



# BASELINE SURVEY REPORT

Sustaining and Enhancing the Momentum for Learning and Innovation around the System of Rice Intensification in the Lower Mekong River Basin (SRI-LMB)



*Funded by the European Union*



*Hosted by ACISAI*



*Implemented by AIT*

## ABOUT THE PROJECT

SRI-LMB, an EU-financed regional project, aims to contribute towards enhancing the resilience of rainfed farmers confronting climate change variability in the Lower Mekong River Basin (LMB) region. It brings various stakeholders together working at global, regional, national, and local levels. The purpose of the project is to increase crop yield, productivity and profitability on sustainable basis at smallholder farmers' field in rainfed areas of the LMB. The project through its action aims to address the food security and livelihood issue of smallholder farmers by developing adaptive measures against climate change. The action is being implemented in four LMB countries: Cambodia, Laos, Vietnam and Thailand. The total period for implementation is 60 months (2013 - 2017).

The project is led by the Asian Institute of Technology (AIT) in partnership with FAO, Oxfam, SRI - Rice of Cornell University and University of Queensland together with many national partners coming from ministries, national universities and NGOs.

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SRI-LMB is a regional collaborative effort that brings various stakeholders together working at global, regional, national, and local level. For better collaboration and coordination at all level, the project has established regional, national and local offices, which are called Regional Coordination Unit (PCU) at AIT, Project Management Unit (PMU)/country office at country level and Local Management Unit (LMU) at provincial level, respectively. The newly established Institute-wide Center of AIT Asian Center of Innovation for Sustainable Agriculture Intensification (ACISAI) hosts the regional coordination unit (PCU) of the project. Contact details of key project personnel working at regional, national and local levels are given below:

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## LIST OF ABBREVIATION

ACISAI	Asian Centre of Innovation for Sustainable Agriculture Intensification
AIT	Asian Institute of Technology
CFPAR	Central Farmers' Participatory Action Research
Ha	Hectare
EU	European Union
FAO	United Nations Food and Agriculture Organization
FFS	Farmer's Field School
FPAR	Farmers' Participatory Action Research
LMB	Lower-Mekong Basin
LMU	Local Management Unit
MEI	Monitoring, Evaluation and Impact
MEL	Monitoring, Evaluation and Learning
MoAC	Ministry of Agriculture and Cooperative
MoE	Ministry of Education
NE	Northeast
NGOs	Non-Governmental Organizations
NIPW	National inception and Planning Workshop
OA	Oxfam America
PCU	Project Coordination Unit
PMU	Project Management Unit
PRA	Participatory Rural Appraisal
Pp/km <sup>2</sup>	Population per Square Kilometer
PRA	Participatory Rural Appraisal
SRI	System of Rice Intensification
SRI-LMB	System of Rice Intensification in the Lower Mekong River Basin
T	Tons
°C	Degree Centigrade
ToT	Training of Trainers

## SUMMARY

A baseline survey was undertaken by administering structured questionnaire to 353 randomly selected farm households from 30 districts in 10 provinces from four LMB countries: Cambodia, Thailand, Vietnam and Laos. The purpose of the baseline survey was to prepare baseline information on the status and key constraints of rice cultivation practices in the identified study areas. The findings of the baseline survey would be used as reference for refining the project's monitoring and evaluation plan, training module and capacity building intervention, and identifying relevant policies and guidelines and frameworks for supporting the project advocacy work. The baseline findings will be used to assess and benchmark the existing parameters, and compare with the situation in next three years within the framework of SRI-LMB's objective. The baseline survey explored various information's with regard to farm characteristics, socio-economic condition, access to productive capital, agricultural practices, farming decision and SRI specific practices.

Some of the highlights of the baseline findings at regional level are;

- The higher percentage of female farmers in Thailand than Cambodia, Laos and Vietnam. At regional level 37% of the total households surveyed were female farmers.
- Average age of household head at regional level was 51 years and 83 % of the total farmers were above 41 years old.
- The majority of the household head had either primary or secondary school education across the countries.
- Surveyed farmers had experience in rice cultivations for 22-28 years except Laos where surveyed farmers had only 7 years of experience.
- Rice area per household was higher in Thailand (3.2 ha) followed by Laos (2.0), Cambodia (1.21ha) and Vietnam (0.62 ha).
- Average rice yield reported from surveyed farmers were 4.8, 3.3, 2.7, and 2.4 ton/ha in Vietnam, Thailand, Laos, and Cambodia, respectively.
- At regional level, around 50 percent of the household had some kind of off-farm income. The percentage of households having off-farm income was higher in Cambodia (59%), followed by Thailand (51%), Vietnam (47%) and Laos (34%).



- Ninety percent of households from Cambodia and Vietnam and 80% of households in Laos and all the households in Thailand had sufficient rice from own cultivation for the whole year.
- Households from Cambodia and Laos have more large livestock (81%) than other two countries.
- In LMB region, 80-88% of the households have chickens/ducks mainly for home consumption.
- In LMB region, 95 % of the surveyed households have access to agricultural land.
- Majority of the households both man and woman jointly taking decision on what to grow in agricultural land in the LMB region. Similarly, on adopting new agricultural practices, 50 % by jointly and 38 % by man.
- Man mostly taking decision on pesticide use while woman mostly taking decisions on selling the crops in the region.
- More number of farmers were aware of SRI in Cambodia than other three countries.
- The top most three common factors across the countries for preference to SRI were less seed and water requirement and higher yield, though other factors placed equal importance in each country.

The survey ultimately reinforces the objectives set out by the project and a scope to enhance the productivity, profitability and sustainability in the light of climate change, through adapting/adopting SRI principles using action research-FFS platforms by smallholder communities in the selected provinces and districts.

