FbF: Forecast-based **Financing & FUNES in Togo**

FbF-FUNES won the 2017 World Government Summit 'Edge of Government Award', given by UEA Prime Minister to Togo's Ministry of Environment

Croix-Rouge Togolaise

Deutsches Rotes Kreuz

Communauté Electrique du Bénin

GFDRR
Global Facility for Disaster Reduction and Recovery

Republique Togolaise
Plateforme Nationale de Réduction des Risques de Catastrophes

The Netherlands Red Cross

RED CROSS RED CRESCENT CLIMATE CENTRE

FORECAST-BASED FINANCING & FUNES

Building on its community-based early warning system, Togo Red Cross is using an innovative flood risk forecasting tool called FUNES, to trigger early action - and the release of funding necessary for rapid risk reduction before the flood hits.

FUNES (for “functional estimation”) uses an innovative self-learning algorithm to predict flood risk in the populous Mono River basin.

Developed collaboratively with the Communauté Electrique de Benin’s binational Nangbéto hydropower dam, thanks to funding from GFDRR’s Code for Resilience project, FUNES integrates flow data entered daily by dam operators, while upstream rainfall observers transmit readings by SMS, with actual flood impact data entered each year by Togo Red Cross.

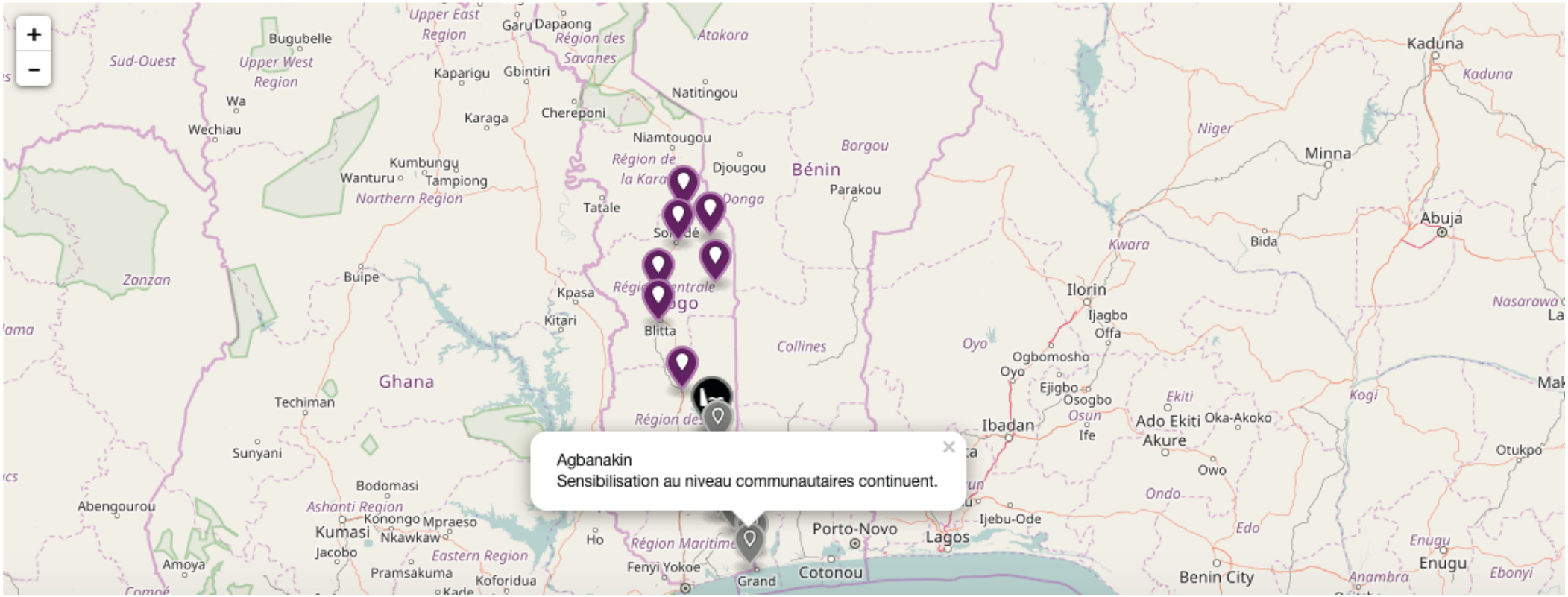
FORECAST-BASED FINANCING & FUNES

Simulation la plus récente:

