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

Village Baseline Study:

Site Analysis Report for Ekxang village Phonghong district, Vientiane province, Lao PDR (LA01)

May 2015

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ABSTRACT

Data collection for the Village Baseline Study for the Ekxang Climate-Smart Village located in Phonhong District, Vientiane Province, Lao PDR, took place on November 19th - 21st, 2014. Three days of focus group discussions were conducted separately for men and women. Participatory methods were used to gather information on community resources, organizational landscapes, information networks, and the community's vision for the future.

Men and women in Ekxang village had different point of views on their community's resources. Women were focused more on the conservation and increased forest land as they are responsible for collecting the Non-Timber Forest Product. Men were more interested in the development of agro-forestry. Regarding agriculture, men were focused on rice paddies while the women were more focused on the smaller household vegetable gardens. There were several changes in community resources. Forest and pasture areas were significantly degraded due to urban development, increasing people demands, and expansion of agricultural lands since 1980s. Infrastructures for irrigation were improved 30 years ago to expand the irrigated area but only few households in Ekxang could benefit from it. Villagers experience that soil fertility has declined compared to 25 years ago. There were a number of organizations operating at the village, half of them related to food security, food crisis and natural resource management. However, linkages is not strong the organizations. Farmer-to-farmer, mobile phone and television are main sources of information that support farmers in their decision making. There is a high potential to develop ICT-based technologies in order to support climate-smart farming practices to farmers. From the farmers' perspective, their Climate-Smart Village should be an agroforestry landscape with smart groundwater use, smart pest management and crop diversification, and smart information services.

Keywords

Village Baseline Survey; Laos; Participatory Mapping; Climate Change; Agriculture; Food Security.

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Abbreviations

CC	Climate Change
CCAFS	Climate Change, Agriculture and Food Security
CGIAR	Consultative Group on International Agricultural Research
CUSO	CUSO International
CSV	Climate smart village
DAFO	District Agriculture and Forestry Office
DOI	Department of Irrigation
FGD	Focus Group Discussion
IWMI	International Water Management Institute
JICA	Japan International Cooperation Agency
KIP	Laos Kip
NAFRI	National Agriculture and 4Forestry Research Institute, Laos
MDC	Mekong Development Centre
NGO	Non-governmental organization
OBS	Organizational Baseline Survey
PAFO	Provincial Agriculture and Forestry Office
R&D	Research and Development
R4D	Research for development
VBS	Village Baseline survey

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1. INTRODUCTION

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic ten-year partnership between the CGIAR and Future Earth to deal with the threats posed by a changing climate, to achieve food security, improve agriculture and livelihoods. In 2014, CCAFS South East Asia region identified sites for implementing Climate Smart Villages (CSVs). Six sites were selected in three countries of Vietnam, Cambodia and Lao PDR. The objectives of CCAFS CSV is to increase the adaptive capacity of small-holder famers in light of climate change effects, improve livelihoods by sustainably increasing productivity and resilience, mitigate climate change by reducing greenhouse gases (GHGs), and enhance national food security and development goals.

This report presents the results of the Village Baseline Study (VBS) that took place in the Ekxang CSV located in the Phonhong District, Vientiane Province, Lao PDR. The VBS is part of the baseline activities (including Household Baseline Survey and Organizational Study) done in target sites for CSVs. The VBS aims to provide baseline information at the village level about community resources, organizational landscapes, information networks, and the community's vision for the future.

The objectives of the VBS are to:

1. Collect baseline data on indicators that allow site comparability and monitor changes in the villages over time. In particular, these are changes that allow people to manage current climate risks, adapt to long –run climate change, and reduce/mitigate greenhouse gas emission;
2. 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.
3. Gather information on the aspirations of the community in order to make future interventions more sustainable and easily adopted.
4. Explore gender differentiation.
    - Perceptions of women and men were gathered separately to be able to present different gender perspectives.
    - Focus group participants were selected to present perceptions of groups differentiated by age.

This report is presented in five sections: the Introduction is followed by a brief overview of the methodologies used, brief profile of Ekxang village, and the results relating to the three evaluated topics – community resources, organizational landscapes, and information networks. A conclusion and recommendations for CCAFS end this report.

2. METHODS

The VBS consisted of 3- days of Focus Group Discussions (FGD) and participatory activities held separately for men and women on 19-21 November 2014.The venue was pagoda of Ekxang. Each day, 15 men and 15 women from the village were randomly selected and invited to participate in male and female FGDs. The Lao CSV Team, consisting of representatives from various local organizations including NAFRI, DAFO, PAFO, MDC, CUSO and IWMI, were responsible for conducting the VBS. Following CCAFS protocol on gender differentiated FGDs, male team members worked with the male participants while the female team members worked with the women participants. A facilitator and a note-taker were assigned to each FGD to lead and to record the discussion, respectively. .

Day 1 of the VBS was for the community mapping activity. Initially, each male and female focus group created a map of the village on the ground, which was then transferred map on to a flip chart. A block of 10 x10 km satellite image covering Ekxang and other surrounding villages was used to facilitate mapping by villagers of the past and current resources available in the community. These maps were used to capture important resources of the community, their state, and driving forces of change.

Day 2 of the VBS focused on understanding the organizational landscapes of the community, particularly identifying organizations that contribute to food security, food crisis, and natural resource management. Each male and female focus group were made 1) to list the organizations working in the village; 2) rank the organizations in terms of importance; 3) identify the organizations that contributed to food security, food crisis, and natural resource management; and 4) describe the linkages between the various organizations. The outputs were the score of each organization and three diagrams showing the organisational landscape and the linkage of the organizations for food security, food crisis and natural resource management.

Day 3 had two main activities. The first set of activities was focused on understanding the information networks within the community through separate FGDs with men and women. The FGD participants were asked to list the information they need to help them make agricultural decisions, and discuss the ways this information is accessed. The outputs were diagrams containing illustration of the kind of information accessed via four main sources: individuals (farmers-farmers), media (TV, radio, internet and etc), organizations (NGOs and Government), and other sources (companies). The second set of activities focused on generating a vision of what the community would like to see in the future. The output of the men and women was a map overlaid on a 10 x10 km satellite image showing “the vision of the community in the next 15 years (2030)”. Before starting this vision, 3 volunteers from Day 1 presented 15 photos they took representing images they were most proud of and images they are not proud of and do not want to see in the future. This process was meant to make the villagers to think about their future.

Data collected was captured on sketches, maps, flip charts, information cards, and notes. All these were brought together in one debriefing report which is the basis of this VBS site analysis report.

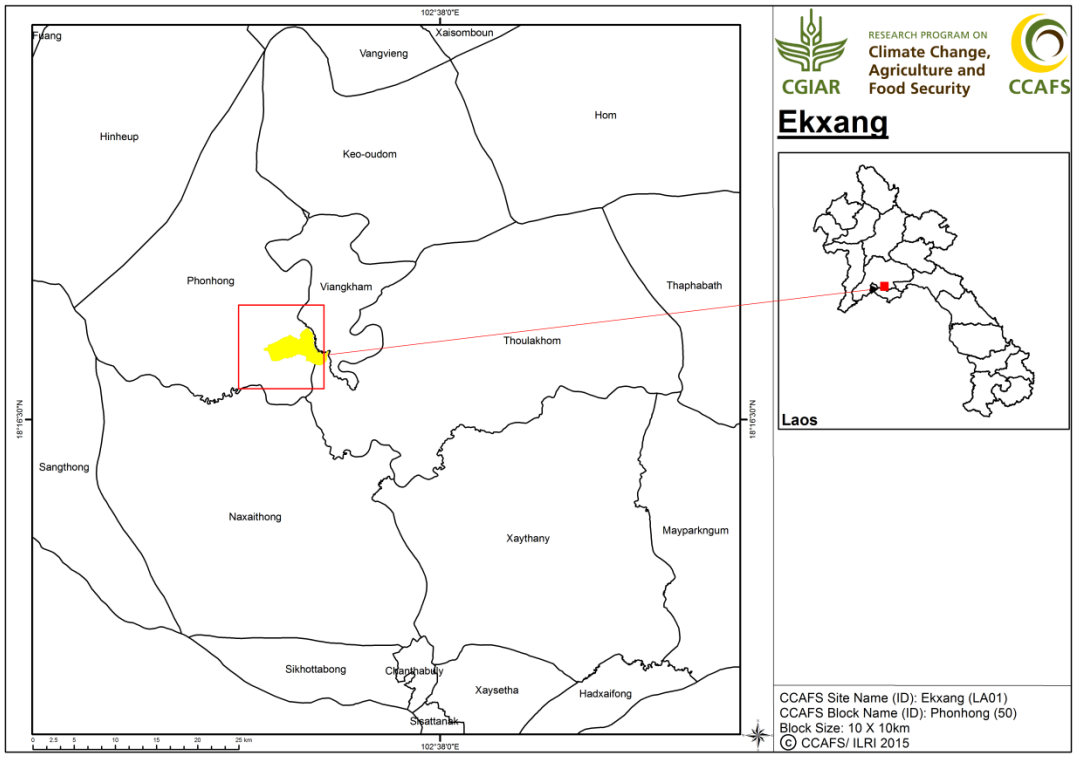
The detailed tools and guidelines used for the implementation of the village baseline study across all CCAFS sites, as well as the manuals, data and analysis reports can be accessed at http://ccafs.cgiar.org/resources/baseline-surveys.

3. BRIEF PROFILE OF EKXANG VILLAGE

Ekxang was selected as a CSV by CCAFS-SEA and the International Water Management Institute (IWMI) in 2014. Ekxang village is located in Phonhong District, Vientiane Province, Laos (Map 1). The village's is located in coordinates 102° 26' 23" E-102° 30' 48" E and 18° 20' 6" N - 18° 22' 31" N. The distance between Ekxang and Vientiane capital is approximately 52 km.

The main livelihood source of 70% of the households in Ekxang village is agriculture. Paddy rice is the major crop during the wet season, and vegetables and watermelon during the dry season. Livestock production, fishing, and the collection of non-timber forest products, such as bamboo shoots, mushrooms and wildlife, are also important sources of household income and food. The quality of natural resources supporting agricultural livelihoods such as forests, ponds, rivers and pastures have declined since the 1980's due to rapid population growth, urban development, and perceived climate change.

Despite the degradation of resources, Ekxang farmers are able to produce a diverse and large quantity of agricultural products compared with other villages in Phonghong district. This is due to multiple reasons relating to effective use of groundwater and surface water resources, and efforts of many organizations such as Oxfam, Phonesoung Agriculture Development Centre, JICA and DAFO, that have contributed in increasing agricultural production and improving people livelihoods. Farmers receive a variety of information that facilitates agricultural decision making on aspects including weather conditions, crop varieties, livestock vaccinations, sustainable agricultural production techniques, market prices, pest control and fertilizers. Sources for this information include government extension workers, other farmers, NGOs, and the media.



