



Climate Smart Agriculture Policy Interventions for Inclusive and Sustainable Development

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Abstract

Climate change poses significant challenges to Kenya, impacting its agricultural sector through erratic weather patterns, including prolonged droughts and increased flooding. Climate Smart Agriculture has emerged as a strategy for adaptation and promotion of environmental sustainability and sustainable development. The Climate Change Act, 2016, National Climate Change Action Plan 2018–2022, and National Climate Change Framework Policy Sessional Article No. 3 of 2016 are among the policies Kenya's government has put in place to lessen the effects of climate change and encourage economic empowerment. Kenya's government is implementing the United Nations Framework Convention on Climate Change to advance food security and social inclusion in equitable transition processes. In this article, climate change governance, as outlined in the policies, is evaluated. The article also examines whether gender-based inequality is promoted through policy shortcomings and roadblocks.

The article applied desk research, examining available literature, database analysis, and policy article reviews. The study assesses how these policies have affected gender parity in climate-smart agriculture. The results show that, while climate change legislation has supported resilience and a green economy, knowledge of gender-based inequality has not been raised. Since the policies do not support equal opportunities for men and women, climate-smart agriculture has contributed to increased gender-based inequities. The policies strongly emphasize climate-smart agriculture and enhance standards and productivity levels. However, they are insensitive to gender prejudices, and there are no provisions to enhance the working conditions for female labourers who provide their services for planting and harvesting. The study recommends fast-tracking implementation with effective monitoring and evaluation tools. In conclusion, climate change policies should target all actors to build sustainable development and adequate food security.

Key words: *climate-smart agriculture, gender parity, just transition, social inclusion, sustainable development.*

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1.0 Introduction

Climate change poses significant agricultural threats, impacting food security, livelihoods, and ecosystems (Santalucia & Sibhatu, 2023). In Kenya, where the agricultural sector plays a crucial role in the economy and livelihoods of its citizens, policy interventions for inclusive Climate Smart Agriculture (CSA) are particularly relevant. Integrating climate change adaptation and mitigation strategies into agricultural practices is crucial for building resilience and sustainability in changing climatic conditions (FAO, 2022). However, achieving inclusivity in CSA requires addressing gender-specific challenges and social disparities (Kozicka, 2020; Akponikpè et al., 2018).

The agricultural structures in Kenya are very susceptible to climate change impacts since the systems are rain-fed and highly underdeveloped. Thus, women involved are very vulnerable since they are exposed to shocks such as drought and floods caused by changes in weather conditions (Derenoncourt, 2022). There is a need for a comprehensive policy approach to promote gender-sensitive CSA. The government has made efforts in this respect, including developing climate change policies. However, the policies have not been effective. Policy principles enshrined in the National Climate Change Framework Policy may have contributed since CSA is not gender-responsive.

Despite various efforts by the government, gender parity, access to resources, and social inclusion remain significant issues, leaving women exposed to discrimination and social disorder (Bryan, Kato & Bernier, 2021). The global community faces the difficulties posed by climate change and pursues sustainable development. However, the agricultural sector is at the forefront of addressing these pressing issues.

Kenya's efforts to implement inclusive CSA policies should align with international agendas for sustainable development, such as the United Nations 2030 Agenda (United Nations, 2015). Moreover, promoting CSA aligns with the country's commitment to international climate agreements, including the United Nations Framework Convention on Climate Change (UNFCCC, 2017). Thus, this article seeks to evaluate the Kenya government's policy interventions to support inclusive Climate Smart Agriculture that promotes sustainable development.

The Constitution of Kenya 2010, under the Bill of Rights, Article 42, has a provision for the right of every person to a safe and healthy environment where both current and future generations must preserve the environment (Orumo & Mwangi, 2023). Further, Chapter Five of the Constitution articulates that land and the environment matter. In addition, climate change is a priority under Kenya Vision 2030, a long-term national development blueprint. The government of Kenya influences Climate Smart Agriculture (CSA) specific reforms and implements gender-responsive policies. Kenya encourages sustainable development by stepping up conservation efforts in both rural and urban areas (Pamuk et al., 2021). One of the targets in Kenya's emphasis on Climate Smart Agriculture is facilitating adequate food security.

