

Senegal: Food Security and Ecosystem Resilience

Introduction

The Ministry of Agriculture and Rural Equipment is mandated to enhance productivity in the agricultural sector through sustainable land and water resources management and in so doing ensure food security and sustainable livelihoods. It operates within the framework of the Plan Senegal Emergent - the development plan to 2035.

Table 1: Key indicators (UNDESA, 2018) (World Bank, 2017)

SENEGAL	2018
Total population (million)	16.29
Total area (km ²)	196,712
Population density (persons/km ²)	84.6
Per capita income, 2015 (US \$)	980

Agriculture in the Senegal Economy

The population of Senegal is growing at 3 per cent per annum and by 2018 had reached a total of 16.29 million as shown in [Table 1](#) (UNDESA, 2018). Only 52.8 per cent of people live in the rural areas and they are all involved in agriculture. The contribution of agriculture to the economy was 17 per cent in 2018 compared with 20.2 and 27 per cent by industry and services respectively. The proportion of people in employment in 2018 was 76.7 per cent (UNDESA, 2018).

Senegal's land area is 196,712 km² and 46 per cent of this is agricultural land ([Figure 1](#) and [Figure 2](#)) (UNDESA, 2018) (World Bank, 2017).



Figure 1: Land cover Senegal (2015) Data source: Global Forest Watch

Food Security Situation

High levels of hunger exist in Senegal with 11.3 per cent of the total population classified as undernourished in 2017; and 17 per cent of children under the age of 5 said to be stunted in the same year (SDGCA and SDSN, 2018).

This is shown in [Table 2](#). The Government of Senegal has put in place a National Strategy for Food Security and Resilience 2015-2035 to try and address this problem.

Relevant SDG 2 indicators

- 2.1.2** Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
- 2.4.1** Proportion of agricultural area under productive and sustainable agriculture

Table 2: Food insecurity trends in Senegal (FAO, IFAD, UNICEF, WFP and WHO, 2018)

Location	Prevalence of undernourishment in the total population (%)		Prevalence of severe food insecurity in the total population (2015-2017)	Prevalence of wasting in children under 5 (2017)	Prevalence of stunting in children less than 5 years of age (%)		Prevalence of overweight in children under 5 years of age (%)	
	2004-2006	2015-2017	%	%	2012	2017	2012	2017
Senegal	21.6	11.3		7.2	15.5	17.0	0.7	0.9
Western Africa	12.3	13.1	25.1	8.1	31.9	29.9	2.6	2.4
Africa	21.3	19.6	25.9	7.1	32.6	30.3	5.0	5.0

