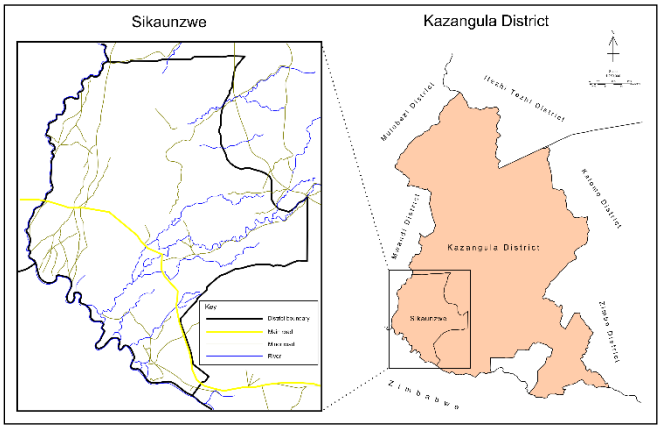
Case study briefing

Drought, flood and chronic water supply shortages

Evidence from Sikaunzwe

At a glance

In Sikaunzwe, Kazungula, the combined impacts of inadequate rural water supply coverage, saline groundwater, and the absence of effective drought and flood management have culminated in a water crisis which is taking a serious toll of the health and livelihoods of residents.



Map of Sikaunzwe Ward in Kazungula District

In the largely rural District of Kazungula, Sikaunzwe Ward suffers from low levels of rural water supply coverage. It is estimated that 50-55% of the population lack access a safe, sustainable water source. In addition to poor water supply coverage, much of the area suffers from high levels of groundwater salinity. Many boreholes in Sikaunzwe yield salty water which is unsuitable for drinking and domestic purposes.

The challenge of water in Sikaunzwe is compounded by regular periods of drought and flooding, which have increased in frequency as a result of climate change.

> *The question of water here is the question of do or die.* – **Sekute village resident**

The water crisis in Sikaunzwe is driven by poor management and a lack of policy implementation. Extensive legislation exists in Zambia to enable responsible institutions to provide water supply and sanitation services and protect citizens from the impacts of drought and floods, including the Water Resources Management Act 2011, the Disaster Management Act 2010, the Water Supply and Sanitation Act 1997, the Public Health Act and the Local Government Act. However, it is clear that those responsible for managing water resources, providing rural water supply, and protecting citizens against the impacts of floods and droughts are failing to deliver on their mandates.

This case shows how important it is for our water governance institutions to be active and accountable. Effective and equitable implementation of water law and policy is critical to ensuring the health and economic well-being of Zambian citizens.

Addressing the water crisis in Sikaunzwe requires a well-coordinated and immediate response from the Kazungula District Disaster Management Committee, the Water Resources Management Authority (WARMA), the

This report was produced by the Fair Water Futures Programme, a joint initiative between Action 4 Water and Water Witness International. Fair Water Futures undertakes high quality action research to generate evidence and advocacy materials to improve water resource management and water security for all Zambians.
To find out more contact the Programme Officer, Gershom Pule at gershompule@gmail.com, or write to info@waterwitness.org

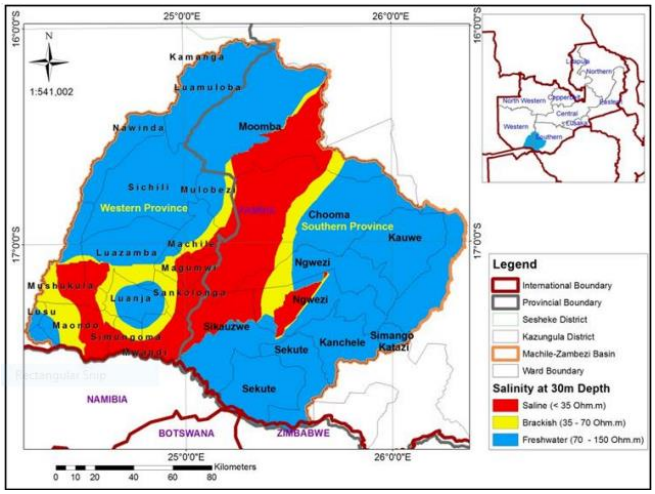
Department of Water Resources Development (DWRD), Kazungula District Council, and the Kazungula District Health Office.

Inadequate water supply

It is estimated by the Kazungula District Council that rural water supply coverage in the District is between 45-50%, meaning that at least half the population of Sikaunzwe, approximately 4,769 residents, is without access to a safe and reliable water supply.

Drinking water in Segwa village, Sikaunzwe

Additionally, of the boreholes that do exist in Sikaunzwe, many yield saline groundwater which is unfit for domestic use. A study of boreholes in Sikaunzwe conducted by the Department of Water Resources Development in 2015 found high levels of electrical conductivity and total dissolved solids, which are indicative of salinity, that were in exceedance of Zambia Bureau of Standards (ZABS) drinking water standards. The study found that the groundwater was unfit for drinking and domestic use. Additional research carried out by the University of Zambia Integrated Water Resources Management Centre recommended that the DWRD and the Ministry of Local Government and Housing explore deeper boreholes, desalination and rain water harvesting as alternative sources of water supply (UNZA IWRM Centre, 2014).



