



SECOND REGIONAL REVIEW AND PLANNING WORKSHOP HANOI, VIETNAM 23-25 APRIL, 2017

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

REPORT



AIT
Asian Institute of Technology



Regional Review and Planning Workshop, 23-25 April 2017, Hanoi, Vietnam
Sustaining and Enhancing the Momentum for Innovation and Learning around the System of Rice Intensification (SRI) in the Lower Mekong River Basin



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Workshop Report

Second Regional Review and Planning Workshop

23-25 April, 2017, Hanoi, Vietnam



Organized by the ACISAI, AIT
Hosted by the Plant Protection Department, Vietnam

Partners



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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 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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ACRONYMS

ACISAI	Asian Center of Innovation for Sustainable Agriculture Intensification
AIT	Asian Institute of Technology
DAEC	Department of Agriculture Extension and Cooperative
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FPARs	Farmer’s Participatory Action Research
GDA	General Directorate of Agriculture
GOV	Government of Vietnam
LMU	Local Management Unit
MAF	Ministry of Agriculture and Forestry
MAFF	Ministry of Agriculture, Forestry and Fisheries
MARD	Ministry of Agriculture and Rural Development
MoAC	Ministry of Agriculture and Cooperatives
PCU	Project Coordination Unit
PMU	Project Management Unit
PPD	Plant Protection Department
SRI	System of Rice Intensification
SRI-LMB	Sustaining and Enhancing the Momentum for Innovation and Learning around the System of Rice Intensification (SRI) in the Lower Mekong River Basin

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EXECUTIVE SUMMARY

The second Regional Review and Planning Workshop of the SRI-LMB Project was held at Hanoi, Vietnam, on 24 and 25, April 2017. The event was organized by the Asian Center of Innovation for Sustainable Agriculture Intensification (ACISAI) of the Asian Institute of Technology (AIT) and hosted by the Plant Protection Department (PPD) of the Ministry of Agriculture and Rural Development (MARD), Vietnam.

The objectives of the workshop were: to share learnings from the Farmer Participatory Action Research (FPAR) activities of the Project; to learn from regional initiatives focusing on similar activities in the Mekong Basin countries and beyond; to discuss government policies for food security and sustainable agriculture/ rice development within the context of productive water management and climate-change adaptations in the Mekong region; to review Project activities; and discuss strategic directions, and finalize the work plan of various Project teams for 2017.

About 50 persons participated in the workshop. Participants included representatives from PPD, MARD, and Hanoi University of Agriculture, Vietnam; General Directorate of Agriculture (GDA), Ministry of Agriculture, Forestry and Fisheries (MAFF), Royal University of Agriculture and Agroecology Learning alliance in South East Asia (ALiSEA), Cambodia; Department of Agriculture Extension and Cooperative (DAEC), Ministry of Agriculture and Forestry (MAF), Lao PDR; Rice Department, Ministry of Agriculture and Cooperatives (MoAC), Ministry of Education (MOE) and Mekong Institute, Thailand; Sustainable Rice Platform, Philippines; Olam International Ltd., Singapore; the Food and Agriculture Organization (FAO) of the United Nations; Oxfam America; SRI-Rice Cornell University; University of Reading UK; University of Queensland; AIT and the EU Delegation to Thailand. A New Zealand-based independent consultant, and expert farmers from SRI-LMB Project in all four partner countries and India were also among the invitees.

The two-day workshop was preceded by a field visit to Bac Giang province. The first day of the workshop was earmarked for learning exchange. Presentation of key learnings from SRI-LMB Project was complemented by the keynote address on how farmer organization has the potential to reach out and benefit more and more farmers and how mutually beneficial partnership between farmer organization and private sector can help farmers to profitably engage in market economy. Various agro-ecological approaches like conservation agriculture and integrated, participatory farming systems development, and their importance were discussed. Policies concerning food security and sustainable agriculture in relation to water management and climate change adaptation in all four SRI-LMB Project countries were presented. It was concluded that all countries are now-sufficient with respect to rice requirement and are even exporting. With present emphasis in all policies on enhancing

productivity and profitability in a sustainable manner, crop intensification and hence, SRI, is very relevant for all countries.

Supportive policy environment needed by the small-scale farmers, and initiatives and opportunities which could help in retaining younger generation of farmers in agriculture, and connecting them better to the markets, were also analyzed and deliberated upon.

The second day was mainly focused on review of Project activities in various countries, experience sharing by farmers and country coordinators and future planning. Higher yield and higher profits were reported from all four countries. Taking this learning forward, importance of and opportunities existing in the region for scaling up and scaling out were discussed. Each Project Country, other partners and advisors highlighted areas for action to take the Project activities forward.

Overall, the two-day deliberations revealed that the SRI-LMB Project has resulted in impressive gains for the farming community. All partners are interested in scaling up and scaling out Project activities. The workshop concluded with recommendations to continue working with SRI and conservation agriculture to sustainably intensify agriculture for quality and profitable produce, create and strengthen market opportunity for farmers and work with farmers on compliance with market standards.



1. BACKGROUND

The Asian Center of Innovation for Sustainable Agriculture Intensification (ACISAI) at Asian Institute of Technology (AIT, www.ait.asia) is leading an European Union-financed project entitled “Sustaining and Enhancing the Momentum for Innovation and Learning around the System of Rice Intensification (SRI) in the Lower Mekong River Basin (SRI-LMB: <http://www.sri-lmb.ait.asia/>), in partnership with the Food and Agriculture Organization of the United Nations (FAO), Oxfam America, SRI-Rice of Cornell University, USA, the University of Queensland, Australia, and government ministries and national universities of Cambodia, Laos, Vietnam and Thailand. ACISAI has been implementing a “more intelligent pathway” for cultivating healthy and profitable rice under climate change scenario. SRI is an alternative set of principles and methods to conventional rice cultivation techniques that instills a social dimension to farming, to produce healthy and profitable crops using less water and seed, through skillful management of plants, soils, water, nutrients, pests and labour.

The Project is being implemented in food-insecure rainfed rice production areas of the Lower Mekong River Basin countries. The objective is to develop location-specific crop management practices using the principles of SRI and Farmer Field School (FFS) platforms, by initiating and facilitating farmers’ participatory action research. Documenting the results and sharing them with the immediate farming community and communities at large through an inclusive participatory process, from local to national and regional levels, represents the core *modus operandi* of the project. The government policies within the context of sustainable agriculture development and climate-resilient, food-secure rainfed smallholder systems have been taken into consideration while designing the project activities. Evidence-based options for a better set of policies are being generated through a participatory consultation process working closely with all relevant stakeholders, including policy-makers in the country.

A series of actions have been undertaken under the auspices of the Project since 2013, including a regional Training of Trainers course, 2 regional workshops, 6 national workshops, 10 season-long Central Farmer’s Participatory Action Research (CFPAR) trainings, regional farmers’ exchange visits, 17 provincial workshops and a Farmers’ Congress. Concurrent to these activities, research on SRI adaptation responses by farmers, on the macroeconomic study of small-scale farmer’s investment in LMB countries and economics of SRI practices and on the public- private policy environment for the development of smallholder agriculture was also conducted.

The initial learning and feedback from 60 action-research sites, which was received in 2015 from local and national stakeholders, including implementing government agencies, revealed that

adaptation of SRI principles definitely increased rainfed paddy yields and net on-farm returns with reduced use of purchased inputs. The first Regional Review and Planning workshop, which was conducted in 2015, deliberated these initial learnings and incorporated feedback and suggestions from all partners, local to regional, to strengthen the conduction of next cycle of FPARs. The chief recommendations were to increase the number of FPAR locations and also the area under field experimentation and under SRI demonstration in all four countries, utilizing the SRI principles as much as possible in given location-specific circumstances.

Following that, field activities were conducted at >171 Farmers' Participatory Action Research (FPAR) sites in the wet season 2015 involving more than 7000 farmers and at >400 FPARs in wet season 2016 involving more than 11000 farmers in 33 districts of 11 provinces across all four countries (3 in Cambodia, 3 in Lao PDR, 3 in Thailand and 2 in Vietnam). More than 500 field experiments and locally-suited SRI demonstration plots were set up by farmers for the development of low-cost technological options in rainfed production systems using SRI principles. Hand-to-hand research was conducted to 'visualize' the SRI adaptation response by farmers, and policy analysis was done within the context of economics and public-private environment for small-scale agriculture development in the Mekong region.

With this background, the second Regional Review and Planning Workshop (RRPW) was planned to share the learning derived from the action-research sites, to jointly review project activities undertaken since 2013, to develop evidence-based policy options for recommendation, and to collect feedback from the various stakeholders, developing a way forward for the improvement of the learning and for sustainability of the improved practices.

The workshop was organized at the Hotel Hilton Garden Inn, Hanoi, Vietnam by ACISAI, AIT and was hosted by the Plant Protection Department (PPD), Ministry of Agriculture and Rural Development (MARD), Vietnam.



2. OBJECTIVES OF THE WORKSHOP

- To share learnings from the FPARs conducted in 33 districts of 11 provinces in Cambodia, Thailand, Lao PDR, and Vietnam.
- To learn from other regional initiatives implemented in the Mekong River Basin countries on similar practices.
- To discuss current government policy for food security and sustainable agriculture/rice development within the context of more productive water management and climate-change adaptations in the Mekong region.
- To review the project activities involving implementing partners, project associates, and Project Steering Committee.
- To discuss strategic directions and finalize the work plan for the next cycle of action research in consultation with national and local project partners.

3. PARTICIPANTS AND SESSIONS

Approximately 50 persons participated that included representation from the Plant Protection Department (PPD), Ministry of Agriculture and Rural Development (MARD), Vietnam; General Directorate of Agriculture (GDA), Ministry of Agriculture Forestry and Fisheries (MAFF), Cambodia; Department of Agriculture Extension and Cooperative (DAEC), Ministry of Agriculture and Forestry (MAF), Lao PDR; Rice Department, Ministry of Agriculture and Cooperatives (MoAC), Thailand; representation from national universities; representatives of Food and Agriculture Organization of the United Nations (FAO); Oxfam America (OA); SRI-Rice Cornell University; University of Reading, UK; University of Queensland, Australia; representative of Olam International Limited; representative of Sustainable Rice Platform UNEP/IRRI; Rapid Asia Thailand; Mekong Institute Thailand, and the representative of the Delegation of the European union to Thailand.

4. TOPICS/ACTIVITIES COVERED

The three-day engagement during the RRPW focused on the following key activities:

1. Day 1 (23rd April) Field Visit to the Bac Giang province (For details refer to Annex 2).
2. Day 2 (24th April) Plenary and Learning Exchange Session
3. Day 3 (25 April) Review and Planning

For further details, refer to the workshop schedule attached as Annex 3, and for the speaker's brief bios, Annex 4.



4.1 PLENARY AND LEARNING EXCHANGE SESSION (24 APRIL, 2017)

4.1.1 WELCOME ADDRESS, OPENING REMARKS AND KEYNOTE ADDRESS

His Excellency, **Mr. Nguyen Quy Duong**, the Deputy Director General of PPD, MARD, representing the host, warmly welcomed all participants. He recalled that SRI in Vietnam was introduced in 29 provinces with funding support from Oxfam. The formal recognition of SRI practices as a “Technical Advance” in October 2007 by the Ministry of Agriculture and Rural Development was a significant milestone in SRI promotion. All those efforts have led to more than two million farmers adopting SRI practices at present in Vietnam. He discussed the key details of the rice production scenario in the country. While production has increased, so have constraints and risks, like greater costs of production, climate change and negative impacts on human health and environment as a result of agricultural practices adopted. He recognized that SRI has the potential to mitigate some of the concerns and constraints. He acknowledged that since it began working in two provinces in 2014, the SRI-LMB Project has contributed to the country’s food security and that the related work would continue even in the future.

Opening Remarks

Dr. Abha Mishra, Team Leader, SRI-LMB Project and Director, ACISAI, welcomed all participants, thanking all of them for coming to the workshop. She expressed her gratitude to the PPD for hosting the workshop and to the EU for providing funding support to the project. She mentioned that SRI-LMB has completed its four years of journey working with more than 15 institutions in the region. Through its collaborative effort, the project has progressed well despite some minor ‘hiccups’ which was experienced during the journey. She further drew attention of the participants that the project is being implemented in 33 districts of 11 food insecure provinces of Cambodia, Laos, Vietnam and Thailand. So far, the project has involved more than 11,000 farmers directly with more than 57% women participation, and have reached out to another 30,000 through Field Day, local workshop and Farmer’s Congress. Utilizing the project implementing consortia, which is functional at local, national and regional level, the project has achieved its goal in terms of enhancing productivity and profitability by utilizing household resources efficiently. However, this alone cannot address the issues of food security. Apart from water and climate change variability, the project has witnessed, that at the household level, the food price instability further damage vulnerable livelihoods. And farmers’ gain that they achieve through their knowledge intensive and creative efforts gets disappear. This needs to be addressed by creating opportunity for smallholders. It means heterogeneity of smallholder farms needs be taken into consideration and flexibilities needs to be built in the system.

Now, with stakeholders from diverse professional sectors and backgrounds available in the workshop, from farmers to donors, government to research institutions and private sectors, it is an opportunity for all of us to learn from each other, to reflect on our work, gain critical feedback and plan our future work.

Following this, **Ms. Ana Maria Pena Segura**, representing the Delegation of the European Union to Thailand, spoke to the participants. She noted that the EU was pleased to fund the SRI-LMB project, which had reached out to many thousands of farmers. Project activities, like involving farmers in laying out more than 400 field experiments based on SRI practices, have resulted in positive outcomes. They are very timely considering that we face some very complex challenges, like climate change. They are also relevant in the light of the Sustainable Development Goal 2, concerned with ending hunger, achieving food security, improved nutrition, and promoting sustainable agriculture development, for which the EU is fully committed. She encouraged the participants to actively discuss and share their experiences, with respect to project results and national policies. It is only with proper modifications to our actions and policies that favorable changes achieved through the project can be sustained. She thanked the PPD for hosting the workshop and the participants for attending it, and extended a warm welcome to all of them.

Keynote Address

Presenting the keynote address that he prepared with **Dr. Norman Uphoff, Dr. C.M. Wijayaratna** focused on issues concerning the scaling-up of SRI practices. He said this is important now since there is enough evidence that SRI is beneficial, for increasing yield, poverty reduction, environmental benefits and other reasons. He drew the attention of the participants to the fact that the social capital plays an important role in ensuring the food security and well-being of small-scale farmers. It can also be very useful for scaling-up SRI practices. He discussed experiences from the Gal Oya Irrigation Management Project in Sri Lanka (1979-85) which had demonstrated the importance and effectiveness of collective action, and how it had been applied in working with farmers and scaling-up SRI in the Chattisgarh Irrigation Development Project (CIDP) rehabilitation efforts in India (2011-12). Farmers were mobilized into organizations for collective action on many issues, including SRI demonstrations and extension. This showed how a farmer organization/farmer company approach had the potential to reach out and benefit more and more farmers. Mutually beneficial partnership between farmers organizations (FOs) and private sector entities should and would help farmers to profitably engage in market economy. The government agencies can expand their services, such as agriculture extension and input services, more efficiently if they work through FOs and farmer companies. Once farmers are successful on the agronomic side, how can they be as successful on the economic side? How can they avoid their agronomic success leading to economic setbacks? These questions are crucial for food security.



