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CARBON FINANCE READINESS: A REVIEW OF INSTITUTIONAL FRAMEWORKS AND POLICIES IN KENYA

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ABSTRACT

Purpose of Study: Carbon finance is vital to global efforts to combat climate change, particularly in developing regions like Africa. It facilitates investments in climate-smart projects that are essential for reducing greenhouse gas emissions and enhancing resilience to climate impacts. As countries and corporations strive to achieve the Paris Agreement's goal of limiting global warming to well below 2°C, adopting carbon finance mechanisms becomes increasingly critical.

Problem Statement: Africa has encountered significant challenges in accessing and utilizing carbon finance effectively. This study examines the institutional frameworks and policy environments that influence Kenya's readiness for carbon finance.

Methodology: A comprehensive review of scholarly articles, government reports, and documents from development partners was conducted using keywords such as "Kenya," "carbon finance," "climate change," and "institutional frameworks."

Result: The findings indicate that while Kenya has made considerable progress in establishing carbon-related policies, legislation, and institutions, several gaps remain. These include challenges in data management, policy alignment, and mobilizing private-sector investments.

Recommendation: Addressing these issues is crucial to enhancing Kenya's access to carbon finance and promoting sustainable development. This review is valuable for the Kenyan government, development partners, and the private sector involved in climate finance initiatives.

Keywords: *Carbon Finance, Climate Change, Institutional frameworks, Sustainable Development*

INTRODUCTION

Global efforts to mitigate climate change have increasingly recognized carbon finance as a crucial tool for reducing greenhouse gas (GHG) emissions (Chang, Wang, Xiang & Liu, 2021). Carbon finance refers to financial mechanisms and market-based tools such as carbon pricing, carbon markets, and emission reduction credits, designed to incentivize the reduction of carbon emissions (Li, Liu, Song, Li & Guo, 2021). In 2022, the value of the global carbon market surged to approximately $865 billion, a 164% increase from 2021, largely driven by stricter climate commitments and the expansion of carbon trading schemes, particularly in Europe and North America. This rapid growth reflects the increasing adoption of carbon finance mechanisms as countries and corporations strive to meet the Paris Agreement's goal of limiting global warming to well below 2°C. Africa, with its vast carbon sequestration potential and abundant renewable energy resources, is increasingly viewed as a key region for carbon finance initiatives (International Energy Agency, 2023). Although Africa contributes less than 4% of global GHG emissions, it stands to gain significantly from carbon finance through projects related to reforestation, afforestation, and renewable energy. However, the continent's participation in carbon markets remains low, with African countries accounting for only about 2% of global carbon credit transactions as of 2023. This limited engagement is attributed to factors such as inadequate technical capacity, regulatory barriers, and the high costs associated with developing and verifying carbon offset projects.

Global efforts to combat climate change have revealed significant regional disparities in carbon finance readiness, largely driven by differences in economic development, policy frameworks, and technological access (World Bank, 2023). High-income countries, especially in Europe and North America, dominate the carbon finance landscape, accounting for over 80% of global carbon credit issuances as of 2022, while low- and middle-income countries, including those in Africa, receive less than 5% of global carbon finance flows. For instance, Europe's Emissions Trading System (ETS), valued at over $760 billion in 2021, Africa's participation in global carbon markets is relatively small, amounting to less than $10 billion. (International Carbon Action Partnership, 2022). To address these disparities, global and regional initiatives have been launched, including the Clean Development Mechanism (CDM) and the Green Climate Fund (GCF) under the United Nations Framework Convention on Climate Change (UNFCCC), which have collectively mobilized over $50 billion by 2023 for carbon finance projects in developing countries (UNFCCC, 2023). The African Development Bank (AfDB) has also pledged $25 billion in climate finance between 2020 and 2025, with a focus on carbon finance initiatives (AfDB, 2023). These efforts aim to close the financial and capacity gaps that limit low- and middle-income countries' participation in global carbon markets, promoting a more equitable distribution of carbon finance benefits.

In Sub-Saharan Africa, carbon finance readiness varies significantly across countries due to differences in economic development, institutional capacity, and access to finance (Mungai, Ndiritu & Da Silva, 2022). Countries like Kenya and Ethiopia have made notable progress, particularly through large-scale afforestation, reforestation, and renewable energy projects that generate carbon credits under international frameworks such as the Clean Development Mechanism (CDM) and REDD+ (Reducing Emissions from Deforestation and Forest Degradation). For instance, Kenya's participation in the CDM has led to projects like geothermal energy development, which helps reduce emissions and generate carbon credits. However, such successes are not widespread, with many Sub-Saharan countries lacking the necessary

infrastructure, regulatory frameworks, and financial mechanisms to fully engage in global carbon markets (World Bank, 2021). The main challenges hindering carbon finance readiness in the region include weak regulatory environments, limited financial and technical capacity, and restricted access to international carbon markets (African Development Bank, 2020). These barriers are exacerbated by the region's vulnerability to climate change impacts, which often diverts attention and resources from long-term mitigation strategies such as carbon finance. Despite these challenges, there are opportunities to enhance carbon finance readiness in Sub-Saharan Africa through capacity-building programs, regional cooperation, and the development of financial instruments tailored to local contexts (UNFCCC, 2021). These efforts are essential for ensuring that more countries in the region can participate in and benefit from global carbon finance mechanisms.

