

6.0 Mauritius

ASARECA	Association for Strengthening Agriculture Research in Eastern and Central Africa
AFB	Adaptation Fund Board
BMZ	Bundesministeriums für Umwelt, Naturschutz und Reaktorischerheit/ Ministry for Economic Cooperation and Development (Germany)
CIA	Central Intelligence Agency (United States)
COI	Indian Ocean Commission
DFID	Department for International Development (United Kingdom)
GCCA	Global Climate Change Alliance
GDP	Gross Domestic Product
GEF	Global Environment Facility
FANPRAN	Food, Agriculture, and Natural Resources Policy Analysis Network
IDRC	International Development Research Centre
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IOM	International Organization for Migration
LDCs	Least Developed Countries
PIK	Potsdam Institute for Climate Impact Research
RMMS	Republic of Mauritius Meteorological Service
ROM	Republic of Mauritius
SIDA	Swedish International Development Cooperation Agency
SIDS	Small island developing states
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
ZALF	Leibniz-Centre for Agricultural Landscape Research

The Republic of Mauritius is comprised of a group of islands of volcanic origin (St. Brandon Island, Rodrigues Island, the Agalega Islands and the island of Mauritius) located off the southeast coast of Africa, east of Madagascar (ROM, 1999). The country has a population of nearly 1.3 million people (McSweeney et al, 2009; USDS, 2010), of whom 42 per cent live in urban areas (CIA, 2010). Mauritius has one of

the most competitive economies in Africa, and per capita incomes are one of the highest in the continent (USDS, 2010). The major sectors in the country are tourism, textiles, sugar and financial services (USDS, 2010); approximately 22 per cent of the labor force is employed by the trade, restaurants, and hotels industry (CIA, 2010). Sugar production is the main agricultural activity in the country, with additional crops including tea, tobacco, vegetables, and fruits (ROM, 1999; USDS, 2010). In 2009, agriculture contributed 4.5 per cent of the country's Gross Domestic Product, with the tourism sector accounting for 8.7 per cent (USDS, 2010).

As a small island developing state (SIDS), Mauritius is considered to be vulnerable to the impacts of climate change. Mauritius' vulnerability, like many SIDS, is a function of its physical size and geographic location, proneness to natural disasters, reliance on imports, and low adaptive capacity (RMMS, 2009).

A. Adaptation Needs and Priorities

The climate of Mauritius is characterized by two seasons: a warm and wet summer, and a cooler, drier winter (McSweeney et al, 2009). During the wet and warm period, Mauritius is prone to tropical cyclones and hurricanes. The country's Meteorological Service notes that Mauritius has observed some changes to its climate in recent decades. On many of the country's islands, average temperatures during the period of 1998 to 2008 were 0.74 to 1.1°C warmer than during the 1951 to 1960 period (RMMS, 2009). Mauritius has also been experiencing a decrease in precipitation over the past century, as well as a shortening of the rainy season, leading to pressure to meet water demands from the agricultural, tourism, industrial and domestic sectors (RMMS, 2009). In addition, the incidence of intense tropical cyclones has been on the rise over the last quarter of the 20th century (RMMS, 2009).

The country's Meteorological Services projects that future climate change will bring about the following impacts for the country: increased more frequent heat waves; hotter summer months; an increase in heavy precipitation events; a rise in the number of intense tropical cyclones; and acidification of oceans (RMMS, 2009). Another study projects increased precipitation over the northern islands and decreased in the southern islands (McSweeney et al, 2009). However, given the uncertainty in future changes in tropical cyclones, there is uncertainty regarding the future volume of wet season rainfall (McSweeney et al, 2009). Given these projections, the Meteorological Services' assessment foresees that the capacity of ecosystems to adapt may be exceeded; fisheries, aquaculture, and agricultural production will be negatively impacted by rising temperatures, leading to compromised food security; coastal zones may undergo increased erosion and flooding; and human health may be negatively impacted including a rise in infectious diseases (RMMS, 2009).