Therefore, SRI programmes and initiatives should consider how farmers' organizations (FOs), their networks and ensuing farmer companies can mobilize and manage collective action to enhance agronomic efficiency, farmer incomes, and agroecological sustainability. Projects may provide at least project-specific coordinating mechanisms (and assist the government in establishing gradually the necessary legal and regulatory mechanisms). Mainly because most of the farmers are smallholders with poor resource endowments, the strengthening of FOs to efficiently organize and manage collective action will be the key requirement. SRI can produce a large volume of value-added from rice production, but this should benefit whole communities (and countries) rather than just individual farmers.

The Keynote was followed by a discussion on whether some of the benefits observed in the CIDP project with collective action, such as labour reduction with SRI, were universal. **Dr. Vannasouk**, the DDG, DAEC, MAF, Laos was skeptical about it since, he said, in the past, farmers in Laos reported greater labour requirement with SRI. **Dr. Mak Souen**, the DDG, MAFF, Cambodia further added, saying there was experience and research to back the comment; and if labour savings happened, it depended on multiple factors, like for example, the variety cultivated. **Dr. Wijayaratna** said research from CIDP showed that seven labour days were saved per hectare because of SRI adoption, but was open to the idea expressed by others. **Dr. Abha Mishra** clarified that since we all work with heterogeneous communities and areas, no technology fits all, and hence, benefits cannot be universal, if we apply uniform practices. For example, if the transplanting is not a conventional practice and if we are introducing transplanting as a part of SRI recommendation instead of direct-seeding, this would indeed increase the labour demand. Location-specific SRI adaptation is the key for achieving higher yield with reduced cost of cultivation. Baseline/conventional practices and location-specific heterogeneity should be taken into account for designing SRI activities and training needs.

Dr. Wijayaratna was asked if having lead farmers to mobilize farmer groups and organizations was essential. He responded that while it was a good idea to have a local person known to the community, it is cost-effective to have external, trained community mobilizers. Lead farmers often emerge over a period of time, and they could then be involved more closely with our efforts.

4.1.2 SUSTAINABLE AGRICULTURE INTENSIFICATION IN ASIA AND BEYOND

Session Chair: Dr. **Max Whitten**.

4.1.2.1. Soil Health for Sustainable Agricultural Intensification: Some Perspectives

Dr. Amir Kassam drew the attention of the participants to the annual loss of 10 Mha of agricultural land because of soil degradation. Tillage, one of the most common agricultural practices

followed throughout the world, is a key contributor to this. It makes the soil susceptible to breaking down of the soil structure and erosion, leading to degradation, including the destruction of soil microflora. Being a part of all ecosystems, soils provide us with various services, including provisioning, but not only food, regulatory and cultural services.

With stagnating crop yields being a key concern worldwide, there is high interest in 'sustainable intensification' of agriculture, to help us gain the highest possible production with greater efficiency while reducing the damage to agro-ecosystem functions and increasing their resiliency. Conservation Agriculture (CA), which replaces mechanical tillage with biological tillage and maintains permanent organic soil mulch cover and cropping system diversity, can help to improve productivity and profitability, minimize degradation, reduce purchased inputs, and energy and labour requirement, and harnessing of ecosystem services..

Several crops, including rice, are amenable to CA, which has been increasing at the rate of 10 Mha per year worldwide since 2008; as of 2013, CA was practiced on 157 Mha across the globe, at various scales, in most agro-ecologies. CA-based rice production systems are practiced in parts of South Asia and South America. Scaling up CA requires farmers organizing themselves into cooperatives, associations and networks, policy support, especially the removal of contradictory policies, equipment availability and institutions, which will support infrastructure development, policy advocacy, media outreach, training and facilitation of participatory engagement of stakeholders, especially farmers.

4.1.2.2. Regional Rice Initiative: Updates, Results to Date & Future Planned Work

Mr. Johannes Willem Ketelaar discussed the links between rice and poverty, and the need for enhancing productivity and profitability of rice cultivation. With more land, labour and water moving out of rice cultivation in Asia, there is a need for farmers to learn how to save the resources and continue on the path of healthy farming; this formed the basis for FAO's Save and Grow campaign. The Regional Rice Initiative (RRI) is a part of this campaign and contributes to FAO's second strategic objective, to 'make agriculture, forestry and fisheries more productive and sustainable.'

Rice farming systems in Southeast Asia are not only about growing rice. They ensure multiple goods and services beyond crop yields, like fish and other aquatic resources, which have economic and nutritional significance for the farm families. So sustainable intensification of rice also means that the focus of the activities is more comprehensive, inclusive of other sub-systems, like the aquatic systems. The RRI is working in Indonesia, Phillipines and Lao PDR, helping farmers through capacity building and contributing to policy development. The Farmers Field School approach adopted in the programme also works with various practices of interest to SRI-LMB programme. Mr. Ketelaar then

discussed the project results from the Phillipines, Indonesia and Lao PDR, all of which showed positive outcomes in comparison with the control plots. Finally, he outlined the work plan of the RRI for 2017 and beyond.

4.1.2.3. Saguna Rice Technique – A Conservation Agriculture, Zero Till, Farmer-friendly, Climate-Smart Path for Rice Farming

Mr. Chandrashekar Bhadsavle provided the details of the Saguna Rice Technique (SRT), a no-till method of rice cultivation he developed after experimenting on his farm since 1998-99. With this, no puddling (tillage) or land preparation is necessary every year. A permanent raised bed is constructed into which rice is sown using a dibbling frame costing about USD 30. The result is a healthy and profitable crop. Both roots and shoots grow robustly, and a better yield is got, compared to conventional rice plots. The costs of production is reduced because of lower water and inorganic input use. Mr Bhadsavle informed that more than 3000 farmers in his area have adopted SRT, because of which they are happy. SRT involves SRI principles of younger seedling (or direct seeding), wider spacing and mainly aerobic soil. When permanent soil mulch is maintained on raised beds, SRT cropping system involving several crops is a Conservation Agriculture system. **Mr. Vannasouk** commented that only the advantages of SRT were discussed and questioned if that was indeed the case; he pointed out that with CA, weedicide application could increase. **Mr. Bhadsavle** replied that the advantages weighed out the disadvantages, if there were any. He said he was a farmer, not a researcher, and others were welcome to study SRT to identify the disadvantages.

4.1.2.4. Key Learning from the SRI-LMB within the Context of Food Security, Water Management and Climate Change Adaptation

The recommendation of the Committee on World Food Security on the need for focusing on smallholder farmer development, and that of the ASEAN on why rice is important for the food security concerns in Southeast Asia, formed the background of the presentation made by **Dr. Abha Mishra**. She mentioned that rice occupies 60% of the total cropped area in Thailand and Vietnam and almost 90% in Cambodia and Lao PDR. Not only that, ASEAN is the largest exporter of rice and contributes almost 55% of the total export volume. These statistics is closely linked to four LMB countries and therefore they are important member states in achieving food security for ASEAN and also for the world. Rice sector in these countries are dominated by smallholders and therefore, in the context of climate change scenario, the challenges to produce more food with ferwer resources are compounded by other challenges, such as limited access to and the productivity of household resources and heterogeneous production systems facing diffrenent types of constraints. Smallholders often react differently to new market opportunity and therefore they need to be involved differently.



She informed the participants about the genesis and development of the SRI-LMB project by providing details on the key milestones and ideas which drove the project. The World Bank-supported workshop of 2009 which highlighted the necessity for a regional and national and local platforms for coordinating actions to address the concerns related to food security and livelihoods of resource-poor farmers in the LMB countries; availability of prior experience of working with SRI in Cambodia and Thailand at AIT; the advantages of SRI practices, i.e., it doesn't rely on external input intensification, which allow experimentation by smallholder farmers to address location-specific needs, utilize resources efficiently, especially external inputs, and have the potential to increase crop yields; the project ideas and activities which fit into the AIT research strategy: Sustainable Land and Water Resource Management and Business and Innovation Model for a Green Economy; and the establishment of ACISAI as a regional platform at AIT, were all linked to how the project got off the ground. Importantly, it has to be noted that ASEAN Integrated Food Security framework and Strategic Plan of Action for Food Security includes SRI and conservation agriculture to be implemented as climate smart agriculture in ASEAN Member States. Therefore, SRI-LMB intervention is aligned with national, regional as well as global policy.

She then provided a brief overview on various project activities and the implementation structure, how different farmer practices are understood in relation to SRI and conventional practices, and the process of data collection, management and analysis followed at local, national and regional level.

Following this, **Dr. Suresh Lokhande**, Research Specialist, ACISAI, AIT, presented the key learnings from the SRI-LMB Project utilizing the FPAR learnings. These were derived from data analysis comparing SRI practices and SRI-transition practices (SRI-T - mix of SRI and locally adapted practices - transitioning towards SRI) from 2015, and baseline survey information (for conventional practices), across SRI-LMB countries.

The results were clustered under some of the Sustainable Rice Platform (SRP) performance indicators, such as improved farmer livelihoods (productivity, profitability and labor productivity), resource use efficiency (water productivity, Inorganic fertilizer use efficiency and total energy input) and climate change mitigation (greenhouse gas emissions) and were presented reflecting the national as well as regional trend and compared with the baseline scenario.

He explained that the SRI practices helped to improve livelihoods across the LMB region by increasing rice yield (66% w.r.t. baseline) and net returns (70% w.r.t. baseline). Analysis showed that the labour use efficiency increased with SRI practice along with higher water productivity and inorganic fertilizer use efficiency. At regional level, 31 Kg of rice was produced per Kg of inorganic fertilizer, i.e. 30% more than that reported in literature. The total energy input in farming decreased

by 37%. It is clear that there is a potential to reduce greenhouse gas emissions by encouraging adoption of SRI practices.

To the question on why SRI plot in Cambodia reflected higher energy use with respect to baseline, **Dr. Suresh** replied that it was because more fertilizers and more labour were used there; about 50-60% of total energy calculated in the analysis was related to fertilizer use. This may change depending on the methodology used for the calculation and also depending on the production environment.

The SRI-LMB Project video commissioned by **ACISAI** was also screened during this session. The video can be viewed at: <https://www.youtube.com/watch?v=gu4f1JXOT9c&feature=youtu.be>

4.1.3. GOVERNMENT POLICY FOR FOOD SECURITY AND SUSTAINABLE AGRICULTURE / RICE DEVELOPMENT WITHIN THE CONTEXT OF WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE MEKONG REGION

Session chair: **Mr. Johannes Willem Ketelaar.**

4.1.3.1 Cambodia

Dr. Mak Soeun, the DDG, MAFF, Cambodia noted the challenges for agriculture and food security in Cambodia - climate change, global and regional competition, use of land, water and biodiversity, and increased competition for land and water use by other sectors. He then outlined the policy landscape, comprising two policies: 1) Rice Production and Export Policy, and 2). Cambodia Industry Development Policy 2015-2025, and also three plans:

- 1) Agricultural Sector Strategic Development Plan, 2014-2018;
- 2) Cambodia Climate Change Strategic Plan, 2014-2023; and
- 3) Food Security and Nutrition Strategic Plan, 2014-2018,

These policies influence food security and agriculture including rice production. He discussed the agricultural vision of the country, said to be in line with that of the ASEAN.

The Agricultural Sector Strategic Development Plan, 2014-2018, fits into the National Strategic Developmental Plan. It has a target of achieving 5% annual growth through five different programmes. One of these five programmes focused on enhancement of agricultural productivity, diversification and commercialization. And emphasis is not only on quantity, but also on quality and safety of agricultural produce. Concept of resilience, resource-use efficiency and sustainability figures prominently in various plans and policies. Dr. Mak Soeun then focused on the four pillars of the rice

production and export policy, and explained how SRI practices played an important role in some of them. For instance, in case of a public-private partnership project involving agriculture value chain development and contract farming, SRI practices were being adopted for getting better grain quality for exporting. They were also being used to produce seed material for further distribution among farmers. He ended his presentation with the question on how Cambodia could export to the EU market and link SRI farmers better to the market.

4.1.3.2 Thailand

Ms. Ladda Viriyangkura, Senior Specialist on Rice Inspection and Certification, Thailand Rice Department, Ministry of Agriculture and Cooperatives (MoAC), Thailand explained that Thailand is a leading agricultural exporter with no trade deficit, but there are risks and constraints being faced – the aging farming population, more poverty among farming households and their increasing debt, high reliance of the sector on export markets for produce sale and on imports for agricultural inputs, and climate change were prominent among them. She discussed the influence of global and national factors, including the Self-Sufficiency Policy of the Royal Thai Government, and world consumption trends, on Thai agriculture. The agricultural development plan focused on development of production systems, infrastructure, farmer organizations and natural resource management. She emphasized that there is a need for integrating the four approaches: community-based, household-based, and commodity-based, issue or function-based to agricultural development to get the best results.

She discussed the elements of sustainable agriculture that agricultural development projects need to consider and outlined the various factors influencing the restructuring of Thailand's production and marketing systems. These include those related to promotion of intensive, site-specific agricultural technologies, including mechanization, agricultural production information management, supplying quality inputs to farmers, value addition of agricultural products and setting up mechanisms including certification, to ensure product quality and traceability. The strategy is to tap all markets, from local to future markets, by involving all stakeholders, from farmers to private sector and consumers, to make agriculture profitable to everyone concerned with it. These are expected to lead towards the various goals set: primary (improving productivity and produce quality, reducing costs of production) and intermediate goals (enhanced competitiveness of the sector) are linked to the ultimate goals of greater national food security and export earnings, and quality of life for the farmers. Various programmes are in place to improve food safety, food security, farmer wealth and agricultural sector sustainability.

Development Plan for Agriculture is part of the National Strategy No. 3, for strengthening economy on a sustainable basis. It specifically recognizes conservation and management of natural resources including water and soils, and the need to increase their use-efficiency, while focusing on

development of forward and backward linkages to agriculture. The Climate Change Master Plan is also considered separately, alongside Agricultural Development Plan, in the overall National Development Plan. The strategy formulated for the Climate Change Master Plan for 2017-2021 has a vision of making Thai agriculture resilient to the vagaries of climate change and has various strategies outlined to move towards it. These are related to information and knowledge management concerning climate change and raising awareness among the citizens about the various issues involved, strengthening the capacity of the farmers and associated institutions and businesses to cope with climate change, developing an environment-friendly growth model and participating in global efforts to mitigate climate change and strengthening the capacities of officials and managers to deal with climate change in agriculture.

She then discussed elements of sustainable rice cultivation in Thailand based on Sustainable Rice Platform (SRP) guidelines and indicators, and Good Agricultural Practices (GAP) indicators, and the current status of rice policy in Thailand. The government wants to target 62.12 million rai of the total 67.13 million rai rice area cropped in the first and second seasons, to produce 27.17 MT of rice. This is to be achieved by adopting a large field approach, using intensive farming methods, including mechanization. Good Agricultural Practices (GAP) will be emphasized, including sustainable water management and lowering of risks through the Cost Reduction Scheme. The farmers will be encouraged to grow other crops in the remaining area; especially during the first season, mixed cropping and livestock rearing are to be promoted on 0.57 million rai area. During the second season, corn will be promoted on 2 million rai area, green manures on 0.5 million rai and other crops on 0.3 million rai area. Improving soil fertility management is planned on 3.19 million rai area. Those cultivating rice for a third season, on a total of 1.8 million rai area will be encouraged to shift to other crops.

4.1.3.3. Vietnam

Mr. Nguyen Quy Duong provided a brief overview of the agricultural sector in Vietnam and outlined the key challenges- the small-scale of farming (average land area per household is 0.41 ha), climate change and the need for economic integration. To cope with these, the government is keen on restructuring the agricultural sector. In June 2013, the Prime Minister approved a project promoting value addition in agriculture and ensuring that the sector contributed to sustainable development.

