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Accelerated Implementation of Climate Action in Africa

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AICAA FIELD NOTES

Enhancing Access to International Climate Funds in Senegal: A Comprehensive Review and Roadmap

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ReSAKSS Regional Strategic Analysis and Knowledge Support System by AKADEMIYA2063

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Accelerated Implementation of Climate Action in Africa (AICAA) Field Notes

The new phase of the Comprehensive Africa Agriculture Development Programme (CAADP) Strategy and Action Plan (2026-2035) for "Building Resilient Agrifood Systems in Africa" underscores the importance of promoting the sustainable management of natural resources, highlighting climate change adaptation and mitigation as key priorities for Africa's agrifood system transformation agenda. It has expanded, with increased granularity, the resilience commitment under the 2014 Malabo Declaration on "Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods."

In recognition and support of this expanded agenda, AKADEMIYA2063 is implementing a series of projects to support climate action across the continent. These initiatives are deployed under the framework of **Accelerated Implementation of Climate Action in Africa (AICAA).**

Several climate change frameworks have been adopted at the continental level. These include the Africa Climate Change Strategy (2020–2030), the African Union Climate Change and Resilient Development Strategy and Action Plan (2022-2032), the African Union Green Recovery Action Plan – GRAP (2021-2027), as well as the Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) developed under the Paris Agreement. AKADEMIYA2063 provides technical and analytical support for the implementation of these initiatives in selected countries to inform climate planning and strengthen capacities for evidence-based policymaking to advance progress toward climate goals.

AICAA Field Notes are publications by AKADEMIYA2063 scientists and collaborators based on research conducted to help accelerate the implementation of climate action by meeting the needs for data and analytics and supporting institutional and coordination capacities. These interventions include the development of comprehensive Integrated Results Frameworks (IRFs) and the definition of mitigation and adaptation indicators and metrics to assist countries toward effective governance of climate actions; baselining and stock-taking analysis; assessment of greenhouse gas (GHG) dynamics as well as their distribution in tracking by land use and land cover and in real-time; as well as identifying policy and program opportunities for mitigation and adaptation. At the continental level, the team is supporting the development and implementation of the African Mitigation and Adaptation Review (AfMAR) dashboard to help the Monitoring, Reporting, and Learning Dashboard (MRLD) in the implementation of the AU Climate Change and Resilient Development Strategy and Action Plan.

Published on the AKADEMIYA2063 website (open-access), AICAA Field Notes provide broad and timely access to significant insights and evidence from our ongoing climate adaptation and mitigation research activities. Based on diagnostic and predictive analytics using the latest technologies, the data presented through this publication series aims to provide evidence-based insights to practitioners and decision-makers driving climate action across Africa toward accelerated climate resilience and better-calibrated policy outcomes.

About AKADEMIYA2063

AKADEMIYA2063 is a pan-African non-profit research organization with headquarters in Kigali, Rwanda, and a regional office in Dakar, Senegal. Inspired by the ambitions of the African Union's Agenda 2063 and grounded in the recognition of the central importance of strong knowledge and evidence-based systems, the vision of AKADEMIYA2063 is an Africa with the expertise we need for the Africa we want. This expertise must be responsive to the continent's needs for data and analysis to ensure high-quality policy design and execution. Inclusive, evidence-informed policymaking is key to meeting the continent's development aspirations, creating wealth, and improving livelihoods. AKADEMIYA2063's overall mission is to create, across Africa and led from its headquarters in Rwanda, state-of-the-art technical capacities to support the efforts by the Member States of the African Union to achieve the key goals of Agenda 2063 of transforming national economies to boost economic growth and prosperity. Following from its vision and mission, the main goal of AKADEMIYA2063 is to help meet Africa's needs at the continental, regional, and national levels in terms of data, analytics, and mutual learning for the effective implementation of Agenda 2063 and the realization of its outcomes by a critical mass of countries. AKADEMIYA2063 strives to meet its goals through programs organized under five strategic areas—policy innovation, knowledge systems, capacity creation and deployment, operational support, data management, digital products, and technology—as well as innovative partnerships and outreach activities. For more information, visit www.akademiya2063.org.

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Abstract

In the face of escalating vulnerability to climate change and limited adaptation capacities, climate finance has emerged as a crucial tool in mitigating its adverse effects in Africa, particularly in Senegal. Despite significant national efforts to facilitate access to climate funds through institutional frameworks and policies, many developing countries struggle to access adequate funds. This situation is exacerbated by the urgent need for financial assistance to combat climate change while aligning with Nationally Determined Contributions (NDCs) and development policies. This study aims to recommend strategies and tools to enhance Senegal's mobilization of international climate finance, especially for agrifood systems. It provides an overview of Senegal's climate finance framework, examines strategies and policies devised by the country to optimize fund access, identifies encountered limitations, and proposes policy, institutional, and programmatic innovations to bolster Senegal's capacity to access climate funds. Based on the Malabo Montpellier Panel's case study analysis of policy innovations aimed at unlocking climate finance for resilient food systems in Benin, Mali, Rwanda, and Zimbabwe, the methodology for evaluating Senegal's current climate finance framework uses both qualitative and quantitative methods. It aims to assess the strategies and policies in place, identify barriers to effective fund access, and propose actionable solutions. The findings suggest that while Senegal has made strides in facilitating access to climate funds, there remains a substantial gap in climate finance disbursement. More targeted strategies and innovations are therefore necessary to overcome these challenges. The study proposes several policy, institutional, and programmatic innovations to enhance Senegal's capacity to access climate funds, including improving policy coherence, strengthening institutional capacities, and developing innovative financing mechanisms. Implementing these strategies can help Senegal better mobilize international climate finance and address the financing gaps in its mitigation and adaptation efforts.

Keywords

Adaptation, Mitigation, Climate Finance, Policy Innovation, Institutional Innovation, Programmatic Innovation.

1. Introduction

Climate change and the escalating demands of a growing population pose the most significant challenges to humanity (PwC 2011). This global issue is particularly pressing in Africa, where rising temperatures, sea levels, altered precipitation patterns, and extreme weather events jeopardize human health, safety, food and water security, and socio-economic development. The consequences, including temperature increases, heatwaves, floods, tropical cyclones, prolonged droughts, and sea-level rise, lead to loss of lives, property damage, and population displacement, hindering Africa's pursuit of the Sustainable Development Goals (SDGs) and Agenda 2063 (WMO 2022).

Senegal, situated along the North Atlantic Ocean with borders adjoining The Gambia, Mauritania, Mali, Guinea, and Guinea-Bissau, faces unique vulnerabilities. With 90 percent of its land below 100 meters, the country contends with poverty and is classified as least developed.

