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

**Village Baseline Study:
Site Analysis Report for Lawra – Jirapa, Ghana
(GH0108)**

October 2012

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



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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://ccaafs.cgiar.org/resources/baseline-surveys>).

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Abstract

The village baseline study of Doggoh village in the CCAFS benchmark site Jirapa-Lawra in Ghana took place from 26th to 28st July 2011. Focus group discussions were conducted separately for men and women.

Doggoh village is located in a Sudan Savannah characterized by a considerable tree population, and the farming system it practices involves cultivation among trees. Land is cultivated by individuals but owned and administered communally through a traditional system of local chiefs. The average land productivity is low and the community can only produce enough to feed themselves for 3 months a year, resulting in the need to seek food from other sources for 9 months of the year. To survive, people depend on remittances.

Trees are communally managed with community sanctions against those who break the accepted practice. Nonetheless, the sale of wood fuel is putting pressure on the tree population. There is evidence of degradation on the landscape where vegetation has been removed and there is bare soil. The community relies on boreholes for their domestic water supply and take for granted the value of wetlands and the rivers, which remained effectively unmanaged.

The participants identified 22 organisations in the village, including 12 operating beyond the locality, 3 functioning within the locality and 7 operational within the community. Seventeen organisations contribute to food security, and other 14 encourage natural resource management. Organisations and radio are the most important sources of information.

Keywords

Baseline; Ghana; 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.

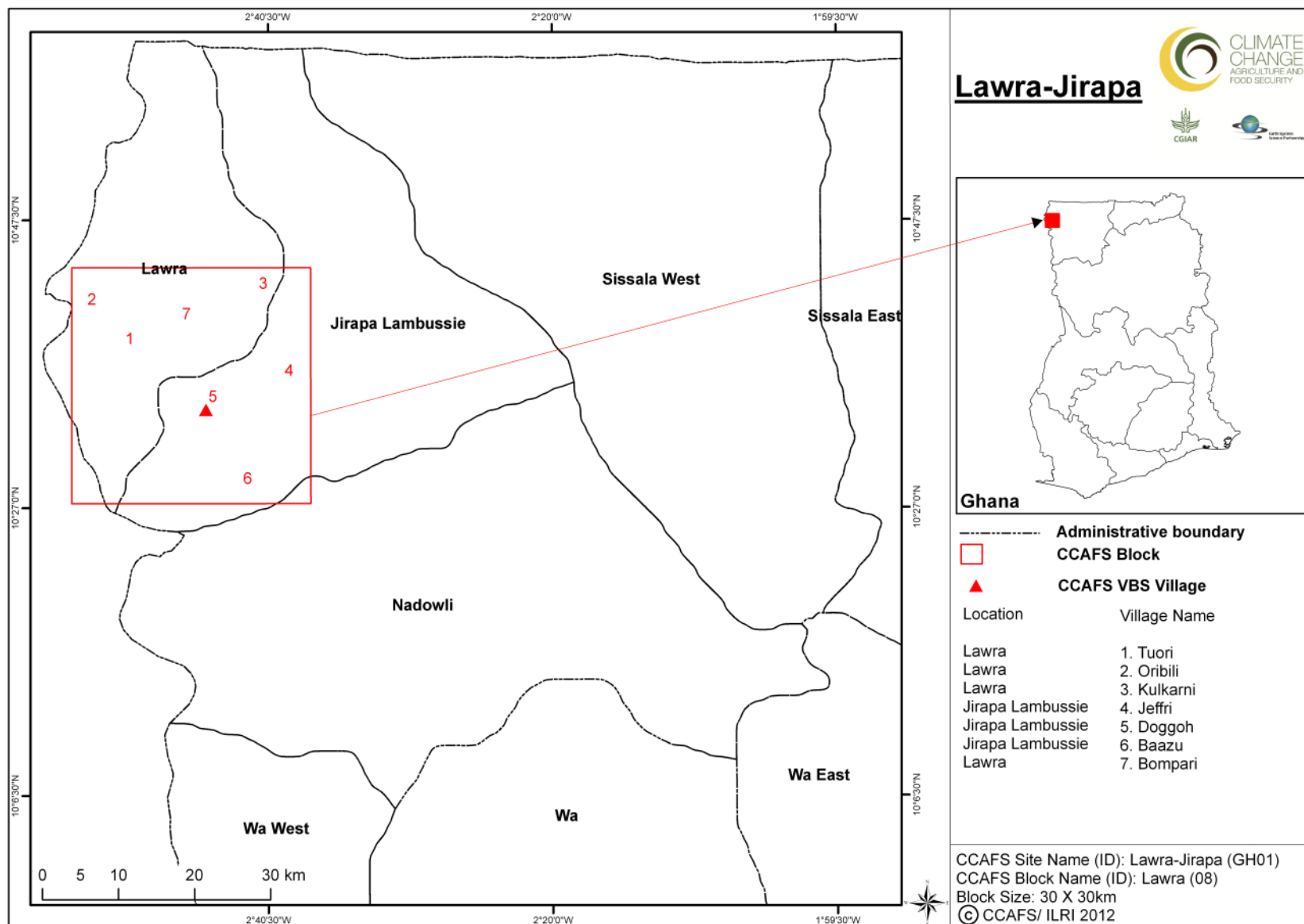
The focus of this site analysis report is the village baseline study (VBS). To date, fifteen VBS were conducted in the three CCAFS regions. The VBS aims to provide baseline information at the village level about some basic indicators of natural resource utilisation, organisational landscapes, information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



This report presents the results of the Village Baseline Study (VBS) conducted on July 26 to 28, 2011 in the village of Doggoh, Ghana (Map 1). The village geocoordinates are 10.567, -2.750. Doggoh village was chosen for the baseline survey because of its relative central location in the CCAFS' study block. There is reasonable accessibility to the village although in the event of heavy rain the roads can be difficult to navigate. The survey team was composed of two facilitators, two note takers and two translators. Each pair was male and female. Consultations were made with the village authorities concerning time and place of meeting, and the authorities selected the chief's palace as an appropriate venue. The site team leader sent out invitations to three sets of participants who were chosen using random sampling. Each set was composed of 15 men and 15 women. Three consecutive days were selected for the survey and on each day only one set of participants were expected to participate in the survey. On the first day of the survey the whole community was invited to an introductory session where the survey was explained to them and results of an earlier household survey were shared. After the introductory session the community was set free and only the invited group of 15 men and 15 women remained behind to carry on with the survey. At the end of the third day, when the survey was completed, the whole community was again invited to attend a debriefing session where a summary of the findings was shared.

The survey used participatory methods of data collection. The data collection process was carried out through separate groups of men and women to allow for collection of gender-differentiated information. The task on day one was to introduce the community group to a satellite image of the block and work with each group to identify and map/sketch resources that are important to the community, their current state, their past state and what caused the changes. The outputs were maps and sketches. The initial diagrams were drawn on the floor using chalk and discussed by the group to arrive at a consensus before being transferred to paper. The process of working with the community to identify the resources that are important to them depended entirely on how well they were able to understand and interpret the image. The appreciation of scale was important for them to get their bearing on the image. It was critical for the both the regional team and the local team to understand the block well in advance. The exercise could not be rushed and took a lot of time.

The task on day two was to work with each group to understand the organisational landscape and the links that exist between the organisations in relation to food security in a normal year 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.

There were two main tasks on day three. One was to work with each group for them to define the sources of information that they use to make decisions on agriculture. The outputs were diagrams. The second task was to bring the two groups together and generate a vision of what the community would like their village to be like in the future. The output was a map/sketch showing "the vision of the community." Information generated from the survey was captured on sketches, maps, flip charts, information cards and notes. All these needed to be brought together in one debriefing report from which the final report is written. Photographs were also taken of all the activities and information generated at each stage. The bulky outputs were then labelled and packed for transmission back to base for processing. The debriefing report was prepared in the field so that it could benefit from the presence of the site team. The notes form the base of the report. The photographed sketches and maps are inserted in the debriefing report. In the final report proper maps and diagrams replace them derived from the field outputs.

The following summary of the household level baseline findings was presented to the community members on day one. A total of 140 households were sampled for the household survey out of 7 communities in the Jirapa-Lawra site of the Upper West region of Ghana. Most households practiced subsistence agriculture but had diversified sources of livelihoods. All sampled households produced food crops, vegetables, fruits and livestock. They all collected firewood, honey and manure. The most important sources of cash-income were the sale of labour, businesses and remittances. In the last 10 years, all sampled households had adopted new crop varieties, and had made 2 or more significant crop related changes like intercropping, adopting early planting, and integrated pest and crop management. These changes were reportedly made in response to market opportunities, climate, land,

labour availability, pests and/or diseases, and the existence of projects organised by agencies from outside the village. There were also changes reported on soil and water use. All households also reported having made changes to 2 or more types of their animals in the last 10 years, particularly changes in animal management and feed. Households reported being food insecure during 5 months a year, i.e. from April through August. There was no household whose hunger period extended beyond 6 months. Inputs used by the sampled households were found to be pesticides, fertilizer, veterinary medicine and seeds. Men reported that they received information on climate and weather through radio, friends or family.

