



RESEARCH PROGRAM ON
**Climate Change,
Agriculture and
Food Security**



**CGIAR Research Program on
Climate Change, Agriculture and Food Security (CCAFS)**

**Village Baseline Study:
Site Analysis Report for Xai Xai, Zongoene
Village, Bairro 1, Mozambique (MO0246)**

February 2014

**L. Onyango, A. Raimundo Finiase, J. Mango, B. Wamubeyi, L. Loo,
D. Guambe, H. Michaque Manhique, R. Dixon**

Edited by: W. Förch, L. Cramer, T. Schuren



Correct citation:

Onyango L, Raimundo Finiasse A, Mango J, Wamubeyi B, Loo L, Guambe D, Michaque Manhique H, Dixon R. 2014. Village Baseline Study: Site Analysis Report for Xai Xai, Zongoene Village, Bairro 1, Mozambique (MO0246). CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Copenhagen, Denmark. Available online at: www.ccafs.cgiar.org

Titles in this series aim to disseminate interim climate change, agriculture and food security research and practices and stimulate feedback from the scientific community.

Published by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

CCAFS Coordinating Unit - Department of Agriculture and Ecology, Faculty of Life Sciences, University of Copenhagen, Rolighedsvej 21, DK-1958 Frederiksberg C, Denmark. Tel: +45 35331046; Email: ccaafs@life.ku.dk

Creative Commons License



This paper is licensed under a Creative Commons Attribution – NonCommercial–NoDerivs 3.0 Unported License.

Articles appearing in this publication may be freely quoted and reproduced provided the source is acknowledged. No use of this publication may be made for resale or other commercial purposes.

The tools and guidelines used for implementation of the village baseline study across all CCAFS sites, as well as the mapping outputs at a higher resolution can be accessed on our website (<http://ccaafs.cgiar.org/resources/baseline-surveys>).

© 2013 CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

DISCLAIMER:

This Paper has been prepared as an output for the baseline activities under the CCAFS program - Climate Change Adaptation Research Project in Mozambique implemented by IIAM in partnership with IUCN - and has not been peer reviewed. Any opinions stated herein are those of the author(s) and do not necessarily reflect the policies or opinions of CCAFS, IIAM or IUCN.

All images remain the sole property of their source and may not be used for any purpose without written permission of the source. For higher resolution versions of any image, please contact CCAFS.

Abstract

This is the report of the village baseline study of Zongoene Village, Bairro 1, in the CCAFS benchmark site of Xai Xai, Mozambique in May 2013 to complement an earlier household baseline survey done in the same village. Zongoene village is located by the coast at the mouth of the Limpopo River where there are extensive wetlands along with forests and sand dunes. The village is divided into five sections: Bairro 1, Bairro 2, Bairro 3, Bairro 4 and Bairro 5. Zongoene is the result of a government resettlement program that brought people together to ease service provision. Nonetheless, the level and quality of services remain very low with roads in bad condition, local schools poorly built and lacking water, one hospital with insufficient staff and resources, and nascent electrical availability. The concentrated and expanding population is also increasing pressures on the environment as demand for food and farmland grows.

The village is food insecure and does not produce enough food to meet its needs so additional food is purchased from South Africa. Rice has long been cultivated in the wetlands using traditional methods and no mechanization, which results in below optimal harvests and small plots. Fear of flooding in the wetlands limits the production of other crops, such as maize and fruits, which are grown around the village, ponds and forests. As with rice, the level of technology and mechanization is low with diverse crop cultivation. While the sand dunes provide protection from the ocean and related weather hazards, they also redeposit sand in fields and waterways, impacting soil quality and water resources. As viable land for planting is limited, the forests are increasingly cleared for food production. Forests are also exploited as sources of firewood, timber and charcoal.

A total of 25 organizations were identified by the community. Out of this total, 12 were identified by men and 15 were identified by women. More than half (52%) of the organizations are operating beyond the locality, 16% within the locality and 32% within the community. In general only 36% of the groups or organizations identified by both men and women address food security. Groups that addressed natural resources were limited but evenly spread with 33% in each locality sphere. There is evidence from the organizational landscape that the local administration provides a significant link for other organizations operating in the area. However, during times of crisis due to floods or lack of food the community reported little support from government and other organizations.

The men's discussion group identified more sources of information than the women's group, however both groups reported limited sources of information and knowledge. The source of information that is most frequently used is the farmer, followed by Radio Xai Xai. The local government and community meetings ranked third. Most community meetings are called by the local administration therefore these two sources are closely linked. The government is a significant source of information especially warnings on adverse weather conditions. Farmers provide a range of information regarding weather, planting, seeds and cultivation.

The study identified a range of opportunities for research and development interventions. The village's proximity to the beach and Zongoene Lodge mean there is potential for services related to tourism. Food production and livelihoods can also be expanded while not increasing damage to wetlands and forests. This can come from diversifying wetland production beyond rice to include crops such as maize, onion, potatoes and bananas as well as mainstreaming modern farming technologies and practices. The wetlands can also be used for aquaculture, an effort that is already being supported by local universities. In addition, opportunities exist to expand the village's production of oranges and tangerines and promote the development of village processing facilities. The report also calls for increased local engagement and cooperation, which can be supported through broadened information sharing, group formation, collaborative commercial enterprises and an expanded local organizational landscape.

Keywords

Baseline; Mozambique; village study; participatory mapping; organisations; access to information

About the Authors

Onyango, Leah – Regional Team Leader/Lecturer-Chairman-Department of Urban and Regional Planning-Maseno University, Private Bag, Maseno, Kenya

Arão Raimundo Finiasso – Site Team Leader, Mozambique

Mango, Joash – Senior Technician, ICRAF GRP 5 and East Africa region; World Agroforestry Centre, P.O. Box 2389, Kisumu, Kenya

Wamubeyi, Brian – Enumerator; Freelance GIS Practitioner, P.O. Box 3613-40100, Kisumu, Kenya

Loo, Loice – Enumerator; Masters Student, Maseno University, P.O. Box 30119-00100, Nairobi, Kenya

Guambe, Domicio – Translator, Mozambique

Michaque Manhique, Helena – Translator, Mozambique

Dixon, Richard – Senior Programme Officer, ESARO, Mozambique Office, International Union for Conservation of Nature, 23 Fernão Melo e Castro Str., P. O. Box 4770, Maputo, Mozambique

Förch, Wiebke – CCAFS science officer, Theme 4 (Integration for decision making); International Livestock Research Institute (ILRI), P.O. Box 30709, Nairobi, Kenya

Cramer, Laura – CCAFS consultant, Theme 4 (Integration for decision making); International Livestock Research Institute (ILRI), P.O. Box 30709, Nairobi, Kenya

Schuren, Tara – CCAFS consultant, Theme 4 (Integration for decision making); International Livestock Research Institute (ILRI), P.O. Box 30709, Nairobi, Kenya

Contents

Abstract.....	Error! Bookmark not defined.
Keywords.....	3
About the Authors.....	Error! Bookmark not defined.
Contents	5
Data analysis	9
Topic 1: Community resources – participatory satellite imagery interpretation and visioning.....	9
A. Current resources.....	9
B. Gender-differentiated comparison of current conditions.....	16
C. Major changes of resource conditions	16
D. Vision of the future.....	20
Topic 2: Organisational landscapes	22
A. Basic spheres of operation.....	22
B. Organisational landscape of food security.....	26
C. Organisational landscape of natural resource management.....	28
Topic 3: Information networks	31
Conclusion and recommendations	31
Implications for CCAFS.....	32
Recommendations for major opportunities	33

Introduction

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic ten-year partnership between the Consultative Group on International Agricultural Research (CGIAR) and Future Earth to help the developing world overcome the threats posed by a changing climate, achieve food security, enhance livelihoods and improve environmental management. In 2010, CCAFS embarked on a major baseline effort at household, village and organisation levels across its three target regions, namely East Africa, West Africa and South Asia (more information about CCAFS sites is available on our website <http://ccafs.cgiar.org/where-we-work>). CCAFS trained survey teams from partner organisations in the three regions to conduct the baseline.

The baseline effort consists of three components – a household survey, village study and organisational survey. The household baseline survey, a quantitative questionnaire on basic indicators of welfare, information sources, livelihood/agriculture/natural resource management strategies, needs and uses of climate and agricultural-related information and current risk management, mitigation and adaptation practices, was implemented by CCAFS partners in 35 sites (245 villages) with nearly 5,000 households in 12 countries to date. CCAFS partners are implementing village baseline studies (VBS) and organisational surveys in one out of the seven villages within each CCAFS site where the household survey was implemented. The plan is to revisit these villages in roughly 5 years, and again in 10 years, to monitor what changes have occurred since the baseline was carried out. The goal is not to attribute these changes to the program, but to be able to assess what kinds of changes have occurred and whether these changes are helping villages adapt to, and mitigate, climate change.