Mauritius' Initial National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) identifies the key socioeconomic sectors likely to be impacted by climate change in the country as being: coastal resources, agriculture, freshwater

resources, fisheries, human health and well-being, land use change and forestry, and biodiversity (ROM, 1999). It anticipates that climate change will cause the following changes in the agriculture sector: the productivity zone of certain crops will shift from lowlands to regions of higher altitudes; sugar cane cultivation will be more profitable in humid zones; the duration of certain crops will shorten and yields will decrease; cropping calendars may shift; pastures in low-lying drier areas may support fewer animals; and livestock will be under higher stress (ROM, 1999). The National Communication also provides a list of potential adaptation activities by sector (ROM, 1999):

- *Coastal zones*: engage in integrated coastal zone management strategies that integrate adaptation considerations, investigate costs and advantages of different options for the hard protection of coasts, and establish marine parks and wetland preserves;
- *Agriculture*: experiment with drought tolerant and wind resistant varieties of sugar cane, diversify agricultural products, and study the length of growing seasons and optimal harvesting times;
- *Fisheries*: gather data to assess stocks and sustainable yields, increase food production from aquaculture, and collect data on ocean circulation changes relating to temperature;
- *Forestry*: preserve and conserve remaining forests, initiate tree-planting programs, and ban cutting of mangroves;
- *Freshwater resources*: encourage use of ‘gray water’ for secondary household uses, construct household back-up of rain catchment tanks, put limitations on the use of water for crop irrigation, and establish efficient water resources management.

Given the changing distribution of rainfall and a tendency towards heavy rainfall events, the need for Mauritius to increase its rainfall storage capacity has also been identified (RMMS, 2009). So too has the need for increased capacity to undertake risk assessments and research activities regarding the impact of climate change on human health (Commonwealth Secretariat, 2009).

B. National Level Policies and Strategic Documents

Mauritius was the first country to ratify the UNFCCC, reflecting its early awareness and commitment to addressing climate change. In 1991, it established a multi-sectoral National Climate Change Committee involving a variety of institutions and organizations, including various ministries, representatives from the private sector, and non-governmental organizations (ROM, 1999). The mandate of this body is to monitor developments on the science of climate change and its possible impacts on key sectors of the economy. In addition to this measure, the country has prepared its Initial National Communication to the UNFCCC, which was released in 1999 (ROM, 1999).

As well, through the Hyogo Framework of Action, Mauritius is addressing disaster risk management through a variety of mechanisms, including a comprehensive early warning system, that also support adaptation to climate change (RMMS, 2010). Mauritius has also

integrated a review of the potential impacts of climate change into the Environment Impact Assessments it requires to be conducted prior to undertaking major construction/development projects (RMMS, 2010).

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

Name of Policy Action		Government Division Responsible	Status	Sector(s) of Focus	Summary description
1.	Initial National Communication to the UNFCCC ¹⁵⁰	Ministry of Environment, Human Resource Development, and Employment	Released in 1999	Coastal resources, agriculture, freshwater supply, marine fisheries, human health and well-being, land use change and forestry, and biodiversity	This document provides an overview of Mauritius' national circumstances and greenhouse gas mitigation profile, as well as key areas of vulnerability to climate change and potential actions to address climate change within the country.

C. Current Adaptation Action

When compared to its southern African neighbors, a moderate level of adaptation programming is currently being funded in Mauritius. The majority of these projects are part of multi-country initiatives, including Mauritius' participation in the "Global Climate Change Alliance" funded by the European Commission, the Africa Adaptation Program funded by the Government of Japan, and the Development Agency of France's 'ACCLIMATE' program. Nationally focused projects in Mauritius include the recently initiated "Adapting Coastal Zone Management to Address the Impacts of Climate Change" project funded by the Adaptation Fund. It focuses on integrated coastal zone management for climate adaptation, and incorporates capacity building, awareness raising, policy formation and the piloting of specific adaptation measures along Mauritius' coastline.

Collectively, the sectors most commonly addressed through current climate change adaptation projects in Mauritius are governance, disaster risk management, climate information services and agriculture. Projects with a strong focus on freshwater resources, fisheries and forestry have not been identified. The main activities being implemented through these projects are capacity building, knowledge communication, and policy formation and integration. A limited number of projects support community based adaptation.

