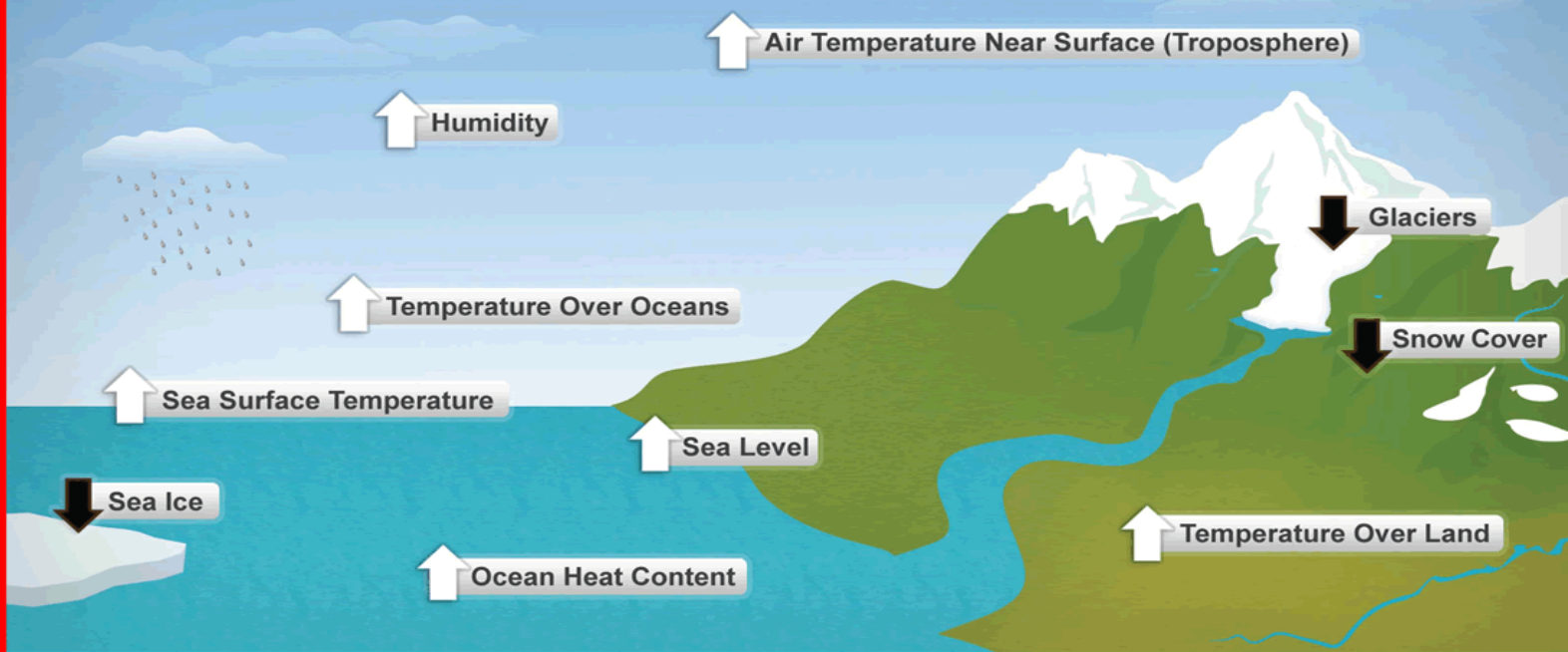


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## Ten Indicators of a Warming World



### Impact of Climate Policy Interventions on Temperature Anomalies in Sudan

*Abdel Aziz*



## Impact of Climate Policy Interventions on Temperature Anomalies in Sudan

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### Abstract

**Purpose:** The aim of the study was to assess the impact of climate policy interventions on temperature anomalies in Sudan.

**Methodology:** This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

**Findings:** The study found that international agreements, such as the Paris Agreement, have led to countries committing to carbon reduction targets, slowing down the rise in global temperatures. However, the effectiveness of these policies varies significantly depending on implementation and enforcement. While developed nations have generally made more progress due to better resources and technology, many developing countries struggle to meet their

commitments, leading to continued warming trends in certain regions. Overall, climate policy interventions have contributed to slowing global temperature rise, but stronger global cooperation and enforcement are needed to prevent future anomalies.