In May 2016, the Minister of Agriculture and Rural Development promulgated a decision approving a programme for restructuring the rice sector by 2020, with a vision until 2030. The objective of the programme is to improve the efficiency in rice production to achieve food and economic security; it was also expected to assist in creating more jobs, improving incomes, accessing

global markets, environmental protection and sustainable development. Specific targets for greater usage of certified seeds, adoption of sustainable agricultural practices, enhancing farmer profits, reducing post-harvest losses and greenhouse gas emissions and trading are set to be achieved by 2020 and 2030. Working with farmer institutions, ensuring food quality, safety and nutrition, focusing on gender issues related to rice cultivation and international cooperation were some of the key issues linked to the above.

The priorities for the government include ushering reforms in science and technology sector and increasing expenditure on research and development, enhancing infrastructure spending and reforming various policies concerning food and agriculture sector, eg., related to land, food security, rice land. Currently, restructuring of the rice sector is already being attempted as part of the Vietnam Sustainable Agriculture Transformation (VNSAT) Project in two major production areas.

4.1.3.4. Lao PDR

Dr. Tiene Vannasouk provided the general profile of the country and its agriculture sector. He outlined the importance of agriculture and rice cultivation for the country's economy and household food security, respectively. The Ministry of Agriculture and Forestry (MAF) has **four** core programmes: 1) food security and nutrition, 2) commodity production, 3) sustainable forest management, and 4) rural development, and poverty eradication.

He provided key agricultural production statistics, detailed some of the key changes happening in recent times and constraints being faced, with respect to the agriculture sector. Generating 23 percent of the country's GDP, agriculture sector is very important for the economy of Laos. The total land area available for agriculture in the mountainous country is 4.5 million ha, or about 18 percent of the country's total land area. Of this, area that could be available for rice cultivation is 2 million ha, while 1.78 million ha and 0.67 million ha are set aside for other crops and grasslands, respectively. Only about half the area available for rice, about 0.96 million ha, is currently cropped, producing 4.2 million tonnes (2015).

While rice is the most important crop, there are two macro changes which could impact its cultivation. One, Laos is encouraging domestic and Foreign Direct Investment (FDI) for cultivation, processing and marketing of commodity crops like rubber, coffee, cassava, banana, maize sugarcane and tree crops like eucalyptus and acacia, with a focus on involving smallholder farmers in these activities. This could mean area and farmers shifting away from rice cultivation. Secondly, land available is also being allocated for other sectors, including infrastructure development, on activities like mining, road construction and hydroelectricity generation projects. This could take away lands from agriculture, including rice cultivation.

The key constraints faced by the agriculture sector, including rice cultivation, includes: predominantly small-scale production dependent on traditional practices, low productivity and quality of agriculture produce, weak farmer institutions, limited adequate policy support, including limited access to credit, high costs of production and transportation, weak linkages of the farmers with the markets and low engagement of public-private-partnerships in agriculture.

This was the background for the presentation of the 'Agriculture Strategy 2020 and Long-term Vision of the Lao PDR'. The vision for the agriculture sector as per the plan documents necessitates that it contributes to the national food security and also industrialization and economic growth. Specific goals and targets for production and export of various crops and commodities, including rice, have been set as per the plan. Accordingly, it is expected that with an annual growth rate of 5.5 percent, 4.7 to 5.0 million tonnes of rice will be produced annually by the year 2020, with 70 percent of it being sticky rice. This accounts for all uses of rice including household consumption, seed production, domestic processing, maintaining reserve stock and exports. Particularly related to exports, with set target of 1.5 million tonnes by 2020, the government is interested in promotion of traditional varieties with market demand, such as, Khao Kham (dark rice), Khao Khai Noy and other local aromatic rice varieties.

Key comments from the session

The Session Chair, Mr. Jan Ketelaar, commented that the country presentations provided an insight into the substantial gains made in the agriculture sector over the last 20 years; all countries are now-sufficient with respect to rice requirement and are even exporting. With present emphasis in all policies on enhancing productivity and profitability in a sustainable manner, crop intensification and hence, SRI, is very relevant for all countries. **Dr Abha Mishra** reinforced that ASEAN Integrated Food Security framework and Strategic Plan of Action for 2015 to 2020 for Food Security includes SRI to work on climate change adaptation, which also makes SRI relevant to the countries and for the region as a whole.

4.1.4 MICRO AND MACROECONOMICS STUDY AND POLICY RESEARCH IN THE CONTEXT OF SMALL-SCALE AGRICULTURE, NETWORKING, AND MARKET DEVELOPMENT IN THE MEKONG REGION

Session Chair: **Dr. Amir Kassam.**



4.1.4.1. SRI-LMB Policy Research and Policy Advocacy Options

Ms. Sopheavy Ty, Head of Portfolio Management Unit, Asia and Pacific, Oxfam America, explained that policy research was analysis of various governmental and non-governmental policies and practices which affect the smallholder farmer livelihoods. This is done so that pro-poor options can be evolved to be used in policy advocacy. She updated the participants with activities concerning policy research and advocacy carried out in the SRI-LMB Project, including the desktop review baseline research on policies carried out in 2016. For each of the project countries, she discussed the focal areas of activities, the rationale for their prioritization and background, and what has been done.

In Cambodia, women empowerment was emphasized because despite gender-related issues receiving policy attention, their implementation is weak. So Oxfam America trained rural women in agricultural extension so that they could provide paid service to farmers; Women Farmers Forum was established to facilitate the reach of women smallholder farmers to other stakeholders, especially the policy makers. The complex and contradictory policies existing necessitated efforts for their careful analysis, and the support from multiple stakeholder including bilateral and multilateral agencies which collaborate with the government and civil society organizations was effectively used for policy advocacy.

In Lao PDR, they focused on ensuring that the voices of the women and smallholder farmers were heard by other stakeholders, including policy makers, development agencies and research institutes, during policy formulation and programme development. The Laos Women Union which they supported has effectively engaged other stakeholders in this direction.

The National Socio-Economic Development Plan encourages the smallholder rice growers especially in the uplands to continue to be productively engaged in agriculture. Also the country's overall industrial policy has been reshaped from encouraging resource extraction to promoting cottage industries; this supports local production and consumption, and improving product quality while ensuring competitive prices for producers, to ensure the sustainability of activities. In order to ensure that these policies actually benefit the smallholders and women farmers however, it was essential that they engage with relevant stakeholders. This was the basis for Oxfam's activities. They also tried to engage other actors like the civil society organizations and farmer cooperatives in their efforts, including the private sector specifically in rice value chain development. Efforts were also directed for changing the role of public extension from that of a service provider to being a facilitator who will coordinate development of smallholder farmers.

In Thailand, Oxfam collaborated with the Research Centre of Communication and Development Knowledge Management (CCDKM) to link the country's SMART farmers to the ASEAN-SMART Farmer network using Information and Communication Technology (ICT). Many factors

influenced this engagement. Thailand, compared to other project countries, is more agriculturally developed, and provided a good platform to work with ICT. The activity also aligned itself with the Philosophy of the Self-Sufficiency Economy and The New Theory of Agriculture policy, which are the guiding principles behind the ‘Thai Development Way’ promoted by the government. This initiative has the potential to assist poor farmers engaged in contract farming, who typically had lower bargaining power. And finally, it would help in understanding better the impact of global markets on smallholders.

In Vietnam, in association with many other stakeholders, they focused on advocating for policies which would support improve the rice quality in the domestic market, as part of the in the soon-to-be formulated Socio-Economic Development Plan (SEDP).

The organization thinks there is a need for incentives to promote private or farmer-led extension services, input registration and regulations to protect the poorest while facilitating contract farming. Overall, there is a need to review the new agriculture restructuring process with a specific objective of ensuring that smallholder farmers benefit. In Vietnam, Oxfam has been working with SRI over the last 10 years and the return to investment is more than 3000%.

On **Mr. Vannasouk** seeking clarification on ‘SMART’ farmers, she said they were young farmers, who were being assisted to return to farming and practice it in a profitable and sustainable way. **Mr. Mak Souen** inquired about the quality checking of agricultural extension services by rural women, comparing them to government extension services which underwent periodic assessments. **Ms. Sopheavy** said it was a question for Oxfam Cambodia to answer.

4.1.4.2. Implication of Macroeconomic Growth on Small Scale Farmers in Lao PDR, Cambodia, Thailand and Vietnam

Mr. Hemantha Kumar Pamarthy, Consultant, Rapid Asia (sub-contracted by Oxfam for the study) provided the overview of the study, including details on team members involved, key areas investigated, design and analytical framework. He noted the importance of agriculture sector in the respective economies of various SRI-LMB countries. He drew the attention of the participants that over time, based on the importance of agriculture but also on a host of other factors, countries could be classified into various stages of development, leading from intensification to expansion, to diversification; the last stage being when migrants shifted from farming to other occupations. Accordingly, among SRI-LMB countries, LAO PDR was assigned the ‘Intensification’ category while Cambodia was considered to be in the ‘Expansion’ stage; Vietnam was midway in between ‘Expansion’ and ‘Diversification’, while Thailand was said to be in the ‘Diversification’ stage. He discussed the case study done in Thailand and based on the outputs as well as the desk study, provided broad

recommendations for improving the livelihoods of the small scale farmers. These ranged from educating farmers to building their capacities in financial management; from improving the infrastructure along the rice value chain to land distribution.

4.1.4.3. Economics of Rice Production Under Different Production Techniques

Ms. Sobia Asghar presented her analysis on the economics of rice production under different production techniques with data gathered in SRI-LMB Project. After introducing the project, she discussed the details of the problem analysis exercise for Cambodia, Thailand and Vietnam. Depending on the crop practices adopted, she informed how the suite of production techniques adopted in various experimental sites were classified as SRI, SRI-Transition (SRI-T) and Conventional Practices, for the purpose of the study. This was followed by presentation of results of analysis comparing the different techniques with respect to various parameters like yield, cost of cultivation and net returns.

She concluded that at regional level, SRI techniques ensure food security by providing highest yield compared to other practices. She noted that yield and market price play an important role in determining economic benefits accruing to the farmers. Finally, she pointed out that despite lower yields obtained, Thai farmers are better off than those in other two countries because of higher market prices for their produce received. She recommended that experiments with farmers should focus on reducing chemical inputs in Vietnam; and that price regulation policies should be implemented for improving the farmer income.

On being asked about why produce price varied with spacing, she replied that this issue needed more investigation, and is possibly related to many factors such as variety, place of sale and grain quality. **Dr. Wijayaratna** said the analysis shows that crop economics from SRI practice adoption is positive, but while attempting cross-country analysis, it would be good to also include information on macro indicators like government spending on providing inputs to the farmers and pricing policy. **Dr. Amir Kassam** questioned why no soil deterioration was seen in Thailand, unlike other countries. **Ms. Asghar** replied that she worked with data already collected, but it could be because the organic matter content in Thailand is more compare to other countries, while pesticide usage is lower. **Ms. Lucy Fisher** asked while labour costs for transplanting is shown as being on the higher side, if it has been accounted that the labour for nursery raising and transporting them to the main fields can be lower.

Dr. Abha Mishra clarified that as far as price of the produce is concerned, the economic anlaysis has been done using farmgate price which varies from district to district and province to province. The second factor is the variety of the paddy rice that farmers are growing under SRI. For example, in Thailand some of the farmers are growing Rice Berry which fetches 4 times higher market

price compared to other varieties. Third factor is the purpose “why they are growing”. Many SRI-LMB farmers are involved in seed business and they use SRI method for seed production. Seed produced with SRI method gets higher price in the market. And lastly, the government policy that drives the adoption and the decision taken by the farmers. In Thailand, for the year 2015-16 government policy supports the production of organic, jasmine and glutinous rice. In Sisaket province, farmers are growing completely organic and they have reported higher price for their produce. Therefore, there are multiple factors that can influence farmer’s net return. But overall, there is a uniform positive trend at the regional level. Farmers and country team have reported higher yield with reduced input cost (and cost of cultivation) so this results into higher net return.

Regarding soil deterioration in Thailand, she added that as a part of Thai government policy, farmers in Northeast Thailand are encouraged to grow quality/organic rice. And as a part of training intervention, government provides training on indigenous organic fertilizer production and usage. Also organic rice has higher market price. This is contributing to soil fertility along with higher profitability to farmers. Regarding **Ms. Lucy Fisher’s** query on labour cost for transplanting and labour for nursery raising, she informed that almost 90% farmers use direct seeding for the rice cultivation. The reason is that transplanting requires at least 15 labours/ha and the cost of one labour is 300 – 400 Thai Baht. This increases the cost of cultivation significantly. Whereas, for the direct seeding, there is a direct seeding machine available at the community center. Farmers need to pay 300 Thai Baht only to rent the machine. The machine can be adjusted to maintain the wider spacing and it takes only ½ hr to complete the sowing.

Transplanting is followed by those farmers only who are involved in seed business or in quality rice production. Indeed, the labour use is increased in this case but labour use efficiency and productivity and profitability also increased, as reported in the results presented in the morning session and also by Sobia.

4.1.4.4. Transforming Rice Value Chains: The Sustainable Rice Platform (SRP)

Mr. Peter Sprang drew the attention of the participants to the importance of rice globally, and especially in Asia, where in addition to being the most important food item, it is also a cultural heritage. He discussed the need to enhance productivity and production in the face of increasing world population. He pointed out that rice cultivation, if attention is paid to conservation and efficient utilization of resources, and granting women equal access to resources in the process, provides us with an opportunity to contribute significantly to move towards attaining seven of the Sustainable Development Goals by 2030. The SRP is trying to contribute in this direction.



The SRP was founded as a public-private initiative by UN Environment (UNEP) and International Rice Research Institute (IRRI) in 2011 with the objectives of reducing vulnerability, enhancing food security and resource efficiency; serve as a knowledge hub; and catalyze sector transformations through alliances by creating shared value. It presently has more than 70 institutional members including research institutes, international organizations and NGOs. It has developed the world's first rice sustainability standard with active involvement of IRRI, which is set to be revised in 2017. The platform has a goal to ensure that one million farmers adopt climate-smart best practices in the next five years (2017- 2021).

He thought the SRI-LMB project experience could be useful for SRP. He also shared a message by SRP Coordinator, **Dr. Wyn Ellis**, who congratulated the SRI-LMB Project and thought that there was an opportunity here for all involved to benchmark SRI guidelines with SRP standards. The SRP General Assembly and First Global Sustainable Rice Conference and Exhibition to be held during 4-5 October 2017 (UN Convention Center, Bangkok, Thailand) would provide participants with further opportunities to learn about SRP.

To the question on whether adoption of SRP standards was voluntary or mandatory, **Mr. Sprang** replied that it was voluntary.

4.1.4.5. Better Rice Initiative Asia, Sustainable Rice Platform and opportunity for SRI-LMB farmers

Mr. Paul Nicholson, Vice President, Rice-Research and Risk Management, Olam International Limited, Singapore, introduced the participants to his company, Olam International. It is a 20 billion Singapore dollars company, and as world's second biggest trader, deals with 40 commodities, including two million tons of rice per year. He explained his company's interest in working with sustainable rice value chain. There are many risks confronting rice trading business, including: global warming; water risks, which develop from increasing urbanization that pushes agriculture to less fertile areas; land degradation and agri-input usage, which can affect food safety; supply and policy risks arising out of increasing population and demand for rice, and shifting agriculture and trade policies. These risks affect rice supply chains and increase the costs.