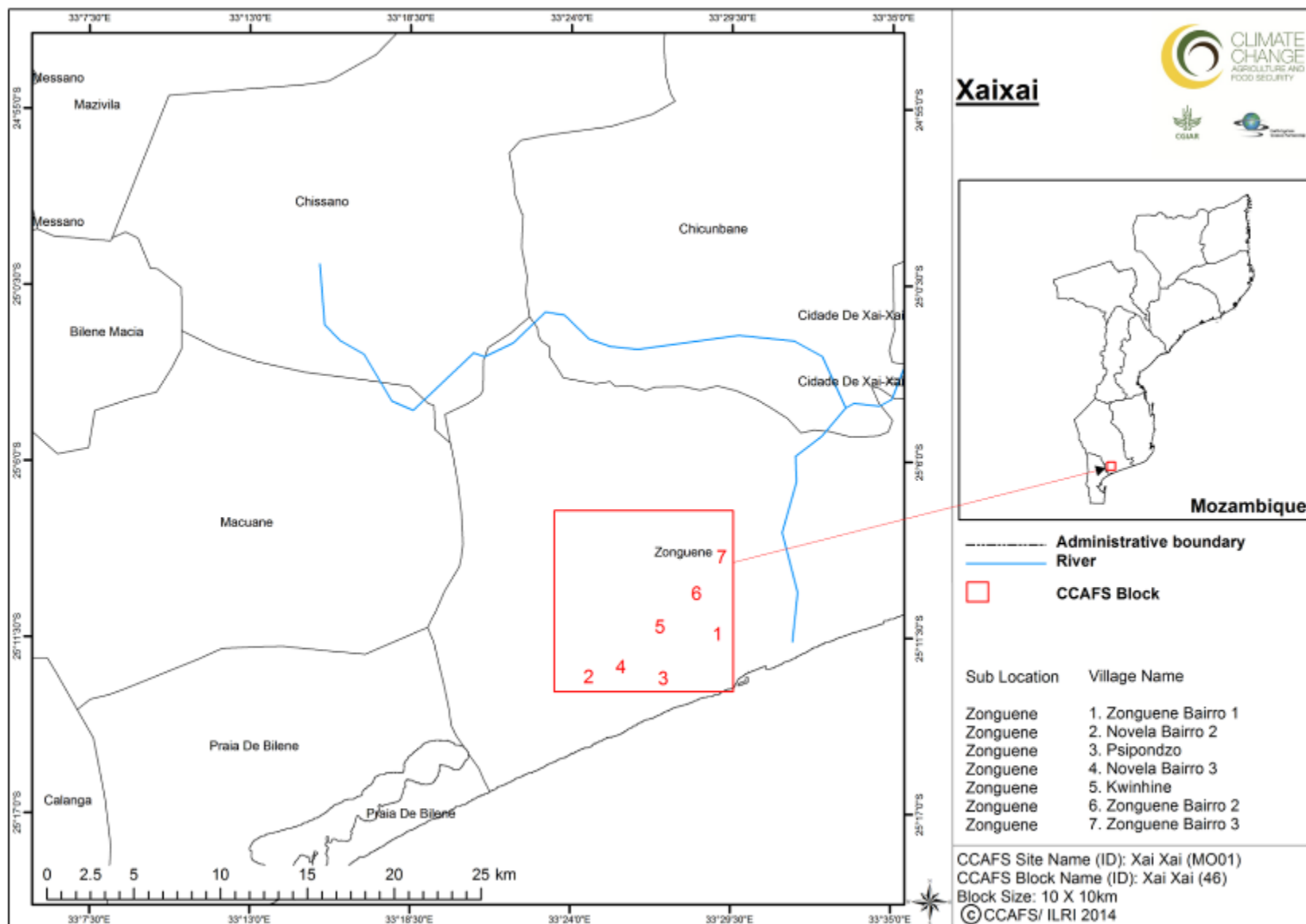
The focus of this site analysis report is the VBS. To date, seventeen VBS were conducted. The VBS aims to provide baseline information at the village level about some basic indicators of natural resource utilisation, organisational landscapes, information networks for weather and agricultural information, as well as mitigation baseline information, which can be compared across sites and monitored over time.

The objectives of the VBS are to:

- Provide indicators to allow us to monitor changes in these villages over time. In particular, changes that allow people to
 - Manage current climate risks,
 - Adapt to long-run climate change, and
 - Reduce/mitigate greenhouse gas emissions
- Understand the enabling environment that mediates certain practices and behaviours and creates constraints and opportunities (policies, institutions, infrastructure, information and services) for communities to respond to change
- Explore social differentiation:
 - Perceptions of women and men will be gathered separately to be able to present different gender perspectives.
 - Focus group participants will be selected to present perceptions of groups differentiated by age.

The detailed tools and guidelines used for the implementation of the VBS across all CCAFS sites, as well as the manuals, data and analysis reports can be accessed on our website (<http://ccafs.cgiar.org/resources/baseline-surveys>).

Map 1. Location of the Zongoene Village in the CCAFS benchmark Xai Xai site, Mozambique



This report presents the results of the VBS conducted in May 2013 in the village of Zongoene, Mozambique (Xai Xai site) (Map 1). Zongoene village is divided into five sections and this study targeted Bairro 1. It was chosen for the baseline survey because of its relative central location in the block. The survey team was composed of two facilitators, two note takers and two translators. Each pair was male and female. Consultations were made with the village authorities concerning time and place of meeting. They selected the community meeting grounds as an appropriate venue.

Invitations were sent out by the site team leader to three sets of participants who were chosen using random sampling. Each group was composed of 15 men and 15 women. Three consecutive days were selected for the study and on each day only one set of participants were expected to participate in the study. The whole community was invited on the first day of the study for an introductory session where this study was explained and results of an earlier household survey shared. After the introductory session the rest of the community was set free and only the invited group of 15 men and 15 women remained behind to carry on with the study. This was repeated at the end of the third day when the study was completed. The whole community was again invited to attend a debriefing session where summaries of the findings were shared.

The study used participatory methods of data collection. Throughout the data collection process groups of male and female members of the community worked separately. This was to allow for collection of gender-differentiated information.

The task on day one was to introduce the community group to a satellite image of the block and work with each group to identify and map/sketch resources that are important to the community, their current state, their past state and what caused the changes. The outputs were maps and sketches. The process of working with the community to identify the resources that are important to them depended entirely on how well they were able to understand and interpret the image.

The task on day two was to work with each group to understand the organisational landscape and the links that exist between the organisations in relation to food security in a normal year, in a year of crisis and in relation to natural resource management. The outputs were diagrams showing the organisational landscape. Information on each organisation was also captured cards. The links between the organisations were shown using lines and arrows on the diagrams.

There were two main tasks on day three. One was to work with each group on understanding information networks in relation to weather elements and farming activities. The outputs were diagrams. The second task was to bring the two groups together and generate a vision of what the community would like their village to be like in the future. The output was a map/sketch showing “the vision of the community.”

Information generated from the study was captured on sketches, maps, flip charts, information cards and notes, which were brought together in an initial debriefing document and ultimately this final report. Photographs were also taken of all the activities and information generated at each stage. The survey materials were then labelled and packed for off-site processing. The debriefing report was prepared in the field so that it could benefit from the presence of the site team. The photographed sketches and maps were inserted in the debriefing report. In this site analysis report proper maps and diagrams derived from the field outputs replaced them.

Data analysis

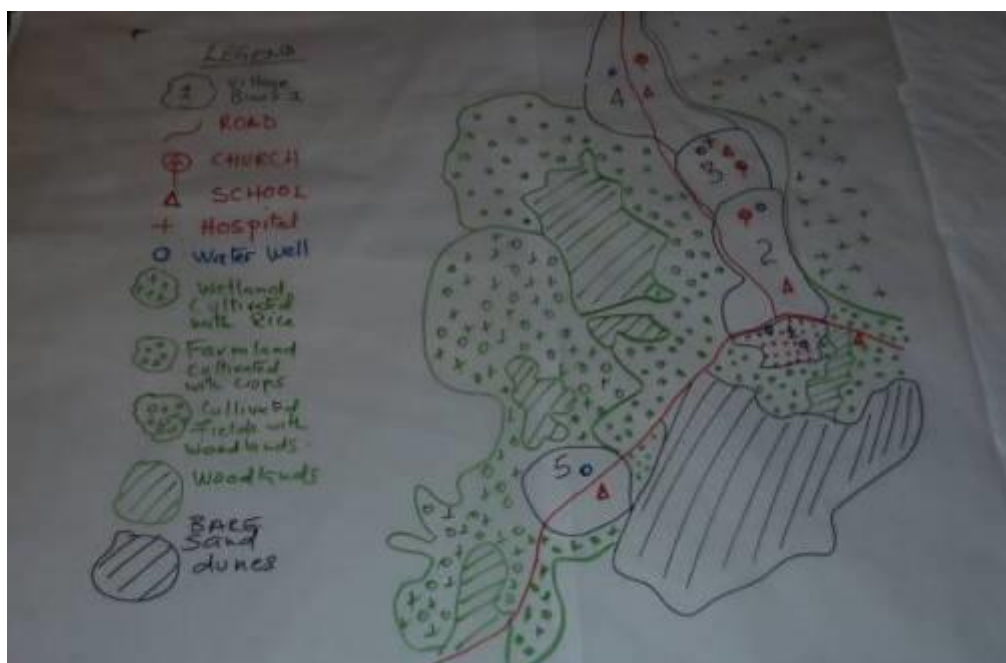
Topic 1: Community resources - participatory satellite imagery interpretation and visioning

Community infrastructure and resources and gender-differentiated access and utilisation of those resources have been analysed, based on a process of participatory visual interpretation of high-resolution satellite imagery (RapidEye). The aim was to create a basic understanding of existing community resources, as well as of community dynamics in relation to its environment. The participants discussed the current state of those resources, in terms of quality, access, management, history and potential drivers of change. Later on, a mixed group developed an image of village resources and human well being into 2030 to understand opportunities, constraints and aspirations for the future. The detailed approach to this exercise is outlined in the CCAFS Village Baseline Study Implementation Manual (follow the link to the baseline study from our website <http://ccafs.cgiar.org/resources/baseline-surveys>).

A. Current resources

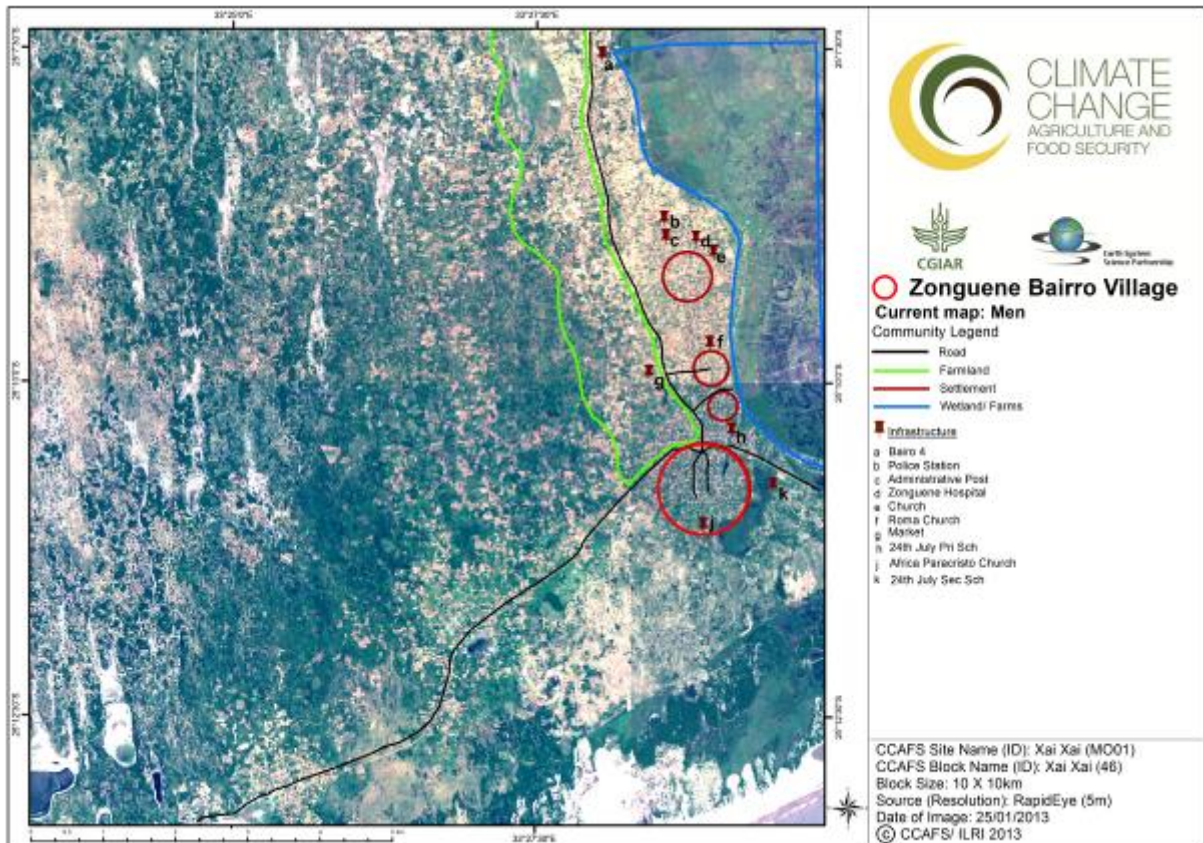
Separate meetings of male and female participants took place at the community meeting grounds. Findings from the CCAFS household baseline survey done in the same village were summarized and participants agreed with the majority of the results. It was clarified that the village experiences food insecurity in April and May in addition to the initially reported October and November period. To begin the identification of community natural resources and infrastructure, groups generated initial diagrams on the floor as a basis for discussion and consensus before final versions were transferred to flipcharts by the research team (Photo 1). Following this activity groups were shown satellite imagery of their region to compare and confirm their maps. The appreciation of scale was important for participants to get their bearings. The exercise could not be rushed and took a lot of time, but both groups were ultimately able to identify key features from the images.