The institutional framework for carbon finance readiness includes a range of stakeholders such as government agencies, private sector entities, and civil society organizations, all working together to promote carbon finance initiatives (International Energy Agency, 2022). A critical element of this framework is the establishment of a Designated National Authority (DNA), responsible for approving carbon reduction projects under mechanisms like the Clean Development Mechanism (CDM) and ensuring alignment with national sustainable development goals. As of 2023, more than 150 countries had set up DNAs, reflecting the global recognition of their importance (UNFCCC, 2023). However, the effectiveness of these DNAs varies significantly, with some lacking the technical expertise, financial resources, or legal authority to fully carry out their responsibilities.

Policy frameworks also play a crucial role in creating enabling environments for carbon finance. These frameworks include national climate strategies, carbon pricing mechanisms, and regulations governing the monitoring, reporting, and verification (MRV) of emissions reductions. According to the World Bank's 2021 "State and Trends of Carbon Pricing" report, 65 carbon pricing programs were either operational or scheduled for implementation, covering approximately 22% of global greenhouse gas emissions (World Bank, 2021). However, the report also highlights disparities in policy readiness, with many developing countries still lacking the legal and regulatory infrastructure needed to engage in carbon finance programs fully. Addressing these gaps is critical to improving carbon finance readiness and ensuring broader participation in global carbon markets.

Capacity building plays a pivotal role in enhancing carbon finance readiness, particularly in developing countries. This process involves equipping stakeholders with technical skills such as greenhouse gas accounting, project design, and navigating carbon market operations. International organizations and bilateral donors have made significant investments in capacity-building programs. For example, the World Bank's Partnership for Market Readiness (PMR) provided over $120 million in grants to 23 countries between 2011 and 2021 to support their efforts in preparing for carbon markets and implementing carbon pricing mechanisms (World Bank, 2021). Despite these initiatives, significant capacity gaps remain, especially in the least developed countries (LDCs) and small island developing states (SIDS). According to the UNFCCC Secretariat (2020), only about 30% of developing countries had sufficient capacity to effectively engage in international carbon markets, leaving many countries unable to fully capitalize on carbon finance opportunities. Closing these capacity gaps is essential for enabling broader participation in carbon markets and ensuring that all countries can benefit from global climate finance mechanisms (Streck, 2020; UNFCCC, 2020).

The National Climate Change Action Plan (NCCAP) 2013–2017 emphasized the Clean Development Mechanism (CDM) as a primary tool for mobilizing mitigation finance, reflecting its centrality under the Kyoto Protocol. While the CDM played a significant role in attracting climate finance, the reliance on this mechanism has limited the diversification of funding sources for climate action, especially for adaptation efforts (Government of Kenya, 2020). This focus on CDM alone risks constraining Kenya's broader climate finance potential, as the mechanism primarily targets mitigation, leaving gaps in funding for adaptation, resilience-building, and other sustainable development goals. Recognizing this limitation, the Kenyan government has identified the need to explore and integrate additional sources of climate finance, including newer mechanisms under the Paris Agreement, such as Article 6 market-based mechanisms and the Green Climate Fund (GCF). According to the Kenya National Climate Finance Policy (2018), broadening financial instruments could unlock significant resources, particularly through leveraging private sector investments, developing carbon pricing schemes, and accessing bilateral and multilateral climate funds.

Challenges related to climate finance remain critical. A World Bank (2021) report highlights that financing gaps persist across all sectors, impeding Kenya's ability to meet its Nationally Determined Contributions (NDCs). The need for a comprehensive, multi-source climate finance strategy is apparent, one that incorporates innovative tools such as green bonds, blended finance, and public-private partnerships (PPPs) to enhance the mobilization of funds. Kenya's NCCAP (2018-2022) calls for deeper collaboration with development partners, international financial institutions, and the private sector to ensure sustainable and diversified funding. The country must strategically position itself to access a variety of carbon finance opportunities, ensuring a robust financial foundation for achieving its long-term climate goals (Ulpiani, Rebolledo, Vetters, Florio & Bertoldi, 2023). Expanding beyond CDM, these efforts will enhance Kenya's readiness for carbon finance, while addressing adaptation and mitigation needs.

Kenya Vision 2030, the country's long-term development blueprint, emphasizes sustainable social, economic, and environmental development. It underscores the importance of creating a clean and secure environment, which is essential for achieving social and economic progress (Government of Kenya, 2007). While climate finance has the potential to significantly contribute to the realization of Vision 2030 through climate-smart investments, the document does not explicitly address the mechanisms for mobilizing and structuring climate finance. This absence of a comprehensive climate finance framework, including specific financial needs and strategies for raising the necessary funds, highlights a critical gap (Ongugo, Langat, Oeba, Kimondo, Owuor, Njuguna & Russell, 2014; The National Treasury, 2017). In response to this gap, Kenya introduced the National Climate Finance Policy in 2018, providing a structured framework that outlines the governance, mobilization, and management of climate finance. This policy aims to align the country's climate finance efforts with its broader development goals, ensuring that funding is available to support mitigation and adaptation projects (The National Treasury, 2018). It identifies key sectors such as energy, agriculture, and forestry, and delineates the roles of government, the private sector, and international development partners in financing climate action (Bowman & Steenmans, 2019).