The country's climate is shaped by its geography, with a desert climate in the north and a tropical climate in the south. The arid north experiences year-round drought, high temperatures, and minimal rainfall, while the tropical south has distinct wet (July–October) and dry (November–June) seasons. Annual temperatures range from 25°C to 30°C, with hotter conditions inland. Precipitation varies from 1,400 mm in the south to 250 mm in the north (Discover Senegal n.d.). Senegal is divided into four agroecological zones: Arid/Sahel, Semi-arid/Sudan Savannah, Northern Guinea Savannah, and Southern Guinea Savannah (PIK 2022). The dry season (October–May) is marked by Harmattan winds, followed by a rainy season (June–September) with heavier rains in the south (World Bank n.d.). Dependent on rain-fed agriculture and fishing as primary sources of employment, Senegal is inherently susceptible to the impacts of climate change (Zamudio and Terton 2016), with increased temperatures projected to rise by 1.1–3.1°C by the 2060s, variability in rainfall patterns leading to droughts and floods and rising sea levels impacting coastal areas (USAID 2017).

Droughts in Senegal since the 1960s have impacted food security, prompting rural-to-urban migration, particularly to coastal cities like Dakar. The coastal zone experiences additional threats from floods, coastal erosion, and rising sea levels, affecting tourism and compounding Senegal's vulnerability to climate change (De Vit and Parry 2011; Schaeffer et al. 2014).

The economic repercussions of climate change are widespread across Africa, resulting in increased income inequality and losses in key sectors such as agriculture, tourism, manufacturing, and infrastructure (Trisos et al. 2022). In Senegal, a Sub-Saharan country severely affected by climate change, the agriculture sector faces pressure from overuse, deteriorated soil, rising temperatures, and declining rainfall (USAID 2022). Consequently, there is an urgent need for climate financing in Senegal to support both mitigation and adaptation efforts.

Recognizing the pivotal role of climate finance in addressing climate change, the United Nations Framework Convention on Climate Change (UNFCCC) established the Green Climate Fund (GCF) during its 2010 session in Cancun. Climate finance, distinct from traditional overseas development assistance (ODA), aims to decrease vulnerability to climate change, reduce greenhouse gas emissions, and address its impacts. It encompasses funds from local, national, or transnational sources, including public, private, and alternative financing, supporting both mitigation and adaptation actions in response to climate change (ECOWAS 2021; World Bank 2019).

Since the Bali Action Plan of 2007, identifying financing as a critical component for a global climate change agreement, climate financing has evolved in political importance, complexity, and involvement of various actors (PwC 2011).

Sub-Saharan Africa (SSA), despite contributing minimally to global greenhouse gas emissions, is highly vulnerable to climate change. Predictions by the Intergovernmental Panel on Climate Change (IPCC) indicate potential crop yield reductions and water shortages, necessitating substantial funding for adaptation (Nakhooda et al. 2011).

Climate finance is indispensable for both mitigations, requiring large-scale investments to reduce emissions significantly, and adaptation, demanding significant financial resources to address the adverse effects of a changing climate. However, Africa's climate finance falls short of meeting the region's needs, with a substantial gap projected between 2020 and 2030 (Guzmán et al. 2022).

The Paris Agreement reiterates the obligations of developed countries while encouraging voluntary contributions from other Parties. To reduce national greenhouse gas emissions and adapt to climate change effects, implementing nationally determined contributions (NDCs) is a priority in the West African region, including Senegal.

After ratifying the Paris Agreement in 2016, Senegal specified its commitments by finalizing its NDC at the end of 2020. Aligned with the national development strategy, the Emerging Senegal Plan (PSE), Senegal's NDC outlines unconditional and conditional targets, with an estimated financial requirement of approximately US$ 13[1] billion over 2020-2030.

The paper aims to revisit the current climate finance figures mobilized by Senegal, address challenges, and propose solutions to enhance the country's climate finance profile. It underscores the urgency of sustained and effective climate financing to achieve Senegal's climate goals and ensure resilience in the face of climate change.

2. Methodology

The methodology employed a comprehensive literature review to investigate the effects of climate change, strategies for adaptation and mitigation, and the financial requisites for addressing climate change. Established methods for searching, gathering, and organizing relevant literature were applied. The review encompassed scientific papers, reports, research reviews, and data from reputable sources, including the US Agency for International Development (USAID), the Food and Agriculture Organization of the United Nations (FAO), and the Malabo Montpellier Panel.

To gain insights into Senegal's endeavors in securing climate financing for agriculture and food systems, a meticulous analysis of the 11th report of the Malabo Montpellier Panel was conducted. This report identifies African countries that have successfully accessed climate funds for adaptation, focusing on the food sector. Titled **"ADAPT: Policy Innovations to Unlock Climate Finance for Resilient Food Systems in Africa,"** the report provides a comprehensive review of the actions taken by four top-performing African countries – Benin, Mali, Rwanda, and Zimbabwe.

The selection of these countries was based on a methodological approach considering their historical performance in accessing climate finance, governance, credit rating, and vulnerability. A key guiding principle involved the development of an index to gauge countries' capacities for attracting climate finance. This index, referred to as CapFin, was transformed into a logarithmic scale to normalize its distribution and mitigate extreme values (see Table 1). The index serves as a tool for ranking African countries based on their capacity and recent performance in accessing adaptation funds (Malabo Montpellier Panel 2022). According to this index, Senegal was positioned as the 7th performing African country (see Table 1).

This selection was further supported by emerging evidence from these countries, highlighting positive outcomes resulting from institutional and policy reforms across food systems, as documented in previous reports from the Malabo Montpellier Panel.

Table 1. African countries' performances in accessing adaptation funds.

Country	CapFin	Log-Delta-Adapt	Vulnerability
Benin	0.14	1.19	0.57
Malawi	0.06	0.64	0.55
Mali	0.04	0.83	0.60
Morocco	0.23	0.99	0.38
Rwanda	0.18	0.41	0.59
Senegal	0.18	0.26	0.53
Sierra Leone	0.06	0.96	0.56
Zimbabwe	0.04	1.48	0.55

1 All dollars referenced are US dollars.

3. Climate Finance Landscape in Senegal

3.1. Assessment of Senegal's Climate Finance Needs and Funding Dynamics for Mitigation and Adaptation

Climate finance is a crucial catalyst for attracting external financial resources in Senegal. This necessitates enhancements in the institutional framework, increased allocation of domestic resources to the sector, and the mobilization of national and international private financing through public funds.

The financing requirements for Senegal's climate change mitigation and adaptation measures, as outlined in its NDC, are estimated at $5 billion and $14.5 billion by 2030 and 2035, respectively. These funds aim to reduce greenhouse gas emissions by 7 percent, 15 percent, and 21 percent by 2020, 2025, and 2030, respectively (base year: 2010) (CSE 2020).

The total cost of implementing Senegal's NDC is $13 billion. Of this amount, $8.7 billion is allocated to mitigation, comprising $3.4 billion unconditional and $5.3 billion conditional. Additionally, $4.3 billion is allocated to adaptation, with $1.4 billion unconditional and $2.9 billion conditional (Senegal, Ministry of Environment and Sustainable Development 2020).

Climate finance funds in Senegal originate from diverse sources, including the national public budget, multilateral organizations, and private donors. The Global Environment Fund (GEF) stands out as the primary provider of grants to Senegal.