Photo 1. Current conditions mentioned by women regarding natural resources and infrastructure

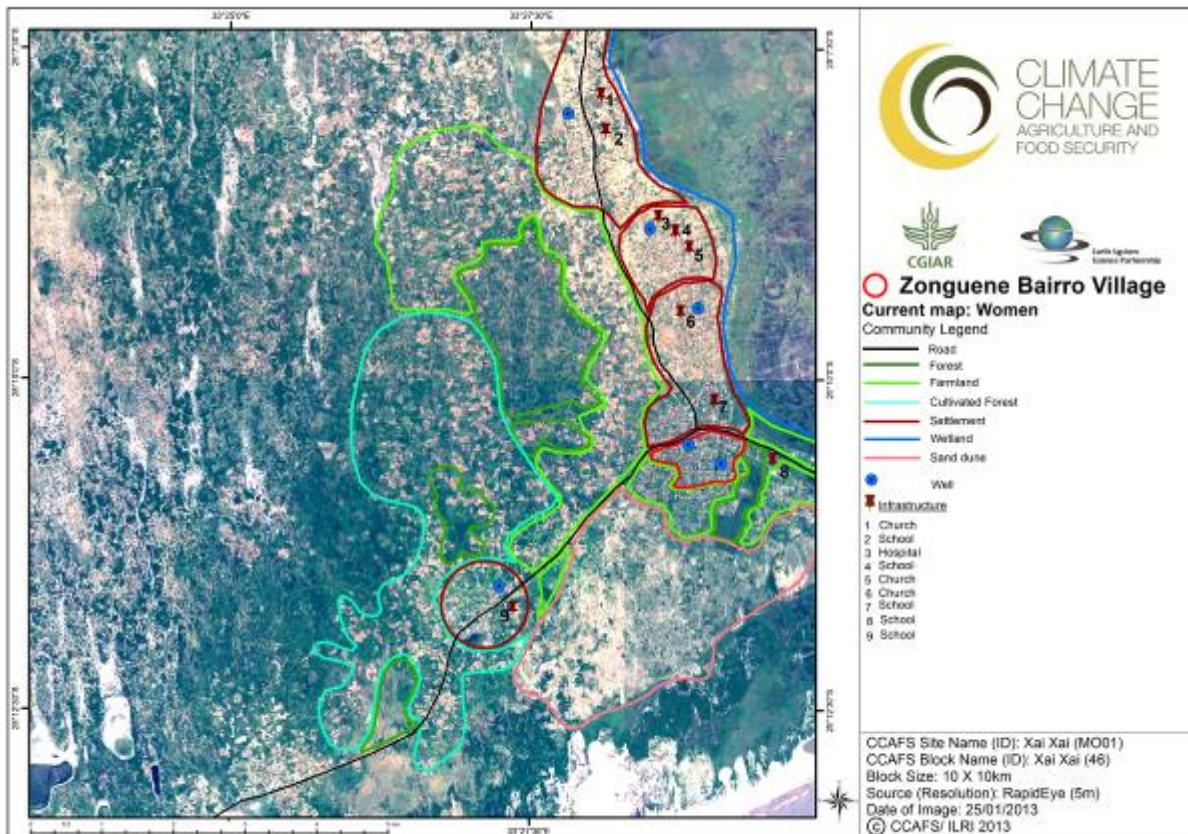


Maps 2 and 3 represent the current conditions in the community regarding natural resources (water, forest, grazing, farmland, and degraded land) and infrastructure (roads, markets, education, and health) according to, respectively, male and female participants. The maps lay out information prepared by the community participants super-imposed on a satellite image.

Map 2. Men's map of current community resources



Map 3. Women's map of current community resources



Male and female participants provided the following information on their community's resources, including infrastructure (summarized in Table 1).

Wetlands: Zongoene village is located at the mouth of the Limpopo River where there are extensive wetlands. These wetlands are used for rice farming and are a critical resource for the community. The current state of the wetlands is good with fertile soils and moderate rice yields. The focus on rice is because rice is flood tolerant. The rice fields have been farmed since the pre-colonial period. They have a well-developed system of canals to drain the water from the swamps and into the river. However the drainage relies entirely on gravity and is not able to cope with high levels of flooding. The wetland is a source of food for the community. The wetlands are not titled but are managed by the community. Repeated wetland flooding hinders the community from farming anything but rice.

Farm land: Community members cultivate fields within the village and also outside the village for subsistence. Some fields are as far away as one hour from the village. The farmland that is far away from the wetlands is made up of sandy soils with low moisture retention capacity. The fields bordering the wetlands suffer from water logging and poor drainage. Farmers have channels for draining excess water from waterlogged soils. The community chief administers the land but individuals manage each field. Fields close to the river benefit from irrigation during the dry season. The non-irrigated farms are larger than the irrigated fields. Cultivation is moving further into the forested areas and reducing forest cover. Farming creates self-employment for the community. The farmers sometimes hire labour and oxen to help plough the land, however funds are often not available.

Forest: There are many pockets of forested areas close to the village. Sections of the forests are continuously cleared to extend cultivated fields and as a result the forest is reducing in size. The forests are also a source of charcoal, firewood and timber. The main forest is a 45-minute walk from the village in Tiumhiny. The forests are managed by the community and owned by the community leader. The main environmental benefit they provide was identified as fresh and clean air. The expansion of human settlement is leading to reduced forest cover due to cultivation.

Sand dunes: Sand dunes are a 1-½ hour walk and located between the village and the ocean. The community uses the sand for construction purposes, which is leading to their reduction. The wind is also causing the dunes to shift and deteriorate. Most of the dunes are bare or have very little vegetative cover. They are owned by the community leader but not formally managed. The main environmental benefit they provide is shelter from the ocean and related weather hazards, however they also have negative environmental impacts such as overrunning the wetlands and dams.

River Limpopo: The village is located close to the mouth of the Limpopo River. The river is wide and heavily vegetated along its banks. It is one hour away from the village and is the main source of water for cultivation, livestock and domestic use. The river is not owned by anyone. It is flood prone and crops within the flood plain are frequently destroyed especially in times of heavy rainfall.

Wells: Wells are a source of water for domestic use. There is a well located at Tchombeni, which is about a 5-minute walk from the village. The current state of the well is relatively good and it provides the community with clean water all year round. The well was built by the government and is managed by the community.

Roads: There are several roads in the village, such as Bairro 1 to Novella, Bairro 1 to Bairro 4, Bairro 1 to Limpopo River. The roads are narrow, dusty and difficult to pass during heavy rains. They were constructed by the government and are managed by the community.

Churches: There are many churches 5-30 minutes from the village, including Betel, Roma and Africa Para Cristo. Most of the churches are small but provide places of worship for the community.

Schools: There are two schools in the village: 24th July Primary School and 24th July Secondary School. The schools have no water and are not well constructed. The schools provide education for the village children. They are affected negatively by the government's failure to provide resources and improve the infrastructure.

Market centres: The local market is Rotunda and comprises private businesses. It is about a 20-

minute walk from the village. The centre does not provide all the services required by the community, such as construction materials. It was not reported that villagers sell anything in the market.

Hospital: There is one hospital located in Bairro 3, which is about a 1-hour walk away. The hospital is owned and managed by the government. It has no ambulance, beds, or electricity. Candles are used to provide light. The hospital also does not have an adequate supply of medicine. It employs 2 nurses and 1 midwife. Referrals are sent to Xai Xai at their own transport expense. This is the only public medical facility servicing the community yet it is poorly equipped and poorly staffed.

Table 1. Summary for Layer 1: current conditions, as perceived by men (M) and women (F)

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Wetlands (M)	Land for producing irrigated rice	Zongoene	Good and produce good yields	10 minutes	Community		Source of food and other crops can be grown: Maize, onion, potato, banana, etc. Also possible to farm fish	Floods hinder farming. Lack of mechanization also leaves them using the hand hoe for farming
Dry Land (M)	Farmland	Zongoene	Larger farmland. Some close to village while others farther away	30 minutes on foot	Individuals		Individuals or hired labour and animal traction can be used.	Lack of sufficient water
Farmland (F)	Cultivation		Average in size and mostly waterlogged	1 hour	Owned by community Chief and managed by community members	Channels for draining excess water from soils	Close to river allowing for irrigation during dry season	Close to forests which reduces forest cover
Forest (F)	Farming, charcoal, firewood and timber	Tiumhiny	Reducing in size due to increased cultivation	45 minutes	Owned by community Chief and managed by community members	Fresh and clean air		Increased human settlement is causing forest reduction due to cultivation
Sand Dunes (F)	Sand for construction		Mostly bare with little vegetation	1 ½ hours away	Owned by community leader but not managed	Act as barrier between village and river		Sand harvesting for construction could destroy dunes
River (F)	Water for cultivation, livestock and domestic use	Limpopo	Wide and heavily vegetated along banks	1 hour away	Community owned and managed	Provides sufficient water for cultivation		Floods and destroys crops during heavy rains

