

FATHUM Policy Brief

April 2020

FbF - A mechanism for improved Disaster Preparedness in Mozambique

Who should read this?

- Disaster Risk Management, Water resources management and Meteorology policy makers and planners in government and humanitarian practitioners in institutions

Key messages

- FbF improves disaster preparedness.
- FbF is founded on good forecast capacity.
- FbF implementation requires good communication and mobilization capacity at local level.
- FbF must be informed by local risk context

Executive Summary

This policy brief summarizes the results of a study designed by a transboundary three-party team of researchers and conducted from 2017-2019 in flood-prone districts of the Gaza Province in Mozambique. Led by UDM's Centro de Investigação e Extensão from 2017 to 2019, the study's purpose was to examine the relevance of the biophysical drivers of risk (disaster risk profile and history), the local disaster risk management capacity and institutional arrangements as well as the established early warning systems in the implementation of Forecast based Financing (FbF)

Findings:

- *Communities are aware of flood risk.*
- *Communities have primary dwellings in higher grounds whilst keeping another abode in the flood prone fertile lowlands.*
- *Communities know escape routes to move their cattle to safe grounds.*
- *Local EWS are in place.*
- *Central and local DRM entities are in place but do not seem to know about FbF.*
- *Early Action Protocols are signed for floods.*
- *In country forecast capacity needs modernization.*
- *Vertical communication needs improvement*

Recommendations:

- *Central and local DRM institutions must be made aware of FbF mechanism.*
- *Meteorological and Water Resource Management authorities must use state of art technology.*
- *Collaboration with international forecast institutions should be established.*
- *Disaster Management authority must coordinate disaster preparedness training activities carried out by several parties.*

What is FbF

Mozambique constantly suffers from flood events, cyclones, and droughts. The frequency of these events has clearly shown an increasing trend along the last decades. When these extreme events occur, the affected communities lose all their possessions. With this in mind, in an innovative manner, the FbF aims to implement a funding mechanism for these communities to be better prepared and to better adapt to these extreme climatic events. FbF enables the communities to develop preparedness activities boosting the development of the country as well.

The purpose of the FbF mechanism is to fund measures to prepare for disasters that are triggered by natural forces. Once the alert level is reached for floods or strong winds, funds are released to finance preparedness measures. The important thing is that the activities are detailed on an Early Action Protocol. (Centre, 2016)

Successful implementation of FbF encompasses two stages:

- creating Early Action Protocols that connect specific forecast triggers to a set of early actions, and
- making available assets necessary to execute those activities when triggering forecast is issued

Why Gaza Province?

Gaza province is in the Southern region of Mozambique with its capital, the city of Xai-Xai, about 210 kilometers to the North of the national capital, Maputo. With an area of 75,334 km², this province is crossed by the Limpopo River, its vital center.

The population of this region is mainly rural living in scattered communities. Although new settlements have been defined on higher grounds, because of the floods, these populations continue to have homes in the lowlands where they practice agriculture. Besides agriculture they have cattle, raise, goats, pigs and poultry (chickens and ducks), practice informal trade, migrant and wage labour in the fields of some "advanced" farmers. Men of working age tend to go abroad to work in the mines leaving behind women acting as household heads. Flooding is a major problem in the Limpopo River basin, particularly in the lower Limpopo River, across the coastal floodplain in Mozambique, where the three study districts are situated.

Flooding occurs following a large inflow of water into the river system. In east Africa, these sudden river inflows often accompany tropical cyclones. The rainfall associated with tropical cyclones is often intense and sustained for significant periods of time, resulting in a rapid saturation of the soil, followed by a huge pulse of run-off into the drainage network, often causing flooding. The extent and duration of the flood is determined by the length of the rainfall event, the status of soil saturation and the speed of recharge and soil drainage. (GIZ Transboundary Water Management in SADC) The Limpopo riparian communities most prone to floods in Mozambique are in three districts within the Gaza Province: Guijá, Chókwe and Chibuto. During the timeframe of this study (2008 – 2018) alone, of the six major disasters affecting the region, four were floods.

