

# Actors and networks of agroecology in the Greater Mekong Subregion

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## SUMMARY

The study reported in this document aimed at assessing the feasibility of a regional project promoting agro-ecological principles and practices in the Great Mekong Sub-region -GMS- countries: Cambodia, Laos, Myanmar, Thailand, Vietnam, and Yunnan-China. The study has taken stock of the practices, actors, experiments (e.g. success stories, constraints to adoption) related to agro-ecology in the Mekong countries. A review of the literature was combined with country-based consultation workshops (Cambodia, Laos, Myanmar, Vietnam) and expert surveys (Thailand, Yunnan-China). During the workshops and consultations, preliminary results from the initial desk studies have been presented and discussed with key stakeholders of agro-ecology in each country. By addressing the whole range of agro-ecological practices such as conservation agriculture, but also agro-forestry, SRI, integrated agriculture, organic agriculture..., the study identified a whole range of research organizations, government agencies, NGOs, private companies with a diversity of experiences and expertise in agro-ecology.

### 1. TAKING STOCK OF AGROECOLOGY IN THE MEKONG REGION

The national consultations identified a continuum of practices under the term “agro-ecology”, which made it difficult for participants to delineate clear boundaries between their approaches or schools. Many projects combine the different approaches so as to offer local farmers a panel of technical options that they can adapt to their own circumstances, needs and capacities. In addition, both donors’ communities and farmers’ communities are open to agro-ecology approaches and are willing to combine/integrate them in their practices.

Observed tensions between schools (e.g. organic conversion versus transition to more sustainable practice) are often limited to leaders of the different schools who tend to defend their position in a very competitive market for donor support. In reality, most farmers adopt a subset of the principles proposed by each school and rarely the complete technical package. As a consequence, trying to delineate precise boundaries between schools may divide more than synergize and may widen the gap between agro-ecology discourses and field/farm realities. Tenants of the different schools easily agreed on their common principles and the scope of agro-ecology. Some participants noted that while the word “agro-ecology” is new to them they have worked in accordance with its principles for many years using other terms such as sustainable agriculture, clean agriculture, integrated farming, smart agriculture, etc.

The consultation addressed the six most significant agro-ecological schools/practices found in the region, namely: organic agriculture, integrated farming, home gardens, system of rice intensification (SRI), conservation agriculture and agro-forestry. Well known practices such as **Integrated Pest Management (IPM), SRI, conservation agriculture and agro-forestry have expanded and gained visibility thanks to a top-down support of key international institutions**, respectively FAO, Cornell University, CIRAD and ICRAF. These international institutions implement their activities through government agencies in the different countries and have organized regional networks with the support of international donors. International and local NGOs have joint the movements later on to support extension activities with farming communities. Some project teams have also turned into

national NGOs when the project ended to maintain the momentum beyond the project period. On the other hand, the **organic movement appears as a bottom-up process with farmers and local activists** getting organised and linking with other groups to support their activities and to gain recognition. They ultimately federate as members of national associations and up to International Foundation of Organic Agriculture Movements (IFOAM) which provide them with technical support and certification service.

This **diversity of practices and governance mechanisms should be considered as an asset and not a constraint for facilitating the transition to agro-ecology**. While they all have their strengths and weaknesses, it appears that all thematic networks need to first strengthen their own activities before opening to others. With a strong portfolio of projects and recognized achievements it is much easier to engage with others. A **regional umbrella to agro-ecology movements** is deemed necessary (i) to open existing initiatives to other schools and stakeholder groups, (ii) to provide more flexibility and reactivity to the existing 'top-down' networks and (iii) to strengthen existing national agro-ecological networks and develop synergies with the regional thematic networks.

## 2. TOWARDS AN ALLIANCE OF REGIONAL NETWORKS

The lessons drawn from the analysis of existing regional networks highlight a number of qualities that a future regional agro-ecology network should have to fulfil its main duties and reach its goal: facilitating the agro-ecological transition in the Mekong region.

### **Well defined common objectives**

The overarching objectives of the network should be:

- Poverty reduction and improved livelihoods of smallholder farmers,
- Ecological intensification of agricultural production,
- Diminution of negative environmental externalities from agriculture.

The network should address in priority the issues faced by **smallholder farming** systems and only deal with agribusinesses in relation with their interactions with smallholders or impacts on family farming. The purpose of the network should be to accompany the **agro-ecology transition** in the region, i.e. supporting smallholders in transitioning from their current practices to agro-ecology techniques through gradual transformation of their farming system.

### **Democratic governance**

**Multi-stakeholders** groups should federated around the agro-ecology principles. Cooperative mechanisms should be developed to allow members to freely express their opinions, to control the activities of the network secretariats through regular general assemblies and to **elect their representatives** to the board. A strong and active **implication of farming communities** in the life of the network should be promoted. Ideally, the future network should combine top-down and bottom-up approaches, with a neutral regional secretariat supported by donor agencies and reporting to the network members.

### **Financial autonomy**

The network review showed that regular funding is crucial to keep the momentum in the activities and interest of all partners. Funding sources should be diverse as institutional donors tend to stop

their support after some years. A combination of three funding sources should be sought: (i) financial support from institutional donors or private foundations to the regional coordination, (ii) a portfolio of diverse national and regional projects (multiple donors and partners) developed with the support of the regional secretariat, (ii) annual subscription from network members (i.e. from their core budget of national projects).

The support provided by the regional network to its members through valorisation of good practices (e.g. via certification PGS, PSE) or service provision (e.g. formations, diagnosis, soil analyses) should be a strong incentive for members to subscribe to the network.

### **A combination of national and regional thematic networks**

Thematic networks are related to specific practices within the larger scope of agroecology ( e.g. OA, SRI, IPM, CA). They may exist at national, regional and global levels depending on the schools. The study pointed the strengths and weaknesses of the existing thematic networks at the different scales. It shows that the different agroecology schools are not necessarily well coordinated at each level (national, regional, global) nor across levels for each theme. The future network should work on both vertical (across scales) and horizontal (AE schools at each level) integration. **The activities of a regional agroecology learning alliance should be grounded in strong national networks and endorsed by global networks.**

L'étude présentée dans ce document porte sur la faisabilité d'un projet régional de promotion des principes et des pratiques agro-écologiques dans la région du Grand Mékong : Cambodge, Laos, Myanmar, Thaïlande, Vietnam, et Yunnan – Chine. L'étude a réalisé un état des lieux des pratiques, acteurs, expériences liées à l'agro-écologie dans les pays du Mékong (ex : histoires à succès, contraintes à l'adoption), à partir d'une recension bibliographique complétée par des ateliers de concertation (Cambodge, Laos, Myanmar, Vietnam) et des consultations d'experts (Thaïlande, Yunnan-China). Les résultats préliminaires ont été présentés et discutés avec les principaux acteurs de l'agro-écologie dans chaque pays. Au travers de cette revue large des pratiques agro-écologiques telles que l'agriculture de conservation, mais aussi l'agroforesterie, le SRI, l'agriculture intégrée, l'agriculture biologique..., l'étude a permis d'identifier des partenaires potentiels (118 organisation de recherches, agences gouvernementales, ONGs, compagnies privées dans les 6 pays) avec une grande diversité d'expériences dans le domaine de l'agroécologie.

### 3. ETAT DES LIEUX DE L'AGRO-ECOLOGIE DANS LA REGION DU MEKONG

Les consultations nationales ont permis d'identifier un continuum de pratiques qui se rattachent aux principes de l'agro-écologie, les participants reconnaissant la difficulté de tracer des frontières nettes entre leurs approches ou écoles. De nombreux projets combinent souvent différentes approches de façon à offrir aux agriculteurs un panel d'options techniques qu'ils puissent adapter à leurs contextes, besoins et capacités. Par ailleurs, les bailleurs de fonds tout comme les agriculteurs sont généralement ouverts aux diverses approches agro-écologiques, ces derniers étant disposés à les combiner / intégrer dans leurs pratiques.

Les tensions parfois observables entre écoles (ex : conversion à l'agriculture biologique versus transition graduelle vers des pratiques d'agriculture durable) se cantonnent souvent aux leaders des différentes écoles, qui tendent à défendre leurs positions au sein du marché très compétitif des bailleurs de fonds. En revanche, dans la réalité, il est rare que les agriculteurs adoptent le paquet technique complet proposé par chaque école, la plupart n'adoptant souvent qu'une partie des principes proposés. Vouloir tracer des frontières trop strictes entre écoles se révèle alors contreproductif, créant des divisions au détriment de synergies potentielles, et creusant l'écart entre les discours agro-écologiques et la réalité des agriculteurs sur le terrain. Afin de construire des ponts entre les différentes écoles (et atténuer les divisions), **les activités de 'networking' devraient porter en priorité sur les principes communs qui sous-tendent les pratiques**. Les tenants des différentes écoles tombent en effet assez facilement d'accord sur des principes communs et la signification et portée du concept d'agro-écologie.

Le processus de consultation a couvert six principales écoles/pratiques agro-écologiques rencontrées dans la région : agriculture biologique, agriculture intégrée, jardins intensifs (*home gardens*), système de riziculture intensive (SRI), agriculture de conservation, et agroforesterie. Des pratiques connues telles que la **lutte intégrée (*Integrated Pest Management* - IPM), le SRI, l'agriculture de conservation et l'agroforesterie se sont répandues et ont gagné en visibilité grâce à un appui top-**

**down d'institutions internationales clés**, respectivement la FAO, l'université américaine de *Cornell*, le CIRAD et l'ICRAF. Ces institutions internationales mettent en œuvre leurs programmes au travers d'agences gouvernementales dans les différents pays, et ont bénéficié de l'appui des bailleurs de fonds pour organiser des réseaux thématiques régionaux. Les ONG internationales et nationales ont par la suite relayé ces écoles et réseaux en diffusant leurs pratiques auprès des agriculteurs. Plusieurs équipes de projets se sont transformées en ONG nationales pour poursuivre la diffusion de ces pratiques au-delà de la période d'activité des projets. D'un autre côté, **le mouvement de l'agriculture biologique semble résulter d'un processus *bottom-up* porté par des agriculteurs et militants locaux ayant réussi à s'organiser et à construire des alliances pour développer leurs activités et gagner en reconnaissance**. Ces acteurs se sont généralement fédérés en associations nationales puis finalement liés à l'*International Foundation of Organic Movements* – IFOAM qui leur fournit un appui technique et des services de certification.

**Cette diversité de pratiques et de modes de gouvernance représente un précieux atout (et non une contrainte) pour encourager la transition vers l'agro-écologie**. Il apparaît en revanche que chacun de ces réseaux thématiques, avec ses atouts mais aussi ses faiblesses, mériterait de renforcer ses propres activités avant de s'ouvrir aux autres. C'est en particulier le cas du CANSEA qui gagnerait à consolider ses activités liées à l'agriculture de conservation, avant de s'ouvrir aux autres écoles et autres communautés d'acteurs. Un portefeuille consolidé de projets et des résultats probants reconnus permettront ainsi de plus facilement de s'engager avec d'autres (écoles, acteurs), avec l'appui d'un réseau régional agro-écologie ou d'une fédération de réseaux nationaux agro-écologie. Un tel **réseau régional d'appui aux mouvements agro-écologiques** apparaît pertinent et nécessaire pour : (i) ouvrir les initiatives existantes aux autres écoles et communautés d'acteurs, (ii) permettre aux réseaux top-down existants d'acquérir plus de flexibilité et de réactivité, (iii) renforcer les réseaux agro-écologiques nationaux et développer des synergies avec les réseaux thématiques régionaux.

#### 4. VERS UNE ALLIANCE REGIONALE DE RESEAUX

L'analyse des réseaux régionaux existants met en lumière une série de qualités souhaitables pour un futur réseau régional agro-écologique qui viserait à faciliter la transition agro-écologique dans la région du Mékong.

##### **Des objectifs communs bien définis**

Les objectifs principaux d'un tel réseau pourraient être :

- la réduction de la pauvreté et l'amélioration des moyens d'existence des petits exploitants agricoles,
- l'intensification écologique de la production agricole,
- la diminution des externalités environnementales négatives de l'activité agricole.

Le réseau régional devrait traiter en priorité les problèmes rencontrés par les **petites agricultures familiales**, et ne s'intéresser à l'agro-industrie que dans ses interactions avec les petits producteurs et ses impacts sur ces derniers. L'objectif du réseau devrait être d'accompagner la **transition agro-**

**écologique** dans la région, i.e. d'appuyer les petits exploitants agricoles pour faire évoluer leurs pratiques actuelles vers des pratiques agro-écologiques par une transformation graduelle de leurs systèmes d'exploitation.

### **Une gouvernance démocratique**

Plusieurs **groupes pluri-acteurs** devraient se fédérer autour de « principes agro-écologiques ». Des mécanismes coopératifs sont recommandés, permettant aux membres d'exprimer librement leurs opinions, de contrôler les activités des secrétariats du réseau au travers d'assemblées générales régulières, et d'**élire leurs représentants** au sein d'un conseil d'administration. Il est important de promouvoir une **forte et active participation des communautés d'agriculteurs** dans la vie du réseau. Idéalement, le réseau régional devrait combiner une double approche *top-down* et *bottom-up*, avec un secrétariat régional « neutre » cofinancé par les bailleurs de fonds et rendant des comptes aux membres du réseau.

### **Autonomie financière**

L'analyse des expériences existantes de réseaux régionaux montre combien il est crucial de garantir une continuité de financement de façon à maintenir la dynamique collective et d'entretenir l'intérêt des partenaires. Les sources de financement devraient se diversifier à mesure que les bailleurs institutionnels réduisent leur support après quelques années. Il est recommandé de créer les conditions pour alimenter le réseau régional à partir de trois sources de financement : (i) appui financier des bailleurs de fonds institutionnels et de fondations privées pour la coordination régionale, (ii) portefeuille de projets nationaux et régionaux (financements et partenariats multiples) développés avec le support du secrétariat régional ; (iii) cotisation annuelle des membres du réseau (i.e. : à partir de leur budget propre ou de projets).

La diversité et qualité des appuis fournis par le réseau régional à ses membres, tels que la valorisation des « bonnes pratiques » (ex : certification, PGS, PSE) ou la fourniture de services (ex : formations, diagnostics, analyses de sols...), devraient constituer de fortes incitations à l'adhésion des membres au réseau.

### **Une combinaison de réseaux nationaux et de réseaux thématiques régionaux**

Les réseaux thématiques portent sur des pratiques spécifiques rattachées au concept général de l'agro-écologie (ex: agriculture biologique, SRI, IPM, agriculture de conservation). Selon les « écoles », ces réseaux existent au niveau national, régional ou global. L'étude a pointé les forces, mais aussi certaines faiblesses des réseaux thématiques existants à chacun de ces niveaux. Ces différentes « écoles » montrent des faiblesses de coordination au sein même de leurs réseaux thématiques (entre les niveaux national, régional, global) mais aussi entre les réseaux des différentes écoles. Le futur réseau devrait favoriser à la fois la coordination / intégration verticale (entre niveaux) et horizontale (entre écoles à chaque niveau). Les activités d'un réseau régional fédératif devraient reposer sur des réseaux nationaux solides et être reconnues / appuyées par des réseaux globaux.

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## LIST OF ACRONYMS

AAN - Alternative Agriculture Network, Thailand

ACIAR - Australian Centre for International Agricultural Research

ACISAI - Asian Center of Innovation for Sustainable Agriculture Intensification, AIT, Bangkok

ADB - Asian Development Bank

Adda - Agricultural Development Denmark Asia, International NGO

ADG - Belgian NGO Aide au Développement Gembloux

AFA - Asian Farmer Association

AFD - French Agency for Development

AIT - Asian Institute of Technology

AMAF - ASEAN Ministers of Agriculture and Forestry

ASB - Alternatives to Slash-and-Burn

ASDSP - Association pour le Soutien au Développement des Sociétés Paysannes, Lao PDR

ASEAN – Association of South East Asian Nations

ASFN - ASEAN Social Forestry Network

ASOCON - Asia Soil Conservation Network for the Humid Tropics

CA - Conservation Agriculture

CANSEA - Conservation Agriculture Network for Southeast Asia

CASRAD - Centre for Agrarian Systems Research and Development, Vietnam

CCAFS - CGIAR Research Program, Climate Change, Agriculture and Food Security

CEDAC - Centre d'Etude et de Développement Agricole Cambodgien, Cambodia

CGIAR – Consultative Group for International Agricultural Research

CGS - Competitive Grant Scheme

CIFOR – Centre for international forestry Research

CIPM – Community IPM

CIRAD – Centre for International Research on Agricultural Development, France

CIRD - Cambodian Institute for Research and Rural Development, Cambodia

CMES - Centre for Mountain Ecosystem Studies

COraA - The Cambodian Organic Agriculture Association, Cambodia

CPWF - Challenge Program Water and Food, CGIAR

CRP - CGIAR Research Programs

DNFE - Education Ministry's Department of Non-Formal Education, Thailand

DOAE, Department of Agricultural Extension, Thailand

EU – European Union

FAO - Food and Agriculture Organization of the United Nations  
FFS – Farmer Field Schools  
GAA – Welthungerhilfe, German Agro Action  
GAP - Good Agricultural Practices  
GIZ - Deutsche Gesellschaft für Internationale Zusammenarbeit, German International Cooperation Agency  
GMO – Genetically Modified Organisms  
GMS - Great Mekong Sub-region  
GRET – Groupe de Recherche et d’Echanges Technologiques, France  
IAARD - Indonesia Agency for Agriculture Research and Development, Indonesia  
IBI - International Biochar Initiative  
ICM- Integrated Crop Management  
ICRAF – World Agroforestry Centre  
IFOAM - International Federation of Organic Agriculture Movements  
INGO – International NGO  
IPM - Integrated Pest Management  
IRD – Institut de Recherche pour le Développement, France  
IRRI – International Rice Research Institute  
ISM - Integrated Soil Management  
IWMI – International Water Management Institute  
KIB - Kunming Institute of Botany, Yunnan, China  
LDD, Land Development Department, Thailand  
MAF - Ministry of Agriculture and Forestry, Lao PDR  
MAFF - Ministry of agriculture, forestry and fisheries, Cambodia  
MARD – Ministry of Agriculture and Rural Development, Vietnam  
MI - The Mekong Institute  
MOAG - Myanmar Organic Agriculture Movement Group, Myanmar  
M-POWER - Mekong Program on Water, Environment and Resilience  
MRC - Mekong River Commission  
MSEC - Managing Soil Erosion Consortium  
NAFRI - National Agriculture and Forestry Research Institute, Lao PDR  
NGO - Non Governmental Organization  
NOMAFSI - Northern Mountainous Agriculture and Forestry Science Institute, Vietnam  
NPA - Non for Profit Association  
NTFP – Non Timber Forest Products  
OA - Organic Agriculture  
PADAC - Projet d’Appui au Développement Agricole du Cambodge

PADETC - Participatory Development Training Centre, Lao NGO

PAN - Pesticide Action Network Asia Pacific

PEAC - Pesticide Eco-Alternative Centre, Yunnan, China

PES - Payment for Environment Services

PGS - Participatory Guarantee System

PUAC - Peri-Urban Agricultural Center, Cambodia

RECOFTC - Regional Community Forestry Training Center for Asia and the Pacific, The Center for People and Forests

SAEDA - Sustainable Agriculture and Environment Development Association, Lao PDR

SALT - Sloping Agricultural Land Technology

SANRM - Sustainable Agriculture and Natural Resource Management, Vietnam

SDC - Swiss Agency for Development and Cooperation

SEARCA - Southeast Asian Regional Center for Graduate Study and Research in Agriculture

SEANAPE - South-East Asia Network for Agro-Forestry Education

SIDA – Swedish International Development Agency

SFRI - Soils and Fertilizers Research Institute, Vietnam

SRI - System of Rice Intensification

Sumernet - Sustainable Mekong Research Network

TEF - Thai Education Foundation, Thailand

TOA - Towards Organic Asia

TOTA - Thai Organic Trade Association, Thailand

UNDP – United Nation Development Programme

VAC - Vuon, Ao, Chuong in Vietnamese which means garden/pond/livestock pen

VNFU - Vietnamese Farmers Union, Vietnam

VOA - Vietnam Organic Association, Vietnam

WASWAC - World Association of Soil and Water Conservation

WCS - Wilde Conservation Society

WFTO - World Fair Trade Organization

WOCAT - World Overview of Conservation Approaches and Technologies

YAAS Yunnan Academy of Agricultural Sciences

## I. INTRODUCTION: TAKING STOCK OF AGROECOLOGY IN THE MEKONG REGION

For the last 15 years, AFD fostered the experimentation and diffusion of **Conservation Agriculture** in developing countries as a mean to increase agriculture productivity through an optimization of biological processes, while at the same time improving soil fertility, optimizing crop water supply, and fixing carbon in the soil. In Southeast Asia, research-development activities supported by AFD have led to the emergence of a regional network on conservation agriculture named **CANSEA** (Conservation Agriculture Network for Southeast Asia - <http://cansea.org.vn>), which is facilitated by CIRAD. The network was created in 2009 by seven institutions from six countries in the region: in Cambodia (Ministry of agriculture, forestry and fisheries - MAFF), in China (Yunnan Academy of Agricultural Sciences - YAAS), in Indonesia (Indonesia Agency for Agriculture Research and Development - IAARD), in Laos (National Agriculture and Forestry Research Institute - NAFRI), in Thailand (Kasetsart University – KU) and in Vietnam (Northern Mountainous Agriculture and Forestry Science Institute – NOMAFSI – and Soils and Fertilizers Research Institute - SFRI). The network supports regional exchanges in terms of research, development and training; it favours synergies, capitalizes knowledge gained by its members and different partners and optimizes the use of available resources to tackle the challenges of ecologically friendly intensification of agriculture in Southeast Asia.

With the aim of expanding and institutionalizing Regional Agroecology Networks, the present study took stock of CANSEA activities and achievements so far through literature review and consultation of its members. It investigated how complementarities between countries and institutions have been harnessed, how synergies were developed at the regional level between network members, how research results were capitalized and data stored and mobilised by network members, and how an expertise dedicated to conservation agriculture has emerged thanks to the activities of the CANSEA.

At the same time, challenges for the future have been analysed and summarized as follows:

- To *build bridges with other agro-ecological practices and actors*, in order to meet farmers' demands and gain capacity of influence on public policies,
- To *develop alliances with other actors of agro-ecology beyond governmental agencies*, in order to enrich the learning process and ease the extension of agro-ecological practices.
- To *open and reinforce governance mechanisms*, in order to add flexibility and reactivity in networking activities,
- To *diversifying funding sources*, in order to ensure financial sustainability of the network.

It is expected that a broader approach, building bridges between conservation agriculture and other agro-ecological practices and networks (e.g. SRI, IPM, organic farming), will enhance **cooperation and synergies among actors of agro-ecology in the region**, support experience and knowledge sharing, facilitate the construction of a common understanding of agro-ecology principles, and promote the operational translation and application of agro-ecological principles in practices and public policies. Actors of agro-ecology include farmers, policy makers, research, development agencies and civil society.

The study has been organized in three phases. The first phase aimed at taking stock of the practices, actors, experiments (e.g. success stories, constraints to adoption) related to agro-ecology in the

Mekong countries. The second phase aimed at analysing and drawing lessons of governance modes of existing regional networks. Based on the outputs of previous phases, the third phase of the study consisted in building and discussing scenarios for a future agroecology learning alliance.