The policy also addresses institutional frameworks, detailing the roles of stakeholders such as the Climate Change Directorate and the National Treasury in coordinating efforts to mobilize climate finance from various sources, including multilateral funds like the Green Climate Fund (GCF) and private sector investments (The National Treasury, 2021). This approach is essential for ensuring

that climate finance supports sustainable development and enhances Kenya's resilience to climate change impacts. By filling the gaps left by Vision 2030, the National Climate Finance Policy serves as a crucial tool for mobilizing resources and aligning Kenya's climate actions with international agreements such as the Paris Agreement, ultimately contributing to the country's long-term sustainability goals (Government of Kenya, 2018).

MATERIAL AND METHODS

This study assesses Carbon Finance Readiness (CFR) in Kenya by conducting an in-depth review of relevant institutional frameworks, policies, and legislation. The research incorporates an extensive analysis of publicly available scientific research, government policies, and reports from multilateral agencies, focusing on carbon finance in the Kenyan context. To identify relevant materials, a targeted search was conducted on academic databases like Google Scholar, JSTOR, and ScienceDirect using keywords such as "carbon finance," "institutional frameworks," "climate change policy," "climate mitigation," "climate adaptation," and "Kenya." These sources provided a broad spectrum of scientific articles, policy papers, and institutional reports. In addition to academic sources, primary documents from key Kenyan governmental institutions were collected. These institutions included the Ministry of Environment and Forestry (MoEF), the National Environmental Management Authority (NEMA), the Climate Change Directorate (CCD), and the Kenya Forestry Research Institute (KEFRI). Reports and documents from these bodies were critical for understanding Kenya's legal and regulatory environment surrounding carbon finance. For instance, the National Climate Change Action Plan (NCCAP) 2018-2022 from MoEF offers a framework for Kenya's climate change priorities, while NEMA's Annual Environmental Reports provide insights into the country's environmental management efforts and challenges (Government of Kenya, 2020).

Additionally, reports from global institutions, including the World Bank, the United Nations Framework Convention on Climate Change (UNFCCC), and the African Development Bank (AfDB), were included. These reports provide a global and regional context for carbon finance, outlining Kenya's role within international carbon markets and climate finance mechanisms. For example, the UNFCCC (2020) highlights capacity-building challenges in developing countries, while the World Bank's Partnership for Market Readiness (2021) outlines Kenya's progress in building a carbon finance infrastructure.

The initial query yielded around 450 publications, which were then filtered based on relevance to carbon finance readiness and institutional frameworks in Kenya. Further refinements were made using specific keywords like "carbon finance readiness," "carbon policy," "institutional frameworks," and "climate finance legislation." After this filtering process, 20 key documents were selected for detailed review. These documents included legislative texts, government reports, and scholarly articles that provided insights into Kenya's institutional frameworks for carbon finance. The selected documents were thoroughly reviewed to assess gaps in carbon finance policies and institutional frameworks. The review focused on instances where policy documents identified barriers to effective carbon financing, particularly challenges in mobilizing financial resources, gaps in institutional capacity, and inadequacies in governance structures. When proposed mechanisms were found insufficient to address these challenges, they were categorized as gaps in Kenya's carbon finance readiness.

The legislative review also examined whether successive policies built upon or replaced previous frameworks. For example, the Climate Change Act (2016) and subsequent policies were assessed

for coherence and operational linkages. The findings, including identified policy gaps and institutional challenges, are presented in a tabular format to summarize the key areas where Kenya must enhance its carbon finance readiness. These improvements are essential for Kenya to effectively mobilize carbon finance for both mitigation and adaptation, as outlined in global agreements like the Paris Agreement.

RESULTS AND DISCUSSION

Carbon-Related Policies

Carbon-related policies are pivotal in global efforts to mitigate climate change and transition towards low-carbon economies. Many countries have established policy frameworks to regulate carbon emissions, encourage renewable energy use, and incentivize investments in climate-smart technologies (Zhou, Cao, Dong & Zhen, 2023). For instance, the European Union (EU) has implemented its Emissions Trading System (ETS), which is the world's largest carbon market. The EU's ETS has been instrumental in reducing greenhouse gas (GHG) emissions by approximately 21% from 2005 to 2020, illustrating the success of integrating regulatory frameworks with market-based instruments (Baboukardos, Kopita, Ranegaard & Demetriades, 2024). Similarly, countries like Canada and Japan have introduced carbon pricing mechanisms that not only reduce emissions but also generate substantial revenue for reinvestment into green technologies and climate adaptation projects. In Canada, the federal carbon pricing system has been effective in lowering carbon pollution while supporting climate-friendly investments (Erdoğan, 2023). Japan's carbon tax, combined with its cap-and-trade system, has contributed to significant reductions in GHG emissions and fostered the development of innovative green technologies (Erdoğan, 2023). However, the effectiveness of these policies varies significantly across regions due to differences in economic capacities, governance structures, and policy implementations. For example, while developed countries often have more robust frameworks and resources to implement and benefit from such policies, developing countries may face challenges related to institutional capacity and financial constraints. These disparities highlight the need for tailored approaches that address specific regional contexts and support equitable global climate action.