Map 1. Location of Ekxang village in CCAFS benchmark Vientiane, Lao PDR

4. RESULTS

4.1. Topic 1: Community resources – participatory satellite imagery interpretation and visioning

Through the process of participatory visual interpretation of high resolution satellite imagery, the VBS team gained a greater understanding of community resources (including infrastructure, forest, water resources, agricultural lands and pastures), their quality, access, management, history and drivers of change. This information was gathered separately for men and women, enabling the team to capture the gender differentiated perspectives of community resources. Five maps were produced: the current community resources by women (Photo 1) and men (Figure 3), the past community resources by women (Figure 4) and men (Figure 5), and "the future vision" map of community resources and human well-being into 2030 (Figure 6). The future vision map illustrated the community's concerns and aspirations to guide CCAFS interventions within the village and to ensure that these interventions will be sustainable, easily adopted, and in line with the community's own goals.

4.1.1. Current resources

During the community mapping activity, the note taker in each male and female focus group recorded details about the quality and management of the natural resources described. These detailed notes were included in the debriefing document in the format prescribed by CCAFS VBS manual. The most important resources identified by men and women groups are described below:

Cropland

The total farmland area in the village is 230 hectares. Most of cropland is used for cultivating paddy rice during the rainy season. During the dry season, the area is used to cultivate cash crops such as vegetables and watermelon. Household gardens also produce vegetables such as morning glory, lettuce, spring onion, egg-plant, and mint. Some of these household gardens make use of greenhouses, compost, bio-char, raised beds, and organic production techniques.

Although most of croplands in the village are privately owned, there are three hectares of communal cropland managed by the Village Elder Association. Currently, the area is rented out to support the Village Fund, which is mainly used for village infrastructural development.

Pasture

Large livestock production, specifically cow and buffalo, is important for household livelihood in Ekxang village. There are over 1,000 heads of large livestock in the village requiring areas for grazing.

Pastures in Ekxang can be areas specialized for grazing or can be fallowed croplands. Pastures are also the source of mushrooms, herbs, bamboo shoots, and insects for villagers. All pastures are privately owned land but the owner may allow other villagers to raise livestock on their land during off-crop season. Pastures are generally small and overcrowded. Distance from residential land to pastures varies from 10 minutes to 2-hours walk. Areas far from the village are difficult to access and to monitor livestock. Pastures often have tree cover to create shade for the livestock. However, the cove rate is reducing quickly nowadays.

Forest

Ten years ago, the area had large communal forest land. Currently, there is only a small private forest area of 159 ha. The reduction was due to deforestation, urbanization and

expansion of agricultural land. The remaining forest is located along the main road access to Ekxang, which takes 30 minutes to reach by walking. Villagers depend on this resource for NTFPs such as fuel wood, mushrooms, herbs, bamboo shoots, and wild animals. However, there is a high competition for collecting these products threatening the sustainability of this forest. The future of the forest depends on the land use decision of the land owner.

Ponds

There are eight ponds that provide fish, amphibians, and insects for households in the region. These ponds are often dried up in the dry season, and thus population of aquatic species is small. Six ponds are managed by the Village Elder Association. Fish in these ponds is often harvested for community's events. Fish is also sold and sales is contributed to the Village Fund.

Rivers and canals

A river located outside the village were mentioned by the men's group. The river passes Phongthanh, a neighbouring village. This river is important for irrigation and fish breeding. In the 1980's, Korea supported the local government to build a small concrete dam to retain water for irrigation. Although the dam is managed by Phongthanh village, farmers in Ekxang, who have fields nearby can also access this water source via irrigation canals.

Groundwater

Groundwater is the main source for irrigation and domestic uses. Almost every household has their own well. Exploitation of groundwater enables farmers in Ekxang to have two cropping seasons a year. The use of this resource requires an electric pumping machine and can only supply water needs of fields surrounding the wells. Recently, IWMI DOI in partnership with other organizations drilled three boreholes, which will be used to test community-managed irrigation.

Roads

A main road connects Ekxang to Highway Number 13 North (the main highway leading to Vientiane capital and the market at Km 52). This enables villagers to sell their products to the market, access schools, communicate to other regions, and find off-farm works in surrounding areas. The road used to be a dirt road until 2009 when it was improved and expanded by government. Due to poor maintenance, the road is not in good condition with many potholes, making it difficult to use during the rainy season.

School

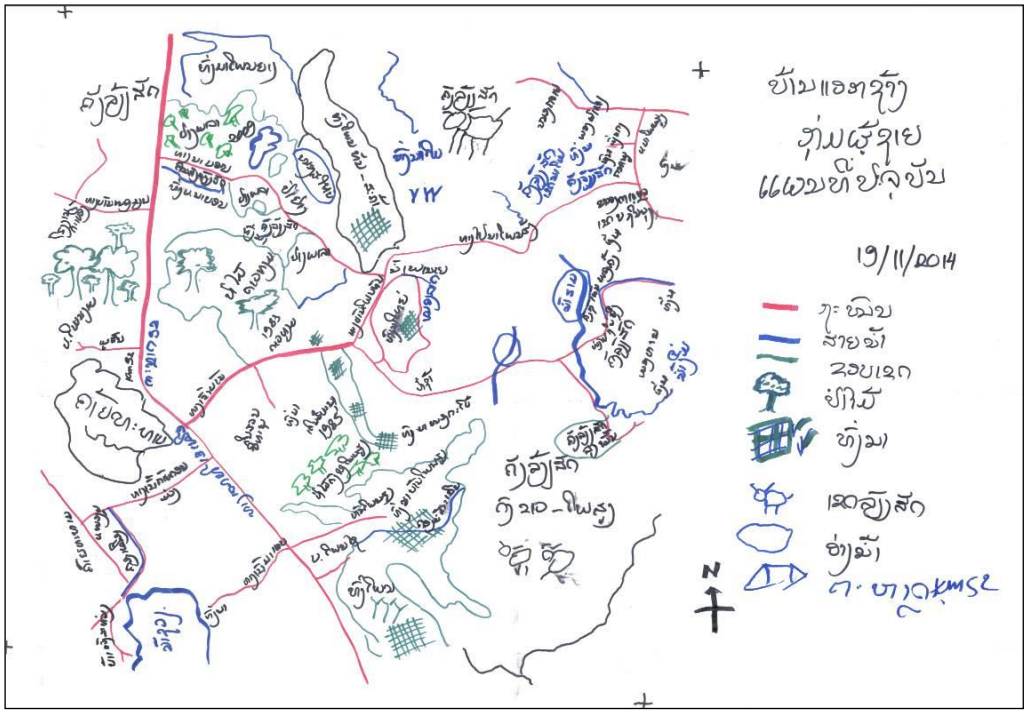
Ekxang village has a primary school. The school was re-built in 2008 with support of JICA. The school is small, overloaded, lack proper facilities, and teachers. The school, however, is very important to the community, especially to the young generation. It is widely believed in the community that education will create opportunities to improve their livelihoods.

Pagoda

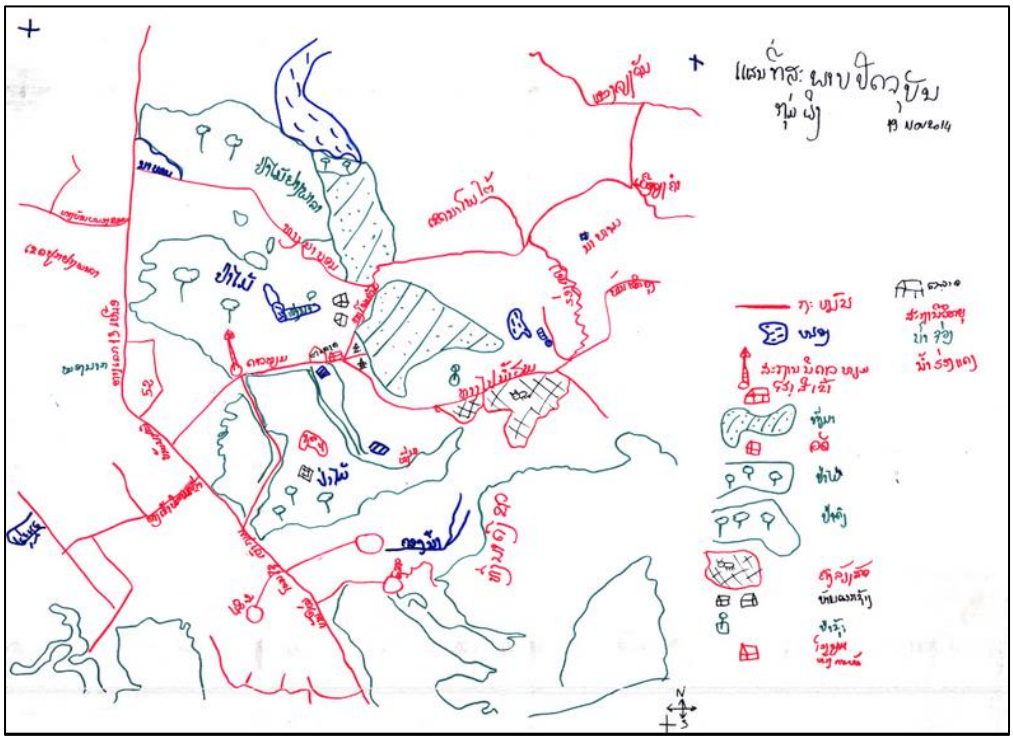
The pagoda is the focal landmark in the community. It is a place for cultural expression, religious activities, and holding community events and meetings. The pagoda was made of wood until it was converted into a concrete structure using funds contributed by the community. It has beautiful painted walls, paved driveway, and sliding doors.

Market

A small local market in Ekxang opens every evening. A variety of local products such as meat, fish, insects, fruits, herbs, and vegetables are sold. To buy clothing, facilities and other products, villagers have to go to a larger market at KM 52 of the Highway 13, which is about 3 km from Ekxang.



Map 2: Men's map of current community resources



Map 3: Women's map of current community resources

Table 1. Summary for map layer 1- current conditions as perceived by men (M) and women (W)

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
Forest (W)	Fuel wood, NTFPs.	Ekxang Forest	Deforestation is controlled.	30	Private	Fresh air, biodiversity (flora and fauna)	Collect NTFPs Source of foods Extra income.	Forest area is small Competition for NFTPs is high Area is privately owned
Pasture (W)	Grazing Collecting foods unusual arable land.	Ekxang pasture	Good condition with a few trees.	10-120	Private	Supports biodiversity	Have space for feed and also keep the animals	Far away from village Less secure Land use may change depending on owner decision Increase in livestock population threatens sustainability of resource.
Ponds (W)	Fish, amphibians and insects	Ponds	Seasonal dry, shallow Low fish population	30-120	Communal	Refuge for biodiversity	Source of foods and cash	Far from village, shallow and not functioned in dry season
Groundwater (W)	Wells		Good quality with an electric pumping system	0-60	Private	Enables crop diversification	Easy access Clean water	Require electricity for pumping engine.
Borehole (W)	Boreholes		Good quality with manual pumping system	3	Communal		Open access Clean water	Manual pump requires labour and time. Far from village
Infrastructure (W)	Tele communication tower		Properly maintained and secured	30	Government		Communicate with people inside and outside the village	

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
	Rice mill		Good machine that makes processing rice faster	5-15	Private		Speeds up rice processing Save farming time	Middle man gets priority over villagers
	Market	Evening market	Small market and only sells local food products.	5-10	Private	Promote locally grown organic foods	Buy and sell local foods.	No other goods (e.g. clothes, furniture…)
	School	Primary school	Small, lack of facilities and materials; lack of teachers.	5	Community	Environmental education for the children	Close to village; opportunity for new generation to be educated as a means to improve livelihoods	Costly; Small, lacks facilities and materials
	Village' office	Ekxang Village Office	Small, old and lack of proper facilities.	5	Local government		place for community/official meetings Enables cooperation between village authorities and outsiders	Small and old Lacking sufficient electricity and facilities. Generally restricted use to village authorities.
	Pagoda	Ekxang Pagoda	New and large Concrete and beautiful paintings, under construction.		Community		Place for cultural expression, religious activities, and holding community events	
Road (W)	Road	Ekxang Main Road	Small road with some potholes	0	Community/Government		Connects village with main Highway 13N, enable villagers to travel outside for trading, accessing education and information.	Small dirt road with potholes that is difficult to pass during rainy season.

