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Implementing Entity/Responsible Partner:

National Agriculture and Forestry Research Institute, NAFRI

United Nations Development Programme

Baseline Survey Report in Savannakhet Province

Project ID:00076176 / ATLAS Award ID 60492

**Improving the Resilience of the Agriculture Sector in Lao PDR to
Climate Change Impacts (IRAS Lao Project)**



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July 2012

Lao People democratic Republic
Peace Independent Democracy Unity and Prosperity

National Agriculture and forestry Research

**Improving the Resilience of the Agriculture Sector in
Lao PDR to Climate Change Impacts
(IRAS Lao Project)**

**Baseline Project Report
For Small Farmer at Savannakhet Province**



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July 2012

Project profile

Country Programme Outcome Indicators (UNDP Laos CPAP 2007-2011):

Capacities on sustainable land management, drought and flood preparedness enhanced through participatory adaptation and monitoring activities in selected provinces.

Project Objective and Outcomes are aligned with UNDP's thematic focus on adaptation to climate change and are matching or do correlate to Goal, expected Impact and Indicators of the GEF LDCF/SCCF Result-Based Management Framework Adaptation to Climate Change.

Project Objective

Food insecurity resulting from climate change in Lao PDR minimized and vulnerability of farmers to extreme flooding and drought events reduced.

Food insecurity resulting from climate change in Lao PDR will be minimized and vulnerability of farmers to extreme flooding and drought events will be reduced as part of an overall approach designed to introduce new adaptive techniques to farmers while encouraging a diversification of livelihood strategies at community level. This will be achieved by overcoming key policy, communication & information, institutional and economic barriers, relating to agriculture and food security as identified in the NAPA as requiring immediate action. Thus, under Outcome 1 the information base for understanding climate risks and vulnerability will be strengthened and organised in way that it can effectively inform agricultural sector policies and planning. Outcome 2 addresses the need to develop the capacity of planners at different levels of government to use this information in the planning and allocation of resources. Outcome 3 focuses on Lao PDR's agricultural extension services and demonstrating new techniques to build resilience at the community level including targeted training modules to ensure that these techniques take hold and become widely applied. Under Outcome 4 lessons learned and adaptation knowledge generated through the project will be systematically compiled, analyzed and disseminated nationally and internationally, thereby supporting further up-scaling and replication.

Relevant maps

Savannakhet province is located in the central part of Laos, with total natural area of 21,774 square kilometers and included 15 districts (Outhumphone, Champhone, Xayboully, Khanthaboury, Xayphouthong, Songkhone, Thapangthong, Xonboury, Phalanxay, Atsaphangthong, Atsaphone, Vilaboury, Pin, Nong and Xepon). The province is situated within 16.57° North latitude and 104.75° East longitude ranges, which far away from Vientiane Capital around 500 Kilometers.

The Savannakhet is established in 1895, sharing borders with Khammouane, Salavanh, Kouang Chine (Vietnam) and Thailand in the North, South, East and West respectively.

To estimate rainfall patterns in the target area, data is available from two meteorological stations located at Outhumphone and Champhone districts. According to the meteorological assessment done by Outhumphone and Champhone District Agriculture and Forest Office, identifying mean annual rainfall in 10 years round (2001-2010) at about 1,621 and 1,385 mm at Outhumphone and Champhone district respectively. The detail of annual rainfall in Outhumphone and Champhone district for ten years round are the figure 1 and 2.

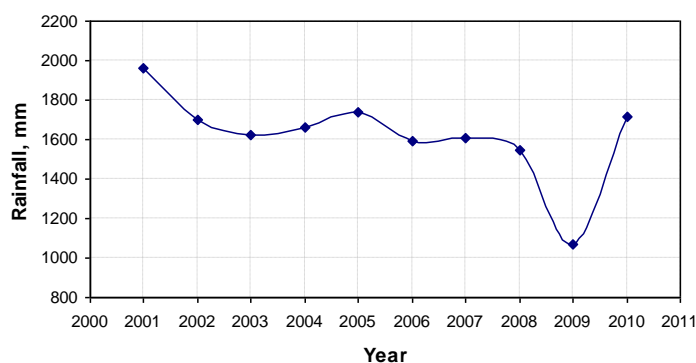


Figure 1. Annual rainfall of Outhumphone District.

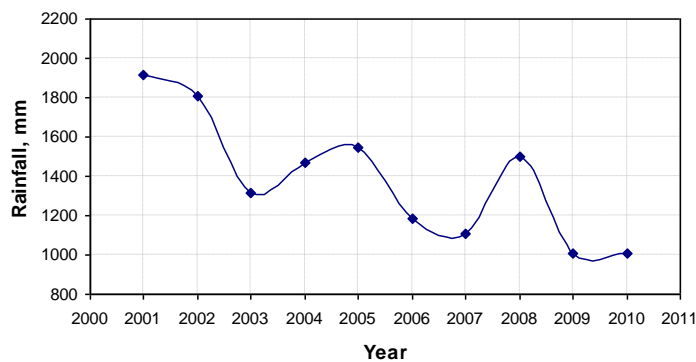


Figure 2. Annual rainfall of Champhone District

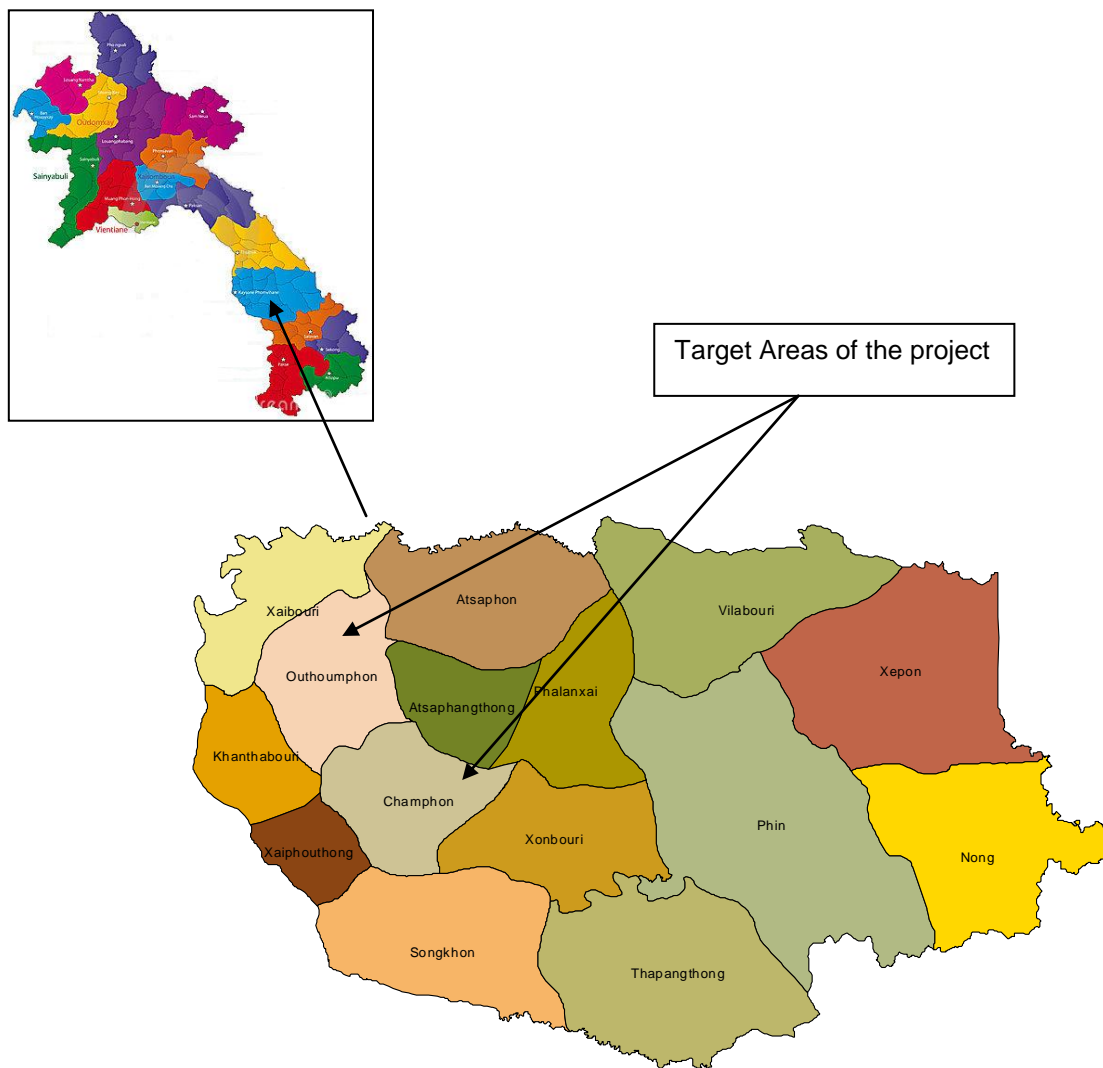


Figure 3. Savannakhet Province

List of Abbreviations and acronyms

ASL	Above Sea Level
DAFO	District Agriculture and Forestry Office
GEF	Global Environment Facility
IRAS	Improving the Resilience of the agriculture sector in Lao PDR to climate change impact
MAF	Ministry of Agriculture and Forestry
M & E	Monitoring and Evaluation
NAFRI	National Agriculture and Forestry Research Institute
NAPA	National Adaptation Programme of action to climate change
NCSA	National Capacity Needs Self-Assessment
PAFO	Provincial Agriculture and Forestry Office
PRA	Participatory Rural Appraisal
RRA	Rapid Rural Appraisal
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund

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Executive Summary

“Improving the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts” is cooperation project between UNDP and the Ministry of Agriculture and Forestry (MAF) which is a part of the NAPA follow-up activities.