Topic 1: Community resources - participatory satellite imagery interpretation

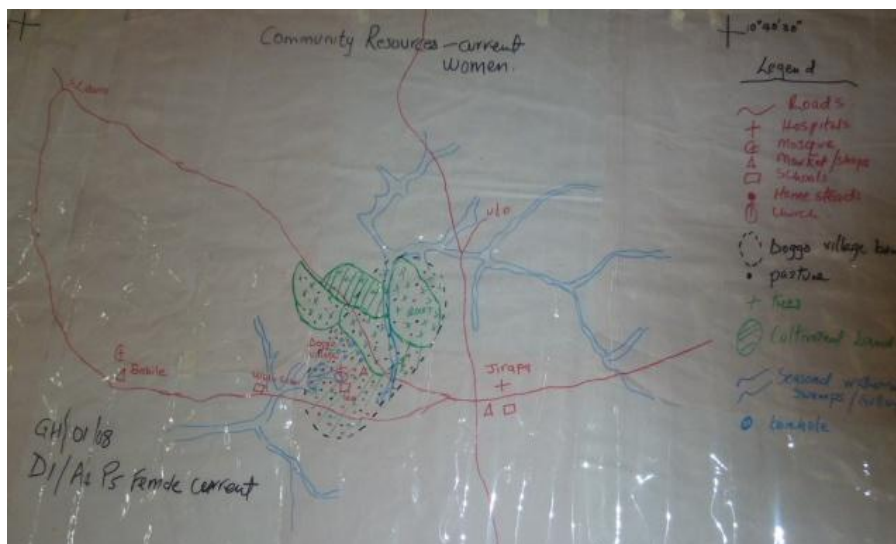
Community infrastructure and resources and gender-differentiated access and utilisation of those resources have been analysed, based on a process of participatory visual interpretation of high-resolution satellite imagery (RapidEye). The aim was to create a basic understanding of existing community resources, 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

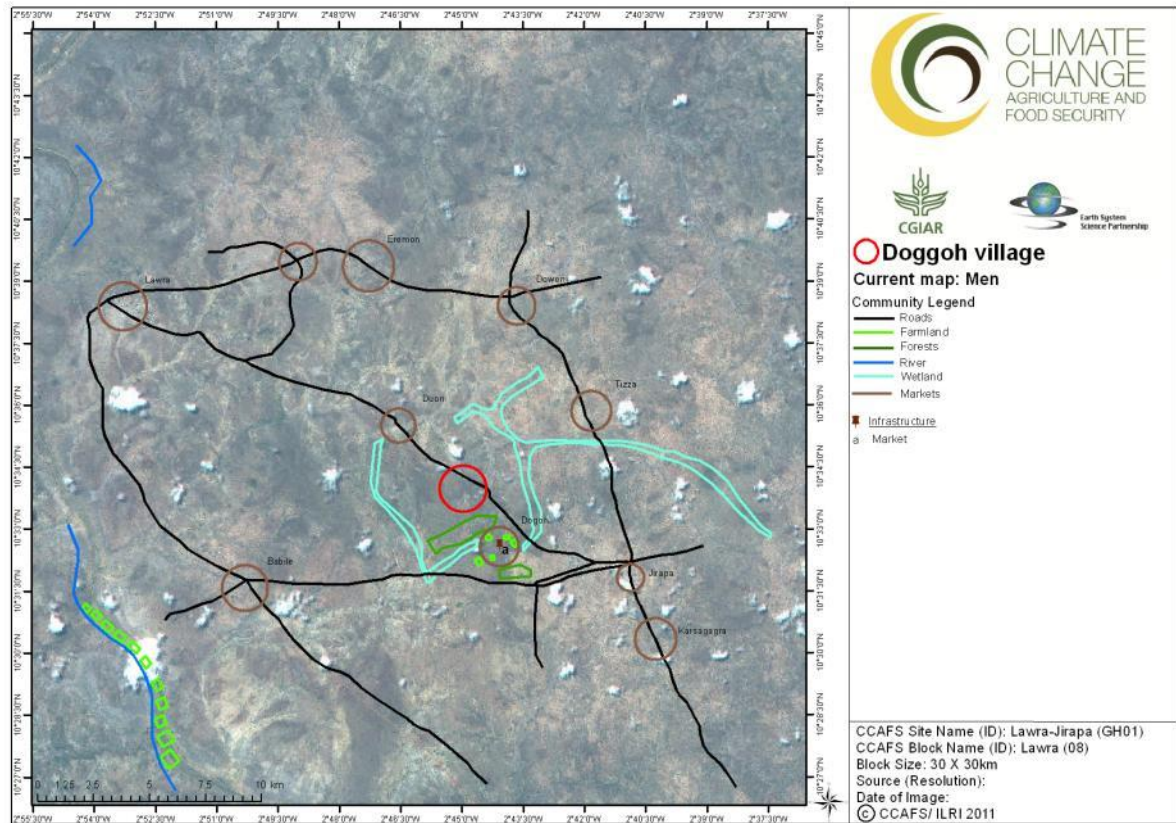
Separate groups of men and women drew maps on the ground outlining the main landmarks in the village, including the natural resources and infrastructure (road, school, religious buildings, etc.). The resulting sketches were transferred onto flipcharts. The CCAFS team then placed the satellite image on 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 (see Photo 1). The resulting maps of current community resources are presented below (Maps 2 and 3).

The team invited the participants to discuss the main resources in the area. These included roads, schools, markets, health centres, religious buildings, forests, agricultural land, grazing land, natural resources, and water sources for drinking, irrigation or livestock. Questions were posed on the state of management of the land in the community, i.e. whether there were community-managed areas, degraded areas or protected areas. A summary of the discussion is presented in Table 1, below.

Photo 1. The map of community resources as sketched by the women's group



Map 2. Men's map of current community resources



Map 3. Women's map of current community resources

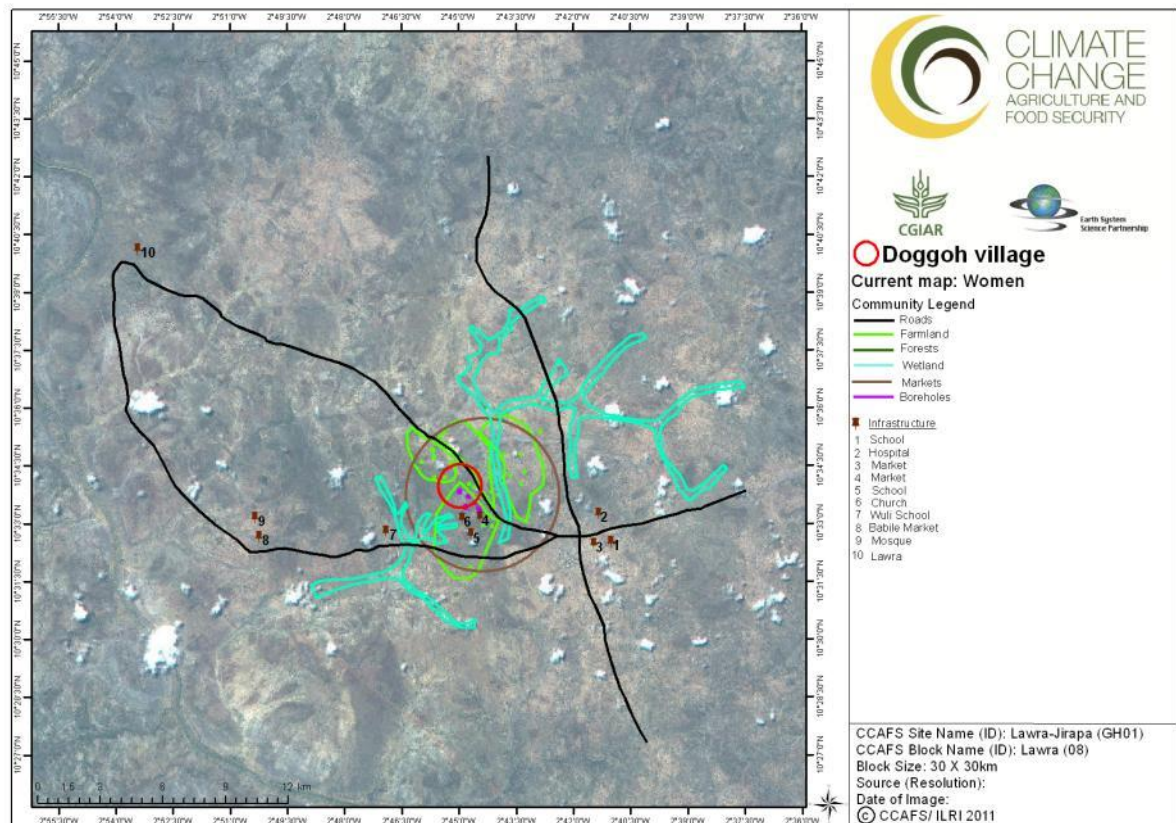


Table 1. Summary of current situation, as perceived by men (M) and women (F)

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
River (M)	Irrigation for vegetables and rice. Fishing.	Black Volta	Good quality, wide	1 hour by bicycle and 3 hours on foot	Land on the Ghana side owned and but managed by the government	Provides habitat for fish, which are important part of the diet	Availability of water for multiple uses like fishing, irrigation, etc.	Dangerous for those who cannot swim. Government bans on fishing especially during rains.
Wetland (M)	Source of water (water pans are locally called “dams”). Horticulture.	Kulbog	Wetland has clean water with clear water collection points. It has limited vegetation.	5 to 20 minutes.	It has no owner but landlords whose farms touch the wetland manage it.	Source of water to the “dam.” It “traps” rain. Habitat and breeding grounds for fish.	Used for rice farming especially during rainy season. Fish farming and water for irrigation.	Land owners next to the swamps.
Farmland (M)	Cultivation of crops such as groundnuts, Bambara nuts, sorghum, rice, and yams. Grazing livestock.	Spread all over the Doggoh village.	Low soil fertility.		Cultivated by individuals but managed by paramount chief.	Improves soil water absorption.	Food/crop production.	Individual ownership.
Farmland (F)	They grow maize, groundnuts, cowpeas and rice.	In the village and towards Duori.	Not enough production due to low soil fertility and less rainfall.		Farmland is owned by individuals, and not for sale.			
Woodlots (M)	Grazing livestock and collection of firewood.	Scattered all over Doggoh village.	Scattered trees have been reducing in numbers over time.		Managed by community in some cases and by individuals in others.	Trees improve soil fertility, provide shade during the hot days, make the air fresh, act as windbreak during the Harmattan and “attract” rain.	Firewood Roofing poles Sale of fruits. Food security via fruits, “Dawa dawa” (made of fermented fruits from Néré tree) and Shea butter (from Shea tree).	Individual land ownership Deforestation

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Woodlots, forest (F)	Woodlands where women go to fetch firewood for domestic use and for sale at Jirapa town. Women also get fruits from Dawadawa and Shea trees, grazing ground for livestock.	Some are close to the village and others are far.	The woodlands provide enough firewood for domestic use but not enough for commercial purposes.		Community- and privately owned land. They have rules that guide people when cutting down the trees.	Act as windbreakers, provide shade.	Woodlots provide people with fruit trees, timber and wood fuel. There is potential for beekeeping.	Not enough for commercial purposes.
Grassland (F)	Grazing fields	They graze the livestock between the cultivated fields and the woodlands.	They do not have adequate pasture.		They graze in both the public and private land.	Landscape is degraded. Vegetation has been cleared and soil is bare.	A program has been initiated to rehabilitate the degraded environment.	Livestock are still free ranging.
Seasonal rivers (F)	People have boreholes and so they do not use water from this source. There is cultivation along the banks.	In the village.	Open waterways that are dry during dry season.		Community owned.		Rich alluvial silt is good for cropping.	River vanishes during dry season.
Boreholes (F)	Main water source.	In the village.	They have six boreholes and get enough water from them.	5 minutes	Owned by community, and managed by a committee of men and women.			Since they have adequate water no one is making any effort to harness rainfall.
Degraded land (F)	Rocky places.	Most parts.			Community.			Limits land for farming.