Understanding various financial institutions and their operations becomes paramount when constructing a diversified financial portfolio, particularly for large-scale projects such as dams, irrigation infrastructure, and weather forecasting. Funding for such projects in developing countries typically emanates from bilateral, regional, or multilateral sources. The distinction lies in how they provide funds and the timeframes for completing projects (World Bank 2019).

Senegal has identified strategic investment opportunities in climate-related projects, notably through its Green Climate Fund (GCF) program (2018-2022). These opportunities are bifurcated into two pillars: mitigation and adaptation. The mitigation pillar encompasses investments in low-carbon energy production, access to low-emission energy, sustainable land and forest management, and promoting low-carbon agriculture. On the other hand, the adaptation pillar focuses on investments in building the resilience of vulnerable communities, safeguarding livelihoods from food, water, and health insecurity, and promoting sustainable infrastructure and ecosystem management (Subnational Climate Fund 2023).

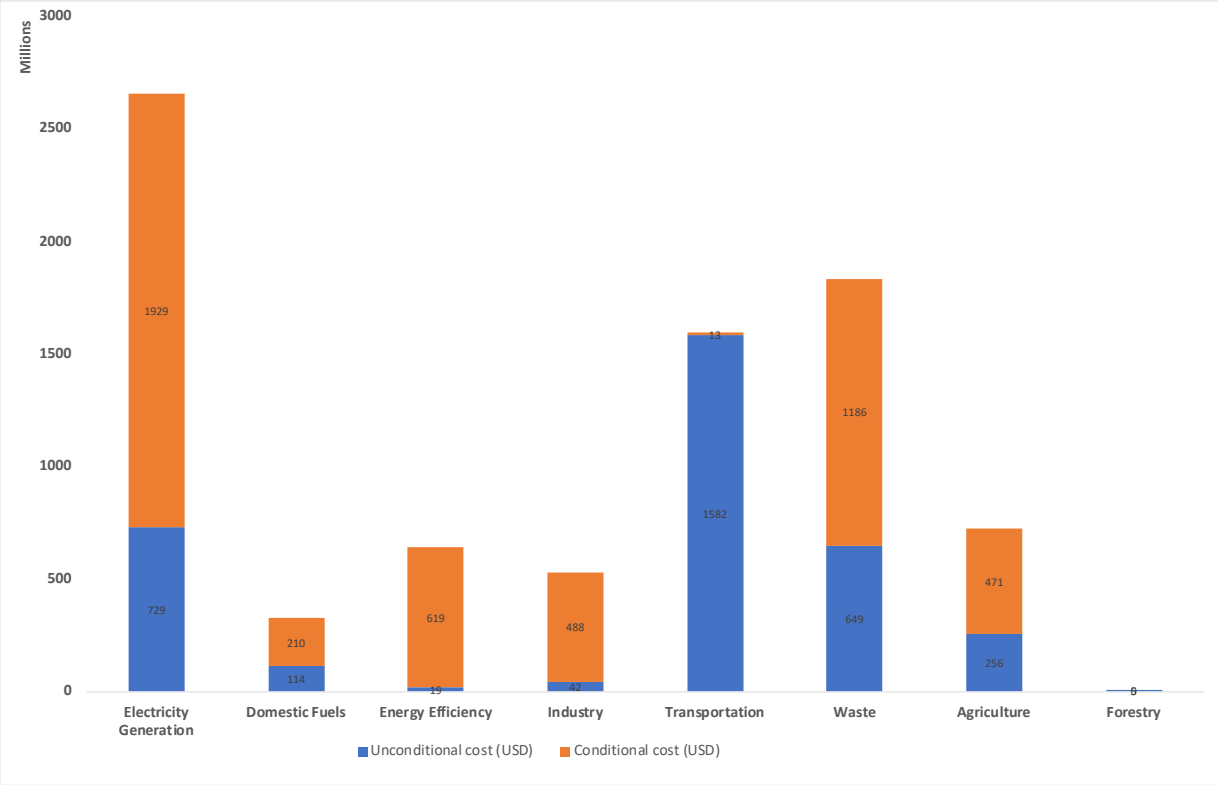
3.1.1 Mitigation

The total financing needs to be mobilized for GHG mitigation projects under the NDC (2020-2030) is estimated at $8,762,733,104, of which approximately $3,396,581,680 is unconditional costs, and $5,366,151,424 is conditional[2] (Figure 1).

The Electricity Generation and the Waste sectors express the highest need, with Conditional demand of $1929 and $1186 million, respectively. Energy Efficiency, Industry, and Agriculture follow with respective conditional demands of $619,488 and $471 million (Figure 1).

2 The unconditional contribution consists of activities carried out by national means (e.g., state, local authorities, private sector, NGOs). In contrast, the conditional contribution will be achieved with the international community's support.

Figure 1. Sectorial costs for mitigation in Senegal's NDC implementation.

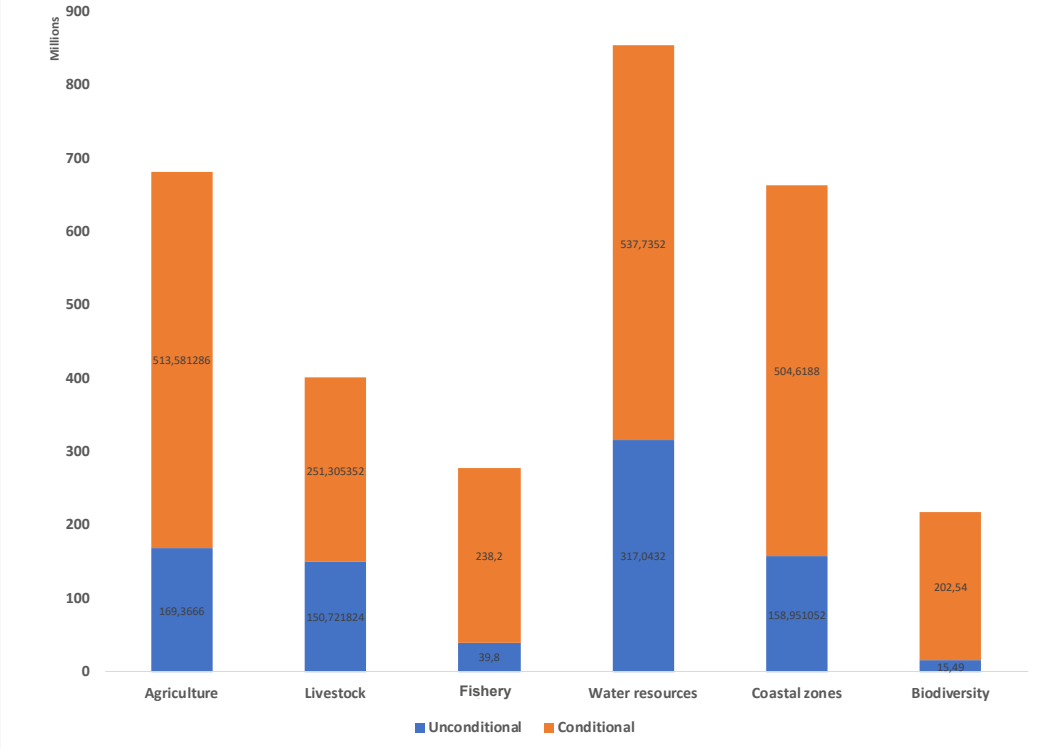


Source: Senegal, Ministry of Environment and Sustainable Development (2020).