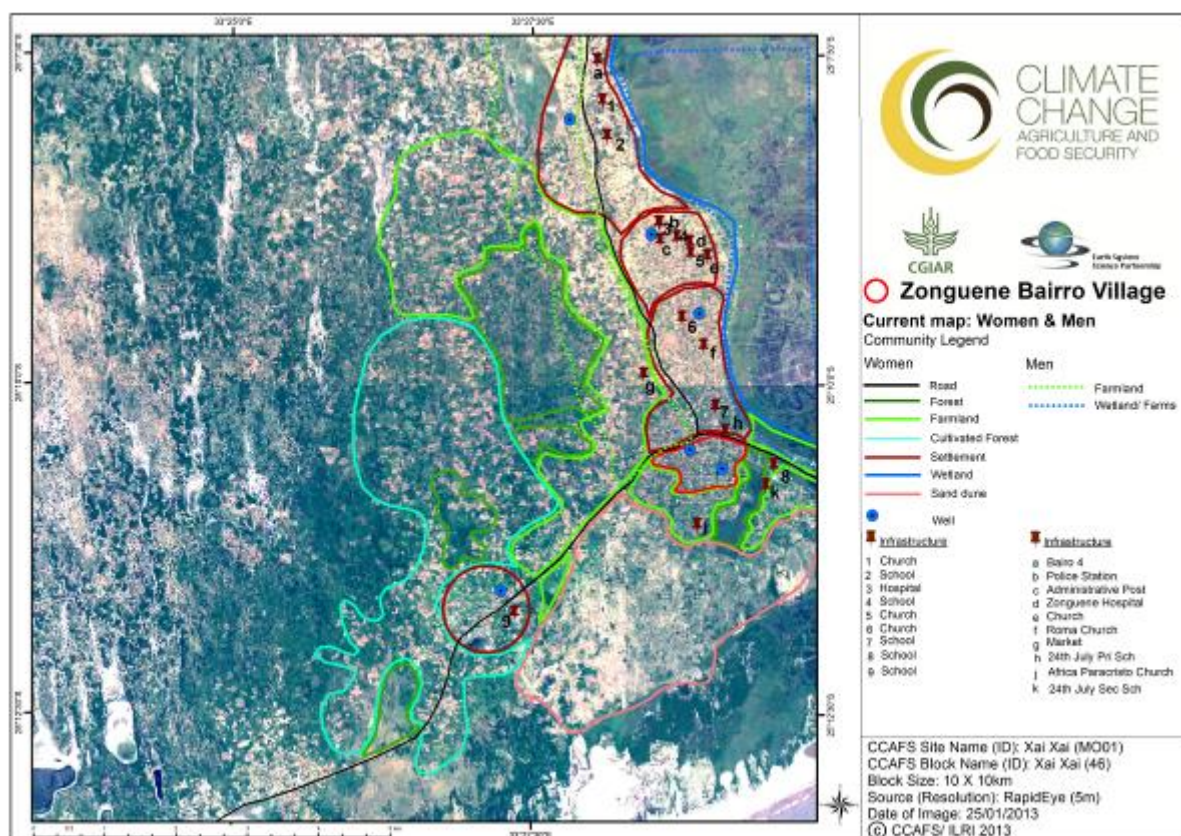
Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
School (M)		24 th July primary and secondary schools	No water and poorly constructed	10-20 minutes by foot			Education of children	Government failure to provide and improve resources. Inadequate teachers and poor quality education
School (F)		24 th July primary and secondary schools	Good condition	5-10 minutes	Owned and managed by Government			Only primary school in village
Market Centre (M)		Rotunda	Doesn't satisfy needs. No construction materials sold	20 minutes by foot			Source of basic items	Limited agricultural production that is entirely subsistence
Hospital (M)		Zongoene	No ambulance, electricity or beds. Candles used. Inadequate drugs. Referrals go to Xai Xai at own expense. Only 2 nurses and 1 midwife.				Source of healthcare for community	Poorly equipped and staffed
Hospital (F)		Bairro 3	No electricity, water or doctors		Owned and managed by Government		People prefer hospital to traditional medicine men	Only one hospital serving whole community
Roads (M)		Xai xai-Zongoene-Novela						
Roads (F)		Bairro 1 - Novella, Bairro 1 - Bairro 4, Bairro 1 - Limpopo River	Roads are narrow, dusty and difficult to pass during heavy rains		Managed by community		Roads can be paved	

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Wells (F)	Source of water for domestic use	Tchombeni	Provide clean water year round	5 minutes	Government owned and community managed	Provides clean and safe water		
Settlements (F)	Homesteads	Bairro 1, 2, 3, 4 and 5	Highly populated with well planned land use		Managed and owned by community members			Population is increasing and available space reducing
Churches (M)	Betel, Roma and Africa Para Cristo		Place of worship for community	Betel-30 minutes; Roma- 15 minutes; and Africa Para Cristo-5 minutes				

B. Gender-differentiated comparison of current conditions

In Bairro 1, men head most of the households and women head only a few. That said, women and young men do most of the work, which may account for the variation among men's and women's details of community resources. Men and women reported some of the same resources but women provided overall a more differentiated account. Men distinguished between wetlands and dry land as sources for food production. While women did not mention wetlands, however they did cite farmland, forests and rivers as resources and addressed their relation to production. Women also listed settlements as a limiting resource negatively impacting forests and straining food production. They also cited wells as a source of clean drinking water and sand dunes as protecting the community from the elements and providing a source of construction material. Men and women noted the same infrastructure and gave a combined account of its prevalence and condition. Men cited the local market while women did not. Though women provided more details regarding the community's resources they did not have a good understanding of the past as they had all come from different areas. For example, they were unaware of both the dam disappearance due to sand incursion and the previous condition of the roads.

Map 4. Overlay of current conditions, comparing men's and women's maps



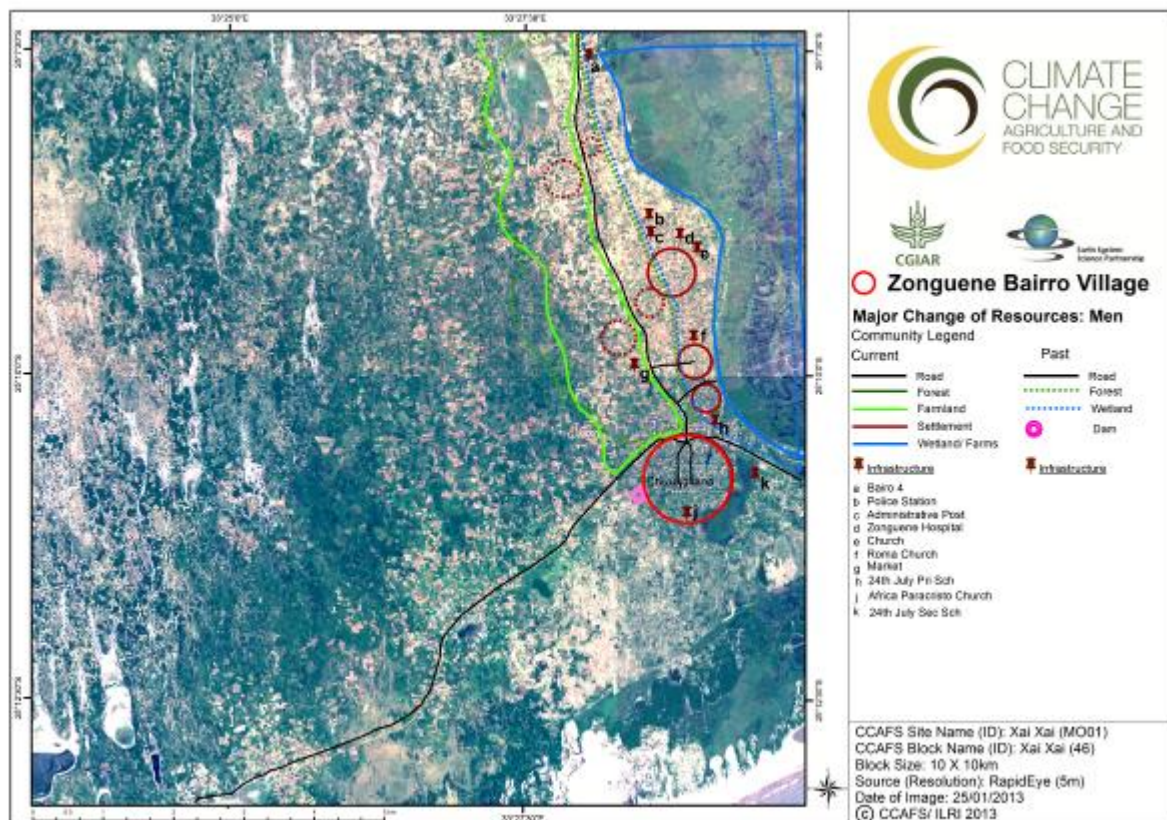
C. Major changes of resource conditions

Maps 5 and 6, and Table 2, show the most relevant changes in community resources as expressed by male and female participants. Most of the people moved into Zonguene in 1995. A government resettlement programme was aimed at bringing people together in villages to make it easier to provide services. This led to a population increase in existing villages and the establishment of new villages. The current location of Zonguene was previously under forest cover and early settlers had to clear forest to establish the settlement. The increased population triggered the expansion of farmland into the forest. In the past there was more land under forest cover and the forests were more expansive and dense with little cultivation on the edges. Forests continue to be cleared for cultivation and have also

become a source of charcoal, firewood and timber. The village's location close to the sea and sand dunes has also made it vulnerable to the movement of sand from wind. Records show the dunes were bigger in 1933. The sand has impacted the wetlands and dried up a dam that used to provide a regular source of water to the community.

While infrastructure remains a challenge, the last 10 years have brought improvements. The establishment of Zongoene Lodge in 2007 led to the expansion of the village electricity network. Local people can now be connected to electricity with less difficulty and it has opened up numerous possibilities. In addition, several construction programs have occurred, including a well, school and hospital. In 1995 the government also rehabilitated the roads made of sand by the community in 1976. Some improvements to farming techniques have also been noted in the last 10 years, particularly for maize. Farmers now have access to improved maize seed and are now practicing intercropping of maize, cassava and beans. However, the community reported that increases in heavy rains have caused floods, which is negatively impacting crop production. The community also noted that most households no longer have livestock. Pests and diseases reportedly killed earlier livestock populations. With no veterinary services available the community was unable to treat their animals.