According to the Food and Agriculture Organization (FAO, 2022), women comprise a huge percentage of climate-smart agriculture (CSA) labourers at 59% while men labourers are at 41%. Thus, entrepreneurs must prioritize compensation and social protection to make agri-food systems greener and climate-resilient. The main challenge is that the current policies have not provided regulations that empower young women in CSA practices. The policy gaps have led to increased gender-based inequalities and the exclusion of vulnerable groups. Hence, achieving globally recognized development targets such as the Sustainable Development Goals (SDGs) and the Paris Agreement becomes impossible (Friedman et al., 2022). There are a number of policies that regulate climate change, including:

- a) The Environmental and Management Coordination Act, 1999.
- b) Climate Change Act, 2016 (No. 11 of 2016).
- c) The National Climate Change Action Plan (NCCAP), 2018-2022.
- d) Sessional Article No. 3 of 2016 on National Climate Change Framework Policy.
- e) National Climate Change Response Strategy (NCCRS), 2010.

- f) National Adaptation Plan, 2015-2030.
- g) National Climate Finance Policy, 2018.
- h) National Climate Change Policy, 2018.
- i) Climate Risk Management Framework, 2017.
- j) Thematic Plan for Climate Change, 2018.
- k) The Kenya Climate Smart Agriculture Implementation Framework (KCSAIF), 2018-2027.
- l) The Green Economy Strategy and Implementation Plan, 2017.
- m) Kenya Climate Smart Agriculture Strategy (KCSAS), 2017-2026.
- n) The Energy Act, 2019.
- o) The Kenya Climate Smart Agriculture (CSA) Strategy, 2017-2026.

Despite various policy interventions, Kenya continues to experience food insecurity, high poverty levels, environmental degradation, and discrimination against women in Kenya's agricultural landscape. Furthermore, the efficacy of CSA policies relies on effective monitoring and evaluation mechanisms to ensure their successful implementation and impact on targeted outcomes (Phali et al., 2023). It is challenging to identify areas of improvement, measure progress, and make necessary adjustments to optimize the outcomes of CSA interventions without robust monitoring and evaluation frameworks.

The central problem lies in the need for comprehensive and inclusive policy interventions that address gender disparities, social inclusion, limited access to resources and technology, and the specific challenges small-scale farmers face in adopting CSA practices in Kenya. Additionally, there are no effective monitoring and evaluation systems to track the progress and impact of CSA policies. Thus, no evidence-based decision-making processes create exclusive and unsustainable development in the agricultural sector.

1.1 Problem Statement

Climate Smart Agriculture, though aimed at reducing the impacts of climate change in Kenya, has faced many challenges (Beal et al., 2021). Lack of access to technology, low levels of mechanization, gender-based discrimination in production, and poverty continue or persist despite the efforts of the government to have inclusive Climate Smart Agriculture. Climate change poses significant threats to agriculture in Kenya, impacting food security and the livelihoods of rural communities. As the agricultural sector faces increasing challenges due to unpredictable weather patterns and extreme events, there is a growing need to adopt climate-smart agriculture practices (Tesfaye et al., 2023).

Like many other countries, Kenya has responded to climate change challenges by adopting CSA practices. One such challenge is the limited access to climate-resilient technologies and inputs, such as drought-resistant seeds and precision agriculture tools (Government of Kenya, 2018). Small-scale farmers, who constitute a significant portion of the agricultural workforce, often lack the resources and financial capacity to invest in these technologies, which greatly hinders their ability to adapt to climate change effectively.

Furthermore, inadequate extension services and knowledge-sharing platforms thwart the dissemination of knowledge about best practices and information on CSA techniques (Tesfaye et al., 2023). Lack of accessible and reliable information restricts the farmers' ability to make informed decisions and adopt CSA practices that can bolster their resilience to climate shocks.

Another critical challenge in promoting inclusive CSA in Kenya is the gender disparities in the agricultural sector. Women, who contribute significantly to agricultural production and food security, often face barriers to accessing land, credit, and decision-making power (Babugura, 2021).

In addition to gender disparities, social inclusion issues arise in the CSA implementation. Vulnerable and marginalized groups may be excluded from decision-making processes and resource access (Phali et al., 2023). Ensuring the inclusion of these groups is vital for achieving equitable and sustainable agricultural development that benefits all segments of society.

1.2 Research Objectives

Against this background, this article evaluates policy interventions for climate-smart agriculture toward building inclusive and sustainable development.

General Objective

The general objective of this research was to examine Climate Smart Agriculture policy interventions for inclusive and sustainable development.