To monitor the project progress and achievement during the regular project monitoring, mid-term review, and final evaluation in the future, the Project Baseline is significantly required. The project baseline had implemented into two parts. One focuses on farmers (on household level) and another focuses on the supporting sectors. This project baseline was focused on household by assessing the current climate change adaptation capacities of farmers. The results of this baseline survey will provide a set of the current data, which contributes to the project outcome 2.

This survey had applied a participatory rural appraisal method by applying a questionnaire consisted of 6 major parts: 1). basic profile of the respondents, 2). experience with climate change, 3). direct effect on food/farm production/food security, 4). perceived change in food security and losses in agricultural asset, 5). climate change adaptation skills and knowledge, and 6). disaster risk reduction measure.

Baseline surveying for a small farmer in Outhumphone and Champhone districts, Savannakhet province is held on the period of May 2012 to July 2012 and the results of the survey could be used to estimate the baseline indicators, particularly for outcome 2. These are some of the important highlighted by the survey:

- This baseline survey had been covered 300 households with 10 villages (5 villages per district) in two districts
- Farmers in the target villages of this project are worked hard and main source of their income is from farming with 100 percent in both Outhumphone and Champhone district.
- Farmers much suffered with climate change or other natural phenomena. The impact with Over-all in each type of natural phenomena in Outhumphone and Champhone district is shown in table 3 and 14 respectively.
- Mean of rice yield in both irrigated and rainfed land during affected by climate change in Outhumphone and Champhone district is low and need support on technical skill and other facilities for crops planting.
- Climate change and other natural phenomena such extreme flood, drought and as well as storms are a part problem for farmers in these areas. Although farm lands are not serious damage during the event, but yield of production is low and caused to food shortage. More than half of farmer in both Outhumphone and Champhone districts (target villages) lack of rice for eating during those events especially farmers in Champhone district which covers till 122 out of 150 households.

1. Introduction

Climate change is a subject that impacts the way we live and work. It is having a significant impact on many economic sectors including agriculture. These impacts are seriously undermining development. The poorest people, who often live in the most fragile environment and are especially reliant on climate-sensitive agriculture sector, are highly vulnerable to climate change. The United Nations Development Programme (UNDP) has been active in fighting against climate change since 1990's, assisting Developing countries including Lao PDR with capacity development, adaptation and mitigation actions. With funding from the Global Environment Facility (GEF) and technical support from UNDP, the Lao PDR completed its first National Communication (FNC), the National Adaptation Programme of Action to Climate Change (NAPA), and the National Capacity Needs Self-Assessment (NCSA) in October 2000, April 2009 and May 2009, respectively.

UNDP and the Ministry of Agriculture and Forestry (MAF) have completed the formulation of the project "Improving the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts" as part of the NAPA follow-up activities.

The objective is to minimize food insecurity resulting from climate change in Lao PDR and to reduce the vulnerability of farmers to extreme flooding and drought events. There are four expected outcomes:

- Outcome 1: Knowledge base on Climate Change impacts in Lao PDR on agricultural production, food security and vulnerability, and local coping mechanisms strengthened;
- Outcome 2: Capacities of sectoral planners and agricultural producers strengthened to understand and address climate change – related risks and opportunities for local food production and socio-economic conditions
- Outcome 3: Community-based adaptive agricultural practices and off-farm opportunities demonstrated and promoted within suitable agro-ecological systems
- Outcome 4: Adaptation Monitoring and Learning as a long-term process

1.1 IRAS results framework, project indicators and baseline

Table. Improved Logical Framework Matrix: Increasing the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts (IRAS)

Description	Objectively verifiable Indicators (OVIs)	Means of Verification (MOV)	Assumptions
Project Objective Food insecurity resulting from climate change (CC) in Lao PDR minimized and vulnerability of farmers to extreme flooding and drought events reduced.	<ul style="list-style-type: none"> Food production of major crops, livestock and fisheries of targeted farmers/households in four (4) pilot districts increased by at least 25% Perceived reduction in hunger among targeted beneficiaries in four (4) pilot districts measured by the number of months without rice reduced by xxx month Per cent of targeted households below food threshold reduced by 5% (supplementary indicator) 	<ul style="list-style-type: none"> Annual Project Review/Project Implementation Report Project Terminal Report Project perception survey of beneficiaries Participatory Rapid Appraisal survey (e.g. focus group discussion) GOL Poverty statistics 	<ul style="list-style-type: none"> Farming is a profitable undertaking. Opportunities for adaptive agriculture exist for effects brought about by climate change.
Outcome 1 Knowledge-based on CC adaptation strengthened	<ul style="list-style-type: none"> At least a single CC adaptation policy framework drafted and adopted by 2014 (supplementary) CC adaptation compliance by two (2) Provinces (pilot sites) improved through the passage of resolutions and ordinances 	<ul style="list-style-type: none"> Annual Project Review/Project Implementation Report Project Terminal Report Project Perception survey of beneficiaries Participatory Rapid Appraisal survey (focus group discussion) 	<ul style="list-style-type: none"> Support among GOL stakeholders and donors are available.
Output 1.1 <ul style="list-style-type: none"> Reliable CC and vulnerability information generated 	<ul style="list-style-type: none"> At least one (1) CC scenario with GIS-assisted vulnerability hazard map analyzed by mid 2012 for application in ANR projects At least four (4) district land-use plans overlay with CC risks 	<ul style="list-style-type: none"> Project Progress Report 	<ul style="list-style-type: none"> An efficient information flow system is coordinated and established at NAFRI through its improved www//.

	<p>prepared by mid 2012</p> <ul style="list-style-type: none"> At least one (1) codified/improved land-use guideline incorporating CC risks prepared by mid 2012 		
Output 1.2 <ul style="list-style-type: none"> Long-term information system on floods and drought established at NAFRI 	<ul style="list-style-type: none"> A functional data base established at NAFRI by end 2012 	<ul style="list-style-type: none"> Project Progress Report 	<ul style="list-style-type: none"> NAFRI has a focal staff to manage the information system
Output 1.3 <ul style="list-style-type: none"> Food security and land-use policies and other strategic framework reviewed as basis for improved CC adaptation guidelines 	<ul style="list-style-type: none"> xxx number of food security and land-use policies including other strategic framework relevant to CC adaptation were inventoried and reviewed 	<ul style="list-style-type: none"> Project Progress Report 	<ul style="list-style-type: none"> GOL agencies are willing to participate in dialogues through various forums and share existing policies, programmes and projects
Outcome 2 CC adaptation capacities of GOL policy makers and agricultural officers strengthened	<ul style="list-style-type: none"> At least 30% of policy makers and agricultural officers at national level are using CC scenario planning to develop long-term adaptation strategies At least 15% of agricultural extension officers are able to implement CCTA courses At least 15% of DDMC staff are practicing disaster risk reduction measures in 4 pilot districts 	<ul style="list-style-type: none"> Annual Project Review/Project Implementation Report Project Terminal Report Training Assessment report 	<ul style="list-style-type: none"> NAFRI and other GOL agencies are willing to learn and participate in evolving new strategies for CC.
Output 2.1 <ul style="list-style-type: none"> Trained policy makers, agricultural officers, and DDMC staff on CC risks and community-based CC adaptation 	<ul style="list-style-type: none"> At least three (3) training curricula developed by mid 2012 : (a) land-use planning; (b) food security policy analysis and evaluation; and (c) disaster risk reduction measures/ground practices 	<ul style="list-style-type: none"> Training Accomplishment Report Project Progress Report 	<ul style="list-style-type: none"> There are competent staffs from among the GOL ministries and departments, including people from the civil society both at the district/province and national levels who can carry out important and critical tasks.