## 1.0 INTRODUCTION AND RATIONALE OF THE BASELINE SURVEY

The population of Cambodia, Laos, Thailand and Vietnam were 15.8, 6.9, 68.14 and 94.44 million (Worldometers 2016), respectively, and majority of them living along the Lower Mekong River Basin. An estimated 66-75 % total population of these countries living in rural areas and majority of them are smallholders depending rice cultivation for their food security and livelihoods. Share of agriculture in GDP were 35, 11, 34, and 24 % respectively in Cambodia, Thailand, Laos and Vietnam. However, 36% of population in Cambodia is food insecure while 47 % of Laos population are malnourished and largest rice growing area of Northeast Thailand have high incidence of poverty and similarly in rainfed rice area in Vietnam. The rice area harvested/person were 0.2, 0.17, 0.14 and 0.08 ha respectively in Cambodia, Thailand, Laos and Vietnam. Smallholders share the substantial land holding, 95 % of the land holding in Vietnam are below 2 ha while 70 % in Lao PDR, 67 % in Cambodia and 55 % in Thailand are below 2 ha. In 2014, rice was grown in 3.1, 0.96, 10.8, and 7.8 million ha, respectively, in Cambodia, Laos, Thailand, and Vietnam. However, the major rice production comes from rainfed areas- 75, 58, and 42 % of total rice area in Cambodia, Laos, and Thailand, respectively, under rainfed condition.

Rice production in 2014 were 9.3, 4.0, 32.6 and 45 million tons with average yield of 3.01, 4.18, 3.01 and 5.75 tons/ha in Cambodia, Laos, Thailand and Vietnam, respectively. Rice is the most important staple food for this LMB region with average rice consumption per capita of 133-160kg per year. Rice plays a vital role in economic growth, poverty reduction and food security in this region. However, sustainable and profitable rice production were the major issues, particularly in rainfed rice-based production systems which associated with widespread food insecurity in the region. A step towards addressing the challenges of increasing the food demand and reducing poverty is to increase sustainably the agricultural productivity especially of small holder farms. It is believed that System of Rice Intensification could be instrumental in developing sustainable solutions to local agricultural problems for smallholders who have fewer economic inputs but who have better control over their resources.

A collaborative partnership with each country is needed to address the issues and hence, SRI-LMB project are aligned with the respective government programs for smallholder farmer's capacity building and empowerment within context of food security and improved livelihoods. The SRI-LMB project (<http://sri-lmb.ait.asia/>), which is stretched to 60 months (2013-2017) across four

LMB countries: Cambodia, Laos, Vietnam and Thailand, has marked its project activities into three phases. The first phase (1-12<sup>th</sup> month) is assigned for project preparation phase, while the actual implementation of the project activities is earmarked for phase two (13<sup>th</sup> till 48<sup>th</sup> month), and the third phase (49<sup>th</sup>- 60<sup>th</sup> month) is exclusively assigned for reporting and documentation of the project results and learning.

The initial first year of the project is basically focused on setting of the project structure and operational planning at local, national and regional levels. An overall project planning was held through Regional Planning and Inception Workshops and set up regional steering committee, and provide overall strategic direction to the project among all stakeholders. A baseline survey was hence planned in the project initiation phase, as an integral part to support the design of these CFPAR activities by establishing prioritized working issues for CFPAR and FPAR conduction in each province, as well as developing CFPAR and FPAR training curricula. After the kick-start of the project, PRA and baseline survey, setting up CFPAR through several intensive slot of Training of Trainer's (ToT) and subsequently FPAR activities were planned in all target provinces.

This report basically details the baseline findings. The findings include generic demographic information, existing situations with regard to farm characteristics, socio-economic conditions, access to productive capital, agricultural practices, farming decisions, cost and benefit, and SRI-specific practices. The findings will be used to assess and benchmark the existing parameters, and will be used to compare with the situation in next three years. They were also used for design of training interventions, including CFPAR curriculum and training module design and design of field experiments. In addition, baseline results are also considered important at the later stages of the project for Monitoring, Evaluation and Impact (MEI) study, a significant component of the project.

## 2.0 MATERIALS AND METHODS

### 2.1 STUDY AREA

A baseline survey was carried out in 30 districts from 10 provinces from four countries viz. Cambodia, Laos, Thailand and Vietnam. Three provinces each from Cambodia and Laos, and two

provinces each from Thailand and Vietnam were selected for the study. Kampong Speu, Kampot and Takeo provinces from Cambodia, Savannakhet, Khammouan, and Vientiane provinces from Laos, Uttaradit and Surin provinces from Thailand, and Bac Giang and Ha Tinh provinces from Vietnam were chosen for the study (Fig 1). In each province, three districts were chosen for the project implementation. These provinces were chosen based on their subsistence rain-fed paddy cultivation, dominance of smallholder farmers, climate risks, and overall food insecure condition. Selected farmers were interviewed using the set of questionnaire for gathering information on demographic, socio economic and farmer’s practices of rice cultivations. A detailed information for geographic, climatic and demographic could be found in the baseline survey report of each country.



Fig 1. Selected provinces for the baseline survey for the project implementation

## 2.2 SELECTION OF THE STUDY AREA

The selection of districts in each province was done by provincial working team with support from national working team of the SRI-LMB, using the following selection criteria:

- ✓ Rice cultivation as a main crop
- ✓ General interest and awareness to explore SRI with respect to their own management practices
- ✓ Presence (and support) of local NGOs and local government working and supporting SRI-like activity
- ✓ Has good number of on-going FFS activity and FFS graduates

## 2.3 SELECTION OF THE RESPONDENTS

Selection of the respondent was preceded with series of activities, such as village immersion and community meetings with farmers and their leaders. During these meetings, the objectives of the project were shared and initial interests of farmers were registered. Local project partners took a lead in identifying the farmers from their respective areas. The respondents for baseline survey were randomly selected by the study team. A total of 353 households were interviewed across the ten provinces in four countries. In Cambodia, 134 households were interviewed which consist of 48 farmers from Takeo, 48 farmers from Kampot and 38 farmers from Kampong Speu provinces. In Laos, 90 households were interviewed, 30 each from Savannakhet, Khammouan, and Vientiane provinces. Whereas in Thailand, 69 households were interviewed from two provinces, 33 in Uttaradit and 36 in Surin. In Vietnam, 60 households were interviewed, 30 each from Bac Giang and Ha Tinh provinces. At least 10 farmers from each district were selected in Vietnam and Thailand and more in case of Cambodia and Laos.

