



## The 1<sup>st</sup> expert consultation and workshop on the development and implementation of soil doctors program in Lancang-Mekong Countries

### WORKSHOP REPORT

Development and promotion of soil doctors program for sustainable land and agricultural management practices in Lancang-Mekong Countries





# **Workshop report**

## **The 1<sup>st</sup> expert consultation and workshop on the development and implementation of soil doctors program in Lancang-Mekong Countries**

15-18 March 2022

Sunee Grand Hotel, Ubon Ratchathani Province

Land Development Department  
Ministry of Agriculture and Cooperatives, Thailand  
March, 2022

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## Executive Summary

The expert consultation and workshop on the development and implementation of soil doctors programs in Lancang-Mekong Countries was held from 15 to 18 March 2022 at Sunee Grand Hotel, Ubon Ratchathani and Yasothon Provinces in a hybrid system (a combination of online and on-ground in the meeting room). They are 80 people from various sectors participated in the workshop; 1) Experts on agriculture/sustainable land management from project member countries, such as Thailand, Cambodia, Laos, Myanmar, Vietnam, and China; 2) Experts from the Global Soil Partnership and its members/partners related to farmer institutions, such as Australia, Malawi, Costa Rica; 3) Expert from the Stockholm Environment Institute of Asia; 4) Experts and officials from the Department of Land Development, both central and regional; 5) Experts and officials from the Department of Land Development, both central and regional; and 6) Experts from educational institutions, media organizations, and the public sector.

The meeting platform is as follows:

1. Presentations by experts and representatives from international organizations.

**Technology and knowledge exchange for land and agricultural development is prioritized** in the following areas:

1.1 Farmers' Network presented by speakers from Australia, Malawi, Costa Rica, Thailand and representatives of the Global Soil Partnership (GSP) highlighted the integration of academics and the establishment of a network of farmers for the implementation of soil and land development and strengthening farmers.

1.2 Sustainable Land and Agricultural Management presented by speakers from China, Cambodia, Myanmar, Vietnam, Laos, and the Stockholm Environment Institute. This aims to exchange information and knowledge on land management, climate change mitigation, smart agriculture, and organic agriculture in order to achieve the sustainable land management, sustainable agriculture, and food security in the Lancang-Mekong sub-region.

2. Panel discussion on the challenges and plans for scaling up soil doctors in Lancang-Mekong sub-region with representatives of the GSP served as group discussion moderators. **The meeting expresses international support for the soil doctor project, seeks academic collaboration, and actively promotes the project.**

3. Lessons learned on the soil doctor's role models and their networks in sustainable land management and community food security. There were experts in the lesson learned joining as a facilitator and two models of volunteer soil doctor, namely 'Plookhug Organic Farm' Lumpuk Sub-district, Kham Khuean Kaeo District, Yasothon Province and Mr. Suriya Hongloywong, Volunteer Soil Doctor of Kham Nam Sang Sub-district, Kut Chum District, Yasothon Province. Participants joining the workshop learned how to arrange lessons with storytelling methods, experience, and success in the operation of volunteer soil doctors and networks. The main points from the lessons learned were found that:

3.1 The 'Plookhug Organic Farm Group, Lumpuk Sub-district, Kham Khuean Kaeo District, Yasothon Province, is an example of a soil doctors who build a strong network with farmers in the area. **This group of farmers seeks to improve well-being, lower production costs, expand market opportunities, and preserve a fertile soil, land and environment for future generations.** There are networking and integration of various agencies, such as volunteer soil doctors, plookhug group, government agencies, and local organizations which prioritize on market opportunities in Yasothon Province. Soil doctors play an important role in land management with a wide range of knowledge and the use of technology in land management. At present, the Plookhug organic farm group has achieved tangible results and serves as a model for expanding positive outcomes in surrounding areas.

3.2 Mr. Suriya Hongloywong, an outstanding volunteer soil doctor in Kham Nam Sang Sub-district, Kut Chum District, Yasothon Province, is **a model soil doctor who has developed his own area and built a learning center to share with other farmers.** There are best practices employed in land utilization and management for maximum utilization, including the management of the area to adapt and accommodate the risks that may occur from various disasters such as floods, floods and droughts, etc. The success factors in the operation consisted of knowledge gained from learning by doing, managing the land with new theories and based on the Sufficiency Economy Philosophy, the well-planned work plan, supporting by families, as well as government agencies and networks, and planning the production according to the appropriateness of the area and having a variety. At present, Mr. Suriya has a land development technology transfer center that uses for transferring knowledge to other farmers and people who are interested in land management and agriculture.

The purpose of this workshop is to create academic collaboration between international researchers and academics as well as the Volunteer Soil Doctors and Farmers Network, to develop knowledge and technology on soil, land and agriculture, and to support information on the development of volunteer soil doctors in the Mekong-Lancang sub-region.

## **Knowledge exchange on sustainable land and agriculture management at international level**

There are presentations by experts and representatives from international organizations on technology and knowledge exchange for land and agricultural development

### **CHINA**

- 1. Title** Conservation agriculture practices in China-from plot research to field application
- 2. Country** China
- 3. Authors/Experts** Dr. Huijun Wu; Dr. Hong Wang  
Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences (CAAS)
- 4. Overview** All of the World topsoil could become unproductive within 60 years if current rates of loss continue. More than 40% of China's arable land is degraded. The improper agricultural practices led to soil quality decline, a shallow surface layer, and the difficulty of straw returning to the field safely and effectively in dry land farming in North China. How to use conservation agriculture in right way is still a problem. Based on the soil and climate characteristics of the northeast China plain and the North China plain, we conducted regional conservation tillage research in various eco areas, focusing on the evaluation of regional conservation tillage adaptation, the process and mechanism of soil water and nutrient dynamics under conservation tillage. Moreover then we try to demonstrate the good practices to local farmers.

<b>5. Stakeholders</b>	<b>Sectors</b>	<b>Names of organization</b>	<b>Roles</b>
	1. Government	1.1 Ministry of science and technology	Financial support
		1.2 Ministry of agriculture and rural affairs	Financial support
		1.3 Local bureau of agriculture and rural affairs	Outreach services
	2. Private	2.1 Local farmers	End user of technics
		2.2 Local farmer organization	End user of technics



3. Education institutes	3.1 Institute of Agricultural Resources and Regional Planning	Research institution
	3.2 China Agriculture University	Research institution

**6. Factors influencing farmers' participation** There are several factors influencing farmers' participation in the program such as gender, non-farm income, farmland size, farming experience, market access, trust and agro-ecological conditions, etc.

**7. Constraints hindering farmers' participation** Constraints that hindering farmers' participation in the program are similar to factors influencing farmers' participation in the program such as gender, non-farm income, farmland size, farming experience, market access, trust and agro-ecological conditions, etc.

**8. Progress and achievement of the program** The project promoted mechanized agronomic conservation tillage for regional adaptation. The scientific research achievements made these new technologies easily mastered by farmers through various training and field demonstration, and then increased agricultural output and increasing farmers' income. The farmers can get more income than 1500 yuan/ha. The technology demonstration effect were be enhanced in the form of "appearance and talk" by people around, and the "project demonstration" will make farmers "seeing is believing" and promote farmers to actively adopt conservation tillage technology.

**9. How does this program/network contribute to the Sustainable Development Goals (SDGs)?** Returning straw to fields increases soil fertility and reduces the use of chemical fertilizers, thus protecting the ecological environment. At the same time, conservation tillage has a carbon sequestration effect and is also an important technology choice for the national carbon peak and carbon neutralization strategy.



**10. How can the soil doctors program be applied or contribute to the country's existing program/network?**

It is a good program for the local farmers to learn new agricultural techniques for sustainable development.

**11. Photos of the program/network**



## CAMBODIA

- 1. Title** ‘Applying Metkasekor model to scale out the Soil Conservation practice’
- 2. Country** Cambodia
- 3. Authors** Seng Vang and Phy Chhin  
Department of Agricultural Land Resources Management (DALRM),  
The General Directorate of Agriculture (GDA)
- 4. Overview** In Cambodia, about half a million hectares of land are characterized as being highly vulnerable to soil erosion. Cambodia’s agricultural land is under threat of degradation and soil fertility depletion due to its expansion into degraded forestland. The annual cost of land degradation is estimated at USD 677 million or 3% of the country’s GDP (GM/UNCCD, 2018). The Cambodian agricultural sector must reinvent itself by shifting away from increased output through land expansion and excessive input use and toward sustainable intensification. After more than 15 years of research and development, conservation agriculture (CA) practice has proven to be applicable and profitable for farmers.

The concept of this practice has been central in the context of soil conservation. The rate of adoption by farmers of CA practice has increased sharply since 2012 (8.5 times), but the cropped area under CA has remained relatively small, at 1393 ha in 2021. The underlying problems are related to the lack of CA service providers, availability and access to agricultural machinery and implements for CA practice, and absence of a strategy to scale out the technology. Therefore, Metkasekor, an innovative CA extension model, was developed in order to boost the adoption of CA practice. Two provinces, Battambang and Preah Vihear have been selected to implement the Metkaksekor model.

Characteristics of the Metkasekor Model MetKasekor is an innovative extension model that focuses on opening the market for private sector investments in agricultural technology. Its unique features are composed of four key players, including public sector, private sector, early adopters (Modeled farmers), and the government’s extension system.

Purposes of the Metkasekor Model. The model is a government resource for the future with the intention of improving the public agricultural extension service system in Cambodia.

Main activities of Metkasekor Model. Our pilot phase has been focusing on increased adoption of CA technology. The main activities include land preparation for plantation, land leveling, planting of cover crops, management of cover crops, planting of the main crop, and harvesting of the main crop. All of these activities involve the use of agricultural implements.

Benefits of Metkasekor Model. Metkasekor introduces agro ecological practices into the farming systems of rice, cassava, maize, and horticulture. This practice helps improve soil fertility, restore ecosystem services, sequester and store carbon in the soil, reduce pest and disease pressure, diversify food production, maintain soil biodiversity, reduce soil erosion and restore degraded land, increase soil water retention, reduce methane emissions, and improve water use efficiency.

Farmers' Perception on Metkasekor Model. At present, the main challenges facing farmers are the lack of access to cover crop seed and mechanical service providers for land levelling, and the planting of cover crops and commercial crops. The start-up cost (land leveling and subsoiling) to implement this practice may be high for some resource-poor farmers.

5. Stakeholders	Sectors	Organization	Roles
1. Government		1.1. Department of agricultural land resources management	Provide technical support on soil management through knowledge transfer to local extension agents and early adopters and farmers.
		1.2. Department of agricultural engineering	Provide technical support on the use of appropriate scale mechanization to local service providers.
		1.3. Department of extension for agriculture, forestry and fisheries	Coordinate the process of conservation-agriculture technology transfer to a wider range of farmers and service providers.
		1.4. Provincial department of agriculture, forestry and fisheries	As the technology acceptor through TOT provided by the above three expert departments.
2. Private		2.1. SmartAgro	Provide seed of cover crops to be used by farmers.
		2.2. Larano	Is a service provider. It provides service to farmers related to land levelling, sowing of cover crops, planting of main crop, and harvesting.

	2.3. Cheang Oeun	Is a service provider. It provides service to farmers related to land levelling, sowing of cover crops, planting of main crop, and harvesting.
3. Education institutes	3.1. Royal University of Agriculture	Assessing the performance of agricultural machinery implements for use conservation agriculture.
4. other sectors	4.1. Swiss contact	NGO supports the coordination among partners, and jointly implements the project activities.
	4.2. CIRAD	NGO provides technical support, and jointly implements the project activities.
	4.2. CIRAD	NGO provides technical support, and jointly implements the project activities.

**6. Factors influencing farmers' participation**

Farmer's knowledge and their ability to adopt new practices or technology.

**7. Constraints hindering the farmers' participation**

Farmland size, farmer's living status, product price and market access, limited availability of CA service providers, and access to low-interest-rate rural credit.

**8. Progress and achievement of the program**

Presently, in the two targeted provinces, we have about 1000 ha of agricultural land covered with our newly introduced soil conservation practices under the Metkasekor Model. In addition, we have also we have made the following achievements: 1000 farmers participated, 25 agricultural machinery implements were sold, 4 private sectors were involved, 15 service providers, and 17 tons of cover crop seed were produced. Despite knowing the benefits of agro ecological practice for the environment, economy, and rural society, the assessment of the impact of agro ecological practice on soil quality, the environment, and economics of farmers who have been adopting the practice has yet to be carried out by developing and implementing the MRV system ( Monitoring, Reporting, and Verification).



**9. How does this program contribute to the Sustainable Development Goals (SDGs)?**

This innovative extension model aims to enhance the adoption by farmers of soil management practices that would help transform the current farmer's unsustainable farming practice into a more sustainable and climate-smart soil management practice. In response to SDG15-Life on Land, the adoption of agro ecological practice helps improve soil fertility, restore ecosystem services, sequester and store carbon in the soil, reduce pest and disease pressure, diversify food production, maintain soil biodiversity, reduce soil erosion and restore degraded land, increase soil water retention, reduce methane emissions, and improve water use efficiency.

**10. How can the soil doctors program be applied or contribute to the country's existing program/network?**

This existing extension program would help leverage the soil doctor program to be applied in Cambodia because of the nature of the program which has already embedded the context of soil conservation, productivity and profit, and environmental sustainability.

**11. Photos of the program/network**





## COSTA RICA

- |  |   |
|--|---|
| <b>1. Title</b>  | Costa Rican Soils Networking  |
| <b>2. Country</b>  | Costa Rica  |
| <b>3. Expert</b>   | Mr. Esteban Loria; Costa Rica Soil Association (ACCS)   |
| <b>4. Overview</b>   | <p>Most elementary school and high school students and small scale farmers do not know basic information about soil, soil classification, and general soil management. Therefore, the ACCS organizes a network capacitation and weekly radio programs to teach them about different topics of high importance related to soils, including Facebook live in a one-hour program. The ACCS also provides other materials such as posters, and agricultural inputs as awards for participants, e.g., hydroponic kits, organic fertilizers for home gardens, limestone, synthetic fertilizers, etc. These are all related to the scheduled programs. The goals of the program are to gather gathering people's participation in soils and soil information. We implemented the year's program with an open activity called "Hands to the soil" with several soil activities. The impact of this program is raising an awareness of soil and the importance of soil among people through an increase in the participation of people in the program, starting from 3000 to 120000 interactions 2 years after program implementation.</p> |
| <b>5. Stakeholders</b>                                     | <ol style="list-style-type: none"> <li>1. Government sector i.e. INTA, Ministry of Agriculture, with the roles of investigation, political role interaction with farmers.</li> <li>2. Private sector i.e. Fund cooperation, FAO, Colegio de Ingenieros Agronomos, with the roles of sponsor, information and economic.</li> <li>3. Education sector, i.e. University of Costa Rica, Instituto Tecnologico, with the roles of supporting Students and providing information.</li> <li>4. Other sectors i.e. Radio Cartago, Bummerang, with the roles of collaboration and networking.</li> </ol>   |
| <b>6. Factors influencing farmers' participation</b>       | Farmer's participation in the program is influenced by factors such as technical information, soil testing labs' info, and economic benefits for efforts in soil conservation.  |
| <b>7. Constraints hindering the farmers' participation</b> | Constraints that hinder the farmers' participation in the program are building network and access in the rural areas.   |

**8. Progress and achievement of the program/network**

This program provided general information about soil science to people who participated in the program. This also reduces the costs of soil testing labs in the country, as well as well interpretation. The taxes on well management farms decreased with new agricultural techniques and fertilizer management.