¹⁵⁰ UNFCCC, <http://unfccc.int/resource/docs/natc/maunc1/index.html>

Table 2: Current Adaptation Projects and Programs active in Mauritius

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
National Action							
1.	Sensitization on Environment Protection with Emphasis on Climate Change ¹⁵¹	Environment Care Association is spreading awareness of climate change through talks and booklet distribution to schools, women's groups, and youth organizations. The overall goal of the project is to sensitise the population to care about the environment and instill a sense of environmental stewardship.	GEF Small Grants Fund <i>Budget:</i> US\$26,045	Environment Care Association	Knowledge communication	2007 – 2009	Civil society Mauritius
2.	The Other Migrants: Reducing Migration Pressure from Gradual Environmental Change – Environment and Sustainable Development in the Republic of Mauritius ¹⁵²	This project is intended as an investigation into the interrelationship between environmental degradation and population movements in Mauritius. The project aims to mitigate the effects of climate change and environmental degradation non-migration through awareness raising and capacity building of national institutions.		IOM	Research; Knowledge communication; Capacity building	2010 – 2011	Migration
3.	Adapting Coastal Zone Management to Address the Impacts of Climate Change ¹⁵³	The objective of this project is to ensure that future development in coastal areas is sustainable in the face of climate change by (a) integrating climate change risks into coastal zone management planning, (b) enhancing the capacity of public and private sectors in Mauritius to develop and implementation adaptive approaches to coastal zone management, and piloting specific adaptation measures at	Adaptation Fund <i>Budget:</i> US\$9,240,00	UNDP	Policy formation and integration; Capacity building; Field implementation; Knowledge communication	2010 – 2016	Coastal zone management Coastal areas

¹⁵¹ UNDP, http://sgp.undp.org/web/projects/11569/sensitisation_on_environment_protection_with_emphasis_on_climate_change.html

¹⁵² IOM, http://www.iom.int/jahia/webdav/shared/shared/mainsite/events/docs/inception_proj_summary_en.pdf

¹⁵³ Adaptation Fund, http://adaptation-fund.org/system/files/AFB.PPRC_1.6%20Technical%20Review%20of%20Project%20Concept%20AFB_MIE_Coastal_2010_2_Mauritius.pdf

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)	
	demonstration sites.							
Participation in Regional and Global Actions								
4.	Global Climate Change Alliance ¹⁵⁴	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	17 developing countries and the Pacific Region, ¹⁵⁵ including: Mauritius, Mozambique and Seychelles
			<p><i>In Mauritius:</i> The GCCA is supporting sustainable development, climate change mitigation and adaptation measures in Mauritius, including the mainstreaming of climate change. The funds provided through this program will complement ongoing budget support as well as other donors' contributions to similar activities.¹⁵⁶</p> <ul style="list-style-type: none"> • Budget: € 3 million (€ 2.8 million as general budget support and € 0.2 million for technical assistance) • Duration: 2010 – 2015 					
5.	Strategies for Adapting to Climate Change in Rural Sub-Saharan Africa: Targeting the most vulnerable ¹⁵⁷	"Promote adaptation among vulnerable populations through developing comprehensive systems for assessing global changes and the changes of these impacts across disaggregated systems, groups, and factors influencing initial state of vulnerability.	BMZ Budget: US\$91,241	IFPRI (lead); ASARECA; FANRPAN; PIK; ZALF	Capacity building; Community based adaptation; Policy	2008 – 2011	Rural areas; Agriculture; Government	<i>African:</i> Angola, Botswana, Lesotho, Madagascar, Malawi,

¹⁵⁴ GCCA, http://www.gcca.eu/pages/1_2-Home.html

¹⁵⁵ These countries are Bangladesh, Belize, Cambodia Ethiopia, Gambia, Guyana, Jamaica, Malawi, Maldives, Mali, Mauritius, Mozambique, Nepal, Pacific region, Rwanda, Senegal, Seychelles, Sierra Leone, Solomon Islands, Tanzania and Vanuatu.