## 1. PHASE 1: TAKING STOCK OF AGRO-ECOLOGY EXPERIENCES IN THE REGION

### THE SCOPE OF AGRO-ECOLOGY

Agro-ecology concept emerged during the last century and diffused in many countries. Originally defined as the application of ecological principles to agriculture at farming system and agro-ecosystem levels (Altieri 2005, Gliessman 1998), it was progressively enlarged to the whole food system linking production with the food chain and consumers, including the political dimensions of food systems (Francis 2003). Agro-ecology has become an unifying concept engaging scientists, agriculture and food system practitioners, and political and social movements (Wezel et al. 2009). Today, it is widely recognized that agro-ecology involves not only scientists and development practitioners, but also social actors (associations, citizens, consumers...) who actively contribute to the definition, improvement and promotion of an alternative food system in its technical, economic, social and political dimensions. Agro-ecology is seen on the international scene as a credible alternative to the dominant market-oriented conventional food system, to tackle the challenges of food security, climate change and restoration of degraded landscapes (IAASTD 2009).

As a polysemic concept, agro-ecology is understood in many different ways according to the people background and experience. For the purpose of this feasibility study, the implementation team proposed a common “scope of agro-ecology” that was shared among team members located in the different countries, and was used for guiding the literature review and stakeholder consultations.

A practical way of addressing the scope of agro-ecology for this study was to identify key principles that would guide and unify the stakeholders involved. Five historical principles have been defined for agro-ecology in the 1980s by Miguel Altieri, then widely cited by various authors. These principles mainly apply to the farming system and agro-ecosystem levels.

#### Agro-ecology: historical principles (Altieri 2005)

1. Enhanced recycling of biomass, optimizing nutrient availability and balancing nutrient flows.
2. Securing favourable soil conditions for plant growth, particularly by managing organic matter and enhancing soil biotic activity.
3. 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.
4. Species and genetic diversification of the agro-ecosystem in time and space.
5. Enhanced beneficial biological interactions and synergisms among agro-biodiversity components thus resulting in the promotion of key ecological processes and services.

Additional principles have been formulated, e.g. by Stassart et al. 2012. They aim at widening the scope of agro-ecology to include considerations such as food system, biodiversity, agro-ecological transition, resilience and adaptability, participation of the whole society. We mention here four of these principles.

#### Agro-ecology: some additional principles

1. Valorise agro-biodiversity as an entry point for the (re)conception of agriculture and food systems guaranteeing autonomy of farmers and food sovereignty
2. Valorise knowledge diversity (local/traditional know-how and practices, layman knowledge and expert knowledge) in the definition of research problems, the definition of people concerned, and in finding solutions.
3. Work on agro-ecosystems with a perspective of fostering agro-ecological transition on the long term, giving importance to properties of adaptability and resilience
4. Promote participatory research driven by the needs of society and practitioners, while at the same time guaranteeing scientific rigor

Several agricultural practices and schools were found compatible with the principles of agro-ecology and were therefore considered during the literature review and stakeholder consultations in the different countries.

#### LITERATURE REVIEW

In each country, we listed past or current initiatives in the domain of agro-ecology, including institutions, projects and contact persons involved in agro-ecology. The description and analysis of agro-ecology experiences addressed the following aspects:

- Characterization of main stakeholders (government, NGOs, farmers' organization, funding agencies...) active in the promotion of agro-ecological practices,
- Assessment of the level of adoption of agro-ecological practices by farmers (particularly looking at the level of adoption « without » or « after » project support), constraints faced by stakeholders for strengthening effective adoption of agro-ecological practices in the country,
- Inventory of gaps in literature review to be filled through consultation workshops or expert interviews.

#### CONSULTATIONS

Questionnaires were sent to the contact persons identified during the previous phase together with invitations to take part in national consultation workshops. The information initially available from the literature review was gradually refined using the participant responses to the questionnaires.

Expert consultation (Thailand, Yunnan) and consultation workshop (Cambodia, Laos, Myanmar, Vietnam) were then conducted in 2013. They helped updating and validating the information gathered from the literature. They were also used to assess the interest of the different partners in taking part in a regional network on agro-ecology (i.e. participants expectations towards a potential regional network on agro-ecology).

Between 13 and 25 participants took part in the national consultation workshops. The relatively limited number of participants allowed for real, lively discussions to take place beyond the individual presentations of participants activities related to agro-ecology.

**Table 1.** Number of participants to consultation workshops and expert consultations

Country	Consultations dates	Number of participants	Institutions involved in agroecology				
			govt	ingo	cso	priv	tot
<b>Cambodia</b>	30/05/2013	15	4	13	4	4	<b>25</b>
<b>Lao PDR</b>	15/05	14	9	5	4	1	<b>19</b>
<b>Myanmar</b>	12/06	20	4	4	5	3	<b>16</b>
<b>Thailand</b>	12/06	-15-	7	5	5	1	<b>18</b>
<b>Vietnam</b>	11/06	27	8	14	3	0	<b>25</b>
<b>China</b>	19/06	-14-	5	4	2	4	<b>15</b>
<b>Total</b>		<b>105</b>	<b>37</b>	<b>45</b>	<b>23</b>	<b>13</b>	<b>118</b>

N.B. The number of institutions involved in agro-ecology in each country is displayed in the last column with break down according to the type of institution in the previous columns (govt = government institutions, ingo = international non-governmental organizations, cso = civil society organizations, priv = private sector).

Altogether, 105 persons were involved in the consultation process (both consultation workshop and expert consultation) and 118 institutions with different status (i.e. governmental, non-governmental, civil society, private companies) were identified as involved in agro-ecology in the region. Country reports (available on request) were finally incorporated into a comparative analysis across the 6 target countries.

## 2. PHASE 2: LESSONS LEARNED FROM MEKONG NETWORKS

### LITERATURE REVIEW & EXPERT SURVEY

The analysis of governance modes of existing regional networks has been carried out through a literature review combined with survey of resource persons involved in these networks and institutions.

Seventeen networks and networking institutions were reviewed as indicated in Table 2. Additional initiatives were included in the analysis during the review process so as to enlarge the range of networking experiences.

A comparative analysis led to a network classification based on their conditions of emergence, their structure and governance mechanisms.

**Table 2.** Regional networks and organizations surveyed

Organisation	Contact	Zone Intervention
<b>AIT</b> - Asian Institute of Technology – 1957	www.ait.ac.th	Asia
<b>SEARCA</b> - Southeast Asian Regional Center for Graduate Study and Research in Agriculture - 1965	searca.org	Southeast Asia
<b>ASFN</b> - ASEAN Social Forestry Network – 2005	www.asfnsec.org	ASEAN countries
<b>IBI</b> - International Biochar Initiative – 2006	www.biochar-international.org	Global
<b>FAO</b> Inter Country Programme for IPM – 1989 FFS - Farmer Field School - <b>Field Alliance</b>	www.vegetableipmasia.org (FAO)	Global
<b>ASB</b> - Alternatives to Slash-and-Burn - 1992	www.asb.cgiar.org (ICRAF)	Global - Indonesia, Thailand, Philippines
<b>CCAFS</b> - CGIAR Research Program, Climate Change, Agriculture and Food Security	ccaafs.cgiar.org (CIAT)	Global
CGIAR Program Forests, Trees and Agroforestry – <b>Mekong Sentinel Landscape</b>	led by CIFOR	Global + Mekong countries
<b>Humidtropics</b>	humidtropics.cgiar.org (ITTA)	Global + Central Mekong Action Area
<b>SENAFE</b> - Southeast Asian Network for Agroforestry Education - 1999	led by ICRAF	Indonesia, Lao PDR, Philippines, Thailand, Vietnam
<b>CANSEA</b> - Conservation Agriculture Network in South-East Asia - 2009	www.cansea.org.vn (CIRAD)	Indonesia, Lao PDR, Cambodia, Thailand, Vietnam, Yunnan
<b>Landcare International</b>	www.landcareinternational.net	Australia and global. In Southeast Asia - Philippines and Indonesia
<b>MRC</b> - Mekong River Commission - 1959	www.mrcmekong.org	Cambodia, Lao PDR, Thailand, Vietnam
<b>M-POWER</b> - Mekong Program on Water, Environment and Resilience – 2004	www.mpowernetwork.org	Mekong countries
<b>MI</b> - The Mekong Institute - 1996	www.mekonginstitute.org	Mekong countries
<b>Sumernet</b> - Sustainable Mekong Research Network – 2005	www.sumernet.org led by SEI	Mekong countries
<b>RECOFTC</b> - Regional Community Forestry Training Center for Asia and the Pacific – 1987	The Center for People and Forests - www.recoftc.org	Asia - Pacific region

Lessons learnt from existing institutional mechanisms were then be used to develop scenarios for a future agro-ecology network in the Mekong region.

### 3. PHASE 3: SCENARIOS FOR A REGIONAL AGRO-ECOLOGY NETWORK

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#### SCENARIO DEVELOPMENT

The outputs of phases 1 and 2 have been presented and discussed during a meeting organized at AFD office in Vientiane on June 26, 2013, with the participation of AFD and CIRAD representatives. From there, scenarios for agro-ecological networks have been developed and discussed. A project concept has been prepared for discussion with partners.

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#### RESTITUTION WORKSHOP

A validation workshop has been organized on December 6, 2013 with partners from all GMS countries.

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#### REPORTING

The draft report was finalized after the restitution workshop so as to incorporate written and oral comments from workshop participants.

## II. AGROECOLOGY EXPERIENCES, PRACTICES AND ACTORS IN THE MEKONG REGION

This review is based on the integration and comparison of country data generated through the literature review and consultation process conducted in the six target countries of the Mekong region.

Farmers in the Mekong region have historically practiced subsistence-based integrated farming combining crops, livestock and trees in complex landscape mosaics. Paddy rice grown in the lowland and upland rice produced as part of long term rotational agriculture have long been the main staple food all over South East Asia. Agricultural practices relied on strong ecological knowledge built over many generations by subsistence farmers. Shifting cultivations systems with an integrated fallow period for restoring soil nutrients, home gardens characterized by high biodiversity, the practice of agro-forestry based on nitrogen-fixing trees were all based on agro-ecology principles. Shifting cultivation, once widely practiced by upland farmers all over the region has largely vanished due to increased population pressure combined with government policies for the conversion of temporary land use to permanent land use. All countries in the Mekong region have engaged in a process of so-called 'modernization' of agriculture by applying the agricultural practices of the Green Revolution to export-led mono-cropping. Different countries have reached different stages in the process of agricultural intensification and also in land degradation and biodiversity depletion associated with the generalization of input-intensive cropping practices. Depending on their respective history, demographic changes, economic development patterns and agro-ecological potential of their landscapes, agriculture intensification has evolved at different pace and had variable ecological impacts throughout the region.

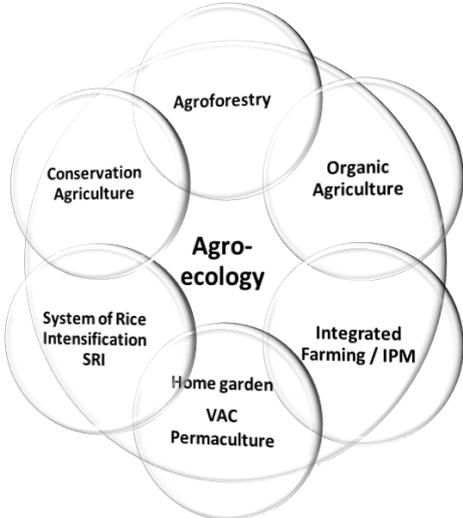
In the **1970s**, the *Thai* government favoured the emergence of an export-led commercial agriculture while the *Chinese* government faced with an increasing demographic pressure promoted the intensification of agriculture to preserve food security. Different development priorities led to similar patterns of agricultural intensification based on new crop varieties and intensive use of chemical inputs. But in Thailand, alternative agricultural movements, such as the Alternative Agriculture Network (AAN) established in the 1980s by farmers and local non-government organizations (NGOs) were left some political space to exist while in China alternative practices were not officially allowed.

In *Vietnam* and also, to a lower extent in *Cambodia* and *Laos*, the **end of the 1980s** marked the end of subsidised chemical input supplies due to the collapse the Soviet Block. *Myanmar* also shifted to market-based economy around the same period. In these countries, alternative cropping practices emerged at that time to compensate for the lack of chemical agricultural inputs more than as reaction to land degradation or environmental issues related to the intensive use of agrochemicals such as in Thailand and China. The countries that were less opened to international market were less impacted by the Green Revolution, leaving their most remote regions with their traditional subsistence agricultures, and therefore adopted alternatives practices because of the lack of agrochemical supplies more than as reaction to environmental concerns.

In the **2000s**, "**modern agro-ecology**" initiatives in the Mekong countries were largely pushed by national and international NGOs as part of a global movement that spread across the region. This countermovement to the global trend of agricultural intensification promotes more sustainable land uses, production of healthier food, and conservation of traditional knowledge and practices. More recently, these practices have been valorised as part of "climate smart" agricultural strategies. The

next section takes stock of the status of the six main agro-ecology practices found in the Mekong region, namely: organic agriculture, integrated agriculture, home garden – VAC, system of rice intensification, conservation agriculture, and agro-forestry (Figure 1).

**Figure 1.** Main agro-ecological practices in the Mekong countries



**1. ORGANIC AGRICULTURE**

**INTRODUCTION**

Organic agriculture aims at sustaining the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and natural cycles adapted to local conditions, rather than the use of chemical inputs with potentially adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.

**Organic Agriculture principles (<http://www.ifoam.org>)**

1. Principle of Health: OA should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible (i.e. this implies to avoid the use of fertilizers, pesticides, animal drugs and food additives that may have adverse health effects)
2. Principle of Ecology: OA should be based on living ecological systems and cycles, work with them, emulate them and help sustain them (i.e. production is to be based on ecological processes, and recycling).
3. Principle of Fairness: OA should build on relationships that ensure fairness with regard to the common environment and life opportunities (i.e. natural resources used for production and consumption should be managed in a way that is socially and ecologically just and should be held in trust for future generations)
4. Principle of Care: OA should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment (i.e. no GMO)

In the Mekong countries, organic production is dominated by **rice, vegetable, coffee, tea and fruit trees**. Some wild products collected from forest and fallow lands, which are traditionally consumed by local farmers, are also certified and sold as organic.

In *Thailand*, Green Net and the Earth Net Foundation estimate that the area under organic farming increased from just over 2,100 ha in 2001 to 21,701 hectares in 2005 and 34,079 hectares in 2012, representing 0.16 percent of the total agricultural land area (21 million hectares) and employing an estimate of 7,405 farming families (GreenNet 2012 - <http://greennet.or.th>). While still marginal in terms of area and production volume, the Thai organic agriculture has been growing at a steady rate fuelled by export opportunities. According to the 2010 IFOAM report, the certified organic area in *Vietnam* was some 21,000 hectares, equivalent to 0.2% of the total cropped area of which 7,000 ha was for aquaculture (shrimps mainly). *China* is the third largest producer of organic products. Organic farming is practiced on 2.3 million ha, which represents 2 % of the total agricultural area of China. The organic food industry is growing by 30% per year. Despite discrepancies between this information obtained from our country studies and the data available from the FiBL-IFOAM survey presented in Table 3, it is clear that **organic agriculture still represents a very small percentage of the overall agricultural areas (between 0.1 and 0.3%)**. This data will need to be gradually refined by the future regional project.

**Table 3.** Status of organic agriculture in Mekong countries in 2011

Country	Area (ha)	% Organic	Producers
Cambodia	8 284	0.15	5 182
China	1 900 000	0.36	
Laos	3 843	0.16	2 178
Myanmar	202	0	13
Thailand	34 830	0.18	7 405
Viet Nam	23 400	0.23	4 385

Source: FiBL-IFOAM survey, based on national sources and data from certifiers.

The status of organic agriculture in the six countries under study results from a combination of (i) the historical trends presented above that determines the experience and strength of *national organic agriculture movements*, (ii) the level of *support provided by the governments* to organic agriculture in the form of policies, subsidies or certification schemes (iii) the *support from international NGOs and development programs* to less advanced countries.

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A REVIEW BY COUNTRY

In Cambodia, Lao PDR, Myanmar and Vietnam organic agriculture emerged in the 2000s, pioneered by international NGOs and Development agencies that supported national agencies and/or NGOs in their endeavour to organize organic farmers groups and cooperatives, promote local and national organic markets and develop certification schemes. In some cases, the project was turned into an NGO to sustain activities after the end of project funding period.

In **Cambodia** several programs led by GIZ and Oxfam Quebec supported the *Centre d'Etude et de Développement Agricole Cambodgien* (CEDAC) in promoting organic rice production among farmers since 2003. Organic rice producer groups and associations were established in the framework of the Community Based Rural Development Program of GIZ implemented in collaboration of CEDAC. It is interesting to observe that organic rice production was often seen as the second step after adoption of SRI practice, which encourage farmers to reduce the use of chemical pesticides and fertilizers. Encouraging wildlife protection, the Ibis rice program of the *Wilde Conservation Society* (WCS) supported the establishment of village marketing network, which buy organic rice from farmers with a premium price. The Ibis rice is labelled as "Wildlife Friendly" brand, following the certification standard of Wildlife Friendly Enterprise Network. In 2001, the *Peri-Urban Agricultural Center* (PUAC) was created by the Belgian NGO Aide au Développement Gembloux (ADG) to strengthen support to the production of high added value and chemical residue free vegetables and the organization of the commercialization channel of the farmer production to hotels, restaurants and supermarkets in Phnom Penh. In 2009 ADG project was converted into an agricultural cooperative and the PUAC became an autonomous agency legally registered at the Minister of Agriculture, Forestry and Fisheries (MAFF). In 2009, the *International Volunteer Center of Yamagata* (IVY), a Japanese NGO, started to support two village Women's Association Farmers Association which were engaged in organic vegetable cultivation in Svay Rieng province. An agricultural cooperative was setup that today gathers 544 vegetable producers and buys 3 tons per month of vegetables. *The Cambodian Organic Agriculture Association* (COAA - [www.coraa.org](http://www.coraa.org)) was created in 2006 to federate the many initiatives of this kind in a national organic agriculture movement that is recognized and supported by the government.

In **Laos**, a Swiss NGO, *Helvetas* supported the emergence of organic rice production and market since 2005 while *CIRAD*, a French research institute, supported organic coffee production in the Boloven plateau (Paksong) and geographic indication for 'kay noy' rice variety. Both worked in close partnership with the Ministry of Agriculture and Forestry (MAF). They were instrumental in drafting a decree on organic agriculture standards and creating the Clean Agriculture Development Center (CADC) and a Lao certification Body (LCB) as part of the Department of Agriculture (MAF) in 2005. Other INGO, like *OXFAM* or *CCL* (*Comité de Coopération avec le Laos*), worked directly with local communities or supported them in partnership with national Non-Profit Associations (NPA) such as SAEDA, ASDSP or PADETC.

As a whole, these organizations have promoted organic farming systems through:

- Capacity building of agricultural department staff on technical and marketing issues;
- Support to producer groups and farmer organizations;
- Development of organic value chain, agricultural products' processing through supply of appropriate equipment;
- Certification and standardization of agricultural products (including organic and fair trade certifications);

There is *no formal national network on organic and sustainable agriculture* but many partnership or relationships between government agencies (MAF) and NGOs or between NGOs and NPAs.

In **Myanmar**, organic farming is also recent despite failed attempts to sell organic sugar to European market in the early 2000s. The sugar factory passed the inspection for certification but the country was hit by US and EU economic sanctions due to political reasons and could not export its products.

Like in Cambodia and Laos, the most recent attempts to develop organic agriculture in Myanmar were led by international NGOs, such as *GRET*, that supported local NGOs and farmer groups. The *Myanmar Organic Agriculture Movement Group* (MOAG) provides an umbrella for organic farming initiatives at the national level. MOAG is the only national organization to issue *organic certificates* in Myanmar besides foreign certification agencies. There are three types of certificates: Organic Certificate for organic inputs, Organic Certificate for organic farming, and Organic Certificate for organic processing. Up to now, two companies have already applied for organic inputs production (e.g. organic fertilizers) and 12 farms and orchards for organic farming certificates. MOAG is working with *Myanmar Green Network* which is a group working for environment in the whole country. MOAG is providing training support to stakeholders of the organic movement in collaboration with national NGO, INGO and other interested public organizations occasionally.

On the private sector side, the *Myanmar Fruits, Flower, and Vegetables Producers Entrepreneurs' Association* (MFFVPE) which was established in 2006 and is affiliated to Union of Myanmar Federation of Chamber of Commerce and Industry (UMFCCI) provides control on the marketing of organic products.

In **Vietnam**, organic agriculture is also a new concept as consumers' awareness about food safety is still limited. In 2005, a Danish NGO, *ADDA* was funded by DANIDA to start the largest initiative in organic farming in collaboration with a national mass-organization, the *Vietnamese Farmers Union* (VNFU). The project aimed at increasing awareness and knowledge of farmers on organic agriculture, and assisting them to produce, certify and market organic products. The *Adda-VNFU* project established 25 farmer groups producing organic products in nine provinces. On an area of 70 ha they produced organic vegetables, rice, orange, litchi, grapefruit, tea, fresh water fish and trained 120 farmers on organic production. The *ADDA-VNFU* organic project collaborates with *MARD* to support development of national organic standards and certification. In 2006 the government set up a national standard to guide organic productions. *ADDA-VNFU* also developed a *Participatory Guarantee System* (PGS) to promote organic vegetables for domestic market. Since 2008, other international NGOs such as IUCN/SNV (shrimp farming), *Veco* (vegetables), and research institutions like *CIRAD* (tea) are engaged with national partner institutions in clean agricultural practices, value chain development through different certification mechanisms: PGS, Geographical Indication, social certification, trademark registration. The private sector is also engaged in organic sector with companies directly involved in farming organic products for export (e.g. *Hiep Thanh - Ecolink*) The increasing number of stakeholders involved in organic agriculture are now organized in a *Vietnam Organic Association* (VOA).

In **Thailand**, the *Alternative Agriculture Network* and later on the *Sustainable Agriculture Foundation Thailand* spearheaded organic farming in the 1990s. Farmers' groups throughout north-eastern Thailand developed sustainable agriculture techniques based on the local ecology and expanded their positive impacts by training and educating other members of their communities through farmer field schools (FFS). In addition, joint activities with *La Via Campesina*, *Grain*, *ENGAGE*, and a number

of other international non-governmental organizations provide opportunities to publicize the situation of Thai organic farmers at the global level. The *Green Net Cooperative* has been registered as a cooperative under the Ministry of Agriculture and Cooperatives since 1993 to serve as a marketing channel for small-scale organic farmers by combining organic agriculture and fair-trade as its core policies. Green Net is a member of the International Federation of Organic Agriculture Movements (IFOAM) and the World Fair Trade Organization (WFTO). The *Earth Net Foundation* received registration as a non-profit organization in 2000. The Foundation's main objective is to promote and support initiatives related to production, processing, marketing and consumption of organic food, natural products and ecological handicrafts. Their main targets are small-scale producers and marginalized farmers. Beside promotion of organic agriculture in Thailand, these organizations have supported the emergence of organic movements in Yunnan and Lao PDR through exchange visits and collaborations with International NGOs active in the neighbouring countries. The Thai Organic Trade Association (TOTA) was founded in 2005 with a common goal to enhance the organic movement in Thailand. Over the years, the TOTA has become an important player of organic business in the country. The TOTA members consist of private companies involved with certified organic production and trade.

The *agribusiness sector* also initiated organic projects. Local entrepreneurs with linkages to overseas markets have seen business opportunities in the emerging organic markets. As they often lack knowledge on organic production, they engage local researchers and government agencies in helping them with farms' conversion. They also tend to use services of foreign organic certification bodies as suggested by their overseas trading partners. These early pioneers appear to be the large-scale business with export facilities, however, as the domestic market emerges, more and more of smaller local business and entrepreneurs come into the scene. In the last few years, several new organic business projects were launched and have become important actors in the Thai organic movement.

