

UNTAPPED OPPORTUNITIES FOR CLIMATE ACTION

An assessment of food systems in
Nationally Determined Contributions



COUNTRY ASSESSMENT

SENEGAL



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PREFACE

Integrating food systems transformation into the Nationally Determined Contributions (NDCs) – the national climate actions at the heart of the Paris Agreement, is critical to delivering on interconnected ecological, biodiversity, health, economic, social, and cultural goals. Taking a food systems approach builds climate resilience and results in a diversity of context-specific solutions for food production, distribution, consumption, and waste. Yet, food systems are rarely prioritized in climate policy.

This country assessment is part of a suite of publications that are designed to centre food systems transformation in future climate policy:

1. **Untapped Opportunities for Climate Action: An Assessment of Food Systems in Nationally Determined Contributions**: A summary report providing a synthesis of the 14 country assessments with recommendations and priority actions for policymakers and climate policy advisors
2. **A Practical Guide to Assessing Food Systems in Nationally Determined Contributions (NDCs)**: A guide with a framework designed to enable users to take a food systems approach to developing future NDCs and implementing climate policies.
3. A set of **14 country assessments** examining the latest NDCs of 14 countries from around the world, outlining areas of improvement and opportunity.

Users are also encouraged to read **Confronting the Climate Crisis with Food Systems Transformation: Stories of Action from 14 Countries**, which provides a catalogue of global case studies that complement the suite of materials for policymakers, advisors, and advocates of climate action.

OVERVIEW OF SENEGAL'S FOOD SYSTEMS

Food production makes up an important share of the Senegalese economy. Almost one-third of the working population is employed in the agriculture sector, which makes up 17% of their gross domestic product (GDP).¹ Senegal's food staples are rice, millet, sorghum, and maize.² Together with cowpeas and groundnuts, these crops constitute the majority of the country's agricultural production.³ Groundnut production occupies about half of Senegal's total cropped area and employs two-thirds of the rural population.⁴

While all main crops are grown across the country, Senegal's agricultural production can be divided into six main regions, each with their own agricultural focus. In the River Valley in the North, irrigated rice and horticulture are dominant. Rainfed rice is the main crop in Eastern Senegal, the Upper Casamance, and the Lower Casamance. Moreover, the Niayes region produces 80% of Senegal's horticulture, the Groundnut Basin is the main production site of groundnuts and millet, and the silvopastoral zone focuses on livestock production.⁵ Coastal fisheries are also a key component of the Senegalese food sector and provide about 600,000 jobs and 1.6% of its GDP.⁶ Fish and seafood make up an important element of Senegalese diets, contributing about 43% of average animal protein intake in 2013, with an annual consumption of 23.9 kilograms (52.6 pounds) per person.⁷

Horticulture has rapidly evolved in recent years, with production of fruits and vegetables increasing from 905,000 tons in 2012 to 1,446,360 tons in 2018.⁸ The vast majority of workers in the horticultural export sector are women, who are often employed on a seasonal or even daily basis between October and May. Workers often return to family farms during the two peak harvest moments: from June to July when irrigated rice is harvested, and from September to October for the harvest of rainfed crops.⁹ In rural areas, small-scale, rainfed family farms predominate and are critical for livelihoods and food security.

Nevertheless, Senegal remains a net importer of staple food crops. The country imports approximately 70% of its food needs, which means households are vulnerable to fluctuations in global markets.^{10,11} Moreover, population growth, urbanization, and evolving diets have driven food imports. Top agricultural imports include rice, wheat, corn, onions, palm oil, sugar, and potatoes, as well as fruits and vegetables.¹² On the other hand, the agricultural products that dominate the export trade are cotton (10.78%), vegetables (7.88%), and peanuts (7.87%). The main export partners for Senegal are Mali, the European Union, India, Switzerland, and Guinea. With the export value quadrupling from 14,811.4 million West African CFA francs (XOF) (25.8 million USD) in 2000 to 70,956.8 million XOF (123.6 million USD)* in 2015, Senegal is also a net exporter of fish and fisheries products.¹³ In 2020, fish exports reached 247,430 million XOF (431 million USD), representing 11% of total exports.¹⁴

