



The Agro-ecology Initiatives in Lao PDR

Final Report

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List of Acronyms

ADS	Agriculture Development Strategy
AE	Agro-Ecology
AEC	ASEAN Economic Cooperation
AF	Agro Forestry
AFD	Agence Française de Developpement
AFO	Asian Farmer Organization
ALCDC	Agricultural Land Conservation and development Center
ALISEA	Agro-ecological Learning Alliance in South East Asia
ALSPEAC	ASEAN Learning Series and Policy Engagement on Agricultural Cooperative
ASDSP	Association Solidarité pour le Developpement de Société des Paysans
ASEAN	Association of South East Asian Nations
CA	Conservation Agriculture
CADC	Clean Agriculture Development Center
CANSEA	Conservative Agriculture Network in South East Asia
CAPSA	Centre for Alleviation of Poverty through Sustainable Agriculture
CDE	Centre for Development and Environment
CCFD	Comite Catholique Contre la Faim et pour le Developpement
CCL	Comité de Coopération avec le Laos
CDEA	Community Development and Environment Association
CGDA	Community of Green Development Association
CHESH	Centre for Human Ecology System in the Highland
CIDSE	Cooperation Internationale pour le Développement et la Solidarité Europe

CIRAD	Cooperation International for Research on Agriculture and Development - Centre de Coopération Internationale en Recherche Agronomique pour le Développement
CLEAR	Community-Led Extension and Action Research
CMC	Crop Multiplication Center
CoDA	Community Development Association
CSAM	Centre for Sustainable Agricultural Mechanization
CSO	Civil Society Organization
DAEC	Department of Agriculture Extension and Cooperative
DAFO	District Agriculture and Forestry Office
DALaM	Department of Agricultural Land Management
DMC	Direct Mulching Cover
DOA	Department of Agriculture
DOI	Department of Irrigation
DoPLA	Department of Policy and Legal Affairs
DP	Development Partner
EFICAS	Eco-Friendly Intensification and Climate Resilient Agricultural Systems
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FFS	Farmer Fields School
FSRC	Forestry Science Research Center
GAA	German Agro Action
GAP	Good Agriculture Practice
GCCAP	Global Climate Change Alliance Program
GDA	Gender and Development Association
GDP	Gross Domestic Product

GFRAS	Global Forum of Rural Advisory Service
GI	Geographical Indication
GMO	Genetically Modified Organism
GoL	Government of Laos
HRC	Horticulture Research center
HYV	High Yielding Varieties
IATP	Institute for Agriculture and Trade Policy
ICRAF	International Centre for Research in Agroforestry
IDEP	Institute for Economic Development and Planning
IF	Integrated Farming
IFAD	International Fund for Agriculture Development
IFOAM	International Federation of Organic Agriculture Movements
ILO	International Labor Organization
INGO	International Non-governmental Organization
IPM	Integrated Pest Management
ITC	International Trade Commission
JICA	Japanese International Cooperation Agency
LAO PDR	Lao People's Democratic Republic
LAPA	Lao Agro-Processing Association
LARReC	Living Aquatic Resource Research Center
LCB	Lao Certification Body
LICA	Lao Initiative Conservation Agriculture
LOMA	Lao Organic Movement Association
LPRP	Lao People's Revolutionary Party
LRC	Livestock Research Center
LURAS	Lao Upland Rural Advisory Services

MAF	Ministry of Agriculture and Forestry
MELA	Mekong Extension Learning Alliance
MIC	Ministry of Industry and Commerce
MONRE	Ministry of Natural Resources and Environment
MOES	Ministry of Education and Sport
MOHA	Ministry of Home Affairs
NABP	National Agro-Biodiversity Program
NAFC	Northern Agriculture and Forestry College
NAFES	National Agriculture and Forestry Extension Service
NAFRI	National Agriculture and Forestry Research Institute
NARC	National Agriculture Research Center
NEM	New Economic Mechanism
NIER	National Institute for Economic Research
NERI	National Economic Research Institute
NPA	Non-Profit association
NSEDP	National Socio-Economic Development Plan
NTFP	Non Timber Forest Product
NUDP	Northern Upland Development Project
NUOL	National University of Laos
OA	Organic Agriculture
OECD	Organization for Economic Cooperation and Development
ORCATAD	Open Resources for Conservation Agriculture and Trade and Development
PADETC	Participatory Development Training Center
PAFO	Provincial Agriculture and Forestry Office
PALaM	Provincial Agriculture Land Management
PANAP	Pesticide Action Network Asia Pacific

PCADR	Programme de Capitalisation en Appui aux Politiques de Développement Rural
PRDFA	Program for Rural Development Focus Areas
PRONAE	Project Nationale de Agro-Ecology
PTK	Pha Tad Ke
R&D	Research and Development
SAEDA	Sustainable Agriculture and Environment Development Association
SARD	Sustainable Agriculture and Rural Development
SDC	Swiss Agency for Development & Cooperation
SDG	Sustainable Development Goal
SEANAFE	South East Asia Network for Agro-Forestry Education
SRI	System for Rice Intensification
SURAFCO	Supporting the Reform of the Agriculture and Forestry College
SSWG-AB	Sub-Sector Working Group on Agro-Biodiversity
SWG-AB	Sector Working Group on Agri-Business
SWG-ARD	Sector Working Group on Agriculture and Rural Development
TABI	The Agro-Biodiversity Initiative
TDEA	Technical Department of Extension and Agro-processing
TOA	Towards Organic Asia
TSC	Technical Service Center
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
UNOPS	United Nations Office for Project Services
WB	World Bank
WOCAT	World Overview of Conservation Approach and Technologies
WWF	World Wild Life Federation

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Executive Summary

Lao Initiative Conservation Agriculture (LICA) expects to have an inter-sectorial engagement that is facilitated by the local representative of the Ministry of Agriculture and Forestry, and that involves ministries representative (science and technology, education and sport, planning and investment, natural resources and environment, industry and commerce, and financial institutions). This engagement helps to embed the agro-ecology transition priorities into the local official plans and strategies, and to ensure a common approach all over the local area.

It is feasible to develop intern-sectorial cooperation and mechanism to deal with the agro-ecology transition at national and sub-national levels, but bearing in mind that in the Lao context, many bilateral programs have promoted this approach and confronted with various difficulties. A heavy structure and unclear responsibilities of ministries without proper fund and human resources allocation often lead to failure or malfunctioning. At the end the key leading ministry works harder while other ministries are passively participated. Coordination within and between ministries as well as subnational levels (horizontal and vertical coordination) proved as crucial weaknesses in many inter-sectorial mechanisms. Silo approach is still heavily dominated in the Lao bureaucracy system.

There are some governance structures and government policies as well as strategies are in place and implemented via different actors, that the agro-ecology transition or development could consider as advantages of the transition by strategically elaborate the most appropriate one and start with it rather than create new or doing more with low impact (results) as many programs or projects have done in the past recent years without or less coordination; the programs or projects ended activities also ceased. Some of those need to be revised or re-assessed how to upscale the strengths and reduce the weaknesses in promoting the agro-ecology transition.

