

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

**Village Baseline Study:
Site Analysis Report for Kollo – Fakara,
Niger (NI0111)**

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The detailed tools and guidelines used for the implementation of the village baseline study across all CCAFS sites, as well as the mapping outputs of topic 1 at a higher resolution can be accessed on our website (<http://ccafts.cgiar.org/resources/baseline-surveys>).

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Abstract

The village baseline study of Tigo Zéno village in the CCAFS benchmark site Fakara in Niger took place from 23th to 25st June 2011. Focus group discussions were conducted separately for men and women.

Tigo Zéno's natural resources are degraded, with sparse tree population. Water is scarce and temporary, the farmlands have eroded, and soil is infertile with low productivity. People are particularly concerned about the presence and expansion of gullies ("koris") that have created uncultivable areas, major declines in soil fertility, destruction of crops during serious overflow of ponds and heavy rainfall, and significant reduction in the size of farmlands, especially those belonging to women, who have smaller farmlands than men.

The study participants' long-term vision for their village is to reduce and minimize the koris, restore the general vegetation cover, reduce the area under cultivation and intensify production through the use of better agricultural and livestock practices, and protect the trees. Significantly, the participants' vision also includes reducing human population growth and limiting migration from rural areas, including the lengthy seasonal outmigration of men.

The men identified 11 organisations working in the areas of food security and natural resource management in the village, while the women identified 15. Extension services work exclusively with men although women produce sesame, groundnuts and cowpeas. The most important sources of information are individuals and the radio.

Keywords

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

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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 the Earth System Science Partnership (ESSP) to help the developing world overcome the threats posed by a changing climate, to achieving food security, enhancing livelihoods and improving 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.

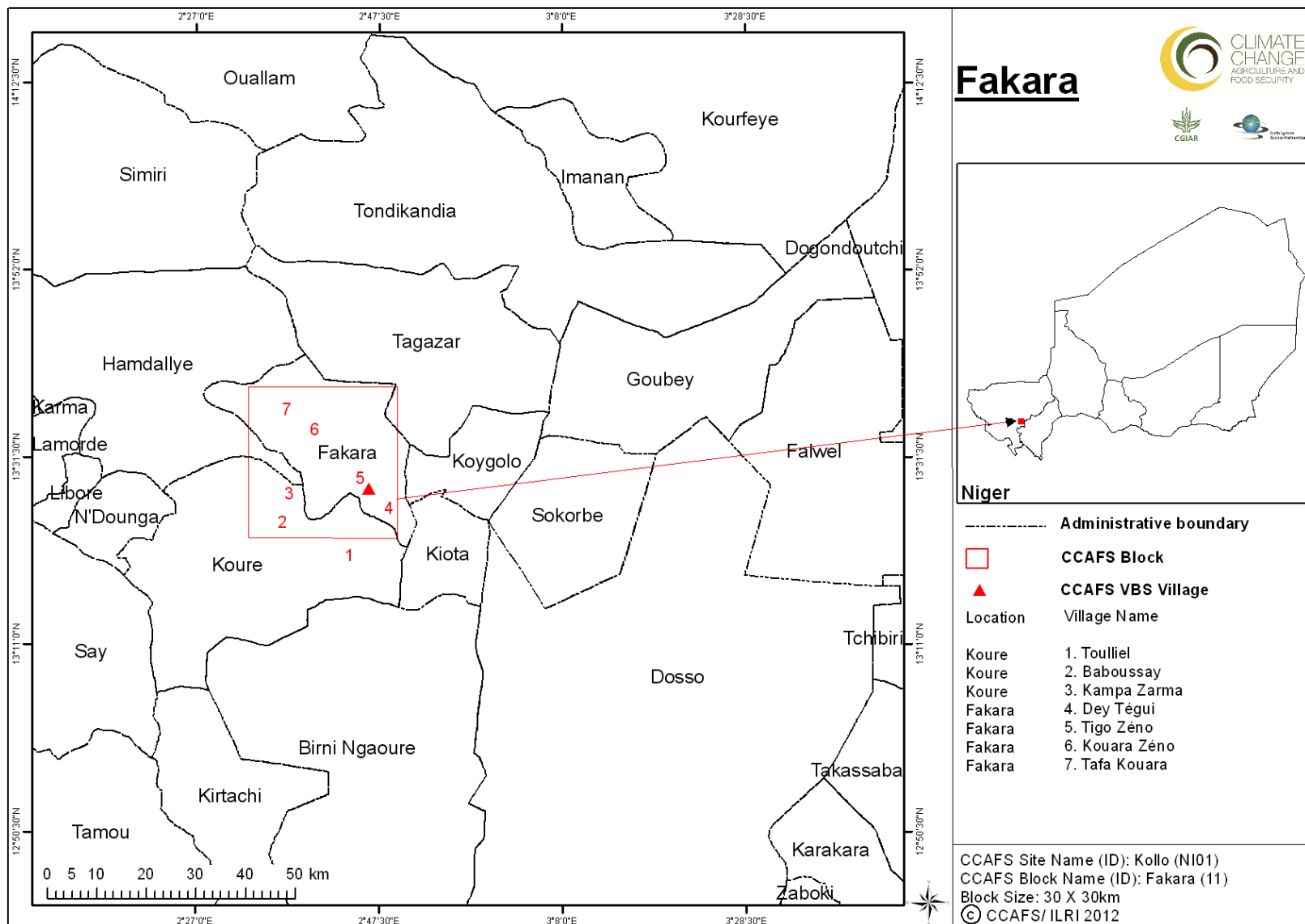
The focus of this site analysis report is the village baseline study (VBS). To date, fifteen VBS were conducted in the three CCAFS regions. The VBS aims to provide baseline information at the village level about some basic indicators of natural resource utilisation, organisational landscapes, information 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 village baseline study 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 village baseline study 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 Tigo Zéno village in the CCAFS benchmark Fakara site, Niger



This report presents the results of the Village Baseline Study (VBS) conducted on June 23 to 25, 2011 in the village of Tigo Zéno, Niger (Map 1). The village geocoordinates are 13.470, 2.771. The local team leader, in collaboration with the required authorities and resource persons, identified the Tigo Zéno village as a study site on 10 May 2011. Tigo Zéno is one of the 7 sample villages included in the household baseline study. It is situated near the centre of the block. The number of households in the village is almost the same as the average number of households of the 7 villages. It is relatively easy to access the village. On the 18th and 19th of June the local team and the two translators contacted the village authorities about the impending survey to ensure proper entry into the village. The actual village study took place four days later.

At the start of the first day, Moussa Boureima, the local CCAFS team leader, facilitated a village public meeting at the village chief's court. In the meeting the team leader introduced the regional team members, presented the working program for the three-days of data collection, explained the approach for the formation of the men and women groups for the three-day exercise, and presented a brief summary of the results of the household survey.

The community chose two classrooms in the village primary school for the data collection activity. Two separate groups of men and women met. On the first day, the CCAFS team introduced the participants in each group to a satellite image of the block and worked with them 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 initial diagrams were drawn on the floor using chalk and discussed by the group to arrive at a consensus before being transferred to paper.

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

The team carried out two main tasks on day three. First, it worked with each group to define the sources of information that the participants use to make decisions on agriculture. The outputs were diagrams. Second, the team brought the two groups together and generated a vision of what the community would imagine their village to be like in the future. The output was a map/sketch showing "the vision of the community."

The following summary of the household level baseline findings was presented to the community members on day one. The team leader explained that the household baseline survey was conducted in January 2011 and included 140 households in 7 villages of Fakara, namely: Touliel, Baboussay, Kampa Zarma, Dey Tegui, Tigo Zéno, Maourey Kouara Zéno, and Kida Tafa Kouara. All households cultivated millet, sorghum and cowpeas, as well as up to 3 more additional crops, all primarily for domestic consumption. Agricultural productivity is low, and most households are unable to meet their most important food needs, and supplement their resources through purchase, diverse social exchanges or harvesting of non-timber forest products. The majority of farmers also reared small ruminants. Households do not have many sources of income.

The average farmland area is about one hectare. In the last 10 years some households have introduced terraces, stone barriers, hedges, contour farming, and crop rotations to their farming. About half of the households use manure to fertilize their farms. A few use mineral fertilizer and purchase veterinary products for their livestock. None has access to agricultural credit, or has adopted improved water-management techniques or agroforestry. The few trees available in the area are exploited for firewood, the only energy source for the households, and for timber. Charcoal production and bee keeping are limited due to the scarcity of trees. The large majority of the households do not own any means of transport or a generator for the production of electricity.

The majority of households do not belong to any formal community group. Half of the households declared that they received assistance from friends, family members and neighbours when faced with a climate-related crisis over the last 5 years. Most households acknowledge having received weather information from the radio in the past months but the information is accessible mainly to the men.

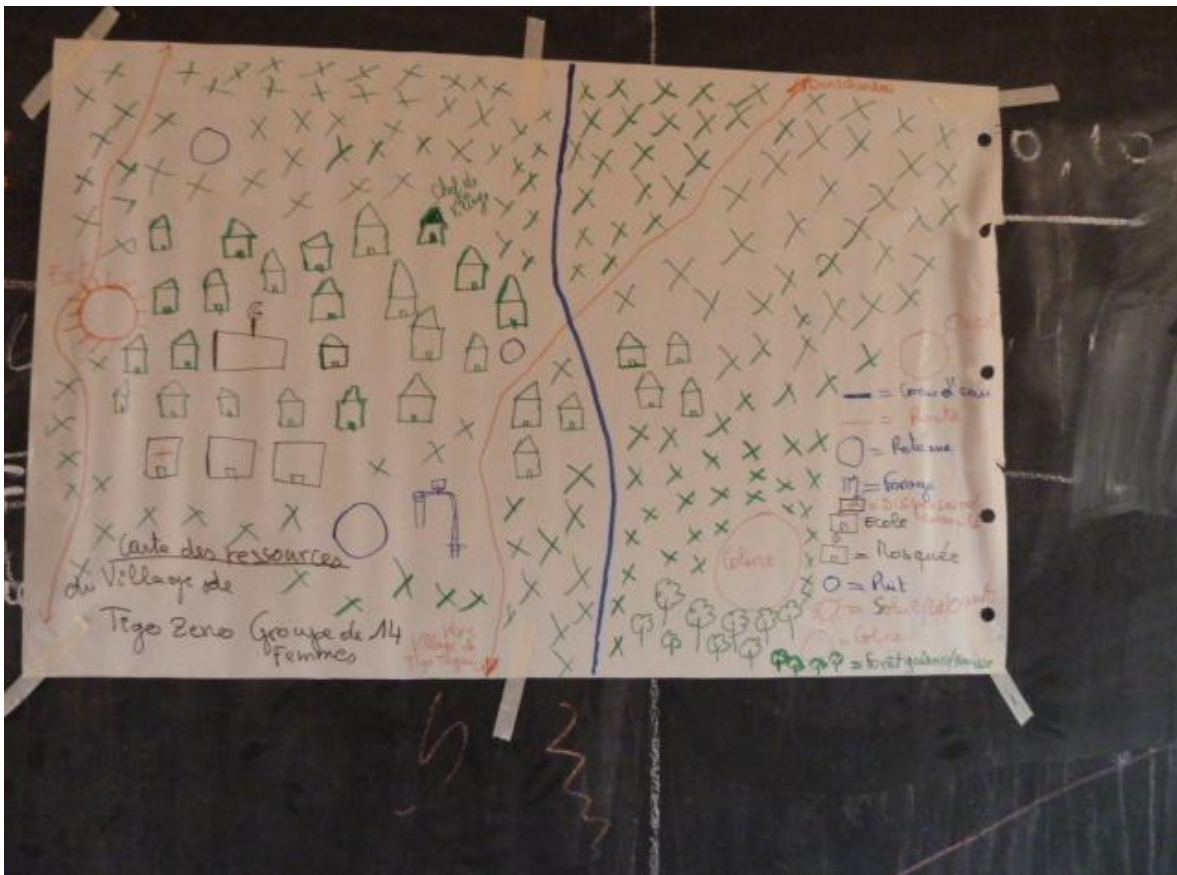
Topic 1: Community resources - participatory satellite imagery interpretation

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. Another 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>).