On the positive side, there have been developments which are encouraging for Olam, including: lower costs of new technology which makes working with various stakeholders cost-effective; increasing public-private partnerships replacing the former mistrust that many had on private sector; increasing consumer demand for sustainable products; and encouraging government policies which support sustainable practices. These enabled the company to be interested and link its business with sustainability.



Olam works with World Resources Institute's model for sustainability. This has a three step process:

- 🌱 Count it – which involves identifying solutions, and developing standards and monitoring indicators, and developing programmes for farming systems development,
- 🌱 Change it – involves collaborating with national governments and international organizations for taking up pilot projects, and
- 🌱 Scale it – involves reaching out to large numbers of farmers.

4.1.4.6. Make Markets Work for the Poor: A Case of Rice in Khammouane Province, Lao PDR

Mr. Hung Cuong, Director, RLED-EWEC Project, Mekong Institute, Thailand, provided the profile of the Regional and Local Economic Development – East West Economic Corridor (RLED-EWEC) Project. It is operational in Thailand, Vietnam, Lao PDR and Myanmar, and his presentation focused on the work in Laos. He discussed the details of a SWOT analysis of the project area in Khammouane Province. The first phase of the project was initiated in 2013, and the second phase is slated to start in July 2017. The project focused more on market development by involving stakeholders along the rice value chain, comprising rice mills, rice farmer groups and seed farmers groups. He explained the various project interventions taken up with the three groups of project partners, including promotion of standards like Good Agriculture Practices (GAP) certification, which focused on production of adequate quantity of good quality seeds by seed producers, increasing productivity and maintaining a stable output of good quality by rice growers and ensuring good quality produce for the markets and higher volume of sale by the rice millers.

He also provided the details of benefits that accrued to the various stakeholders from project activities. Accordingly, The 82 seed producers involved in the project produced 78 tons of certified seeds, reaching earning US\$ 322 through this activity. For farmers who used the certified seeds, the average productivity increased by 12.8%. With average production costs declining by US\$ 56/ha as a result of project interventions, their incomes increased from US\$ 297 to 434/ha. The 80 producers who adopted the GAP and met the standards received 25 to 35 percent above the regular prices for their produce, earning on an average US\$ 156 extra per household. The trade volumes for the five rice mills involved increased by 2362 tonnes who together reported an additional profit of US\$ 315464.

The project faced a problem during implementation since Good Manufacturing Practices (GMP) could not be introduced to small units of rice mills. **Mr. Cuong** cautioned that such project efforts will be sustainable only if various actors benefit from the activities they are involved with. Even

though there is no direct involvement of the government in the project, its officers are invited for all training with the assumption that the knowledge base will be utilized even after project withdrawal. A future, long-term contract with the Chinese Government for organic rice production is also expected to sustain the project activities.

Mr. Jan Ketelaar asked how the farmers made more money from the project activities. **Mr. Cuong** said they were paid extra by the millers who sold rice at a premium in the market. **Mr. Vannasouk** remarked that the higher transportation costs made it difficult for Laos to be competitive in the export market, but that it was a learning stage for the country. **Ms. Ladda** shared that Thailand had good experience of working with GAP standards. But despite their adoption, if farmers do not get a good price, the activities will not sustain. Hence, the private sector needs to provide higher prices for such rice. **Mr. Cuong** replied that there were also other factors like food safety which were important for the consumers involved here. By also considering them in our work, the possibility of getting a higher price can be increased.

4.1.4.7. Agro Tourism : an effective way to attract able youth to rural area for sustainable growth

Mrs. Anuradha Bhadsavle, wife of Mr. Bhadsavle, MBBS Doctor by degree and Agriculturalist by profession, shared her thoughts that agro-tourism is an activity which can help retain younger farmers on farm. This activity consists of the farmers facilitating learning about rural and agricultural issues by urban residents. It can help in providing a sense of dignity to the farmers, which helps in keeping them interested in farming. She has been involved with the enterprise for many years now, and the multiple activities in her Sagunabaug farm help in ensuring that the visitors from the cities remain interested.

Dr. Mak Souen asked how the activity helped farmers. **Mrs. Bhadsavle** replied that the activity was based on payment made by visitors to farmers, which was additional income.

Several participants across countries were interested with the question of how to retain the younger generation of farmers in agriculture. **Mrs. and Mr. Bhadsavle** suggested that agro-tourism would help in doing it. **Mr. Pamarthy** said that governments need to create learning opportunities for young farmers, and attract them by saying that their success stories would be shared with other young farmers; he said incentivizing private sector investment in agriculture was important in getting younger farmers into agriculture. **Ms. Lucy Fisher** suggested that the Thai experiences with the Weekend farmers group could also be helpful to thinking of options for this problem.



Session wrap-up

In the wrap-up session, **Dr. Maxwell Whitten** traced the trajectory from the days of promotion of high-external input usage agriculture during the Green Revolution to the Integrated Pest Management (IPM) era, which had a more agro-ecological orientation. Compared to it, he felt SRI was more holistic as it does not deal only with the technical issues. For instance, it also encourages farmers to look at soil biology. So it is a better entry-point to work with farmers on sustainable agriculture.

Dr. Amir Kassam noted that compared to yesteryears, we have more knowledge, skills and networks to support farmers in alternative, more sustainable approaches to agriculture development. Even the policies are more conducive and will support such activities. This should be used to the maximum extent possible in our work. He observed that the results of the SRI-LMB Project, which he followed from its inception to the present day, have been impressive.

4.2 REVIEW AND PLANNING SESSION (25 April, 2017)

The day commenced with **Mr. Ashwin Mysore**, Action Research Coordinator, ACISAI, AIT, recapping the key discussion points from all the sessions of Day 1.

4.2.1 FARMERS' PARTICIPATORY ACTION RESEARCH (FPAR), FARMERS' RESPONSE FOR SRI ADAPTATION AND WORK PLAN FOR THE NEXT SEASON

Session chair: **Mr. Tiene Vannasouk (Morning session)**

The morning session focused on country-level experience sharing by project Champion Farmers followed by Country Coordinators detailing the project implementation, key results and the work plans for the year 2017. The detailed profiles and experiences of Champion Farmers are presented in Annex 5. Details of the presentations made by the country-teams are provided in Annex 6.

4.2.1.1 Cambodia

Mr. Tep Khen, the Champion Farmer informed the participants about his family background. He provided details about the high-input usage cultivation practices that he adopted previously. Following his participation in the 2015 FPAR, he started applying what he learned on his own field in 2016. These practices included leveling his field, increased use of organic fertilizers and transplanting in rows. He explained that proper levelling enables proper drainage, easier management of irrigation water and facilitates better weed and pest control. Application of organic fertilizer loosens the soil and provides a good environment for beneficial microorganisms that help rice grow well. This, combined

with reduction in chemical fertilizer usage improves the taste of the harvested grains. Transplanting in rows results in healthier plants.

While he is interested to make his rice fields better than other farmers in his area, he adopts the modified and new practices to benefit not only his own family, but also others. He tries to explain what he does to other farmers who visit him; he would like to tell them how to record yield and calculate economic returns of their production. He would like to explore further practices and technologies which could benefit all of them, especially in the light of new risks like climate change.

Mr. Kong Kea, Country Coordinator of the Project, then provided a brief history of SRI introduction and promotion in Cambodia, before the start of the SRI-LMB Project in 2014. The programme is lodged with the General Directorate of Agriculture, MAFF and the National IPM Programme. It was implemented in three districts each in three provinces. He listed the various activities that have been carried out as part of the Project implementation and provided details on the farmer outreach.

The FPAR plots recorded higher yields, at an average of 4.1 tons/ha (in case of transplanted rice) and 4.2 tons/ha (for direct-seeded rice) compared to conventional practices, which in comparison yielded 3.1 and 3.5 tons/ha rice, respectively. Direct seeding addressed the problems concerning late onset of rains. The difference in yields from different treatments under the experiments on number of seedlings per hill was not significant albeit the benefits were higher where less seedlings per hill were used due to the lower cost of seeds. It was found that the 20x20 spacing provided most yields, compared to others. The work plan for 2017 includes conducting a National Review and Planning Meeting and the implementation of activities for FPAR women farmers' groups.

Ms. Lucy Fisher inquired if the dragon weeders distributed through the project were used. She was told that while these weeders were good, the farmers do not use it since it increases labour requirements. So some farmers do hand weeding and others apply herbicides for weed management.

4.2.1.2 Lao PDR

Ms Mee Yang, the Champion Farmer from Vientiane province, attended the CFPAR where she learned about the advantages of transplanting young, single seedlings at a wider spacing, and draining water from the field after two weeks of transplanting. During the training, she observed the rice crop in four different stages and found that yields from plots where SRI practices were applied were better than those where conventional practices were adopted. She then started to demonstrate these practices through the FPAR in her village. She shared what she learned in the CFPAR with 20 other farmers. Their FPAR used a traditional variety for the demonstration plot. The farmers saw and then

believed that yields increased from the application of SRI practices. She said that after the FPAR, the SRI practices have been adopted by even other farmers in her area.

Following her, **Mr. Viengxay Photakoun**, Country Coordinator, provided details about project implementation since the Inception Workshop was held in June 2014. From 2015-2016, a total of 46 FPARs in three provinces (Vientiane, Khammouane and Savannaketh) were conducted. A total of 1,227 farmers (628 women) were trained in the FPARs so far. Other activities that were carried out were related to monitoring and evaluation, conducting provincial and national workshops and data entry. In all experiments, plots where SRI practices were employed performed better and got higher returns compared to the plots where farmers' conventional practices were applied.

He outlined the various lessons learned during the last two years, which included: the need for better coordination among various agencies involved in the project, capacity building, potential areas of focus for project activities, improved training curricula based on FPAR experience and project outcomes. He also provided a set of recommendations to be considered.

The work plan for 2017 includes: conducting provincial and national workshops, and attending RRPW (already completed); conducting 82 FPARs; facilitating information exchange between farmers by organizing meetings and facilitating cross-visits; developing SRI-LMB project training materials; and report preparation.

During the post-presentation discussions, **Dr. Abha Mishra** sought clarification on the process of data collection. Mr. Kongsy, National Training Expert of SRI-LMB and staff of DAEC replied that they were collected from five random samples within the FPAR plots, but not near the bunds. It was suggested that they could try to demonstrate the economics of using weeders in rice cultivation and consider the possibility of setting up Farmers' Organizations for scaling up project activities.

Mr. Vannasouk raised the issue of slow adoption of SRI practices despite all observations being made about their success. He pointed out that it was location specific; while farmers in the northern Lao PDR adopted these practices, it was not preferred in the south because it added to the labour requirement of growing rice. This again reinforces need for the development of location specific SRI practices rather following blanket recommendation.

To a question raised by **Mr. Hieu Van Tran**, it was also clarified that the project design in Lao PDR involves same farmers even in the 2nd cycle of FPARs. This differs from Vietnam where local governments decide to move the FPARs to new locations to benefit other groups of farmers.



4.2.1.3 Vietnam

Mr Duong Van Thuyet, the Champion Farmer from Bac Giang province, recalled his rice cultivation practices before attending the FPAR, which included transplanting seedlings at high density, excessive fertilizer use, keeping water in the field during the whole season and spraying pesticides four times per season for pest and disease management. His average yields were about 5.5tons/ha.

After being a part of the FPAR in 2016, he learned new techniques such as transplanting young seedlings, using less seedlings per hill, balanced fertilization and water management, i.e., drying the field at the beginning of the season to make the plants grow better and have less pests and diseases. He obtained yields of about 6.3-6.9 tons/ha, reduced pesticide use by three to four times and increased profits by about 7-8 million VND/ha.

Then, **Mr. Do Hong Khanh**, IPM Coordinator, PPD, MARD, made presentation on the SRI-LMB Project implementation in Vietnam. He provided details about project implementation activities and the number of farmers reached. In 2015-16, a total of 1440 farmers were directly involved in the FPARs, with 54 field experiments and 50 SRI demonstrations. Workshops at provincial and national levels and media engagement allowed the project to reach out to farmers and others not directly involved.

The average yield of FPAR plots in Bac Giang (2015 -2016) was higher than that from the Farmer Practice (FP) fields by about 0.6 - 1.2 tons/ha. Lower seed and pesticide usage reduced expenditures, increasing the net returns from VND 4,352,000 to 8,632,000/ha (US\$ 202.42 to 401.49/ha). In Ha Tinh, the SRI average yield in 2016 was slightly higher than FP fields. But net returns increased because of reduced expenditures, especially due to reduced transplanting density, pesticide use and costs of irrigation. In all experiments, plots where SRI practices were employed performed better and got higher returns compared to FP plots.

He outlined the key learnings from the project on various issues, from selecting fields for experiments, farmers and experiments to field-activity planning; from planning activities to the outcomes of their implementation. He also provided a list of recommendations for the future. The work plan for 2017 includes facilitating FPARs in two provinces, supporting FPAR women farmers groups in a year-long project, holding review and planning workshops at provincial and national levels.

During the discussions following presentation, it was clarified that the FPAR women's group will be supported on a range of activities like integration of livestock in rice cropping systems,



facilitating learning on no-tillage potato production and cultivating legumes after rice for enhancing soil fertility. **Kong Kea** said that they have plans for similar activity in Cambodia.

Dr. Max Whitten noted that the SRI-LMB Project was able to build on the foundations of the IPM programme started in Vietnam in 1995; the programme had focused on capacity building, and those trained then were involved even now. The difference was that while earlier projects focused on irrigated areas, the present concern was rainfed areas. He hoped that much more remote areas will receive the attention of the project in future.

Dr. Mak Souen noted that it could be useful to demonstrate SRI as a specific package of practices to highlight the gains. He also noted that it is essential to better integrate small farmers with the markets.

4.2.1.4 Thailand

Ms Rampeung Sorathaworn from Surin province recalled her experiences from attending the FPAR which had 30 participants. Based on the learnings reaching other farmers, many in her area now use only 20 kg seeds/ha for sowing. This and reduction in fertilizer and pesticide application fetches them better returns, despite the yields in FPAR and conventional plots being nearly the same. But SRI practices has certainly helped them cope better with drought, made weed control easier and eliminated crop lodging

Ms Nucharee Jaimool, NFE teacher from VTDC, Utradit province presented project implementation details from Thailand. In 2016-17, it was implemented in two locations in her province. She explained the key activities taken up as part of the FPARs. The application of SRI practices resulted in reduced costs for seeds, labour and herbicides, and in yields of about 800-900 kg/rai (5-5.5 tons/ha).

Mr. Bishal Bhari, PMU Programme Officer, then provided a more comprehensive picture of the FPAR progress report for Thailand. He explained the project and FPAR institutional structure and informed that over three years, 5065 farmers were directly involved in 192 experiments.

In general, plots under Farmers Practice recorded lower yields and net returns compared to the FPAR plots. The 2014 results showed FPAR plots recording increased yields, improved fertilizer use efficiency and improved economic gains. It was observed that the experiments where all the SRI principles were adopted yielded better results than those experiments where only few or non of the SRI principles were adopted.. Net returns were influenced by the farm gate price, which in turn was dependent on a host of factors including government policies and global market variations.



He also shared project experiences of working with supplementary irrigation, exploring the potential to link SRI and organic rice production, working with women farmers and other government programmes, and with outreach activities, including media and farmer-centric efforts, to reach out to more non-project stakeholders and farmers.

The work plan for 2017 involves organizing a national workshop and consultation to convey overall results from the project and chart future course of action, to especially link smallholder farmers better with the markets.

4.2.2. REVIEWING MONITORING EVALUATION AND LEARNING (MEL) STUDIES AND LEARNING ABOUT TRENDS IN FARMER'S RESPONSE FOR SRI ADAPATION.

