

Enhancing the Adaptive Capacity of Communities to Climate Change Induced Water Challenges using ICT in Uganda

Project Design and Anticipated Policy Implications

In Uganda, climate change poses great risks to the well-being of the population. Studies show that climate changes are already threatening Uganda's ecosystems and the livelihoods of the population that depend on them. Climate change is increasing the frequency and intensity of severe weather events such as droughts, floods and landslides. Information and Communication Technologies (ICT) such as mobile phones, radio, Internet, web-based media and knowledge centers can be used for enhancing adaptive capacity of communities. Such tools can be used to inform communities and raise their awareness about the effects of climate change; facilitate networking among communities; and build the capacity of communities and support agencies through distance learning processes.

Research on the use of ICT for improving adaptive capacity of communities in developing countries is scarce but has started providing important indications of the potentials of ICTs for improving the adaptive capacity of communities.

The Climate Change Adaptation and ICT (CHAI) project will assess the extent to which the adaptive capacity of communities to water-related impacts of climate change can be strengthened by implementing a robust integrated system that provides information on appropriate adaptation mechanisms to communities. The project will employ ICT tools to improve the quality of climate risk and vulnerability data and support the timely generation, dissemination and use of climate-related information.

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A key objective of the project is informing policy processes with research-based evidence on the role and potentials of ICTs for improving the adaptive capacity of Ugandan communities to climate-induced water challenges.

The research will bring a new approach to information gathering and information dissemination to support policy formulation and will equip vulnerable communities with mechanisms to cope with water-related impacts of climate change.

Project Snapshot

The CHAI project seeks to strengthen the adaptive capacity of individuals and communities in the cattle-corridor to water-related impacts of climate change and variability by improving the quality and timeliness of climate risk and adaptation information through the utilization of ICT tools. Four districts, namely, Soroti, Nakasongola, Rakai, and Sembabule, representing a range of water management zones and agro-ecological conditions, will form the pilot sites for the project.

The project will:

- i) assess the relevance of indigenous knowledge and determine the information and communication needs of vulnerable communities and government institutions. Identify the factors which hinder government agencies' efforts to predict risks and implement adaptation options;
- ii) develop and test the effectiveness of an information system combining mobile phone-based applications and other ICT tools for two-way communication on water-related climate risks and adaptation options;
- iii) research how the use of ICTs impact the ability of communities to adapt to water-related impacts of climate change; and
- iv) Document lessons and share findings to inform national adaptation policy and practice.

How will the project demonstrate the use of ICT for enhancing adaptive capacity?

The project has identified the following types of information for dissemination to communities in the cattle corridor.

Seasonal Forecasts: High quality seasonal forecasts can help crop farmers and pastoralists make informed choices about the management of their livestock and crops. . The project will disseminate seasonal forecasts to the communities in the cattle corridor.

Advisories and Early Warning: Information on severe weather events such as storms and damaging floods will be disseminated to communities. The project will work closely with district administrations to obtain information on availability of pasture in each district and disseminate information to pastoralists using multiple channels.

Market Information: In times of stress, such as prolonged droughts, one of the coping mechanisms of pastoralists is selling their livestock. The project will disseminate information on livestock market /prices to communities in the three pilot districts.

Raising community awareness: Information designed to raise community awareness on the causes and effects of climate change, vulnerabilities to climate-related water challenges, and adaptation measures such as water harvesting techniques and water conserving measures will be disseminated to communities.

How will adaptation information be disseminated to vulnerable communities?

Text Messaging: Climate and adaptation-related information to multiple users in the three pilot project areas will be circulated via mass text (SMS) messaging.

Voice Messaging: An Interactive Voice Response system (IVR) technology that allows callers to navigate an automated menu and listen to pre-recorded audio content in their local languages will be deployed to facilitate communication with illiterate individuals.

FM Radio: The project will collaborate with local radio stations to broadcast relevant information in local languages to communities in the three pilot districts. Radio broadcasts will be particularly important for illiterate people and pastoralist communities who usually tune into radio programs.

Community Loudspeakers:

Individuals, especially those without radios or where a radio cannot be carried to the garden or grazing field, listen to announcements made over community loudspeakers. The project will use community loudspeakers or explore possibilities of replaying FM broadcasts on climate change adaptation information over the community loudspeakers as a complementary channel.

The use of diverse means of communications, in addition to reaching a larger number of communities, will provide the project with an opportunity to assess the relative efficacy of each of the communication options.

Where and when will the demonstration be implemented?



Soroti, Nakasongola and Sembabule will be the intervention districts where the ICT tools for enhancing adaptive capacity will be deployed; Rakai will serve as the control district. The selected districts represent a range of water management, hydro-climatic and climatologic, and agro-ecological conditions ensuring that the research is undertaken in diverse settings making findings of the research more representative of the national situation. The demonstration will continue through January 2014.

How will the demonstration be evaluated?

The research methodology will involve the use of quantitative and qualitative methods from data collected through literature reviews, structured surveys, and semi-structured in-depth interviews. GIS will be employed for vulnerability mapping and predicting climate scenarios. A comparative study involving intervention and control districts will be conducted to assess the changes in adaptive capacity. A baseline survey will be conducted in August 2012, followed by mid-line and end-line surveys at six-month intervals. The surveys will assess:

- Climate trends and projections for the cattle corridor
- What is at risk including gauging the exposure of individuals, communities, assets and resources to water-related hazards, and the degree of likely damage (sensitivity) due to exposure to hazards
- The potential impacts that may occur without planned adaptation responses

- The current adaptive capacity of individuals and communities to cope with current and expected impacts of climate change on water resources

Occurrences of flood and drought in the study area will be assessed using HEC-RAS and Palmer Drought Severity Index (PDSI) and Standardized Precipitation Index (SPI) integrated in a GIS environment. Digital Elevation Model, stream layers, and flow data will be used to predict flood hazards, while rainfall and temperature data for all cattle corridor and neighboring areas will be used for drought-prone area determination.

Baseline conditions and changes observed during midline and end-line studies will be compared among the intervention and control districts.

How will the results be documented?

The research team will document findings in interim technical reports generated every six months (first interim report due August 2012), periodic policy briefs and a final technical report (due January 2012).



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This work is carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada.

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