

Too much water, or too little?

Who is responsible for drought and flood management in Zambia?



Summary

This brief explores the effectiveness of Zambia's framework for drought and flood management, assesses current levels of institutional performance, and gives the following priority recommendations to improve drought and flood management in the country:

- The legal framework put in place to support Zambia's National Climate Change Policy must clearly define and distinguish the roles of authorities in disaster risk reduction and climate change adaptation in relation to drought and flood events.
- The Government of Zambia must strengthen financing for the Disaster Management and Mitigation Unit (DMMU) to deliver its mandate, and for local authorities to mainstream disaster risk reduction in development activities.
- To advance its role in disaster mitigation, DMMU must prioritise creation of district mitigation and preparedness plans and establishment of Satellite Disaster Management Committees.
- The overlapping mandate for hydrological early warning systems between the Water Resources Management Authority (WARMA) and the Department for Water Resources Development (DWRD) must be clarified, and such a system must be operationalised.
- WARMA must develop a statutory instrument to carry out special measures during drought and flood events.

Introduction

Over the past four decades Zambia has experienced an increase in the frequency of floods and droughts because of climate change, as well as rising temperatures and changing rainfall patterns, with shorter rainy seasons and more intense rainfall (Funder et al, 2013). Historically mean annual temperatures have increased by 1.3°C and mean annual rainfall over Zambia has also decreased by an

average rate of 1.9mm per month since 1960 (McSweeney et al, 2009).

With the changing climate, it is expected that drought and flood events in Zambia will only increase in frequency and severity. Climate modelling has predicted an increase in mean annual temperature of up to 3°C and a decrease in rainfall ranging from 8% to 30% by 2075. Increases in temperature are expected to have significant impacts on water resources. Increased evaporation is likely to reduce runoff and groundwater infiltration, and increase losses from dams and wetlands (Jack et al, 2016). In terms of rainfall, indications are that rainfall totals will be delivered in less frequent events resulting in longer dry spells, mostly during the already dry season but also extending into the early and late rainfall season.

Impact of droughts and floods

In just the past three decades, floods and droughts have cost Zambia more than US \$13.8 billion in disaster losses, which is equivalent to a loss of 0.4% in annual economic growth (GRZ, 2017). Drought and flood events also have a tremendous human cost – contributing to poverty, displacement, food insecurity and disease. Figure 1 provides a timeline of the number of people affected by drought and flood events in Zambia from 1985-2015.

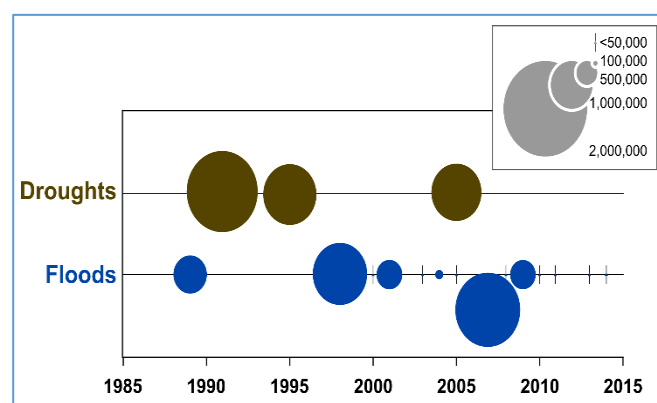


Figure 1: People affected by drought and flood events in Zambia from 1985 – 2015 (EM-DAT: The Emergency Events Database, 2017)

The 2005/06 drought left 1.2 million people, over 10% of the population, food insecure for up to 8 months,

while the 2007/08 flood displaced 495,972 people, equivalent to 8% of the population (GRZ, 2011).

Agro-ecological Region 1, which covers parts of Western, Southern, Lusaka, and Eastern Provinces is considered the most vulnerable region for drought and flood events in Zambia (Munali et al, 1999).