3.1.2. Adaptation

According to estimates, Senegal will need a total of $4,315,064,064 for climate change adaptation between 2020 and 2030. This includes $1,387,112,823 for unconditional costs and $2,927,951,241 for conditional costs. As outlined in its NDC, the country's adaptation priorities focus on biodiversity, agriculture, coastal economy, fisheries, livestock, water, and health. The water resources, agriculture, and coastal zones sectors have the highest adaptation needs, with conditional values of approximately $538,514 and $504 million, respectively (Figure 2).

Figure 2. Sectorial costs for mitigation in Senegal's NDC implementation.



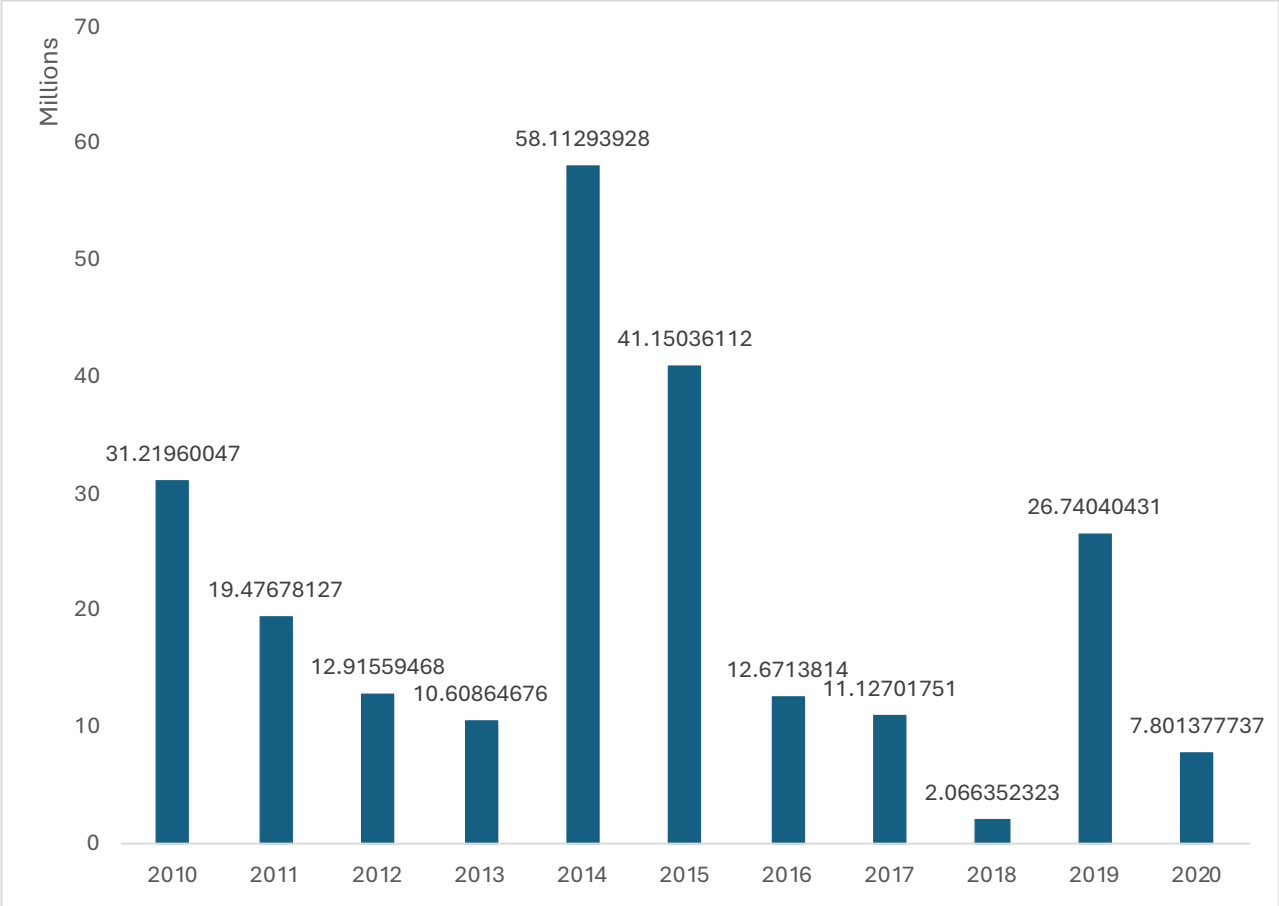
Source: Senegal, Ministry of Environment and Sustainable Development (2020).

Overall, Senegal necessitates a total of $2,956,145,136 for the 2018-2025 phase of its NDC, with $2.9 billion allocated for adaptation and $5.1 billion for mitigation, highlighting the country's emphasis on adapting to climate change as a top priority.

Furthermore, the country anticipates needing $3,447,038,500 for the 2026-2030 phase, bringing the total program cost to $6,403,183,636. Senegal estimates that implementing the conditional funding for its climate action plan will cost $8 billion. The total cost of the country's program action lines, representing 80 percent of the funding needed to implement its climate commitments, is estimated at $6.4 billion. Senegal aims to primarily utilize the GCF as the source of financing for its climate efforts, with additional support from other partners and the Senegalese government (GCF and Senegal, Ministry of Environment and Sustainable Development 2018).

The yearly commitments for adaptation in Senegal from 2010 to 2020 exhibit a discontinued dynamic, indicating variations in amounts from year to year. Estimated at $31 million in 2010, the commitments for adaptation decreased to about $ 11 million in 2014, then increased to $41 million in 2015, and subsequently reduced to about $8 million in 2020 (Figure 3).

Figure 3. Financial commitments for climate adaptation in Senegal (US$).



3.2. Climate Finances Utilized to Date: Trends and Allocation for Mitigation and Adaptation

Climate finance in Senegal initially prioritized adaptation projects, but a shift occurred in 2017. From 2010 to 2016, adaptation initiatives constituted approximately 60 percent of climate finance, addressing challenges like rising sea levels and enhancing agricultural resilience. However, in 2017, there was a noteworthy increase in climate finance directed toward energy projects, specifically the development of solar power plants, aligning with Senegal's aim to achieve 30 percent renewable energy.

Sources of climate financing in Senegal are diverse, encompassing the state budget and multilateral, bilateral, and private sectors. The Global Environment Fund (GEF) stands out as the principal provider of grants to Senegal, allocating $473.04 million across 94 projects approved since the inception of GEF's first phase. Other major contributors include the United Nations Development Programme (UNDP), the World Bank, the African Development Bank (AfDB), the European Union, the International Fund for Agricultural Development (IFAD), and FAO (CSE 2020).

