More information for better planning

Rural communities have been adapting to a changing environment for a long time. But the scale of adaptation has to increase as a result of climate change. The Sakai project, implemented in Kenya, shows how important weather and climate information is when adapting to climate change. Cropping calendars were used to put this information alongside traditional knowledge. Farmers then used them in planning their farming systems, including the use of relevant "external" techniques such as improved seed varieties and drip irrigation systems.

Cynthia Brenda Awuor

Many parts of Kenya are already experiencing unpredictable weather, with more frequent droughts, floods, and strong winds (particularly at the coast). Kenya, like many other countries, is particularly vulnerable to climate change. It relies on rain-fed agriculture and on other activities that are highly weather-sensitive; it suffers water scarcity, and many of its natural resources are degrading. Rapid population growth, inadequate basic infrastructure, and weakening social institutions and safety nets only increases its vulnerability, threatening to undo decades of poverty reduction and development achievements. This article presents the experience of a Kenyan community that is reducing its vulnerability to drought, as a first step towards increasing food security and reducing poverty.

Setting up a pilot project

The pilot project presented here is part of a regional project on "Integrating Vulnerability and Adaptation to Climate Change into Sustainable Development Policy Planning and Implementation in Southern and Eastern Africa" (ACCESA). This is funded by the Global Environment Facility (GEF) through the United Nations Environment Programme (UNEP), and the Governments of the Netherlands and Norway. It is being implemented by the local community, together with the Centre for Science and Technology Innovations (CSTI), and the Arid Lands Resource Management Project (ALRMP). Its main objectives include increasing household food security, reducing poverty, and facilitating the integration of climate change adaptation into policies related to disaster management and to the sustainable development of arid and semi-arid lands in Kenya.

Starting in 2006, this project is being implemented in Sakai, a sub-location in the Kisau division of Makueni, a district in Kenya's Eastern province. Sakai covers an area of approximately 24.5 km^2 and has a population of about 4800 persons, who mainly conduct small-scale, rain-fed agriculture and livestock rearing. This area was chosen because it is very vulnerable to drought, it has local institutions and organisational structures in place, and the community was willing to actively participate.

Local knowledge and information

About three-quarters of Sakai residents were aware of indigenous or traditional methods of forecasting rainfall, including the use of weather indicators. More than 40 percent of all households get weather information from traditional sources, including traditional weather forecasters (members of the community who determine whether the rain will fall or not by observing the behaviour of certain birds or insects). Of these, about one third use this information for seed selection, for deciding when to till, terrace and repair agricultural land, or for planting. At the same time, 88 percent of the respondents receive weather information from other sources, including radio, television, newspapers and agricultural extension officers.

But while traditional sources of weather information have been useful, and are widely accepted among the community, the villagers noted that they do not provide sufficient information to help them plan their activities in the long run. Considering that knowledge and information is directly related to vulnerability, the project therefore decided to fill this gap by complementing traditional weather information with scientific weather forecasts.

The project team has been "downscaling" scientific weather forecasts for the sub-location, and communicating this information in agricultural terms. Downscaling involves conducting meteorological weather forecasting and seasonal weather predictions at the sub location, to generate more accurate figures for expected temperature and rainfall. By doing so the team has been able to provide accurate weather predictions for the sub-location – especially when compared to the provincial weather forecasts provided by the Kenya Meteorological Department. For a large geographical area, they only classify the expected rains as "above normal", "normal" or "below normal". In parallel, community members were trained on the use of seasonal weather information. For example, they have been trained on how to interpret provincial weather forecasts provided by the Kenya Meteorological Department. This includes the specific range of rainfall quantities expected under "above normal", "normal" and "below normal" rains. In addition, community members have been trained on suitable agricultural and land management activities that they could undertake under different seasonal weather predictions. This looks at types of crops to plant during "above normal and normal rains" as well as drought resistant crops and seed varieties to plant under "below normal" rainfall quantities. Based on downscaled seasonal weather forecasts, villagers have been regularly provided with information detailing the expected dates of the onset and cessation of rain, duration and amount of expected rainfall, suitable crop and seed varieties for a given season, and dates for land preparation and sowing.

The team used various channels of communication. These included several meetings with the local administration or *"barazas",* notices in local newspapers, as well as radio programmes run at the beginning of each rainy season by the local radio station hosted in partnership with the Arid Lands Resource Management Project Team in Makueni. A special activity was the preparation of "cropping calendars". These incorporate traditional knowledge on weather and farming practices, outlining suitable agricultural activities to be undertaken during the rainy and dry seasons. A "cropping calendar" also highlights the importance of preparing the land early, selecting appropriate seeds, and conserving livestock feed. It provides guidelines for planting that take into consideration possible rainfall scenarios under different soil types. It provides information on appropriate crop types, seed varieties, planting dates, as well as depth and spacing of seeds. In addition, we also prepared guidelines on land preparation, application of manure, pest and disease control, weeding, crop rotation, grain selection, packaging, storage and transportation.