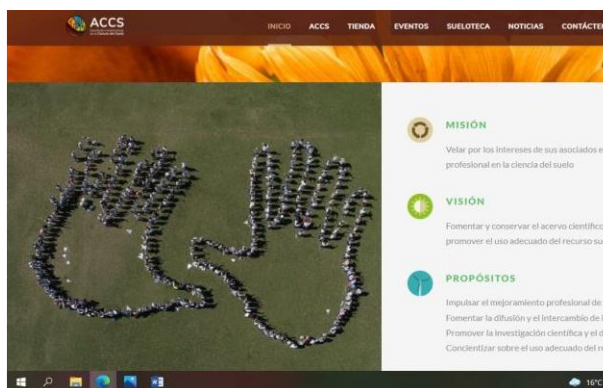
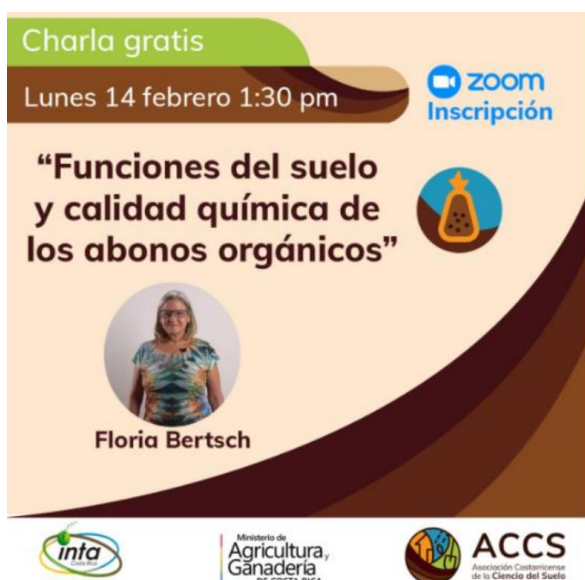
**9. How does this program contribute to the Sustainable Development Goals?**

Successful technical experience of experts could be shared at local, national and international levels.

**10. How can the soil doctors program be applied or contribute to the country's existing program/network?**

Soil kits will be useful for small-scale farmers in the rural areas who have difficulty accessing to the cities where the soil testing labs are located.

**11. Photos of the program/network**



## LAO PDR

- 1. Title** Soil Doctor
- 2. Country** Lao PDR
- 3. Authors** Sisavath PHIMMASONE (Sisavathphimmasone@yahoo.com)  
Sinouan SOUVONG (xsinouane@yahoo.com)  
Agricultural Land Development and Fertilization Center  
Department of Agricultural Land Management (DALaM)
- 4. Overview** Lao PDR is a landlock country and about 7 million people live in its 18 provinces, with most people 68 percent still living in rural areas and the share of agriculture in Laos' gross domestic product was 16.21 percent (Lao Statistics Bureau, 2020), More than 70 percent of the population depends on agriculture for their livelihoods (UN, 2015). 23 percent of the population still lives below the poverty line (IFAD, 2019), 90 percent of poverty people live in the mountainous area and mainly on land resources (Messerli et al., 2018).
- Problem soils relate to the approximate 80% of soils which are on sloping land and subject to landslides and erosion (UN, 2015; DOF, 2011), Shifting cultivation exacerbates the situation, and often the soils are shallow, stony and on rocky platforms, and parent materials. Acidic soils are widespread another major problem as noted in the Harmonised World Soil Database (HWSD). The development of rural advisory services faces a number of challenges, including a lack of government funding, inadequate human resources, the outflow of young people from rural areas, the exclusion of vulnerable groups (such as women and ethnic minority groups), weak market regulation, and expansion of crops and technologies that have negative impacts on the environment.
- The objective:**
- 1) To establish a farmer-to-farmer training system by building the capacity of farmers on the practice of sustainable soil management;
  - 2) To support the efforts of governmental agencies and organizations working on agricultural extension at the field level;
  - 3) To support field research based on interactions between the Soil Doctors and universities and research institutes, including access to demonstration and experimental fields;

The main characteristics aimed to support national governments and stakeholders working with farmer communities in building the capacity of farmers for sustainable soil management in their community.

### **The 5 main activities of the soil doctor program in LAO PDR**

1. Selection of the volunteer to become the Soil Doctors Farmers joining the Soil Doctors Global programme should be identified as a group of excellence by their community. Based on that, only farmers that meet certain criteria can become Soil Doctors.

2. Trainings: 3 days trainings provided to the Soil Doctors by the promoters on the practice of sustainable soil management. The topic of the trainings is chosen by the promoter(s) depending on national priorities and the needs of the local communities such as

- The overview of soil in Lao PDR
- Basic knowledge on soil
- Soil fertile management
- Soil Problem for crop production
- The way to solve soil problem.
- And the other related topic

All Soil Doctors receive the same training consisting of technical and practical classes such as Compost making, Effective Microorganisms (EM), Bio-extract, and the visit of experimental or demonstrational plots.

3. Certification of the soil doctor. All training participants were trained does not mean the soil doctor yet, they still need to implementation by following the soil doctor guideline (implementation in their farm, coaching/sharing to their community). After 6 months of monitoring the DALaM/local partner be able certified the soil doctor.

4. Monitoring and evaluation. After 1 year of soil doctor, the local partner will be monitoring the soil doctor that they still involved in the role and responsibility of the soil doctor, will be remove from soil doctor network/database if in case of death, resignation, involved in Non-farm activity and so on.

5. Encouragement and promotion the soil doctor

- Be able the representative land management agency at the farm level in their area and the assistance of a trusted member of their community and Through their Soil Doctor, they will have a preferential channel to communicate with the promoter(s) , particularly with regard to their needs.

- Support/update the equipment/tool (Soil testkit, training material ) and facility need for promotion the implementation of soil doctor.

In 2014 the Lao PDR established the Soil Doctor guidelines (Adopted the lesson learn from Thailand and GSP) and launched the Soil Doctor Program. Due to Limited support and contributed from ADB via the CASP II project and from GIZ have been received to date. Since 2015, 238 people have received initial training support as trainee soil doctors from across 17 provinces. None yet have been certified but about 25% are working across 3 province to support in some form such as farmer field schools and other activities in land and soil management. Other extension programs with some soil and land management activities are run by the concerned department.

**5. Stakeholders**

<b>Sectors</b>	<b>Names of organization</b>	<b>Roles</b>
1. Government	1.1 Department of Agricultural Land Management	Policy making, technical support, Creating guideline, contribution for implementation.
	1.2 Provincial and district of Agricultural Land Management	Implementation, monitoring & evaluation.

**6. Factors influencing farmers' participation to the program/network**

In this case of the soil doctor program in Lao PDR that most of the farmer participation are

1. Soil doctor is new for networking, and many activities/topics are interesting,
2. Market access is one of the key encouragement the farmer to learn the new technology and share their experience to other farmers.
3. Promotion the soil doctor as land development agency at farm/village level will work/link with agricultural land management at district/provincial level

**7. Constraints that hinder the farmers' participation to the program/network**

1. The main constraint the farmer participation are the non-farm income that farmer has focusing on their work to make the income generation,
2. The market access is also of these constraint caused to limit of agriculture production demand and an encouraging farmer involve in soil doctor program.
3. Lack of resources to supports the soil doctor program.
4. Previous supported the training by a few projects was not the full task of a soil doctor.
5. Limited of promoter at local level.
6. The local extension material is limit.

**8. Progress and achievement of the program/network**

The soil doctor program has been implemented with many members that will support for sustainable soil management to ensure good agriculture production in their farm and of Course with their community.

**9. How does this program/network contribute to the Sustainable Development Goals (SDGs)?**

That contributed to support the National Green Growth Strategy of the Lao PDR and SDGs 15 in particular,

1. The program has developed the knowledge and skills of the producers to ensure improved techniques and efficient production as well as providing the opportunity for livelihood alternatives. This includes the promotion and development of products with local unique characteristics for export and food security.
2. Also promoting the integrated agricultural production and crops rotation practices to reduce the degradation of soil; restricting and decreasing the mono-culture practices for long period that may affect soil fertility and biodiversity by promoting multi-crop cultivation that takes into account the economic efficiency, technical feasibility, change of climatic conditions, capacity to ensure food security and nutritional value.

**10. How can soil doctors program be applied or contribute to the country existing program/network?**

To implement the Soil doctor in Lao PDR have been adopted a lot from the soil doctor program, in particular, the Soil doctor guideline, learning material (Poster, manual, educational materials) and lesson learn implementation LMC member.

**11. Photos of the program/network**





## MYANMAR

- 1. Title** “Myanmar Food Security Working Group”
- 2. Country** Myanmar
- 3. Expert** Dr. Ohnmar Khaing, Advisor of Myanmar Food Security Working Group (FSWG)

**4. Overview** The Food Security Working Group (FSWG)’s mission is to improve the quality of, and the enabling environment for, food security interventions and policies implemented in Myanmar through mobilizing the collective capacities of the network. Until 2020, the FSWG network has over 200 members of local and international non-governmental organizations (NGOs), community-based organizations (CBOs), and individuals who are working or are interested in food security related issues in Myanmar.

Capacity Building: FSWG is building the capacities of its members and partners (mainly local CBOs and CSOs) to enable them to best develop and implement food security innovations.

Knowledge and evidence-based information: Together with its members and strategic partners, FSWG is conducting policy related researches to produce reliable data and relevant research information to be able to influence the government’s policy making and implementations in addressing the country’s food security issues.

Networking and coordination: FSWG is organizing events and activities based on member demands and needs in order to fully utilize the FSWG information and networking opportunities.

Policy analysis: FSWG is playing an important role in policy analysis by actively engaging in policy dialogues and advocacy activities. Through analysis of the existing and draft policies on the welfare and right of smallholder, FSWG has demonstrated active policy engagement in national/regional food security agenda.

Advocacy: To a large, FSWG and its network members are influencing national and regional policies and their associated factors (i.e. trade, crops, nutrition, climate change, fishery, food safety, environment, gender, market, land tenure, etc.) using evidence-based research findings and advocacy interventions. FSWG has created the space for Myanmar civil society to do its main functions.

<b>5. Stakeholders</b>	<b>Sectors</b>	<b>Names of organization</b>	<b>Roles</b>
	1. Government	1.1 Department of Agriculture	Extension service , training, policy advocacy
		1.2 Department of Fishery	Extension service , training, policy advocacy
		1.3 Department of Agricultural Research	Research , strategy development
		1.4 Department of Forestry	Agro forestry policy making process
	2. Private	2.1 Myanmar Rice Federation	Private sector engagement such as contract farming and market intelligence
		2.2 Myanmar Consumer Union	Food safety and Consumer awareness
	3. Education institutes	3.1 Yezin Agricultural University	Research, policy advocacy and technology sharing and adoption
		3.2 University of Forestry	Research and policy advocacy
		3.3 University of Veterinary Science	Research and policy advocacy
	4. other sectors (NGOs and CSOs)	4.1 Local farmer groups	Member , sub-grant, technology dissemination through farmer networks in state and region
		4.2 local livestock growers	Member , sub-grant, technology dissemination through farmer networks in state and region
		4.3 Community forest uses groups	Member , sub-grant, technology dissemination through farmer networks in state and region
		4.3 International NGOs	Member , policy advocacy and networking with donors

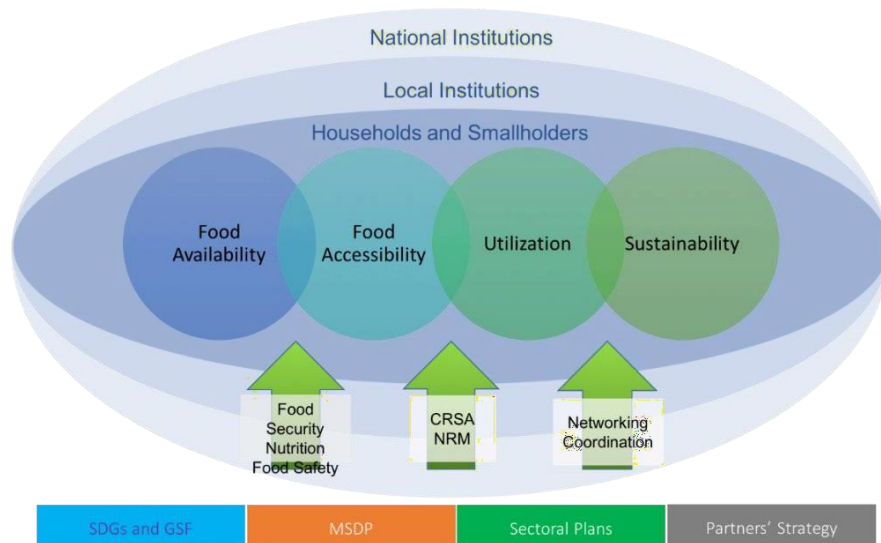
**6. Factors influencing farmers' articpation** Capacity building, farming experience, linkage to local and regional networks, different agro-ecological conditions

**7. Constraints that hinder the farmers' participation** Lack of networking, low education, market access, resource limitations,

**8. Progress and achievement of the program/network** Crop productivity, technology adoption, market linkages and private sector engagement, awareness of land ownership and land user rights, increased income and improved livelihood, understanding of laws and regulations relevant to farmers

**9. How does this program/network contribute to the Sustainable Development Goals (SDGs)?**

Food Security Framework and intervention logic model of FSWG strategy 2019-2023



**10. How can the soil doctors program be applied or contribute to the country's existing program/network?** Capacity development for farmers and CSOs, knowledge sharing and learning for farmer groups and CSOs through sub-national networks. Policy advocacy and evidence-based research learning through existing network activities of sustainable agriculture practices, farmer field school activities, agroforestry practices

**11. Photos of the program/network**



Chilli, Ginger, Pineapple Value Chain Field Exchange Trip To Mandalay, Thibaw, Ywar

**VIETNAM**

**1. Title** Overview of Land Use systems and Farmers' Union in Vietnam

**2. Country** Vietnam

**3. Authors** Dr. Ngo Thanh Son  
Dr. Nguyen Thu Ha  
Mr. Vu Thanh Bien

**4. Overview** Mekong Delta in Vietnam is one of the most examined deltas in the world given its dynamics, complexity, and vulnerability. In the past decades, the VMD has changed rapidly, especially the land use in relation with the socioeconomic development. National policy has profoundly influenced these changes and the changes have significantly affected local livelihoods. However, these changes are not well reported systematically. According to MARD in 2020, about 70% of the country's population relying on agricultural land, however, for a long time, we paid little attention to soil for agricultural production, and did not periodically evaluate soil quality and fertility. For many years, we have been intensively farming for productivity, using a lot of chemical fertilizers, chemical pesticides, less organic fertilizers, and no suitable measures to protect and improve the soil. So, the soil has been gradually degraded.

