

**ANTICIPATING DISASTER:  
Local Dependence on Formal Climate Information  
vs.  
Traditional Ways of Knowing**

Sierra Gladfelter

MA Student, Geography Department, University of Colorado Boulder  
Intern, Red Cross/Red Crescent Climate Centre & Zambia Red Cross Society  
sierra.gladfelter@colorado.edu

## **Executive Summary**

### **Introduction and Research Objectives**

Rural Zambian communities living on the floodplains of the Zambezi River are increasingly suffering from climate-induced disasters, with both floods and droughts alternatively striking and eroding their security. In 2009, Thurlow et al. estimated that residents across southern Zambia face a 75-80% chance of experiencing either a severe drought or flood in any given year. The growing frequency and intensity of these extreme weather events have been strategically linked to climate change in media reports and policy documents since the mid-2000s, particularly in the aftermath of the 2006 and 2008 floods which devastated thousands of residents across Kazungula District of Zambia's Southern Province. Even today, communities here receive limited support in terms of advanced forecasts and early warnings that might enable them to better prepare for disasters. As a result, many residents continue to rely on traditional ways of anticipating and adapting to floods and droughts in order to secure their families and livelihoods.

This report is based on two weeks of qualitative data collection conducted during July 2016 in rural communities located in Kazungula District, Southern Province of Zambia. The specific goals of this study were to detail current barriers that communities face both in coping with and adapting to climate-induced disasters and to identify potential culturally-appropriate and feasible mechanisms to improve access to early warnings and enhance preparedness. Communities across Kazungula District have been beneficiaries of the Zambia Red Cross Society (ZRCS)'s Zambezi River Basin Initiative implemented from 2012-2015 and continue to be integrated in activities as part of the Building Resilient African Communities project scheduled to end in 2017. As a result, the ZRCS is deeply interested in understanding resident experiences with the growing challenges of climate change, in documenting existing technologies at the local level to cope with these changes, and in analyzing opportunities to enhance both preparedness for disasters and climate adaptation through targeted interventions. Thus, this research intends to provide data on these topics that can guide the ZRCS's ongoing activities and future interventions in the region.

### **Methodology**

In order to triangulate information central to the study's research objectives, I employed a multi-method approach. This involved 1) three focus groups with members of the ZRCS's Satellite Disaster Management Committees (SDMCs) representing villages in Kawewa, Sikaunzwe and Kasaya, 2) 13 semi-structured interviews with key stakeholders at the district level as well as with local residents, 3) participant observation of ZRCS evaluation and

monitoring activities of existing interventions, and 4) site visits and photo documentation of flood and drought impacts as well as local adaptive strategies for these disasters.

## **Results and Analysis**

In the body of the full report, I provide an overview of 1) the primary disasters that residents face; 2) local strategies for coping with floods and droughts; 3) local access to formal weather and climate information that may guide these actions and barriers to its dissemination; 4) traditional mechanisms for predicting disasters in the absence of formal data; and finally 5) community perspectives on the utility of each source of information. These overviews are followed by an analysis of existing interventions to institute formal early warning systems (EWSs) in the region and addresses barriers to such interventions more broadly. In this section, I also include a detailed picture of existing informal communication structures at the community level for relaying critical information from upstream in the absence of robust cell phone networks or radio signals.

Next, I include a section of recommendations that focuses on two areas: 1) identifying opportunities for enhancing community-based EWSs already functioning in the region and 2) making suggestions for low-tech climate adaptive strategies proposed by residents that would not be feasible without either technical or financial assistance from an institution like the ZRCS. Specifically, on the topic of EWSs, I suggest leveraging the river gauges that already exist on tributaries to the Zambezi River by linking their trained gauge readers to downstream communities that would directly benefit from an early warning and clear lead time before being struck by floodwaters. Furthermore, by installing additional basic river gauges in the upstream, more residents may be integrated into a localized EWS even in the absence of formal forecasts by simply linking upstream communities with access to live river level data to downstream villages. These systems, I suggest, could leverage both the informal communication structures already present on the ground and ZRCS's SDMCs to formalize a more effective structure for dissemination. In addition to these detailed recommendations on ways to enhance community-based EWSs, I also present several potential climate adaptive strategies for mitigating local loss to floods and droughts that were generated by informants during interviews and focus groups.

Ultimately, I conclude that while profound barriers restrict the dissemination of formal forecasts that would enable communities to take early action prior to disasters, there are also significant opportunities to leverage information already available on the ground and use informal communication structures to provide early warnings at the community level. Additionally, by taking seriously place-based knowledge on opportunities to respond to the localized effects of floods and droughts, institutions like the ZRCS may work collaboratively with communities to identify feasible, low-tech climate adaptive strategies to support residents in adapting to climate change across the Zambezi River floodplain.