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
Cropland (W)	Paddy field	Ekxang paddy fields	Low soil quality; seasonal flooded and droughts; locally lack of irrigation	10-120	Private	Locally grown food and organic products	Source of foods (rice, vegetable, insects) Diversify cropping systems Seasonal grazing area.	Low soil quality, lack of irrigation; occurrences of pests and disease.
	Gardens	Household Gardens	Small scale; used for organic production and green-houses vegetables, fruit trees.		Private	Supports biodiversity; organic products; trees	Source of food and cash income; improve nutrition balance of households	Small scale
Cemetery (W)	Cemetery area	Ekxang cemetery	a part is rented out for the cassava plantation; Include a small building	10- 30	Communal		Sacred place for villagers	
Roads (M)	Highway	Road 13 North	Pave road	40	Government		Easy access to capital city and major markets	
	Road connecting Ekxang to major highway	Main road of Ekxang	Dirt road with some potholes	0	Government (70%) and community (30%)		Encourage traders and projects to come to Ekxang	Dirt road with potholes makes it hard to pass in the rainy season
	Radio station area	Road of radio station	Dust road with potholes	40	Government		Sources of fire wood and NTFPs products.	Fear that over use of this area will lead to the depletion of resources

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
	Road to Phonesoung village	Phonesoung village Road	Small road along paddy field	30-40	Community		Connects villagers with Phonesoung village	Not assess on raining reason.
	Road to Nathaet Village	Nathaet Village	Good quality road	60	Government (70%); community 30%		Connects villagers with Nathaet village	
	Road to Dongkhao Village	Dongkhao Village	Dust road	120	Community		Connect villages with Dongkhao and encourages more social events than in the past	
	Road to Nongnuk Village	Nongnuk Village	Good quality of road	90	Government (70%); community (30%)		Connects to the ethnic community.	As other village is a different ethnicity, they are concern about conflict
	Road to Nongkonh Village	Nongkonh Village	Good quality and some still dust road	180	Government (70%) and community (30%)		Encourage more social events and more development	
	Road to Nabon Village	Nabon Village	Dust road	120	Community		Save time for transportation and is a short cut to Ekxang village	
	Road to Houghia Village	Houghia Village	Dust road	360	Community		Goods connected with outside people	Not assess all road

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
	Road to Phonethone Village	Phonethone Village	Good quality of road	10	Government (70%) and community (30%)		Opportunity to have more contact with traders than in the past	
	Road to Nongpoung Village	Road to Nongpoung Village	Good condition	90	Government		Connect villagers with more development projects and has more social events with people outside the village.	
	Road to Chengsavang Village	Chengsavang Village	Good quality road	90	Government		More social events and contact more trader that's why village income increased.	Conflict is once problem in this community
	Road to Tinyoung Village	Tinyoung Village	Dirt road	120	Government		More communication than past and attract trader to buy poultry	Some year flooding and not bridge as present
Infrastructure (M)	Radio station	Radio Station	Good	40	Government		Way to receive news, weather and increase knowledge of surrounding areas.	Sometime, they could not access the radio as problem on raining season
	Satellite station	Satellite station	Still have some trees and wild animal s	40	Government		Way to receive information on news and weather beyond the village.	

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
	School	Ekxang School	School is relatively new, but still lacks basic facilities and teachers.	5	Community		Improve the education of the new generation. Potential employment for teacher within village.	Not enough teachers, and lacks basic facilities.
	Pagoda	Ekxang Pagoda	New big and beautiful pagoda still under construction	5	Community		Place for large community meetings and religion events.	
	Market	Ekxang village	Small and not enough space for community.	5	Community		Place to sell local agricultural products, attracts people from outside village.	Limited parking, small area and limited products being sold.
	Rice mill	Ekxang Rice Mill	Still working. because of good maintain/repair	10	Private		Most people can access and save time to take rice to miller.	Have to pay for service and no more choices.
	Village office	Ekxang village office	Old building and small office	2	Community		Location for village authority work.	Limited space for village meetings and lacks facilities.
Farmland (M)	Livestock areas	Houyhia areas	Still have trees and grass and suitable to raise livestock	360	Community		Good for raising livestock which supports HH income	Theft problem
	Livestock areas	Napho areas	Still trees and suitable in the dry season	120	Private		Support to community livestock	Flooding in rainy season

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
	Pig's shed	Talell area	Good condition/standard	120	Korea invester		Opportunity for villagers to access work	N/A
	Livestock area	Dongkhao - Phonsoung area		60	Private		Support to livestock market	N/A
	Livestock farm	"Uncle Meaun farm"	Big area and good quality	90	Private		Encourage farmers to raise livestock and produces manure for paddy field in several villages	N/A
Forest (M)	Rubber plantation	Nongnuk village		4	Private		Generates income to an individual HH	Does not provide work for community
	Collect fire wood and NTFPs production and sources HH income	Satellite area	Still have big trees and NTFPs products.	20	Government		Sources of HH income and consumption.	Concerned that there will be less forest covers and NTFPs in future with over use.
	Collect NTFPs products and bamboo	Radio area	Still have bamboo trees and other natural plants	20	Government		Opportunity to collect bamboo shoots for subsistence and commercial.	Area is far away, over use of resource causes fear of resource degradation.
	Conservation forest	Dongchong Phonsoung area	Still have big trees and not allow to cut trees without permission	180	Community	Supports biodiversity and tree cover.	Opportunity to growth trees and NTFPs production	

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
Water Resources (M)	Collect water for domestic use	Ground water wells	Steady quantity of water but sometimes have issues with water quality	0	Private		Enough water for domestic use	Have to pay of electricity fee for pumping
	Helps irrigate vegetable gardens and paddy fields in the raining season	Deang steam	Still have good quality but not much water available in dry season	30	Community		Helps irrigate vegetable gardens and paddy fields in the raining season	Some years, flooding causes problems in rice paddies.
	Used to irrigate cash crops as water melon and long bean	Ham stream	Used for irrigation	30	Community		Used to irrigate cash crops as water melon and long bean	Not enough water for entire community
	Supports fishing and irrigates cash crops.	Phaniey river	Still have big trees and NTFPs production	10	Community	Opportunity for forest covers	Supports fishing and irrigates cash crops.	
	Fishing.	Nearn river	Still have trees around, big fish and good water quality	30	Community		Opportunity for fishing.	
		Ngam river	Still big river and good water quality	25	Community			
	Irrigates rice paddies in dry season and used for fishing.	Soung river	Still have forest cover, big fish and good water quality	120	Government	Opportunity for forest covers	Irrigates rice paddies in dry season and used for fishing.	

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
Ponds (M)	Used for fishing (commercial and subsistence).	Lard pond	Still have problem with water quality	20	Community		Used for fishing (commercial and subsistence).	Pond is shallow and runs dry in the dry season.
	Used to irrigate rice paddies	Kayo pond	Still have problem with water quality.	10	Private		Used to irrigate rice paddies	Individuals have to pay to access water for irrigation.
	Encourage to produce rice in dry season and fishing.	Yai pond	Still have trees, fish and good water quality	60	Community	Wetlands and fish	Encourage to produce rice in dry season and fishing.	
	Has a wetland area and supports fish breeding	Khoug pond	Still have fish and suitable for fish breeding	120	Community	Wetlands and fish breeding.	Has a wetland area and supports fish breeding	Concerned of theft
	Irrigation for rice paddies and supports wetland.	Phengden g pond	Still have lots of water	120	Community	Wetlands	Irrigation for rice paddies and supports wetland.	Distance is a problem. It is far away from paddy fields
	Used for collecting NTFPs and fishing.	Talell pond	Still have big fish and NTFPs production	60	Community		Used for collecting NTFPs and fishing.	
	Supports wetlands and fishing for commercial and subsistence purposes.	Sathack pond	Still have trees around and fish	60	Community		Supports wetlands and fishing for commercial and subsistence purposes.	
Irrigation (M)	Irrigation	Nongpoun g Village Dam	Old dam but still in good shape.	90	Community		Farmers are able to produce 2 seasons of rice because of available water in dry season.	Have to pay for electricity fee for pumping

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource (minute)	Management and ownership issues	Environ-mental Benefits	Opportunities	Limitations
Rice field (M)	2 seasons of rice production.	Phone-saka village	Still have a good soil quality	120	Private		Irrigation for growing 2 seasons. Opportunity to produce high valued crops in dry season.	
	Rice production in raining season.	Yai area	Need to improve soil quality	5	Private		Rice production in raining season.	Problems with over flooding in raining season
	Rice production in wet season.	Phonesoung-dongkhao village	Soil quality problem which leads to decreased rice yields.	40	Private		Chance to produce cash crops in dry season as rice yields decrease.	Over flooding in raining season
	Pho field	Pho area	Need improve soil quality	120	Private		Two seasons of rice.	Over flood some year
	Rice production in wet season and vegetable production in dry season	Ekxang village	Need to improve soil quality	5	Private		With proper water management and new opportunity for irrigation; community can produce vegetables during dry season.	Lack of irrigation in some parts; paddy fields rely on rainwater.
	Rice production in wet season.	Nabon village	Need to improve soil quality	90	Private		Opportunity to focus on cash crop such as water melon, long bean and maize.	Some area lack access to water because of their high location
	Rice production in wet season.	Phone yeng village	Need to improve soil quality	120	Private		Opportunity to improve soil quality.	Pay for electricity fee for pumping water in dry season