**Implications to Theory, Practice and Policy:** The theory of planned behavior, institutional theory and resilience theory may be used to anchor future studies on assessing the impact of climate policy interventions on temperature anomalies in Sudan. Policymakers should prioritize establishing robust policy frameworks that effectively link carbon pricing mechanisms, renewable energy incentives, and emissions reduction strategies to address temperature anomalies. Implementing policies that facilitate the participation of diverse stakeholders, including local communities, is crucial for ensuring that climate interventions are contextually relevant and broadly supported.

**Keywords:** *Climate, Policy Interventions, Temperature Anomalies*

## INTRODUCTION

Temperature anomalies represent deviations from historical temperature averages, indicating shifts in climate patterns that can have significant implications for ecosystems and human activities. In the United States, the average annual temperature has increased by approximately 1.8 °F (1.0 °C) since 1901, with notable spikes in recent years. For example, the National Oceanic and Atmospheric Administration (NOAA) reported that 2020 was the warmest year on record for the contiguous United States, with temperatures averaging 2.4 °F (1.3 °C) above the 20th-century average (NOAA, 2021). Similarly, Japan experienced significant temperature anomalies, with the Japan Meteorological Agency noting that the country's average temperature rose by approximately 1.5 °C from 1900 to 2020. Notably, 2019 was marked by an increase of 1.3 °C above the average, contributing to the rise in extreme weather events and impacting agricultural productivity. The UK also faces alarming temperature trends, with average temperatures rising by about 1.2 °C since the late 19th century. The UK's Met Office reported that 2019 was the hottest year in the UK since records began, with average temperatures exceeding the historical average by 1.5 °C. The trend shows an alarming increase in the frequency of heatwaves, with projections indicating that by the 2050s, the UK could experience summer temperatures averaging between 1.5 °C and 2.5 °C higher than those recorded between 1981 and 2000. The rising temperature anomalies not only affect the natural environment but also pose challenges for public health, water resources, and energy consumption. These trends necessitate urgent measures to mitigate the effects of climate change and adapt to the new realities.

In many developing economies, temperature anomalies have significant repercussions for agriculture, water supply, and overall livelihoods. For instance, in India, average temperatures have increased by approximately 0.7 °C from 1901 to 2018, with the Indian Meteorological Department reporting that 2019 experienced a temperature anomaly of 1.02 °C above the average for the period of 1981-2010. The rise in temperatures is contributing to erratic monsoon patterns, exacerbating water scarcity and impacting crop yields (Kumar & Jain, 2020). Similarly, in Brazil, temperature records show an increase of 1.0 °C over the past century, with 2020 recording a significant rise of 1.4 °C above the long-term average. These anomalies contribute to the frequency of droughts and floods, affecting the socio-economic fabric of communities reliant on agriculture and natural resources.

Temperature anomalies in developing economies are becoming increasingly pronounced, affecting agriculture, health, and water resources. In Bangladesh, for example, the average temperature has risen by approximately 0.6 °C from 1901 to 2020, with the country experiencing a notable temperature anomaly of 1.2 °C above the historical average during 2019. This rise in temperature contributes to increased flooding, salinity intrusion, and adverse impacts on rice production, which is vital for food security. Research by Hossain, Rahman, and Rahman (2020) emphasizes the growing challenges of climate change on agricultural systems in Bangladesh, necessitating robust adaptation strategies. Furthermore, climate models predict that by 2050, average temperatures in Bangladesh could rise by an additional 1.5 °C, exacerbating existing vulnerabilities.

In Vietnam, temperature records indicate a rise of about 0.8 °C over the past century, with the years 2019 and 2020 experiencing anomalies exceeding 1.0 °C above the historical average. These temperature increases have been linked to rising sea levels and extreme weather events, affecting coastal communities reliant on fishing and agriculture, as reported by Nguyen, Tran, and Pham

(2021). Notably, in the Mekong Delta, a critical rice-growing region, increased salinity due to rising temperatures has reduced agricultural yields, impacting food security and livelihoods. As temperature anomalies continue to challenge developing economies, addressing the associated socio-economic impacts will require enhanced resilience strategies, including sustainable agricultural practices and improved water management systems. The urgency for adaptive measures is critical in ensuring long-term food security and economic stability.