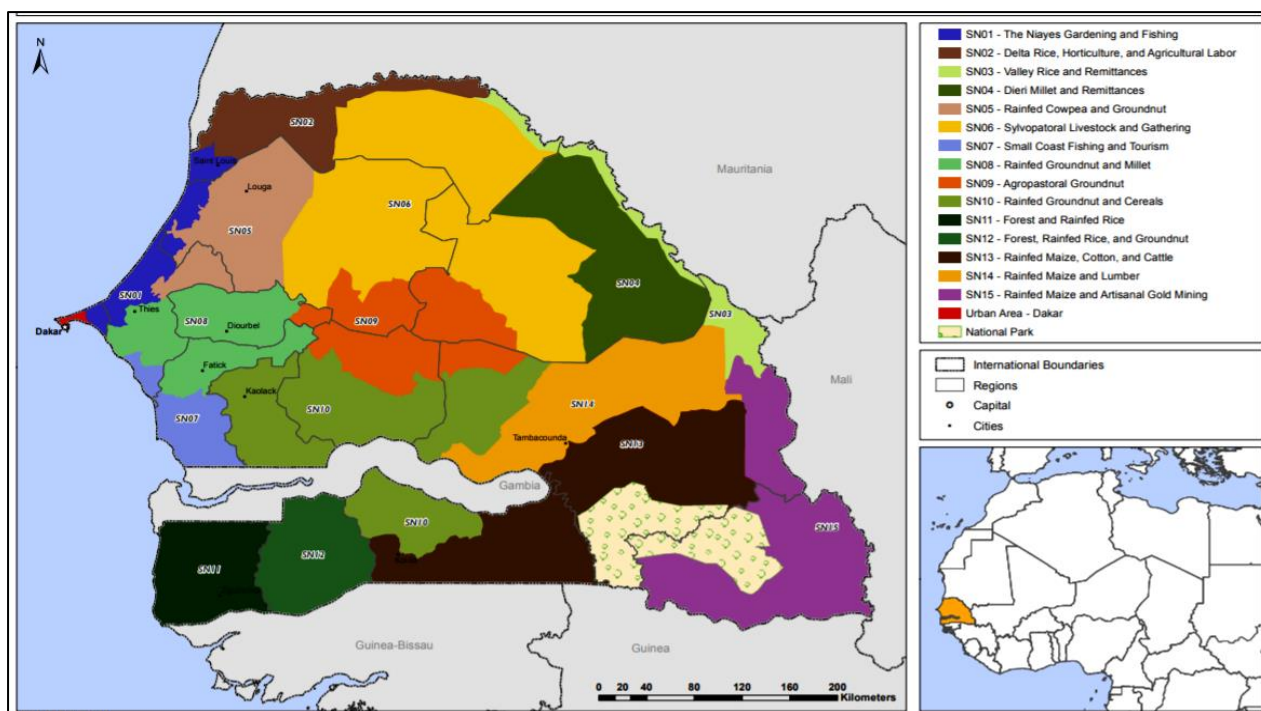


Figure 2: Senegal livelihood zones fews.net

Ending Hunger

Biological Diversity

The National Strategy and National Action Plan for Biodiversity 2015 is the guideline for managing biodiversity in Senegal. Genetic resources and breed diversity are important to food security. The number of local breeds recorded as being kept in Senegal by 2018 was 15. The number of local plant breeds has been going up on the other hand. In 2017, 1,890 plants breeds had sufficient genetic material for reconstitution stored increasing from 958 breeds in 2000. The number of local breeds at an unknown level of extinction was 7 by 2018 and all 7 local breeds are classified as 'not at risk' (UN Stats, 2019).

Relevant SDG 2 indicators

- 2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
- 2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction

The institutional framework for biodiversity includes the National Committee on Biodiversity which serves in an advisory role; and the Ministry of Environment, among others.

Renewable Energy

The renewable energy share in the total energy consumption is very low by African standards. In 2016 it was 37.59 per cent compared to 47.52 per cent in 2000. This is shown in [Figure 3](#) (UN Stats, 2019). The renewable energy is generated from solar, wind, solid biofuels and hydropower among others. There is a renewable energy law 2010 for the sector.