The competitiveness of local crops represents a central challenge for Senegal's food security. This is particularly true for rice, which is Senegal's main staple crop: While the country produced 0.4 million tons of rice in 2013, it continued to depend on the import of 1.1 million tons of rice the same year.¹⁵ Environmental factors, such as insufficient water, climate fluctuations, and prevailing droughts pose significant barriers to rice production that

* Conversions based on February 8, 2022, exchange rates.

compromise yield productivity.¹⁶ In addition, poor soil and crop management, inadequate use of inputs, inefficient agricultural subsidies, and weak structures in value chains, as well as insecure access to land, technology, and markets, pose further infrastructural and governance challenges that also hamper productivity.¹⁷

In response to these challenges, the National Program for the Self-Sufficiency of Rice (NPSR) was formulated as one of the national long-term development strategies for Senegal. The goals of the NPSR (to be achieved by 2035) focus on the improvement of both rainfed and irrigated rice production.¹⁸ Furthermore, the Grand Offensive in Agriculture for Food and Abundance (GOANA) was established in 2011 to increase domestic rice production and thereby reduce the reliance on rice imports. The government recently issued the Letter of Agricultural Sector Development Policy (2019–2023) to further prioritize agricultural development, having previously already allocated more than CFAF 1,000 billion from 2014 to 2019 in the sector. As a result of these investments, cereal production for the 2018–2019 agricultural season was estimated at 2.8 million tons, an increase of 13% compared to the previous season and 55% compared to the average over the past 5 years. In 2020, despite the COVID-19 crisis, agricultural production increased a further 5%.¹⁹

Nonetheless, the country continues to face chronic food insecurity and malnutrition. In 2020, 17% of the population were considered acutely food insecure and 7.5% were undernourished.²⁰ Still, these numbers represent a significant decline from 24% of the population being undernourished at the beginning of the century.²¹ In 2020, the Senegalese government spent an estimated 200,355 million XOF (349 million USD) to improve food security, mainly through agricultural subsidies and irrigation projects, as well as through cash transfers and food procurement for vulnerable households.²²

The agricultural sector is directly responsible for 43% of Senegal's greenhouse gas (GHG) emissions, which total 16.8 MtCO₂e as of 2010.²³ It has to be noted, however, that this share in emissions is marginal compared to the country's share in global GHG emissions, which stands at approximately 0.07% as of 2011.²⁴ Nevertheless, the agricultural sector puts pressure on forests, which are cleared for land use. The threat of deforestation has also been associated with insecure land tenure. Following independence, Senegal pursued a decentralization model of governance empowering local authorities to allocate users' rights to land. To acquire these rights, landholders must demonstrate the economic productivity of the land. As a result, landholders are encouraged to clear forests and establish farms or cattle ranches in order to secure their land rights.²⁵

The consequences of climate change could worsen food insecurity in Senegal, particularly through droughts and soil degradation. Senegal is located in the Western Sahel, where recorded climatic changes have led to environmental degradation, rainfall variability, and famine.²⁶ The country's agriculture is mainly rainfed and depends heavily on seasonal rainfall, with the main staple crops (rice, millet, groundnuts, and sorghum) considered highly sensitive to changes in annual precipitation patterns.²⁷ Moreover, the livelihoods of approximately half of the Senegalese population living in rural areas is particularly threatened, although recent years have seen a large-scale migration to urban areas.²⁸ Given their reliance on rainfed agriculture for their livelihoods, rural households are disproportionately vulnerable to climate change. Changes in annual precipitation patterns and extreme weather events are also associated with a reduced ability by Senegalese households to purchase food.²⁹

NDC STATUS

The Council of Ministers adopted the Intended Nationally Determined Contribution (INDC) in 2015, which presented individual emissions reductions targets for the energy, waste, industrial production and product use, and agriculture sectors.³⁰ In 2020, the official first Nationally Determined Contribution (NDC) was submitted to the UNFCCC, which included updated data, targets, and capacity-building and technology needs. The first NDC sets unconditional and conditional economy-wide mitigation targets by 2030, compared to business-as-usual (BAU) of 7% and 29%, respectively.³¹ There has also been a significant increase in sectoral targets, especially for the agriculture sector. While the INDC included a reduction of 0.63% compared to BAU by 2030, the first NDC included a conditional reduction target for the agricultural sector of 11.98% compared to BAU by 2030.