Some of the selection criteria used was;

- Enthusiastic rice farmers and have access to supplementary irrigation, if needed;
- Having interest to participate in the project activities and meetings especially on FFS day (3-4 per FFS cycle);
- Willing to learn and share knowledge from participation to project activities;
- Willing to apply learning from project to their own farm;

- Growing rice crops per year and owning their own land;
- Basic communication and literacy skills, but illiterates were not excluded though not preferred for the CFPAR; and
- Selection of gender balance (50:50 men and women) respondents, inclusive two landless from each district.

## 2.4 PRE BASELINE TRAINING TO THE NFE TRAINERS

A pre-baseline training was provided to the local Non-Formal Education (NFE) trainers (10 in each of the provinces) for a coordinated understanding of the objectives of the baseline survey, procedural detailing of conducting the survey, and gathering the completed and robust data. During the training, the survey questionnaire was pre-tested in the field and subsequent changes were made and the questionnaire was finalized.

## 2.5 CONDUCTING THE BASELINE SURVEY

The Baseline survey was conducted using a detailed questionnaire and a snapshot of the questionnaire is presented in Table 1. The questionnaire focused on various aspects relating to the SRI principles and scope of the project, along with basic demographic information of the selected sites, socio-economic aspects, and status of gender and landless/land-poor. The survey questionnaire drafting process consisted of identifying an overview of trends and challenges in the crop production, and use of secondary data. More detailed questionnaire was hence developed for identifying the problems in the current rice cultivation practices and SRI with following steps:

- Problem identification;
- Establishing and revalidating 2-3 most important local constraints with emphasis on the prioritization of economically important problem related to rainfed rice production systems;
- Identification and listing of technical options for experimentation to address the problem; and
- Crop calendar development

**TABLE 1 STRUCTURE OF THE SURVEY QUESTIONNAIRE**

<b>Category</b>	<b>Variables</b>
General information	<ul style="list-style-type: none"><li>- Age</li><li>- Sex</li><li>- Education level</li></ul>
Farm characteristics and socio-economic condition	<ul style="list-style-type: none"><li>- Total rice area</li><li>- Crops grown</li><li>- Average farm production (total)</li><li>- Source of income</li><li>- Type of off farm activities</li><li>- Household food autonomy</li></ul>
Access to productive capital	<ul style="list-style-type: none"><li>- Agriculture land</li><li>- Large and small livestock</li><li>- Farm equipment's</li></ul>
Agricultural practices	<ul style="list-style-type: none"><li>- HH members employed in agriculture</li><li>- Total rice growing area in the village</li><li>- Number of rice growing season/year</li><li>- Total rice production</li><li>- Familiarity with SRI</li></ul>
Farming decision	<ul style="list-style-type: none"><li>- About what to grow in the home garden</li><li>- About what to grow in the agricultural land</li><li>- About adopting new practices</li><li>- About using pesticides</li><li>- About selling the crops that are not consumed in the HH</li><li>- About spending the money from the crops sold</li></ul>
Cost and benefit	<ul style="list-style-type: none"><li>- Average cost of inputs (fertilizer + seed + pesticides + electricity + land tax + manure</li><li>- Cost of labour</li><li>- Average rice price</li><li>- Cost of cultivation and net return</li></ul>
If practicing SRI	<ul style="list-style-type: none"><li>- Why prefer SRI</li><li>- Why not prefer SRI</li></ul>

## 2.6 DATA ANALYSIS

IBM SPSS Statistics 21 was used to perform various exploratory and descriptive statistical analysis and tests. Statistical tests were performed by using analysis of variance (ANOVA) and Chi-square test was performed for comparing the distribution of answer across the countries.



## 3.0 RESULTS AND DISCUSSIONS

### 3.1 GENERAL BACKGROUND OF THE RESPONDENTS

Demographic information such as age, sex, and education level of household head are important influencing parameters for adoption, dis-adoption or non-adoption of new agricultural practices. These parameters also hold importance for agricultural labour which may affect the agricultural practices and overall production.

#### 3.1.1 Gender Distribution of the Respondents

Chi-square test on gender distribution shows that there is a significant differences across the countries, with higher percentage of male farmers in Cambodia, Laos and Vietnam, in contrast to higher percentage of female farmers in Thailand (Fig 2). The combined analysis of data at regional level indicates that 37% were headed by female farmers out of 353 total households from four countries. Of the total of 134 household surveyed in Cambodia, around 75 % of the household were headed by male and 25 % were female. Similarly, 74 % in Laos and 58 % in Vietnam were headed by male farmers which was in contrast to 71 % were headed by female farmers in Thailand. Since, the objective of the project is to select gender balanced participation and strengthen the role of women in farming community, selection of 25, 26, 71 and 42 % of household headed by women farmers in Cambodia, Laos, Thailand and Vietnam, respectively, is the positive sign for the women involvement in the project.

