Proceedings of the National Workshop on Agroecology Transition
7th and 8th March 2016, Yangon, Myanmar

Supported by:

Produced by Pierre Ferrand, Dr Htet Kyu and Lucie Reynaud (ALiSEA, GRET)

Summary

I. WORKSHOP WRAP UP

1. Introduction

The 2 days' workshop has been very intense and very fruitful paving the way to some common principles, common understanding and common expectations about agroecology. There are still some works to do in order to define in an encompassing way agroecology but it is on the right track.

The workshop has offered room for a lot of experience sharing from Myanmar. It has enabled to start knowing each other and to present the regional dynamic that ACTAE intends to support. It also allowed identifying some key challenges faced by farmers and that are hindering broader promotion of agroecology.

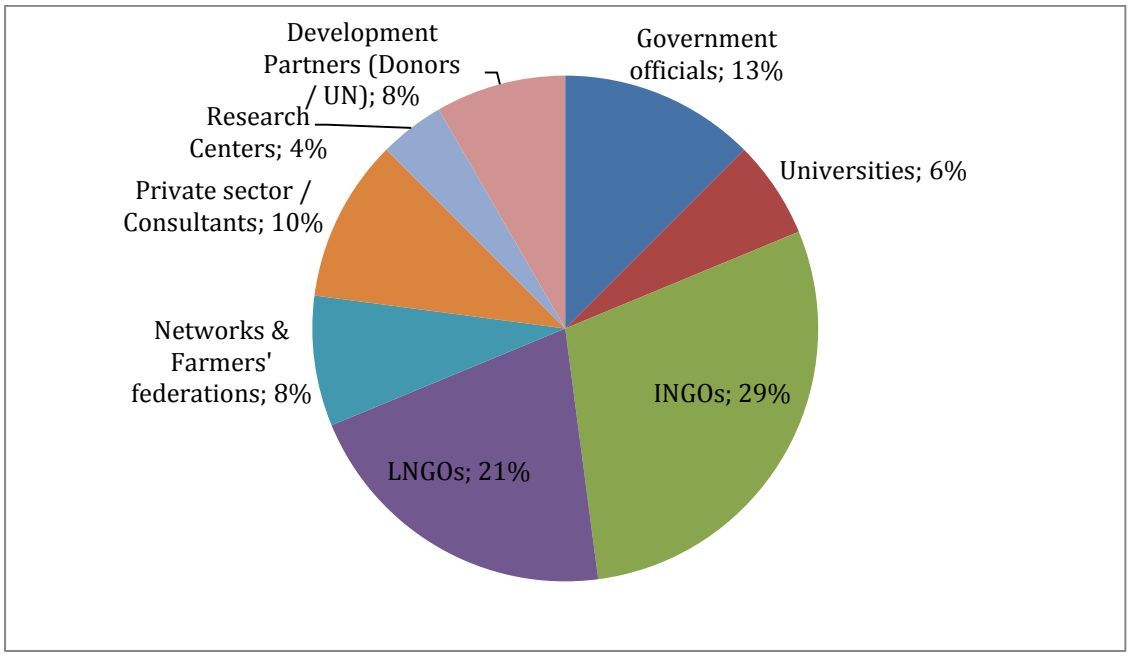
This 1st national workshop was instrumental in laying down the foundations of a national Myanmar network that will partake in a regional Agroecology Learning Alliance, bringing together all stakeholders active in the field of agroecology.

It was the first of its kind and it is expected that others will follow to keep on networking, sharing experiences and best practices and ultimately promote agroecology transition in the Mekong region.

2. A short account of the 2 days' workshop

The 1st national multi-stakeholder workshop addressing Agroecological Transition in the Mekong Region, and more especially in Myanmar, was held on the 7th and 8th of March 2016 in Yangon. It was organized by CIRAD and GRET as part of the inception phase of ACTAE project, funded by the French Agency for Development (AFD).

It brought together **48 specialists and practitioners** from national and international NGOs, research and universities, farmers' and consumers' associations, government agencies, development partners and private sector actively working on sustainable agriculture sector in Myanmar (see participants list in annex).



It aimed at sharing knowledge, information and experiences between agricultural development stakeholders, more especially through:

§ The presentation of ACTAE program with its 2 components:

- Conservation Agriculture Network in South East Asia (CANSEA)
- Agroecology Learning Alliance in South East Asia (ALiSEA)

§ The discussions of initial findings from the 1st study carried out in the framework of ALiSEA about *Myanmar agroecology stakeholder mapping and policy framework review* (report available on ALiSEA website: http://ali-sea.org/aliseaonlinelibrary/agro-ecology-transition-in-myanmar-issues-status-and-stakeholder-mapping/)

§ The introduction to the online ALiSEA knowledge management and experience sharing platform on Agroecology (http://ali-sea.org/) and its dedicated Facebook page (https://www.facebook.com/AgroecologyLearningAlliance/)

§ The presentation of 12 case studies from various stakeholders

§ Working groups building upon lessons learnt from the case studies and ACTAE presentations resulting in

- A brainstorming about main agriculture challenges faced by farmers and formulation of recommendations for promoting agroecology
- A shared understanding and common vision of agroecology and a sound and accurate translations (in national language) of the concept of agroecology
- A preliminary brainstorming about governance and structure for a future national platform addressing agroecology transition

2.1 Day 1: Setting the stage

Agriculture at a crossroad and the urgent need for a shift towards agroecology

The first day of the workshop provided room for presenting few overall reflexions about agroecology in general and some concrete illustrations of past / ongoing agroecological initiatives in Myanmar. It provided some lessons learnt and supported collective discussions regarding agroecology promotion and dissemination.

First of all, to have a shared understanding regarding why agroecology is necessary today, it was reminded the Green Revolution's limits and negative impacts, the increasing importance of climate change and the current ecological crisis that agriculture and small holders in particular are facing.

These elements call for alternative cropping systems, and agroecology provides convincing and evidence-based alternatives to the current agrifood systems.

It was mentioned that agroecology seeks to produce diversified and high-quality food, reproduce – or even improve – the ecosystem's fertility, limit the use of non-renewable resources, avoid contaminating the environment and people, contribute to the fight against global warming.

In addition, it was emphasized on the fact that agroecology is not new, relying on empirical learning processes and knowledge transfer from generation to generation. Meanwhile, it can be also seen as a modern approach for agriculture, building on both traditional empirical knowledge and scientific research for a better understanding and use of ecological processes operating in the farming systems.

Thus, Agroecology provides innovative concept and approaches capable of tackling issues related to food security / sovereignty, and mitigation & adaptation to climate change

In line with the need for concept clarification, historical principles of agroecology (Altieri and al. 2005) were reminded since they provide a sound basis for addressing most of technical issues related to food production

- **Enhanced recycling of biomass**, optimizing nutrient availability and balancing nutrient flows.
- **Securing favorable soil conditions** for plant growth, particularly by managing organic matter and enhancing soil biotic activity.
- **Minimizing losses** due to flows of solar radiation, air and water by way of microclimate management, water harvesting and soil management through increased soil cover
- **Species and genetic diversification** of the agro-ecosystem in time and space.
- **Enhanced beneficial biological interactions** and synergisms among agro-biodiversity components thus resulting in the promotion of key ecological processes and services.

To put it in a nutshell and to quote some of the work from A. Wezel (2009), Agroecology can be seen as a set of practices, a scientific discipline and a social movement.

A broad range of agroecology practices found in the region and in Myanmar: quick stakeholder mapping and few case study based illustrations

A presentation from U San Thein, independent consultant hired by ALiSEA, of his main findings regarding Myanmar agroecology stakeholder mapping and policy framework review, introduced a session of the workshop dedicated to take stock of the multitude of agroecology initiatives implemented in Myanmar.

6 sets of practices most commonly found have been identified during a feasibility study conducted by GRET in 2013 across the Mekong Region: System of Rice Intensification (SRI), Integrated Pest Management (IPM), Organic Agriculture (OA), Integrated Farming System (VAC as its acronym in Vietnam), Conservation Agriculture (CA), Agroforestry (AF)

As far as Myanmar is concerned, most of these practices are implemented across the country, and supported by different mechanisms. They are either

- driven by market demand (OA for instance),
- promoted by INGO/LNGO (SRI or VAC for instance),
- implemented by default by farmers due to remoteness of their locations and lack of access to input or affordability (OA for instance)
- supported by factory scale production

All these support mechanisms vary according to the crops and to the regions.

In relation to the 5 historical principles of agroecology (presented above) and/or to the 6 most commonly found "set of practices" in the Mekong region, 12 cases studies were presented by various stakeholders according to 3 main topics (see detail list of case studies in annex):

- Disseminating agroecology practices through training and extension approaches (5 case studies)
- Addressing soil and water conservation through agroecology practices (4 case studies)
- Making markets work for agroecology and small holders (3 case studies)

Such case studies were completed by farmer testimonies regarding the implementation of collective actions around conservation agriculture in Shan State.

In terms of diversity of stakeholders, there were 3 presentations from Government representatives, 3 from LNGOs representatives, 5 from INGOs representatives and 1 from private sector.

Such presentations were instrumental to feed the collective brainstorming on Day 2. In addition, they stimulated some preliminary exchanges between the different stakeholders.

Most of the remarks mostly addressed 2 important issues:

- How to ensure "agroecological" quality for the products?
- Need to foster behavior change at different level: producers, traders and consumers… but also policy makers

Several other issues were mentioned and should be taken into consideration or improved:

- Producers empowerment: "Farmer field school"
- Pest & disease control (IPM, bio-pesticides)
- Erosion
- Crop management (Water management / Seed)
- Soil fertility
- Quality / market opportunities
- Communication / lobbying

Overall, it was acknowledged a good expertise at several levels: Academia, Research institutions / Technical departments under MOAI and NGOs (Local& International)… but still very little support from policy makers to promote Agroecology until now.

2.2 Day 2: Working groups and brainstorming about agriculture challenges and a future governance for ALiSEA

Addressing agriculture challenges and agroecology principles

3 working groups were set up according to the nature of the stakeholders (Local NGOs & Networks, International NGOs, Government and Research) in order to brainstorm about challenges currently faced in agriculture especially related to:

- Agriculture production (soil fertility, pest and disease management / control, water management, access to good quality seeds…)
- Dissemination of innovations / extension approaches
- Access to market (certifications, incentives for quality product)

Main findings from these working groups have been summarized in the table in annex III. Some groups made a distinction between grass root level (farm level) and national / policy level.