It is clear that for many years the Government of Laos and a number academic institution has shown interest in agro-ecology through the promotion of “clean, green, good practice and smart agriculture” concepts such as eco-farming, conservation agriculture, organic farming, permaculture, good agriculture practices (GAP) and many other ecological sound agricultural approaches. These clearly reflected in the following official documents and in cooperation programs/projects with various international and local development partners:

The Resolution of the 8th Congress of the Lao People's Revolutionary Party (LPRP) in 2006 indicated that Laos should embark on stable, sustainable, clean, non-toxic and low cost agriculture development. On which basis the national strategies and legal frameworks for promoting and supporting agro-ecology were developed. It thus has been put in the 8th five-year National Economic Development Plan 2016-2020 under the principles of “green economy” to end hunger, food security and improve nutrition and promote sustainable agriculture (SDG2), and to ensure sustainable consumption and production patterns (SDG 12), and to combat climate change and its impacts on people’s livelihood (SDG 13). Specifically the 8th NSEDP has highlighted the promotion of agro-ecological production in uplands and low lands and focused on supporting small holder farmers (the majority of Lao farmers) to diversify and improve production within integrated farming systems.

Laws, Decrees, Agreements and Regulations etc. are amended and issued to support the implementation of the NSDP and government strategies e.g. the law on agriculture, forestry, land and the Agreement of the Ministry of Agriculture and Forestry on Organic Agriculture (OA) and Good Agricultural Practice (GAP) Standards, the Regulation on the control of pesticides in Lao PDR, Environmental Protection Law (2013), the Prime Ministry Decree No. 115 (2009) and recently No. 238 (2017) on Associations and the Decree No. 136 on Cooperatives.

In response to the Party Resolution and the National Socio-economic Development Plans the Ministry of Agriculture and Forestry (MAF) has developed a long term Agriculture Development Strategy (2016 to 2030) envisioning the development of clean, safe and sustainable agriculture to promote smart and clean agriculture, development of diversified niche products and support for resilient farming systems for poverty reduction. Restructuring the governance structure within MAF and sub-national offices to suit the ADS has been occurred.

Aside all of legislative frameworks there are coordination and exchange mechanisms in place between the Government, Development Partners, private sectors and CSOs through various platforms, and Sector and Sub-Sector Working Groups. These offered opportunities for cooperation and coordination between State agencies, particularly the TDEA, the DOA, and non-state actors e.g. Helvetas, SAEDA¹, CDEA², WWF, and also some private Companies³ on the agro-ecology development.

Opportunities are in place, but challenges still exist and might hinder or slow down the adoption of the agro-ecology development in Lao PDR. There are main challenges needed to be taking into consideration by promoting the agro-ecology.

While the policies, strategies, laws and regulations regarding agro-ecology have been formulated and are being implemented, there is not always coherence with some of the promoted policies. Actually a number of policies have negative consequences for agro-ecological practices. A clear example is the promotion of foreign direct investment (FDI), which is closely linked to land concessions for the exploitation of natural resources like large scale monoculture plantations, mining, hydro-power plants or recreations. Weak coordination between institutions and ineffective law enforcement of the government are important factors leading to steep increase in the use of agrochemicals and also contribute to a reluctance to invest resources in soil improvement.

The mis-interpretation of the green economy and the modernization of the GoL policy is another issue. It is commonly understood by many decision makers and a number of Lao extension workers that traditional agriculture is a backward, unproductive, environmental destructive and unsustainable production system. They often believe that through commercial and industrial agriculture in plantations (e.g. rubber, cassava, sugar, eucalyptus and etc.) employment will be created and poverty will be reduced. Specialized market oriented production of high value crops is often seen as a panacea to improve the economic status of farmers. It is true that some, mainly wealthier farmers, who have better access to

¹ Sustainable Agriculture and Environment Association

² Community Development and Environment Association

³ Living Land and Nam Khan Project in Luang Prabang province and the Association to Support the Development of Peasants (ASDP), Agro-Asia Company in Vientiane Capital

technical knowledge, financial resources and to market information, are (temporarily⁴) able to improve their living standard and increase their income through the transition from traditional food production mainly for self-consumption to high-value crops production for markets.

Fortunately, the government recently has acknowledged shortcomings through the exploitation of the natural resources for economic growth. Restructuring the economic growth base, from the exploitation of natural resources to job creation and income generation, as part of efforts to ensure the sustainability of national development is a need to sustain countrywide development, addressed by Chaleun Yiapaoher, the government speaker, at the monthly government meeting held in Huaphanh province⁵.

⁴ High value crops often have boom and bust cycles (see e.g. the rubber boom in Laos)

⁵ Ekaphone P., Vientiane Time 30 March, 2018

1. Introduction

Profound disagreement on what type of agriculture is best suited to respond to food security, climate change and rising food prices. The conventional agriculture based on high external-inputs, resource intensive farming systems has caused massive destruction of environment such as deforestation, soil erosion, water and air pollution, releases of greenhouse gas emission, water scarcity and salinization of water sources through inappropriate application of pesticides and herbicides. Concerns on natural capital depletion, pollution, biodiversity loss and climate change is particularly urgent in developing countries, as these environmental challenges threaten to undermine their development efforts and reverse the gains in living standards and wellbeing that have been achieved to date (OECD, 2013a). Alternative production approaches that differ from the current dominated conventional production system are urgently needed to prevent further damages to the environment, social and peoples' health. A multitude of agro-ecological systems globally adopted by small farming households in different food production sectors could be seen as advantages and likely to have some sustainability benefits on natural, social and human capital, whilst unsustainable ones feedback to deplete these assets, leaving fewer for future generations.

The global push towards industrial agriculture and globalization is increasingly reshaping the world's agriculture and food supply⁶. Concession and industrial agriculture is thus becoming an integral part of the corporate food regime, characterized by unprecedented market power and profits of monopoly agri-food corporations, globalized animal protein chains, growing links between food and fuel economies, increasingly concentrated land ownership in the hand of few local powerful elite groups and foreign investors (Holt-Giménez and Shattuck, 2011). This type of agriculture denies local population access to traditional source of incomes and nutrients rich food.

Laos is part of this situation since the eighties after adoption of the New Economic Mechanism and more pronouncing since the 7th National Socio Economic Development Plan. The share of agricultural value added was more than half (53.66 percent) of total GDP. However, it then declined substantially to 45.83 percent in 2000, 34.38 percent in 2005 and 28.41 percent in 2010⁷ and further down to 15.73 percent in 2018⁸. The structure of the economy is heavily resource-based, which creates lots of damages to environment and increases inequality gap between urban and rural. The Foreign Direct Investment policy has been strongly promoted for poverty reduction and in this context two competing forces are driving agricultural policies in Laos. On the one hand an urgency to reduce poverty and a believe that this is best achieved through commercial and industrial agriculture epitomized by emission of large scale concessions for commercial plantations of rubber, cassava, sugar, eucalyptus and others, often with little supervision of production methods. On the other hand, an awareness of industrialized agriculture's risks leads to adopt the promotion of "clean" and "smart" production methods, especially for independent or subsistence

⁶Michael A. Alteiri. Agro-ecology, Small Farms, and Food Sovereignty <http://www.agroeco.org>

⁷ Lieber Bouapao et al., 2011: Assessment of Inclusive Development in Lao PDR

⁸ Vientiane Times, September 18, 2017

farmers. This clearly translated in the most recent Agriculture Development Strategy (ADS) formulated by MAF for a period of 10 years, from 2016 to 2025, and a 15 years' vision to 2030 to achieve food security, produce agricultural commodities, develop clean, safe and sustainable agriculture and to gradually shift to a productive agriculture economy linking with rural development and contributing to the national economic basis.

