

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

**Village Baseline Study:
Site Analysis Report for Kaffrine – Kaffrine,
Senegal (SE0112)**

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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>).

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Abstract

The village baseline study of Toune Mosquée village in the CCAFS benchmark site Kaffrine in Senegal took place from June 2 to 4, 2011. Natural resources in the village are in a progressive state of degradation. The 'protected' forest has almost disappeared, the soils have low fertility and are degraded, and crop production is not sufficient to meet the food needs of a family throughout the year. Families must buy food to fill the gap in production. For that they harvest and sell forest products, which creates a vicious cycle of resource degradation.

The male and female groups identified 35 organisations operating in the village including informal groups, state services, associations, NGOs and Muslim brotherhoods. While 18 of those work on food security issues, only 4 are involved in the management and protection of natural resources. Very few agricultural extension and training opportunities target women despite the women's significant role in agriculture and livestock production.

Women obtain information on livestock feeding techniques from people and organisations such as the horticultural project, women's associations, and water and forest services. Men get information on soil inputs and soil fertility management from other farmers, organisations, radio and television, and from community leaders, notably the office of the village chief and the mosque on Fridays. The radio is the form of media most commonly used by the women but few women own a radio.

Keywords

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

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Contents

Abstract	2
Keywords	2
About the Authors	3
Contents	4
Introduction	5
Data analysis	7
Topic 1: Community resources – participatory satellite imagery interpretation and visioning	7
A. Current resources	7
B. Gender-differentiated comparison of current conditions.....	14
C. Major changes of resource conditions.....	15
D. Vision of the future.....	18
E. Conclusion	22
Topic 2: Organisational landscapes	23
A. Basic spheres of operation	23
B. Organisational landscape of food security.....	27
C. Organisational landscape of food crisis situations.....	28
D. Organisational landscape of natural resource management.....	29
E. Conclusion	30
Topic 3: Information Networks	31
Conclusion and recommendations	34
Implications for CCAFS	34

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.

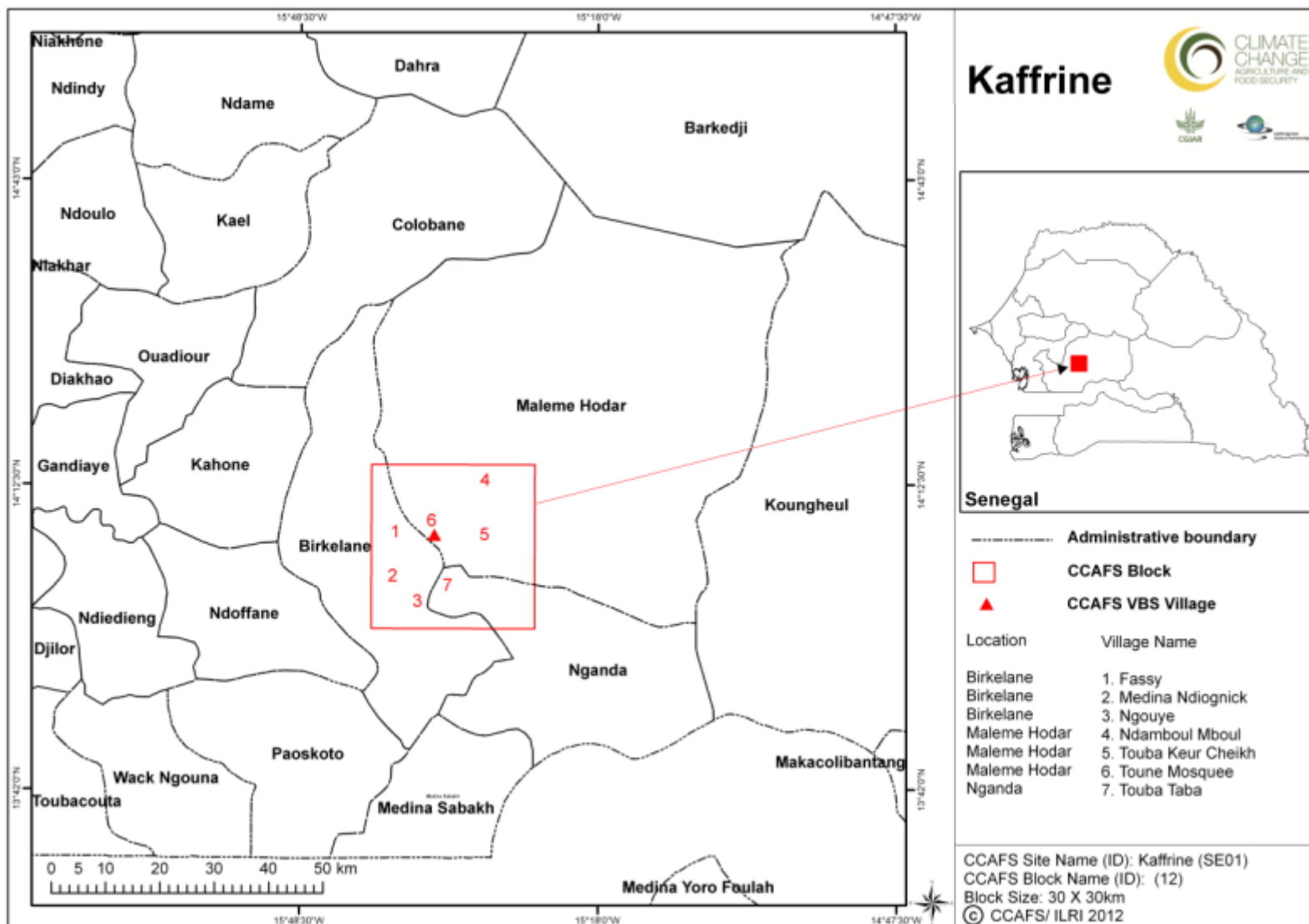
The focus of this site analysis report is the village baseline study (VBS). To date, fifteen VBS were conducted in the three CCAFS regions. The VBS aims to provide baseline information at the village level about some basic indicators of natural resource utilisation, organisational landscapes, information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



This report presents the results of the Village Baseline Study (VBS) conducted on June 2 to 4, 2011 in the village of Toune Mosquée, in the Kaffrine CCAFS site, Senegal (Map 1). The village is easily accessible and situated towards the centre of the Kaffrine 30km x 30km sampling frame. Its geocoordinates are 14.125, -15.559. The village is part of 7 sample villages included in the household baseline study.

The sampling of the participants in the village survey was randomly done from the list of all households in the village. Fifteen male household heads were chosen for each day, that is 45 in total for the three-day survey. An equally large group of women were selected also through random sampling. Considering the small number of female heads of households, women from male-headed households completed the female group. Before beginning the study, the local team and the two translators undertook a mission to inform the community and to prepare and schedule the activities. This provided an opportunity to contact the village authorities and to ensure a proper introduction into the village. On 30th May, two days prior to the survey, there was a meeting among members of the regional team and the local team leader to discuss and review the program. One day later the translators were trained with a simulation of the data collection tools. This allowed for better comprehension of the survey and its different stages, and an accurate translation of the key concepts (often with the support of the local team leader).

The actual implementation of the study followed the stages prescribed in the step-by-step guide of the VBS. On the first day, therefore, a public meeting was held in one of the classrooms of the Toune Mosquée Primary School, and was facilitated by Madame Ndèye Yacine Badiane Ndour, the local team leader. The activities included the introduction of the regional team members, the work program for the three-day data collection exercise, the creation of the groups (men and women), and the presentation of the summary results of the household survey. The community selected two village classrooms for the exercise. During the three days of information gathering males and females met separately, except at the end when they jointly developed the community's long term vision. Data entry consisted of filling in the debriefing document and this was done progressively. The present report was written based on the results contained in the debriefing document.

Data analysis

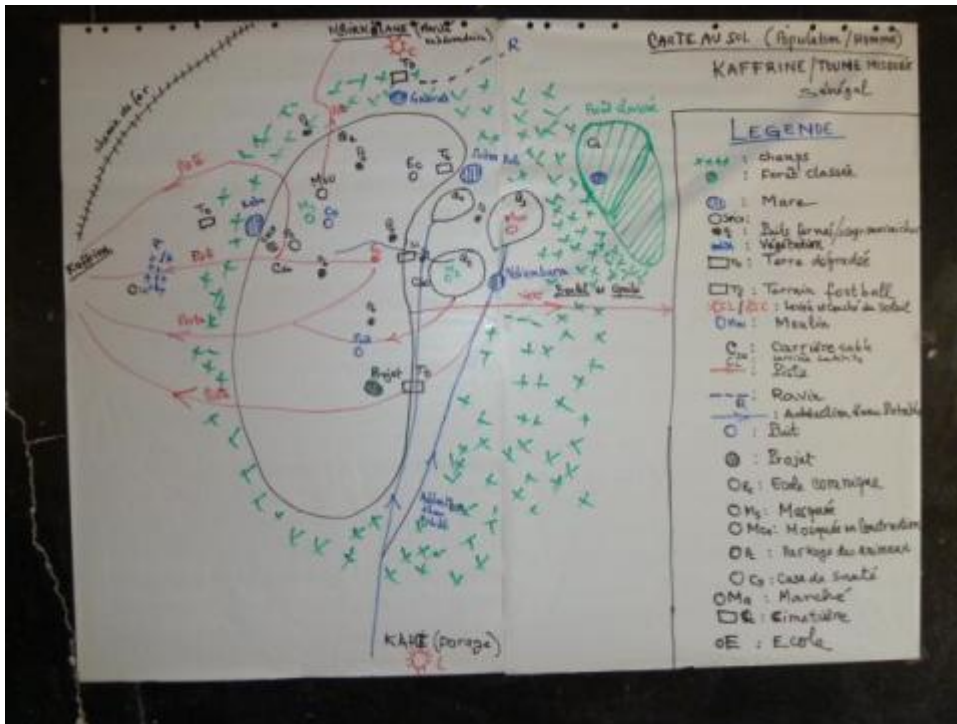
Topic 1: Community resources - participatory satellite imagery interpretation and visioning

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. 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

The men's group as well as the women's group first drew the map of the resources available in the community on the blackboards of the Toune Mosquée elementary public school where the baseline study took place. The drawings made on the boards were then transferred to the flip chart, as the example below shows (Photo 1).