Relevant SDG 7 indicators

- 7.2.1 Renewable energy share in the total final energy consumption

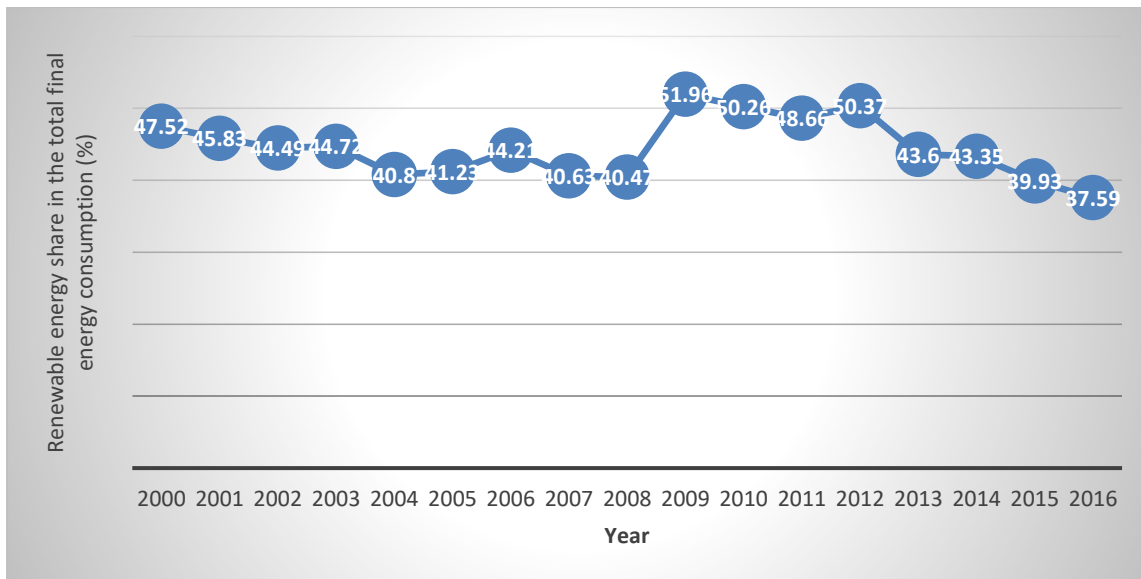


Figure 3: Trends in renewable energy share in the total final energy consumption (%) 2000-2016 (UN Stats, 2019)

Clean Water and the Marine Environment

Water Quality

Permanent water bodies cover 0.65 per cent of the total land area. Withdrawals as a proportion of available freshwater resources was estimated at 11.8 per cent in 2000 (above 25 per cent which is considered the threshold of initial water stress) (UN Stats, 2019).

Relevant SDG 6 indicators

- 6.3.1 Proportion of wastewater safely treated
- 6.3.2 Proportion of bodies of water with good ambient water quality
- 6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources.
- 6.6.1 Change in the extent of water-related ecosystems over time

Open defecation is a problem and although it is declining, it can lead to water contamination with impacts on human wellbeing and food security. At the national level, 15.11 per cent of the populations were practicing open defecation as shown in Figure 4.

