



KAZAVA

Kavango-Zambezi Vulnerability and Adaptation

Project Overview

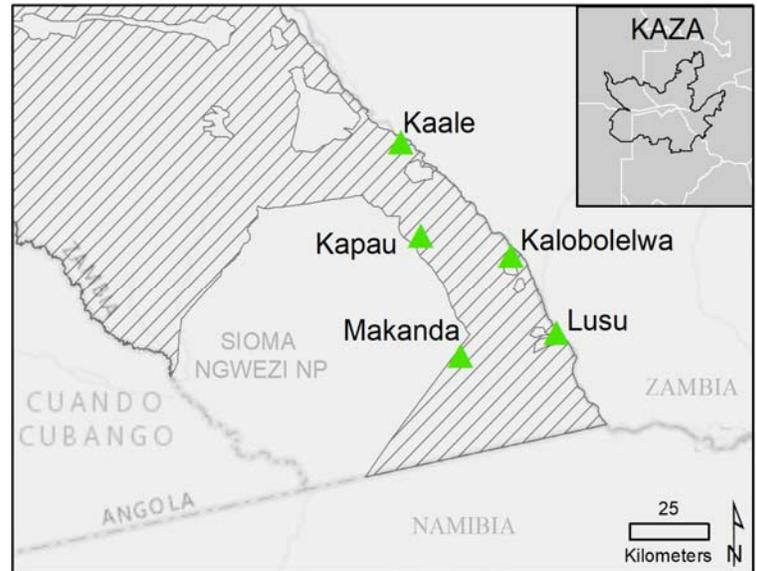
KAZAVA is an interdisciplinary research program studying interactions among communities and their households, land use, and climate in the Kavango-Zambezi Transfrontier Area (KAZA) of Southern Africa. We study the outcomes of these interactions in order to suggest pathways for more adaptive and less vulnerable livelihoods. Our work aims to facilitate a broader understanding of how livelihoods, land use and its history, and the environment are changing in this region. Our team collaborates with partner organizations and has members from the U.S., Botswana, Zambia, and Namibia.

In 2017, team members visited the Lower West Zambezi Game Management Area. With local partners, we began to build a network of collaboration and communication to identify how objectives for KAZAVA could complement ongoing efforts in the region. In 2018, we returned to conduct a field season, relying again on local partnerships established in the previous year and developing new networks.

The main goal of the KAZAVA work is to determine leverage points that might mitigate how land-use decisions and land-cover change affect vulnerability in the face of uncertainty. Once discovered, these leverage points should be linked to policy such that decision-makers can implement targeted and efficient programs to better support households experiencing environmental changes. The following sections provide an overview of the data collection during 2018.

Household Surveys – Lower West Zambezi GMA

Household surveys were conducted in five communities in the Lower West Zambezi GMA, July 2018: Lusu, Kalobolewa, Kapau, Makanda, and Kaale. Surveys were



Five village study areas in the LWZ-GMA, Zambia. A total of 245 household surveys completed in July 2018.

designed to measure household livelihoods (economic, human, natural, physical, and social capitals) and vulnerability. Surveys were part of an integrated framework to understand and quantify environmental change, the resulting impacts on households, and subsequent household responses. Surveys included 245 households and were combined with 481 additional surveys completed in Botswana and Namibia. The Zambia sample design and survey protocols included the following:

- Selection of the five communities within the Sesheke West Community Resource Board (CRB) jurisdiction
- Random sampling of approximately 50 households in each
- Implementation of surveys by six trained enumerators from the Sesheke West CRB

Identifying and Mapping Resource Gathering Areas

Surveys recorded common place names for all areas where respondents and their household members gathered resources, such fuelwood, thatching grass, and fish. Upon the completion of the household surveys, we compiled the place names to create five lists of all resource areas reported by respondents from each village area. We consulted with an Area Induna or knowledgeable area resident to confirm that no important resource areas had been omitted from these lists. To accurately identify the location of each resource area, we physically visited each one with a local guide. At each resource area, we collected GPS boundaries or markers for further delineation on satellite maps where



Conducting household surveys, Sesheke West

Preliminary household survey data

Area	Kaale	Kalobolelwa	Lusu	Kapau	Makanda	Zambia	Botswana and Namibia
Food security index	1.10	1.34	1.18	1.03	1.00	1.14	1.75
Farm size (ha)	1.82	1.79	2.51	1.84	0.83	1.62	4.04
Income (SUSD)	128.45	82.48	169.55	38.76	54.15	83.97	1729.33
Gathered food index	7.20	8.16	5.22	7.50	8.51	7.33	4.00

accessible. Within the resource area, we also collected waypoints at points of interest, such as water pans or sites of obvious natural resource harvesting. After visiting all resource areas, we reconstructed their boundaries in a GIS (ArcMap 10.5) for further analysis.

Biophysical Reference Sample Protocol

On-going analyses with the household data will be combined with remotely-sensed, land cover analyses for the study areas. To calibrate these remotely-sensed data sets and accurately interpret the images, we collected reference samples of various land cover types throughout the LWZ-GMA. To do this, we traveled to areas with a variety of vegetation types and levels of human impacts and recorded details about the landcover in these locations.

The reference data assists us in analyzing aerial and remotely-sensed imagery of these locations and know exactly what landcover type these data represent. As we collected reference samples across the entire range of landcover types in the area, we will be able to extend our reference samples to



Identifying and mapping resource gathering areas.

the greater region and accurately interpret data within and outside the study village areas.

Next Steps

Field data collection in Zambia, Namibia, and Botswana is now complete, but there is a large amount of work remaining. The preliminary household data reported here will be integrated with the household and biophysical data from the other country sites. We are currently analyzing the data, and representatives of our team plan to return to all three sites in 2019. Following the completion of data analyses, our goal is to be able to identify ways in which people can adapt to ongoing environmental changes. We will communicate these insights to our government and development partners in technical reports, and to our study communities in short research briefs.



KAZAVA enumerator and trainer survey team.

Key Personnel: Andrea Gaughan, Project Director (aegaughan@gmail.com, UofL), Forrest Stevens (UofL), Narcisa Pricope (UNC Wilmington), Lin Cassidy Consulting (Botswana), Joel Harter (CU Boulder), Jonathan Salerno (CSU).