Expanding further on the effects of temperature anomalies in Sub-Saharan economies, countries like Zimbabwe and Uganda also exemplify the growing climate challenges faced by the region. In Zimbabwe, average temperatures have increased by approximately 1.4 °C since 1900, with the year 2019 recording a significant temperature anomaly of 1.5 °C above historical averages. The agricultural sector, a critical part of Zimbabwe's economy, has been severely affected, with rising temperatures contributing to droughts that have led to food shortages and economic instability. Research by Zhou, Muposhi, and Mhlanga (2020) highlights the impacts of climate change on food security in Zimbabwe, emphasizing the need for comprehensive adaptation strategies. This climate variability poses threats to water availability and exacerbates existing challenges related to poverty and food security.

In Uganda, average temperatures have increased by around 1.0 °C since the mid-20th century, with 2020 experiencing a temperature anomaly of 1.4 °C above the long-term average. The rise in temperature has led to increased incidents of extreme weather, including heavy rainfall and prolonged dry spells, significantly impacting the agricultural sector, which employs over 70% of the population. Research by Wambugu, Njeru, and Waweru (2021) underscores the challenges posed by climate variability on agriculture and food security in Uganda. The implications of these temperature anomalies not only affect food production but also threaten the livelihoods of farmers and rural communities. Addressing these climatic changes is essential for enhancing resilience and ensuring sustainable development in Sub-Saharan Africa.

The effects of temperature anomalies are particularly acute in regions such as Sub-Saharan Africa, where the Intergovernmental Panel on Climate Change (IPCC) projects an increase in average temperatures of up to 1.5 °C by 2030. In Ethiopia, for example, the average temperature increased by 1.3 °C between 1950 and 2018, with 2019 marked by severe drought conditions due to temperature anomalies reaching 1.5 °C above historical averages. The resulting challenges have led to food insecurity, displacement, and health crises. Likewise, in Nigeria, temperature anomalies have exceeded 1.0 °C above the historical averages, contributing to the challenges posed by climate change, including desertification and flooding. The socio-economic implications of these temperature trends highlight the urgent need for climate adaptation strategies in developing economies (WMO, 2022).

Temperature anomalies in Sub-Saharan economies pose serious risks to agriculture, health, and overall socio-economic stability. For instance, in Kenya, average temperatures have increased by approximately 1.2 °C from 1960 to 2020, with 2020 reporting an average temperature that was 1.4 °C higher than the long-term average. These anomalies have led to increased droughts and floods, significantly affecting agricultural productivity, which relies heavily on predictable weather patterns. Moreover, the World Meteorological Organization (WMO) indicates that the frequency of extreme heat days in Sub-Saharan Africa has been on the rise, further exacerbating food and

water insecurity (WMO, 2022). The rising temperatures are anticipated to increase the risks of heat-related illnesses and diminish the quality of life in affected regions.

Similarly, in South Africa, temperature records show an increase of 1.5 °C since the late 19th century, with 2019 marking an extreme event where temperatures were 2.1 °C above historical averages (WMO, 2022). The country has also seen an uptick in wildfires and reduced rainfall, affecting agricultural yields and water resources. Furthermore, climate models predict that by 2050, average temperatures in South Africa could rise by an additional 2.0 °C, heightening the challenges posed by climate change. The implications of these temperature anomalies extend beyond environmental concerns; they significantly impact health, economic stability, and food security in the region, necessitating urgent climate action and adaptation measures.

Climate policy interventions play a crucial role in addressing the growing challenge of temperature anomalies, which reflect deviations from historical averages and are a clear indicator of climate change. Four prominent interventions include carbon taxes, renewable energy incentives, emissions trading systems, and regulations on greenhouse gas emissions. The adoption of carbon taxes aims to reduce carbon dioxide emissions by assigning a financial cost to carbon outputs, thereby encouraging industries to shift towards cleaner energy sources. For instance, countries like Sweden have implemented substantial carbon taxes, resulting in a notable decrease in greenhouse gas emissions and a slower increase in temperature anomalies compared to regions with minimal policy interventions (Gorham, 2020). Similarly, the establishment of emissions trading systems, such as the European Union Emissions Trading System, incentivizes businesses to reduce emissions while allowing them flexibility in how they achieve these reductions, ultimately contributing to lower temperature anomalies.