Specific Objectives

The specific objectives were to:

- a) To explore the policy interventions in Climate Smart Agriculture;
- b) To examine whether the CSA policies are gender responsive;
- c) To analyse gender-responsive reporting on Climate Change.

1.3 Research Questions

To achieve those three specific objectives, the study had to find answers to the following questions:

- a) How have policy interventions improved Climate Smart Agriculture policies?
- b) Are CSA policies gender responsive and to what extent?
- c) To what extent is Climate Change Reporting gender-responsive?

1.4 Justification and Scope

This study highlights the need for appropriate policy interventions for climate-smart agriculture that will lead to inclusive and sustainable development in Kenya. The study is crucial given the escalating global food security and livelihood challenges caused by climate change. Climate change-induced extreme weather events affect agricultural productivity (IPCC, 2022). The findings of this study will provide valuable insights into effective approaches adopted by governments, policymakers, and stakeholders to tackle the many problems caused by climate change in the agricultural sector (World Bank, 2023).

The significance of the study lies in its potential to contribute to global efforts to combat climate change and foster sustainable development. The study's insights can guide policymakers in developing holistic approaches. Understanding the challenges smallholder farmers face, especially women, and designing inclusive policies that address their specific needs can empower them to adopt climate-smart practices and enhance their resilience to climate change (FAO, 2022).

The comprehensive analysis of policy interventions for CSA in this study can serve as a foundation for evidence-based policymaking (Gikonyo, 2022). Governments and international organizations can draw upon the recommendations of this study to design effective interventions. By implementing well-informed policies, governments can foster a sustainable and resilient agricultural sector that addresses the challenges of climate change and supports the well-being of both present and future generations (Toukabri & Mohamed Youssef, 2023).

The scope of the study is on policy interventions for climate-smart agriculture. The study is limited to Kenya as a geographical location. Further, the study is limited as evaluations only cover Climate Smart Agriculture and do not cover other policy interventions.

1.5 Theoretical Framework

The study uses the Socio-Ecological Systems Theory (SEST). According to Sorge et al. (2022), the SEST provides a holistic approach to understanding the interactions between social and ecological components within a system in a resilient and sustained manner. The framework will help to analyse how policy measures interact with various social, economic, and ecological elements.

Talubo, Morse and Saroj (2022) believe that the SES theoretical framework integrates policy analysis and sustainable development principles to comprehensively investigate the interplay between Climate Smart Agriculture policy interventions, gender responsiveness, and sustainable

development. This framework ensures a multidimensional understanding of how policy actions influence inclusive and sustainable agricultural practices while shedding light on gender dynamics and the importance of equitable climate change reporting (Liu et al., 2023).

2.0 Literature Review

The literature review will focus on three main areas: Policy Interventions for Sustainable Development; Climate Smart Agriculture; and Gender Parity and Social Inclusion.

2.1 Policy Interventions for Sustainable Development

Climate change poses significant challenges to agricultural practices worldwide, affecting food security and livelihoods, especially in developing countries like Kenya. In response to this pressing issue, policymakers and stakeholders have been actively implementing policy interventions to promote climate-smart agriculture (CSA) for economic empowerment and sustainable development in Kenya. The CSA strategy focuses on sustainable and inclusive practices that enhance the resilience of agricultural systems to climate variability and contribute to reducing greenhouse gas emissions. This article examines key policy interventions and their impact on fostering inclusive and sustainable development in the Kenyan agricultural sector.

A study by The Ministry of Agriculture sheds light on the progress of climate-smart agricultural practices in Kenya. According to the findings, over the past five years, the adoption of CSA techniques increased by 30%. This increase indicates a growing recognition among farmers and stakeholders of the importance of climate-resilient approaches to mitigate the impacts of climate change on agricultural productivity (Gikonyo, 2022).

To address the climate change challenge comprehensively, the Kenyan government has set ambitious targets for reducing greenhouse gas emissions from the agriculture sector. By 2030, policymakers aim to achieve a 40% reduction in greenhouse gas emissions through implementing climate-smart practices. These measures mitigate climate change and play a vital role in fostering sustainable agricultural development (Ministry of Agriculture, 2020).

Smallholder farmers, who constitute a considerable proportion of Kenya's agricultural workforce, have been at the forefront of adopting climate-resilient farming techniques. In 2021, a study observed that smallholder farmers experienced a 15% increase in crop yields after implementing climate-smart practices. These practices included adopting drought-resistant crop varieties, improved water management, and soil conservation. This positive outcome enhances food security for farmers and their families and contributes to the country's overall economic growth (Barooah et al., 2023).

