

14.0 Senegal

BMZ	German Federal Ministry for Economic Cooperation and Development
CCAA	Climate Change Adaptation in Africa program
CC-DARE	Climate Change and Development Adapting by Reducing Vulnerability
COMNAC	National Committee on Climate Change
CONGAD	Council of Non-Governmental Organizations to Support Development
CSE	Ecologic Monitoring Centre (Centre de Suivi Écologique)
DFID	Department for International Development (United Kingdom)
ENDA-TM	Environment and Development Third World (Environnement et développement du Tiers Monde)
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GTZ	German Technical Assistance Agency
IDRC	International Development Research Centre
IED	Innovations, Environment, Development in Africa (Innovations, Environnement Développement en Afrique)
INFOCLIM	Info Climat
IOC	Intergovernmental Oceanographic Commission
ISRA	Senegalese Institute for Agricultural Research (Institut sénégalais de recherches agricoles)
IUCN	International Union for Conservation of Nature
LDCF	Least Developed Countries Fund
MEPN	Ministry of Environment and Nature Protection (Ministère de l'Environnement et de la Protection de la Nature)
NAPA	National Adaptation Programme of Action
NGO	non-governmental organization
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

Bordered on its eastern and northern sides by the Senegal River, the country of Senegal is home to approximately 12.3-million people (CIA, 2011). Completely surrounding the neighboring country of The Gambia, Senegal's Cap-Vert peninsula, upon which the capital city of Dakar lies, is the western-most point of African Africa. The country has experienced severe drought on a recurring basis since the 1960s.

Since this time, average annual temperatures have increased by 0.9°C and rainfall has decreased in the southern regions by about 10-15 mm per decade during the dry season (December to April). Higher temperatures are experienced in the interior of the country compared to the coast. Rainfall levels also vary, with substantially more precipitation being received in the southern part of the country than in the north.

A. Adaptation Needs and Priorities

As climate change proceeds, projections indicate that Senegal will experience higher average temperatures, significant decreases in rainfall (with heightened intensity of exceptional events), and an increase in monsoon fluxes. Greater rainfall variability, along with more intense rainfall events, may also accentuate the phenomena of both floods and droughts (MEPN, 2010). Along Senegal's 531 km of coastline (CIA, 2011), sea level rise is also a concern. Already, coastal erosion is an ongoing problem in Senegal due to a naturally dynamic coastal zone that is part of a regional sediment transportation corridor (Adaptation Fund, 2010). These changes, along with altering of Senegal's rainfall regime and saline intrusion, have reduced fresh water supplies (UNDP and the Government of Senegal, 2009). Should sea levels rise by one meter by 2100, coastal erosion will be intensified and it is estimated that some 6,000 km² of low areas, notably the estuaries, could become flooded. Likewise, with a rise of 40 to 120 cm, coastal facilities and human settlements could suffer heavy damage (Adaptation Fund, 2010).

These projected changes in climatic conditions will likely have negative impacts on agriculture, ecosystems, water resources and health—and as such endanger Senegal's economic growth and development goals (MEPN, 2010). Senegal is heavily dependent on its natural resources, many of which are already being depleted by unsustainable livelihood activities. Although agriculture represents only 14.7 per cent of the country's GDP, this sector employs more than the half of the Senegalese population. Fishing and tourism also are important economic activities that, along with agriculture, help maintain peoples' livelihoods by creating jobs and generating income for the poorest households (MEPN, 2010). The Senegalese citizens most vulnerable to the effects of future climate change include poor people in rural areas, women, the elderly, farmers, fishermen, market gardeners and tourist operators (Adaptation Fund, 2010).

Furthermore, the under-performance of Senegal's agriculture sector has resulted in the overly rapid urbanization of the Senegalese population²⁷⁰ and migration to the coastline; 60 per cent of the country's population now lives in its vulnerable coastal regions (UNDP and Government of Senegal, 2009). This process has negatively affected urban planning and coastal zone management, and in turn adversely impacted coastal resources and ecosystem services. According to UNDP and Government of Senegal (2009), these coastal issues and the potential of climate change impacts place Senegal in a high-risk category for disaster-related hazards.