In high-income countries, well-established legal and institutional frameworks have facilitated the successful implementation of carbon finance mechanisms, leading to measurable reductions in carbon emissions (Oduro & Taylor, 2023). For example, despite political challenges, the United States has made significant progress at the state level, with California's cap-and-trade program serving as a model for achieving emissions reductions while fostering economic growth. This program has been lauded for its ability to cut greenhouse gas emissions by over 30% since its inception while generating billions in revenue for clean energy investments (World Bank, 2023). In contrast, low- and middle-income countries often face significant challenges in implementing carbon-related policies due to constraints such as limited financial resources, insufficient institutional capacity, and competing development priorities (Gimba, Alhassan, Ozdeser, Ghardallou, Seraj & Usman, 2023). These barriers have slowed the integration of carbon finance into their climate policy frameworks, underscoring the need for international support and capacity-building initiatives. Enhanced financial and technical assistance can improve carbon finance readiness in these regions, helping them to mobilize climate finance and transition towards low-carbon economies. Kenya's national policies and strategies are crucial in shaping the country's readiness for carbon finance by establishing institutional frameworks that can attract climate-sensitive investments. The Climate Change Act (2016) and the National Climate Change Action

Plan (NCCAP) (2018–2022) provide key foundations for managing climate finance and implementing mitigation strategies (Baboukardos, Kopita, Ranegaard & Demetriades, 2024). However, further strengthening of these frameworks is necessary to fully capitalize on carbon finance opportunities and achieve Kenya's climate goals.

The Constitution of Kenya, 2010 serves as the foundation for environmental protection, asserting every citizen's right to a clean and healthy environment (Government of Kenya, 2019). This constitutional mandate is pivotal in shaping policies that support carbon finance by placing a legal obligation on the government to establish frameworks aimed at reducing greenhouse gas (GHG) emissions. Following this, the Climate Change Act of 2016 and the National Climate Change Action Plan (NCCAP) were introduced to operationalize these constitutional goals. The NCCAP, first implemented for the period 2013–2017 and later updated, has been a cornerstone in Kenya's strategy to tackle climate change through mitigation and adaptation initiatives. It outlines specific approaches, including the promotion of carbon mitigation projects such as the Clean Development Mechanism (CDM), a tool under the Kyoto Protocol that allows countries to implement emission reduction projects (Government of Kenya, 2016a). While CDM projects have played a significant role in mobilizing funds for GHG reduction, they have predominantly focused on mitigation finance, with limited attention given to broader carbon finance strategies. This reliance on CDM mechanisms, as reported by Bernstein (2023), has constrained Kenya's overall carbon finance readiness by not fully exploring other potential sources of climate finance, such as green bonds and private sector investments. To improve carbon finance readiness, there is a growing recognition of the need for more diverse approaches that go beyond CDM. Integrating alternative mechanisms, such as the growing green bond market and scaling up private sector involvement, can significantly enhance Kenya's capacity to mobilize carbon finance and support its broader climate goals (World Bank, 2022).

Kenya's Vision 2030, the country's long-term development blueprint, underscores the importance of achieving sustainable economic growth within a clean and secure environment. This vision is structured around three pillars: economic, social, and political, with the social pillar recognizing the role of climate finance in fostering environmental sustainability through investments in climate-smart projects. Vision 2030 highlights the need to integrate environmental conservation into national planning, but despite this recognition, it falls short of providing a detailed framework for mobilizing carbon finance or specific strategies for leveraging global climate funds (Purdon, 2024; The National Treasury, 2017). The lack of a well-defined carbon finance framework within Vision 2030 presents a significant gap. Semieniuk, Campiglio, Mercure, Volz, and Edwards (2021) argue that a clear and robust institutional framework is essential for effectively implementing carbon finance programs, particularly in developing economies. The absence of such a framework in Kenya's Vision 2030 is likely to hinder the country's ability to attract and manage climate finance from both the public and private sectors. Addressing this gap requires the development of an institutional structure that outlines the roles of different stakeholders including the government, private sector, and international partners in mobilizing funds for climate-related projects. By building an effective governance structure and incentivizing private sector investment, Kenya can better position itself to achieve its carbon finance and climate goals as part of its broader Vision 2030 aspirations.