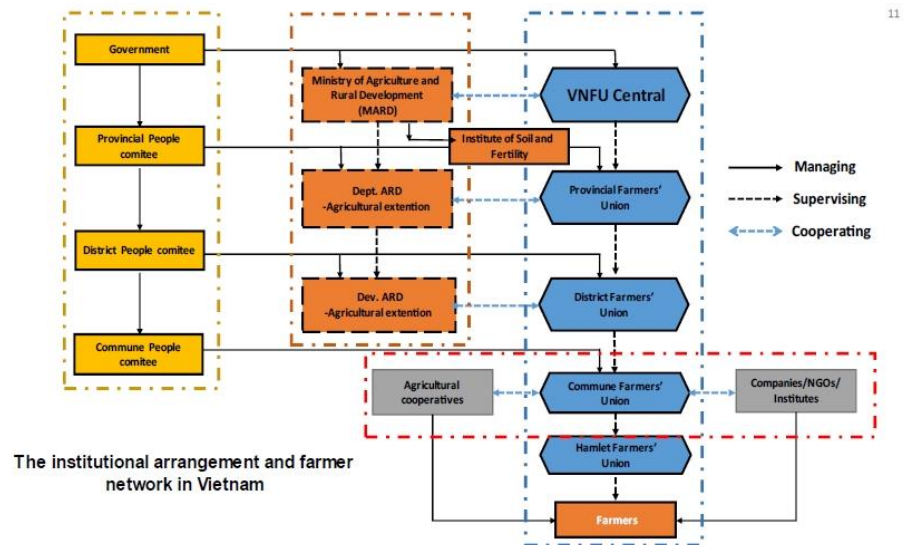
Firstly, is physical degradation, the soil is no longer porous, but becomes compact, hard, and changes in structure. Secondly is chemical degradation, some nutrients in the soil are unbalanced such as excess phosphorus, potassium deficiency, micronutrient deficiency, contaminated irrigation water along river basins and soil around industrial park. Thirdly is biological degradation as more harmful organisms than beneficial ones. If we want to have a sustainable agriculture, better life in both wealth and spirit of farmers, besides high-tech agriculture in greenhouses, it is necessary to look at the key role of soil and the permanence of soil-based traditional agriculture. Although, we have many successful know how farmers in developing agriculture practices over Vietnam, we do not have any soil doctor in community.

In fact, farmers may associate with each other in cooperatives. But the essence of cooperation is to find and share markets rather than to help each other in matters of land use, maintenance, and improvement soil fertility. Farmers, who are the direct soil users, need the necessary knowledge to make sustainable use of agricultural land resources. Therefore, Soil Doctor program play an important role in building the farmers' networks in Vietnam and assisting government agencies to

educate farmers on soil science principles for practices of sustainable soil. This would be crucial step to exchange and transfer knowledge and technologies and to assist the countries implementing sustainable land and agricultural management practices in LMC in general and Vietnam in particular.

**5. Stakeholders**

(MARD, MONRE, Dept. of Agriculture and Rural Development, Dept. of Natural Resources and Environment, VNFU, University/Intitute, NGOs, Private Company, etc)



- The role of government: In recent years, the government has issued many regulations, circulars, and decrees focusing on land resources management which emphasized soil quality and fertility improvement. However, there is a big the gap between the national policy and implementation at the provincial level. The implemented.
- policy and institutional settings were not able to take full account of ecosystem services (exp. soil protection and conservation) and their linkages and positive/ adverse impacts to local livelihoods. There is a need of integration between top-down and bottom-up approach. In this light, the provincial government should play a more important role in linking national policy to demands of farmers and the actual their livelihoods. It is equally important that better insights into the changes and the complexity of various social-ecological systems are required before (hard) solutions and relevant policies implemented.
- The Role of the public sector: implementing MARD and its directives related to agricultural development and soil protection, orientating, consulting, and supporting for agricultural extension services; Coordinating linkages and relationships between farmers (cooperatives) and businesses; Facilitating the establishment of business clusters.
- The role of Vietnam Farmers' Union: Participating in the formulation, dissemination of policies, laws related to agriculture, farmers, and rural areas; Providing legal support for farmers; Monitoring and social

feedback; Transferring techniques and technology to farmers; providing vocational training and job assistance for farmers; Developing sustainable development models on agricultural production and business such as cooperatives, cooperative groups, environment-friendly agricultural models, value chains; Providing services for farmers: credit, seed, seedlings, fertilizers, pesticides, marketing; Raising awareness, knowledge of farmers on social issues such as environmental protection, prevention, and against social evils; Organizing cultural and sports activities for farmers; and Promoting international cooperation.

- The role of cooperatives: Representing and promoting the interests of farmers, Providing services to farmers; Forming linkages between farmers, service providers and markets school; Coordination of production and farmers' resources; Apply quality standards.
- The role of businesses: Provide high quality input products and services; Access to finance including private sector investment; Market Access; Market information – ensure farmers produce products according to market demand; Introduction of sustainability, quality standards and certification.
- The role of university and research institution is training human resources, developing technology, and disseminating knowledge in agriculture and rural development.
- Soil doctor program in Vietnam will focus on develop the farmer union at commune level and the link among farmer, university/institution and private sectors. Soil doctor will be the one who will disseminate knowledge of soil conservation and sustainable agriculture models to local farmer in the community. In addition, this successful program will be disseminated to other regions in Vietnam.

**6. Factors influence farmers' participation to the program/network**

- Lack of funding: funding for basic research on soil quality and soil fertility improvement at the provincial and district levels is low. The level of efficiency in transferring research results to farmers is not high. Therefore, farmers' ability to understand the principles and approach techniques/technology in sustainable use of agricultural land is still limited. As the results, nutrient supplying capacity of the soil is reduced, unbalanced for plants, the yield of crops is likely to be high, but the quality is not high enough, more pests appearance and environmental impact.
- Farmers lacking knowledge on soil degradation, soil protection and improving fertility. The results of intensive agricultural production lead to effect on soil properties and causing environmental pollution, especially to groundwater, greenhouse gas emissions.

**7. Constraints that hinder the farmers' participation to**

- Farmers lack knowledge and skills about the production and management;
- Fragmented and scattered agricultural land caused problems in applying large scale technology and practices ( i. e. , planting,

**the program  
/ network**

harvesting, land leveling, etc.). Cost of agricultural inputs and price of agricultural products.

- Lack of market information and market forecast (i.e., quantity, variety, price, quality, processing requirement, and potential market).
- Policy to attract investment from private sector in agriculture, and establish an information exchange platform to update information on market issues (i.e., demand, quality, amount, price, and potential buyers)
- Farmers have limited access to services and finance.
- Linkage between production and consumption is weak. It is difficult to develop a value chain program for some key agricultural commodities for lack of large firms that can lead the value chain.
- Low product quality and unsafety food, and less competition
- Climate change and environment degradation

**8. Progress and  
achievement of the  
program/ network**

Expectation of soil doctor program in Vietnam as follows:

- Increased nutrient and water holding capacity, Increased water infiltration
- Reduced run-off of sediment and nutrients, Erosion control
- Increased carbon sequestration and reduction of greenhouse gases in atmosphere
- Increased root penetration and aeration
- Resilient to drought and high intensity rainfall events
- Increased nutrient cycling
- Less fertilizer inputs
- Increased biodiversity
- Reduced risk of disease
- Increasing awareness of conventional farmers about the environmental impact they make can lead to a move towards alternative farming systems (e.g., organic)
- Connecting farmers and local authorities (i.e agricultural extension office) //farmers and academic institutes//farmers and businesses.

**9. How does this  
program/ network  
contribute to the  
Sustainable  
Development  
Goals (SDGs)?**

- 65-70 percent of poor people in rural areas in Vietnam depend on agriculture for their livelihoods. Therefore, soil doctor program by improving soil health, through strategies such as agroforestry, intercropping, and composting, is one important way to increase the productivity of these small plots of land. This in turn which smallholder farming communities increase their resilience to environmental shocks and grow their way out of hunger and poverty (SDG 1,2, and 4).
- Soil is a highly valuable—and in our lifetime, non-renewable—resource (SDG 15).
- Climate change is driven by atmospheric carbon. Surprisingly, soil can absorb nearly twice as much carbon as can be contained within plants and the atmosphere combined! Soil's enormous capacity to absorb more carbon has additional benefits: adding carbon to the soil via plant materials (compost, green manure, animal manure, biochar) will

actually reduce carbon (and thereby the amount of carbon dioxide) in the atmosphere. Increasing the amount of carbon in soil will also allow the soil to capture and hold more rainwater, which reduces the amount of soil erosion and increases the soil's ability to filter ground water, which increases water quality. (SDG 13)

**10. How can soil doctors program be applied or contribute to the country existing program/network ?**

- Identify and develop existing information, material, needs and gaps at commune level, develop guideline and organize the workshop/meeting with head of farmer union at village or commune.
- Establish the network among head of farmer union at village and cooperative, and private company in promoting soil doctor program at locally level.
- Carrying plot or case study to identify best practices to address major land degradation and land management problems to be used by soil doctors.
- Conduct training of trainers. Organize an expert group meeting exchange knowledge, technologies and action on the knowledge and technology transfer. Conduct training of trainers through seminar, meeting, and study visit.
- Create a platform and promote soil doctor activities. Supply equipment and tool for knowledge transferring.

**11. Photos of the program/network**



## Lessons' learned from Soil Doctors

Lessons' learned on the soil doctor's role models and their networks in sustainable land management and community food security. There were experts in the lesson learned joining as a facilitator and two models of volunteer soil doctor, namely 'Plookhug Organic Farm' Lumpuk Sub-district, Kham Khuean Kaeo District, Yasothon Province and Mr. Suriya Hongloywong, Volunteer Soil Doctor of Kham Nam Sang Sub-district, Kut Chum District, Yasothon Province. Participants joining the workshop learned how to arrange lessons with storytelling methods, experience, and success in the operation of volunteer soil doctors and networks.

### Model 1 Plookhug Organic Farm Group

#### 1. Background of the Plookhug Organic Farm Group



Yasothon is one of the provinces that experiences soil constraints while using the land for agriculture. The soil constraints are defined as sandy soil with the area of 306,899 rai (11.79% of the provincial area), saline soil (moderate and low) with the area of 140,255 rai (5.39%) and shallow soil mixed with pebbles and mountainous soils 68,117 rai (2.62%). The poor physical property of soils includes low water holding capacity, especially in the dry season where the soil becomes extremely dry. For this reason, farmers are able to use the land for farming during the rainy season once a year. In addition, uneven land surface can easily lead to erosion and soil loss and such sediments and agricultural chemicals easily flow from the land into water. Furthermore, wastewater from households, industries and trash, including farmers washing their tools containing chemicals in water sources

also cause the water sources in the farm to deteriorate from the residues of those contaminants. This affects the quality of the land and environment. The relevant agencies therefore need to encourage farmers to turn to organic farming and develop into organic agriculture.

Land Development Department provides great importance on people's participation in planning policies, directions, work plans and implementing the LDD plans in correspondence with the National Economic and Social Development Plan. LDD transfers farmers' participation to an agency under the LDD in accordance with the agency's main mission in land use planning, soil improvement, increasing the potential of the soil, use of organic fertilizers, and the development of microbial innovations for land development. In addition, LDD has given importance to drive

the organic agriculture development project since 2011, starting from supporting the project of using organic substances to reduce of agricultural chemicals. The volunteer soil doctors in the village will act as the chairman of the group of farmers who are using organic substances. The chairman require that there is a vice chairman and the committee of 5-7 people as appropriate. Volunteer soil doctors play a role in driving the group through knowledge support on soil improvement to be suitable for production in the organic farming system. This includes transfer knowledge of organic farming production according to organic agriculture standards to farmers participating in the project and support agricultural inputs that necessary for organic farming. LDD staff will act as academic advisors on organic agriculture for farmers groups, starting from applying for organic farm certification to pass the organic farming standard with participation.

### Goals:

**Cost reduction,  
Access the market,  
Better environment,  
Better life**



Plookhug Organic Farm Group is one of many groups that promote the use of organic substances. It is a strong farmer group that can be developed further into complete organic farming group. Most of the activities will focus on growing organic rice and planting watermelons after the rice is harvested. There are the senior volunteer soil doctors and younger generation has continued to drive the work of the organic farming group. Now, organic farmers gathered together as a group of organic Plookhug Watermelons. The new generation realizes the value of the development with the intellectual heritage and potential of the area. They love for agriculture career and focus on consumers with a common goal: reduce production costs, increasing marketing opportunities, preserving the environment, both of soil and water resources to be fertile for future generations and better life quality. Plookhug Organic

Farmer Group finds the opportunity of organic watermelon production as shown in the motto of the province that help in publicity and promotion of organic watermelons.

## **2. Wisdom, Technology, Principles, and Implementation for the success**

The Plookhug Organic planting project uses a combination of knowledge between wisdom of the older generation and new technology. The wisdom of the older generation that have been used such as (1) using domestic herbs such as wild yam, wormwood, golden shower pods, and Stemona, mixed with bio-extract supper LDD 7 to minimize insect and pests; 2) using a bottle tie to an iron nut, when the wind blows, it makes a sound that frightens the birds in the field (3) Bird repellent CD, kite, and scarecrow frightens the birds in the field as birds think that there is a big bird and people in the field, so they don't dare to enter the watermelon plot. (4) Bird hook is a hook that is attached to a rope around the rice field and organic watermelon. Birds or crows

do not dare to enter the plot as the pointed metal from the hook. (5) The use of trees or straw as a line for wind protection. Farmers notice that wind causes yield reduction, so they find windproof materials and coverings such as rice straw from organic rice fields.

In addition, new technology has been used, such as (1) labeling the quality of watermelon by using barcode which can be traced to the planting plots, planters and planting dates (2) Processing of products into watermelon juice, watermelon jam and watermelon ice cream (3) Using applications such as Line (line), to form a group of people who grows watermelon to public news and information on watermelon production (4) Using Facebook to increase marketing opportunities and advertising, new marketing communications (5) Trading through online platform (6) Organizing promotional activities such as demonstrations of making various menus from watermelon, watermelon eating contest, Organic Watermelon, Auction, Adding value to products such as planting heart-shaped watermelons for the Valentine's Day festival (7) Using drones to spray insect repellents, etc.