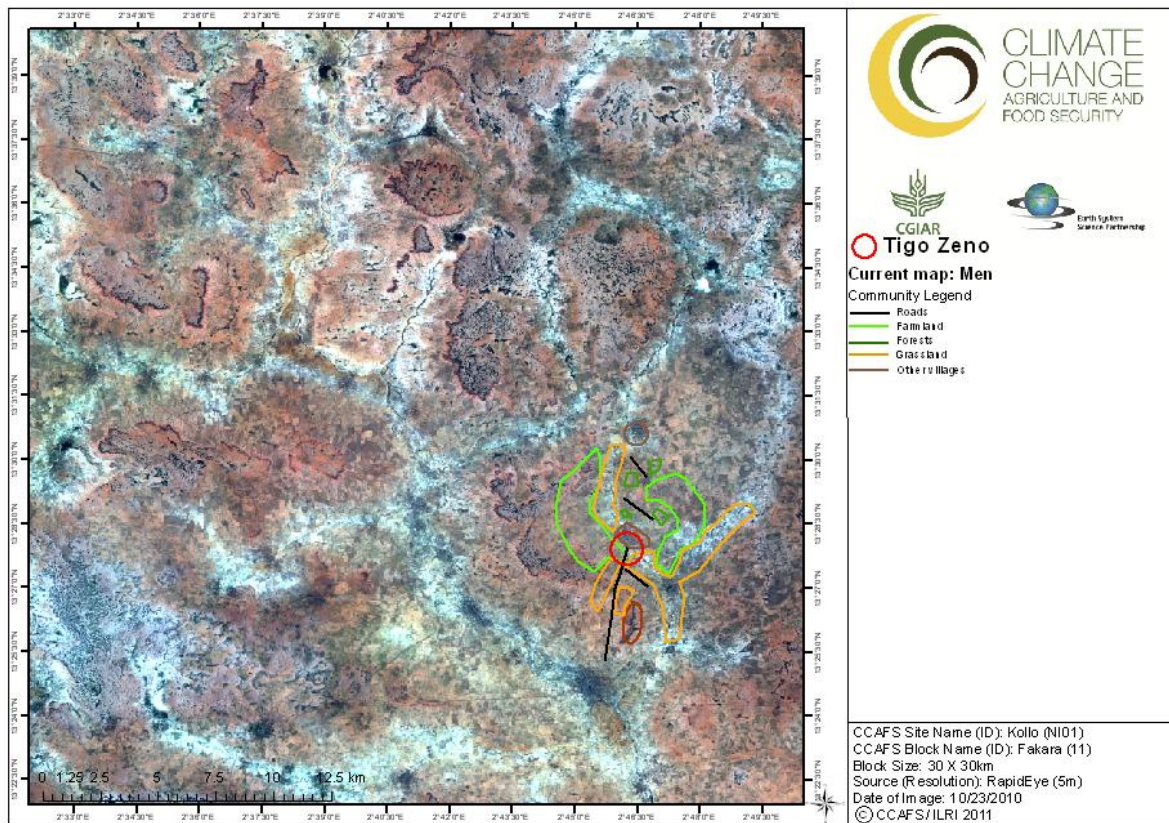
A. Current resources

Separate groups of men and women drew maps on the ground outlining the main landmarks in the village, including the natural resources and infrastructure (road, school, religious buildings, etc.). The resulting sketches were transferred onto flipcharts (Photo 1). The CCAFS team then placed the satellite image on a wall facing the participants, and asked them to point out their village and current location on the image. Once the participants established their bearings on the satellite image, the team positioned a piece of tracing paper on top of the satellite image, asked the participants to identify on the satellite image the landmarks they had previously drawn on the ground, and recorded those landmarks on the tracing paper. The resulting maps of current community resources were later processed and are presented below (Maps 2 and 3).

Photo 1. Initial community resources map drawn by women, transferred to flipchart



Map 2. Men's map of current community resources



Map 3. Women's map of current community resources

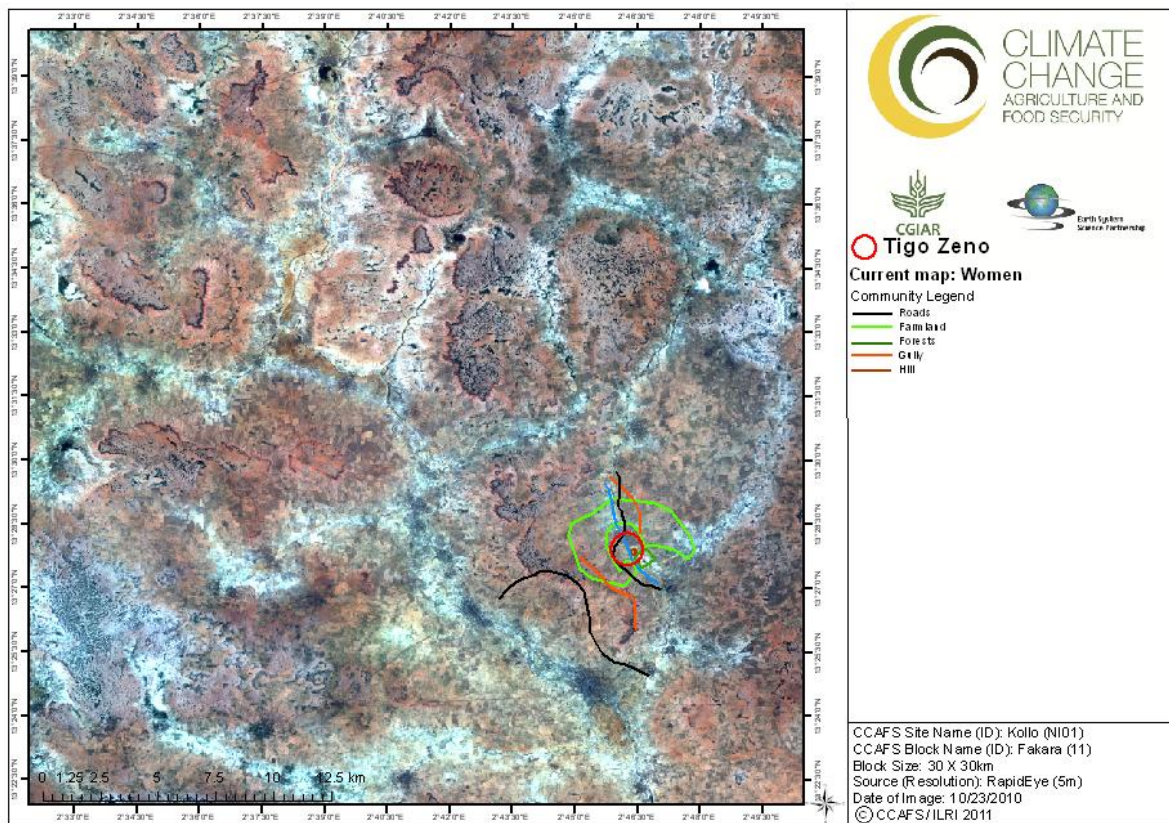


Table 1. Summary of current situation, as perceived by men (M) and women (F)

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Forest/ reserve (F)	Harvest non ligneous forest products for consumption, treatment of humans and animals, and collection of firewood and timber	Hill forest	Very poor and sparse. Turned into a bush of some sort.	15 minutes walk	Free access, unusable for agriculture			No hindrances since there are no harmful wild animals
Big isolated trees (M)	Timber for making hoes, roofs and granaries. Use of fruits	Outside the village	Many trees but degraded.		Trees looked after in family farmlands are private. Other trees belong to the community	Shelter for animals, soil fertilization, and home for birds		Birds that live in the trees eat harvested produce
Farmland (F)	Farmlands on small plots of land. Sesame, groundnuts, and okra cultivation	Homestead, village and bush farmlands.	The farmlands are degraded. Major drop in soil fertility levels. Plots allocated to women by their husbands are too small	5 mins to 45 mins	The farms are inherited by men who give a small portion to their wives		Practice of intensive cultivation of groundnuts, cowpeas, and millet	Women have small plots, and lack financial means.
Farmland (M)	Farms and crops for food	Around the village to a 5 km radius	Poor soil. Degraded	1 to 5 km	Community Family	Presence of useful tree species. Farm residues for the livestock (cowpeas, sorrel)	Satisfaction of food needs for 5 months out of 12 in a year.	Presence of degraded land (koris), and uncultivable areas (terrace)
Grassland/ Open field (M)	Gathering of fresh and dry fodder (grass) depending on the season for animals. Pasture for animals	Several localities: Kokiri, Koubié, Tondikiré, Guirikadou	Poor quality pasture	10 min to 1 hour depending on the site	Community	Soil fertility improved with animal dung during grazing. Wind breaker	Use of medicinal plants (herbs)	

