

Addressing climate change in East and Southern Africa

Major challenges for agriculture and rural development

Climate variability and change are expected to compromise agricultural production and food security severely in many African countries. In East and Southern Africa, the effects of climate change will be compounded by the region's high poverty levels, weak infrastructure, poor natural resources management and dependence on rainfed agriculture.

As a result of climate change, the region could see net reductions of more than 10 per cent in the production of maize and other major crops such as sorghum, millet, sugar cane and wheat. While commercial livestock activities may marginally improve as the result of increased rainfall, traditional communal livestock activities may be disadvantaged because of increased erosion and the incursion of woody weeds in some areas.

Water-related problems, already serious in the region, are likely to worsen as a result of climate change. Intense rainfall events will increase the incidence of flooding in many areas. At the same time, reduced run-off will exacerbate water stress and reduce the quality and quantity of water available for domestic and crop and livestock use. Experts predict that Southern Africa will become drier, and that rainfall will increase in parts of East Africa. Drought-prone areas of Botswana, Ethiopia, the Sudan and Zimbabwe are likely to become more vulnerable to climate change than more humid areas of the United Republic of Tanzania or Zambia.



There are already signs that drought is becoming more common and more prolonged in the drylands of Southern Africa, and drought incidence is expected to increase as a result of higher temperatures and reduced rainfall.

IFAD's response

IFAD works with governments and communities in the region to introduce appropriate measures and adaptive technologies that reduce the vulnerability of poor rural communities to climate variability and longer-term climate change. Projects in Eritrea,

Kenya, Madagascar and the Indian Ocean islands are introducing simple water and land management techniques that prevent damage to soils from flooding and help conserve water. A main focus is restoring ecosystems and their services as a means of bolstering the resilience of agricultural livelihoods.

Across the region and beyond, IFAD is also pioneering and testing payment for environmental services, income diversification and more sustainable and profitable management systems, which promise to become a major factor in encouraging rural communities to protect the resources they depend on and to help them become active players in reducing global greenhouse gas emissions.

Examples of climate change activities in IFAD loans and grants

IFAD loans

Soil and water conservation in Eritrea

A combination of low-lying coastal regions, arid and semi-arid areas, fragile ecosystems and zones prone to drought and desertification make Eritrea particularly vulnerable to climate change. Subsistence farmers, pastoralists, rural inhabitants and fishing communities are all groups at risk. The greatest challenge they face is the unpredictability of rainfall, which can range from erratic to torrential. When heavy rain falls after a period of drought, the water cannot penetrate the hard-caked soil, causing floods to occur. Increasing climate variability is already affecting various sectors. To halt land degradation and increase the availability of water for crop irrigation, an IFAD-funded agricultural development project introduced soil and water conservation technologies, such as earth or brushwood bunds and terracing. It also introduced micro-catchment interventions to reduce rainwater run-off and increase soil infiltration, and constructed two medium-scale spate irrigation schemes covering about 1,100 hectares and benefiting 1,000 farmers.

Project name: Gash Barka Livestock and Agricultural Development Project

Contact information: Abla Benhammouche, Country Programme Manager, a.benhammouche@ifad.org

Partner: Belgian Survival Fund for the Third World

Project duration: 2003-2010



Building farmer resilience in Kenya

Over the past century, the glaciers of Mount Kenya have lost 92 per cent of their mass, and the volume and extent of this loss has greatly accelerated in recent years, causing major floods in the Lower Tana Basin. Serious droughts have also affected the area over the past 50 years. In 2000, the third successive year of drought, some rivers and streams in the middle catchment areas of Meru Central and Embu dried up completely for the first time in living memory. An IFAD-financed pilot project in the area is using community-based approaches to strengthen the resilience of poor communities' farming systems in the face of short-term climate variability, and to reduce vulnerability to current climatic risks. The project has introduced a range of adaptive activities such as improved water resource management through water user associations; more appropriate agricultural practices such as agroforestry and river bank protection; energy-efficient cooking stoves and charcoal kilns; and the rehabilitation of degraded land, especially hilltops. Global Environment Facility (GEF) grant activities complement the loan project activities by supporting ecosystem management, including reforestation and management of Mount Kenya's rich and diverse flora and fauna, which are of global conservation significance. The grant-supported activities are relieving pressure on forest and water resources by focusing on poverty reduction strategies and introducing alternative livelihood options and improved management practices in agricultural areas adjacent to the forests, while also promoting sustainable solutions for the management and conservation of protected areas.