	<ul style="list-style-type: none"> • At least 6 training modules (CCTAMs) on community-based adaptation developed by mid 2012 • All identified policy makers, agricultural officers and DDMC staff covering xxx personnel completed training by mid 2013 		
Outcome 3 Community-based CC adaptive farming systems' technologies and off-farm opportunities increased	<ul style="list-style-type: none"> • At least 30% of the targeted farmers have diversified their farming practices or used low sensitivity climate food production methods • Cropping intensity of land with improved small-scale irrigation facilities expanded by xxx% 	<ul style="list-style-type: none"> • Annual Project Review/Project Implementation Report • Project Terminal Report • Participatory Rapid Appraisal Survey of beneficiaries • Perception survey of beneficiaries 	<ul style="list-style-type: none"> • Farmers are willing to participate and share whatever resources they may have.
Output 3.1 <ul style="list-style-type: none"> • ALF climate resilient farming technologies/options made available and adopted 	<ul style="list-style-type: none"> • At least 5 ALF climate resilient technologies available and implemented by early 2013 	<ul style="list-style-type: none"> • Project Progress Report 	<ul style="list-style-type: none"> • Community-based adaptive farming technologies are financially, economically and environmentally feasible
Output 3.2 <ul style="list-style-type: none"> • Farmers' exposure to on farm, value chain innovations and off-farm experiences established and maintained effectively 	<ul style="list-style-type: none"> • At least 20 demonstration centers on ALF farming systems equipped with essential farm implements have been established by mid 2013 and maintained by the targeted beneficiaries • At least two (2) value chain innovations (one per province) developed and demonstrated • At least 400 farmers (100 farmers/pilot district) especially farmer leaders have completed 	<ul style="list-style-type: none"> • Project Progress Report 	<ul style="list-style-type: none"> • Farmers are willing to maintain the demonstration centers

	training by end 2013		
Output 3.3 <ul style="list-style-type: none"> Small-scale irrigation facilities, protection measures and watershed maintenance made available 	<ul style="list-style-type: none"> Xxx hectares of expanded irrigated land Number of water users group organized and trained to manage effectively the irrigation facilities provided 	<ul style="list-style-type: none"> Project Progress Report 	<ul style="list-style-type: none"> Farmers are trained to protect these investments
Outcome 4 CC adaptation, monitoring, and learning (ALM) as a long term process widely leveraged	<ul style="list-style-type: none"> At least 2 GOL projects (proposed or pipeline) incorporating the IRAS best practices, methods and approaches are evident by 2014 	<ul style="list-style-type: none"> Annual Project Review/Project Implementation Report Project Terminal Report Participatory Rapid Appraisal Survey of beneficiaries Perception survey of beneficiaries 	<ul style="list-style-type: none"> Access to knowledge information available at NAFRI is user friendly
Output 4.1 <ul style="list-style-type: none"> Knowledge information shared among local and global practitioners 	<ul style="list-style-type: none"> At least one (1) international conference/workshop on the project knowledge organized by mid 2014 At least 2 advocacy materials on indigenous knowledge on CC adaptation, including lessons learned/best practices documented and published by mid 2014 At least 3 dialogues and media forums organized by 2014 	<ul style="list-style-type: none"> Project Progress Report 	<ul style="list-style-type: none"> Advocacy materials are available
Output 4.2 <ul style="list-style-type: none"> Knowledge networking initiative established at NAFRI 	<ul style="list-style-type: none"> One stop web portal established at NAFRI 	<ul style="list-style-type: none"> Project Progress Report 	<ul style="list-style-type: none"> NAFRI's website is regularly updated

2. Methodology

The methodology used during the site visits is typically described as Rapid or Participatory Rural Appraisal (RRA, PRA). The principles of this method are by now well known; i.e. low key site visit by a multi-disciplinary team, refer to local village and district sources and offsetting expected biases by utilizing a variety of information sources in order to quickly gain information relevant to the review. The team therefore used a variety of devices: key informants, existing data, individual interview (household interview) and direct observation.

In depth field surveys are undertaken by the multi-disciplinary team. Individual and group interviews are conducted which specifically included representatives of the Village Development Committees and farmers who suffered of climate change (flood and drought). The team used a comprehensive questionnaire as instruments which have been carefully prepared by international M and E consultant of the project to ensure consistency and therefore comparability of information gathered. Direct observation and photographic records are encouraged as is the use of key informants such as respected village elders. Separate interviews are held with head of provincial agriculture and livestock section, head of district agriculture and forestry service offices and village leaders.

2.1 Selection of target areas and identification of respondents

Criteria in the selection of the target area are as follow:

- A. Provinces:
 - (1) Savannakhet
- B. Two (2) districts for Savanakheth province(Outhoumphone and Champhone)
- C. Estimated or indicative number of farming households for IRAS is 6,000. For each Province, there are about 3,000 farming households or 1,500 farming households per district.
- D. For every district, select the village (kumban) and/or cluster of villages
- E. In the selection of the village for each district, use the following criteria:
 - The potential villages must be the vulnerable areas. By definition, vulnerable areas are those that are frequently experiencing severe droughts and/or floods or any climate abnormal phenomena (example: landslide, forest fire);
 - Total farming households, at least 50-100 per village;
 - For manageability of providing support, adjacent or cluster of villages that are near to each other should be selected

- Agriculture or farming is the main livelihood of the people.
 - Accessibility of the village to transport, market and other infrastructure facilities is moderately easy.
- F. The number of villages per district need not be exact to get the total estimated 1,500 farming households per district. The rule of thumb or preference for selection is that, the village should be vulnerable area. If there are only a few vulnerable villages in the district chosen, say 5 to 6 villages with a total farming households of 800 to 1,000, they should be considered priority villages. Other villages maybe identified as potential project areas.

2.2 training of surveyors

A. Determining the sample respondents

1. First and foremost is to identify the villages to be assisted by IRAS. As a rule, these villages must be the **vulnerable areas**, villages that are often hit by floods and/or drought. These villages should be appropriately indicated on vulnerability hazard maps. If vulnerability hazard map is not yet available, a topographic map may be used. The extent of vulnerability on the villages indicated in the topographic map should be validated with the people living in the villages through participatory rapid appraisal (PRA). Verify whether the people have experienced climate change phenomena. If so, these villages can be chosen as project sites.
2. Samples must be drawn from the list of farming of households staying in the designated villages and/or cluster of villages (Kumban).
3. The total farming households (estimate of total population) should be provided by the DAFO.
4. If this is not available from the DAFO, the chief of the village may have the master list of the total farming households staying in the village. This list could very well serve as the population frame.
5. From the total population, determine the sample size of respondents to be interviewed. There are appropriate statistical formulas to get the sample size. If the characteristics of the population, however, is homogenous a pre-determined sample size can be applied.¹
6. From the master list, select randomly the name of the respondents to be interviewed, preferably to include female respondents. Replacement for respondents that cannot be located should be provided. They should be drawn from the same master list where the sample respondents were selected.

B. FACE-TO- FACE INTERVIEW

1. Use the questionnaire (small farmers) designed for this purpose
2. Before doing the actual interview, it is always important to seek the help of the village chief, at a least a day prior to the conduct of the face to face interview with the respondents. The interviewer should take time to explain the purpose of the interview and most importantly about the project to be implemented in the

¹ As a rule, a sample size of 30 respondents per village and/or cluster of village may be applied (FAO).

community. In doing so, the village chief can notify his/her constituencies of the relevance of the exercise.

3. The interviewer should show the sample respondents to the village chief and check with the village chief whether indeed the chosen sample respondents are staying in the village. If the sample respondent cannot be located, then go to the replacement list and get alternative respondents.
4. The questionnaire is very brief. Be polite in asking the question in order to get the respondents' true answers.
5. Always end the interview with a "Thank you".

C. PROCESSING THE ANSWERS

1. Using the MS Excel, a worksheet can be prepared to input the encoded answers of the questionnaire.
2. Prepare the dummy tables and decide on which statistics to calculate, e.g. simple mean.
3. The processed answers should be presented in simple tables.

Work Plan for Baseline Survey per village: Small Farmers

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Days
Visit designated villages																	2
Confirm if designated villages are vulnerable areas through field observation and focus group discussion																	0.5
If by chance, the village is not vulnerable, report to DAFO/PAFO and look for another village, preferably with the aid of a map																	3
Meet with village chief and explain purpose of survey																	1
Begin survey of farmers (at least 4 respondents/day)																	8

for a total of 30 samples																		
Edit and review answers																		1.5
Total																		16