### 3. Stakeholders

Stakeholders involved in Plookhug Organic Farm Group are divided into 3 groups as follows:

1) main stakeholders are volunteer soil doctors and the group of organic watermelon producers

2) secondary stakeholders are:

- Land Development Department
- Yasothon Land Development Station
- Land Development Regional Office 4
- Research and Development Division
- Yasothon Province
- Thai Organic Agriculture Foundation
- National Bureau of Agricultural Commodity and Food Standards
- Farmers Rehabilitation and Development Fund
- Yasothon College of Agriculture and Technology
- Sukhothai Thammathirat Open University

3) Direct stakeholders are local farmers and the local Administrative Organization

#### 4. Summary of lessons learned, success or benefits received

##### Economic aspect

1) Empowerment of farmers. Farmers can set the price of produce and make continuation contracts with consumers. They do not face the problem of price fluctuations or pressure from middlemen. Most of the farmers in the organic watermelon producer Plookhug group have an income increase of about 10,000 baht / rai, which is twice as profitable than growing rice. As a result, farmers are not in debt from their agricultural career and can relieve household debt burden. When income increases, farmers have a better quality of life and encouraged them to develop better product quality.

2) The cost of agricultural production has clearly decreased. Farmers earn more income. From data in Yasothon Province, farmers who practice organic farming earn an average of 20,156 baht/family/month and has an average expenditure of 3,229 baht/family/month. Meanwhile, farmers with chemical production will have an average income of 20,444 baht/family/month. but has an average expenditure of 22,227 baht/family/month.

3) The Participatory Guarantee System (PGS) can improve the competitiveness of organic agriculture by reducing the cost of external inputs ( chemical fertilizers, pesticides, herbicides, seeds stocks) and turning to the most inputs on their own farms or within the group. Organic farming has led farmers to stop using chemical fertilizers and pesticides. The agriculture cost is only 720 baht/rai.



4) The amount of agricultural waste in the fields decreased by 43 million tons across the country. In the area, 1,870 households use agricultural waste to make compost/bio-fertilizer for their own use in farmland and sell to other farmers.

5) The use of green manure (Sunn hemp) improves the soil in agricultural areas more fertile. Farmers of 1,500 rai have plowed the green manure crops to increase the organic matter in the field by the biomass of hemp at 475 kg per rai.

6) Plowing of rice straw in rice planting areas in combination with the use of bio-fermented products helps reduce the burning of agricultural waste.

**Qualitative/quantitative aspect**



1) A group of organic watermelon producers was gathered and strengthened. The initial stage, there were only 50 members, but increase to 220 members and the organic farming area increased to 573 rai. In 2017, 16 PGS certified farmers covered 145 rai of organic farming areas, with 30 additional certifications requested. There are 6 additional organic certified plant species (other than rice and watermelon), including dates, yam, sweet potato, lemon, bamboo and dragon fruit.

2) At present, there are 36 groups of farmers in Yasothon is in the waiting list to register for organic farming standards. In the organic farming project with PGS totaling 452 farmers, covering an organic farming area of 6,808 rai.

3) Farmers have better health condition. The results of farmers who had the pesticide residues in the blood higher than the standard values decrease of 78.57-100 percent.

4) Established 87 successful organic fertilizer banks and fresh manure seed banks across the country that were used as inputs in the organic farming system.

5) A brand of quality organic products certified by PGS was established with consumers accepted and 100% satisfaction.



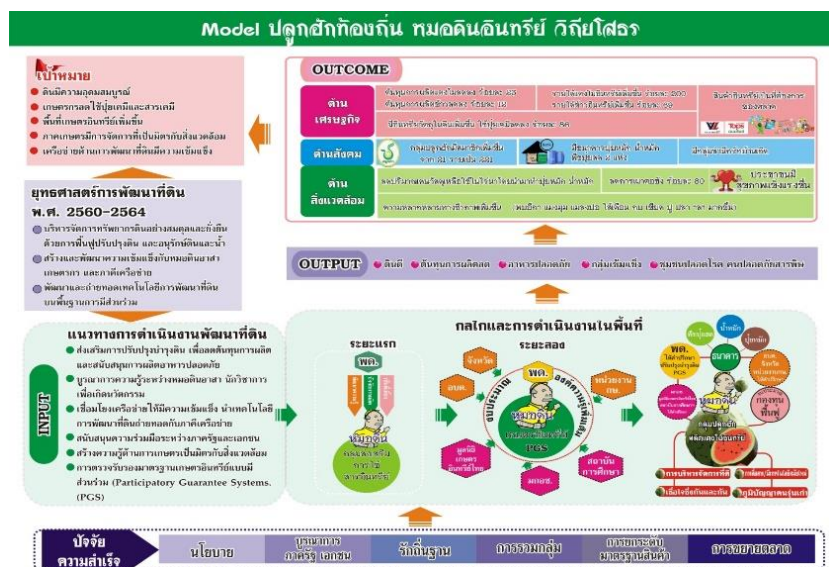
**Environmental aspect**

There is an increase in biodiversity in the local area such as earthworms, spiders and dragonflies. These organisms are indicators of ecosystem balance that indicate the abundance of natural resources that have been restored.

### Conclusion

Plookhug Organic Farm group has been succeeded from the 5 principle as follows:

1. Inspiration: The new generation or middle-aged people have been inspired to develop their local and community for better living space, especially for people in the agricultural sector which is an important sector in the country.
2. Understanding: Soil doctor networks or local agricultural groups have knowledge and understand on the physical, soil, natural, environmental, and local wisdom of their land.
3. Open mind: Farmers, both old and new, are open their mind to accept organic farming. It is challenging and difficult to accept as organic farming takes time, understanding, patience and determination to perform. It takes a long time to see the results clearly, causing some areas to be unsuccessful.
4. Pay attention: LDD staff has information on science, theory and technology for soil Management, the principles with a developed system, and access to volunteer soil doctors, farmers and various organizations. LDD has cooperate with many agencies who have the same goals, that is, taking into account the needs of the people in the area primarily. These all agencies have brought the knowledge and transferred to the community, resulting in improving volunteer soil doctors, new and old generations of farmers knowledge.
5. Collaboration: Government sector, private sector, volunteer soil doctors, farmers, local people, and the Plookhug Organic Farming Group join hand to develop the land until the Yasothon province received the motto of “the land of organic agriculture, healthy farmers and consumers are safe”



## Model 2 Mr. Suriya Hongloywong, Volunteer Soil Doctors

Mr. Suriya Hongloywong was the first village volunteer soil doctors in 1995. He was then invited to work as soil doctor in Kham Nam Sang Sub-district in 2007 and he established a land



development technology transfer center in 2012 and began to seriously develop his farm by applying the knowledge that has been trained to develop the land. Mr. Suriya develops his own area as a learning center for interested people to learn about land management, with the area of 37 rai. The soil is Chakkarat soil series (Ckr), with a slope of 2-5 %. The main constraint is severe low soil fertility as soil texture is sandy soil. Plants grown are prone to water shortages. The slope

area will contribute to soil erosion and unsuitable for rice cultivation. Therefore, he planned the management of the land with several measures. For example, soil and water conservation, changing from monocrop (rice) to mixed farming, using innovative technology from LDD (bio-extract products), using green manure to improve the soil, plowing of rice straw, composting, bio-compost, and making insect repellent from herbs, planting vetiver grass for soil and water conservation. There is also water management to prevent crop water shortages, making the embankments to collect water, digging wells in the fields to store water for use in the dry season.

In 2012, the soil was analyzed and the results showed that the soil pH was 5.8, 0.49 %OM, 3 mg/kg of  $P_2O_5$ , 15 mg/kg of  $K_2O$ , while in 2017, soil pH increased to 6.9, 1.80 % OM, 9 mg/kg of  $P_2O_5$ , 74 mg/kg of  $K_2O$ . It can be seen that the continuous improvement of soil in the area making soil has increased fertility. In 2016, he was chosen as the chairman of PGS Group, Kham Nam Sang Subdistrict, and developed the agriculture into organic agriculture purposely safe food production. At present, his rice field has become a land development technology transfer center in Kham Nam Sang Sub-district, Kut Chum District, Yasothon Province. It is a learning point for all forms of land development for farmers to learn agriculture. From his devotion to agriculture, Mr. Suriya has become a village leader who has real knowledge of farming and has received many awards.



**Mr. Suriya farming concept are:**

1. Allowing family to produce enough food 2. Providing life stable with sufficient food and more income 3. Helping others in the community, and 4. Providing better environment. His pride of being soil doctors, Mr. Suriya mentioned that seeing other people apply the knowledge gained from the his learning center to their own farm and improving the soil in their own way or better than their own.

**Key success factors**

1. Applying knowledge gained from training on land management and agriculture development to plan the effective use of land.  
 2. Eliminating the problem of water scarcity. Mr. Suriya expanded the ridge area in paddy field to be larger and grow fruit and vegetables on the ridge. Also, he improved the soil in the pond to grow vegetables and fruit around the pond and along the roads. There is systematic water management by discharge method into the field along the slope of the area level. Draining water from the paddy fields has been done at least 1 week before harvesting the rice and brought such water back to the pond for other purposes.



3. When there is water in the farm, a variety of crops can be grown according to the new theory agricultural and adhere to the Sufficiency Economy Philosophy.

**The Knowledge:** systematic farming planning and economical water management by siphon discharge method into rice fields, making small wells, implementing new farming theory, following Sufficiency Economy Philosophy, and apply local wisdom.

**In the past:** the land initially used

for rice farming only and plants grown were prone to water shortages as cultivation relies on rainwater solely. This results in low yield production, not worth the investment. When having knowledge of soil improvement, soil and water conservation, Mr. Suriya brings such knowledge to make water management plan, mixed farming, improve soil by using agricultural inputs that are circulating in the area, reducing the cost of chemical fertilizers, and turning to organic farming. Currently, his agricultural plots acts as a learning center for other agencies and general farmers, and Mr. Suriya is a speaker to transfer knowledge from actual practice.

**Next targets:** 1) expand the network of volunteer soil doctors and farmers in the area to increase by about 30%, 2) expand the market for organic products with other soil doctor network and



### Conclusion from lessons learned of volunteer soil doctors Mr. Suriya

1. Knowledge accumulation: on land management, new theory agriculture etc.
2. Learning about nature: farming based on nature.
3. Applying Wisdom: applying the knowledge that has been taught and the wisdom that has been accumulated by one's own experience.
4. Learning by doing: put knowledge gained into practice in one own area. Demonstration a good example is more valuable than teaching.
5. Receiving and Sharing: when receiving various knowledge about agriculture, Mr. Suriya is ready to pass it on to the new generation, farmers, and the general public through the Land Development technology transfer center in Kham Nam Sang Subdistrict and the Sufficiency Agriculture Model Center of Kut Chum District.

“Immediately apply the knowledge gained into practice, do it slowly, little by little, not a business but a routine.

A good example is worth more than a word.”

## ANNEX

### 1. The expert consultation and workshop on the development and implementation of soil doctors program in Lancang-Mekong Countries

#### 1.1 Rationale

The agricultural sector of the Mekong sub-region faces various problems and challenges such as degradation of natural resource, oversupply, high production cost, water scarcity interspersed with flooding, expansion of urban communities, lack of knowledge of farmers, and climate change, etc. The above factors affect the ability of agricultural production. This leads to the problem of income inequality among farmers. Land Development Department, which is an agency under the supervision of the Ministry of Agriculture and Cooperatives Thailand, realized the importance of soil resources and land use for agriculture that affect regional and national economies in the Mekong sub-region. Therefore, initiated and developed a volunteer soil doctor program to increase efficiency and build stability of the agricultural production sector in the country. LDD develops farmers to have readiness, knowledge and expertise in agricultural occupation. In the past, LDD has supported knowledge, technology, equipment and established a network of volunteer soil doctors. It has been continuously developed to successfully improve soil fertility and increase agricultural productivity as well as increase the competitiveness of small farmers.

Soil doctor network is a significant feature for promotion of sustainable agricultural production. This program was initially established and developed by Land Development Department (LDD), Ministry of Agriculture and Cooperatives, Thailand to provide farmers with technologies and recommendations for soil and land improvement and conservation practices to promote sustainable agricultural management. At the beginning, “soil doctors” were LDD staff in charge of training farmers, but later on LDD decided to involve farmers in the process of educating and supporting rural communities on the practice of sustainable agriculture. Therefore, the so called “volunteer soil doctors” have been recruited to work in partnership with the LDD’s staff at village, sub-district, district and provincial levels. By using the technical and financial support offered by LDD, soil doctors cooperate in assisting farmers to obtain better understanding and practice soil conservation and sustainable soil and land resources management. The initiative appeared to be successful in improving soil fertility and productivity as well as crop yield production.

Recently, soil doctor program is being scale up as part of the implementation plan under global soil partnership on technical cooperation, policy, education, awareness, and extension in support of the soil and land resource. By promoting the establishment of a farmer-to-farmer training system, the soil doctor program aims to build the capacity of smallholder farmers on the practice of sustainable soil and land management and, by doing so, support governmental agencies working on agricultural extension at the farm level, promoting broader impact and a reduction of costs. The program also aims to educate farmers on soil science principles for

practices of sustainable soil management and aims to achieve this by providing them with a set of tools composed of some educational materials and a soil testing methods manual for preliminary soil analysis. Guidelines for implementation will be also provided to countries joining the program. This program requires multi-disciplinary system approach incorporating socio- economic conditions of farmers, their perceptions on sustainable management, biophysical processes (soils), and viable and economic relevant alternatives for agricultural systems. Therefore, this workshop ‘the expert consultation and workshop on the development and implementation of soil doctors program in Lancang-Mekong Countries’ was arranged to discuss how to build a network of volunteer soil doctors and assist member countries implement sustainable land management and agriculture.

## **1.2 Objective**

1.2.1) To exchange and share knowledge on Soil Doctor Program and the farmer network in the LMC.

1.2.2) To create network of soil cooperation and promote soil doctors program in LMC.

1.2.3) To exchange knowledge and technology for sustainable land and agriculture management in the LMC.