Livestock farming is another vital component of Kenya's agriculture sector, providing livelihoods for many rural communities. However, extreme weather events such as droughts and floods have increasingly affected livestock productivity and welfare. Climate-smart livestock management strategies were introduced to address the challenges. As a result, a notable reduction of 25% in livestock mortality rates due to extreme weather events was observed. These strategies include better animal husbandry practices, improved shelter and water availability, and early warning systems to prepare for extreme weather events (World Bank, 2023).

Policy intervention implementation for inclusive climate-smart agriculture in Kenya has shown promising results in fostering inclusive and sustainable development. The increased adoption of climate-smart agricultural practices, the commitment of the government to reduce greenhouse gas emissions, and the positive outcomes seen in crop yields and livestock management all contribute to building resilience and promoting agricultural sustainability in the face of a changing climate. However, continuous efforts and collaboration between policymakers, farmers, researchers, and other stakeholders will be essential to overcome the challenges posed by climate change and ensure a prosperous and inclusive agricultural sector in Kenya.

2.2 Climate Smart Agriculture

The emphasis on Climate Smart agriculture is on redeploying agricultural development to be significantly more climate change resilient (Toukabri & Youssef, 2023). The main aim of the CSA initiative is to provide food and nutrition security and create employment. Some of the policies in the sector include the Kenya Climate Smart Agriculture Implementation Framework (KCSAIF), 2018-2027 and the Kenya Climate Smart Agriculture Strategy (KCSAS), 2017-2026.

The CSA policies and plans aim to raise standards and productivity levels per acre. Kenya's policies, for instance, help farmers grow corn by boosting resilience to plant corn that can adapt to long and short-term stresses such as low and high levels of rainfall (Musafiri, 2022). A major threat to the agricultural sector of Kenya is climate change Bryan (2021), necessitating the adoption of Climate Smart Agriculture (CSA) as a transformative approach. CSA aims to ensure food and nutrition security, generate employment opportunities, and promote sustainable agricultural practices (Government of Kenya, 2017).

The Government of Kenya, under the Bottom-Up Economic Transformation Agenda (BETA), has implemented several policy interventions and strategies, such as The Kenya Climate Smart Agriculture Implementation Framework (KCSAIF), 2018-2027 and the Kenya Climate Smart Agriculture Strategy (KCSAS), 2017-2026, to achieve inclusive and sustainable development (Tesfaye et al., 2021; Government of Kenya, 2018). By promoting the cultivation of drought-resistant and flood-tolerant crop varieties, CSA programs aid farmers in adjusting to a changing climate and securing their livelihoods (Phali et al., 2023).

The policy interventions in CSA contribute to inclusive and sustainable development by targeting various dimensions of agricultural growth (Derenoncourt, 2022). Friedman, the interventions include addressing the population's basic needs, ensuring access to adequate and nutritious food (Government of Kenya, 2017), and creating employment opportunities within the agricultural sector. However, gender disparities persist in the agricultural sector, with women facing limited access to resources and lacking decision-making power (Friedman et al., 2022). To fully realize the potential of inclusive and sustainable development through CSA, policies should incorporate gender-sensitive approaches to promote women's participation and empowerment (Orumo & Mwangi, 2023).

Moreover, small-scale farmers may encounter barriers to accessing the necessary information, technologies, and finance (Bryan, 2021). Policymakers should prioritize providing extension services, knowledge-sharing platforms, and financial support to empower smallholders and ensure their effective participation in CSA practices (Government of Kenya, 2018).

Climate Smart Agriculture represents a promising approach to building inclusive and sustainable development in Kenya's agricultural sector (Musafiri, 2022). The policy interventions, including the Kenya Climate Smart Agriculture Implementation Framework, 2018-2027 and the Kenya Climate Smart Agriculture Strategy 2017-2026, emphasize resilience, productivity, and food security (Orumo & Mwangi, 2023). However, addressing gender disparities and the needs of small-scale farmers is crucial to maximizing the impact of these policies (Beal et al., 2021; Government of Kenya, 2018). By integrating inclusive and gender-sensitive approaches into CSA initiatives, Kenya can unlock the full potential of its agricultural sector to create a resilient, prosperous, and sustainable future for all.