4 main cross cutting issues were highlighted:

- Land grabbing and loss,
- Lack of consumer knowledge and trust in national certification schemes,
- Lack of information exchange on sustainable farming successes
- Lack of investment for long term approach of farm management (only short cycle of production)

As an attempt of synthesis of the different inputs from stakeholders, following challenges/constraints and recommendations can be pointed out:

Soil Fertility

Challenges/constraints	Recommendations
Soil Fertility is decreasing in general, mostly due to monocropping, and over/misuse of chemical fertilizers and pesticides Unprotected soil cover and deforestation cause soil erosion	Soil organic matter content should be built up The use of manure and compost should be promoted Crop rotation and soil/water conservation practices should be applied

Pest Management & Control

Challenges/constraints	Recommendations
Farmers' knowledge in pest and disease is poor and confused by chemical sellers Monocropping creates more pest and disease problems	IPM practices include mass release of predators, use of botanicals, physical nets and other innovative protective means IPM practices should be promoted among farmers As government facility is limited, private sectors should also participate in rearing and releasing of predators for healthy ecosystem

Water Management

Challenges/constraints	Recommendations
Water amount and quality are major issues Climate Change has cause more frequent drought and flood Government irrigation structures are big and not efficient nor effective	The approach using water harvesting and water shed development in the individual family level need to be promoted

Access to Quality Seed

Challenges/constraints	Recommendations
The use of hybrid seeds increase external dependency Farmers' local seeds are degenerating and of poor quality Farmers need suitable local varieties seeds What farmers focus is not the high yield varieties responsive to inputs but the drought, flood, salt tolerant varieties adaptable to their local condition	Farmers level seed production and sharing is necessary because government and private sector seed supply is limited

Innovation & Extension Approach

Challenges/constraints	Recommendations
Government extension service is very weak Government extension is top-down not participatory	Farmer-led extension approach should be innovated Farmer network should be strengthened NTIC should be investigated to elaborate new tools for farmers

Access to Market

Challenges/constraints	Recommendations
Market information for farmers is weak Market link is limited by bad roads Low farm gate price, unstable price and premium price for quality produce are major issues	Awareness of consumers and stakeholders in safe and quality food needs to be raised PGS, GI and other collective control on quality and safety of the produce should be promoted

Access to Land

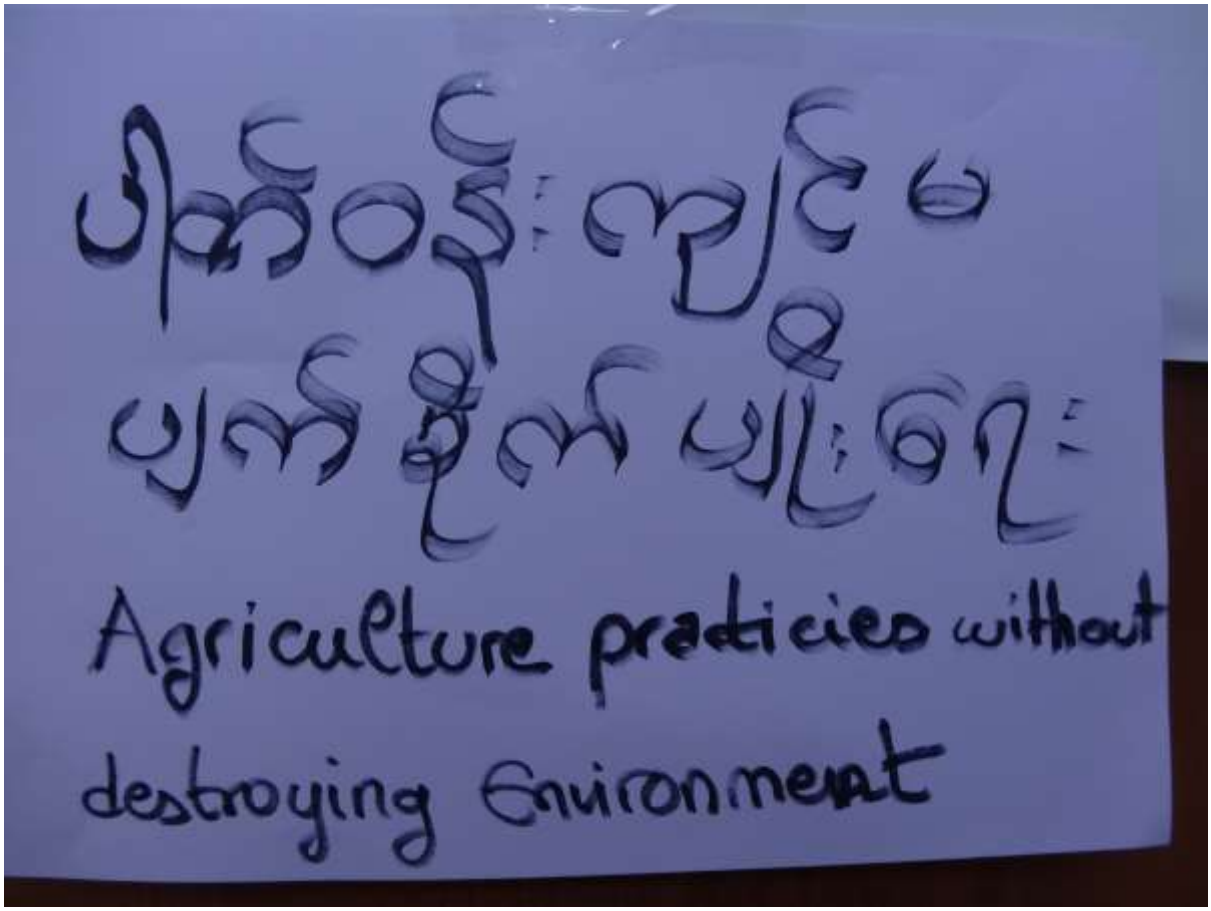
Challenges/constraints	Recommendations
Farmers cultivable land areas are reducing Agricultural policy focused on conventional agri-business, ignoring importance of small farmers and their needs Limited knowledge of farmers in land laws and implementation	Integrated Farming and other AE practices should be promoted Awareness raising to farmers about land laws is needed

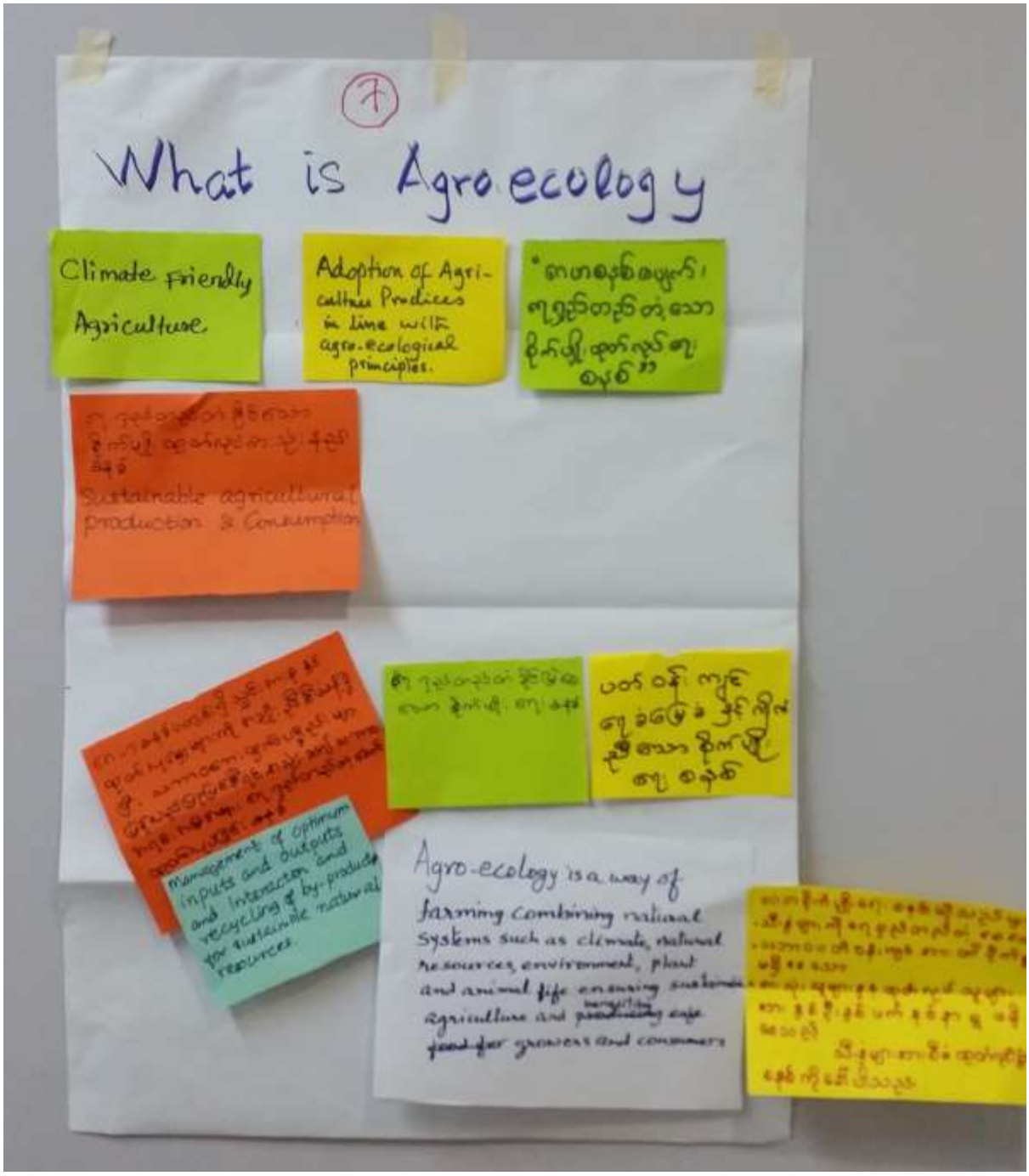
Linking identified challenges/constraints faced by smallholders, we can identify few overall key agroecology principles that could offer some way forwards such as:

1. **Better use of local and available resources**: soil fertility, seed, cropping system
2. **Sustainability**: develop long term approach for balanced ecosystem
3. **Adaptability and flexibility to local context**: agroecology practices should NOT be implemented as tool kit but need extension workers to adapt their recommendations
4. **Farmers first**: at the center of the decision by capacity building reinforcement (knowledge intensive), technologies development, empower them to carry an approach, to get organize to carry collective action
5. **Enhance diversity** in terms of economic and ecological aspects in order to foster resilience

Agroecology approach supports advocacy for changing behavior from farmers to policy markers level and encourages building linkages among stakeholders (such as between farmers and academia for instance).

Two complementary definitions were proposed as per the pictures below.





Addressing governance and structure features for ALiSEA Myanmar

✓ **Experience sharing on past and current involvement in existing networks**

The discussion highlighted the need to clarify the different terminologies = forum, network, platform, learning alliance.

What is ALiSEA?

- A Network / platform (both terms are synonymous)
- A learning alliance as a group of people with different background, sharing same goal, interested to learn and share among each other
- A forum as public open space to allow free discussion

Green Way has established an online platform nationwide focused since 2011 to disseminate agroecology practices, to share good farming practices. The objective is to create linkages between farmers and experts. Such web portal is working well in some townships of Shan State, but is more difficult to access in Kachin (low internet connection, language barrier…).Farmers can access commodity prices but can also advertise their products on the platform. It has an editing group in charge of supporting farmers to write articles that feeds the platform. The platform belongs to everyone. The success of a network lies in its ownership by the members.

KalyanaMitta mentioned that they believed in more collaboration / cooperation between organizations. They have been inspired by small local pilot project implemented by NGOs that are able to share their experience. They consider that an efficient network should rely on a triangle formed by (i) policy makers, (ii) CSO and (iii) researchers. It is important to carefully define / identify the role of each stakeholder (private sector, policy makers/regulators, consumers, CSOs'…).

Building upon the experience sharing from Kalyana Mitta, the president of **MOGPA** insisted on the importance of consolidating collective efforts to build the network. It is needed to define the role of each actors regarding agroecology promotion: government, private sector, NGOs

Lastly, **Metta Development Foundation (MDF)** mentioned that they were part of several networks at national and local level like Food Security Working Group (member of the steering committee), Community Forest Groups but also at regional level such as Towards Organic Asia (since 2012), regional SRI network (since 2014). Networks are inspiring for sharing common issues faced by the communities; and enable one to get stronger for advocacy and lobbying. Metta has been involved for instance in an Assessment of Organic Agriculture in Myanmar alongside with partners, as well as specific actions of editing to facilitate the dissemination of experience.

All participants highlighted the importance of being involved also at regional level since there are common threats that should be addressed collectively at a higher level to be more powerful / to have their voice better heard. In this regards, it is crucial to understand our common goals in the Mekong region in order to be more visible and influential.

However, some participants also mentioned that although regional level is important, their organization is far stretched in terms of human resources available and their priority goes to the national level. Such aspect will have to be closely considered in future collective action.