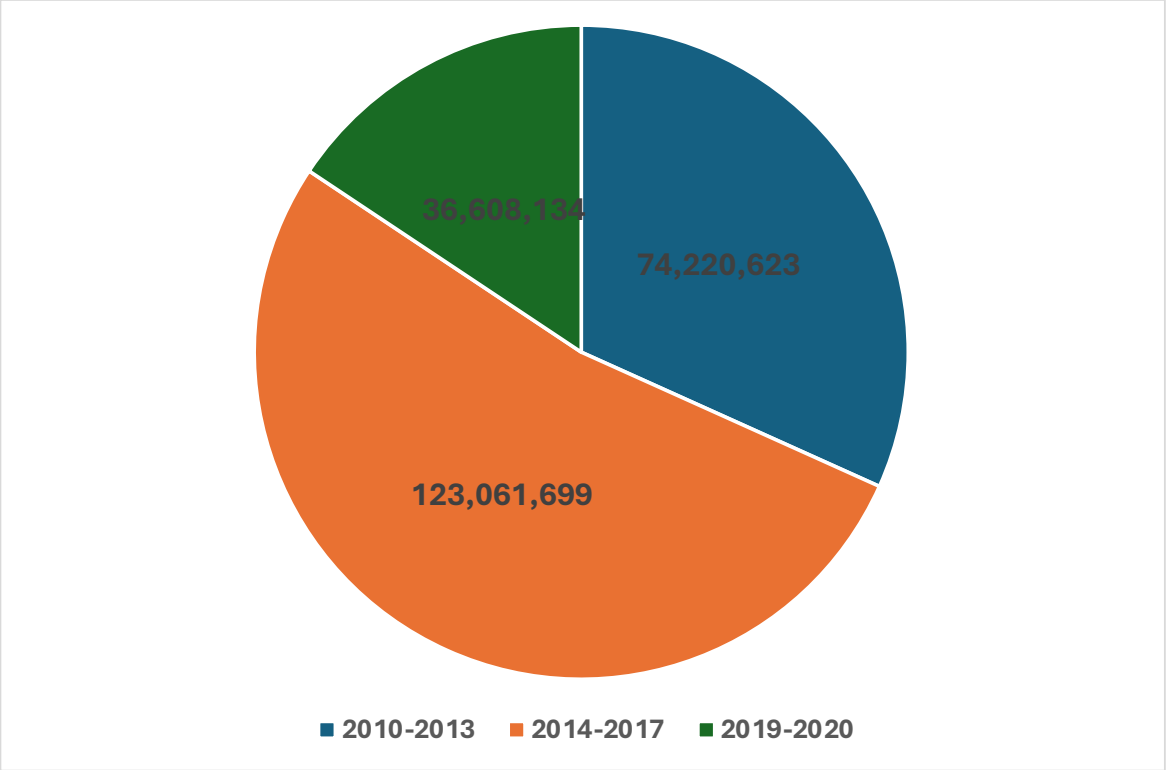
For 2010-2013, 2014-2017, and 2018-2019, Senegal received total disbursements of approximately $74.22 million, $123.06 million, and $36.61 million, respectively (Figure 4). In the upcoming years, with the backing of the GCF, Senegal is set to implement 14 projects with a total financing of $204.9 million.

Some notable adaptation projects include:

- "Increasing the resilience of vulnerable households in Senegal to climate-related risks through better risk management, water, and soil conservation." Approved on October 02, 2017, the project was expected to conclude on January 14, 2024, with a total funding of $10 million and an estimated duration of four years" (GCF 2023a).
- "Restoring salinized lands through improved knowledge and planning, implementing measures such as hydraulic works, reforestation, anti-soil erosion systems, and use of adapted agriculture." Approved on November 05, 2015, this project is anticipated to conclude on February 13, 2026, with a total funding of $8,2 million and an estimated duration of four years (GCF 2023c).

- The Senegal Integrated Urban Flood Management project, approved on October 14, 2016, aims to safeguard urban areas from flood risk through investments in drainage infrastructure and establishing a national disaster risk management policy. The project, estimated at $75,8 million, is co-financed by GCF (78.2 percent) and the French Development Agency (AFD), with an expected completion date of April 11, 2025, spanning five years (GCF 2025).

Figure 4. Cyclical financing disbursements for adaptation in Senegal (2010-2013, 2014-2017, 2019-2020).



For mitigation, Senegal is implementing the ASER Solar Electrification Project, which aims to help the Senegalese government achieve universal access to energy by 2025. The project, with a total cost of $212,1 million, was approved on August 21, 2020, with an expected end due on March 28, 2028 (GCF 2023b).

3.3. Addressing the Climate Finance Gap in Senegal: Challenges and Opportunities

From 2010 to 2020, Senegal averaged an annual mobilization of $411 million in climate finance, with 12.6 percent sourced from private financing. This funding, however, falls short of the identified annual needs of $1.3 billion. The inability to access sufficient climate funds poses a significant obstacle to implementing climate policies, resulting in a 70.7 percent shortfall in Senegal's adaptation efforts. Insufficient domestic public resources have been recognized as a constraint in climate management, impeding the execution of adaptation projects. The insufficiency of climate finance also hampers African countries from meeting the conditional targets outlined in their Nationally Determined Contributions, necessitating financial resources, technology transfer, technical cooperation, and capacity building. Approximately 85 percent of the required funding is allocated to these conditional targets, with the remaining 15 percent dedicated to unconditional targets. Therefore, it is imperative to identify and mobilize sustainable finance sources to ensure the effective implementation of climate change actions in Senegal (GCF 2020).

Closing the climate finance gap by 2030 demands a substantial increase in private sector mobilization. Considering stable public contributions in the coming years, the current private sector contribution must multiply nearly twentyfold to meet the country's requirements. However, the mobilization of private climate finance encounters challenges related to the macroeconomic situation, business environment, and technical capabilities. Obstacles include weak technical, human, and institutional capacities in the financial system, challenges in cross-sectoral coordination, and risks to private investment and green financing mechanisms. Despite the growing involvement of the private sector in energy transition projects, its contribution to climate finance remains low at 12.6 percent, whereas South Africa's private sector contributes 38 percent (AfDB 2023).

To address the estimated climate finance gap by 2030, private climate finance flows to Africa must escalate by up to 36 percent annually.

Despite these challenges, Senegal has witnessed a steady annual increase in the amount of climate finance received, with an average growth rate of 14.2 percent. In 2010, the country received $151.3 million, rising to $572.4 million in 2020, reaching over $1 billion in 2017. From 2016 to 2020, Senegal received $3.4 billion in climate finance, compared to $1.2 billion from 2010 to 2015. To enhance the private sector's contribution to climate finance, the government, in collaboration with the Central Bank, West African Economic and Monetary Union (WAEMU), and other member countries, could establish the necessary conditions for issuing green bonds at the regional market level. Operationalizing the integrated sustainable finance framework, along with recommended tax incentives and business climate improvement measures, is also crucial. Furthermore, development partners could provide technical assistance to identify ways to access affordable capital in the international market for green growth and investments, thus mitigating risks for private sector investment. Finally, the private sector could establish a platform with stakeholders to identify key risks in critical sectors and propose mitigation solutions to attract funding (AfDB 2023).