Session Chair: Ms. Ladda Viriyangkura

4.2.2.1 Vietnam

Dr. Nguyen Yen informed the audience about the objectives for MEL activities, study sites and sampling method before presenting her results on changes in cropping pattern, SRI practice adaptation and adoption in the areas, cost and benefit of rice production and farmer assessment of the FPARs.

She concluded based on her research that

- After FPAR training, farmers tended to adopt some of the SRI practices, including using younger and lower number of seedlings while transplanting, reduced application of urea (though NPK and potassium usage increased), reduced use of water, especially during tillering stage, and lower pesticide application. Lower input usage, including labour, which cut down costs, and realization of higher yields, led to better profit generation from rice cultivation in the FPAR farmers.
- The farmers considered the training received during FPARs as 'very good' or 'good', but wanted them to be organized earlier considering the local rice crop calendar.
- There were challenges to SRI practice adoption by farmers which included low availability of organic manure, risk of higher infestation by golden apple snail and plant hopper, difficulty in water management and unfavorable weather conditions.

Ms. Lucy Fisher inquired about the trend of increasing NPK fertilizer usage. The project personnel clarified that unlike urea which supplied only nitrogen, the complex fertilizers supplied

even the other two macronutrients and the practice was a step towards better crop fertilization practices.

4.2.2.2 Cambodia

Professor Chuong Sophal presented the outputs of from the MEL exercise in Cambodia with the background of the objectives and research methodology. Based on the research results, he concluded that

- Adoption of SRI practices focused upon in the Project (like transplanting younger seedlings at lower density at wider spacing and lower fertilizer application) was more among FPAR farmers compared to those not associated with the training.
- FPAR farmers reduced costs of production and increased their yields compared to other groups of farmers.
- Low availability of family labour and irrigation water shortage were key problems which prevented uptake of SRI practices by the farmers.

4.2.2.4 Regional Trend

Dr. Suresh Lokhande presented the regional MEL trend for the year 2015. He shared details concerning the objectives of the analysis exercise, sample and variables considered before presenting the results. Based on his findings, he concluded that

- Women participation in the Project was more than that of men.
- Preferred SRI practices by FPAR farmers for adaption and adoptions were lower seed rate (49%) and seedlings per hill (45%) and transplanting younger seedling at a wider spacing (40%).
- About 37% of FPAR farmers reported applying manure which is good indicator for soil health in long term.
- More FPAR farmers managing weed by manual method (50%) tending towards less use of herbicide.
- Non-FPAR farmers were also adopting some of the practices like dry seedbed preparation, lower seed rate and transplanting younger seedling at a wider spacing.
- SRI practice adoption led to increase in rice yield and net incomes of farmers.
- Overall feedback from farmers indicate that they are adapting SRI practices to achieve higher yield, use less amount of seed and less requirement of water.

Dr. Mak Souen raised the issue that researchers and policy makers need more specific recommendations on what constitutes SRI for their use. **Mr. Tiene Vannasouk** had also expressed similar issues previously. **Dr. Abha Mishra** explained that the project is working with smallholders and in rainfed areas, not in irrigated areas. It deliberately chose to define SRI loosely to understand which of the practices interest and which direction adoption proceeds and hence, be adapted and adopted by the farmers. But with our experience, where needed, we could work towards providing recommendations. **Ms. Ladda Viriyangkura** agreed and said that site-specific recommendations would be the way forward.

Dr. Wijayaratna suggested that the term 'participation' needs to be defined better and was interested in understanding lower attendance by male farmers in the FPARs. The Project personnel explained that this was due to male migration to other places in search of employment.

4.2.3. REVIEWING SRI-LMB PROGRESS AND WAY FORWARD

Session Chair: **Dr. Amir Kassam & Dr. Abha Mishra**

4.2.3.1 The Role of International, Regional and National SRI Networks in Sustaining the Global SRI Community

Global, Regional and National SRI Networks

Ms. Lucy Fisher drew the attention of the participants to the idea that SRI, practiced by thousands of farmers across the globe, was an example of open-source agronomy and collaboration, which yielded practical and environmentally-friendly answer to the pressing problems concerning agriculture worldwide. She noted the rapid strides made by SRI, being validated in more than 50 countries, and provided a brief introduction to and work of SRI-Rice at Cornell University, where she is based, which coordinates global knowledge management on SRI.

She provided examples of national, global and regional SRI Networks and discussion groups with an idea of their activities and how they operated. She discussed issues related to how some networks operated successfully (eg., having SRI champions, well connected and motivated members), while others, especially related to external funding often did not sustain over a period of time.; and the importance of being inclusive for running and sustaining successful networks.

Dr. Mak Souen inquired about the type of information existing at SRI-Rice, how it is organized and if it was similar to what was being considered in the SRI-LMB Project. **Ms. Fisher** replied that information at SRI-Rice was organized similar to how it is done in libraries. But since SRI practices varied between countries, because they are all modified to suit local-specific needs, what can be got are a set of principles underpinning SRI.



Agro-ecology Learning alliance in South East Asia (ALiSEA)

Ms. Lucie Reynaud was invited to share basic information about ALiSEA. She explained that the network was founded in 2015 with support from the French Development Agency. It is operational in Cambodia, Laos, Myanmar and Vietnam for now. It aims to network institutions and individuals working on agro-ecology to generate knowledge, with the intention of using it for advocating more ecology-favoring policies. On a participant inquiring if they funded activities, she said they did have a small grant facility. That as well as other information about the network can be accessed at <http://ali-sea.org/>

4.2.3.2 STRATEGIC DIRECTIONS FOR FUTURE PROJECT ACTIVITIES AND FOR COMPLEMENTING WITH OTHER REGIONAL INITIATIVES

FAO: Mr. Jan Ketelaar thought the workshop was a positive experience and the outputs, including the work plans, were indicators of how the Project will move forward. But the plans presented need more specific details, like for eg., on their implementation. He suggested that any training material development, for example in Laos, while it being an important activity, should build on previous efforts and materials available. He noted that it was essential to reflect and strategize scaling up SRI and information technology, including the use of smart phones, could offer an opportunity in this work. The project could think of linking farmers to other programmes operating in their areas, to facilitate cross learning. In case of Laos, it would be useful to hire a national researcher to cross verify data and learnings being reported by the project. He also felt that we need to better understand issues concerning SRI adoption.

Oxfam: Ms. Ty Sopheavy said that following the 2015 review process, Oxfam America has a new strategy for the Project. SRI-LMB Project is relevant to sustainable agriculture, one of the three components of sustainable food systems, a strategic focus of Oxfam. So they will continue supporting it in Vietnam and Cambodia, to further investigate the policy environment related to women in agriculture; a researcher from OA's Boston office would be involved in this effort. She hoped the PMUs in these countries would be closely involved with the study. **Dr. Abha Mishra** requested her to ensure that even the other two countries are included in OA's work plans.

University of Queensland: Dr. Maxwell Whitten put forth the research opportunities that could be explored by the Project. This included studying the epigenetic basis and changes in soil microflora to understand the phenotypic differences between SRI-rice and conventional rice. This could be done in three phases, from initially focusing on plant growth, and then on herbivore development, before studying interaction of pesticide application with natural enemies. He said it was essential to tap the private sector funds which may be available for such work. **Dr. Abha Mishra** felt

that investigating issues concerning epigenetics will require sophisticated laboratory facility, and it could be useful to network and bring in other partners into this effort.

Based on **Dr. Abha Mishra's** request, the representatives from the government ministries across the four countries then shared their views on scaling up SRI in their respective countries.

Cambodia: Mr. Mak Souen said in Cambodia, SRI is already part of the National Strategic Plan. The SRI Secretariat set up to promote SRI in the country is coordinated by Mr Kong Kea, who is country coordinator for the SRI-LMB Project. For scaling up SRI, we could emphasize its utility for growing quality crop, which can be used as seeds. We can also try to promote it as part of the government policies and strategies related to rice. It might be useful to form existing farmers into groups and work through them. However, the farmer-to-farmer approach to agricultural extension, especially in the backdrop of the government policy and regulations, need to be understood better. **Dr. Abha Mishra** said in Cambodia, farmers found both SRI and FFS as a methodology beneficial. Hence, any existing networks could be used to promote these.

With reference to Lao PDR, she shared Project learnings that the farmers wanted SRI to be disseminated to more number of farmers. It would be useful for the Ministry to identify location-specific SRI topics which will be useful to the farmers. She hoped, considering the stated interest in their presentation, the Project team would ensure that at least three to four FPAR sites will try to integrate ducks/fish in the rice-production systems.

Laos: Mr. Tiene Vannasouk said that while continuing to work with farmers through the Project, there was also a need to establish national level network of farmers, which would advocate for better policies for the small farmer. They would be more effective than the Project in doing this. Meanwhile, there was a need to identify location-specific SRI practices which are simple and cost-effective, which can also be tested by other stakeholders.

Thailand: For Thailand, based on her discussions with Ms. **Ms. Ladda Viriyangkura**, **Dr. Abha Mishra** said the Project will work closely with the Rice Department and existing farmer networks on collaborative activities related to SRP. **Ms. Ladda Viriyangkura** concurred that the Rice Department should be the focal point for developing future activities. These should focus on understanding better the various factors related to adoption of a practice by farmers. It is important that all scaling up plans recognize some of the structural factors which will impact them, for eg., the younger farmers moving out of agriculture in Thailand.

SRP (UNEP/IRRI): Mr. Peter Sprang invited the workshop participants to the October 2017 conference at Bangkok, being organized by SRP in collaboration with the Rice department. That would be an opportunity to explore the SRI standards further and understand how they are used and fare in different countries. On **Dr. Abha Mishra's** inquiry on the kind of support that might be available if

some of our Project farmers wanted to evaluate SRP standards, **Mr. Sprang** replied that he could try to link those farmers with existing SRP members or if needed, could try to directly collaborate with the work involved.

SRI-Rice, Cornell University: Ms. Lucy Fisher thought the Project should try and test small scale equipment useful for SRI cultivation; even other crops could be considered with the same principles and students could be engaged for the research. **Dr. Abha Mishra** recalled that weeders had been provided to all Project countries, and it was necessary to follow-up on how they have been used so far.

Concerning Vietnam, **Dr. Abha Mishra** thought that with the government focus on value addition and produce quality following efforts for restructuring agriculture, conservation-oriented agriculture focusing on yield quality could be the focus of activities. **Mr. Do Hong Khanh** said it was important to identify and promote practices which are easy to apply and effective. There was a need to develop farmer groups to facilitate agricultural extension. SRI scaling up could happen through these groups.

Dr. Abha Mishra then said that AIT would be more active henceforth, in linking the SRI-LMB Project with other networks to take the activities forward. She summed up the future plans based on feedback from the partners as below:

- 🌱 All partners are in general interested on the issues related to scaling up and scaling out
- 🌱 There is interest in diversification of SRI activities by integrating other activities, like for eg., those focusing on soil health, with regular project activities. Laos and Vietnam have the time and opportunity to work on these issues.
- 🌱 Networking will be an important aspect of our work henceforth.
- 🌱 There is interest among various partners in working for linking the smallholders better to the markets; SRP could be a useful link to work on this issue. Similarly, Mekong Institute could be another important link to explore, especially in Laos.

Olam International Limited: Related to the last issue, **Mr. Paul Nicholson** suggested that if there is a desire to work with market linkages, then there is a need to think beyond SRI agronomic practices. There is a need to focus more on resilience, which has market value as it helps reduce costs and stabilize supply. It could also be useful to deliberately work with agricultural inputs which are accepted by the markets and hence, will not negatively impact the supply chain.

EU Delegation, Thailand: Ms. Ana Maria then commented that the workshop had been participatory and provided a good learning experience for all involved with the SRI-LMB Project. The Project focus of learning by doing is very relevant and has been useful. Involving and working with

the governments has been very useful. It was good to see the commitment of various partners to their work and the Project. She said she will help communicating the Project results to other EU Delegations in project countries and also Head Quarters, in Brussels. She hoped for continued cooperation among all involved, since this would be essential in sustaining the Project interventions.

Dr. Abha Mishra thanked all participants for their active participation in the workshop which made it very productive and forward-looking.

5. CONCLUSION

In conclusion, as a way forward, following points can be recommended:

- 🌍 Share key achievements and learnings of the projects with wider stakeholders and with exiting online networks through national, regional and global platforms
- 🌍 Consult with national as well as regional stakeholders to develop way forward to
 - ✓ Continue facilitating the productive use of on-farm assets for generating higher consistent quality produce for household consumptions and market through training on production method which conserves natural resources, enhance ecosystem services and environmental sustainability
 - ✓ Improve farmer connectivity to markets
 - ✓ Work on farmer compliance with market standards (by providing information and organization resources, technical support and some critical cost).

Note: The feedback received from some of the workshop participants is provided in Annex 7.

Additional Link:

Workshop Pictures:

<https://goo.gl/photos/dNpjVeI5WKpP4ker9>

Workshop Presentations:

<https://drive.google.com/open?id=0BwAND94jB80zZndXSWRvWVpVRW8>

Press Release:

<http://www.sri-lmb.ait.asia/downloads/Hanoi%20RRPW%20Release.pdf>

YouTube Video:

<https://www.youtube.com/watch?v=gu4f1JXOT9c&feature=youtu.be>

Women Farmer Harvesting Success

<http://www.sri-lmb.ait.asia/downloads/Farmers%20Success%20stories.pdf>



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ANNEX 2: A NOTE ON FIELD VISIT TO BAC GIANG PROVINCE

A field visit to Bac Giang province was organized by the Plant Protection Department, MARD, Vietnam on 23rd April 2017.. About 30 participants who had traveled to Hanoi for the RRPW chose to be part of this visit. Arrangements were made to allow interaction between participants and farmers who were part of the Farmers Participatory Action Research (FPAR), and also visit the FPAR fields. On reaching the Tan Think Commune in Lang Giang district, the participants split into two groups, each visiting a FPAR group of farmers and fields separately. Below are notes on key observations and discussion points from both groups. The Group 2 note also considered information from the video recordings.

Notes from Group 1:

Farmers presented and talked about how adoption of wider spacing (more than 20x20 cm), one to three seedlings/hill and water management at vegetative stages helped them to increase yield and overall income. One of the SMART farmers also pointed out that wider spacing helped to reduce the insects and pests in the fields. Sixteen women farmers and 12 men farmers (including five SMART farmers) shared their experiences and said they would continue adoption of SRI practices even in the future. During the visit to SRI demonstration plot, the participants tried to gain insights into SRI practices experimented with, including water management practices. The details on comparing cost of cultivation (labor, farm input and land preparation) of SRI compared to farmer practices were discussed extensively. The project staff informed that the FPAR site cost of cultivation was about 20 percent less with SRI demonstration compared to farmer practices (700,000 VND/Sao vs 860,000 VND/Sao).

Notes from Group 2:

About 20 FPAR group members assembled in a community hall to meet the field visit participants. They had completed their seventh weekly Farmers Field School (FFS) session, and had displayed the charts related to agro ecosystem analysis. One of them explained the process they followed, observations made and decisions arrived at, with justifications. The participants discussed various elements of the project related to rice cultivation, the experimental process and experiences on working together as a community.

The farmers informed that plant hoppers were the most serious pests in their area. They had observed that a few other insects like the ants, spiders and another three-coloured insect, helped the farmers by feeding on the eggs and larva of the harmful insects. In SRI plots, since they applied less pesticides, they found more of these natural enemies, compared to the conventional plots. No preventive pesticide applications were made in SRI plots. But with pesticide applications, the farmers said that they do observe more pest control.