The active engagement of the *Thai government* in organic agriculture since the early 2000s helped farm conversion to organic practices for both domestic market and exports. Since 2005, Thailand's National Organic Development Plan is supported by various government agencies from 3 main ministries: Ministry of Agriculture and Cooperative, Ministry of Commerce, and Ministry of Science and Technology and coordinated by the National Economic and Social Development Board.

In **Yunnan**, like in other parts of China, organic agriculture is expanding rapidly. In China, organic production is mainly targeted to overseas markets and controlled by overseas-based certification companies. In the case of Yunnan, the production of organic foods and other products is mostly targeted to the Chinese market. However, certification processes are too costly, and some producers cannot renew the certification of their products. It is interesting to observe that these producers still use the term "organic", relying on the confidence they have been able to build up among their clientele. Organizations like the *Pesticide Eco-Alternative Centre* (PEAC) are trying to counter this situation by establishing *Participatory Guarantee Systems* (PGS). PEAC, established in 2002, is a non-profit, non-governmental organization dedicated to the collection, extension and advancement of ecological alternative forms of pest control, elimination of chemical pesticides and development of ecological and organic agriculture, so as to protect both human and environmental health and further promote sustainable development. Policy advocacy is aimed at raising the awareness of decision-makers for pesticide risks. PEAC counts among its major successes that a number of

chemical pesticides have been banned as a result of its campaigns. PEAC is committed to build up an action network for the reduction of pesticide use and its risks. Its activities were initially limited to Yunnan, but have by now spread all over China. PEAC is strongly interested in forming an international network with the commitment to reduce chemical pesticide use. A previous visit to Thailand through which PEAC staff have learned about the strong support of organic farming by the government through e.g. paying certification fees for farmers, has shown them the value of learning from different countries in the same region. Similar initiatives by non-profit organizations are worth noticing such as the *TianZi Biodiversity and Development Center* established near Jinghong in Xishuangbanna or the *Centre for Biodiversity and Indigenous Knowledge* based in Kunming, which promotes organic and traditional products, conservation of traditional land uses as well as conservation of traditional livelihoods along with the environment that sustains them.

In addition to smallholder agriculture, there is a large number of *organic farms* in Yunnan. The biggest farm, *Huabao Qing Organic Farm*, located just outside of Kunming, is mainly catering to the domestic market. *Manlao River Organic Coffee Plantation*, located near Pu'er in SW Yunnan, 500 km away from Kunming, started in 2004 and produces organic coffee on 100 ha out of a total of 10,000 ha farmland.

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#### COMPARATIVE ANALYSIS

The comparative analysis in the six countries shows that *organic agriculture emerged recently* with the notable exception of Thailand. *Volumes and areas of production are still marginal* in all countries but they are expanding rapidly, especially in China, under the pressure of better informed customers and export-market opportunities. Most stakeholders in the organic sector have started their activities during the past decade and are gradually getting organized with the support of relevant government agencies. In all countries, except Laos, *organic agriculture associations* have been created to coordinate the different initiatives.

*Organic certification and regulation* have been playing a key role in the expansion of the organic sector. National networks are in most cases organized around certification schemes which, however, are applied mainly to products for export in order to gain confidence of overseas consumers. In the domestic market, very little organic products are certified as the cost for independent certification would increase too much their organic price premium. Other mechanisms for building trust between producers and consumers are being explored to overcome these issues, such as *Participatory Guarantee Systems* (PGS). They are however still isolated initiatives or still at their initial stages of testing in the region (e.g. regional ADB project on PGS).

Since 2013, the organic agriculture sector also benefit from the support of the *IFOAM-Asia* that is aimed at coordinating activities in the region from its office in South Korea. IFOAM Asia is planned to work in synergy alongside Global IFOAM to more effectively further the organic movements in Asia. It is a regional self-organized structure and a non-profit, membership-based organization, open to all IFOAM affiliates and other stakeholders of Organic Agriculture in Asia.

*Towards Organic Asia (TOA)* is a project-based regional network aimed at strengthening organic agriculture in the region though partnership with national NGOs focus specifically on organic agriculture. For example, PADETC in Laos is one of its partners. Since 2011, Towards Organic Asia is managed by the coordinating team based at School for Wellbeing Secretariat Office in Bangkok, and

works in collaboration with CCFD – Terre Solidaire, Thailand Green Market Network and Suan Nguen Mee Ma social enterprise.

*Other national or regional networks* have been identified which also contribute to the development and expansion of organic and sustainable farming systems. Their main areas of intervention are: civil society strengthening (Civil society partnership development effectiveness, NPA networks), farmers' organizations (Asian Farmer Association based in the Philippines), value chain development (Sub-working group on agro-business in Laos) or pesticide use reduction (Pesticide Action Network Asia Pacific). A big challenge of these organic networks is to differentiate themselves from initiatives led by international agrochemical companies (e.g. Syngenta, Monsanto) that use the same extension approaches (e.g. FFS) and slogans (e.g. rationalizing input use, climate smart agriculture) to promote their products with smallholders.

## 2. FROM INTEGRATED PEST MANAGEMENT TO INTEGRATED CROP MANAGEMENT

### INTRODUCTION

Integrated agriculture provides high quality food and other products by using natural resources and regulating mechanisms, instead of polluting chemical inputs, to secure sustainable farming. The agronomic techniques and biological / physical / chemical methods are carefully selected and balanced taking into account the health of people (i.e. farmers and consumers) and of the environment.

#### **Integrated Agriculture principles** ([http://www.iobc-wprs.org/ip\\_ipm/IOBC\\_IP\\_principles.html](http://www.iobc-wprs.org/ip_ipm/IOBC_IP_principles.html))

1. Integrated agriculture is applied holistically (i.e. relies on ecosystem regulation)
2. External costs and undesirable impacts are minimized (e.g.: nitrate contamination, erosion are minimized)
3. Farm is the unit of implementation (i.e. strategies such as balanced nutrient cycles, crop rotations and ecological infrastructures, become meaningful only if considered over the entire farm)
4. Farmers' knowledge must be regularly up-dated (e.g.: regular trainings)
5. Stable agro-ecosystem characteristics must be maintained (i.e. least possible disturbance)
6. Nutrient cycles must be balanced and nutrient losses minimized (e.g. leaching), replacement of nutrient exports through sales of commodities, and recycling of farm organic residues
7. Intrinsic soil fertility must be preserved and improved (i.e. fertility is a function of balanced physical soil characteristics, chemical performance and balanced biological activity, including fauna.
8. Integrated Pest Management is used for crop protection (e.g. priority to preventive methods)
9. Biological diversity enhanced (i.e. reduction of pesticide uses thanks to well managed biological diversity)
10. Total product quality is sought (i.e.: including non-visible production and social criteria)
11. Welfare of animal must be guaranteed

Integrated Pest Management (IPM) is defined as “the use of all appropriate techniques of controlling pests in an integrated manner that enhances rather than destroys natural controls. If pesticides are part of the programme, they are used sparingly and selectively, so as not to interfere with natural enemies” (Speerling and Scheidegger, 1995). IPM programs use observation-based information on the life cycles of pests and their interactions with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people and the environment. IPM takes advantage of all appropriate pest management options including, but not limited to, the judicious use of pesticides. In contrast, organic food production applies many of the same concepts as IPM but limits the use of pesticides to those that are produced from natural sources, as opposed to synthetic chemicals.

*FAO introduced IPM concepts through Farmer Field School (FFS) in Mekong countries (Thailand, Laos, Vietnam and Cambodia) from 1992-98 based on previous experience in Indonesia. In 1986, serious infestation of brown plant hopper (BPH) damaged almost the entire rice crop in central Java of Indonesia. The government of Indonesia asked experts to investigate this problem. They explained that when insecticides are sprayed in rice fields the beneficial insects are killed leading to uncontrollable outbreaks of destructive insects. The FAO Inter-Country Program for Community Integrated Pest Management (CIPM) was then designed to build farmer's skills in taking more immediate and self-reliant crop management decisions themselves. This marked the beginning of the FAO-IPM activities at regional scale. In each country, including Yunnan region in China (not reported below), FAO worked through relevant government agencies under ministries of agriculture.*

*Farmer field schools (FFS) were systematically used as extension approach. FFS is a learning process based on farmer observation and analysis of the agro-ecosystem. Although the FFS was originally designed and applied in the context of IPM projects, it has been adapted to other development issues. Particularly important from the perspective of agro-ecology was the work on 'living soils'. This became a topic in regular IPM Field Schools, and in some cases it became the basis for FFS on *Integrated Soil Management (ISM)*. The aim of the ISM training, just like IPM, was to get farmers and extension agents to apply a scientific process (i.e. simple experiments, collection and analysis of data) that helps them to understand interactions between different elements of the local agro-ecosystem and the impact of different interventions.*

Gradually, the national IPM programs shifted to *integrated crop management (ICM)*, as they included good use of fertilizers, identification of pest, their impacts and control, and post-harvest techniques. In all countries (except China where FAO-IPM program was not implemented), national IPM networks, initially supported by FAO and managed by government extension systems gradually expanded their membership to include international and national NGOs and *diversified their activities from pest management to crop and soil management.*

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#### A REVIEW BY COUNTRY

In **Cambodia** the pilot phase of the national IPM program carried out by the Department of Agronomy and Agricultural Land Improvement (DAALI) of MAFF started in 1993 with the assistance and financial support from IDRC, IRRI and FAO. In 1997, Cambodia joined 12 other countries as part of the *FAO Southeast Asia Regional Vegetable IPM Program* with core technical and financial support for farmer training from FAO and various donors such as World Bank, UNDP, DANIDA, AusAID, EU. By

2000, the program had spread in 14 provinces, focusing on rice, vegetables, mungbean, chili and cassava productions. According to MAFF (2012), 160,000 farmers were trained through the national IPM program, involving 2530 farmers-trainers, and 673 district staff trainers from the agricultural department in the training. At the end of the FAO regional program in 2001, *Srer Khmer - meaning Field of Cambodia* – was established by a group of former staff of FAO Community IPM Program as a local NGO providing support to the national IPM program. Others organizations have also contributed to the continuation of the program beyond FAO initial support. For example, DANIDA IPM training project named - reduction in use of hazardous insecticides in rice - has been implemented In Cambodia since 2000. The impact evaluation of the project conducted in 2004 showed mixed results with the reduction of 43% in insecticide use from 2.9 to 1.6 applications per season and a decrease of pesticides volume of 64% mainly on hazardous pesticides. However the evaluation reports also large differences in pesticide volumes between provinces. Yield and profits were not significantly affected by training, exposed farmers showed a pesticide use similar to non-FFS farmers, and finally a limited diffusion of knowledge and practices within-village (Van den Berg, 2004). DANIDA IPM project ended by the establishment of Agriculture Technology Services Association (ATSA) which aims to carry over the achievements, impacts, networks and structures created during the 5 years project.

In **Laos**, FAO started to promote IPM practices in 1996 in collaboration with the MAF (plant protection research centre) by the establishment of Farmers' Field Schools (FFS) in Vientiane capital for *paddy rice* production systems. The promotion and development of IPM practices for *vegetable* production systems started 4 years later (2000) also in Vientiane capital. Since then many international/national projects (e.g. ABP, AgriSud, SNV, Oxfam Belgium with ASDSP) collaborated with local agricultural authorities to promote IPM practices. In 2013, *the IPM program is active through the Provincial Agriculture and Forest Offices (PAFO) in all provinces* for paddy rice production systems and in 8 provinces for vegetable production systems (Vientiane, Vientiane capital, Xieng Khouang, Oudomxay, Luang Namtha, Phongsaly, Sayaburi and Champassak).

In **Myanmar**, IPM trials were conducted throughout the country after 1986, by the IMP Unit of the Plant Protection Division of Myanmar Agriculture Service. In 2003, *UNDP-HDI programme adopted the Farmers' Fields School (FFS) approach* to build the capacity of farmers to learn pest management and IMP approach. With assistance from UNDP/FAO FFS-based IPM was diffused by the Agriculture Department. The approach appeared to be top down by calling upon the government head office to offer farmers FFS trainings on IPM. Later on the FFS-based IPM training and farmers capacity building process were primarily carried out by the UN-systems agencies such as FAO, UNDP and NGOs. World Concern Myanmar, Yangon –based INGO, worked with IPM programme from 2005 to 2012. Gret has also introduced IPM in Northern Rakhine state between 2005 and 2008 through a Farmer Field School approach addressing both rice and vegetable production (IPM was one of the component of the FFS curriculum).

In **Thailand**, FFS-based IPM was also promoted by FAO since the *end of the 1980s*. In the 1990s, however, IPM implementation slowed down to nearly nil due to technology transfer-oriented approaches by entrenched plant protection and extension systems, as well as close and mutually-

beneficial relationships between many government staff and the agrochemical industry. In many agriculture intensive regions, *private extension services provided by agrochemical companies pushed farmers to an ever increasing use of pesticides*, trapping farm households in a treadmill of insect resistance and debts. Faced with increasing environmental and economic problems due to pesticides abuses, *IPM principles were revived in the later part of the 1990s*. The Ministry of Education, with support from FAO-CIPM and *Thai Education Foundation (TEF)*, pioneered IPM activities with primary school children, a program that caught the interest of both central level planners and the media. Shortly thereafter, the *Education Ministry's Department of Non-Formal Education (DNFE)*, also collaborating with the CIPM and TEF, began conducted training courses for their staff and field schools for both farmers and DNFE students. The other major development during this period came with Royal support to IPM and field schools, with the creation of the *Institute of Biological Agriculture and Farmer Field Schools (IBAFFS)* in the Department of Agriculture Extension (DOAE). The CIPM provided IPM trainers from the region and partial financial support for the initial training courses undertaken by this institute under a Royal Initiative, as well as those conducted by the DNFE. The FAO IPM strategy for Thailand ([www.vegetableipmasia.org](http://www.vegetableipmasia.org)) is designed towards assisting Programme partners (Government, Royal Project, NGOs, DANIDA project) in implementing IPM training and assistance towards development of alternatives to toxic pesticides.

In **Vietnam**, the National IPM Program was established in 1990 with support from FAO to address concerns regarding heavy reliance on chemical inputs in crop production and protection, negatively affecting smallholder farmers, their livelihoods, consumer health and the environment. As in other countries, the IPM Program originally aimed to improve farmers' decision-making capacities by enhancing their knowledge and skills to reduce the widespread use of insecticides *first on rice production, then on others crops such as tea, vegetables, corn*. The National IPM Program was managed by the *Plant Protection Department (PPD)* under the Ministry of Agriculture and Rural Development (MARD). Starting from 1996, the MARD encouraged provincial governments to establish *Clean Vegetable Program* as a response to public concern after studies detected high levels of pesticide residues in fruits and vegetables. Through provincial funds, these provincial government programs organized training activities on safe vegetable production in almost all of Vietnam's 64 provinces. In recent years, FAO has supported the Vietnam government's efforts in expanding the number of qualified trainers as well as strengthening the content and methodology of the trainings by introducing the season-long IPM FFS approach as the farmer education model. During implementation PPD has received direct support from many entities, including a variety of FAO-funded IPM programs (for rice, vegetable, cotton), the IPM component of the Agriculture Sector Program Support (ASPS), the *Biodiversity Use and Conservation in Asia Program (BUCAP)*, and some other agencies and NGOs (e.g. DANIDA, Adda, SEARICE, ACIAR, CIDSE). For example the NGO *Agricultural Development Denmark Asia (Adda)* trained more than 11 000 farmers on IPM vegetables management between 1999 and 2005, showing a significant decrease of insecticides and fungicides use on the target crops. A total of 1,132,654 farmers from 22 provinces of Vietnam have been trained on rice IPM.

IPM has been widely spread in all countries in the last twenty years. Diffusion has been done through Farmer Field Schools (FFS) with strong involvement of the government ministries (agriculture or education) and support from FAO.

As FAO partners have been trained over long periods they have gradually become autonomous and required less direct support. The *Field Alliance* ([www.thefieldalliance.org](http://www.thefieldalliance.org)) was created in 2002 to support and build upon activities similar to those that were supported by the FAO sponsored Regional IPM program. Those activities include: the development and application of farmer educational approaches such as the Farmers Field School (FFS), community planning, farmer action research, participatory pesticide surveillance studies, local and international advocacy, farmer based information and evaluation systems, and environmental education in rural schools. The Field Alliance consists of a Regional Group, National Partners, and Collaborating Organisations. The National Partners are either new NGOs established to play a role similar to the Field Alliance at a country level or existing national NGOs that share the vision of the Field Alliance and have previously implemented IPM training programmes. National partners manage activities in cooperation with a wide range of collaborating organisations, such as community groups, farmers associations, NGOs, local and national government. The Regional Group provides support to National Partners, especially in Indonesia, Cambodia and Thailand.

Unlike organic agriculture that certifies products, IPM has no certification and then do not require additional certification costs but on the other hand do not generate additional incomes through higher farm-gate prices. *Good Agricultural Practices (GAP) standards aim at recognizing good practices in the absence of certification of agricultural products.* The diffusion of GAP is a multidisciplinary area of work in FAO which has attracted a significant and growing demand for assistance. Over the period 2003 – 2005, FAO has carried out a number of activities and consultations related to GAP, focusing on information provision, technical assistance and capacity building to help developing countries cope with changing and globalizing food systems and the proliferation of GAP standards. A *GAP Working Group* has been established in this context in 2004, bringing together FAO experts on food safety and quality, marketing, commercialization and trade, plant production, animal production and health, forestry, fisheries, policy assistance and institutional strengthening. All countries in the region were then sensitized to *GAP standards* in a movement to reward best practices in crop management. While commending efforts have been made to improve agricultural standards through GAP, there is a consensus among actors of agro-ecology that GAP is far from their objectives and is often used to cover agrochemical companies in their promotion of conventional practices using GMO seeds and/or chemical fertilizers and pesticides.

A large number of international and national NGOs have supported integrated farming systems as part of their sustainable agriculture and good agricultural practices endeavours. Under these numerous projects different practices have been combined and adapted by local farmers to their objectives, capacity and needs. Such projects have been reported in all Mekong countries, they build on production systems that have long been practiced in South East Asia and traditionally consist in a mix of crops, livestock and trees managed in an integrated manner.

### 3. HOMEGARDEN – NEW THEORY FARMING AND VAC

#### INTRODUCTION

This section addresses integrated farming approaches that have been promoted as alternatives to Green Revolution agriculture since the 1990s for *self-sufficient farming*. The **New Theory farming system** in Thailand and **VAC system** in Vietnam (VAC in Vietnamese is Vuon, Ao, Chuong which means “garden/pond/livestock pen”) consist in highly bio-intensive methods of small-scale farming in which food gardening, fish rearing and animal husbandry are integrated. These intensive farming practices, which integrate food and energy systems, makes optimal use of land, water and solar energy in order to achieve high economic efficiency with low capital investments.

#### VAC principles (<http://www.fao.org/docrep/005/Y1187E/y1187e10.htm>)

1. Integrated management of garden, fish pond and livestock.
  - a. Some products from garden are used to feed fishes.
  - b. Fish pond provides water, mud and slime for irrigating and fertilizing the garden.
  - c. Some fishes and weeds can be used for livestock nutrition.
  - d. Animal manure is used for feeding plants and fishes.

Like for all integrated farming systems, the output from one subsystem becomes an input to another sub-system resulting in a greater total effect than the sum of the individual sub-systems.

Other schools mentioned in the countries reports such as permaculture or natural farming go along the same lines, differing more by their philosophic background than their actual practices. Permaculture promotes consciously designed landscapes which mimic the patterns and relationships found in nature, while yielding an abundance of food, fibre and energy for provision of local needs. Main ethic principles are: to take care of the earth (provision for all life systems to continue and multiply), to take care of the people (provision for people to access those resources necessary for their existence), to set limits to consumption and reproduction, and redistribute surplus (healthy natural systems use outputs from each element to nourish others).

#### Permaculture principles (<http://holmgren.com.au/about-permaculture/>)

1. Observe and interact: taking time to engage with nature we can design solutions that suit our particular situation.
2. Catch and store energy: develop systems that collect resources at peak abundance.
3. Obtain a yield: Ensure to get truly useful rewards as part of the work done
4. Apply self-regulation and accept feedback: discourage inappropriate activity to ensure that systems can continue to function well.
5. Use and value renewable resources and services: make the best use of nature's abundance to reduce consumptive behaviour and dependence on non-renewable resources.

6. Produce no waste: Value and make use of all the resources that are available.
7. Design from patterns to details: observe patterns in nature and society, which can form the backbone of the designs.
8. Integrate rather than segregate: put the right things in the right place, fostering relationships between elements so that they work together to support each other.
9. Use small and slow solutions: small and slow systems are easier to maintain than big ones, making better use of local resources and producing more sustainable outcomes.
10. Use and value diversity: diversity reduces vulnerability to a variety of threats and takes advantage of the unique nature of the environment in which it resides.
11. Use edges and value the marginal: the interface between things is where the most interesting events take place. These are often the most valuable, diverse and productive elements in the system.
12. Creatively use and respond to change: it is possible to have a positive impact on inevitable change by carefully observing, and then intervening at the right time.

In **natural farming**, the means of production is the power of nature. One almost feels that natural farming means production by nature for the benefit of nature. It involves neither tilling nor giving fertilizer. It does not need watering or weeding.

#### Natural farming : principles

<http://www.rivendellvillage.org/Natural-Way-Of-Farming-Masanobu-Fukuoka-Green-Philosophy.pdf>

1. No ploughing – because it destroys the cycles of life in the soil,
2. No fertilisers – because they deplete the land from which they are taken and disrupt the balance of the soils on which they are used,
3. No pesticides – because there are no ‘pests’,
4. No weeding – because there are no ‘weeds’,
5. No pruning – because a tree left undisturbed knows far better how to grow

As permaculture and natural farming are still marginal in the region, they are therefore not explicitly dealt with in this comparative analysis across countries.

#### A REVIEW BY COUNTRY

In 1993, His Majesty the King Bhumiphol Adulyadej of **Thailand** proposed a new agricultural theory based on the concept of “*Sufficiency Economy*”. The integrated agriculture and aquaculture system is designed for small-scale farms and takes advantage of the mutually reinforcing linkages between crops, fish and livestock. Under the “*New Theory*”, farm land is divided into 30% rice paddy for self-consumption, 30% field crops, orchard and vegetables, 30% fish pond and 10% living space and livestock raising. Since 1995 the *Office of the Royal Development Projects Board* has introduced the New Theory farming system to farmers all over the country through a number of royal projects. With the cooperation with *Royal Development Study Centres* located in each region, local agricultural

cooperatives and government units such as the Department of Agricultural Extension, the royal projects distribute seedlings or livestock breeds that have been developed and proved suitable for the area.

The integrated agriculture and aquaculture farming system was introduced into Northeast Thailand as a solution to the failure of conventional agriculture. Intensive home garden systems on limited area were promoted to improve livelihoods in the poorest region of Thailand through self-sufficient family-based farming. More recently the *Thai Department of Agricultural Extension (DOAE)* has encouraged farmers to convert to an integrated farm system by stressing the potential increase in income and the decreased risk involved with the production of a variety of produce instead of a single crop under a monoculture system. The DOAE uses a variety of methods to extend the idea of integrated farming including arranging farm visits for farmers to model integrated farms; *regional competitions such as the 'Best Integrated Farm in the Eastern Region'*; and seminars for farmers to learn about, and discuss, the mechanics of integrated farming.

The *Royal Project Foundation* ([www.royalprojectthailand.com](http://www.royalprojectthailand.com)) implements the New Theory across the whole country through research, development and marketing activities. It provides high quality fruits, vegetables, flowers, coffee, fish and meat (chicken, rabbit and pork) to some of Bangkok's most prestigious restaurants. All Royal Project fruits and vegetables minimally *meet the Good Agricultural Practices (GAP) regulations*, while they also have a percentage of products that meet *Global GAP codes* or even meet *organic standards*.

