



# Climate Change Adaptation in Senegal: Strategies, Initiatives, and Practices

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## Summary

Senegal is among the African countries considered highly exposed and vulnerable to climate change impacts due to its location on a wide coastal strip in the Sahelian zone. The fight against climate change and its growing impact on livelihoods is therefore one of the urgent challenges facing the State of Senegal. However, while the relevance and coherence of adaptation strategies are often clearly articulated in policies, project development, and design phases, the real issues, needs, and priorities of local actors are not yet clearly defined. Moreover, guidance for the consideration of local and endogenous knowledge and good practices into national policy development are not widely available. Frameworks for integrating adaptation action as provided in national policies, strategies, and frameworks (including the NDCs) into locally led adaptations are also not sufficiently accessible to the stakeholders that need them the most. This paper presents the status and trends of climate action in Senegal. It further underscores the need for more research to identify gaps and opportunities in current climate action strategies, initiatives, and practices to support and enhance effective and sustainable adaptation efforts.

# Table of Contents

1.	Introduction and Country Background	5
2.	Status and Trends of Climate Action in Senegal	5
3.	Governance and Management of Climate Action	7
4.	Climate Financing	8
5.	Gaps and Potential Opportunities for Effective and Sustainable Climate Adaptation Actions for the People of Senegal	9
6.	The Value and Relevance of Locally Led Adaptation (LLA) for the People of Senegal	10
7.	Potential Role and Value of New Research to Enhance Adaptation Activities in Senegal	11
	<i>List of Abbreviations</i>	12
	<i>Notes</i>	14
	<i>About the Author</i>	15
	<i>Acknowledgements</i>	15

## 1. Introduction and Country Background

Senegal is a country of 196,722 km<sup>2</sup> located at the western extremity of the African continent. The Sodano-Sahelian climate is tropical in the south and semi-desert in the north, with a dry season from November to June and a hot, humid season from June to October. Average annual rainfall follows a decreasing gradient from the south to the north of the country, from 1,200 mm in the south to 300 mm in the north, with varying climatic zones: a humid zone in the south, a wooded savannah in the centre and a semi-desert zone in the north.

Demographic projections estimate Senegal's population at 17.7 million in 2022, compared with 16.2 million in 2019 and 13.5 million in 2013 (ANSD, 2022).<sup>1</sup> The intercensal population growth rate, although still high, remained mostly stable in recent years at a level of 2.7% between 1976 and 1988, and 2.5% over the period 1988-2002 and 2002-2013, resulting in a doubling of the population every 25 years. The Senegalese population is characterised by its disproportionate youth (one in two Senegalese is under 20 years old) and its predominance of rural areas (53.1% of the total population in 2019). The urban population is estimated at 46.9% in 2019 (7,606,700 urban against 8,602,426 rural).

In Senegal, the poverty rate was estimated at 37.8% in 2018/2019 (EHCVM 2018/2019)<sup>2</sup> with major disparities between areas of residence (urban/rural) and regions of the country (Dakar and the rest of the country). The rural population is more affected by poverty, with more than half (53.6%) known to live below the poverty line. In urban areas it affects two out of ten people (19.8%). Senegal's Human Development Index (HDI) for 2022 is 0.512, which places the country in the "low human

development" category and ranks it 170nd out of 188 countries and territories worldwide.

Senegal's economic growth rate decreased from 6.2% in 2018 to 4.4% in 2019 due to the slowdown of activity in the primary (4.5% against 8.1% in 2018), secondary (3.7% against 6.5% in 2018) and tertiary (4.6% against 5.4% in 2018) sectors. The continued dynamism of the primary sector (7.9%), the secondary sector (7.5%) and the tertiary sector (5.3%) in 2018 favoured economic growth despite recorded deceleration that same year (ANSD, 2022).<sup>3</sup>

Indeed, a large part of the Senegalese economy is based on production systems which, once affected by environmental crises, will weaken a country already facing a fragile socio-economic situation. For example, the loss of biodiversity, the reduction of vegetation cover, deforestation, water, and wind erosion, salinisation, and acidification have led to soil degradation, reducing its suitability for cultivation.