Previously, when they saw any of their peers applying pesticides, it was common for even others to do the same without considering if it was needed in their fields or not. Now, with training, rather than following others, they make informed decisions on input application, which has resulted in lower pesticide and fertilizer application.

They discussed the various SRI practices they were aware of– shallow planting of young seedlings at a wider spacing in a grid pattern; draining out irrigation water, sometimes even allowing the field to be nearly dry; and while weeding, ensuring that the soil was also loosened and aerated.

In northern Vietnam, where Bac Giang province is located, transplanting rice is common unlike the south where direct seeding is popular. Some of the farmers had tried direct seeding once, but it was on a slope and with hard rains, the seeds got washed away. They also experienced that some insects ate the seeds sown.

There were farmers who had applied SRI practices on all their lands after learning them in FPARs. They appreciated that with SRI practices, lower seed rates (only 50 percent of that conventionally used) were required, other input application was low, the crop health was good, the grains produced were bigger, less broken with thinner husk and the yields were often higher. Overall, they found SRI to be beneficial and many among them would continue adopting SRI practices.

But some experienced the problem of golden snails with younger seedling transplanting. They were interested in techniques which would lower the labor requirements for farming since agricultural labor availability was becoming a major problem. It had even led to a change in their transplanting method. They now grew young seedlings in trays and for transplanting, they ‘parachuted’ seedlings into prepared land, unlike the traditional transplanting where farmers bent and pressed the seedlings into the soil. This method allowed a single person transplant 700 sq. m area per day. The tray used for raising seedlings was shown to the participants. Labor shortage has also resulted in the farmers giving up a crop they took up previously in between two seasons of rice. As of now, they only grow two crops of rice per year.

Following the interaction in the community hall, the participants visited the FPAR plot nearby. There was a main plot with SRI demonstration and adjoining plots where they had taken up learning experiments, varying the fertilize doses. Transplanting had been done along a grid, using a string, in the conventional manner, not by the ‘parachuting’ method normally followed. They planted younger seedlings at wider spacing and drained water at the start of tillering, four days after first fertilization; they irrigated again when cracks developed in the soil. About 30 to 40 percent of water was said to be saved because of this. They were applying 1.8 Kg N, 3 Kg PK, 25 Kg vermicompost and 20 Kg P, with N being provided in three split doses / 360 sq. m.

The FPAR farmers expressed that other non-FPAR farmers interacted with them about the project activities being carried out and their experiences. This is said to have led to adoption of some of the SRI practices like using lower seed rate and younger seedlings for transplanting and reduced water application by other farmers too. The commune with the FPAR plot faces irrigation water shortage problems. So compared to the situation before, when farmers carried water to their fields from other sources or pumped it at times of scarcity, now many know that at particular stages of crop growth, water unavailability will not harm the crop. So they save on labor by not taking up the unnecessary watering, as was done before.

The FPAR farmer facilitating our field visit was of the opinion that despite the neighboring plot displaying robust growth, the FPAR plot would get better yields. He reasoned that the FPAR plot would have more productive tillers. The production costs in FPAR was said to be about VND 850000 per Sao; gross returns about 1.4 to 1.5 million. Compared to this, not only did conventional rice cultivation cost more, but even the gross returns were low at about VND 1.2 million / Sao.



ANNEX 3: WORKSHOP SCHEDULE

Time	Activity	Person-in-Charge
23 April, 2017: Field Visit to Bac Giang Province Departure: 6.45 am from Hotel Hilton Garden Inn, Hanoi Forenoon: Visit to farmer fields and interaction with farmers Afternoon: Lunch and interaction with government representatives (in a restaurant) Return: 5 pm		
Day 1 (Date: 24 April 2017)		
08.30-09.00	Registration	
Welcome and Plenary Session		
09.00-10.00	Welcome Address	Dr. Nguyen Quy Duong , Deputy Director General, Plant Protection Department (PPD), Ministry of Agriculture and Rural Development (MARD), Vietnam
	Opening Remarks	1. Dr. Abha Mishra Director ACISAI, AIT; Team Leader, SRI-LMB, ACISAI, AIT, Thailand 2. Ms. Ana Maria, PENA SEGURA , Attaché Cooperation, Delegation of the European Union to Thailand
	Workshop schedule and expectation	Dr. Suresh Lokhande Research Specialist, ACISAI, AIT
	Keynote: Strategic Options for Food Security: System of Rice Intensification (SRI) and Farmers' Collective Action	Dr. C. M. Wijayaratna Independent Consultant, Agriculture Strategy Specialist, New Zealand
10.00-10.30	Group photo, Tea break & Media briefing	
Session: Sustainable Agriculture Intensification in Asia and Beyond		
Session Chair : Dr. Max Whitten Rapporteur : Mr. Ashwin Mysore		
Presentations		
10.30-10.50 (15 minutes, followed by 05 minutes Q&A)	Soil Health for Sustainable Agricultural Intensification: Some Perspectives	Dr. Amir Kassam Visiting Professor School of Agriculture, Policy and Development University of Reading, UK Moderator of the FAO-hosted Global Platform for Conservation Agriculture Community of Practice (CA-CoP)
10.50-11.20	Saguna Rice Technique (SRT): A conservation agriculture, zero till, farmer friendly, the climate-smart path for rice farming	Mr. Chandrasekhar Bhadsavle Organic Farmer and Entrepreneur, India



11.20-11.40 (15 minutes, followed by 05 minutes Q&A)	Regional Rice Initiative: Updates, Results to Date & Future Planned Work	Mr. Johannes W. Ketelaar Chief Technical Advisor for FAO's Inter Country IPM/Pesticide Risk Reduction Programme, FAO Regional Office for Asia and the Pacific, Bangkok, Thailand
11.40-12.30 30 minutes followed by 10 minutes Q&A)	Key Learning from the SRI-LMB within the Context of Food Security, Water Management and Climate Change Adaptation	Dr. Abha Mishra & Dr. Suresh Lokhande
12.30-13.30	Lunch Break	
<p>Session: Government Policy for Food Security and Sustainable Agriculture/Rice Development within the Context of Water Management and Climate Change Adaptation in the Mekong Region</p> <p>Session Chair : Mr. Johannes W. Ketelaar Rapporteur : Mr. Bishal Bhari</p> <p>Presentation (10 minutes each, followed by 5 minutes Q&A)</p>		
Time	Activity	Person-in-Charge
13.30-13.20	Cambodia	Dr. Mak Soeun Deputy Director-General, General Directorate of Agriculture, Ministry of Agriculture Forestry and Fisheries, Cambodia
13.20-13.40	Thailand	Ms. Ladda Viriyangura Senior Specialist on Rice Inspection and Certification Thailand Rice Department, Ministry of Agriculture and Cooperatives (MoAC)
13.40-14:00	Vietnam	Dr. Nguyen Quy Duong Deputy General Director, PPD, MARD
14.00 - 14.20	Lao PDR	Dr. Tiene Vannasouk Deputy Director-General, DAEC, MAF
14.20-14.50	Tea Break	
<p>Session: Micro and Macroeconomics Study and Policy Research in the Context of Small-scale Agriculture, Networking, and Market Development in the Mekong Region</p> <p>Session Chair : Dr. Amir Kassam Rapporteurs : Ms. Sopheavy Ty</p>		
14.50 - 15.10	An Analysis of the Public and Private Policy Environment and Practices towards Smallholder Farmers and Small Scale Agriculture in the Context of Food Security and Climate Change in the Lower Mekong River Basin	Ms. Sopheavy TY Head of Portfolio Management Unit-Asia, SRI-LMB Oxfam, America
15.10-15.30	Macroeconomic Study of SRI & Implications of Small Scale Farmers' Investment in Four LMB Countries	Mr. Hemantha Parmarthy Consultant, Rapid Asia, Thailand

15.30 – 15.50	Economics of Rice Production Under Different Production Techniques	Ms. Sobia Asghar PhD Candidate AIT, Thailand
15.50-16.10	Sustainable Rice Platform (SRP)	Mr. Peter Sprang, SRP Technical Coordinator Secretariat, Sustainable Rice Platform c/o UN Environment Asia and the Pacific Office Bangkok, Thailand Coordinator position hosted by IRRI (International Rice Research Institute) Los Banos, Philippines
16.10-16.30	Better Rice Initiative Asia, Sustainable Rice Platform and Opportunity for SRI-LMB Farmers	Mr. Paul Nicholson Vice President Rice - Research and Risk Management Olam international Limited, Singapore
16.30-16.50	Make Markets Work for the Poor: A Case of Rice in Khammouane Province, Lao PDR	Mr. Nguyen Hung Cuong Director, RLED-EWEC Project Mekong Institute Thailand
16.50-17.10	Agro Tourism : An Opportunity to Attract Able Youth to Rural Areas of the Country for Sustainable Growth	Mrs. Anuradha C. Bhadsavle Farmer and Entrepreneur Suguna Baug, Malegaon Village, Raibag District Maharashtra, India
17.10-17.30	Wrapping Up – Day One	Dr. Amir Kassam and Dr. Max Whitten
18.00	Welcome Dinner	

Time	Activity	Person-in-charge
Day 2 (25 April 2017)		
09.00-09.30	Reflection on Key Points from Day 1	Mr. Ashwin Mysore Action Research Coordinator, ACISAI, AIT
Session : Farmers’ Participatory Action Research (FPAR), Farmers’ Response for SRI Adaptation and Work Plan for the Next Season		
Session Chairs : Mr. Tiene Vannasouk (before lunch), Ms. Ladda Viriyangura (after lunch)		
Rapporteurs : Abubakar Alma Linda (before lunch), Ashwin Mysore (after lunch)		
Presentations : 25 minutes each (10 minutes for farmer + 10 minutes for Country Coordinator), followed by 10 minutes discussion		
09.30-10.00	Key FPAR Learning and draft work plans, Cambodia	Mr. Tep Khen Farmer’s representative Mr. Kong Kea Country Coordinator, Cambodia, SRI-LMB
10.00. 10.30	Key FPAR Learning and draft work plans, Lao PDR	Ms. Mee Yang Farmer’s representative Mr. Viengxay Photakoun Country Coordinator, Lao PDR, SRI-LMB



10.30-11.00	Tea Break	
11.00-11.30	Key FPAR Learning and draft work plan from Vietnam	Mr. Duong Van Thuyet Farmer's representative Mr. Do Hong Khanh IPM Coordinator, PPD, MARD
11.30-12.00	Key FPAR learning and draft work plan from Thailand	Ms. Rampueng Sorathaworn Farmer's representative Ms. Nucharee Jaimool Representative of Provincial Coordinator, VTDC, Uttaradit
12.00-13.00	Lunch Break	
13.00-13.30	Key FPAR learning and draft work plan from Thailand	Mr. Bishal Bhari Program Management Officer ACISAI, AIT, Thailand
13.30-14.00	Monitoring, Evaluation and Learning (MEL) study from Vietnam	Dr. Nguyen Yen Thi Bich MEL-Researcher, CARES, Hanoi University of Agriculture
14.00-14.30	MEL learning from Cambodia	Dr. Chuong Sophal MEL-Researcher Royal University of Agriculture
14.30-15.00	MEL learning – regional trends	Dr. Suresh Lokhande
15.00-15.30	Tea Break	
Session: Reviewing SRI-LMB Progress and Way Forward		
Session Chairs : Dr. Amir Kassam & Dr. Abha Mishra		
Rapporteur : Mr. Ashwin Mysore		
15.30-16.30	The Role of International, Regional and National SRI Networks in Sustaining the Global SRI Community	Ms. Lucy Hill Fisher Director of Communications, SRI-Rice, Cornell University
	Setting Strategic Directions for Future Project Activities and for Complementing with Other Regional Initiatives	10 minutes for each implementing partner (FAO, Oxfam, University of Queensland, SRI-Rice Cornell University)
16.30-17.00	Summary with Recommendation/Suggestions for Broader Follow-Up	AIT and EU

ANNEX 4: SPEAKER BIO

- 1. Dr. Nguyen Quy Duong** – is Deputy Director General, Plant Protection Department (PPD), Ministry of Agriculture and Rural Development (MARD). He graduated from Hanoi Agriculture University (HAU) in 1992, and holds a PhD degree. He has been with the PPD since 1982 working on various fields such as Plant Quarantine, Planning, International Cooperation and Plant Protection. He now is in-charge of PPD.
- 2. Ms. Ana Maria Pena Segura** – is Attaché Cooperation, Delegation of the European Union to Thailand.
- 3. Dr. Abha Mishra** - is Director, ACISAI, and Team Leader, SRI-LMB Project, based at AIT, Bangkok.
- 4. Dr. C. M. Wijayaratna (Wijay)** – he was born and bred in a village in rural Sri Lanka. Wijay has nearly four decades of work experience mainly in designing, implementing, monitoring and appraising development Projects and programs, internationally. He has been extensively involved in implementing participatory / community-driven projects with small farmers. The major areas of field experience include: Participatory Irrigation Management (PIM), Agriculture Strategy, Farmers' Companies / Farmers' Organizations, Participatory Community Development / Rural Development and Natural Resources Management (including Watershed Management and Forestry).

Wijay served in several countries in Asia and Africa and with number of international organizations/donors. He has over 100 publications.

Wijay has a B.Sc. in Agricultural Sciences (honours, Special) from Sri Lanka, Masters in Agric. Development from Leeds, UK and Ph.D. in Agricultural Economics from Cornell University USA. In addition, he has advanced academic training in: Rural Sociology (Cornell), Agric. Extension (Sri Lanka and Wageningen, Netherlands) International Agriculture (Cornell) and Development Management (CGIAR Management Course for Senior Managers, USA). He has farming experience. He is a citizen of Sri Lanka and New Zealand.

- 5. Prof. Amir Kassam OBE, FRSB, CBiol, PhD** - is Visiting Professor in the School of Agriculture, Policy and Development, University of Reading, UK, and Moderator of the FAO-hosted Global

Platform for Conservation Agriculture Community of Practice (CA-CoP). He is Chairman of the International Conservation Agriculture Advisory Panel for Africa (ICAAP-Africa) of the African Conservation Tillage Network (ACT); Vice-Chairman of the Conservation Agriculture Association for the United Kingdom (CA-UK), and member of the European Conservation Agriculture Federation (ECAAF).

In 2005, he was made an OBE in the Queen's Honours List for services to tropical agriculture and to rural development. He is a Fellow of the Royal Society of Biology (UK), and member of several international advisory committees and Boards. He has published widely.

Born in Zanzibar, Tanzania, Kassam received his BSc (Hons) in Agriculture and PhD in Agroecology from the University of Reading, and MSc in Irrigation from the University of California-Davis. Kassam's research, education and development work is focused on sustainable agricultural intensification and land management. He has worked internationally with a number of national research and development institutions, and with several CGIAR centers, UN agencies and NGOs.

He has served as: Research Fellow at the Institute for Agricultural Research, Ahmadu Bello University, Zaria, Northern Nigeria; International Scientist at ICRISAT, India; Deputy Director General for Programmes at WARDA (AfricaRice), Cote d'Ivoire; Interim Executive Secretary of the CGIAR Science Council, FAO, Rome; Chairman of: the Aga Khan Foundation (UK); Chairman of the FOCUS Humanitarian Assistance Europe Foundation, and Chairman of the Tropical Agriculture Association (TAA), UK.