3. Results of survey

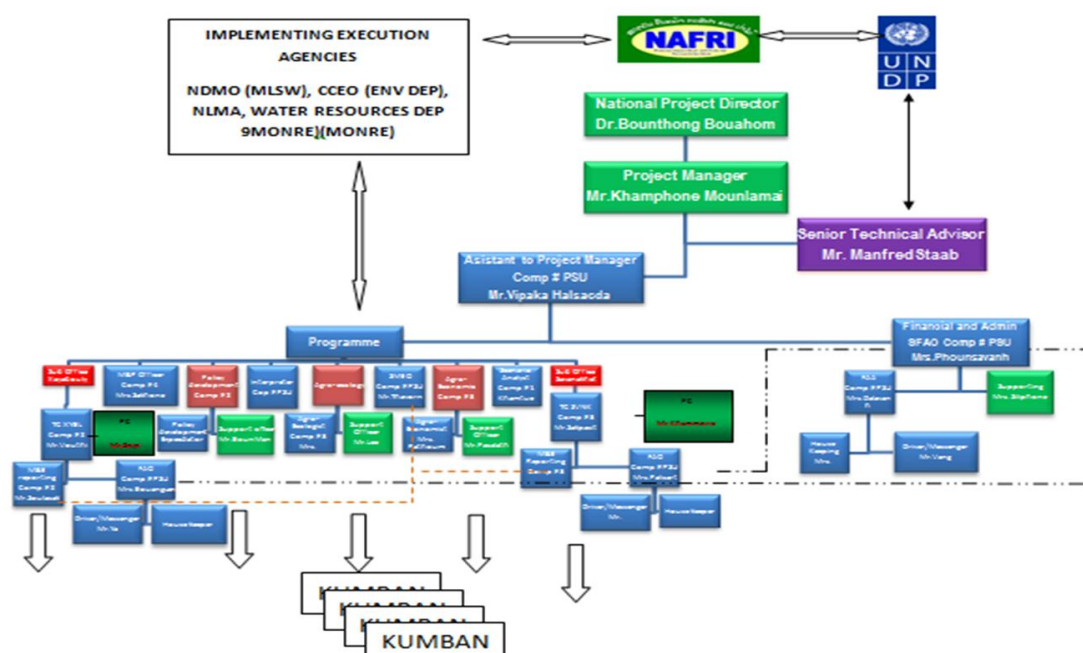
Working Challenge

As we know, during the months of June and July is a beginning time for rice and other crops planting. Some farmers of Outhumphone and Champhone district (target district of the project) are started for their rice planting and some are already transplanting especially farmers in the Outhumphone district. However, cultivation of farmers in these areas is difference and depends on many factors. Some grow only rice in both wet and dry seasons (Champhone district) and some just can growth only in the wet season because of water problem.

Farmers are worked hard and most of their times are on the field. It means just only children, elder or female are stay in the house. So when we conduct our work or data collection we faced to this matter and lost much of time for farmer's interview. Moreover, most remote area, road (see picture on annex 3) and education of farmers are also a problem for this survey.

Working strength

Improving the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impact project is project that formulated by UNDP and the Ministry of Agriculture and Forestry (MAF) so organization's structure of the project is an international standard level. Roughly for project's structure is as follow:



surveying in this time is smoothly for all areas. It means before field visit, project manager/assistant manager and coordinators in each level have in advance planning and preparation through coordination and collaboration with the consultant and local authorities by sending documents to each other.

In addition, province and district staffs in line agencies that related to the project especially is agriculture and forestry office's staff and all respondent in two districts are a part of completely of this survey.

3.1 Result of baseline survey for Outhumphone district

Baseline surveying for small farmer in Outhumphone as well as Champhone district, Savannakhet province is held on the period of May 27, 2012 till July 20, 2012. According to questionnaire that covers several topics and plenty of things so outputs of this survey in each article are as follow:

3.1.1 Basic Profile of Respondent

According to instruction of project's M & E expert, number of respondent in this survey is 150 which are in the target village of Outhumphone district namely Nondokmay village, Nong Ahong village, Nonnakhoun village, Nonvilay village and Vangkhean village. Beside this, gender that include of adult till elder has considered as well as their age which showed in the table 1 and 2 below. However, total persons living with respondent in this interview is 930 (46.67% female).

Table 1. Number of respondent that separated to gender

Gender	Frequency	Percentage
Male	104	69.33
Female	46	30.67
Total	150	100

Table 2. Age of respondent

Age	Frequency	Percentage
≤ 30	14	9.33
31 – 40	47	31.33
41- 50	35	23.33
> 50	54	36.01
Total	150	100

3.1.2 Experience with Climate Change

The livelihood of farmers in the target villages as well as other farmers in the Outhumphone district is farming, fishing, livestock and other poultry feeding, selling and other off-farm such as carpentry, mason, driver and etc. However, as results of the baseline survey main source of livelihood of people in this area are farming and fishing. Therefore main source of income of farmers 100% is from farming.

Some target villages are located on the field that lack of water sources like Vangkhean, Nondokmay and Nonvilay villages. Although some villages like Nonnakhoun and Nong Ahong villages are nearly located with source of water (Toub river) but they could not utilize this water for their rice cultivation in both the wet and dry season. It means almost of their fields do not have problem with flooding season and any landslide that cause of damaging to their land field. In the opposite way, almost every year people in this area are suffered from droughty.

According to meteorological station of Outhumphone district, which belong with Agriculture and Forestry Sector. The annual rainfall is not so few and the average annual rainfall in ten years round is about 1,621 mm. However, some years rainfall does not come on time (on season) and prolonged drought during the dry season and cause to cultivation of farmers.

Beside pest and some diseases during the wet and dry seasons are also a problem of farmers as it is affected their crops, livestock and fisheries production. However, each year farmers have suffered with different from diseases and pest. Some years, farmers faced with birds, shells and some years they faced with leaf and stem diseases (blast, stem rot, sheath blight, foot rot, sheath rot and etc,...).

During the last ten years production of farmers such crops, livestock and fisheries in the target village has much suffered by climate change and others natural phenomena. So the detail of over-all impacts in each type of natural phenomena is shown in the table 3.

Table 3 Over-all impact in each type of natural phenomena in Outhumphone district

Nature of climate change or Natural phenomena	Over-all impact			
	Intensity of impact	Frequency	Percentage	Total
1. Flooding before end of growing or harvest season of rice and/or other crops	H	0		100
	M	3	2	
	L	5	3.34	
	N	142	94.66	
2. Drought after planting of rice and/or other crop	H	15	10	100
	M	122	81.33	
	L	9	6	
	N	4	2.67	
3. Prolonged rainfall/flood during wet season	H	1	0.66	100
	M	2	1.34	
	L	7	4.66	
	N	140	93.34	
4. Prolonged drought during dry season	H	5	3.34	100
	M	97	64.66	
	L	27	18	
	N	21	14	
5. Storms/typhoons during wet season	H	0		100
	M	2	1.33	
	L	0		
	N	148	98.67	
6. Pest and diseases during wet season	H	19	12.66	100
	M	108	72	
	L	22	14.67	
	N	1	0.67	
7. Pest and diseases during dry season	H	22	14.67	100
	M	41	27.34	
	L	40	26.66	
	N	47	31.33	
8. Land slides	H	0		100
	M	0		
	L	0		
	N	150	100	
9. Forest fires	H	0		100
	M	0		
	L	0		
	N	150	100	

Note: H, M, L and N – mean high, medium, low and no impact.

3.1.3 Direct Effect on Food

As mentioned in section of *experience with climate change*, almost of target villages of this survey are located on the field that lack of water sources. So crops cultivation of farmer in these areas is depend on rainfall. Because of climate change, some years rain does not come on time or prolonged drought in dry season so farmers could not growth any thing with their field and much suffer with this event. At the same time, as the result of this interview more than half of farmers do not have enough rice for eating.

Actually land field of these farmers is large enough for rice growing and as well as other crops cultivation. But it seems lack some facilities for them like reservoir and irrigation system. No irrigation system it means no dry season growing in these areas so 100 percent of farmer's land fields depend on rainfall. The detail of rainfed land of farmers who interviewed in this time is showed in the table 4.

Table 4. The detail of rainfed land of farmers in Outhumphone district

	Frequency	Percentage
None	0	0
< 1 ha	08	5.34
1 – 2 ha	92	61.33
> 2 ha	50	33.33
Total	150	100

As show in the table, rainfed land of most farmers in this survey is between 1 ha to 2 ha which covers around 61 percent. However, the range of this land is 0.5 and 7 ha with total area of 331.7 ha.

Farmers in the Outhumphone district as well as in the target villages of this interview are worked hard, they do not growing only rice but also fish raising. The total fishpond area of farmers is 98,219 square meters. However, around 47 percent of farmers do not have fishpond area and 34 and 10 percent of farmers have fishpond with area of less than 1000 and between 1000-2000 square meters respectively. And only around 8 percent of farmers have fishpond with area that more than 2000 square meters. The yield of fish production is low maybe because of some causes like climate change, technical skill, kind of fish, fish feeding system and etc, so the maximum of fish production yield and only one fishpond is around 1.67 kilogram per square meter.

Table 5 Fishpond area

	Frequency	Percentage
None	71	47.33
< 1000 m ²	51	34
1000-2000 m ²	15	10
> 2000 m ²	13	8.67
Total	150	100

Sources

The five target villages as well as all the Outhumphone district have abundant of natural resources especially land field which is advantage for cultivation of farmers in these areas. Actually, at normal year the yield of rice production of farmers will be high. Some farmers have rice not only for eating but also for selling. However, at the unusual year (extreme drought event) especially in the year of 2006 farmers much

suffer with drought even. All of farmers can not transplant their rice on time (season) and even later they can transplant but the water still not enough, so rice yield production of farmers in this area is low. Besides some years pest and other diseases are still disturb farmers' products such bacterial leaf blight, blast disease, brown spot, seedling blight and etc,. The mean and range of rice yield production are 1.25 and 0.30 to 3.00 ton per hectare respectively and the detail of rice yield production in these areas is showed in the table 6.