The Kenya National Adaptation Plan (KNAP) 2015–2030 serves as a crucial policy document, building on the groundwork laid by the National Climate Change Action Plan (NCCAP) and the National Climate Change Response Strategy (NCCRS). KNAP's primary objective is to strengthen

the country's resilience to climate change impacts through sector-specific adaptation measures. However, despite its detailed analysis of adaptation needs in areas such as agriculture, water resources, and infrastructure, KNAP falls short of adequately addressing the financial mechanisms required to support these adaptation programs (Government of Kenya, 2023). The plan identifies a significant financial deficit in funding for adaptation projects, which poses a substantial challenge to the country's ability to meet its climate objectives. The lack of sufficient funding is a common hurdle in many developing nations, where adaptation projects often struggle to secure the necessary financial support due to limited domestic resources and competing development priorities. To overcome this financial shortfall, Kenya needs to develop integrated strategies to mobilize domestic and international resources for adaptation. This could include linking adaptation finance with broader carbon finance mechanisms, such as green bonds, private sector investments, and multilateral climate funds. By leveraging these sources of finance, Kenya can bridge the existing financial gap and enhance the effectiveness of its adaptation programs, ensuring that they are sufficiently resourced to meet the demands of climate resilience.

The enactment of the Climate Change Act in 2016 indeed represented a pivotal moment in Kenya's efforts to combat climate change. This legislation set the stage for a more structured approach to climate governance by establishing key institutions like the Climate Change Council and the Climate Change Directorate. These bodies are tasked with coordinating climate change actions, ensuring policy coherence, and, crucially, mobilizing climate finance to support mitigation and adaptation projects. The Act plays an instrumental role in mainstreaming climate change into both national and county-level development planning, thereby promoting better institutional coordination and aligning policies with climate goals. However, while the Act provides a robust legal framework, its implementation has encountered several obstacles. One of the most pressing challenges has been aligning county-level climate initiatives with national climate finance strategies. This misalignment is particularly significant because counties in Kenya have varying capacities to implement climate policies, often due to limited technical expertise and financial resources. Strengthening the coordination between national and county governments is essential to ensure that climate finance mechanisms, such as carbon credits, green bonds, and international climate funds, are effectively utilized at all levels. A more integrated approach will enhance Kenya's carbon finance readiness by fostering a unified strategy that brings together national policies, local adaptation measures, and available financial resources.

Kenya's National Policy on Climate Finance, adopted in 2018, addresses gaps in previous climate policies by providing a structured approach to mobilizing and managing climate finance. It outlines target sectors like energy, agriculture, and water management, and specifies government interventions and governance structures needed for effective execution. Aligning with international standards such as the Paris Agreement, the policy enhances Kenya's carbon finance readiness and aims to attract both public and private investments for emission reductions. Success depends on robust monitoring, transparency, and continuous stakeholder engagement, including collaboration with the private sector and development partners. While it addresses earlier policy gaps, further improvements in coordination between national and county governments are needed for full implementation. Table 1 shows a summary of carbon finance-related policies in Kenya, their linkages, and the identified policy gaps.

Table 1: Summary of Carbon Finance-Related Policies in Kenya, Linkages and Policy Gaps

Policy	Description	Linkages	Identified Policy Gaps
Constitution of Kenya, 2010	Provides a constitutional right to a clean and healthy environment (Article 42).	Forms the legal foundation for environmental and climate-related policies.	Does not provide specific guidelines or frameworks for carbon finance mechanisms.
National Climate Change Action Plan (NCCAP)	Strategic plan for climate change mitigation and adaptation (2018-2022).	Linked to the Vision 2030 and Climate Change Act, focusing on focusing on reducing emissions and promoting adaptation.	It does not provide detailed regulatory frameworks or specific financial incentives for alternative carbon finance mechanisms beyond the Clean Development Mechanism (CDM).
Climate Change Act, 2016	Establishes the Climate Change Council and Directorate to oversee and coordinate climate actions, including those related to carbon finance.	In line with NCCAP and Vision 2030 for institutional support of broader climate actions.	Challenges in harmonizing national and county-level policies; limited enforcement capacity.
Kenya Vision 2030	Long-term development blueprint integrating economic, social, and environmental goals.	Supports NCCAP and Climate Change Act by promoting sustainable development.	Lack of detailed structure for climate finance and specific strategies for fund mobilization.
Kenya National Adaptation Plan (KNAP) 2015–2030	Focuses on enhancing resilience to climate change impacts through adaptation efforts.	Builds on NCCAP and National Climate Change Response Strategy (NCCRS) to address climate vulnerabilities across sectors.	Emphasize adaptation over carbon finance, lacking detailed structures for mobilizing funds from carbon markets or engaging the private sector.
Environmental Management and Coordination Act (EMCA), 1999	Provides the legal framework for environmental management in Kenya.	Foundation for NCCAP and Climate Change Act; operationalizes environmental policies.	It does not address carbon finance directly; with limited integration with climate finance strategies.
Green Economy Strategy and Implementation Plan (GESIP) 2016 – 2030	Promotes a transition to a green economy in Kenya by integrating	Linked to Vision 2030 and NCCAP, encouraging green investments and	Gaps in its implementation framework for carbon finance and lacks