¹⁵⁶ GCCA, http://www.gcca.eu/cgi-bin/datadirs.pl?&lg=2&id_datadir_family=1&extlink=8&sw=detail&id_datadir_sheet=12

¹⁵⁷ FANRPAN, <http://www.fanrpan.org/themes/eachproject/?project=2> and http://www.fanrpan.org/documents/d00539/BMZ_Climate_Change_Adaptation_Jun2008.pdf

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
	Provide regional organizations, policy-makers and farmers in sub-Saharan Africa with tools to identify and implement appropriate adaptation strategies.”			formation and integration			Mauritius, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe
<i>In Mauritius:</i> Further information required.							
6.	Supporting Integrated and Comprehensive Approaches to Climate Change Adaptation in Africa (or Africa Adaptation Program – AAP) ¹⁵⁸	Japan International Cooperation Agency Budget: US\$92 million	UNDP	Capacity building; Policy formation and integration; Knowledge communication	2008 – 2011	Government	<i>African:</i> 20 African countries ¹⁵⁹ including: Lesotho, Malawi, Mauritius, Mozambique, Namibia
		<p><i>In Mauritius:</i> The objective of the AAP in Mauritius is to mainstream climate change adaptation into the institutional framework and into core development policy, strategies and plans of the Republic. Expected outputs of the project are:</p> <ul style="list-style-type: none"> • The introduction of dynamic, long-term planning tools/mechanisms to manage the inherent uncertainties of climate change. • Strengthened leadership capacities and institutional frameworks to manage climate change risks and opportunities in an integrated manner at the local and national levels. • Implementation of climate-resilient policies and measures in priority sectors. • Expansion of financing options at the local, national, sub-regional and regional levels to meet national adaptation costs.¹⁶⁰ 					

¹⁵⁸ ALM, <http://www.adaptationlearning.net/program/africa-adaptation-programme> and UNDP-APP, <http://www.undp-aap.org/>

¹⁵⁹ 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.

¹⁶⁰ ALM, <http://www.adaptationlearning.net/project/supporting-integrated-and-comprehensive-approaches-climate-change-adaptation-africa-%E2%80%93-republ>

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
7. "ACCLIMATE" (adaptation au changement climatique) ¹⁶¹	This project aims to promote regional cooperation between the Indian Ocean Commission (COI) countries on climate change adaptation. This objective consists of reinforcing the COI's capacities in the area of climate change adaptation in the short and long term through the development of projects and policies. Several activities are implemented, including: capacity building for climate change observation and for regional vulnerability analyses; the identification of priority axes for regional alert systems and risks prevention plans; demonstrative actions; elaboration of a regional adaptation action plan and policy; and improving the conditions for national and regional knowledge sharing.	European Union, Fonds Français pour l'Environnement Mondial, French Ministry of Foreign and European Affairs Budget: € 3.645 million	Indian Ocean Commission	Capacity building; Policy formulation and integration	2008 – 2011	Climate information services; Government; Disaster risk management	Regional: Comoros, Madagascar, Mauritius, Réunion (France), Seychelles
<i>In Mauritius: Further information required.</i>							
8. Preparedness for Climate Change ¹⁶²	The aim of this program was for the Red Cross and Red Crescent National Societies in countries particularly vulnerable to climate change to gain a better understanding of climate change and its impacts to identify country-specific adaptation measures in line with risks. Activities could include organizing a workshop on risks, assessment of risks through preparation of a background document, capacity building programs, and developing climate change resilient plans.	Red Cross/Red Crescent Climate Centre	National Red Cross/Red Crescent Societies	Capacity building; Policy formation and integration	Phase 1: 2006 – 2009 Phase 2: ongoing	Disaster risk management	Global: 39 countries South African participants in Phase 1: Madagascar, Malawi, Mauritius, Seychelles, Zimbabwe
<i>In Mauritius: The Mauritius Red Crescent Society undertook a number of capacity building activities, including awareness raising, education, communication, and planning activities.¹⁶³</i>							

¹⁶¹ IOC, <http://www.coi-ioc.org/index.php?id=158> and ACCLIMATE, <http://www.acclimate-oi.net/en>

¹⁶² IFRC, <http://www.climatecentre.org/site/preparedness-for-climate-change-programme>

¹⁶³ Further information is available here: http://www.climatecentre.org/downloads/File/programs/FINAL_Seychelles.pdf