4.1.2. Gender-differentiated comparison of current conditions

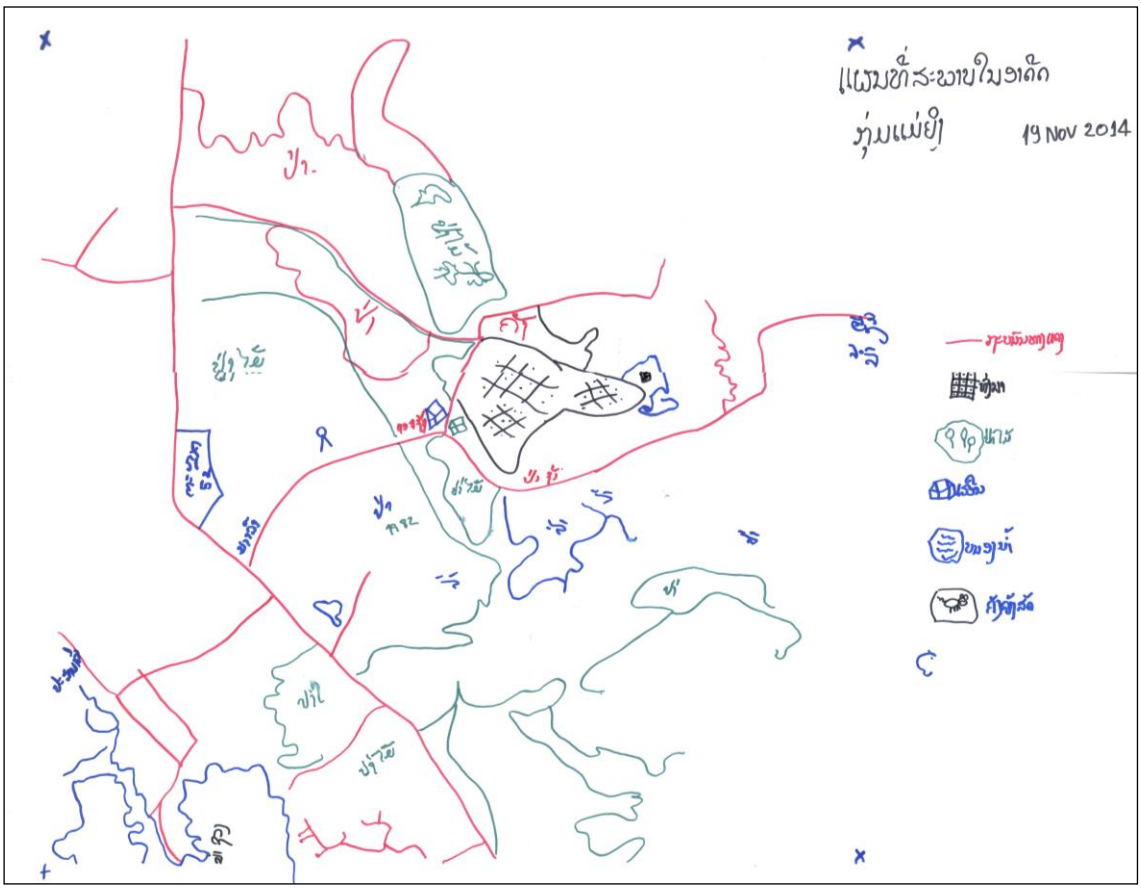
The men and the women had different point of views on their community's resources. With regard to the forest area, women seemed to focus more on the conservation and improvement of forests within the community as they are responsible for collecting the NTFPs. Men were more interested in increasing forested area through agro-forestry, with products such as eucalyptus, palm and fruit trees. Regarding agriculture, the men were highly focused on rice paddies while women were more focused on the smaller household vegetable gardens. Women were interested in improving the local market as they are the ones selling their products within the community while the men were interested in improving the road so they could access larger markets outside the village.

Regarding water access, the men were focused on large scale groundwater access for irrigation while the women were more interested in the household water supply for domestic uses and for irrigating their small household vegetable gardens. Women tend to spend the majority of their time doing household work such as cooking, cleaning and washing clothes, watering the household garden, and giving water to the livestock. The men tend to spend most of their time in the field. The difference in the work of men and women is reflected in their descriptions of current resources.

4.1.3. Major changes in the resource conditions

The men's and the women's group were asked to describe historical land use and natural resources and to identify the major changes that had occurred in their community as well as in the 10 x10km block. Causes of change were also discussed by both men and women's groups. Maps describing the past resources developed by the groups are shown below:

Map 4: Major changes in resources (comparing past and present) for men



Map 5: Major changes in resources (comparing past and present) for women

Forest

In the past, forest areas within and surrounding Ekxang were dense and covered large and extensive areas. However, due to urban development and the expansion of agricultural lands in the 1980s, many of the forests were cut down. The remaining forests are much smaller and have sparse tree cover.

Pastures

The pasture land currently used in Ekxang was previously a small area and full of large trees. However, due to the continuous increase of livestock population and need for fuel wood, the expansion of the pasture land and deforestation within the pasture has been steadily increasing since the 1980's.

Water Resources

Some farmers in Ekxang receive irrigation via a canal from the PhaNaiy river located in Phonthanh, a neighbouring village. This river used to be free flowing, but 30 years ago, with help from a Korean organization, a small concrete dam was built to facilitate and expand irrigated areas.

Another important water resource for Ekxang village is ponds. Previously, these ponds were rich with biodiversity (supporting mainly fish and amphibian populations). Due to prolonged dry season and increased use of water for irrigation, the ponds have become

shallow and dry during the dry season. Lack of pond water decreases the fish and amphibian populations resulting to reduced food available for the community.

Cropland

Trees were abundant within the rice fields 25 years ago. The soil was relatively high in organic matter, and chemical fertilizers and pesticides were not used. Today, the cropland area has expanded and the trees in this area have been cut down. There is a noticeable decrease in soil organic matter and overall soil fertility. Due to increased access to irrigation during the dry season and a higher demand for fruits and vegetables, farmers began to grow vegetables and watermelon during the dry season. However, these cropping systems require intense use of fertilizers and pesticides that negatively affect the health of farmers and the sustainability of the farmland system.

Infrastructure

There have been a lot of infrastructural improvements in Ekxang including the road, school and pagoda. In the past the roads were narrow dirt road that ends just before the village. Villagers were used to walking within Ekxang. In 1980, the government funded road constructionm, widening and extending the road network to connect Ekxang to other villages nearby. Similarly, the primary school in Ekxang used to be small and lacked basic facilities including water and sanitation. In 1996, th primary school was reconstructed with support of JICA. It is now a bigger and concrete structure with water supply and a bathroom. The Pagoda was recently upgraded from a small, wooden structure to a bigger and concrete structure with Buddhist paintings from pooled donated funds of the villagers.

The detailed notes of men and women's discussions are presented in Table 2 below.

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

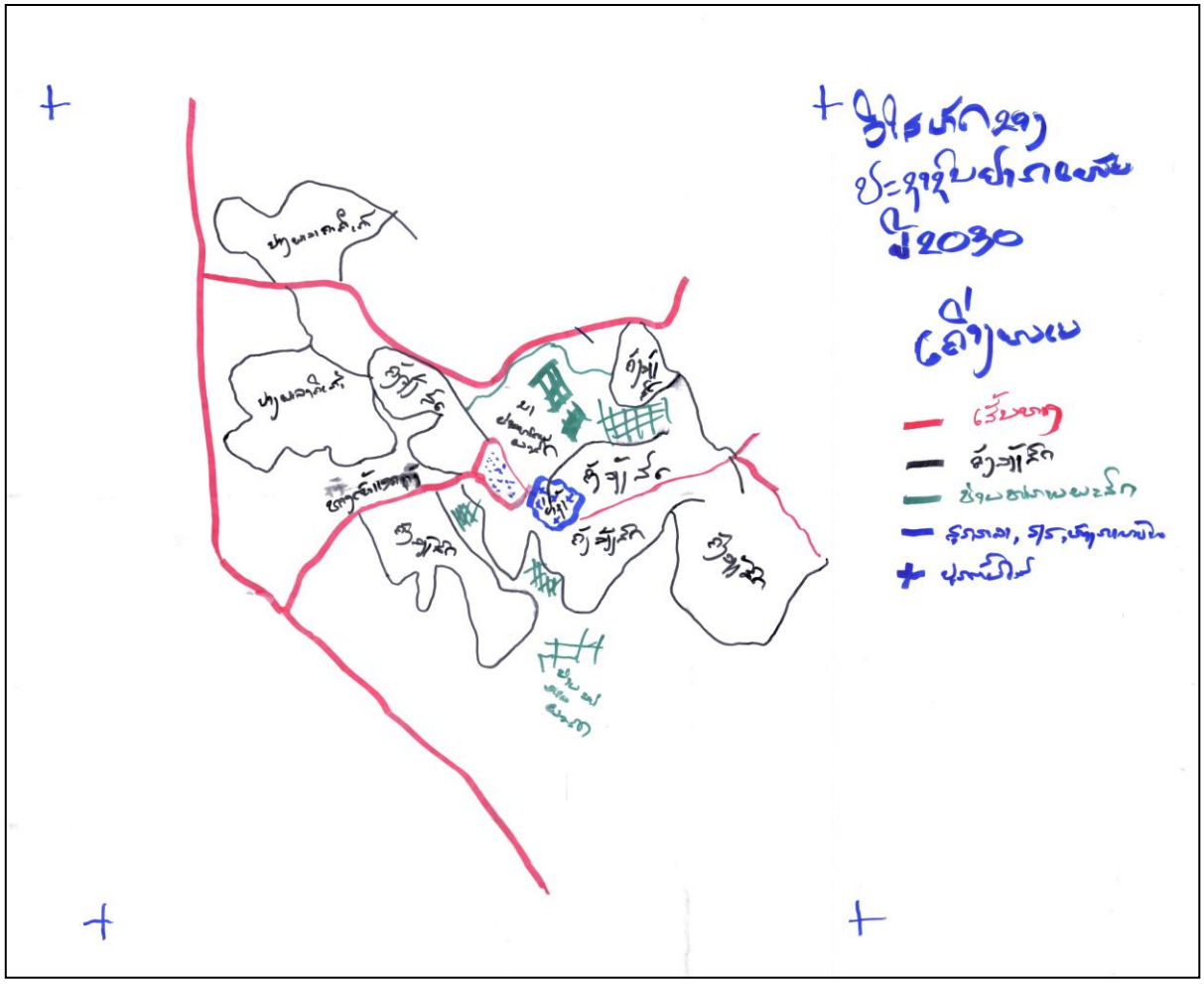
Land cover class	Community determined land use	Location Names	Past state (quality)	Time to resource (minute)	Drivers of change	Management and ownership issues	Environmental Benefits
Forest (F)	Fuel wood, NTFPs.	Ekxang forest	High trees density with large trees and covered a large area.	30	Population growth, urban development, increased deforestation, expanding cultivation area	The fact that the land is privately owned contributes to the preservation of the resource for now.	Fresh air and supports biodiversity (flora and fauna).
Pasture (F)	Grazing Collecting foods unusual arable land.	Ekxang pasture	Smaller area, less livestock and more trees.	10-120	Population growth, increased livestock population, increasing demand in fuel wood.	Privately owned land	Few trees remain and supports biodiversity (flora and fauna).
River (F)	Irrigation, fishing	PhaNaiy River	Used to be free flowing/not dammed.	60	Korean organization support building a small dam 30 years ago.	Ekxang and Phonthanh villages co-manage the water and irrigation system.	Abundant fish in river and good place for fish breeding.
Ponds (F)	Fish, amphibians and insects	Ekxang community ponds	Ponds used to have more water and used to have more abundant fish, amphibian and insect populations.	30-120	Hotter and drier weather in dry season. Now also used for irrigation.	Community managed	Refuge for biodiversity
Infrastructure (F)	School	Ekxang School	Small building that lacked basic facilities	5	Increased population and income within village along with the support from JICA allowed a new school to be built	Community manages school but requires aid from government and NGOs to improve school.	Promote environment education.
	Pagoda	Ekxang Pagoda	Small wooden building	5-10	Increased village population Larger budget contributed by villagers	Community	

