

Forecast-based financing: case studies from Togo and Uganda

Introduction

Uganda and Togo are countries with many differences yet common challenges. Partially due to changing demographics, the impacts of floods and droughts have increased over the years, destroying livelihoods, infrastructure, and increasing the risk of disease outbreaks. Disasters have a disproportionate impact on the poor and most vulnerable.

The problem

Both Togo and Uganda suffer flood impacts and the frequency of this climate-driven disaster risk is expected to continue increasing, affecting more people. Despite the fact that with the availability of meteorological information and some disasters can be predicted in advance, still relatively little is done to prepare based on weather information. This is attributed to a lack of accurate data, information failing to reach the people who need to use it, lack of clear roles and lines of responsibility for what action to take when a forecast is received, and inadequate financial resources to implement interventions that could reduce impacts.



Uganda Red Cross volunteer Deborah Alamo and her colleagues in Omatai village carrying out their second humanitarian distribution under FbF in May 2016; three other villages were also covered as part of the same operation.
(Photo: Denis Onyodi/URCS)

Furthermore, several challenges limit the effectiveness of early warning systems: technical capacity to issue warnings, the ability of responsible agencies to receive and understand the warning, and the willingness or capacity of people and institutions to take appropriate action (Glantz 2009). Since forecast information cannot provide complete certainty, the risk of 'acting in vain' and being perceived as wasting funds often prevents early action (Braman et al. 2013; Coughlan de Perez et al. 2014).

There is unrealized potential for preventive and preparedness actions to be implemented based on forecasts before the actual disaster event occurs, which mostly happens in countries that do not include funds for preparedness actions in planning and budgets. While in most developing countries and especially in Africa, governments and humanitarian organizations have begun investing in long term disaster risk reduction (DRR), opportunities for effective early warning systems to trigger early action remain limited. In reality, there is a hidden financing gap: most humanitarian funding is only available once a disaster strikes, and seldom before.

A potential solution: forecast-based financing (FbF)

There is a window of opportunity between a forecast and a disaster for the implementation of preparedness and mitigation actions. Most climate-related hazards like floods, drought and storms *can* be forecast, and humanitarian organizations can get information about when and where these hazards are expected to occur. To complement existing early warning mechanisms with early action and to close the financing gap, the Red Cross Red

Crescent Climate Centre and its partners developed 'forecast-based financing'.

FbF is a mechanism for releasing humanitarian funding triggered by a pre-established forecast threshold, to ensure rapid mobilization of pre-planned activities to reduce risks, enhance preparedness and improve response. FbF aims to improve humanitarian outcomes while making disaster risk management more cost-effective. The use of scientific forecasts does not preclude the use of traditional indicators; indeed the integration of local knowledge in developing triggers for early action offers fertile ground for new research.

This initiative has been tested in ten countries, including Uganda and Togo, with continuing support from the German government through the German Red Cross (GRC).

The process: how FbF works

In principle, humanitarian organizations and at-risk communities together with stakeholders such as meteorological services and agencies specializing in disaster risk reduction agree on selected actions that are worth carrying out once a forecast reaches a certain threshold and a 'trigger' is activated and a budget defined.

FbF has been piloted by the Uganda Red Cross Society (URCS) in four villages targeting over 2,000 people facing a high risk of flooding, while the Togolese Red Cross (TRC) implemented FbF in 15 villages based on anticipation of the flood impact downstream from the Nangbeto dam on the Mono river, part of which forms the international border with Benin. The table below compares the processes each National Society undertook in implementing FbF.

Uganda

Risk analysis was conducted to understand the levels of vulnerability and exposure. Vulnerability and capacity assessments were conducted to identify and understand the hazards, people at risk, existing vulnerabilities and capacities. Historical impact data of the hazards was also assessed through participatory games.

The URCS in collaboration with the Uganda National Meteorology Authority identified the available forecasts (national and international); taking into consideration the quality of available forecasts and the lead time provided, it was decided to use a global forecast, the Global Flood Awareness System (GloFAS), jointly developed by the European Commission and the European Commission Centre for Medium-Range Weather Forecast (ECMWF). [The team](#) carried out a forecast verification analysis to understand the probability of acting in vain.

Early actions were identified based on identified risk that could be reduced, possible impact, and thresholds and lead times provided by the forecast. URCS focused on the three thematic areas of water access, storage and hygiene, food security and water diversion. Early actions such as prepositioning of relief stocks and distribution of relief items were identified as some of the actions to be implemented once the trigger was activated.