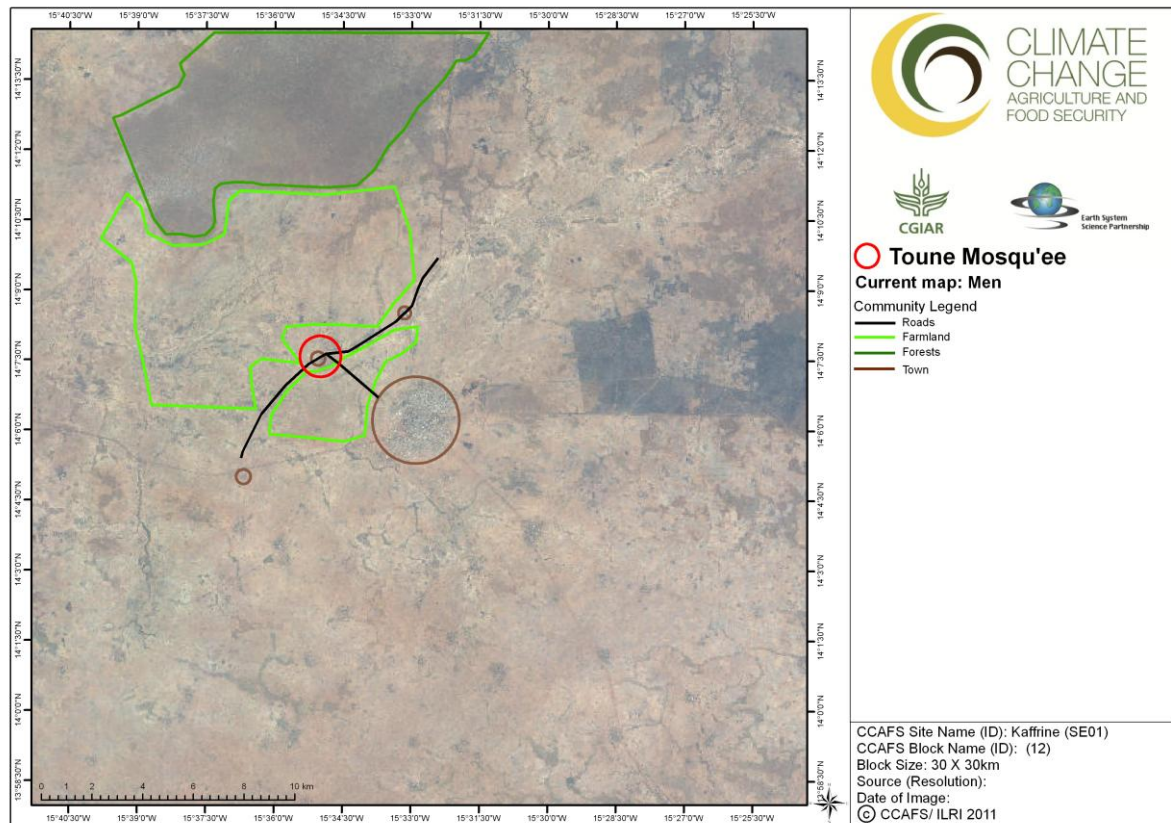
Photo 1. Current conditions mentioned by men regarding natural resources and infrastructure.



Given that none of the women could read or write, the facilitators for the women’s group often presented them symbols and helped them make the illustrations following the instructions that women gave.

Once the maps had been transferred to the flipcharts, the CCAFS team showed the satellite image to the groups. The identification of the village on the satellite image was not easy for either males or females. For instance, the men identified 4 ponds in the village in addition to the ponds situated within the protected forest, while women located only 2. A discussion ensued on current resources in the village, which is summarized in Table 1, in the following pages. Maps 2 and 3 show the current resources as they were identified by the men’s and women’s groups.

Map 2. Men's map of current community resources



Map 3. Women's map of current community resources

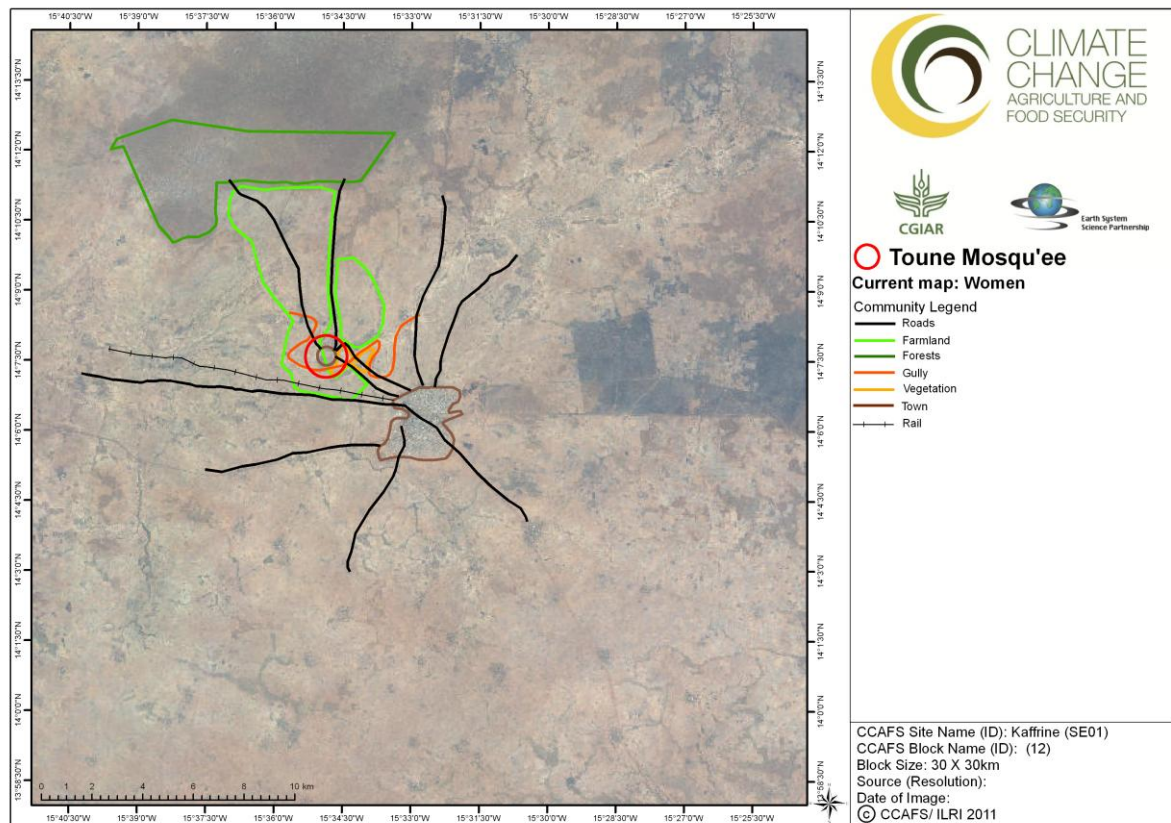


Table 1. Summary of current situation, as perceived by men (M) and women (F)

Type of resource	Community determined land use	Location names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Oppor-tunities	Limitations
Forest (M)	- Collection of dead wood - Straw and timber collection for roofing and fencing. - Fodder collection during dry season. - Pasture during wet season. -Collection of fruits for consumption. -Hunting of small game.	-Protected forest	-More degraded	-2 hours on foot 30 to 40 min by cart/ horse, 1h to 1h30 by cart/ donkey	-Community management -Community and water and forest service -Free access for adjacent communities -Ban on felling trees. -Presence of forest guard.	-Windbreaks. -Limit spread of bush fires towards village. -Protection of ponds against silting.		-Refuge for thieves. - Destruction of crops by wild animals (monkeys and warthogs).
Forests (F)	- Harvesting of firewood and timber (for construction of houses, granaries, sheds, etc.) -Hunting wild animals, gathering various wild fruits. -Extraction of Arabica gum, edible <i>sterculia stigera</i> gum, used in couscous preparation.	Protected forest	-More and more “eaten away” and sparse, less dense. -Larger game vanished and only rabbits, hyenas, jackals, monitor lizards, squirrels and other small game are found.		Protected intercommunity forest, farming is normally forbidden.	-Different kinds of plants and animals -Nearby farmlands deemed to be more fertile		Wild animals go to graze in fields causing damage to and loss of produce
Ponds (M)	-Watering of animals -Brick making. -Washing clothes by women. - Vegetable production	4 ponds (Kaba, Saboudala, Gnarole, Niambane). Other ponds in listed forests	-Seasonal ponds -Reduction in water-retention capacity -Water available for three months in a year	10 to 20 min depending on ponds outside forest	Community management			Waterborne diseases (Schistosomiasis, leeches)
Pond (F)	Laundry, watering of animals.	Toune Mosquée pond	Sizeable, but often dries up at a given period in a year.		Community Resource			

Type of resource	Community determined land use	Location names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Quarries (M)	Sand and laterite harvesting for construction of houses, roads, etc.	Bègne 1 quarry for laterite and several for sand.	Growing in size. High quality sand.	30 min on foot for sand quarry and 3 hours for laterite quarry.	-Authorization from rural community of Boulell for laterite and from Kaffrine administrator for sand. -Tax of 2000 CFA charged.			-Damage to roads by sand harvesting lorries.
Infra-structure for drinking water (M)	Drinking, cooking, laundry, Construction.	From Krahi borehole 9 taps in village: 5 in Toune Mosquée, 1 in Leona, 2 in Toune constr. site, 1 in Ndougoubène	Water with high salt content		-Purchase (5 CFA for 25 litre container)			Water unsuitable for vegetable production due to its salinity
Water fountains (F)	Water for drinking, cooking, laundry and body hygiene	Eight in total distributed in different localities	In good condition and are used by both men and women	On average located 10 min away				
Livestock yard (M)	Assembly point for communal herding of livestock.		Good and operational		-Community management -Payment of herdsmen based on herd size (75 to 100 CFA per day)			
Roads (M)	Leads to market, Kaffrine Health Centre, and other places.	-Road to Kaffrine (3 dirt roads). - Birkilane road. -Boulell road.	-In a bad state -Impassable during rainy season.		Community management			High transp. costs during wet season due to bad state of roads (250 CFA versus 100 CFA during dry season)