The VAC system developed in **Vietnam** around the same period based on traditional gardening in the fertile Red River Delta. VAC is an acronym of three Vietnamese words: "Vuon" meaning garden or orchard, "Ao", meaning fish pond, and "Chuong", meaning animal sheds. Like in the case of New Theory farming, VAC provides diversified agricultural products to meet the complex nutritional demands of *self-sufficient households based on ecological knowledge intensive technique and recycling strategies*. Annual income through VAC farming can be three to five times higher than that derived in the same area from growing two rice crops per year (Morrow, 1995). The VAC system was introduced by the government after the country opening to market economy in 1986. It was considered as a good alternative to increasing use of chemical products by individual farmers after the agricultural cooperatives were dismantled.

VACVINA was founded in 1986 to (1) promote sustainable agriculture, (2) increase economic and social efficiency of the VAC system, (3) support agriculture diversification into the VAC system, (4) help and consolidate family and collective VAC. There are *Vacvina branches in 30 provinces*. Today the *Vietnam Gardening Association* has about 900,000 members. 2,500 staff from the Vietnam Gardening Association were trained in ToT on VAC Integrated systems. The Vacvina movement also promotes the *production and use of biofertilizers* (reducing NPK fertilizer by 40-45%). VAC and biogas have been promoted and supported nationwide. VAC has integrated biogas with Vacvina Bio-digester, turning waste into energy. Since 2010, a national program supported by SNV and other INGOs promotes biogas production in all regions of the country.

## COMPARATIVE ANALYSIS

These two examples illustrate national level initiatives / policies which translated into large movements involving a multitude of smallholders. Other initiatives of the same kind have developed in other Mekong countries at more local scales. For example, Gret and a local partner, Mangrove Service Network (MSN), have started testing and introducing such Integrated Farming Systems in the Delta of Ayeyarwaddy in Myanmar after Nargis typhoon (2010 till now).

These initiatives should be recorded in a systematic way to better assess the importance at the regional level of these labour-intensive small-scale farming practices combining food gardening, fish rearing and animal husbandry.

## 4. SYSTEM OF RICE INTENSIFICATION

### INTRODUCTION

The System of Rice Intensification, known as SRI is an agro-ecological approach for increasing rice productivity (and more recently other crops) by changing the management of plants, soil, water and nutrients.

#### **SRI principles** (<http://sri.ciifad.cornell.edu/aboutsri/methods/index.html#SRIprinciples>)

1. Early, quick and healthy plant establishment (e.g. seedlings less than 15 days)
2. Reduced plant density (e.g.: 1-3 seedlings/hill, 25 to 40 cm spacing)
3. Improved soil conditions through enrichment with organic matter (e.g.: natural fertilizer)
4. Reduced and controlled water application (e.g.: only minimum water, keep soil moisture)

The System of Rice Intensification (SRI) was originally developed and promoted by Father Henri de Laulanié in Madagascar in the 1980s. It aims at maximizing the rice crop productivity with lower resource utilization of such inputs as water and fertilizer. Basic principles of SRI are i) rice seedlings are transplanted very young (usually 8-12 days old), which preserves the original seeds nourishment potential by around 40-50% and thereby optimizes the potential for tillering and root growth, 2) a single seedling is transplanted per hill instead of 3-4 together to avoid root competition, 3) seeding spacing is widened to 30 cm x 30 cm or more to provide room for profuse root and tiller growth by allowing the plant to monopolize the soil fertility and sunshine energy, 4) soil is kept moist but well-drained, aerated and a minimum of water is applied during the vegetative growth period, and then only a thin layer of water is maintained on the field during the flowering and grain filling stage, 6) weeding is necessary at least once or twice, starting 10-12 days after transplanting, and preferably 3 or 4 times before the canopy closes. Using a rotary hoe - a mechanical push-weeder - has the advantage of aerating the soil at the same time that weeds are eliminated and are left in the soil to decompose so their nutrients are not lost. In addition to the basic concept above, provision of

organic matter (compost) to the soil has been recommended to help achieve sustainable SRI cultivation practices.

Like for other agro-ecological practices, not all principles are systematically adopted by farmers as a full package. The figures provided about the rapid expansion of SRI in the region therefore mask the large discrepancy between the principles (i.e. components of the practice) that area actually adopted.

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#### A REVIEW BY COUNTRY

In **Cambodia**, SRI was initially promoted by the national NGO named *CEDAC* - Center for Studies and Development of Cambodian Agriculture - with the support of *GIZ Rural Development Program* since 2000. SRI was initially tested in the two pilot provinces of Kampot and Kampong Thom. MAFF has lent large credibility to this innovative practice by setting up a *SRI Secretariat* under the coordination of DAALI and in cooperation with CEDAC. SRI practice were further *included in the National Strategic Development Plan (NSDP) and policy frameworks for 2006-2010*, which aimed to improve rice production and contribution to poverty reduction of farmers in Cambodia. In 2007, 80.000 farmers were involved in SRI and cropping 47.000 ha of rice with this innovative practice (Im Sothea, 2008).

SRI assessment studies conducted in Cambodia between 2004 and 2011 showed an increase of rice yield from 40 to 60%, a reduction of production costs as SRI requires lower amount of seed (50% decrease) and chemical fertilizers (50 to 70% decrease), and an increase of farmers' incomes and net profit. One key advantage of SRI is its ability to *show immediate results* during the first season of production, which allows farmers to get confidence in the technology and definitely facilitate the change from traditional practices to news agricultural system as very often change is related to a risk for smallholders' farmers. Currently several SRI training and dissemination programs can be found all over the country: governmental institutions at national and local levels, farmer organizations, local NGOs as well as international have been taking over this agricultural innovation and tried out in various context of intervention. As mentioned previously, the adoption of SRI practice (which encourage farmers to reduce the use of chemical pesticides and fertilizers) often paves the way to organic rice production.

In **Laos**, *Oxfam Australia* supported the Lao National Agriculture Research Centre (NARC) to introduce SRI techniques in Vientiane and Saravan provinces. Based on its own experiments, the *NARC concluded in 2001 that the likelihood of disseminating SRI throughout Laos was extremely slim* because of: 1) the generally poor water control and absence of individual water management, 2) the poor soil fertility in many areas that would require large quantities of organic fertilizers. More tests were done in 2006/07 by *Pro-Net 21* (a Japanese NGO) and the *ADB-funded Northern Community Management Irrigation Sector Project* (NCMI) with the *Department of Irrigation (DoI)* which demonstrated the feasibility of SRI in favourable environments. In 2008, the MAF issued an *official decree so that all provincial line agencies in the country would promote SRI*. As a result the DoI has actively extended SRI techniques in all irrigated areas together with different organizations such as CUSO-VSO, SAEDA, WWF or ADRA Japan. In 2010, the total area under SRI (including NCMI and Pro-Net 21 projects) was 3625 ha for 10666 households.

Impact assessments of the NCMI project has shown that adoption of the SRI techniques has been relatively high in Luang Prabang province (up to 60-70% in some villages) due to the presence of favourable factors such as small paddy areas and high availability of family labour force (due to little external employment opportunities during the dry season). On the opposite, adoption rate is not so good in the other Northern provinces, mainly due to low availability of family labour during the dry season.

In **Myanmar**, SRI was first introduced to the IPM-FFS trainings in 2000 under the project of the *Metta Development Foundation* in Kachin State. The rice yields could be doubled in a single year, bringing a lot of interest for the new practice. Since 2001, Metta conducted more than 600 FFS with SRI in Kachin State with the support of MISEREOR and Swiss Aid. The *GRET-CORAD* project team conducted training sessions in Northern Chin State, *GAA* (German Agro Action) in Wa Region and Ayaryawady Region and *World Concern* in Kachin, Northern Shan and Mon State. A Consortium of 20 local NGOs, known as *Food Security Working Group* is also supporting SRI trials. The rapid adoption of the SRI is mainly due to its dissemination through *Farmer Field Schools (FFS)*. In 2008, the Metta Foundation, estimated that about 50,000 farmers in Kachin and Shan States are using some combinations of SRI method. In the Kachin State project, the average rice yield under SRI method was 5.5 t/ha compared with traditional yield of 2.5 t/ha.

In **Thailand**, like in Laos, the *initial trials of SRI conducted in 2001 by the Multiple Cropping Center (MCC) at Chiang Mai University were not successful*. However, continued evaluations by MCC and others led to a *national SRI network*, which was formalized at a national SRI workshop held in Chiang Mai in May 2003 (<http://sri.ciifad.cornell.edu>). Since 2005, researchers at the *Asian Institute of Technology* engaged with the CGIAR Challenge Program on Water and Food to support participatory action research with farmer field school groups to evaluate SRI. SRI was introduced to villages in northeast Thailand through action-research. Successive SRI projects were then conducted by AIT in Thailand and in the Lower Mekong Basin and have been institutionalized in 2013 with the creation of the *Asian Center of Innovation for Sustainable Agriculture Intensification (ACISAI)* at AIT. Despite all these research efforts, *SRI is expanding quite slowly in Thailand as intensive mechanised rice cultivation systems dominate, with most of the rice paddies being directed seeded*. SRI potential can be found in subsistence based households such as the ones targeted by the New Theory farming as mentioned above.

In **Vietnam**, SRI was initially *tested in 2005* in 14 provinces across the country, with promising results (e.g. reduction of seed quantities by 70-90%, nitrogen applications by 20-25%, and yield increase by 9-15%). Healthier crops led to better resistance to pests and diseases, and to a significant reduction of pesticides use in the field. SRI technique rapidly became popular among farming communities. In 2007, the *Science Council of MARD recognized SRI as a scientific advance*. MARD issued an official request to DARDs in Northern region to support SRI expansion. In 2008, 95,000 farmers were using SRI on 33,000 hectares of paddy in Ha Tay Province. The *Plant Protection Division of MARD* worked with Oxfam America in Hanoi, Thai Nguyen, Bac Kan, Phu Tho, Ha Tinh, and Nghe An Provinces. SNV engaged with 13,000 beneficiaries on 500 ha in the provinces of Quang Binh and Binh Dinh. A study by the Centre for Agrarian systems research and Development (CASRAD) (Dao the Anh et al., 2012

Assessment of policies and public service impact rice cultivation technique based on SRI principles applying on large scale) investigated the potential of SRI for inclusion in the policy actions of the Action Plan for Climate Change of the Ministry of Agriculture and Rural Development. They found that IPM, ICM and SRI are compatible with the government policies to reduce input use in rice production and could also help reducing emissions of greenhouse gases. The '3 reductions - 3 increases' (3G-3T) policy consist in reducing the use of seeds, chemical fertilizers and pesticides while increasing productivity, quality and economic efficiency. The '1 must - 5 reductions' (1P-5G) policy consists in (1 must) using certified seeds while (1) reducing quantity of rice seeds, (2) nitrogen fertilization, use of (3) pesticides and (4) water, (5) reduction of post-harvest losses.

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#### COMPARATIVE ANALYSIS

SRI expanded rapidly in Cambodia, Laos, Myanmar and Vietnam where there was a real “*agro-ecological potential*” (size of the paddies, water control, manual practices relying on family labour force, etc.), strong *support from government agencies* from national to local levels, *Farmers Field School (FFS)* used as extension approach, good *potential for production cost reduction* in terms of fertilizers and seeds, etc. In these countries the actual impact is localized in high potential areas and SRI does not reach all rice farming households because of constraints related to available labour force, quality of the irrigation-drainage systems, etc. Assessments conducted in Cambodia have pointed out *the constraints to SRI adoption*: (i) SRI increases labour requirement for weeding, transplanting and water management (Deichert and Koma, 2002), (ii) its implementation is difficult on big rice paddy areas, (ii) few farmers practice the whole set of the 12 principles (some of them are not able to use compost, drain water or transplant young seedling as most of agricultural production system relies on natural rainfall), (iv) It takes several years for farmers before they become skilful in applying SRI practices (Koma and Siny, 2004), (v) SRI requires intensive training with a high demand for human and financial resources (Anthofer, 2004). Similar constraints have been pointed out in Laos, Myanmar and Vietnam that explain the heterogeneous diffusion patterns of this practice.

As a consequence, the *Ministries of Agriculture are supporting a dual rice system*, focusing on technology-based production (e.g. hybrid rice, direct seeding, mechanized practices) in large irrigated paddies managed by better-off farmers and, on the other hand, *supporting poor smallholders in applying ecological knowledge-intensive SRI on their small paddies*. The priority given by Thai and Chinese farmers to technology-based, mechanised agriculture explains why SRI has still a very limited impact in these countries. Its adoption is limited to small farmers who have tested the system by conviction (i.e. ecological awareness) or because they do not have access to other technical options to intensify their production.

## 5. CONSERVATION AGRICULTURE

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#### INTRODUCTION

Conservation Agriculture (CA) is an agro-ecosystems management approach aimed at improving and sustaining agricultural productivity, increasing profits and food security while preserving and

enhancing the resource base and the environment. CA is characterized by three interrelated principles.

#### Conservation Agriculture principles (<http://www.fao.org/ag/ca/index.html>)

1. Continuous minimum mechanical soil disturbance (direct planting of crop seeds)
2. Permanent organic soil cover (crop residues and cover crops)
3. Diversification of crop species grown in sequences and/or associations.

While the FAO definition is provided above, conservation agriculture may have different meaning for different people and should therefore be clearly defined. The term *conservation was initially used in relation to agriculture for the purpose of soil and water conservation*. A large array of soil and water conservation techniques were researched and tested with Asian upland farmers in the 1980s and 1990s. They usually consist in installing hedgerows or vegetative strips (e.g. vetiver) along contour lines. For example, the *Sloping Agricultural Land Technology (SALT)* consists in using tree and shrub legumes for improving the fertility and stability of agricultural soils. It was initially developed in the southern part of the Philippines and then rapidly spread all over the world. SALT can easily evolve towards improved fallow or agro-forestry systems depending on the management types. These erosion control practices have been systematically documented and promoted by global *soil and water conservation networks such as the World Overview of Conservation Approaches and Technologies (WOCAT - [www.wocat.net](http://www.wocat.net))* or the *World Association of Soil and Water Conservation (WASWAC - [waswac.soil.gd.cn](http://waswac.soil.gd.cn))*.

*Conservation agriculture practices*, consisting in no tillage or minimum tillage combined with permanent soil cover through mulching or cover crops and systems of crop association or rotations have been tested by different soil and water conservation projects in the region, including for example the Land Development Department of the Thai Ministry of Agriculture and Cooperatives ([www.ldd.go.th](http://www.ldd.go.th)), agricultural universities (e.g. Kasetsart, Khon Kaen, Chiang Mai, Maejo) and Royal Projects. In the Philippines, these practices promoted by the *Landcare movement* with the support of ICRAF somehow mixed soil conservation approached with no tillage and agro-forestry systems in such a way that it becomes difficult to precisely name the agricultural systems practiced by upland farmers. Also, like for organic farming, SRI and other practices, farmers engaged in conservation agriculture often do not adopt the complete set of principles, which is often a source of confusion about measurements of what is actually adopted by farmers at to what extent.

*Since the early 2000, the three principles of conservation agriculture, namely:*

- Soil is permanently covered (mulch or living cover)
- Soil is neither ploughed nor even superficially tilled (sowing is done directly through soil cover, mechanically or chemically controlled beforehand)
- Biodiversity is enhanced by implementing rotations, successions and associations with cover plants

have been popularised by *CIRAD* through its action-research projects in Vietnam, Laos, Cambodia and Thailand. During the stakeholder workshops and consultations organized as part of this feasibility

study, the scope of conservation agriculture was somehow reduced to CIRAD's activities in the region and supported by the *Conservation Agriculture Network for South East Asia (CANSEA)*.

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#### A REVIEW BY COUNTRY

In **Cambodia**, conservation agriculture started in 2004 with the experiments on crops diversification and *direct sowing mulch cropping system* (DMC) implemented by CIRAD as part of a rubber development project (2004/2008). From 2008 to 2012, PADAC - project for the development of agriculture in Cambodia - followed on this previous phase with DMC experimentations. PADAC is a research-development project, implemented by the *Ministry of Forest and Fisheries of Cambodia* (MAFF) with the scientific and technical assistance of CIRAD and funded by AFD. A partnership and complementary financing has been provided by USAID.

PADAC designed conservation agriculture production systems based on maize, cassava, soybean and upland rice in three pilot zones, first in two districts in Kampong Cham province and then in Battambang. According to CIRAD impact assessment conducted in 2011, the area of DMC systems has significantly increased, from 180 ha in 2009 to 370 ha in 2011. Conservation agriculture covered 600 ha in 2012 and involved 700 households in the target districts. Conservation agriculture requires investments and use of complex technology that appear to limit its adoption by smallholders' farmers. PADAC has developed a contract farming system between farmers and agro-industry processors to ensure the sustainability and extension of conservation agriculture.

In **Laos**, the development of Conservation Agriculture (CA) by the MAF-CIRAD over the last decade was supported by AFD. CA-based interventions find their origins in the *PRODESSA* when a specific research component on CA was integrated to that rural development project in 2001 in Kenthao district (Sayaburi province). Building on the results of that first initiative on CA, the *PRONAE* was launched (preparatory phase from 2001 to 2003 and implementing phase from 2004 to 2009) in 3 districts of Sayaburi province and 3 districts of Xieng Khouang province. In addition, *PASS* project (2005 to 2009) was dedicated to CA extension and agricultural diversification in maize monocropping systems with legumes crops in association or rotation in four Southern districts of Sayaburi province. Finally the *PROSA* started in 2007 with the following objectives: i) providing an institutional support to the MAF in expanding CA to the whole country, ii) promoting Agroecology and Conservation agriculture in the curriculum of Faculties and Colleges of agriculture, iii) supporting research and experimentation on development and dissemination of CA, and iv) developing a regional network for CA in South East Asia. The project which ended in 2012 has also implemented farm-level activities related to CA in Savannakhet province. All of these interventions were funded by the AFD, managed by the MAF and implemented by CIRAD in collaboration with Provincial and District Offices of Agriculture and Forestry (PAFOs and DAFOs).

The results in terms of farmers' adoption of innovative practices were very good in the target areas of the projects and as long as the projects were active. However, *most farmers did not adopt the three principles of CA* as they limited the adoption to no-tillage and residue management in maize monocropping systems in the absence of legume association and crop rotation and many discontinued after the end of the projects (Coudray, 2013).

In **Myanmar**, traditional method of conserving soil moisture by mulching or intercropping in the dry land farming is an age-old practice. Environmentally sustainable food security and micro income opportunities in critical watershed project in Southern Shan State was carried out during the period from 1996 to 2002. Based on promising results obtained in Mindanao Island in the Philippines, a similar project was carried out in the dry zone and conservation agriculture was systematically and widely undertaken by UNDP/FAO project personals. The *Ecosystem Conservation and Community Development Initiative (ECCDI)*, the *GRET-CORAD project* and *Welthungerhilfe (GAA)* have brought about conservation and management on ecosystem of natural resources with the aims of enhancing the socio-economic development of communities. *Conservation agriculture and sloping agriculture land technology (SALT)* have been incorporated in many projects after initial experience of the IRRI-Myanmar hilly regions farming systems development project in Shan State between 1992 and 1994 with hedgerow planting and alley cropping.

The main government agencies involved are the *Ministry of Environmental Conservation and Forestry*, *Ministry of Agriculture and Irrigation* and the respective State and Regional government bodies. At the watershed level, integrated watershed management programme as in the case of Inlay Lake rehabilitation are implemented by a large organized body of all the union and regional level government agencies, UN systems agencies, INGOs, local NGOs, and individual researchers and development workers. The centre piece of all the activities are seen to be conservation agriculture.

*No-tillage system* has been introduced by Welthungerhilfe (or German Agro Action), a German INGO, and was adopted by 2500 households in northern Shan State. Maize plots are covered with previous crop residues and planted with no soil disturbances in the next crop season. Different tillage practices are adopted such as minimum tillage, zero tillage, in-row tillage, in-line tillage, etc. in different agro-ecological zones in Myanmar. Cover crop can reduce surface crusting and run-off. Farmers find difficult to practice cover crop if it is not edible plant. Mulching with crop residues may be subject to fire hazard in Myanmar dry land condition. In sugar industry of private sector, sugarcane crop residues are covered in-between rows to conserve soil fertility and moisture. This method, termed as trash blanketing is applied by Australian sugar industry and the method was transferred to Thailand then Myanmar sugar industry in 2005. In Myanmar four sugar companies are applying it over 1000 acres. It enhances soil fertility, suppress weed growth, conserve moisture and prolong rationing crop cycle.

In **Thailand**, conservation agriculture practices, consisting in no tillage or minimum tillage combined with permanent soil cover through mulching or cover crops and systems of crop association or rotations have been tested by *different soil and water conservation projects*, including *Land Development Department (LDD)* of the Ministry of Agriculture and Cooperatives, *agricultural universities* (e.g. Kasetsart, Khon Kaen, Chiang Mai, Maejo) and *Royal Projects*. The LDD has developed a national network of applied research and extension stations to support the diffusion of soil and water conservation practices. Since 1995, *soil doctors are trained in all villages as intermediaries between LDD extension staff and farming communities*. Volunteer farmers are trained to soil and water conservation practices to help their fellow villagers and can request support from LDD extension agents when necessary. This participatory approach responded to the need to develop alternatives to the traditional 'technology transfer' extension approaches and also responded to the

problem of decreasing number of LDD staff available on the ground. At present, there are approximately 60,000 volunteer soil doctors representing the LDD at the village level.

Since 2007, *CIRAD collaborates with Kasetsart University* to study the impact of agricultural practices on the soil biological characteristics and functioning. A *laboratory of soil biology installed in the campus of Sakon Nakhon* (northeast of Thailand, Sakon Nakhon Province) is organized around three main activities: applied research in the field of soil biology, training and expertise. *Field experiments* have been conducted in Kasetsart University campus to evaluate the effect of various no-till systems with cover crops on soil quality: e.g. study of the quality of the fresh organic matter brought back to the soil, impacts on soil macro-fauna abundance and diversity, impacts on soil microbial abundance and activity.

In **Vietnam**, the introduction and development of conservation agriculture has mainly resulted from a long-term partnership between Vietnamese and French agricultural research centres: *Vietnamese Institute of Agronomic Sciences (VASI)*, *Northern Mountainous Agriculture and Forestry Science Institute (Nomafsi)*, *CIRAD since 1996 and IRD since 1999*. More recently the *University of Queensland* and *Think soils* (consultancy company) have conducted CA research in Son La province in partnership with Nomafsi and Tay Bac University and with the financial support of ACIAR and AUSAID.

The *ADAM project* (2009-2013) followed the SAM project - Mountainous Agrarian Systems (1999/2005) with the objective of extending conservation agriculture in the 3 provinces of Phu Tho, Son La and Yen Bai. The project had 2 components: (1) promotion of direct seeding mulch-based cropping systems (DMC) and (2) design and testing of innovations for *sustainable tea production* on sloping lands and 3 main activities: adaptive research, training, and communication.

The *Vietnam Soil and Fertilizers Research Institute (SFRI)* in cooperation with IRD, is carrying out experimentations and measurements on Dong Cao Watershed, in Hoa Binh province since 2001. Different DMC techniques (e.g. rice straw mulching, cover crops) have been experimented, in comparison with farmer-control plots also in Thailand and Laos. This research is part of the *Managing Soil Erosion Consortium (MSEC - 1999-2010)* that was initially funded by ADB, then the IWMI, IRD, AFD and French MFA. The current phase MSEC3 (*Multiscale Environmental Changes*), from 2011 to 2015, is implemented by IRD in partnership and with the support of the ALLENNVI alliance from the French Ministry of Research and Higher Education.