In order to reach conditional mitigation targets, the Government of Senegal indicates it needs USD 3,042.6 billion XOF (5.3 billion USD) in international finance, in addition to 1,664.8 XOF (2.9 billion USD) for adaptation. Senegal's NDC was developed within the context of the Emergent Senegal Plan (Plan Sénégal Émergent [PSE]), which is the national framework for Senegal's economic and social policy until 2035. The agricultural component of the PSE, the *Programme de Relance et d'Accélération de la Cadence de l'Agriculture sénégalaise (PRACAS2 2019–2023)*, sets targets for increased production of groundnuts, onions, fruits, and vegetables through improving land fertility, increasing yields of targeted crops, and water management. The implementation of this agricultural strategy is to be financed jointly by the government, the private sectors, and development partners.

The following assessment draws on Senegal's NDC as well as the targets and strategies set out in the PSE and PRACAS2. In addition, five interviews were held with local experts who were involved in developing the NDC and agricultural policy.

KEY FINDINGS

NDC DEVELOPMENT PROCESS

TABLE 1: NDC DEVELOPMENT: KEY FINDINGS AT A GLANCE

Key findings

- The revision and update process of Senegal's NDC was participatory and involved a process of consultation, sensitization, and dialogue.
- Gender equality is generally considered in the NDC.
- The NDC was developed within the framework of Senegal's national development plan.

Areas for improvement

- Take a holistic and integrated food systems approach when developing the NDC by ensuring effective participation of all stakeholders in the process.
- Consider the findings of holistic food systems assessments in the development of the NDC.

The revision and update process of Senegal's NDC was participatory and involved a process of consultation, awareness-raising, and dialogue. There was a large consultation process spearheaded by the Ministry of Environment and operationalized through the Climate Change National Committee.³² As the NDC takes a sectoral approach, several ministries, including the Ministry of Environment and Sustainable Development, Ministry of Agriculture and Rural Equipment, Hydraulics and Sanitation, the High Council of Territorial Governing Bodies, and the Executive Secretariat of National Council for Food Security, were involved in gathering data and developing targets and strategies for their respective sectors. In preparation of the NDC and as part of engagements organized for the National Adaptation Plans (NAP), consultations were held with different stakeholders, including civil society, farmers, health professionals, and trade associations, as well as with technical and financial development partners.³³ In 2015, a workshop was held to validate the targets and strategies set out in the INDC. In 2019, the Senegal Partnership for Action on Green Economy (PAGE) Steering Committee and the Inter-Agency group, which are composed of several different governmental agencies, met to discuss the impact of the COVID-19 crisis on the NDC process.³⁴ However, it is unclear whether stakeholder engagement predominantly took place after 2015 for the development of the first NDC or whether most consultations took place prior to 2015 for the development of the INDC.

Gender equality is generally considered in the NDC. The Government of Senegal has adopted a National Strategy for Gender Equity and Equality (SNEEG) and has expressed its commitment to integrating gender issues in all policies. This general commitment is explicitly mentioned in the NDC. However, it is unclear to what extent women organizations participated in consultations during the development process of the NDC.

The NDC was developed within the framework of Senegal's national development plan. Senegal's NDC is based on the Emerging Senegal Plan, echoing its Priority Action Plans. The Emerging Senegal Plan (updated for the period 2019–2023) is a cross-sector plan integrating climate change in the formulation of

policies on health, the fight against poverty and malnutrition, energy transition, and gender mainstreaming. In addition, Senegal is developing sectoral adaptation plans for seven sectors, including agriculture, water resources, and coastal areas and has established climate change coordinating committees at the national and regional levels. A National Adaptation Plan (NAP) for the fisheries sector has also been developed, and the government is working on developing a plan for the agriculture sector with support of the FAO.³⁵

AREAS FOR IMPROVEMENT

Take a holistic and integrated food systems approach when developing the NDC by ensuring effective participation of all stakeholders in the process.

Many of Senegal's commitments on climate change mitigation and adaptation directly or indirectly affect its food systems. Plans to transform the agricultural, livestock, and fisheries sectors, as well as the sustainable management of natural resources, the management of waste, and the design of industrial processes, all affect the availability, affordability, and sustainability of food. Although several of these impacts were included in Senegal's NDC, the sectoral approach taken in the NDC makes recognizing and addressing them difficult. One interviewee mentioned that intersectoral coordination on food policy is a key area of improvement that should be addressed in Senegal, and that taking an integrated food systems approach may result in a better recognition of the cross-sectoral nature of food systems.