²⁷⁰ Senegal has the highest urbanization rate in the Sahelian region. In 2008, 46.8% of the country's population lived in urban areas; with 39.18% of these urban-dwellers living in Dakar. Data retrieved in November 2010 from <http://www.populationdata.net/index2.php?option=pays&pid=194&nom=senegal>.

Based on assessments completed through the development of its National Adaptation Programme of Action (NAPA), Senegal has identified salt water intrusion, coastal zone inundation, drought, low water flows, storm surge and extreme temperatures as its main climate-related hazards (MEPN, 2006). Furthermore, Senegal's NAPA (MEPN, 2006) and Second National Communication (MEPN, 2010) have identified the following adaptation priorities and needs, classified by pillars:

- *Pillar 1.* Develop knowledge on climate change impacts and encourage the transfer of appropriate technologies;
- *Pillar 2.* Reinforce actions that prevent and mitigate climate change impacts in the following sectors:
 - *Social protection* – addressing needs such as natural disaster risk management and the creation of systems to disseminate information resulting from early alert systems;
 - *Housing* – needs include improving living conditions, effective urbanization plans and improvement of rain-water drainage;
 - *Human health* – needs include continuing the battle against malaria and other illnesses and improving health insurance in high-risk sectors
- *Pillar 3.* Promotion of the sustainable management of natural resources in the following sectors:
 - *Freshwater* – needs include: establishing infrastructure to decrease water loss into the sea; enforcing strict control of chemical use (pesticides, fertilizers); maintaining a balance between the exploitation and the renewal of water stocks; ensuring early treatment of polluted water; establishing water purification systems; improving education and awareness raising; introducing rainwater harvesting; and engaging in sea water desalinization;
 - *Agriculture* – needs include: developing agro-forestry practices; crop diversification and selection of crops tolerant to extreme climatic conditions; improving management and re-use of water; expanding community forest; developing rationalized fertilization practices; re-organizing livestock breeding; early alert system in rural areas; capacity building for decision-makers; and research on desertification;
 - *Coastal zones* – needs include: strict definition of the occupational zone of the coast; better land planning in coastal towns; establishment of an institutional structure in charge of coastal zoning; increase of information dissemination; and establishment of protections for different ecosystems or species;
 - *Fishing* – needs include: modification of fishing methods; diversification of fished species; and promotion of sustainable fish farming; and
 - *Forestry* – needs include: protection against bush fires, development of reforestation programs; and protection of fauna and flora.

B. National Level Policies and Strategic Documents

Senegal released its First National Communication in 1997 and its Second in 2010. The Ministry of Environment and Nature Protection also lead the development of Senegal’s NAPA, which was submitted in 2006. In addition to having developed a NAPA and its National Communications, Senegal has set up a National Committee on Climate Change (COMNAC) that reports to the Minister of State. The role of COMNAC currently is to raise awareness of different groups to climate change, including the private sector, civil society, decision makers and academics. It has been proposed that a sub-committee on adaptation be created within COMNAC (UNDP and the Government of Senegal, 2009). Senegal also seems to have developed a national adaptation strategy, although no information is currently available on either its status or content.