Map 5. Major changes in resources (comparing past and present) for men



Map 6. Major changes in resources (comparing past and present) for women

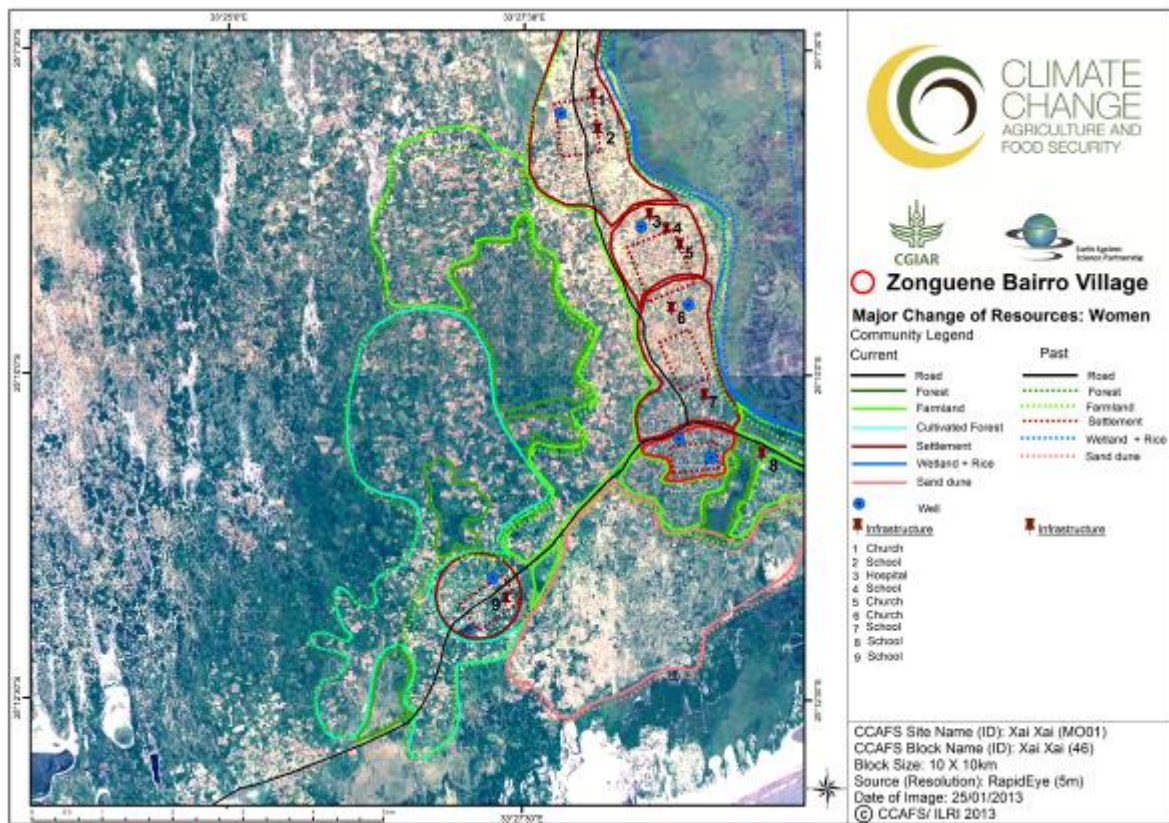


Table 2. Major changes and drivers of change in the last 10 years, as perceived by men (M) and women (F)

Land cover class	Community determined land use	Location Names	Past state (quality)	Time to resource	Drivers of change	Management and ownership issues	Environmental Benefits
Wetlands (M)	Farmlands	Zongoene	Used to be more and bigger	10 minutes	Winds and rains from storms deposit sand from dunes onto farmlands	Community	Large scale rice production due to land availability and fertile soils
Farmland (W)	Cultivation		Big parcels of land		Increased population and demand for farming land	Owned by community Chief and managed by community members	
Forest (M)	Scattered human settlements		Villages didn't used to exist as settlements were scattered. Land was covered in forest	5 minutes	Government resettlement programs	Community	There were more fruit trees, less human disease and more livestock
Forest (F)	Farming, charcoal, firewood and timber	Tiumhiny	Expansive and dense with little cultivation on edges	45 minutes	Increased cultivation and population	Managed by community and owned by community leader	Clean and fresh air
Water (M)	Pond/dam		Used to be permanent all year long		Sand deposits and human settlement around them now	Community	Recreation like swimming
Roads (M)	Xai Xai – Zongoene – Novela road has long existed. Sandy ones built by the community				Sand was removed by government to improve road in 1995		
Roads (F)	Bairro 1- Novella, Bairro 1 - Bairro 4, Bairro 1 - Limpopo River		Narrow and dusty but accessible in rainy season		Government repairs	Owned and managed by Government	
Settlements (W)	Homesteads	Bairro 1	Few inhabitants with large parcels of land		Increased population due to resettlement	Managed and owned by community	

D. Vision of the future

With a mixed group of men and women, the goal was to develop an image of village resources and human wellbeing into 2030 to understand the opportunities and constraints, as well as aspirations for the future. This exercise built upon all the work completed in the previous sessions. In the section below we include the map that encapsulates Zongoene village's vision of the future (Map 7).

The community's vision for 2030 is wide reaching and diverse to meet their perceived needs, deficiencies and challenges. The community sees a range of opportunities, including expanding access to and from the village, increasing production and employment opportunities, managing water resources, reaping the benefits of electricity and better preparing their children for the future. Given their wetland, dry land, forest and river resources the community is keen to expand their utility while preserving them for future generations. Increasing tourism, shifting from subsistence to more commercial farming and improving food storage are also seen as means to improve livelihoods. The village is located in a beautiful area and leveraging the beach and operations such as Zongoene Lodge could be a great opportunity for the long-term viability of the area.

While the community was quick to identify their vision for 2030 they also identified numerous constraints, largely stemming from a lack of financial resources and technical knowledge. The main challenges for the village are saline and sandy soils that limit production, poor food security due to subsistence farming and limited crop diversity, lack of mechanized farming, and inadequate roads that make travel difficult. Though the vision was well articulated the community was less clear which organizations or resources could be brought to bear to address the constraints. Many community members are concerned about population pressures and an increasing demand for expanded production and available farmland. Given the soil and water limitations in the dry lands, populations will continue to look towards the forests and wetlands for resources, which are already in decline. Table 3 presents a summary of the major opportunities and constraints for the vision of the future.

Map 7. Future map of the community

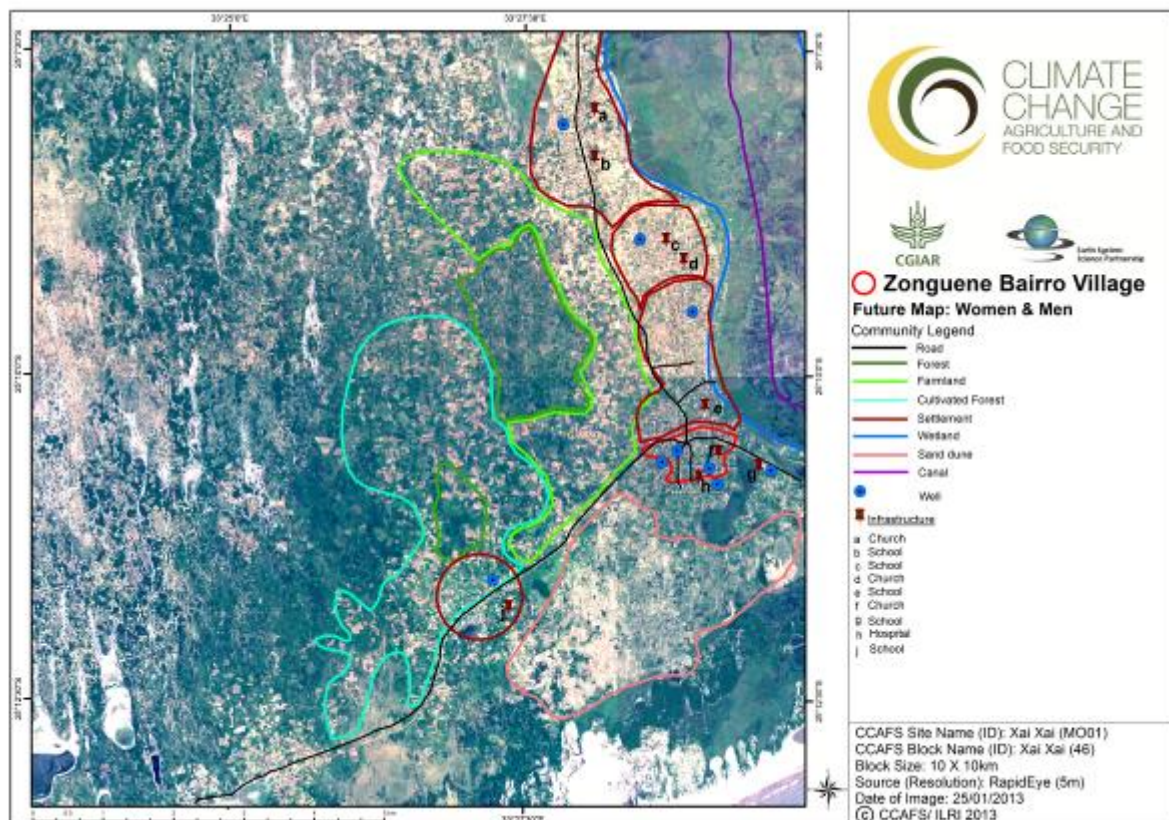


Table 3. Vision of the future

Items from the map legend	Preferred condition for 2030	Opportunities	Constraints	Organisations to involve
Roads	Paved road from Chicubane to Novela, wider roads, and construct new paved road from Bairro 2 to N1 (main road to Xai Xai)	Accommodate more cars, reduce mortalities by ensuring faster ride to hospital, and increase tourism and jobs in community	Sandy soils not suitable for construction. Lack of materials	Government
Churches	Ones in Bairros 2 and 3 would be expanded in size, have new roofs, and windows would change from metal to glass		Inadequate financial resources	Community
Schools	Upgrade secondary school to boarding school and add football field. Add additional level to other schools. All schools offer English language classes	More students attracted from Xai Xai, taller buildings will reduce culture shock for children, and students will learn to play football		
Water/Wells	Improve existing wells and increase number of wells from 2 to 5		Inadequate financial resources	Community and Government
Wetlands and Farmlands	Expanded farmlands to accommodate expanding demand from increasing population. Keep wetlands at same size	Increase land under production and allow for increased agricultural production and surpluses for sale	Inadequate financial and technical resources	Community
Drainage Canals	Canals that pass through middle of wetlands to allow needed water in and excess water out into Limpopo River	Water in canal can be used for irrigation when farmland is dry	Inadequate financial and technical resources	Community
Dry Farmland	Remain the same	Children who go to school will live in urban centres so there will not be an issue with land access	Eastern part of village has saline soils unsuitable for cultivation	Community
Woodland	Expanded		Lack on knowledge on how to achieve or who can undertake	Relevant Expert
Sand Dunes	Remain the same however increase the number of trees surrounding the dunes for protection			Community
Electricity Network	To reach homes	Increase employment opportunities in the village. Maximize use of home appliances, such as freezers to conserve fish		
Hospital	Additional hospital in Bairro 1			Donor or NGO

Topic 2: Organisational landscapes

This topic aims to show evidence of organisational capacities that help address food security and manage resources. This will inform CCAFS about how prepared the village is to respond to the challenges envisaged as a consequence of climate change or other future challenges and to engage with CCAFS partners at a collective level.