## **1.3 Participants**

1.3.1 Workshop participants are personnel from various related agencies, totaling 80 people, consisting of

- 1) Experts in land management for agriculture from countries in the region
- 2) Experts from Global Soil Partnership (GSP) and Asian Soil Partnership (ASP)
- 3) Experts and officials from the Land Development Department and provincial
- 4) Experts and officials from Ministry of Agriculture and Cooperatives
- 5) Representatives of educational institutions, organizations and farmers
- 6) Working Group on the Development and Promotion of Soil Doctors for

sustainable land management and agriculture in the LMC

1.3.2 Keynote speakers

- 1) 8 foreign speakers
- 2) 7 speakers from the domestic

## **1.4 Operating modules**

1.4.1 Presentations on soil doctor program in Thailand and sharing information on land management for sustainable agricultural development

1.4.2 The subgroups were divided to study the volunteer soil doctor work and the network, including lessons learned and brainstorming

1.4.3 Discussion to determine the direction of the project implementation plan and summarize the results of the workshop

## **1.5 Duration and place**

The workshop was hold from 15 - 18 March 2022, in Ubon Ratchathani and Yasothon Provinces, Thailand

## 2. Participants

### 2.1 Experts and officials from the Land Development Department

No	Name-Surname	Position	Office
1	Mr. Prasert Thepnorapapai	Director of Research and Development for Land Management Division	Research and Development for Land Management Division
2	Mr. Pramote Yamclee	Expert on Land Degradation Management	Research and Development for Land Management Division
3	Ms. Bunjirtluk Jintaridth	Expert on improvement of acidic soil	Research and Development for Land Management Division
4	Mrs. Nisa Meesang	Expert on soil management with plant systems	Research and Development for Land Management Division
5	Mr. Chakkapan Phaosrakhu	Agricultural Research Officer, Senior Professional Level	Research and Development for Land Management Division
6	Ms. Sunsanee Arunyawat	Agricultural Research Officer, Senior Professional Level	Research and Development for Land Management Division
7	Ms. Chotika Ngamnngernsakul	Agricultural Research Officer, Senior Professional Level	Research and Development for Land Management Division
8	Ms. Pornpat Nopmalai	Agricultural Research Officer, Senior Professional Level	Research and Development for Land Management Division
9	Ms. Isariya Meesing	Agricultural Research Officer, Senior Professional Level	Research and Development for Land Management Division
10	Ms. Prapa Taranet	Agricultural Research Officer, Senior Professional Level	Research and Development for Land Management Division
11	Ms. Wanraya Suthumchai	Agricultural Research Officer, Senior Professional Level	Research and Development for Land Management Division
12	Mr. Sarunnop Inthasen	Agricultural Research Officer, Professional Level	Research and Development for Land Management Division
13	Mr. Apisit Boupai	Agricultural Research Officer, Practitioner Level	Research and Development for Land Management Division
14	Ms. Phanthipha Phophan	Project Coordinator	Research and Development for Land Management Division
15	Mr. Anucha Sathong	Driver	Research and Development for Land Management Division
16	Mr. Aunnop Puttaso	Expert on improvement soil with organic matter	Division of Soil Biotechnology
17	Ms. Sumalee Klangasuk	Agricultural Research Officer, Senior Professional Level	Division of Soil Biotechnology
18	Mr. Kridsopon Duangkamol	Soil surveyor, Senior Professional Level	Soil Resources Survey
19	Ms. Saranya Norkaew	Soil surveyor, Professional Level	Soil Resources Survey
20	Ms. Sumitra Watana	Director Office of science for land development	Office of science for land development

No	Name-Surname	Position	Office
21	Mr. Surachet Narabhat	Scientist, Senior Professional Level	Office of science for land development
22	Mrs. Kamarin Nimnualrat	Scientist, Senior Professional Level	Office of science for land development
23	Ms. Nattaporn Prakongkep	Scientist, Professional Level	Office of science for land development
24	Mr. Attaya Phinchongsakuldit	Director Center of Information and Communication Technology	Information and Communication Technology Center
25	Ms. Arissara Pungpa	Computer Technical Officer, Senior Professional Level	Information and Communication Technology Center
26	Mr. Weera Pathakheenang	Photogrammetrist, Professional Level	Information and Communication Technology Center
27	Mr. Chanchai Jongcharornsuk	Computer Technical Officer	Information and Communication Technology Center
28	Mr. Thanaphat Phromtha	Computer System Officer	Information and Communication Technology Center
29	Mr. Narit Buabundit	Driver	Information and Communication Technology Center
30	Mrs. Kreeyaporn Devahastin	Plan and Policy Analyst, Senior Professional Level	Planning Division
31	Ms. Payattika Polsrakhu	Plan and Policy Analyst, Senior Professional Level	Planning Division
32	Mr. Konphong Khanachaiwirut	Plan and Policy Analyst, Practitioner Level	Planning Division
33	Ms. Saengrawee Khanpichit	Plan and Policy Analyst	Planning Division
34	Mr. Kritchaphon Wattatnanukit	Dissemination Technical Officer, Professional Level	Office of the secretary
35	Mrs. Nongnuch Sripum	Director of Land development office 1	Land development office 1
36	Ms. Natta Takrattanasaran	Soil surveyor, Senior Professional Level	Land development office 1
37	Ms. Thanachanok Khamkajorn	Soil surveyor, Professional Level	Land development office 1
38	Mr. Suchon Kaewkosaba	Director of Land development office 2	Land development office 2
39	Ms. Smira Mongkol	Agricultural Research Officer, Senior Professional Level	Land development office 2
40	Ms. Siriwan Inprom	Agricultural Research Officer, Senior Professional Level, Trat Land Development Station	Land development office 2
41	Mr. Chatchai Prasarawan	Director of Land development office 3	Land development office 3
42	Mrs. Niphaphorn Sribandit	Agricultural Research Officer, Senior Professional Level	Land development office 3

No	Name-Surname	Position	Office
43	Mr. Theerapol Plengsuntia	Agricultural Research Officer, Professional Level	Land development office 3
44	Mr. Sornjit Srinarong	Director of Land development office 4	Land development office 4
45	Mr. Yuthasong Namsai	Expert Land development office 4	Land development office 4
46	Ms. Kanyaporn Sungkaew	Agricultural Research Officer, Senior Professional Level	Land development office 4
47	Ms. Wanna Suwannawijit	Agricultural Research Officer, Senior Professional Level	Land development office 4
48	Mr. Panmaha Thongbo	Director of Ubon Ratchathani Land Development Station	Land development office 4
49	Mr. Boonsung Chuenta	Director of Nakhon Phanom Land Development Station	Land development office 4
50	Mr. Boonthom Gumphon	Director of Roi Et Land Development Station	Land development office 4
51	Mr. Komkrit Jindamanee	Director of Yasothon Land Development Station	Land development office 4
52	Ms. Panotphon Koonphan	Director of Si Sa Ket Land Development Station	Land development office 4
53	Mr. Atiwat Sittipinyapat	Director of Mukdahan Land Development Station	Land development office 4
54	Mr. Sansern Charoensiri	Director of Amnat Charoen Land Development Station	Land development office 4
55	Mr. Kachen Sufon	Agricultural Research Officer, Senior Professional Level, Mukdahan Land Development Station	Land development office 4
56	Ms. Duangduen Promkhan	General Administration Officer, Practitioner Level	Land development office 4
57	Ms. Wanvisa Boonthanom	Finance and Accounting Analyst, Practitioner Level	Land development office 4
58	Ms. Thitaree Phrawas	Finance and Accounting Analyst Officer	Land development office 4
59	Ms. Patamaporn Kankaew	Computer System Officer	Land development office 4
60	Mr. Sakol Narit	Director of Land development office 5	Land development office 5
61	Mrs. Pornpana Phothinam	Agricultural Research Officer, Senior Professional Level	Land development office 5
62	Mrs. Sukanya Thaweekij	Director of Khon Kaen Land Development Station	Land development office 5
63	Mr. Thavorn Meechai	Director of Land development office 6	Land development office 6
64	Mr. Wirot Banchoetrit	Director of Chiang Mai Land Development Station	Land development office 6
65	Mr. Boonman Chattae	Director of Mae Hong Son Land Development Station	Land development office 6
66	Ms. Juraiporn Kaewthip	Agricultural Research Officer, Senior Professional Level	Land development office 6

<b>No</b>	<b>Name-Surname</b>	<b>Position</b>	<b>Office</b>
67	Mr. Nakarin Chompu	Director of Land development office 7	Land development office 7
68	Mr. Srannupong Chaiwattanagul	Expert Land development office 7	Land development office 7
69	Mrs. Suneerat Lohajoti	Agricultural Research Officer, Senior Professional Level	Land development office 7
70	Mr. Winyoo Jekchuen	Director of Loei Land Development Station	Land development office 8
71	Mr. Sathit Kalapuak	Agricultural Research Officer, Senior Professional Level	Land development office 8
72	Mr. Somboon Thichan	Director of Phetchabun Land Development Station	Land development office 8
73	Mr. Anek Deepromkul	Director of Phitsanulok Land Development Station	Land development office 8
74	Mr. Boonchuay Chuayradom	Director of Land development office 9	Land development office 9
75	Mr. Surin Waiyacharoen	Expert Land development office 9	Land development office 9
76	Ms. Mayuree Obsuk	Director of Sukhothai Land Development Station	Land development office 9
77	Mr. Totsanat Rattanakaew	Agricultural Research Officer, Senior Professional Level	Land development office 10
78	Mrs. Patcharamai Thala	Agricultural Research Officer, Practitioner Level	Land development office 10
79	Mr. Noppadon Junnuan	Agricultural Research Officer, Senior Professional Level	Land development office 11
80	Mr. Natawoot Jounsong	Agricultural Research Officer, Senior Professional Level	Land development office 11
81	Mr. Itisak Khunthong	Director of Satun Land Development Station	Land development office 12
82	Ms. Pilatluck Lioroongcharoen	Agricultural Research Officer, Professional Level	Land development office 12

## 2.2 Experts from other organization and partner countries

No	Name-Surname	Position
1	Dr. Huijun Wu	Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences (CAAS), China
2	Dr. Seng Vang	Department of Agricultural Land Resources Management (DALRM), The General Directorate of Agriculture (GDA), Cambodia
3	Mr. Esteban Loria	Costa Rica Soil Association (ACCS), Costa Rica
4	Mr. Sisavath Phimmasone	Agricultural Land Development and Fertilization Center/Department of Agricultural Land Management (DALaM), LAO PDR
5	Dr. Ohnmar Khaing	Advisor of Myanmar Food Security Working Group (FSWG), Myanmar
6	Dr. Ngo Thanh Son	Vietnam National University of Agriculture, Vietnam
7	Dr. Gunnar Kirchhof	School of Agriculture and Food Sciences, University of Queensland, Australia
8	Mr. Chandiona Munthali	Ministry of Agriculture, Malawi
9	Ms. Carolina Olivera	Global Soil Partnership
10	Ms. Silvia Pioli	Global Soil Partnership
11	Mr. Thanapon Piman	Stockholm Environment Institute (SEI)
12	Ms. Saowanuch Tawornpruek	Head of Department of Soil Science, Faculty of Agriculture
13	Mrs. Pornsiri Senakas	Expert on lesson transcription
14	Mr. Kukiatt Soitong	Expert on lesson transcription
15	Mr. Charlie Navanugraha	Director Center of Excellence for Soil Research in Asia
16	Mr. Suriya Hongloywong	Volunteer Soil Doctors/National Outstanding Farmer
17	Mr. Pornatawee Srisanga	Head of Local Hug Planting Group, Yasothon Province
18	Mr. Nares Norasri	Volunteer Soil Doctors/Farmer
19	Mr. Ken Kaodan	Farmer
20	Mr. Banacha Chareekaew	President of Lumpuk Subdistrict Administrative Organization, Kham Khuean Kaeo District, Yasothon Province
21	Mr. Amnat Yongyuen	Agricultural Extension Officer, Senior Professional Level

### 3. Activities during workshop



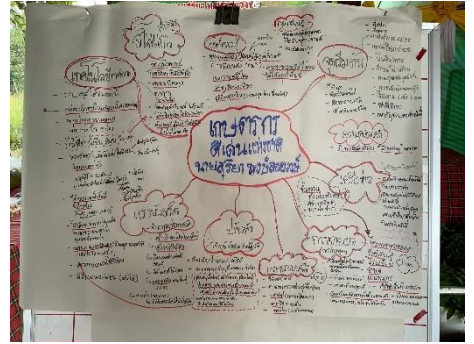
**Implementation activities in Asia**

**Bangladesh**

Promoting Institutions	Ministry of Agriculture, Bangladesh (2018-2019); Bangladesh Agricultural University (2019-2021); Soil Conservation and Land Reclamation (2021)
Municipalities	Chittagong City Corporation, Chittagong; Baniar of Chittagong; Jhalakati and Balisongol of Pirojpur District
Period	July-August
Topic of the training	SDG for million sensitive agriculture
Location	SDG education
# of trainers	10
# of participants or general meeting	400
# of Soil Doctors selected	16

### 4. Activities to take lessons learned from farmers and volunteer soil doctors of the Plookhug Group





## 5. Presentations during the workshop


### 1. Dr. Gunnar Kirchof, School of Agriculture and Food Sciences, The University of Australia

Sustainable Land Management  
and Farmer Networks in Australia

Gunnar Kirchof,  
The University of Queensland  
School of Agriculture and Food Sciences, Australia  
[g.kirchof1@uq.edu.au](mailto:g.kirchof1@uq.edu.au)



Landcare in Australia



- Community based grass roots movement since 1950s
- Start and support by government in 1986
- Official start 1989 of the *not-for-profit organisation*
- ISCO 1996 : Bonn, Germany: *Landcare Australia the most successful examples of community based sustainable land management organisation*
- In AU only: 6000 groups with over 100,000 volunteers
- Landcare model now used in over 20 countries

<https://landcareaustralia.org.au/>

## What is it about?

Caring for land and water that sustains us

- Empowering individuals and communities
- Sustainable management of natural and productive landscapes
- Building resilient ecosystems and communities
- ➔ Community action: **bottom up and not top down!**

- Integrated land management
- Environmental protection and natural habitat restoration
- Farming system resilience
- Social cohesion



## How does it work?

- Community based projects
- Sharing
- Webinars, seminars, training programs
- Social media event
- Field days
- Conferences
- Landcare awards
- Volunteering



## How to pay for it?

- Fundraisers
- Landcare Grants
- State or Federal
- Government initiatives
  - Natural Heritage Trust
  - Carbon farming initiatives
  - Future Drought fund
- Local commercial opportunities
- **Private Public Partnerships PPPs**
- ➔ Think outside the box

*They come and go*



## The Emu Creek Landcare Group

- Weed eradication programs (Lantana)
- Remnant vegetation management
- Erosion management strategy
- Community based farming equipment
  - Lime spreader
  - Contour banks grader



## What makes it work

- Good leadership – having a champion
  - Good communication skills and community standing
  - Ability to prepare applications – address donor priorities
  - Group coherence: do what you say you would do
  - Budget accountability
- ➔ Reputation for future funding



## International Landcare

- ACIAR Landcare in the Philippines, 1990s (soil erosion)
- World Agroforestry, Landcare International (LI) since 2004
  - Landcare Kenya ([https://www.youtube.com/watch?v=oqzmzEao4\\_GY](https://www.youtube.com/watch?v=oqzmzEao4_GY))
  - Total Land Care (TLC), Malawi since 1999



- Uganda Landcare Network (ULN)
- Chiang Mai, Thailand - Elephant Nature Park



**2. Dr. Seng Vang, Department of Agricultural Land Resources Management  
General Directorate of Agriculture, Ministry of Agriculture, Forestry and Fisheries,  
Cambodia**



## Extension Models towards Sustainable Soil Management in Cambodia



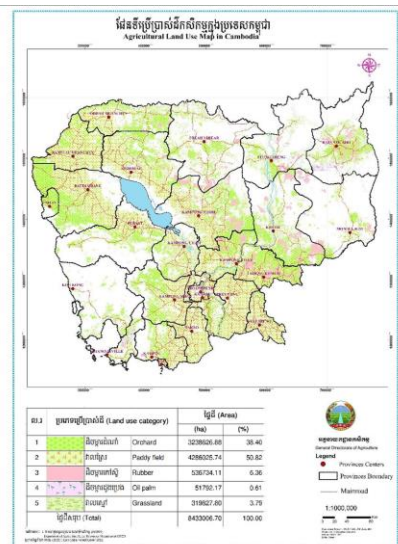
**Phy Chhin and Seng Vang**  
Department of Agricultural Land Resources Management  
General Directorate of Agriculture  
Ministry of Agriculture, Forestry and Fisheries

### Contents

1. Cambodia- Status of ALU and land degradation
2. Initiatives towards the agroecological transition
3. MetKaseKor Model (Extension)
4. Dei Meas Initiative (Golden Soil)

### Cambodia's agricultural land use (ALU)

- Cambodia commits to achieve an economic growth rate of 7% per annum to reach an upper-middle income country by 2030.
- Agriculture is a key driver for economic development (23% of GDA in 2020).
- Achieving a sustainable agricultural growth at 5% per annum is essential to achieve the Royal Government of Cambodia's economic development goal by 2030.