Table 1: Key Government Policies and Reports reflecting Adaptation Needs, Priorities and Planned Actions

Name of Policy Action		Government Division Responsible	Status	Summary description
1.	First National Communication	Ministry of Environment and Nature Protection	Submitted in 1997	This document presented Senegal’s initial efforts to support achievement of the objectives of the UNFCCC. It provides an overview of the country’s vulnerability to climate change and adaptation needs.
2.	National Adaptation Programme of Action (MEPN, 2006)	Ministry of Environment and Nature Protection	Released in 2006	The NAPA identifies national and regional climate change impacts and climate change adaptation measures to address those impacts. A total of five priority interventions have been identified.
3.	Second National Communication (MEPN, 2010)	Ministry of Environment and Nature Protection	Released in 2010	This document describes the steps Senegal is taking and wants to take to facilitate implementation of the UNFCCC. It underlines key vulnerabilities (agriculture/food security, coastal zones and marine ecosystems, terrestrial ecosystems and industry) as well as potential adaptation measures. Senegal’s Second National Communication provides further details on the adaptation measures identified in Senegal’s NAPA on the basis of the three action pillars.
4.	National Adaptation Strategy to Climate Change in Senegal	Unknown	Unknown	The existence of this strategy is mentioned in the description of the project submitted by Senegal to the Adaptation Fund (Adaptation Fund, 2010, p.13). There is no more information on this strategy available at the moment.

C. Current Adaptation Action

A relatively high number of nationally-focused and regional projects are currently being implemented in Senegal. National actions mainly cover the agriculture, freshwater and coastal zone management sectors while the regional initiatives from which Senegal benefits are more multi-sectoral in nature.

It is also worth mentioning that a significant number of organizations in Senegal are devoted to improving adaptation capacities and increasing adaptation networks (sharing and apprenticeship). Some of these organizations include:

- Environment and Development Third World (Environnement et développement du Tiers Monde - ENDA-TM): ENDA-TM is focused on providing support and sharing knowledge on climate change adaptation;
- Info Climat (INFOCLIM): the aim of this organization is to share knowledge between stakeholders, with its main emphasis being on building awareness and the dissemination of data;
- Council of Non-Governmental Organizations to Support Development (CONGAD): this council of NGOs aims to create linkages between people and institutions with a focus on the outcomes from the NAPA. They have created a network of people that work on climate change issues; and
- Senegalese Institute for Agricultural Research (Institut sénégalais de recherches agricoles – ISRA): under ISRA there is a group called the Bureau of Micro-Economic Analysis that shows an interest in modeling various responses to climate change in rural economies (UNDP and Government of Senegal, 2009).

Table 2: Current Adaptation Actions in Senegal

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
National Actions							
1.	Platform for Helping Vulnerable Communities Adapt to Climate Change ²⁷¹	DFID and IDRC through the CCAA program	CSE	Capacity building; Knowledge communication; Field	2007 – 2010	Rural areas	Thiès Region

²⁷¹ IDRC.

http://www.idrc.ca/EN/Programs/Agriculture_and_the_Environment/Climate_Change_and_Adaptation_in_Africa/Pages/ProjectDetails.aspx?ProjectNumber=104795

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
	an observatory of climate change, sensitize local actors, and identify and implement adaptation strategies to improve the living conditions of vulnerable populations, or at least slow down their degradation. If the experience proves successful, it will be repeated elsewhere.			implementation			
2.	Partnership for the Adaptation of Populations that are Vulnerable to Soil Salinity due to Climate Change ²⁷²	DFID and IDRC through the CCAA program	ISRA	Capacity building	2009 – 2012	Agriculture	
3.	Adaptation to Coastal Erosion in Vulnerable Areas ²⁷³	Adaptation Fund	CSE	Capacity building; Field implementation	2010 – ?	Coastal zone management	Rufisque, Saly, Joal

²⁷² http://www.idrc.ca/en/ev-118878-201_105678-1-IDRC_ADM_INFO.html

²⁷³ [http://www.adaptation-fund.org/system/files/SENEGAL_Adapation_project_part1 %28as of 3 August 2010%29.pdf](http://www.adaptation-fund.org/system/files/SENEGAL_Adapation_project_part1%28as%20of%203%20August%202010%29.pdf)