Table 6. Rice yield production at rainfed land, in (ton/ha)

	Frequency	Percentage
<1.0	53	35.33
1.0 – 1.5	63	42.00
1.6 – 2.5	29	19.33
2.6 – 3.5	05	3.34
Total	150	100

Sources

Basically, Non Dokmay, Nong Ahong, Non Nakhoun, Non Vilay and Vang Khean villagers depend on rice production, so it is not enough to have only rice for eating. Therefore the villagers try to find other income generating activities that can upgrade their living condition. Besides mainly making household income from rice production and domestic animal raising (buffalo, cow, pig and other poultry) is other option. However, this activity it seems need some more technical skill because every year farmers faced with high of animal mortality especially chicken and duck. The detail of head and percent of animal mortality is showed in the table 7.

Table 7 Number of head and average percent mortality of livestock and Poultry for **which district ?**

Livestock and poultry	Number of head	Percent mortality
Water buffalo	461	25.81
Cow	733	20.32
Pig	223	24.66
Goat	264	10.60
Chicken	3843	54.72
Poultry (duck)	1942	48.09

Sources ?

As show in the table 7 number of head of chicken and duck are higher than the other and at the same time percent mortality of them are also higher which cover till 54 and 48 percent respectively. According to the survey, farmers faced with animal diseases problem in dry than rainy season, especially during the coldest weather period.

3.1.4 Perceived Change in Food Security and Losses in Agricultural Asset

Although farmers in target villages of this project depend on rice production and main source of their income is from farming, but because most of their land fields located in the zone without of water sources and just only depend on rainfall. So almost every year farmers in these areas much suffer with drought event. The impacts of drought event in these areas are food and water shortage. According to this survey, the number of farmer who lack of rice for eating during the extreme drought event is 83 out of 150. The detail number of months and households who lack of rice for eating is show in the table 8.

Table 8 Number of household lacked rice for eating during the drought event

Number of month	Number of household
Less than 1 month	13
1 to 2 month	26
3 to 4 month	29
More than 4 month	15
Total	83

Sources :

3.1.5 Climate Change Adaptation Skill and knowledge

Actually after extreme of drought events, local authorities as Provincial Agriculture and Forestry Office (PAFO) staffs and as well as District Agriculture and Forestry Office (DAFO) staffs were visited those field. There are a good cooperation between local authorities and farmers to be checked and listed every damage things. Then related staffs in agriculture sector will plan and visit those fields again to help farmers by doing some activities such giving them some advice and knowledge like planting native varieties of rice, corn or vegetables, change cropping calendar, planting multi-cropping in upland like planting root crops and others. Because of farmers often face with drought event, so in this survey some of farmers already had experiences and can solve problem after drought event by themselves.

The farming technology that is being used by farmers after the event of extreme drought with number and percent is showed in the table 9.

Table 9 number and percent of farmers with farming technology

Farming technology	Number of farmer	percentage
Plant native varieties of rice, corn and vegetables	46	30.66
Change cropping calendar/cropping pattern	0	0
Introduce multi-cropping in upland (e.g. planting root crops)	7	4.67
Postpone raising livestock and fish production	10	6.67
Other (no have any technique)	87	58
Total	150	100

Sources

Although farmers in these area depend on crops cultivation such rice, watermelon, cucumber, corn, peanut, bean and other vegetable like onion, garlic and etc,. However, the main crop of them is only rice while the other just only growing for consuming in household. Besides, fishponds are also ditched with some farmers' land. Therefore, the current system of farming in their existing landholding is most with diversified farming system and mono-cropping as show in the table 10.

Table 10 Current system of farming in the target villages

Farming system	Number of farmer	Percentage
Mono-cropping	75	50
Multiple cropping	0	0
Diversified farming system	75	50
Total	150	100

Sources

3.1.6 Disaster Risk Reduction Measure

As mentioned in the beginning, almost of target villages as well as their land fields are located in the zone without of the water sources. So extreme flood event, in these areas is never been. In the opposite way, most farmers faced only with drought event and do not have any experience to solve or reduce this matter as show in the table 11.

Table 11 Number and percent of farmers to disaster risk reduction measure

Disaster risk reduction measure	Number of farmer	Percentage
Storage facilities for harvested produce	0	0
Livestock pens/corrals on elevated places	0	0
Evacuation centre on higher grounds	0	0
Others (no have idea)	150	100
Total	150	100

Sources

3.2 Result of baseline survey for Champhone district

Baseline surveying for small farmer in Champhone as well as Outhumphone district, Savannakhet province is held on the period of May 27, 2012 till July 20, 2012. According to questionnaire that covers several topics and plenty of things so outputs of this survey in each article are as follow:

3.2.1 Basic Profile of Respondent

According to instruction of project's expert, number of respondent in this survey is 150 people which are in the target village of Champhone district namely Sakeuane Tay, Nonsithanh, Kengpoul, Phaika and Lambong village. Beside this, gender that include of adult till elder has considered as well as their age which showed in the table 12 and 13 below. However, total persons living with respondent in each household are 948 (50.64% female).

Table 12 Number of respondent that separated to gender

Gender	Frequency	percentage
Male	89	59.33
Female	61	40.67
Total	150	100

Sources

Table 13 Age of respondent

Age	Frequency	percentage
≤ 30	08	5.34
31 – 40	41	27.33
41- 50	45	30
> 50	56	37.33
Total	150	100

Sources

3.2.2 Experience with Climate Change

The livelihood of farmers in the target villages as well as other farmers in the Champhone district is farming, fishing, livestock and other poultry feeding, selling and other off-farm such as carpentry, mason, driver and etc. However, as results of this baseline survey main source of livelihood of people in this area is farming and fishing respectively. Therefore main source of income of farmers 100% is from farming.

According to this survey four target villages such Sakeuane Tay, Kengpoul, Phiaka and Lambong villages are located along the Sechamphone river and only Nonsithanh village locates along the Bak reservoir. Farmers have utilized water from these rivers for various activities such as domestic consumption, agriculture and practice fisheries. However, every year people in these areas are suffered from seasonal flooding especially is Sakheuane Tay, Kengpoul, Phiaka and Lambong villages. Although, land field of farmers do not serious damage by the extreme flood event but almost products of them are damaged. So a lot of people were lacked or not enough of rice for eating during the extreme flood event. It means most farmers in these areas depend on dry season.

Besides pest and diseases during the wet and dry seasons is also one problem for farmers and affected their crops, livestock and fisheries production. However, each year farmers have suffered with different diseases and pest. Some years farmers faced with shells and some years they faced with leaf and stem diseases (blast, stem rot, sheath blight, foot rot and sheath rot).

So during the last ten year production of farmers such crops, livestock and fisheries in the target village has much suffered by climate change and others natural phenomena. Especially with two storms event known as Xang Sane and Nock-ten The detail of over-all impacts in each type of natural phenomena is shown in the table 14.

Table 14. Over-all impact in each type of natural phenomena in Champhone district

Nature of climate change or Natural phenomena	Over-all impact			
	Intensity of impact	Frequency	Percentage	Total
1. Flooding before end of growing or harvest season of rice and/or other crops	H	92	61.33	100
	M	48	32	
	L	7	4.67	
	N	3	2	
2. Drought after planting of rice and/or other crop	H	9	6	100
	M	4	2.67	
	L	53	35.33	
	N	84	56	
3. Prolonged rainfall/flood during wet season	H	81	54	100
	M	50	33.34	
	L	16	10.66	
	N	3	2	
4. Prolonged drought during dry season	H	1	0.67	100
	M	1	0.67	
	L	31	20.66	
	N	117	78	
5. Storms/typhoons during wet season	H	146	97.33	100
	M	3	2	
	L	0	0	
	N	1	0.67	
6. Pest and diseases during wet season	H	44	29.34	100
	M	65	43.33	
	L	38	25.33	
	N	3	2	
7. Pest and diseases during dry season	H	27	18	100
	M	23	15.34	
	L	61	40.66	
	N	39	26	
8. Land slides	H	5	3.33	100
	M	0	0	
	L	0	0	
	N	145	96.67	
9. Forest fires	H	0	0	100
	M	0	0	
	L	0	0	
	N	150	100	

Note: H, M, L and N – mean high, medium, low and no impact.

Sources

3.2.3 Direct Effect on Food

As mentioned in section of *experience with climate change*, target villages of this survey are located along the Sechamphone river, so every year land fields of these

farmers are flooded in rainy season. Some years and like in the year of 2011, farmers faced with Nock Ten storm and farm products (rice and other poultry) in these areas (Kengpoul and Phiaka villages) are extreme damaged by flooding and a lot of farmers complain about rice in this year maybe not enough for eating.

Fortunately, land fields of farmers are not serious damaged and just only a few percent can not permanently grow for any crop. The land field or physical area in difference type of farmers is showed in the table 15 and 16 below.

Table 15 Irrigated land

	Frequency	Percentage
None	49	32.66
< 1 ha	56	37.33
1 – 2 ha	40	26.67
> 2 ha	05	3.34
Total	150	100

Sources

As show in the Table 15, farmers who interviewed in this survey around 32 percent do not have irrigated land and 37 percent have irrigated land with area that less than 1 ha. However, only 3 percent of farmers have irrigated land with area that more than 2 ha.