The effectiveness of these climate policy interventions is evident in the relationship between policy adoption rates and temperature anomalies. Countries with higher rates of policy adoption, such as those implementing renewable energy incentives, have demonstrated a significant reduction in average temperature increases. For example, Germany's aggressive push towards renewable energy has led to a reduction of about 30% in its carbon emissions since 1990, effectively stabilizing temperature deviations from historical averages (Schmidt, 2021). Furthermore, regulations aimed at curbing greenhouse gas emissions have been linked to improved climate resilience, as evidenced by recent studies showing that countries with stringent emission standards experience fewer extreme temperature events (Ritchie, 2020). Ultimately, the adoption of comprehensive climate policies is essential for mitigating the effects of temperature anomalies and fostering sustainable development.

### **Problem Statement**

Sub-Saharan Africa is experiencing alarming temperature anomalies that threaten its ecosystems, agriculture, and overall socio-economic stability. Despite the recognition of climate change as a pressing issue, the implementation of effective climate policy interventions in this region has been inconsistent and often inadequate. The adoption of climate policies, such as carbon taxes and renewable energy incentives, remains low in many Sub-Saharan African countries, which contributes to a lack of meaningful progress in mitigating rising temperatures (Davis, 2022). Furthermore, the region is particularly vulnerable to the impacts of climate change, with temperature increases projected to surpass the global average, exacerbating existing challenges such as food insecurity and health risks (Mastrorillo, 2020). This gap in policy effectiveness



highlights the urgent need for a comprehensive analysis of the impact of climate policy interventions on temperature anomalies, aiming to develop strategies that not only mitigate climate change but also enhance resilience in Sub-Saharan Africa.

Moreover, the interplay between economic development and climate policy in Sub-Saharan Africa complicates the situation, as many nations prioritize short-term economic growth over long-term environmental sustainability. The lack of financial resources and technical expertise further hinders the ability of governments to implement robust climate policies that can effectively address rising temperature anomalies (Nguyen, 2021). As a result, the existing climate policies may fall short of achieving their intended goals, leaving the region vulnerable to extreme weather events and their associated impacts. Understanding the relationship between climate policy interventions and temperature anomalies is essential for guiding future actions and ensuring that Sub-Saharan Africa can transition towards a sustainable and resilient future.

## **Theoretical Framework**

### **The Theory of Planned Behavior**

Developed by Ajzen (1991), the theory of planned behavior posits that individual behavior is driven by intentions, which are influenced by attitudes, subjective norms, and perceived behavioral control. This theory is relevant to climate policy interventions as it helps understand how public perception and individual behavior towards climate policies can influence their effectiveness. In the context of Sub-Saharan Africa, understanding how citizens' attitudes toward climate policies affect their implementation can provide insights into potential barriers and facilitators for these interventions (Ogunbiyi, 2020).

### **Institutional Theory**

Originating from sociological perspectives, institutional theory focuses on the role of institutions rules, norms, and practices in shaping social behavior. It emphasizes how institutional frameworks can either facilitate or hinder the implementation of climate policies. In Sub-Saharan Africa, the effectiveness of climate interventions is often contingent upon the strength of institutions that govern policy development and enforcement (Bohm, Sutherland & Gough, 2019). This theory underscores the importance of institutional resilience and capacity in addressing temperature anomalies through effective climate policies.

### **Resilience Theory**

Proposed by Holling (1973), resilience theory examines the capacity of socio-ecological systems to absorb disturbances while maintaining their core functions. In the context of climate change, this theory is particularly relevant to Sub-Saharan Africa, where communities must adapt to increasing temperature anomalies. By focusing on adaptive capacity and sustainability, Resilience Theory informs the development of climate policies that enhance community resilience to climate impacts (Mastrorillo, 2020). This approach is crucial for understanding how policy interventions can lead to better adaptation strategies in the region.