URCS, the Climate Centre and the National Meteorology Authority representative defined the danger levels for flood for the respective target area, upon which a trigger would be activated and action taken. The teams agreed to consider the 1-in-2-year flood event as the 'danger level', and to act when there was a 50 per cent probability of this flood happening.

[A study](#) was conducted to define the triggers for humanitarian action.

Togo

Building on a community-based, upstream-to-downstream early warning early action system linked to observed river levels, the TRC conducted a risk analysis in the Mono river basin to categorize communities according to three levels of vulnerability to flooding.

To circumvent a lack of historical hydro-meteorological data preventing actionable forecasting, in a pioneering collaboration with the Nangbeto hydroelectric dam and with funding from the Global Facility for Disaster Reduction and Recovery (GFDRR), the Climate Centre and the TRC jointly developed the FUNES ('functional estimation') flood-risk prediction model. This is based on a 'self-learning algorithm', enabling it to extend flood risk predictions from from two to three hours to two to three days for communities downstream of the dam. It also established a relationship between the TRC and Nangbeto dam for information to be shared daily during high-risk periods of the year.

Early actions such as radio spots and live interviews, water purification tablets, preparation of evacuation sites, and protection of vital documents were planned, budgeted and matched with the FUNES five-point scale of risk levels.

By 2015, over 1,000 Red Cross volunteers had been trained by the national meteorological and hydrological services to make daily rainfall and river-level observations; with the meteorological service, rainfall gauges have been installed in schools for children to learn, and limnimeters that measure the water level of lakes have been added to the community-based early warning system's river poles. The GFDRR provided additional funding to enable volunteers to transmit all (national) daily rainfall and river-level data by SMS into a digital interface that automatically feeds into FUNES; the national meteorological and hydrological services have planned a road map for taking over management and development of FUNES.

To calibrate risk-levels in FUNES, the Climate Centre helped the TRCS and dam operators assign risk levels; they chose to use a five-point danger-level scale: Very low risk, low risk, medium risk, elevated risk, and very elevated risk. Initially based on elevation, risk levels are improved annually as FUNES 'learns' from the actual geographical impact data recorded by TRC in FUNES following each flood event.

Uganda

The URCS developed institutional guidelines that provided a framework on when to trigger and actions to be implemented. The standard operating procedures (SOPs) stipulated the roles and responsibilities of each department and the branch. In addition, the SOPs define the amount of funds needed to implement the early action, how and when to access it. These funds, held by the German Red Cross in-country, should be easily accessible when a trigger is issued.

The Standard Operating Procedures were tested during a simulation exercise and validated at a stakeholders' forum that included NGO representatives and local government. The URCS simulation was based on a hypothetical trigger and mobilized communities within 24 hours to raise awareness of an impending flood, and suggested actions to be implemented. Items such as water storage containers, soap and water purification tablets were prepositioned at the branch ready for distribution the next day.

The URCS activated the Standard Operating Procedures twice based on a trigger alert, of potential flooding in four villages and distributed relief items such as soap, water purification tablets, water storage cans, hoes, food storage bags and wood pallets to 367 families. The URCS received trigger alerts on 12 November 2015 and again on 20 April 2016 of possible flooding within 30 days and the National Meteorology Authority was able to confirm the forecast. On the 13 November 2016, relief items were transported from national headquarters and prepositioned at the branch. Communities were mobilized and verified on the 14 November and distribution of relief items took place the next day. Communities started digging trenches and continued all through the lead time. Officials from the district local government participated in the distribution of items and sensitization of communities on actions to take before the flooding occurs.

An evaluation was conducted to facilitate learning and identify areas for improvement. For example, the team will revise the SOPs and conduct an in-depth analysis for the selection of actions

Togo

The TRC developed SOPs that set out the roles and responsibilities of national and regional staff and local focal points, what flood-risk levels trigger which actions, specific areas where actions are taken, and funds necessary to implement the actions. Management of the preparedness fund is outlined in a financial management protocol first outlined in consultation with the TRC secretary general, then developed with TRC project staff, subsequently reviewed and approved by the TRC accounting department, then reviewed by GRC accounting and the final agreement co-signed by TRC and GRC.

The SOPs were co-developed by the regional coordinators from all regions, to build core capacity in the formulation of SOPs within TRC. SOPs were tested and validated through simulations and with key partners in the national platform for disaster risk reduction.