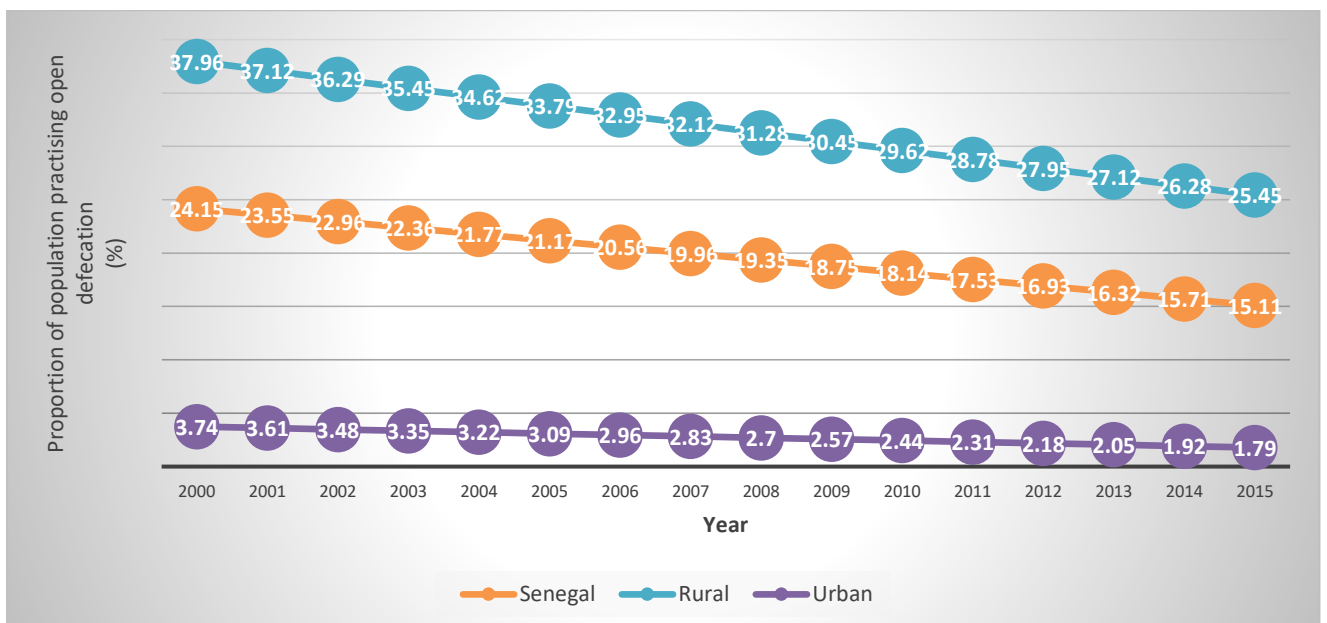


Figure 4: Trends in open defecation in Senegal 2000-2015 (UN Stats, 2019)

Sustainable Management of Fisheries

Senegal is among the top 100 fish-dependent nations, with 42.9 per cent of animal-source protein derived from fish. In 2015, 427,000 metric tonnes of capture fisheries were caught. However, the main challenges of this sector are overfishing and poor management. Overfishing has affected 25.7 per cent of fish stocks in Senegal. This may explain why the sector contracted by 0.2 per cent between 2000 and 2015. This is a threat to food security, livelihoods and the economy. In Senegal, 80 per cent of the reported catch comes from artisanal fishing and an estimated 60 per cent of total fish catch. The contribution of small-scale fishery to GDP in 2010 was 3 per cent with a total value of US \$407.2 million (UNDESA, 2018) (World Bank, 2017) (SDGCA and SDSN, 2018).

The aquaculture sector grew 17.8 per cent between the same time period (World Bank, 2017).

Fish caught by trawling is 15.2 per cent (SDGCA and SDSN, 2018).

Illegal Fishing

On a scale of 1 to 5, Senegal scored a 5 in terms of putting in place measures to address illegal, unreported and unregulated fishing. But illegal fishing is still an issue. Between 1999 and 2011, the value of industrial illegal, unreported and unregulated fishing catch annually, was about US \$300 million estimated at 2.6 million tons (USAID, 2017); (UN Stats, 2019).

The sector is regulated by the Fishing Code and Fisheries and Aquaculture Sector Policy and Development Letter; and the country is in the ratification process for the Food and Agricultural Organization-led Port States Measures Agreement. Some relevant institutions include the National Marine Fisheries Consulting Committee (CNCMP) and the Oceanographic Research Center (CRODT).

Terrestrial Ecosystems: Land, Biodiversity and Forests

Tree and Forest Cover

In 2015, forests covered 42.96 per cent of the total land area down from 46.71 per cent in 2000. Table 3, Figure 6 and Figure 6 highlight this decline. Net forest area decreased by 0.4 per cent in 2015 (UN Stats, 2019).

Table 3: Forest area as a proportion of total land area 2000-2015 (UN Stats, 2019)

Relevant SDG 14 indicators

- 14.2.1:** Proportion of national exclusive economic zones managed using ecosystem-based approaches
- 14.4.1:** Proportion of fish stocks within biologically sustainable levels
- 14.5.1:** Coverage of protected areas in relation to marine areas.
- 14.6.1:** Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing.
- 14.b.1:** Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries

Relevant SDG 15 indicators

- 15.1.1** Forest area as a proportion of total land area
- 15.1.2** Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
- 15.2.1** Progress towards sustainable forest management
- 15.3.1** Proportion of land that is degraded over total land area
- 15.5.1** Red List Index