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#### COMPARATIVE ANALYSIS

More than a decade of CA experimentation and monitoring field *results are quite convincing*: increase of soil moisture, soil biodiversity (earth worms), decrease of soil erosion (from 75 T/ha to 1.5 T/ha) and in parallel, reduced losses of nutrients, yield increased. The labour for cultivation has been reduced resulting in many sites in a rapid expansion of CA areas.

However, *farmers face a number of constraints in the adoption of DMC systems* and many have stopped practicing CA after the end of the projects in all countries. The main reasons advanced to explain this situation are: (i) high level of initial investment (ii) technical problems (iii) conversion to perennial crops.

Other reasons were identified, according to the local contexts:

- No or limited access to market, in particular for legumes (resulting in limited association or rotation corn with legumes);
- Lack of supply chains for equipment for direct sowing , cover crop seeds;
- Limited access to credit (for developing improved animal production systems) or high level of dependency on traders for credit access (in corn cropping systems);
- Lack of long-term technical support, training and support policies;
- No short term gain in adoption of soil conservation practices; long transition period before visible economic impact, especially on degraded soils that require a longer recovery period.

The *CANSEA* (Conservation Agriculture Network in South-East Asia) network was created in 2009 in an attempt to tackle these issues from a regional perspective. The main stakeholders involved in CA development in South-East Asia use the network to exchange knowledge, experiences and technical expertise in the fields of research, development, capacity building on CA. The *CANSEA* has provided support to conservation agriculture research conducted by its members in Laos within the framework of the European project *ORCATAD* (Open Resources for Conservation Agriculture and Trade and Development, 2006-2008), in Cambodia in collaboration with the project *PADAC* (Projet d'Appui au Développement Agricole du Cambodge), in Vietnam in collaboration with Nomafsi – ADAM project. *CANSEA* communicates its results to its members and provides trainings to its partners so as to learn from each other's and to overcome the issues pointed above.

## 6. AGRO-FORESTRY

### INTRODUCTION

Agro-forestry is a collective name for land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence. Agro-forestry is a dynamic, ecologically-based, natural resource management practice that, through the integration of trees on farmland in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits.

#### Agro-forestry principles (<http://www.worldagroforestry.org/>)

1. Intentional: Combinations of trees, crops, and/or livestock are intentionally designed, established, and/or managed to work together and yield multiple products and benefits, rather than as individual elements which may occur together but are managed separately. Agroforestry is neither monoculture farming, nor is it a mixture of monocultures.
2. Intensive: Agroforestry practices are created and intensively managed to maintain their productive and protective functions, and often involve cultural operations such as cultivation, fertilization, irrigation, pruning and thinning
3. Integrated: Components are structurally and functionally combined into a single, integrated management unit tailored to meet the objectives of the landowner. Integration may be horizontal or vertical, above- or below-ground, simultaneous or sequential. Integration of

multiple crops utilizes more of the productive capacity of the land and helps to balance economic production with resource conservation

4. Interactive: Agroforestry actively manipulates and utilizes the interactions among components to yield multiple harvestable products, while concurrently providing numerous conservation and ecological benefits.

Combination of trees and non-tree crops or animals on the same land management unit is considered more as an approach than as a single technology. Agro-forestry systems have long been developed in southeast Asia, especially by ethnic minorities, before the emergence of export-led mono-cropping (e.g. fruit trees in home gardens). Similar to other agro-ecological practices, 'modern agro-forestry' has been promoted in reaction to deforestation and resource depletion to protect natural resources while increasing agricultural productivity and diversifying sources of income. More recently, the potential of complex agro-forests to reduce atmospheric concentration of CO<sub>2</sub> and mitigate climate change has been valorised as part of climate smart agricultural strategies.

#### A REVIEW BY COUNTRY

In **Laos** agro-forestry practices and non-timber forest products (NTFP) management practices are distributed into 3 main fields of activities:

- *Production of forestry systems with regeneration and protection forests* (PADETC and SDC with the collaboration of the Forest Science Research Centre (FSRC) of the National Agriculture and Forestry Research Institute (NAFRI),
- *Promotion of agro-forestry systems with plantations based on wood/commercial trees* (such as rubber, candlenut, Jatropha, palm oil trees) in association with rice, corn or galangal/ginger cropping systems (SIDA project in collaboration with NARC and FSRC in Sayaburi, Luang Prabang, Oudomxay, Luang Namtha and Bokeo provinces, 2004-2010);
- *Development of NTFPs production through sustainable management* (SDC/NAFRI/FSRC project, *GRET project* in 3 districts of Houaphan province since 2010 on bamboo), and domestication (plantation of NTFPs, possibly associated with traditional crops) like SIDA/NARC/FSRC project, AgroForex company in Phongsaly and Houaphan provinces on benzoin and German Agro Action (GAA) in Oudomxay province (Namo district) on cardamom.

In spite of encouraging results (like NTFPs domestication with AgroForex company and GAA), *several constraints limit the adoption of agro-forestry practices* such as: (i) the pressure by foreign investors to develop mono-cropping systems for rubber, maize or cassava, (ii) high variability of fruit tree production and prices, (iii) substantial labour force requirements that limit the adoption of those systems to the "middle class" as the poor lack labour and the rich lack interest in mixed systems. In the *absence of a national network on agro-forestry*, related initiatives are mainly project-based.

In **Thailand**, the *World Agro-forestry Centre* (ICRAF) has spearheaded agro-forestry research since the early 1990s, as part of the *Alternative to Slash and Burn Initiative* (ASB - [www.asb.cgiar.org](http://www.asb.cgiar.org)). Implementation responsibility was delegated to the *Ministry of Agriculture and Cooperatives*, and the *Royal Forest Department* (RFD) was assigned to serve as the responsible counterpart agency. The Mae Chaem watershed in Chiang Mai Province was selected as the benchmark research site in

association with the *multi-institutional ASB-Thailand consortium*. Many publications have been produced over the years based on experiments conducted in this benchmark site. In addition, many Thai universities have been involved in agro-forestry related research over the years with *relatively limited impact in term of adoption of innovative practices* as compared to the large and sustained research investments on agro-forestry.

In **Vietnam**, the government included agro-forestry in rural development policies for the mountainous regions of Vietnam *about 20 years ago*. The *Extension and Training Support Project for Forestry and Agriculture in the Uplands* (ETSP, 2003/2007) was a follow-up project of the *Social Forestry Support Program* (SFSP, 1994/2002) implemented by Helvetas Vietnam funded by the Swiss Agency for Development and Cooperation (SDC). Historically, Finland and Denmark governments were also an important partner on forestry and agro-forestry. *ICRAF started its operations in 2007 in Vietnam* as a not-for-profit, international non-government organization; it is based in Hanoi with 20 scientific and support staff and students. National partners are *NOMAFSI* with its project on 'Agro-forestry for Livelihoods of Small-holder Farmers in North-West Vietnam', the *Centre for Agricultural Research and Ecological Studies* (CARES) at the *Hanoi University of Agriculture* and other research centres and universities members of the *Vietnam Network for Agro-Forestry Education*.

In **Yunnan**, modern agro-forestry as defined by the World Agroforestry Centre is promoted by the *Centre for Mountain Ecosystem Studies* (CMES). CMES has been established in 2002 as an applied research & development institution jointly managed by ICRAF and the *Kunming Institute of Botany* (KIB), Chinese Academy of Sciences. It is working on environmental research and development in the Southwest of China, which is characterized by diverse mountain terrain and climate, a large population of ethnic minorities an, rich biodiversity and increasing pressure on natural resources. CMES cooperates with various government institutions and NGO partners to strengthen community's capacities by introducing farmers, government agencies, and NGO staff to new approaches and methods adapted to diverse upland situations. By diversifying the agro-forestry model, certifying organic farming, promoting fair trade, sustainable use of NTFPs, use and research on bioenergy, setting up mechanisms for Payment for Environmental Services, and addressing global climate change, CMES is committed for a long term goal of sustainable development in the Southwest of China

Since 2004, poor upland households have participated in research and development for integrating medicinal plants into agro-forestry systems. Some medicinal plants such as *Dipsacus daliensis*, *Foeniculi fructus* and *Pinellia ternata* have a high potential for domestication but the lack of technical knowledge of farmers is a constraint. A commodity chain analysis of major local NTFPs – mushrooms, walnuts and pine nuts – has been initiated in 2005 to provide an essential base for strategic development inputs at the local level. A focus of this research is on commodification and sustainable management of the NTFP products in agro-forestry systems.

Under pressure from both national and provincial governments to address problems caused by rapid rubber expansion, in 2009 the Xishuangbanna prefectural government and the rubber industry established the "*Leadership Group for Environmentally Friendly Rubber*" (LGEFR). The group links government, research, and industry stakeholders, and thus provides a forum for discussing and implementing policy instruments for restoring ecosystem services and alleviating poverty. A part of

this initiative, CMES is designing a Green Rubber landscape that balances income from rubber with restoration of ecosystem services for sustainable poverty alleviation.

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#### COMPARATIVE ANALYSIS

Like FAO in the case of IPM or CIRAD for CA, ICRAF plays a leading role in the promotion of modern agro-forestry in the Mekong region. ICRAF has offices in Hanoi (Vietnam), Chiang Mai (Thailand) and Kunming (Yunnan-Vietnam), which have been managing national, regional and global programs related to agro-forestry for the past two decades.

At the regional level, ICRAF has hosted the *South-East Asia Network for Agro-Forestry Education* (SEANAFE), a network of 85 member institutions of five country networks in Indonesia, Laos, Philippines, Thailand and Vietnam. From 1999 to 2010, SEANAFE worked closely with established networks, government agencies, and regional and international development organizations in building capacities in agro-forestry and natural resources education. It also collaborated with civil society and other non-government organizations involved in promoting the practice and science of agro-forestry through either formal or non-formal education.

## 7. BEYOND AGRICULTURAL PRACTICES

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#### OTHER DIMENSIONS OF AGRO-ECOLOGY: VALUE CHAINS AND FOOD SOVEREIGNTY

Agro-ecology has multiple dimensions from production to consumption including marketing. Beyond production, smallholder agriculture should get organised all along the **market chain** to respond to its future challenges, e.g. adaptation to climate change, food security and safety. Agro-ecology also aims at improving farmers' livelihoods by promoting better equity and food sovereignty.

Food sovereignty also means production and distribution of **certified seeds** to all farmers at reasonable prices, avoiding monopoly position of hybrid or GMO seed production companies. The promotion of agro-ecology practices starts with avoiding losses of native crop species and quality seeds. **Land tenure security** also plays an important role in food sovereignty. It is an important condition of long term investment of farming households in soil preservation and improvement practices as promoted by agro-ecology movements. **Economic benefit** is a key driver of farmers' adoption of innovative practices. Policies and regulations that will increase direct economic benefit by farmers in adopting agro-ecology practices should therefore be given priority.

Another issue discussed during the second consultation meeting with regional agro-ecology stakeholders (December 6, 2013) is related to the prospective analysis of the needs and aspirations of the **next generation of family farmers** in the GMS. In northeast Thailand for example, most rice growers are older than 60. The young men are working elsewhere, off-farm. Who will take over rice production? How to adapt agro-ecology practices and support policies to the future farmers in the GMS. These questions should be addressed by the future project.

Many agro-ecology initiatives aim at the promotion of local products through certification (organic products standard, participatory guarantee systems - PGS) and the development of local farmers markets.

By doing so, agro-ecology represents an alternative economic model whereby producers and consumers jointly define the quality of the product by taking into account others innovative components such as farmers' employment, food sovereignty, and biodiversity (Stassart and al., 2012).

The networks Ecovida (in southern Brazil) and PGS Vietnam are famous examples of PGS certification. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange (IFOAM).

[http://www.ifoam.org/Policy\\_Brief\\_PGS\\_web.pdf](http://www.ifoam.org/Policy_Brief_PGS_web.pdf)

<https://sites.google.com/site/pgsvietnam/Home>

[http://www.ifoam.org/about\\_ifoam/standards/pgs\\_projects/pgs\\_projects/15649.php](http://www.ifoam.org/about_ifoam/standards/pgs_projects/pgs_projects/15649.php)

The future of agro-ecology in the Mekong region may well rely on innovative certification mechanisms that will provide access to dedicated markets, like for organic farming nowadays.

### III. IMPLICATIONS FOR A REGIONAL AGROECOLOGY NETWORK

#### 1. LESSONS FROM THE COMPARATIVE ANALYSIS OF AGRO-ECOLOGY EXPERIENCES

##### TRADITIONAL VERSUS MODERN AGRO-ECOLOGY

Several participants to consultation workshops highlighted the concept of “modern agro-ecology” as compared to “traditional agro-ecology”.

Traditional agro-ecological practices refer to the farming systems and practices developed by farmers in their different contexts, based on *empirical learning process and knowledge transfer from generation to generation*. Agro-forestry, crop rotation and association, etc... have been traditionally practiced by farmers all over the Mekong region. Local, indigenous knowledge are highly relevant and should be mobilized in designing alternative agriculture practices.

Modern agro-ecology concept appeared in reaction to societal and environmental problems generated by the expansion of the so-called modern or conventional agriculture (i.e.: motorized and chemical agriculture). These modern agro-ecological practices build on traditional empirical knowledge *and scientific research for a better understanding and use of ecological processes operating in the farming systems*. They are compatible with the traditional concepts of *sustainable agriculture* or more recent promotion of *climate smart agriculture*. Beyond the term ‘agroecology’ that has been used for many years lies very innovative concept and approaches capable of tackling the most recent issues related for example to food security or sovereignty or mitigation/adaptation to climate change.

The different agro-ecology “schools” presented in the previous section, such as integrated farming / IPM, SRI, conservation agriculture, agro-forestry, organic agriculture, illustrate the collective effort of the society to re-build a modern “agro-ecology”. They aim at rationalizing the lessons learned from daily practice of farmers and scientific experiments and supporting their diffusion through adapted policies and development programs. They also provide increased visibility to gain support from policy makers, consumers and funding agencies.

This finding stresses the importance to **affirm the “modernity” of the “agro-ecology” concept**, based on both empirical knowledge and increased scientific understanding and use of ecological processes for sustainable intensification of agriculture.

##### RELATIVE STRENGTH OF EXISTING AGRO-ECOLOGY SCHOOLS: OA, IPM, SRI, CA, AF

Organic agriculture, integrated farming/IPM, SRI, Conservation Agriculture and agro-forestry have developed in all six countries in the last 25 years.

Some institutions have played a key role in the expansion and visibility of these approaches in the region such as FAO for integrated pest management, Cornell University for SRI, CIRAD for conservation agriculture and ICRAF for agro-forestry. These international institutions implement their field activities through government agencies in the different countries and have organized regional networks with the support of international donors. International and local NGOs have joint the

movements later on to support extension activities with farming communities. Some project teams have also turned into national NGOs when the project ended to maintain the momentum beyond the project period.

The organic movement appears as a bottom-up process with farmers and local activists organizing themselves and linking with other groups to support their activities and to gain recognition. They ultimately federate by becoming members of national associations and up to International Federation of Organic Agriculture Movements (IFOAM) which provide them with technical support and certification service.

A regional **assessment of the technical performances, adoption rate, coverage and impact** of these practices (number of farmers, area, production and economic value) is deemed necessary for a future networking activities.

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#### THE 'FORGOTTEN' AGRO-ECOLOGY PRACTICES

Organic farming, IPM, SRI and agro-forestry are well known international schools related to the agro-ecology movement. The technical recommendations generally apply or aim to apply to farming systems with a high market orientation.

Two less known schools have been documented in this study: the VAC system and the “New Theory farming systems”, respectively in Vietnam and Thailand. These alternative farming systems aim at optimizing ecological processes through optimum “integration” of food gardening, fish rearing and animal husbandry. They generally apply to labor-intensive small-scale farming systems, with a higher self-consumption orientation. Both have specific network carrying out research and extension. The limited time allocated to the feasibility study did not allow to quantify the respective importance of these schools (number of farmers, area, production and economic product).

Although less known and less market oriented, **these initiatives have and still produce sound field experiences that maybe useful for the agro-ecological transition.**

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#### AGRO-ECOLOGY PRACTICES PARTIALLY ADOPTED AND ADAPTED BY FARMERS

The review of the previous section provides various illustrations of how farmers adopt, and also often adapt, the agro-ecological techniques to their realities. For example, the practice of SRI is expanding quickly with positive results, however SRI 12 principles are rarely fully applied by farmers. We made the same observation for conservation agriculture (CA), whose 3 principles are not always adopted by farmers.

This should not be seen as a problem, but rather as an illustration of the capacity of farmers to innovate and select what seems to be more adapted to their interests and means in the current contexts. There is no readymade recipe for agro-ecological development and farmers are not interested in supporting such or such “schools”. They are rather interested in experimenting any innovation potentially useful for solving the actual problems they face or gaining sustainability.

This pleads for an opened and flexible mind of tenants of what we called “agro-ecological schools”, who are invited to join their efforts and to coordinate their support to the agro-ecology movement, by **offering complementary production alternatives to smallholder farms** on the one hand, but also by **documenting and harnessing the adaptation / innovation processes** led by farmers.

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#### HARNESSING COMPLEMENTARITIES BETWEEN SCHOOLS

The adoption of System of Rice Intensification (SRI) practice paves the way for organic agriculture (e.g. Cambodia, Laos) and for application/expansion of the SRI principles to other crops through the so-called System of Crop Intensification (SCI). The Farmer Field School (FFS) learning process initially promoted by FAO for extending IPM practices is nowadays used for SRI (e.g. Myanmar) and other agro-ecology practices by a large range of stakeholders. Integrated Protection Management (IPM) evolved towards Integrated Crop Management (ICM). Trained individuals and government institutions (e.g. IPM units at provincial and district levels) are often mobilized to manage new practices such as SRI. Building on previous projects who have invested in agro-ecology training over long periods (e.g. training of trainers, FFS), engaging knowledgeable people who already understand the underlying principles of agro-ecology, facilitates the dissemination of new approaches. The role of the private sector in these evolutions is also worth noticing as private companies often accompany the changes in farmers practices, for example through production and marketing of alternatives to chemical inputs.

These examples illustrate the on-going learning process and the **potential benefits for each school and for agro-ecology as a whole from cross-fertilization of experiences and knowledge** between schools.

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#### WINDOWS OF OPPORTUNITIES FOR PROMOTING AN AGRO-ECOLOGICAL TRANSITION

Some conditions, periods or stages in agriculture development are more favourable than others for farmers to successfully incorporate agro-ecological practices. The review shows clear examples of differentiated rates of adoption for IPM, SRI, agro-forestry, conservation agriculture.

For example, CA dissemination experiences show that two kinds of situations are more favourable for adoption of conservation agriculture practices: (i) situations where farmers still use traditional shifting cultivation practices and need to adapt to fertility constraints due to restrained access to land, and (ii) situations where the use of conventional methods such as motorized tilling and use of chemical fertilizers and pesticides lead to heavy environmental problems such as erosion of pollution. Obviously, conservation agriculture will have less echo in contexts where farmers recently engaged in convention agriculture practices (tractors, chemical pesticides and fertilizers...) are receiving short term benefits and still do not face environmental difficulties. Support policies are also essential components of such transition as exemplified by the situation in Bhutan, where a clear vision of organic agriculture has been developed to support national policy for agriculture development.

This suggests **identifying windows of opportunities** for more efficient and effective promotion of agro-ecological practices.

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#### THE SUCCESSES OF FARMER FIELD SCHOOLS

Farmer Field Schools (FFS) are unanimously recognized as a powerful extension instrument for agro-ecology principles as it builds farmers' capacity to observe and react to ecological processes. Many

organisations have used the FFS for engaging a strong scientific/experiential learning process on issues relevant to agro-ecology (e.g. organic farming, IPM, ISM, SRI).

FFS was easier to promote in countries where official extension system were weak or had limited ties with the agrochemical lobbies. In Thailand for example, the Training and Visit (T&V) system developed in the 1980s with the support of the World Bank had institutionalized top-down technology transfer mechanisms of agricultural extension, combined with strong ties with agrochemical companies that used the government extension system to reach the farmers. These prevailing systems made it more difficult for tenants of agro-ecology practices to promote them through alternative FFS extension approaches as it was clashing with the well-established T&V scheme. This may explain why FFS met great success in Cambodia, Vietnam, Laos and Myanmar but had lower impact in other countries in the region.

Also, the term FFS has been used for describing any group-based extension activity, regardless of the quality of the training. Some so-called FFS involved a different topic every week: no experimentation, no season-long process of observation and analysis.... just regular sessions with a group of farmers. The number of these pseudo-FFS has risen with its success.

This suggests the importance of **promoting and supporting not only alternative farming practices, but also alternative extension approaches**. Members of agro-ecology networks should be invited to revisit the principles of agro-ecology and at the same time get back to the fundamentals of FFS so that a community of practice can be gradually developed at the regional level.

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#### CERTIFICATION MECHANISM TO REWARD AGRO-ECOLOGY PRACTICES

The multiplicity of initiatives and the required learning process raise the issue of the difficulty to give visibility and to reward this global effort of farmers and stakeholders for building agro-ecological alternatives to the conventional food and agriculture system. Organic farming is seen by some participants as the most accomplished standard of agro-ecological practice, with certification standards and procedures which provides visibility and economic award. It is also seen as a niche market allowing a price premium on limited volumes of production dedicated to specific market segments while “mass production” cannot benefit from such a price premium.

Very few farmers however can strictly respect the organic farming principles, and/or afford the cost of external certifications. This results in the emergence of alternative concepts such as Good Agriculture Practices (GAP), green products certification (e.g. China) or clean vegetables (e.g. Vietnam). In several countries, Participatory Guarantee Systems (PGS) reward farmers on the quality of their products or Payment for Environment Services (PES) reward the quality of the ecosystem services farmers preserve by adopting agro-ecology practices (e.g. China).

These observations highlight the importance to address the question of valorisation of products, practices and/or landscapes (e.g. certification and PGS, labels, PES). **Economic incentives to farmers who join the “agro-ecology learning process”** should be investigated collectively, tested in real conditions and lessons learnt should be largely disseminated.

## 2. EXPECTATIONS FROM STAKEHOLDERS IN THE MEKONG COUNTRIES

Participants to the consultation process were asked to express their interest in taking part in the establishment and the development of a regional network on agro-ecology. **All participants positively received the initiative proposed and clearly expressed their interest to participate to the future agro-ecological network.**

The Table 4 summarizes expectations of participants during the workshop.

**Table 4.** Expectations from participants towards a GMS agro-ecology network

Expectations	CA	LA	MY	TH	VN	YU
Building a <b>shared understanding</b> and <b>common vision</b> of agro-ecology	x	x	x	x	x	x
Developing <b>synergies</b> among stakeholders, organizations	x	x	x	x	x	x
Increased skills and expertise of network members through <b>capacity building</b>	x	x	x	x	x	x
<b>Up-scaling project</b> activities and facilitating the dissemination of innovative techniques	x	x	x		x	
<b>Generate funds</b> to strengthen national networks and regional umbrella	x	x	x		x	
Include <b>more stakeholder groups</b> (researchers, farmers, technicians)	x	x				x
<b>Empowering the civil society</b> and facilitating the recognition of NPA organizations		x			x	

We develop below some of the expectations based on the discussions that took place during the consultation workshops.

### BUILDING A SHARED UNDERSTANDING AND UNIFIED VISION OF AGRO-ECOLOGY

Participants expressed their interest and wish to reach a shared understanding and common vision of agro-ecology, for gaining higher visibility and influence.

*The concept of “agro-ecology” is sometimes new to them.* Some organizations considered the concept of “sustainable agriculture” as the old wording for the concept of “agro-ecology” (more fashionable). For example, the concept of “sustainable agriculture” is used by GRET/CIRD in Cambodia (APICI) for characterizing a learning process approach where farmers are testing, adapting and combining SRI and integrated farming techniques. Others consider that the concept of “agro-ecology” is similar to “Climate Smart Agriculture” as defined by FAO. The four criteria of Climate Smart Agriculture, namely sustainability, stability, equitability and productivity, would also hold for agro-ecology approaches.