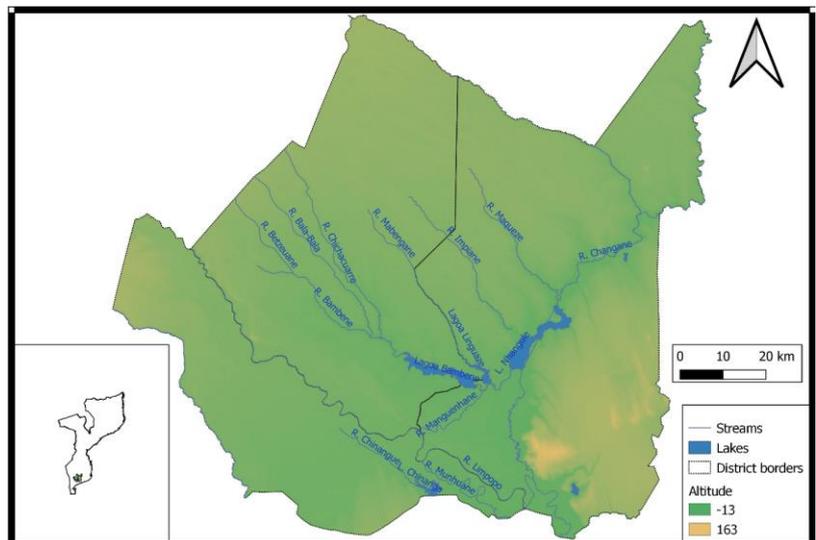


Figure 1 Study area encompassing three districts of Mozambique's Gaza Province

Table 2 Demographics of the study districts

	Chibuto	Guijá	Chókwe
Population	229 329	104 550	219 033
Surface [km²]	5 653	4 207	2 466
Population density [inhab./ km²]	41	25	89
Urbanization rate [%]	35	6	45
Masculinity rate [%]	46	46	45

Table 1 Main events affecting the study region from 2008 to 2018

Event	Date
Flood	January 30, 2017
Drought	April 22, 2016
Flood*	January 20, 2013
Tropical Cyclone Funso / Tropical Storm Dando	January 15, 2012
Flood	January 25, 2011
Flood	January 1, 2008

From February to May 2000, the southern part of Mozambique experienced the worst floods in the last 150 years. Figure 4 shows the extents of Limpopo River flooding in 2000 floods, from a satellite image. In some places the water spread more than 10 kilometres across the landscape. The negative impacts of the floods of 2000, and of many of the previous events, were not limited to the tragic loss of life and the immediate economic impacts of the loss of goods and crops. The 2000 floods had a significant long-term impact on Mozambique's economy: some sources suggest a **20% reduction in Gross Domestic Product**, besides nearly **800 deaths** and around **540 000 displaced people**, as a direct impact of the floods. (AfDB , 2018)

In addition, the severity of the 2000 floods has devastated the upper soil of large portions of agricultural land in the lower Limpopo River basin.

Study Methodology

The study carried out served as a foundation for exploring the relevance of local context in the implementation of FbF, in order to interrogate the effectiveness of FbF/A activities and the potential for situating FbF/A within local, longer-term resilience-building and short-term humanitarian response¹. The study is one of three parallel studies, with the other two carried out in South Africa by RADAR at Stellenbosch University and in Uganda by Makerere University. Mixed methods that involved focus groups discussions and desktop were used in these studies following an agreed common methodology that was adjusted to actual local contexts.

Study Findings

The flood-prone communities retain knowledge transmitted from generation to generation, that allows them to forecast climatic events using animals, trees and religion, although this knowledge lost the vitality it had in the past due to the modernization that caused its loss.

Throughout their history, populations have developed an attachment to their social territories because they guarantee survival and social reproduction, and because there are socially and culturally constructed norms and the sacredness of some spaces. Despite this, the floods of 2000 were instrumental in reducing attachment, especially in scenarios where it was necessary to leave one's dwelling to survive. The high level of devastation showed the victims that it was necessary to rethink the messages, the warnings given by various media about the floods and take concrete actions to avoid being swallowed by the waters.