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Rivers (F)	Horticultural production, brick making for building houses, watering of livestock, bathing, washing	Tigo Zéno river	Drying up increasingly earlier. Silting and reduction of the riverbed as a result of wind erosion. Heavy dependence and use of this resource		Free access to water	Micro climate, biodiversity	Developing gardening and fishing	Insufficient water due to ever increasing needs.
Borehole (F)	Drinking, cooking, washing clothes, bathing	Tigo Zéno borehole	In good order but the output has reduced since the construction of the water tower	5 mins on average	Free access, free of charge	Retention of rain water, micro climate	None	Water insufficiency due to growth in needs
Well (F)	Drinking, cooking, washing and horticultural production	Tigo Zéno well	2 are still in working order but one has dried up because of the passage of time and low rainfall while the 3 rd well does not function properly.		Free access			
Ponds (M)	Brick making, watering of animals	Three ponds: Djokoratou, Gorou, Deyzenabo	Big, medium, small. Sometimes levels are high and create flooding.	2 min	Community management. Free access by the community		Availability of water for making bricks	Children drown when water levels are high. Presence of mosquitoes (malaria). Destruction of crops in case of flooding
Pond (F)	Vegetable production. Watering of animals at the water reservoir	Tigo Zéno pond (near the borehole)	Small. Low availability of water	Average 5 mins	Free access, no charges	Retention of rain water, micro climate	None	

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Roads/Paths (M)	For accessing surrounding villages and farmlands	Road to Tolokoaré, Kiétano, Koubié, Guerkadou, Tigo Tegui, etc.	Average but impassable during the rainy season (flooding)		Community	No environmental benefits	The village is rendered more accessible. Transportation of people	
Roads (F)	From Tigo Zéno towards other villages	North road and East road	Deteriorated and in a poor state		Easy access		Trade and different kinds of movement	
Gullies (F)	Unnecessary	Tigo Zéno ravines	Increasingly deeper and wider					
Degraded land (Koris) (M)	No use	Goroubé, Daguéri Kato, etc.	Expanding in size	3 min or more	No management or ownership	Filling the ponds with water	No opportunity	Animals falling into the “koris”. People unable to cross during the rainy season. Uprooting of trees around the “koris”

Depending on the groups, different terms were used to refer to the water resources (ponds, rivers or water reservoirs) or to vegetation (grasslands, isolated trees, scattered forest, reserve, and bush). The men and women involved in the village study also had some difficulties in determining environmental benefits, which they confused with the uses made of the resources.

Women identified a former forest reserve not used for agriculture (for supernatural or cultural reasons), which has now become a sparse bushland. Vegetation is characterized by some isolated trees and a previously degraded forest, currently resembling a bush with no use for agriculture.

Surface water is scarce and temporary. Both women and men identified a water reservoir fed by the flow from the borehole, boosted by rainwater during the rainy season. They also mentioned a borehole and two large, wide wells (a third well dried up and is therefore out of use), and three small, medium and large ponds. These water resources are managed by the community and are freely accessible.

Previously, farmlands were located only around the huts or households, and only a few were on the fringes of the village. Currently, due to the relatively high rate of population growth and the need for more farmland, the farmlands have increased in size, and expanded as far as bushland such as Tchetau, Gueri Kadou, Koubiye and Koubou banda in the north, Cothiri in the South East, Kourey tandi in the midwest, Tandi tchirey and Gorou in the northeast.

Male and female participants described farmlands as characterized by poor, degraded soil that was worsened by gullies. The degraded lands were in hilly zones (one identified by the women and another by the men). Women identified one large gully, while men identified 3. For both men and women, gully formation has destroyed farmlands and reduced the area of land for cereal production.

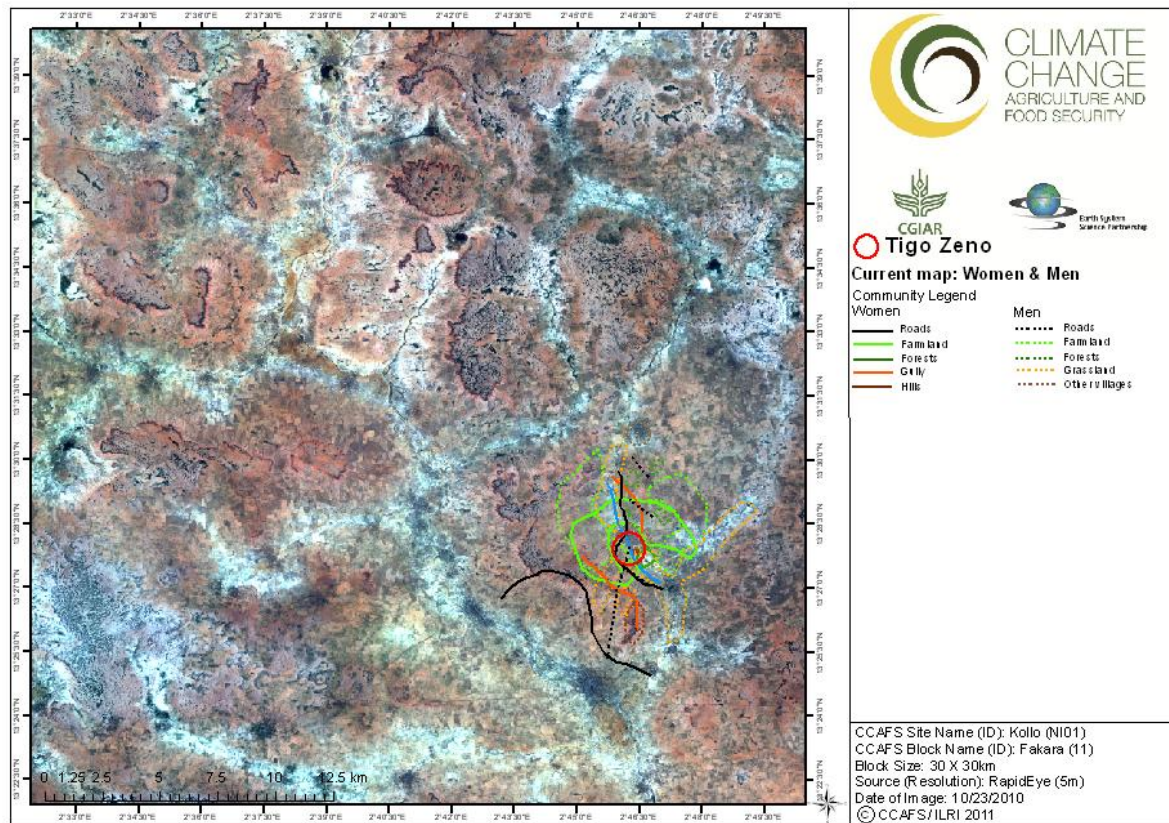
The infrastructure is limited to two main roads complemented by village paths, a school with 3 classrooms (one of which is made of straw), and a health centre—referred to as a "health hut"—consisting of a dispensary and a maternity. The village has no market. The community goes to markets in neighbouring villages, notably Dantyaoundou.

B. Gender-differentiated comparison of current conditions

Notwithstanding the similarities between the observations of men and women, men and women perceive the resources in the community differently according to their experience. For example, the women see a degraded forest in what the men call big isolated trees. Where the women see a river, the men see huge gullies or ponds. Men mentioned the grassland, but women did not. The opposite happened with the well, which was only mentioned by women. One must bear in mind that men do not go to the well because fetching drinking water is a socially defined woman's role. Likewise, given that certain women practice sheep fattening, they do not go the grassland or to the open field, and therefore grasslands are not a "resource" for them.

The sizes of farmlands are much bigger for the men than for the women. The kinds of crops cultivated also differ depending on gender: women grow oilseed plants (cowpea, sesame, and groundnut) and the men grow cereals (millet and sorghum in low quantities). Map 4 below compares the current resources identified by male and female participants.

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



C. Major changes of resource conditions

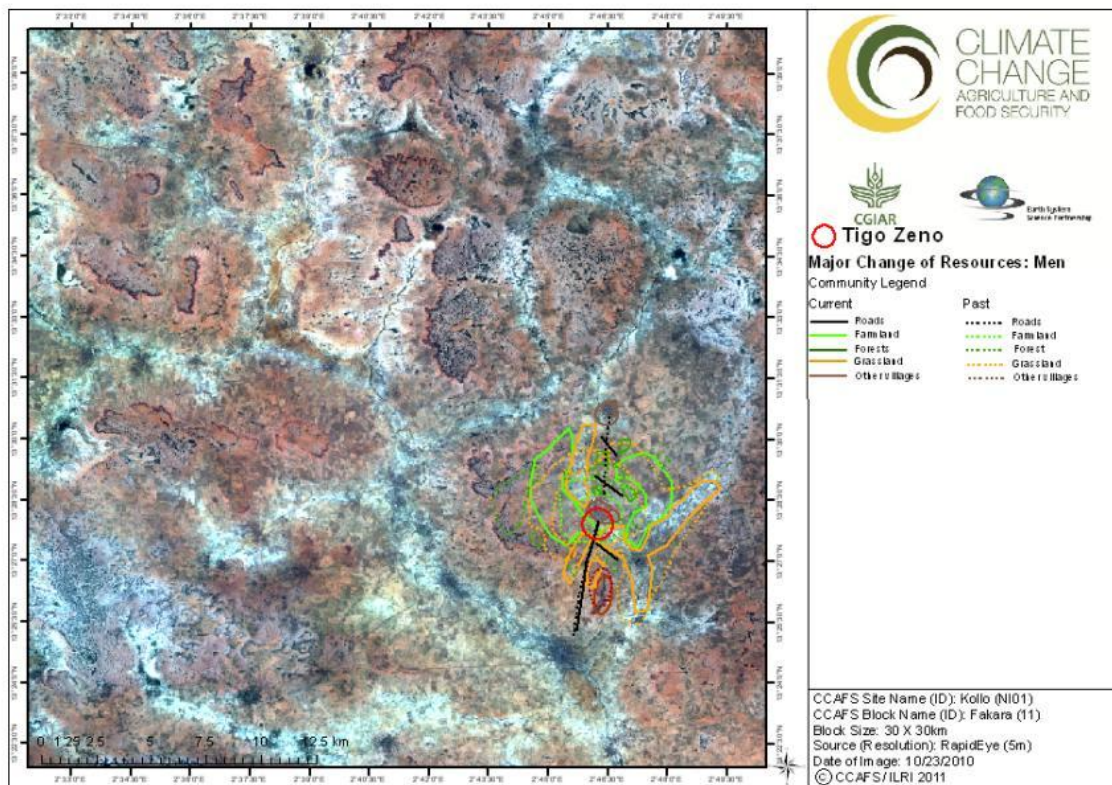
Participants were asked to consider the resources they had in their community, to discuss the history of land use, and to identify major changes that had occurred in the landscape in the past 10 years. In addition, they were invited to examine how the resources got to the current condition and the major drivers of those changes; as well as the opportunities and constraints into the future. In the following pages the results of those discussions are summarized both on maps traced on top of the satellite images for the village (Maps 5 and 6), and Table 2 that includes the major changes and drivers of change, as perceived by male and female participants.