Période de simulation:
22 Nov 2016 to 25 Nov 2016

Niveau de risque prévu par le modèle FUNES Automatisé:
Trés faible - Sensibilisation au niveau communautaires continuent.

Niveau de risque prévu par Operateurs de Barrage:
en attente de validation par operateur de barrager



The FUNES hydrometeorological flood prediction tool posts daily two-day forecast risk level, according to locality. For each location the preparedness actions corresponding to the daily level of risk can also be shown. For example, in the village of Agbanakin, the color gray indicates “Very Low” flood risk with the associated action “continued community level awareness”.

When flood risk rises to “Low” the raindrop changes to yellow, for “Medium” risk it will be blue, “Elevated” will show orange, and “Very High” risk is indicated in red.

FORECAST-BASED FINANCING & FUNES

Togo Red Cross organizing early action with a flooded community

Each level of FUNES-forecasted risk triggers a specific set of actions in specific localities, which Togo Red Cross initiates ***before the anticipated level of flooding begins.*** At the same time that a FUNES flood forecast triggers a specific set of standard operating procedures (SOPs), it also triggers authorization to release the amount of funds necessary to carry out the SOP, from a designated contingency fund.

With seed money from the German Federal Foreign Ministry and assistance from German Red Cross, Togo Red Cross established a Preparedness Fund and defined a fiscal management protocol to allow release of funding for pre-costed early action based on forecast triggers.

WHY LINK FORECASTS TO FINANCING?

Every year, people die from flooding in Togo. FUNES flood risk forecasts give Togo Red Cross and government actors in the National Platform for Disaster Risk Reduction more time to carry out preparedness actions to protect vulnerable communities before a flood hits.

FUNES flood risk predictions anticipate the likely level of risk - by locality, today, tomorrow and the day after tomorrow. Pre-planned actions to protect lives and livelihoods, triggered by a specific level of risk, based on expected local level impacts, all help to make the most of this precious "window" of time to act before a potential disaster.

For rapid action when FUNES predicts high flood risk, access to funds needed to carry out pre-planned (and pre-costed) preparedness activities is also triggered. Reducing risks before the preparedness window closes can save lives and protect livelihoods, resulting in less flood impact and more efficient spending of scarce resources, throughout the disaster response cycle.

KEY TERMS

Early actions: Carried out before an extreme event to reduce disaster risks

Early warning: Based on scientific information about what is happening and what might occur

Trigger: A forecast probability and danger level that activates pre-planned preparedness action

Danger level: The risk of harmful impact from an extreme event is determined by exposure to the hazard, vulnerability and willingness to act based on a forecast (as local conditions change, danger levels should be updated)

Forecast: A scientific prediction of future hydro-meteorological (environmental) conditions for a specific time and place

Standard operating procedure (SOP) A mandatory guideline for who takes what action when, and with what funding. SOPs are triggered by a forecast reaching a predefined probability and danger level

HOW DO FUNES & FbF WORK?

…TO ACCELERATE FLOOD PREPAREDNESS & RESPONSE?

- In 2010 flooding in Togo's Mono River basin was underway by July and by September almost 6000 people had been flooded out of their homes with thousands more suffering crop and livestock losses, property damage, and disrupted livelihoods. Togo Red Cross requested about $250,000 Disaster Relief Emergency Fund (DREF) assistance from the International Federation of Red Cross and Red Crescent (IFRC). Funding was approved in late October, to be spent from November through January.