- ✓ **What are the expectations of the stakeholders towards their participation to ALiSEA network?**

Several ideas, suggestions were proposed by the participants such as:

- To learn from other national workshops on agroecology transition in Mekong region like in Cambodia or in Vietnam
- To draw trends at regional level about agroecology in order to build a broader vision of existing initiatives by highlighting specificities of each countries and to learn from other regional initiatives
- To produce case studies, organize study tours, share experiences, and make information leaflets or newsletters

- To develop strategies in order to reach out to farmers
    - Building upon interesting experiences such as the one of Green Way that encourages and supports farmers in writing articles
    - To document agroecological practices in an accessible way to farmers: pictures, movies in order to impact the field.
- To put members of the network at the center → a successful network should be members driven

2.3 A contribution to the way forward…

✓ **A first working group formed**

At the end of the 2 days' workshop, a **first working group** of 8 volunteer members have committed to contribute to the elaboration of the **structure of the future Myanmar Agroecology Learning Alliance**:

From Left to Right on the picture hereafter: Mr Sai Lone (Swissaid), Mr Khin MaungLatt (Metta Foundation), Mr San Thein (VIDA), Mr Thein Soe Min (Green Way), Ms Clemence Bourlet (Green Lotus), MsEi Khin Khin (Banyan Services), Ms Tin Moe Khaing (Food Security Working Group), MsSandar Kyaw Win (Karuna Mission Social Solidarity).

✓ **Launching the small grants facilities**

2 Small Grant Facilities will be launched shortly with different objectives as described in the PowerPoint (shortly available on ALiSEA website):

- One managed by CIRAD, aiming at supporting CANSEA members and amounting 320 000 Euros
- One managed by GRET, aiming at supporting ALiSEA members and amounting 210 000 Euros

ALiSEA Network will provide around **22 grants** for **2 years** and **4 countries** (Myanmar, Cambodia, Lao PDR and Vietnam). Grants will preferably be proposed as co-funding, with a **maximum of 10,000 USD**. The objective of the SGF is to provide means to address the issues related to agroecology dissemination, production, market access. It aims at fostering knowledge generation and sharing.

ALiSEA SGF will be launched at the end of the 4 National Workshops on Agroecology Transition in Mekong Region, around June 2016. All details information will be displayed on ALiSEA website.

Interested stakeholders should send a 2 pages concept note with an obligation to produce **2 short "agro-ecological transition stories"** and a brief narrative and financial report.

The concept note should be preferably written in English. Specific support through ALiSEA national coordinator, Dr Htet Kyu, could be provided to grass root organizations that could write their concept note only in Burmese language.

✓ **Learning and sharing events: organizing collective events in the coming months…**

Location of the events should be taken into consideration since it would define the target audience. Events should not be only in Yangon, it is needed to consider other provinces of Myanmar as well. They are already examples of the Seed Forum that was organized in Nay Pyi Taw (in collaboration with Metta Development Fondation and SEARICE) to promote local products and biodiversity.

Actions addressing consumer's awareness should be considered as well.

Several kinds of events could be considered according to the target audience and the message that needs to be disseminated:

- **Green Festival** to connect consumers and farmers
- **Agricultural Fair** in places that attract many people like public parks; where farmers can bring, promote and share their own local resources from all over provinces of Myanmar (seed, bio-pesticides, fruit trees etc.)
- **Farmers Symposium**: to give space to farmers for sharing their knowledge and difficulties / challenges. To provide opportunity for hearing farmers' voices
- **Study Tour** to outstanding sites: to invite jointly government departments, teachers and students from universities
- **Joint study** on pesticide use patterns & drivers of pesticide use (and roadblocks to biological control, agro-ecological approaches and pesticide-free management) at national and regional level
- **Joint study** to analyze agricultural policy

In the coming month, it was mentioned that Metta Development Foundation will organize in a **National Workshop on agroecology farmers' practices**.

Annexes

II. ANNEXE: CASE STUDIES (POWERPOINTS)

All the case studies presented and listed below are available for download on ALiSEA website (http://ali-sea.org/1st-national-multi-stakeholder-workshop-addressing-agroecological-transition-in-myanmar/):

Disseminating AE practices through training and extension approaches

Agroecology Approaches and Practices in Farmer Field School, Metta Development Foundation

Sustainable Agricultural Practices of Farmers through Farmer Field School Approach, Doh Taung Thu

Moving toward an acceptable alternative livelihood and food security, NEED

Ecological Farming Pilot Project, SWISSAID

Agro ecology Transition in Myanmar, focus on IPM, Plant Protection Division, Department of Agriculture

Addressing soil and water conservation through AE practices

Farming Practices Applied in Lashio contributing to Sustainable Agriculture, Welthungerhilfe (Conservation Agriculture)

Assessment of soil erosion risk in different cropping systems of the Inle Lake watershed area, NyaungShwe Township, Southern Shan State, Myanmar, Land Use Division, DOA, MOAI

Management of cropping pattern, NyangOo, Agricultural Extension and Education Division

Soil and water conservation in the Dry Zone of Myanmar, Gret

Making markets work for AE and small holders

Developing High Quality Tea Value Chains for Poverty Reduction for Ethnic Minorities in Northern Vietnam, Laos, and Myanmar, Helvetas

Strengthening the agroecological sector in Myanmar: Networking and Lobbying, Green Lotus

Market opportunities for agro-ecology products from Myanmar, Banyan Green Services

III. ANNEXE: SUMMARY OF WORKING GROUPS DISCUSSIONS

No.	Group	Production				2 Innovation & Extension Approach	3 Access to Market	4 Access to Land
		1 Soil Fertility	1 Pest Management & Control	1 Water Management	1 Access to Quality Seed			
1	**LNGO**	Majority of farmers are not aware of soil Microbial properties and organic matters control	Farmers unable to identify of pest and disease	Poor system of drainage and irrigation	Expensive to buy	Government Extension approach is weak	Lack of proper market system	
2	**LNGO**	Lack of knowledge on efficient fertilizer using	Lack of knowledge on IPM	Saline water intrusion and waterpollution	Cannot produce good quality seed locally	Improvement of Extension Service structure	Lack of value chain improvement	
3	**LNGO**	Lack of awareness on soil fertility management	Weakness in systematic use of pesticide	Rely on rainfed agriculture	Depend on hybrid seed on other countries	Need to train extension workers	Internal and External market link is still weak	
4	**LNGO**	Over use of chemical fertilizer	Regarding change to modern monoculture agriculture effect on more chemicals are used and destroyed effective microbes	Inadequate water resources	Difficult to get quality seeds	MOAI need field level extension services	Poor infrastructure	
5	**LNGO**	Reduction of effective microbe caused by chemical inputs	Over use of pesticide	Farmers (majority) think the more they use water, they can get more yield	Farmers used grains as seeds	Select the best extension approach	Lack of crop insurance by Government	

6	**LNGO**	Lack of using organic fertilizer	Climate disorder effect on more disease or pests, so need to use net house and putting herbs	Lack of knowledge on purification	Farmers cannot store their seed systematically	Farmer led extension services	Government control and legislation	
7	**LNGO**	Soil degradation by using chemical inputs	Reduction of predator	Dripping is rather than spraying or irrigation	Most of farmers rely on hybrid seed and follow they want to grow marketable seeds	Farmers facilitators	Government Trade Policy is unstable	
8	**LNGO**	A lot of pesticides used	To disseminate use of pesticide safely according to set guideline	Need water saving technology to apply in farmer' fields	Need to produce and attain local seed or indigenous seed	Organize farmers' trials	Promote market based crop production	
9	**LNGO**	High cost to soil amendment	Need to improve plant extraction method for pest control	Need to water management research to apply on field level	Need to link with national seed bank (DAR)	Set-up demo for seeing is believing	Promote value added from crop production	
10	**LNGO**	Take time to build soil fertility using organic methods	Resurgence of pests due to excessive pesticide usages	Need to improve water management system	Seed information network should be formed (including production)	Conduct to networking and capacity building training	Establish Market Information System (MIS)	
11	**LNGO**	Chemical fertilizers do not promote soil fertility improvement through microbiological activities in the soil. Soil-Plant- Nutrient relationship	Need to use Biological control Pest and Disease Management link - private sector and service provider of natural enemies for pest control farming	Need to improve water management system (eg. Drip irrigation)	Need to reinforce on current and new laws and regulation	Application of ICT on Agri-Extension (Mobile Phone)	Establish sale agent in areas	

12	**LNGO**				Strengthen Participatory Guarantee System (PGS) for farmers seed production	Invent mobile phone application	Encourage PGS for organic farmer growers	
13	**LNGO**					Promote exchange visit	Establish organic food market in Resort, Recreations and Ecotourism Zones	
14	**LNGO**					Problem based extension services provision in farmers' field	Establish premium prices for organic products	
15	**LNGO**					Promote exchange visits	Certification for Agro-eco products farmers produced	
16	**LNGO**					Arrange field days, excursion tips and Agri- fair		
17	**LNGO**					Establish of financial assistance		
18	**LNGO**					PSA (Public Service Announcement) by private sector for their CSR (Cooperate Social Responsibilities)		
19	**LNGO**					Promote Private, Public Partnership (PPP)		

20	**INGO**	deterioration of soil structure and texture due to excess use of chemical fertilizers	Many agrochemicals are illegal and poor in quality and information.	Unable to anticipate rainfall pattern due to climate change effect	Variety degeneration	farmers do not have access to alternative agri techniques	marketing is limited by rough roads	farmers are losing land due to being encroached by civil areas and privatization of large orchard area
21	**INGO**	crop yield is decreasing due to lower fertility with time	Weak law enforcement on chemicals (illegal dangerous trade, strong and active advertisement)	Lack of water harvesting technique in DZ	Lack of suitable variety and quality seeds	Government's extension do not reach the grass root level farmers		Limited knowledge of farmers in land laws and implementation
22	**INGO**	soil erosion is accelerated due to shifting cultivation, inappropriate practices, and unprotective cover.		Insufficient & irregular irrigation water	lack of Local and diverse seeds	Lack of extension on agroecology		Government's focus in large conventional agri business only ignoring importance of small farmers and their needs
23	**INGO**	many farmers concentrates in immediate yield increase by chemical fertilizers instead of long term investment on soil fertility improvement by biomass recycling		Lack of practices suitable for Climate Change environment		Lack of diversity in agriculture education and research		
24	**INGO**			Government dams are not effective				
25	**Government & research**	Mono cropping	little knowledge in pest and disease	Lack of proper irrigation canals and drainage structure	Government and Private sector seed supply is insufficient	Government Extension (technology transfer) is poor	Poor storage facility	
26	**Government & research**	Unbalanced nutrients (Urea application only)	wrong pesticide application	poor water management practice	Need drought, salt, flood talerant variety seeds	Insufficient technical resource persons in the field	Poor market access due to bad roads	

27	**Government & research**	Improper fertilizer application techniques	No knowledge in IPM (Economic Threshold Level ETL)	Frequent flood and drought impact due to climate change effect		Untrained extension agents	Lack of price guarantee	
28	**Government & research**	Rare use of manure and compost				extension agents mobility is limited	Market information access is limited	
29	**Government & research**	Chemical fertilizers are costly and of low quality				Government extension approach is not participatory		
30	**Government & research**	Soil erosion due to unprotected cover and no mulching				Farmers' wrong perception in advanced technologies ignoring the possible negative consequences afterwards		
31	**Government & research**	Soil erosion due to deforestation						
32	**Government & research**	Some cultivation practices cause soil erosion						
33	**Government & research**	Lack of promotion of soil & water conservation practices						
34	**Government & research**	Lack of promotion of crop rotation based on ecological conditions						