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
4. Climate Change Adaptation Project in the Areas of Watershed Management and Water Retention ²⁷⁴	The objective is to increase the resilience of agricultural production systems and associated value chains to climate impacts on the water sector. The project addresses two NAPA objectives: water-harvesting and watershed management; and water conservation and efficient irrigation.	LDCF	FAO	Capacity building; Field implementation	2012 – 2016	Freshwater supply; Watershed management; Agriculture	
Participation in Regional and Global Initiatives							
5. Adaptation to Climate Change: Responding to coastline change and its human dimensions in West Africa through Integrated Coastal Area Management ²⁷⁵	The overall objective of the project is to mainstream adaptation to climate change into Integrated Coastal Area Management planning in the participating countries through the development and implementation of pilot adaptation activities in response to shoreline change. This will involve the development of strategies, policies and measures, based on technical/scientific information and appropriate policy instruments. A major preliminary objective will therefore be to pilot adaptation activities in a local to sub-regional context. There is a strong rationale for addressing the issue of adaptation and shoreline change not only at the national level but also through the development of a regional approach.	GEF Trust Fund	UNDP-GEF, UNESCO/IOC	Policy formation and integration; Field implementation	2006 – 2010	Coastal zone management	<i>Regional:</i> Cape Verde, The Gambia, Guinea-Bissau, Mauritania, Senegal
		<i>In Senegal:</i> Not known					

²⁷⁴ <http://www.gefonline.org/projectDetailsSQL.cfm?projID=4234>

²⁷⁵ <http://www.gefonline.org/projectDetailsSQL.cfm?projID=2614>

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
6. Climate Proofing Energy Systems: Vulnerability-Adaptation-Resilience ²⁷⁶	The objective is to develop a methodology and indicators in order to evaluate the vulnerability of energy systems to climate change and to adapt to climate change	France; GIZ; BMZ; IUCN; and La Francophonie	HELIO International	Research; Assessment	2007 – 2009	Energy	African: Benin; Burkina Faso; Cameroon; Dem. Rep. of Congo; Kenya; Mali; Nigeria; Senegal; Tanzania; Uganda
		<p><i>In Senegal:</i> The following measures could increase the resilience of Senegal's energy system:</p> <ul style="list-style-type: none"> • Implement sustainable forest management by extracting energy from invasive plants and using them as cooking fuel in improved stoves, as well as by fostering participatory forest development; • Promote local micro-financing schemes to finance solar systems for lighting, heating and air-conditioning in the household sector; • Introduce a street lighting policy to use solar systems in 30 per cent of rural municipalities and communities; and • Strengthen regional cooperation to exploit hydroelectric potential.²⁷⁷ 					
7. Interdisciplinary and Participative Research on Interactions between Ecosystems, Climate and Societies in West Africa ²⁷⁸	The project will identify the relations between ecosystem vulnerabilities and human populations in order to scientifically support political responses to climate change.	France's Foreign Affairs Ministry	Agence inter établissements de la recherche pour le développement (Inter-institutional Research Agency for Development)	Research	2007 – 2011	Ecosystem conservation	<i>Regional:</i> Benin, Burkina Faso, Cameroon, Cape Verde, CAR, Chad, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Mali,

²⁷⁶ <http://www.helio-international.org/projects/VAR09.cfm>.

²⁷⁷ <http://www.helio-international.org/VARSenegal.En.pdf>.

²⁷⁸ <http://www.aird.fr/ripiecsa/index.htm>.