Community meetings such as this one, held in August 2008, were vital for the preparation of the "cropping calendars".

This information has been useful for farmers. They use it to decide when to prepare their land, the crop varieties they will grow in a given season (in view of expected quantity and duration of rainfall), and good land and crop management practices that will help them improve their agricultural yields. All villagers agree that the use of information has contributed to improved yields during the last four cropping seasons. According to one of the farmers, Boniface Kimeu, the results have been very positive. He was provided with 2 kg of good quality, drought-tolerant maize seeds bought by the project. He used knowledge and skills gained through training, as well as weather information provided, and planted them. He harvested 50 kg of maize at the end of the long rainy season in 2007. Out of his harvest, he selected 6 kg of good quality seeds and planted them during the short season of the same year. Out of this, he harvested 400 kg of maize.

Other activities

In addition to the interpretation, packaging and timely communication of weather forecasts, other project interventions include training community members on appropriate agricultural and animal husbandry practices. The project also runs training courses on identification, retrieval, selection, bulking and storage of good quality seeds, pest control, post harvest storage and management. Demonstration sites were established with 40 families, helping to show the benefits of using weather information in agricultural planning, as well as the use of specific agricultural practices.

Many of the Sakai villagers have been participating in farmer-to-farmer trainings, and distributing good quality seeds from their farms to other farmers in the area. The farmer-to-farmer training sessions are conducted twice a year before and during each rainy season. Each farmer trains two neighbours. As a result, we estimate that more than 600 farmers have been trained so far. Thanks to the Arid Lands Resource Management Project, much of the work carried out in Sakai has been replicated in the nearby divisions of Kibwezi, Tulimani and Kalawa.

Furthermore, to enhance year-round availability and accessibility of water, the project helped to build two sand dams, namely *Kwa Dison* and *Kwa Ndeto*. These are designed to form a partial barrier across a river or stream, which traps sand and water as it flows. Sand dams are suitable for the area because they conserve water that the community can use during dry seasons. Since the completion of the first sand dam in mid 2007, community members have appreciated the benefits of such efforts, especially in terms of access to water. This water has so far been used for domestic purposes, and for the cultivation of kitchen gardens. Future plans include the drilling of shallow wells and establishment of drip irrigation systems in the area. The project is also strengthening small-scale micro-finance institutions in the area to help diversify the community's economic base and increase access to credit.

A wider outreach

One of the project's main interests is to regularly update its website, showcasing the many activities and results. In addition, the team has prepared several papers based on the project's experience, presenting them at various national and international meetings. Project partners have also prepared and distributed a project brochure and a video documentary. Plans are underway to use the video documentary as a tool for further awareness creation, peer learning, as well as in further policy engagement. Policy briefs will also be produced. They will highlight the importance of integrating climate change adaptation into sustainable development policy planning and implementation, and will draw on lessons from the pilot project.

In terms of policy engagement, the project actively involved many authorities and decision makers, such as representatives of the District Food Security Group and the District Environmental Committee. It also met with representatives of the Ministries of Environment, Agriculture, Social Services, Water, Planning and National Development and Finance. Integration of climate change adaptation into national policies, however, has been a major challenge. The team faced different constraints, especially in terms of knowledge and application of appropriate tools and methods. Another challenge is the lengthy process of policy review, together with external factors that affect policy change, such as political interests or the prevailing economic priorities.

Fortunately, the Kenyan government recognises that climate change is a challenge to national development, and is committed to action. The Arid Lands Resource Management Project helped by including climate change adaptation in the National Disaster Management Policy, currently under review. A draft of the document has been tabled in Kenya's parliament, with the results of the deliberations expected soon. A National Climate Change Office is being set up, and will be charged with the task of formulating a national climate change strategy on adaptation and mitigation. This office is expected to consider the lessons drawn from the Sakai pilot project's experience. Our next task is to contribute to this office's success. We plan to do this by comparing the experience in Sakai with that of the other areas where the project is now being replicated. This will help build a body of knowledge on the application and adaptation of diverse tools and methods in community based adaptation to climate change and policy integration.

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Cynthia Brenda Awuor. Research Associate, Stockholm Environment Institute – Oxford, Red Cross Road, Nairobi, Kenya. E-mail: cawuor@gmail.com