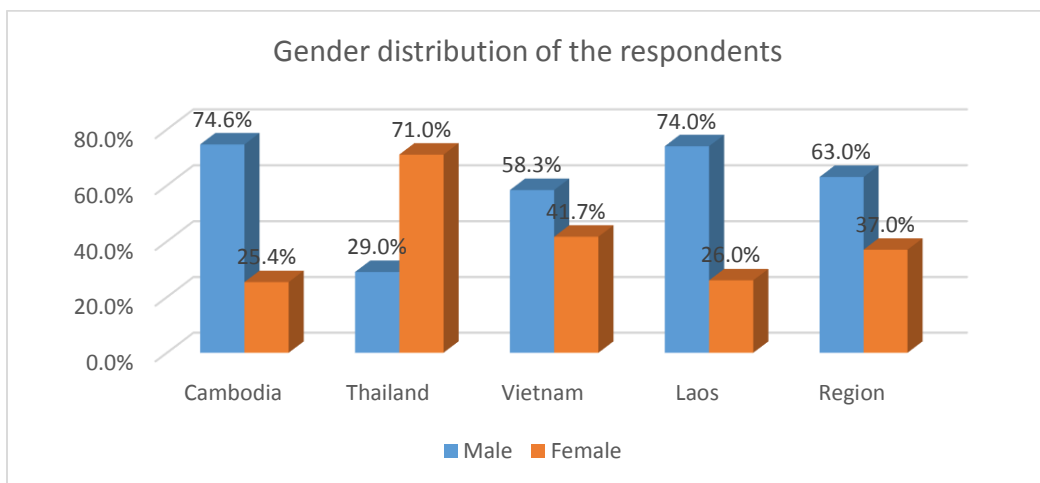


Fig 2. Gender distribution of the surveyed households across the countries.

### 3.1.2 Age of the household head

The average age of household head in the study area also differ significantly (F test) across the countries (Table 2). The interviewed household head in Vietnam and Laos were comparatively younger than in Cambodia and Thailand. The average age of household head at regional level was 51 years. Chi-square test for distribution of age group among the countries showed significant differences and majority of the farmers were lies between 41-50 and 51-60 years age group. At regional level, 31, 28 and 23 % of the farmers were in the age group of 51-60, 41-50 and beyond 61 years, respectively. Only 18 % of farmers were less than 40 years in regional level though Laos have comparatively younger farmers than other countries.

**Table 2. Average age of household head and age group distribution in LMB region**

	Average age in years	% of the respondents in each age group				
		<30	31-40	41-50	51-60	>61
Cambodia	55.00	3.00	7.00	21.00	31.00	38.00
Thailand	55.00	2.00	7.00	37.00	25.00	29.00
Vietnam	47.00	8.00	15.00	28.00	40.00	8.00
Laos	46.00	3.00	32.00	33.00	29.00	3.00
Regional	51.00	4.00	14.00	28.00	31.00	23.00
Significance	*** <sup>a</sup>	*** <sup>b</sup>				

a F test for average age for comparing the countries

b Chi-square test for distribution of age group among the countries

### 3.1.3 Formal education of household head

The results show that there was a significant difference among the countries on formal education of household head (Fig 3). The majority of the farmers had either primary or secondary education across the countries. Around 76, 62, 78 and 37 % of household head have primary school education in Cambodia, Thailand, Vietnam and Laos, respectively. However, 15 % of household head each from Vietnam and Laos, and 6 % in Thailand had no education. The low number of farmers had above secondary school, 7 % in Thailand and 3% in Vietnam.

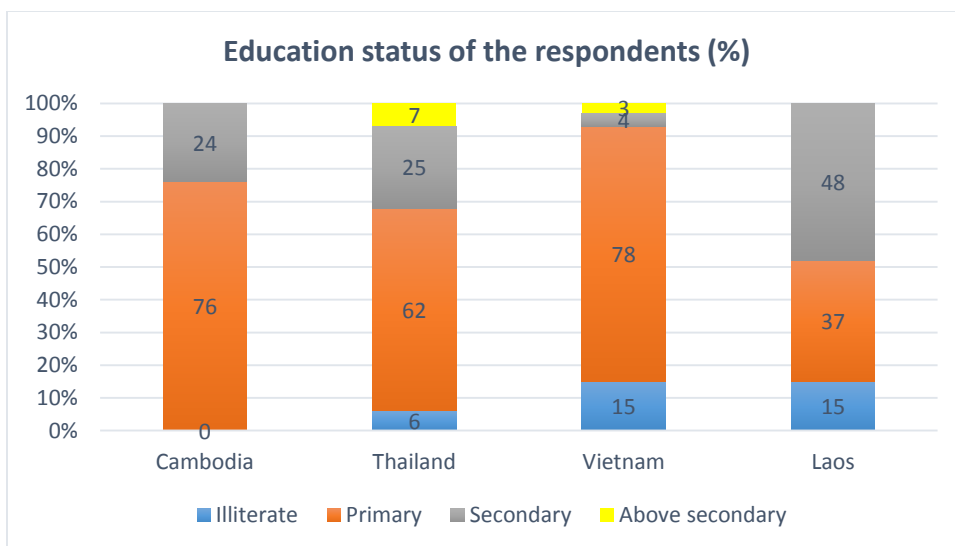


Figure.3 Education status of the household head in the study area

### 3.2 FARM CHARACTERISTICS AND SOCIO-ECONOMIC CONDITION

Farm characteristics are important parameters in relation to the overall project activities, which is focused on the rice farming intensification through SRI practices. This section describes the rice growing area, seasons, yields, off-farm income and household food autonomy from the household survey.

#### 3.2.1 Rice growing area, yield and experience

There was a significant difference among the study countries on rice growing area in the village, rice seasons, average rice areas per households, average yield, and years of farmer's experience in rice cultivation (Table 3). An average the surveyed farmers had experience in rice cultivations for 22-28 years except Laos where farmers had only 7 years of experience.

Table 3. Rice growing area, seasons and experience in rice cultivation in the study areas

	Cambodia	Thailand	Vietnam	Laos	Regional	F test
Experience in agriculture (years)	28	25	22	7	26	***
Rice growing seasons (numbers)	1.41	1.44	1.83	1.23	1.52	***
Average rice area per HH (ha)	1.21	3.2	0.62	2.0	1.7	***
Average rice yield (ton/ha)	2.6	3.3	4.8	2.7	3.35	***

Rice area per household was higher in Thailand (3.2 ha) followed by Laos (2.0), Cambodia (1.21ha) and Vietnam (0.62 ha). However, rice cropping intensity were higher in Vietnam, 83 % of the households grow rice in two seasons, compared to other countries. Average rice yield also higher in Vietnam (4.8 ton/ha) compared to 3.3 ton/ha in Thailand, 2.7 ton/ha in Laos and 2.6 ton/ha in Cambodia. At regional level, rice area per household was 1.70 ha and yield was 3.35 ton/ha.