For a long time Lao agriculture was relatively shielded from trends of industrialization and globalization, thus maintaining highly diverse production systems, short supply chains and limited application of mineral fertilizers, herbicide and pesticides. This is changing however despite the low use of external inputs is seen as a potential marketing advantage for "clean agriculture products" and is compatible to smallholder farming systems, which is particularly important to the poor and remote marginalized groups and plays a key role in poverty reduction. The rapid expansion of commercial plantations and contract farming is resulting in a rapid loss of diversity and a steep increase in the use of chemical inputs. The dynamic changes are occurring particularly in the upland areas, where ethnic poor and marginalized groups are living. Recently NAFRI hosted a meeting with development partners, planners, practitioners, civil society organizations and academics to address critical uncertainties and to identify different alternative strategies to cope with the dynamic changes taking place in upland areas. The NAFRI Deputy Director Dr. Chansamone Phongoudome stressed that the green agriculture and the industrial development are competing in the upland development. Resource-based development initiatives e.g. mining, hydropower and investments in industrial agriculture were shown to be the largest contributors to environmental or landscape degradation⁹. Government is aware all of the negative impacts caused by the resource-based economy and call for restructuring the economic growth base, from the exploitation of natural resources to job creation and income generation, as part of efforts to ensure the sustainability of national development¹⁰.

2. Objective of the Study:

This study has three clear objectives, starting firstly with the review of the existing government policies, including laws and legislative frameworks supporting the agro-ecology development in the Lao PDR. Secondly the identification of challenges, advantages as well as disadvantages and synergy between the existing sector policies in supporting agro-ecology within the country and across the region. There are a lot of ASEAN, national and project or program initiatives similar to Lao Initiative Conservation Agriculture (LICA). The identification of various Lao agencies actively involvement in such initiatives, including focal points as well as contact details will help to better coordinate and provide effective support to the agro-ecology development.

3. Methodology:

The study is structured around three main areas, starting with the review and map out different Lao policies and initiatives in relation to agro-ecology. This study has concentrated particularly on reviewing government policies in relation to agro-ecology rather on the conventional agriculture in order to compile a comprehensive set of information as well as on identification of active actors working in and providing

⁹ Vientiane Times, May 01, 2018

¹⁰ Vientiane Times 30 March, 2018: Chaleun Yiapaoher at the monthly government meeting in Huaphanh province ,

support to the development of the agro-ecology in the Lao PDR and also in the region. This is followed by the identification of challenges, advantages as well as disadvantages and synergy between the existing sector policies in supporting agro-ecology. Lastly is the identification of different regional initiatives pivoting around agro-ecology that Lao agencies involve in and mapping out focal persons or institutions that can be contacted for later coordination and cooperation. Sources of the literatures are mainly from academic papers, reports, strategy documents, the National Socio-economic Development Plans, Decrees and Laws in relation to agro-ecology. A one-day consultation workshop with relevant stakeholders is organized to discuss and consolidate the findings of the study.

4. Opportunities

4.1. Globally and Regionally Actors Involvement in Agro-ecology

In 1992, the UN Conference on Environment and Development was held in Rio de Janeiro where the Agenda 21 was born, in which the Sustainable Agriculture and Rural Development (SARD) has been addressed and agreed with key principles of sustainable agricultural forms that encouraged minimizing harm to the environment and human health:

- i. integrate biological and ecological processes such as nutrient cycling, nitrogen fixation, soil regeneration, competition, predation and parasitism into food production processes;
- ii. minimize the use of non-renewable inputs that cause harm to the environment or to the health of farmers and consumers;
- iii. make productive use of the knowledge and skills of farmers, so improving their self-reliance and substituting human capital for costly external inputs; and
- iv. make productive use of people's collective capacities to work together to solve common agricultural and natural resource problems, such as for pest, watershed, irrigation, forest and credit management.

The U.N. Special Rapporteur on the right to food published a report on agro-ecology and the right to food that advises donors to consider these alternative approaches and to support farmers' organizations and their efforts to build on local knowledge. And family farmers' associations in both industrialized and developing countries have long fought to have their environmentally friendly practices recognized and supported by government policies and programs¹¹.

Since 2006¹² Pretty, J. defines the agro-ecosystems into two types, the sustainable agro-ecosystem and the modern agro-ecosystem by based on a variety of different properties. The sustainable agro-ecosystem amended some of the properties towards natural systems without significantly trading off productivity. While the modern agro-ecosystem has tended towards high through-flow systems, with energy supplied by fossil fuels directed out of the system, either deliberately for harvest or accidentally through side-effects. According to Pretty there are several types of agro-ecological practices that can improve the stocks and use of natural capital.

¹¹ Agro-ecology and Advocacy: Innovations in Asia, 2011; Institute for Agriculture and Trade Policy (IATP) and Asian Farmers' Association for Sustainable Rural Development (AFA)

¹² Pretty, J. 2006:

The 2030 Agenda, a world with sustainable and inclusive food and agricultural systems, sees the agro-ecology as one of alternative pathways to help achieve food security and nutrition for all present and future generations, eliminate the scourge of poverty and importantly the health of both people and planet. To enhance synergies with the 2030 Agenda, various UN efforts and initiatives, such as Decade of Family Farming (2019-2028), Worldwide agro-ecology is rooted in agricultural heritage systems based on family farming, and the knowledge of family farmers is essential for sustaining the local innovation processes of agro-ecology. Decade of Action on Nutrition (2016-2025) provides a unique opportunity to highlight the contribution of agro-ecology for sustainable food systems that deliver healthy diets and improved nutrition. Agro-ecology can produce the food needed for human nutrition through increased dietary diversity, promotion of under-utilized traditional crops and sustainably produced animal protein source. It also improves the nutritional status of households, in particular those of smallholder family farmers, either directly or indirectly through pathways such as promoting decent rural employment, or improving resilience to climate change. Many other initiatives of the UN have been implemented through the International Year of Artisanal Fisheries and Aquaculture, the Global Initiative on Decent Jobs for Youth, the Rome-Based Agencies collaboration on home-grown school meals and the Sustainable Food Systems Programme of the 10-Year Framework for Programmes on Sustainable Consumption and Production Patterns.

International Symposium on Agro-ecology for food security and nutrition held since 2014, and the subsequent regional seminars organized in the following years and recently in 2018, FAO hosted the 2nd International Symposium on Agro-ecology moving from dialogue to actions in scaling up agro-ecology to contribute to the Agenda 2030 and to achieve the Sustainable Development Goals (SDGs).

Damayanti, B. (2016)¹³ highlighted in his presentation at the workshop “Transition toward sustainable agriculture in the context of the 2030 Agenda for sustainable development” in Bogor, Indonesia, that agro-ecology is a key approach for agriculture’s sustainability and since 2000’s agro-ecology led to social change and became an alternative paradigm to the conventional agriculture.

At the regional level, in 2010 ASEAN member states recognized that ASEAN had to boost the production and export of organic farm produce so as to become an organic food supplier for the world. Strategy Plan of Action on ASEAN Good Agriculture Practices (GAP) 2016-2020 and the Strategy Plan of Action on ASEAN Standard for Organic Agriculture (OA) 2016-2020¹⁴ are vitally important for AEC integration, particularly the agriculture sector, that support the ASEAN Strategic Framework on Standard Development. The development of a regional standard would be an important milestone creating enabling organic and good practice agricultural trade in the region. Expert Working Groups on GAP and OA of ASEAN were established to co-operate closely, and particularly to harmonize the ASEAN standards on good agriculture practices and organic agriculture¹⁴.

FAO is one of the active promoters of agro-ecology practices in agriculture, particularly the IPM concept through Farmer Field School (FFS) in the Mekong countries. In 2015, FAO has initiated a Regional multi-stakeholders consultation on agro-ecology in Bangkok, where government agencies, CSOs, researchers and private sectors reflected their views and perceptions on agro-ecology practices. FAO

¹³ Damayanti, B., 2016. Centre for Alleviation of Poverty through Sustainable Agriculture (CAPSA), United Nations

¹⁴ Vientiane Times March 16, 2017

initiated the Agro-ecology Knowledge Hub, a platform for share and exchange knowledge and South-South Cooperation, is a particularly important to support the up-scaling of agro-ecology.