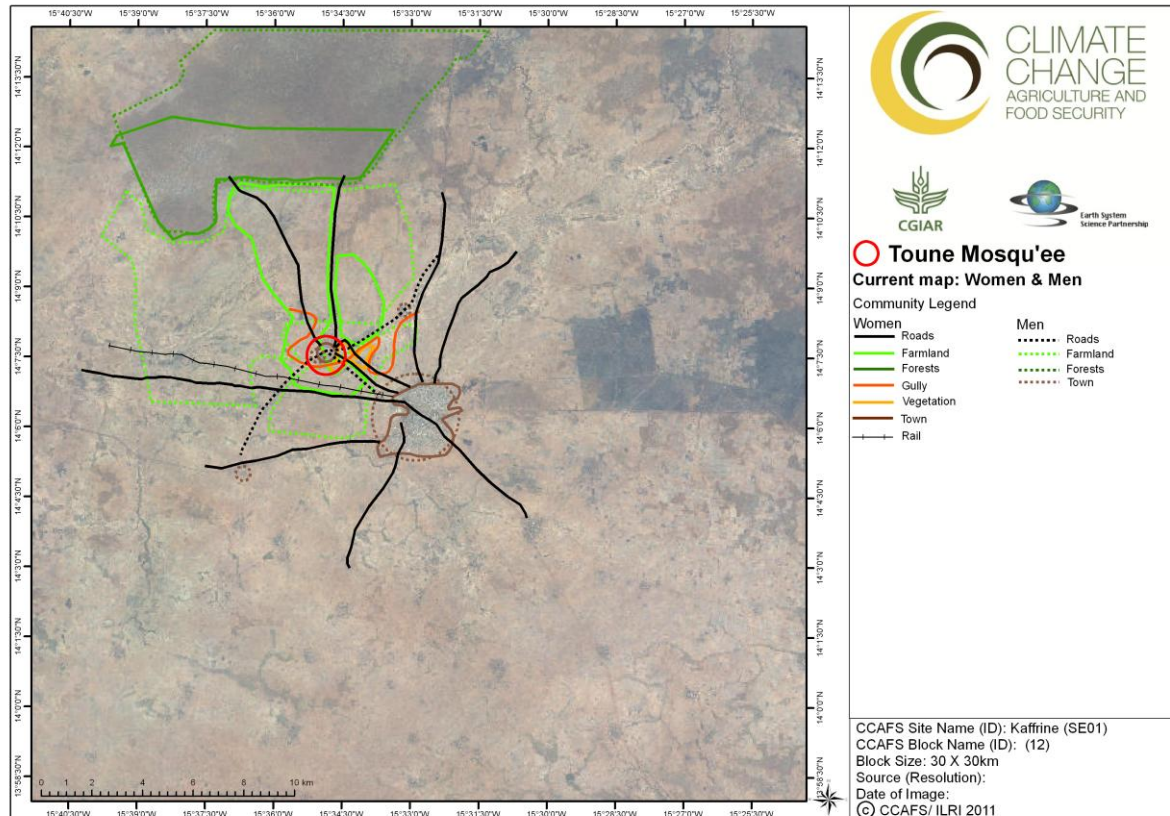
Type of resource	Community determined land use	Location names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Roads (F)	Movement between villages.	No official names. depend on village or nearest town that roads lead to	- Relatively degraded by gully; broken bridge; and some are often impassable during rainy season.					
Railway (F)	- Dakar-Bamako train. Transport people, livestock and produce to urban or worldwide areas.	Dakar-Bamako Kaffrine – Birkilane	National line is not operational. Only Mali Senegal line is operational.		Public transport.			-Used by bandits to rob people. -High insecurity. -Fatal accidents for people, animals.
Public primary schools and Islamic education schools (F)	Academic and spiritual education for children.	Public elementary school; Toune Mosquée Islamic edu. school.	Traditional public school in existence for last 25 years. It is currently being refurbished.	About 5 min on average.				
Farmlands (M)	Groundnuts, millet, sorghum, maize, cowpeas, sesame, melons, sorrel and okra fields.	Infields (near homes) and outfields (away from homes)	Exhausted and degraded soils.	10 min to 2 hours depending on field.	-Individual family fields. - Existence of communal fields - Inheritance. - Gifts from rural community	Produces better quality grass fodder in terms of water content and nutrients.	Use of agricultural waste by animals.	-Poor soil - Lack of fertilizers and improved seed. -Out-dated agricultural equipment. - Soil erosion -Weeds (striga) and pests. - Inadequate land

Type of resource	Community determined land use	Location names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Farmlands (F)	Cereals (millet, sorghum, maize), oilseeds (cowpeas, groundnut), vegetables (okra, marrows), sorrel, etc.	Farmlands progressively extended to more distant bushes: Gandou and Gabane to west, Kaba(S), Keurbale and Yamal (E), Guelsangole (W), Gouisamba and Tourguel (N), Khalawa (S).	Women use terms such as “tired soil, dead soil” to indicate state of degradation and of soil infertility.		Husbands give patches of land to women. Two community horticultural farmlands developed through a women’s and men’s project		They would like to increase returns through acquisition of improved seeds and fertilizer.	Low level of soil fertility and crop equipment for women.
Degraded Land (M)	Fields of crops other than tubers and those with underground pods (groundnuts)		- Gullies -Salinity		- Individual family fields Communal fields -Inheritance. -Gifts from rural community			-Unsuitable for potato and groundnut production
Degraded land/ gullies (F)	Former sand harvesting quarry for construction of houses and road to Kaffrine. Site turned into large hole or pond. There is also long gully to south of village.		Gully and hole from former quarry are bigger and bigger, longer and more dangerous.					-Hole is enlarged due to landslides, shrinks size of farmlands and density of forest -Animals fall into hole while drinking water. -Drowning brings grief to families.

B. Gender-differentiated comparison of current conditions

Map 4 compares the current resources identified by male and female participants. Men and women identified, the uses made of each resource, the name of the locality, the current state of the resource or of the infrastructure, the time taken or the distance covered to access the resource, the management and ownership, environmental benefits, opportunities and limitations. Generally speaking, the men and women identified and located nearly the same resources and infrastructure.

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



Both male and female participants acknowledged that in spite of an official prohibition, the community collects natural resources such as live wood and shrubs in the protected forest. Hunting of wild animals is practiced on a wide scale so that there is only small game left. According to women, the forest serves as a windbreaker and fire breaker for it limits the spread of bush fires towards the village. The forest also protects the ponds against filling with sand, yet even with protection the ponds are seasonal with water available for only three months in a year.

The key uses of the forest are: a) the collection of live and dead wood (for both males and females); b) the collection of straw and dead and live wood for roofing and fencing around houses (cited by men); c) fodder collection during the dry season (men); d) pasture for animals during the wet season (men); e) the gathering of fruits for consumption (both groups); f) hunting small game (both groups); and g) the collection of Arabica and *sterculia stigera* rubber which is edible and used in the preparation of couscous (women).

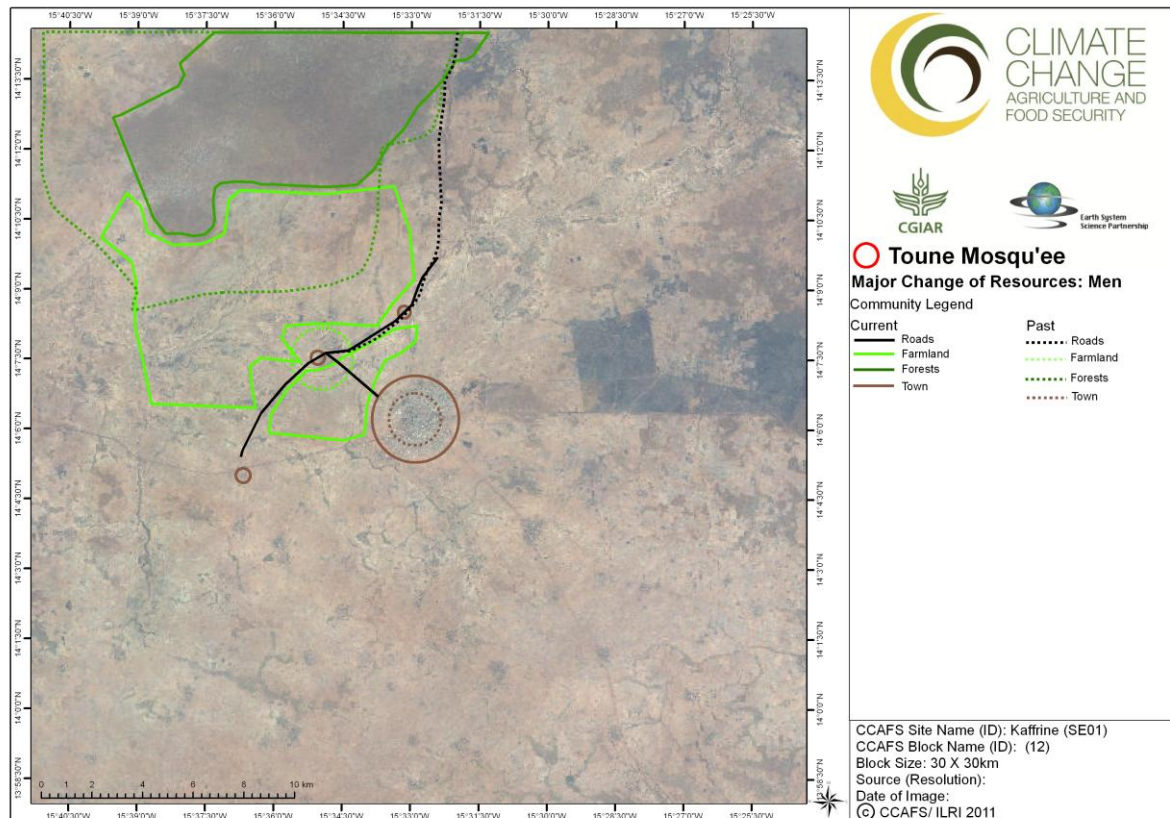
Low fertility levels and declining productivity characterize the farmlands. Women used terms such as “tired soils” and “dead soils” to describe the state of degradation and infertility of the land. To cope with declining productivity, producers are gradually extending the fields to more or less distant areas: Gandou and Gabane to the west, Kaba to the south, Keur-bale and Yamal to the east, Guelsangole to the west, Gouisamba and Tourguel to the north, Khalawa to the south behind the railway line.

Although both men and women noted an expansion of crop fields, neither group wanted to mention that such expansion is taking place at the expense of the forest, which is gradually being “eaten into.”

C. Major changes of resource conditions

Participants were asked to consider the resources they had in their community discuss the history of land use and identify major changes that had occurred in the landscape in the past 10 years. In addition, participants were 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 & 6), and table 2 that includes the major changes and drivers of change, as perceived by male and female participants.

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



Generally, the men and women are in agreement on the major changes and the drivers of change as far as resources and infrastructure are concerned. The male participants thought that the migration by the Julof people (nomadic pastors from the north) towards the forest ponds of Toune Mosquée explains why the ponds are drying up prematurely. They also noted that commercial farming creates the demand for more land, which in turn increases pressure on land.