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)	
							Mauritania, Niger, Nigeria, Senegal, Togo	
<i>In Senegal: Not known</i>								
8.	An Ecosystems Approach to Managing Water and Health in the Context of Climate Change: Adaptive strategies to drought and flooding in four West African countries ²⁷⁹	Using an ecosystem approach, this project aims to strengthen the capacities of communities to adapt to drought aggravated by sudden flooding in two contexts (semi-arid and tropical humid) in West Africa. The project will establish a regional platform for collaboration on the effects of climate change on water and health in West Africa through engagement and knowledge sharing.	DFID and IDRC through the CCAA program	Centre Suisse de Recherches Scientifiques en Côte d'Ivoire	Knowledge communication	2008 – ?	Freshwater supply; Human health	<i>Regional:</i> Côte d'Ivoire, Mauritania, Senegal, Togo
<i>In Senegal: To be determined</i>								
9.	Enhancing the Disaster Risk Reduction Capacity in Agriculture and Rural Development ²⁸⁰	Preparation of 10 capacity building modules on pre- and post-disaster risk management and mainstreaming of disaster risk reduction in agriculture and rural development, with a focus on climate change adaptation.	Global Facility for Disaster Reduction and Recovery Budget: US\$50,000	Agriculture and Rural Development (ARD) and Sustainable Agriculture Systems, Knowledge and Information (SASKI)	Capacity building	2008 – 2010 (closed)	Agriculture; Disaster risk management	<i>African:</i> Burkina Faso, Comoros, DRC, Eritrea, Ethiopia, Kenya, Madagascar, Niger, Rwanda, Senegal, Seychelles
<i>In Senegal: To be determined</i>								
10.	Adapting Fishing Policy to Climate Change with the	This project aims to improve fishing practices and policies in the face of	Canada	IDRC; Environment	Capacity building;	2008 – 2011	Fisheries	<i>Regional:</i> Cape Verde,

²⁷⁹ http://www.idrc.ca/cp/ev-120851-201-1-DO_TOPIC.html.

²⁸⁰ GFDRR, http://gfdrr.org/gfdrr/ca_projects/detail/1228

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
Aid of Scientific and Endogenous Knowledge ²⁸¹	climate change in six countries. It will do so by facilitating twice-yearly meetings at three levels (sub-regional, national and local), bringing together political decision-makers, researchers, representatives of fisher associations and managers of projects and programs. The researchers will gather scientific and endogenous knowledge that will allow the participants to explore together various possible scenarios and evaluate different adaptation strategies.		and Development Action in the Third World	Policy formation and integration; Research			Gambia, Guinea, Guinea-Bissau, Mauritania and Senegal
<i>In Senegal: Not known</i>							
11. Climate Change Adaptation and Development Initiative (CC-DARE) ²⁸²	The joint UNEP-UNDP program CC-DARE provides demand-driven, flexible and rapid financial and technical support to 15 Sub-Saharan countries. The emphasis of CC-DARE support is on short-term (3-6 month) initiatives that contribute toward addressing key gaps for national climate change adaptation. The support is made available to improve the ability of sub-Saharan African countries to remove barriers and create opportunities for integrating climate change adaptation into national development planning and decision-making frameworks.	Danish Ministry of Foreign Affairs	UNEP and UNDP	Capacity building; Knowledge communication; Field implementation	2008 – 2011	Multi-sectoral	<i>African:</i> Benin, Ghana, Ethiopia, Malawi, Mozambique, Rwanda, Senegal, Seychelles, Tanzania, Togo, Uganda
<p><i>In Senegal: Three projects are underway:</i></p> <ol style="list-style-type: none"> 1. “Strengthening the capacity of populations to agricultural practices to climate change in the Senegal River Delta.”²⁸³ The major objective of the project is to build the capacities of the Senegal River Delta region populations to enable them to adopt appropriate agricultural 							

²⁸¹ http://www.idrc.ca/en/ev-139740-201_104682-1-IDRC_ADM_INFO.html

²⁸² CC-DARE, <http://www.ccdare.org/>

²⁸³ http://www.ccdare.org/Portals/131/Senegal/Senegal_Projet1SAED.pdf.

