2011, these structures are recognized. Therefore, in their efforts to improve adaptation and resilience-building, national, state, and local climate change adaptation planning procedures should identify and take into account these traditional institutions and practices for disaster response.

5.3.1.7 Establishment of Environment Court

South Sudan should establish a dedicated court with authority to handle and resolve legal conflicts pertaining to environmental planning, climate change affairs, and any other disputes concerning the environment and climate change. Scholars argue that general courts lack expertise to try technical and scientific matters.[158] General courts in South Sudan are characterized by delays, lack of technical capacity, huge caseload, corruption and bribery. Therefore, it would be very important to establish Environmental Court as this will reduce the caseload, and enhance judicial system efficiency, and render high quality decisions.

With diverse climate change issues and complexity of international environmental law principles and instruments, there is a need for a specialized environmental court in South Sudan, well equipped with qualified judges on environmental law, this will enhance sustainable development. Robust institutions serve as the cornerstone for enhancing governmental responses to climate change impacts. Hence, it is imperative that South Sudan's endeavors to adapt to climate change encompass the rectification of the institutional deficiencies emphasized in this section. NAPA has prioritized enhancing South Sudan’s institutional capacity to include climate change deliberations into policies and enhance climate change resilience. Several measures and key actions can be taken to enhance the capability of pertinent institutions for climate change.

This chapter has presented comprehensive elucidations of the repercussions of climate change at the sectoral level. Furthermore, it has outlined the government's focal points and current and future efforts to adapt within these sectors and throughout South Sudan's seven livelihood zones.

[158] Andrew Harding, *Access to Environmental Justice: A Comparative Study* (Brill|Nijhoff 2007).

Providing assistance is crucial for enhancing the factors that empower people, households, and communities to endure shocks, adjust, and evolve in response to changing surroundings. This section delineates the necessary climate change adaptation measures in sector plans, which are determined by the government's goals and ongoing operations.

5.3.2. Mid-term

5.3.2.1 The establishment of climate change departments and divisions in all relevant government agencies

There are still a number of ministries that are vital to adapting to climate change but do not have dedicated climate change divisions or departments. Their inability to effectually adapt to climate change is a result of a lack of resources, both monetary and technological. These ministries can better address climate change concerns if they establish climate change divisions or departments within themselves. When it is not a priority to create specialized units, it is crucial to promote relationships and links between these institutions and others. An example of this would be the Ministry of Petroleum and Mining forming cooperative partnerships with the Ministry of Environment and Forestry in order to develop rules for the climate change industry.

5.3.2.2 Utilize the assistance and backing of NGOs and the civil society

In addition to government institutions, there are more possibilities to leverage assistance from NGOs and civil society in order to enhance climate change adaptation. South Sudan has a flourishing non-governmental organization (NGO) sector. Their efforts, namely in the areas of ensuring access to food, responding to emergencies, and developing infrastructure, have greatly assisted the country in dealing with political upheavals, food shortages, flooding, and drought catastrophes. Utilizing the unique abilities of non-state actors can enhance the execution of climate change policies, strategies, and plans. The NGOs' activities focused on capacity development and information sharing have played a central role in comprehending the effects of climate change and the measures taken by local people to adapt or cope with them.

5.3.2.3 National planning and funding to incorporate adaptation and resilience to climate change.

The effects of climate change must be included in government spending plans and strategic plans. The South Sudanese government must ensure that its sector and coordinating agencies have the resources they need to include adaptation to climate change in their strategic plans and budgets at the federal, state, and county levels. They will be more equipped to deal with the difficulties of integrating climate change concerns after this. This policy not only protects investments in vital infrastructure and resources for sustaining livelihoods, but it also offers a cost-effective plan for the future.

5.3.2.4 Promoting utilization of energy-efficient technology.

The overuse of biomass as a source of energy has significantly accelerated the decline and deterioration of plants. It is important to work to find and promote the best energy-saving technologies. Financial assistance from institutions would be necessary for the implementation of various technologies, for example, kilns that efficiently produce charcoal, solar panels, biogas systems, and stoves that use less energy. Facilitating the use of low-cost technology by local craftspeople should go hand in hand with advocating for improved biomass conservation methods.

5.3.3 Long-term

5.3.3.1 Accelerating the deployment of strategies to tackle climate change adaption and enhance resilience

Accountable institutions are crucial to the successful execution of government programs and goals, political determination, and the existence of intersectoral institutional structures. Therefore, the successful execution of these mechanisms requires the development of skills and the exchange of knowledge among all sectors. Institutionalizing climate change considerations within relevant institutions, along with capacity development, is vital. Strengthening the climate change unit within the Ministry of Environment and Forestry is essential to enable effective climate change coordination.

5.3.3.2 Enhancement of South Sudan's ability to produce and utilize climate-related data

This should involve the creation and management of a Monitoring, Reporting, and Verification (MRV) system that covers adaptation, mitigation, and the ways in which they work together. Implementing such a system will allow South Sudan to accurately quantify and disclose data about GHG inventories, both for national and global objectives. This system not only fulfills international reporting obligations but also aids South Sudan in adapting to a changing climate and monitoring the performance of climate mitigation and adaptation actions.