Consider the findings of holistic food systems assessments in the development of the NDC.

Commitments related to food systems transformation requires holistic food systems assessments, collection, and upkeep of quantitative and qualitative food systems data. More investigation into the linkages between climate variability, aflatoxin, and food and nutrition security in Senegal is required. Moreover, research aimed at better understanding and promoting production of nutritious food crops under climate variability and change for Senegal is essential to support decision-making and planning around climate-smart food and nutrition security interventions.

CONTENT OF THE NDC

TABLE 2: NDC CONTENT: KEY FINDINGS AT A GLANCE

Key findings

- The NDC includes several measures to decrease emissions from agriculture through agroecology and soil restoration.
- The NDC includes targets linked to the Programme for the Recovery and Acceleration of Senegalese Agriculture (PRACAS — 2019–2023).
- As part of its adaptation strategy, the NDC aims to promote integrated production systems that combine agriculture, livestock, and agroforestry production.
- The NDC includes measures to protect, conserve, and recover natural resources and ecosystems.
- Along the food chain, Senegal's NDC includes measures to improve efficiency and reduce emissions.
- The NDC aims to improve nutrition and highlights the health co-benefits of its mitigation and adaptation plans.
- The NDC mentions other agricultural policies and programs that may support a shift to sustainable and healthy diets.

Areas for improvement

- Consider how food and agricultural measures will impact women and vulnerable communities, as well as what their role can be during implementation.
- Include more concrete measures to promote sustainable and healthy diets that are not currently present in the NDC.
- Beyond general waste, include separate measures in the NDC for reducing food loss and waste throughout the food chain.
- Integrate the commitments made in the context of the Global Methane Pledge and the Glasgow Leaders' Declaration on Forests and Land Use.

The NDC includes several measures to decrease emissions from agriculture through agroecology and soil restoration.

The agricultural sector currently makes up the largest share of Senegal's GHG emissions and is at the same time vulnerable to the impacts of climate change. Mitigation commitments within the agricultural sector include an unconditional target to put 99,621 hectares of agricultural land under Assisted Natural Regeneration (ANR) through the application of agroforestry and the use of organic manure. The NDC also mentions the goal to implement composting initiatives to restore organic soil fertility and improve agricultural productivity. Under the conditional NDC target, these targets increase to 498,105 hectares for ANR and 14,400 hectares for compost if enough international finance is made available.

Conditional on financial support, the NDC also sets out to move 28,500 hectares of irrigated rice to an Intensive Rice System (IRS), reducing both the volumes of water used and the amount of methane emitted. Adaptation measures included in the NDC include a commitment to sustainable land management, soil restoration, and integrated production methods such as agroforestry. Adaptation measures for the fisheries sector take a similar approach, with a focus on sustainable aquaculture, restoration of marine habitats, and extension of marine protected areas.

The NDC includes targets linked to the Programme for the Recovery and Acceleration of Senegalese Agriculture (PRACAS, 2019–2023). PRACAS is the agricultural component of the Emerging Senegal Plan, and sets out the country's strategy to improve the productivity of the food sector, increase nutritional security, and develop a sustainable horticultural export sector. The implementation of this program is based on improving land fertility, increasing yields from targeted crops, and improving water management. The amount of land used for rice fields is targeted to increase to 1,001,640 hectares in 2023 (compared to 677,197 hectares in 2019), of which 17.5% is irrigated, 32.5% is rainfed, and 50% is a combination of irrigated and rainfed. The NDC also mentions and sets to align its measures with the Sectoral Policy Letter for The Development of Agriculture (2019–2023). This policy aims to: 1) increase soil fertility and diversify agricultural production to feed population in the most sustainable way possible; 2) improve governance of the agricultural sector, provide agricultural and non-agricultural jobs, and secure decent rural incomes; 3) manage natural resources sustainably; 4) strengthen equitable management of land; and 5) strengthen agricultural facilities.