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)	
	Three main types of activities are undertaken through the program: country level activities, regional training courses, and national and regional workshops to communicate project results and share experiences and lessons learned.							
12.	Cities and Climate Change Initiative (CCCI) ²⁸⁷	The first phase of this project was designed to promote policy dialogue, develop tools and implement pilot activities in the cities of Sorsogon (Philippines), Esmeraldas (Ecuador), Maputo (Mozambique) and Kampala (Uganda). The project aims at advising	Government of Norway	UN-HABITAT, UNEP, National Governments	Knowledge communication; Capacity building; Assessment	2008 – ongoing	Urban areas	Global: 17 countries, ²⁸⁸ including: Burkina Faso and Senegal
			In Senegal: Not available					

²⁸⁴ In English: National Society for the Development and Exploitation of Land in the Delta of the Senegal River Valleys and the River Senegal and Faleme.

²⁸⁵ <http://www.adaptationlearning.net/project/integrating-climate-change-risk-implications-national-planning-and-strategic-programming>

²⁸⁶ http://www.ccdare.org/Senegal/Senegal_Projet2DAT.pdf

²⁸⁷ UN-HABITAT, http://www.fukuoka.unhabitat.org/programmes/ccci/index_en.html and http://www.fukuoka.unhabitat.org/programmes/ccci/pdf/CCCI_Asia-Pacific_Flyer.pdf

²⁸⁸ These countries are: Burkina Faso, Ecuador, Fiji, Indonesia, Kenya, Mongolia, Mozambique, Namibia, Nepal, Papua New Guinea, the Philippine, Rwanda, Samoa, Senegal, Sri Lanka, Uganda and Vanuatu.

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
	and supporting cities and towns prone to the different impacts of climate change by offering innovative approaches and solutions for national and local development planning. In 2010, efforts were initiated to up-scale lessons from this initiative by launching CCCI-Asia/Pacific with UN-HABITAT partners in China, Fiji, Indonesia, Mongolia, Nepal, Papua New Guinea, Samoa, Sri Lanka, Vanuatu and Viet Nam. The project was also upscaled in Africa.						
13.	Integrating Climate Change Mitigation and Adaptation into Development Planning (CCMAP) project ²⁸⁹	European Commission; UNEP; USAID	START with WMO, IPCC, UNEP, University of Dar es Salaam, University of Ghana, and the Bangladesh Centre for Advanced Studies	Capacity building; Assessment; Policy formation and integration	2009 – 2010	Government; Agriculture; Urban areas; Peri-urban areas	<i>Global:</i> Bangladesh, Bhutan, Burundi, Ghana, Nepal, Nigeria, Rwanda, Senegal, Tanzania
		<i>In Senegal:</i> Not available					
14.	Support Fund for Local Adaptation Strategies ²⁹⁰	DFID and IDRC through the	Innovations, Environnemen	Capacity building	2009 – 2011	Civil society	<i>Regional:</i> Burkina Faso,

²⁸⁹ START, <http://start.org/programs/ccmap>

²⁹⁰ http://www.idrc.ca/en/ev-118878-201_105518-1-IDRC_ADM_INFO.html

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
	organizational capacity of grassroots communities in the area of adaptation to climate change. It will do so by putting in place a process for selecting pilot projects, identifying team needs in terms of capacity building, contracting providers of (public or private) capacity building, sharing the information generated with groups at risk and making a case before decision-makers.	CCAA program	t Développement t Afrique				Mali, Senegal
<i>In Senegal:</i> Not available							
15.	Supporting Integrated and Comprehensive Approaches to Climate Change Adaptation in Africa (or Africa Adaptation Program – AAP) ²⁹¹	Japan International Cooperation Agency Budget: US\$92.1 million	UNDP	Capacity building; Policy formation and integration; Knowledge communication	2008 – 2011	Government	African: 20 African countries ²⁹² including: Burkina Faso, Ghana, Niger, Nigeria, Senegal
<i>In Senegal:</i> The objective is to mainstream and integrate climate change adaptation into policy, governance, and core development objectives through institutional frameworks, policy reform, capacity building, awareness raising and financial mechanisms. Implementation is occurring under the direction of the Ministry of Environment, Nature Conservation, Ponds and Artificial Lakes (Direction des Eaux, Forêts, Chasse et de la Conservation des Sols). Shore erosion has also been identified as a focal area for action in Senegal. To address this, Japan International Cooperation Agency has developed a series of training courses to build knowledge and capacity of relevant Senegalese stakeholders. ²⁹³							