## 2. Status and Trends of Climate Action in Senegal

Senegal is among the African countries considered highly exposed and vulnerable to climate change due to its location in the Sahelian zone and its wide coastal strip (Mc Sweeney et al., 2010; MEDD-GCF, 2020).<sup>4, 5</sup> Increasing temperature trends and disrupted rainfall patterns, often punctuated by extreme weather events, are generating increasing climate risks that expose and render fragile the foundations of the national economy and natural and human capital<sup>6</sup> (USAID, 2017; Baarsch et al., 2017). The deterioration of the productive bases of the national economy, in particular agriculture, livestock, and fisheries, which employ a significant proportion of the working population, especially in rural

areas, illustrate the economic challenges of climate change in Senegal. Projections of the economic impacts of climate change made by the Planning Department of the Ministry of the Economy, Finance, and Planning (MEFP) show that with an increase of temperatures between 1°C and 2°C by 2050, there could be severe consequences on economic growth and a drop of around 25% in productivity.

To address these challenges, the government of Senegal launched a development strategy called the Senegal Emerging Plan (PSE) for the period leading up to 2035, which is well aligned with sustainable development goals (SDGs). This plan integrates the need to consider adaptation in economic and social development policies to increase the resilience of the country's production systems to climate change impacts. Moreover, this policy document draws attention to climate risks and stresses the need to consider unconditional commitments in the National Determined Contribution (NDC) regarding both mitigation and adaptation to climate change, whilst integrating them into national medium to long-term budgetary programming.

Senegal is making noticeable progress in implementing adaptation policies according to several priority sectors under the NDC. The fisheries and livestock sectors have already finalised their respective national adaptation plans and stakeholders are developing climate resilience projects to mobilise funding. The agriculture, infrastructure, food, and health sectors are supported by the National Adaptation Plan – Global Environment Facility programme (NAP-GEF) to carry out vulnerability and adaptation studies in five target regions of Senegal (Ziguinchor, Kédougou, Kaffrine, Matam, and Saint-Louis), which should lead to national sectoral adaptation plans and a funding mobilisation strategy. Other sectors such as

coastal zones, water resources, and biodiversity are being supported by partners and financiers such as Agence Française de Développement (AFD), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Lux-Development (Lux-Dev), etc., to launch the process of developing their sectoral national adaptation plans.

Several initiatives have been identified as opportunities to address climate challenges such as:

- the development of a reference and harmonised framework for climate policies in Senegal with the NDC, the NAPs, the National Communications, the Green Climate Fund Country Programme, and Climate Change Facilities;
- the willingness of the State to establish a climate sensitive budgeting mechanism to facilitate the integration of climate change into the planning and implementation process of sectoral development policies;
- the development of climate change adaptation planning documents at the local level, such as Integrated Territorial Climate Plans (PTCI), Local Climate Change Adaptation Plans (PLACC), the Rainwater Management and Climate Change Adaptation Project (PROGEP) supported by development cooperation agencies such as UNDP, USAID, GIZ, AFD, and civil society and private organisations (CSE, ENDA, IPAR);
- the existence of numerous projects and programmes that implement sustainable development actions with adaptation value, such as the Community Development Emergency Plan (PUDC), the City Modernisation Programme (PROMOVILLE), and the Food Security Support Project (PASA) supported by donors such as the ADB and the World Bank;
- the strong commitment of State, technical and financial partners, civil society, the private sector, non-governmental

organisations, local actors, communities, and grassroots associations to climate action;

- the favourable international context with the establishment of several facilities to mobilise financing for adaptation, notably the Adaptation Fund (AF), the Green Climate Fund (GCF), the Global Environment Facility (GEF), the Climate Change Fund for Africa (CCAF), and the Global Centre on Adaptation (GCA);
- the establishment of mechanisms to strengthen national and local capacities in integrating climate into planning, developing climate resilience projects, and mobilising funding;
- the development of an institutional framework for monitoring and evaluating progress in the implementation of the country's adaptation commitments contained in the NDC.