Attribute	2000	2005	2010	2015
%	46.21	45.04	44.00	42.96
'000 ha	8,898	8,673	8,473	8,273



Figure 5: Senegal with a 30%+ tree canopy (2010). Data source: Global Forest Watch

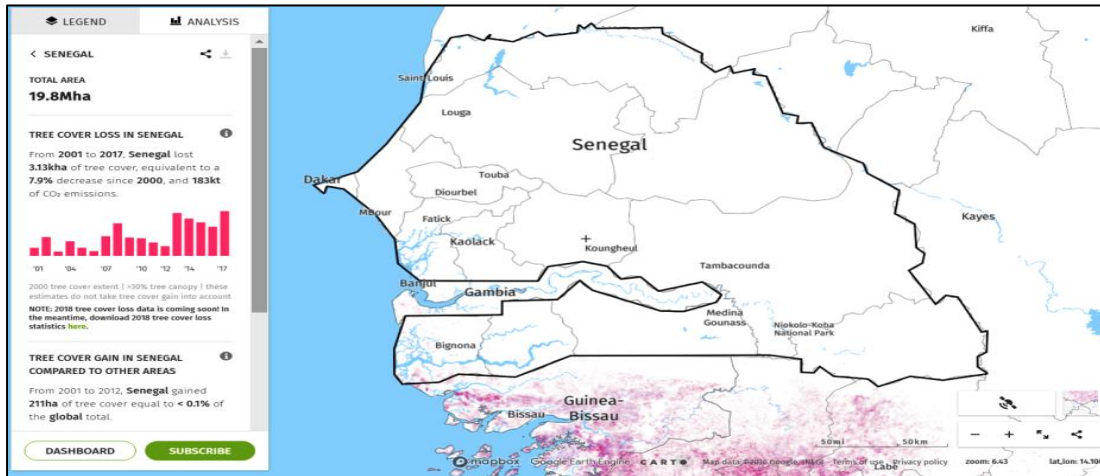


Figure 6: Tree cover loss in Senegal 2001-2017. Data source: Global Forest Watch

Encouraging Sustainable Forest Management

The environmental value of forests as measured by above-ground biomass increased only slightly from 65.27 tonnes/ha in 2015. The legal guidance for forests includes the Forest Code 1998. By 2019, 5.9 per cent of forests had a long-term management plan (UN Stats, 2019).

Protected Areas

Country data indicates that 19 mammal species, 19 birds, 58 fish and 14 species of higher plants are threatened as at 2018 (World Bank, 2017). Senegal's Red List Index, a measure of extinction risk has been declining slightly from 0.95 in 2000 to 0.94 in 2019 (UN Stats, 2019).

The proportion of terrestrial biodiversity covered by protected areas was estimated at 42.96 in 2018 and increased from 37.88 in 2000 (UN Stats, 2019). See [Figure 7](#).