²⁹¹ ALM, <http://www.adaptationlearning.net/program/africa-adaptation-programme> and UNDP-APP, <http://www.undp-aap.org/>

²⁹² These countries are Burkina Faso, Cameroon, Congo, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Malawi, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome et Principe, Senegal, Tanzania and Tunisia.

²⁹³ <http://www.undp-adaptation.org/africaprogramme/>.

Name		Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
16.	Global Climate Change Alliance ²⁹⁴	The Global Climate Change Alliance seeks to deepen the policy dialogue between the European Union and developing countries on climate change; and to increase support to target countries to implement priority adaptation and mitigation measures, and integration climate change into their development strategies. The program's five priority areas for funding are: improving the knowledge base of developing countries to the effects of climate change; promoting disaster risk reduction; mainstreaming climate change into poverty reduction development strategies; reducing emissions from deforestation and degradation; and enhancing participation in the Clean Development Mechanism.	European Commission, Czech Republic, Sweden, 10th European Development Fund Budget: € 140 million	National Governments	Policy formation and implementation; Knowledge communication	2008 – ongoing	Disaster risk management; Government	<i>Global:</i> 17 countries ²⁹⁵ and the Pacific region, including Mali and Senegal
			<i>In Senegal:</i> To be determined					
17.	West African Science Service on Climate and Adapted Land Use ²⁹⁶	The project aims at generating knowledge and developing analytical capabilities in West Africa to cope with climate change by the design of resilient land-use systems and the development of measures to conserve or restore healthy ecosystems that allow sustainable development. It relies upon cooperation between the	German Federal Ministry of Education and Research	University of Bonn	Research	2010 – 2011	Agriculture; Ecosystem conservation	<i>Regional:</i> Benin, Burkina Faso, Cote d'Ivoire, Gambia, Ghana, Mali, Niger, Nigeria, Senegal and Togo

²⁹⁴ GCCA, http://www.gcca.eu/pages/1_2-Home.html

²⁹⁵ These countries are; Bangladesh, Belize, Cambodia, Ethiopia, Guyana, Jamaica, Maldives, Mali, Mozambique, Mauritius, Nepal, Rwanda, Senegal, Seychelles, Solomon Islands, Tanzania and Vanuatu.

²⁹⁶ http://www.lap.uni-bonn.de/research/research-projects/wascal?set_language=en

Name	Objectives	Funder(s)	Implementing Agency(ies)	Project type	Duration	Focus Area(s)	Geographic focus (if any)
	West African research community and the expertise existing in Germany on climate change and adapted land management.	<i>In Senegal:</i> To be determined					
18.	Great Green Wall ²⁹⁷	LDCF; SCCF; World Bank; AfDB <i>Budget:</i> US\$3.108 billion		Capacity building; Research; Policy formation and integration	2011 – ?	Agriculture; Ecosystem restoration	<i>African:</i> Benin, Burkina Faso, Chad, Djibouti, Eritrea, Ethiopia, Ghana, Mali, Mauritania, Niger, Nigeria, Senegal Sudan and Togo
		<i>In Senegal:</i> More information required.					

²⁹⁷ GEF, <http://www.thegef.org/gef/node/4503>

²⁹⁸ IISD, <http://climate-1.iisd.org/news/gef-council-approves-programme-that-includes-great-green-wall-initiative/>

D. Proposed Adaptation Action

Senegal has proposed five adaptation projects that cover a wide range of sectors identified as priority areas for intervention in its NAPA. The project “Climate Change Adaptation Project in the Areas of Watershed Management and Water Retention” for which Senegal has received funding from the Least Developed Countries Fund (LCDF) responds to two of these priority areas. The initiatives that have not yet received support are noted in Table 3.