Generally speaking, the major changes focus on degradation of farmlands and other resources; insufficient natural resources and infrastructure vis-à-vis the production needs; qualitative and quantitative depletion of vegetation cover and pasture; increase of total cultivated area, but reduction in the average area per farmer due to high population increase; creation of gullies, and siltation of rivers. The presence of gullies or koris, which is increasing progressively, has the following negative consequences: the existence of uncultivable areas (terrace), major decline in soil fertility, destruction of crops during serious overflow of ponds and heavy rainfall (flooding); uprooting of trees surrounding the koris. The existence of koris reduces the already small size of farmland under cereal cultivation, especially those belonging to women. Hence, it creates pressure for land in general, and worsens the poor access to land by women. In addition to creating production constraints, koris represent risks to humans, animals and the economy of households. Children drown during flooding events, animals fall into the crevices, and roads are cut off during the rainy season.

Neither men nor women mentioned actions that they would take for restoration of natural resources. They lack financing for proper infrastructures and actions that could mitigate the effects of these constraints.

For both the men and the women, the roads are no longer visible.

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



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

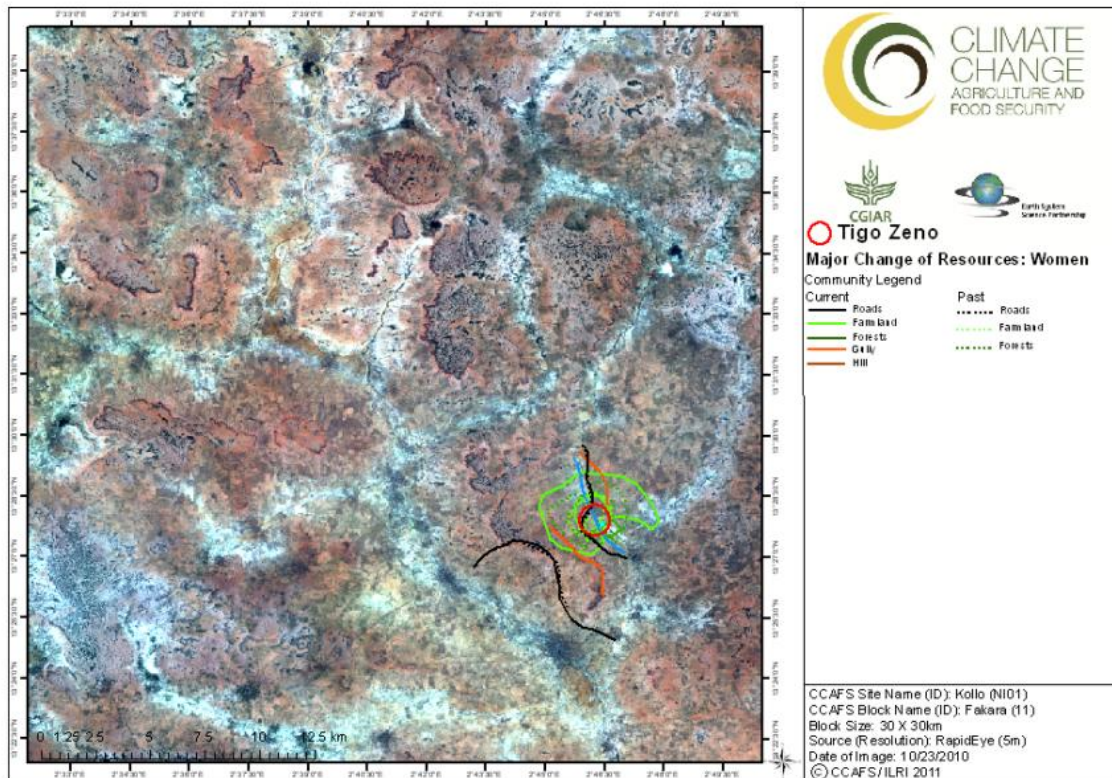


Table 2. Major changes and drivers of change in the last 10 years, as perceived by men (M) and women (F)

Land cover class	Past state	Current state	Drivers of change
Forest (F)	Very dense	Sparse and in poor quality. Forest has turned into bush land.	Indiscriminate felling of trees. No reforestation. Drought.
Big isolated trees (M)	Abundant.	There are still many trees but degraded.	Continuous drought for 2 consecutive years. Community allows individuals to cut trees for sale.
Farmland (M)	Soil was more fertile and profitable.	Poor fertility soil. It is degraded	Population growth. Reduction in rainfall. Slash-and-burn farming.
Farmland (F)	Land was more fertile.	Farmlands are degraded and with major drop in soil fertility levels.	Non-usage of fertilizers. Soils get depleted. Poor access and lack of transportation. Financial pressure
Grassland/open fields (M)	Vast, provided well for livestock	Poorer quality pasture	Population growth and increase in area under cultivation. Drought for 2 consecutive years.
River (F)	Big and deep river with fish	Drying up sooner than in the past. Shrinkage of water source and disappearance of fish.	Human pressure. Silting, in filling with sand and reduction of the riverbed due to wind erosion.
Ponds (M)	There were big, medium, small ponds.	There are still big, medium, and small ponds. Water levels are sometimes high and create flooding.	Increase of degraded land. Disappearance of trees via charcoal production by people from Niamey.
Ponds (F)	Small	Small. Low availability of water.	
Wells (F)	There were 3 wells where water was available in all seasons.	There are 2 wells still in working order. One dried up because of the passage of time and low rainfall.	Population growth increased demand, while rainfall increasingly became reduced.
Roads (M)	Average quality	Average but impassable during the rainy season (flooding)	Rain and lack of maintenance
Roads (F)	Good and barely used	Deteriorated and in a poor state.	Rain and lack of maintenance
Degraded land (Kori) (M)	Few and small in size	Many more and larger than in the past.	Heavy rainfall. Lack of vegetation cover (grass, trees for reducing erosion). Degraded land contributes to uprooting of trees in adjacent are, and creates more degradation.

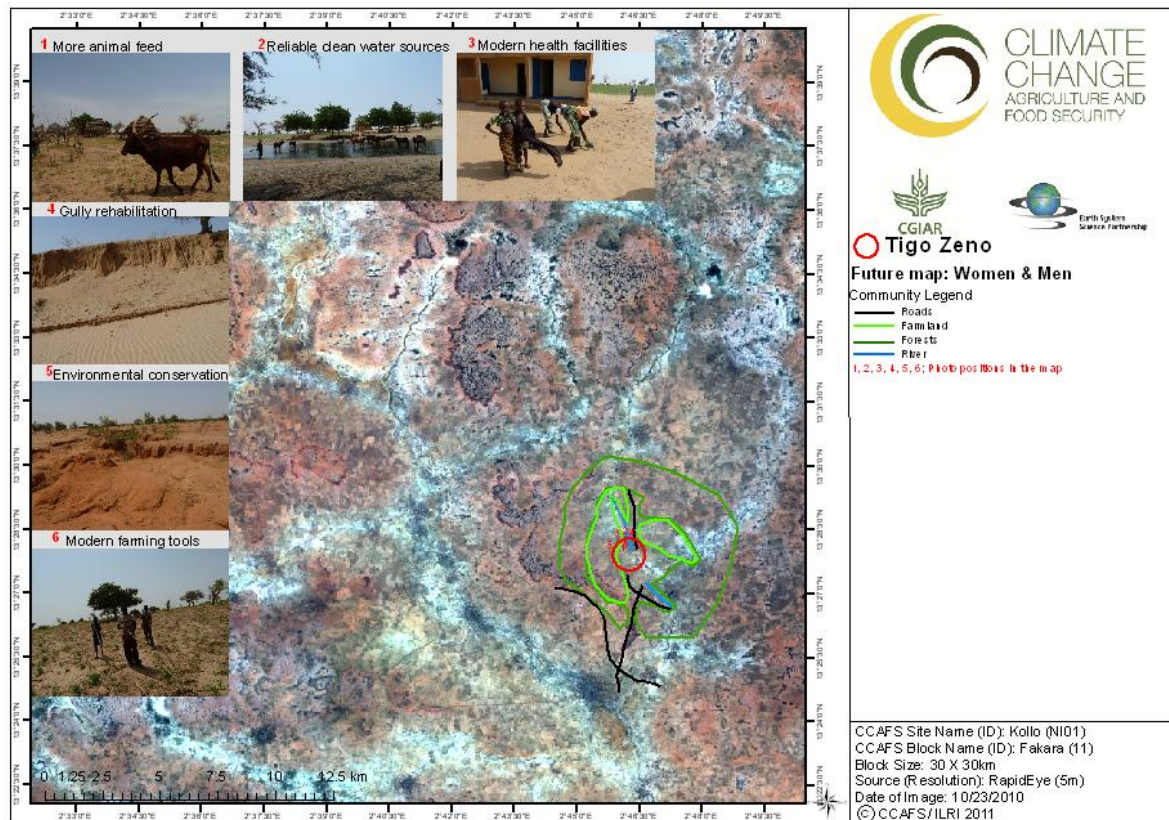
D. Vision of the future

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 addition, the exercise took into account the photographs of the landscape, including things they are proud of and things that need to be improved upon in the future, that a group of young people had produced following instructions given on day 1. It should be pointed out that when the women and men

assembled for the session to jointly define the community vision, the men attempted to dominate the discussion. The CCAFS team had to ask questions specifically to the women to get them to participate.

In the section below we include the map that encapsulates Tigo Zéno village's vision of the future (Map 7). The map includes a few of the photographs taken by the youth. These images operationalize the collective vision of the future.

Map 7. Future map of the community



During the discussions on the vision for the future, the opportunities cited focused more on the wishes, needs and expectations of the community, rather than on the initiatives that the community itself could realistically engage in.

The long-term vision defined by the participants in the Tigo Zéno assessment is to see the disappearance of gullies or koris, restore the general vegetation and vegetation cover, intensify agriculture through better agricultural and livestock productivity, reduce the areas under cultivation, protect the trees, reduce population growth, and limit migration from rural areas and the lengthy migration of men.

Table 3. Vision of the future

Resources	Preferred condition for 2030	Opportunities	Constraints	Organisations to be involved
Rivers/Ponds	There is a big water reservoir with plenty of fish	Fishing, vegetable production	Lack of funds for the construction of reservoirs	JIRCAS, MORRIBAN, SOUDJIMAZOU MBOU
Roads	The roads between Dantyandou and Tigo Zéno are operational and full of traffic			
Forest/trees	Forests are dense, and trees throughout the community are big	Fight against erosion, runoff water, timber (for the construction of houses and granaries)	Inadequate protection of trees	MORRIBAN
Agricultural lands/farmland	Farmlands are more fertile and productive			
Degraded land (Koris)	Koris have disappeared			JIRCAS, ICRISAT, CCAFS

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). The results are shown in the images that follow.