Specifically, this section presents the different formal and informal organisations involved in the community in general terms, as well as with respect to food security in different situations (i.e. average and crisis conditions), and natural resources management (NRM). It also elaborates on what types of activities the organisations are engaged in, who their members are, whether the organisations are useful, etc.

A. Basic spheres of operation

Participants were asked to draw three large concentric circles on the ground. The inner circle would represent the community, the middle circle the locality and the outer circle beyond the locality. Participants were then asked to name organisations working in the area, whose names were written on cards, and place the cards in the appropriate circle. Thus, the group placed in the inner circle the cards of organisations that worked in the community, in the middle circle the cards of organisations operating in the locality, and in the outer circle those that operated beyond the locality. See Photo 2 for an example of the activity as carried out with the study participants. The results are shown in the diagrams that follow.

Based on this structure, a total of 25 organisations were identified by the community. The men identified 12 and the women 15 organizations, with only two in common. The identified organizations focused on activities such as construction of drainage canals, allocating land to farmers, organising traditional crop related events, social welfare, funds acquisition, road rehabilitation, educational support, paid labour, resource mobilisation, HIV/AIDS education and family planning. The main focus of the organizations was on social activities (80%) and economic concerns (50%), while environmental issues were not widely addressed (10%). Organizations were identified throughout the area, however women were more familiar with those working within the village while men were more familiar with those beyond the locality. Overall, more than half (52%) of the organisations are operating beyond the locality, 16% within the locality and 32% within the community.

In Tables 4 and 5, more detailed information is provided on the five most important organisations as they were ranked by the men's and women's groups.

Photo 2. The organisational landscape activity in progress



Figure 1. Organisational landscape of the men's group

	Legend
1	24 th July community group
2	Ncovothlo group
3	Save the Children, UK
4	Ministry of Agriculture
5	Ministry of Fisheries
6	Ministry of Transport
7	Ministry of Education
8	Ministry of Health
9	Administrative Post
10	Policia
11	Frelimo Party
12	World Food Program

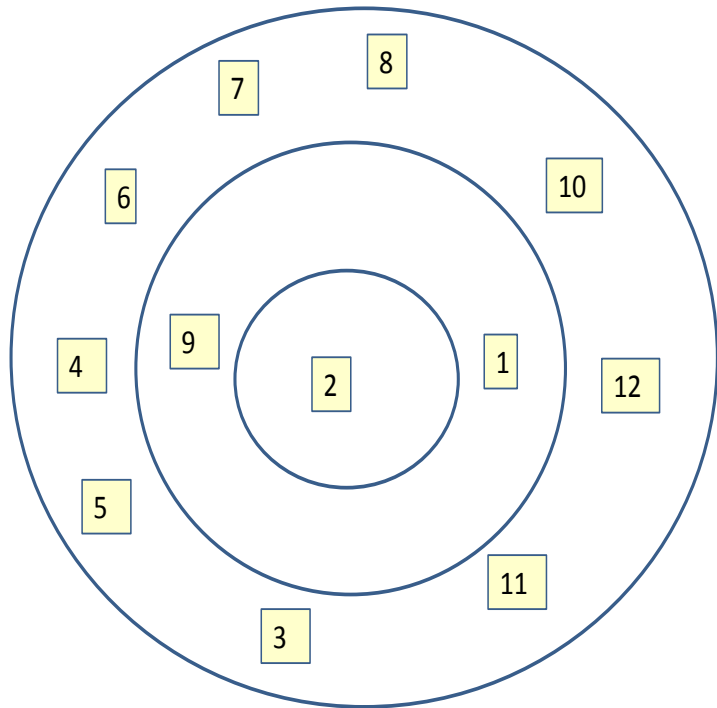


Figure 2. Organisational landscape of the women's group

	Legend
1	Save the Children
2	Txova xova
3	Pang fang
4	OMM
5	Pou panca
6	Matsumi
7	Stique
8	Nkuvu
9	Nlhawa
10	Nkuvu
11	Agriculture
12	Farming Committee
13	Frelimo
14	MIA
15	Local Government

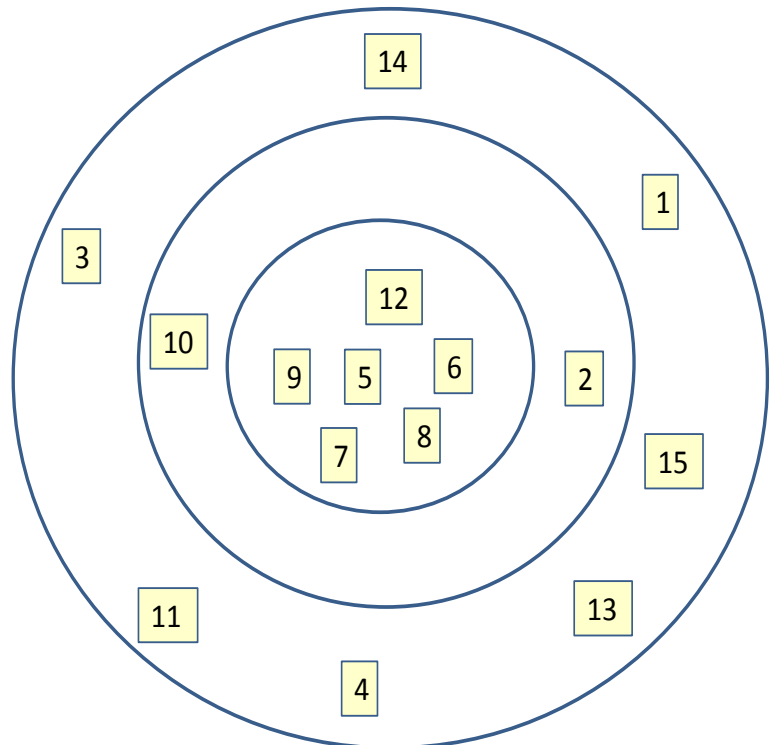


Table 4. Information on the first five organisations ranked by the men

Organisation name	Main activities	Number of members (estimate)	Access (open or restricted to...)	Origin (indigenous, state, NGO, project)	Sphere of operation: community, local, beyond local	For community groups		
						Sources of funding (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
1 Ncovothlo Group	Making water canals to channel water for increased rice farming	100-200	Open to anyone wanting to farm in the village	Indigenous	Community	Members	Longer	Formal – Recognized by local government
2 24 th of July	Celebrate by feasting and dancing after good harvest	Over 3000	Membership to only non-farm holders	Indigenous	District	Members	Longer –since 1975	Formal
3 Frelimo	No direct activities but members feel it brings collective belonging, farms and homesteads. Brought donors for school construction	10 representatives and over 500 members	Open	Originated from Dar Es Salaam	Beyond Local	Members	Longer – since 1964	Formal
4 Ministry of Transport	Road construction and increased mobility		Open	State	Beyond Local	Road tools	Longer -1995	Formal
5 Ministry of Education	Education of children	3000 students from village	Open	State	Beyond Local	Student enrolment fees	Longer- 1975	Formal

Table 5. Information on the first five organisations ranked by the women

Organisation name	Main activities	Number of members (estimate)	Access (open or restricted to...)	Origin (indigenous, state, NGO, project)	Sphere of operation: community, local, beyond local	For community groups		
						Sources of funding (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
1 Farming Committee	Giving land to farms and providing capacity building to farmers	8	Restricted	State	Community	External	Longer	Formal
2 Frelimo	Initiating government projects like building schools and providing business loans	100	Open	State	Local	Members	Longer	Formal
3 Stique	Group that provides labour and pools money for shared resources	10	Restricted	Indigenous	Community	Members	1-5 years	Informal
4 Txova Txova	Capacity building on health and HIV/AIDS prevention	10	Restricted	Project	Local	External	Less than 1 year	Formal
5 Pang Fang	Family planning and community welfare	34	Restricted	NGO	Beyond Local	External	1-5 years	Formal

B. Organisational landscape of food security

The goal of this exercise was to get an improved understanding of how the organisational landscape contributes to the food security of the group. Food security is mostly measured at the household level. Nonetheless, community-level organisations and interactions influence the food security of groups within the community differently. Male and female participants were asked to discuss the concepts of food availability, access and utilization, and then review each organisation they had previously identified by asking which of them had activities that fell under these categories.

The men's discussion group identified 12 organisations, of which 25% are addressing food availability and food utilization. These organisations were the Ministry of Agriculture, Ncovothlo group and 24th July Community group. The women identified a total of 15 organisations out of which 40% are involved in food security. Of these 6, all but one address food availability. Overall, only 36% of the organisations identified by both men and women address food security and food availability is their main concern.

There are various types of linkages between the organisations engaged in food security issues. The links identified by the women's discussion groups are through capacity building and training. Many of the links were connected to Frelimo. In the women's view, the political party has a lot of influence and any agency working in the area must seek its clearance. The men were only able to identify links in food supply. The organisational landscape exhibited both horizontal and vertical links where horizontal links are links between organisations operating in the same sphere and the vertical links are between organisations operating across spheres. The men were able to identify a total of three links, with one being vertical and two horizontal. The pivotal point was within the locality. The numbers of links identified are few and indicate a low level of cooperation between stakeholders. The women identified five linkages in total, with two horizontal and three vertical. An analysis of the linkages suggests the political party and administration are at the centre of activities, which indicates civil society is weak or does not play a prominent role in development or specifically food security.

Participants were asked to define organizations involved in providing assistance in food crisis situations. The purpose of this exercise was to understand how organizations help people to cope under those conditions. The community associates food crises with a lack of rainfall and drought conditions. A memorable food crisis for the community was in 1983 when the crops failed and withered due to lack of rain and the community was forced to eat paw paws for survival. They made long queues at the bakeries for bread starting as early as 12 am. The men's discussion group was able to identify 4 organizations that addressed food crises while the women did not identify any. They identified: 24th July Community group; Save the Children-UK, Administrative Post and World Food Programme (WFP). The men also identified horizontal and vertical links between these groups during times of crisis. They reported the main difference between a food crisis and food security situations is that there is an increase in links during food crisis with the administrative post acting as the coordinator.