- 6. Mr. Chandrashekar H. Bhadsavle** - He finished his higher studies in agriculture (Mumbai, 1970) and food technology (California, 1972). After working in various food industries in California till 1976, he returned to his family farm near Mumbai to work towards the goal of being a "Happy Farmer" and fulfil the wish of his social-reformer father. He takes pride in achieving his goal, and even his three children with their spouses have returned to their native village to pursue farming. His latest innovation, Suguna Rice Technique (SRT), a Conservation Zero Till Agriculture method, received two international awards (WatSave Award & Earth Care Award) in November 2016. He has presented the SRT details in international forums five times since 2015.



He has also received several state and national awards for innovative farming in India. He writes frequently in popular media on various topics like agro-tourism, rice, aquaculture and other crops, and has organized many farmer meetings.

7. **Mr. Johannes W. Ketelaar** – is Chief Technical Advisor for FAO’s Regional Rice Initiative and IPM Programme. He is also the Action Research Expert for the SRI-LMB Project.

8. **Dr. Suresh Lokhande** – is Research Specialist with SRI-LMB Project based at ACISAI, AIT, Bangkok. He is engaged in conducting research in the field of cropping systems, applied agronomy and crop physiology. He has demonstrated his experience in sustainable management of natural resources in agricultural ecosystems to cope up with climate resiliency through conducting active research, extension and outreach efforts and by building public-private partnership and industry collaboration. During his tenure with United States Department of Agriculture, he engaged in application and testing of crop models for future climatic and management scenarios in humid and subtropical climate across Asia and United States. He was a team member of USDA funded multi-institutional and multidisciplinary project (sustainablecorn.org) and also part of efforts made in improving grain cropping system in Midwest United States. He has published research findings in refereed journals and presented in several international conferences.

He pursued his undergraduate in agriculture engineering from India. As an alumnus of Asian Institute of Technology he holds Masters in agriculture engineering and pursued his PhD in agronomy from Mississippi State University, USA.

9. **Dr. Mak Soeun**- is Deputy Director General, General Directorate of Agriculture (GDA), Ministry of Agriculture, Forestry and Fisheries (MAFF), Cambodia.

10. **Ms. Ladda Viriyangura** – is Senior Specialist on Rice Inspection and Certification, Rice Department, Ministry of Agriculture and Cooperatives (MoAC), Thailand.

11. **Mr. Tiene Vannasouk** – is Deputy Director General, Department of Agricultural Extension and Cooperatives (DAEC), Ministry of Agriculture and Forestry (MAF), Lao PDR. He graduated with a Bachelor’s degree in animal science (veterinary) at Villa Clara University in Cuba Republic in 1984 and pursued Master’s degree in Agriculture Study at Queensland University, Australia, in 1994. He worked for many years with livestock extension under the Department of Livestock and Fishery and is with the DAEC since 2001.



12. Mr. Hemantha Kumar Pamarthy - has over 40 years of experience that straddles across Corporate and Development Sectors. Having grown from the ranks with experience Pamarthy became the Managing Director of Hand in Hand Micro Finance Private Limited before turning an International Independent Adviser, Consultant and Resource Person in the Development Sector advising and teaching Corporate Social Responsibility (CSR) and Development Finance (Financial Inclusion and Microfinance) at Reputed institutions like Asian Institute of Technology (AIT Extension), Thailand and Confederation of Indian Industry, India. He is an empaneled consultant with Rapid Asia Company Limited. He has also consulted for Aid Organisations like CARE India, UNDP India, GIZ Laos, the Government of Laos PDR (through World Bank).

Pamarthy travelled into many countries in the Africa, Americas, Europe and Asia and has hands on working experience in Brazil and the LMB Countries like Cambodia, Laos PDR and Thailand. He is a TEDX speaker and has several publications to his credit.

13. Ms. Sobia Asghar – is a student assistant in the SRI-LMB Project office at ACISAI, AIT, Thailand. She is analysing of economic costs and benefits of different rice production techniques in SRI-LMB Project areas in Thailand, Vietnam and Cambodia.

She is a doctoral candidate in Natural Resources Management field of study at AIT and is currently working on water use efficiency of conjunctive irrigation practicing farms in Punjab, Pakistan. She has a Master's degree from AIT in Natural Resources Management and Bachelors degree in Agricultural and Resources Economics from University of Agriculture, Faisalabad, Pakistan.

14. Mr. Paul Nicholson- is Vice President of Olam's Rice Business overseeing research and risk, he also helps oversee coffee research. Paul has been at Olam for over 4 years. Prior to Olam, Paul worked for Kraft/Mondelez overseeing global commodity research as a member of the risk management team. He was the Executive Director of the Texas Pension Review Board and a Senior Commodity Analyst at the International Monetary Fund. Paul has a Juris Doctor in Law and his work on commodities has been published in the IMF World Economic Outlook and Procurement Leaders magazine. Currently, Paul serves as part of the Advisory Committee for the Sustainable Rice Platform and is leading Olam Rice's engagement in global sustainability efforts. He lives in Singapore with his wife and two children.



15. Mr. Nyugen Hung Cuong- is with the Mekong Institute, Thailand, since August 2013. He is currently the Director for the RLED-EWEC Project. Before joining the Mekong Institute, he has more than 10 years of experience working in the development sector in Vietnam. He formerly worked for the Netherlands Development Organization SNV and Oxfam in Vietnam.

Mr. Cuong has a lot of experience in development project implementation and management and conducting researches. His major areas of expertise are Value Chain Development, Make Markets Work for the Poor (M4P), Sustainable Agricultural Development, SMEs Development and Inclusive Business. He obtained his master degree in Agricultural Economics from Kyushu University, Fukuoka Prefecture, Japan where he studied the characteristics and price correlation of the international grain prices and crude oil prices.

16. Ms. Lucy Fisher- is Associate Director of Communications at the SRI International Network and Resources Center (SRI-Rice), which is located at Cornell University's International Programs in the College of Agriculture and Life Sciences. She oversees knowledge management initiatives, liaises with SRI projects and networks around the world, and maintains the SRI-Rice (<http://sricrice.org>) and Conservation Agriculture websites and related social media.

17. Mrs. Anuradha Bhadsavle - She pursued higher education in microbiology and cancer immunology in Mumbai, India. After marrying a farmer, she decided to walk on the path of rural life. She is a pioneer associate in evolving and developing agro tourism at Saguna Baug, Neral, since 1985. She evolved methods for food preparation and general hospitality for agro tourism. She conducts certificate courses on agro-tourism in association with Government Polytechnic College, Mumbai. She has served as a Lecturer of Biology for Junior College students and as moderator on Botany at High School Certificate Board, Mumbai, for more than 15 years. She is a member of the selection committee of 'Homi Bhaba Young Scientists Award' organised by the Mumbai Science Teachers Association. She is the co-author of the book "Krishi Paryatan". She lectures and writes popular articles frequently on various topics like soil health, climate change, women entrepreneurship and agro-tourism, and has received many awards.

18. Dr. Peter Sprang – is Technical Coordinator, Sustainable Rice Platform, IRRI, and is based in Phillipines.



19. Mr. Kong Kea – is Deputy Director, Department of Rice Crop, GDA, Cambodia, and Country Coordinator, SRI-LMB Project.

20. Mr. Khen Tep– is Champion Farmer, SRI-LMB Project, Cambodia.

21. Mr. Viengxay Photakoun - is the Deputy Director of Division of Agriculture Technique, Production and Mechanization Promotion at the Department of Agriculture Extension and Cooperatives (DAEC) of the Ministry of Agriculture and Forestry (MAF), Lao PDR. He has served with the MAF in various capacities in different departments and programmes since 2001. He is the country coordinator of the SRI-LMB Project.

He has a Master of Science degree in Zoo-technics from Kharkov Zoo- Veterinary Academic, N.M. Borissanko, Kharkov, Ukraine. (Former Russian Union) and a Master of Philosophy from Charles Sturt University, NSW, Australia.

22. Mrs. Mee Yang - is Champion Farmer, SRI-LMB Project, Lao PDR.

23. Mr. Do Hong Khanh –is Vice Chief of Plant Protection Division, Plant Protection Department (PPD), MARD. He graduated from HAU in 1996 with a Bachelor of Science in Plant Protection. He worked with the Hanoi Plant Protection Sub-Department from 1996 to 2007. From 2008, he is with the Plant Protection Department (PPD). He is also the National IPM Coordinator and holds a Masters Degree.

24. Mr. Duong Van Thuyet- is Champion Farmer, SRI-LMB Project, Vietnam. He is a farmer from Tan Thinh commune in Lang Giang district of Bac Giang province.

25. Mr. Bishal Bhari – is Programme Management Officer, SRI-LMB Project, based at AIT, Bangkok.

26. Ms. Nucharee Jaimool- is Provincial Coordinator of SRI-LMB Project, based at VTDC Center, Uttaradit, Thailand.

27. Ms. Rampoeng Sorathaworn - is Champion Farmer, SRI-LMB Project, Thailand.



28. Dr. Nguyen Thi Bich Yen – is Monitoring Evaluation and Learning (MEL) Researcher with SRI-LMB Project, Vietnam. She is a Researcher at CARES, Hanoi University of Agriculture, Vietnam.

29. Prof. Chuong Sophal – is the National MEL Researcher with SRI-LMB Project, Cambodia. He is a lecturer and researcher at the Royal University of Agriculture.

30. Prof. Max Whitten – was with the University of Queensland, Australia and has been involved with Aid projects in South and South East Asia since 1981, focusing on rice and vegetable IPM. He was with the FAO from 1996 to 1999, based at Manila, The Phillipines, as a Technical Advisor and Team Leader for Vegetable and Rice IPM and farmer empowerment. He has been associated closely with Dr. Abha Mishra of ACISAI, AIT since 1997, advising and co-authoring research on rice production systems, especially focusing on the scientific basis for SRI and the role of farmers in adopting and adapting improved methods to grow rice to improve profitability and sustainability.



ANNEX 5: CHAMPION FARMER PROFILE AND EXPERIENCES

A5.1. Cambodia

Mr. Tep Khen from Takeo province is married, with four children. There are six members in his household, of whom three are available as family labor for farming.

Previously, he used to grow rice as per conventional practices. For eg., using high seed rates, about 100kg/ha, and high dosages of chemical fertilizers, the latter resulting in soil degradation. He would collect cow manure in April-May and pile it on his field, to be spread later for the planting season that starts in July-August. This practice led to nitrogen losses.

He participated in the 2015 FPAR and started applying what he learned on his own field in 2016. These practices included leveling his field, increased use of organic fertilizers and transplanting in rows. He explained that proper levelling enables correct drainage, easier management of irrigation water and facilitates better weed and pest control. Application of organic fertilizer loosens the soil and provides a good environment for beneficial microorganisms that help rice grow well. This, combined with reduction in chemical fertilizer usage improves the taste of the harvested grains. Transplanting in rows results in healthier plants.

He related to the field visit to Bac Giang province on 23rd April and said even he underwent classroom and field-based training. He would like to keep learning, gain more knowledge and improve his rice production.

While he is interested to make his rice fields better than other farmers in his area, he adopts the modified and new practices to benefit not only his own family, but also others. He tries to explain what he does to other farmers who visit him; he would like to tell them how to record yield and calculate economic returns of their production. He would like to explore further practices and technologies which could benefit all of them, especially in the light of new risks like climate change.

A5.2 Lao PDR

Ms Mee Yang from Vientiane province, has seven people, including her five children, in her family. Five of them are available for farming-related work.

Ms Mee Yang attended the CFPAR where she learned about the advantages of transplanting young, single seedlings at a wider spacing, and draining water from the field after two weeks of transplanting. During the training, she observed the rice crop in four different stages and found that yields from plots where SRI practices were applied were better than those where conventional



practices were adopted. After this training, she had a clear understanding of the SRI practices. She then started to demonstrate these practices through the FPAR in her village. She shared what she learned in the CFPAR with 20 other farmers. Their FPAR used a traditional variety for the demonstration plot. The farmers saw and then believed that yields increased from the application of SRI practices. She said that after the FPAR, the SRI practices have been adopted by even other farmers in her region.

The initial difficulty they faced for transplanting young 14-day seedlings and the lack of access to irrigation water for the field were two problems they faced in this process.

A5.3 Vietnam

Mr Duong Van Thuyet is from Bac Giang province. There are four people in his family. The family's income mainly comes from agriculture production on 2,880m² land, on which they grow rice and vegetables. During lean months, his wife's business in the local market supports the family.

Before Mr Duong Van Thuyet attended the FPAR, his rice cultivation practices included transplanting seedlings at high density, excessive fertilizer use, keeping water in the field during the whole season and spraying pesticides four times per season for pest and disease management. At times, he would experience bad harvest due to Brown Plant Hopper (BPH) incidence. His average yields were about 5.5tons/ha.

After being a part of the FPAR in 2016, he learned new techniques such as transplanting young seedlings, using less seedlings per hill, balanced fertilization including basal fertilizer application and water management, i.e., drying the field at the beginning of the season to make the plants grow better and have less pests and diseases. In the 2016 summer season, he sprayed only once for disease management; in the spring season, he did not use any pesticide. He obtained yields of about 6.3-6.9tons/ha, reduced pesticide use by three to four times and increased profits by about 7-8million VND/ha. The project was helpful for him and other farmers. Now he has time to join community activities. In spring season 2017 he asked other farmers to apply SRI and about 150-450 farmers in his community are now doing so.

A5.4. Thailand

Ms Rampeung Sorathaworn is from Surin province. She is 46 years old. Her family farms on 12 hectares of land following the principle of self-sufficiency. They practice mixed cropping, growing banana, rice, and bamboo in addition to raising ducks, fish and cattle.

Her FPAR had 30 participants. The curriculum included topics on biocontrol. In their area, labor sharing in transplanting is practiced although in some areas, drum seeders are used. Farmers in



her area now transplant using only 20kg seeds /ha. They predominantly grow three varieties including rice berry, RD15 and jasmine rice. In the FPAR, they collected data including on problems such as blast and lodging. Community labor sharing is also practiced at harvesting. Three years after participating in the FPAR, they have reduced their production costs by decreasing the seed rate and fertilizer and pesticide application, although their yields are not different from conventional plots. The application of SRI practices has helped them cope better with drought, made weed control easier and eliminated crop lodging. Her community is committed to follow SRI and scale up/out practices to other farmers in line with the King's philosophy.



ANNEX 6: COUNTRY BACKGROUND, EXPERIENCES AND FUTURE WORK PLANS

A6.1 Cambodia

Mr. Kong Kea, Country Coordinator of the Project, first provided a brief history of SRI in Cambodia. SRI was introduced to Cambodia by the NGO, CEDAC, in the year 2000, which started working with 28 farmers with support from the GIZ. Soon, other donors stepped in to take the activity forward. In 2004, the SRI working group was established by the government to share experiences and streamline activities involving all stakeholders. In 2005, the SRI Secretariat was established to promote and collect data on SRI. In 2006, SRI was included in the National Strategic Development Plan. Many NGOs have implemented projects and a number of farmers have adopted SRI, but more farmers are yet to understand and accept it. The reasons for this were studied and modifications made to facilitate better adoption in the FAO IPM-supported activities from 2007. In 2014, the EU-supported SRI-LMB project commenced.

The programme is lodged with the GDA-MAFF and the National IPM Programme. It was implemented in three districts each in three provinces. Activities implemented from 2014-2016 include: Inception Workshop to start activities after informing the larger group of stakeholders about the project; baseline study; a mini Training of Trainers through the Central Farmers Participatory Action Research (CFPAR) to build capacities of District Trainers (DTs) and Farmer Trainers (FTs) on SRI and how to organize FPARs; and Farmers' Participatory Action Research (FPAR), a farmer training tool using FFS approach. In the FPAR, principles and good practices of rice production were introduced and discussed based on field experiments. A total of 117 FPARs were conducted training 3,393 farmers, including 2,061 women; 72 post-FPAR activities were held to carry out more experiments and train 1,738 farmers, including 1,201 women. Seven Field Days were organized to share achievements reaching about 680 participants. LMU workshops were conducted to discuss results from FPAR and post-FPAR activities, constraints and solutions to problems experienced and to make plans for the next cycle of activities. A total of six meetings were organized involving participation by 192 participants. A Farmer Exchange visit to Thailand was carried out in November 2014 with 10 participants (2 women).