	sustainability across various sectors in Kenya.	sustainable development.	sufficient incentives for the private sector to engage in carbon finance initiatives.
Energy Act, 2019	Provides a framework for sustainable energy development, including renewable energy.	Supports the implementation of green energy projects and links to the Green Economy Strategy and Implementation Plan (GESIP).	Limited provisions for integrating carbon finance mechanisms in energy projects. Lacks a strong focus on carbon finance strategies.
National Policy on Climate Finance, 2017	Establishes a framework for mobilizing and managing climate finance in Kenya.	Aligns with the Climate Change Act and Vision 2030; supports NCCAP implementation.	Implementation challenges; need for enhanced coordination among stakeholders to effectively mobilize and manage climate finance.
Forest Conservation and Management Act, 2016	Promotes sustainable management of forest resources, crucial for carbon sequestration.	Aligns with the NCCAP and Climate Change Act by supporting reforestation efforts.	Limited integration with carbon finance mechanisms; gaps in enforcement and monitoring.
National Climate Change Framework Policy, 2016	Aims to provide a comprehensive framework for addressing climate change across sectors.	Supports the implementation of the Climate Change Act and NCCAP.	It has gaps in detailing the operationalization of carbon finance mechanisms, such as carbon markets and other financial tools for climate mitigation and adaptation. .
Sustainable Waste Management Act, 2022	Provides a framework for sustainable waste management, including waste-to-energy projects.	Links to the Green Economy Strategy and Implementation Plan (GESIP) and the Energy Act, promoting climate-smart waste management practices.	Limited focus on integrating carbon finance mechanisms in waste management initiatives such as carbon credits or emissions trading schemes.

Institutional Frameworks

The success of carbon finance programs relies heavily on the strength of the institutional frameworks that support them. These frameworks include policies, regulations, governance structures, and coordination mechanisms crucial for mobilizing, managing, and monitoring carbon finance. Countries with robust institutional frameworks are better equipped to attract and utilize carbon finance effectively, leading to significant reductions in greenhouse gas (GHG) emissions and advancements in climate-smart investments. For example, the European Union (EU) has

implemented a comprehensive framework featuring the European Emissions Trading System (EU ETS), which is the largest carbon market globally and has helped reduce emissions by over 21% from 2005 to 2020 (ICAP, 2022). Similarly, Canada and Japan have developed effective frameworks that integrate carbon finance into broader climate strategies, allowing them to mobilize significant financial resources and promote substantial climate action (OECD, 2023).

The development of institutional frameworks for carbon finance readiness across Africa has been uneven, with some countries making notable progress while others face significant challenges. The African Development Bank (AfDB) has played a crucial role in advancing these frameworks, committing to mobilize $25 billion for climate finance from 2020 to 2025 (AfDB, 2023). Despite these efforts, the effectiveness of these frameworks is often limited by the capacity of national governments to implement and enforce them. Many African countries encounter institutional hurdles such as insufficient technical expertise, limited financial resources, and weak governance structures, which impede the full operationalization of carbon finance mechanisms. For instance, South Africa has made strides by implementing a carbon tax and establishing a carbon market. In contrast, countries like Nigeria and Ghana are still in the early stages of developing the institutional frameworks necessary to support carbon finance (World Bank, 2022).

The institutional framework for carbon finance readiness in Kenya has seen notable advancement over the past decade, reflecting an increasing acknowledgment of the need to integrate carbon finance into national climate strategies. Central to this framework is the Climate Change Act of 2016, which established the Climate Change Council and the Climate Change Directorate to oversee climate actions and mobilize finance (Government of Kenya, 2016). These bodies are responsible for implementing the National Climate Change Action Plan (NCCAP) and aligning climate finance with national development objectives. However, challenges persist, particularly in coordinating efforts between national and county-level governments, leading to fragmented implementation of climate policies and carbon finance initiatives (The National Treasury, 2018).

The private sector plays a crucial role in Kenya's carbon finance readiness, as recognized by various policies and strategies. Kenya’s National Climate Change Action Plan (NCCAP) and the Climate Change Act of 2016 underscore the importance of private sector involvement in climate finance, including through public-private partnerships (PPPs) and the development of financial instruments like green bonds (Sangori, 2021). The National Policy on Climate Finance, adopted in 2022, indeed emphasizes enhancing private sector engagement in climate finance. Despite these efforts, challenges persist in fully integrating the private sector due to limited incentives and bureaucratic barriers (Bowman & Steenmans, 2019). Kenya's first green bond was issued in 2019, but the uptake has been slower than anticipated, highlighting the need for more supportive frameworks to encourage private sector participation (GoK, 2021). Furthermore, there are significant gaps in Kenya’s carbon finance framework, including the need for effective monitoring and evaluation mechanisms, as well as strengthening the capacity of county governments to implement local climate projects. Integrating carbon finance into broader economic planning is essential for embedding it fully within Kenya's development agenda (World Bank, 2023).

Oversight and Regulation of Carbon Finance

Oversight and regulation are crucial to carbon finance readiness, ensuring transparency, accountability, and effectiveness in reducing greenhouse gas (GHG) emissions (Green & Kuch, 2022). Globally, carbon finance regulation has evolved, with many countries adopting robust oversight frameworks for managing carbon markets, carbon pricing, and climate finance

utilization. For example, the European Union's Emissions Trading System (EU ETS) operates under a comprehensive regulatory framework involving the European Commission, national regulators, and independent verification bodies. This multi-layered approach has been instrumental in ensuring compliance with emissions reduction goals and preserving the integrity of the carbon market (ICAP, 2022). A core element of effective regulation is the establishment of clear guidelines for measuring, reporting, and verifying (MRV) emissions, which are essential for the sustainability and credibility of carbon finance mechanisms (Olczak, Piebalgs & Balcombe, 2022).