Figure 3. Organisational landscape of food security – men

Legend	
1	24 th July community group
2	Ncovothlo group
3	Save the Children, UK
4	Ministry of Agriculture
5	Ministry of Fisheries
6	Ministry of Transport
7	Ministry of Education
8	Ministry of Health
9	Administrative Post
10	Policia
11	Frelimo Party
12	World Food Program

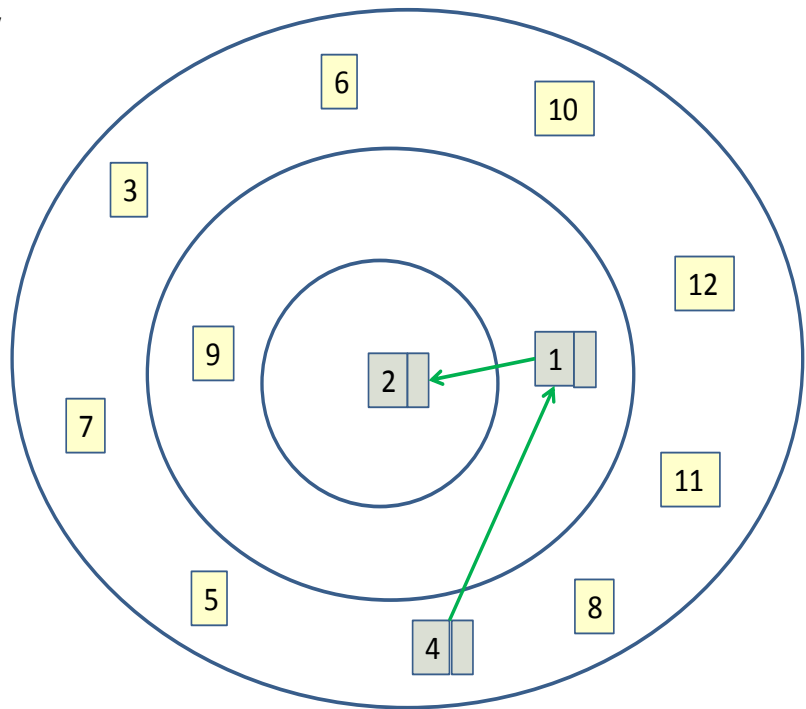
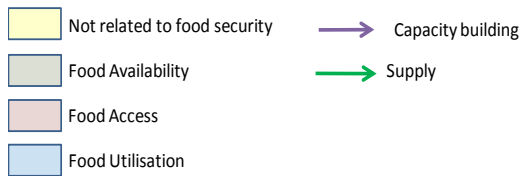
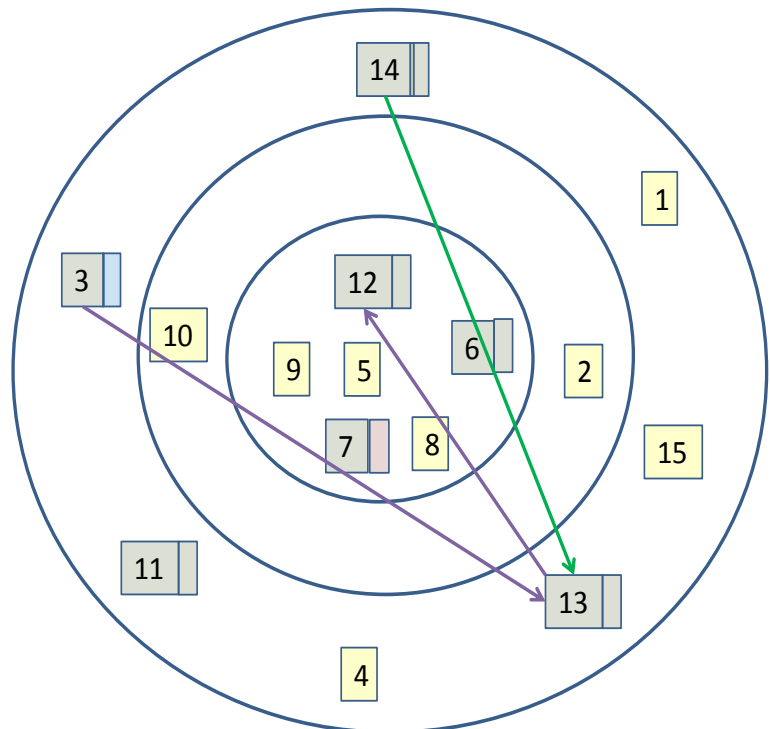


Figure 4. Organisational landscape of food security – women



Legend	
1	Save the Children
2	Txova xova
3	Pang fang
4	OMM
5	Pou panca
6	Matsumi
7	Stique
8	Nkuvu
9	Nlhawa
10	Nkuvu
11	Agriculture
12	Farming Committee
13	Frelimo
14	MIA
15	Local Government



C. Organisational landscape of natural resource management

In this section, the organisational landscape in relation to NRM is discussed. Specifically, what organisations were actively working to protect the environment, manage natural resources, etc.? The process entailed asking the group to highlight what organisations are involved in the management of natural resources in the community; developing a list of natural resources important to the livelihoods of the community; and asking the group to decide on a symbol for each type of natural resource listed.

The men identified 4 organisations engaged in NRM, half of which operate within the locality and half beyond the locality. The women identified 5 organisations involved in NRM and more than half operated within the community. Among all the NRM focused organizations, they operated equally between the three spheres. The number operating at the community level are indicators of a high level of community participation in natural resource management, which improves adoption and sustainability of interventions. NRM organizations operating beyond the locality are also valuable as sources for local capacity building and resource mobilisation. Three linkages that focused on seed supply and capacity building were identified by the men’s group, which all link to the administrative post. Most of links noted by the women are vertical while those identified by men are horizontal.

Figure 5. Organisational landscape of natural resource management – men

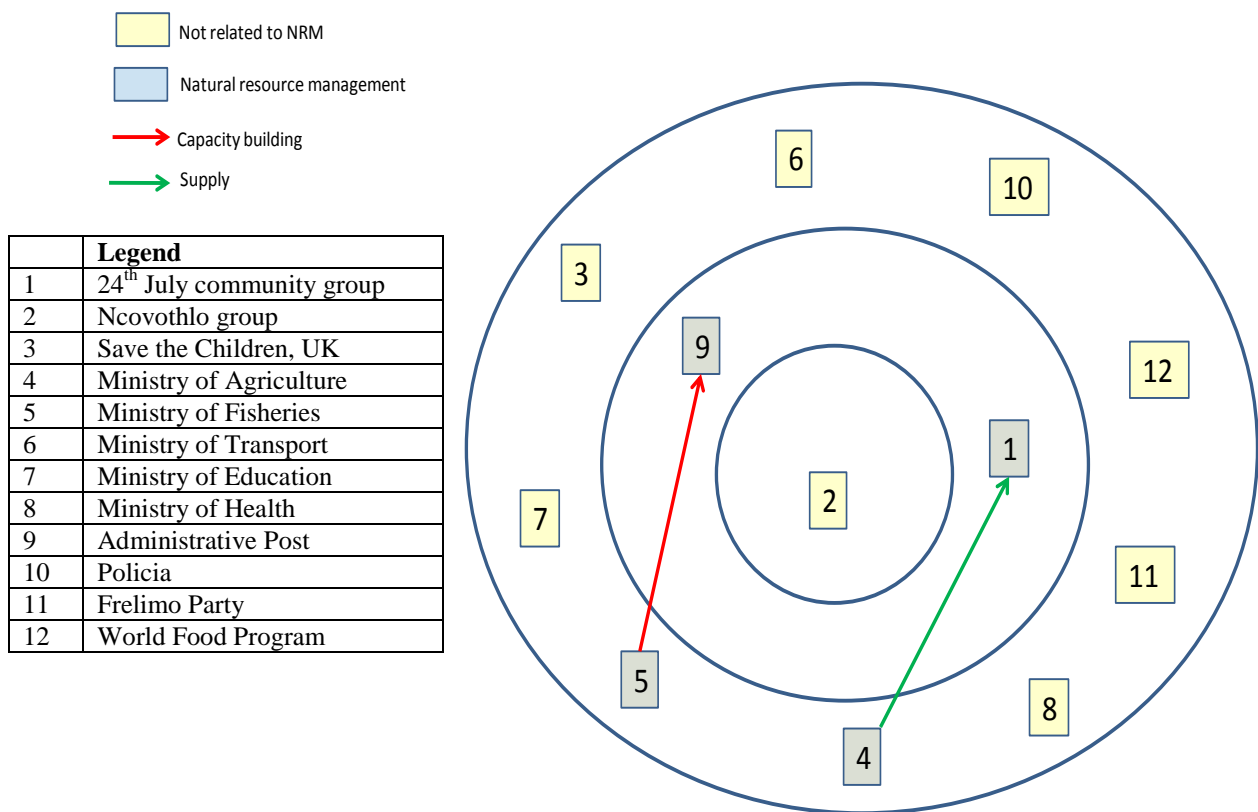


Figure 6. Organisational landscape of natural resource management – women

Legend	
1	Save the Children
2	Txova xova
3	Pang fang
4	OMM
5	Pou panca
6	Matsumi
7	Stique
8	Nkuvu
9	Nlhawa
10	Nkuvu
11	Agriculture
12	Farming Committee
13	Frelimo
14	MIA
15	Local Government

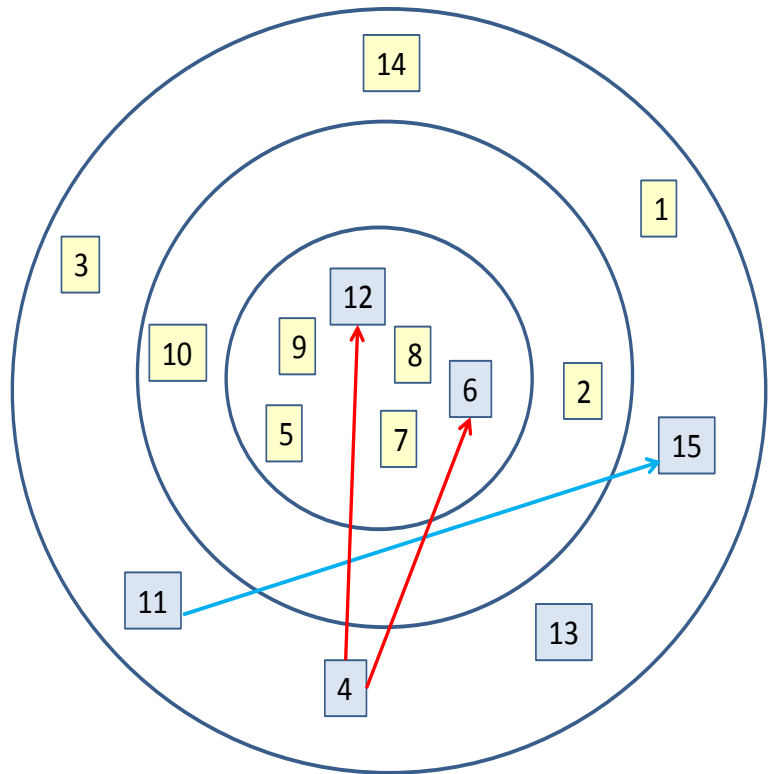
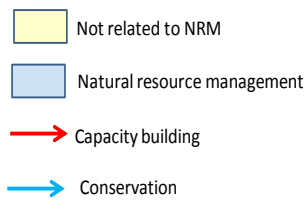


Table 6 below summarizes information on all the organisations identified separately by male and female participants. The organisations are classified according to their role in supporting food availability, access and/or utilization, as well as the provision of relief in times of food crisis, and the management of natural resources.