Project name: Mount Kenya East Pilot Project for Natural Resource Management

IFAD loan contact: Samuel Eremie, Country Programme Manager, s.eremie@ifad.org

Partner: Global Environmental Facility

Integrated GEF grant (Trust Fund): Mount Kenya East Pilot Project for Natural Resource Management

GEF grant contact: Naoufel Telahigue, Regional Climate and Environment Specialist, n.telahigue@ifad.org

Duration: 2004-2012

<http://www.mkepp.or.ke/>

*The activities described represent a component or a specific feature of the project presented.



IFAD grants

Piloting rewards for environmental systems in Kenya, Uganda and the United Republic of Tanzania

The degradation of ecosystems as a result of climate change has a direct impact on the livelihoods, health and welfare of poor rural communities in Africa. It also affects non-rural communities that depend on ecosystem services. Changing climatic conditions exacerbate poverty and undermine the ability of communities to prevent degradation and nurture the environment they depend on. An IFAD-financed programme in Kenya, Uganda and the United Republic of Tanzania (also implemented in West Africa, in Guinea) was based on a recognition that poor rural people have the potential to be important players in natural resource management and carbon sequestration, benefiting not only themselves but also others further afield. The programme worked with poor communities and potential ecosystem service beneficiaries to put in place schemes to pay or reward communities for providing these services, including through improved land-use practices, reforestation and river bank restoration.

The concept of rewards for environmental services (RES) is a novel approach that links ecosystem stewardship with the interests of ecosystem service beneficiaries. Payments or RES mechanisms are a new and widely recognized type of voluntary, conditional and negotiated contract between ecosystem stewards and ecosystem service beneficiaries. The IFAD grant-funded activities promoted the development of these systems for carbon storage, hydrological services and biodiversity conservation.

In Kenya, the programme focused on the Upper Tana, where ecosystem degradation has the greatest impact on the river's life-supporting functions. The Tana River supplies significant hydropower and also irrigation water. Its reservoirs and dams are, however, threatened by sediments resulting from farming activities in the upper Tana catchment. Deforestation and the expansion of commercial and subsistence farming activities are factors contributing to the degradation.

In Uganda, the programme partnered with two not-for-profit organizations, Ecotrust Uganda and Nature Harness Initiatives, to explore upstream-downstream linkages and a wide range of incentive options for watershed management. In partnership with Ecotrust Uganda, through the Plan Vivo approach, which encourages individual landholders to draw up sustainable land management plans, 17 farmers became eligible for carbon payments (for sequestration of 5,735.88 tons of carbon dioxide resulting from trees planted to enhance the River Mubuku watershed). Other incentives explored to supplement upstream-downstream rewards included forest-based enterprises, eco-labelled handicrafts and the engagement of private-sector companies in corporate social responsibility.

In the United Republic of Tanzania, the programme worked in the Usambara Mountains, where deforestation and unsustainable land-use practices are prevalent. The direct adverse impacts can be seen in reduced agricultural production and lower water quantities for local and regional water supply. Hydroelectric power generation has also been affected. In the West Usambaras, the programme collaborated with researchers from the World Agroforestry Centre and the Selian Agricultural Research Institute to address this degradation by linking upland farming communities with urban water utilities, hydropower generators and downstream agricultural producers. The programme also studied the feasibility of reducing emissions from deforestation and forest degradation (REDD) in the East Usambaras, with a focus on land-use trade-offs, benefits sharing and the delineation of subnational REDD interventions.

Grant name: Programme for Pro-Poor Rewards for Environmental Services in Africa (PRESA)

Contact information: Sheila Mwanundu, Senior Technical Adviser, s.mwanundu@ifad.org

Partner: World Agroforestry Centre

Programme duration: 2007-2011

<http://presa.worldagroforestry.org/>



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Markets for carbon sequestration in Mozambique

New market opportunities are fast opening up for high-value agricultural products and services related to climate change mitigation, such as carbon sequestration. An applied research programme, funded by IFAD and carried out by the International Food Policy Research Institute, was designed to ensure that poor rural people, and women in particular, have better access to, and the capacity to take advantage of, these burgeoning opportunities. The programme reviewed and assessed existing activities related to carbon markets in Mozambique and in three other countries outside of the region (Ghana, Morocco and Viet Nam). In Mozambique, it focused on two IFAD-financed operations: the Rural Markets Promotion Programme (PROMER) and the Sofala Bank Artisanal Fisheries Project (SBAF). It analysed the impacts of SBAF and identified commodities with potential for market development, and contracted farming experiments and a baseline study to evaluate the impact of PROMER.