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Roads (M)		Jirapa-Downi-Lawra (JDL) and Jirapa-Babile-Lawra (JBL).	Most roads are loose surface roads. A very short stretch of the JBL road network is tarmacked /all weather. JDL is not passable during the rainy season as it develops potholes.		Maintained by government.		Transport of food to and from the market. Movement of people and goods. Government revenue through taxes. Improved access/communication within region	The bad conditions.
Roads (F)		Road from Jirapa to the village, road from Jirapa to Lawra, road joining Babli and Lawra, Road from Jirapa to Nadowli						Most of the roads are not all weather.
Schools (M)		Konzokola School	Big school in good condition.	30 minutes on foot.	Government-managed though community-owned.	No restrictions.	Improved access to educational services for the children.	No limitation
Schools (F)		Kunzokola and Wily primary schools.	Their children and children from other villages go to Kunzokola school.					

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
Markets (M)		Jirapa, Babile, Lawra, Tizza and Eremon	Several old markets. Jirapa and Babile are the best and the biggest.	By bicycle: 30 min. to Jirapa; 2 hrs to Babile and 7 hrs to Lawra	Markets belong to community (early settlers) but government manage them.		Develop of commerce and trade	
Market (F)		Jirapa, Babile and one small market in the village.	Jirapa and Babile are old main markets and there are many buyers and sellers. The market in the village is still small.					
Church (F)		At Doggoh village	This is where they go for service.					
Mosque (F)		Babile	Muslims worship here.					
Hospital (F)		Jirapa	This is where they go for treatment. They have a structure in the village where they go and weigh the infant.					

There are several seasonal river systems within Doggoh village. For the better part of the year, the seasonal rivers are dry open waterways. The Black Volta River flows through parts of the block. It is a very big river and acts as a national boundary between Ghana and Burkina Faso. The waters of the Black Volta are of good quality and provide a habitat for fish, which is an important part of the local diet. The government imposes a ban on fishing from time to time during the rainy season to allow the fish to breed. It takes one hour of cycling to travel from Doggoh village to the Black Volta River. The community does not use river water for domestic purposes because they have boreholes and because it is relatively far. There was, however, evidence of serious exploitation of the riparian area for cultivation of rice and vegetables. There does not appear to be an established mechanism for managing the rivers as a valuable resource. The seasonal rivers carry rich alluvial silts that are good for cultivation. The region is prone to a long dry season and the rivers dry up then. The Black Volta does not dry up and poses a physical danger to those who cannot swim.

There is a wetland within Doggoh village. It is a section of a seasonal river system that collects as a water pan and is called Kulbog. The water pan (called “dam” locally) has good quality water that is collected by the community at specific collection points. The wetland has limited vegetation along its banks. The time required to walk from the village to the wetland is quarter of an hour. The wetland is utilised and managed by landowners whose lands are adjacent to it. The wetland and the catchment facilitate rice farming, fish farming and crop irrigation.

Doggoh village is located within a vegetation type known as Sudan Savannah that is characterised by scattered trees among which cultivation is carried out and livestock grazed. The community uses the woodlands as a source of wood fuel for both domestic and commercial purposes. Timber from the trees is used as construction material. Some trees also produce nuts such as shea nut and dawa dawa, which form an important part of the local diet. The fruits are also sold as a source of household income. There is untapped potential for beekeeping and a generally low level of commercial exploitation of the forest/trees resources in the community. Nearly all the trees found on the landscape are indigenous trees. There is evidence of attempts to introduce woodlots of other tree species. The most obvious introduced species is the teak, which is not indigenous to the region but appears to grow well.

All men own land, and land is handed over from generation to generation. Farmland is therefore given and not purchased. Land in Doggoh is owned and administered through a traditional system of the Jirapa Paramouncy which works closely with local chiefs. The role of the government is to legalize the arrangements made by the traditional community system. Documentation must be done with consent of the customary system. No one in Doggoh village has land documentation papers.

The trees are managed through traditional systems that do not allow members to cut down fruit bearing trees. Agricultural productivity is low due to poor soils and unreliable rainfall during the months of drought and the years of crop failure are many. Hence, the fruits from the trees supplement the food requirements of the community. There is a difference in the management of trees that fall on community owned land (open access) and those that fall on individually owned land (controlled access). There is ready market for wood fuel in the towns such as Jirapa, which is putting pressure on the tree population. The absence of alternative sources of income increases the risks of the trees to being cut for sale. The community, however, has not yet come up with mechanisms to regulate cutting down of trees to sell as wood fuel. The reported environmental benefits of the trees include improvement of soil fertility and the provision of shade and fresh air. The region is subject to very strong winds called the “Harmattan.” Trees provide a windbreak, especially during the Harmattan. Trees are also associated with “attracting” rain.

The farming system practiced by the community involves cultivation of land between trees. They maintain the natural trees and introduce other trees of economic value such as mangoes. Some of the natural trees like the shea nut trees and the dawa-dawa are retained for their fruits while others like *Acacia albida* are retained to improve soil fertility.

Farmland/cultivated fields are scattered all over the village of Doggoh. The community grows a variety of crops such as maize, groundnuts, cowpeas and rice ground nuts, bambara nuts, sorghum, yams, and also keep livestock. All land is owned and managed by the community, which allocates

plots to community members for use. Farmland is therefore given in usufruct and not purchased. All members of the community have land that they cultivate. In spite of everyone having land to cultivate, and cultivating many crops in their plots, community members do not grow enough food to meet their needs. They can only produce enough food to feed themselves for 3 months a year and must seek food from other sources for the remaining nine months of the year. The average land productivity is low due to poor soil fertility and the little, unreliable rainfall received in the region. Members rely on remittances from their children who go south to seek employment.

The community in Doggoh village graze livestock between the cultivated fields and the woodlands. The livestock in Doggoh are mainly short-legged goats and pigs. There is a noted absence of cattle. The community feel that they do not have adequate pasture for their livestock and this is a constraint to keeping larger stock such as cattle. The grazing fields are both private and publicly managed but access to the grazing areas is relatively open in the privately owned lands because individual land ownership is governed by traditional systems that encourage resource sharing. There is evidence of degraded land. In several parts of the village the free ranging of livestock has contributed to removal of vegetation that exposes soils to agents of erosion. There are also parts of the village with rocky outcrops and no vegetation. This area cannot be used for farming. The government has initiated a programme to rehabilitate this degraded environment.

Jirapa, Babile and Lawra are old markets that have recently developed into towns. The closest market to Doggoh is Jirapa, which is a 30 minutes bicycle ride away. Babile and Lawra are further away at, respectively, 1.5 and 4 hours of cycling. Lawra is on the border of Ghana and Burkina Faso and serves a wider area than the rest of the markets. There are other smaller markets such as Karisagra, Duori, Tizza, Downi and Eremon that offer lower levels of service and draw traders from a smaller hinterland. There is also a small market in the village. People go to markets to sell and purchase goods. The markets are also centres of traditional or cultural significance where the community meets to socialise. Most of the land in the towns and markets belong to early settlers in the area who are referred to as “tamandas” (landlords), but the government manages the land.

There are two schools in the vicinity: Kunzokola primary school and Wili primary school. The children from Doggoh village and other villages attend Kunzokola primary school, which is 30 minutes’ walk from the Doggoh village. The community owns the schools but the government manages them. The Kunzokola school is big and in good condition, and provides the children in the village the chances of getting a good education and eventually a better job in the south to support the family.

The main roads in the area are: 1) Jirapa-Babile-Lawra, 2) Jirapa-Doggoh-Lawra, 3) Jirapa-Ulu-Downi-Lawra, and 4) Jirapa–Nadowli. The only stretch that is covered with tarmac is the Jirapa–Nadowli road. The rest are loose surface roads, often in poor condition especially during the rainy season when they develop potholes. Roads facilitate movement of people, goods and services to and from one place to another. Government maintains the roads and derives revenues from them when the users are taxed. The road network has improved access/communication within the region, but the roads’ poor conditions have compromised the quality of the services provided and increased the cost of transport, which in turn affects the cost of goods.

Due to the limited number of rivers in the regions boreholes are the common sources of water. There are six boreholes in the village and these provide enough water for the community. The water from the boreholes is of good quality. The boreholes were drilled by the government but are owned and managed by the community through a committee comprised of men and women. Since people have adequate water there is no effort to harvest rainfall.