Amongst the populace, it is the rural poor, whose livelihoods and food security depend directly on natural resources, and whom lack adequate water storage and supply infrastructure, who are most vulnerable to the escalating impact of drought and flood events, and will continue to suffer the greatest in the absence of adaptation, mitigation and preparedness. (GRZ, 2013). Therefore, a comprehensive and coordinated approach to drought and flood management is required to reduce poverty and safeguard development.

Findings

Through a programme of action research, the Fair Water Futures (FWF) programme has explored the effectiveness of Zambia's framework for drought and flood management through the case study of Sikaunzwe, Kazungula, where vulnerable communities are severely impacted by drought and flood events. The team collaborated with community representatives from Sikaunzwe to understand their water security challenges, and the relevant laws, policies and responsible institutions. By supporting community representatives to take action by calling on duty bearers to fulfil their institutional mandates and tracking the response, as well as convening with government partners, reviewing existing literature, analysing available resources, and conducting key informant interviews, the Fair Water Futures programme has gathered evidence of institutional performance on drought and flood management, gaps in policy implementation and some of the bottlenecks to effective delivery.

Drought and flood mitigation: Who's responsible?

Disaster management

The Disaster Management Act of 2010 was established to provide a system for the "anticipation, preparedness, prevention, coordination, mitigation and management of disaster situations", including drought and flood events. The Act designates the Disaster Management and Mitigation Unit (DMMU) as well as Provincial, District and Satellite Disaster Management Committees as the bodies responsible for implementation of the Act. The Act also gives

Drought and flood vulnerability in Sikaunzwe Ward, Kazungula

Sikaunzwe Ward, located in the largely rural district of Kazungula, falls within agro-ecological region I of Zambia which has been most effected by the impacts of climate change, and in recent years has suffered from an alternating pattern of droughts and floods.

Sikaunzwe also suffers from poor water supply coverage – only 45-50% of the population has access to a sustainable water supply – high levels of groundwater salinity, and a lack of water storage. The main sources of domestic water supply are rivers, streams, burrow pits, and dambos. However, during droughts and floods, which are a common occurrence, the water supply becomes even more precarious. Flooding causes contamination of unprotected water sources, and when water sources dry during drought, residents travel as far as 15 kms and spend upwards of 6 hours a day fetching water. Some families are even forced to temporarily migrate to the banks of the Zambezi to find water.



Water supply in Sikaunzwe Ward

While the District Disaster Management Committee functions reasonably well during emergency events and immediate recovery, it is generally inactive between emergencies (Chrisopolos et al, 2014). As Goliath Sekute of Sekute village attests:

"DMMU responds to emergencies and adaptation programs are conducted by the Department of Agriculture, but in this village, water has not been addressed in adaptation programs".

Without measures to mitigate and prepare for flood and droughts – including the establishment of district disaster mitigation and preparedness plans or operationalisation of Satellite Disaster Management Committees – and the mainstreaming of climate adaptation and disaster preparedness into district water supply provision, Sikaunzwe remains dangerously vulnerable the effects of droughts and floods.

DMMU significant convening power to mobilise line ministries and local authorities in disaster management.

However, while DMMU's response to emergency flood and drought events has been relatively efficient, it has also been "very centralised and weak on prevention and longer-term planning", with little attention paid to drought and flood mitigation (Chrisopolos et al, 2014: 17).

Disaster risk reduction

The revision of the National Disaster Management Policy in 2015 marked a paradigm shift away from disaster management, considered to be a reactive approach, towards disaster risk reduction, which aims to minimize vulnerability and mitigate the adverse impacts of hazards. The Policy was also revised in part to integrate climate-change related issues (GRZ, 2015b).

The Disaster Management Act and subsequent Disaster Management Operations Manual include many provisions and functions for disaster mitigation and prevention, although they have yet to be operationalised and efforts remain quite centralised. According to Section 22 (2a) of the Act, one of the functions of the District Disaster Management Committees is to "prepare and update district multi-sectoral disaster preparedness, prevention and mitigation plans for slow and rapid-onset disasters". However, to date, it is not clear if any such plans have been developed. Furthermore, it seems that Satellite Disaster Management Committees, which are intended to act as the primary agent for disaster mitigation and preparedness at the local level have yet to be established, even in the most vulnerable areas of the country.