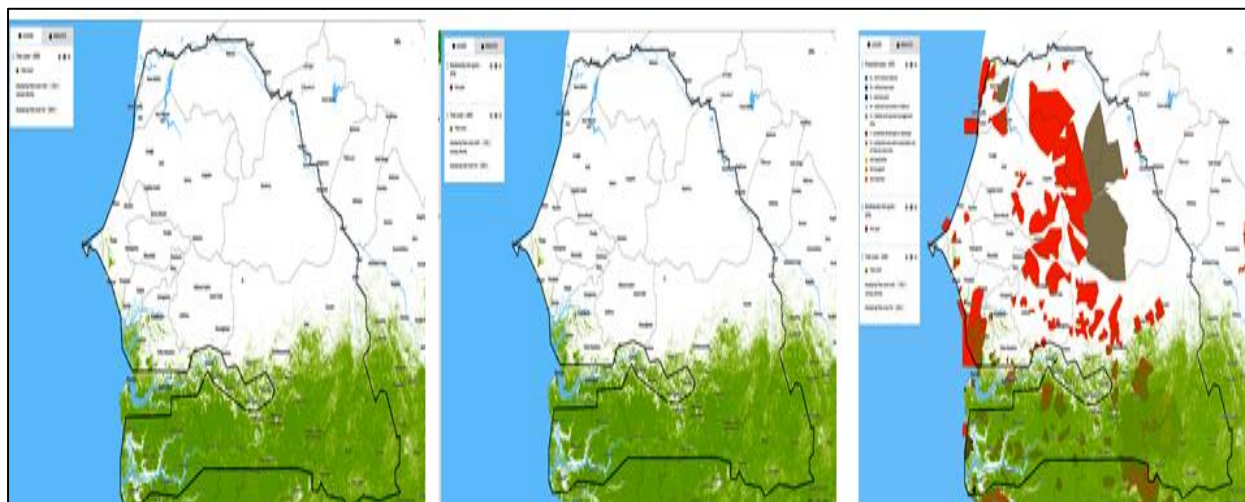


Figure 7: From left to right – Senegal with a 10%+ tree canopy cover (2010), then with hotspots (2016) and then protected areas (2018) Data source: Global Forest Watch

Emerging Environmental Challenges

Waste Production and Management

Data from 2017 indicates that municipal solid waste generation in cities in Senegal is about 0.6 kg per capita per day and e-waste generated is 1.3 kg per capita (SDGCA and SDSN, 2018). The volumes generated present a management challenge. Almost half (42 per cent) the urban households use pits in their backyard to dispose of their solid waste while 12 per cent simply dump it on the roadside creating unsightly messes and odours (Kasinja & Tille, 2018).

Senegal acceded to the Basel on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in 1992; and the Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade in 2001.

Relevant SDG 12 indicators

- 12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment
- 12.5.1 National recycling rate, tons of material recycled

Climate Change

The changes in the rainfall regime in Senegal have resulted in crop and livestock production becoming even more difficult and there is the threat of creeping desertification from the Sahara. This makes access to drinking water, livelihoods support and food security even more challenging. The country has ratified the United Nations Framework Convention on Climate Change and the Kyoto

Protocol. Guidance is provided also by the National Adaptation Plan (2006) for the UNFCCC and a National Strategy for Sustainable Development (in 2005)

The Ministry of Environment oversees climate change issues through the National Committee on Climate Change.

Financing Natural Resources Management

Official development assistance has been fluctuating as shown in [Figure 8](#) reaching a high of US \$174.36 million in 2015 and a low of US \$0.33 million in 2002 (UN Stats, 2019).

Relevant SDG 13 indicators

- 13.2.1** Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other
- 13.3.1** Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula
- 13.3.2** Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions

Relevant SDG 15 indicators

- 15.a.1** and **15.b.1** Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems
- 15.c.1** and **15.7.1** Proportion of traded wildlife that was poached or illicitly trafficked