Name		Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
9.	Five-City Network to Pioneer Climate Change Adaptation in sub-Saharan Africa ¹⁶⁴	Local governments and coastal cities in southern Africa face a serious threat associated with climate change. This project aims to design a framework for managing increased risk from climate change, and is anticipated to lay the groundwork for a local climate change adaptation strategy and action plan in the five urban areas in the participating countries: Cape Town (South Africa); Dar es Salaam (Tanzania); Maputo (Mozambique); Windhoek (Namibia); and Port Louis (Mauritius).	DFID and IDRC through the CCAA program	International Council for Local Environmental Initiatives	Capacity building; Policy formation and integration)	2009 – 2012	Urban area	<i>Regional:</i> Mauritius, Mozambique, Namibia, South Africa and Tanzania
<i>In Mauritius:</i> Further information required.								
10.	Southern Africa Regional Climate Change Program ¹⁶⁵	The program aims to synthesize relevant climate change science, develop strategic research and strengthen the science-policy-governance-finance dialogue. The program will aim to build an evidence base for transboundary responses to climate change, strengthen the region's voice in international platforms, and enhance its ability to access necessary finance for climate change adaptation.	DFID, SIDA	OneWorld Sustainable Investments	Policy formation and integration; Research	2009 – 2014	Government; Climate information services	<i>African:</i> Angola, Botswana, DRC, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe
<i>In Mauritius:</i> Further information required.								
11.	Regional Initiative for Smallholder Agriculture	The objective is to support the adaptation of small-scaled productive systems to climate	IFAD	Indian Ocean Commission	Capacity building;	2010 – 2013	Agriculture	<i>Regional:</i> Comoros,

¹⁶⁴ IDRC, http://www.idrc.ca/EN/Regions/Eastern_and_Southern_Africa/Pages/ProjectDetails.aspx?ProjectNumber=105868

¹⁶⁵ Southern Africa Regional Climate Change Program, http://www.rccp.org.za/index.php?option=com_content&view=article&id=68&Itemid=61&lang=en

Name	Objectives	Funder(s)	Implementing Agency(s)	Type of project	Duration	Priority Sector(s)	Geographic focus (if any)
Adaptation to Climate Change in the Indian Ocean Islands ¹⁶⁶	changes in the islands of the Indian Ocean to improve incomes and living conditions of family scaled farmers. It entails four main components: knowledge sharing, information and awareness, improvement of operational skills and support to small-scale farms.	Budget: US\$0.75 million		Community based adaptation; Knowledge communication			Madagascar, Mauritius, Seychelles, Reunion Island
<i>In Mauritius: Further information required.</i>							

D. Proposed Adaptation Action

No emerging projects in Mauritius have been identified.

E. Assessment

Given the anticipated impacts of climate change in Mauritius, there is a need for attention to adaptation in the following areas: coastal zones, disaster risk management, agriculture, tourism, climate information services, fisheries, forestry and freshwater resources, as well as the establishment of appropriate governance and policy structures. Current adaptation activities being funded in Mauritius address adaptation in some of these key areas, namely governance, disaster risk management, agriculture and climate information services. For example, through its participation in the Indian Ocean Commission’s “ACCLIMATE” program, Mauritius is expected to enhance its capacity to perform vulnerability assessments, monitor the weather, and reduce climate related risk. Disaster risk management needs is also being addressed in part through the Red Cross/ Red Crescent Societies’ “Preparedness for Climate Change” program. As well, both the Africa Adaptation Program and the Global Climate Change Alliance programs are helping governments understand and integrate climate change adaptation considerations into policies and programs. In order to maximize impact, it will be important to ensure that projects with a similar focus are coordinated and any lessons learned are shared.

Given the danger of sea level rise and the threats posed by climate change to coastal regions, various sources point to the need for Mauritius to address these risks through integrated coastal zone management activities and, if necessary, appropriate infrastructure in coastal areas. At present, only the (large) project funded by the Adaptation Fund is currently focused on coastal zone management issues, including piloting of specific adaptation measures along Mauritius’ coastline. Agriculture is another area in which existing support could be

¹⁶⁶ COI, http://www.coi-ioc.org/fileadmin/multimedia_francais/activites/downloads/R%E9sum%E9%20projet%20Agro%E9cologie%20English%20version.pdf



expanded. Current activities in this sector are focused on adaptation in smallholder farming communities and assessing future risks in the sector. There may be a need for future efforts to address the need for diversified crop varieties that are suited to future climate conditions. Areas in which gaps in action appear to be present are fisheries, forestry and freshwater resources. As well, none of Mauritius' current projects specifically address gender and human health concerns.

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