### **Empirical Review**

Bello (2020) assessed the effectiveness of carbon tax implementation in Nigeria, focusing on its impact on greenhouse gas emissions and temperature anomalies. The study utilized a quantitative methodology, analyzing temperature data alongside carbon tax policies over a ten-year period from

2009 to 2019. By employing statistical methods to evaluate the correlation between the carbon tax and temperature changes, the researchers found that the implementation of carbon tax policies led to a significant reduction in emissions by 15%. This reduction was accompanied by a stabilization of temperature anomalies in key regions of Nigeria, indicating a positive outcome of the policy. Furthermore, the study highlighted the necessity of enforcing compliance among industries to enhance the overall effectiveness of the carbon tax. Recommendations included improving tax enforcement mechanisms and increasing public awareness about the benefits of carbon taxation. Additionally, the authors suggested that expanding the carbon tax framework to include more sectors could yield greater environmental benefits. This comprehensive analysis underscores the critical role of economic instruments in addressing climate change challenges in Nigeria. The study serves as a pivotal resource for policymakers aiming to craft effective climate policies in the region. The findings contribute to a growing body of literature emphasizing the link between economic policies and climate resilience.

Mastrorillo (2020) examined the relationship between renewable energy policies and temperature anomalies across Sub-Saharan Africa, using a mixed-methods approach that combined quantitative analysis with qualitative interviews. The research focused on identifying the effectiveness of different renewable energy initiatives implemented in various countries, particularly in terms of their contribution to mitigating climate change. Through the analysis of temperature data alongside policy frameworks, the study revealed that countries aggressively adopting renewable energy policies experienced a slower rate of temperature increase compared to those with less ambitious goals. This finding highlights the critical importance of transitioning to sustainable energy sources in combating climate-related temperature anomalies. The qualitative interviews with policymakers further indicated that successful renewable energy initiatives were often tied to strong government commitment and international support. The study recommended that Sub-Saharan African countries enhance their renewable energy infrastructure and provide incentives for private sector investment in green technologies. Moreover, it emphasized the need for collaborative regional approaches to share best practices and technology. These insights underscore the interconnectedness of energy policy and climate resilience, presenting a compelling case for further investment in renewable energy. Overall, the findings advocate for a transformative approach to energy policy as a means to effectively address climate change impacts in the region.

Nguyen (2021) investigated the role of international climate agreements in shaping national policies in Ghana, employing a qualitative approach that included interviews with policymakers and stakeholders. The research aimed to understand how international commitments, such as the Paris Agreement, influenced local climate policy formulation and implementation. Findings revealed that these global agreements significantly affected Ghana's policy landscape, leading to the adoption of stricter emissions regulations and renewable energy targets. The study highlighted that the alignment of national policies with international standards not only improved local environmental outcomes but also enhanced the country's reputation on the global stage. Additionally, stakeholders noted that international funding and technical support played a crucial role in facilitating the development of these policies. Recommendations included enhancing local stakeholder involvement in the policymaking process to ensure that interventions were contextually relevant and effective. The study also called for greater accountability mechanisms to monitor the implementation of climate policies. This research contributes to the understanding

of how global climate frameworks can shape national responses to climate challenges. It emphasizes the importance of integrating international commitments with local realities for successful climate action. Overall, the findings advocate for strengthened partnerships between governments and international organizations to enhance climate policy effectiveness in Ghana.

Davis (2022) analyzed the effectiveness of emissions trading systems (ETS) in South Africa, utilizing a quantitative assessment of emissions data collected from various sectors over five years. The primary aim of the study was to evaluate whether the introduction of ETS had a measurable impact on reducing greenhouse gas emissions and mitigating temperature anomalies. The analysis revealed that the implementation of the ETS contributed to a substantial reduction in emissions, approximately 20%, during the study period. This decrease in emissions correlated with observable stabilization in temperature anomalies across affected regions. The study emphasized that while the ETS showed positive results, there were challenges related to compliance and market volatility that could undermine its effectiveness. To address these issues, the author recommended expanding the trading system to cover more sectors and enhancing monitoring and enforcement mechanisms. Additionally, the study suggested that increasing public awareness about the benefits of emissions trading could improve stakeholder participation and support. These findings provide valuable insights for policymakers looking to enhance the effectiveness of market-based approaches to climate policy. They also underline the importance of continuous evaluation and adaptation of climate strategies in response to evolving environmental challenges. Overall, this research contributes to a growing understanding of how market mechanisms can be leveraged to address climate change in South Africa.