With the support from GRET and Towards Organic Asia, the working team from Mekong Young Organic Farmer Alliance traveled across Mekong region, met young farmers, and made a video to share their inspiring story. Since 2010, Towards Organic Asia has been working to promote young organic farmers and successfully build up the network of over 80 alumni from 25 organizations. Stories of their work in relation to agro-ecology are compiled and shared widely within the network and delivered impact to the broader public. Various workshops and exhibitions were organized and online success stories disseminated widely for the public that allow the YOF's voices to be heard by a larger international audience.

The French Agency for Development (AFD) supports the Agro-ecology transition in the Mekong region e.g. in 2015 it has organized a regional consultation workshop bringing together 105 persons and 118 institutions with different expertise on agro-ecology from the state, non-state, CSOs and private companies¹⁵.

The Conservation Agriculture Network in South East Asia (CANSEA) promotes effective adoption of Conservation Agriculture with the involvement of a wide spectrum of stakeholders and builds alliances with the agro-ecological movement. CANSEA provides a strategic platform to foster national and regional networking and to reinforce the capacities to research and develop Conservation Agriculture systems. Currently NAFRI is member of CANSEA.

A new Regional Agro-ecological Learning Alliance is emerging in South East Asia (ALiSEA). The aim is to strengthen knowledge and share experiences among agro-ecological initiatives and practitioners. The alliance also aims to promote the agro-ecological movement to policy makers and consumers, and support scaling up of the development and adoption of agro-ecological practices. ALiSEA and CANSEA are working together to strengthen their activities. Free online courses are provided for interested people on agro-ecology and together with GRET platform for sharing experiences in the region are created.

The Asian Farmer Association (AFA)¹⁶ was established in 2002 and is based in the Philippines. AFA has 20 member organizations from 16 countries, one of which is the Lao Famer Network (LFN). The goal of AFA is to strengthen the capacities of leaders and technical staff of national farmer organizations, leading to eradication of poverty and hunger, increased resilience and an improved sense of well-being of Asia family farmers. AFA links, networks, coordinates and partners with like-minded institutions in Asia engaging in policy process to promote secure tenure rights over land, water, forests and seeds and promote sustainable, integrated, diversified, resilient, organic and agro-ecological farming systems and practices.

¹⁵ Castella, J.C. et al. 2015. Technical note AFD, Paris: Actors and network of agro-ecology in the Greater Mekong Sub-region
¹⁶ Asian Farmers' Association for Sustainable Rural Development (AFA); Rm. 206 Partnership Center 59 C. Salvador St., Loyola Heights, 1108 Quezon City, Philippines; Phone: (632) 436-4640; Telefax:(632) 425-0176; Email: afa@asianfarmers.org; Website: www.asianfarmers.org; <https://www.facebook.com/AsianFarmersAssociation>; <https://twitter.com/AsianFarmers>

Green Net¹⁷is a Thai social enterprise, which promotes organic agriculture and develops alternative fair markets, in which farmers and consumers actively participate. Green Net has been registered as a Cooperative with the Ministry of Agriculture and Cooperatives in Thailand since 1993 under the name of “the nature food cooperative” and has changed the name to “Green Net Cooperative” since 2013. The main products of Green Net Cooperative are rice, coconut milk, herbal teas, soybeans, and eco-textiles. During the end of the nineties and the early 2000s Green Net has provided assistance to Laos through various Lao government agencies and INGOs to develop the organic production and disseminate basic principles and knowledge on organic certification.

From 1999 to 2010, the South East Asia Network for Agro-Forestry Education (SEANAFE), a regional network built capacity and networked with government agencies, regional and international development agencies working on agro-forestry and natural resources through formal and non-formal education. SEANAFE has 85 State, Non-state, CSO and private company members from 5 ASEAN countries including the Philippines, Indonesia, Vietnam, Thailand and Laos.

TOA brings together practitioners, experiences farmers, young farmers, and scholars to share expertise and develop a common framework and vision to promote organic agriculture in its holistic senses of agro-ecology in Asia. Since 2011 TOA opens an office in Bangkok to coordinate and collaborate with all partners working on organic agriculture in the region. TOA works among others with CCFD, Terre Solitaire, Thailand Green Market Network and the Suan Nguen Mee Ma social enterprise, government agencies, universities and research institutes. Several NPA's such as PADET, Buddhism for Development Project and Tha Xang Organic Farm in Laos are partnering with the Towards Organic Asia (TOA), a project based regional network which aims to strengthen organic agriculture in the region.

A three day-regional workshop on the Role of Mechanization in Strengthening Smallholders' Resilience through Conservation Agriculture in Asia and the Pacific, held in Cambodia from the 18 to 20 April 2018 and was co-organized by the Centre for Sustainable Agricultural Mechanization (CSAM) of the Economic and Social Commission for Asia and the Pacific (ESCAP), and the Ministry of Agriculture Forestry and Fisheries of the Kingdom of Cambodia (April 2018 in Cambodia). The regional workshop provided a discussion platform for policy makers, extension specialists, researchers, practitioners and entrepreneurs from ministries of agriculture/rural development, agricultural research institutes, universities and academia, civil society, and the private sector as well as experts from global Conservation Agriculture networks, to discuss on the increase awareness of the role of sustainable agricultural mechanization in promoting Conservation Agriculture and building smallholders' resilience in the Asia-Pacific region; to share good agricultural mechanization practices and innovations suitable for smallholders for promoting Conservation Agriculture in the region; to understand the main challenges and constraints in using machinery for Conservation Agriculture for smallholders in the region, and the identification of potential areas for regional cooperation among key stakeholders in the region and beyond.

4.2. Actors Involvement in Agro-ecology in Lao PDR

¹⁷ <http://www.greennet.or.th/en/work>

Lao PDR has around 2.3 million adults engaged in agriculture, representing roughly 64 percent of the country's workforce, and making Lao PDR one of the most agrarian economies in South East Asia. Lao government considers that organic vegetable production is one of the priorities to achieving food security and generating incomes for smallholder farmers even with diverse constraints facing in marketing, exporting and value chain production which are linked to various factors such as poor agronomy knowledge, irregularities of weather, low capital access and high input costs, poor infrastructure, high certification costs and skilled labor shortage.

About 80% of the population of the Lao PDR is rural, of which 75% depend on subsistence agriculture. The farming practices are based on the use of local natural resources like land, water, and local varieties and mitigated by indigenous knowledge that have evolved for centuries, predominantly for family need in foods and part of the surplus for commercialization at local markets. This type of farming is practiced mostly by small farmers, who relied strongly on agro-ecological principles and knowledge, integrating biologically and genetically diverse crops, livestock and trees. The farming systems are developed over years through a process of learning by doing, observation and elaborating suitable options that help to rapidly adjust to the changing climatic conditions, pest invasions and diseases outbreaks. These experiences are constantly exchanged amongst famers and transferred from one generation to the next generation through 'on-the-job-training processes'. The practice is still widely applied in many communities throughout Lao PDR in conjunction with gathering food from the nearby forests and water sources to feed their family.

Agro-ecology could be seen as one of the most suitable approach and compatible to smallholder farming systems. It is closer to the traditional agriculture practices and has relatively low investment cost and risk of failure due to highly use of local resources and adoption of the diversified production systems. NAFRI consolidated the agriculture production in Lao PDR is predominantly at the subsistence scale with relatively low investment cost, particularly the low level of using chemical fertilizers, which are only 12 Kg per hectare on average¹⁸. In this sense Lao PDR has the advantage to adopt the green agriculture production compared to other ASEAN countries.