The women focused attention on the bridge, which was broken due to action by water. The lack of the bridge forces them to use alternative routes to access their fields and to get to Kaffrine. They also pointed out changes related to the presence of the railway line especially the increase in number of bandits, the evacuation of mad men from Dakar and their release into the area through rail transport. They also lamented the cessation of operations of national trains, which served the interior of the country.

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

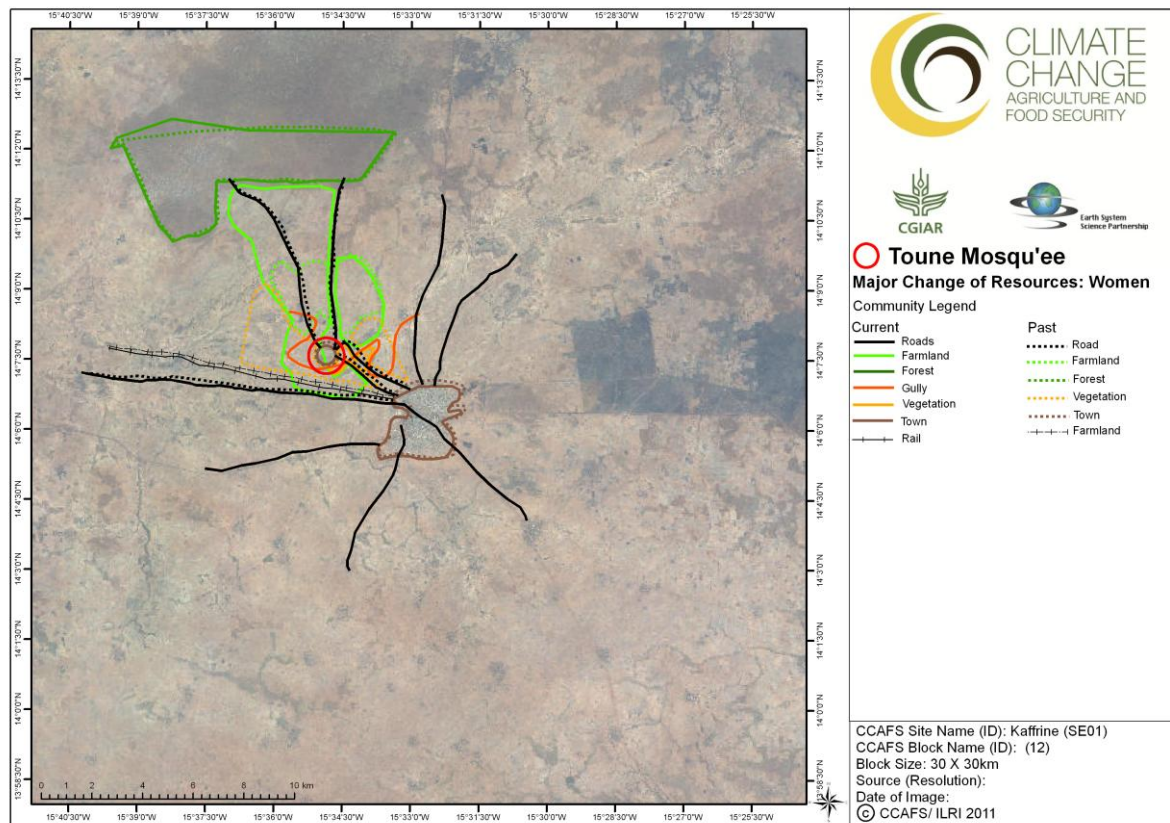


Table 2, below, provides a summary of the major changes experienced by the community, as expressed by the participants.

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/ ownership issues	Environmental Benefits
Forest (M)	-Unexploited forest	Protected forest	Thicker, bigger, with many animals	1 hour on foot	-Population growth; - Deforestation; -Expansion of farmlands - Mechanization of agric. Prod.; - Change of mode of management	State (water and forest service)	
Forest (F)	-Mild cutting of trees for crafts -Hunting: big game -Collecting med. plants -Gathering wild fruits.	Protected inter community forest	Very dense	Less than 2 hours on foot	-Indiscriminate felling of trees - Progressive extension of farmlands into forest -Reduction of forested area -Disappearance of big game	State, Listed forest	Fight against erosion, biodiversity maintained
Ponds (M)	-Watering animals -Brick making -Washing of clothes - Vegetable production	4 ponds, others in forest.	-Temporary ponds - Greater storage -Water available 8 months in year.	10 to 20 min	-Shorter rainy seasons -Reduction in rainfall - Increased demand for water by Julof pastoralists from north.		
Pond (F)	Laundry, watering of animals, bathing.	Toune Mosquée pond.	-Less sand. -Larger, deeper.		Filling with sand and drying up.	Community.	Microclimate, increase in biodiversity
Roads (M)	Route to Kaffrine market, health centre...	One dirt road to Kaffrine.			-Once a dirt road is degraded, community creates another.	Community managed.	
Roads (F)	Movement between villages.		No tarmac, dirt roads good cond.		Currently more degraded by long furrow. Sections divided in two	Public, state owned.	
Farmland (M)	Fields of groundnuts, millet, sorghum, maize, cowpeas, sesame, sorrel and okra.	-Infields nearer homesteads.	-More fertile and productive soil. -Presence of fallow land.	30 minutes	- Population increase, pressure. -Mechanization of agric. prod. -Practice of chem. fertilizer agric. -Individualization of farms. -Commercial farming.	- Family, farms. -Communal farms -Inheritance. -Donation by rural community.	
Farmland (F)	Grow maize, groundnuts, cowpea, okra.	Home-, community	Fairly fertile, good yields.		Decline in soil fertility due to over-exploitation.	Family, clan, community man.	
Railway line (F)	Movement between cities and countries, transportation of goods.	Trains for local/nat. transp, Dakar – Bamako train.	Fairly good condition, used frequently by travellers.		Nat. trains stopped operation. Increase in banditry. Evacuation of madmen from Dakar, released on way to Toune.	Public.	More and more bandits and madmen in area
Islamic religious schools (F)	Spiritual education for children of Toune Mosquée		Only Islamic school. Public school since 25 yrs.		Existence of public school and new Islamic religious schools.	Islamic school begun by marabouts (spiritual leaders)	

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.

In the section below we include the map that encapsulates Toune Mosquée village's vision of the future (Map 7). We also include 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

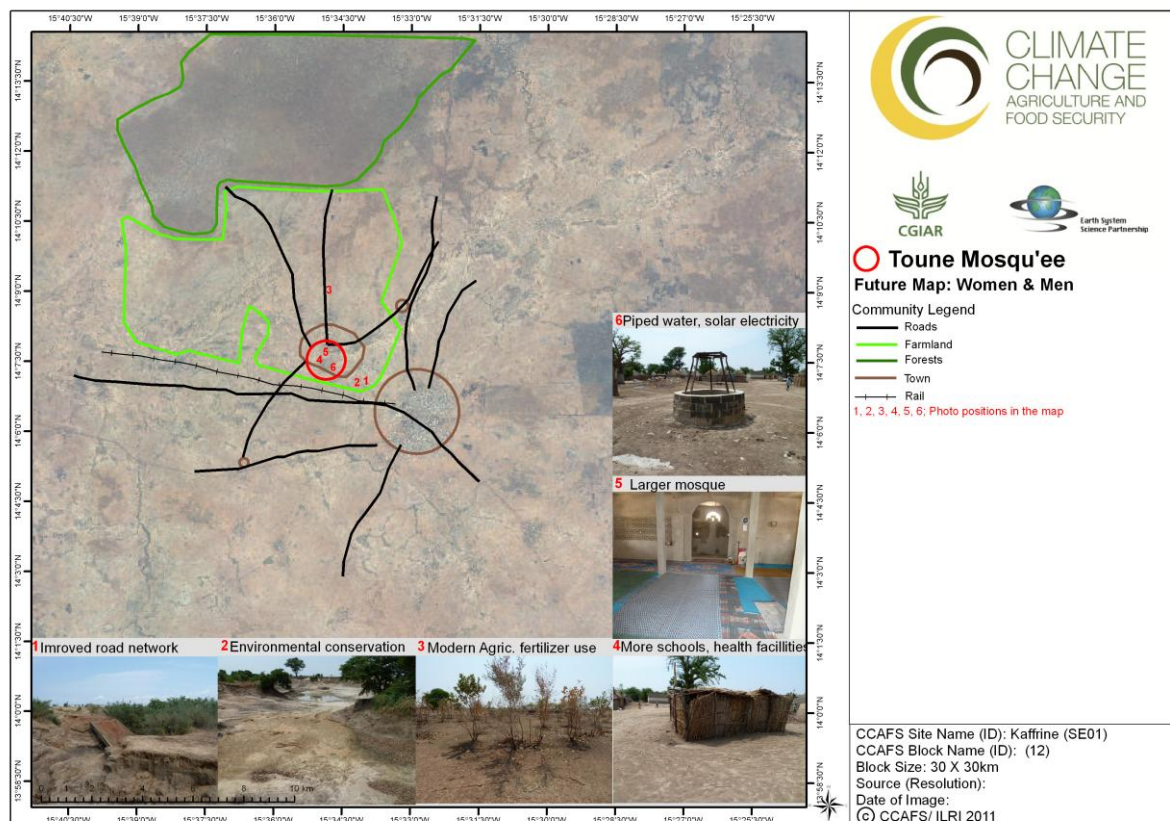


Photo 2 shows a large bridge broken by the force of water from coming down the main gully in the community. The young male photographer wished that the community could control the gullies that damage most roads in the village. Photo 3 depicts several baobabs in a large cleared field. The trees have been spared because they are part of the Senegalese culture. They have been left in the fields from generation to generation, hence their trait as tall and huge trees. The photographer wanted for this tradition to continue strong.

Photo 2. Bridge broken by the force of water from the gully



Photo 3. Baobabs in the middle of cleared lands



Photo 4 shows the extent of pressure on trees, which are cut for use as timber and as fodder for animals. It also shows the denuded conditions of the formerly strong protected forest, which currently is increasingly composed of shrubs. Photo 5 portrays a tree nursery which was not cited by the men or women, but whose importance to the village emerged during the elaboration of the vision. The youth wished for the development of more similar projects to occupy them and to retain them in the village. It can eventually be used for reforestation.

Photo 4. Trees on the verge of going extinct



Photo 5. Tree nursery



Photo 6 shows the importance of non-wood forest produce in the feeding of families, especially in times of food shortage. The photographer stressed the need to conserve and expand the forests. Photo 7 depicts heaps of household garbage that are seen around the village homesteads creating an unhygienic environment. The photographer wants this addressed in the future. Garbage (organic matter) in the village could be transported and disposed of in the fields to improve the low fertility levels of the soil. According to women, the main reason why garbage is not processed into compost is the lack of transportation equipment, such as carts.