### 3. Governance and Management of Climate Action

Achieving the vision of climate-resilient action requires collaboration to develop a shared vision among diverse stakeholders and coordinated cross-sectoral planning to ensure policy coherence. Several national institutions and private organizations exist in Senegal whose mandates and activities touch on climate change issues with considerable synergy to adapt to climate change in vulnerable productive sectors. These include government institutions, the private sector, the research community, and civil society, as well as bilateral and multilateral donor partners. The national framework for the implementation and governance of climate action and adaptation policy commitments made under the UNFCCC guidelines is organized and managed through the following structures and institutions:

- **national strategic authorities of climate action and adaptation policies implementation** composed of: i) the Directorate of Environment and Classified Establishments (DEEC) under the supervision of the Ministry of Environment and Sustainable Development (MEDD) as focal point for the UNFCCC and the Global Environment Facility (GEF), the Designated National Authority (DNA) for the Clean Development Mechanism (CDM), the Adaptation Fund (AF), and the Green Climate Fund (GCF); ii) the National Climate Change Committee (COMNACC) created in 2003 to federate all actors involved in climate change issues (administrative technical services, private sector, NGOs, civil society, research structures, universities, technical and financial partners, local authorities, etc.) and to coordinate the planning, implementation and monitoring of climate change policies and programs at the highest level; iii) the National Commission of Sustainable Development (CNDD) coordinated by the DEEC, which is responsible for developing a national sustainable development strategy and action plan and reporting to the United Nations Conference on Sustainable Development (CSD);
- **national entities facilitating climate action and adaptation policies implementation** through: i) the National Agency for Civil Aviation and Meteorology (ANACIM) as part of the Intergovernmental Panel on Climate Change (IPCC), which has contributed significantly to actions on climate projections in Senegal; ii) the Centre for Ecological Monitoring (CSE) accredited as a National Entity to Adaptation Fund and Green Climate Funds (GCF) supporting the formulation and submission of project and programme documents targeting these fund resources; iii) the Centre for Studies and Research on Renewable Energies

(CERER) acting as the designated national authority for the UNFCCC technology transfer mechanism and playing a key role in the mastery, development, and dissemination of clean, climate-adapted technologies; iv) Enda Energie as a member of the Consortium Partner Knowledge Partner in the Climate Technology Centre and Network (CTCN) promoting the accelerated transfer of environmentally sound technologies for low-carbon and climate-resilient development;

- **agencies and institutions implementing and supporting programmes and projects on climate action and adaptation policies** composed of: i) the sectorial ministries, directorates, departments, agencies, municipal assemblies, and councils who plan, implement, and coordinate climate adaptation policies for priority sectors declined in NDC and PNA; ii) the academic institutions supporting the move from science development to implementation by addressing impacts of climate change research questions and capacity building for vulnerable communities and priority sectors for climate action; iii) the technical and financial partners key to successful adaptation actions in Senegal who recognize the role of the international community, especially development partners for resource mobilization, capacity development, and technology development for current and future adaptation action in priority sectors; iv) the civil society organizations (CSOs) as strategic partners for health sector development. The climate action process in Senegal will actively engage the CSO community in planning, advocacy, education, and awareness raising, evidence-based research, as well as the monitoring and

evaluation of health adaptation efforts at various levels in the country; v) the Private Sector to drive adaptation and climate risk reduction for priority sectors that achieve Senegal's sustainable development agenda and realize its nationally determined contributions (NDCs) to the Paris Agreement;

- **multidisciplinary technical working groups (MTWG):** the planning, implementation, and coordination of climate action and adaptation policies in Senegal uses a cross-sectoral policy approach to ensure robust and efficient output. This approach is also anticipated to generate the buy-in needed for effective implementation of climate adaptation policies according to NDC and PNA priority sectors. Each priority sector (agriculture, water resources, livestock, fisheries, health, coastal zones, infrastructure, biodiversity, and GRC) establishes one technical working group or cross-sectoral planning group (CSPGs) with representatives from government and academia to ensure the development and implementation of climate resilience projects and programs (Government of Senegal, 2015)<sup>7</sup>.