Climate change adaptation

While DMMU acknowledges linkages between DRR and climate change adaptation (CCA), it differentiates its role in that "DRR actions tend to focus on extreme events that considerably exceed people's ability to cope with and recover from a set of conditions they experience at a point in time, while climate change adaptation in addition to this requires actions based on knowledge about changed conditions further into the future" (DMMU, 2015). Put simply, DMMU does not envisage a role for itself in development activities (DMMU, personal communication). Nonetheless, there are considerable overlaps between DMMU's role in DRR, and CCA, as evidenced by Zambia's National Policy on Climate Change 2016, which seeks to "promote and strengthen the implementation of adaptation and disaster risk reduction measures to

reduce vulnerability to climate variability and change". However, the legal framework to support the policy has yet to be put in place.

Resources and capacity

DMMU lacks the resources and capacity to operationalise its structure, and carry out its mandate. Figure 2 provides a summary of budget allocations for DMMU, including the total allocation, as well as allocations for disaster response, disaster preparedness, and disaster mitigation programmes for 2014-17. While the figures do not account for donor contributions – which are significant – they do reveal a concerning trend of significantly reduced budget allocations for disaster management, as well as a clear prioritisation of disaster response and preparedness over mitigation, which has received miniscule allocations in recent years.

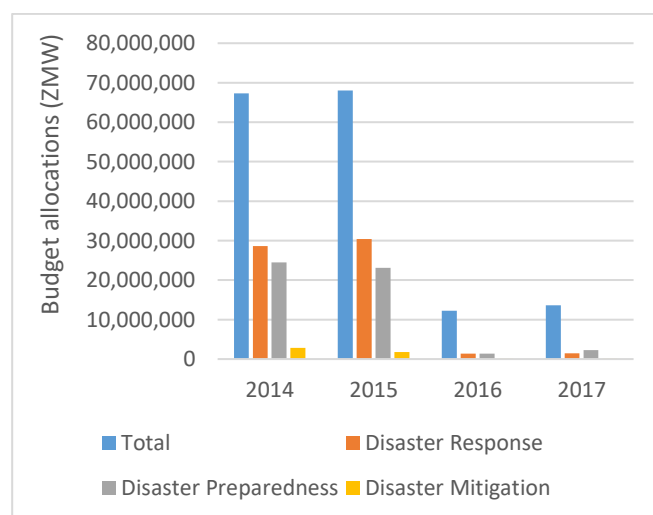


Figure 2: Budget allocations to the Disaster Management and Mitigation Unit 2014-17 (GRZ)

Both the Disaster Management Policy 2015 and the National Climate Change Policy 2016 aim to mainstream disaster mitigation and climate change adaptation into plans and development activities at the national, provincial, district, and community levels. However, while Zambia has a decentralisation policy, there has been "little real devolution of authority and budgets to district councils" with some local authorities pointing out that "their responsibility to facilitate local development is impossible if they are not provided with greater control over funds and decision making in DRR [disaster risk reduction] and CCA [climate change adaptation]" (Chrisopolos et al, 2014:43).

Role of the water sector in drought and flood management

Given that primary impacts of climate change in Zambia – rainfall variability and increased drought and

flood events – the water sector has a key role to play in DRR and CCA. Zambia's National Water Policy 2010 recognizes the importance of climate change and calls for establishing specific provisions for understanding and managing the potential impacts, and the National Climate Change Policy intends to mainstream climate change into all sectors, including the water sector.

Early warning systems

According to the Disaster Management Operations Manual (2015) the Department of Water Affairs, now known as the Department of Water Resources Development is responsible for generating information on hydrological conditions and submitting to DMMU monthly. At the same time, according to Section 144 of the Water Resources Management Act 2011, the Water Resources Management Authority (WARMA) is also responsible for establishing an early warning system for water-related disasters, including floods and droughts. To date, neither system has been operationalised.