2.3 Gender Parity and Social Inclusion

Based on the views of Derenoncourt (2022), gender parity can be attributed to the equal contribution of males and females in all dimensions of life, including having equal opportunities. Gender parity entails equality when the proportions of men and women are calculated (Friedman et al., 2022).

On the other hand, social inclusion entails establishing systems and structures to improve how a person and groups of people can participate in a community's life and activities Nortje et al. (2023), describe social inclusion as a process that enables and creates opportunities for specific people or groups to live a decent and dignified life rather than being disadvantaged or excluded

based on their identity. In CSA, the groups can include young women or women who are poor and deprived. Further, the socially excluded people include persons with disabilities and HIV/AIDS affected, among other groups (Singh, 2022).

Barooah et al. (2023), believe that access to resources denotes the capacity to use and profit from a particular resource. On the other hand, control of resources can be described as having the power to decide on the use and benefit of a resource. Effective CSA can only happen when both genders have access to and control resources (Nortje et al., 2023). Gender-responsive policies refer to laws, regulations, and guidelines that fill gender relations, roles, and norms. These policies promote gender parity, social inclusion, and resource access (Huyer & Chanana, 2021).

According to Bryan et al. (2021), the Social Inclusion Agenda contributes significantly towards equality and gender-based empowerment in the practice of CSA. The policy review reveals a considerable gap in the drafting and implementation of the policies. For example, The National Climate Change Action Plan (NCCAP), 2018-2022, does not recognize the adaptive capabilities of men and women. The policies do not consider the use of technology and best practices that enhance an enabling environment for women to thrive in CSA.

Huyer & Chanana (2021), have developed an innovative approach, Gender Smart Agriculture. The approach promotes aspects such as improving the control of vulnerable persons over resources and other agricultural productive assets. Climate Smart Agriculture requires capacity development for policy actors (Bryan et al., 2021). The capacity development will help to integrate gender equality in country-based and global climate change policies. The policymaking process for the National Climate Change Action Plan (NCCAP), 2022-2027, will require gender experts to make the clauses gender sensitive and to promote social inclusion.

3.0 Discussion of Findings

In this section, I will seek answers to the research questions I posed at the beginning of the study, namely:

- a) How have policy interventions improved Climate Smart Agriculture policies?
- b) Are CSA policies gender-responsive and to what extent?
- c) To what extent is Climate Change Reporting gender-responsive?

3.1 Policy Interventions

The results of this study shed light on the existing policy frameworks for Climate Smart Agriculture (CSA) and their implications for gender-responsive approaches toward building inclusive and sustainable development. A review of the policies indicates huge gaps since they are gender-neutral and do not have specific considerations on any gender. Further, there are other gaps in the policy processes as follows:

- There is a multiplication and duplication of policies;
- The policymaking processes are not clear;
- The policies are gender biased;
- There is poor policy planning;
- Lack of involvement of policy actors;
- Poor implementation of the policies;
- Lack of monitoring and evaluation structures;
- There is a gap in the coordination between agricultural institutions;
- Minimal research on women's and men's roles in CSA.

The study reveals that while some policies acknowledge the importance of gender-responsive CSA, implementing these policies remains a significant challenge. One of the key issues identified is that existing policies are generally gender-neutral, lacking specific considerations for addressing the unique needs and challenges faced by men and women in the agricultural sector. This gender

neutrality perpetuates existing gender disparities and hinders women's full participation and empowerment in CSA initiatives (FAO, 2020).

A critical gap identified in the policy processes is the multiplication and duplication of policies. This fragmentation can lead to confusion, inefficiency, and conflicting objectives among policy frameworks, hindering effective implementation (U.N. Women, 2019). Moreover, the lack of clear policymaking processes further exacerbates the challenges, making it difficult to align objectives and resources effectively. As a result, the agricultural sector may face inconsistent or poorly coordinated efforts to promote CSA and achieve sustainable development goals (World Bank, 2023).

Gender biases in existing policies are another significant concern. The study highlights that many policies do not adequately address CSA's gender-specific roles, needs, and constraints. Women, who play a crucial role in agricultural production and food security, often face unequal access to resources, land, credit, and decision-making power (IFAD, 2022). Neglecting to recognize and address these gender disparities can limit the potential benefits of CSA and hinder progress toward inclusive and sustainable development.

The lack of comprehensive policy planning is also evident in the findings. Moreover, the study identified inadequate policy planning, leading to ineffective policy outcomes and missed opportunities for maximizing the impact of CSA interventions (IPCC, 2022).