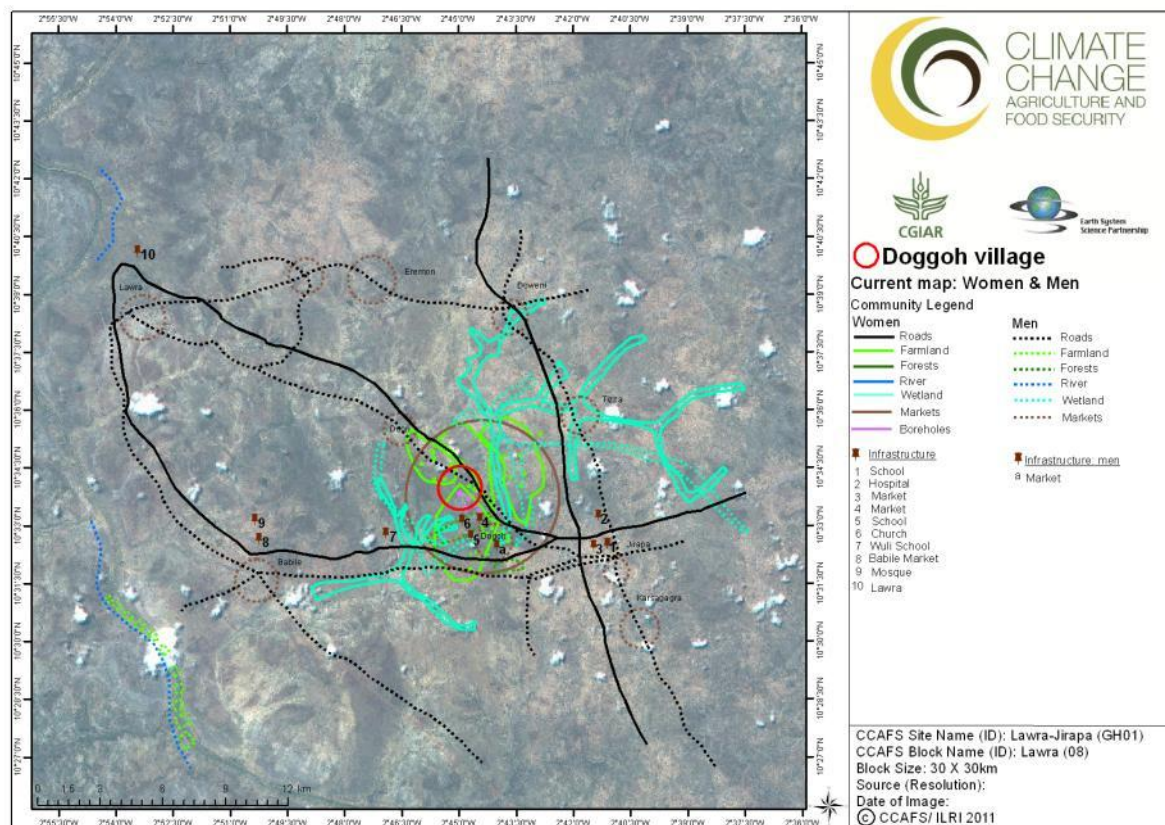
The hospital closest to the village is in Jirapa. This is where they go for treatment. In addition, there is a structure in the village that is used to offer basic medical services.

The places of worship in the area are a mosque in Babile, and a local church in the Doggoh village. Despite that most people in the community are Muslim, there are more churches than mosques.

B. Gender-differentiated comparison of current conditions

Map 4 below compares the current resources identified by male and female participants. The women were familiar with resources that were closer to the village and could describe them in detail. This shows that they interact less with resources that were further away. Most women had not travelled far and their husbands controlled most resources. Only one of them had gone as far Ulu town.

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



The women identified the seasonal rivers as a community resource while the men only identified the Black Volta, which is a very big river. The men, however, were able to identify environmental benefits of the river.

Both men and women appreciated the fact that the trees/forests/woodlots were the sole source of domestic energy (wood fuel) for the community, and also noted the importance of wild fruits trees (shea nut and dawa dawa) in supplementing the diet. The women identified limited potential for the commercial exploitation of tree/forests resources but raised the issue of beekeeping potential. The men identified the reducing tree population as a limitation.

Women pointed out the degradation of community resources, which is probably an indication that they interacted more intimately with the natural resources and could therefore detect its gradual degradation.

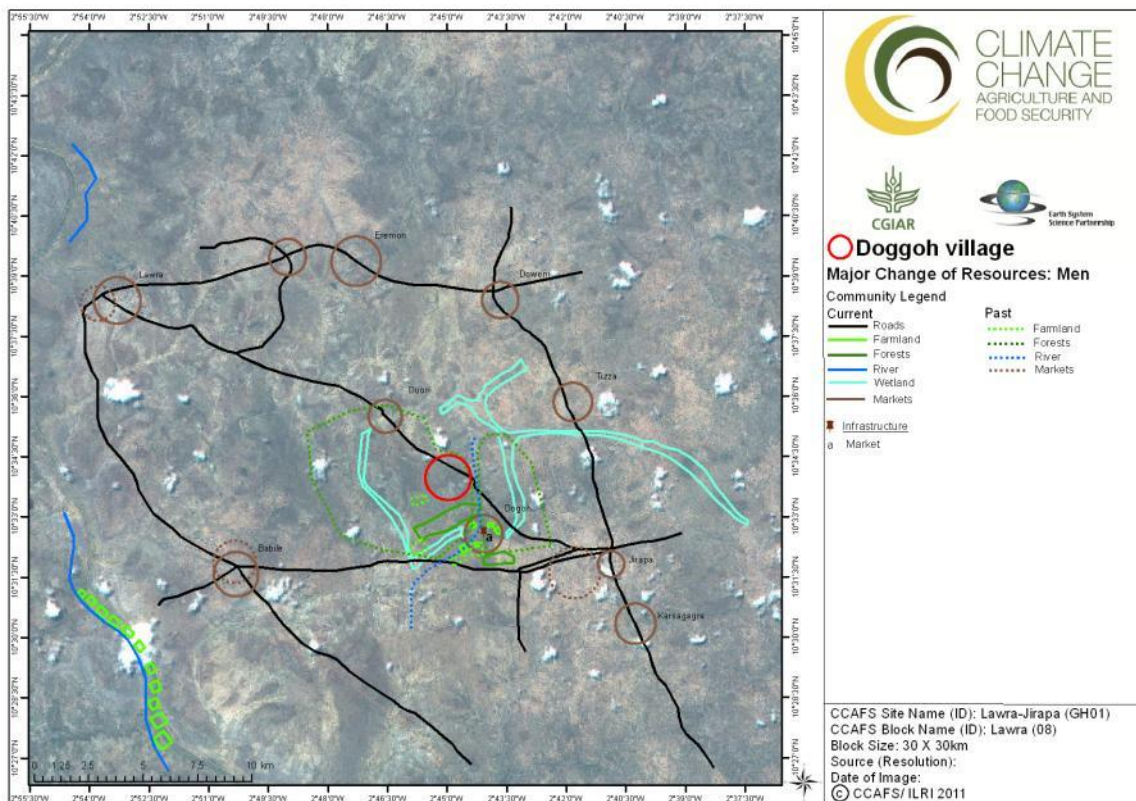
The women talked of soil infertility and unreliable rainfall as the main problems facing them in relation to farming, while the men were of the opinion that land tenure was a bigger limitation.

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, 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.

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



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

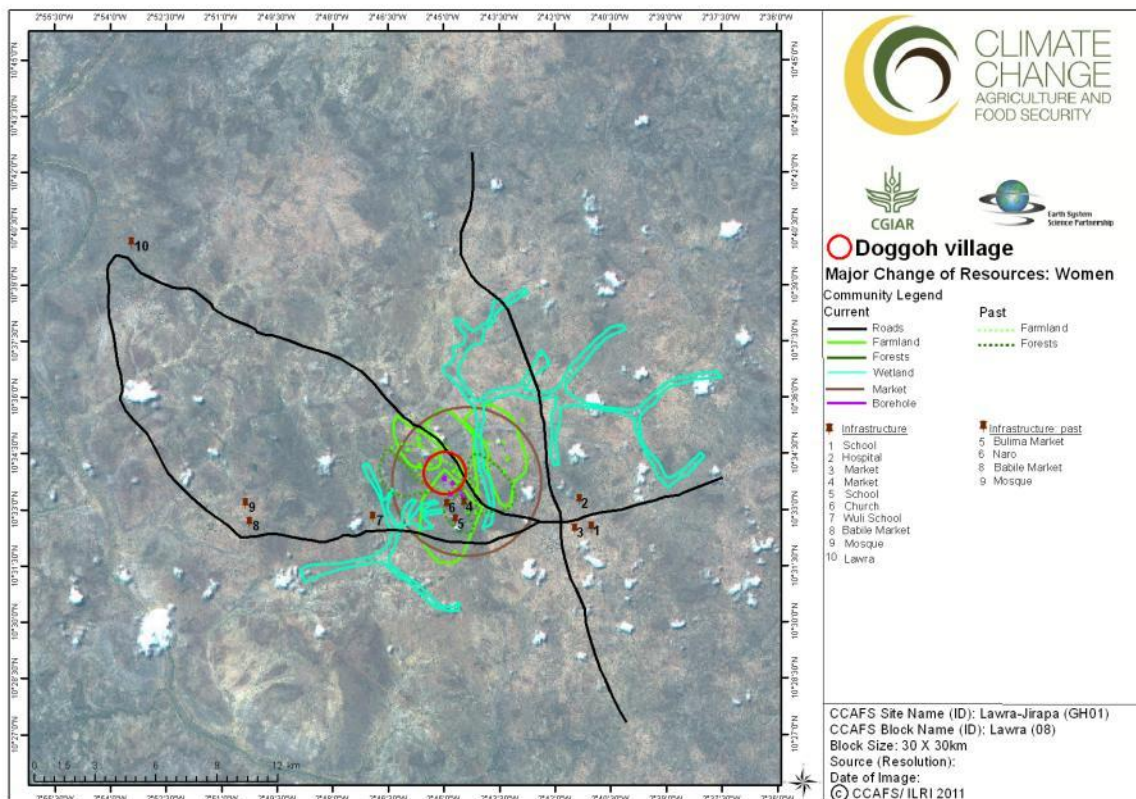


Table 2. Major changes and drivers of change in the last 10 years, as perceived by men (M) and women (F)

Land cover class	Past state (quality)	Current state	Drivers of change
Forest (M)	The area was forested all over. There was plenty of rainfall then.	Deforested. No areas that one could call “forests.” Minimal rainfall.	Bush burning, poverty. Increased demand for wood fuel.
Forest (F)	There were more trees and bushes.	Deforested.	Deforestation for firewood and clearing of trees for cultivation, due to population growth.
Grassland (F)	They left the sheep and cattle on free range but tied the goats.	Not enough pasture for all animals.	More animals.
Seasonal river (M)	They existed in the current dry valleys	River dried out.	Less rainfall in the region and “disobedience” to the taboos and cultural practices guiding the use of natural resources.
Seasonal river (F)	Contained a lot of water. It was a big river.	River dried out.	It dried because of rainfall failure.
Swamps (M)	Was smaller since they used to block and drain them.	There is no more blocking or de-silting, and therefore their area has grown.	
Boreholes (F)	It was only one borehole.	They have several boreholes.	Growing population needs. Better access to funds and government intervention.
Roads (M)	They were narrower than at present. The oldest ones existed in the 40s.	Better road network.	Growing population needs.
Farmlands (M)	Were good and fertile in the 1970s	Soil fertility and agricultural productivity are low.	Bush burning, poor farming practices and population explosion led to landscape 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.