IV. ANNEXES: LIST OF PARTICIPANTS

No	Name	Position	Institution
1	Dr Hla Than	Professor and Principal	Yezin Agriculture University – Hmawbi Branch
2	Dr Kyi Toe	Professor and Principal	Yezin Agriculture University – Hlegu Branch
3	Dr Khin Mar Cho	Coordinator for MELA & Country Director for Myanmar	Cornell University & MIID Board Member
4	U San Thein	Agriculture Consultant	Freelance
5	U Thein Su	Retired Associate Professor specializing in conservation agriculture, SRI and Rural Development	Yezin Agriculture University
6	Stephane Fayon	Agroecology Consultant	
7	Myat Su Win	Program Officer	UNOPS - LIFT
8	ANTONELLI Claudia	Programme Manager	European Union
9	Mangshang Yaw Bawm		Diplomatic Mission of Finland
10	U Kyah Moo	President	Myandhrra
11	U Hla Min	Chairman	Myanmar Organic Grower and Producer Association
12	Dr Kyin Kyin Win	Deputy Director	Plant Protection, Department of Agriculture
13	Daw Khin Mar Yee	Deputy Director	Extension, Department of Agriculture
14	U Tin Tun	Director	Forest Department
15	Dr Daw Hnin Nwe Htwe	Researcher	Land Use, Department of Agriculture
16	Premila Masse	Project Manager	Gret- Delta
17	Ms Justine Scholle	Agroecology Specialist	Gret-Delta
18	U Pe Than	Project Manager	Gret-Dry Zone
19	Pierre Ferrand	Regional Network Coordinator	Gret-ALiSEA, Laos
20	Dr Htet Kyu	National Network Coordinator	Gret-ALiSEA, Myanmar
21	Lucie Reynaud	National Network Coordinator	Gret-ALiSEA, Cambodia
22	U Sai Lone	Senior Programme Officer	SWISSAID
23	Dr Ohnmar Khaing	Country Coordinator	ACIAR
24	Clemence Bourlet		Green Lotus
25	Bryan Berenguer	Project Manager	Welthungerhilfe
26	Daw Yee Yee Maw	Programme Agriculture and Market Officer	Helvetas Myanmar
27	U Khin Maung Latt	Sector Coordinator	Metta Development Foundation
28	U Thein Soe Min	Leader	Green Way
29	Daw Heather Morris	Chairman	Doe Taung Thu Organization
30	Dr Daw Tin Moe Khaing	Knowledge Sharing Manager	Food Security Working Group
31	U Maung Maung	Chairman	Myanmar Consumer Union

32	Dr Daw Sanda Kyaw Win	Program Manager	Karuna Myanmar Social Services
33	U Bo Bo Lwin	Director	Kalyana Mitta
34	Daw Htwe Htwe Aung	Vice Chair Person	Golden Plain Livelihood Development Services Coop. Ltd
35	U Khaing La Mum	Executive Director	Youth & Community Development Network (YCDN)
36	Daw Ei Khin Khin	Managing Director	Banyan Green Services Co. Ltd.
37	Daw Thida Tun	Chairman	Myanmar Emerald Land Organic Products
38	Phillipe Cao Van	CANSEA Coordinator	CIRAD - ACTAE
39	Dr Tun Shwe	Deputy Director	Department of Agriculture Research
40	Daw Moe Moe	Board of Director	Greenovator
41	Dr Tun Win	Agri Adviser	National League for Democracy
42	U Ohn Thein	Technical Adviser	Gret – Northern Rakhine State Project
43	LAYEC Matthien		
44	Daw Aye Aye Mya	Assistant Director	Plant Protection, Department of Agriculture
45	Caity Calier	Permaculture Teacher	Network for Environment and Economic Development (NEED-Burma)
46	Daw Sint Sint Mar	Chair Person	Women Association
47	Sai Kham Thi	Agriculturist & Nutritionist	Freelance
48	Dr Daw Pa Pa Win	Program Officer	UNOPS - LIFT

V. ANNEXES: WORKSHOP PRESENTATION EXTENDED ABSTRACTS

Disseminating AE practices through training and extension approaches

(1) Agroecology Approaches and Practices in Farmer Field School, Metta Foundation

By U Khin Maung Latt, Sector coordinator, Metta Development Foundation

Metta Development Foundation Founded in 1998, MettaDevelopment Foundation (Metta) has become one of Myanmar's largest community-based development agencies. It is a recognised not-for-profit, social development organisation headquartered in Yangon, with four additional branch offices in Myitkyina (Kachin State), Lashio (Northern Shan State), Taunggyi (Southern Shan State) and Yangon (Yangon Region). There are four project coordination offices in MyaungMya and Pathein (Irrawaddy Region), Loikaw (Kayah State) and Taungngu (Bago Region). It has three established permanent living and learning centres in Alam village (Kachin State), Naung Kham (Southern Shan State) and Bulei Inn (Bago Region).

Metta has pioneered Farmer Field School (FFS) programmes in Myanmar since 2000, engaging in diversified FFS programmes in rice production, upland agriculture and community forestry (CF), and nurseries. Over the last 12 years, Metta has implemented FFS programmes in more than 1,000 communities across Kachin, Shan, Kayah states and, Sagaing and Ayeyarwady regions, resulting in significant increases in production.

Metta introduced the System of Rice Intensification (SRI) to the FFSs and encouraged the FFS farmers to grow rice organically. Firstly Metta followed the ideal practices such as 8-12 days old seedlings and transplanting only one seedling. Later Metta extended its FFS programme to different States and Regions depending on the request of local communities. The extended areas have different agro ecology conditions and types of rice cultivation and even varieties. Therefore Metta modified the basic principle of SRI to another 2 methods; transplanting 2-3 seedlings with the age of 15-18 days and direct seeding using Drum Seeder depending on the water level of the fields and the choice of farmers. Although the transplanting and seeding methods were different the FFS farmers could raise the rice yields and total production as shown in the figures. On the other hand there were some issues in the application of SRI practices such as labour shortage, rice transplanter scaricity, land preparation and leveling, sowing time and unwillingness of farmers to adopt the line sowing.

Metta introduced farmer level quality rice seed production to the FFSs to be able to easily access rice quality rice seed in the local communities. Metta supported the high class quality seeds to the seed grower farmers and facilitated the seed production package using SRI practices. Metta seed farm and seed producing farmers has been practicing quality seed production using SRI method and organic inputs. The produced and distributed quality rice seeds by Metta seed farm and seed grower farmers were shown in the figures.

Metta also started its Community Nursery and Community Forestry programme (CNCF) since 2006 and innovated the programme approach, process and methodologies in 2012 and change the name as Upland Agriculture and Community Forestry (UACF) introducing agroforestry, climate change adaptation, village planning and natural resource management practices. The project communities applied community forestry

certificates and natural forest conservation tenure right. The progress were tabulated and presented in the power point. So far the communities achieved certificates of 2 CFs in Kachin, 3 CFs in Kayah and 6 CFs in Southern Shan States. Among them some CF have being applied agroforestry practices with selected field crops and fruit trees depending on the user groups' choice and market availability. Although the progress were made to some extent, there were some issues such as no official land entitlement, illegal logging from other villages, land encroachment, wild fire, land buying by outside investors, land concession by government, mining and land ownership conflict between villages.

(2) Sustainable Agricultural Practices of Farmers through Farmer Field School Approach

By Heather Morris, Chairperson, Doh Taung Thu (Our Farmer) LNGO

Doh Taung Thu (Our Farmer) is a local Non-Government Organization assisting farmers in adopting sustainable agriculture practices in the Union of Myanmar. The organization has been active since seven years ago with the Chairperson having experience in agriculture development for over thirty years. Twelve technical members, four patron members and two administration staff are involved in supporting farmers at grass root level. Four local farmers were hired as farmer facilitators for the project. This project was undertaken with the support of UNDP and entitled "Capacity Building of Farmers in Southern Shan State by Farmer Field Schools" and Doh Taung Thu was the implementing partner

This presentation will focus especially on sustainable practices through Farmer Field School (FFS) approach and the outcomes. FFSs were first established in 1999 in Myanmar by the Author with the support from FAO and later taken up by other INGOs and LNGOs. A brief explanation on the objectives, concept and technology dissemination of FFS will be included followed by the sustainable agricultural practices conducted by farmers. FFS approach initiated in Southern Shan State of Myanmar will be the main focus of the presentation

Inlay Lake situated in Southern Shan State at 2900 ft above sea level has an area of 63 square miles, where main livelihood of farmers is growing tomato crops on floating gardens of which products are distributed to big cities within the whole country. Due to market demand, farmers have changed from growing local varieties to hybrids which need a large amount of chemical inputs. The lake is now facing detrimental environmental consequences by soil and water pollution, biotic species such as fish and water cress are dying out and farmers are facing health issues with contamination of toxic chemicals. The FFS is an effort to train farmers in reduced chemical usage, to conserve the environment in the core and buffer zones of the Inle Lake area, to provide safe food for consumers and to improve health conditions of the lake area residents.

The FFS approach developed in Southern Shan State includes Integrated Pest Management such as bio-pesticides (neem oil soap solution, chilli, onion, ginger soap solutions), other IPM methods (seed germination tests, correct planting dates, planting techniques, introduction of high yielding groundnut variety) developed in relation to prevailing farming systems and the results. Natural Farming techniques and methods for increasing yields (compost making, vermiculture, fermented fruit juice, fermented plant juice, Fish Amino Acid solution) will be presented. The production and use of

natural soil amendments will be explained. More over organic fair, study tours and sale of organic products by the farmers will be included.

Farmers realizing the disastrous effects of chemicals on their health, environment and food safety are slowly changing their attitude, behavior and agricultural practices. Farmers now have market linkages and are selling their organic products to Yangon and other big cities. Three farmers have been awarded organic certificates by the Myanmar Organic Agriculture Group (MOAG) and another two are in the pipe line. Farmers are continuing to grow chemical free products, thus ensuring healthy life styles, safe food for consumers and a steady income for households. But some farmers are still using chemicals and these organic farmers are pioneers who are facilitating change in their farming systems.

(3) Moving toward an acceptable alternative livelihood and food security

By KhaingDhu Wan, Founder/Executive Director of NEED Myanmar

NEED Myanmar Eco village Farm school modelbegan in 2013 in Nyaung Pin TharYar village,Hmawbi township Yangon.We are attempting to be an agro-ecology farm school model. Since 2013, we have been recruiting and traininga young generation of farmers. We recruit from multi-ethnic youth living in different areas of Myanmar, they then learn through classtheoryand through daily hands-on farm work. We try to teach our students a different way and view; looking to the future and finding solutions for livelihood opportunity and climate change adaption through practical experimentsrelevant to local rural farmers. Our farming curriculum focuses on the following strategies:- 1. Soil fertility management with cow and buffalo waste; 2. Integrated planting, guild planting; 3. Corporate and sharing with neighboring farmers; 4. Local verity seeds saving and zero hole farming; 5. Saw dusts and straw mushroom farming. All those activities promote a zero waste management system around the farm and the farm products in the field. It's also been proved with the following assets that we have received

This case study is from conducting, researching and documenting at the six acres of the farming land, where NEED-Myanmar currently exists.Before the school, the land was un-propagated and overrun with grassy weeds. After three years, the land is now producing~15 vegetables,rice,free runchickens,12 cows and 6 buffalo. At the same time, we have developed the farm (and school)infrastructure by building mud-brick eco-homes, classrooms, dormitories, farmer discussion area, storage and a recent bamboo accommodation hut.

The project is first and foremost a school, so students are always the main focus. The number of students is continually growing; 26 in 2013; 28 in 2014; and currently 32 who will graduate in March. Students who complete the training take their knowledge of sustainable organic agriculture and continue to educate their own local communities around Myanmar. The NEED alumni network is already quite vast and working in different organic farming communities around Myanmar. This farm school model have been processing under ways of developing by the holistically, such as socially, environmentally and economically.

We have documented for all animals, their daily waste, which we could collect. For cow and buffalo manure this is about 200 kgs every day onto the rice field and vegetable fields. Before we established this farm, we tested the soil to be only 4.06 PH, after 3 years, the soil has increased the level of PH to be 5.05. The effects of this change are clear with visible higher biodiversity, increased vegetable production and less input of labor.

Current Situation and Endemic Problems: The current economic climate for farmers is worse today than before. All farmers are facing a difficult situation due to the following issues; Rice paddy farmers are rapidly losing money and are trying to find alternative methods to cut their losses In some areas, since Cyclone Nargis in 2008, rice prices have dropped nearly 50%. Lack of credit: access to credit is difficult, if it exists at all. This extreme shortage of existent credit means that farmers have too much rice for sale at harvest time. As a result, farmers are forced to sell all of their rice to earn enough money, leaving little rice left for home consumption. Debt is rising: Cumulative debt is extremely high in Cyclone Nargis-affected areas and water flouting is rampant throughout the country in last year.