The results showed that FPAR activities gave better yields compared to farmers' conventional practices. SRI transplanted plots gave yields of 4.1tons/ha while conventional practices, 3.1tons/ha. SRI direct seeded plots gave yields of 4.2tons/ha while conventional practices gave yields of 3.5tons/ha. Direct seeding addressed problems concerning late onset of rains.

The difference in yields from different treatments under the experiments on number of seedlings per hill (i.e., 1-2, 3-4, 5-6) was not significant albeit the benefits were higher where less



seedlings per hill were used due to the lower cost of seeds. In the experiments on seed rates in kg/ha (i.e., 40-60, 70-90, 100-120), the treatment where less seeds were used gave the best yield at 4.0tons/ha vis-à-vis 3.7tons/ha where higher seed rates were used. It was found that the 20x20 spacing provided most yields, compared to others.

Problems faced during project implementation include: drought; rotation of family members attending FPAR sessions; farmers not actively participating in data collection; lack of knowledge and facilitation skills of DTs and FTs.

Not all SRI practices are applied by farmers due to location specific conditions, e.g., lack of water for irrigation. However, farmers have reported benefits from the application even of only a few SRI practices, e.g., reduced transplanting density or seed rates.

Work plans for 2017 include conducting a National Review and Planning Meeting and the implementation of activities for FPAR women farmers' groups.

A6.2 Lao PDR

Mr. Viengxay Photakoun, Country Coordinator, presented on behalf of the Project team. In Lao PDR, the Inception Workshop of the SRI-LMB project was held in June 2014. This was followed by the baseline survey and three CFPARs in 2015, where a total of 90 farmers were trained as Farmer Trainers (FTs) to lead FPAR implementation in the project areas. From 2015-2016, a total of 46 FPARs in three provinces (i.e., Vientiane, Khammouane and Savannaketh) were conducted. Each FPAR was facilitated by a pair of FTs. A total of 1,227 farmers (628 women) were trained in the FPARs. Other activities that were carried out were related to monitoring and evaluation, conducting provincial and national workshops and data entry.

The average yields from SRI demonstration plots reduced to 4.4tons/ha in 2016 from 4.6tons/ha in 2015. The reduction resulted from heavy rains and damage from golden apple snails. In all experiments, plots where SRI practices were employed performed better and got higher returns compared to plots where farmers' conventional practices were applied.

Lessons learned included the following:

1. The PMU should prepare activity work plans well in advance and communicate these to all project partners promptly for the necessary technical review and administrative action. This could facilitate timely initiating of field work aligned with the major production season.
2. Improving cooperation and communication between PCU, PMU, FAO in BKK and AIT is essential for better project implementation.



3. Capacity building of various stakeholders involved in field activities is essential. Organizing provincial workshops and training to exchange knowledge and experiences between farmers, provincial and district coordinators can be helpful in this.
4. It is essential to deliver technical support for managing the golden apple snail in rice fields, preferably based on good IPM practices.
5. It is necessary to explore the potential of direct seeding and transplanting single seedlings of rice with machines along with other SRI practices to cope with labour shortages in some places.
6. FPAR training started late, when farmers were already transplanting. So farmers attending the training were not able to adopt the practices they learned about during the same season. So it is better to start FPAR training at start of the season when rains allow so that farmers can practice in their own fields simultaneously what they learn in the FPAR training.
7. Some farmers experienced more weed problems in their SRI Rice fields. Since there were no rains after transplanting, it was difficult to manage weeds. Families where men migrated for employment faced labor shortage, which also affected weed management. Duck raising activity could be integrated with rice production to manage weeds.
8. Data collection was mostly done along the bunds in the FPAR fields in Van Vieng and Muen districts so there is a chance of “border effect”. It is essential to build the capacity of the District Coordinators and Farmer Trainers for better science-based action research designs and implementation;
9. Using young seedlings and wider spacing during transplanting can provide yield advantage in rice cultivation.

Recommendations for future activities include:

1. Providing assistance for farm mechanization by conducting trials exploring direct-seeding and/or single seedling transplanting, and weed management, can help families deal with labour shortage; this will be especially useful for those families where male members migrate away from their farms in search of employment.
2. In Vientiane province the farmers adopted SRI practices without chemical fertilizer and pesticide usage. We can promote organic rice farming among these farmers and link them with organic produce markets to avail premium prices and enhance their incomes.
3. SRI practices should be integrated with duck and fish rearing in order to increase rice yields and incomes. The design of the rice-fish farms should allow for regular draining of fields for purposes of creating alternate wet and dry conditions, a key SRI practice to promote soil and crop health.



Work plan for 2017 include: conducting provincial and national workshops, and attending RRPW (already completed); conducting 82 FPARs; facilitating information exchange between farmers by organizing meetings and facilitating cross-visits; developing SRI-LMB project training materials; and report preparation.

A6.3 Vietnam

Mr. Do Hong Khanh, IPM Coordinator, PPD, MARD, made presentation on the SRI-LMB Project implementation in Vietnam. The preparatory activities included holding an Inception Workshop in 2014, followed by the baseline survey carried out by the civil society organization Community Assistance Center (COMAC). A summary of persons trained during various activities undertaken in the 2015-2016 period is as follows:

Activities	Bac Giang	Ha Tinh	Total
- No of District Trainers	10	6	16
- No. of Farmer Trainers	23	27	50
- No. of Women Trainers	22	14	36
- No. of farmers	720	720	1,440
- No. of field experiments	27	27	54
- No. of SRI demonstrations	25	25	50

After each FPAR cycle, Provincial Workshops were organized in each province. **A National Review and Planning Meeting was held on 18 November 2016.** Local media events and engagement were periodically undertaken to inform a wider audience on project work and outputs.

The average yield (tons/ha) from 24 SRI demonstration fields in Bac Giang in summer season of 2015 and 2016 was higher than that from the Farmer Practice (FP) fields by about 0.6 - 1.2 tons/ha. In SRI fields, because of reduced expenditures, especially due to reduced rice seed and pesticide use rates, the net returns (benefits) increased from VND 4,352,000 - 8,632,000/ha (US\$ 202.42 - 401.49/ha). In Ha Tinh, average yield (ton/ha) from 24 SRI demonstrations fields (FPARs) in spring and summer seasons of 2016 was slightly higher than FP fields (0,16 - 0,32 tons/ha). The net returns from SRI fields were slightly higher because of reduced expenditures, especially reduced transplanting density from 4-5 seedlings/hill to 1-2 seedlings/hill, reduced pesticides (no sprays/season) and lower costs of irrigation. In all experiments, plots where SRI practices were employed performed better and got higher returns compared to plots where farmers' conventional practices were applied.



Key learnings include the following:

1. Select the experiments to solve the problems in the locations. For e.g., working on transplanting density or seeding rates for broadcasted rice. Almost all experiments with SRI demonstration gave high yields and reduced expenses so the farmers and local leaders became interested and support the project.
2. Selecting fields for experiments should be based on the purpose of experiment, e.g., if one of the objectives of the experiment is to show results of different water management regimes (i.e., draining at tillering stage and keeping water at dough and ripening stage), the sites should be selected so that most impact can be demonstrated. For example, they should be those with access to irrigation facilities that allow control of water application.
3. Better preparation is needed before implementing field experiments, to complete the process of selecting farmers, fields, laying out of experiments and defining the survey methods.
4. The groups should be ready to deal with severe weather conditions such as flooding, drought and, pest and disease occurrence. (Last season, one experiment in Luc Nam district could not be completed because when the rice seeds were broadcasted there was prolonged and extremely heavy rains that destroyed all rice fields. Because it was late in the season, the fields could not be re-sown for the experiment.)
5. District Trainers should be equipped with enough knowledge so as to be able to explain to farmers about the problems faced during the implementation of the field experiments.
6. It is essential to keep records in the Field Diary, the basic data required to calculate productivity, benefits and other information related rice production.
7. Strengthening communication from commune level to PMU, especially on reporting and recording data from field experiments is essential.
8. We should select a core group of farmers with good technical knowledge and experience, and enhance their capacities on SRI through FPARs using Farmer Field School (FFS) approaches. The model using core groups of farmers to support Farmer Trainers and District Trainers can be used to convince local leaders and other farmers in the community about the SRI project.
9. The application of one or all of the SRI principles will depend on the local conditions.
10. To help farmers apply SRI practices and principles, we need to enhance their knowledge and change their attitudes (i.e., about old practices). On the other hand, we also need to change the thinking of the government technical staff and managers and lobby for support from local leaders.
11. The main local rice varieties should be used for the experiments.
12. We should select farmers who have not participated in FPARs in the previous seasons.
13. It is a common practice for farmers not to keep water in the field from milk stage to ripening stage (i.e., drain the field after flowering). This reduces productivity especially when drought



sets in. There is a need to carry out more experiments on the influence of water on rice yields/production.

Recommendations include:

1. Local authorities should focus on directing and guiding farmers to apply the SRI practices on a large scale.
2. Continue to implement field experiments to evaluate the programme's results and encourage farmers to participate.
3. The European Union and AIT should provide funding to expand SRI on other crops (peanut, soybean, corn, etc.).

Work plans for 2017 include the following:

1. Facilitate Farmers' Participatory Action Research (FPAR) in 2 provinces (24 FPARs)
2. Provide support to FPAR Women's Farmer Groups
3. Conduct National Review and Planning workshop
4. Conduct Local Management Unit Meetings

A6.4 Thailand

Ms Nucharee Jaimool, Representative of the Provincial Coordinator, Vocational Training and Development Center (VTDC), Uttaradit, presented project implementation details from Thailand. In 2016-17, the VTDC in Uttaradit implemented the SRI programme in two locations, i.e., Fak Tha and Nam Pat districts. Farmers planned together at each crop stage on what to do. RD6 was transplanted when seedlings were 14-20 days old, with a spacing of 30x30 cm. Agroecosystem analysis (AESA) was carried out in the FPARs at various growth stages. Data collection was done regularly during the FPARs. Details on various parameters like growth and yield were collected. Salt solution was used to test seeds during selection. The FPAR also included topics on bio-control.

The application of SRI practices resulted in reduced costs for seeds, labor and herbicides, and in yields of about 4-5 tons/ha.



ANNEX 7: FEEDBACK FROM RRPW PARTICIPANTS

Ms. Ana Maria Pena Segura, the Delegation of the European Union, Thailand

Satisfaction for the latest achievements of the project that show very encouraging results, in particular the fact that most of the beneficiaries are women. We are very pleased to find out that the project is yielding very good results involving more than 11,000 farmers. The implementation of the project is carried out in a very inclusive way bringing together all main actors involved. The platform created for sharing of knowledge and experiences is very relevant and will facilitate dissemination of the results and will make the intervention sustainable after project end.

Continuation of EU support to this and similar initiatives at the regional and national level since the EU is fully committed to the achievement of the SDG's, in particular SDG 2, aiming at reducing poverty, achieving growth for all and leaving no one behind.

Besides improving income generation, food security and nutrition for rural households. The project is a good framework for promoting climate-smart techniques with an impact on the reduction of greenhouse emissions from the agricultural sector, which at the same time is one of the most vulnerable sectors to climate change.

Dr. Wijayaratna, New Zealand

In my opinion, the workshop was extremely successful. As I had informed Dr. Abha Mishra, it was a great learning experience for me; I would like to thank you again for providing me with the opportunity.

The workshop has been designed and organized well. It brought together a group of important people with wide and diverse knowledge and experience. It was a “good mix”; ranging from policy makers to farmers at the grass-root level. There were eminent academics, researchers at various levels and senior representatives of donors and development agencies. The workshop covered, not just the progress of the project, but global developments in SRI, ecological agriculture, “activities beyond farm” which has demonstrated success in enhancing small farmer income and sustainability.

While the technical aspects have been addressed, the workshop provided a forum for relevant policy dialogue in the presence of key project-related policy-makers in the region.



It was evident that the region has well-accepted SRI and obviously, the project contributes significantly.

As I had mentioned at the workshop, I hope that the project would be extended or pave the way to a second phase/project. I would like to repeat what I had suggested: it would be better if phase 2 (or the “new project”) could broaden the scope and add collective action. In addition to SRI, the next phase/project may strengthen farmer adoption of SCI focusing on year-round cultivation and diversification. I believe that collective action through farmers’ organizations and/or companies can significantly accelerate the adoption of SRI and SCI.

Ms. Lucy Fisher, SRI-Rice, Cornell University, USA

I felt the workshop organization was very well done. It was of course important to have the farmers from each country present and they all did a great job. Meeting the Vietnamese farmers during the field day and understanding their views of agroecology was a good addition. This was my first SRI-LMB workshop so I cannot compare it with the others, but I especially appreciated the emphasis on lessons learned by each of the countries. The participants not only presented the lessons, but were making efforts to correct the things that were not working. Working in a rainfed environment is a great challenge and not many are brave enough to take it up! Learning about all the adaptations was fascinating.

The outside speakers represented a range of interesting views ranging from market opportunities in Laos to the Saguna Rice Technique adaptations in India. Having good explanations of important regional initiatives such as the FAO programs and the Sustainable Rice Platform (SRP) was quite helpful to me personally, but it is good to continue to build relationships between these regional programs and the SRI-LMB participants as they will probably be operating after the SRI-LMB project itself has finished. Finally, I was grateful to be able to make a presentation on the various SRI networks and to gain feedback on my own ideas on how farmers and other stakeholders can build long-term alliances. The SRI-LMB has provided a unique opportunity for the region to direct attention and resources toward farmers who might otherwise be left out. Taking the risk on working in rainfed conditions has turned out to be well worth the effort!

Ms. Lucie Renaud, ALiSEA, Cambodia

On behalf of GRET and ALiSEA team, I would like to take this opportunity to thank you again for inviting us. Thanks to the event we have learned a lot about SRI practices, evaluation, strategy within national agricultural policy. It was great to have the possibility to visit a field on the first day. We could directly enter into the topic /discuss with farmers and start to meet other participants.



SRI-LMB project achieved many positive results and implement innovative methodology of monitoring and evaluation as well as participatory learning approach with farmers. The topics are very innovative. We would be interested to learn more and potentially others stakeholders as well may be interested to test your methodology. It could be a good opportunity to train, document even more all knowledge generated by AIT.

In addition, we are open to discussion if some potential synergies and collaboration are possible between our two networks to promote agroecology transition in the Mekong region. Lastly, we would be very interested to participate to next coming events organized by AIT.

Mr. Nguyen Hung Cuong, Mekong Institute, Thailand

The SRI-LMB Project: Since I did not have much information of the project, except for what I listened to the sharing during the day 1, I would share that I appreciate the project approach of capacity development in combination with demonstration on the field. The results will be much convincing; the observation by large number of farmers and policy makers would be very meaningful in terms of scaling up;

The workshop: it was very well conducted, particularly the sharing of highly qualified participants coming from both government and private sectors, and also very important the academic institutions. Unfortunately, I could not attend the day 2, I could not get the sharing by beneficiaries and the project planning. But, I think the project has already done well on the planning towards coming years. It would be good if you can share with me some information.