In the section below we include the map that encapsulates Doggoh 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

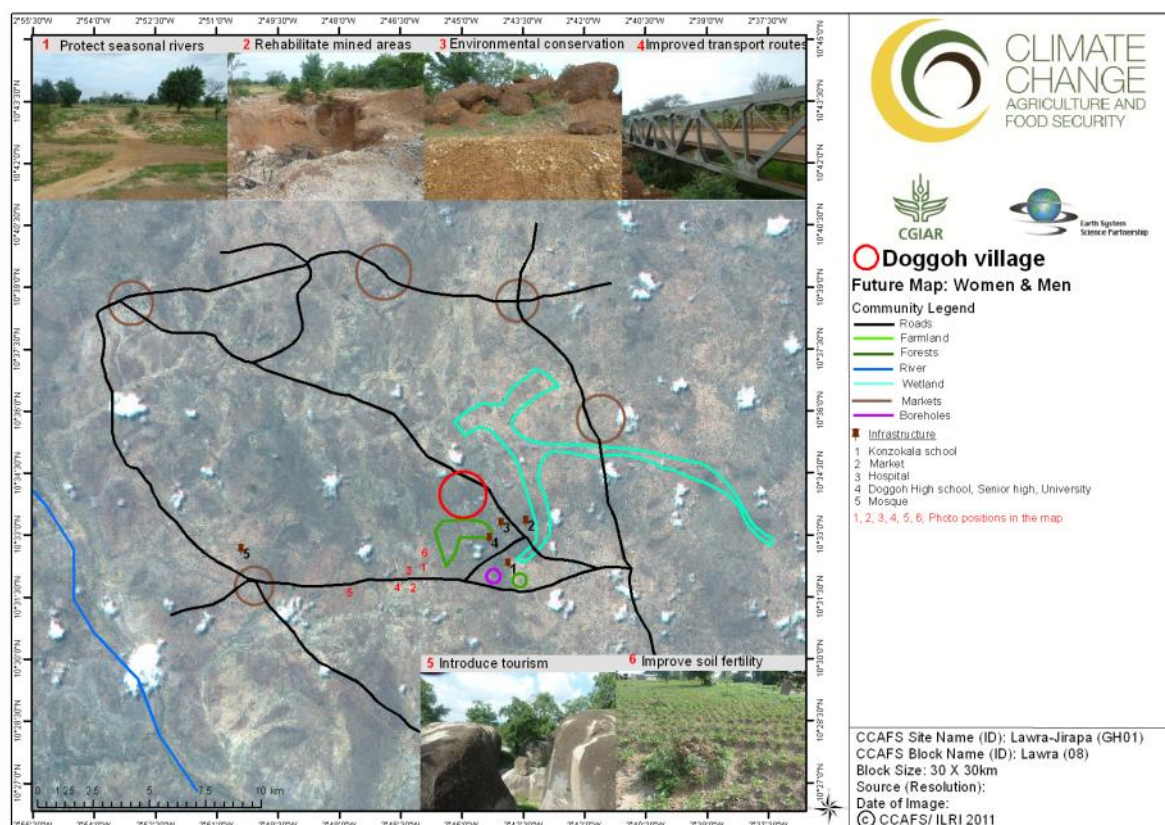


Table 3. Vision of the future

Resources	Preferred condition for 2030	Opportunities	Constraints	Organisations to be involved
Bridge	There is a bridge constructed where the road crosses the wetland	It will improve transportation	Lack of funding	Government
Wetland	The wetland is conserved	This will give them an opportunity to do vegetable irrigation	Land ownership	Government and the community
Roads	Improved roads in the community. They also want an introduction of a road joining Babile through the village to Jirapa.	Improve transportation and reduce the cost of goods from outside the region	Technical and financial constraints	Government and NGO
Schools	More institutions of learning at Doggoh village. Institutions should include Doggoh junior high, Doggoh senior high, and Doggoh University	Other communities will come to Doggoh to get education. Education will improve the chances of getting better jobs to support their families since the community depends heavily on remittances	Technical and financial constraints	Government, NGO, and other states
Water pan (“dam”)	A water pan exists in the community	Water pan will afford dry season gardening, water for livestock, and self-employment for the youth.	Technical and financial constraints	Government or any other development agent

Resources	Preferred condition for 2030	Opportunities	Constraints	Organisations to be involved
Market	To develop the existing Doggoh market.	This will reduce poverty level in the community, as it will get tax from the market	Market is not a priority of the regional government	Community and any well wisher
Hospital	There is a hospital in the village	The community is willing to offer community land and labour.	Financial constrains	NGO or any other well wisher
Trees/Forest.	The community plants more trees to increase forest cover	Trees are a source of food (fruits), income from sale of fruits, wood for roofing, shade, medicinal leaves, and timber for making furniture	Traditional system of management allows everyone access but traditional checks and balance no longer function	Any well wisher
River	The river is conserved for future generations	Guaranteed water availability	There are no structures currently engaged in conservation of the river	The government and civil society

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. The organisational landscape as created by the women's group



Figure 1. Organisational landscape of the men's group

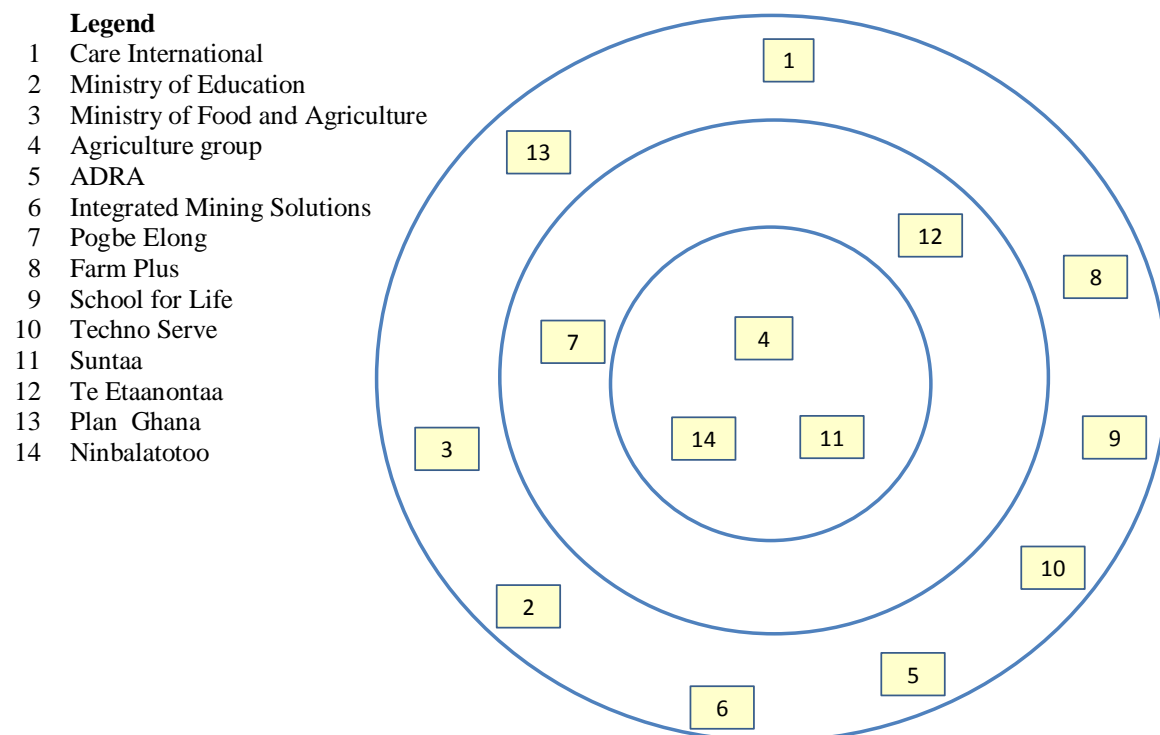
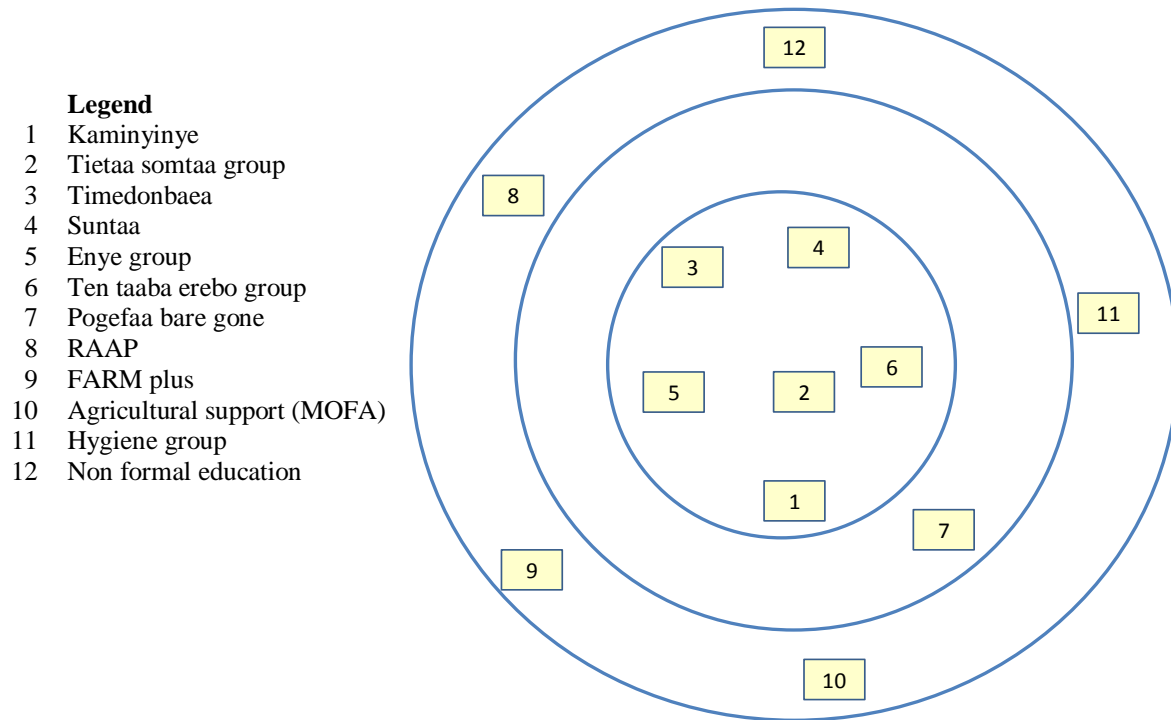