As part of its adaptation strategy, the NDC aims to promote integrated production systems that combine agriculture, livestock, and agroforestry production. As part of its 2025–2030 timeline for implementing adaptation measures in Senegal, the NDC mentions the promotion of integrated production systems as a means of increasing climate change resilience. Such production systems could improve yields and nutritional diversity, as well as preserve essential ecosystems. However, there is currently no further detail on how this target will be operationalized, nor is there any quantification that supports the target. For instance, no mention is made as to how many hectares of land will be converted into integrated production systems.

The NDC includes measures to protect, conserve, and recover natural resources and ecosystems. As an unconditional target, Senegal commits to the reforestation or restoration of 1297 hectares of mangroves and 21,000 hectares of other natural vegetation. Under the conditional commitment, these targeted areas increase to 4,000 hectares of mangroves and 500,000 hectares of other natural vegetation, with an additional commitment to protect 500,000 hectares of forest. The restoration of mangrove forests is particularly important for the fisheries sector. The National Adaptation Plan for the fisheries sector includes plans to work with local communities to restore mangroves and thereby protect coastal integrity and marine ecosystems, specifically in Joal-Fadiouth, on the Saloum Islands and in the Casamance region.³⁶

Along the food chain, Senegal's NDC includes measures to improve efficiency and reduce emissions. A measure to include waste valorization in the agri-food industry is included in the NDC. Moreover, an objective to introduce “platforms and industrial parks that [...] allow [for the] upgrading of agricultural value chains and the development of a high-performance manufacturing industry” are

also included. The NDC also makes reference to agriculture adaptation strategies to improve post-harvest management, including storage and drying. To protect livelihoods, adaptation plans include the implementation of early warning systems and the promotion of agricultural and livestock insurances. These insurances are part of the National Agricultural Insurance Company of Senegal (CNAAS), a public–private partnership established in 2009.³⁷ CNAAS received a significant subsidy from the government in 2016, making agricultural insurances more financially accessible to smallholder farmers.³⁸

The NDC does not contain any measures that address food loss and waste, as well as fisheries.

NDC mitigation measures in the waste sector establish a general ambition to improve solid and liquid waste management and increase the access rate to the sanitation network. While it raises the general ambition to improve waste management in the agro-industry, there is no further specification, nor does the NDC mention food waste specifically. Moreover, the NDC also does not provide concrete mitigation measures for the fisheries sector, although the NAP aims to improve the infrastructure related to fisheries and the safety of fishing communities.³⁹ Plans include the reinforcement of coastal areas by planting trees such as eucalyptus and filaos, as well as by building sea walls, with a view to increasing the resilience of fishing communities and fishing livelihoods.

The NDC aims to improve nutrition and highlights the health co-benefits of its mitigation and adaptation plans.

The restoration of soil and implementation of other mitigation and adaptation measures in the agricultural sector are expected to increase productivity. As a result, agricultural production is expected to grow by an average of 3.3% annually from 2019 to 2035. The NDC highlights that such an achievement could increase nutritional quality of foods by 27.5% by 2035, compared to a BAU scenario. Moreover, the NDC also emphasizes that various adaptation measures in the agricultural sector may also have a positive impact on job creation and poverty reduction.

The NDC mentions other agricultural policies and programs that may support a shift to sustainable and healthy diets.

The National Agricultural Investment Program for Food Security and Nutrition (PNIASAN) 2018–2022 aims to increase agro-sylvopastoral and fisheries production in order to improve food security and nutritional health. This builds on the National Strategy for Food Security and Resilience (NSFSR/SNSAR) 2015–2035, which aims to improve the availability and affordability of diversified, healthy, and nutritious food. The latter policy also aims to protect the livelihoods of rural populations by strengthening their productive capacities, resilience to shocks, as well as tenure security. However, a concrete set of measures to promote sustainable and healthy diets is not present in the NDC.

AREAS FOR IMPROVEMENT

Consider how food and agricultural measures will impact women and vulnerable communities, as well as what their role can be during implementation.

Although the Government of Senegal indicates a general intention to mainstream considering gender equality in the implementation of its NDC, and pilot projects already show the potential of this approach, gendered implications are not detailed in the measures of the NDC. The NDC should indicate how climate change impacts and policies differently affect women and vulnerable (rural) communities and how these groups can act as agents of change in the shift toward sustainable agriculture and healthy diets.