Photo 2. Organisational landscape as created by the women's group



Figure 1. Organisational landscape of the men's group

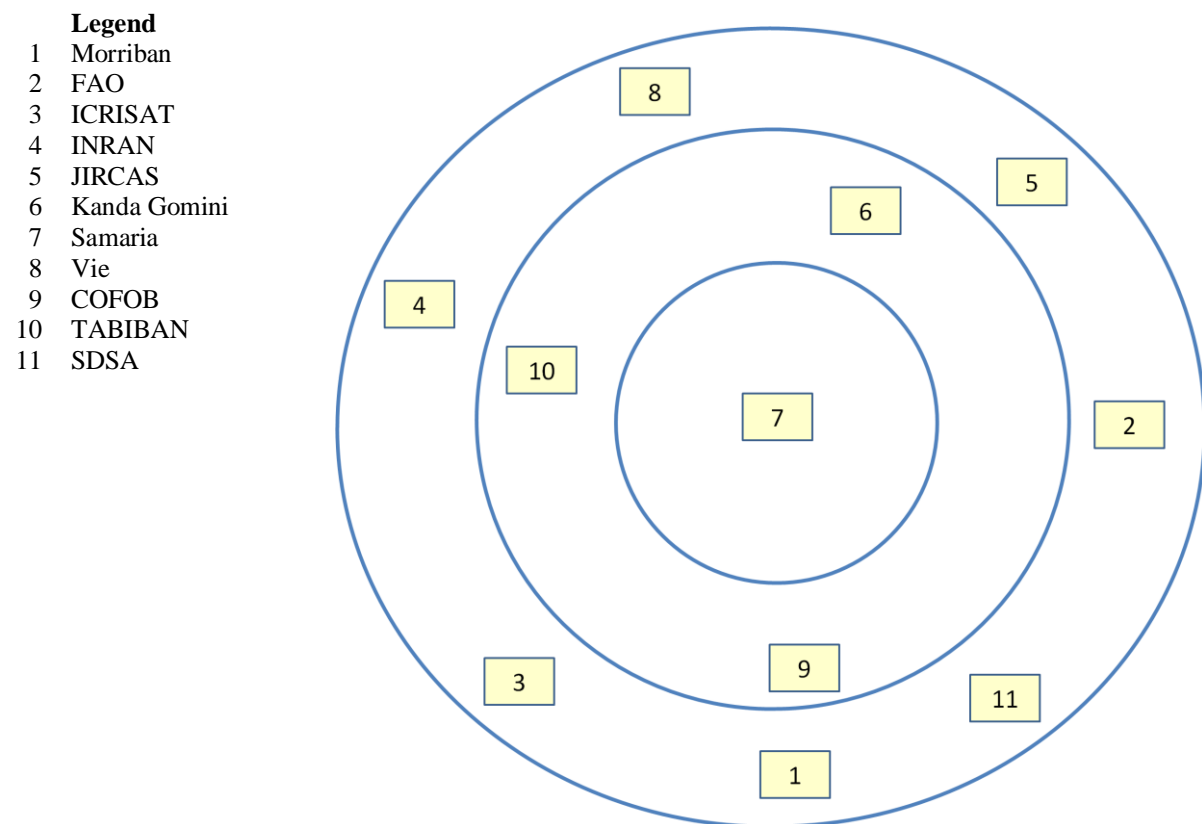
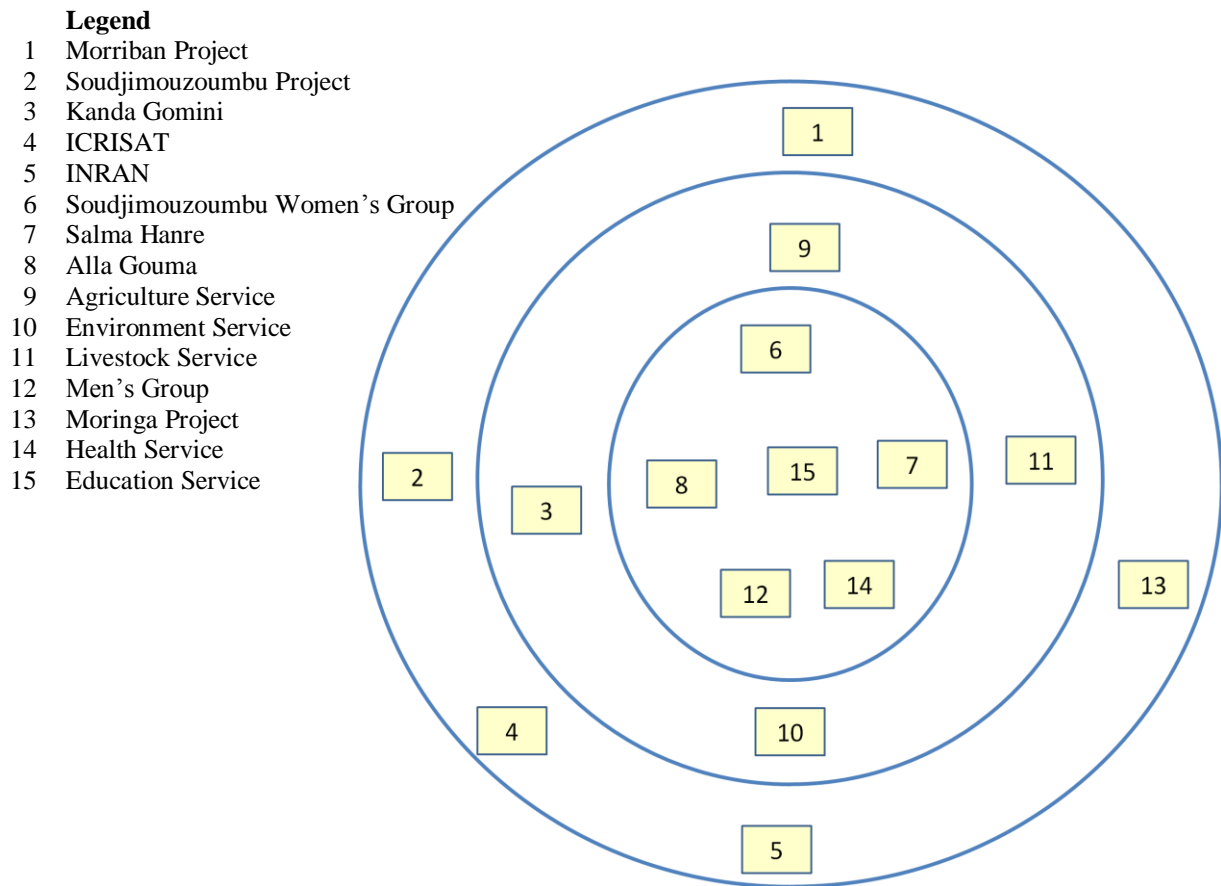


Figure 2. Organisational landscape of the women's group



The quality of the information gathered from the community in this village study varied considerably. The difficulties basically lie in naming of organisations, projects and the contributing structures that are involved or have been previously involved in the village, and thus being able to define their sector and/or level of operation, i.e. local or beyond local. The result is that the data collected on certain organisations like FAO, Japan International Research Center for Agricultural Sciences (JIRCAS) and ICRISAT was inadequate.

The men identified 11 organisations while the women identified 15. Both men and women cited 4 organisations in common. These were Morriban, Kanda Gomini, ICRISAT and Niger's National Institute of Agricultural Research (INRAN). The men and women identified ICRISAT and INRAN as organisations. The men identified Morriban and Kanda Gomini as organisations, while women identified them as projects. Men identified the Moringa Project as an ICRISAT project, whereas women guessed it was a project supported by the Niger state. Samaria was the only group created by the villagers themselves. COFOB, Kanda Gomini and Tabiban are organisations of Dantyaoundou or Kollo that give their support to Tigo Zéno.

In Tigo Zéno village there are three types of organisations, namely organisations at the community, local and beyond-local level. The community level organisations are men's and women's groups, or mixed, to which access is open and subject to payment of a membership fee of 500 F CFA for the majority of organisations. The members pay their annual contribution to ensure the smooth running of these groups.

Organisations at the local level consist of decentralized state technical services (health service, livestock service, agricultural service, environmental service) and some other groups (Morriban) that operate at county (canton), local authority (commune), district (department) or regional levels according to the administrative structure of Niger.

The organisations beyond the local level consist of state or international services and some projects of a national scope (Moringa project, etc.). This is the case of INRAN, ICRISAT, FAO and JIRCAS.

Men identified only 1 organisation operating at the community level, while women identified 6. Regarding organisations that operate at the local level, men and women identified, respectively, 3 and 4 organisations. Men identified 7 organisations operating beyond the local level while women identified 5. Clearly, women are more involved in community level organisations. At local and beyond-local levels, however, the difference between men and women is not as marked.

Four linkages among organisations were established. These were funding, food supply and capacity building linkages, identified by men and women. In addition, women identified one extra linkage, i.e. provision of medicines and veterinary products.

The analysis of the organisational landscape reveals three categories of organisations namely, grass root organisations (men's groups, women's groups, mixed groups, etc.), decentralized state technical services (health, livestock, agriculture, environment, research) and international institutions (FAO, ICRISAT, JIRCAS). Community mobilization is done through grass root organisations, the Morriban project, and is often facilitated by an ICRISAT agent who is based at the county (Dantyangou) and who for a long time serves as the entry point for projects involved in the area. The village chief also serves as an entry point for interventions in the village.

According to the women, the decentralized agricultural technical and environmental services deal exclusively with men yet the women produce sesame, groundnuts and cowpeas. Those technical support services are mainly concentrated in projects. Government extension services are dormant due to lack of funding. It is noted that among the organisations identified by the women, Soudjimouzombou Project and Morriban Project give financial support to the women.