- If FUNES had been in place with a Forecast-based Financing mechanism in 2010, it would have forecast flooding, and could have released funds from a Preparedness Fund to mobilize flood risk reduction measures 36 days sooner and ***before major flooding started. The Togo government could have used FUNES to issue early flood alerts and disaster warnings, enabling Togo Red Cross to make an earlier, accelerated DREF request.***

…TO IMPROVE FLOOD CONTROL & HYDROPOWER PRODUCTION?

- Dams control flooding, up to a limit. FUNES gives Nangbéto dam the ability to anticipate inflows as well as outflows 'today' and for 2 days into the future. Once the reservoir has filled, to prevent the dam from giving way, any more water coming down the river must be allowed to overspill. FUNES uses anticipated flow information from the dam to calculate the level of expected flood risk in downstream communities.

  FUNES also estimates anticipated inflows to the dam, enabling dam operators to plan releases to minimize impacts on vulnerable communities as well as on hydropower production.

…TO ENABLE THE TOGO GOVERNMENT TO REDUCE FLOOD IMPACT?

- A dam can make early releases to lessen anticipated flood impact downstream, however this entails a sacrifice of some hydro-electric production. In mid-September 2016, when the Nangbéto dam reservoir was rapidly approaching the mandatory overspill level, dam operators proposed making planned smaller early releases, so that Togo Red Cross could begin preparing downstream communities, and reduce the impact of unavoidable flooding.

  On a Sunday night in late September, in cooperation with the Togo government's new National Platform for Disaster Risk Reduction, the Ministry of the Interior authorized the first-ever jointly planned early dam releases. When the floodgates opened, Togo Red Cross had already begun to mobilize early action to protect vulnerable downstream communities.

  FUNES accurately predicted subsequent flooding, triggering the release of funding necessary to carry out SOPs, including rapid procurement and distribution of non-food items such as cholera prevention hygiene kits, tarps to waterproof shelters, mosquito nets and other evacuation site supplies, while radio stations interviewed Red Cross coordination staff on the ground and aired pre-recorded flood risk reduction information spots.

WHAT STEPS DID WE TAKE TO LAUNCH FUNES & FbF?

HOW DOES IT WORK?

1 Understand risk scenarios

- Scenarios are designed to analize the risk, including historical impact data and level of vulnerability.

2 Identify available DATA

- FUNES requires daily hydrological and meteorological observer data with post-flood impact data. With the Met service, Togo Red Cross installed rainfall gauges in schools for children to learn, and with the hydro service added limnimeters to the community-based early warning system's river poles. Togo's national meteorological and hydrological services have trained over 1000 Red Cross volunteers to make daily rainfall and river level observations, and an SMS system was developed to automate data entry. Red Cross volunteers have been trained to conduct cellphone-based flood impact surveys.

3 Formulate early actions

Such as:

- Radio spots & live interviews
- Cholera prevention measures
- Preparation of evacuation site
- Protection of vital documents

4 Match risk scenarios to danger levels

- FUNES scenario-determined risk levels start based on elevation, with a 5-point danger level scale: Very low risk, low risk, medium risk, elevated risk, and very elevated risk. Risk levels are continually improved as FUNES 'learns' from the actual geographical impacts of each flood event.

WHAT STEPS DID WE TAKE TO LAUNCH FUNES & FbF?

HOW DOES IT WORK?

5 Create SOPs Standard Operating Procedures

These early action guidelines include:

- Who is responsible for what
- What forecast triggers what action
- Where action will be carried out
- Funding required to enable rapid action

6 Establish a source of contingency funding

- Seed money to get started.
- Define a financial management protocol
- Release funds for SOPs based on trigger.
- Track cost-effectiveness of SOPs.
- Develop a sustainable revenue stream.