The concept of “agro-ecology” may also sometimes not be fully understood due to limited standardization or *translation issues and history of the concept in each country*. For example, the term agro-ecology was used in the 2000s for conservation agriculture, before the latter was more precisely defined among practitioners during the 5th World Congress on conservation agriculture in 2011. Consequently, after 15 years research on conservation agriculture supported by CIRAD in Laos, there is still a confusion between the concept of ‘conservation agriculture’ and ‘agro-ecology’, as ‘conservation agriculture’ was translated ‘ecological agriculture’ (niwet kasikam) in Lao language.

During the workshops, a continuum of practices was identified which made it difficult for participants to delineate clear boundaries between their approaches or schools. Many projects combine the different approaches so as to offer local farmers a panel of technical options that they can adapt to their own circumstances, needs and capacities. As a consequence, trying to delineate boundaries between schools is almost impossible as it would widen the gap between the principles of each school and the reality of field implementation. It was also observed that both donors communities and farming communities are opened to all approaches and keen to combine/integrate them in their practices.

As we aim at bridging the different schools instead of dividing them, workshop participants suggested that *networking activities should primarily focus on the principles* underlying the different practices. During the workshops, participants agreed to *use the five historical principles of agro-ecology as a starting point* in categorizing sustainable production systems, whatever school they belong to. Agro-ecology is commonly understood as a sound use and management of agro-ecosystems, or a good balance between all the components of the ecosystems (water, soil, forest, wildlife, human, fauna and flora, etc.). From there, agro-ecology was defined as a *unifying concept which gathers various forms of agricultural system sharing one common goal: to reach environmental, economic and social sustainability*.

A regional agro-ecology initiative would thus have to further **refine the collective understanding of underlying principles and support the development and sharing of a common vision for agro-ecology development in the Mekong region**.

Beyond the technical and socio-economic dimensions of agro-ecology, Oxfam Lao country director also mentioned that this kind of network should also have a wider mission or vision, including a philosophical common objective related to environment and human well-being issues.

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#### BUILDING SYNERGIES AMONG STAKEHOLDERS TOWARDS A COMMON GOAL

During the workshops, most participants were first interested in *sharing information, ideas and experiences in their own field of expertise*, e.g. “visiting interesting and successful IPM cases in other countries” for the national IPM expert. However, the discussion also raised interest for sharing with other fields of expertise.

The participants also recognized some *tensions between tenants of different schools*. These tensions may be due to different causes. One of them is the institutional competition for access to donor’s funds. Another one is directly linked to the behaviour of charismatic leaders who try to impose their views to others or are competing for their ideas in an attempt to increase their visibility. Beyond these institutional or personal causes, tensions sometimes reveal *conceptual or political divides* between schools. We highlight two of them as examples.

### ❖ Ex 1: Strict conversion versus gradual transition

Tenants of strict organic agriculture exclude the use of any kind of chemicals. Organic certification opens market and may provide a premium price to the farmers for organic products, but it requires from producers a *complete conversion* to chemical-free practices, strictly excluding synthetic insecticides, herbicides or fertilisers. The conversion process is slowing down the adoption rate, as it may temporarily lower the productivity and increase work load in case of pest outbreak or when available residue biomass is not sufficient to produce enough compost.

Others schools (e.g.: IPM, Good Agriculture Practices, Conservation Agriculture, Integrated Farming) promote a sound and/or reduced use of chemicals and possibly their elimination as a final step of their action (nearly never reached). They promote a *gradual transition from current farmers towards a more desirable technical model* adapted to local circumstances, and needs and capacities of farming households. More time is given to insure a smooth transition through gradual learning and adaptation of good agricultural practices. The downside of this approach is that certification is more difficult to set up and producers do not benefit from price premium or dedicated market chains as for organic products.

### ❖ Ex 2: Family farms versus agribusiness companies

Family farms represent the large majority of agro-ecology farmers while agribusiness companies are relatively new to these practices and markets.

During the last 25 years, most sustainable agriculture projects focused on smallholders, considered by governments, researchers and development partners as key actors of agriculture and rural development. Consequently, agro-ecology techniques (AO, SRI, IPM, etc.) have been developed mainly for them and with them.

In the recent years however, moved by consumer demands for safer food and/or policy of corporate social responsibility, a number of agribusiness companies have invested in organic production and market, generally international market. The question is raised whether to include them or not within the agro-ecology movements.

These issues have been discussed during the consultation workshops. All participants reached a consensus that the **future regional agro-ecology network should concentrate efforts on family farms with a gradual transitional approach**. Dealing with agribusiness companies should be done only in relation with their interactions with smallholders or impacts on family farming.

In addition, a consensus appeared about the overall interest of overcoming tensions between schools and learning from each other's work. All schools will get stronger if they can meet the demand from farming communities, governments and donors for a transition to agro-ecological practices. Building synergies among organizations and strengthening the overall network is seen as a prerequisite to increase work efficiency and visibility of agro-ecology in every country and in the region. All expressed their interest and will to share experience and build synergies, in order to promote the agro-ecological transition in the GMS region.

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#### SCALING UP EXISTING EXPERIENCES

The question of scaling up experiences has been discussed and all participants see it as a key challenge. Some of the issues faced for scaling up local agro-ecological initiatives are given below:

- For farmers already engaged in conventional farming, the switch to alternative agro-ecological farming system requires time (e.g. for rebuilding soil fertility) and often a transition period of lower production and income... before recovering. *Specific incentive and compensation mechanisms* need to be worked out. In addition, bio-fertilizers and bio-pesticides are not available to farmers who want to transition to organic production because they are not developed at a commercial scale by private companies to supply an emerging market.
- The transition from subsistence to commercial agriculture is often supported by local *middlemen or traders* would link remote farmers to the market, smallholders to agribusinesses. They compensate the initial lack of credit system, support farmers organisation, and also collection and transportation of agricultural product from villages to markets. They are important actors of local development as they support the diffusion of new practices and equipment but can also become predators when farmers get indebted. They should be fully *involved in the multi-stakeholder negotiations* taking place at the different stages of the agro-ecology transition.
- Organic market infrastructures are not yet much developed in the region and certification costs are high, which reduces the opportunities of premium prices paid by consumers for natural products. Specific ad hoc *certification systems* (e.g. PGS) and *marketing campaigns* to consumers need to be worked out.
- Farmers already engaged in the conventional farming loss empirical knowledge on ecological processes involved in sustainable intensification of agriculture. *Specific training and research / learning mechanisms* are required to engage farmers in adopting alternative farming systems.

The following mechanisms were also considered for scaling-up:

- *Identify windows of opportunity for intervention*: we have explained in a previous section how the different contexts and agrarian evolutions may hinder or favour the adoption of alternative farming systems. The identification of windows of opportunity for intervention and scaling up would help to gain in efficacy.
- *Facilitate communication platforms and consultation mechanisms*: Farmer networks play an important role in the development of sustainable agriculture systems. They support farmers learning and sharing activities during the conversion phase and link them to relevant market outlets. Community-level exchange networks should therefore be promoted as an incentive to the dissemination of agro-ecology practices. Smooth circulation of unbiased information among network members is crucial for them to ripe the benefits of their individual investments in network activities.
- *Valorise good practices through certification and PES systems*: Valorisation of products, practices or landscapes is crucial for gaining visibility, opening market and receiving financial incentives for the agro-ecological transition (e.g. price premium, labels, PES).

According to participants, a regional agro-ecological network should definitely build on existing national and regional networks. A non-exhaustive list of such networks is given below based on the results of the national consultations.

❖ **In Cambodia**

PROLINNOVA, an international multi-stakeholders platform, promotes local innovation, including farmer-led experimentation (Cedac, Srer Khmer and Padek are members);

COraA committee gather different stakeholders (farmers federations, private sector, NGOs) and focuses mainly on organic marketing network;

NGO-Forum is a platform of several NGOs involving on different topics such as the Pesticides Reduction Network (PRN-C). It seems to be strongly managed by the committee; so members gave little information on potential complementarities or overlapping activities.

❖ **In Laos**

The NGO Working Group on Forest and Agriculture gather main international NGOs and local Non for Profit Organizations (NPA).

The Sector Working Group on agriculture coordinated by the Ministry of Agriculture and Forestry is seen as a consultation platform between government agencies and donor communities. It also involves experts from different international institutions, researchers and representatives of the civil society.

❖ **In Vietnam**

Some networks already exist for Agro-forestry, VAC (Vacvina) and organic agriculture (eco-farming).

There is no structured group at the national level on IPM, SRI and Conservation Agriculture. To discuss, exchange ideas and experience more broadly on agro-ecology, the forum of NGO Resource Centre on Sustainable Agriculture and Natural Resource Management (SANRM), could become a relevant platform.

❖ **In Myanmar,**

Like in other Mekong countries, the organic movement is pretty well organized as it depends on certification schemes for product marketing. The Myanmar Organic Agriculture Movement Group (MOAG), which provides an umbrella to organic farming organizations and issues organic certificates also contributes to the Myanmar Green Network.

❖ **In all countries**

National and international NGOs link to a large number of regional or global networks that will be important to investigate more systematically in the context of the future project.

Participants to the consultation workshops mentioned practical issues related to the expansion of existing networks for including many more organizations working on a large range of topics. For example, more than 100 organizations have been identified as working on topics related to agro-ecology in the Mekong region (Table 1). A network with such a large number of members may be too big, too complex to manage efficiently. They suggested to **organize and/or to strengthen existing**

**thematic regional networks** such as for agro-forestry, organic agriculture, IPM, or conservation agriculture. CANSEA already plays a significant role in the promotion of Conservation Agriculture in the region and could become an example for other networks. Later on, these thematic networks could be *federated under a unique regional umbrella*.

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#### INCREASING THE VISIBILITY OF AGRO-ECOLOGY INITIATIVES AT MULTIPLE SCALES

Beside rice production for domestic market consumption, agriculture in the Mekong region is dominated by mono-cropping-based, export-led production systems that generates a share of the total agricultural production, occupies most of the agricultural land and rural population. Very large economic interests are vested in conventional agriculture, which may explain why beyond the ideological discourses about sustainable agriculture and self-sufficiency, alternative agricultural practices have not generalised in the recent years. Agrochemical companies have developed very strong lobbies that prevent, or at best slow down, the transition to alternative farming practices.

As a result, conversion processes have been mainly supported by some form of spiritual and/or environmental activism or market opportunities provided by consumer demand for organic products. Many farmers engaged in alternative farming claim that the non-monetary rewards compensate for the lack of premium on the price of organic products. However, an efficient market infrastructure for their products is a prerequisite for the widespread adoption of alternative agriculture. A recognized certification scheme benefits farmers because consumers sometimes doubt the authenticity of farm product which is simply labelled 'organic' or 'chemical free'. One obstacle to the growth of alternative agriculture is the limitations in certification scheme. Non-governmental organizations have been very effective at promoting sustainable agriculture as they are working at the grassroots level with the poorest farmers who did not get access to the inputs and innovations of the Green Revolution and are worst affected by the failures of conventional agriculture. However, *the future of agro-ecology practices will depend on its visibility*. Flexible agro-ecology certification schemes should be explored to **support the definition and implementation of widely recognized quality standards**.

The success of organic networks lies in the need to get organized into groups or associations to get certified and gain access to dedicated markets. Other schools within the agro-ecology movement should *learn from the experience of the organic movements* to strengthen their networks and develop synergies with higher levels (i.e. from national to regional and global) and with other thematic networks. By increasing their visibility and their recognition as important component of agriculture, agro-ecology movements will then be able to better defend their positions against agrochemical lobbies and may loose on the way its status of 'alternative' agriculture to become 'mainstream', marking the end of the transition. Accompanying the transition towards agro-ecology requires **developing a number of instruments, standards and procedures to support and monitor changes and impacts**.

## IV. GOVERNANCE OF A REGIONAL NETWORK: LESSONS FROM EXISTING NETWORKS

As introduced in the introductory section a review of existing regional networks in the Mekong region has been carried out, in order to draw lessons from similar initiatives which could be used to design networks well adapted to the issues raised, lessons learnt and needs and expectations expressed during the stakeholder consultations. Seventeen networks or networking institutions (Table 2) were investigated through literature review and interviews with resource persons. They were selected based on their activities related to natural resources management or agro-ecology or their geographic scope in the Mekong countries or South East Asia. The network survey addressed the following questions: (i) mission, (ii) history, (iii) governance mechanisms, (iv) partnerships and (v) expertise in agro-ecology.

A comparative framework was developed based on the results of the network survey and consultations. A number of criteria relevant to the issues addressed during the stakeholders consultations were used to build a network typology. The objectives or purpose of the networks were not used as a discriminating criteria as the interest was on comparing their structure and functioning to explain their relative success and problems faced.

The following criteria are used in the next two sections to compare the networks:

### ❖ *Conditions of network emergence*

- Networks of what, whom? multi- or mono-stakeholders,
- Top-down or bottom-up emergence and management,
- Heavy / flexible management, level of support of governmental agencies.

### ❖ *Governance and legal personality*

- Hosting, legal registration: who is in charge of the secretariat, steering committee, board?
- Who decides what and how? Evolution of organic links between funding members and other members when the networks expand,
- Benefits for network members: access to funding, ideas, reputation.

## 1. THE CONDITIONS OF NETWORK EMERGENCE

First we characterize networks with respect to the conditions of their emergence, which has a considerable influence on their structure, functioning and further evolution. The resulting typology distinguishes top-down and bottom-up networks as first level discrimination criterion (Table 5).

**Table 5.** Typology of regional networks (RN) related to natural resources management.

<b>Emergence</b>	<b>Origin</b>	<b>Description - Example</b>	<b>Evolutions</b>
<b>Top-down</b>	<b>Project</b>	International organisation or donor supports governmental agencies in setting-up a network of professionals (researchers, practitioners, etc.), e.g. FAO, CANSEA, SENAFAE, Sumernet, ASOCON	<ul style="list-style-type: none"> <li>• RN supported by weak national networks (i.e. unique organisation or small group) have limited lifetime beyond the end of the regional project,</li> <li>• RN evolves into international NGO – regional networking organisations, gradual professionalization of network management, e.g. RECOFTC, Mekong Institute.</li> </ul>
	<b>Institutional partnership mechanisms</b>	<p>CGIAR Research Program (CRP) networks aim at rationalizing the use of research funds and partnership mechanisms between CGIAR Centres.</p> <p>CIRAD and IRD partnership mechanism lead to thematic collaborative platforms</p>	<ul style="list-style-type: none"> <li>• Some networks sustain activities over long periods (e.g. Alternative to Slash and Burn – ICRAF, Challenge Program Water and Food – IWMI), other disappear after the end of the first round of international funding,</li> <li>• Evaluation of leading institutions on their partnerships mechanisms =&gt; reduced ownership by national institutions (e.g. DP Cirad: CANSEA, LMI IRD LUSE, partnerships FAO, CGIAR) and risk of overlap in RN mandates.</li> </ul>
	<b>Inter-government political decision</b>	ASFN is an inter-governmental network with secretariat managed by ASEAN; bureaucratic, SDC funding allows concrete activities by operators CIFOR-research, RECOFTC-formation, NTFP-Net-civil society	<ul style="list-style-type: none"> <li>• Evolve towards technical-political institutions like the Mekong River Commission when there is a political will to sustain the network beyond the original funding period.</li> </ul>
<b>Bottom-up</b>	<b>Cooperative networks</b>	NGO and community networks get organized at national level (e.g. Organic Agriculture, AAN, GreenNet in Thailand, Helvetas-Profil in Laos) and federate at higher levels: IFOAM and international certification agencies	<ul style="list-style-type: none"> <li>• Certification for export lead to gradual professionalization of the networks to expand activities and get access to larger market opportunities,</li> <li>• Strong relations with peasant movements and activists (e.g. La Via Campesina) favour horizontal and vertical exchanges</li> </ul>
	<b>Federation of networks</b>	<p>National networks led by FAO, NGOs, or govt initiatives federate at regional and international level, (e.g. IPM, SRI)</p> <p>Private sector, national networks of companies and projects subscribe as member of an international coalition (e.g. International Biochar Initiative)</p>	<ul style="list-style-type: none"> <li>• SRI capitalisation at global level funded by a dedicated program at Cornell University via foundations or donations (no member subscription)</li> <li>• Governance transfer of a top-down RN to national NGOs: federation of national multi-stakeholder (e.g. 'FIELD Alliance' legacy of FAO-IPM networks)</li> <li>• Informal coalition of networks: 'Naga House' supported by the challenge program water and food (CGIAR)</li> </ul>
	<b>Alliance civil society - research - development</b>	Civil society (rural communities) initiative supported by government policies in Australia: Landcare.	<ul style="list-style-type: none"> <li>• Difficult to export the model to Asia (e.g. attempts in the Philippines),</li> <li>• Attempts to transfer to global level: Landcare International (ICRAF), Secretariat for International Landcare (SILC), Australian Landcare International (ALI)</li> </ul>

The top-down networks are usually developed and managed by higher level institutions (e.g. regional UN agencies such as FAO, international research institutions CGIAR, government agencies). They involve vertical, descending connection between regional or global institutions that are at the origin of the network and members located at lower hierarchical levels. On the other hand, the bottom-up networks usually develop from members getting organized through horizontal connections (e.g. farmer groups, cooperatives) who then federate at higher hierarchical levels.

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#### TOP-DOWN NETWORKS

We distinguished three categories of networks within this type according to the origin of the network, i.e. a project, an institutional partnership mechanism or an inter-governmental political decision.

**Project networks** are the most common regional networks. They are usually initiated by a *multi-location project* aimed to develop exchanges between stakeholders from different countries around a topic of common interest. These networks usually start with a *single stakeholder group* such as researchers or development practitioners.

- It is the case of the *Conservation Agriculture Network for Southeast Asia (CANSEA)* that was initiated as part of the PROSA (Programme Sectoriel en Agro-Ecologie) in 2009. It was initially funded by **AFD** through PROSA. Then when the project ended in 2012, **CIRAD** used its internal partnership mechanisms (see next section) to maintain the network metabolism at a minimum level and therefore avoid discontinuation of the collective actions.
- *The Southeast Asian Network for Agro-forestry Education (SEANAFE)* started in 1999 with the financial support of the Swedish International Development Cooperation Agency (**SIDA**). SEANAFE's members consisted of educational institutions – universities and technical colleges in Indonesia, Laos, the Philippines, Thailand, Vietnam and collaborations with China and Malaysia. In 2002, SEANAFE managed five national networks in a decentralized structure. The World Agroforestry Centre (**ICRAF**) hosted the SEANAFE's Regional Facilitation Unit (RFU). The RFU (or network secretariat) provides technical assistance, links the network with the global agro-forestry research and development community and facilitates resource mobilization. After a decade of activities, the network ran out of donor support and activities stopped.
- *Asia Soil Conservation Network for the Humid Tropics (ASOCON)* was formed with UNDP/**FAO** support in 1989 and became a quasi-legal entity in June 1993. The network structure consists of a coordinating unit at the Ministry of Forestry (MOF), Jakarta, and National Coordinating Committees established by government institutions in each member country (China, Indonesia, Malaysia, Papua New Guinea, Philippines, Thailand and Vietnam). The network aims to assist its member countries through a programme of information exchange, regional workshops, expert consultations and learning activities to enhance the skills and expertise of those responsible for the development and dissemination of soil and water conservation practices for small-scale farmers. Activities of the network depend very much on the financial

support received by donors. Like in the case of SEANAFE, after a decade of activity, including technical workshops, regular issues of a newsletter and annual meetings, a kind of fatigue is observed with ASOCON from both donor and member sides.

Keeping the interest of members alive is challenging, especially when the network founders have left their place to younger generations. Once the initial enthusiasm of getting to know each other's is over it is very important to make sure that the outputs of the network remain useful to its members. *Researchers and academic champions* tend to engage in volunteer work out of their passion for the research topic of the network. They are rewarded by collective publications and good academic reputation gained from regional networking activities. They often manage the network administration in addition to their regular administrative tasks. In the case of ASOCON, network members are *civil servants from the government* based at relevant ministries. As technocrats they work with both decision makers at ministerial level and farmers at grassroots level. However, the required incentives for this stakeholder group to take part in network activities are different than for researchers or farmers groups. Regular funding is therefore crucial to organize exchange visits in the different member countries as it is one of the most appreciated activities of 'technocrat networks'.

In order to sustain regional activities some of *project networks have gradually institutionalize so as to diversify their funding sources from their initial donor*. This was especially the case for networks related to training and capacity building that became regional institutions such as the Regional Community Forestry Training Centre for Asia and the Pacific (RECOFTC) renamed in 2009 the Centre for People and Forests or the Mekong Institute (MI).

- From a regional training centre, initially supported by **FAO** and the Government of Switzerland (through the Asian Development Bank), **RECOFTC** has grown to become a leader in community forestry information, training, advocacy, and support in the Asia-Pacific region. Since its opening in Bangkok, in 1987 RECOFTC has been hosted by Thailand's **Kasetsart University**, first operating as a Thai national institute then as an international organization in 2000.
- Similarly, the **Mekong Institute** began operations in 1996 as a joint project between the **New Zealand** and Thai governments with support from **Khon Kaen University**. MI works primarily to assist the transition of the GMS countries into the market-economy and to enhance regional development, cooperation and integration, providing training and learning programs to middle-senior level government officials. Since 2009, MI stands as an autonomous intergovernmental organization owned and operated by the six GMS countries it serves.

Both institutions have developed over the years a large portfolio of projects supported by different donors and a large network of alumni. *The alumni network has become over the years a great asset* for the development of new projects, partnerships and advocacy activities as former trainees now occupy high ranking positions in the governments, private sectors and civil societies organisations all over southeast Asia.

**Institutional partnership mechanisms** have been developed by international research organisations to build lasting relations between their traditional partners in their host countries.

- In the case of the *Consultative Group for International Agricultural Research (CGIAR)* global and regional networks are a key instrument of global research. Field activities rely on

national partners (National Agricultural Research Systems – NARS) and connections are built at regional and global levels to promote exchanges. CGIAR Research Programs (CRP) were setup recently to rationalize the use of research funds and partnership mechanisms between CGIAR Centres. Several regional networks are being developed in southeast Asia as part of the CRPs. For example, the CRP1.2 ‘Humid tropics’, CRP5: Water, Land and Ecosystems and CRP6: Forests, Trees and Agro-forestry have developed networking activities in the Mekong region. They engage with national research institutions, often with the same national champions, into joint research on a range of topics negotiated among network members and with initial support from the CGIAR global fund. Then they are supposed to develop project proposals so that they can diversify funding sources and maintain networking activities over long periods. A portfolio of projects becomes endorsed as contributing to the network activities. This setup is similar to the Systemwide Ecoregional Initiatives of the CGIAR in the 1990s that gave rise to the Alternative to Slash and Burn Initiative led by ICRAF, the Managing Soil Erosion Consortium led by IWMI, or the Ecoregional Initiative for the Humid Tropics of Asia led by IRRI. While the formers succeeded in maintaining the momentum beyond the initial global support thanks to the great personal investment of its champions, the latter ceased rapidly its operations after some CGIAR donors decided to reallocate their funding priorities to other topics.

- The same kind of institutional partnership mechanisms have been developed by **CIRAD** and **IRD** with their partner in the South in an attempt to strengthen South-South collaborative programs. The CIRAD name of these institutional mechanisms is ‘Research platform in partnership’ (RPP) while the name is ‘Joint International Laboratory’ (JIL) for IRD. The principle is for the institution to provide seed-money from its core budget to strengthen networking activities up to a point where the network evolves autonomously and generates its own resources through research proposals and consultancy contracts. In the Mekong countries CIRAD has developed four research partnership platforms, respectively on rubber, emerging infectious diseases, agricultural markets and conservation agriculture (CANSEA). IRD supports the Joint International Laboratory LUSES « Dynamic of Land Use changes and Soil Ecosystem Services » ([www.luses.ird.fr](http://www.luses.ird.fr)) with some partners common to the two networks.