Consider waste measures in the NDC, aligning them to existing Senegalese policies. Senegal has developed a National Waste Management Plan (PNGD), which includes the aim to develop biogas from waste and introduce composting practices. The strategy also aims to build a regulatory framework for the waste sector, strengthen technical systems, and build the capacity of stakeholders involved in waste management.⁴⁰ While the PNGD does address organic waste, it does not explicitly address food waste. However, if the policy takes a broad approach and includes food waste in its application, it would be important for future iteration of the NDC to align with this strategy — as well as any future waste policies — in order to fully consider the mitigation and adaptation potential of food waste and loss measures.

Align the NDC to other policies related to the Senegalese food system. For instance, it is not clear whether the NDC is aligned to the National Strategy for Social Protection 2016–2035 (SNSP) and the aforementioned PNIASAN. The SNSP partially focuses on improving food security, and includes multiple targets to improve resilience of agriculture and livestock for natural disasters and climate change, and furthermore aims to develop targeted subsidies for adequate food provision and food programs for children.⁴¹ The PNIASAN also aims to improve domestic food supply and agricultural production systems, and specifically aims to promote sustainable production methods combined with improved environmental conservation.⁴² These policies should be important considerations in the future iteration of the NDC in an effort to strengthen targets and measures for food systems.

Integrate the commitments made in the context of the Global Methane Pledge and the Glasgow Leaders' Declaration on Forests and Land Use. Senegal endorsed these key pledges and initiatives announced during COP26 in Glasgow (but outside of the official UNFCCC regime). The pledges, if fully and adequately implemented, have the potential to accelerate Senegal's shift toward sustainable food systems, in particular through measures that further promote regenerative agricultural practices and restore degraded land and natural ecosystems. But to ensure progress, transparency, and accountability, it is crucial that these international commitments and respective actions be fully integrated and anchored in Senegal's NDC.

IMPLEMENTATION OF THE NDC

TABLE 3: NDC IMPLEMENTATION: KEY FINDINGS AT A GLANCE

Key findings

- A transition to agroecology is being implemented as part of an inclusive and consultative process.
- Moreover, the Senegalese government is also collaborating with development and other international partners to achieve climate targets in the food and land sectors.
- Efforts have also been made to improve nutritional security.
- The NDC also includes implementation plans for providing financial support to some food systems measures.
- A coherent approach is taken for monitoring the NDC.
- The NDC highlights that Senegal is committed to mainstreaming a gender approach in its implementation process.
- Several platforms and projects linked to the NDC, including the platform, provide an important vehicle for including women in the implementation of the NDC.

Areas for improvement

- Detail the investment necessary for developing infrastructure that supports agroecology and regenerative practices.
- Include measures to build cross-sectoral collaboration, exchange of best practices, and building institutional capacity, particularly with local communities and the private sector.
- Improve policy coherence and coordinated governance in planned implementation of agroecology and regenerative approaches.
- Align fiscal incentives and trade policies with the envisioned transition to agroecology.
- Strengthen information system measures to ensure effective monitoring of the NDC.

A transition to agroecology is being implemented as part of an inclusive and consultative process.

Agroecology is one of the five major initiatives of the priority action plan for the second phase of the Plan Sénégal Emergent (2019–2024). Moreover, the president of the country mentioned it as one of the main priorities of his second term in 2018.⁴³ Since 2019, various actors involved in agroecology in Senegal have been brought together under the DyTAES (*Dynamique pour une Transition AgroEcologique au Sénégal*) framework to provide input on the development of an agroecological transition policy.⁴⁴ The framework promotes technical support and knowledge co-production, territorial governance, alternative food networks, and national policy dialogue. It involves a range of stakeholders, including farmers, grassroots community organizations, local authorities, non-governmental organizations, researchers, and private enterprises. Therefore, at least through the DyTAES, the transition to agroecology is being implemented as part of an inclusive and consultative process (so far).