Photo 6. Food from the forest



Photo 7. Household garbage and pollution



The village's vision for the future is summarized in Table 3, below. It contains the resources identified by the mixed group, the ideal conditions that the group wishes for, what would enable the realization of those conditions, the possible limitations as well as the organisations that need to be involved for those conditions to be realized.

Table 3. Summary of the ideal conditions for the future vision of Toune Mosquée

Resources	Preferred conditions for 2030	Opportunities	Constraints	Organisations to be involved
Forest / vegetation	Conserve current forest boundaries. Thicker forest	-Intensified agriculture through utilization of new agricultural technologies (improved seeds, fertilizer) and modern equipment. -Community involvement in forest protection	- Lack of employment forcing community to use forest	IREF, CPF, World Vision
Degraded land/ gullies	No degraded land or gullies.			
Quarry	No quarry.			
Roads	Tarmac road.	-Financial assistance from partners.	Community participation	Government, development partners
Village	Bigger.			
Ponds	Upkeep and protection of ponds.	-Plant around ponds to protect them (protection of banks).		-World Vision -IREF

The women and elderly men did not contribute much to the discussions on the vision for 2030. The CCAFS team had to insist before a young lady got the courage to intervene and talk about the necessity of preserving the forest and intensifying agriculture. Her timely and relevant intervention was a catalyst and more youth supported her views. Her participation was courageous because in the African cultures, women generally refuse to speak in the presence of men who could be their fathers, uncles, father-in-law, etc. The expression of Vision 2030 touches on the following topics:

The protected forest /vegetation in the village: The wish is to maintain the current boundaries of the forest and have a thicker forest by 2030. The community believes that for this to happen, they are going to practice more intensive agriculture integrating new technologies, agricultural inputs (improved seeds, fertilizer) and modern equipment. The participants stipulated the need to commit themselves to the protection of the forest. However, lack of employment opportunities remains a major limitation in the community, and makes it dependant on forest resources as a source of income. Hence, the community feels that it cannot avoid carving off the edges of the forest and cut live wood that is then sold by the men or used for social needs. The identification and harnessing of groups and associations at the village level will help to consolidate interventions on this topic.

Degraded lands, gullies and quarries: The community hopes to see the gullies, pits and degraded lands (eroded, infertile and currently inappropriate for agriculture) eradicated from the village. They wish to put an end to sand and laterite harvesting in their village, as this creates deeper gullies and destroys the roads. However, they do not know how to achieve this dream given that the gullies are of such huge dimensions.

The roads: In the community's vision for 2030, the road from Kaffrine to Toune Mosquée should be tarmac. For this to happen, they are counting on the state and financial partners. The community should also participate in this action.

The dimensions of the village: The community feels that the village will spread beyond its current residential areas. They are conscious that this will be done to the detriment of the farmlands and vegetation. Nonetheless, they believe that if they manage to practice a more intensive agriculture they will compensate for the loss of the area under production through improved productivity and an increase in incomes.

The ponds: The community wishes to maintain the current number of ponds, as the village does not have any other types of water projects such as dams or water reservoirs. To do this, they intend to plant trees around the ponds to protect their banks.

E. Conclusion

The village of Toune Mosquée has a fair amount of natural resources and infrastructure, but these are in a state of progressive degradation. The opinions of the men and the women are more or less similar

on the major changes on the resources and the drivers of these changes. Vision 2030 has to do with the community's desire to protect and improve forest/vegetation, degraded lands, gullies and quarries, roads, and the ponds. To realize these aspirations they are counting on themselves but also on partners. The implications from the above-described scenario are that CCAFS and its partners should join efforts to support the community's vision of improving natural resource management, notably in agricultural intensification that targets the improvement of soil productivity.

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

Both male and female groups were asked to identify organisations operating in the village, and then rank them in order of importance. The ranking of the organisations was based on the perceived benefits that the participants got from those organisations. The participants allocated pebbles to the organisations to indicate the latter's relative importance. Males identified 13 organisations, 2 of them at the community level, 5 at the local level and 6 beyond the local level. For their part, women identified 21 organisations, 17 of which were based at the community level and 4 at the local level. Women hardly know any organisations other than local groups. Hence, the women's identification of organisations operating in the village was a tedious exercise.

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 (see Photo 8). Thus, the group placed in the inner 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. The results are shown in the images that follow (Figures 1 and 2).