### 3.2.2 Source of off-farm income and their importance for the households

Off-farm income plays a vital role for the farmers and landless in improving the livelihoods and also for risk aversion in adopting new agricultural practices. The results from our study showed that one or more household members had some form of off-farm activity for income generation in addition to cultivation of rice on own (Fig 4). At regional level, around 50 percent of the household had some kind of off-farm income. The percentage of households having off-farm income was higher in Cambodia (59%), followed by Thailand (51%), Vietnam (47%) and Laos (34%). The households also indicated that off-farm income is very important for their households for livelihood and food security (Fig 4). Percent of income from rice farming with respect to total household income was 21 % in Cambodia, 62 % in Thailand while percentage of off farm income with respect to the total annual income was 40 % in Cambodia and 48 % in Thailand. Rice contributes 63 % of total income in Vietnam in the selected provinces.

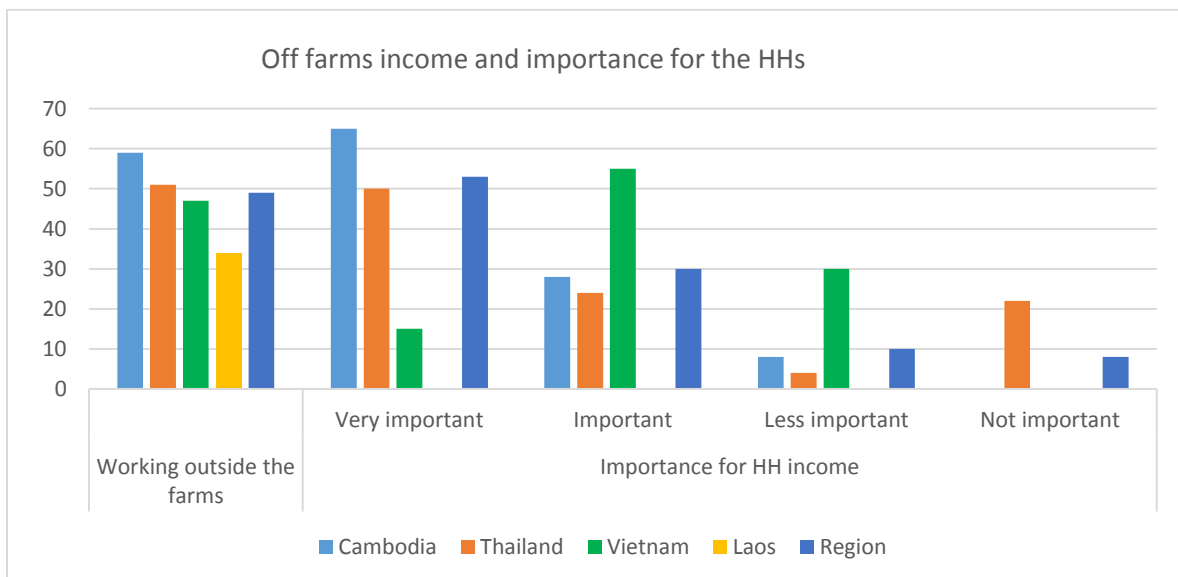


Figure 4. Off-farm income and importance for household

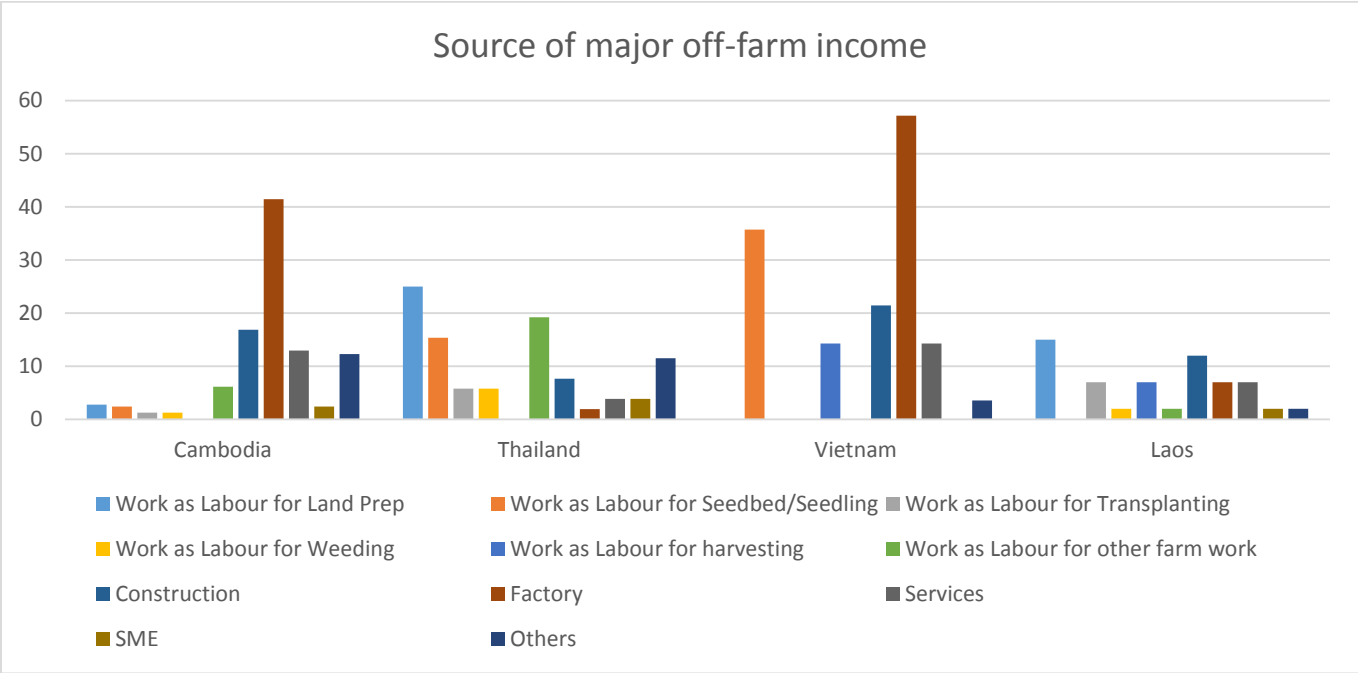


Figure 5. Source of off-farm income in LMB region

Major off farm income were the factory, construction and services in Cambodia, work as labor for land preparation and other farm work in Thailand, factory work, seed bed preparation and construction in Vietnam, land preparation, construction and factory work in Laos were the major source of off-farm income. Whereas, working in factory were the major source of off-farm income in Cambodia. However, working in construction was the second most important source of off-farm income in all the countries (Fig 5).