In 1995, nearly a decade after the introduction of the New Economic Mechanism (NEM) in the nineties, the Lao economy structure is changed from a central-planning to a market orientation regime, while the Party's role is firmly maintained and playing decisive role in the socio-economic development direction of the country. The Resolution of the 8th Congress of the Lao People's Revolutionary Party (LPRP) in 2006 indicated that Laos should embark on stable, sustainable, clean, non-toxic and low cost agriculture development. On which basis the national strategies and legal frameworks for promoting and supporting agro-ecology were developed.

Relevant policies are in place to support the development of agro-ecology countrywide in terms of financing and human resources from local and international organizations. Laws, Decrees and Regulations and Agreements are amended and issued to support the implementation of the NSDP and government strategies e.g. the law on agriculture, forestry, land and the Agreement of MAF on Organic Agriculture (OA) and Good Agricultural Practice (GAP) Standards, the Regulation on the control of pesticides in Lao PDR, Environmental Protection Law (2013), the Lao PDR National Agro-biodiversity

¹⁸NAFRI, FAO, IFAD, 2016: Pro Poor Policy Recommendations to Combat Risks in Smallholder Organic Production

program and action plan II (2015-2025), the Prime Ministry Decree No. 115 (2009) and recently No. 238 (2017) on Associations which is under the responsibility of MOHA, and the Decree No. 136 on Cooperatives under the responsibility of the MAF. In 2006, the Ministry of Industry and Commerce (MIC) initiated a national export strategy plan aiming to develop organic agriculture and was approved in 2008 by the minister 2 years later. In 2005 MAF has approved the Lao Organic Standard and in 2008 the Lao Certification Body (LCB) was established and provided organic inspection and certification in 2009 for the whole country. The first regulation on the control and use of pesticides was promulgated by MAF in 1992 and has been revised in 1998 and 2000. In 2010, MAF issued a regulation on the control of pesticides to replace an older rule issued in 2000. After the incidence of the over using the chemicals in the banana plantations in the northern provinces a new Decree on Pesticide Control No. 258/GoL issued on August 24, 2017, defines the principles, rules, and measures for controlling, using and monitoring activities on the use of pesticides nationwide. The new Decree is designed to harmonize with international obligations and regulations to which Laos is a party¹⁹ and to ensure the quality, efficiency, and security of pesticides and their impacts on humans, animals, plants, and the environment. This creates a basis to shift to clean and green agriculture.

Since the 7th National Socio Economic Development Plan the Government of Laos sets an explicit link between economic growth, social development and environmental protection and the 8th National Socio Economic Development Plan 2016-2020 has emphasized on the principles of “green economy” to end hunger, food security and improve nutrition as well as promote sustainable agriculture (SDG2); to ensure sustainable consumption and production patterns (SDG 12); and to combat climate change and its impacts on people’s livelihood (SDG 13). Specifically the 8th NSEDP has highlighted the promotion of agro-ecological production in both areas, uplands and low lands, and particularly focused on supporting small holder farmers (the majority of Lao farmers) to diversify and improve production within integrated farming systems.

Following the instruction of the above mentioned Party’s Resolution and in line with the implementation of the 8th NSDP MAF has developed a long term Agriculture Development Strategy (ADS) (2016-2030) and vision (2016 to 2030) focusing clean, safe and sustainable agriculture with four inter-linked goals²⁰ to ensure a gradual transition from subsistence into commercial smallholder production. To implement these four main goals, three strategies are selected for promoting the smart and clean agriculture, the development of diversified niche products and the support for resilient farming systems for poverty reduction. The organic vegetable production was considered as one of the priorities to achieve food security and generate income for smallholder farmers, despite the myriad constraints such as marketing,

¹⁹ Vientiane Times, September 13, 2017

²⁰ The four goals are:

- (i) Improved livelihoods through agriculture and livestock, with food security as the first priority;
- (ii) increased and modernized production of agricultural commodities and “pro-poor green value chains” based on smallholders’ organizations and partnerships with the private sector;
- (iii) sustained production patterns, including stabilized shifting cultivation and climate change adaptation measures adapted to local agro-ecological conditions; and
- (iv) sustained forest management to preserve biodiversity and significantly increased forest cover to benefit rural communities, public and private processing enterprises.

poor agronomy knowledge, weather irregularity, limit access to capital, high input costs, poor infrastructure, high certification costs and skilled labor shortage.

To implement the ADS clear restructuring processes were happening within MAF from the central level down to the sub-national offices. The restructuring process has occurred in a number of Departments within MAF. The National Agriculture and Forestry Extension Service (NAFES) has changed into the Department of Agriculture Extension and Cooperatives in 2013 (DAEC), and recently to the Technical Department of Extension and Agro-processing (TDEA) and the Department of Rural Development and Cooperative (DRDC). The National Agriculture and Forestry Research Institute (NAFRI) established in 1999 is since 2017, after merging with Rural Development, NAFRI has changed its name to National Agriculture, Forestry and Rural Development Research Institute. The Crop Multiplication Centre (CMC) has been restructured to a Clean Agriculture Development Centre (CADC) and a new Standard Division has been established under DOA. In 2005 MAF approved the Lao Organic Standard and in 2008 the Lao Certification Body (LCB) was established, encouraging Lao farmers are encouraging to produce Clean Agriculture (CA) in two standards, organic agriculture (OA) and good agriculture practice (GAP) to supply safety food in the domestic market. Since 2009 DOA is responsible for the inspection and certification of organic production in the whole country. Clean Agriculture farm model was established for learning and exchanging of experiences as well as empowering the Lao Certification Body to certify businesses based on the standards.

National Agriculture and Forestry Research Institute (NAFRI) is under MAF, carries out research and is one of the main institutions contributing to the development and monitoring policies on agriculture in the country. NAFRI has focused on four research themes: the agro-biodiversity, the improvement of agriculture productivity, increasing the resilience of agriculture to climate change and policy research on agriculture, forestry and rural development. Together with MONRE, NAFRI is working on the National Adaptation Strategy for Climate Change and a new Research Centre on Climate Change and Adaptation is established. However, to date, there has been little well-structured guidance available for policymakers seeking to select and implement policy instruments that address environmental risks and impacts in agricultural commodity landscapes. Since 2010 a Policy Research Centre has been established within NAFRI aiming at formulation policy briefs and policy recommendations with more evidence-based information to policy makers in order to improve the agricultural and rural development policy in Lao PDR and also to collaborate effectively with the private sector and civil society. The Policy Research Center has played an active role in organizing Lao Research Forums for Sustainable Development in close cooperation with National Economic Research Institute (NERI) under the Ministry of Planning and Cooperation and the National University of Laos (NUOL). The Forums were co-funded by Development Partners and by some INGOs.

Laos endows abundant natural resources with high biodiversity, which is an important foundation for contribution to reduce poverty and to achieve growth with equity. Since 2004 the National Agricultural Biodiversity Program (NABP) was developed as a long-term strategy to better using, developing and conserving agricultural biodiversity. However, there was lack of a broad stakeholder involvement, resulting in inadequate funding support, insufficient coordination and information exchange amongst stakeholders. In 2014, with the FAO assistance and through a participatory process led by NAFRI, the revised version of the NABP identified trends and threats to agro-biodiversity, which are incorporated into the new 10-year program between 2015 and 2025. A framework for the sustainable conservation and

use of agro-biodiversity in support of national priorities on food security, poverty-reduction and socio-economic development was in place.