Figure 2 Typical dwelling in Chicongolo (Guijá District)



Figure 3 Subsistence agriculture in the lowlands of Segundo Bairro (Chókwè)

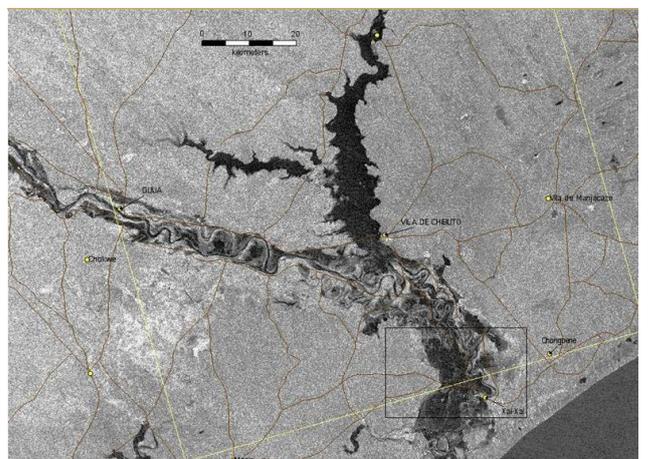


Figure 4 RADARSAT-1 Image of the Lower Limpopo River, near Xai Xai, during the floods of 2000, caused by Cyclone Eline. (Source: Dartmouth College Flood Observatory 2000)

¹ Mozambique Country-specific Risk and Vulnerability Profile Report. <https://www.riskreductionafrica.org/partners-publications.html>

Members of the Local Disaster Management Committees (CLGRCs²) are trained to persuade and support people who are reluctant to evacuate. Unfortunately, due to migrant labor, membership of CLGRC (which is voluntary), suffers high turn-over, so that continuous replacement of volunteers is needed. Communities can do Community Risk Assessment (CRA). Moreover, as the research team learned, communities know, by observing the river, to recognize the critical level, that is, the threat of floods.

It was possible to verify that the communities developed monitoring systems, in collaboration with the district services and NGOs, mainly the Red Cross of Mozambique (CVM). There are, in fact, manual meters spread along the river. Regarding the Early Warning System (EWS³) siren antennas were installed in Lionde, Chókwè, as well as a complex system installed by GIZ⁴, which involves INAM⁵ and ARA-Sul⁶. National forecast capacity is less than five days lead time.

Information on extreme weather events can be found at INGC⁷-Gaza, District Government, ARA-SUL UGBL⁸ and District Services. Some information can also be obtained from non-governmental organizations (NGOs) acting locally. In addition to the government, the Red Cross of Mozambique, the World Food Program, World Vision, Save the Children, I.O.M. act in disaster preparedness and relief. As far as floods are concerned, their interventions are, to some extent, similar except for CVM, that has a broader action.

Authorities, both at national and subnational levels have heard about FbF but they seem to be uncertain about concept. They follow a command flow that might be too slow to trigger FbF action in time.

Recommendations

Along with strong winds and famine, flood risks are recurring in the Chókwè, Guijá and Chibuto. To apply FbF mechanism in this region the following recommendations should be followed:

1. **Central and local DRM⁹ institutions must be made aware and take ownership of FbF mechanism** to increase disaster preparedness and stop perceiving it as “yet another hype”.
2. **Meteorological and Water Resource Management authorities must use state of art technology** (models) to be able to increase lead time to useful periods (one week).
3. **Collaboration with international forecast institutions should be established** to exchange information that decreases “false alarms” while increasing lead time before disaster hits the communities.
4. **Disaster Management (INGC) authority must coordinate and ensure continuity** of disaster preparedness training activities carried out by several parties.

FATHUM (Forecasts for Anticipatory HUMANitarian action) is a study led by the UK's Reading University to strengthen forecasting and early warning systems in Uganda, Mozambique, and South Africa. It aims to improve forecast predictability, investigate complex disaster risk drivers, and implement. This work examines the flood risk drivers in the districts of Chókwè, Guijá, and Chibuto, EWS, DRM capacity and institutional capacity and arrangements – how local context impacts successful application of FbF.

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² *Comité Local de Gestão do Risco de Calamidades*, Local Disaster Risk Management Committees

³ Early Warning Systems

⁴ *Deutsche Gesellschaft für Internationale Zusammenarbeit*, Germany Association for International Cooperation

⁵ *Instituto Nacional de Meteorologia*, National Institute of Meteorology

⁶ *Administração Regional de Águas Sul*, Regional Administration of Water in the South

⁷ *Instituto Nacional de Gestão de Calamidades*, National Institute for Disaster Management

⁸ *Unidade de Gestão da Bacia do Limpopo*, Limpopo Basin Management Unit

⁹ Disaster Risk Management