After official warnings were issued by the national government, the TRC activated the radio-spot SOPs based on high water in the river which was identified by the river pole monitoring system. The live radio spots enabled TRC to address the unanticipated risk with boat safety information. The financial management protocol was triggered to supply evacuation sites, based on FUNES-enabled anticipation by the dam that the need to make releases was fast approaching. Dam operators made early releases in order to reduce the impact of unavoidable flooding. The dam informed the interior ministry, which issued an official early warning, and FUNES predicted the rise in flood risk. The TRC had already triggered the SOPs, and when floodwaters arrived, downstream communities had already begun preparing the evacuation sites.

An impact evaluation was conducted following the 2016 flooding event which collected data at household and village level, using a representative sample from all villages that were affected by flooding (nearly half of which were outside the programme area and acted as a control group). Multiple lessons learned were documented, including the need to provide more supports to tackle diarrhoeal disease and the need to re-evaluate the use of bags as it appears they did not enable documents to be saved as originally intended. Importantly, a shift in the timing of evacuations was documented, with far fewer households evacuating at the last minute after nightfall when it is dangerous to move around in flooded areas.



The Nangbeto dam's operations director, Pascal Kpangon, shows Togo Red Cross regional coordinator, Mathilde Gozan, the structure's critical water level. (Photo: Climate Centre)

The funding mechanism

In these pilots, funds were allocated and set aside so that they can be made available rapidly to support implementation of pre-defined early actions as soon as a triggering forecast is received. These funds were secured through a financial agreement between the donor organization and the spending organization, who together agreed on financial management, access and utilization. The understanding is that these funds be made available and easily accessible within the shortest time possible once a trigger is issued.

In Uganda, these funds were held by the German Red Cross in-country, and once a trigger was issued the funds were transferred to the Uganda Red Cross within 24 hours. Based on defined actions and budget, a formal cash request is raised by the disaster management department to the finance

department which in turn processes these funds and within 48 hours, funds are transferred to the branch. The branch is able to access these funds within 24 hours and utilize the funds for the implementation of early actions.

In Togo, a cost centre for the preparedness fund was created within the accounting system of the GRC umbrella project (FbF was introduced as a climate adaptation measure), with SOP funding disbursed on approval of the GRC delegate to facilitate rapid access. Some funds were disbursed prior to the flood season as a set-up measure (e.g. contracts with radio stations, procurement of water purification tablets, resealable plastic bags, etc.) and additional funds were available immediately on the day of the trigger (e.g. to purchase supplies to prepare evacuation sites).

To ensure a smooth and fast process, coordination amongst the the various departments

like logistics, finance, disaster management and communication and public relations is paramount. The guidelines access to funds for FbF are guided by the general institutional finance manual.

Pros and cons of the FbF initiative

These pilots afforded a number of lessons learned on the potential impact of FbF initiatives. It is clear that in places that are not systematically using river forecasts, these can be made available and used to trigger rapid action before a potential flood. This rapid mobilization can reduce disaster impacts and ensure that disaster response happens in a more timely manner.

However, because forecasts are often only available in the few days before a potential disaster, the FbF approach is constrained by short timelines. This requires the setting up of a system that can act quickly and disburse required funding at very short lead-times. Not all actions can be done in a forecast timeframe; many require too much time to prepare, or are too costly to do if the disaster is not certain. All of these components need to be considered in the selection of appropriate actions for an FbF system that should be one part of a disaster risk management strategy that includes disaster risk reduction and response.

Recommendations

Based on learning gained to date from the various pilot projects, we offer the following recommendations to make FbF effective and able to be scaled up:

- The National Society should formulate an operational protocol for FbF that is flexible and easily adaptable to different locations.
- Standard operating procedures should be monitored, evaluated and revised based on lessons learned each year (or operational season).
- In order to scale up FbF, there is a need to engage with government and other relevant stakeholders so that there is a national outlook on FbF.
- Introducing and then implementing FbF together with governments can enable key actors (especially national DRR platforms and meteorological and hydrological services) to step up and lead; this builds ownership and strengthens integration of FbF within existing early warning systems and disaster preparedness efforts.
- In most cases FbF should be developed as a complement to existing early warning initiatives.
- FUNES offers a special case in which embedding a tool for predicting flood risk can enable a dam to become an early warning system.
- An in-depth analysis on selection of early actions should be conducted to ensure that actions selected indeed reduce the identified risks.