### 3.2.3 Household food autonomy

There were no significant differences in household rice sufficiency among the countries (Fig 6). Around 88 % of the surveyed households from Cambodia and 92 % in Vietnam and 79 % in Laos had sufficient rice for whole year. In Thailand, all the household had sufficient rice production for whole year. At regional level, 90 % household had enough rice for 12 months. Depending credit to buy food varies largely among the countries, around 50 % of household depending credit to buy food in Thailand and Cambodia which was in contrast to only 7 % in Laos and no households in Vietnam (Fig 7).

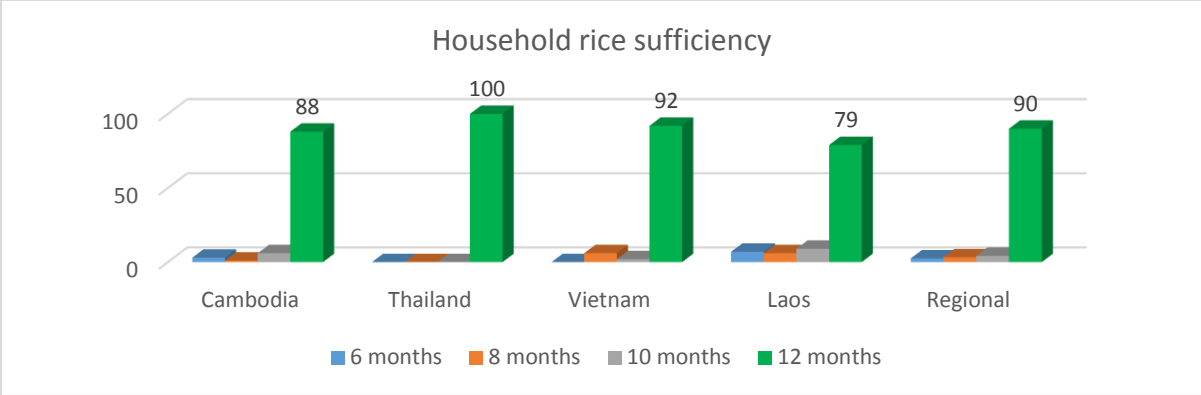


Figure 6. Household rice sufficiency in LMB region

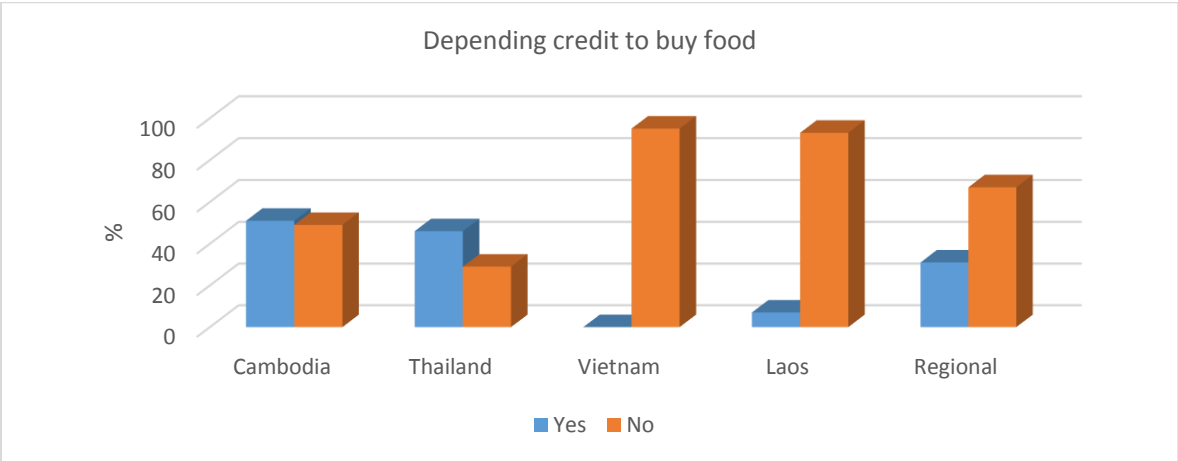


Figure 7. Depending credit to buy food in LMB region

### 3.3 ACCESS TO PRODUCTIVE CAPITAL

Baseline survey captured the information’s on access to productive capitals such as agricultural land, livestock, chickens, fish and farm equipment which are pivotal component for the farmer’s livelihoods. The results from surveyed households shows that there were significant differences among the countries in access to agricultural land, large livestock, fish pond, farm equipment’s both mechanized and non-mechanized (Table 4). However, there were no significant difference among the countries in access to small livestock and chickens/ducks.

**Table 4. Access to productive capitals ( answers are in percentage)**

Particulars	Answer	Cambodia	Thailand	Vietnam	Laos	Regional	Chi-square test <sup>1</sup>
Agricultural land	Yes	91	96	100	98	95	**
	No	9	4		2	5	
Large livestock	Yes	81	32	72	81	72	**
	No	19	68	28	19	28	
Small livestock	Yes	31	28	48	36	35	NS
	No	69	72	52	64	65	
Chickens/Ducks	Yes	80	79	80	88	82	NS
	No	20	21	18	12	18	
Fish pond/fishing equipment	Yes	13	44	17	42	25	***
	No	87	56	83	58	75	
Farm equipment (non-mechanized)	Yes	20	83	82	74	69	***
	No	24	12	18	26	31	
Farm equipment (Mechanized)	Yes	8	74	15	80	41	***
	No	36	26	85	20	59	

<sup>1</sup> chi-square test- testing the distribution of answer across the countries.