Moreover, the Senegalese government is also collaborating with development and other international partners to achieve climate targets in the food and land sectors. For example, Senegal partnered with the FAO and United Nations Development Programme (UNDP) to accelerate climate solutions in agriculture and land use through the Scaling Up Climate Ambition on Land Use and Agriculture (SCALA) program, funded by the German International Climate Initiative (IKI). Senegal's SCALA program is supporting Senegal over the next 4 years to achieve climate plans through a national multistakeholder framework to build institutional, financial, and technical capacities and foster agroecology and agroforestry. Senegal is also working closely with other initiatives in the country (such as the Global Environment Fund) to implement the National Adaptation Plan, the Strengthening Agriculture Adaptation (SAGA) project, and the Scaling Up Agroecology projects. These projects take a multistakeholder approach, fostering private sector engagement and collaboration with key national institutions.* Take, for example, the SAGA project, which functions with the participation of over 70 representatives from the public sector, research institutions, civil society, and the private sector and is tasked with strengthening adaptation planning capacities to achieve food security. The SAGA team was also tasked with developing an implementation plan for the agricultural components of Senegal's NDC.⁴⁵

Efforts have also been made to improve nutritional security. The National Council of Nutrition Development (CNDN), for example, oversees the implementation of the Nutrition Enhancement Program.⁴⁶ The program takes a multifaceted approach and has developed several innovative interventions to empower women in areas characterized by a high prevalence of food insecurity and acute malnutrition in children under the age of 5. Interventions included the production and processing of agricultural and animal goods with high nutritional value; the economic management of new technologies; building community solidarity to access production assets; providing health, nutrition, hygiene, and sanitation services; and the promotion of essential family health and nutrition practices.

The NDC also includes implementation plans for providing financial support to food systems measures. The NDC provides disaggregated budgets for the agriculture, fishing, livestock, coastal areas, health, water management, and biodiversity sectors. The highest proportion of unconditional funding for adaptation measures is reserved for health and agriculture, at 65% and 37%, respectively. Under unconditional mitigation finance, the agricultural sector makes up 35% of the budget. Additionally, the NDC indicates an international funding need of over 4,592 billion XOF (8 billion USD) for mitigation and adaptation.

A coherent approach is taken for monitoring the NDC. A harmonized monitoring and evaluation framework has been developed to assess the progress of the NDC. The Ministry of Environment and Sustainable Development and the National Committee on Climate Change will coordinate the monitoring of the NDC. The actual monitoring of the implementation of the foreseen activities and the various indicators of the NDC will be carried out by sectoral agencies. The NDC also indicates that a capacity-building plan will be developed for progress monitoring in relevant sectors.

* FAO and the Government of Quebec have joined forces with the Governments of Senegal and Haiti to support the implementation of the adaptation component of their Nationally Determined Contributions (NDCs) and the integration of agriculture in the National Adaptation Plans (NAPs) process. See <https://www.fao.org/in-action/saga/en/>.

The NDC highlights that Senegal is committed to mainstreaming a gender approach in its implementation process. By implementing the National Strategy for Equity and Gender Equality (SNEEG), Senegal aims to mainstream gender equality in the implementation of policies. The updated policy (2017–2025) outlines a need to especially integrate gender considerations where women play an important economic role. According to the policy, this includes water and fuel wood collection, agriculture, fishing, and forestry. The NDC has further been enhanced with the Gender Equity and Social Inclusion (GESI) Strategy, which aims to contribute to better coordination of these strategies with other ministerial departments to help the government reach its targets of universal access to energy by vulnerable communities, including access by women and young people to co-benefits such as basic social services (including health).

Several platforms and projects linked to the NDC, including the DyTAES platform, provide an important vehicle for including women in the implementation of the NDC. Several community initiatives implemented in collaboration with the FAO have already actively contributed to strengthening the role of women in sustainable food production and the management of natural resources. Examples include an entrepreneurial program specifically targeting the needs of women and young people and the “Consulting Clubs in soil health” projects, which aim to strengthen rural communities’ capacities in formulating and implementing sustainable community management of natural resources.⁴⁷

AREAS OF IMPROVEMENT

Detail the investment necessary for developing infrastructure that supports agroecology and regenerative practices. This includes small-scale irrigation, post-harvest equipment, storage infrastructure, and energy infrastructure. The NDC should also consider alignment between key policy and strategy documents such as the National Food Security and Resilience Strategy (SNSAR); the National Agricultural Investment Plan (PNIA); the New Alliance for Food Security and Nutrition (NASAN) cooperation framework; the Strategic Plan for Agricultural and Rural Statistics in Senegal (PSSAR_SEN); and the Community Development Emergency Program (PUDC), which aims to strengthen short-term access to infrastructure and basic services for rural economic advancement.