Challenges are: (a) Landlessness is widespread and increasing, Wage employment is scarce,Cash has disappeared from farms and no more rising the cattle in their field, Agricultural value chains are very inefficient throughout Myanmar,Most young Farmers have disappointed for the continually farming and looking forward to employ neighboring countries or urban areas. Landlessness, some due to military seizures and business modern and infrastructure development through the country; and (b) Most of farming communities have not cooperate and breaking down, not regular discussion regarding with cultivation or production or marketing. Most farmers have very little knowledge of Marketing ideas, limited access of news and information.

Our suggestions and recommendations include:- - Inalienable land rights; Freedom to choose crops or seeds; Incentives to expand cultivation into undeveloped land; Emphasis on landless people; Communal ownership restored; Communal administration of irrigation; Confiscated land – return of land or compensation in kind; Liberalization of land layout, transport, create path way on the field, digging, integrating paddy farming, fishes farming ponds and cattle rising by farmers.; Government/ private sectors should encourage and support organic agriculture farmers; Provide more agriculture technical assistance to the small holder farmers and more encourage or assist that to establish agro ecology farming. Groups of Small holder farmers /private sectors or NGOs shouldbe initiative or encourage for the Community Support Agriculture (CSA)

Finally we want to conclude that this case study was conducted from the evidence and facts found from collecting data from the field by students and farm employees. We are currently unable to undertake significant scientific studies, so can only present our results as those we have witnessed and as a basic study on what can/has been achieved. On the other hand, NEED team have been working and collaborating with local small holder farmers, trying to raise awareness on ecological agriculture farming, and the importance of biologically developing farm fields. Currently, most farmers are attempting to move to modern, technical farming which has resulted in losing their cattle and decreasing their soil fertility. Meanwhile, current policies and land laws encourage the change to modern chemical farming, leaving farmers who wish to remain

or change to organic struggling. This strategy has been threatening to the small holder farmers and family faming, and eco system in nature. Thus, through our own farm and those of our neighbors', we would like to prove that 6 acres of farming can be easily managed by one family. That it can easily feed a family; providing secure and safe food, better rehabilitation for the soil and earth, better environment while also developing or increasing the biodiversity around the farm and greater Myanmar.

(4) SWISSAID Ecological Farming Pilot Project
By Sai Lone, Senior Programme Officer, SWISSAID

The rationale for SWISSAID's support for ecological farming in Myanmar is rooted in the need to reduce the vulnerability of rural communities to environmental, economic and political pressures. A diverse and integrated approach to ecological farming will lead to greater resilience within rural communities. Farmers in Myanmar are vulnerable to many shocks and pressures; including flood, drought, sudden reduction in the market value of crops, conflict and political uncertainty. Compared to industrial agriculture, an ecological approach to farming will minimize the risks faced by farmers and thereby contribute to livelihood security. In August 2013, SW-MY carried out a review of our current activities in Ecological Farming in Kachin and Shan States in order to inform future programming in this Programme Impact area. This project has been designed to take forward the recommendations of the review.

The project will include a variety of partners in Kachin and Shan who are engaged in activities to improve food security through ecological farming. These are: - Shan – Shwe Danu, Southern Shan Local Development Organisation (SLDO), Kawdai, Maw Kon Local Development Organisation (MKLDO), Kutkai Association of the Kachin Baptist Convention (KBC Kutkai), Metta Development Foundation; - Kachin – NamkyioPrahita Foundation, Waimaw Baptist Association (WBA), Aung Set Kyar (ASK), Kachin Urban Rural Mission (KURM), KBC Myitkyina, Lisu Baptist Association, Banmaw Local Development Organization (Banmaw LDO).

This first phase has been developed as a pilot intervention for 18 months in order to test some of the approaches and recommendations of the programme review. Therefore at this stage it has been difficult to develop Project level outcomes. However, this phase will contribute to the Programme Impacts of the country strategy, specifically:

SWISSAID Myanmar Programme Impact 2– Poor women and men small-holder farmers achieve food security and secure livelihoods through ecological farming practices and sustainable access to and use of natural resources.

Results achieved are:- (1) SW-MY staff and targeted partners have increased capacity for designing and implementing "farmer-first" integrated ecological farming projects; (2) Farmers from Kachin and Shan are actively identifying, sharing and adapting good practices for ecological farming; (3) Women farmer-researchers have tested innovations for increasing income through integrated ecological home gardening; (4) Farmers from 12 FFS have developed a system for Community-based seed production. (5) Partners and farmers are aware of the content and implications of at least one law / policy relating to agriculture in their area.

The core activities include the development and implementation of a training on integrated ecological farming systems for staff and partners; the establishment of an Eco-Farming Learning Alliance; a pilot Farmer-led Innovation for Integrated Ecological Home gardening project; a pilot Participatory Paddy Seed Variety Selection project; SW-MY staff and partners capacity development through attending trainings organized by other organizations in Myanmar and in the Asia region; and research on at least one law / policy relevant to ecological farming in Kachin and Shan states.

(5) Agro ecology Transition in Myanmar, focus on IPM, Plant Protection Division, Department of Agriculture (no abstract)

Addressing soil and water conservation through AE practices

(6) Farming Practices Applied in Lashio contributing to Sustainable Agriculture, Welthungerhilfe (Conservation Agriculture)

By Thein Su, Retd. Asso. Proff. Yezin Agriculture University and Project Coordinator, WELTHUNGERHILFE-Lashio, Northern Shan

Sustainable agriculture is the production of food, fiber, or other plant or animal products using farming techniques that protect the environment, public health, human communities, and animal welfare. This form of agriculture enables us to produce healthful food without compromising future generations' ability to do the same.

Sustainable farms produce crops and raise animals without relying on toxic chemical pesticides, synthetic fertilizers, genetically modified seeds, practices that degrade soil, water, or other natural resources.

Sustainable agriculture integrates three main goals--environmental health, economic profitability, and social and economic equity. A variety of philosophies, policies and practices have contributed to these goals. People in many different capacities, from farmers to consumers, have shared this vision and contributed to it. Finally, it is important to point out that reaching toward the goal of sustainable agriculture is the responsibility of all participants in the system, including farmers, laborers, policymakers, researchers, retailers, and consumers. Each group has its own part to play, its own unique contribution to make to strengthen the sustainable agriculture community.

Sustainable farming also allows farmers to transform their farms into giant recycling centers. They can turn crop waste and animal manure into fertilizers, use crop rotation to enrich the soil and reroute rainwater to fuel the irrigation system. Not only does this save money, but it also conserves natural resources. Sustainable farming also lowers the need for chemicals and pesticides, and it makes the transition to a more organic, clean farming process a lot more feasible.

By growing a variety of plants and using techniques such as crop rotation, conservation tillage, and pasture-based livestock husbandry, sustainable farms protect biodiversity and foster the development and maintenance of healthy ecosystems.

In Welthungerhilfe-Lashio project villages, the farming practices the farmers have been adopting are:- (1) Conservation Agriculture–CA The farmers of Welthungerhilfe-Lashio project villages started CA practice since 2011 monsoon season with corn crop. They grew corn with no ploughing the soil and use mattock or furrow lines for seeding. Slashing and burning crop residues were very common in this area before project intervention but it stopped after the introduction of CA by WELTHUNGERHILFE-Lashio. Mulching was also incorporated as much as possible with no burning of crop residues. Corn was mixed with rice bean instead of growing single crop. Demonstration plots were established in farmer's plots and also at Naung Mon State Farm, Lashio Township. Mulching effects were significantly observed in not only suppressing the weed growth but also enhancing the crop growth of corn, soybean, wheat, sweet pea, etc. One prominent feature happened in Naung Mon farm is that they never burn all the crop residues and plant debris but reuse those in mulching and composting. Naung Mon farm becomes now a smokeless farm; (2) Sloping Land Management practice - In the Northern Shan State, the uplands are a zone where both agriculture and forestry are practiced on slopes. Slope lands occupy more than half of the land surface of the area. Sloping Land Management practice is a technology package of soil conservation and food production that integrates several soil conservation measures. Initial introduction is the establishment of contour bunds by using stones, stumps of cut trees from slashing of slope lands, and check-dams in deep ditches portions. The nitrogen fixing hedgerows such as Leucaena (Leucaena leucocephala), Gliricidia (Gliricidia sepium), Tephrocia (Tephrosia apollinea), Flemingia(Flemingia macrophylla), and Pigeonpea(Cajanus indicus) are planted along the contour lines of the slopes. Corn is grown in the allies of contour hedgerows mixing with rice bean (Vigna umbellata/ Phaseolus calcaratus). A few Sloping Land Management plots are demonstrated at different WELTHUNGERHILFE project villages and controlling soil erosion and increasing soil fertility were observed. Farmers were brought to demo plots as study tours; (3) Promotion of Rice Bean growing - Rice bean, Vigna umbellata, previously Phaseolus calcaratus, is a neglected crop, cultivated on small areas by subsistence farmers in hill areas of Northern Shan. It can be grown in diverse conditions and is well known among farmers for its wide adaptation and production even in marginal lands, and drought-prone sloping areas. Palaung people call rice bean as Palaung-Pe and also call Paung-Naing-Pe (weed suppressing bean). Under mixed cropping with maize it is usually broadcast sometimes between sowing maize and that crop's first and second earthing up, so rice bean sowing extends from April–May to June. WELTHUNGERHILFE-Lashio introduced and promoted growing of rice bean together with maize since 2011 monsoon growing season. The commitment is to grow rice bean as a mixed cropping whenever they receive the corn seeds from the project. More than 60% of farmers are now growing rice bean in WELTHUNGERHILFE project villages up to 2014. They realize now that rice bean improves their soil fertility through increased corn yield and they also earn noticeable additional income from rice bean after corn harvest from the same plot. Organic matter supplements by drops of biomass from rice bean leaves and twigs are also very high. There can be seen rice bean everywhere in Naung Mon farm, even on the bunds of the plots where weeds were growing in the past. (4) System of Rice Intensification (SRI) - WELTHUNGERHILFE-Lashioproject introduced SRI practice to small scale farmers since 2008 in WA region. Paddy fields in project villages are mostly very small with average size of less than an acre and some plots are terrace fields. The project organized the farmers with some incentives such as provision of seeds and fertilizers to be able to practice SRI. Rotary weeders were also distributed. The crop

performances were very encouraging and yields were increased nearly double of their traditional practice in a few cases. However, continuous adoption of the practice needs to wait for some times as difficult to change the attitude firmly attached to their traditional practice; (5) Promotion of practicing Direct Seeded Rice(DSR) - WELTHUNGERHILFE-Lashio organization introduced DSR practice in 2012 in project villages. Direct seeded rice is a resource conserving technology for growing rice. It does not need to raise nursery beds thus reduces money, labor, time, and other input resources. It does not need to transplant the seedlings thus avoiding the transplanting shocks and root damages which can shorten the life period of the paddy age and can also save the transplanting cost which is very high now a days. By using drum seeders at sowing time, the plants grow well in rows that makes easy for weeding by rotary weeders effectively. Rain fed paddy fields need sufficient rains to raise nursery plot. The monsoon comes in the Northern Shane very late in this year-2014, and removes again very early from the area. The two Lahu-farmers (U KyaTawt and U Kya Nu) from KaungSar village, Theinni Township, were able to grow paddy this year by applying this DSR practice otherwise they cannot because of late shower. The yields from DSR plots are quite promising with low cost and high income; (6) Production of Vermi-Compost – Vermi-composting or worm composting is a simple technology for converting biodegradable waste into organic manure with the help of earthworms (the red worm Eisenia foetida) with no pile turning, no smell, and fast production of compost. The earthworms are bred in a mix of cow dung, soil, and agricultural residues or pre-decomposed leaf-litter. The whole mass is converted into vermin-compost, which can be used on all types of plants in vegetable beds, landscaping areas, or lawns.A10ft. long, 4 ft. wide, and 3 ft. high pit is constructed with bricks on a moist and/or shaded site. If brick is not available, box or bamboo bin can also be used. To facilitate drainage digging into the soil, the base of the pit is covered with an 8 cm thick layer of sand. This is covered with a 15 cm thick layer of dry cow dung crushed into small pieces, followed by a layer of pre-decomposed degradable dry biomass and another thick layer of crushed dry cow dung. Finally the heap is covered with a thin layer of soil and the worms are poured on top. A thatched roof should be built over the pit to maintain 40-50% moisture and 20-30°C temperature. Regular watering is needed to maintain the optimum moisture level. After 5-6 weeks, the top layer is removed and piled in one corner of the pit. After a few days, the newly exposed earthworms have burrowed down and the next top layer can be harvested. About 600 to 1000 worms can convert 45 kg of wet biomass in a week yielding about 25 kg of vermi-compost. The earthworms are removed when all the compost has been taken out, and can be stored in moist paddy straw or a jute bag for later use. Vermi-compost can be applied to any crop at any stage.