## 1. Cambodia – Status of land degradation

Cambodia’s agricultural land is under threat of **degradation** and soil fertility depletion due to its expansion to degraded forest land.

- Vulnerability to soil erosion:
  - 0.49 million ha – highly
  - 7.63 million ha – moderately
  - 9.73 million ha – low to none
- Small holder farmers are particularly **vulnerable** to **climate change** given their high **dependence** on rainfall and minimal crop diversification.
- 6.3 million Cambodians living on degrading agricultural land in 2010, practicing poor land management.

## Land degradation – Impact

There is a need for the Cambodian agriculture sector to reinvent itself by shifting from increased production through land expansion and excessive use of inputs towards sustainable intensification.

- **Annual cost of land degradation** is estimated at USD 677 million or 3% of the country’s GDP (GM/UNCCD, 2018)
- Conventional tillage practice (Maize) increased soil loss by 13 times more than CA practice on 5% slope (DALRM, 2020).
- Soil erosion resulted in losses of SOC (870 kg/ha), N (90 kg/ha), P (0.42 kg/ha), K (10 kg/ha) (DALRM/GDA 2020, unpublished data)

## 2. Initiatives towards the agroecological transition

**2007 - 2013 (RESEARCH):** Small holder rubber development project (SRDP II) by AFD, FFEM (PAMPA); Projet d'Appui au Développement de l'Agriculture au Cambodge & PAMPA.

**2014 - 2019 (SERVICE PROVISION):** By RAD NW uplands CE SAIN/ SIIL (ASMC & WAGN); USAID, Agropolis, AFD, CCCA.

**2018 - 2020 (ENGAGEMENT OF PRIVATE SECTOR):** Cover crops & machinery CASF, (MIGIP)/SDC; CASIC Dialogue politique.

**2021 (POLICY DIALOGUE AND EXTENSION):** Agroecology and Safe Food Systems Transition in SEA (ASSET), WATACAM, CE SAIN/SIIL (ASMC2, S3), ISA, MetKasekor.



## 3. MetKaseKor Model (Extension)

### មីត្តកសិករ

MetKaseKor

An "opening the market"  
early adopters led extension model





### MetKasekor Supports Sustainable Intensification







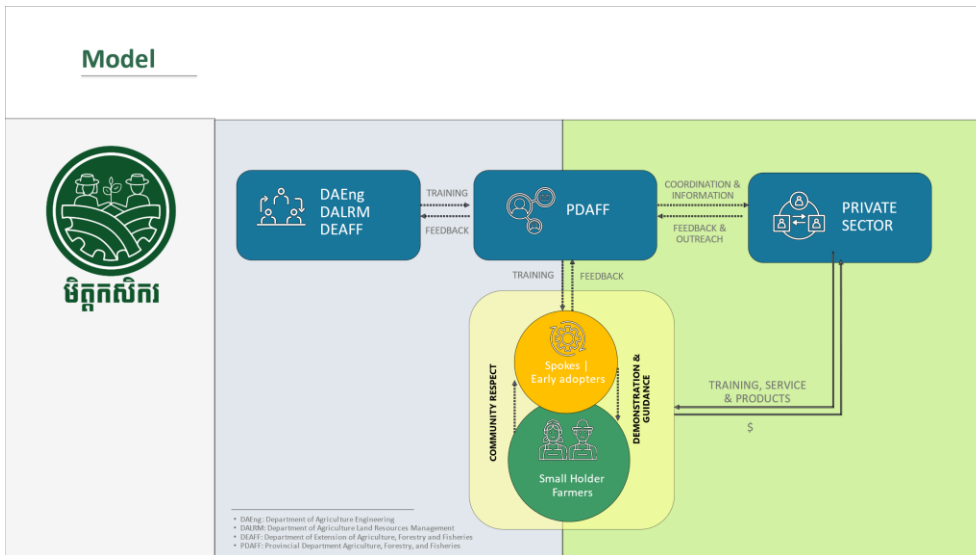
### មីត្តកសិករ

MetKasekor is an innovative extension model. MetKasekor focuses on opening the market for private sector investments. The model is a government resource for the future with the intention to improve the public agricultural extension service system in Cambodia.



### Unique Features

 PUBLIC SECTOR	 PRIVATE SECTOR	 EARLY ADOPTERS	 GOVERNMENT EXTENSION
Involved in "opening the market" for the private sector	Accompany the public sector during the sensitization of the farmers and provide the services on a commercial basis	Agree to take the SI services and use their land to showcase the results to other farmers	Embed MetKasekor into the Government Extension System



### Current Status

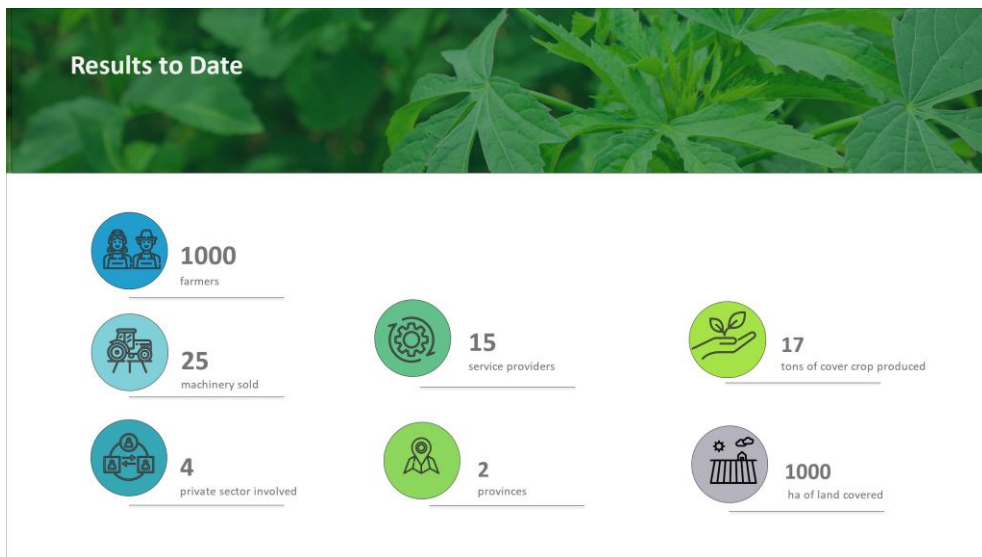
MetKasekor will be piloted in two provinces: Battambang and Preah Vihear (2021-24)

The pilot will be monitored by a Steering Committee within the Ministry of Agriculture, Forestry and Fisheries (MAFF)

Battambang

Preah Vihear






## 4. Dei Meas Initiative



A TRANSITIONING SYSTEM FOR A CHANGE TOWARDS AGROECOLOGICAL PRACTICES




### Agro-ecology in Cambodia: Impacts and co-benefits



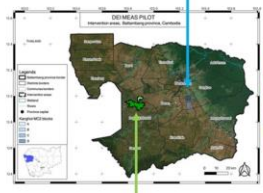
#### Impacts and co-benefits:


- Improve soil fertility,
- Restore ecosystem services,
- Sequester and store carbon in the soil,
- Reduce pests and diseases pressure,
- Diversify food production,
- Preserve soil biodiversity,
- Reduce soil erosion and restore degraded land,
- Increase soil water retention,
- Reduce methane emissions,
- Improve water use efficiency.

### DEI MEAS: 2 pilot locations in Battambang province (NW)



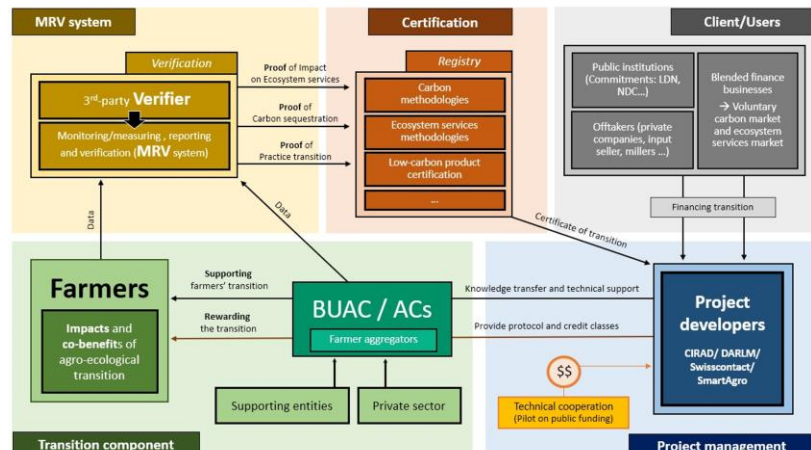
**Lowland:**  
Kanghot irrigation scheme  
→ 200 Households on ~400ha





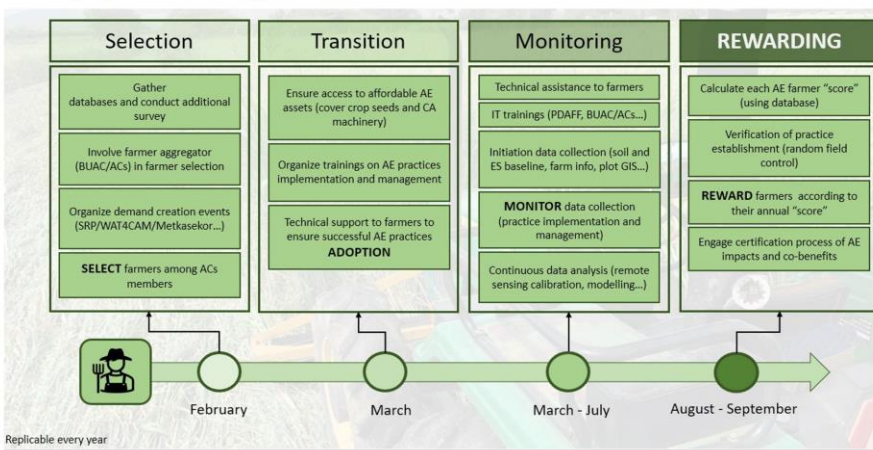
**Upland:**  
Pech Changvar and Sangha villages  
→ 80 Households on ~150ha

### The DEI MEAS system



19

## Supporting farmers transition



## Scoring system Rewarding farmers for practice implementation

Practice	Parameter	Scoring	Reward (\$/ha)
Land preparation	Ploughing	0	0
	Subsoiling	1	5
	Land leveling	2	10
Cover crop establishment	Bare land	0	0
	Short cycle	1	25
	Long cycle	1	30
Residue management	Exporting or burning biomass	0	0
	Green manure	1	5
	Green sowing	2	10
Sowing method	Broadcasting	0	0
	No-till planter Cereals	1	10
	No-till planter Cassava	2	20
Crop diversification	Monocrop	0	0
	Other grain crop	1	10
	Cover crop seed production	2	20
Water management	Pulse crop/ Mungbean	2	20
	Rainfed	0	0
	Flooding	0	0
	AWD	1	30

Example:  
~45\$ reward

To be adapted to each cropping system (maize, cassava...)

## Key points and outcomes of DEI MEAS pilot

The creation of a detailed **transitioning system**, incentivizing smallholder farmers to access and implement agro-ecological practices.

The quantification of carbon and ecosystem services production, with efficient and cost-effective **MRV protocols**, allowing international certification and recognition of practices impact.


Recognizing smallholder farmers as contributors of natural resources conservation and climate change adaptation and mitigation.

### Co-benefits of the pilots

- Sustainably increasing agricultural productivity and incomes;
- Improving smallholder farmers' resilience to climate change;
- Maintaining or enhancing soil fertility, water resources, and other ecosystem services;
- Sequester carbon and reduce greenhouse gas emissions.