7 Validate FbF/FUNES

With key actors:

- Hydropower dam operators
- Meteorological service
- Hydrological service
- National DRR Platform

Run simulation/actual SOPs

- selected communities
- joint exercise with national platform

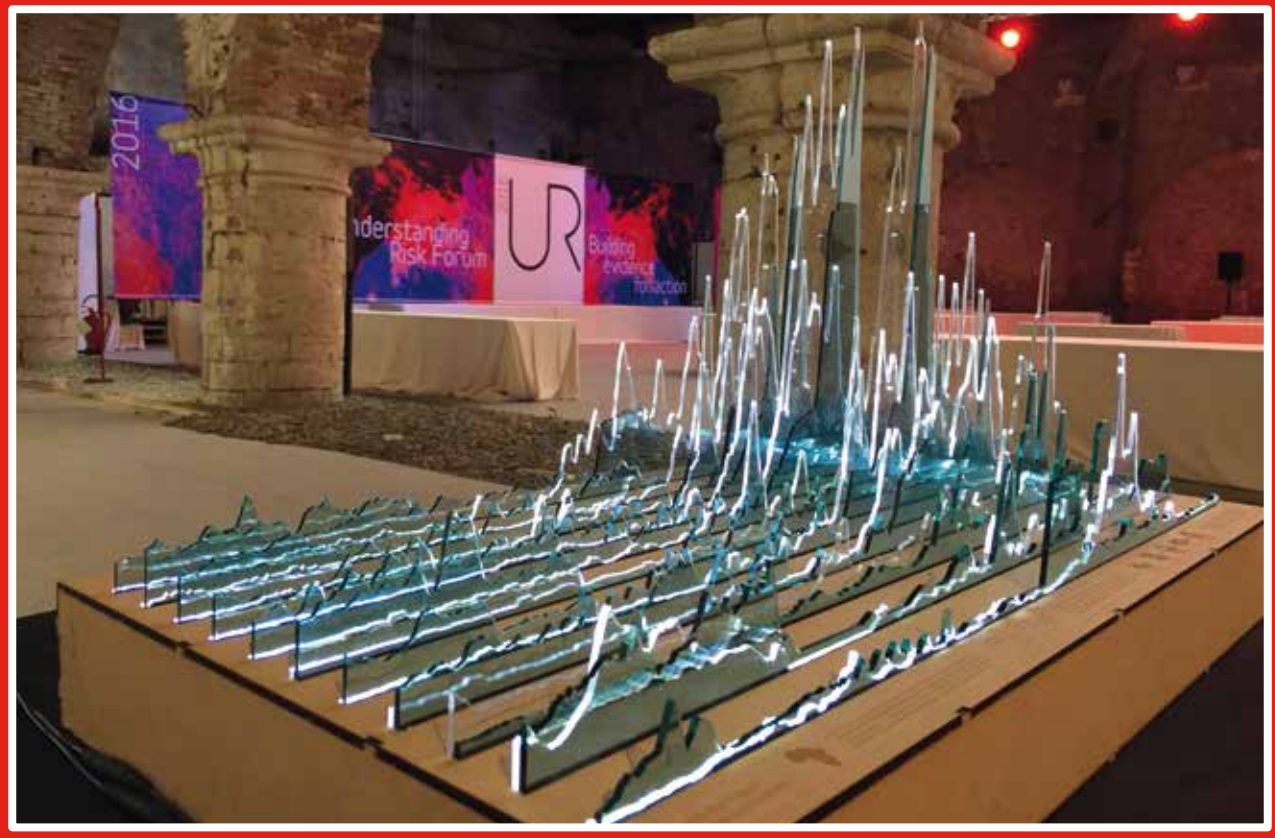
8 Monitoring, Evaluation & Learning

FUNES

- Enter flood impact data by locality locality and run FUNES so it can 'learn' (requires trained Hydromet technicien) Note: risk levels may change by locality

SOPs

- Document timeline of SOP triggers and action for analysis
- Conduct household impact evaluation surveys
- Revise SOPs for next flood season



Acknowledgement: Datasculpture, unveiled at GFDRR's 2016 Understanding Risk Forum, is based on a decade of Nangbeto dam data reveaing how the dam controls flooding - up to a point - and how FUNES enables forecast-based financing for early action when flooding is unavoidable.