

ICT FOR DATA COLLECTION AND MONITORING & EVALUATION

Opportunities and Guidance on Mobile
Applications for Forest and Agricultural Sectors



6.5 THWARTING DROUGHT—MOBILE-BASED DATA COLLECTION FOR DROUGHT PREPAREDNESS IN UGANDA³⁷

Properties of Featured Technology: *Java, basic phone, smart-phone, hosted, frontline workers, open source* (see also annex 4).

Context

As part of a regional initiative to reduce the risk of drought in East Africa with Early Warning Systems, community chiefs in 55 village centers are collecting specific and tangible data in resource availability and behavior to identify indicative patterns among the rural pastoral communities of the Karamoja region.

Located in the arid northeast of Uganda, Karamoja has the lowest human development indicators of any region in the country.³⁸ The region suffers from chronic poverty, malnutrition, and food shortages, as well as frequent droughts, due to generally poorly distributed, unreliable, and low rainfall amounts. Unlike other regions in Uganda, which have a bimodal rainfall pattern, Karamoja's pattern of rainfall allows for only one planting season, and the unpredictability of this pattern further exacerbates agricultural livelihoods. Given heavy reliance on cattle, sheep, goats, and poultry in the pastoral and agropastoral communities as food, investment, and safety net, tracking vulnerability to drought requires indicators such as water availability, agriculture, and livestock conditions so that communities may efficiently make the best of the land's low primary productivity.

Project

In an attempt to tackle the challenges of delays in data collection for preparedness and relief in vulnerable drought-prone regions, FAO and the Agency for Technical Cooperation and Development (ACTED), in partnership with a local district government in Uganda and inspired by the Kenyan Drought EWS, created a mobile application that enabled early signals to be collected and collated instantly online and fed into an early warning algorithm. The prior delay in manually collecting, aggregating, digitizing, and analyzing data had

severely delayed information transmission and thereby rendered the early warning system ineffective. The new early warning algorithm was used to generate a drought bulletin used throughout the district for drought preparation and relief efforts in the Karamoja region of Uganda.

When the Drought Early Warning System (DEWS) was first introduced, parish chiefs conducted the survey by hand, noting the information on paper, which was then delivered from the sentinel to the subcounty chief, and then to the DEWS Focal Person. It was entered manually into the system and then analyzed and disseminated in the form of drought bulletins, delaying the process by five to seven business days. A year and half into the project, the impact of the delay of paper-based data collection was evident—forecasts and predictions were less relevant than before. With the emergence of greater network connectivity and affordable mobile devices, ACTED saw an opportunity to bring mobile-based data collection to the DEWS project.

The mobile-based data collection project to inform monthly drought bulletins is the result of a partnership between three groups: local government partners who collect the information monthly through their area chiefs at 55 parishes (village clusters) and publish the monthly bulletin; ACTED, the international NGO that was able to bring together best practices and the stakeholders to develop the Early Warning System for Karamoja; and FAO, which was able to design and work with the technical team to develop the mobile application using Nokia Data Gathering and which provided operational and trouble-shooting capacity training to the project.

The Drought Early Warning System used in Karamoja relies on monthly weather forecasts from the Department of Meteorology of the Ministry of Water and Environment. The vulnerability indicators are collected from households, kraals, and markets by the village chiefs.

In order to obtain the information in a timely manner and to support communities and organizations in preparing for drought, three main factors played a key role: designing the optimal data collection parameters, a symbiotic partnership that enabled community ownership, and accessible mobile technology with network connectivity.

³⁷ <http://www.acted.org/en/uganda>.

³⁸ The administrative area in Karamoja has seven districts, which are further divided into subdistricts and then into parishes. Parish chiefs are selected by the local government and are responsible for a number of duties. Parishes have a market, where crops are sold, and kraals, where livestock are traded.

Designing the survey was a collective effort between stakeholders to arrive at a comprehensive yet efficient set of questions that can be administered through a basic feature phone:

- **Household survey (October 2012):** Collects data from the same 10 households in each survey location every month, including type of water source and time spent to fetch water from each, quantity of water fetched, security, type and source of food, crop conditions and type of crops, and alternative livelihood indicators such as price of casual labor.
- **Kraal survey:** Tracks the same five herds of cows of about 20 animals each, monitoring livestock body condition and access to grazing areas.
- **Market survey:** Administered monthly, tracking type and number of animals available in the market and market prices for the main sources of grain, meat, and energy.

Once collected and uploaded in a location with adequate connectivity, the data are processed on a Nokia server and exported in CSV format and imported to the DEWS database through a conversion applet. The DEWS is a web-based centralized application, on a server hosted by the Ministry of Agriculture, Animal Industries and Fisheries of Uganda. As the FAO involvement in the project ends in 2013, an integrated solution between Nokia data gathering technology and DEWS is currently being planned. The project is also developing new web-based products to further information dissemination.

The parish chiefs are selected to be enumerators based on motivation, accessibility, level of literacy, and availability of kraal and market in their parish. Employed by the local government, they are nominated by subcounty chiefs to be DEWS data collectors, enabling the government to run data collection sustainably beyond the funded project period.

Despite the fact that no additional compensation was offered, enumerators who were nominated were eager to participate because of the additional training, phone use, and the connections that the project offered. Working in isolated project areas, the periodic training brings together various parish chiefs to discuss challenges in

getting information and collecting data, and provides access to a network of similar community leaders.

Prior to technology training, the FAO trainers conducted sensitization to teach the interview process first. When enumerators are aware of how the data will be used, and why it is important to have accurate numbers, they are able to better establish a relationship with an interviewee, especially when disclosing potentially sensitive household information. Because enumerators are usually already familiar with texting on mobile keypads, only a half-day of initial technology training was required prior to implementation.

Main Takeaways

Empowerment of communities and local implementers: Periodic user training and capacity building generates greater awareness of digital tools and ownership of the process.

Symbiotic partnerships can combine resources with capabilities: FAO brought in technical knowledge and training, and ACTED provided implementation capacity in coordination with local communities and government.

Increased timeliness of early warning: Real-time data collection and drought bulletin production increase the timeliness of drought warning and the preparation response put in place by communities and partners.

Decrease in costs leads to greater likelihood of sustainability: As transport costs for carrying questionnaires from the field to sub-country and district offices is eliminated, data collection becomes more efficient and more viable for government adoption.

Sources:

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Malika OGWANG, ACTED, interview and survey documents shared on 20 February 2013.

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