In Africa, the oversight and regulation of carbon finance are still in the developmental stages, with varying progress across different countries. The African Development Bank (AfDB) has played a key role in supporting the establishment of regulatory frameworks for carbon finance through initiatives like the Africa Climate Change Fund (ACCF) and the African Carbon Support Programme (AfDB, 2024). However, many African nations face challenges in implementing effective oversight mechanisms, largely due to limited technical expertise, financial constraints, and weak institutional capacities. For example, while South Africa has introduced a carbon tax with a robust regulatory framework, countries such as Nigeria and Ethiopia are still working to establish the necessary regulatory structures to support carbon finance (World Bank, 2022). Additionally, the lack of harmonized regulations across the continent presents a challenge, hindering regional cooperation and the development of a unified carbon market in Africa.

In Kenya, the oversight and regulation of carbon finance have seen progressive improvements, particularly following the enactment of the Climate Change Act of 2016. This legislation established the Climate Change Council, which is tasked with coordinating and overseeing the implementation of climate policies, including carbon finance initiatives (Government of Kenya, 2016). The Act also introduced a Monitoring, Reporting, and Verification (MRV) system, a critical component for ensuring transparency, accountability, and effectiveness in carbon finance activities. However, despite the legal frameworks in place, there have been challenges in implementing these regulations, especially concerning the coordination between national and county governments and enforcing compliance (The National Treasury, 2018). The Climate Change Directorate, serving as the technical arm of the Council, is responsible for aligning carbon finance programs with Kenya's national climate objectives. However, it often faces constraints related to limited resources and technical capacity, which hinders its ability to fully execute its oversight responsibilities.

The private sector plays an increasingly important role in carbon finance in Kenya, especially through mechanisms like public-private partnerships (PPPs) and the issuance of green bonds. The National Policy on Climate Finance, adopted in 2018, provides a foundational regulatory framework for involving the private sector in climate finance initiatives. However, gaps remain, particularly in terms of detailed guidelines for compliance, clear incentives, and penalties for non-compliance (Kiremu, Scrimgeour, Mutegi, & Mumo, 2022). The Nairobi Securities Exchange (NSE) has also taken steps to encourage private sector participation by introducing regulations for green bonds, which serve as a critical tool for mobilizing private investment in carbon finance. Despite these initiatives, the uptake of green bonds has been slow, primarily due to regulatory uncertainties and concerns over the risks involved in climate-related investments (NSE, 2021). Strengthening the regulatory framework by offering more specific guidelines and reducing bureaucratic barriers could significantly enhance private sector compliance and engagement in carbon finance initiatives.

DISCUSSIONS, CONCLUSIONS, AND POLICY IMPLICATIONS

This study reviewed Kenya's carbon finance readiness (CFR) by analyzing its policies, legislation, and institutional frameworks. The findings highlight Kenya's significant progress in CFR through key initiatives such as the Climate Change Act of 2016 and the National Climate Change Action Plan (NCCAP) (Government of Kenya, 2016). These frameworks, including establishing the Climate Change Council, have aligned Kenya's carbon finance with global climate goals. Furthermore, the National Policy on Climate Finance, adopted in 2018, has bridged gaps in Kenya's Vision 2030 by targeting climate finance mobilization (Ministry of Environment and Forestry, 2018). However, challenges remain, particularly in fully integrating non-traditional carbon finance mechanisms and building the capacity of the county governments.

As enshrined in the Constitution of Kenya 2010, Kenya's constitutional emphasis on sustainable development provides a solid legal foundation for climate finance integration (Republic of Kenya, 2010). Institutions like the Climate Change Directorate and National Environmental Management Authority (NEMA) play essential roles in overseeing the implementation of carbon finance. Despite this progress, there are gaps in resourcing and institutional capacity, which affect the enforcement of regulations and monitoring of carbon finance activities. Additionally, the private sector's involvement needs to be strengthened, as does coordination between national and county governments.

While Kenya has made strides in enhancing carbon finance readiness (CFR), the review shows that continuous adaptation is essential. Given the evolving global standards and increasing complexity of carbon finance instruments, Kenya must update its policies regularly. The government should focus on innovative financing tools, such as green bonds, and address gaps in private sector engagement and regulatory enforcement to maintain access to carbon finance and achieve its climate goals. The government must consider implementing measures that address the identified gaps, such as the ones discussed below: -

Carbon Finance Data

Accurate and accessible carbon finance data is essential for effective planning, monitoring, and reporting of carbon finance activities in Kenya. While Kenya has made efforts to improve climate-related data management through institutions like the Climate Change Directorate, significant gaps persist in data availability, quality, and integration across sectors. These challenges hinder informed decision-making and the efficient allocation of resources for carbon finance initiatives. The lack of a centralized, comprehensive database that consolidates data from government bodies, the private sector, and international donors further complicates the ability to track carbon finance flows and measure project impacts. To address these issues, Kenya should invest in developing a robust carbon finance data management system. This system must consolidate and standardize data from all relevant sectors, ensure regular updates, enhance accessibility, and comply with international climate finance reporting standards. Such a system would improve transparency, facilitate better project monitoring, and support the country's climate goals by providing accurate insights into financial flows and carbon reduction outcomes.

