

Preparing for Climate Change in Kenya

Early Outcomes of the Project "Increasing Community Resilience to Drought in Makueni District"

December 2008



Demonstrating strategies that reduce vulnerability to climate change

The arid and semi-arid lands that cover approximately 80 per cent of Kenya have long experienced water shortages and drought due to unreliable and poorly distributed rains. Smallholder farmers in these regions are used to coping with variable conditions, but the weather has become even more unpredictable recently—putting lives and livelihoods at greater risk.

Climate change will likely make matters worse. It is projected to lead to significant declines in rainfall and river flows in many parts of Kenya, particularly its arid and semi-arid regions. This additional stress further threatens the water and lands upon which smallholder farmers rely for their livelihoods, health and well-being. Kenya must, therefore, identify and implement policies, processes and technologies to sustainably develop an agriculture sector resilient to current climate variability and long-term climate change. The Makueni District drought resilience project is addressing this challenge.

The project seeks to:

- increase food security by enhancing the drought resilience of local agricultural practices;
- reduce poverty through diversification of livelihoods; and
- facilitate the integration of adaptation to climate change into Kenya's sustainable development plans and policies.

Through field activities, the project is succeeding in demonstrating strategies and measures that can be taken to reduce the vulnerability of smallholder farmers to climate variability and climate change. It is also illustrating how national policies may be influenced and modified based on lessons from the field.

Project Overview

Lying in south-central Kenya, Makueni District is characterized by sharp contrasts between the low-lying, sparsely populated grasslands in its southern reaches, the volcanic Chyulu Hills along its southwest border, and the more densely populated, resource-rich rolling hills found in its north. In this mainly semi-arid district, rainfall patterns are highly variable in terms of their onset and duration. Drought and food insecurity are always a worry. A swelling population, land fragmentation and the migration of people into the sparser, drier lowlands, all contribute to Makueni's considerable vulnerability to current climate variability and long-term climate change.



“We can now plant and sell vegetables using the water from the sand dams. Three years ago we had to buy vegetables from Makueni town. But now we have a period of more than four or five months to plant vegetables and other crops.”

– Onesmus Munyao, 27, from Mwayu Kwanzwili village



In response, this community drought resilience project was initiated in 2006 in the northern sublocation of Sakai, Kisumu Division, one of the regions of Makueni District that is most vulnerable to drought. The approximately 4,800 people living in Sakai rely on marginal mixed farming fed by rains that fall twice a year: the long rains of March/April; and the short rains of November/December. However, residents report that the long rains have become less predictable since the 1980s, leaving the community of Sakai increasingly dependent on only one reliable annual harvest. This vulnerability is exacerbated by a heavy reliance on varieties of maize, millet and cowpeas that are sensitive to drought.

The project works to reduce vulnerability in Sakai through activities at the field and policy level. At the field level, the project increases household food security by enhancing the resilience of local agricultural practices and reduces poverty through livelihood diversification. Activities include:

- *Downscaling climate forecasts to guide the choice of crops planted and the timing of agricultural activities.* In advance of each rainy season since late 2006, the project has downscaled weather forecasts and advised on the timing of planting, crop selection and seed spacing. The results have been communicated to farmers via radio broadcasts and brochures in the local languages. District Officers of all line-ministries; leaders of community-based organizations; and representatives of non-governmental organizations have been trained in downscaling and communicating weather forecasts.
- *Improving agronomic practices by providing access to fast maturing and drought-resistant crop varieties.* Working with the Kenya Agricultural Research Institute, the Ministry of Agriculture and community members, the project has helped to identify appropriate

crop seed varieties and provide training on improved crop husbandry, pest control, interpretation of weather forecasts, seed bulking and storage, and post-harvest management. Approximately 120 farmers, men and women, have established demonstration sites that illustrate the benefits associated with the improved methods. As well, a Farmer's Handbook based on an analysis of 40 years of weather data from five local meteorological stations is being developed. It will advise on how and what to grow under different weather scenarios.

- *Building sand dams, shallow boreholes and drip irrigation systems to improve access to water for use in crop production.* Two sand dams have been built in Sakai as part of the project, improving access to water during the dry seasons. As well, the project has promoted the introduction of small boreholes fitted

with either a hand- or foot-pump. These will soon be linked to drip irrigation systems—providing farms with the water needed to increase agricultural productivity while promoting water conservation.