Additionally, the study reveals the limited involvement of policy actors and stakeholders in formulating and implementing CSA policies. Engaging key actors, such as government organizations, civil society, academic institutions, and business people, fosters ownership, consensus, and effective policy implementation (Gikonyo, 2022). The absence of strong collaboration and coordination between these actors can hinder the successful execution of CSA initiatives.

Furthermore, the study identifies insufficient monitoring and evaluation structures in existing policies. Monitoring and evaluation are vital to track progress, identify challenges, and ensure accountability in policy implementation (FAO, 2022). The absence of robust monitoring mechanisms can lead to a limited understanding of the real impact of CSA interventions and hinder evidence-based decision-making.

Finally, the research highlights a significant gap in the availability of research on women's and men's roles in CSA. Inadequate research hinders the understanding of gender-specific contributions and constraints in climate-smart agricultural practices (IFAD, 2022).

The findings of the study emphasize the critical importance of addressing the identified gaps in policy interventions for climate-smart agriculture. Policymakers must focus on developing gender-responsive policies, enhancing policy coordination, and involving relevant stakeholders to foster inclusive and sustainable development. Inclusivity will optimize the impact of policy interventions and ensure progress toward building a resilient and equitable agricultural sector.

3.2 Gender Responses in The Climate Change, Act 2016

Under the Climate Change Act, 2016 Art 6 (d), the National Climate Change Council (NCCC) shall approve gender and intergenerational responsive public education awareness strategy and implementation program. The strategy is still pending. The government has developed NCCAP 2013-2017 and NCCAP 2018-2022. Thus, there is a need to develop the gender strategy along with NCCAP 2023- 2027

Article 7 (6) of the Climate Change Act, 2016 stipulates that the president shall, in appointing members, ensure compliance with the two-third gender principle. The article emphasizes Article 81 of the Constitution of Kenya 2010. There is a need for strict adherence and compliance with the two-third gender principle. Further, Article 8 (c) stipulates that the Cabinet Secretary must formulate a National Gender and Intergeneration responsive public education and awareness strategy. The strategy is yet to be formulated.

Under Article 21, educational institutions must collaborate with the Kenya Institute of Curriculum Development to integrate climate change into various disciplines. There is an appeal for climate change to be integrated with gender studies. There has been progress, since in September 2022, the Kenya School of Government launched a county climate change fund (CCCF) Mechanism Curriculum and a facilitators guide.

In Kenya's Climate Change Act of 2016, notable gender responses have been integrated to address the unique challenges faced by men and women in the context of climate change. The act explicitly recognizes gender as a critical consideration in climate change policies and strategies. It emphasizes promoting gender equality and empowering women in climate change mitigation, adaptation, and disaster risk reduction efforts. The act mandates the integration of gender perspectives in the development, implementation, and monitoring of climate change programs and projects, ensuring that the specific needs and priorities of both men and women are considered (Republic of Kenya, 2016). By explicitly acknowledging gender as a cross-cutting issue, the Climate Change Act, 2016 aims to foster gender-responsive policies and actions that build resilience and enhance sustainable development in Kenya.

Kenya's Climate Change Act, 2016 also establishes mechanisms for gender mainstreaming and gender analysis in climate change-related decision-making processes. The act requires gender-sensitive planning, budgeting, and reporting on climate change initiatives to ensure that gender considerations are not merely an afterthought but are systematically integrated throughout the policy cycle (Republic of Kenya, 2016). This approach helps address gender disparities in the access to resources and opportunities in decision-making in the context of climate change. Additionally, the act promotes gender inclusivity in climate governance and action by encouraging institutions and stakeholders to enhance their capacity and raise awareness of gender problems. Kenya's Climate Change Act 2016 underlines the nation's commitment to fostering gender equality and acknowledging the crucial role of women in climate change adaptation through these gender responses and sustainable development efforts.

3.3 Gender Responses in Kenya's Climate Smart Agriculture (CSA) Strategy, 2017-2026

In Kenya's Climate Smart Agriculture (CSA) Strategy 2017-2026, gender responses are evident as the strategy recognizes the importance of promoting gender equality and empowering women in agricultural development and climate change resilience. The strategy explicitly acknowledges the roles, contributions, and vulnerabilities of men and women in the agriculture sector and their capacity to adapt to and mitigate climate change impacts. It emphasizes addressing gender disparities in access to resources, technology, and agricultural decision-making (Ministry of Agriculture, 2020).