Fragmentation of Carbon Finance Information/ Data

The fragmentation of carbon finance data and information across multiple institutions in Kenya has been a significant challenge to the effective coordination and implementation of carbon finance projects. This has led to issues such as data duplication, inconsistency, and a lack of alignment

between stakeholders, making it difficult for the government and investors to develop a unified approach to carbon finance mobilization and utilization. A centralized, well-managed carbon finance information system could help address this problem. The establishment of a national repository, managed by the Climate Change Directorate or a similar authority, would ensure that all carbon finance-related data including financial flows, project outcomes, and policy initiatives is consolidated and made accessible to all relevant parties. Such a system would promote transparency, improve policy coherence, and enhance the monitoring and evaluation of carbon finance activities in Kenya, leading to more effective climate action.

Carbon Finance Needs and Mobilization

Kenya's ability to mobilize carbon finance effectively depends on a comprehensive understanding of its financial needs for both mitigation and adaptation projects. While the National Climate Change Action Plan (NCCAP) and the National Policy on Climate Finance provide a general framework, more detailed sector-specific assessments are necessary to accurately determine the required investments. Currently, the lack of precise data on carbon finance needs limits the ability to create tailored financial strategies that attract both domestic and international investors. To address these gaps, the government should conduct thorough analyses across key sectors like energy, agriculture, and infrastructure to better understand their carbon finance requirements. This would inform the development of innovative financial mechanisms such as blended finance, public-private partnerships (PPPs), and green bonds, which are essential for bridging funding gaps and ensuring that sufficient resources are available to meet Kenya’s climate goals.

Transparent Budget Expenditure Tracking

Transparent tracking and reporting of budget expenditures related to carbon finance are essential for ensuring accountability and efficient resource use. In Kenya, while carbon finance has been incorporated into national and county-level budgets, there is still a need for clearer reporting mechanisms that explicitly track how funds are allocated and spent on climate-related projects. This would include reporting the amounts spent, the sources of the funds (whether domestic or international), and the specific outcomes achieved through these expenditures. The government of Kenya should establish mandatory reporting frameworks for carbon finance expenditures that detail not only the financial inputs but also the measurable impacts of the projects financed. Such transparency would enhance trust among stakeholders, attract more investment, and provide a basis for evaluating the effectiveness of carbon finance initiatives, guiding future resource allocation to priority areas.

Role of the Private Sector in Carbon Finance

The private sector is crucial for advancing carbon finance in Kenya, as it can provide essential capital, innovation, and expertise to meet the country's climate objectives. Despite this potential, private sector involvement has been hindered by regulatory uncertainties, insufficient incentives, and a lack of clear guidelines on integrating private investments into national climate strategies. To enhance private sector engagement, the government of Kenya should streamline regulatory processes, offer tax incentives, and establish robust public-private partnerships (PPPs) that align with national carbon finance goals. Furthermore, expanding the use of financial instruments such as green bonds and climate resilience bonds is necessary to attract private capital to climate-related projects. Strengthening the private sector’s role is vital for mobilizing the financial resources required to achieve Kenya’s climate targets and transition to a low-carbon economy.

Alignment of Policies

Effective alignment of carbon finance policies across different sectors and levels of government is essential for a coherent approach to climate finance in Kenya. While the National Climate Change Action Plan (NCCAP) sets a broad framework for climate action, its practical implementation is often challenged by inconsistencies between national and county-level policies. These discrepancies can lead to inefficiencies and fragmented efforts in carbon finance initiatives. For instance, while the NCCAP provides strategic guidance, county governments may face difficulties in aligning their local policies and actions with national objectives due to varying priorities and limited resources. To address these issues, the government of Kenya should enhance policy coherence by conducting a comprehensive review of existing policies to identify and resolve conflicts and gaps. Additionally, there should be a concerted effort to harmonize regulations and ensure that all policies support the overarching national climate finance strategy. Engaging stakeholders, including county governments, the private sector, and civil society, in this review process, will be crucial for developing practical, integrated, and effective policies.

Public Interest Statement

Climate change poses a significant challenge to Kenya’s economic stability and the well-being of its citizens. Carbon finance presents a vital opportunity for Kenya to invest in projects that reduce greenhouse gas emissions and enhance climate resilience. Effective access to carbon finance requires well-established institutional frameworks, clear policies, and active participation from both the public and private sectors. This study evaluated Kenya's Carbon Finance Readiness (CFR) and found that while Kenya has made notable strides through the establishment of policies such as the Climate Change Act of 2016 and the National Climate Change Action Plan (NCCAP), challenges remain. Issues include fragmented data management, policy misalignment, and limited private-sector engagement. Addressing these challenges is crucial for maximizing Kenya’s ability to effectively access and utilize carbon finance, ultimately supporting sustainable development and climate resilience.

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