Land cover class	Community determined land use	Location Names	Past state (quality)	Time to resource (minute)	Drivers of change	Management and ownership issues	Environmental Benefits
Road (F)	Road to connect village to other places. Enable trading, education, and access to information.	Ekxang main road	Narrow dirt road stopped just before village (villagers had to walk to their house)	30	Government supported to expand, widen the road.	Government	
Cropland (F)	Rice fields	Ekxang paddy fields	Soil was relatively high in organic matter, trees were abundant in the fields, and chemical fertilizers were not used.	120	Started using the chemical fertilizers and cutting down trees to increase production.	Private	Locally grown food and organic products
Roads (M)	Main road to attract trader outside/NGO/Government visit village	Main road to Ekxang village	Dirt road that did not extend into the community	120	Government repair since 1975	Government	
	Enable wider communication (visit Phonengam village)	Road to phonengam	Small and dirt road	300	Since 1990, the government supported 70% of the cost for road improvements.	Community and government	
	Enable wider communication (visit Nongkhone village)	Road to nongkhon village	Small and dirt road	180	Since 1960, investor have to build road Government have to maintain 2009- 2010 From 2011-2012, Mrs. Phengphone was responsible for maintenance.	Government	
	Enable wider communication	Road to Nongpoung	Small and dust road	240	Road has been improved because it's being used by soldiers.	Government	

Land cover class	Community determined land use	Location Names	Past state (quality)	Time to resource (minute)	Drivers of change	Management and ownership issues	Environmental Benefits
Infrastructure (M)	Investment /industry location	Roof factory		120	Since 2005, China investor supported building road.	Private	
Forest (M)	Industry place	Nongkhone Village	Forest cover.	180	Since 2009, improved construction by private investment	1986 Local community 2009 individual	
	NTFP collection and forest cover.	Ekxang village	Have big trees and lots of wild animals.	15	As population increased forest was replaced with rice paddies. Also, urban development and road construction also caused deforestation.	Community	
	Conservation forest	Dongjong-Phonsoung village	A large forest with wild animal	15	Since 1980, Government has to extend/improve road to village	Community	
	Collect fish area and NTFPs production	Wetland Dongkhao–Phosoung village	Forest cover and collects bamboo shoot area.	180	Livestock production has caused the resource to be degraded since the 1980's.		
River (M)	Collect fish for HH consumption	Hongdeng	Was surrounded by forested area.	120	Slash and burn of upland fields nearby lead to soil erosion problems since 1981	Community	
Rice field (M)	Produce rice and leave livestock	Phon thon village	Previously had big trees in field and wetland areas.	360	Extension of paddy field and area of livestock grazing lead to decreased tree cover and wetland area.	Since 1990	

4.1.4. Vision of the Future

The 'Vision of the Future' was discussed by a mixed group of men and women. The goal was to develop an image of village resources and human wellbeing by 2030. The exercise enabled the understanding of the opportunities and constraints, as well as aspirations of the community. The exercise built on the activities completed in the previous sessions (Days 1 and 2), which included a presentation of the current community resource map given by a volunteer from the men's group and a volunteer from the women's group who participated on the first day. It also included a presentation of 15 photographs taken by 3 villagers from Day 2 highlighting things in the village they are proud of and things that need to be improved upon in the future. The map that encapsulates Ekxang's Vision of the Future is presented below (Figure 6). A description of the future aspirations is presented in Table 3.



Map 6: Future map of the community

Table 3. Visions for the future by mixed group of women and men

Items	Preferred condition for 2030	Opportunities	Constraints	Organization to be involved
Main road and small roads of the village	a paved road to make access to Ekxang easier.	Good for economic development such as exchange productions (Selling and buying). Paved roads within the village will reduce dust pollution.	Need government support. Village doesn't have enough money to build the road.	Government
Hospital/clinic in the village	a clinic in the village so people who do not have transportation can seek medical care in case of emergencies	Villagers can have access to health care and nutritional information.	Need money to build clinic and trained person to work in clinic.	Government/NGO
Village office	Bigger office with good facilities	They have built a new large pagoda which is suitable for having large meetings in.	Need money to expand/improve this office	Government/NGO
Groundwater	all farmers can access groundwater for irrigation year round.	IWMI has already started a groundwater users group trial for supplementing irrigation.	Only a limited number of farmers can directly benefit from the trial.	IWMI and Department of Irrigation.
Cropland	2-3 growing seasons/year instead of one. Diversification of crops.	Enough land is available but need to increase productivity of this land with steady irrigation supply and sustainable agriculture techniques. Diversification of crops to increase income and increase household nutrition.	Need irrigation supply and extension workers to train farmers in techniques on sustainable agriculture.	Oxfam, IWMI, DAFO
Cemetery	Increase number of trees in this area	Planting diverse food trees can make area more beautiful and simultaneously provide food for community events and celebrations.	Need diverse tree seedlings	DAFO
Pasture	Increase livestock production and increase tree density within pasture.	Increase in income of villagers from selling meat products. Opportunity to test the production of smaller/new breeds of livestock.	Need increased pasture area as livestock production increases but don't know where to get the land for this. Current pasture area is privately owned land.	DAFO, land owners, community.
Forest	Increased tree density and diversity of trees.	Opportunity to increase tree cover via agroforestry, near the cemetery and within the pasture.	Forest is privately owned land.	DAFO, village organizations, land owners, ICRAFT.

Roads

All participants indicated that roads are very important for the development of the village. The main road leading to the village brings opportunities to the community: access to markets, schools, off-farm work, information, and enables villagers to connect to outsiders. Good transportation allows farmers to sell their products directly to big markets where they can get higher income than by operating through the middleman. The villagers were unable to repair the roads by themselves as the costs are high and thus, requiring government support. In addition to the main road, villagers expected to have small paved roads within the village to reduce the hazards caused by dust. Villagers believed that when the road is in a better condition it will encourage more people to visit and invest in the village.

Clinic

Currently, no clinic or health care station operates in Ekxang. Villagers have to travel to Phonhong health centre (30 minutes by car) for medical care. Villagers expected that the government or organizations could support them to build a health station in the village.

Village office

The existing village office is small and lacks adequate facilities. The villages hope for a new, bigger, cleaner office with better facilities.

Groundwater

Groundwater has the potential to increase the productivity and diversify agricultural products during the dry season. IWMI, DOI and other partners are launching a community-level groundwater irrigation trial but it only supplies water to about 20 farmers in the village. Therefore, access to groundwater in the future was highly expected.

Cropland

Although current cropland is enough to produce food, farmers would like to o increase the productivity of their current land area. They preferred having 2 or 3 cropping cycles per year and requested support on new cultivation techniques, greenhouses mitigation, improved seed varieties, and soil-fertility management.

Pasture

There are currently over 1,000 cows in Ekxang. Cattle population will continue to increase in the future due to high income from livestock production. However, the pasture areas have many limitations, Ekxang people want to have a larger and more secure pasture areas, which will require community land management/planning.

Forest

Villagers believe that deforestation in their area is the cause of the higher temperatures and disappearance of morning fog. In addition, many villagers rely on the forests for NTFPs. Therefore they expressed the need to increase forest density and the diversification within the village, particularly through agroforestry.

Cemetery

The cemetery is a communal land. Currently it lacks trees, and thus when a ceremony takes place there, there is no shade for the people. They planned to grow diverse fruit trees. Farmers expect the help from DAFO in terms of good tree seedlings.

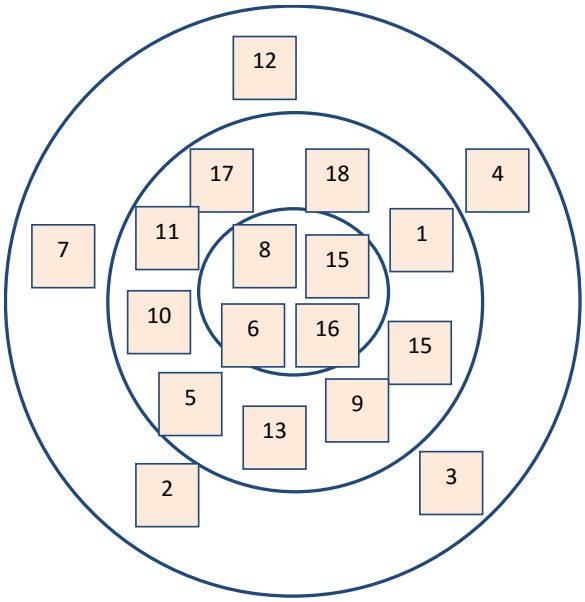
4.2. Topic 2: Organisational landscapes

This topic aims to show evidence of organisational capacities that help address food security and manage resources in the target region. This activity enables the CCAFS team to determine how the village is prepared to respond to climate change impacts and other future challenges and to engage CCAFS partners in implementing collective actions. Specially, this section presents the different formal and informal organisations involved in/responsible for food security, food crisis and natural resource management. It also elaborates on what types of activities the organisations are engaged in, their members, and how to engage these organizations in our future interventions.

4.2.1. Basic spheres of operation

Each male and female focus group was asked to draw three large concentric circles on the whiteboard. The inner circle represents the community (Ekxang village) level, the middle circle for locality (district/provincial) level, and the outer circle for beyond the locality (national, regional, international) level. The participants were asked to name organisations working in the area, write the names on cards, and place on the appropriate circle. The results for both women and men's groups are shown in Figures 1 and 2, respectively. Based on this structure, the men's group identified 18 organisations while the women's group identified 14 organizations. More detailed information on the most important organizations ranked by participants is provided in Table 4.

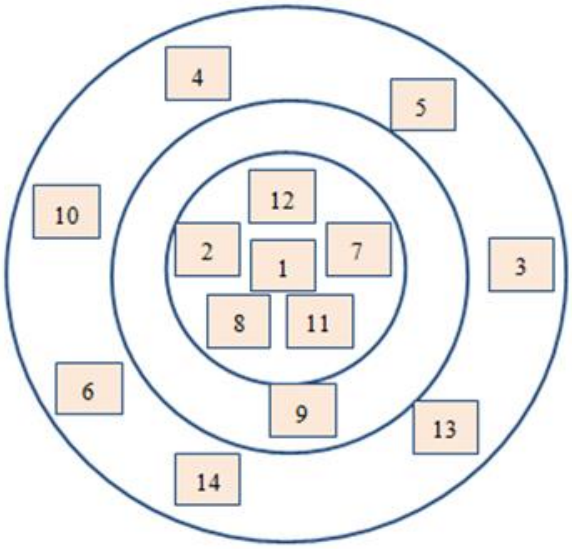
Photo 1: The organisational landscape activity in progress



Legend:

1. Phonesoung Agriculture Development Centre
2. JICA
3. IWMI
4. ACLEDA Bank
5. Village elder group for road repair
6. Village Security
7. Oxfam
8. Village Elder Association
9. Collect tax with agriculture sector
10. Women's Union
11. Provincial Security
12. Bank of Lao PDR
13. Phonhong Health Centre
14. Private sector
15. Youth Union
16. Provincial Women's Union
17. Cassava Project
18. Rubber plantation

Figure 1: Organisational landscape of the men's group



Legend:

1. Village elder group for road repair
2. Women's Union
3. JICA
4. Oxfam
5. IWMI
6. Phongsavanh Bank
7. Village Elder Association
8. Village Security goup
9. DAFO
10. Lao Development Bank
11. Renting community land group
12. Youth Union
13. ACLEDA Bank
14. Agriculture Promotion Bank