3.4. Institutional Framework and Strategies for Climate Finance Access in Senegal

As assessed in Senegal's climate finance mobilization, establishing the Environment and Sustainable Development Authority underscores the government's steadfast commitment to managing the intricate interplay between the environment and development. Preparations are underway for climate planning documents and dedicated funds or conventions, such as the National Adaptation Plans (NAPs). Furthermore, two nationally accredited entities for direct access to the Green Climate Fund are complemented by an institutional framework managing projects funded within these frameworks. Consultation and action frameworks bring together national, regional, and local stakeholders. Senegal has formulated policies, strategies, projects, and programs addressing climate change at national, regional (with ECOWAS in progress), and continental (African Union) levels.

Addressing the impacts of climate change necessitates an institutional framework at the national level to harmonize efforts with other Multilateral Environmental Agreements (MEAs) with climate implications. In addition to the institutional framework, several initiatives are underway concerning climate change adaptation and mitigation (GCF and Senegal, Ministry of Environment and Sustainable Development 2018).

Access to finance to meet obligations under the Convention poses a significant challenge for developing countries like Senegal. Demonstrating its commitment to the global effort against global warming, Senegal has committed to creating a strategic framework of interactions (Country Program) with GCF, outlining its investment priorities in terms of adaptation and mitigation.

The GCF has developed a country program for Senegal aligning with its climate goals outlined in its Nationally Determined Contributions (NDC). This program will guide Senegal's climate investments in 2030, enhancing access to climate finance, including the Green Climate Fund, and promoting development resilient to climate change (GCF 2018).

Climate finance in Senegal primarily focuses on the energy sector, constituting 26 percent of the total. Other targeted sectors include water and sanitation (22 percent), agriculture (16 percent), and transport (10 percent). The Senegalese government has committed to investing 10 percent of its annual budget in agriculture, recognizing its significance for food security and economic growth, employing a large portion of the population and providing income in rural areas. Agriculture in Senegal includes cash crops like peanuts and cotton and food crops like cereals. With extensive arable land (3.4 million hectares) and water resources, the country has the potential to become a net food exporter.

The private sector also contributes to mitigation projects, exemplified by initiatives like the Bokhol Solar project and the Scaling Solar program. Senegal has also invested in low-carbon transport infrastructure, such as TER (Le Train Express Régional) and BRT (Bus Rapid Transit), which is crucial for a green transition and offers more opportunities for private sector involvement in climate finance. This shift towards energy-focused finance is a significant part of Senegal's climate transition strategy (AfDB 2023).

3.5. National Strategy for Mobilizing Climate Finance: Public and Private Sectors Roles

The Senegalese government has formulated a National Strategy for Mobilizing Climate Finance for the public and private sectors. The primary objective of this strategy is to mobilize both internal and external resources for climate finance, supporting mitigation (by reducing greenhouse gas emissions) and adaptation (by enhancing community and ecosystem resilience, managing risks, and addressing disasters) while promoting sustainable development. The Ministry of Environment and Sustainable Development (MEDD) oversees and monitors the development and implementation of climate policy. The ministry serves as the implementing agency for the strategy through the Directorate of Environment and Classified Establishments (DEEC). Key National Strategic Authorities responsible for implementing climate action and adaptation policies include DEEC, the Designated National Authority for the Clean Development Mechanism (CDM), the Adaptation Fund (AF), the Green Climate Fund (GCF), and the National Climate Change Committee (COMNACC). DEEC acts as the focal point for the UNFCCC, the Kyoto Protocol, and the National Authority designated by the country in cooperation with GCF. It functions as the secretariat "to ensure the coordination and synergy of national actions for the implementation of the Convention mentioned above" (Article 9 of the decree). COMNACC, under the Ministry of Environment's supervision, was established in 1994, further reinforced in 2003 by Order No. 1.220 of March 7, 2003, from the ministry. COMNACC coordinates the planning, implementation, and monitoring of climate change policies and programs.

The National Commission of Sustainable Development (CNDD), coordinated by DECC, is entrusted with developing a national sustainable development strategy and action plan, reporting to the United Nations Conference on Sustainable Development (Sy 2022).

Senegal's national entities actively facilitate climate action and adaptation policies, including the National Agency for Civil Aviation and Meteorology (ANACIM), CSE, the Centre for Studies and Research on Renewable Energies (CERER), and Enda Energie. ANACIM is part of the Intergovernmental Panel on Climate Change (IPCC), and CSE is accredited as a National Entity to the Adaptation Fund and GCF. CERER serves as the designated national authority for the UNFCCC technology transfer mechanism, and Enda Energie is a Consortium Partner Knowledge Partner in the Climate Technology Centre and Network.

Given the diverse funding sources available, aligning the country's funding needs with the most suitable sources becomes crucial. Consequently, providing stakeholders with a national resource mobilization strategy is necessary and imperative.

Since GEF first began awarding grants to Senegal, it has approved 94 projects worth $473 million. Several other global organizations, including the United Nations Development Program (UNDP), the World Bank, and AfDB, also support Senegal's climate finance sector (Sy 2022).

3.6. Framework for Direct Access to Climate Finance in Senegal

Various multilateral climate finance instruments offer different avenues for countries to access funding. Although countries are encouraged to seek direct access to funding, there are also implementing entities that serve as intermediaries, offering valuable assistance. These entities may be national, multinational, or regional organizations. The Adaptation Fund enumerates 28 accredited implementing entities, comprising fifteen national, 10 multinational, and three regional entities. National institutions include ministries, agencies, institutes, funds, banks, and trusts. Notably, only two African countries, Senegal and Rwanda, have successfully applied for program funding from the Adaptation Fund, underscoring the need for institutional and human capacity development on the continent. The commendable promotion of national implementing entities notwithstanding, the Adaptation Fund's funding distribution cap for multilateral implementing entities could present programming constraints for countries not yet ready for accreditation. Other multilateral, regional, and bilateral funding instruments have different access modalities aligned with their internal regulations and program interests. While private-sector funding is emerging as an important source of climate finance, Africa's ability to capitalize on these opportunities is constrained by the lack of appropriate engagement approaches and public-private partnerships (UNECA 2014).

African countries have advocated strongly for direct access to climate finance, aiming to reduce transaction costs. However, direct access necessitates that national institutions meet fiduciary standards and effectively manage and allocate funds. Senegal, Benin, and South Africa have all established National Implementing Entities (NIEs). As the first to seek direct access, Senegal appointed an association of public utilities (CSE) with

expertise in coastal resource management to act as its designated NIE. Direct access is envisioned as a key modality for the new GCF, which should include support for building the capacity of national institutions to access climate finance, a provision not currently available through the Adaptation Fund.

To successfully implement funded projects, institutions receiving financing from international funds must establish robust relationships with partners on the ground (Massulo and Ndiaye 2016).