Photo 8. The organisational landscape as created by the men's group

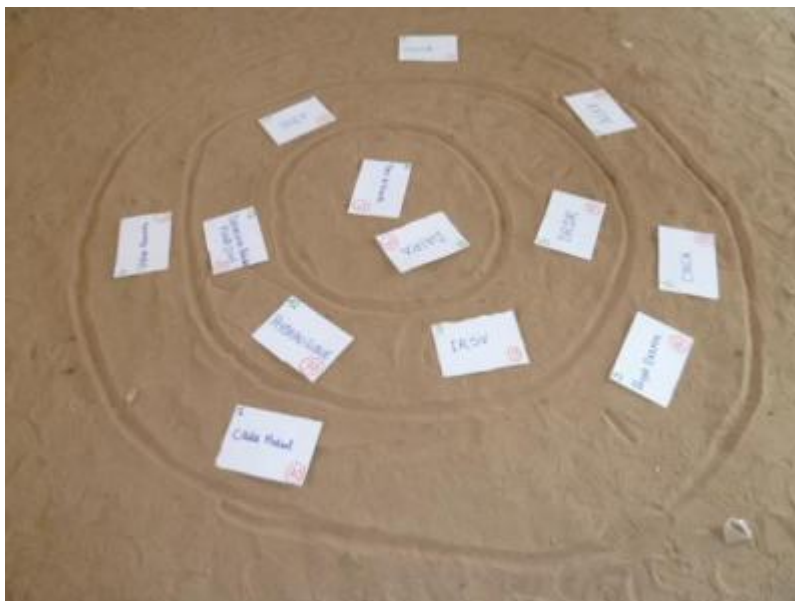


Figure 1. Organisational landscape of the men's group

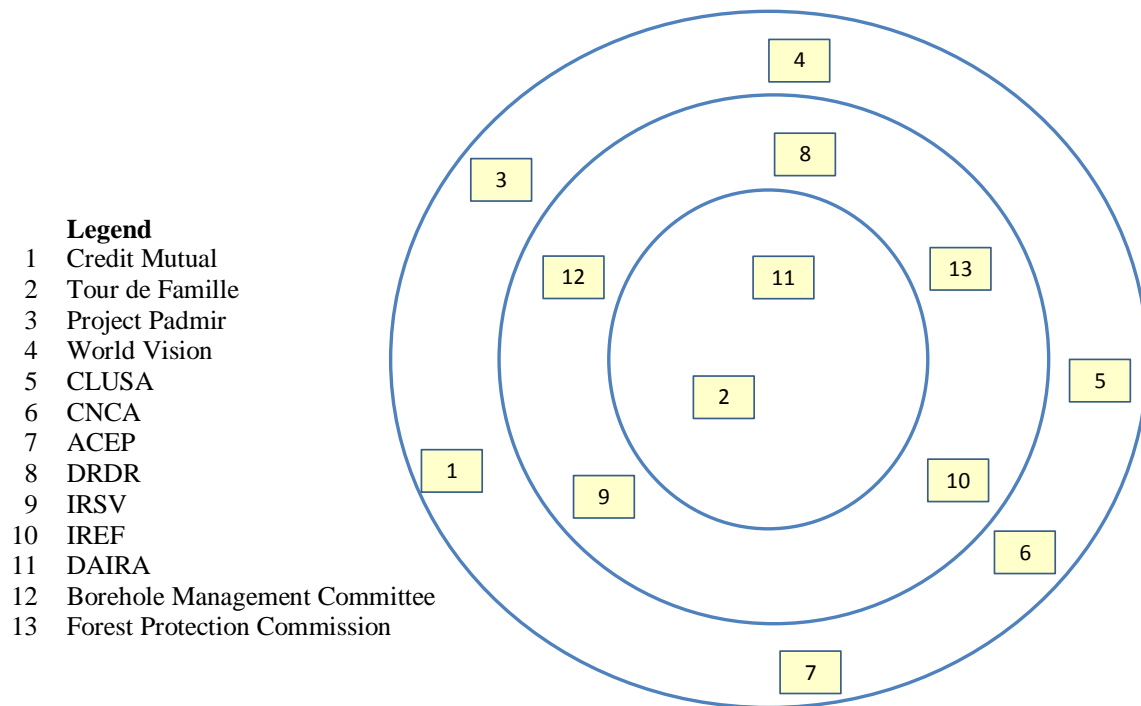


Figure 2. Organisational landscape of the women's group

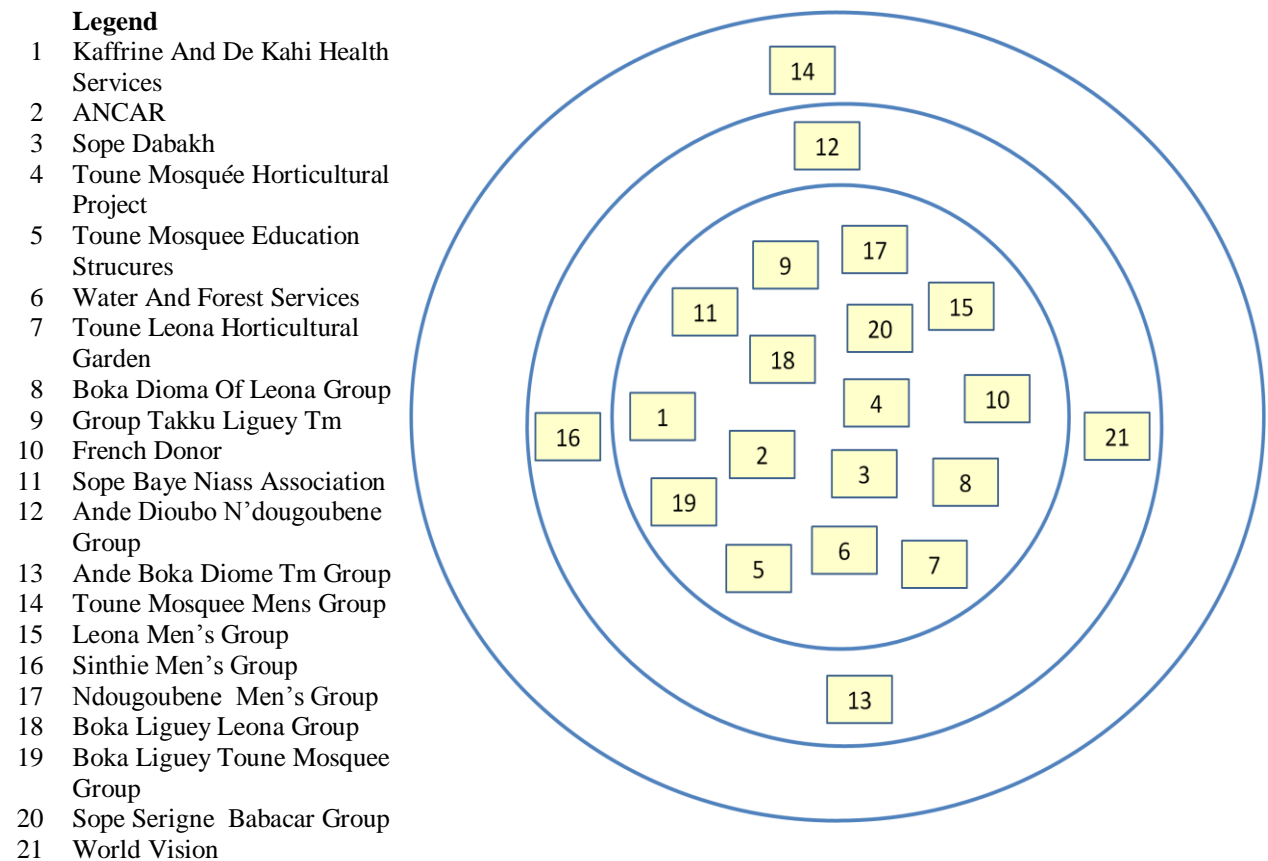


Table 4. Basic Organisational Information pertaining to the village according to male and female respondents

Male respondents

							For community groups		
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)	Sources of funding (member, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal	
1	Hydraulique (Management committee of Kahi Borehole)	Piping of drinking water to community through public taps.	One person manages each of 9 taps in village. They are members of Hydraulique commission	Village selects people in charge of managing tap.	State	Local	Bill paid by the users.	1-5 years	Formal
2	Daira (religious center)	-Religious activities (organisation of overnight prayers) - Support for community activities (purchase or rent chairs for community, sound equipment for religious activities, communal farmlands).	There are 3 Daira based on religious brotherhoods. These are Mourid, Tidiane and Niassène.	-Requests for membership during general assembly. -Contributions -Belonging to a religious brotherhood	Indigenous	Community	Members contribute 100 CFA/week or more relative to means of people, at end of rainy season.	-Over 5 years for Daira of Tidianes and Niassènes - 1-5 years for Daira of Mourid)	Informal
3	IREF	-Forest protection. -Training on production of pine -Reforestation through tree planting campaigns. -Purchase of seedlings			State	Local		More than 5 years	Formal
4	DRDR	-Agricultural support through seed and fertilizer subsidies.			State	Local		More	Formal
5	Forest Protection Commission (CPF)	Forest Surveillance	Only one person from Toune Mosquée belongs to CPF		Indigenous (Rural community/ State)	Local	Both	More	Formal

Female respondents

									For community groups
Organization name	Main activities	Number of members (estimate)	Access (open or restricted to...)	Origin (indigenous, state, NGO, project)	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	Health Service	Health care to the community		State	Beyond				
2	ANCAR	Extension services, promotion of improved seed		State	National				
3	Sope Dabakh	Horticulture, all kinds of mutual help, provision of loans to members, borrowing from microfinance institutions	36	Membership fee of 4000 CFA	Community association created by women	Community	Donations, development partners	11 years Informal	
4	Toune Mosquée Horticultural Project	Construction of horticultural sites and accompanying infrastructure (wells, power pumps, fence), digging trenches for pipes to take water from women's site to men's site whose water is salty.	Beneficiaries are women from 3 of 4 residential areas (Toune Mosquée, Sinthie Mosque, Leona)			Community	7 years for women's site, 5 for mixed gender site	Informal	
5	Education Structures	Elementary public education is provided through traditional public school and Islamic religious schools. Islamic religious school is integrated at Toune Mosquée in traditional school. There is a school canteen at public school.	Trad. School, 2 Islamic schools are in Toune Mosquée residential area. 3 Islamic schools in other areas	Payment required.	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. Not all the organisations listed by the men and the women were involved in food security (Figures 3 and 4). Men and women perceived food security in very similar terms. Men defined food security in terms of “good food availability” and the capacity to buy food. For their part, women defined food security as “feeling food secure when yields are good and when the family has money to buy food.”

Figure 3. Organisational landscape for food security – men

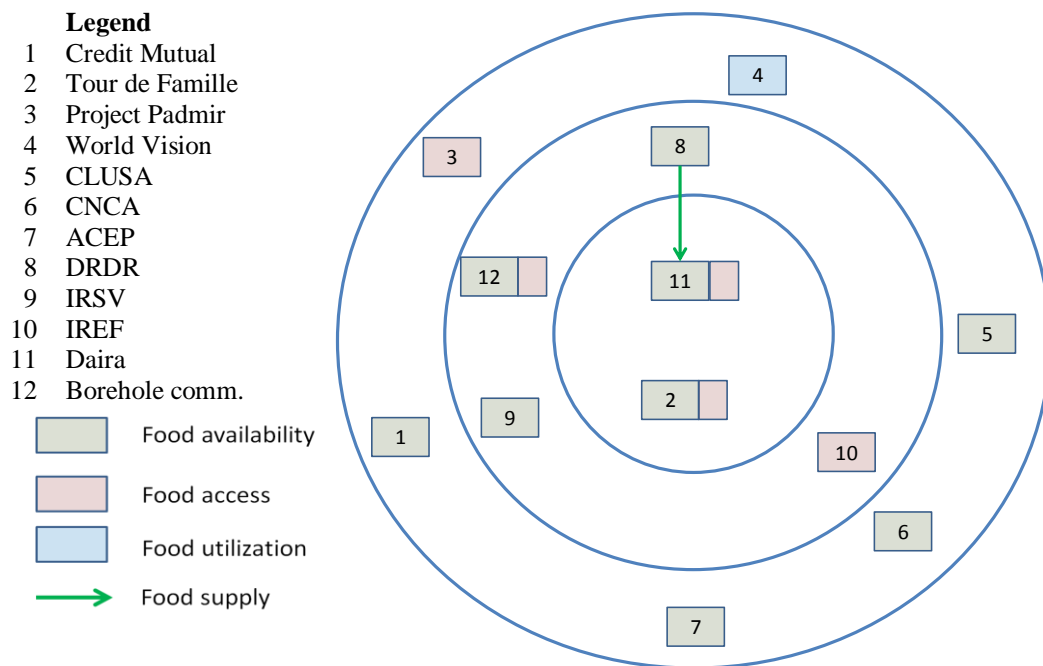
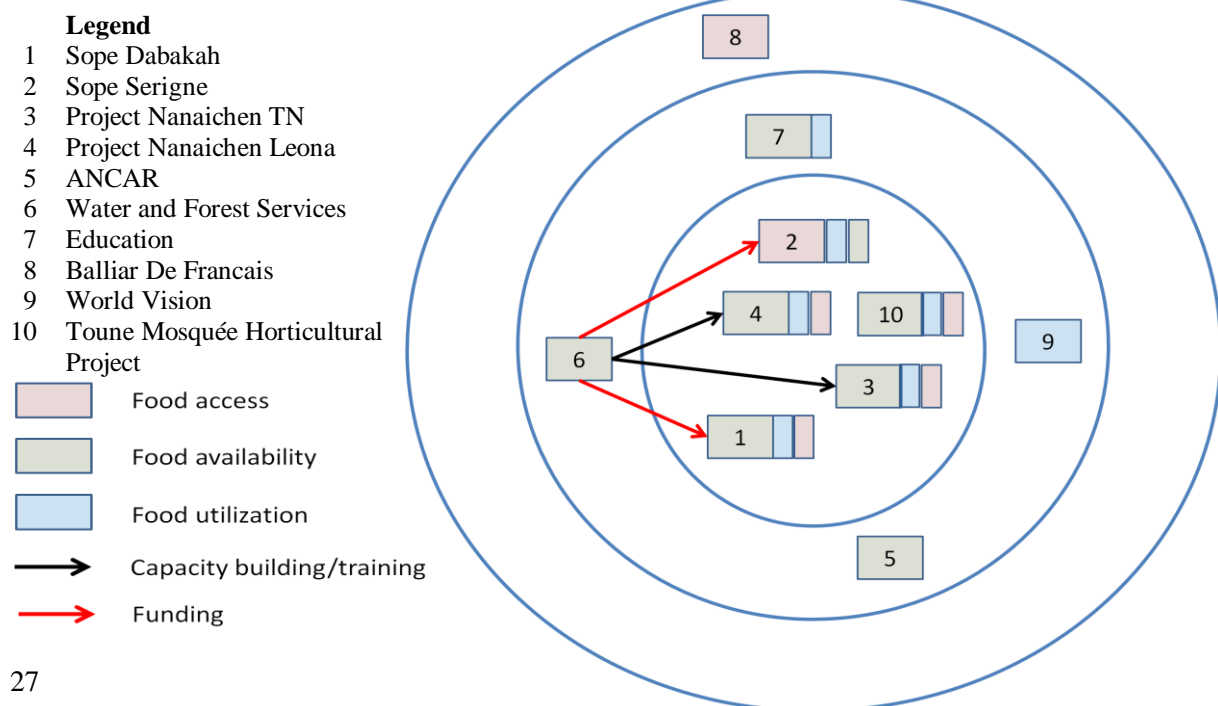


Figure 4. Organisational landscape for food security – women



The men's group identified 13 organisations, 12 of which are involved in food security. The women's group identified 20 organisations, and out of those 10 are involved in food security. A new organisation that had not been previously mentioned, World Vision, was added to the original listing of organisations when the topic of food security was introduced to give a total of 21 organisations listed by the women.

There are very few similarities between organisations identified by the men and those identified by the women. Organisations such as World Vision, IREF (Water and Forest Services for the women) and DRDR (or ANCAR for the women) are common to both groups. Overall, however, there was a clear difference in the identification of the organisations between the men and the women, as if the men knew little of what the women did, and vice versa.

Men and women were asked to define the types of linkages that existed among the different organisations. Men identified only one linkage, seeds supply from the Regional Directorate for Rural Development (DRDR) to the community through the Dairas. Meanwhile, women identified several types of linkages including funding, the posting of agents, training or capacity building.