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

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)	for community groups			
					Sphere of operation: community, local, beyond local	Sources of funding (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
1 Morriban	It gives training for rain-fed and off-season agriculture, and livestock production. Provides loans for agricultural equipments (ploughs) and for livestock production (acquisition of animals for fattening, etc.) Promotes income-generating activities.	Membership is via two groups of Tigo Zéno: one mixed group of 56 people (46 men and 10 women); and a women's group with 33 members.	Free access. Average fee of 500 F CFA per person for membership in the grassroots organisation; and 10000 F CFA per group for membership in the umbrella organisation.	Federation of grassroots organisations of farmers.	Local (regional)	External and internal funding	More than 5 years	Formal
2 FAO (Food and Agriculture Organisation)	Financial aid and loans for the acquisition of sheep for fattening. Provision of agricultural inputs and improved seeds. Provision of food supplies.			International	Beyond local (international)			
3 INRAN	INRAN research results are popularized in other villages (varieties, organic manure)			State	Beyond local (national)			
4 ICRISAT (Moringa project)	Mobilization of water for women's gardens during off-season periods when men are away. Implementation of the Moringa project. Managing the "Koris"			International	Beyond local (international)			
5 SDSA	- Creation and funding of groups.			National	Beyond local			

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)	for community groups			
					Sphere of operation: community, local, beyond local	Sources of funding (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
1 Moringa Project	Distribution of Moringa seeds, training of the villagers in planting, maintenance and harvest of leaves, follow-up.	All the village women are beneficiaries	Free access	Women don't know its origin but think it is the Niger state	National.			
2 Agricultural Service	Technical advice to farmers, free distribution of seeds, sensitization on the use of fertilizer and pesticides	All the village farmers are beneficiaries	Free access	The State of Niger	Local			
3 Morriban Project	Issue of credit in cash or in form of livestock, seed donations.	All the women but in a revolving manner by group.	Free access, refundable loans.	Women do not know but they think it is the Niger state	Local			
4 Health Service	Health care, maternity services, malaria prevention, distribution of mosquito nets to expectant women and to babies during weighing. Provision of porridge to children. Child weighing and vaccination.							
5 Education Service	Children's education	All the village children	Fee charged	Niger state	Local			

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 different 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.

For both men and women, food security is defined as a situation when food is abundant to meet all the family needs from one harvest to the next. This abundance is to be guaranteed by reliable harvests. In addition to this definition of food security in terms of food availability, men added another based on food access, i.e. in case of lack of food, there should be money available to purchase food.

Both men and women identified Morriban, JIRCAS, Kanda Gomini, FAO, ICRISAT and INRAN as the organisations most involved in food security issues. The Soudjimouzoundou project and Moringa project were also deemed critical for food security support.

It is surprising how few organisations men identified as working on food security issues (6) as opposed to women (15). At the same time, men did not identify any food security organisation at the community level, while women identified 6.

Figure 3. Organisational landscape of food security – men

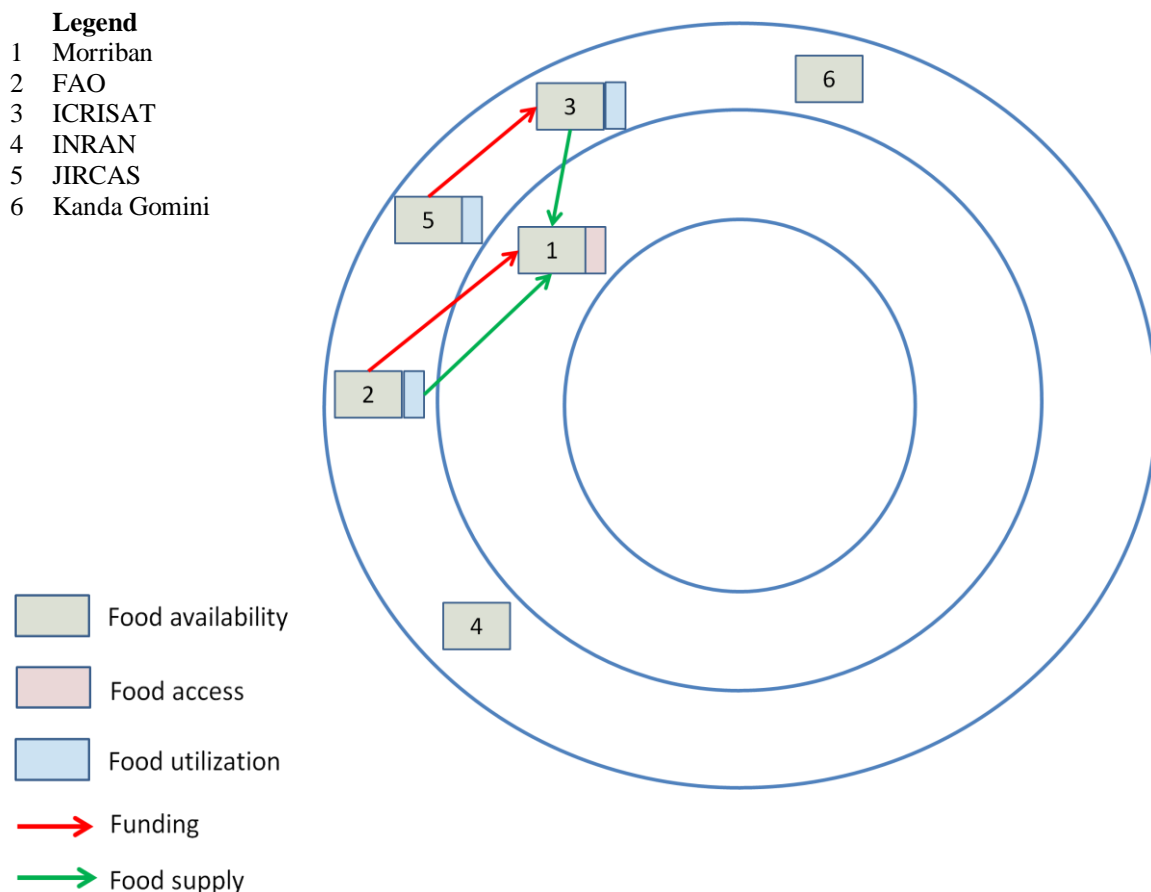
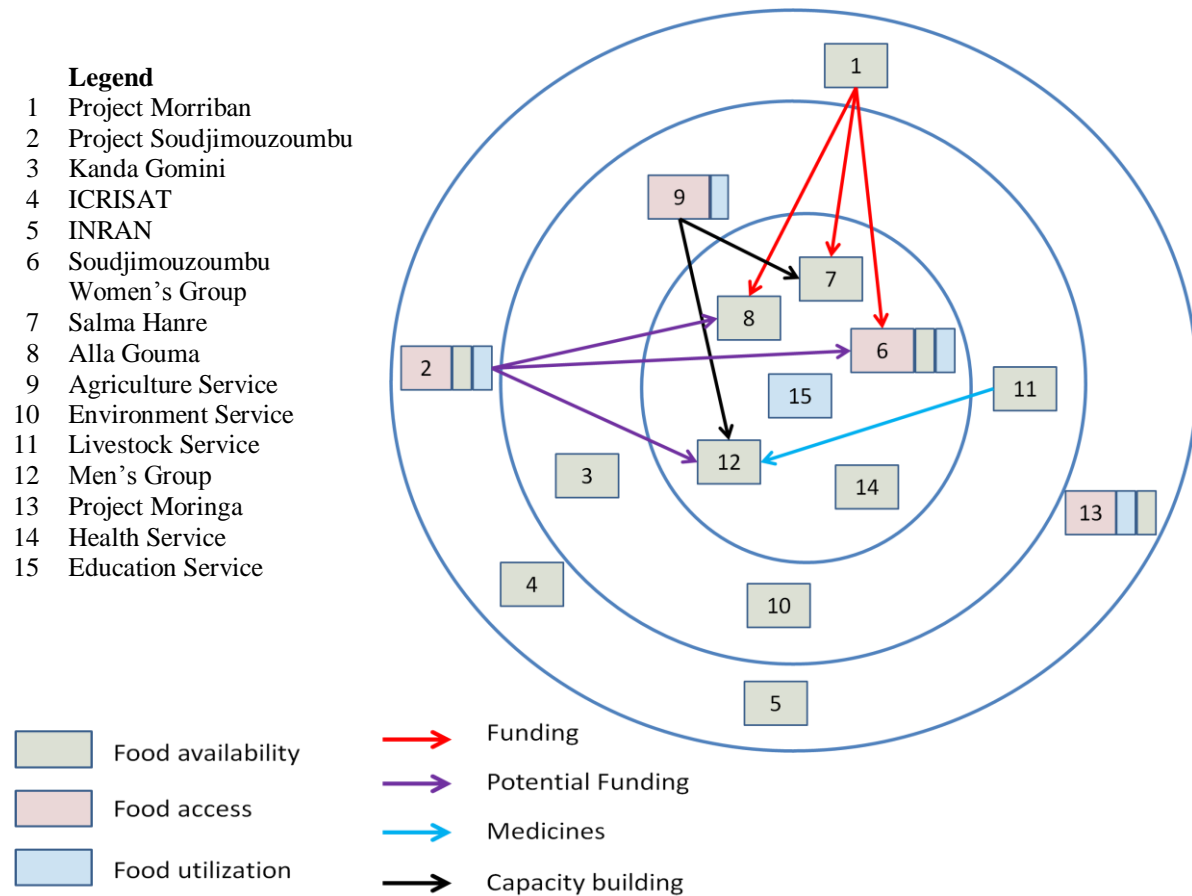


Figure 4. Organisational landscape of food security – women



C. Organisational landscape of food crisis situations

The purpose of this exercise was to understand how organisations help people to cope in times of food crisis. Participants identified a food crisis situation that they all remembered (e.g. a bad year or the lean season), and discussed how the organisational landscape of food security operated in that situation.

The men and the women agree that the most serious food crisis occurred 18 years ago, in the early 1990s. Nonetheless, they state that years when production is insufficient to meet food requirements are common and recurrent.

According to the men, only the state or the government as an administrative entity supports the village in times of food crisis; a businessman from the district of Kollo, known as Chanan distributes food to the community. The women share the same opinion with regard to interventions by the state and the businessman. But the women's view differs in that the state buys supplies from this financial operator. The men noted that there were no linkages in terms of food crisis, but the women's group identified a linkage between the state and the businessman.