The landless constitutes around 9, 4 and 2 % of the surveyed households in Cambodia, Thailand and Laos, respectively. There were 81 % of the households each from Cambodia and Laos have large livestock such as cattle, buffaloes' and cows which was in contrast to only 32 % in Thailand and 72% in Vietnam. Many households in the LMB region do not have small livestock such as pigs and goats, only 28-48 % of households have small livestock. Nevertheless, 80-88% of the households have chickens/ducks mainly for home consumption rather than selling to market.

The results also indicate that more households (42-44%) in Thailand and Laos have fish pond than Cambodia and Vietnam (13-17%). The higher percentage of surveyed households in Thailand (74-83%) has access to farm equipment both mechanized and non-mechanized than in Cambodia (19-56%). Use of two wheeler tractor in the selected provinces of Laos is about 86 % though only 34 % of the households owning the machinery according to FAO report on Lao census of Agriculture, 2014. However, 82 % of households in Vietnam have access to non-mechanized farm equipment though only 15% of them have mechanized farm equipment's. Thailand has more mechanized farm equipment's which might be due to comparatively large rice areas than other countries and also due to increasingly shortage of labour and also due to increasing labour wage.

At regional level where SRI-LMB project has been in force, 95 % of the households have access to agricultural land while 5 % were landless. This statistics shows that during survey only 5% landless's household were surveyed because landless do not stay in village, ofte move to city areas of jobs.

Regarding livestock's, 72 % household have large livestock and 82 % of households have chickens/ducks. However, only 35 and 25 % of households have small livestock and fish, respectively. Similarly, mechanized farm equipment was lower in the region with 41 % of the household have access to it though 69 % of the farmers have non-mechanized farm equipment's.

### 3.4 GENDER ROLE IN DECISION MAKING ON FARMING AND RELATED ACTIVITIES

Gender plays a distinctive role in decisions making in farming and related activities. In this baseline survey, decision making were reflected based on who makes the decision on the following parameters:

- About what to grow in the home garden
- About what to grow in the agricultural land
- About adopting new practices
- About using pesticides
- About selling the crops that are not consumed in the HH
- About spending the money from the crops sold

The overall farm and related decision making is presented in Table 5, where decision making among the countries varies greatly in all the parameters except on adopting new practices which have similar pattern of decision making in all the countries. There is a general proposition that mostly woman makes decision on home gardens while man makes decision on agricultural crops. However, our baseline results on home garden shows that 44-58% of the households takes decision jointly by both man and woman across the countries. Nevertheless, woman dominates in decision making on home garden (35 % by woman) in Laos. Similar to home gardens, decision making on what to grow in agricultural land also mostly by both man and women jointly though it varies greatly among the countries and 70, 64, 55 and 38 % of households taken jointly in Cambodia, Laos, Vietnam and Thailand, respectively. The next major decision by man (only/mostly by man) on agricultural land (14-36%) than woman (15-25%) across the countries. At regional level, the decision making on agricultural land were 63, 21 and 16 % by jointly, by man (only/mostly), and by woman (only/mostly), respectively.



**Table 5. Gender role in farming decisions (%) in LMB region**

Particulars	Answer	Cambodia	Thailand	Vietnam	Laos	Regional	Chi-square test <sup>1</sup>
Who decides what to grow in the home garden?	Man only	13	6	22	10	15	***
	Mostly man	14	29	15	6	14	
	Both jointly	53	44	58	49	52	
	Mostly woman	6	18	0	21	10	
	Woman only	6	3	5	14	8	
Who decides what to grow in the agricultural land?	Man only	6	19	18	9	9	*
	Mostly man	7.5	17	12	11	12	
	Both jointly	70	38	55	64	63	
	Mostly woman	11	15	10	11	11	
	Woman only	5.5	10	5	5	5	
Who decides of adopting new practices?	Man only	17	22	18	20	18	NS
	Mostly man	18	25	14	27	21	
	Both jointly	55	29	48	43	50	
	Mostly woman	4	12	15	6	6	
	Woman only	6	12	5	4	6	
Who decides of using pesticides?	Man only	25	26	18	25	24	***
	Mostly man	19	28	32	23	24	
	Both jointly	33	26	30	40	35	
	Mostly woman	3	7	13	8	6	
	Woman only	4	12	7	5	5	
	No response	16	1	0		13	
Who sells the crop that are not consume in the HH?	Man only	0	17	2	1	5	***
	Mostly man	5	12	3	3	5	
	Both jointly	38	25	53	50	44	
	Mostly woman	26	32	35	19	27	
	Woman only	22	13	7	27	19	
Who decides how to spend the money from the crops sold?	Man only	1	12	17	1	9	***
	Mostly man	5	9	0	4	5	
	Both jointly	41	25	72	52	49	
	Mostly woman	21	38	5	27	22	
	Woman only	20	16	7	16	16	

The decision making behavior of households on adopting new practices is very important for wider dissemination of the technology such as SRI. The pattern of decision making on new technology were not significant across the countries. In other words, decision making on adopting new technology is similar in all the countries. At regional level, 50, 38 and 12 % of the households makes decision jointly, only/mostly by man, and only/mostly by woman, respectively. The similar trend were noticed in all the countries except in Laos and Thailand where higher percentage of decision taken by man followed by jointly and woman.

As expected in pesticides use, the higher percentage of decision were taken by man (44-50 %), followed by jointly (26-40%) compared to 7-20% by woman across the countries. At regional level, the decision making on pesticides use were 48, 35 and 11% by only/mostly by man, jointly, and only/mostly by woman, respectively. In contrast to this, the decision on selling crops were taken mostly by woman (42-48%), than jointly (25-53%) and man (4-29%) across the countries. However, large percentage of household jointly taken the decision on spending money from sold crops in all the countries except in Thailand where 54 % of the household taken decision by women. At regional level, decision on spending money from sold crops were 49, 38 and 14 % by jointly, woman and man, respectively.