Figure 2: Organisational landscape of the women's group

Table 4. The five most important organisations ranked by the men and women's group

	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 (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
1	Phonesoung Agriculture Development Center	Provide tree seedlings, training, greenhouses	13	open	Government	Provincial	Ox farm (NGO)	Longer	Formal
2	JICA	Training on organic agriculture, built school and groundwater well	20	open	NGO	Beyond	Both	Longer	Formal
3	IWMI	Groundwater management trial	30	Not open	NGO	Beyond	Both	1yr	Formal
4	ACLEDA Bank	Providing loan with lower interest rate	11	open	Private	Beyond	Both	1-5 yrs	Formal
5	Elders group for road repair	Maintain/repair road	5	open	Government	Provincial	State and local community	Longer	Formal

Table 5. The five most important organisations ranked by the men and men's group

	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 (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
1	Elders group for road repair	Manages and collects funds for supporting community infrastructural development (i.e. road and pagoda).	12	Restricted to members only	Indigenous	Village	From villagers	1-5 yrs	Informal
2	Women Union	Organize events and activities within the village. Also manage a savings group.	women above 18 years	Restricted to women above 18	Government	Village	Events in the village And collect from the villagers	Longer	Formal
3	JICA	Build school, groundwater wells and toilet for school.	5	Restricted	NGO	beyond local	N/A	1 yr but no longer working	Formal
4	Oxfam	Provides training on organic agricultural production, composting and pest control techniques	30 (locals who participate in this project)	Open to villagers interested in participating in project	NGO	beyond local	N/A	1-5 yr	Formal
5	IWMI	-Constructing groundwater boreholes for irrigation and domestic uses - Training on water management.	20 farmers in research trail	Restricted (project only aimed at few farmers)	NGO	beyond local	N/A	1 yr	Formal

4.2.2. Organisational landscape of food security

This part of the activity enabled the team to understand how the organisations contribute to the food security of the community. The men and women FGD participants were asked to discuss the concepts of food availability, access and utilization. They were then made to review each organisation they had previously identified. Villagers placed a card representing an organization on the appropriate location on the organizational landscape diagram with different colour tags to identify weather the organization contributes to food security by the means of availability, access and utilization (Figure 3 and 4).

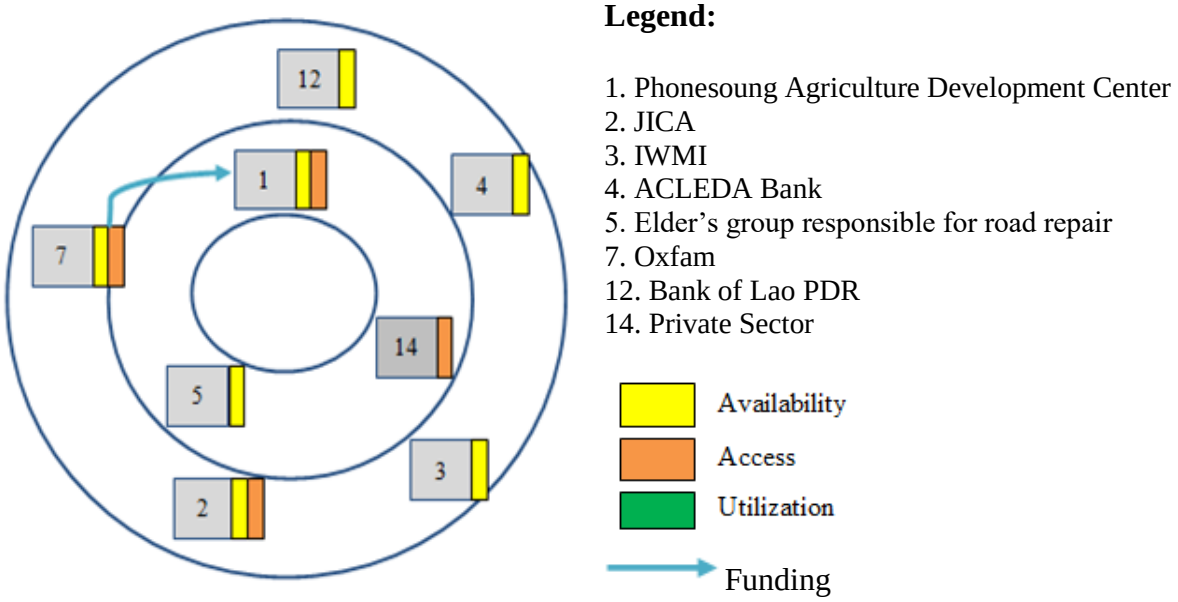


Figure 3. Organisational landscape of food security from the men's group

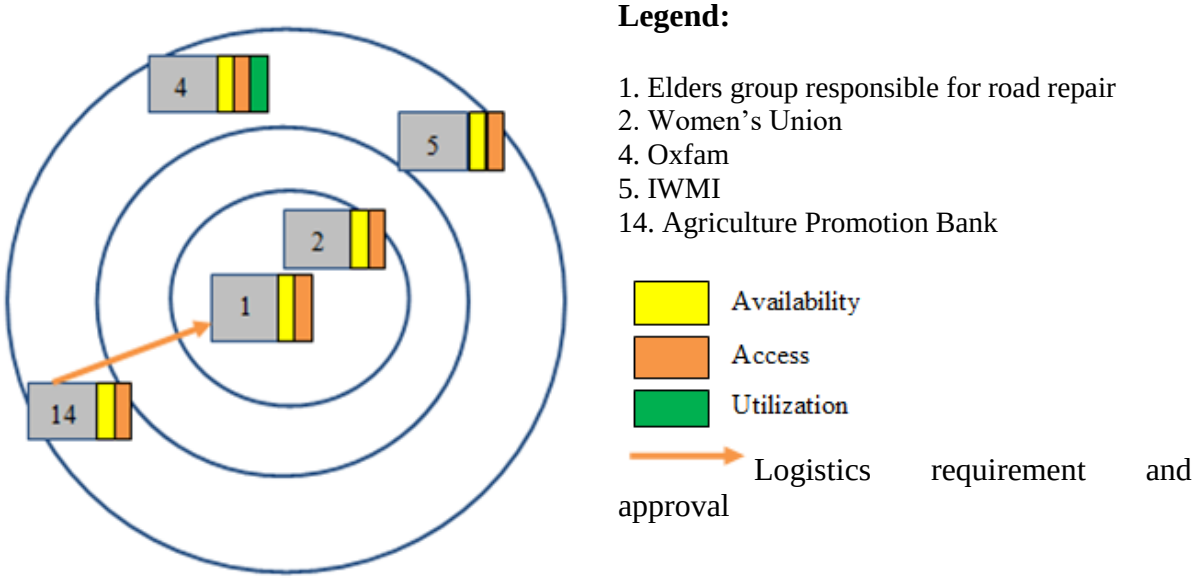


Figure 4. Organisational landscape of food security from the women's group

A total of 23 organizations were listed by both men's and women's groups. Ten of the 23 organizations were identified to contribute to food security in the village by supporting agricultural production, distribution, exchange, affordability, allocation, preference, nutritional value, and food safety. This indicates a relatively high involvement of organizations on food security in the village. However, most of the groups addressing food security operate beyond the locality (80%) while 20% operate at the province, district and village level. There are not many linkages between the various organizations operating in the community except that Oxfam previously funded Phonesoung Agricultural Development Center and the approval requirements for bank loans from the village elders association. New linkages could be formed in the future to maximize the efforts of future CSV interventions and to build synergy between the various organizations from every level, community to international.

4.2.3. Organisational landscape of food crisis situation

The purpose of this exercise was to understand the roles of organizations in helping villagers cope in times of food crisis. Each men and women's group were asked recall a time when there was a food crisis in the community, identify the organizations that were involved in providing support during that period or those that would provide support if a food crisis occur in the future, and indicate their role. The villagers placed the cards representing these organizations on the organizational landscape diagrams (Figure 5 and 6 for men and women, respectively) and marked them with colored tags representing the ways they contribute in a food crisis situation in terms of availability, access, and utilization.