Welthungerhilfe -Lashio introduced vermi-composting to 15 project villages since 2010 and over 50 vermi tanks were appeared. A few farmers are using vermi-composts in their farms with no chemical fertilizers at all.

Welthungerhilfe-Lashio had been applying the above mentioned six farming practices since from 2010 aiming at contributing to Sustainable Agriculture.

As it was mentioned above, it is important to point out that reaching toward the goal of sustainable agriculture is the responsibility of all participants in the system, including farmers, laborers, policymakers, researchers, retailers, and consumers. Each group has its own part to play, its own unique contribution to make to strengthen the sustainable agriculture community.

Welthungerhilfe-Lashio initiated these sustainable farming practices though it seemed a negligible count but believing that it will contribute to reaching towards the goal of Sustainable Agriculture. We also strongly believe on the Concept of Sustainability which means "Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs."

(7) Assessment of soil erosion risk in different cropping systems of the Inle Lake watershed area, Nyaung Shwe Township, Southern Shan State, Myanmar

By Thin New Htwe, Deputy Officer, Land Use Division, Department of Agriculture, Ministry of Agriculture and Irrigation

In Myanmar, one of the region's climatically most diverse countries, erosion affect crop yields and income levels particularly in the unique wetland ecosystem of the Inle Lake, where soil erosion processes in surrounding uplands strongly contribute to sedimentation and pollution of the lake. This study used the Revised Universal Soil Loss Equation (RUSLE) to identify soil erosion risks of the Inle Lake region in space and time and to assess the relationship between soil erosion and degradation for different agricultural zones and cropping systems. The hotspot of soil erosion risk is situated in the western uplands characterized by unsustainable land use practices combined with a steep topography. The estimated average soil losses amounted to 19.9, 10.1 and 26.2 t ha-1 yr-1in 1989, 2000 and 2009 respectively. These fluctuations were mainly the results of changes in precipitation and land cover (deforestation and cropland expansion). Among the main cropping systems in the three zones, the soil loss was the highest on upland rice with poor soil and water conservation practices (20 t ha-1) and the lowest (0.05 t ha-1) was observed on lowland paddy fields. Average soil loss in eastern and western parts of upland zone indicated that the lower erosion risk in eastern part compared with soil loss for western partof Inle Lake because of some soil and water conservation practices.Soil erosion in Inle watershed area have long lasting effects on productivity in agricultural land and water quality in the lake.

However, most farmers in the study area have not yet introduced effective soil protection measures to mitigate the immediate effects of soil erosion such as land degradation and water pollution of the lake reservoir, which urgently needs to be addressed by policy makers and extension services.

(8) Management of cropping pattern, NyangOo, Agricultural Extension and Education Division (no abstract)

(9) Soil and water conservation in the Dry Zone of Myanmar, Gret (no abstract)

Making markets work for AE and small holders

(10) Developing High Quality Tea Value Chains for Poverty Reduction for Ethnic Minorities in Northern Vietnam, Laos, and Myanmar, Helvetas

By Yee Yee Maw (Program Agriculture and Market Officer)

Broad leaf tea is a major crop grown by ethnic minorities in Northern Vietnam, Laos and Myanmar. Tea produced by minority smallholders in extensive farming systems at high altitude has intrinsic high quality and is very suitable for production of higher value tea

products, including Pu'er tea and orthodox black tea. However, a series of interlinked constraints in broad leaf tea value chains within the three countries means that returns to smallholders from tea production are relatively low, and the poverty reduction potential of broad leaf tea for ethnic minority smallholders in the three countries has been largely unrealized. The intrinsic quality of broad leaf tea produced in the Northern highlands of Laos, Vietnam and Myanmar is high due to favorable climatic conditions, soil types and altitude, and tea produced in these areas uses little or no chemical pesticides or fertilizers. This should translate to good opportunities for improved livelihood for smallholder ethnic minority tea farmers, including the emerging organic and fair-trade markets for tea. However, in general the potential of tea production for poverty reduction for these stakeholders has not yet been realized and most ethnic minority smallholder tea producers in the three countries remain in poverty.

The main objective is to deliver sustainable livelihood improvements to at least 3100 tea producing smallholders by implementing a set of coordinated interventions to tackle interlinked constraints of tea value chains. Shan Tea Project which aims to reduce poverty of poor households, especially ethnic women and minorities, through generating additional income and employment in selected value chains in which the poor can participate was implemented in Northern Vietnam, Laos and Myanmar.

The challenges found were:- In Vietnam, limited capacity of local partners, requirement for substantial amount of training work, expansion of customer base and market linkages distortion caused by external short term players entered to market. In Lao, partnership with processors, enabling environment and value chain governance, lack of technical staffs on tea production and communicating with tea farmers. In Myanmar, to adopted GAP (Good Agriculture Practice) with contour farming instead of traditional terrace farming which is luck of soil conservation and without right method of pruning.

Key Issues are:- Local partners' under-capacity has become increasingly a bottleneck to sustainability development of tea sector in Vietnam.To access to higher value market in Europe, organic certification is required in future production.

Condition for Up scaling are:- To deliver the above outcomes, 3 key outputs were set out: (1) improved upstream and downstream linkage, (c) improved quality of tea at production and processing level, and (3) improved enabling environment.

Overall bottleneck for Vietnam, Lao and Myanmar are: (1) Good Agricultural Practice is not well covered or lacks in tea growing area. Conventional farming practices with improper pruning and plucking; Low plant density ,no/less usage of inorganic inputs,Soil quality degradation as no mulching, no contour line cultivation; (2) Shifting from quantity to quality production in households' mind-set has just started, and hence, more time required for technical training and upward price adjustment based on quality by companies to change traditional farming habit; (3) Addressing quality at the tea grower level is most critical. Market for poor approach and quality driven fair trading within farmers and processors need to build up at the same time; (4) The private sector need to be capacitated and assisted to better manage and exploit their investment in physical facilities and know-how. This is to deal with both streamlining and innovating of the operational processes, quality control practices, and business model modifications.

(11) Strengthening the agro-ecological sector in Myanmar by creating and boosting a multi-stakeholders dialogue and network

By Clemence Bourlet, Team Coordinator, Green Lotus

The agricultural sector represents one of the most powerful tools to alleviate poverty and, particularly in the context of Myanmar, to mitigate climate change. That is why there is a need to focus on it so that a large number of the population can reach a better lifestyle, uncontrolled massive rural exodus can be tackle and the country can be developed in a sustainable way. The opening of Myanmar to foreign investments is an excellent opportunity to develop a sustainable agriculture but it represents a threat itself as big agro groups (fertilizer, GMOs' seeds, pesticides…) have interest to invest in Myanmar.

Agricultural sector must be a priority in the country's development. But it must be paid attention to the development model chosen. Past experiences, in several part of the world, showed that an intensive agriculture model have strong negative environmental and social consequences. Despite land grabbing, soil and water pollution are already threatening the environment and climate change will extend these threats dramatically.

Agro-ecology aims at developing agriculture in a sense that is less harmful for the environment. It is a first step towards the adoption of fully organic methods of agriculture. Organic agriculture's model seems to match perfectly with the state of art of Myanmar's agricultural sector characterized by: small-scale farming, important poverty and important environmental and social issues.

Problems/Challenges addressed are:- (1) Need for strengthening of farmers competencies - Farmers' lack of competencies in term of agro-ecology constitutes the main issue that does not allow the development of an agro-ecological market. This is partly due to the government policies that push towards the development of intensive agriculture despite all its already-known negative impact. Green Lotus has identified a global need in term of strengthening of existing initiative and their replication. (2) A fragmented institutional landscape - Public and private institutions concerned by agricultural issues, and more specifically by agro-ecology, do not structure enough the landscape. The lack of relationship between these organizations is considerably slowing down any initiative of development of agro-ecology's sector. The Multi-Agri Development Group (MADA), depending from the Myanmar's Chamber of Commerce, need to be strengthened and connections with other organism remain to be made. Also, and more precisely on the organic sector, the lack of financial support to the Myanmar Organic Agricultural Group (MOAG) does not allow farmers to access an organic certification as well as its link with other organizations. It is necessary to structure agro-ecology's market by strengthening the relationship between the actors, whereas they are institutions or CSOs. (3) Need for sensitization of the population in terms of environment and health - Myanmar's people already know very well the wealth of its country. In the street market, products are numerous and various. However, there is a strong lack of the quality of the products, the people does not know the impact of pesticides on their health and thus are not regarding toward the quality of what is offered. This statement is also valuable for some CSOs that does not consider enough the importance of food's quality and so need to be trained and sensitized on sustainable agricultural and environmental threats of intensive farming.; (4) The agricultural sector suffering from decades of isolation - The isolation known by the country had disastrous

consequences agricultural sectors' development. Today, the issue is to develop the link between this sector and the international actors. National actors does not have the competency nor the tools yet to deal with these international actors and, in the other hand, the latter do not know well enough Myanmar's market nor do not have the trust enough to develop strong ties with the national actors. Green Lotus is willing to use its strong knowledge of Myanmar's agricultural sector actors and of international market to make the link between these two worlds.

Green Lotus aims at promoting sustainable development in Myanmar since 2012. In the mark of its activities, Green Lotus have met numerous key-stakeholders in the agricultural sector and more precisely in the agro-ecological sector. Links created since then with the civil society are strong, as those develop with public institutions.

A conference on sustainable agriculture has been held in July 2014 as a scaling up of Green Lotus' "Myanmar Platform for Dialogue on Green Growth" project (MPDGG). Several actors interested in sustainable agriculture mobilized and start creating a network, with Green Lotus as its cornerstone. Through the MPDGG they regularly gathered.

The debates being held in the MPDGG enable Green Lotus to enlarge its knowledge on the main issues related to sustainable agriculture. This knowledge leads to a fine needs' identification of the stakeholders of the agriculture sector. Green Lotus purposely direct its actions towards the constitution and structuration of a strong network of actors concerned with these issues in order to contribute to the autonomy of agro-ecology's sector in Myanmar.

The partners and stakeholders are: (1) Academics: NEED, Yezin University, Green Peasants Institute; (2) CSOs: Green Lotus, Gaihahita, NEED, Green Peasants Institute, Green Way, Vihara Collective; (3) Private sector: Myanmar Mya Myay, Go Green, Banyan Green Services, Shan Maw Myae, Citymart; (4) Certification bodies: Myanmar MOAG, MOGAP / International: Control Union

Results achieved include:- (1) Preventing massive rural exodus and alleviating poverty for famers and preventing major threats for the environment and human health; (2) Training for farmers: farmer field school, adaptation and implementation of a new Universitys' curriculum; (3) Access and support to famers in the cartification's process; (4) Institutional strengthening of key stakeholders of AE sector; (5) Enhancing multi-stakeholder dialogue; (6) Awareness campaign with institutional support (Ministry of Health, Ministry of Agriculutre, MoECAF)

Key issues remained for scaling up are:- (1) A lack of coordination among the NGOs, donors and Union government is a risk that as to be considered; (2) To upscale this global AE network there is a need of political will and public policies support.

(12) Market opportunities for agro-ecology products from Myanmar
By Ei Khin Khin, Managing Director, Banyan Green Services

One of the best way to really improve agro-ecology in Myanmar against intensive and fully chemical low quality type of agriculture, is to open market for the AE products, assuming they are high quality, good for health of ppl, desire of the consumers, and good organization of the distribution.