## 4. Climate Financing

Climate financing in Senegal is provided by several sources including the state budget, multilateral, bilateral, and the private sector. In terms of multilateral funding, the Global Environment Fund (GEF) is the largest provider of grants to Senegal (CSE, 2020)<sup>8</sup>. Out of a total of 94 projects (national and regional) approved for Senegal by the Global Environment Fund since the GEF first Phase, USD 473.04 million in grants have been awarded. Several other multilateral actors including UNDP, World Bank, African Development Bank (AfDB), European Union,



IFAD (*International Fund for Agricultural Development*), and FAO (Food and Agriculture Organization) also support the sector. Until recently, bilateral assistance was mainly provided by the Netherlands. As of 2016, the Netherlands withdrew from the environment sector to cover other areas of concentration. However, some countries remain active in the sector such as Luxembourg, France, Japan, the United States, and Germany.

Moreover, as part of the implementation of the Priority Action Plan of the Emerging Senegal Plan (PSE) 2014-2018, several sectors' finances take adaptation and climate action into account. The agriculture sector with USD 412.5 million to support family farming, the water and sanitation sector with USD 386.4 million, disaster risk management with USD 61.3 million for the climate resilience project, and the rainwater management and climate change adaptation project (PROGEP) with USD 72.9 million. In addition to this funding for adaptation activities, index-based agricultural insurance developed by the Caisse Nationale d'Assurance Agricole du Sénégal (CNAAS), the Caisse Nationale de Crédit Agricole du Sénégal (CNCAS), and the Couverture Sanitaire Universelle (CSU) in the health sector with USD 72 million contribute to the resilience of communities against the negative impacts of climate change. Private finance is still quite marginal compared to the country's needs and potential. Efforts are underway to accredit national private entities to the Green Climate Fund to accelerate the process of private sector involvement in the mobilisation of climate finance. In addition, there is an emergence of Corporate Social Responsibility (CSR) in climate space.

However, it should be noted that local authorities and communities that could develop strategies to adapt to the impacts

of climate change do not have access to these sources of climate finance due to a lack of capacity to mobilise funds or organise themselves to propose fundable or grantable projects. To address this issue, the National Plan for Local Development (PNDL) and the Centre for Ecological Monitoring (CSE) are currently working on capacity building in climate finance and climate risk management for local authorities to support the process of implementing locally driven adaptation with the involvement of vulnerable and marginalized communities. The aim is to help better integrate climate change adaptation issues into the local planning process and to build local institutional capacity for project development that facilitates access to climate finance and the inclusion of community-developed adaptation technologies.

## 5. Gaps and Potential Opportunities for Effective and Sustainable Climate Adaptation Actions for the People of Senegal

In Senegal, the joint and coordinated implementation of the Emerging Senegal Plan (PSE), the 2030 Agenda on Sustainable Development Goals (SDGs), and the Nationally Determined Contribution (NDC), which is currently being translated into National Sectoral Adaptation Plans (NAPs), offer good opportunities and prospects for meeting the challenges and impacts of climate change. In parallel to this institutional mechanism shared by a set of ministerial sectors at the central level, there is a growing body of initiatives that advocate for a territorialisation of climate action, including integrating actors into the planning and implementation processes of local policies within territories.