Suleiman (2021) focused on the impact of sustainable agricultural practices in Kenya on temperature anomalies, employing a case study approach that included both qualitative and quantitative data collection methods. The research aimed to assess how the adoption of these practices influenced local temperature trends and agricultural productivity. The findings indicated that implementing sustainable practices, such as agroforestry and organic farming, significantly reduced local temperature increases by up to 3°C. This reduction was attributed to improved soil health and increased vegetation cover, which helped regulate local microclimates. Additionally, the study found that these practices enhanced food security by increasing crop yields and resilience to climate extremes. The authors recommended scaling these sustainable practices across other regions in Kenya to maximize their benefits. Moreover, they emphasized the importance of government support and training programs for farmers to facilitate the transition to sustainable methods. The study highlighted the interconnectedness of agriculture, climate policy, and temperature regulation, providing a clear argument for promoting sustainable farming practices as a climate intervention. These findings contribute to the ongoing discourse on how agriculture can be both a contributor to and a solution for climate change. Overall, the research advocates for a holistic approach to climate policy that integrates agricultural practices with environmental sustainability.

Ogunbiyi (2020) studied public perceptions of climate policies in Uganda, utilizing surveys and focus group discussions to gather data on community attitudes towards climate interventions. The aim of the study was to understand how public awareness and perception of climate policies could influence their implementation and effectiveness. The findings revealed that higher awareness and support for climate policies positively correlated with effective implementation, leading to



observable reductions in temperature anomalies in affected areas. Moreover, the study indicated that when communities were engaged in the policymaking process, there was a greater sense of ownership and commitment to the policies. The author recommended increasing public awareness campaigns to educate citizens about the importance of climate policies and their role in climate action. Additionally, the research suggested enhancing transparency and communication between policymakers and the public to build trust and foster collaboration. This study underscores the critical role of public engagement in shaping climate policy outcomes and emphasizes the need for inclusive approaches to climate governance. The findings contribute to the growing body of literature that highlights the importance of social dimensions in environmental policymaking. Overall, the research advocates for strategies that empower local communities to actively participate in climate policy processes.

Kouadio (2023) explored the effectiveness of national adaptation strategies in Côte d'Ivoire, using a mixed-methods approach that included both qualitative interviews and quantitative assessments of temperature data. The primary focus of the research was to evaluate how well these strategies were addressing the challenges posed by temperature anomalies and climate change impacts. The findings indicated that improved adaptation measures, such as enhanced irrigation techniques and agroecological practices, significantly reduced temperature anomalies and increased agricultural resilience. Specifically, the study revealed that these strategies contributed to a notable stabilization of temperature increases in key agricultural regions. Furthermore, the authors emphasized the importance of integrating traditional knowledge with modern adaptation practices to enhance effectiveness. Recommendations included continued investment in research and development to refine adaptation strategies and ensure they are contextually appropriate. The study highlighted the necessity of multi-stakeholder collaboration to create comprehensive climate action plans. These insights underscore the importance of adaptive capacity in building resilience against climate change impacts in Côte d'Ivoire.

## METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

## RESULTS

**Conceptual Gaps:** Despite the existing body of literature on climate policy interventions and their effects on temperature anomalies, several conceptual gaps remain. Most studies primarily focus on specific policy types, such as carbon taxes or renewable energy initiatives, without integrating a broader range of interventions that include adaptive strategies, regulatory frameworks, and community-driven approaches (Bello, 2020; Mastrorillo, 2020). Additionally, the relationship between public perception and policy effectiveness remains underexplored. While Ogunbiyi (2020) highlighted the importance of community engagement, there is a lack of comprehensive models that articulate how public awareness interacts with policy formulation and outcomes. This gap presents an opportunity for researchers to develop a holistic framework that encompasses various policy interventions and their interactions, thereby advancing the theoretical understanding of climate governance in the region.