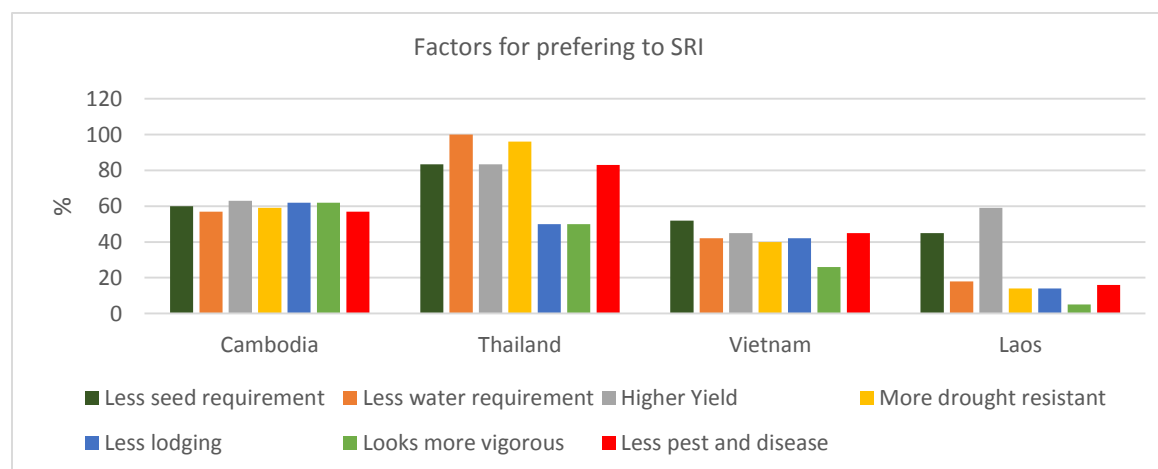
### 3.5 SRI RELATED PARAMETERS IN THE STUDY AREA

Baseline survey tried to capture the farmers' familiarity and specific knowledge on SRI and their current status of SRI adoption which are important information for the project on SRI techniques. The baseline study indicates that there were significant differences among the study countries with respect to farmer's knowledge on and with experiences in SRI (Table 6). The awareness on SRI was higher among the farmers in Cambodia (71%) followed by Thailand (15%), Vietnam (10%) and Laos (2%) in the project area. This was due to active promotion of SRI in Cambodia by CEDAC., especially in the provinces selected for the project implementation. The lack of awareness among the farmers (85-98%) on SRI in other three countries will be the big opportunity for the project to create awareness and promote SRI in large-scale. Some farmers were not responded for SRI related questions because they might be adopting few SRI practices rather than whole set of SRI practices. Hence, some farmers were in dilemma for answering the SRI related questions particularly in Vietnam and Thailand because some farmers were adopting one or two SRI practices, for example, planting one to two seedlings per hill, or adopting wider spacing which they think that this would not come under SRI. SRI known farmers has been practicing or practiced SRI in their own farms (42 % in Cambodia, 22% in Vietnam) or gained experience while working on other SRI farms ( 27 % in Cambodia, 13 % in Vietnam).

**Table 6. Farmer's knowledge and experiences in SRI methods**

Particulars	Answer	Cambodia	Thailand	Vietnam	Laos	Regional	Chi-square test <sup>1</sup>
Do you know SRI	Yes	71	15	10	2	34	***
	No	29	78	68	98	61	
	No response		7	22		5	
Practiced SRI in own farm?	Yes	42	9	22	1	25	***
	No	58	75	50	99	69	
	No response		16	28		5	
Practices SRI in other farms?	Yes	27	3	13	2	18	***
	No	72	75	55	98	69	
	No response	1	22	32		13	

The factors influencing the farmers for preferring or adopting SRI in four countries is presented in Fig 8. All the factors were placed almost equal importance in Cambodia though it varies in other countries. The top most three common factors across the countries for preference to SRI were less seed and water requirement and higher yield, though other factors placed almost equal importance in each country. The top most reasons for farmers adopting SRI in Cambodia were higher yield, less lodging and more vigorous, less seed requirement. Whereas in Thailand, less water requirement, more drought resistant, less seed requirement and higher yield were in the order of importance for preferring to SRI. In Vietnam and Laos, less seed, higher yield and less pest and disease were the major reasons for adopting SRI.



**Figure 8. Factors influencing the farmers to prefer SRI in LMB region**

The study reveals that SRI practices such as more weed infestation, snail problem and lower yield were the major factors for dis/non-adopters of SRI in Cambodia. Whereas in Thailand, water management problem, more weed infestation and more labour were mentioned as major factors for non-adoption of SRI. Low yield, planting much younger seedling and difficulty in transplanting were the major factors for non-adoption for Vietnam and Laos. However, during national inception workshop in Laos, farmers found SRI was a new technology with many steps involved, technical backstopping by extension workers was highly needed, and farmers did not have a good understanding and lacked skills on SRI. This resulted in SRI perceived as time consuming and less labour available in the village due to labour migration.

#### 4. CONCLUSION

The baseline survey highlighted the existing demographics and farming characteristics of the chosen study sites from four LMB countries. Some of the distinct information acquired from this survey will be utilized in stipulating the right project interventions. The baseline results revealed that there is a scope for SRI training and action research in the selected 10 provinces in four countries as majority of the respondent farmers are unaware or unfamiliar with SRI. Hence, gathering their interest in imparting new knowledge through farmers training and action research can be carefully thought of and implemented. This baseline survey fulfills an immediate objective of selecting the farmers for CFPAR and their involvement in action research. In the long run, these baseline results will also be useful for benchmarking and monitoring the differences in post-SRI intervention in these areas.

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