The GCF has accredited entities in Senegal for direct access, including Attijariwafa Bank (AWB), CSE, and La Banque Agricole (formerly Caisse Nationale de Crédit Agricole du Sénégal), a private financing institution accredited by CSE for small-scale projects in 2020, ranging between $10 million and $50 million. Two other entities, "le Fonds Souverain d'Investissement Stratégique" (FONSIS) and "le Fonds de Garantie des Investissements Prioritaires" (FONGIP), are also engaged in the accreditation process, aiming to enhance access to climate finance in Senegal. This reflects Senegal's strategic objective of diversifying financing sources and reducing dependence on large international entities.

3.7. Challenges to Accessing Climate Finance in Senegal

Overall, there is a growing movement to involve local actors in planning and implementing climate action initiatives in Senegal. This is supported by government policies such as the Emerging Senegal Plan and the 2030 Agenda on Sustainable Development Goals. However, there are obstacles to accessing climate finance, including a lack of understanding of climate change and difficulty in proving the climate-related nature of projects. This leads to rejected projects and a lack of financial resources for beneficiaries. Additionally, there is a lack of funding within the government and insufficient involvement of stakeholders in the process. Besides, multiple challenges prevent people from accessing international financing for climate change projects. One common obstacle is a lack of understanding about climate change, which makes it difficult to justify the project's connection to climate change. Beneficiaries are also not often involved in developing projects, limiting their ability to express their needs and concerns. Furthermore, there is a lack of information about the budgets of cooperation projects and programs, making it challenging to align projects with the actual needs of beneficiaries and those implementing them.

Besides, Senegal is implementing its climate policy, focusing on renewable energy and expanding public transportation. However, it has abandoned plans for coal-fired power generation and continues with its 'gas to power' strategy. The National Committee on Climate Change (COMNACC) coordinates climate action, but its effectiveness is questionable due to broad stakeholder participation. Transitioning to a zero-emissions society has not been mainstreamed into sectoral policies, and actions are fragmented between and within ministries. Senegal does not have a designated authoritative body providing climate or energy transition-related advice to the government, and resource constraints limit the ability of key institutional players to act (Climate Analytics and New Climate Institute 2022).

- **Political Context**

The political side of climate change is poorly defined in Senegal, with no clear priorities or plans to address the issue. There is also limited cooperation between different government ministries, which makes it challenging to address the problem effectively.

- **Institutional Context**

There is a lot of red tape and little cooperation with the Technical and Financial Partners. There is also a lack of incentive for the private sector and other stakeholders involved in the fight against climate change. Additionally, the national private sector is not very involved in climate planning. The language barriers make it challenging to access climate finance.

- **Financial Context**

The integration of climate finance into various government budgets is lagging, and there is low interest from private banks and insurance companies. The sector is still largely untested, and mobilizing resources can be complicated. Additionally, using funds is not always in line with the objectives of climate change mitigation and adaptation programs.

Besides, according to (Sy 2022), the analysis of climate action and adaptation policies in Senegal reveals several gaps and barriers, including poor climate risk integration in sectoral development planning, inequalities in access to climate financing between priority sectors and vulnerable territories, weak technical and scientific

capacity to transfer innovative strategies, low consideration of communities and local actors' adaptation needs, and the lack of a framework to monitor and evaluate climate policy implementation, such as the Monitoring, Reporting, Verifying (MRV) system. Integrating adaptation strategies into local development policies is also a significant challenge from technical and political perspectives. The complexity lies in the lack of a quantitative assessment of climate effects on local development policies, which informs central decision-makers. This highlights the need for a bottom-up approach that integrates the adaptation needs of vulnerable local communities into planning and implementation processes and aligns with Act III of decentralization, which enshrines the territorialization of public policies. This requires shifting from top-down approaches to a new model where local actors have more power and resources to adapt to the impacts of climate change.

Experiences with local actors and indigenous communities have shown that they often lack the necessary funds and expertise to carry out local adaptation activities (Toure, Diop, and Bünner 2020). This raises concerns about the compatibility of top-down adaptation strategies with local needs and development plans. Despite recommendations to incorporate local knowledge and practices, the planning and implementation of adaptation options in national strategies do not clearly include a framework for a locally-led approach. Therefore, local actors' involvement becomes crucial for successful adaptation efforts. Research is also needed to understand the challenges and opportunities for advancing climate solutions in Senegal, focusing on country-specific priorities and local communities' needs. This knowledge would inform policymakers in Senegal to balance climate action with job creation and sustainable economic development goals. It would also support national, local, and international decision-makers in designing and implementing long-term strategies to address climate change and sustainable development in Senegal without undermining policy space or the ongoing adaptation efforts of local communities. This would help design effective, long-term strategies without undermining policy space or the ongoing adaptation efforts of local communities (Sy 2022).

4. Policy and Institutional Innovations to Enhance Climate Finance Access in Senegal

Strengthening Senegal's capacity to access financial resources is paramount for addressing climate change, requiring increased climate investment to fulfill national targets for both mitigation and adaptation. The Senegalese government is formulating a long-term low-carbon development strategy considering the absence of comprehensive climate change legislation and a net-zero target. Simultaneously, efforts are underway to establish a transparency framework and a national monitoring, reporting, and verification system.

However, the limited resources dedicated to the environment in Senegal underscore the necessity for a substantial shift in funding allocation to effectively meet the country's needs. This shift should not introduce new measures, as in the past, but rather involve significant changes in the financing approach (CSE 2020).

According to Sy (2022), locally led adaptation (LLA), a process empowering individuals, communities, and organizations to set agendas and develop climate change adaptation solutions, could play a pivotal role in ensuring climate resilience at the local level. LLA fosters community potential and creativity, providing free and equitable access to resources and promoting effective, equitable, and transparent adaptation. The process enables local actors to decide on adaptation technologies, advocacy approaches, and mobilization strategies, supporting local capacities and ensuring high ownership of projects. LLA further facilitates the flow of climate adaptation finance from national to local governments, ultimately benefiting vulnerable communities (GCA 2021).

Assessing obstacles to accessing international climate finance funds prompts the formulation of political and institutional recommendations for Senegal, referencing the Malabo Montpellier Panel report on climate finance as a guiding document. The objective is to position Senegal as one of the African countries capable of securing climate finance to adapt to climate change and mitigate its impacts on agrifood systems. Building on the success stories of Benin, Mali, Rwanda, and Zimbabwe, the Malabo-Montpellier Panel emphasizes adopting robust policies, institutional innovations, and programmatic interventions to increase climate finance for agricultural adaptation. To replicate this success, Senegal must undertake political, institutional, and programmatic efforts to reverse the current situation.

At the political level, following the example of Mali, Senegal would benefit by integrating climate change into development policies, particularly in the agricultural sector.

At the institutional level, Senegal has taken proactive steps by including key public entities, the Sovereign Strategic Investment Fund (FONSIS) and the Guarantee Fund for Priority Investments (FONGIP), on the list of entities with direct access to the Green Climate Fund. This strategic move aims to diversify crucial aspects of financing, such as funding scale, financial instruments, and risk levels. Additionally, Senegal benefits significantly from establishing a dedicated budget line, exemplified by the Senegal Climate Fund, mirroring successful practices in countries like Mali. This initiative is pivotal in enhancing institutional capacities for mobilizing and effectively disseminating climate finances, primarily emphasizing funding adaptation and mitigation policies and strategies, particularly within the agrifood sectors.