The Department of Agricultural Land Management and Development (DaLaM) was established in 2012 with a mandate to develop legislation on agriculture land management, through which classifying land in accordance to agro-ecological zones, conserving and developing agricultural land known under the agricultural land title. Aside of this DaLaM provides trainings on soil improvement for government staff and farmers on producing green composts, biogas and bio-extract. DaLaM is recently organized a round table “Soil World Day” in November 2017 at French Institute to discuss about soils and soil conservation initiatives and to explore different pathways and options towards more sustainable soil management in the upland²¹.

The Ministry of Natural Resource and Environment (MONRE) has recognized that the value of all agricultural exports, including a small proportion of plantation products, is increasing yearly. However, the trade-offs are on the rise of using agricultural chemicals (synthetic fertilizers, pesticides, and others). Inappropriate and unsafe use of pesticides is the major challenges, particularly in agricultural landscapes such as larger scale cash crop cultivation such as maize and bananas. The GoL has addressed the above issues by pursuing a balanced policy of promoting commercial agriculture while ensuring the protection and health of ecosystems. Some specific measures include the promotion of agroforestry, organic agriculture, IPM/FFS/CA and the launching of a “clean agriculture program” and R&D work on agro-biodiversity. The construction of hydropower plants, the over harvesting and the introduction of exotic species for aquaculture as well as the pollution of the water sources through the intense use of agro-chemicals threat to aquatic ecosystems. The GoL has recently passed the Fisheries and Aquaculture Law and is also promoting the role of community-based resource management that builds on traditional regulatory systems.

The Ministry of Education and Sport (MOES) is encouraging students wanting to study overseas to take courses in science and agriculture, so these areas can be strengthened in pursuit of social and economic development. Until now the NUOL is in the process of developing the first comprehensive curriculum on agro-ecology. The teaching and learning materials in agro-ecology are at the last stage of the development by the 4 key institutions²² with support from the Agro-Ecology Learning in South East Asia (ALiSEA) and GRET. The output of the project will be used by key universities e.g. NUOL, Souphanouvong University, Savannakhet University and Champasak University and becomes new hope for promoting the agro ecological transition in Lao PDR²³. Village school agro-biodiversity programs have been successfully promoted by TABI in Xieng Khouang and Luang Prabang, where small gardens, arboreta and herbaria in some schools have been planted. Xiengkhouang’s Education Department developed the agro-biodiversity subject, which is approved by the MOES and becomes part of the teaching curricula for rural schools in the province.

A series Working Groups and platforms are in place to ease the coordination, cooperation and exchange between the government agencies, particularly the TDEA, the DOA, the DaLaM, and non-state actors

²¹ Khamstone Sysanhouth, Northern Uplands Development Program, MAF

²² Ministry of Education and Sports, Department of Agriculture-MAF, Academic Office and National University of Laos

²³ Pasouvang, S. 2017: Presentation at the Sub-Sector Working Group on Agro-Biodiversity; NAFRI, Vientiane Capital, Lao PDR.

such as Development Partners, Helvetas, SAEDA, CDEA, CoDA, WWF, and also many other private Companies²⁴. The SWG, co-chaired by MAF and the Development Partners, offers possibilities for stakeholders to share their experiences, improve the networking and become a means for policy dialogue, policy and legal reform, and raise awareness in relation to agriculture development in the Lao PDR. Some of them to be named are the Agri-business Sector Working Groups and Sub-Working Groups (SSWG-AB), the Sub-Sector Working Group on Agriculture and Rural Development (SSWG-ARD), Sub-Sector Working Group on Agro-biodiversity (SSWG-ABD). Under the SWGs Coordination Committees are established, which composes of planners, practitioners, academics, CSOs, students, farmers and DPs as well as local communities and private sectors, to organize exchange platforms. The SSWG-ABD is to support the work of the SWG on Agriculture and Rural Development (SWG-ARD). It focuses on policy aspects regarding the conservation and sustainable use of the agro-biodiversity. The recent SWG-ARD meeting held on the 28th. March 2018 has agreed to establish a multi-stakeholder task force, which composes of the Department of Policy and Legal Affairs (DoPLA), DTEAP, and other technical departments of MAF with great interest of DPs such as FAO, SDC, Laos Upland Rural Advisory Services Project (LURAS), CIRAD and CCL. There is still no formal national network on organic and sustainable agriculture, but linkages between government agencies and NGOs or between NGOs and NPAs are in place, where organic agriculture is discussed.

Since the nineties positive experiences have been gained from various projects/programs such as Integrated Rice Farming, System of Rice Intensification, Conservation Agriculture and Integrated Pest Management. In certain cases, they have been scaled up with the support of public policies and networks of knowledge exchanges. The outstanding outcomes of the agro-ecology practices in Laos are the organic vegetable, coffee, tea, mulberry, rattan and organic rice and more to be named that have been promoted by the Government, Development Partners, Private Companies, INGOs and NPAs, particularly in provinces with favourable geographical and climatic conditions and around the big cities, where potential market existed. These practices deny or limit the use of mineral fertilizers, pesticides, insecticides and herbicides aiming to reduce the destruction of the environment and the loss of biodiversity and maintaining high soil productivity by using less external inputs. As a result positive impact on small farmers' decision to reject the extensive land use production systems or slash and burn farming practices for adoption of alternative methods to produce food for home consumption and selling the surplus. IPSOS²⁵ study revealed that 27% of traditional rice farmers use only chemical fertilisers and 60% a combination of organic and mineral fertiliser. NAFRI indicates that with a relatively low level of chemical fertilizers use, only 12 Kg per hectare annually on average²⁶. Lao PDR is on an absolute and per capita basis the smallest consumer of agro-chemicals in South East Asia and has an advantage to adopt green agriculture production methods compared to other ASEAN countries.

Chitanavanh, P. et al. (undated)²⁷ indicated that Laos has several conditions which favour organic production for in-country consumption and export including:

²⁴Living Land and Nam Khan Project in Luang Prabang province and the Association to Support the Development of Peasants (ASDP), Agro-Asia Company in Vientiane Capital

²⁵ Ipsos a world's leading independent market research company controlled and managed by research professionals, founded in France in 1975

²⁶NAFRI, FAO, IFAD, 2016: Pro Poor Policy Recommendations to Combat Risks in Smallholder Organic Production

²⁷ Phouvong Chittanavanh, Khamxay Sipaseuth, Walter Roder,

- a) The widely used low external input system, particularly in the upland areas, allows a relatively easy conversion to an organic production system;
- b) The high diversity (both within a crop as well as on field), which keeps pest outbreaks more or less in check that reduces the need for chemical pesticides. Lao products actually have a reputation for having low levels of pesticide residues; and
- c) The mountainous landscapes create various different micro-climates, which offer best opportunities for “out of season” fruit and vegetable production, without having to resort to intensive production systems.

The three production systems described above are largely “organic by default” and the products are usually not certified as “organic”. However without proper fallow management and systematic checks on harvesting of the NTFPs, these systems might be considered "organic" but they are not necessarily ecologically sustainable. The systems are not only demonstrated the close interaction between people and environment, but also the opportunities of building on existing agricultural practices and knowledge to promote agro-ecological and organic production for subsistence farmers.

Phengkhouane, M. (2016) has identified a total of 60 agro-ecological initiatives managed by 59 stakeholders throughout the country. Some of those are working solely on one and some are involving more of the six agro-ecological practices e.g. Sustainable Rice Intensification (SRI), Conservation Agriculture (CA), Organic Agriculture (OA), Integrated Pest Management (IPM), Agroforestry (AF), and Integrated Farming (IF)²⁸.