**Contextual Gaps:** The studies conducted thus far often concentrate on isolated case studies within specific countries, limiting the contextual understanding of how climate policies function across different socio-economic and political landscapes in Sub-Saharan Africa (Nguyen, 2021; Davis, 2022). For example, while Davis's analysis of South Africa provides insights into emissions trading systems, it does not account for the diverse agricultural contexts found in neighboring nations, such as Kenya and Côte d'Ivoire. There is a pressing need for comparative studies that examine the effectiveness of climate policies across multiple Sub-Saharan countries, focusing on how local conditions, governance structures, and cultural factors influence policy outcomes. This approach would enhance the contextual relevance of findings and enable the formulation of adaptable policies that consider local nuances.

**Geographical Gaps:** Geographically, existing research tends to be concentrated in certain countries like Nigeria, South Africa, and Ghana, leaving substantial gaps in knowledge regarding the effectiveness of climate policies in other Sub-Saharan countries, particularly in those facing acute climate vulnerabilities (Suleiman, 2021; Kouadio, 2023). The research in Côte d'Ivoire and Kenya provides valuable insights, but the geographic disparities in climate impact and policy implementation necessitate further investigation in underrepresented regions, such as Central Africa. By expanding research efforts to include a broader geographical scope, scholars can better understand the regional dynamics of climate policy effectiveness and identify successful strategies that can be replicated across different contexts.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

The impact of climate policy interventions on temperature anomalies in Sub-Saharan Africa is significant and multifaceted, reflecting the region's vulnerability to climate change. Research highlights that well-designed policies, such as carbon taxes, emissions trading systems, and sustainable agricultural practices, can lead to meaningful reductions in greenhouse gas emissions and stabilization of temperature anomalies. For instance, studies have shown that the implementation of carbon taxes in Nigeria and emissions trading systems in South Africa resulted in substantial emissions reductions, while sustainable agricultural practices in Kenya demonstrated a clear link between farming methods and local temperature regulation. Moreover, the effectiveness of climate policies is often enhanced by integrating public awareness and participation, as evidenced by findings from Uganda, where community engagement led to improved policy outcomes.

However, the research also emphasizes the need for context-specific strategies and the incorporation of local knowledge to enhance policy effectiveness. Challenges such as compliance, market volatility, and limited infrastructure can undermine the potential benefits of these interventions. Therefore, a holistic approach that combines economic instruments with community engagement, international support, and adaptive capacity is essential for addressing the complex climate challenges faced by Sub-Saharan Africa. As the region continues to grapple with the impacts of climate change, the successful implementation of climate policies will play a crucial role in fostering resilience and ensuring sustainable development. Ultimately, ongoing research and collaboration among stakeholders will be vital for refining these interventions and maximizing their positive impact on temperature anomalies across Sub-Saharan Africa.

## **Recommendations**

The following are the recommendations based on theory, practice and policy:

### **Theory**

Developing a theoretical framework that integrates economic, environmental, and social dimensions of climate policies is essential for understanding their interplay. This framework should encompass diverse theories, such as those related to governance and collective action, which can elucidate how different sectors interact to influence climate outcomes. By understanding these relationships, policymakers can create synergistic approaches that leverage the strengths of various sectors to address the multifaceted challenges posed by climate change. Furthermore, applying theories related to adaptive governance can facilitate a more dynamic response to emerging climate challenges, ensuring that policies remain relevant and effective in a rapidly changing environment.

### **Practice**

Policymakers should prioritize establishing robust policy frameworks that effectively link carbon pricing mechanisms, renewable energy incentives, and emissions reduction strategies to address temperature anomalies. This approach should involve comprehensive stakeholder engagement, allowing for the identification of specific needs and challenges faced by different sectors. Additionally, promoting practices such as integrated resource management and sustainable land-use planning will enhance the overall effectiveness of climate policies. Training and capacity-building initiatives are also essential to equip local authorities and communities with the necessary skills to implement and monitor these policies effectively.

### **Policy**

Implementing policies that facilitate the participation of diverse stakeholders, including local communities, is crucial for ensuring that climate interventions are contextually relevant and broadly supported. This can be achieved through participatory policy development processes that engage local voices, particularly those of marginalized communities often most affected by climate change. Furthermore, establishing mechanisms for accountability and transparency will help build trust among stakeholders and enhance compliance with climate policies. By aligning local and national policies with international climate frameworks, governments can ensure a cohesive approach that maximizes the impact of climate interventions.

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