Table 6. Information on highlighted organisations of men and women (1=yes, 0=no)

Organisational Landscape Name of organisation	Men					Women				
	Org. ID by men	Sphere. 1=Village 2=Locality 3=Beyond locality	Food security	Food crisis	NRM	Org. ID by women	Sphere. 1=Village 2=Locality 3=Beyond locality	Food security	Food crisis	NRM
1. 24 th July	1	Locality	1	1	1	0				
2. Ncovothlo Group	1	Village	1	0	0	0				
3. Save the Children UK	1	Beyond locality	0	1	0	1	Beyond locality	0	0	0
4. Ministry of Agriculture	1	Beyond locality	1	0	1	0				
5. Ministry of Fisheries	1	Beyond locality	0	0	1	0				
6. Ministry of Transport	1	Beyond locality	0	0	0	0				
7. Ministry of Education	1	Beyond locality	0	0	0	0				
8. Ministry of Health	1	Beyond locality	0	0	0	0				
9. Admin. Post	1	Locality	0	1	1	0				
10. Police	1	Beyond locality	0	0	0	0				
11. Frelimo	1	Beyond locality	0	0	0	1	Beyond locality	0	0	0
12. World Food Program	1	Beyond Locality	0	1	0	0				
13. Txova Txova	0					1	Locality	0	0	0
14. Pang Fang	0					1	Beyond locality	1	0	0
15. OMM	0					1	Beyond locality	0	0	1
16. Poupanca	0					1	Village	0	0	0
17. Matsumi	0					1	Village	1	0	1
18. Stique	0					1	Village	1	0	0
19. Nkuvu	0					1	Village	0	0	0
20. Nlhawa	0					1	Village	0	0	0
21. Agriculture	0					1	Village	1	0	1
22. EMCEP	0					1	Beyond locality	0	0	0
23. Farming Committee	0					1	Locality	1	0	1
24. MIA	0					1	Beyond locality	0	0	0
25. Local Admin.	0					1	Village	1	0	1
TOTALS	12	Village=1 Locality=2 Beyond locality=9	3	4	4	15	Village=7 Locality=2 Beyond locality=6	6	0	5

Topic 3: Information networks

The aim of this exercise was to understand the diversity of options people use for accessing information on agriculture and weather; how people take advantage of sources of information available, and if some sources are not used and why. We want to describe networks of how people access and share information within the community.

The two groups identified several sources of information, with the men citing more than the women. The source of information that is most frequently used is the farmer, followed by Radio Xai Xai. Farmers provide a range of knowledge, including the start and end of seasons, droughts, floods, wind, frost, bird management, and seed types and benefits. The government is also a significant source of information especially warnings on adverse weather conditions. The local administration calls community meetings so these are a closely tied source of information. Other organisations provide some access to diverse advisory services.

Table 7. Networks of information

Source	Topic (women)		Topic (men)					Total
	Weather related info	Seed	Weather related info	Flooding	Crop Disease	Crop Types	Seed Types	
Individuals								
Elders	1	1	0	0	0	0	0	2
Farmers	0	1	1	1	1	1	0	5
Organizations								
MIA	0	1	0	0	0	0	0	1
Agriculture	0	0	0	0	0	0	1	1
Frelimo	1	0	0	0	0	0	0	1
Government	0	0	1	1	0	0	1	3
Local Government	0	0	1	0	1	0	0	2
Media								
Radio Xai Xai	0	1	1	1	1	0	0	4
TV	0	0	0	1	0	1	0	2
Other								
Community Meetings	0	0	1	0	1	0	1	3

Conclusion and recommendations

Zongoene village and its five Bairros are located along the coast and in an area that used to be forested and comprised of dispersed settlements. The current village pattern is the result of a deliberate government effort to make people live together to ease service provision. The main community resources are the wetlands, forests, farmlands, sand dunes and infrastructure. Nonetheless, the level of service provision remains very low in spite of the people having moved into the village. Roads, wells, schools and hospitals remain inadequate and in poor condition. The village's resources are also their source of vulnerabilities and challenges due to changing environmental conditions and population pressures. Its proximity to the coast and Limpopo River leaves it vulnerable to flooding and sand incursion from dunes. Flooding in certain areas frequently destroys crops. In addition, sand impacts soil composition resulting in lower crop yields and has overrun a village water source. The dunes provide a barrier from much of the coastal weather, however they are not preserved and are stripped as sources of construction material.

Wetlands have provided a historical source of rice however diversified food production including maize and citrus is left to occur on marginal sandy soils surrounding the village or on more fertile land in cleared forests. As the population grows and demand for food increases, the wetlands and forests are vulnerable. In addition to land, forests provide sources for timber, firewood and charcoal. The community also reports that along with flooding, lack of rainfall and variable conditions impact their food production. Given the combined pressures Zongoene is food insecure and is not producing enough to meet the needs of its growing population. The village is not engaged in commercial agriculture and the local area market is a source for only basic items. With an expansion of improved farming technologies and practices there is potential to diversify and increase production as the village currently uses traditional practices and hand hoes for rice and other crops.

A total of 25 organizations were identified by the community. Out of this total, 12 were identified by men and 15 were identified by women. Two of the organizations were identified by both groups. More than half (52%) of the organizations are operating beyond the locality, 16% within the locality and 32% within the community. Their activities address social, economic and environmental issues. Further analysis indicates that 80% of these activities address social concerns, 50% address economic concerns and only 10% address environmental concerns. Among the limited organizations targeting NRM, they were evenly spread between the village, locality and beyond the locality. Food security is addressed by only 36% of the organizations identified by both men and women. The aspect of food availability is given attention by more groups than all the other aspects. The difference between food crisis and food security situations is that there is an increase in linkages during food crisis. The community, however, reported that during times of floods or food crises there was either little or no increase in assistance from the government or organizations. Analysis of the linkage points among all identified organizations shows the political party and the administration at the centre of activities. This is an indication that civil society is weak or does not play a prominent role in development or specifically food security. The local government has the capacity to mobilise the community given their direct contact and findings highlight the local administration provides a significant link for other organisations operating in the area.

Farmers, Xai Xai radio, government and community meetings were cited as major sources of information. Farmers are the most important source and share knowledge on weather, planting, seeds and cultivation. Government provides valuable information regarding adverse weather events. None of the organisations identified by the discussion groups addressed marketing of farm produce. The information networks indicate that farmers sought information on seed types but not on marketing due to lack of surplus. However even in the case of fruits where there was plenty of surplus there are no indications of farmers seeking market related information. The organisational landscape indicated several organizations addressing environmental protection through increased tree planting, however the community did not report seeking out information on tree planting. Conversely, there is little effort by area organisations to address expansion and commercialisation of rice farming. Farmers rely on more experienced fellow farmers for that information.

Implications for CCAFS

Food security and NRM are significant issues for Zongoene, which are exacerbated by poor access to services, information, and markets as well as climate variability and severe weather events. Without interventions the village's expanding population will face increasing challenges securing enough food while preserving its surrounding ecosystem. There are numerous ways in which CCAFS and other organizations can support the village.

Research and development activities could benefit the community by looking at how to increase food production, improve food security, expand market access, sustainably utilize available resources and improve service provision. Food production and food security could be improved through the use of mechanisation and improved farming techniques to increase yields, production diversification into maize, onion, potatoes and bananas, greater soil management, introduction of fish farming (already being supported by local universities), strengthened post harvest storage, and sustainable land use system development. Value addition through rice and citrus processing offer an opportunity for income generation and better use of available resources. Increasing market access can come from

expanding producer groups, linking producers to agribusinesses and tourist markets, and improving infrastructure. The village has recent access to electricity that can be leveraged but continues to need better roads to connect with markets. More broadly, improved schools and hospitals will allow for a more educated and healthy population that can more actively and effectively engage in community development. With a system developed for protecting Zongoene’s wetlands, forest, dunes and water sources, natural resources can be maintained while meeting the needs of an expanding population requiring food security and viable land for sustainable production.

Improving access to knowledge and information will benefit the community given local knowledge is limited and community members largely rely on each other as sources. There is a need for increased capacity building and targeted interventions at the village level, with an increase in organizations operating locally to address food security and NRM as well as improved linkages among organizations. Given the village is vulnerable, organizations can make greater efforts to mitigate the severity of shocks and limit their potential occurrence. In addition, as the local administration was identified as dominating village activities other local organizations can be more proactive in taking action and mobilizing resources. The local administration is a key resource in mobilizing the village, however other potential partners exist and there is the need for an expanded organizational landscape.

Among the organizations noted by the groups, those presented in Table 8 are of particular interest for CCAFS. Given the implications for CCAFS and the identified challenges for Zongoene, Table 9 provides a summary of targeted recommendations based on opportunities.

Table 8. Potential CCAFS partners

ORGANISATION	SPHERE OF OPERATION	ACTIVITIES	STRENGTH
Eduardo Mondlane University	Beyond Locality	NRM and agriculture	Aquaculture
University of Zambezi	Beyond Locality	NRM	Aquaculture
Ministry of Agriculture	Beyond Locality	Agriculture	Agriculture
Ministry of Fisheries	Beyond Locality	Fisheries	Aquaculture
Save the Children	Beyond Locality	Schools, nutrition, etc	Local knowledge
Local Administration	Village	Coordination and information sharing	Local knowledge

Recommendations for major opportunities

Table 9. Recommendations for major opportunities

Gaps in knowledge/ current constraints that could provide opportunities/niches for CCAFS and partners	Opportunities for Research (CCAFS)	Opportunities for Action Research (CCAFS partners)	Development Interventions (Partners)
1. Draining wetlands to expand land for rice cultivation	X		X
2. Post harvest handling and processing of fruit		X	X
3. Collective action		X	X
4. Local ecotourism			X
5. Forest conservation	X	X	X
6. Information sharing platforms	X		X
7. Village savings programs		X	X