Beside some farmers can be growing their rice in the dry season by using irrigated land. The area of land that can grow in the dry season is 87.49 ha or around 97 percent of total irrigated land. The rest land can not be growing because of many conditions like: climate change phenomena, poor irrigation system and etc,...

Table 16. Rainfed land

	Frequency	Percentage
None	39	26
< 1 ha	41	27.34
1 – 2 ha	52	34.66
> 2 ha	18	12
Total	150	100

Sources

The result of interviewed shows that most farmers have rainfed land with area between 1-2 ha which cover around 34 percent and just only 12 percent of farmers who have land with area that more than 2 ha. However, 39 out of 150 households do not have rainfed land which cover till 26 percent.

Farmers in the target villages as well as in the Champhone district are worked hard, they do not grow only rice and other crops but also fish farm. However, number of fishpond is limited because of local geography known as floodplain. Every year during the wet season farmers in these areas much suffer with extreme flood event. So fishpond area of them is only 1,845 square meters. As show in the table 17 most farmers do not have fishpond area and just only 8 households who have fishpond with area that less than 1000 square meter. The yield of fish production is low maybe because of some causes like technical skill and fish feeding system, so the maximum fish yield is 0.8 kilogram per square meter.

Table 17 Fishpond area

	Frequency	Percentage
None	142	94.66
< 1000 m ²	08	5.34
1000-2000 m ²	0	0
> 2000 m ²	0	0
Total	150	100

Sources

The five target villages as well as Champhone district have abundant of natural resources especially water resources which is advantage for cultivation of farmers in these areas. Actually, at normal year the yield of rice production of farmers will be high. Some farmers have rice not only for eating but also for selling. However, at the unusual year (serious flood or drought) especially in the year 2011 farmers much suffered with Nock-ten storm. So rice and other crops production yield are very low. Besides in some years pest and other diseases are also disturbed farmers' products. The mean and range of rice production yield in rainfed land are 0.85 and 0.05 to 4.80 ton per hectare in wet season respectively. For the irrigated land the mean and range of rice production yield are 1.51 and 0.10 to 6.67 ton per hectare in wet season, while in the dry season are 3.13 and 0.67 to 7.50 ton per hectare. The detail of rice production yield of farmers in the irrigated and rainfed land is showed in the table 18 and 19 below.

Table 18 Rice yield of farmers in the irrigated land.

	Frequency	Percentage
≤ 1	20	51.28
1.1 – 1.5	03	7.69
1.6 – 2.0	08	20.52
2.1 – 2.5	01	2.56
2.6 – 3.0	02	5.14
3.1 – 3.5	03	7.69
3.6 – 4.0	01	2.56
> 4.0	01	2.56
Total	39	100

Sources

As show in the table 18, most rice production yield of farmer is less than or equal 1 ton per hectare which is covered till 51 percent. Follow by the yield of 1.6 to 2.0 ton per hectare which is covered around 20 percent. While the rice production yield of farmer that higher than 4.0 ton per hectare is only one field.

Table 19 Rice yield of farmers in the rainfed land

	Frequency	Percentage
≤ 1	79	73.14
1.1 – 1.5	16	14.81
1.6 – 2.0	07	6.48
2.1 – 2.5	01	0.93
2.6 – 3.0	02	1.85
3.1 – 3.5	01	0.93
3.6 – 4.0	01	0.93
> 4.0	01	0.93
Total	108	100

Sources

As mentioned above, every year farming land of farmer in these areas is flooded by rainy season. Some years farmers much suffer with extreme food event as well as in the year 2011 they much suffer with Nock-ten storm, so rice production yield of them is low.

Basically, villagers of Sakheuane Tay, Nonsithanh, Kengpoul, Phiaka and Lambong village depend on rice cultivation. However, it is not enough for them to have only rice for eating. Therefore the villagers try to find other income generating activities that can upgrade their living condition by gaining some extra money. Besides mainly making household income from crops cultivation and domestic animal raising (buffalo, cow, pig and other poultry) is other option. Unfortunately, these activities need more technical skill and higher investment cost compare to rice cultivation. So, farmers of the target village as well as around these areas raise domestic animal only for consumption and selling.

Moreover, climate change (coldest weather and extreme drought event) in some years affected livestock and poultry production of farmers especially for chicken and duck. Some years percent mortality of farmer's chicken and poultry is 100. However, number of heads and average of percent mortality is showed in the table 20.

Table 20 Number of head and average percent mortality of livestock and poultry

Livestock and poultry	Number of head	Percent mortality
Water buffalo	104	15.38
Cow	532	8.08
Pig	92	4.35
Goat	142	11.27
Chicken	3449	49.2
Poultry	2531	49.7

Sources

As show in the table 20, number of head of poultry is higher than the other and at the same time percent mortality is also high compare to chicken and other which covers till 49.7 percent. According to the survey, chicken and duck are dead in dry season than in the wet season because of climate variation and other factors.

3.2.4 Perceived Change in Food Security and Losses in Agricultural Asset

Although farmers in target villages of this project depend on rice cultivation and main source of their income is from farming, but because of some land fields are located along the river (Se champhone). So every year farmers of these areas suffer from seasonal flooding and some year with extreme flood and storm event. The impacts of seasonal flooding on the villages are food shortage and loss of agriculture land. According to this survey, number of household that lack of rice for eating on the extreme flood and drought event is 122 out of 150. The detail number of months and households who lack of rice for eating is showed in the table 21.

Table 21 Number of household lacked rice for eating during the flood and drought event

Number of month	Number of household
Less than 1 month	15
1 to 2 month	39
3 to 4 month	39
More than 4 month	29
Total	122

Sources

3.2.5 Climate Change Adaptation Skill and knowledge

Actually before and after flood season, local authorities as Provincial Agriculture and Forestry Office (PAFO) and District Agriculture and Forest Office (DAFO) often have cooperation with villagers who live along the river such Sakeuane Tay, Kengpoul, Phiaka and Lambong. In case villagers faced with extreme flood event, those staffs will work close with villagers especially with head of the village and gather check and list every damage thing. Then relate staffs will plan to help villagers by providing some supports such technical and knowledge in agriculture adaptation like planting native varieties of rice, corn or vegetables, change cropping calendar, planting multi-cropping in upland like planting root crops and others. So in this survey, some farmers have experiences and can solve problem after extreme flood and drought event by themselves.

The farming technology that is being used by farmers after the event of extreme flood and drought with number and percent is showed in the table 22. As show in the table, most farmers used technique of change cropping calendar especially growing rice on

dry season than the other technique which covers till 54 percent. However, it is not few of farmers who do not have any technique with their farm maybe because of family situation (number, female, older).

Table 22 number and percent of farmers with farming technology

Farming technology	Number of farmer	percentage
Plant native varieties of rice, corn and vegetables	25	16.67
Change cropping calendar/cropping pattern	82	54.66
Introduce multi-cropping in upland (e.g. planting root crops)	0	0
Postpone raising livestock and fish production	0	0
Other (no have any technique)	43	28.67
Total	150	100

Sources

According to results of the survey, farmer in these areas depend just only rice production because of farm land situation (floodplain area). Therefore, the current system of farming in their existing landholding is most with mono-cropping and as show in the table 23.

Table 23 Current system of farming in the target villages

Farming system	Number of farmer	Percentage
Mono-cropping	149	99.33
Multiple cropping	0	0
Diversified farming system	1	0.67
Total	150	100

Sources

3.2.6 Disaster Risk Reduction Measure

According to the interview, Kengpoul, Phiaka, Sakheuane Tay and Lambong villages are much suffered from flooded in rainy season because these villages locate along the

Sechamphone (Champhone river). In 2011 all target villages of this project were suffered from extreme flooding in rainy season (see picture in annex ...). The impacts of seasonal flooding on these villages are food shortage, some of farm land damaged, livestock, poultry and other lost. To reduce problems of seasonal flooding and as well as other disaster risk reduction measure, farmers try to solve them by using some methods as show in the table 24 below.

Table 24 Number and percent of farmers to disaster risk reduction measure

Disaster risk reduction measure	Number of farmer	Percentage
Storage facilities for harvested produce	38	25.33
Livestock pens/corrals on elevated places	105	70
Evacuation centre on higher grounds	07	4.67
Others	0	0
Total	150	100

Sources

4. Conclusions

To achieve the purpose of baseline data Survey, small farmers surveying at Savannakhet province as well as Outhumphone and Champhone districts on May 27, 2012 is started. The methodology used during the site visit is typically described as Rapid or Participatory Rural Appraisal (RRA, PRA). However, before surveying some documents related to agriculture and forestry and other reports are collected and reviewed.