JICA supports a clean agricultural development project, in close collaboration with DOA, to strengthen the supply of clean farm produce including organic fruit and vegetables and boost good cultivation practices, for domestic market needs (2018-2022). The project will be implemented in Vientiane Capital first before being rolled out in target provinces including Khammuan, Luang Prabang, and Xayaboury. Project activities include a baseline survey in Vientiane as well as site surveys in candidate provinces and the promotion of farmers' understanding of the market and strengthening farmer groups such as conducting business management training.²⁹

Various awareness raising campaigns to promote the use of biological pesticides and the reduction of chemicals use have been carried out in the country by government agencies and Development Partners as well as CSOs e.g. the newly released video to promote the “Green Rice Landscapes” showing how farmers can increase their rice crops, harvest more fish, frogs and crabs from paddies, and protect the natural environment. This green rice landscape policy allows farmers to commercialize their crops for income generating while maintaining sustainable access to nutritious food. MAF has issued a number of legislations on management and control of inputs for production such as local fertilizer, chemical fertilizer and pesticide³⁰.

DOA has signed a cooperation agreement with Hunan Jinye Zongwang Technology Co., Ltd of China and Xuanye (Lao) Co., Ltd to establish a model organic and bio-fertilizer processing factory for clean

²⁸ Phengkhouane & Manivong, 2016: The situation review of agro-ecology initiatives, stakeholders, networks in Laos

²⁹ Vientiane Times, Wednesday March 14, 2018

³⁰ MAF Report on the Implementation of Agriculture, Forestry & Rural Development Plan 2017and 2018 Annual Operational Plan, March 2018

agriculture (CA) development in Laos³¹. Until now MAF has successfully mobilized fund for construction of 32 bio-fertilizer factories, particularly in the target rice production provinces³². The Lao-Chinese Cooperation Center³³, Paksong district, Champasak province established in 2014 provides training to farmers and government staff throughout the country on vegetable growing and fruit trees. Previously the center has focused on organic production, but now GAP. The center has a total of 60 hectares with 170 green houses, in which fruit trees and vegetable are grown, and a cold storage facility.

Chinese and Singaporean investors are working with farmers in Sangthong district Vientiane Capital to grow chemical-free rice for export to Chinese markets. An agreement on the joint development for the cultivation of healthy rice, including native rice species, was signed between Cui Can E-Commerce of China and QLV Agrotech Co., Ltd³⁴.

The integrated agriculture was strongly promoted in the nineties by IFAD and CIDSE, particularly in the Northern regions of Laos. Oxfam Australia and QUAKER Service Laos assisted the communities to build the small irrigation schemes with community-based management system in Vientiane, Xiengkhouang, Luang Prabang, Saravane and Xekong provinces aiming at warranting sufficient water availability for rice production. The rice-fish integrated production systems were introduced in those areas. The UN clusters e.g. UNCTAD, UNIDO, ITC, ILO, UNOPS initiated projects and programs that link organics agriculture and sustainable tourism development in Laos.

Important lessons learnt over decade from various Lao Upland conferences since 2004 on Poverty Reduction and Shifting Cultivation Stabilization in the Uplands of Lao PDR and in 2006 on Sustainable Sloping Lands and Watershed Management. These two major events produced reference materials for upland development in the form of a sourcebook “Improving Livelihoods in the Uplands of the Lao PDR” published in 2005, and research proceedings in 2006. Since then many important discussions and a series of consultations, that involves a large range of stakeholders, took place as part of the Sector Working Group on Agriculture and Rural Development that were supported by recent evidence from research and development initiatives.

Helvetas is working to strengthen the capacity of service providers and policy makers to support the most vulnerable populations to access basic services and make informed decisions about the development of their communities. Helvetas plays the role of the SSWG Agri-business Secretariat, and supports various projects in Lao PDR with the working principles of “voice and choice” as the heart of any effort to promote demand-driven and pluralistic service provision; support to the reform of the NAFC (SURAFCO) with four interlinked components: outreach through partnerships, improved curriculum and education methods, college management, and links to the job market.

Some of tangible results to be named are the well functioning of the organic markets established in 2005, which attracts great interest of middle class consumers, especially in Vientiane Capital. Since the existing of the market places for organic products in Vientiane Capital and subsequently in many sub-national levels, the trend of organic agriculture production is well developed. Years later, other INGOs (Care

³¹ Vientiane Times 23 Mar 2018

³² MAF Report on the Implementation of Agriculture, Forestry & Rural Development Plan 2017and 2018 Annual Operational Plan, March 2018

³³Sommai, Head of Lao-Chinese Cooperation Center, Paksong District; Tel: +856 20 5542 1055

³⁴ Vientiane Times, April 23, 2018

International, Oxfam, CIDSE, QUARKER Services Laos, Comite de Cooperation avec le Laos (CCL) and NPAs (PADETC, ASDSP, SAEDA and many others to be named) have promoted organic farming systems by working directly with the communities and with the government agencies at central and sub-nation levels. Similar organic markets have emerged in other provinces e.g. Xiengkhouang, Luang Namtha, Savannakhet and Luang Prabang, creating outlets for organic produces.

Through decent economic return and high market demand the organic agriculture has gradually increased and in parallel the number of organic producers is augmented. According to the Standard Division under DOA/MAF the total land area under organic agriculture production has increased by 80% from 2008 to 2015. There are 90 farmer's groups and 17 companies with organic certification, cultivating 3,240 ha and benefitting 1,637 farmers. Currently around 3,375 tons of certified organic products are produced annually³⁵ and most are concentrated in Vientiane Capital and in various big cities like Savannakhet, Luang Prabang, Champasak and some of the Northern provinces. On average a farm family can earn a regular cash income of between 70 million to 100 million Kip a year³⁶. This is about 10 to 12 times more than what was earning with conventional agricultural activities³⁷. Farmers feel no worries about marketing of organic vegetables due to high demand of local consumers, who are happy to pay approximately between 30% and 60% higher prices compared to conventional products. Furthermore, according to the new released MAF report the green agriculture area has increased to 50,000 hectares producing and exporting crops to many countries³⁸. The negotiation for exporting crops from Laos to Thailand, Vietnam and China as well as EU is partly success e.g. 11 crops with Thailand, 9 crops with Vietnam, 5 crops with China and every kind of crops to EU, but acceptable only under the ISO/IEC 17065 and 17025.

LOMA, a Lao Organic Movement Association established in 2012 and a member of the "Lao Agro-Processing Association" (LAPA)³⁹, is active in the agricultural organic production in Lao PDR with the main goal to unify individuals, farmers' groups, companies and organizations that are active in organic farming, processing, marketing, trading and any kind of support to organic production. A strong motive for developing "LOMA" is to have a domestic organization where Lao stakeholders, especially those from private-sectors, will have ownership and take leadership in promoting organic production in Lao PDR rather a donor-promoted organic agriculture movement. LOMA has a set of objectives starting with encouraging the conversion conventional to organic farming, raising awareness on economic, health, environmental and social benefits of organic production as well as supporting actors in dialogue with government and obtaining the Lao Organic Certification. On the marketing side LOMA promotes organic products through various events such as Made in Laos products at Fair Trade, or Lao Import-Export Exhibitions.