Figure 5. Organisational landscape of food crisis – men

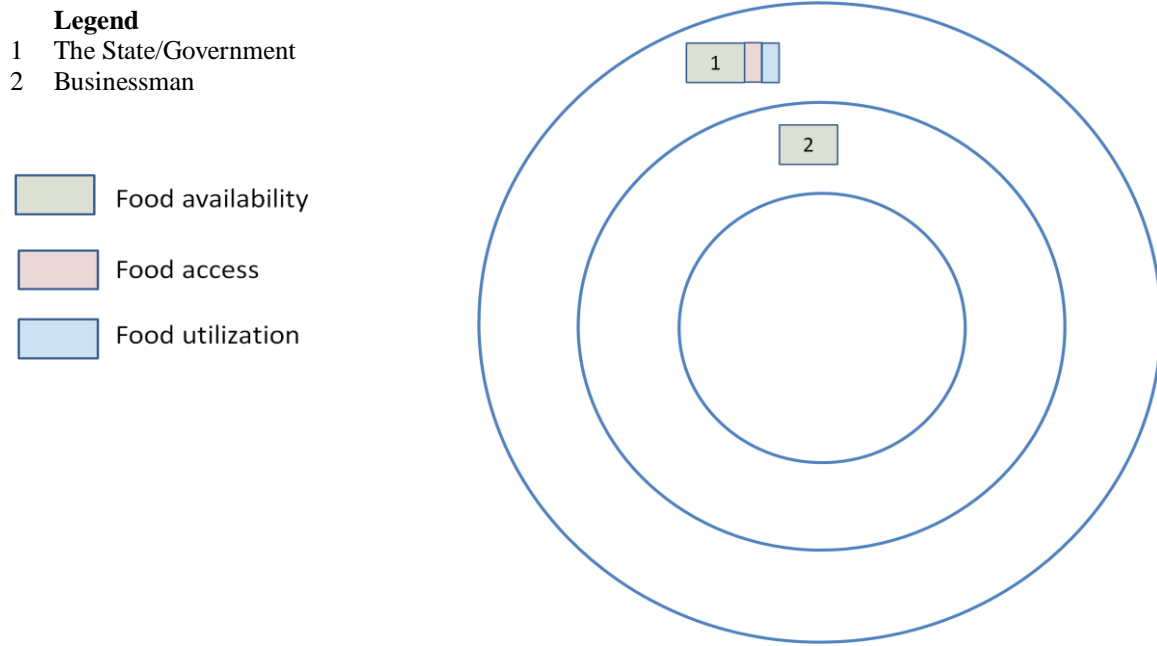
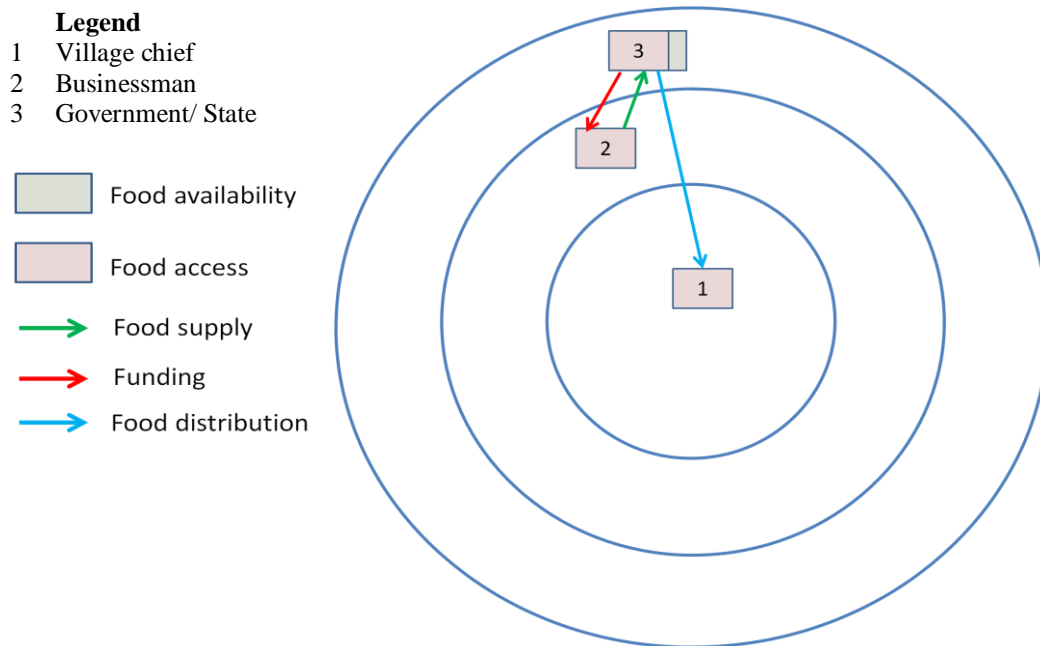


Figure 6. Organisational landscape of food crisis – women



D. Organisational landscape of natural resource management

The main natural resources in Tigo Zéno village include trees, farmlands and degraded land, the latter locally known as “koris.” The organisations involved in this natural resource management (NRM) are 4 for the men and 10 for the women.

For the men, there is ICRISAT and JIRCAS, which are involved in tree planting and restoring degraded land. COFOB is involved in land security. Kanda Gomini is the grassroots organisation through which ICRISAT intervenes on the ground. It is noted that the natural resource management organisations identified by men mainly operate at the local and beyond the local level.

For the women, the organisations involved in managing natural resources are arms of decentralized state structures (agriculture, livestock, and environment), projects (Moringa project, Morriban project and Soudjimouzombou project) and grassroots groups (Alla Gouma Women's Group, Salma Hanre Women's Group, Men's Group, Soudjimouzombou Women's Group). The Moringa project organizes the distribution of Moringa seeds, training of villagers in planting and maintenance of seedlings and harvesting of moringa leaves.

Few local initiatives exist in terms of management and restoration of natural resources. Apart from the activities of JIRCAS which is involved in the restoration of degraded soil (restoration of gullies) and some projects on development of production capacities of local organisations (through training, advice on agricultural and livestock production, provision of input such as seeds and fertilizers), there is not significant enough action to turn around the situation and to realize the vision for the year 2030 as seen by the community.

Figure 7. Organisational landscape of natural resource management – men

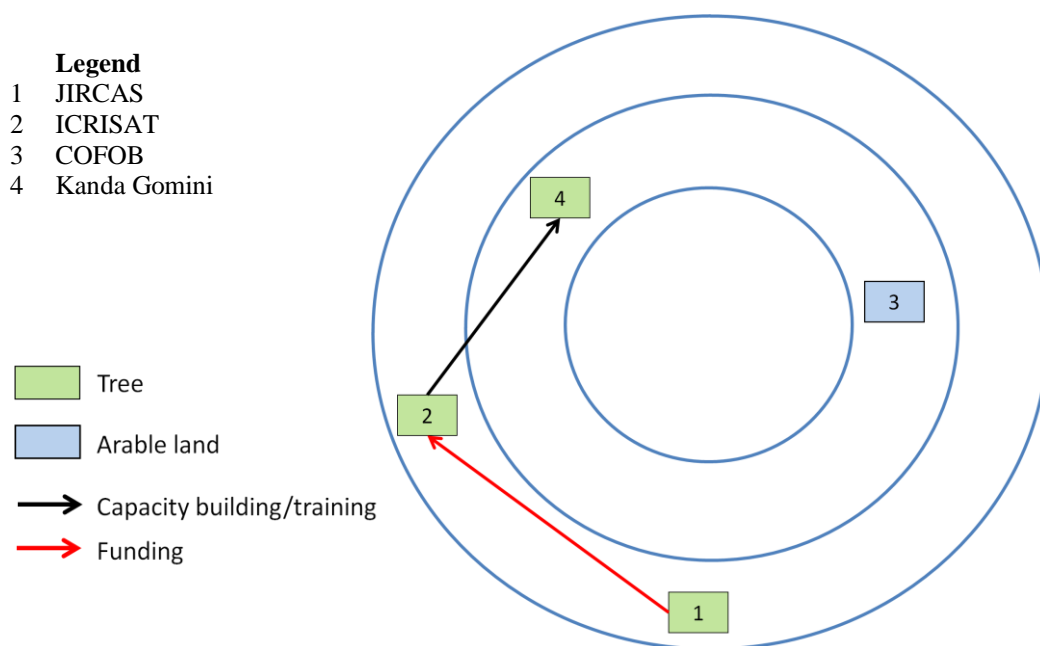
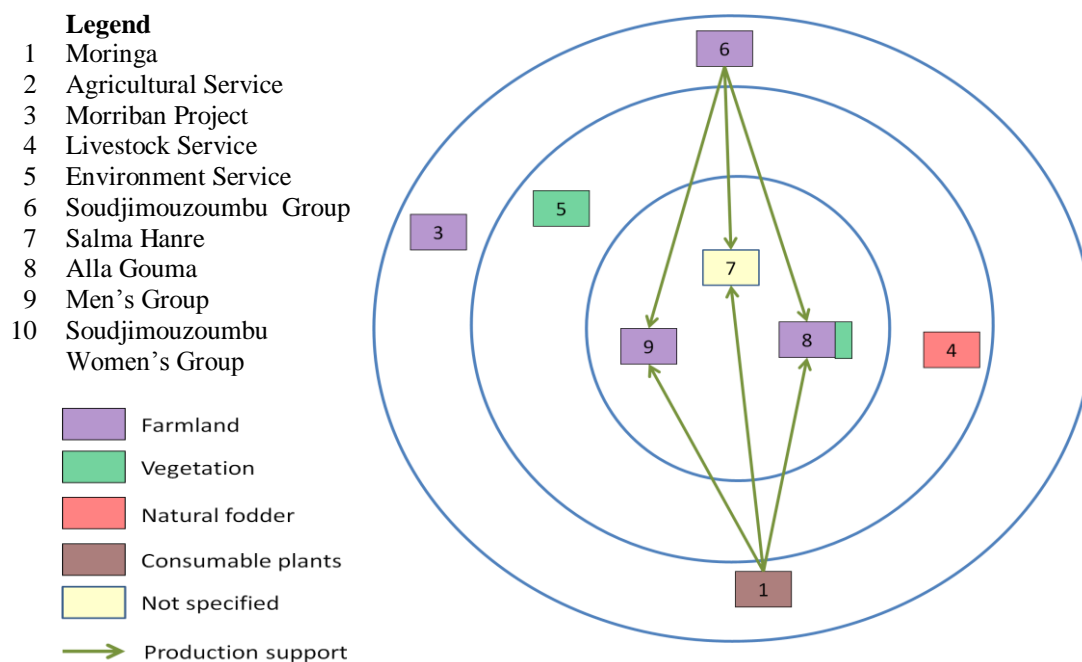


Figure 8. Organisational landscape of natural resource management – women



The existence of organisations at the community level is a social asset for the village and the dynamism of the communities shows that there exists a high capacity to mobilize the community. Nonetheless the community does not have financial resources. Most of the interventions do not seem to originate from the grass roots but rather from above. The communities should be trained in project formulation and resource mobilization.

From the analysis of organisations, we noticed gaps in terms of popularization of new technologies of agricultural and livestock production to the community, dissemination of information on weather, and the consideration of the gender dimension. These two areas are crucial when it comes to adapting to climate change in agriculture. Information on adaptation options developed by national and international research bodies needs to get to the community through a system of popularization. The effective use of these technologies requires a building of the community's capacity but also a good knowledge of information on climate (forecasts, onset of rains).