Ten villages in 2 districts of Savannakhet province (Outhumphone and Champhone) are selected as target of IRAS project. The surveying is started at Outhumphone district with 5 target villages namely Nondokmay village, Nong Ahong village, Nonnakhoun village, Nonvilay village and Vangkhean villages. The number of respondent of these villages is 150, it means around 30 respondents per village. Then follow by Champhone district with also 5 target villages namely Sakeuane Tay, Nonsithanh, Kengpoul, Phaika and Lambong villages. The number of respondent to the survey in Champhone district is used the same case of Outhumphone district around 30 respondents per villages. The detail number of respondent and gender in this survey please see at the table 25 below. However, total number of persons who live with respondent is 930 (46.67% female) and 948 (50.64% female) for Outhumphone and Champhone districts respectively.

Table 25 Number of respondent

Gender	Number of respondent	
	Outhumphone district	Champhone district
Male	104	89
Female	46	61
Total	150	150

Sources

The farmer in Outhumphone and Champhone districts as well as farmers who live in the target villages of the project depend on crops cultivation, fishing, domestic livestock raising, selling and other off-farm such as carpentry, mason, driver and etc.,. Based on results of the survey main source of their livelihood in these areas are farming and fishing respectively. So main source of income of farmers in Outhumphone and Champhone district 100% is from farming.

According to the farmer's interview and as well as PAFO and DAFO reports, most land field of farmers in the target villages are suffered from seasonal flooding and droughty. In recent year, there are two extreme events of flooded (Xangsane and Nock-ten storms) in Champhone districts. Some villages such Sakheuane Tay, Kengpoul, Phiaka and Lambong village in Champhone district are much suffered than the other villages from these event. Because most of their land fields are located along the river (Sechamphone). Although Champhone district seems much suffered with flood season or storms than outhumphone but in fact and according to meteorology station recorded by DAFO, annual average rainfall in Outhumphone is higher than in Champhone district (see figure 4). So Outhumphone district faced with water for rice production is not only from lack of rainfall, but also from local geography, soil, forest and others. Besides pest and diseases during the wet and dry season are also a part problem of farmers and affected their crops, livestock and fisheries production.

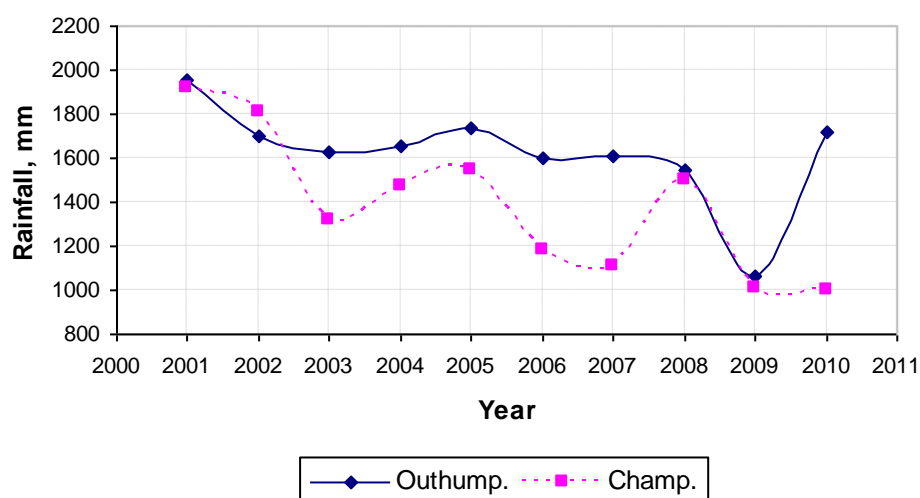


Figure 4. Annual rainfall of Outhumphone and Champhone district

Actually, the yield of crops production in these areas is high at normal year. However, seasonal flooding and drought or extreme event of flood and drought in some years are affected farmer's production. Besides pest and diseases during the wet and dry seasons and as well as poor irrigation system like metal pipe is leaking (see at the picture in annex 3), canals are destroyed during storms are also problem for farmers and affected their crops, livestock and fisheries production. So knowledge or technical skill support on crops cultivation for farmers is necessary. The mean and range of crops production in these areas are not so high and as showed in the table 26.

Table 26 Mean and range of crops production in Outhumphone and Champhone districts

Landholding planted	Yield of crops production, ton/ha			
	Outhumphone district		Champhone district	
	Mean	Range	Mean	Range
Irrigated	-	-	1.51	0.10-6.67
			3.13*	0.67-7.50*
Rainfed	1.25	0.30 – 3.0	0.85	0.05-4.80

Note: * - Mean and range of rice yield in dry season

As mentioned in the *experience with climate change* section, main source of income of farmers in these areas is from farming. However, fishing, domestic animal raising, chicken farm, duck raising are other option to earn extra income. The percent mortality of livestock is high for chicken and duck in both Outhumphone and Champhone district and most being in the dry season.

In addition, fish farm in these areas is significant to farmer's livelihood especially farmers in outhumphone district. There are about 98,219 square meters of fishpond area and the maximum of yield is around 1.67 kilogram per square meter.

The climate in Outhumphone and Champhone district is difference. The average annual rainfall round ten year is about 1,621 and 1,385 mm for Outhumphone and Champhone respectively. The impacts of flash flood or extreme flood event in Champhone district and drought event in Outhumphone district are soil erosion and food shortage. So some farmers in these areas lacked rice for eating in those event. As the result of this survey, number of farmer who lacked rice for eating during the extreme of flood and drought event in Champhone is higher than Outhumphone district and may depend on local geographical. The number of household or farmer who lacked rice for eating during the extreme flood and drought event is showed in the table 27. [Insert here the analysis as mention above from both district]

Table 27 Number of household lacked rice for eating in extreme flood and drought event

Number of month	Outhumphone district	Champhone district
	Number of household	Number of household
Less than one month	13	15
1 to 2 months	26	39
3 to 4 months	29	39
More than 4 months	15	29
Total	83	122

Sources

To continue farming activity of farmers in the event of extreme drought, most of them do not have any technique which covers till 58 percent follow by planted native varieties rice, corn and vegetables which covers till 30 percent for Outhumphone district. While in the Champhone district, most farmers change cropping calendar in the extreme flood event which cover till 54 percent. However, around 28 percent do not have any technique to continue farming activities in that event.

Besides at normal production period mono-cropping system is more used than the other system for farmers in Champhone districts which cover around 99%, while in Outhumphone district 50 percent is used mono-cropping system and other 50 percent is used diversified and/or multiple cropping.

Regarding to disaster risk reduction measure, some farmers have much experience with this matter because they often faced with seasonal flooding especially farmers in Champhone district. However, most of farmers used method of livestock pen/corral on elevated places with number of respondent till 70 percent. While in Outhumphone district all of farmers in the target village do not have any idea to reduce disaster risk.

5. Recommendations

After completed the field visit at Outhumphone and Champhone district, Savannakhet province, then a consultant has applied the information for his drafting. According to farmer's interview, field observation and related of local authorities discussion, some comments on this survey are as follow:

The Outhumphone is one of target district in the IRAS project and five villages are selected for farmer interviewing. As discussed on the part of result, Outhumphone district especially farmers in target villages are often faced with drought event. Some villages such Vangkhean, Nonvilay and Nondokmay do not have source of water. It means farmer in these areas depend only rainfall for their rice growing. Although two villages such Nonnakhoun and Nong Ahong nearly located with source of water, but farmers can not utilize this water in both wet and dry season for their rice growing. To solve problem on water shortage for rice and other crops growing, farmers need assistance from the government and other organizations to construct irrigation system.

The district such Champhone is also one target of IRAS project. It locates with geography known as floodplain area. Every year farmers in the target village namely Kengpoul, Phiaka, Lambong and Sakheuane Tay are suffered with extreme flood event especially with Nock-ten storm in 2011. Some irrigation systems are destroyed during the event especially is canal. To continue farming activity, farmers need assistance from the government and other organizations to repair irrigation canal.

ANNEXES

Annex. 1 Formats of questionnaires

Baseline Survey for Small Farmers Improving the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts (IRAS)

Purpose: The purpose of this baseline survey, being administered by the National Agriculture Forestry and Research Institute (NAFRI) is to get baseline data from farmers who will be assisted by the project entitled: Increasing the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts. The results of the baseline survey will establish the reference data of selected indicators for farmers who will be assisted by the project. In the future, the baseline data will serve as the basis of comparison whether the project has satisfied its main objective of reducing food insecurity from climate change and vulnerability to farmers from extreme effects of floods and droughts.

Respondent Number _____ District _____

Name of Interviewer _____ Date of Interview _____

A. Basic Profile of Respondent

[Question A1-A6 is linked to establishing data on gender disaggregation, total population, etc.]