One point will be to focus on the main available and typical products from Myanmar

Problems/Challenges are:- (1) Defining the best products could promote AE. (good for health and market and nature) AND defining leading products with high added value but should be made through AE; (2) Setting marketing strategy for each of these products; (3) Building alliances and specific networks for each of them; (4) Convincing official stakeholders (govt, regions, donors) to bet on these products and strategies; (5) Develop GPI strategies; (6) Develop a specific AE distribution organization, based on farmers' network and cooperation; (7) Enhance social business development coming from farmers; (8) Develop a specific organic products communication and branding strategy.

Stakeholders involved and existing partnerships are:- (1) Farmers and farmers' networks producing organic products; (2) Organic certification CSOs : MOAG, MOGAP, (3) First organic shops and brands; (4) Existing AE activist CSOs : Green Lotus, Green Way, NEED, Green Peasants Institute, Gaihahita…; (5)MFFVPEA, Myanmar Rice Federation, Farmers Associations; (6) Fair trade organizations and brands; and (7) Foreign organic brands and buyers

Results achieved are: (1) New market opens, new products created and develop; (2) Farmers income and quality of life develop; (3) The model of AE is seen as strong and profitable

There are still some issues remained for scaling up. They are:- (1) Studies and existing and future products; (2) Studies on marketing potential; (3) Networking of the actors, from research and farmers, to distribution; (4) Organization of the different types of certifications; (5) GPI analysis and strategies; and (6) Pro. Networking of activist CSOs and grassroot CBOs

Abstract received but not presented

Long-term human resources development – a key to successful extension
By KITSUKI Fumio, Country Director, OISCA International

OISCA (Organization for Industrial, Spiritual and Cultural Advancement) International is an international NGO based in Japan. In 1996 it concluded aMemorandum of Understanding with the Ministry of National Planning and Economic Development. The MOU dictates OISCA works with Department of Agriculture, Ministry of Agriculture and Irrigation. In 1997, DOA OISCA Training Center was established in Yesagyo, Magway. As of March 2016 the number of trainee graduates will be totally 354, graduates of their 10-month practical hands-on training.

Except for Sundays and national holidays, the trainees get up at 5:00 am and attend roll call, flag raising ceremony and exercise. Their daily work start at 07:00 am and morning work last till 11:30 at which they have lunch. In the afternoon, 1 hour and 30 minutes study in classroom starts at 1:30 pm and from 3:00 pm – 5:00 pm they engage in their afternoon fieldwork.

The main subjects are rice culture, vegetable culture, pig breeding, poultry farming and food processing. They learn "organic agriculture" and the basic concept is "agriculture

with livestock raising as a major sideline." These five subjects are independent in terms of their profit making and all the proceeds are merged into the fund to support the training program. The DOA OISCA Training Center is self-sustaining and independent in running its training program although it is provided with facilities and equipment by donor agencies.

Chicken droppings and pig dung are used to make Bokashi compost –nutrient-rich organic composed fertilizer that acts as both a long-term and a short-term soil fertilizer and improves the soil. The Center does not use chemical fertilizers or agro-chemicals. They sometimes use natural insect repellents to get rid of harmful insects.

In the Central Dry Zone, organic matters in the soil are decomposed quickly, and the soil pH is about 8.5 – very strong alkaline condition. To grow rice the Center depends on irrigation water from Chindwin River. To cultivate vegetables, they have to use water from wells, which is also strong alkaline. Most of vegetables do not grow well in strong alkaline condition. However, thanks to the soil improvement by continuing to apply organic fertilizers for many years, they can grow various vegetables with this soil and ground water – Chinese cabbage, cabbage, tomato, carrot, garlic, chili, egg plants, radish, lettuce and many others.

DOA OISCA Training Center plays a role of extension. The staff is now confident in introducing organic farming, and teaching farmers how to make Bokashi. They are all graduates of DOA OISCA Training courses. Most senior members have been working at the Center for more than10 years.

Problems /Challenges addressed

Farmers are generally conservative but they can see the effects of organic fertilizers at the Center. They see also the profitability of using organic fertilizers – Bokashi is cheaper than chemical fertilizers.

There are farmers with wait-and-see attitude. But there are pioneers who would like to try using organic fertilizers. Once the pioneers make a success others will follow.

In the Dry Zone, farmers need assistance in getting their irrigation water. DOA OISCA Center works with donor agencies to get fund and implement projects for mini-dam renovation, canal renovation, and development of livelihoods. This interaction generates trust between farmers and the staff of the Center. The trust is the basic condition to make extension work a success.

Stakeholders involved/ existing partnerships

- Department of Agriculture (central and local levels)
- Local governments (township administrator)

Results /impacts /Lessons learnt

Agricultural development is a long-term process. And for agricultural development OISCA continues to train young people. It takes time. Since the Training Center was established it is 19 years. Committed and experienced staff, who were trained at the DOA OISCA Center, now play roles in training other people.

Key issues identified as be furthered /conditions for upscalling /potential bottlenecks

While the Center is independent, it needs to be supported by human resources with high volunteer spirit – staff committed to work for the benefit of rural population. Agriculture is not lucrative business; normally it cannot bring them in high profits. So, it is not easy to upscale the whole system.

However, it is possible to accommodate at DOA OISCA Training Center or elsewhere short–term trainees– mainly farmers – for them to learn for example how to make Bokashi compost or other methods if they are considered useful.

Opportunities & Challenges in applying Agro-Forestry and producing high quality coffee focus
By Ngwe TUN and Hla Min

Genius Shan Highlands produce high quality coffee from Shan Highlands. We apply Agro-Forestry practice in coffee plantation. Coffee must grow under shade trees and other crops around in coffee plantation. It helps bio-diversity and multiple income generation for farmers. It still having debate in commercial grade coffee vs specialty grade coffee plantation in the world.

Problems/Challenges addressed include:- low quality and solo coffee plantation without shade tree may not help for multiple income generation and coffee production yield is low. low quality Raw material export is not sustainable business/farming.

Stakeholders involved / existing partnerships are:- Community Forest and Coffee Farmers

Development of Water Hyacinth Shredder for promoting Organic Farming
By Heather Morris, Chairperson, Doh Taung Thu (Our Farmer) LNGO

Inle Lake situated in Southern Shan State is well known by local populace and foreign visitors for the natural beauty of the lake waters, surrounding mountain ranges, tomato floating gardens and leg rowers of boats. The lake plays a vital role for the ecosystem and economy of Shan State, providing many important goods and services for the communities. It is an ASEAN heritage site and also designated as Man and Biosphere Reserve Area by UNESCO. It is the main water source for Lawpita hydroelectricity power plant, a major tourist attraction site and a habitant for rich biodiversity and traditional culture. The lake is now facing devastating effects of unsustainable practices in forestry, agriculture and fishing activities. The situation is accelerated by impact of climate change. Water surface area and sanitation is decreasing, fish and plant species are disappearing at a fast rate while water hyacinth species are increasing, blocking water ways and dominating other useful water cress that farmers use for building floating gardens.

Therefore with the collaboration of Ministry of Environmental Conservation and Forestry (MOECAF), UNDP and UNESCO, a fund has been provided from Norwegian Government to implement conservation and rehabilitation activities in the area. UNDP acting as the funding agency is working together with implementing partners to restore the area with the assistance of local communities. Due to the need of the communities,

organic farming and market linkages activities have been implemented by implementing partner DohTaung Thu, a local non-government organization.

For Organic farming, farmers have been trained in compost making, vermiculture, production of agriculture organic inputs such as natural pesticides, plant juice, fruit juice containing indigenous micro-organisms. With these products farmers are utilizing natural resources in the area. In addition an attempt is made to utilize water hyacinth for organic farming.Farmers use either water cress or water hyacinth for mulching their tomato crops.

A meeting was held with 20 village community members on whether they needed a shredder for their village and based on their decision, a shredding machine was developed from a small model of onion and garlic grinder used in kitchens. It has a funnel where the water hyacinth is filled in and three cutters 2" apart fitted at the bottom of the funnel. This shredder is joined to a 5-6 horse power engine which operates on diesel oil. Once set up it can easily be operated with pressing the button on the diesel engine.

The cutter can shred one boat load which can be used for one acre within 5 minutes. Without the shredder it takes two hours manually to fill up one boat. Moreover mulching suppresses weeds and minimizes weeding, decreases soil moisture depletion and adds compost to the soil on tomato gardens. The shredded water hyacinth makes good compost, feed for earth worms and poultry. Additionally by farmers collecting the water hyacinth they are clearing water ways on the lake and boats can now easily move around. In this way water hyacinth which is gradually becoming a pest is being controlled and farmers are making use of natural resources for organic farming.

The village committee has written a proposal for managing the shredder by the responsible group. Decisions have been made by the group members to hire the cutter to users for 2000 Kyats per day. The user will supply own diesel oil for running the machine. The shredder is in high demand by community members for chopping water hyacinth and making compost. Altogether eight shredders have been developed and distributed according to the demand of community members. Three wheel cartsare delivered to community to transport the cutter to places where it is needed. Farmers are now enjoying the resulting compost and applying on tomato, peanut, corn crops and vegetables such french bean, bitter gourd and egg plant.

National Multi Stakeholder workshop on agroecology transition

Participants profiles

Yangon, Myanmar
7th and 8th of March 2016

AGENCE FRANÇAISE DE DÉVELOPPEMENT

cirad

GRET
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Premila Masse is an agronomist with a Master's Degree in Tropical agronomy engineering from IRC, SupAgro in Montpellier, France.

After 2 years as Project manager for Food and livelihood security projects in Malawi, she started to work for Gret in Myanmar Delta project as Technical Advisor in 2013. She is now the Project Manager of Delta Program combining livelihood security, rural economic development and microfinance projects.

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Justine Scholle is an agronomist, holder of a Master of Science in Tropical Agro- Development, including agriculture and rural economy, from ISTOM, in Cergy-Pontoise, France.

She is working in the field of agriculture development for 3 years, mostly on agroecology and agroforestry practices. Previously in Congo DR with Gret, she just arrived recently in Myanmar for 1.5 year as Technical Advisor in a rural development project, based in Delta.

Pierre Ferrand
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He is an agronomist, holder of a Master of Science in Tropical Agriculture Development from CNEARC (post graduate college for tropical agronomy) in Montpellier, France.

He has been working in the field of agriculture development for over 10 years, including 5.5 years in Myanmar (2006-2011) implementing Food and Livelihood Security Projects (agriculture development and extension, value chain development…) and 3.5 years at Gret Headquarters in Paris (2011 to 2015) as Project Officer in agriculture development and value chain.

Starting from May 2015, he moved to Vientiane, Laos PDR, to take part to a regional project (Laos, Cambodia, Myanmar) addressing the promotion of agroecology

	transition in South East Asia. He is in charge of facilitating the emergence and coordinating at regional level an Agroecology Learning Alliance, bringing together all relevant stakeholders active in the field of agroecology (CSOs, research centers, government officials, private sector).

	**Khaing Dhu Wan** Executive director /founder www.need-burma.org KhaingDhu Wan is holding a BA in Burmese. In 1995,KhaingDhu Wan left to Thailand to work and learn with Myanmar migrant community development.In 2004, he received a scholarship to study in MahaChulalongkorn University in Thailand. In 2006, he founded NEED Myanmar in Chiang Mai, Thailand, to establish a Model Farm Initiative school (MFI) for providing opportunities to the Young Farmers from Myanmar. Then in 2013, he moved to Hmawbi Yangon Myanmar, and started Eco village Farm school. Currently, 32 young Myanmar have been studying agriculture and community development for 10 months.
	**EI KHIN KHIN** BANYAN Green Services, Myanmar Khinkhin.ei@gmail.com EI KHIN KHIN is a managing director of BANYAN Green Services. She has been almost two years in Climate Smart Agriculture and Agro-Economy as Active Market leader in Myanmar. Continuously working for the development of local organic products of Myanmar including organic fresh produces, organic textile and fabric and dying, and organic alternative herbal medicine, cooperating with Department of Agriculture, SME center, local farmers and local producers. Also planning to promote GPI products of Myanmar to export to Europe and production of recycle wood products with the cooperation of CVT Myanmar. Over five year's previous experiences in administration, capacity building, CSR, responsible business, business and social researches and social contributions work and experience in organizing events and coordinating teams.