Drought and flood response

Under the Water Resources Management Act, the Water Resources Management Authority (WARMA) is empowered to take special measures during droughts, including the suspension and amendment of water permits, as well as determining the amount of water which may be used when, where and by whom. WARMA is also empowered to take special measures during floods including the use of land, acquisition of materials and disposal of structures of other obstacles. However, the Authority has yet to implement any of these measures.

For a fair water future...

To enhance the coordination and implementation of effective drought and flood management in Zambia, it is recommended that:

- The legal framework put in place to support Zambia's National Climate Change Policy must clearly define and distinguish the roles of authorities in disaster risk reduction and climate change adaptation in relation to drought and flood events.
- The Government of Zambia must strengthen financing for the Disaster Management and Mitigation Unit (DMMU) to deliver its mandate, and for local authorities to mainstream disaster risk reduction in development activities.
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- The overlapping mandate for hydrological early warning systems between WARMA and DWRD must be clarified, and such a system must be operationalised.
- WARMA must develop a statutory instrument to carry out special measures during drought and flood events.

References

Chrisopolos, I. Aben, C. Bashaaha, B. Dhungana, H. Friis-Hansen, E. Funder, M. Hong, N. Khatri, D. Lindegaard, L. Mweemba, C. Ngoan, L. Nyambe, I. Pain, A. Sen, L. Towards 'Good Enough' Climate and Disaster Risk Governance: Emerging lessons from Zambia, Nepal, Vietnam and Uganda. DIIS Report 2014:21. Copenhagen. Danish Institute for International Studies.

EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir -www.emdat.be, Brussels, Belgium

Funder, M. Mweemba, C. Nyambe, I. 2013. *The climate change agenda in Zambia: National interests and the role of development cooperation*. DIIS Working Paper 2013:13. Copenhagen. Danish Institute for International Studies.

GRZ. 2017. *Seventh National Development Plan 2017-2021*. Ministry of National Development Planning. Lusaka.

GRZ. 2017. *Estimates of Revenue and Expenditure 2017*. Ministry of Finance. Lusaka.

GRZ. 2016. *Estimates of Revenue and Expenditure 2016*. Ministry of Finance. Lusaka.

GRZ. 2016. National Policy on Climate Change. Ministry of National Development Planning and Ministry of lands, Natural Resources and Environmental Protection. Lusaka.

GRZ. 2015a. *Estimates of Revenue and Expenditure 2015*. Ministry of Finance. Lusaka.

GRZ. 2015b. *National Disaster Management Policy*. Disaster Management and Mitigation Unit, Office of the Vice President. Lusaka.

GRZ. 2015c. *Disaster Management Operations Manual*. Disaster Management and Mitigation Unit, Office of the Vice President. Lusaka.

GRZ. 2014. *Estimates of Revenue and Expenditure 2014*. Ministry of Finance. Lusaka.

GRZ. 2013. *Investment Projects for the Barotsse and Kafue Sub-Basins under the Strategic Programme for Climate Resilience in Zambia: Environmental and Social Management Framework Volume I*. Ministry of Finance, Lusaka.

GRZ. 2011. *The Water Resources Management Act 2011*. Act of Parliament.

GRZ. 2011. *Zambia: Strategic Programme for Climate Resilience (SPCR)*.

GRZ. 2010a. *The Disaster Management Act 2010*. Act of Parliament.

GRZ. 2010b. *National Water Policy 2010*.

Jack, C. Wolski, P. Pinto, I. and Indasi, V. 2016. Africa's Climate – Helping Decision-Makers Make Sense of Climate Information: Zambia Country Factsheet: Knowing the climate, modelling the future.

McSweeney, C. New, M. and Lizcano, G. 2008. UNDP Climate Change Country Profiles: Zambia. School of Geography and Environment – University of Oxford and Tyndall Centre for Climate Change Research.

Munalula, T. Nkomoki, J. et al. 1999. *Estimating the Impact of Climate Change on Rainfed Agriculture*. Pilot Environmental fund: Spedicoprint. Lusaka.