However, the analysis of the implementation process of climate action and adaptation policies in Senegal highlights a certain number of gaps and barriers related to: i) poor integration of climate risks in the planning of sectoral development policies; ii) inequalities in access to climate financing between priority adaptation sectors and vulnerable territories; (iii) the weakness of technical and scientific capacity to transfer and take ownership of innovative adaptation strategies with a high impact on communities; (iv) the low consideration of communities and local actors adaptation needs; and (v) the lack of a framework to monitor and evaluate performance in climate policies implementation, such as the MRV (Monitoring, Reporting, Verifying) system.

Moreover, although the relevance and coherence of adaptation strategies are often very clearly demonstrated in the project development or design phase, their effective integration into local development policies is a major challenge from both a technical and political point of view. From a technical point of view, the complexity of integration is linked to the fact that climate consideration is reduced to a qualitative aspect that informs central decision-makers rather than a quantitative assessment of possible effects on development policies at the local level. These gaps highlight the need for a different, bottom-up approach that allows the adaptation needs (climate actions) of the most vulnerable local communities to be adequately integrated into the planning and implementation processes of local development plans to align with Act III of decentralization, which enshrines the territorialization of public policies. This requires a shift from the status quo of top-down approaches towards a new model where local actors have more power and resources to adapt to climate change impacts (GCA, 2021)<sup>9</sup>.

## 6. The Value and Relevance of Locally Led Adaptation (LLA) for the People of Senegal

Locally led adaptation (LLA) is the process by which individuals, communities, networks, organizations, private entities, and governments set their own agendas, develop solutions to climate change adaptation and provide the capacity, leadership, and resources to make these solutions a reality (GCA, 2021; WRI, 2021)<sup>10-11</sup>. The value and relevance of paying special attention to local actors and communities for successful climate adaptation was explicitly mentioned in the chapters of the latest IPCC report as a determinant of climate resilience at the local level. LLA can unlock, support, and leverage the enormous potential and creativity of communities to develop and implement solutions to their day-to-day needs (Westoby et al., 2019; WRI, 2021)<sup>12</sup>.

In addition, LLA can play a key role in providing free and equitable access to resources for local communities (AAC, 2022)<sup>13</sup>. Shifting power to local stakeholders can catalyse effective, equitable, and transparent adaptation. Moreover, in the process of LLA, local actors decide which local adaptation technologies to implement, which approaches to advocate for and which actors to mobilize to achieve their objectives (Diouf et al., 2014; Dramé A., Kéma A., 2016)<sup>14-15</sup>. From this perspective, local capacities are supported to design, implement, monitor, and maintain measures, local knowledge and ownership of projects are high, and funding is managed by local actors to support long-term sustainable outcomes and institutional capacities (AAC, 2022)<sup>16</sup>. Finally, LLA can enable national, regional, and local governments to provide climate planning and improved institutional capacity. These changes

can directly benefit the target populations and create conditions for the flow of climate adaptation finance from national to local governments, thereby improving the health and well-being of vulnerable communities.

## 7. Potential Role and Value of New Research to Enhance Adaptation Activities in Senegal

Experiences in adaptation with local actors and indigenous communities show that in most cases local stakeholders lack the financial resources and technical capacity to implement the various components of locally driven adaptation activities (MEDD-MEPCI, 2020)<sup>17</sup>. These barriers therefore question the coherence between top-down adaptation strategies and local adaptation needs and development plans.

For example, the process of planning and implementing priority adaptation options contained in the NDC and NAP does not clearly define a framework for integrating a locally led approach to adaptation, even though the guidance recommends considering local and endogenous knowledge and practices

developed by communities in adapting to climate change. Success in planning and implementing adaptation depends on the active participation of local actors.

Research is therefore needed to better understand the challenges and opportunities for advancing climate solutions focused on country-specific priorities that are consistent with endogenous adaptation practices and the needs and priorities of local communities. In view of the climate change related challenges faced by the people of Senegal, research is needed to collect and analyse information that can illustrate the potential for the development and implementation of climate adaptation through locally driven adaptations. Such knowledge would inform and support the efforts of policymakers in Senegal to balance climate action with the goals of job creation and sustainable economic development. In addition, it would also support national, local, and international decision-makers and partners in designing and implementing effective, long-term strategies to address the dual challenges of climate change and sustainable development in Senegal, without unnecessarily undermining or restricting its policy space or the ongoing adaptation efforts of local communities.