Map of groundwater salinity at 30m depth in Machile River Basin (Tembo, 2014)

Due to the shortage of water supply in Sikaunzwe, residents are forced to travel as far as 15 kilometres, and spend upwards of 6 hours a day collecting water from unprotected sources such as burrow pits and dambos. It is women and children who bear the brunt of the burden of collecting water. The time wasted collecting water eats into income generating activities and school attendance.

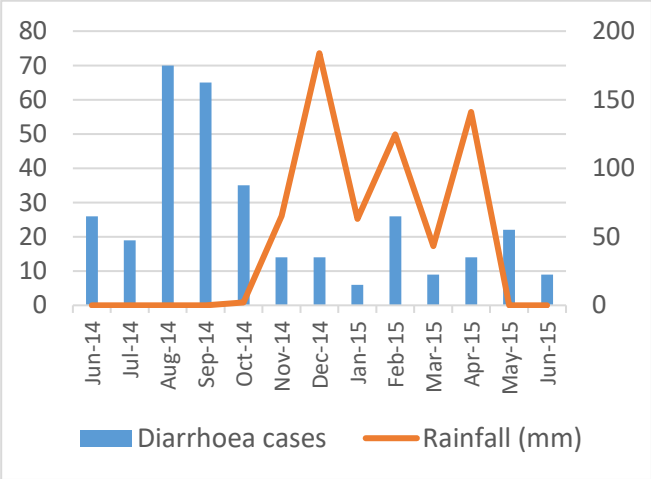
> *"The water challenges have really crippled our economic activities and made our lives really difficult, especially for women and children"* – **Headman of Sikuyu village**

Drinking water from these unprotected sources also poses serious health risks. Due to the poor quality water supply, the occurrence of diarrheal diseases in Sikaunzwe is exceptionally high. In 2014, diarrhoea was the second most prevalent disease amongst children under 5 at Sikaunzwe clinic.

Flood and drought impacts

Over the past four decades Zambia has experienced an increase in the frequency of floods and droughts as a result of climate change, as well as changing rainfall patterns, with shorter rainy seasons and more intense rainfall (Funder et al, 2013). Sikaunzwe Ward is located in the Zone I agro-ecological region 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.

The challenges of water supply are exacerbated during droughts and floods in Sikaunzwe. Residents are forced to travel even further in search of a water supply, and incidents of waterborne disease increase dramatically.



Correlation between rainfall and diarrhoea cases at Sikaunzwe clinic from June 2014 – June 2015

During periods of drought many families temporarily migrate to the banks of the Zambezi River in order to have access to a water supply. This seasonal migration has a hugely disruptive impact on people's lives. Children are forced to miss school for extended periods, and livelihoods

suffer as people are unable to tend to their crops. The seasonal migration has also contributed to the loss of life of humans and livestock through conflicts with wildlife.

Children drinking from dambo at Kasaya Primary School

"135 learners out of 173 miss school every day whenever families shift to the banks of the Zambezi river" **– Deputy Headmistress of Kasaya Primary School**

The District Disaster Management Committee (DDMC) is responsible for disaster management, including floods and droughts, at the District level. While the DDMC functions reasonably well during emergency events and immediate recovery, it is generally inactive between emergency events (Danish Institute for International Studies, 2014). According to Section 22 (2a) of the Disaster Management Act, one of the functions of the DDMC is to "prepare and update district multi-sectoral disaster preparedness, prevention and mitigation plans for slow and rapid-onset disasters". However, in Kazungula District, no such plans exist.

"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" **– Goliath Sekute, Sekute village**

What needs to change?

The situation in Sikaunzwe highlights the importance of accountable institutions for the effective implementation of water management law and policy.

Addressing the issues of inadequate water supply, groundwater salinity and drought and flood management will require a coordinated effort from the responsible institutions including WARMA, the District Disaster Management Committee, Kazungula District Council, DWRD and the Kazungula District Health Office to fulfil their legal duties to protect and serve the citizens of Sikaunzwe. It is recommended that:

Locally:

- The Kazungula District Disaster Management Committee needs to develop and implement district disaster preparedness, prevention and mitigation plans to build resilience against the impacts of droughts and floods, and to fulfil its duties under the Disaster Management Act.
- The Department of Water Resources Development and the Ministry of Local Government and Housing should undertake feasibility studies to determine appropriate sources of safe and sustainable water supply for residents of Sikaunzwe.
- The Kazungula District Council needs to mobilize funding to invest in rural water supply.
- The Kazungula District Council, the Department of Water Resources Development and the Ministry of Local Government and Housing need to undertake a review of borehole drilling procedures in Sikaunzwe based on an understanding of groundwater salinity.
- The Kazungula District Health Office must ensure that regular water quality monitoring and community sensitization is carried out by an Environmental Health Technician at Sikaunzwe Clinic.

Nationally:

- As part of their mandate, the Disaster Management and Mitigation Unit needs to ensure that District Disaster Management Committees, including Kazungula, prepare and implement disaster preparedness, prevention and mitigation plans which incorporate drought and flood management.
- The Water Resources Management Authority needs to ensure that borehole drillers are licensed and that they submit borehole completion reports.