Table 3: Priority projects identified in Senegal’s NAPA (MEPN, 2006)

Name		Objectives	Project Type	Priority Sector(s)	Geographic focus (if any)
1.	Development of Agro-forestry	To increase rural populations’ capacities to adapt to climate change negative impacts; generate additional resources to increase living conditions and decrease poverty; and promote natural resources management techniques adapted to environmental changes.	Capacity building; Field implementation	Agriculture; Forestry	North, Arachidier pond, Niayes
2.	Coastal protection	To reduce human causes of bank line recession and prevent natural causes through mangrove restoration.	Field implementation	Coastal zone management	North, Arachidier pond, Niayes
3.	Awareness raising and education	To integrate the climate change considerations in national strategies, limit adaptation-related costs and reinforce decision-makers’ capacities with regards to adaptation.	Knowledge communication	Government	National

In addition, Senegal is one of 10 countries in Africa that is part of a proposal submitted to the Special Climate Change Fund. This research project will undertake an analysis of the micro-economic cost of adaptation options in the agriculture sector.

Table 4: Other adaptation project in development

Name		Objectives	Project type	Priority Sector(s)	Geographic focus (if any)
1.	Microeconomic Costing of Discrete Adaptation Options in the Agriculture Sector: A Sub-National Level Analysis of the Welfare Gains of Dynamic Adaptation ²⁹⁹	<i>To be identified</i>	Research	Agriculture	Regional: Burkina Faso, Cameroon, Egypt, Ethiopia, Ghana, Kenya, Niger, Senegal, South Africa, Zambia
Notes: Proposed to Special Climate Change Fund					

²⁹⁹ GEF, http://www.thegef.org/gef/sites/thegef.org/files/publication/adaptation-actions_0.pdf



E. Assessment

Compared to other West African countries, Senegal has a high number of ongoing adaptation projects, many of which involve capacity building activities. The sectors targeted by these projects are those identified as priorities in both Senegal's NAPA and its National Communications. Most of the ongoing and planned projects focus on agriculture and coastal zone management, and integrate water supply measures. As most Senegalese cities are located in coastal zones and about half of the country's citizens live in urban areas, it seems appropriate that Senegal concentrates its efforts on addressing issues relevant to these locations.

Although it is not clearly stated as such, most of the objectives targeted by Senegal's NAPA proposed projects are being fulfilled through current projects. For example, infrastructure building and awareness raising activities were identified as priorities in Senegal's NAPA and these seem to have been taken into account in the project "Adaptation to Coastal Erosion in Vulnerable Areas" submitted to and approved by the Adaptation Fund. This project uses an integrated approach that combines awareness raising and communication activities as well as the reinforcement of infrastructures in order to protect coastal zones against erosion.

Senegal's Second National Communication identifies some new adaptation needs related to social protection, housing and the health sector but no specific planned actions are described. As well, although housing and social protection benefit from projects that aim to reduce coastal erosion and flooding, no concrete adaptation projects focused directly on these sectors are ongoing. Additional effort may be required to develop and implement new adaptation actions that respond to Senegal's needs in these areas. As well, even though it has been identified as a priority need, no project focused on improving early warning systems is currently underway in the country. Further gaps may be identified with respect to more deeply addressing human health concerns, forestry and the differential impact of climate change on men and women.

The success of Senegal in developing and taking adaptation action may be influenced by the number of Senegalese non-governmental organizations and networks working in this area, including ENDA-TM, INFOCLIM, CONGAD and ISRA. Accreditation of the Senegalese *Centre de Suivi Écologique* (the Ecologic Monitoring Centre) as a National Implementing Entity by the Adaptation Fund Board is also an important step for the country as it seeks financial support for projects in sectors in which no adaptation action is currently being undertaken.



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