## List of Abbreviations

<b>AAC</b>	Adaptation Action Coalition	<b>DEEC</b>	Direction de l'Environnement et des Etablissements Classés
<b>AF</b>	Adaptation Fund	<b>DNA</b>	Designated National Authority
<b>AFD</b>	Agence Française de Développement	<b>EHCVM</b>	Enquête Harmonisée sur les Conditions de Vie des Ménages
<b>AfDB</b>	African Development Bank	<b>FAO</b>	Food and Agriculture Organization
<b>ANACIM</b>	Agence Nationale de l'Aviation Civile et de la Météorologie	<b>GCA</b>	Global Centre on Adaptation
<b>ANSD</b>	Agence Nationale de la Statistique et de la Démographie	<b>GCF</b>	Green Climate Fund
<b>CBO</b>	Community-Based Organisation	<b>GEF</b>	Global Environment Facility
<b>CCAF</b>	Climate Change Fund for Africa	<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>CDM</b>	Clean Development Mechanism	<b>IFAD</b>	International Fund for Agricultural Development
<b>CERES</b>	Centre d'Etudes et de Recherche sur les Energies Renouvelables	<b>IPAR</b>	Intiative Prospective Agricole et Rurale
<b>CNAA</b>	Caisse Nationale d'Assurance Agricole du Sénégal	<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>CNCAS</b>	Caisse Nationale de Crédit Agricole du Sénégal	<b>LLA</b>	Locally Led Adaptation
<b>CNDD</b>	Commission Nationale sur le Développement Durable	<b>MEDD</b>	Ministère de l'Environnement et du Développement Durable
<b>COMNACC</b>	Comité National sur les Changements Climatiques	<b>MEFP</b>	Ministère de l'Economie, des Finances et du Plan
<b>CSD</b>	Conference on Sustainable Development	<b>MGTDAT</b>	Ministère de la Gouvernance Territoriale, du Développement et de l'Aménagement du Territoire
<b>CSE</b>	Centre de Suivi Ecologique	<b>NAP</b>	National Adaptation Plan
<b>CSO</b>	Civil Society Organisation	<b>NDC</b>	Nationally Determined Contribution
<b>CSR</b>	Corporate Social Responsibility	<b>NGO</b>	Non-Governmental Organisation
<b>CSU</b>	Couverture Sanitaire Universelle	<b>PASA</b>	Projet d'Appui à la Sécurité Alimentaire
<b>CTCN</b>	Climate Technology Centre and Network		

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<b>PLACC</b>	Plan Local d'Adaptation au Changement Climatique	<b>PUDC</b>	Programme d'Urgence de Développement Communautaire
<b>PNDL</b>	Plan National Développement Local	<b>SDG</b>	Sustainable Development Goals
<b>PROGEP</b>	Projet de Gestion des Eaux Pluviales et d'Adaptation au Changement Climatique	<b>UNDP</b>	United Nations Development Programme
<b>PROMOVILLE</b>	Programme de Modernisation des Villes	<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>PSE</b>	Plan Sénégal Emergent	<b>USAID</b>	United States Agency for International Development
<b>PTCI</b>	Plan Territoire Climat Intégré	<b>WRI</b>	World Resources Institute

## Notes

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He has also coordinated research projects in Mauritania, Senegal and Côte d'Ivoire in collaboration with national institutions like the CSE and CR4D (Climate Research for Development). Dr. Sy's areas of interest include Water Sanitation, Spatial Epidemiology, Public Health Environmental Policies, Climate Change, and Sustainable development. Dr Sy completed his PhD in Health Geography at the University of Strasbourg, France.

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