Figure 2. Organisational landscape of the women's group



In total both males and females identified 22 organisations that they considered important to the community. The men identified 14 organisations while the women identified 12. Both the men and women coincided on only 4 organisations. These were the Agricultural Support Group (MOFA) and Farm Plus (both of them operating beyond the locality) and the Suntaa group and Te Etaasontaa group (both active within the community). Women engaged with very local small groups that were mostly informal groups, and had very little information about organisations working beyond their village.

The organisations were placed in three categories: those working only within the village (community), those working within the district (locality) and those working beyond the district (beyond the locality). The spread of the organisations among these three categories was skewed. There were 12 organisations (54%) operating beyond the locality, 3 organisations operating within the locality (14%), and 7 organisations operating within the community (32%). All the organisations operating beyond the locality had formal registration while all the ones operating within the community were informal, with no registration. The organisations engaged in a wide range of activities that included:

- Household livelihood security: provision of food items, provision of household items, credit for women, support vulnerable community members (orphans, widows, physically challenged).
- Agriculture: capacity building in farming practices, credit scheme for farm inputs, and mobilisation of local farm labour.
- Health: HIV AIDS awareness, health education, and drill boreholes.
- Community development: provide youth with employment, educational support, environmental health, support to participate in and contribute to social activities, organised labour groups, educate the elderly in the community.

The activities address social, economic and environmental issues in the community. There was no single group that brought the whole community together.

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	Origin (indigenous, state, NGO, project)	Sphere of operation: community, local, beyond local	For community groups		
						Sources of funding (members, external, both)	Existed how long (less than 1 year, 1-5, longer)	Formal or informal
1 CARE International	Give food and fertilizer to the poor	45	Restricted	NGO	Beyond local	External	1-5	Formal
2 Ministry of Education	Give free uniform, books, cups, food, pens and education at basic level	300	Open	State	Beyond local	Government taxes	Longer	Formal
3 Ministry of Food and Agriculture (MOFA)	Teach modern farming practices like application of fertilizers. Encourage group formation. Provide better animal breeds and teach people how to rear them	16	Restricted	Indigenous	Local	Development partners like NGOs, government	Longer	Formal
4 Agriculture Group	Offers communal farm labour to members	30	Restricted	Indigenous	Local	Member contributions and sale of farm produce	Longer	Formal
5 ADRA (Adventist Development and Relief Agency)	Train them on modern farming practices. Give farm inputs. Dug a borehole for the community.	20	Restricted	NGO	Beyond local	External	Longer	Formal

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

Organisation name	Main activities	Number of members (estimate)	Access (open or restricted to...)	Origin (indigenous, state, NGO, project)	For community groups			
					Sphere of operation: community, local, beyond local	Sources of funding (members, external, both)	Existed how long (less than 1 year, 1-5, longer)	Formal or informal
1 Agricultural Support Group (MOFA)	Gives farmers inputs like fertilizers. Farmers repay them through cash payment of 30 Ghana cedi or 3 bags of maize. Women have not directly benefited with this service because men mainly are involved with the transactions.	60 % of households get the service	Open to all	State	Beyond local			Formal
2 Hygiene group (Health Department)	Teaches the community on living healthy and hygiene at home.	About 70% of the community	Open to everybody	State	Beyond local		5 years	
3 Farm Plus	Gives food support to the vulnerable group (orphans, widows and disabled) when there is hunger.	45 registered members	Selected		Beyond local		2 years old. This year is their last.	
4 Kaminyinye	Provides group labour on farms for pay and later distributes money amongst women. Money from the group is used to buy food, utensils and settle funeral bills.	27 members	It is a mixed local group		Community/village level	Registration fee of 1 Ghana cedi to join.	3 years	Informal
5 RAAP	Provides loans to women only. It has played a major role in introducing Farm Plus group to the community. Has educated them on HIV/AIDS						1 year	

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.

Seventy-seven percent of the 22 groups/organisations identified by men and women contributed to food security. Also two-thirds of the 14 groups/organisations that the male participants identified as working in the community addressed food security issues. Seven of those groups/organisations addressed food availability (Suntaa, Care International, Agric. group, Ministry of Food and Agriculture, ADRA, Tietaanontaa, and Farm Plus), 5 of them addressed food access (Care International, PogbeElong, ADRA, Farm Plus, and Ninbalatotoo), and none addressed food utilisation. Three of those organisations addressed both food access and availability (Care International, ADRA, and Farm Plus).

All 12 of the groups/organisations identified by women addressed food security. Two organisations addressed food availability (Farm Plus, Agricultural support (MOFA), 3 addressed food utilization (Farm Plus, Hygiene group, and Non-formal education) and 8 addressed food access (Kaminyinye, Tietaa somtaa, Timedonboea, Suntaa group, Enye group, Tene taaba erebo group, Pogefaa bare gone, and RAAP). There were only 2 groups/organisations (Farm Plus and Agricultural Support) that addressed more than one aspect of food security. The groups involved in food access were the largest in number. These are groups that provide farm labour for wages, which they use to purchase food.

The area has been described by other studies as being food insecure, therefore it logical that more than half the groups /organisations in the area be engaged in addressing food security.