Beside the risk of overlap between these networks and the necessity to clarify their mandates and coordination mechanisms, these networks systematically face a problem of institutional ownership as they somehow belong to their convening organisation. These organizations, e.g. CGIAR centres, CIRAD or IRD, are also evaluated based on their partnership activities and results of their networks. The network makes their partnership institutionally visible. As a consequence, they tend to keep their hand on it, somehow *reducing the autonomy of their members to evolve independently from the founding organization*.

On the other hand, some of these networks are decided and designed by their founding organizations for their own interest. Little account is made of the interest of the members in joining the new network. For the founding institution the main objective is to federate its existing projects in partner countries to get a regional visibility of their action. As a consequence, these networks require tremendous efforts from their founding organizations to keep them alive, which strengthen the ownership of the founding agency on the network and lower the sense of responsibility /

accountability of member organizations. *These networks generally disappear with the end of the financial support from the founding organization.*

**Inter-government political decisions** also lead to networks as instrument of regional politics.

Two learning institutions enter in this category: AIT and SEARCA.

- In 1957, a regional graduate school of engineering was created with support of the Southeast Asia Treaty Organization (SEATO) member countries (Australia, France, New Zealand, the U.K., and the U.S.). In 1967, the school of engineering became the *Asian Institute of Technology (AIT)*, an institution independent from SEATO. In 2012, the AIT became an international intergovernmental organization, a status which enables the higher learning institute to assume a regional role from its home base in Thailand.
- In 1965, the education ministers of Thailand, Laos, Malaysia, Philippines, Singapore, and Vietnam, together with a representative from the United States Government established the Southeast Asian Ministers of Education Organization (SEAMEO) as a chartered international organization whose purpose is to promote cooperation in education, science and culture in the Southeast Asian region. In 1966, the *Southeast Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA)* was established by the SEAMEO and hosted by the University of the Philippines Lao Banos (UPLB).

These two academic institutions originated from inter-government political decisions and evolved over long periods before gaining their status of international organization. They were supported all along by a strong political will and regional networks of ministries. Like RECOFTC and MI they have professionalized their network management activities, despite the high transaction costs and heavy bureaucracy as regional networking is their main mandate and their comparative advantage over national organizations. *They have gained their autonomy by diversifying their project portfolio and funding sources.*

- The ASEAN Social Forestry Network is a new organization of this kind. The ASFN is an inter-governmental network established in 2005 with a vision to promote Social Forestry policy and practices in ASEAN Member States. The current phase of ASFN is funded by the Swiss Cooperation Agency (SDC) and managed by a Secretariat that operates in close cooperation with the ASEAN Secretariat under the ASEAN Ministers on Agriculture and Forestry (AMAF). ASFN aims to promote cooperation and catalyse actions to exchange experiences and share knowledge and know-how regarding social forestry and social forestry issues in ASEAN affecting local communities through various means to targeted audiences. This network is at an initial stage in the evolutionary pathway we have described here above. Despite the strong political message given by ASEAN countries through its creation, its activities are still supported by a single donor and not directly operated by member countries but by international networking institutions such as CIFOR for the research component, RECOFTC for the training component and NTFP-Net for the civil society component. The network involves both political and technical aspects. Depending on the role that member countries will play in the future, *this network may evolve in the field of forest governance towards the model of the Mekong River Commission in the field of water governance (see Appendix 9).*

**Cooperative networks** are created by their members in response to a common need or motivation. For example, farming communities get organized at local level to defend their rights or to market their products. They assemble their forces to get stronger collectively and to affirm their position towards other stakeholder groups.

- For example, the *Alternative Agriculture Network (AAN)* emerged in northeast Thailand in the 1980s as a reaction to the rapid expansion of export-led commercial agriculture. Farming communities supported by local NGOs got organized as a peasant movement defending their traditional farming systems and building up an organic network that would provide access to alternative markets through certification schemes. Most of the organic movements in the Mekong countries (except in Yunnan) emerged from smallholders who organized into farmer groups or production cooperatives either spontaneously or with the support of NGOs or development programs. In the case of Thailand, the pioneers of the alternative agriculture movements created the *cooperative GreenNet* and attracted the interest of NGOs at a later stage. In the other countries (Cambodia, Laos, Myanmar and Vietnam) development projects and NGOs promoted organic farming and organized farmers groups on one hand and organized certification bodies with the government and market outlets on the other hand. Government agencies were mainly involved in certification mechanisms and implementation of support policies.

These cooperative networks are usually managed by their members through a *democratic process and elected representatives* when the network size requires to shift from direct management by members to a delegated management through a cooperative board.

*Vertical connections with higher levels are usually organized through subscription to regional federations* that also work through a cooperative governance model. Subscription to higher levels such as the newly created IFOAM-Asia or the global IFOAM brings recognition to the local community networks and also provides access to higher level certification bodies and market segments that would be impossible to reach otherwise.

These vertical connections are very often provided by international organizations and NGOs through projects promoting smallholder farmer organizations around alternative agricultural practices. For example the Helvetas-Profil project in Laos, or the Community Based Rural Development Program of GIZ-CEDAC and the Peri-Urban Agricultural Center (PUAC-ADG) in Cambodia, helped setting up farmer groups, learning lessons from similar initiatives in Thailand (e.g. GreenNet support to Profil through Helvetas) and linking to regional and global actors of the organic sector. This type of cooperative network is widespread in the organic sector because it facilitates the certification procedure and access of smallholders to organic markets.

The same networking approach has been promoted by projects involved in a large range of activities, e.g. integrated farming, SRI, conservation agriculture, sometimes with less success as horizontal connection were less vital for product marketing than for organic agriculture. It is however a first step in organizing farming communities at grassroots level and linking with peasant movements, especially in countries where civil society is less developed such as Laos, Vietnam and China.

**Federation of national networks** can be organized by the international institutions that have nurtured these national networks over the years, such as FAO in the case of IPM activities in Indonesia, Cambodia and Vietnam or by international organizations that collect information from the national networks and make it available to all, such as Cornell University in the case of SRI. While the initial mechanisms are different, i.e. direct involvement in the organization of the national networks in the former case but lower implication in the latter, the governance modes of the networks are similar once they are operational.

- During more than 2 decades the **FAO inter-country IPM programme** has supported government organizations all over Asia in implementing participatory IPM training according to the farmer field school (FFS) model. This model, now applied worldwide, was conceived and supported by the FAO Regional Office for Asia and the Pacific with financial contributions by the governments of Australia, Norway and the Netherlands. The farmer field schools and ensuing community IPM were further supported by international and local NGOs up to a point where national IPM networks became autonomous in their management and FAO could gradually shift from its direct involvement in extension activities to a backstopping role. FAO has maintained its regional networking activities through a new project dedicated to vegetable IPM. Besides, the '**FIELD Alliance**' ([www.thefieldalliance.org](http://www.thefieldalliance.org)) was created in 2002 to support regional networking activities among national IPM networks that were 'handed over' to national partners (i.e. national NGOs and government organizations). National partners manage activities in cooperation with a wide range of collaborating organisations, such as community groups, farmers associations, NGOs, local and national government.
- **SRI International Network and Resources Centre** (or SRI-Rice), is based at Cornell University under the auspices of the Cornell International Institute for Food, Agriculture and Development (**CIIFAD**). The Centre was established in 2010 with a generous gift from Jim Carrey's Better U Foundation to systematically collect and make available information on the System of Rice Intensification globally. Many of the documents published come directly from national partners: farmers, researchers, NGOs, government agencies and other stakeholders from around the world. This global network supports regional SRI activities conducted by AIT as part of a EU funded project on SRI in the Lower Mekong Basin. The project is implemented in Cambodia, Laos, Thailand and Vietnam by the Asian Centre of Innovation for Sustainable Agriculture Intensification (**ACISAI**) created at AIT in 2013. This centre is led by Dr. Prabhat Kumar a former staff of FAO Regional IPM network and Dr. Abha Mishra who did her PhD thesis about SRI in Thailand. Prof. Norman Uphoff from Cornell University and Prof. Amir Kassam from the University of Reading and FAO, who are recognized as international champions of SRI and CA respectively, attended the official inauguration, revealing the intricate relations between the multiple agro-ecology practices (i.e. IPM, SRI, CA) at the global level.

The main lessons learnt from these federations of national networks (e.g. FAO-IPM, SRI-Rice) is that they require (i) *original governance mechanisms* based on a combination of decentralized national activities and centralized regional information sharing and synergy building activities, (ii) a well-documented *communication platform* managed by communication specialists, which requires substantial financial resources at the regional/global level (e.g. FAO-IPM supported by government

grants, SRI-Rice supported by private foundations) and, (iii) *champions*, such as Norman Uphoff in the case of SRI, who provide a good visibility to the networks at the regional and global levels.

The story of the **FIELD Alliance** illustrates the problems faced when some of these factors of success are missing. The Alliance was designed as a network of national NGOs. Two already existed (Thai Education and PEAC in Yunnan) and two were created by ex-FAO staff (Field Indonesia and Srer Khmer in Cambodia). Unfortunately Activities never really started at the regional level due to lack of resources. The team of international expert who were involved in creating the Alliance had hoped that FAO would transfer some funds and responsibilities at the end of the Rice IPM programme. But that never happened, partly because FAO had to work through government agencies and was less open than it is now to collaborating with civil society organizations. In the early 2000s, donor interest for IPM had dwindled as well as funds for agriculture development as a whole. *The lack of leadership, which was linked to the lack of funds for a regional coordinator of the Alliance, prevented further development of experiential learning in agro-ecology.*

A similar attempt to transfer network governance to an informal regional structure is the story of the '**Naga House**' in Vientiane. This house took its name from the two Naga statues that decorate the entrance. Naga House is part of an initiative of the Challenge program water and food (CPWF-CGIAR) to develop a hub of water resource thinkers, researchers, development professionals, and government agency personnel, who can use Naga House for meetings and work in it temporarily. It is intended to be a neutral space, where different stakeholder groups can discuss, debate, learn and work. Such a physical place for a 'regional hub' allows direct interactions between members and as such contributes to synergies. The costs are supported by projects of the CPWF. It can last as long as it remains a priority of the program or as long as the program itself. *As the program will be soon replaced by the CRP5 on Water, Land and Ecosystems the house may not be a priority anymore in the future.*

A way to avoid this dependence on donors and programs is to generate funds through *member subscription* as in the case of cooperative networks. The '**Learning House**', also in Vientiane, is a physical space used by NGOs based in Laos to meet, learn and synergize their actions. Its funding depends on annual subscription of member NGOs.

Along the same line, the **International Biochar Initiative** is a *federation of private sector networks that relies on members' subscriptions for their activities*. IBI supports the development of and expanding biochar industry through material and quality standards, guidelines, and certification programs. While its impact on agro-ecology is still limited in the GMS countries, the networking mechanism developed by IBI is worth noticing. Similar to SRI-Rice, IBI collects information on biochar from its members (i.e. private companies and projects) and makes it publicly available. Networking activities among members are facilitated by an independent secretariat made of 5 permanent staff based in the USA. This private, commercially-oriented management model seems well adapted to an emerging industry but maybe less suited to extension activities with smallholders (i.e. SRI, IPM) or international public goods researched by CGIAR Centres and other international research agencies in partnership with government institutions.

Last, but not least in the series of bottom-up networking approaches, is the story of the **Landcare movement** in Australia and beyond. Landcare is an **alliance of civil society - research – development organizations led by actors of the civil society** at the grassroots level.

- Landcare is a *movement of autonomous farmer-led organizations* supported by local governments with backstopping from technical service providers that share knowledge about sustainable and profitable agriculture on sloping lands while conserving the environment and natural resources. Landcare is also an *extension approach/method* that rapidly and inexpensively disseminated agro-forestry practices among upland farmers based on their interest in learning and sharing knowledge about new technologies that earn more money and conserve natural resources. This networking approach embodies three basic cornerstones: appropriate technologies, partnership building and institution building.

Landcare began in Australia in 1986 when *landholder groups initiated community-based activities* to protect and regenerate land resources. Since then, various government programs have been developed and implemented to support local actions. Landcare groups in Australia are federated by Landcare Australia as a national body. Landcare groups in the different states are also supported by their regional Catchment management authority and their State. There are now approximately 4000 Landcare groups in Australia, and the model is being used in about fifteen other countries.

While this civil society-led networking model is well adapted to Australia, it *faces some problems where the civil society does not have the power it has in Australia*. When applied in developing countries, the model often turns into a top-down approach with national government agencies supported by Landcare activists to extend alternative practices with farming communities. It tends to become ‘business as usual’ technology transfer when adopted by the national extension systems. The approach loses what made it original in the first instance: the alliance of civil society - research – development organizations, where participants belong to the same social categories, were trained in the same universities and are ready to respond to farmers requests. In the Mekong countries, there are many more smallholder farmers per extension agent than in Australia and the two stakeholder group do not engage as equal partners in a common network. They usually belong to different, well compartmented networks located at different hierarchical level. Bridging these networks is more challenging than it is in the Australian context.

Finally, the Landcare model is complementary to the other networking mechanism presented above but not directly applicable to the Mekong region. It would be interesting for the future project to conduct research on possible adaptations of this approach to existing networks in the region by engaging civil society, research and development organizations in more power-balanced networking interactions.

## 2. GOVERNANCE & LEGAL PERSONALITY OF NETWORKS

This section introduces a different typology of the regional networks based on their structure, legal personality and mode of governance. This typology relates to the previous one as the functioning of a network depends to a large extent on the conditions of the network emergence. We illustrate each network type by an example from the Mekong region.

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## PROJECT NETWORKS

We illustrate this situation with the example of **CANSEA**.

The secretariat is managed by an international institution member of the network, CIRAD in the case of CANSEA's coordination unit. The network is legally hosted by a national member institution, the Department of Agricultural Land Management (DALaM under MAF) in Lao PDR. The Lao member was selected as host for the network as it is also hosting the CIRAD researcher in charge of the secretariat. This shortens the line of command between the institutions. For practical reasons, CANSEA's host has not changed but other project networks also turn the hosting institution among network members. The web site is managed by another partner institution (NOMAFSI) based in Vietnam. The board or steering committee is composed by member institutions, i.e. CIRAD, the convening institutions, the member countries ministries and universities, and donor institutions such as AFD (and ACIAR in the future).

As mentioned above, most networks initially work that way. The problem is that network management and facilitation relies very much on the secretariat. There is a risk that the members would become passive, expecting the convening institution, which is in charge of the secretariat, to do the bulk of the job. If strong national networks have not emerged after a few years the regional coordination role may become overwhelming for the convening institution. Network fatigue then leads to its dissolution or inactivity.

*It seems therefore essential to secure networking activities at the national level as soon as the initial stages of the regional network.* In the case of CANSEA, these national networks relied on highly visible national projects funded by AFD (PADAC in Cambodia, PRONAE and PROSA in Laos, ADAM in Vietnam) that were federated as a regional network. Once the national projects end, the momentum gradually dissolves at the national level. The regional coordination is then grounded on very little field activities and members lose their interest. The main role of the regional coordination unit is then to anticipate the end of projects and to engage member countries in writing proposals to raise again donors interest and sustain national level activities. In 2012 and 2013, the CANSEA coordination unit dedicated most of its resources to leverage funds for member countries leading to a renewed project portfolio involving multiple donors (e.g. EU funded EFICAS research project in Laos, TICA-AFD funded capacity development project in Thailand).

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## POLITICAL NETWORKS

We illustrate this situation with the example of **AFSN**

An independent inter-governmental secretariat, ASEAN in the case of ASFN, manages the regional network with the financial support of the Swiss Cooperation Agency (SDC). Funding support from an external donor agency is common at the initial stages of a political network. Once the network members are convinced of the interest of this network, member countries may be keen to invest in the networking activities as it is the case for the Mekong River Commission (initially supported by a NUDP project).

Legal hosting by a regional inter-governmental institution (ASEAN) provides a status of international organization since the beginning of the network, while other networks such as AIT, SEARCA or RECOFTC had to wait many years before getting granted the status of full-fledge international inter-

governmental organisation. Their board is composed of representatives from ministries and governmental agencies.

Political networks are usually very bureaucratic. The lack of flexibility is compensated in the case of ASFN by a delegation of field activities to professional networking institutions, i.e. CIFOR for the research component, RECOFTC for the capacity building component and NTFP-Net for the civil society component. *The risk is that three independent networks emerge from each operator and miss opportunities to synergize.* However, regular board meetings and successive phases in the SDC supported project maintain the coherence of the overall networking activities towards its initial vision.

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## INGO NETWORKS

We illustrate this situation with the example of **RECOFT**

Some regional networks managed to register as international organizations after a decade or more of operation. This is especially the *case of networks involved in regional training and capacity building*, such as AIT, SEARCA, Mekong Institute and RECOFTC. These INGOs manage the secretariats of multiple *project networks*. They also manage their *alumni network*, which are often mobilized to develop new projects and networks. All these networks are hosted by the INGO but their boards, composed with representatives of their member institutions, are different from the board of the INGO. The latter consists of 15 members drawn from senior government and civil society organizations, eminent individuals from the world of community forestry, donors, a dean of Kasetsart University — where the organization is based, in Bangkok — and the Centre's executive director. Kasetsart University has been crucial to RECOFTC's establishment and daily operations as it supports RECOFTC with *needed infrastructure* and the land on which the RECOFTC Headquarters has been built. Khon Kaen University plays the same role in the case of the Mekong Institute, Thammasat University for AIT, University of the Philippines – Los Banos for SEARCA. These INGOs have in common their affiliation with a national university from which they have gradually become independent while retaining some strong institutional linkages.

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## COOPERATIVE NETWORKS WITH MEMBERSHIP TO AN INTERNATIONAL ORGANISATION

We illustrate this situation with the example of **IFOAM-Asia**

Cooperative networks such as GreenNet in Thailand have developed democratic governance mechanisms with *members' subscription, right to vote during general assemblies, services to members monitored by an elected board*. Such a structure is common in the organic sector. At the regional level, the cooperative network dedicated to organic agriculture, IFOAM-Asia is very new. It is therefore difficult to draw lessons from its functioning as it only operates since early 2013. However, from the functioning of the global IFOAM one may expect services to members related to information sharing on production, standards and certification. A governance similar to the one described above in the case of SRI-Rice but funded by members subscriptions may turn to be very effective in facilitating the access of members to organic markets and developing synergies between the many initiatives that are developing all over Asia.

We illustrate this situation with the example of **FAO-IPM**

As mentioned above, a federation of national networks is an excellent mechanism when a few conditions are fulfilled:

- a *regional secretariat led by a neutral international organization* (Cornell University – SRI-Rice, FAO – FIELD Alliance) fully funded by institutional donors, foundations, or members' subscriptions,
- regional activities grounded in *active, autonomous national networks* with standard procedures guaranteed by the regional board,
- a *network of champions* comprising a regional leader under the responsibility of the board and national leaders in charge of the daily management of national networks.

In conclusion of this review of networks' governance, the challenge for the future project is to take the best from all these experiences and avoid the pitfalls specific to each governance structure. A combination of the different networking mechanisms is certainly a must. The right dosage will have to be found through an adaptive learning process to adjust practical implementation to a changing institutional environment.

## V. SCENARIOS FOR A REGIONAL AGRO-ECOLOGY LEARNING ALLIANCE

### 1. LESSONS FROM THE COMPARATIVE ANALYSIS OF REGIONAL NETWORKS

Obviously there is no universally applicable recipe for successful networks, i.e. *networks that actively engage their members into information/knowledge sharing and vibrant collective actions with visible benefit for all participants.*

Like a living organism, a network evolves along *successive stages of a transition pathway* from its origins to successive growth stages, maturity and in some case senescence, when the conditions or the reasons that gave rise to the network have disappeared or when the network cannot *adapt to its changing environment*. The performances of a network therefore depend to a large extent on the conditions of its emergence, its structure and governance mode, its interactions with its environment along the successive stages of its evolution.

The review presented above, however, highlights *regularities in the singularities* of the individual network stories. What are the necessary conditions for a vibrant network? What are the factors that are found in all success stories but that may not necessarily be sufficient to fully explain the success?

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#### A CLEAR MANDATE AND WELL DEFINED GOALS

All successful networks have invested time and efforts in defining their **mandate** and delineating the **scope** of their activities. This initial investment helps increasing the **visibility of the network** and avoiding possible confusions with other initiatives. After few years of activities, RECOFTC has become a reference centre, the place to go on *community forestry*, SENAFE has become a famous regional network on *formation in agro-forestry*, M-Power on *water governance*, CANSEA on conservation agriculture in southeast Asia.

A regional agro-ecological network should clearly define its scope and mandate, being complementary of other existing networks. We identified some key pillars of this scope: the promotion of **unifying agro-ecology concept, a learning process** facilitating an **agro-ecology transition** in the region, i.e. supporting smallholders in transitioning from their current practices to agro-ecology techniques through gradual transformation of their farming system

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#### A RECOGNIZED LEADERSHIP

**Charismatic leaders** are often at the origins of successful networks and they provide the initial impulse that get the founding members together and then profoundly mark the initial stages of the network expansion and governance modes. We can take here the examples of Dr. Somsak who was at the origins of RECOFTC and strongly marked it by his personal imprint. CANSEA activities own much to the strong personal investment of Jean-Claude Legoupil from CIRAD. These network conveners are passionate people, ready to volunteer a lot of their personal time to their networks to make them work.

We can identify recurrent characteristics in these charismatic leaders, the “network champions”.

#### ❖ **Node of multiple professional networks**

The champions of regional networks are nodes of multiple networks. They can therefore both strengthen the internal cohesion of the network (bonding) and open to external networks (bridging) especially at the international level. The M-Power network on water management in the Mekong region is a network of regional champions who decided to work together in a flexible and informal way on topics of mutual interest.

Most champions are capable of linking national and international levels through good horizontal and vertical connections they have nurtured over long periods and multiple projects. Among these regional champions one can mention Mr. Vitoon (Green Thailand), a leader of the organic agriculture sector in Thailand, Dr. Sisaliao from the Lao farmer Products and other multiple initiatives in Lao PDR, Dr. Xu Jianchu from the Kunming Institute of Botany and ICRAF and also involved in a myriad of projects and networks that provide him with a strong national (Yunnan-China), regional (Montane Mainland southeast Asia) and global stature in the field of natural resources management.

#### ❖ **Recognition**

Their recognition by peers and by donor communities, their political connections are great assets for the networks they are involved in. Like movie makers, these champions are bankable. Projects are accepted by donors based on their good reputations. They are capable of attracting network members on their single name. Their openness to other stakeholder groups help them bridging to other networks and federating large number of initiatives.

**Capacities.** They have a recognized capacity to develop new projects, to combine multiple projects towards a common vision and to secure the necessary institutional backstopping. Their good track of successful projects, their undisputed technical expertise and recognized management skills largely contribute to build trust of partners and donors.

**Visionary.** Champions are also enablers. Talented networkers, they make things possible by combining efforts of multiple networks and institutions. These people are not necessarily charismatic but they have the characteristics of successful entrepreneurs: they are passionate, goal-driven, resourceful, energetic, and very persistent.

As visionary people and key drivers of change, champions are in permanent tension with lower hierarchical levels for the implementation and consolidation of their ideas. They often produce more ideas, open more pathways than they can actually explore with existing human and financial resources. As a result, there is a risk that they do not persevere long enough on some potential avenues for change before switching to another idea. There is also a risk that the multiplicity of initiatives in many different directions get members of the network lost, losing track of the ultimate goals and priorities. Creative management should therefore include elements of adaptive learning and constant efforts to share a common vision with network members.