- *Increasing local self-help groups' access to income-diversification activities.* Five self-help groups have been selected for participation in a merry-go-round micro-credit scheme and provided with training in the development of business plans. Upon completion of these plans, these groups have been provided with funds to carry out new income-generating activities such as the production of tree seedlings and high value vegetables.

The project is also facilitating the integration of adaptation to climate change into sustainable development plans and policies through continual engagement with district- and national-level policy-makers and by communicating lessons from the field. For example, from its initiation, the project has been endorsed by and has worked with the Makueni District Steering Group. As well, District Commissioners, District Officers and officials from neighbouring divisions have been given field training on the project's activities.

Implementation of the project is being led by the Centre for Science and Technology Innovations (CSTI) in partnership with the Arid Lands Resource Management Project (ALRMP), a community-based drought management project initiated by the Government of Kenya.

Early Outcomes

At the field level, the pilot project has found that farmers using the seasonal, downscaled weather forecasts provided by the project and undertaking early land preparation and dry planting are generating better yields than those who plant at the onset of the rains, or shortly thereafter. As well, the early maturing varieties of maize and pigeon peas selected based on the forecasted rainfall are performing better than the varieties normally preferred by farmers in Sakai. There has been rapid uptake of the borehole technology introduced by the project, and access to water resources is increasing. These changes are helping to increase food security in Sakai, and to reduce the community's long-term vulnerability to climate change.

Early outcomes of the project have also influenced related national policies, helping to incorporate climate change and adaptation considerations into their design and implementation:

- *Integration into Kenya's draft National Disaster Management Policy.* Since 2004, Kenya's Ministry of State for Special Programmes has led a Task Force comprised of key ministries and projects through the development of a national disaster management policy. Spurred by the interventions of a representative of the ALRMP and member of the Makueni project team, the Task Force agreed in 2007 to recommend integration of climate change and adaptation considerations into the policy. The disaster management policy has now been revised to include climate change and adaptation issues in nearly all of its parts. The revised policy is soon expected to be approved by Cabinet.
- *Integration into the management of arid and semi-arid lands.* Drawing upon the early outcomes of the pilot project, the Permanent Secretary for Kenya's Ministry of Northern Kenya and Arid Lands has made it part of its policy that all the districts in the ALRMP will receive downscaled weather forecasts. As well, the Ministry has recalled, from the Cabinet Office, its draft policy on the sustainable development of arid and semi-arid lands to revise it to include climate change and adaptation issues.

Recommendations

Through field-level activities that are improving access to agronomic information and sustainable practices, water resources and micro-credit, this pilot project is working to reduce the vulnerability of the people of Sakai to the impacts of climate change. The policy-level changes spurred in part by the project will help to spread these benefits to a much larger population.

We have also learned that there is a need to improve access to meteorological information at the local level in Kenya in order to help farmers cope with increasingly unpredictable weather conditions. The successful efforts in Sakai to reduce vulnerability have also pointed to the need to increase the availability of drought-tolerant seeds in other semi-arid districts and to expand the emerging distribution network in order to provide drought-tolerant seeds to more farmers. As well, the project implementation team has noted the need to improve agricultural extension capacity in Kenya and to raise the capacity of District Officers to access sufficient information about climate change, its potential implications and actions they can promote to reduce vulnerability in the agriculture sector. Further lessons and recommendations are expected to be generated as the project completes its activities in 2009.

"Increasing Community Resilience to Drought in Makueni District" is one of three pilot projects being implemented as part of the regional project, "Integrating Vulnerability and Adaptation to Climate Change into Sustainable Development Policy Planning and Implementation in Eastern and Southern Africa (ACCESA)." Through pilot projects in Kenya, Rwanda and Mozambique, ACCESA is working with communities to introduce measures to reduce their vulnerability to climate variability and climate change. It is also working to integrate adaptation to climate change into national policy- and decision-making, allowing for amplification of benefits across a wider area and over a longer period of time.

Funding for this project has been provided by the Global Environment Facility and the governments of the Netherlands and Norway, and supported by in-kind contributions from the Governments of Germany, Kenya and Rwanda. The project is led by the United Nations Environment Programme, the International Institute for Sustainable Development and the African Centre for Technology Studies. Further information is available at <http://www.iisd.org/climate/vulnerability/adaptation.asp>.

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