Figure 3. Organisational landscape of food security – men

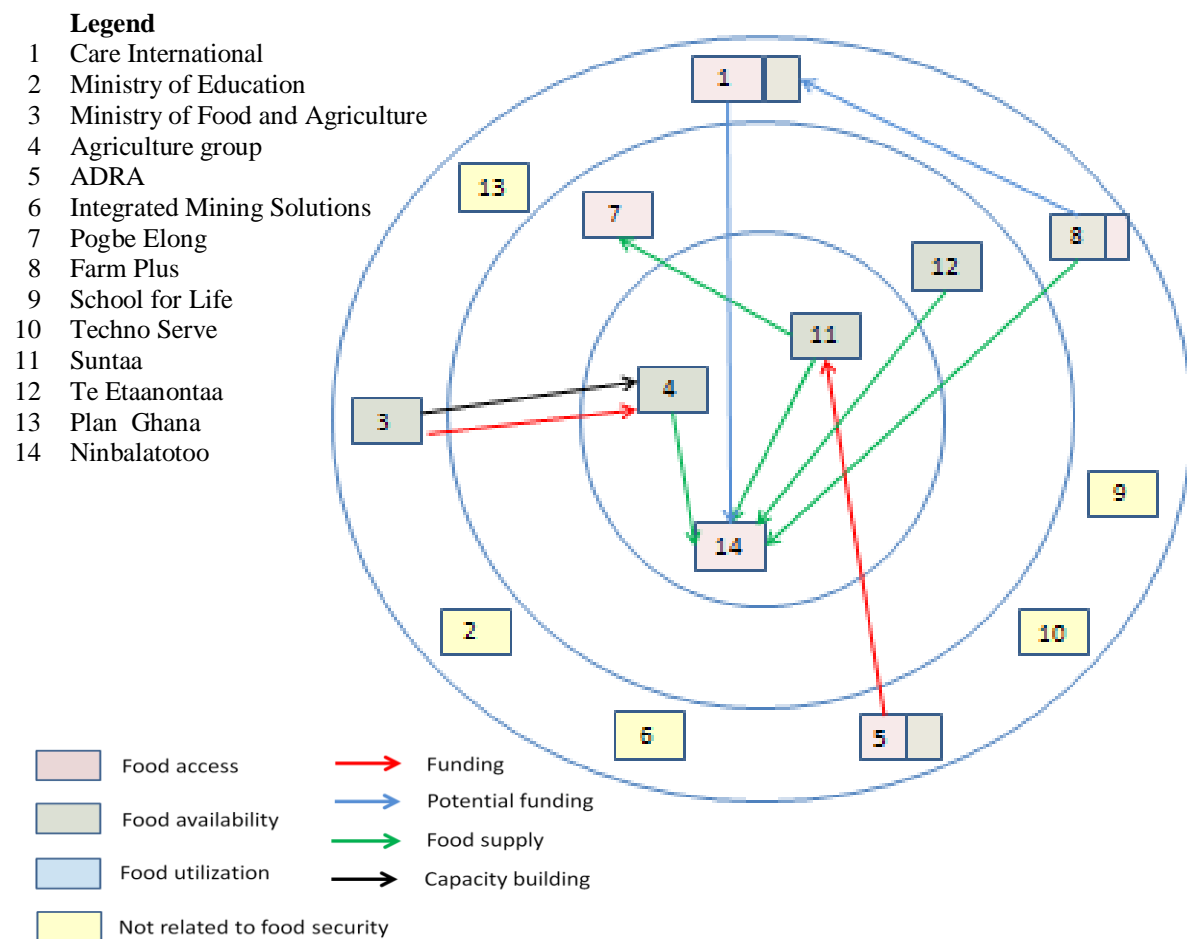
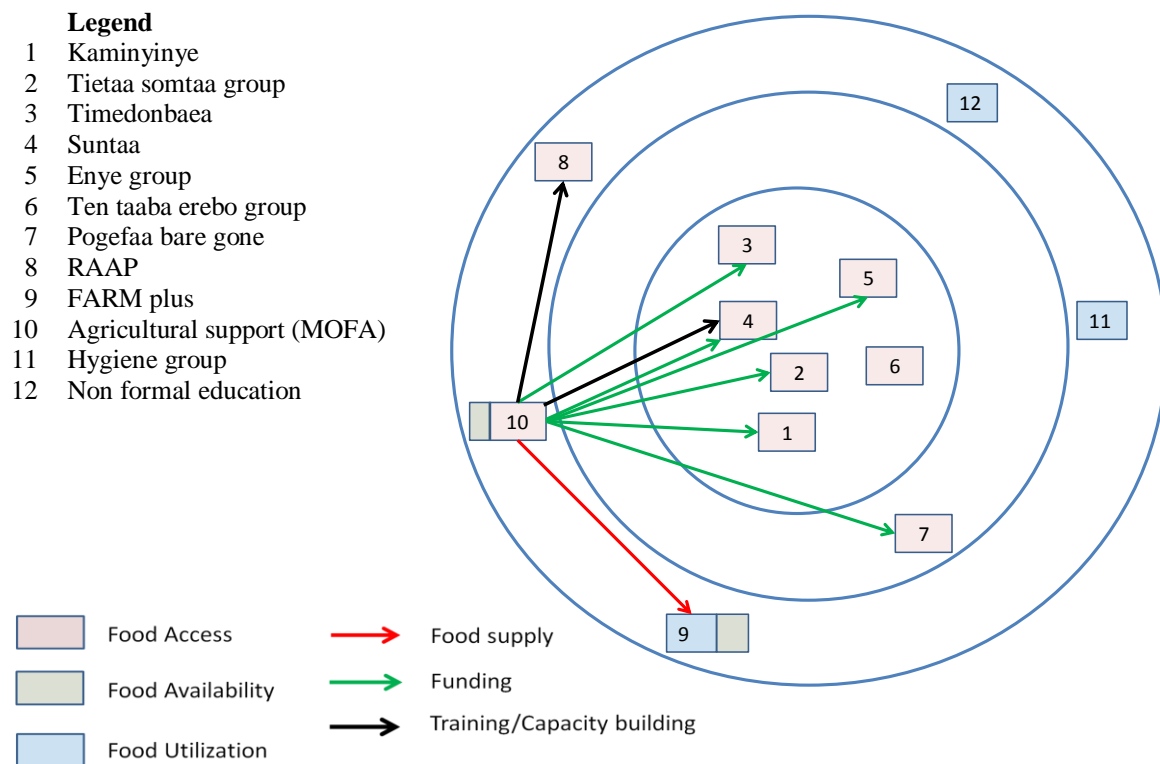


Figure 4. Organisational landscape of food security – women



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 participants described food crisis in the community as a time when the food resources are so limited that the adults cannot eat. They watch as the children eat. The trees shield the community from food crisis. The community relies on leaves and fruits from wild trees and therefore always have something to eat.

There was no difference in the organisational landscape for food security during the time of crisis. The number of organisations remained the same and their roles did not change.

D. Organisational landscape of natural resource management

In this section, the organisational landscape in relation to natural resource management (NRM) was discussed. The process entailed asking the group to highlight what organisations are involved in the management of natural resources in the community; developing a list of natural resources important to the livelihoods of the community; and asking the group to decide on a symbol for each type of natural resource listed.

The men identified 6 organisations engaged in natural resource management. Five of them operated beyond the locality, one within the community and none within the locality. The women identified 10 groups/organisations involved in natural resource management. Six of those groups operated within the community, 4 beyond the locality and none within the locality. Having many actors within the community may indicate a high level of community involvement in natural resource management.

Figure 5. Organisational landscape of NRM – men

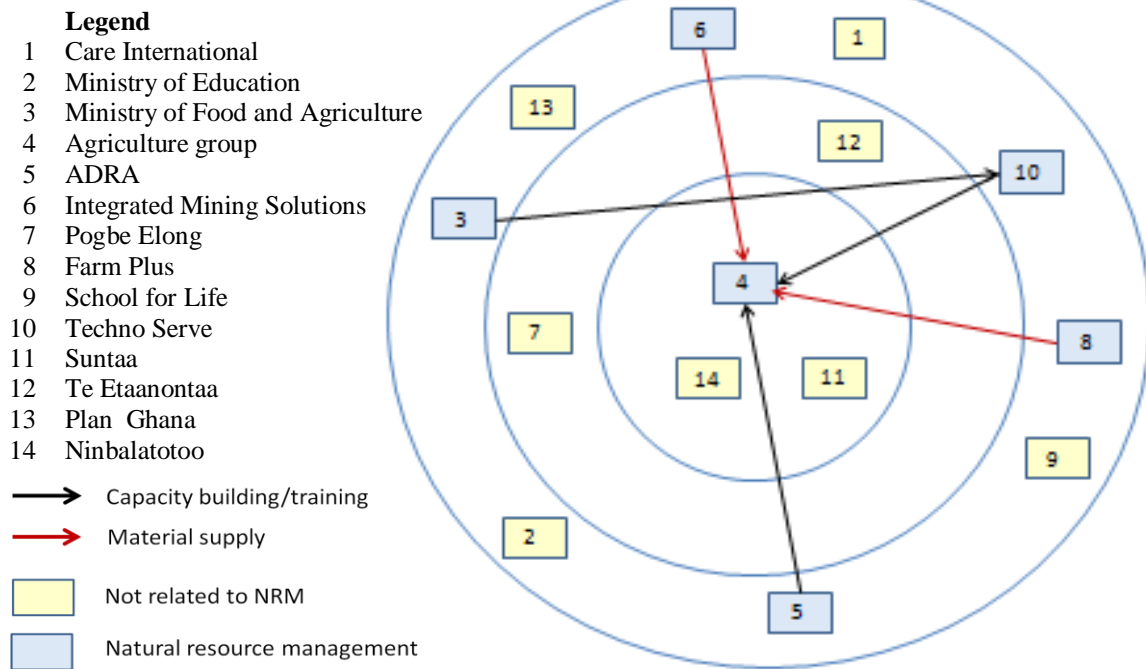
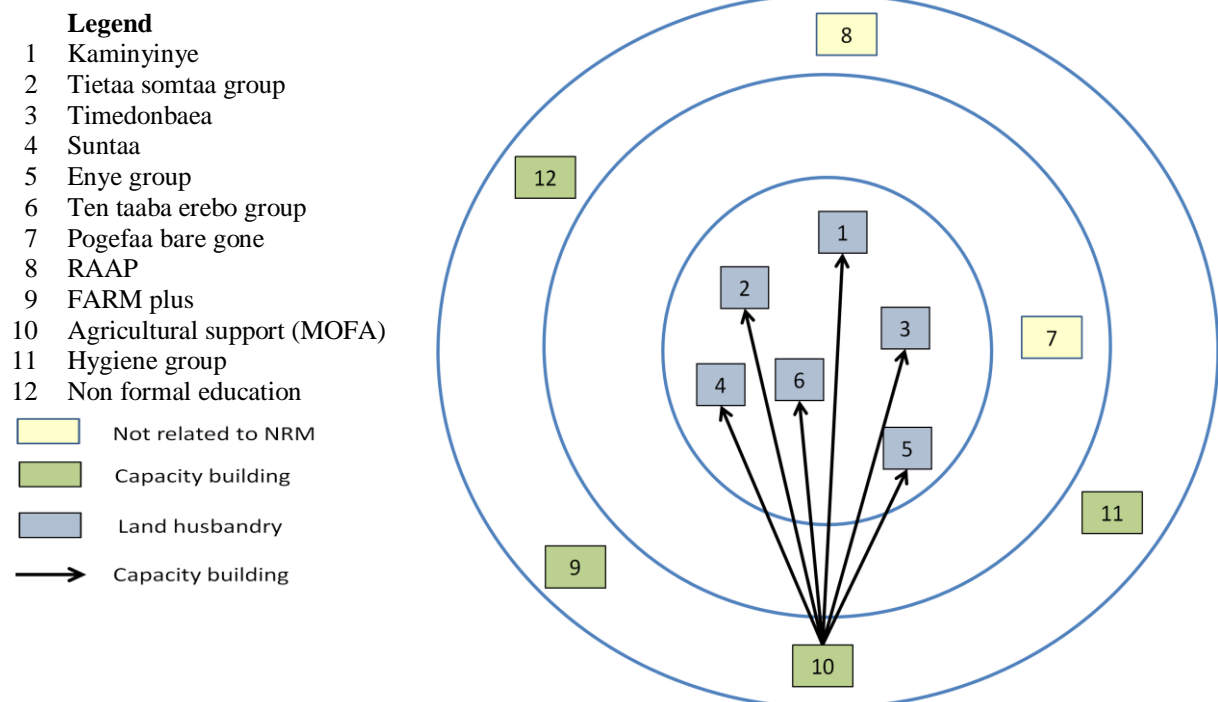


Figure 6. Organisational landscape of NRM – women



Most community organisations in Doggoh village are operating below capacity. They have a significant potential to implement many interventions but they are resource poor. The groups mostly engage in the provision of labour, which is an activity that has very low financial returns. The scope of their activities can be expanded, and much more could be achieved if they were empowered. Capacity building should address resource mobilisation. At the same time, it should include training and support on group formation to enable the community members to mobilise their internal human

and other resources more broadly. Currently, there are no groups /organisations that bring the whole community together.