Programme name: Strategic Partnership to Develop Innovative Policies on Climate Change Mitigation and Market Access

Contact information: Bernadette Mukonyora, Research Officer, b.mukonyora@ifad.org

Partner: International Food Policy Research Institute

Programme duration: 2008-2011

<http://ifadifpri.wordpress.com/>

Climate change adaptation in the Comoros, Madagascar, Mauritius, Reunion, the Seychelles and Zanzibar

Vulnerability assessments conducted in the Comoros and Madagascar in connection with the national adaptation programmes of action under the United Nations Convention to Combat Desertification clearly indicate that changes in climatic variability in the Indian Ocean region, such as prolonged spells of drought and intensive rainy seasons, are leading to rapid declines in soil fertility. The assessments also underscore the need for smallholder agricultural systems to take urgent measures to adapt to climate change. Both assessments identified smallholder farmers as the group most in need of urgent support.

An IFAD-financed regional initiative, implemented by the Indian Ocean Commission, was designed to help smallholder farmers adapt their farming systems to mitigate the effects of climate change. This was done by introducing conservation technologies designed by agro-ecologists, encouraging farmers to share best practices that contribute to restoring and improving soil fertility, and promoting the exchange of knowledge on these topics among the six participating islands (the Comoros, Madagascar, Mauritius, Reunion, the Seychelles and Zanzibar). The initiative also piloted a number of innovative features to sharpen the climate focus of development activities, and set up platforms, working groups and a hub of competence in each country to sustain the action. Features included demonstrating carbon sequestration benefits and conducting vulnerability assessments focused on climate change.

Grant name: Regional Initiative for Smallholder Agriculture Adaptation to Climate Change in the Indian Ocean Islands

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Partners: Indian Ocean Commission; European Union; Reunion Island

Programme duration: 2008-2010



Reinforcing traditional Maasai adaptation practices with information and communication technology in the United Republic of Tanzania

Pastoralist communities such as the Maasai across East Africa are living with the reality of climate change, adapting as they can to successive poor rains, increases in drought-related shocks and more unpredictable and sometimes heavy rainfall events. Their resource management systems have always included a strong adaptive element, but today these systems need a boost from new technologies to cope with the quick pace and unpredictability of change. Traditionally the Maasai predicted rainfall and managed their rangelands using various systems, including the deciphering of animal voices, astronomy and the observation of flowering tree behavior. A First Peoples Worldwide grant, coupled with an IFAD grant and local IFAD support, helped establish a radio-based system for collecting observations and weather predictions from Maasai herders scattered across hundreds of hectares, documenting and verifying these observations, and mapping them with geographic information systems. The aggregated information helps the Council of the Maasai Elders make key decisions on communities' and livestock movements, based on where rainfall is expected. Migratory pastoralism is at its core an adaptive production strategy and a way of life that can contribute to the sustainable management of natural resources in a changing climate. Modern information and communication technology can help the Maasai people sustainably manage their rangelands in the face of a changing climate.

Project name: Indigenous Maasai Cultural Centre

Contact information: Antonella Cordone, Coordinator for Indigenous and Tribal Issues, a.cordone@ifad.org

Partners: Indigenous Heartland Organization; First Peoples Worldwide

Duration: 2009-2010

*The activities described represent a component or a specific feature of the project presented.



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LINKS

IFAD and climate change
www.ifad.org/climate/

United Nations Framework Convention
on Climate Change
www.unfccc.int

Intergovernmental Panel
on Climate Change
www.ipcc.ch

COP 17
www.cop17durban.com

World Bank 2010 World Development
Report: Development and Climate Change
www.worldbank.org/wdr2010

Green water credits in Kenya

Over the past two and half decades, most of Kenya's cropland has lost its topsoil, while the population has doubled, increasing demand for power and water. The green water credits approach is based on a conviction that the most cost-effective way of building resilience to increasing water scarcity caused by climate change and land degradation in Africa is to increase water storage in farmers' fields. 'Green water', or rainwater stored in the soil and available for uptake by plants, is the largest freshwater resource on earth. The availability of green water can be increased by reducing run-off and evaporation from the soil. This results in a larger amount of water being available for crops and also in more water that can be used downstream (the so-called 'blue water'). Farmers and pastoralists are key managers of soil and water but their services often go unrecognized and unrewarded. The concept of green water credits rectifies this market failure by rewarding upstream water producers for specified environmental management services that determine water supplies to consumers downstream. Rewards may be in the form of cash or other more lasting benefits.

Grant Name: Proof-of-Concept Study of Green Water Credits

Partners: World Soil Information; Swiss Agency for Development and Cooperation

Duration: 2005-2007

<http://www.greenwatercredits.net/>

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IFAD is an international financial institution and a specialized United Nations agency dedicated to eradicating poverty and hunger in rural areas of developing countries.

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