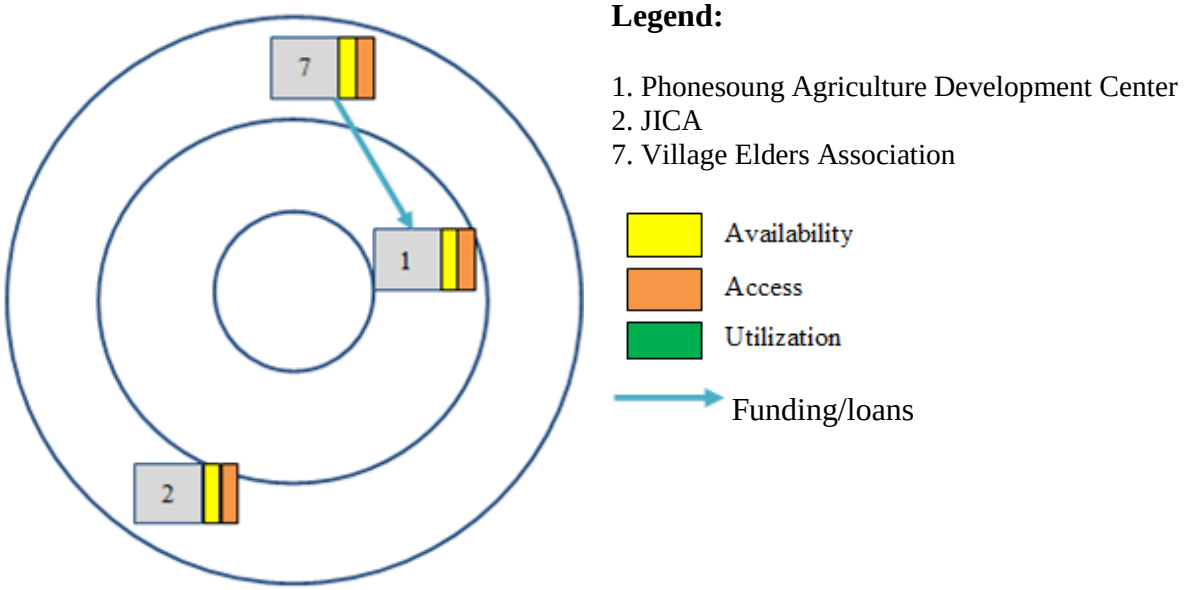


Figure 5 . Organisational landscape of food crisis from the men's group

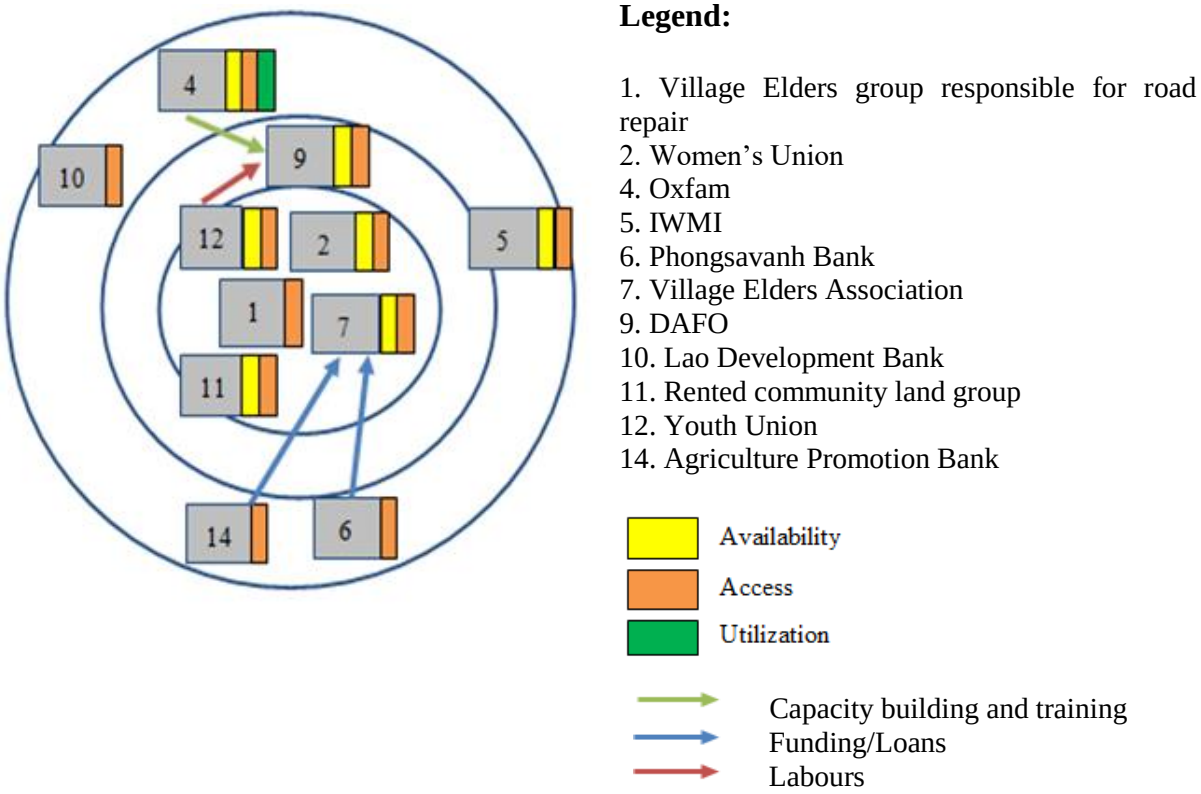
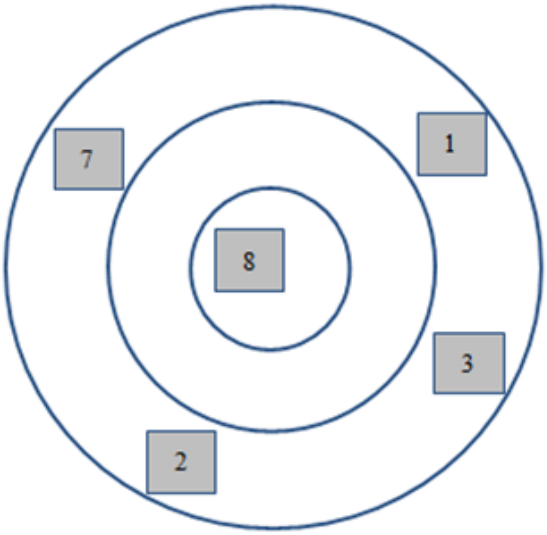


Figure 6 . Organisational landscape of food crisis from the women's group

During this activity, the participants indicated that they never go hungry and they always have access to healthy food throughout the year. Even the landless can access food such as mushrooms, insects, amphibians, fish, bamboo shoots and wild animals in the forests, rice paddies, ponds and pastures. There have been, however, food crises in the past, particularly in 1966 and 1996 when the entire region was flooded from overflow of the Nam Ngum river. During those times the government (DAFO) provided villagers with emergency food aid through the members of the village youth union. Currently, 70% of the villagers are farming households, while the remaining 30% earn income from off-farm work in areas such as teaching, government service, small business and factory work. This off-farm income can soften the impacts of a food crisis in the future. Villagers have ways of earning income independent of agriculture and can afford to purchase food.

4.2.4. Organisational landscape of natural resource management

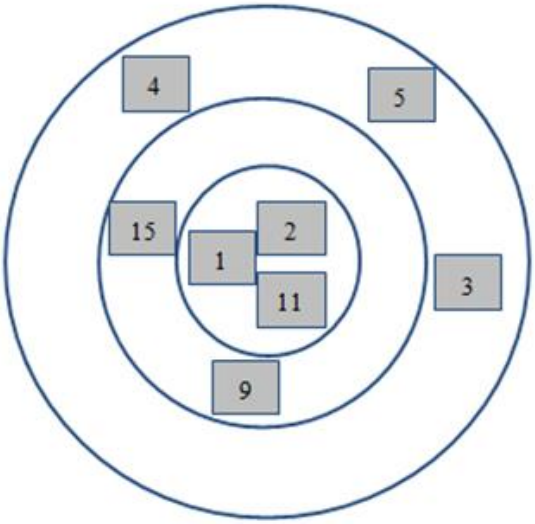
Each of the men and women's focus groups were asked to identify which organizations were involved in natural resource management and/or environmental protection in the village and place the cards representing each organization in their place on the organizational landscape diagram (Figure 7 and 8 for men and women, respectively). Discussions on the links between organizations and their roles in natural resource management were recorded by the note taker in both focus groups.



Legend:

1. Phonesoung Agriculture Development Centre
2. JICA
3. IWMI
7. Oxfam
8. Village Elders Association

Figure 7. Organisational landscape of natural resource management from the men's group



Legend:

1. Village elders group for road repair
2. Women's Union
3. JICA
4. Oxfam
5. IWMI
9. DAFO
11. Rented community land group
15. Phonthanh irrigation group

Figure 8. Organisational landscape of natural resource management from the women's group

Out of 23 organizations identified by both the men's and women's discussion groups, 10 were involved in NRM and/or environmental protection. Of this number, 5 were identified by the men's group (Figure 7) and 8 were identified by the women's group (Figure 8). Most of the organizations identified to contribute to food security also contribute to environmental protection and natural resource management by encouraging the adoption of sustainable agriculture practices including composting, reducing chemical fertilizer and pesticide use, and water management. These organizations include Oxfam, Phonesoung Agricultural Development Center, DAFO, IWMI and JICA. Other important organizations at the village level are the Women's Union and the Village Elders Association as they are well respected groups and often provide advice and disseminate information on the use of community resources.

Table 6 below summarizes gender differentiated data for all the organisations obtained from 'Activity 2'. Organizations are identified for being mentioned by either male or female focus groups and being perceived by villagers as being involved in food security, food crisis situations, and NRM in the village.

Table 6. **Information on highlighted organisations of men and women (unless otherwise noted, 1=Yes, 0=No)**

Organisational Landscape	**Men**					**Women**				
Name of organisation	**Identified by Men**	**Sphere A=village B=locality C=beyond locality**	**Food security**	**Food crisis**	**NRM**	**Identified by Women**	**Sphere. A=village B=locality C=beyond locality**	**Food security**	**Food crisis**	**NRM**
1. Phonesoung agriculture development center	1	B	1	1	1	0	-	-	-	-
2. JICA	1	C	1	1	1	1	C	0	0	1
3. IWMI	1	C	1	0	1	1	C	1	1	1
4. ACLEDA Bank	1	C	1	0	0	1	C	0	0	0
5. Elders group responsible for road repair	1	A	1	0	0	1	A	1	1	0
6. Village Security	1	A	0	0	0	1	A	1	0	0
7. Oxfam	1	C	1	1	1	1	C	1	1	1
8. Village elders association	1	A	0	0	1	1	A	0	1	1
9. Collect tax with agriculture sector	1	B	0	0	0	-	-	-	-	-
10. Provincial Women's Union	1	B	0	0	0	-	-	-	-	-
11. Provincial security group	1	B	0	0	0	-	-	-	-	-
12. Bank of Lao PDR	1	C	1	0	0	1	C	0	1	0

Organisational Landscape	Men					Women				
Name of organisation	**Identified by Men**	**Sphere A=village B=locality C=beyond locality**	**Food security**	**Food crisis**	**NRM**	**Identified by Women**	**Sphere. A=village B=locality C=beyond locality**	**Food security**	**Food crisis**	**NRM**
13. Phonhong Health Center	1	B	0	0	0	-	-	-	-	-
14. Private sector	1	B	1	0	0	-	-	-	-	-
15. Youth Union	1	A	0	0	0	1	A	0	1	0
16. Women's Union	1	A	0	0	0	1	A	0	1	1
17. Cassava project	1	B	0	0	0	-	-	-	-	-
18. Rubber plantation	1	B	0	0	0	-	-	-	-	-
19. Phongsavanh Bank	-	-	-	-	-	1	C	0	1	0
20. DAFO	-	-	-	-	-	1	B	0	1	1
21. Lent Community Land Group	-	-	-	-	-	1	A	0	1	1
22. Agriculture Promotion Bank	-	-	-	-	-	1	C	1	1	
23. Phonethanh irrigation group	-	-	-	-	-	1	B	0	0	1
TOTALS	18	A=5 B=8 C=5	8	3	5	15	A=6 B=3 C=6	5	10	8

4.3. Topic 3: Information networks

The aim of this exercise wasto understand the diversity and importance of options that people have in accessing information related to agricultural decision making, how people take advantage of the alternative sources of information available, and why some sources may or may not be used. The goal was s to describe networks of how people access and share information within the community. Information networks of women and men were investigated separately. The method by which these networks were investigated included the listing of information that farmers require in in making agricultural decisions and to asking them to draw the sources of information for each of these topics such as the. media, organizations or individuals (Figure 9).

Men **Women**

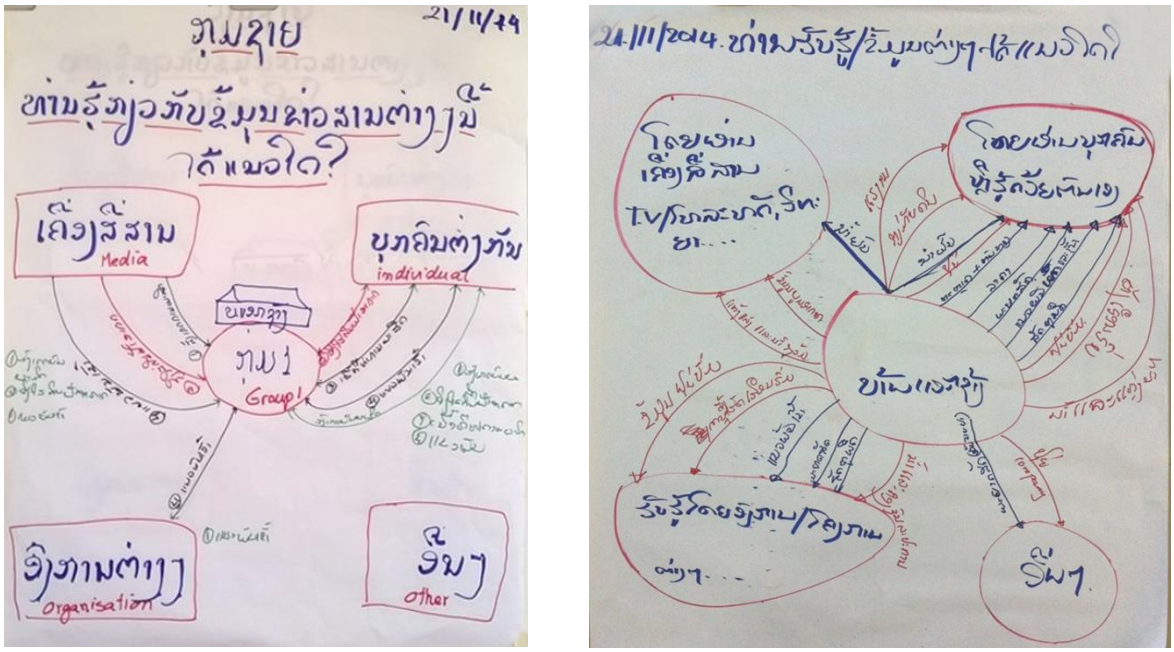


Figure 9. Sources of information from men and women's groups.