Climate action planning must ensure genuine mainstreaming in various transition pathways, such as productive sectors, to attract additional support for climate-specific goals. Thus, Senegal needs planning instruments that operate at both national and sub-national levels, establishing a proper planning system to match the pace of climate impacts with the amount of climate finance.

Finally, on the programmatic level, Senegal should develop an agricultural sector program providing a comprehensive public and private investment framework. This program should include efforts to promote a bottom-up approach to agricultural development, create new technologies and skills to address climate change challenges, improve water management, consider irrigation solutions, and strengthen downstream segments of the value chain by investing in rural infrastructure and enhancing the business environment. Senegal needs a long-term finance program/resource to fulfill its targets and needs, developing a robust strategy with mixed instruments. Additionally, the country would benefit from implementing a partnership framework where ideas and experiences can be shared among stakeholders.

Policy recommendations for unlocking Senegal's access to climate finance and increasing the role of natural resources while promoting sustainable growth include:

- **Addressing Climate Finance Discrepancies.** There is a need for increased transparency in reporting to account for both omission and commission errors in accounting figures, especially when comparing climate finances to development investments. A recent UNEP study, the Adaptation Gap Report, highlights the prevalence of programs exceeding $50 million over five years, with many relying on debt instruments since 2017. Clarifying the distinction between development finance and dedicated climate finance is crucial.

- **Enhancing Priority Setting and Information Sources.** Efforts should address gaps in priority setting, targeting, and the sources of information, including local knowledge, used to formulate robust climate policies. This approach can help overcome various obstacles to climate finance, including issues related to governance, local ownership, power dynamics, marginalization, and inequality.

- **Improving National-Level Cap for Climate Finance.** The cap, representing the maximum foreseeable fund leverage for accredited entities at the national level, should be enhanced through bilateral financial instruments. Emphasizing programs over individual projects can contribute to a cohesive and consistent climate policy with a dedicated focus on scaling up sustainable agricultural practices.

- **Establishing a Comprehensive National Climate-Finance Policy Framework.** It is imperative to develop a national climate-finance policy framework to foster a unified approach, ensuring the creation of a robust project portfolio and establishing strong capacities to develop intricate and competitive climate projects.

- **Adopting a Holistic Approach to Promoting Renewable Energy.** Multisectoral interventions could include leveraging international agreements to create a market for emissions trading and increase participation in the voluntary market while transparently managing mining and hydrocarbon profits. These efforts should go hand-in-hand with enforcing stricter policies to protect forests and prevent illegal logging, regulating fisheries to prevent illegal catches and ensure fair incomes, and implementing projects in agriculture and forestry to increase carbon sequestration. Mainstreaming sustainability initiatives, such as establishing agropoles to enhance the value of farmland, considering climate change impacts, and developing ecotourism in parks and reserves, is highly recommended. Promoting renewable energy with the support of development partners and the private sector will be crucial.

5. Conclusion

This review paper provides a comprehensive overview of Senegal's climate finance needs, fund flows, and challenges in both mitigation and adaptation efforts. The identified funding gaps and the evolving landscape of climate finance sources raise several crucial points for discussion.

Firstly, the paper underscores the significance of climate finance in catalyzing external financial resources for Senegal's climate action. The detailed breakdown of financial requirements for mitigation and adaptation projects and identifying strategic investment opportunities through programs like GCF provides a solid foundation for further examination. The review also highlights the diverse sources of climate finance, including national budgets, multilateral organizations, and private donors. The dominance of GEF and the shift in focus from adaptation to energy projects in recent years invite discussion on the effectiveness of different funding mechanisms and their alignment with national priorities.

Moreover, the analysis of Senegal's average annual climate finance mobilization and the growing role of the private sector presents an opportunity to explore the challenges and prospects of private sector involvement. The notable 70.7 percent shortfall in adaptation efforts due to insufficient funds emphasizes the urgency of finding innovative financing solutions and overcoming political, institutional, and financial obstacles.

The discussion could delve into the evolving climate finance landscape in Senegal, especially considering the country's shift toward renewable energy projects and the increasing reliance on private financing. Assessing the effectiveness of the National Strategy for Mobilizing Climate Finance, the direct access framework and the challenges highlighted in the paper could provide valuable insights into potential policy adjustments and institutional innovations. Additionally, exploring the specific projects funded by climate finance, such as the Bokhol Solar project and the Senegal Integrated Urban Flood Management project, could offer case studies for understanding the initiatives' practical implications and outcomes.

This review paper prompts a thoughtful discussion on the adequacy, efficiency, and sustainability of Senegal's current climate finance mechanisms. It encourages deeper exploration of the challenges and opportunities associated with accessing climate funds, focusing on policy and institutional innovations that can enhance the country's resilience to climate change.

The government has established institutions like the Ministry of Environment and Sustainable Development, CSE, and "la Caisse Nationale de Credit Agricole" to implement these measures and facilitate access to climate funds.

Having ratified the Paris Agreement in September 2016, Senegal finalized its climate commitments through its NDC in late 2020. These commitments align with the national development strategy, the *Plan Sénégal Émergent*, encompassing both unconditional and conditional objectives contingent on external support. With an estimated cost of around $13 billion over the next decade, Senegal recognizes the imperative of external assistance to achieve these goals, emphasizing exploring diverse climate financing options.

Evaluating the disparity between current funding and Senegal's climate goals unveils significant obstacles with potential repercussions on climate policies. The insufficiency of financial resources compared to Senegal's ambitious targets poses challenges in successfully implementing and executing vital climate adaptation and mitigation initiatives. This financial gap may hinder resilience-building efforts and impede institutional capacity-building programs, training, and skill development initiatives, limiting the formulation and enforcement of robust climate policies. Senegal's struggle to adapt to climate change due to inadequate funding may result in delays, leaving communities more vulnerable to climate-related risks. The shortfall in investment in renewable energy jeopardizes Senegal's emission reduction objectives and reliance reduction on fossil fuels, impacting its overall climate goals. The lack of funding also threatens food security initiatives, hindering resilient agriculture and sustainable farming practices.

Climate change exacerbates social and economic inequalities, and the funding deficit may worsen these disparities as marginalized communities grapple with climate consequences. Furthermore, insufficient funding for research and innovation impedes progress toward sustainable and resilient practices.

To address these challenges, Senegal must actively seek additional funding, engage in international collaborations, and explore innovative financing mechanisms to bridge the gap. A strategic focus on enhancing climate finance access for agricultural adaptation, aligned with recommendations from the Malabo Montpellier Panel report, is crucial. Integrating climate change into development policies, particularly in the agricultural sector, and improving institutional and budgetary frameworks are imperative steps for Senegal to achieve its climate goals and ensure a sustainable future.

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