5.3.3.3 Develop and enhance the capabilities of systems for early warning

The implementation of early warning systems is crucial for minimizing the consequences of climate change in South Sudan, as the existing state of such systems is inadequate. Developing early warning systems and initiatives at the local level is crucial in order to notify farmers and livestock keepers about imminent flood and drought calamities. under order for these mechanisms to be efficient and enduring, it is crucial that they actively involve the vulnerable populations who are under danger. Moreover, it is imperative for local governments and communities to have the capacity to forecast weather fluctuations using the early warning system. Capacity-building initiatives should encompass the mobilization of communities to utilize climate change data collected by weather stations. This entails establishing mechanisms for disseminating this information to the communities and devising response strategies for better preparedness.

5.3.3.4 Expand market accessibility and value chain growth

Access to markets is essential for guaranteeing food security in South Sudan, particularly in locations where people significantly depend on markets during lean crop seasons, such as agro-pastoralist and agricultural areas. Unfortunately, the state of road infrastructure for market access is currently very poor. The limited market accessibility in locations such as the Green Belt Zone, which have a high agricultural potential, hinders the ability to add value to agricultural goods. Greater market accessibility, higher production levels, better-quality community services (such as disaster risk decrease), and extra value at each phase of agricultural output would result from better road infrastructure. South Sudan's economy may be revitalised by adopting methods from the Green Belt Zone that strengthen the value chains and marketing of agricultural, livestock, and

fisheries goods. As a result, people's livelihoods will improve, their vulnerabilities will be reduced, and their resilience will be strengthened.

5.3.3.5 Encourage the use of traditional dispute resolution techniques.

The necessity of current conventional conflict management methods is emphasized by the expected rise in conflicts resulting from climate change. It is important to aggressively promote these systems, as they play a vital role in resolving issues related to resources. Additionally, they promote fair and equal opportunities to utilize natural resources, migratory paths, and the settlement of conflicts concerning the acquisition and management of important resources, such as fertile and productive land.

5.3.3.6 Promote the use of traditional techniques for producing crops and livestock.

South Sudanese communities have developed techniques to improve food production. These factors have facilitated their ability to acclimate to a dynamic climate. These precautions involve use conventional techniques to store and save seeds for future planting, as well as constructing dykes using traditional instruments in the case of floods. While traditional dykes are being phased out in favor of more efficient contemporary dykes, they nevertheless serve as a crucial means of access for communities and contribute to raising awareness about climate change adaptation. Livestock grazing in several communities is governed by elders and clans. Certain clans exert dominion over territory situated along the shores of rivers and lakes, therefore securing superior grazing lands and ensuring access to water sources in times of drought. As a kind of adjustment, a tribe would relocate to these regions during the arid season and return to the highlands during the wet season. Promotion of these methods, which provide animals with access to verdant pastures and water even in the arid season, is vital to maintain uninterrupted milk production. Seasonal migration is a significant coping mechanism in South Sudan, employed to seek out pasture, grazing space, water, and other natural resources during periods of hardship, such as seasonal dry spells. These strategies assist households in alleviating the adverse impacts of shocks and stresses.

5.3.3.7 Encourage the use of environmentally-friendly methods for managing land

Effective land access management is crucial for evaluating robustness at both the household and community levels. It forms the foundation of people's capacity to produce an adequate food supply, diversify their production, and withstand various shocks and stressors. When considering

adaptation strategies, it may be more feasible to prioritize efforts to enhance yields in regions with higher precipitation levels rather than expanding agriculture into more marginal areas. Nevertheless, the challenge of rapid population growth complicates the process of slowing agricultural expansion. Promoting sustainable agricultural methods, such as mulching and the utilization of organic manure, is crucial. Additionally, adopting climate-smart and conservation agriculture approaches is imperative. Furthermore, it is crucial to aggressively support strategies that focus on strengthening livestock output and increasing its ability to withstand challenges, such as holistic land management.

5.3.3.8 Boost technical and knowledge abilities

South Sudan's literacy rate is very low. Knowledge and technical proficiency can enable families to obtain jobs in specialized occupations. Their access to important revenue streams in industries unrelated to agriculture, cattle, or fisheries is therefore determined by these jobs. Since these other sources of income are less susceptible to natural or climate-related disasters, it is advisable to support them in order to increase people's ability to adapt to changing circumstances.

5.3.3.9 Enhance the ease of entry into official financial and credit systems

The lack of these mechanisms in South Sudan severely hampers business and market possibilities, hence constraining job chances for disadvantaged populations such young, women, returnees, and internally displaced persons. These groups face difficulties in accessing the work market and establishing reliable sources of income. Ensuring access to credit and finance is crucial for fostering socioeconomic growth and enhancing households' ability to survive the impacts of climate change.

5.3.3.10 Increase institutional capability for managing water resources

The water resources of South Sudan are insufficiently developed. The development of water resources necessitates the creation of organizational capability for the management, planning, and control of water resources at the national, county, and state levels. Conducting on-the-ground surveys is crucial for informing the management of this predominantly untapped resource. Furthermore, it is necessary to provide assistance in the establishment of water resource management strategies, such as the ongoing development of an irrigation plan. In order to safeguard communities and businesses against flooding, institutional capacity-building should also

focus on improving water management infrastructure. An instance of this is the building of dykes in regions susceptible to flooding.

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