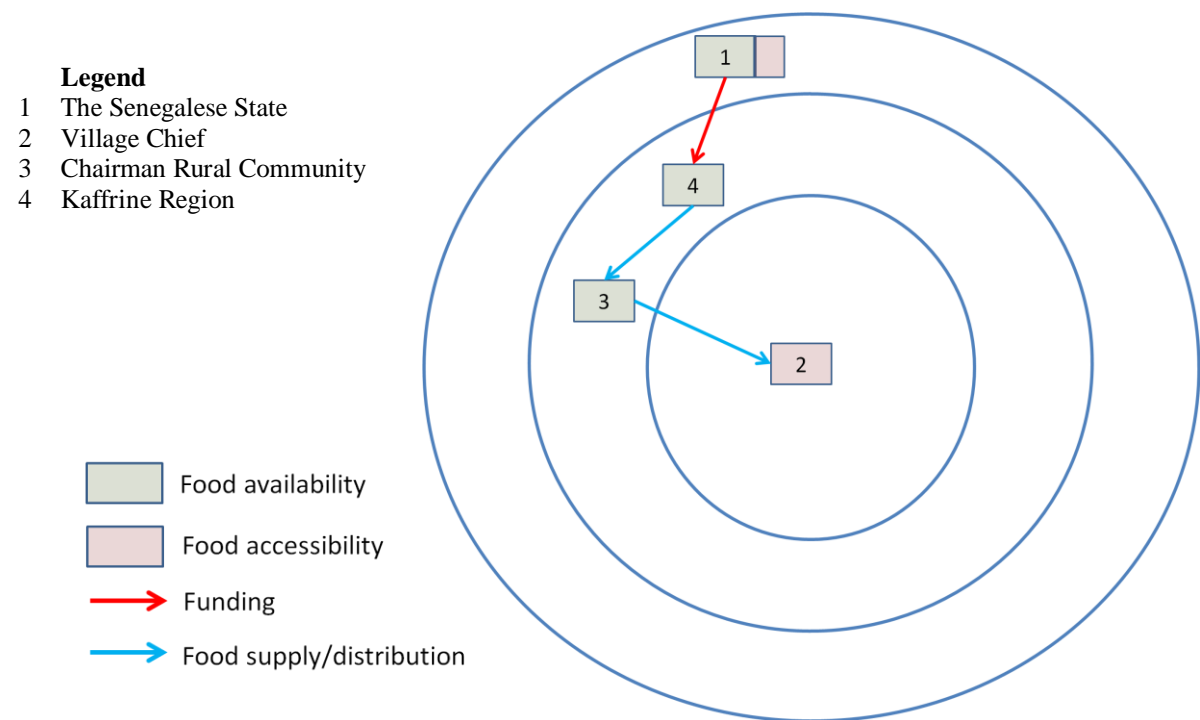
C. Organisational landscape of food crisis situations

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. To anchor the discussion, the male participants focused on the 1985 food crisis that resulted from two consecutive years of drought and bad harvest (1983 and 1984). At the time, the price of millet went from 100 F CFA/kg to 300 F CFA/kg. Men indicated that none of the organisations in the community participated in the management of the food crisis. The men coped as best as they could to manage this food crisis. They sold off their agricultural material and animals cheaply to buy foodstuffs. For example a horse worth 60 000 F CFA sold for 15 000 F CFA. Given the lack of involvement of the organisations in food crisis management, the men's group did not create a diagram for food crisis situations.

The women's group took a different perspective on food crisis. Women felt that generally the production is not enough to satisfy the family's food needs throughout the year, and therefore the food deficit is recurrent. They recognized that after the rainy season their meals are always well varied and of good quality, but pointed out that in the lean period (such as in the month of July) the quality of delicacies and food consumed declines. Overall, they felt that the harvests were not sufficient and indicated that the families often lacked money to buy food. Women also mentioned the lack of transport to go and look for food at Kaffrine.

Prodded to focus the discussion on a specific food crisis, the women cited one crisis in 2004. According to them, no special organisation intervened in the management of the 2004 food crisis in the village. Only the state sent foodstuff to the community through the regular administrative hierarchy. As it is customary in these cases, the food was sent to the administrator at Kaffrine region, who channelled it to the Kahi rural community chairman to be sent to the Toune Mosquée village chief who then allocated it to the families. The amount that each household received was not enough (about 3kg). The women suspected that certain households were discriminated against while others were favoured in the distribution of food. The men temporarily out-migrated in search of employment and income to manage the crisis. Both men and women were forced to sell their livestock cheaply to buy food. The chart included below shows the organisations that women perceived to be related to addressing the food crisis in 2004 in the village, and the linkages that the organisations had among each other (Figure 5).

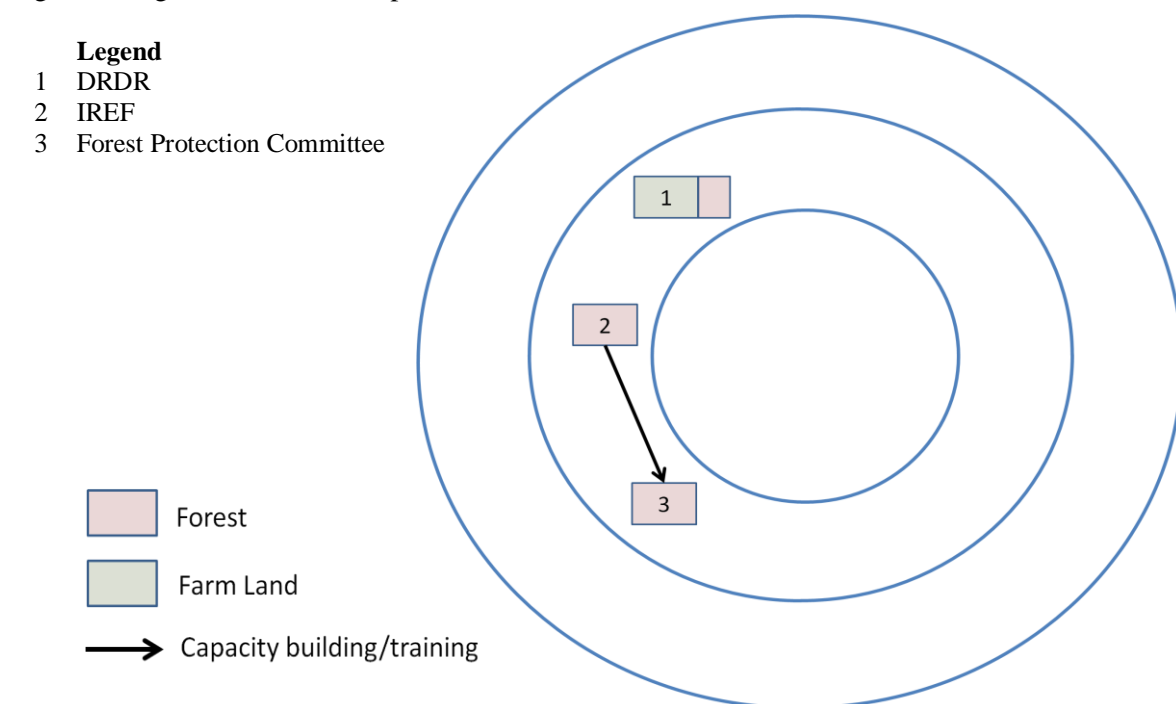
Figure 5. Organisational landscape for food crisis situations – women



D. Organisational landscape of natural resource management

Only the men were able to identify organisations involved in natural resources management (NRM). They identified 3 organisations (IREF, DRDR, and CPF) that focus on forests and farmlands. They recognized only one linkage (capacity building) between the organisations involved in NRM. This entailed training forest guards and providing them with bicycles for use in guarding the forest.

Figure 6. Organisational landscape for NRM – men



E. Conclusion

Table 5 presents a summary of the organisations identified in the community and their involvement in food security and food crisis situations. The women identified 8 organisations that are involved in food availability, 6 in food access, 7 in food utilization, and 4 in food crisis management (State and its organs). The men identified a total of 9 organisations involved in food availability, 5 in food access, 1 in food utilization and no organisation in food crisis management. Men identified 3 organisations in natural resources management, while women identified none.

The two groups identified a total of 36 organisations including groups from the State services, NGOs, associations, Muslim brotherhoods, etc. The spheres of operation of the groups are varied but 32 organisations operate at the community and local levels. The groups and associations, as well as some projects such as the women's horticultural project, are community based. The community based groups and associations are informal in nature and have existed for a period ranging from 1 to 11 years. Sope Dabakh is one of the oldest organisations and encompasses 36 members who pay a membership fee of 4000 F CFA.

Table 5. Information on highlighted organisations of men and women (unless noted, 1=yes; 0=no)

	Organisations	Food avail.	Food access	Food util.	Food crisis	NRM	Total
Women	a Kaffrine and Kahi health services	0	0	0	0	0	0
	b ANCAR	1	0	0	0	0	1
	c Sope Dabakh	1	1	1	0	0	3
	d Toune Mosquée horticultural project	1	1	1	0	0	3
	e Toune Mosquée Education structures	1	1	0	0	0	2
	f Water and Forest Services	1	1	1	0	0	3
	g Toune Leona horticultural project	1	1	1	0	0	3
	h Boka Dioma De Leona group	0	0	0	0	0	0
	i Takku Liquey TM group	0	0	0	0	0	0
	j French donor	1	0	1	0	0	2
	k Sope Baye Niass Association	0	0	0	0	0	0
	l Ande dioubo N'dougoubene group	0	0	0	0	0	0
	m Ande Boka Diome TM group	0	0	0	0	0	0
	n Toune Mosquée group	0	0	0	0	0	0
	o Leona men's group	0	0	0	0	0	0
	p Sinthie men's group	0	0	0	0	0	0
	q Ndougoubene men's group	0	0	0	0	0	0
	r Boka liguey Leona group	0	0	0	0	0	0
	s Boka liguey Toune Mosquée group	0	0	0	0	0	0
	t Sope Serigne Babacar group	1	1	1	0	0	3
u World Vision	0	0	1	0	0	1	
v The Senegalese State	0	0	0	1	0	1	
w Kaffrine region	0	0	0	1	0	1	
x Kahi rural community	0	0	0	1	0	1	
y Village chief	0	0	0	1	0	1	
Total		8	6	7	4	0	25
Men	a Hydraulique (Kahi borehole)	1	1	0	0	0	2
	b Daira	1	1	0	0	0	2
	c IREF	0	1	0	0	1	2
	d DRDR	1	0	0	0	1	2
	e CPF	0	0	0	0	1	1
	f Crédit mutuel	1	0	0	0	0	1
	g PADMIR	0	1	0	0	0	1
	h IRSV	1	0	0	0	0	1
	i CNCA	1	0	0	0	0	1
	j ACEP	1	0	0	0	0	1
	k Tour de Famille	1	1	0	0	0	2
	l CLUSA	1	0	0	0	0	1
	m World Vision	0	0	1	0	0	1
Total		9	5	1	0	3	19

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.