Food security is clearly a problem in the village. The community relies on remittances to purchase food during nine months of the year. This level of dependency needs to be addressed through diversification of livelihoods. More than 50% of the organisations engage in food security issues. They should actively support improvements in farm production so the community’s food availability throughout the year is considerably strengthened.

Most external organisations have in the past come to the area and addressed only issues that were in line with their project objectives without making any attempt to find out which other organisations were already operating in the area and explore synergies between the old and the new initiatives, including initiatives that are led by community organisations. Building local capacity should take into account improving the capacity of those small community organisations so that they can implement long-lasting local interventions. Priority should be given to local community groups with potential to be around for a long time.

Table 6 summarises information on four organisations that CCAFS should consider as potential partners, considering their capacities to contribute to food security.

Table 6. Potential CCAFS partners

Organisation	Sphere of operation	Activities	Strength
MOFA-Ministry of Food and Agriculture	Beyond locality-National	Food security	Resource and community mobilisation
SARI	Beyond locality-National	NRM and food security	Resource mobilisation
TiEntaanonta	Community	Food security	Community mobilisation
Agricultural group	Community	Food security	Community mobilisation

Table 7 below 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.

Table 7. Information on all the organisations identified by male and female participants (1=yes, 0=no, unless otherwise noted)

Name of Organisation	Men					Women				
	Listed by men	Sphere of operation 1=village 2=locality 3=Beyond locality	Food security	Food crisis	NRM	Listed by women	Sphere of operation 1=village 2=locality 3=Beyond locality	Food security	Food crisis	NRM
1. CARE International	1	3	1	0	0	0				
2. Ministry of Education	1	3	0	0	0	0				
3. Ministry of Food and Agriculture (MOFA)	1	3	1	0	1	1	3	1	0	1
4. Agriculture group	1	1	1	0	1	0				
5. ADRA	1	3	1	0	1	0				
6. Integrated Mining Solutions	1	3	0	0	1	0				
7. PogbeElong	1	2	1	0	0	0				
8. Farm Plus	1	3	1	0	1	1	3	1	0	1
9. School for Life	1	3	0	0	0	0				
10. TechnoServe	1	3	0	0	1	0				
11. Suntaa	1	1	1	0	0	1	1	1	0	1
12. TeEtaanontaa	1	2	1	0	0	1	1	1	0	1
13. Plan Ghana	1	3	0	0	0	0				
14. Ninbalatotoo	1	1	1	0	0	0				
15. Enye group	0					1	1	1	0	1
16. Kaminyinye	0					1	1	1	0	1
17. Timedambaea	0					1	1	1	0	1
18. Te taaba erebo group	0					1	1	1	0	1
19. Hygiene group	0					1	3	1	0	1
20. RAAP	0					1	3	1	0	0
21. Pogefaa bare gone	0					1	2	1	0	0
22. Non formal education	0					1	3	1	0	1
TOTAL	14		9	0	6	12		12	0	10

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.

In Doggoh village, the men's group identified the following 6 themes for which they seek advice/information:

- 1) Start of rainfall
- 2) Information on farm inputs (fertilizers and seeds)
- 3) End of rainfall
- 4) Market information (price and market location)
- 5) Drought period
- 6) Type of seeds to plant

Meanwhile, the female participants identified 6 different topics. These are:

- 1) Land preparation
- 2) Application of manure
- 3) Preparation of seedbeds
- 4) Seed selection
- 5) Storage
- 6) Marketing

Table 8 shows the most important sources of information in Doggoh village. Results of this exercise indicate that organisations are the most significant source of information on agriculture in Doggoh village. The organisations include Farm Plus, ADRA, MOFA, women groups and RAAP. Other sources of information in order of importance are radio and friends. The radio stations air many programs in the local language (Dagaare). The print media was not identified as an option by any of the discussions groups because none of the participants had received formal education and could not read or write. Important sources of information on weather information were the radio, the rainmaker and the Ministry of Food and Agriculture. There appears to be a great deal of consultation at the local level among farmers.

Table 8. Sources of information for men and women

Information source	Topic (men)				Topic (women)			Total
	Market information	Rainfall	Planting time	Farm inputs (seeds and fertilizer)	Land preparation	Manure application	Weather information	
Family	0	0	1	1	0	0	0	2
Friends	1	0	1	1	1	1	1	6
Neighbour	1	0	0	0	0	0	1	2
Organisations	1	1	1	1	1	1	1	7
Radio	1	1	1	0	1	1	1	6
Observation	0	1	0	0	1	0	1	3

Conclusion and recommendations

Doggoh village is located within a vegetation type known as Sudan Savannah, which is characterized by a considerable tree population, among which cultivation and livestock grazing take place. Also, as a result of being in savannah country, the village has small amounts of rain that fall in a short rainy season leaving the better part of the year dry, hence the seasonal rivers and streams which for the better part of the year are dry open waterways. The seasonal rivers carry rich alluvial silts that are good for cultivation, but they suffer erosion during the dry spell. There is a water pan (locally called “dam”) and a wetland (Kulbog) in the area. The community members plant rice, horticulture and cereals like maize in the wetland. The wetland also provides a breeding ground for fish. The Black Volta River is at the edge of the block, some considerable distance from the village. Boreholes are the main source of water. The community relies on boreholes for their domestic water supply, but there is not much done in terms of catchment conservation to ensure adequate ground water recharge. In fact, it seems that the community takes the value of wetlands and the rivers for granted. Rainwater harvesting is not being exploited at present.

The trees are a source of wood fuel for both domestic and commercial purposes. Timber from the trees is used as construction material. Some trees also produce nuts such as shea nut and dawa-dawa, which form an important part of the local diet. The fruits are also sold as a source of household income. Trees provide a windbreak, especially during the Harmattan. There is untapped potential for beekeeping and a generally low level of commercial exploitation of the forest/trees resources. Nearly all the trees found on the landscape are indigenous trees. Trees are communally managed with community sanctions against those who break the accepted practice. The sale of wood fuel is putting pressure on the tree population because there is ready market in the towns such as Jirapa. The absence of alternative sources of income increases the risks of the trees being cut for sale. There have been no significant efforts to plant trees. There are small plantations of teak and moringa near the wetland. The dawa-dawa and the shea nut trees are not domesticated due to social issues and not scientific ones. There have been efforts to introduce improved mango varieties in the region. Wood fuel is the sole source of domestic energy in the village therefore there is constant harvesting to meet both domestic and commercial demand. Trees produce fruits that are very significant in the local diet and supplements agricultural production. It is therefore important to retain the trees on the landscape.

Cultivation in Doggoh is wholly rainfed, with small patches of irrigated fields in the swamps and riverbeds. The villagers grow a variety of crops such as maize, groundnuts, cowpeas and rice ground nuts, bambara nuts, sorghum and yams. However the produce is not enough to meet the communities' food demand. The population increase has increased the demand for food leading to over cultivation, which has contributed to reducing the fertility of the soil. More land is required for cultivation and in the process the tree population is reduced. In addition, poor farming practices and bush burning have contributed to reducing soil fertility and led to soil degradation. Land is cultivated by individuals but controlled by a paramount chief, and this may be a disincentive to investing in conservation. Increased demand for wood fuel has led to an increase in the cutting down of trees. The little unreliable rainfall of the region and “disobedience” to the taboos and cultural practices guiding the use of natural resources have contributed to soil fertility depletion and the drying of permanent rivers that have become seasonal. Both male and female participants indicated that in the past the soils were fertile, agricultural productivity was better, the tree population was higher and there were areas that could be described as forests. There was adequate pasture and the community kept cattle, sheep and goats. All those conditions have changed. There are no community initiatives to conserve forests other than the traditional system, which is no longer effective.

Hence, in spite of everyone having land to cultivate, Doggoh villagers can only feed themselves for 3 months a year. They rely on remittances from their children who go south to seek employment in order to support the families in the village. High poverty levels increase the pressure to over exploit tree resources to which the community has open access. Income derived from the sale of wood fuel has created incentives for increasing the rate at which trees are cut down. Not surprisingly, two-thirds

of the organisations identified by men and women in the study provided food security assistance, including during non-crisis times.

Women interact with resources that are close to the village. They are involved with small groups that have very limited capacity, and their activities involved mobilisation of labour primarily. Women do not attend public meetings unless specifically asked. The men interact with resources further away from the village and control resources, although it is women who provide the labour.

Information networks for agricultural and weather information in the community are made up of media, organisations and individuals. The radio is the most used form of media. The radio offers several programmes in the Dagaare language, which provides the community with information.

The Ministry of Food and Agriculture (MOFA), Farm Plus, RAAP and ADRA are organisations that provide the community with information on agriculture. Individuals who form an important part of the information networks include farmers and rainmakers. Individual observation is the most used source of information on weather. Dissemination of weather related information is also done through MOFA, the radio and the rainmakers.

Links should be created among the organisations working in the community to build synergy. The capacity of the community groups can be built to better equip them for participation in the CCAFS agenda.

Table 9 summarizes major gaps in knowledge and other current constraints that could provide opportunities/niches for CCAFS partners in terms of research, action/research and development interventions.

Table 9. Gaps in knowledge or other current constraints that could provide opportunities/niches for CCAFS and its partners

Gaps in knowledge/ current constraints that could provide opportunities/niches for CCAFS and partners	Opportunities for research (CCAFS)	Opportunities for action research (CCAFS partners)	Development interventions (Development Partners)
More work needs to be done on soil fertility	X	X	
Sustainable forest management		X	X
Diversification of crops		X	
Diversification of livelihoods		X	
Strengthen community organisation			X
Improve formation of groups/improve collective action		X	X
Empowering women/creation of awareness		X	X
Extension service to help improve livestock production/pigs/sheep/goat/chicken		X	X
Watershed management/water resource management	X	X	X