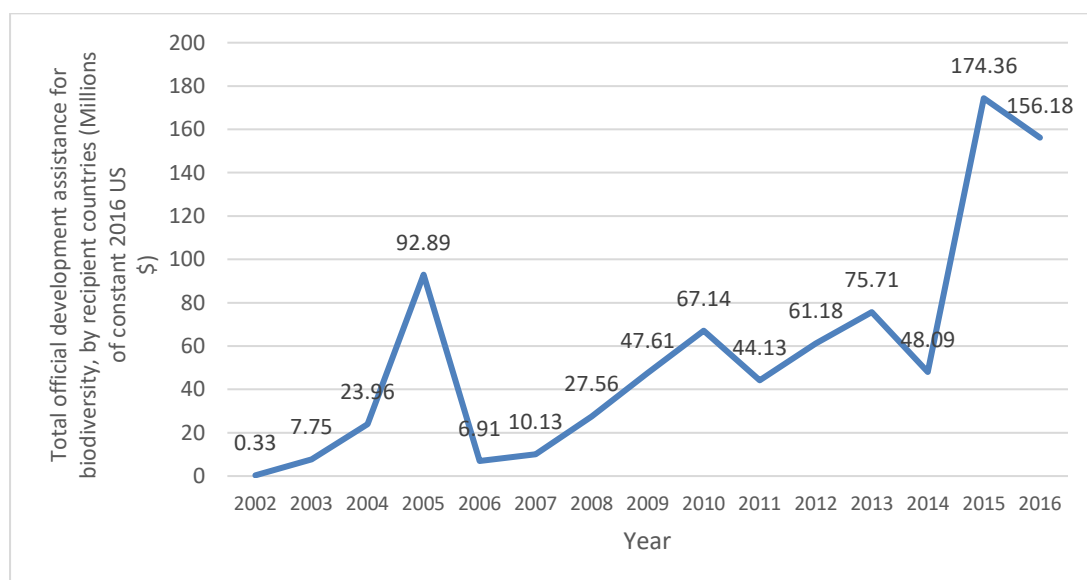


Figure 8: Total official development assistance for biodiversity (millions of constant 2016 US \$) 2002-2016 (UN Stats, 2019)

Supporting Actions to End Hunger

Sustainable management of mountain ecosystems

Mountains cover 0.17 km² of land and there are no gazetted areas for the protection of mountainous biodiversity (UN Stats, 2019).

Relevant SDG 15 indicators

15.4.1 Coverage by protected areas of important sites for mountain biodiversity

Sustainable Management of Biodiversity

The National Biodiversity Strategy and Action Plan identifies exploitation of biological resources, overgrazing, farmland expansion, bush fires, salinization/acidification, pollution and invasive species as some of the major issues to be addressed. These have been integrated into key national policies including the National Strategy for Socioeconomic Development and a draft Framework Law on Biodiversity is being developed.

The National Biodiversity Strategy and Action Plan 2015-2020 has also integrated the Aichi Biodiversity Targets (CBD, 2019).

Relevant SDG 15 indicators

15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits

15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species

15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020

At the international level, Senegal ratified the Convention on Biological Diversity in 1995, the Cartagena Protocol in 2004 and the Nagoya Protocol in 2016. National Biosafety Authority and a National Biosafety Committee. The country is a signatory to the Nagoya Protocol on Access and Benefit Sharing and has developed a National Strategy on Access and Benefit Sharing. The country also ratified the International Treaty on Plant Genetic Resources in 2002.

The Global Invasive Species Database indicates that there are 50 invasive species in Senegal including the Mediterranean fruit fly *Ceratitis capitata*, a pest of economic importance. Invasive species issues are regulated by the National Biosafety Law 2009. The institutional framework includes the National Biosafety Authority and National Biosafety Committee.



The Mediterranean fruit fly (*Ceratitis capitata*) is invasive in Senegal. Source: Kalliergeia.com

Integrated Water Resources Management

On a scale of 1-100, the extent of IWRM plans in the country is 53 (UN Stats, 2019). The Action Plan for Integrated Water Resource Management (IWRM) in Senegal and the Water Code Senegal (Loi n. 81-13 portant Code de l'eau) all contain provision for IWRM. The institutional framework includes the Directorate for the Management and Planning of Water Resources in Senegal

Transboundary Water Resources Management

The main shared water bodies in Senegal include River Sénégal, River Gambia, and the River Sénégal-Mauritanie. The percentage of transboundary basin (rivers, lakes and aquifers) area with an operational arrangement for water cooperation is estimated at 34 per cent while that for rivers and lake basins was 100 per cent (UN Stats, 2019). Senegal has also acceded to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention).

Relevant SDG 6 indicators

- 6.5.1** Degree of integrated water resources management implementation (0-100)
- 6.5.2** Proportion of transboundary basin area with an operational arrangement for water cooperation

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