Men and women were asked to identify topics about which they seek advice and information. The topics differed according to the specific needs of each group. The men identified 5 such topics. These are information on:

1. inputs and soil fertility
2. human and animal health
3. the cost of agricultural and livestock products
4. beginning and evolution of the rainy season
5. pests

The women identified 7 topics for which they need information. These include information on:

1. the use of compost
2. the cause of non homogeneity of plants
3. the best livestock feeding techniques
4. treatment of livestock
5. drought and drought pockets
6. compost production
7. the management of the effects of wind on crops

The information networks were analysed on the basis of the 5 information topics from the men and 3 information topics from the women (notably the information needs on the livestock feeding techniques, drought and drought pockets and the production of compost) (see Table 6, below).

The information contained in Table 6 shows that people and organisations are the key sources of information for women. Although the radio is the form of media most commonly used by women, few women own a radio. On the other hand, men get informed through all the channels (people, organisations, media and others). In addition to the radio, men use television as a source of information. Although there are no television sets in the village, men get informed by watching TV when they visit Kaffrine, a town that is situated 3 km from the village.

Both men and women are interested in weather information, but with different emphases. Women's interest is in defining whether there will be drought and if so, when. Men's interest is on establishing the beginning and the evolution of the rainy season. The women acquire weather information through people and the radio whereas men get it through all four channels, namely people (especially the marabout or religious leader), organisations (Rural Regional Development Management, meteorological services), media (national radio, regional radio and national television) and nature observation (birds, insects etc.).

Women obtain information on livestock feeding techniques from people and organisations such as the horticultural project, women's associations, and water and forest services. Women also get information on compost production via the Kaolack regional radio broadcasting. For their part, men get information on soil inputs and soil fertility management from people (farmers), organisations (DRDR, rural community and State), media (radio and television), and from community leaders, notably the office of the village chief and the mosque on Fridays.

For information on human and animal health, the men inform one another. They also get information from the regional veterinary inspection service (IRSV) for animal health, and from the health clinic for human health. Men use the radio, television, village chief and the Friday mosque as channels of information on human and animal health. Concerning pests, the men inform themselves through people, (farmers), organisations (DRDR and rural community), the radio and national television. Information on the prices of agricultural and livestock products is obtained through people (traders, farmers, herdsmen), the market (weekly and town) and media (radio and national television).

All “official” information to the village first passes through the village chief who relays it to the people. In addition, information is given at the Friday mosque after prayers. Friday constitutes the weekly prayer day in the village. The Friday mosque gathers the largest number of people on that day. The usage of the mosque as a communication channel makes it possible for information to be easily disseminated in the village. This situation is a common practice in Senegal, which is a predominantly a Muslim country.

An analysis of the information networks highlights the central role played by the village chief and the Friday mosque in the dissemination of information. In conclusion, we can say that women have fewer channels of information in comparison to men, hence the lack of information displayed during the discussions.

Table 6. Information networks (unless noted, 1=yes; 0=no)

Source of information	Topic (Women)			Topic (Men)					Total
	Better livestock feeding techniques	Drought; alert on drought pockets	Making of compost	Inputs and soil fertility	Human and animal health	Prices of agric. and livestock products	Onset/ evolution of rainy season	Pests	
<i>People</i>									
Farmer/Pastoralist	0	0	0	1	1	1	0	1	4
Traders	0	0	0	0	0	1	0	0	1
Elders	0	0	0	0	0	0	0	0	0
Marabout (spiritual leader)	0	0	0	0	0	0	1	0	1
Women	1	1	0	0	0	0	0	0	2
Men	1	1	0	0	0	0	0	0	2
<i>Organisations</i>									
DRDR	0	0	0	1	0	0	1	1	3
IRSV	0	0	0	0	1	0	0	0	1
Water and Forest Services	1	0	0	0	0	0	0	0	1
Meteorological service	0	0	0	0	0	0	1	0	1
Health Clinic	0	0	0	0	1	0	0	0	1
Market Vegetable project	1	0	0	0	0	0	0	0	1
Women's Associations	1	0	0	0	0	0	0	0	1
State	0	0	0	0	0	1	1	0	2
Rural community	0	0	0	1	0	0	0	1	2
<i>Media</i>									
Regional Radio (Kaolack)	0	0	1	1	1	1	1	1	6
National Radio	0	0	0	0	1	1	1	1	4
Television	0	0	0	1	1	1	1	1	5
<i>Other</i>									
Village Chief	0	0	0	1	1	1	0	1	4
Friday Mosque	0	0	0	1	1	1	0	1	4
Weekly market	0	0	0	0	0	1	0	0	1
Town market	0	0	0	0	0	1	0	0	1
Observation of nature (birds, insect, etc.)	0	0	0	0	0	0	1	0	1
Total	5	2	1	7	8	10	7	8	

Conclusion and recommendations

The data collected show that the natural resources in the Toune Mosquée village are in a progressive state of degradation. The protected forest, a resource that for a long time has been an important source of revenue for the population, is currently almost deforested. Crop production is not sufficient to meet the food needs of a family throughout the year. The productivity of farmlands has been declining due to degraded and low fertility soils, lack of fertilizer and improved seeds, presence of striga and pests, out-dated agricultural equipment and lack of technological information. To cope with declining productivity, producers are expanding the crop fields at the expense of the forest. Families must buy food to fill the gap in production, and for that they often rely on harvesting and selling forest products, which results in a vicious cycle of resource degradation.

Both males and females pointed out the poor level of input subsidies by the State; the weak support for horticultural production during the dry season; and general inadequacies in funding supplied by financial institutions. Soil erosion is rampant and manifested in the multiple and ever growing gullies that fragment the fields and roads. Both men and women complained about the high transport costs during the rainy season because of the poor state of the roads.

The male and female groups identified 35 organisations operating in the village. This includes informal groups, state services, associations, NGOs and Muslim brotherhoods. The general observation was that currently very few initiatives are developed by internal organisations regarding natural resource management. Those organisations seem to expect everything to come from outside. At the same time, there are only 4 organisations from outside the village--such as IREF, DRDR, and the Forest Protection Commission (FPC)--involved in the management and protection of natural resources. This contrasts with the 18 organisations that work on food security issues.

In their vision for the future (2030) Toune Mosquée people indicated that they seek to engage in actions that will allow for the restoration or improvement of resources and infrastructure. They hope to maintain the forest in its present dimensions, while at the same time improving the vegetation density. To achieve this goal, they want to intensify agriculture through the utilization of mineral and organic fertilizers and a variety of good quality seeds, as well as the integration of livestock rearing activities with agriculture. They want to stop the cutting of green trees, and be able to tame the gullies. These actions would allow them to stop the expansion of the area under cultivation, which is done to the detriment of the protected forest.

Implications for CCAFS

CCAFS can provide support to the villagers so they advance toward making their vision of the future a reality. This will require, above all, a concerted effort of all stakeholders rather than only technological fixes. It is important to highlight that the neighbouring villages, administrative leaders, organisations of different villages--although sharing certain resources such as the forest, ponds, the big gully and quarry sites--are not mentioned as key players to be involved in the actions aimed at restoring these resources. We can therefore ask ourselves how the village of Toune Mosquée intends to improve vegetation density in the forest and to get rid of the long gully without putting in place a consultation framework, considering that the local authorities levy taxes. That is why we think that CCAFS, the village and its current and potential partners (ICRISAT, ISRA, etc.) should develop actions to operationalize the vision in a way that promotes a coordinated and sustainable effort. Decentralized state organisations and development partners should provide financial support to strengthen the village's capacities to address development challenges.

CCAFS should work with institutional partners working in the area. For instance, regarding technological adaptation to climate change and variability, CCAFS can work on the one hand with ICRISAT, ISRA (agricultural national research institute), other research organisations such as IRD and CIRAD, as well as agricultural development organisations. Likewise, CCAFS could support the dissemination of climate and weather information, including early warnings, by working with the appropriate ministries, the Directorate of national meteorology and research organisations such as

Agrhyment/CILSS, ISRA and ICRISAT. Jointly they could establish a climatic multi-risk information system that permits the diffusion of adaptation strategies and early warning products. Finally, the community does not have a strong capacity to mobilize financial resources.

CCAFS should make a special effort in providing opportunities for women to get access to technological innovation. Currently there is a gap in the dissemination of new agricultural and livestock technologies at the community level. Technology training is overwhelmingly targeted at men. Women are excluded from agricultural extension activities regardless of the substantial contribution of women's produce to satisfying family food needs. This situation needs to be corrected.

If we consider the organisations identified by women, the Sope Dabakh and Sope Baye Niass Associations may be potential CCAFS partners. Both associations have been in existence for 11 years and they mobilize women even if the organisations remain informal. The associations will need reinforcement in organisational development, networking and fundraising. In addition, the two horticultural projects, supported by a French donor through the Ministry of Water and Forests, could be potential CCAFS partners. CCAFS could create other horticultural sites or provide technical and financial support for the improvement of working conditions. This would provide an opportunity to tackle environmental problems especially the salinity of the water and land and recurrent drought.

Among the organisations cited by the men's group, the DRDR and the IREF could be potential partners for CCAFS. They are more than five years old and are formal. These are decentralized State services and have expertise in the forestry sector, selection of seeds adapted to local conditions in the context of climate change. Both organisations work to promote improved agricultural practices, which include the use of fertilizer and pesticides.

At the same time, it will be critically important to involve local administrative authorities. It is known that taxes are levied to get rid of the gully or prevent sand harvesting in the quarries, but research participants did not mention such authorities as actors to be involved to address gully expansion or prevent sand harvesting. The vision for 2030 will become a reality only through mobilisation of community organisations and leadership at all levels.

It is also important to keep in mind that many associations established under the initiative of the State or religious leaders are informal and do not operate outside social mutual help activities. In times of food crisis, the community gets together to manage the crisis through village organisations, such as self-help associations (referred to as Tour de Famille or Diara), as well as religious brotherhoods. As a rule of thumb, the Diara organisation serves as an indicator of the capacity of mobilization and mutual help among members of the village community.

The village chief is a required entry point for any intervention in the village. At the same time, religion exerts a great influence on the community's lives, within and among families. The marabouts (spiritual leaders) are respected and often cherished, even after their death (many associations bear the names of deceased marabouts). The marabouts constitute channels for disseminating information in the village, including via the village chief.