### 3. Mr. Estaban Loria, Costa Rican Soils Networking Costa Rica, Costa Rica Soil Association (ACCS)

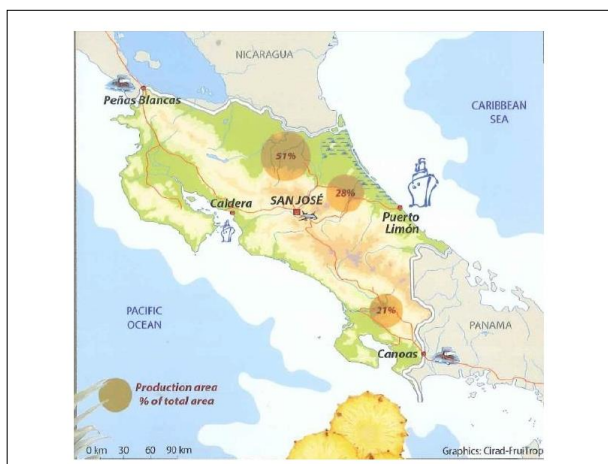
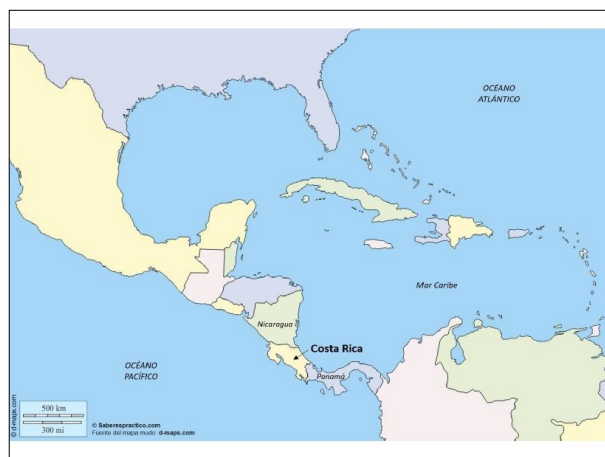
Soil Network in **Costa Rica**



Ing. Agr. Esteban Loria  
March 2022  
Soil Workshop




**95%**  
de los alimentos se producen directa o indirectamente en nuestros suelos.





Google Play App Store

Términos y Condiciones de uso de la app Suelos CR\_firmado.pdf

Capas Cartográficas de Órdenes y Subórdenes de Suelos de Costa Rica

- Órdenes
- Subórdenes
- Calicatas

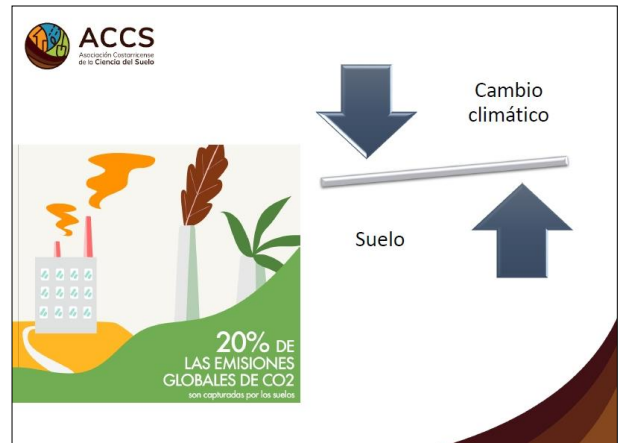
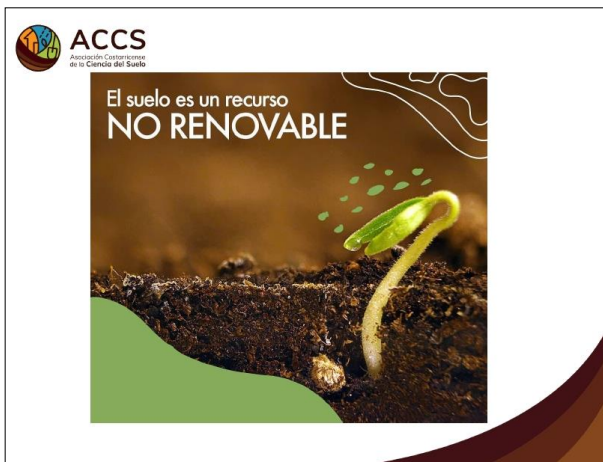
Catálogo de Publicaciones  
Centro de Investigaciones Agronómicas

Revista Agronomía Costarricense

**SUELOS CR**

Visite nuestro canal de YouTube **CIA UCR**

**Trate de no visitar fincas ni áreas donde haya plantas de banano.**





**Networking**

**Publicaciones**

**Podcast**

**Audiovisuales**

**Documentos**

**13 ACCIÓN POR EL CLIMA**

**Metas**

13.1

13.3

**17 ALIANZAS PARA LOGRAR LOS OBJETIVOS**

Alianza Nacional por el Suelo y las Tierras

5 diciembre, 2018

**Publicaciones**

**¡Manos al Suelo!**

**5 Diciembre**

 **ACCS**  
Asociación Colombiana de la Ciencia del Suelo


  
5 Diciembre, 2017  
Finca Brasil de Mora





 **ACCS**  
Asociación Colombiana de la Ciencia del Suelo

  
5 Diciembre, 2018  
La Sabana



 **ACCS**  
Asociación Colombiana de la Ciencia del Suelo


  
Premio de Tailandia





 **ACCS**  
Asociación Colombiana de la Ciencia del Suelo

  
5 Diciembre, 2019  
Parque Nacional



 **ACCS**  
Asociación Colombiana de la Ciencia del Suelo

  
5 Diciembre, 2020  
Evento Virtual



 **ACCS**  
Asociación Colombiana de la Ciencia del Suelo

  
5 Diciembre, 2021  
Evento Virtual



Asistentes disfrutando parte de la práctica: Cálculo y clasificación de suelos.

Dinámica recreativa dirigida a niños de toma muestra para análisis de suelos.

  
5 Diciembre, 2021  
Evento Virtual



 **ACCS**  
Asociación Colombiana de la Ciencia del Suelo

**¡Muchas gracias!**



 Soil is Life!!!!

### 4. Mr. Sisavath PHIMMASONE and Sinouan SOUVONG, Agricultural Land Development and Fertilization Center/Department of Agricultural Land Management (DALaM), LAO PDR

## Soil doctor(SD) in Lao PDR

Country Presentation  
LAO PDR  
Presentation by Sisavath PHIMMASONE and Sinouan SOUVONG  
Agricultural Land Development and Fertilization Center/Department of Agricultural Land Management (DALaM)

### Content

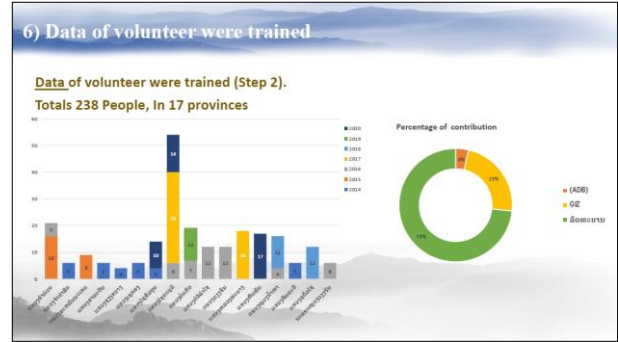
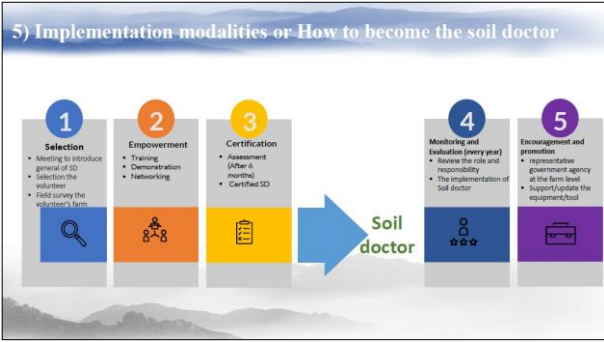
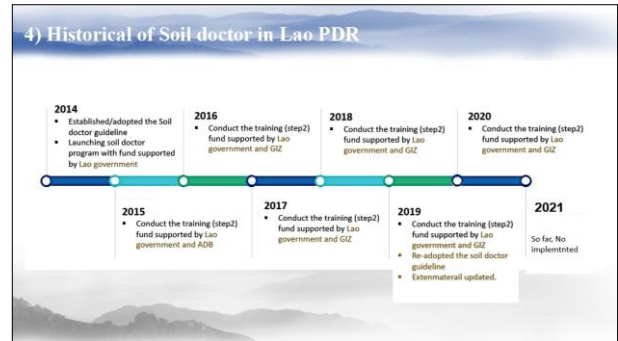
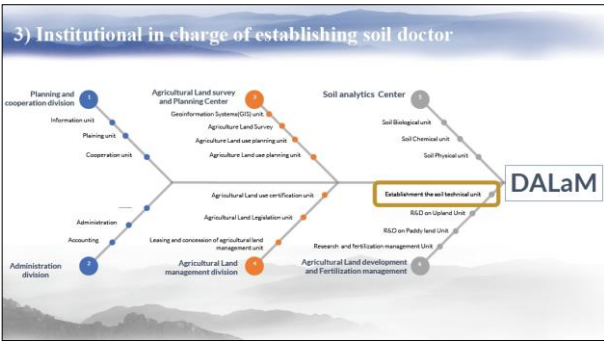
- 1) Overall of LAO PDR
- 2) Objective
- 3) Institutional in charge of establishing soil doctor
- 4) Historical of Soil doctor in Lao PDR
- 5) Implementation modalities or How to become the soil doctor
- 6) Data of volunteer were trained
- 7) The main issue of the soil doctor.
- 8) Future plan to improve the soil doctor in LAO PDR

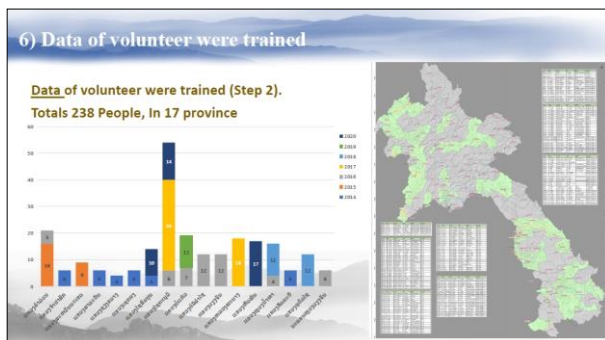
### 1) Overall of LAO PDR

- LAO PDR is a landlock country and Problem soils relate to the approximate 80% of soils which are on sloping land and subject to landslides and erosion (UN, 2015; DOF, 2011)
- About 7 million people live in its 18 provinces, with most people 68 percent still living in rural areas and the share of agriculture in Laos' gross domestic product was 16.21 percent (Lao Statistics Bureau, 2020). More than 70 percent of the population depends on agriculture for their livelihoods (UN, 2015)
- 23 percent of the population still lives below the poverty line(IFAD, 2019). 90 percent of poverty people live in the mountainous area and mainly on land resources (Messerli et al., 2018).

### 2) Objective of soil doctor

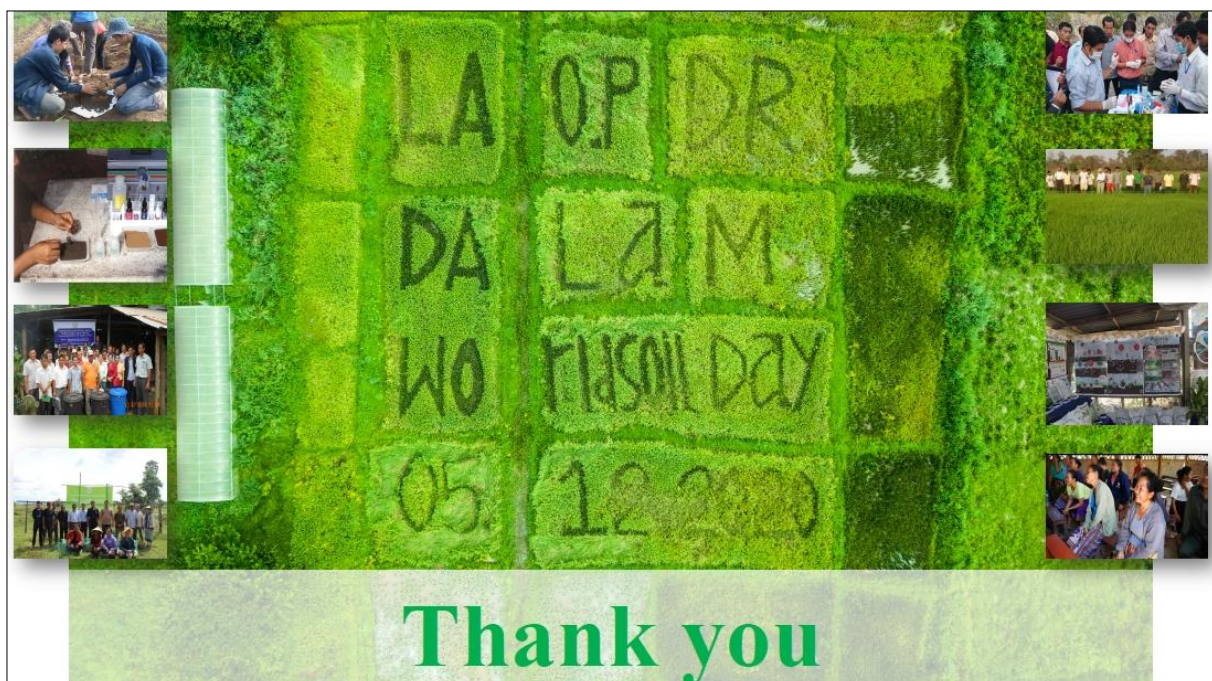
- To contributed to support the National Green Growth Strategy of the Lao PDR and SDGs 15
- To establish a farmer-to-farmer training system by building the capacity of farmers on the practice of sustainable soil management
- To support field research based on interactions between the Soil Doctors and universities and research institutes, including access to demonstration and experimental fields;





- ### 7) The main issue of implementation the soil doctor in LAO PDR.
1. So far, No soil doctor has been certified
  2. Lack of resources to supports the soil doctor program.
  3. Previous supported the training by a few projects was not the full task of a soil doctor.
  4. Limited of promoter at local level.
  5. The local extension material is very poor.
  6. The fewer incentives to involve soil doctor.