	**Clémence Bourlet** Green Lotus,Myanmar cbourlet@green-lotus.org Clémence completed a Master in Environmental Sciences and land planning from Paris-Diderot University as well as a Master in Sustainable development in Developing Countries from Paris-Sorbonne University. She has been working in sustainable development and environmental related issues for the past 4 years and in Myanmar for 20 months working as Green Lotus' Team Coordinator. She came to Myanmar as a project manager for sustainable cities and building civil society network on environmental issues.
	**Yee Yee Maw** HELVETAS, Myanmar Yeeyee.maw@helvetas.org Yee Yee Maw graduated a MSc in Natural Resources Management from Bogor Agriculture University in 2006 in Indonesia. Then she workedfor 12 years with the Department of Agriculture Planning and Land Used Division. In 2011 she moved to workwith NGO in Livelihood sector focus on value chain and environmental management. In 2015 she starts working with HELVETAS Myanmar with position of Program Agriculture and Market Officer until now.
	**Daw Heather Morris** Doh Taung Thu, Myanmar Heathermary2012@gmail.com Daw Heather Morris studied agriculture at Mandalay Agriculture University and obtained a Bachelor of Agriculture Degree. Later was awarded MSC degree specializing in Entomology from the University of Manitoba, Canada. She served in the Department of Agriculture, Myanmar for 29 years.She later was a Free Lance Consultant on Farmer Field Schools with FAO and UNDP for 5 years and after that she joined World Concern Myanmar as a Technical Advisor on Sustainable Agriculture. After working for 7 years with World Concern she continued as a Free Lance Consultant working on natural farming techniques, organic farming, Integrated Pest Management and evaluation of projects. At present, she is a Consultant/ Researcher for FedWell Foods Co. Ltd and a Consultant on Sustainable Agriculture with the Mennonite Economic Development Associates (MEDA).

	**Bryan Berenguer** Welt hunger hilfe, Myanmar bjberenguer@gmail.com bryan.berenguer@welthungerhilfe.de Bryan Berenguer is an agronomist working for the past 12 years on agriculture systems, value chains, natural resource management and community development in Africa, Asia and Latin America. He is co-founder of the Bogale Agriculture Working group and served on the 2012 Southern Africa Conservation Agriculture Task Force. Currently he works for Welthungerhilfe managing a project strengthening local associations and cooperatives in rural Yangon.
	**Dr. Kyi Toe** Yezin Agricultural University, Myanmar Kyitoe66@gmail.com Dr. Kyi Toe, Professor and Principal of Yezin Agricultural University, Hlegu Campus. He got a Ph.D in Agricultural Botany specializing in plant physiology and eco plant physiology
	**Dr. Sanda Kyaw Win** Karuna Mission Social Solidarity, Myanmar sandakyawwin@gmail.com She received a Ph.D in 2010 majoring in Agronomy from the University of the Philippines, Los Banos. Over 19 years of professional experience involving extension, research and planning in agro-industrial crops development as public official. Currently serving as a Program Manager (Livelihood Sector), National Office, Karuna Mission Social Solidarity (KMSS).
	**DR. KYIN KYIN WIN U Soon Shin** Plant Protection Division, Myanmar Agriculture Service kyinkyinwin@gmail.com or k.win@irrialumni.org DR. KYIN KYIN WIN U Soon Shin studied the general agriculture at the Yezin Agricultural University in 1984. Then studied master degree in Plant Pathology, Yezin Agricultural University in 2001. In 2008, she continuedstudy Ph.D in Plant Pathology at the Los Banos University, Philippines. Now she works at the Plant Protection Division, Myanmar Agriculture Service.

	**Daw Khin Mar Yee** Department of Agriculture, Myanmar khinmaryeedoa@gmail.com She studied a bachelor in agriculture at the Yezin Agricultural University, Myanmar. Then worked at Oil Seed Crops Division, ARI, Yezinover the period of 1982-1986. Later she moved to work for Dry-Zone Agricultural Research Farm, NyaungOo Township during 1986-2001. After that she studiedan MSc in Oil Crops Development Project at the Yezin Agricultural University during 2001-2004. Then she works at the Agricultural Extension & Education Division, Department of Agriculture, Nay Pyi Taw since 20014- Up to now.
	Mangshang Yaw Bawm Diplomatic Mission of Finland, Myanmar bawm.mangshang@formin.fi Mangshang Yaw Bawm used to work for NauShawng Education Network on capacity building for young people through both long and short-term intensive training programs. Now he is working as Programme Officer (Natural Resources & Environmental Governance) for Diplomatic Mission of Finland. Before with the Mission.
	Matthieu Layec PARTNERS Myanmar Math.layec@yahoo.fr Matthieu Layec had just finished hisa master of international humanitarian action and is now working for PARTNERS. During his studies, he worked in many countries about agriculture and food security. As to his experiences, he decided to be focused on agroecology and permaculture because it's for him the only way to feed the entire world without impacting on the environment, while allowing farmers to ensure their survival.
	**U Kya Moo** MyanDHRRA, Myanmar kyamoo08@gmail.com U Kya Moo works for Myanmar Development for Human Resources in Rural Areas which is coordination and cooperation with ASESAN countries focus on farmers organizations.

	**Ohnmar Khaing** ACIAR, Myanmar khaing@aciar.gov.au or dr.ohnmarkhaing@gmail.com Ohnmar Khaing is holding a PhD and now working at Australian Center for International Agricultural Research (ACIAR) as a Program Manager in Myanmar. She has nearly 21 years of professional experience in food security, agricultural development and rural livelihoods, with special focus on science-policy interface; project design, development and management; capacity-building; policy advocacy and raising of public awareness.
	**Mr. Pe Than** GRET- Dry zone, Myanmar pethan2009@gmail.com Mr. Pe Than is an Agronomistand now he is the National Project Manager for the Cartier Project, GRET- Dry zone, Myanmar.
	**Stephane Fayon** Auroville Botanical Garden, INDIA stephan8@auroville.org.in Stephane Fayon is a proactive consultant and innovator in the field of agro-ecology, food security, farming and seed system, climate smart agriculture, natural resource and soil fertility management. GRET external consultant: Developing and integrating agro ecological components and interventions into project activities. He has 15 years field experience in agro ecological production system in India, Nepal, Laos, Cambodia, 10 missions in Myanmar.
	**U Thein Su** Agriculture and rural development-Poverty Alleviation,Myanmar ootheinsu@gmail.com U Thein Su graduated a MSc in Agriculture. He used to work in UNDP projects from 1998 to 2006 and then moved to work with in Welthungerhilfe from 2007 to 2015.In all projects, contributed in agriculture extension and strengthening of village groups. He was Initiated to sustainable agriculture practices in 2011 comprising of Conservation Agriculture, SRI, SALT and Sloping Land Management, Organic compost production. In over all, he spent around 31 years for service in Agriculture University and retired in 2007.

	**Dr. Thin Nwe Htwe** Department of Agriculture Ministry of Agriculture and Irrigation, Myanmar nwe.thirimon@gmail.com Thin Nwe Htwe studied BSc in agriculture at the Yezin Agricultural University, Myanmar. Later she continued to take MSc in Natural Resources Management at the Asian Institute of Technology, Bangkok, Thailand. Then she spent her time in Germanyfor study Ph.Din Agriculture at theKassel University. Nowsheworks at the Department of Agriculture, Ministry of Agriculture and Irrigation, Myanmarandresponsibleforgiving training and sharing knowledge to junior officers to improve links between farmers, researchers and extension staff to decrease land degradation, increase yields and reduce poverty. She also involves with conducting the update soil maps as regional level and township level based on soil survey in the fields and making soil profile using FAO/USDA methods.
	**Dr Htet Kyu** Gret, Myanmar (ALiSEA national coordinator) htetkyu@gret.org Dr Htet Kyu, born in 1956, is an MSc (Soil Science) and PhD (Agronomy) degrees holder with a 23 year working service with Myanma Agriculture Service(MAS) in Land Use Division and Seed Division. In collaboration with Yangon Technical University and Yezin Agriculture University, he also took part in providing series of lectures in soil fertility management and advanced crop physiology and guiding several scholars with their master and PhD research work. In 2004 he joined Gret-Myanmar in Northern Rakhine State as an agronomist and project team leader for food security project and livelihood development project. In 2008, he worked for UNDP Yangon as an agriculture specialist in the agriculture recovery project of Nargis cyclone affected five townships of the delta area. In 2009, he worked as an international agricultural extension specialist for the Nam Ngum river basin development project in Laos. Then from 2011 up till now, he resumed working again for Gret Myanmar as Technical coordinator in Dry Zone project for one year, as Country Representative for Gret-Myanmar for one and half year, project management advisor for Gret-MSN Bogale project for two years and now as national network coordinator for Myanmar in part-time basis for Gret ALiSEA project. Presently he is also an agriculture adviser to Myanmar Fruit Flower and Vegetable Producer and Exporter Association.

	**U Thein Soe Min (Co-founder, Green Way)** Green Way, Myanmar He is a graduate of Yezin Agricultural University with a Bachelor of Agricultural Science (B. Agr. Sc). He founded Green Way (www.greenwaymyanmar.org) since 2011 aiming to share agricultural knowledge to the farmers across using mobile app and website while engaging the farmers with the agriculturist to activate the better communication among them. He used to work in agricultural projects for INGO, LNGO and GO (Sanyu consultancy, under JICA) especially in the field of on-site seed production, participatory variety selection, dams and irrigation canals rehabilitation, various agricultural training. Currently, he is consulting for sustainable agricultural program in various organizations as part of Green Way's services. email: tsmin@greenwaymyanmar.org
	**REYNAUD Lucie** GRET, Cambodia reynaud@gret.org Lucie Reynaud is an agronomist, holder of a Master of Agronomy and Food Science from ISARA-Lyon, France. She is working in the field of agriculture development for 4 years. She is currently Technical Advisor on APICI project called Development of sustainable agriculture for small holders in Siem Reap Province. Starting from May 2015, she takes part as the National coordinator in Cambodia to a regional project (Laos, Cambodia, Myanmar, Vietnam) addressing the promotion of agroecology transition in South East Asia.
	**U Khin Maung Latt** Sector Coordinator, Metta Development Foundation, Myanmar khin.maung.latt@metta-myanmar.org U Khin Maung Latt is Bachelor of Agriculture (B.Ag) holder with extensive experience and knowledge in agroecology / sustainable farming. He has attended several dedicated trainings and workshops such as Evaluation of soil Fertility by Plant and soil Testing, Germany (1983 Oct - 1984 Nov), Management of Agricultural Resources, Israel (2009 May), Agriculture Biodiversity Workshop (Ashram, Thailand), Seed Expert Consultation Workshop (Vietnam), Permaculture Convergence, (Hong Kong), Permaculture Teachers' training, (Hong Kong), Frugal Innovation Forum, (Bangladesh). He has been working for Metta Foundation since 2001.
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	U Hla Min Chairman Myanmar Organic Grower and Producer Association
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	U Khin Maung Latt Sector Coordinator Metta Development Foundation
	Dr Daw Tin Moe Khaing Knowledge Sharing Manager Food Security Working Group
	U Maung Maung Chairman Myanmar Consumer Union
	U Bo Bo Lwin Director Kalyana Mitta
	Daw Htwe Htwe Aung Vice Chair Person Golden Plain Livelihood Development Services Coop. Ltd
	U Khaing La Mum Executive Director Youth & Community Development Network (YCDN)
	Daw Thida Tun Chairman Myanmar Emerald Land Organic Products
	Dr Tun Shwe Deputy Director Department of Agriculture Research
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