Concerning technologies for adaptation to climate change, CCAFS can work with ICRISAT, JIRCAS and INRAN, the national institute of research in agriculture.

On dissemination of climate-related information, CCAFS can work with the Ministry of Agriculture, the directorate of national weather and research bodies such as Agrhymet/CILSS, INRAN and ICRISAT for the establishment of a system of information on climate and the dissemination of adaptation strategies.

Table 6 (next page) recapitulates 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.

In general, the organisations operating at the village level are a social asset and a sign of a strong capacity for mobilizing the community. The community, however, does not possess a strong capacity to mobilize financial resources. Furthermore, most of the interventions do not seem to come from the grassroots level, but rather from the top. The community needs to be trained on setting up projects and sourcing for funding.

There is a situation of inactivity and dependence mentality that the community seems to enjoy. There is, therefore, a need to assist the community through sensitization and training so as to stimulate in them the idea of initiating and implementing actions to address their needs.

Topic 3: Networks of information

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 wanted to describe networks of how people access and share information within the community.

Table 7 (page 30) summarizes the most important sources of information in Tigo Zéno village. Different sources of information (media, organisations, people and other) are used both by the men and the women of Tigo Zéno, depending on the topic and sex. The sources that men and women use most are the radio (national and community), people (men and women in Tigo and surrounding villages) and projects. The zone is not covered by national television, and the high illiteracy rate and lack of education among people do not enable their reading of written material (newspapers, for example).

The women have slightly more sources of information than the men, and seem to use those sources more frequently. They get information from one another. Depending on the topic, they also consult the men, elders, marabouts (spiritual leaders), traditional healers, the ICRISAT representative and INRAN, through Barta Sadio (individual), on technical and/or weather-related issues (seeds and varieties, utilization of fertilizer, etc.).

Some individuals are key sources of information in the village. These include the following:

- Men and women of the village and surrounding villages. According to the women, both men and

women are consulted for information on weather forecasts and early warning and on the use of fertilizer. Men cited those people as a source of information for topics related to seed types and varieties, sowing times and pest control techniques (crop protection).

- Traditional healers and herders. These are important sources of advice to women on animal care.
- The marabout or spiritual leader. Women mentioned him as source of rainfall forecasts and extreme weather event early warning.
- Mr. Barta Sadio who is the ICRISAT and INRAN focal point. Women and men mentioned him as a key resource person for the dissemination of technical information on the use of fertilizer, seed types and varieties, crop protection, etc.
- The village chief. Men mentioned him as the link through which projects and technical public extension services are able to reach the community.

Table 6. Information on all the organisations identified by male and female participants

	Organisation	Food avail.	Food access	Food utilization	Food crisis	NRM	Total
Women	1 Moringa Project	1	0	1	0	1	3
	2 Agricultural Service	1	1	0	0	1	3
	3 Morriban Project	1	1	0	0	1	3
	4 Health Service	1	0	1	0	0	2
	5 Education Service	0	0	1	0	0	1
	6 Livestock Service	1	0	0	0	1	2
	7 Kanda Gomini Project	1	0	0	0	0	1
	8 Environment Service	1	0	0	0	1	2
	9 Soudjimouzombou Project	1	1	1	0	1	4
	10 ICRISAT	1	0	0	0	0	1
	11 Alla Gouma Women's Group	1	1	0	0	1	3
	12 INRAN	1	0	0	0	0	1
	13 Salma Hanre Women's Group	1	1	0	0	1	3
	14 Men's Group	1	0	0	0	1	2
	15 Soudjimouzombou Women's Group	1	1	1	0	1	4
	16 State	0	0	0	1	0	1
	17 Businessman	0	0	0	1	0	1
	18 Village Chief	0	0	0	1	0	1
Men	1 Morriban	1	1	0	0	0	2
	2 FAO	1	1	1	0	0	3
	3 INRAN	1	0	0	0	0	1
	4 ICRISAT	1	0	1	0	1	3
	5 SDSA	0	0	0	0	0	0
	6 JIRCAS	1	0	1	0	1	3
	7 Kanda Gomini	1	0	0	0	1	2
	8 SAMARIA	0	0	0	0	0	0
	9 VIE	0	0	0	0	0	0
	10 COFOB	0	0	0	0	1	1
	11 TABIBAN	1	1	1	0	0	3
	12 State/ Government	0	0	0	1	0	1
	13 Businessman	0	0	0	1	0	1
TOTALS		21	9	9	5	14	

Table 7. Sources of information for women and men (1 = yes; 0 = no)

Information source	Topic (women)			Topic (men)			Total
	Rainfall forecasts	Care of livestock	Use of fertilizers	Pests	Onset of rains	Seed varieties	
<i>People</i>							
Women/men	1	0	0	1	0	1	3
Marabou (spiritual leader)	1	0	0	0	0	0	1
Traditional healer	0	1	0	0	0	0	1
Barta: ICRISAT/INRAN focal point	0	0	1	0	0	0	1
Elderly men	0	0	1	0	1	0	2
Herdsman	0	1	0	0	0	0	1
Village Chief	0	0	0	1	0	0	2
<i>Organisations</i>							
Public extension office	1	1	0	0	0	0	2
Groups/NGOs	0	1	0	0	0	1	2
ICRISAT/INRAN	0	0	1	0	0	1	2
Projects	1	1	0	1	0	1	4
<i>Media</i>							
National radio	1	1	1	1	0	1	5
Local radio	0	1	1	1	1	1	5
<i>Other</i>							
Markets	1	0	1	0	0	0	2
Traditional knowledge	1	0	0	0	1	0	2
Total	7	7	6	5	3	4	

Both women and men of Tigo Zéno use radio for information. Radio stations such as Voix du Sahel, Ténéré, Bonferay, Dounya and community radios such as Dosso and Dantyandou are important.

Public technical extension services (agriculture, livestock, and environment) and projects (Morriban), ICRISAT, INRAN are the most relevant organisations serving as sources of information.

Commercial and social exchange markets are important venues where the men and women often discuss information on prices, extreme weather event early warning, etc. Women indicated that migratory birds represent a critical source of climate information. According to the women, the return of migratory birds marks the beginning of the rainy and sowing season.

From the analysis of organisations, we noticed gaps in terms of popularization of new technologies of agricultural and livestock production to the community, dissemination of information on weather, and the consideration of the gender dimension.

The women gave more details than the men. During the discussions with the women, however, it emerged that they do not easily have materials or arrangements to guarantee them permanent access to certain sources such as the media, especially the radio. For example, among 16 women, only 2 owned radio sets, which they say they listen to continually; 3 say that they listen to their neighbours' radio; 11 others state they occasionally listen to the radio, when they get an opportunity to do so. One gets the impression that the women, more than the men, seek to be more informed on issues relating to agriculture and the weather. But when we take the example of the radio, the low number of women owning radios (which they can use all the time) and the high proportion of those who do not own one but rely on their neighbours', and hence only listen to information on the radio occasionally or even by chance, shows that the women have quantitatively and qualitatively speaking less access to the media.

Conclusion and recommendations

Generally, in Fakara and more particularly in the Tigo Zéno village, natural resources are diminishing at a significant level. The vegetation cover is at an advanced level of degradation and consists of some isolated trees and a previously degraded forest, currently resembling bushland not useful for agriculture. Water is scarce and temporary, and the farmlands have poor and degraded soil weakened by gullies.

Both men and women who participated in the study expressed numerous concerns regarding the low quality and quantity of natural resources in relation to the increasing needs of the households and the community. People are particularly concerned about the presence of gullies ("koris" in local language) that are increasingly becoming larger. Koris create uncultivable areas (terrace), major decline in soil fertility, destruction of crops during serious overflow of ponds and heavy rainfall, and significant reduction in the size of farmlands, especially those belonging to women. All of this generates considerable pressure for land, in general, and particularly land for women, who have limited access to land and smaller farmlands than men. Trees surrounding the koris are uprooted, and koris cut off roads during the rainy season. In addition, animals fall into koris and children drown in koris during flooding. Overall, men and women participants were concerned about the lack of means for the village to finance its own infrastructures and engage in actions aimed at mitigating the effects of the above-described constraints.

Understandably, the participants' long-term vision for their village is to reduce and minimize the koris, restore the general vegetation cover, reduce the area under cultivation and intensify production through the use of better agricultural and livestock practices, and protect the trees. Significantly, the participants' vision also includes reducing human population growth and limit migration from rural areas, including the lengthy seasonal outmigration of men.

Initiatives should be conceived and developed in partnership with the men and women of Tigo Zéno to address the topics stated in their vision for the future. There was, however, no far-reaching action capable of reversing the situation to attain the vision 2030 envisaged by the communities. Few local

initiatives exist in terms of management and restoration of natural resources. The exceptions are the activities of JIRCAS, which focuses on the restoration of degraded soils and management of gullies, and those of some projects that are involved in building production capacities of local organisations through training, advice on agricultural and livestock production, and provision of inputs, notably seeds and fertilizer.

There are numerous organisations operating at the village level (men and women groups, NGOs), and at local and national levels (technical partners, development projects). Men identified only one organisation operating at the community level compared to 6 identified by women. At the local level, men mentioned 3 organisations while women cited 4. Beyond the local level, men identified 7 organisations while women identified 5. From this it is apparent that the women are more involved with community level organisations, and less involved in work with national or international organisations that work at the local and beyond local level.

There is a need for technologies and climate-related information for adaptation to climate change. On technology development, CCAFS should consider working with the international research institute focusing on crops in the semi-arid tropical zones (ICRISAT), the Japan International Agricultural Centre for Agricultural Sciences (JIRCAS), and the Institut National de la Recherche Agronomique du Niger (INRAN). CCAFS should also consider working with the ministry of agriculture, the directorate of national weather, and research bodies such as Agrhymet/CILSS, as well as INRAN and ICRISAT, to establish a system of information on climate and to support the dissemination of adaptation strategies. Development partners need to be involved in setting up basic infrastructure such as water reservoirs, schools, health centres, and roads, taking into account the potential contribution of these resources for climate adaptation.

Both research and development initiatives need to be developed through local women's and men's organisations. All CCAFS activities need to include women. Often women are not involved in implementation processes and consequently are ill informed and unable to gain access to technology. Some projects are already supporting women in the production of moringa, and fattening of sheep. There is the need to reinforce these activities and initiate others aimed at supporting women in the production of specific crops such as sesame, groundnuts and cowpea given that those crops play a key role in feeding the family and in creating wealth for the women.