Table 7. Information used to make farming decision mentionedn by men and women

Men	Women
1. Rice yields from previous year 2. Weather information 3. Agricultural land area 4. Seeding 5. Household finances 6. Access to loans from bank 7. Main labour in the household 8. Access to machinery 9. Technical/Experience	1. Weather Information 2. Market price 3. Market access/Road condition 4. Vaccines for animals 5. Varieties 6. Pests 7. Extreme events: Flood/Drought 8. Soil quality 9. Land suitability 10. Sources of irrigation 11. Labour availability 12. Fertilizer 13. Compost

Table 8. Gender differentiated sources of information (1=Source of information; 0=Not a source of information)

	Individual			Organization			Media		
Topic*	Themselves	Family	Neighbour	NGO	Gov	Company	TV	Radio	Newspaper
Men group									
1	1	1	1	0	0	0	1	0	0
2	1	0	0	1	1	1	1	1	0
3	1	0	0	0	0	0	0	0	0
4	0	0	1	0	0	1	1	0	0
5	1	0	0	0	0	0	0	0	0
6	0	1	1	0	0	0	1	1	0
7	1	1	1	0	0	0	0	0	0
8	1	1	1	0	0	0	0	0	0
9	1	1	1	1	1	1	0	0	0
Women group									
1	1	1	1	0	0	0	1	1	0
2	1	1	1	0	0	0	0	0	0
3	1	1	1	0	0	0	0	0	0
4	0	0	1	1	1	1	0	0	0
5	0	0	1	1	1	0	0	0	0
6	1	1	1	1	1	0	0	0	0
7	0	0	0	0	0	0	1	1	0
8	0	0	0	1	0	0	0	0	0
9	1	0	0	0	0	0	0	0	0
10	1	0	0	1	0	0	0	0	0
11	1	1	1	0	0	0	0	0	0
12	0	1	1	0	0	1	0	0	0
13	1	0	0	1	0	0	0	0	0
Total	**15**	**11**	**14**	**8**	**5**	**5**	**6**	**4**	**0**

** Description of information topics are given in Table 7*

The major sources of information described by participants (Table 8) are described in detail below:

Individual: The majority of farmers in the village pass information regarding agricultural decision making on to one another. Information shared included new farming techniques, market prices, pest outbreaks and management, livestock vaccinations, seed varieties, labour availability, access to loans and machinery sources. Farmers communicate face to face or by by using cell phones. Regarding weather information, some farmers have indigenous knowledge to predict seasonal climate by observing specific signs within the environment (i.e. behaviours of insects).

Television: Everyone in the village has access to TV and watches it daily. They have access to local and international channels. Thai channels are the very popular in the area because Lao and Thai languages are similar and most Lao people can understand Thai. These channels provide various weather related information including temperature, rainfall, and extreme events such as flooding and drought, however it is not specific to the area of Ekxang. The farmers make use of this information to help them make optimal decisions regarding agricultural activities. For example, if it is going to rain farmers will possibly delay transplanting or fertilizer/pesticide applications.

Organizations: There are many organizations serving as an important source of

information for villagers in Ekxang, such as DAFO, Phonesoung Agriculture Development Center, IWMI, and Oxfam, Women's Union, Village elders association, and the various banks. These organizations provide crucial information such as sustainable agricultural production techniques, seed varieties, sources of irrigation, livestock vaccinations, pest management strategies, access to loans, and optimal fertilizers application techniques.

Internet/Mobile Technology: Most of villagers own cell phones that they often use to communicate and share information with others. A few villagers (mostly the younger generation) have smart-phone and can access to internet. They also use social media applications such as Facebook and WhatsApp to communicate. However, they do not use internet to access information regarding agriculture or weather. However, this is high potential technology for famers to access a wide range of information in near future.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Community Resources

In Ekxang, the main agriculture activity during the rainy season is rice production and during the dry season is watermelon and vegetable production. Unlike most rural villages in Laos, Ekxang has access to ground water that enables farmers to adapt to dry spells and produce a variety of crop products during the dry season. A large part of paddy fields is often used to grow watermelon after rice harvest.

In order to encourage sustainable use of natural resources, there is the need to improve people knowledge on appropriate farming practices, varieties, crop diversification and "green" agriculture. Success achieved by several governmental and NGOs programs on diversifying agricultural production, sustainable agricultural techniques, livestock disease prevention, greenhouses should be taken into consideration to gain effectiveness of CCAFS interventions.

Access to surface water in Ekxang village is very limited. Only few households can get irrigation water from a river in the neighbouring village. There are some small and shallow ponds for water storage but they easily dry up in the dry season. For majority of the village, groundwater is the main source of water for irrigation and domestic use. Most of households have built their own well/boreholes. Currently, IWMI, DOI and other partners are building three large boreholes and establishing platform for community managed irrigation scheme.

Small forested areas within and surrounding Ekxang village have been degraded due to deforestation and expansion of agricultural land since the 1980's. These private forests are currently used for grazing, firewood and other non-timber forest products (e.g. mushrooms, herbs, bamboo shoots, insects and wild animals). Local people are aware of the importance of forest and expect to increase quantity as well as quality of this resource within the village.

Roads are important infrastructure for villagers in Ekxang village. The roads enable villagers to access large markets outside the village, such as the market at Km 52 of the Highway 13 North, and Vientiane markets. The pagoda is also important because it is the place for hosting large community meetings, events and celebrations. Some infrastructures are not in good condition, such as dirt roads, the primary school, village office.

Organisational Landscape

There are 23 locally and internationally based organizations that are currently working at Ekxang village. Half of these organizations contribute to food security, food crisis, and/or manage natural resources. The main activities of the organizations in the area are to provide training on sustainable agriculture techniques, new varieties, greenhouses, market access, loans, water management, and livestock vaccinations. Various banks, Village Elder Association, Youth Union and Women's Union are organizations that can help farmers in case of food crisis. Emergency food aid was provided by DAFO and distributed by members of Youth Union. Regarding natural resource management, IWMI, JICA, DAFO, Phonesoung Agriculture Development Center and Oxfam gave trainings and supports for sustainable water management, sustainable agriculture and agroforestry. The local organizations that were often mentioned in the community are the Women's Union, Village

Elders Association and Village Authorities, which play important roles in community development and resource management. However, there were few linkages between organizations. These should be improved in the future to facilitate the effectiveness of projects and knowledge sharing.

Information Networks

In Ekxang, the most important way of sharing information on agricultural-related decision making is from farmer- to- farmer route. Information such as agricultural production techniques and technologies are provided by various organizations but are then disseminated throughout the community by word of mouth. TV is the main source of weather information as nearly every household has access to TV and cable. However, the weather forecasts are not specific to the area of Ekxang. Nearly everyone in the village has a cell phone and some people make use of mobile internet and applications, particularly the younger generation. With training, this emerging technology could be used to increase the villager's access to a wider range of information.

5.2. Recommendations for major opportunities

Ekxang is a good choice to establish a CSV as it has already implemented some Climate-Smart technologies and it is a convergent point of various national and international organizations. Below are recommendations for future CCAFS interventions in Ekxang CSV:

Community mobilization and planning: In order to strengthen the community and to prepare the social readiness, community mobilization activities should be conducted. Community mobilization activities can include CSV launching ceremony, coordination meeting between the various organizations working in Ekxang, trainings for local staff and dissemination of baseline survey results at all levels.

Groundwater management: Currently, lack of irrigation water during the dry season limits large-scale agricultural production. Sustainable use of groundwater for boosting irrigation is being studied by IWMI and DOI. The knowledge gained from this research will be shared among stakeholders. This can be considered as a Climate-Smart Agriculture technique for CCAFS to reference and disseminate to other communities in the region.

Pest management and diversification of cropping systems: Vegetables and watermelon are the major products in Ekxang during the dry season. These crops require the intensive use of pesticides, some of which have been banned due to their impacts on human and animal health. This suggests that CCAFS should organize trainings for farmers on proper pesticide use or alternative valuable and environmentally-friendly crops. Collaboration between organizations such as CUSO International, DAFO, NAFRI, CABI, and Phonesoung Agriculture Development Center would maximize efforts.

Climate smart technologies: Mobile phone is popularly used nowadays as almost every famer has his own device. ICT-based techniques that make use of this modern technology would be useful for farmers to access different information and facilitate their agricultural decision making. This can also be useful for boosting agricultural production and income generation.

Farmers also requested trainings on practices that could help them to improve farming production, increase sustainability and strengthen resilience to climate change. Some topics suggested by villagers are soil management, pest and disease management, improved crop

varieties and market information. Particularly, women in the village are interested in learning food processing, medicinal herb production and handicrafts. For them, these are opportunities to improve household income.

Sufficient trainings will be needed through Farmer Field Schools. Local extension agents, DAFO, NAFRI and local community organizations can contribute in organizing farmer field schools. The involvement of local organizations in this activity is also important for future up-scaling and out-scaling of climate-smart agricultural techniques.

Agroforestry: As described above, forest in the region is important for maintaining food security of households. Villagers also believe that degradation of forest land caused hotter weather and disappearance of morning fog. Therefore, they expect to develop agroforestry and improve tree cover in the forest area. Sustainable and integrated agroforestry systems could be introduced to the community. Current efforts of PAFO and DAFO to increase tree cover could be facilitated and expanded upon receiving supports from CCAFS.

Table 9. Potential interventions and partner organizations

Potential Intervention	Potential Partners
Sustainable community groundwater management	IWMI, DOI, Groundwater user group of the village
Community mobilization	IWMI, DAFO, NAFRI, MDC
Pest management	DAFO, CABI, NAFRI Phonesoung Agriculture Development Centre
Reforestation and agroforestry development	DAFO, PAFO, ICRAF, NAFRI Phonesoung Agriculture Development Centre
Community-based land use planning/management	CUSO International, NAFRI, Women's Union Village Elders Association, Village Authorities
New varieties	IRRI, PAFO, DAFO, NAFRI, Phonesoung Agriculture Development Centre,
Diversification of cropping systems	DAFO CUSO International NAFRI
Training in food processing, medicinal herbs, and bio extracts.	Phonesoung Agriculture Development Centre, Lao Farmers' Products (LFP), Women's Union, DAFO
Improve access to information through mobile technologies	Care International, DAFO
Improve soil fertility	DAFO, Phonesoung Agriculture Development Centre, NAFRI

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