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#### A COMMUNITY OF PRACTICE

Building social capital within a network is crucial, especially at the initial stages. Joint activities involving more than 2 partners help developing bonding relations (internal to the network) before bridging connections (outside of the network) can be developed. Network members need to learn about each other's by working together. They need to gradually build a **community of practice** that can turn into an internal network culture when members really adhere to the network objective, mechanisms and spirit that is often impulse by the leaders and/or steering committee.

**Formation and training** are essential component of network activities as they build lasting relations between members and alumni who can then become members themselves and contribute to **alumni networks**. The networking institutions that incorporate a strong formation dimension greatly benefit from their alumni networks (e.g. AIT, RECOFTC, SEARCA).

Beyond capacity building, democratic cooperative mechanisms should be developed to allow members to freely express their opinions, to control the activities of the secretariat through regular general assemblies and to **elect their representatives** to the board. A strong and active **implication of farming communities** in the life of the network should be promoted.

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#### CONTINUOUS FUNDING SUPPORT TOWARDS FINANCIAL AUTONOMY

Successful networks manage to **secure long term funding** thanks to the active involvement of the network secretariat in raising funds. Many project-based network stories end with the end of the project money initially used to support network activities. Network leaders therefore manage to build a **multi-donor project portfolio** with time overlaps between funding periods. They avoid to rely on single donor as all activities may collapse because of donor fatigue or reorientation of support to other activities. Long periods without project support put the whole network at risk as it becomes difficult for the secretariat to operate normally and sustain staff contracts. This has been the case for example for ICRAF regional trainings on agro-forestry or CANSEA activities that went up and down depending on the level of funding available.

**Programmatic approaches** combining support to the network 'basic metabolism' in addition to project based activities are important to develop in partnership with donors capable of providing long term funding (e.g. 10 years programs, foundations). A combination of **three funding sources** should be sought: (i) financial support from institutional donors or private foundations to the regional coordination, (ii) a portfolio of diverse national and regional projects (multiple donors and partners) developed with the support of the regional secretariat, (ii) annual subscription from network members (i.e. from their core budget of national projects). **The willingness of members to pay annual subscription will directly depend on the benefits received from the regional network**, such as valorisation of good practices (e.g. via certification PGS, PSE) or service provision (e.g. formations, diagnosis, soil analyses).

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#### CAPACITY OF ADAPTATION TO AN EVOLVING ENVIRONMENT

Of course these elements of network success (social capital, financial autonomy...) are not given at the beginning. They are co-constructed on the way through an adaptive learning process that allows to sustain network activities amidst a changing environment. The phasing of a network life, just like

the phasing of the agro-ecology transition which the network will support, is therefore an important element to take into consideration.

There will be a need for a **inception phase** when the main actors of the ‘joint-venture’ learn their roles, learn their way through the complex interactions between stakeholders, a **building-up phase** when the network is brought to scale and becomes fully operational, and an **empowerment phase** when the instigators of the network can leave it to its champions (who have merged during the previous phases) to manage autonomously.

Also, a network may not exist forever as it may not be necessary anymore once it has reached its goals. Many of the reviewed networks are very active during approximately a decade (e.g. ASOCON, SENAFE) after which they lose momentum or transform into an international organization (e.g. RECOFTC, MI). Plans for a future network should therefore incorporate a 10 years perspective.

A COMBINATION OF NATIONAL AND REGIONAL THEMATIC NETWORKS

**Thematic networks** are related to specific practices within the larger scope of agro-ecology ( e.g. OA, SRI, IPM, CA). They may exist at national, regional and global levels depending on the theme. Our review pointed the strengths and weaknesses of the existing thematic networks at the different scales. A qualitative assessment of the network strengths at different scales is proposed in Table 6.

**Table 6.** Strengths of existing thematic networks

Level	Organic Agriculture	Integrated farming	System of Rice Intensif.	Conservation Agriculture	Agro-forestry
National	XXX	XX	XX	X	XX
Regional Mekong	X	XX	X	XX	X
Global	XXX	XX	XXX	XXX	XXX

*NB: X – weak, XX – moderate, XXX - strong levels of network coordination at a given scale.*

This table shows that the different agro-ecology themes are not necessarily well coordinated at each level (national, regional, global) nor across levels for each theme. A regional network should work on both vertical (across scales, i.e. columns in Table 6) and horizontal (integration of these thematic at each level) integration. The activities of a regional federative network should be grounded on strong national networks and endorsed by global networks.

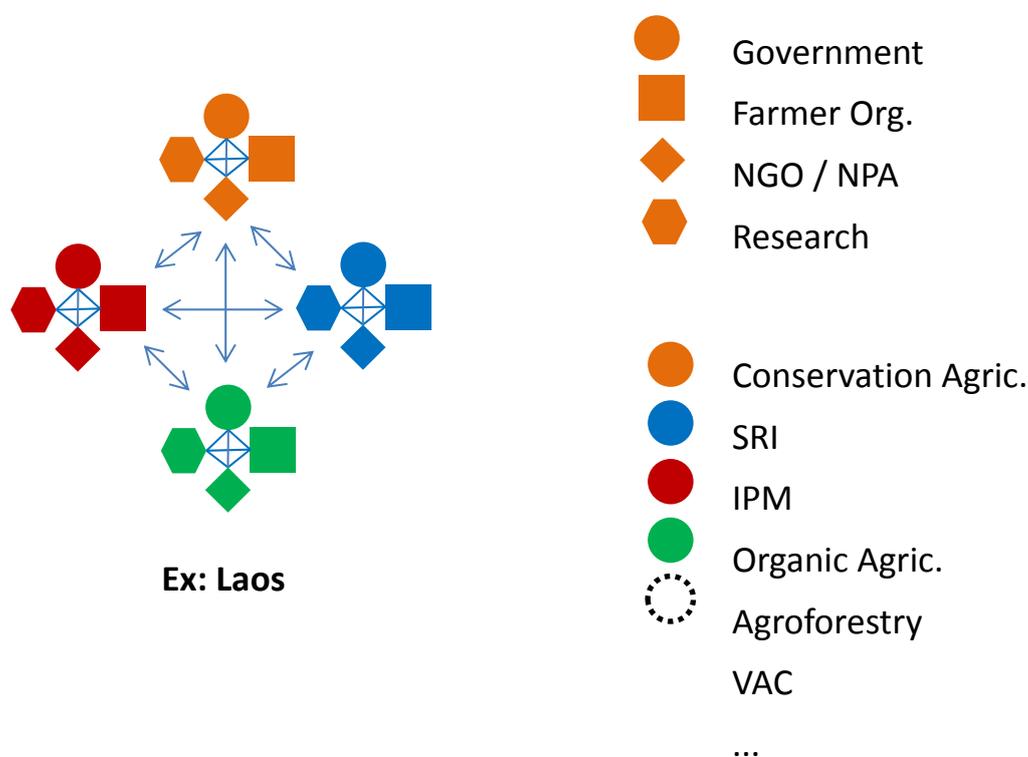
2. A REGIONAL LEARNING ALLIANCE BUILT ON NATIONAL AND THEMATIC NETWORKS

Based on the lessons learned during the review of both (1) the status of agro-ecology in the Mekong region and (2) the existing regional networks, we could envision the necessary condition towards the emergence of a regional agro-ecological network.

In each country it is essential to build strong national foundations for a regional alliance.

National thematic multi-stakeholder networks should be strengthened in two directions: (1) **involve more diversified stakeholders** from government, research, farmers’ organisation, and civil society, (2) **open to the other thematic networks** through consultation meetings and synergies development activities (e.g. joint reflections on cross cutting issues such as extension approaches, long term strategies for capacity building, reduction of pesticide uses). Figure 2 illustrates the conceptual configuration of such national networks.

Figure 2. National networks (e.g. Laos)



The study identified several thematic networks at the regional level (Mekong region or Southeast Asia), such as:

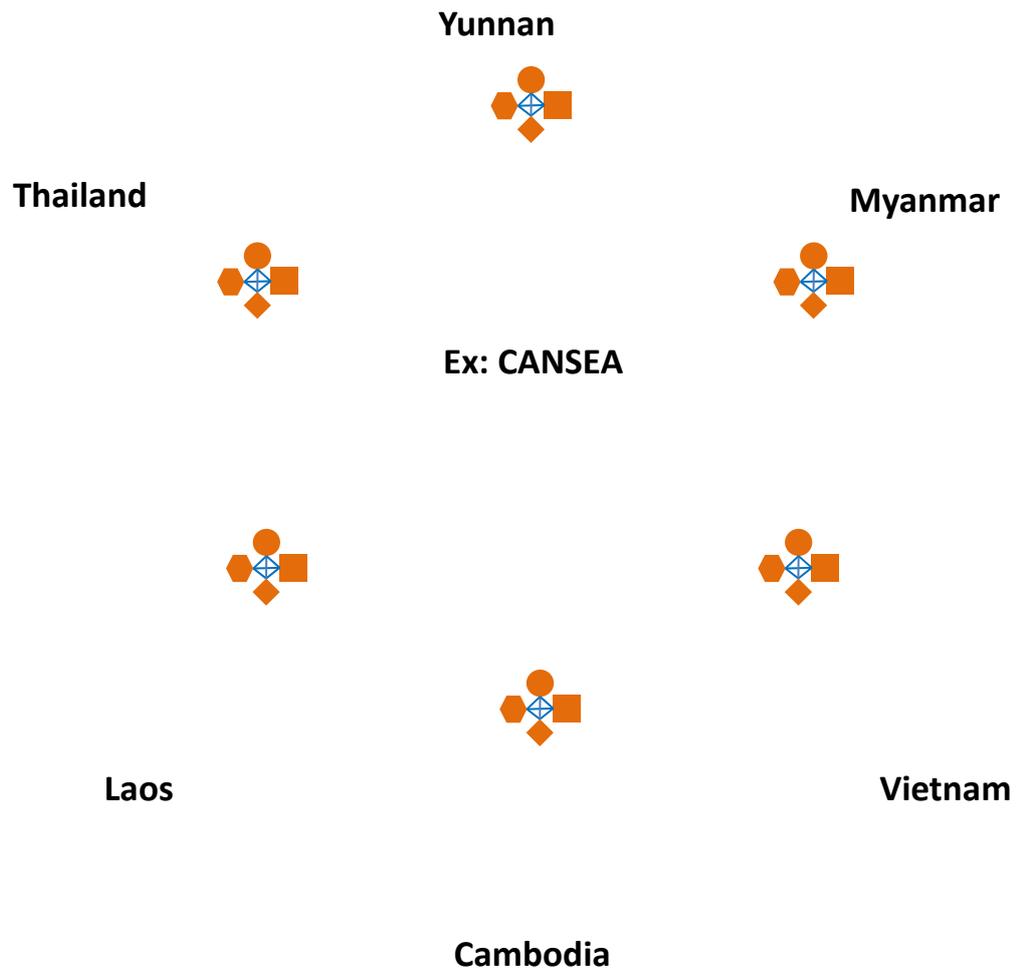
- SRI, with the project from the Asian Centre of Innovation for Sustainable Agriculture Intensification (ACISAI) based at Asian Institute of Technology (AIT),
- IPM with the FAO Regional Office in Bangkok and the FIELD Alliance (Thailand, Cambodia, Indonesia, etc.)
- Agro-forestry Network managed by ICRAF through its regional offices in Vietnam, Thailand and Yunnan,
- Organic Agriculture regional network through IFOAM Asia and regional activities of GreenNet from Thailand to neighbouring countries (Yunnan, Laos, Cambodia, etc.)

- Conservation agriculture, with CANSEA.

These regional thematic networks should be strengthened in two directions: (1) facilitating **learning mechanisms between countries**, (2) facilitating **exchanges between thematic networks**.

Figure 3 illustrates the conceptual configuration of a regional thematic network, taking CANSEA as an example.

**Figure 3.** Regional thematic networks (e.g.: CANSEA)

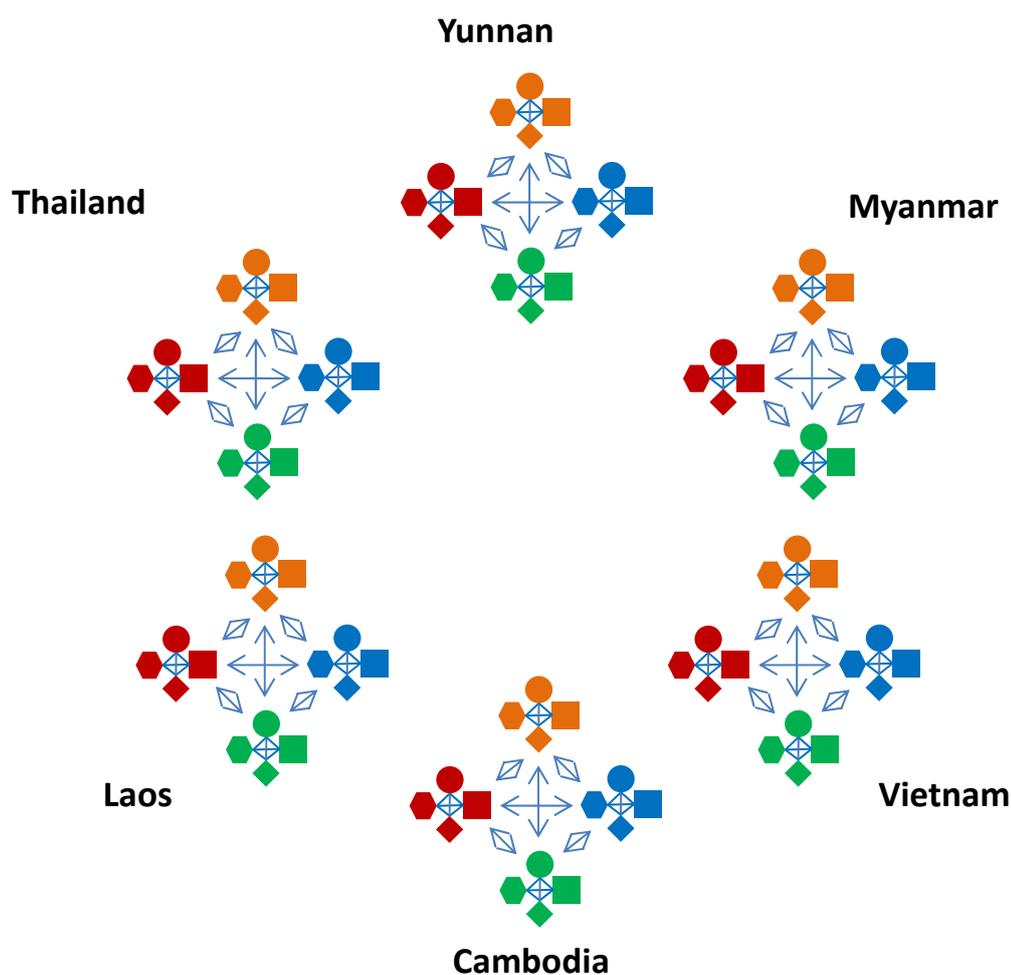



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CREATE THE CONDITIONS OF A REGIONAL AGRO-ECOLOGICAL LEARNING ALLIANCE

The envisioned regional agro-ecological network, as illustrated conceptually in Figure 4, would combine efforts to strengthen multi-themes agro-ecology networks in each country as shown in Figure 2 and developing synergies between regional thematic networks shown in Figure 3. Reaching this ambitious objective will obviously require a flexible and adaptive approach, in order to fit with local situations and feedback from participants.

**Figure 4.** A regional alliance of national networks



We propose to use the concept of “learning alliance” for characterizing this learning approach. There is an abundant scientific literature available about ‘learning alliance’ that will be important to mobilize at the initial stage of the project to make sure all participants share a common vision of the alliance goals, structure and methods.

In short, an “**agro-ecology learning alliance**” can be defined as *a series of communication platforms linking different institutional levels (national, district, community, etc.) and bringing together a range of stakeholders interested in innovation and knowledge generation in the area of agro-ecology*. The Learning alliance functions as a **forum to share and discuss** real issues encountered at multiple levels (i.e. from grass-root level to policy makers). It provides **reflexion and feedback mechanisms** for all stakeholder groups.

The stakeholders have complementary knowledge and capabilities which, when combined through the learning alliance, will (i) scale up the knowledge created in the innovation process (ii) facilitate the dissemination of innovative practices through the **enabling environment** created.

Learning alliances **require facilitation to overcome barriers to interaction and communication** within and between the stakeholder platforms. They aim to enable a shared learning process in which barriers to horizontal and vertical information sharing are broken down.

Learning alliances, by involving key stakeholders at all levels in the process of knowledge creation, aim to ensure that innovation takes place within a framework of local and national conditions and norms ensuring that what is produced is relevant and appropriate. **It is the process of creating the enabling environment through learning among different stakeholders which leads to impact and sustainability.**

The alliance would facilitate the emergence of a collective learning platform at the regional level (i) to synergize existing agro-ecology initiatives and (ii) to support the collective design with farming communities of viable and durable alternative to the current agrifood system. The following keywords best describe the alliance:

- **Regional:** Great Mekong Subregion, Southeast Asia
- **Perennial:** securing financial resource
- **Efficient:** added value from the network should be measurable and monitored
- **Viable agricultural alternatives:** based on agroecology principles
- Collective design, common conceptual framework: **agro-ecology transition**
- **Collective learning:** all stakeholder groups, all schools are involved
- **Synergies:** increased efficiency, influence and impact of the overall project

### 3. AN EMERGENCE & CONSOLIDATION PROCESS IN THREE PHASES

Successive phases are envisioned for the building up of thematic networks and the overall agro-ecology learning alliance. From the experience of other regional networks a total period of 10 years is necessary for the network to reach its goals and then evolve autonomously.

#### AN EMERGENCE PHASE: CREATING AN ENABLING ENVIRONMENT

A first **6-month inception phase** is recommended, for **identifying champions and getting them on board**. The direct input of the convening institutions will be necessary at this initial stage. Activities could be developed in each country through a national facilitator supported by a regional secretariat. Flexible structures adapted to the situation in each country should gradually emerge. They may take the form of an independent secretariat and steering committee (board) or link with existing structure that would host the national agro-ecology networks.

The next **two years, building-up phase** will **create the conditions of the learning alliance**. It will bring the network to scale once all champions and network facilitators will be on board and locally-adapted governance mechanisms will have been tested during the inception phase. The number of network members will gradually increase. The networks will become fully operational, increasing their visibility and attracting the interest of more members who will clearly see the benefits they can get from joining the initiative. The project secretariat will still manage the activities and monitor its impacts.

The **empowerment phase (internalization of the secretariat)** will take place during the next **6 months**, when the network management will gradually be handed over to the champions who will

have taken major responsibilities during the two previous phases. The composition of the regional secretariat will change in time and network members will take the lead and becoming fully responsible for the strategic and financial management of the learning alliance and all related thematic and national networks.

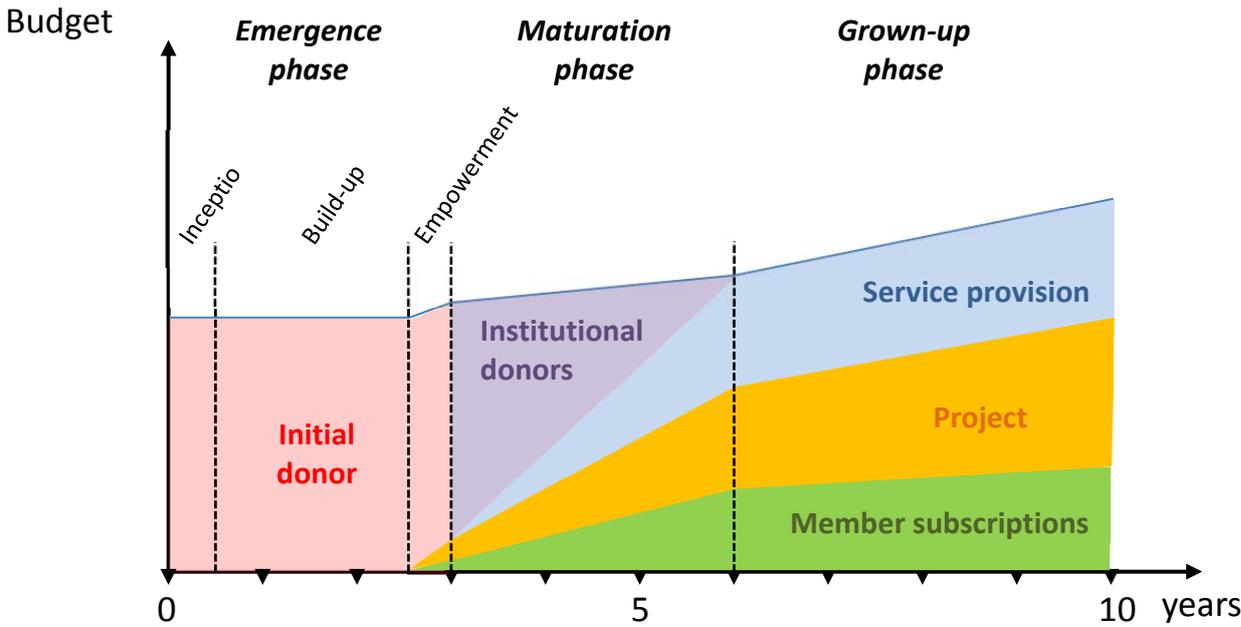
**A MATURATION PHASE: DIVERSIFICATION OF PARTNERSHIPS AND INCOMES**

During the next three years period of the **maturation phase** it is anticipated that the learning alliance will work full speed and will record its first significant successes. A continuous monitoring by an independent entity is therefore important to make sure the process does not lose momentum. It is anticipated that a lighter financial support will be required from institutional donors to support networking and monitoring activities (Figure 5). This period will be important for the initial donors as the impacts of their investments will become visible, while it may not yet be the case at the end of the first 3-years period.

**A GROWN-UP PHASE: COMPLETE AUTONOMY**

The next four years (**grown-up phase**) will be a period autonomous management of the network by the regional champions who will also manage the monitoring and evaluation process independently. The alliance will generate its own financial resources through: member subscriptions, project portfolio owned by network members, and service provision to member and non-member organisations. After a decade, the alliance should evolve into a different entity (e.g. inter-governmental organization) or dissolve if its goals have been reached and the agro-ecology transition is finished in the Mekong region.

**Figure 5.** Agro-ecology learning alliance timeframe and budget scenario



## VI. CONCLUSION « TOWARDS AN AGROECOLOGY TRANSITION »

The study shows that there are a **significant number of initiatives and accumulated experience** in the Mekong Region on practices contributing to an **agro-ecological transition** seen as an alternative to the current agrifood system. Agro-ecology is a **unifying concept** of a wide “agro-ecology movement”, to which “schools” such as Organic Farming, Conservation Agriculture, but also System of Rice Intensification (SRI), Integrated Pest Management (IPM), Integrated Farming, Agro-forestry, and also VAC and new theory farming systems, are contributing. All these initiatives represent a high capital in terms of scientific knowledge, experience and knowledge.

The consultations of agro-ecology actors confirm **a shared interest for bridging and synergizing these initiatives**, in order to exchange and enrich experience, to increase the visibility of the practices and scale up their adoption by farmers and inclusion in public policies, and to increase their capacity of fund raising for strengthening the existing networks.

A regional agro-ecology learning alliance can emerge from the existing, still dispersed initiatives in the region. It should have clear mandate and added value to existing networks and initiative. It can be fostered by “agro-ecology champions” from the different countries, who will actively promote the concept of agro-ecological transition, bridge existing experiences and facilitate the formulation of new projects providing funds necessary to sustain the network activities. The learning alliance will strengthen the agro-ecology networks in the countries, and build and bridge the regional thematic networks. Governance will have a democratic pattern. Finance will be diversified and sustainable.