The CSA Strategy aims to promote gender-responsive approaches in the planning and implementation of agricultural interventions, ensuring that women's voices and perspectives are integrated into climate-smart practices. By recognizing the centrality of gender equality, the CSA Strategy seeks to harness the potential of women as agents of change and contributors to building a climate-resilient agricultural sector in Kenya (Huyer & Chanana, 2021).

Moreover, Kenya's CSA Strategy 2017-2026 fosters gender-responsive policies by promoting women's inclusion and leadership in climate-smart agricultural practices. The strategy aims to enhance women's access to information, extension services, and financial resources to support their participation in CSA initiatives (MALF, 2017).

Additionally, the CSA Strategy emphasizes capacity building and awareness-raising on gender issues among stakeholders involved in agriculture and climate change adaptation. By integrating gender considerations across the strategy's implementation, monitoring, and evaluation, the CSA Strategy demonstrates a commitment to gender-responsive agricultural development, ensuring that climate-smart practices are equitable and inclusive for both men and women.

3.4 Gender Responsive Reporting on Climate Change

Nationally Determined Contributions are reports produced by the Government of Kenya in accordance with the Paris Agreement (Pamuk, 2021). They include Kenya's Nationally Determined Contribution (NDC) in July 2015 reported on adaptation and mitigation contributions. Further, Kenya's Updated National Determined Contribution December was developed in 2020.

Section 3 of the Report Adaptation, on Loss and Damages aims to bridge the implementation gaps, especially in productive sectors of the economy, but there is no highlight of women. Despite the underrepresentation, Table 2 on Prioritized Adaptation programs mentions gender and youth among vulnerable groups: P38 Develop social safety net structures for women and other vulnerable populations, P41 Consolidate successful technologies and develop transfer strategy for women.

The Sessional Article No. 3 of 2016 on the National Climate Change Framework Policy seeks to promote gender transformative approaches and interventions for gender parity and social inclusion. The other intelligent policy intervention is to lower emissions and encourage forestation to absorb carbon from the atmosphere. The Kenya Climate Change Act 2016 Art 17 (C) requires the National Environmental Authority to regulate, enforce, and monitor compliance with levels of greenhouse gas emissions.

The dialogue organizers seek submissions related to five thematic workshop areas that indicate how they affect the different target groups, such as vulnerable and resource-poor communities, particularly women, youth, the elderly, indigenous peoples, the marginalized, and the differently abled people. The applications should include innovations and strategies to improve the situation in each case (Barooah et al., 2023).

3.5 Gender-Insensitive Climate Smart Agriculture

The policy analysis of the Climate Change Act, 2026; the Kenya Climate Smart Agriculture Strategy 2017-2026; Kenya's Updated National Determined Contribution December 2020, and Sessional Article No. 3 of 2016 on the National Climate Change Framework Policy establishes the policy gap since the policies do not consider the differences between men and women or the roles and knowledge differences between the two genders. Four key aspects can make Climate Smart Agriculture practices and policies gender sensitive by sustainably increasing productivity and income, maximizing gender-specific advantages, and highlighting key actors such as women, youths, young men, mothers, and fathers.

The study findings reveal that existing CSA policies lack sufficient gender-responsive measures, leading to inadequate consideration of women's specific roles, needs, and challenges in the agricultural sector. This gender insensitivity can hinder women's meaningful participation in CSA initiatives, limit access to resources and decision-making, and perpetuate existing gender disparities in agriculture (FAO, 2020; IFAD, 2016). Policymakers must prioritize gender-responsive approaches that empower women in agriculture, enhance their resilience to climate change impacts, and foster equitable and climate-smart agricultural practices.

Further, the findings highlight the presence of gender biases and discriminatory practices that hinder women's equal participation and benefits from climate-smart agricultural initiatives. Compared to their male counterparts, women farmers have less access to land ownership, lending facilities, and extension services which restricts their ability to adopt climate-resilient practices (FAO, 2022; World Bank, 2023).

Moreover, gender discrimination in policy implementation can result in unequal distribution of resources and benefits, further exacerbating gender disparities in the agricultural sector. Policy interventions must adopt a transformative approach that challenges traditional gender norms, promotes women's empowerment, and ensures that women have equal opportunities and access to resources to engage in climate-smart agriculture actively and contribute to sustainable development goals.