Include measures to build cross-sectoral collaboration, exchange of best practices, and building institutional capacity, particularly with local communities and the private sector. Interviewees indicate that the NDC should establish platforms to engage local communities and the private sector in order to catalyze the effective implementation of on-the-ground actions planned in the NDC and sectoral NAPs. The private sector is likely to also play a role in promoting risk-reduction measures by creating funding mechanisms for sustainable mitigation and adaptation measures. Additionally, to reduce GHG emissions and build resilience, Senegal will have to create synergies between local community stakeholders and the private sector to reinforce acquired knowledge and build on good practices to scale up action.

Improve policy coherence and coordinated governance in planned implementation of agroecology and regenerative approaches. Senegal is in the process of developing sectoral NAPs, including the Agriculture NAP at the local level, in coordination with various partners. During an interview, technical advisers from the Ministry of Agriculture highlighted that there has been little integration of the NDC and NAP

priorities in the planning and budgeting process of the agriculture, livestock, and fisheries sectors involved in climate action.^{48, 49} Moreover, there is a lack of coordination and capacity in intersectoral planning and implementation of climate actions, which inhibits the advancement of adaptation and mitigation objectives.

Align fiscal incentives and trade policies with the envisioned transition to agroecology. In its goal-setting documents, the government of Senegal indicates an intention to shift toward agroecology and integrated production systems, such as livestock–agroforestry. Interviewees indicated, however, that subsidy schemes (for example, for fertilizer) do not always provide the right incentives to shift toward these more sustainable forms of agriculture.⁵⁰ These schemes often favour conventional and mainly commercial farmers and do not provide incentives for agroecological and regenerative approaches that could also support smallholders.⁵¹

Strengthen information system measures to ensure effective monitoring of the NDC. Despite an existing coherent approach to monitoring the implementation of Senegal's NDC, in 2016 the Government of Senegal undertook a study to assess national capacity to monitor. Piloted by International Land Coalition (ILC) member Initiative Prospective Agricole et Rurale (IPAR), and supported by UNDP, the study identified priority areas where improvement was needed and noted that it was “practically impossible to access accurate data covering sectors such as agriculture and land.”⁵² Accurate data is needed to monitor the implementation of the NDC.

CASE STUDY SUMMARY

National Domestic Biogas Program, Senegal

Senegal's National Domestic Biogas Program (PNB-SN) aims to contribute to ending deforestation and reducing GHG emissions by building 52,000 biodigesters that will produce biogas from human and animal waste. Domestic biogas is being used in homes for cooking, thereby reducing the need for wood and charcoal as a form of cooking fuel. In addition, the program aims to minimize respiratory and eye problems related to the use of firewood, as well as to promote income-generating activities such as market gardening, cow fattening, and milk pasteurization.

"A 10 m³ biodigester produces at least 2.5 m³ of biogas per day. This is enough to meet the energy needs of a household of 10 people for cooking. This corresponds to a daily consumption of 12.5 kg of firewood or 7.5 kg of charcoal," explains Malick Gaye, PNB-SN coordinator. Each biodigester is estimated to have an average GHG abatement potential of 2.5 tons of CO₂eq per unit per year.

Farmers collect biomaterials (manures and other organic waste products from their farms) and pass these onto a producer organization (usually a farmer cooperative body), which then sells the collected biomaterials to a household biogas enterprise. By facilitating access to attractively priced loans through qualified enterprises (often banks, supported by the Senegalese Priority Investment Guarantee Fund), households acquire biogas digesters that enable them to generate income while also benefiting from clean cooking. The PNB-SN has also been developing a new market segment in Senegal for the use (and therefore the sale) of bio-fertilizers (by-products of domestic biodigesters). Households then repay the loan value by means of donating all (or a share) of the bio-fertilizer generated every month to the enterprises.

The construction of 2,278 biodigesters has given access to clean cooking to over 23,000 people and resulted in the replacement of biomass with estimated annual savings of 11,400 tons of wood and 6800 tons of charcoal use. Over 200 households are engaged in the production, sale, and marketing of organic digestates that are produced from the biodigesters. This, in turn, has substantially improved soil quality and crop yields of winter and vegetable crops, thus contributing to improved food security for surrounding communities.

Further information and access to the detailed case study can be found [here](#).

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