- ### 8) Future plan to improve the soil doctor in LAO PDR
1. Develop the road map for soil doctor in LAO PDR
  2. Looking for partner/external support to establish the national Soil doctor program.
  3. Create/Update the extension material to be apposite the current situation.
  4. Review of the trainees that could be certified/ re-training needed on soil doctor.
  5. Establish the promoters at the provincial and district levels (PAFO/DAFO)

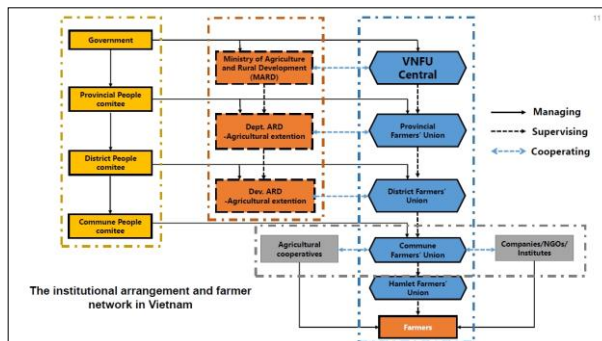


5. Dr. Ngo Thanh Son, Dr. Nguyen Thu Ha and Mr. Vu Thanh Bien, Vietnam  
National University of Agriculture, VIETNAM

### Existing problems unsustainable agriculture in MRD, Vietnam

1. Flood protection: dyke raising to enable triple instead of double crop rice take room from the Mekong River
2. Salinity is occurring already during dry seasons, giving rise to significant crop losses
3. Water quality and water supply: high salinity and potential aluminium contamination, insufficient water supply
4. Ecosystems preservation in the delta
5. Climate change: increase temperature and rainfall variability
6. Land subsidence and groundwater extraction
7. Upstream developments
8. Cost of agricultural inputs and price of agricultural products
9. Low awareness of farmers

**HVN** Học viện Nông nghiệp Việt Nam



### Lessons learned in sustainable land management models

(i) Soil quality improvement;  
 (ii) cassava yields are higher  
 (iii) Additional income from cowpea  
 (iv) Increase farmers' awareness in sustainable agriculture practices

Cassava- Cowpea Intercropping

**HVN** Học viện Nông nghiệp Việt Nam

### Story of L'amant café:

A model of cooperation between businesses and farmers

**Model:** Gather many farming households together, a standard cultivating procedure, export.

**Farmers:** Practice the cultivating process (organic farming, protecting soil resources and maintaining biodiversity)

**Enterprise:** buy products, process and export (EVFTA agreement, ect.)

### Rice sector restructuring in Mekong Delta

**Proposed adaptation options**

1. Applying the acid sulphate and saline tolerance rice varieties with short growth duration .
2. Apply the 3 reductions, 3 gains or 1 Must-Do 5 Reductions approach.
3. For rainfed and saline area, apply 2 rice – 1 cash crop model.
4. In the area with high level of saline intrusion, introduce brackish water shrimp culture and fruit trees (i.e., coconut).
5. Construction of a storage reservoir is recommended during dry season.

**HVN** Học viện Nông nghiệp Việt Nam

### Solution of social-propaganda advised the community

- Strengthening the communication, advising the community on the harmful effects of extreme weather events due to the effects of climate change.
- Developing appropriate land protection and suitable land use models with the participatory of farmers: Field design, crop restructuring, use of appropriate varieties.
- Training, transferring of technical advances to communities on the field: Soil erosion control techniques like afforestation, contour planting, terrace planting, integrated agroforestry models, integrated farming and husbandry models.

**HVN** Học viện Nông nghiệp Việt Nam

### Constrain and Challenge in Adopt

- Climate change and environment degradation
- Lack knowledge and skills on the production and management. In need of training for soil doctor
- Fragmented and scattered agriculture production caused problems in applying large scale technology and practices (i.e., planting, harvesting, land leveling, etc.). Cost of agricultural inputs and price of agricultural products
- Lack of market information and market forecast (i.e., quantity, variety, price, quality, processing requirement, and potential market).
- Policy to attract investment from private sector in agriculture, and establish an information exchange platform to update information on market issues (i.e., demand, quality, amount, price, and potential buyers)
- Farmers have limited access to services and finance
- Linkage between production and consumption is weak
- Low product quality and unsafety food, and less competition

### For Mekong Delta Farmers, Agriculture Diversification is the Key to sustainable development

- Upper sub-region will develop diversified agriculture, focusing on rice and tra fish, on a sustainable basis.
- Middle sub-region, horticulture will be the focus in an aim to develop the country's largest fruit growing area.
- Coastal sub-region will develop agriculture based mainly on saline and brackish water and provide its advantage for aquaculture; develop an agro-forestry system towards ecology, organic agriculture and ecotourism
- Delta will continue to reduce its rice growing area, increase areas of fruit and aquaculture, and develop breeding animals with advanced techniques and on a large-scale, (rice restructuring)

**HVN** Học viện Nông nghiệp Việt Nam

### Project of rice restructuring in Mekong River Delta from 2020 to 2025, orientation to 2030

(i) 2020 – 2025, the country will **maintain about 7 million ha of rice land**; convert 700-800 thousand ha in poorly-cultivated paddy areas or to other crops or combine aquaculture.

(ii) Mekong River Delta: **freshwater alluvium**, promoting strength of two rice crops/year, and **rotation of 2 rice crops – annual crops** where conditions are appropriate. The coastal zone is suitable for the production of **high-quality rice or organic rice in the structure of shrimp - rice**.

(iii) **Conversion of low-yielding rice areas to other crops or aquaculture**, reduction of Spring-Summer rice fields and third rice crops (Autumn-Winter crop) where the conditions are not satisfactory.

**HVN** Học viện Nông nghiệp Việt Nam

### Project of rice restructuring in Mekong River Delta, from 2020 to 2025, orientation to 2030

(iii) Ensuring **profit for rice growers** in the rice production area from 30% of total revenue or more.

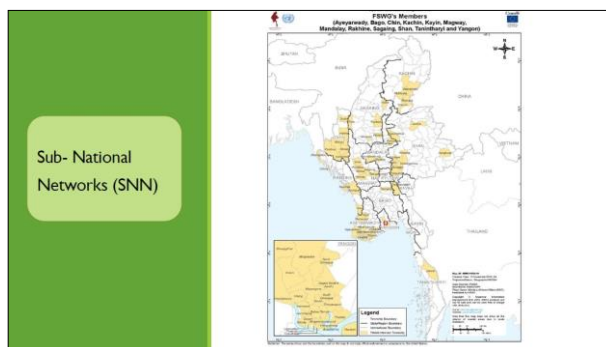
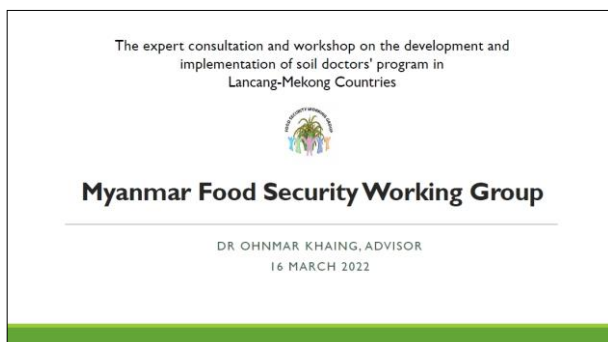
(iv) **Reducing greenhouse gas** emissions by 10% by 2020 and 20% by 2030

(v) **Developing enterprises** in the specialized cultivation areas on consumer products. In non-specialized cultivation areas, it is necessary to increase the scale, accumulation of land; support with seeds, techniques, support in organizing cooperatives and links with enterprises.

(vi) Supporting large enterprises associated in production **involving farmers in key material areas**; identifying target markets, attracting big customers, brands, connecting directly with the retail system.

**HVN** Học viện Nông nghiệp Việt Nam

## 6. Dr. Ohnmar Khaing, Advisor of Myanmar Food Security Working Group (FSWG), Myanmar

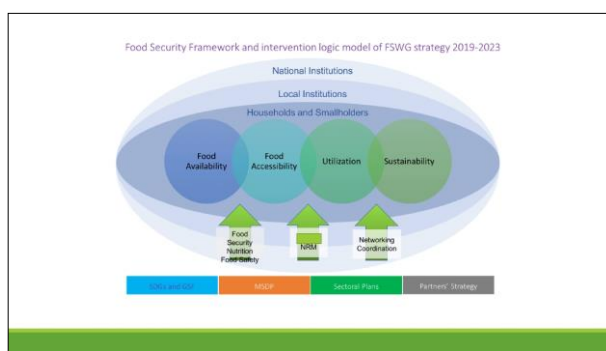


### Thematic Areas

- Climate change adaptation
- Sustainable agriculture
- Livestock production
- Fisheries management
- Forestry
- Natural resource management
- Value chain and market systems
- Links between food security, conservation agriculture and nutrition sensitive agriculture

### Positioning of FSWG on Key Issues

- ADS Development and Implementation (Sub-national Coordination)
- Food Safety and Quality Standardization (Technical Coordination)
- Climate Smart Agriculture (Knowledge services)
- Nutrition Sensitive Agriculture (Technical Coordination)
- Natural Resource Management (Knowledge services and Coordination)
- Value Chain and Market System for small holder farmers (Service Coordination)
- Food Security Working Groups in States and Regions (Coordination with Regional Government and Private sectors)
- Local led Innovative and initiatives (Service Coordination)
- Promoting Rights and Welfare of Small Holders (Networking)
- Small-holders' Networks and Platforms (Networking)
- Financial Inclusion (Budget Advocacy)



**Capacity building:** FSWG is building capacities of its members and partners (mainly local CBOs and CSOs) to enable them best develop and implement food security innovations.

**Networking and coordination:** Based on the members' demands and needs, FSWG is organizing the events and activities appropriately to fully utilize the FSWG information and networking opportunities.

**Knowledge and evidence-based information:** Together with its members and strategic partners, FSWG is exercising policy related researches to produce reliable data and relevant research information to be able to influence government's policy makings and implementations in addressing the country's food security issues.

**Policy analysis:** FSWG is playing an important role on policy analysis by actively engaging in policy dialogues and advocacy activities. FSWG has witnessed its active policy engagement in national/regional food security agenda through analysis of the existing and draft policies on welfare and rights of smallholder farmers.

**Advocacy:** FSWG and its network members are, to large extent, influencing National and Regional Policies and their associated factors (i.e. Trade, Crops, Nutrition, Climate Change, Fishery, Food Safety, Environment, Gender, Market, Land Tenure, etc.) using evidence-based research findings and advocacy

Sectors	Name of organization	Role
1. Government	1.1 Department of Agriculture	Extension service, training, policy advocacy
	1.2 Department of Fishery	Extension service, training, policy advocacy
	1.3 Department of Agricultural Research	Research, strategy development
	1.4 Department of Forestry	Agro-forestry policy making process
2. Private	2.1 Myanmar Rice Federation	Private sector engagement, such as contract farming and market intelligence
	2.2 Myanmar Consumer Union	Food safety and Consumer awareness
3. Education institutes	3.1 Hain Agricultural University	Research, policy advocacy and technology sharing and adoption
	3.2 University of Forestry	Research and policy advocacy
	3.3 University of Veterinary Science	Research and policy advocacy
4. Other sectors (NGOs and CSOs)	4.1 Local farmer groups	Member, sub-grant, technology dissemination through farmer networks in state and region
	4.2 Local livestock groups	Member, sub-grant, technology dissemination through farmer networks in state and region
	4.3 Community forest user groups	Member, sub-grant, technology dissemination through farmer networks in state and region
	4.4 International NGOs	Member, policy advocacy and networking with donors

Stakeholders

- ### Research Activities by FSWG (2012-2015)
- Factors Affecting Commercialization of the Rural Livestock Sector (August 2014)
  - An Analytical Study on Food Safety Issues in Different Stages of Vegetable Production from Farm to Table (August 2014)
  - Gender and Food Security Pilot Study (March 2015)
  - Chemical and Organic Fertilizer Market in Relation to the Interests of Small Farmers in Myanmar (July 2015)
  - Integration of Nutrition in Agriculture and Rural Development Projects (July 2015)
  - Food Security Policy Analysis Myanmar (December 2015)
  - Report on the Policy Analysis of the Myanmar Seed Law and Seed Policy (December 2015)
  - Study on Agricultural Investments (December 2015)

- ### Research Activities by FSWG (2017-2019)
- Studying on Roles and Functions of Fishermen in Good Fisheries Co-Management for Food Security
  - Analysis of Consumption Habit on Safe and Healthy Foods at School Canteens of Basic Education Schools in Yangon Region
  - Application of Pesticide Patterns and Its Residual Effects on the Crop and Cultivated Soil in Mung bean Growing Areas of Thonegwa and Khayan Townships, Yangon, Myanmar
  - Impacts of Agricultural Practices and Farm Investments on Soil Fertility and the Benefits of Farmers in Magway and Minbu Townships of Dry Zone, Myanmar
  - Agro-chemicals Utilization by Farmers and Its Effects on Agro-products and Environment in Potato and Cabbage Production Areas at Kalaw and Pindaya Townships, Southern Shan State, Myanmar
  - Empirical Study on Awareness and Attitudes of Food Safety Knowledge among Women of Rural, Urban & Tribal Areas of Pa-O Self-Administered Zone of Shan State, Myanmar
  - Value Chain Analysis of Chilli in Rakhine State, Myanmar

### Policy Advocacy Activities by FSWG

**Studied and Analyzed**

- ☐ Farmer protection and welfare enhancement law and bylaw
- ☐ Seed law and policy
- ☐ Farmer organization mapping
- ☐ Pesticides law
- ☐ Fertilizer Law
- ☐ Trade Promotion
- ☐ Village firewood plantation law

### Technical Training

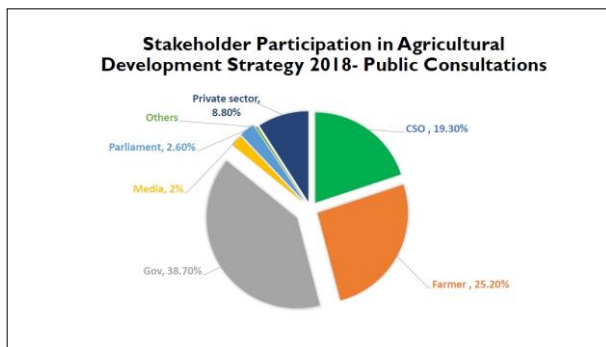
### Chilli, Ginger, Pineapple Value Chain Field Exchange Trip To Mandalay, Thibaw, Ywar Ngan Township

### Organizational Development Trainings For CBO members

### Farmer field School Implementation (2019-2020)

Topics on Farmer Field School	Integrated Crop Management	Integrated Pest Management
What is a Farmer Field School?	Systematic seed production in monsoon rice	What is IPM?
Introducing the FFS	Cultivation methods to achieve maximum crop yield	Principles of IPM
Agro-Ecosystem Analysis (AESA)	Pest, disease control including rodent control measures and soil nutrients	Basic concepts and assumptions
AESA methodology	Comparison of organic and chemical fertilizers	Advantages of IPM
AESA case questions that can be used during the discussion	Cultural management of monsoon rice	Problems and control of weeds and pests
Seeding arrangement in the FFS	Weed control and fertilizer application	The important role of bio-insecticides
Facilitation / Facilitation skills	Manures and organic fertilizers	Preparation and use of natural and bio-pesticides
Training materials		
Date recording		

- ### Policy advocacy activities by FSWG
- 1) Supported Agriculture development strategy (third draft) public consultation workshop in 17 cities of all regions/states.
  - 2) Amended 2012 Ayeyarwaddy Freshwater Fishery Law
  - 3) Submitted policy inputs of 2012 Farm land law
  - 4) Facilitated National Trade Law consultations
  - 5) Conducted Community forestry sustainable management plans and community report
  - 6) Supported public consultation workshop on protection against and control of plants and crop pests and diseases and systematic use of chemical fertilizers and systematic production and use of natural fertilizers in Rakhine state.
  - 7) Supporting Bago Agricultural Regional Development Plan



Thank you very much.



**Development and promotion of soil doctors program  
for sustainable land and agricultural management practices  
in Lancang-Mekong Countries**