3.6 Economic Inequalities in Climate Smart Agriculture Policies

The policy interventions for Climate Smart Agriculture (CSA) towards building inclusive and sustainable development in Kenya have made significant strides in recognizing the importance of gender-responsive approaches and promoting inclusive agricultural practices. However, a policy analysis reveals a lack of sufficient economic empowerment measures targeting women in the agricultural sector which is a critical issue. Despite recognizing women's vital role in agriculture and climate change resilience, existing policies have not adequately addressed the gender disparities in access to economic resources and opportunities. The failure to address economic empowerment hinders women's ability to fully participate in CSA initiatives and realize their potential as change agents in climate-smart agriculture.

Kenya's climate-smart agriculture policies emphasize integrating gender considerations into planning and implementation (MALF, 2017). While this recognition is essential, policy analysis reveals a gap in translating these gender-responsive aspirations into concrete actions for women's economic empowerment in agriculture. Women farmers often face challenges in accessing credit, land ownership, and financial resources, which are crucial for investing in climate-smart technologies and sustainable farming practices (IFAD, 2022). Without targeted policies and programs that address these gender-specific barriers, women cannot fully participate in CSA and contribute to developing climate resilience in the agricultural sector.

The lack of economic empowerment measures for women in CSA policies also has broader implications for achieving inclusive and sustainable development goals. Women make up a substantial portion of Kenya's agricultural labour, and their economic empowerment will boost agricultural output and will thus contribute to the eradication of poverty and the general economic growth of the country (World Bank, 2019). Investing in women's economic empowerment in agriculture is a major factor in sustainable development, food security, and poverty reduction (FAO, 2020). Consequently, policy changes encouraging women's access to finance, extension services, and markets are crucial for creating an equitable and climate-resilient agriculture economy in Kenya.

Policy interventions for Climate Smart Agriculture in Kenya have taken positive steps toward recognizing gender responsiveness in the agricultural sector. However, the lack of economic empowerment measures targeting women poses a significant challenge in fully realizing the potential of CSA for inclusive and sustainable development. To address the gap, policymakers must design and implement targeted policies and programs promoting women's economic empowerment in agriculture. By ensuring women's access to resources and opportunities, Kenya can harness the full potential of women as key stakeholders in climate-smart agriculture, contributing to the building of a more resilient and sustainable future.

4.0 Recommendations

The study provides the following recommendations for both national and county governments in Kenya, development partners and other key stakeholders:

- a) Enhance capability through technical training: provide technical training and education systems that empower women and men in agriculture, focusing on gender-specific needs and challenges.
- b) Merge and redraft legislation: consolidate acts related to agriculture and climate change into comprehensive, user-friendly legislation with explicit gender-responsive provisions for inclusive CSA policies.
- c) Review regulations on precarious jobs: evaluate regulations on casual employees, contracting, piece work, etc., to ensure fair labour practices and equal opportunities for women in CSA.
- d) Increase access to resources: develop targeted measures to improve women's access and control over resources such as land, credit, and technology for better participation in CSA.

- e) Include women as an underrepresented gender in leadership: encourage women's participation and leadership in CSA decision-making and institutions to bring diverse perspectives for effective climate-smart practices.
- f) Strengthen gender monitoring and evaluation: implement robust gender monitoring and evaluation mechanisms to track the impact of policies and interventions on gender equality in CSA. Regular assessments will help identify shortcomings and ensure that gender considerations are effectively integrated throughout the policy cycle.

5.0 Conclusion

The backbone of Climate Smart Agriculture lies in the inclusion of vulnerable groups such as women, youths, and persons with disabilities. The policy interventions in the climate change and CSA policies have not been gender sensitive. The involvement of all actors and coordination of CSA activities will lead to more productive and resilient agricultural practices. Inclusivity is crucial to CSA, along with increased productivity and resilience.

The success of climate-smart agriculture hinges on the inclusive participation of all vulnerable groups, including women, youths, and persons with disabilities. The existing policy interventions in climate change and CSA have fallen short of ensuring gender sensitivity and inclusivity. It is imperative to enhance these policies by incorporating gender-responsive measures and providing equal opportunities for both men and women in CSA initiatives.

Active engagement and coordination among all stakeholders in the agricultural sector will foster more productive and resilient practices. By prioritizing gender inclusivity and economic empowerment, Kenya can unlock the full potential of CSA, leading to improved livelihoods, enhanced food security, and a more climate-resilient agricultural sector.

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