1. Name of Respondent _____
2. Household Address/Village _____
3. Gender
 _____ Male
 _____ Female
4. Age _____
5. Head of Family _____ YES _____ NO

6. Total persons living with respondent

Classification	Number	
	Male	Female
Spouse		
Children		
Parents		
Relatives		
Others		
Total		

B. Experience with Climate Change

[Question B1-B3 is linked to establishing perception on real experiences with climate change phenomena. If by chance there are respondents who have not experienced climate change they should be excluded in the analysis]

1. What are your main sources of livelihood/income? Please check appropriate answer.

- ☐ Farming (1)
☐ Fishing (2)
☐ Vending/selling (3)
☐ Collecting/gathering wildlife (4)
☐ Gathering firewood or other forest product (5)
☐ Other off-farm livelihood (e.g. carpentry, mason, driver, etc.) (6)

2. During the last 10 years that you are farming/fishing, did you notice any climate or natural phenomena that affected your crop, livestock, and fisheries production in your village? Check applicable answer and indicate intensity of impact on corresponding columns identified.

Nature of Climate change or natural phenomena	Intensity of Impact ¹						
	Over-all Impact ¹	Impact according to sub sectors					
		Crops ¹	Number of times occurred ²	Livestock & poultry ¹	Number of times occurred ²	Fisheries ¹	Number of times occurred ²
(1) Flooding before end of growing or harvest season of rice and/or other crops							
(2) Drought after planting of rice and/or other crops							
(3) Prolonged rainfall/flood during wet season							
(4) Prolonged drought during dry season							
(5) Storms/typhoons during wet season							
(6) Pest and diseases during wet season							
(7) Pest and diseases during dry season							
(8) Land slides							
(9) Forest fires							

¹Note: Use the following to indicate intensity of impact: H-high; M-medium; and L-low. Under the sub-sectors, use the same. For instance, if the impact of flood on crops is high, put H and so forth

²On the number of times occurred use the following: 1-once; 2-twice; 3-thrice; 4-four times; 5-five times and so forth

C. Direct Effect on Food/Farm Production/Food Security

[Question C1-C4 is linked to indicator of project objective on (i) production of food staple; and (ii) and yield of major crops. Question C1-C2 on irrigated land is linked to indicator of outcome 3 on cropping intensity]

- Please indicate the physical area in hectares (ha) of your existing land holdings stated in the table below that have been affected by climate change abnormalities and still currently being cultivated.

Type of land	Physical Area (ha) (before) Col 1	Per cent damaged due to climate change Col 2	Physical Area (ha) still cultivable Col 3
1.1 Irrigated ¹			
1.2 Rainfed			
1. Total lowland			
2.1 Rice land			
2.2 Garden			
2. Total Upland			
3.1 Fruit trees			
3.2 Industrial tree			
3. Total Perennial			
Total (1+2+3)			

¹Traditional and primitive weirs are sources of irrigation

Note: The area that is cultivable will be calculated by multiplying col.1 with col.2

- During those years that your landholdings were affected by climate change, please indicate at least 2 **major crops** that you cultivated. Give the average production and area harvested of those crops in the table below. Before filling up this table, please see **Note** below the table.

Landholding and crop planted/harvested	Variety ¹	Wet Season			Dry Season		
		Area (ha) Col 1	Production (ton) Col 2	Yield/ha (ton) Col2/Col1	Area (ha) Col 3	Production (ton) Col 4	Yield/ha (ton) Col4/Col 3
1.1 Irrigated Land							
(i) Rice							
(ii) Vegetables (specify)							
(iii)							
(iv)							
(v)							
1.2 Rainfed							
(i) Rice							
(ii) Corn							

(iii)	Vegetables (specify)							
(iv)								
(v)								
1.3	Upland							
(i)	Rice							
(ii)	Corn							
(iii)	Vegetables (specify)							
(iv)								
(v)								
1.4	Garden							
(i)	Vegetables (specify)							
(ii)								
(iii)								
(iv)								
1.5	Perennial (Fruit Trees)							
(i)	Fruit trees (specify)							
(ii)								
(iii)								

¹Use the following codes: 1-indigenous/native or sticky rice; 2-improved or high-yielding variety (certified seeds)

Note: 1. The meaning of average production and area is the closest estimate of production and area harvested that the respondent can recall during those years/seasons that climate change affected their crop production. However, if the impact of climate change has already established a trend, meaning this was also experienced in the most recent years, the figures in 2010 will be recorded.

Wet and dry seasons are only applicable for irrigated land, thus rice and other crops (e.g. vegetables) may be grown. Upland, rainfed and garden are applicable to wet season, thus crops may be grown only during wet season. No data will appear on dry season. For perennial, there is no distinction between wet and dry seasons. If these are bearing fruit trees, indicate the total production for the entire year.

- Fill up the table below on livestock & poultry production. Get the figures in 2010, or an estimate of the production affected by drought or extreme flood and/or pest and diseases.

Livestock and Poultry	Number of heads	Per cent mortality	Purpose ¹
Water buffalo (carabao)			
Cattle (cow)			
Swine (pig)			
Goat			
Chicken			
Other poultry (specify)			

¹Use the following number: 1 for draft purpose; 2 for consumption and sale purpose

4. Fill up the table below on fish production. Get the figures in 2010, or an estimate of the production affected by extreme drought or flood.

Type of fish specie	Size of fishpond or fish cage (square meters)	Total production (kilo)	
		From fish cage or fish pond	From open rivers
Tilapia			
Other species (specify)			

D. Perceived Change in Food Security and Losses in Agricultural Asset

[Question D2-D3 is linked to indicator of project objective on percent of beneficiaries experiencing hunger expressed by the number of months without rice]

- Did you ever experience of having **not eaten rice** during **the period that you were affected by extreme drought or flood** 1. YES ____ 2. NO ____.
- If yes, by how many months.

____ Less than 1 month	(1)
____ 1 to 2 months	(2)
____ 3 to 4 months	(3)
____ More than 4 months	(5)

E. Climate Change Adaptation Skills and Knowledge

[Question E1-E2 is linked to establishing the existence of indigenous or climate-responsive technology. Question E3 is linked to indicator of outcome 3 on percent of farmers practicing diversified cropping]

- Please name any farming technology that is being used by you and your co-farmers to continue your farming activity in the event of extreme flood/drought? Check applicable answer below _

____ Plant native (indigenous) varieties of rice, corn and vegetables	(1)
____ Change cropping calendar/cropping pattern	(2)
____ Introduce multi-cropping in upland (e.g. planting root crops)	(3)
____ Postpone raising livestock and fish production	(4)
____ Others (please identify)	(5)
- In an average normal production period, describe your current system of farming in your existing landholding? Is it:

____ Mono-cropping	(1)
____ Multiple cropping	(2)
____ Diversified farming system (Combination of crops, livestock, and/or fish production)	(3)

F. Disaster Risk Reduction Measure

[Question F1 is linked to indicator of outcome 2 on practicing disaster risk reduction measures]

- Are there disaster risk reduction measures being in placed in your village? Check applicable answers below:

_____Storage facilities for harvested produce	(1)
_____Livestock pens/corrals on elevated places	(2)
_____Evacuation centres on higher grounds	(3)
_____Others	(4)

Annex. 2 List of professionals consulted during mission

Provincial Agriculture Office

Name	Position	Contact number
1. Mr. Khammone	Head of provincial agriculture office	020 55057522
2. Mr. Sakpasit	Project coordinator for Savannakhet	020 58812547

Outhumphone District Agriculture and Forestry Office

Name	Position	Contact number
1. Mr. Phouthone	Vice Head of district agriculture and forestry office	020 22316048
2. Mrs. Bounsuooy	Project coordinator for Outhumphone District.	020 56266187
3. Mrs. Bounthavy	Project coordinator for Outhumphone District.	020 97502869

Champhone District Agriculture and Forestry Office

Name	Position	Contact number
1. Mr. Banhlang	Head of district agriculture and forestry office	020 55231090
2. Mrs. Veomany	Project coordinator for Champhone district.	020 22781054
3. Mr. Phoulathsamy	Project coordinator for Champhone district.	020 56675865

Target Villages

Outhumphone district			Paklay district		
Name and Family name	Position	Contact number	Name and Family name	Position	Contact number
1. Mr. Xom	Head of Vangkhean village	99658943	1. Mr. Souksalat	Head of Sakheuane Tay village	22798226
2. Mrs. Phetsamone	Head of Nong Ahong village	99186152	2. Mr. Vanh	Head of Nonsithanh village	22674406
3. Mr. Chanhtho	Head of Nondokmay village	98627960	3. Mr. Sombath	Head of Kengpoul village	22606393
4. Mr. Bounsath	Head of Non nakhoun village	97379081	4. Mr. Phouvong	Head of Piaka village	58412523
5. Mr. Bounxom	Head of Non vilay village	59572290	5. Mr. Keankeo	Head of Lambong village	56739613

Annex. 3 Photo of field survey



Some pictures at Champhone and Outhumphone district



ການສຳພາດຊາວນາ ທ.ເມືອງອຸທຸມພອນ



ການສຳພາດຊາວນາ ທ.ເມືອງຈຳພອນ



ທາງໄປບານໂນນສີທັນ, ເມືອງຈຳພອນ



ທາງໄປບານລຳບອງ, ເມືອງຈຳພອນ



ຈຸດນ້ຳຖວມເຖິງທບານແກງຢູນ, ເມືອງຈຳພອນ



Some pictures at Champhone and Outhumphone district