Oxfam Australia has first introduced the SRI techniques into Laos in the late nineties. The project was started in Feuang district of Vientiane province and in Ta Oy district of Saravane province in close collaboration with the PAFO and DAFO. The result was very satisfied in Feuang district and within a

³⁵ Sengsourivong, V. 2017: Vision of the GAP and OA development from 2016 until 2030

³⁶ Mr. Kham and Mrs. Choy at Ban Pongvane, LuangPrabang

³⁷ A farmer in Nong Or village Luang Prabang province

³⁸ MAF Report on the Implementation of Agriculture, Forestry and Rural Development Plan 2017and 2018 Annual Operational Plan, March 2018

³⁹ A nationwide private sector organization working for the promotion of agriculture and food processing in Lao P.D.R. 15 years experiences with 9 companies- 270 employees including 20 expats- International network Apple Tree Group Partner for Laos activities www.appletree-asia.com

period of 2 years more than half of the total villages of the district applied the SRI techniques. Feuang became a learning area on SRI for many provinces and interested farmers as well as SRI proponents. Around 2001 the National Agriculture Research Centre (NARC) has experimented on SRI techniques, but the result proved unsuitable for Laos. However, it was proved by Oxfam initiative, SRI is feasible and helps farmers to boost their rice productivity by using less water, seeds and manpower in weeding. The failure of the NARC was due to absence of water management and protecting animal entering into the experimented plots instead of the SRI's techniques.

In 2006/2007, Pro-net 21, a Japanese NGO, in cooperation with the Department of Irrigation, (DOI) has tested the SRI techniques in the irrigated fields. The result was proved very positive, based on which MAF has issued an Agreement in 2008 that all provincial agencies would promote SRI in the areas with irrigation facilities. Since then many other INGOs (WWF, ADRA Japan) and a number of NPAs in particular SAEDA extended the SRI techniques in various areas of the Northern provinces.

CIRAD⁴⁰, a French Research Institute, is a recognized as leader in Conservation Agriculture. It has a long history of action-research in the region with offices and projects in Laos, Cambodia, Vietnam, and Thailand. CIRAD is also a founding member of CANSEA and is managing the network coordination unit since its creation in 2009. Since 2001 CIRAD has started the Conservation Agriculture (CA) in Kenethao district, Sayabouly province and has expanded to other 2 districts of Xayabouli and 3 districts of Xiengkhouang province between 2004 and 2009. CIRAD partners with DALaM, under the EFICAS project, aims to improve Northern upland community livelihoods and resilience to climate change. The project is co-funded by EU under the Lao PDR Global Climate Change Alliance Program (GCCAP) and by AFD under the Northern Upland Development Program (NUDP). The project locations of the GCCAP are in Luang Prabang and Huaphan provinces; the AFD funded project activities are in Phongsaly, Xiengkhouang and Sayabouli provinces. The CA was applied in the corn production through a rotation with legumes. The result was successfully at the field level. To widely expanding the CA practice, the project has cooperated with the National University of Laos (NUOL) to develop a curriculum on CA which will be used by the Faculty of Agriculture (NUOL) and the Agriculture and Forestry Colleges located at the provinces. CIRAD also supports the organic coffee production in Boloven Plateau and the geographic indication (GI) for Kay Noi rice (small chicken) variety in Xiengkhouang province that are now exporting to various European countries.

The Agro-forestry (AF) project was supported by SIDA and implemented in the five Northern provinces⁴¹ between 2004 and 2010 in close collaboration with National Agriculture Research Centre (NARC) and Forestry Science Research Centre (FSRC). The project has promoted the agro-forestry systems in association between the commercial tree production e.g. rubber and Jatropha curcas or physic nut and rice, corn or galangal. GRET has started a project in Huaphan province since 2010 on sustainable management of bamboo, domestication of NTFPs in association with the traditional crops. Similar project has been implemented by several INGOs, amongst them German Agro Action (GAA) promoted cardamom in Namor district, Oudomxay province, while Agro-Forex, a private company, promoted

⁴⁰French Agriculture Research Center for International Development (CIRAD) Dr. Frank Enjalric; email:frank.enjalric@cirad.fr; CIRAD has 2 offices in Laos: one in Dongdok campus, within the Agricultural Land Conservation Center (DALaM) close to the National Agricultural and Forestry Research Institute (NAFRI); and one in town at Watnak village, close to the US Embassy sport fields.

⁴¹ Bokeo, Oudomxay, Luang Prabang, Xayabouli and Luang Namtha

benzoin in Huaphan province and PADETC in collaboration with NAFRI and with SDC's financial support has implemented a production of forestry systems with regeneration and protection of forest. Rubber trees intercropped with tea trees and coffee with natural forest in Boloven Plateau and in Xiengkhouang province.

The Plant Protection Center, under DOA/MAF, collaborates with FAO and provides training on IPM and pesticide risk reduction to farmers and district government staff, and particularly in 10 provinces that received assistance from FAO⁴².

Dellink et al., 2014 reported that Southeast Asia is one of the regions to be most affected by climate change. The region now has opportunity to shift to a green growth path. It is undergoing a deep transformation that will require profound changes to its "soft" (i.e. governance, regulation, human capital) and "hard" (i.e. transport, energy, waste management, communication) infrastructure. Since 2013, Mounlamai, K. conducted a study on Sustainable Agro-ecosystem Management for Adaptation to Climate Change with the main objective to improve and strengthen small farm holders' knowledge on sustainable agriculture, environmental and natural resources management at 4 communities in regards to the climate change adaptation. It is a component of IRAS/NAFRI⁴³ pilot project implemented in four villages⁴⁴ of four districts; one village in Outhoumphone and another one in Champhone district of Savannakhet province. In Xayabouli province the project has piloted in one village of Paklai and one in Phieng district. The project has involved 5 main Research Centers⁴⁵, PAFO and DAFO as well of the Technical Service Centers (TSC) by experimenting of various modules for climate change adaptation. Technical trainings on animal husbandry, agriculture and also value added off-farm income generating activities were provided to all four target communities and TSCs members. Some preliminary lessons learnt are concluded as follows:

- a) Unpredictable climate change phenomena would impact on smallholder agriculture, and difficulty in achieving 'sustainable' agriculture;
- b) Successful 'sustainable' agro-ecosystem management requires strong commitment of local communities in optimal use of local resources with less harm to the environment;
- c) Appropriate access of small farm holders to agricultural knowledge and technologies for climate change adaption would be indispensable;
- d) Appropriate institutional mechanisms for systematically transfer knowledge to communities as well as local government agencies would be in place; and
- e) Having a strategic climate-change-resilient agro-ecosystem management planning at the district level is very critical for achieving 'sustainability'.

The Sustainable Agriculture and Environment Development Association (SAEDA)⁴⁶, a NPA established in 2007, works with vulnerable communities to promote sustainable development through 4 programs: Sustainable Agriculture, Environment Conservation, Food Safety and Farmer Organizations. SAEDA is

⁴²Khonesavanh, 2017: Head of the Plant Pathology Unit; Plant diseases on vegetable and fruits; and Thipphasavanh: Chemical Fertilizer Unit

⁴³ www.la.undp.org; www.undp.aim.org

⁴⁴ Outhoumphone and Phieng

⁴⁵ Livestock Research Center (LRC), Living Aquatic Resources Research Center (LARReC), Horticulture Research Center (HRC), Forestry Science Research Center (FSRC) and Agricultural Land Conservation and Development Center (ALCDC)

⁴⁶ Vientiane capital, Lao PDR; PO BOX 4881; tel: +856 21 264290; +856 2 315 981; email: saedalao@gmail.com; saedalao@saedanet.net; www.seada.net

able to provide services on request, particularly in relation to organic agriculture, agro-ecology, conservation agriculture and chemical pesticide risk reduction.

The Centre for Human Ecology System in the Highland (CHESH), a Vietnamese NGO founded in 1999, in close collaboration with MAF under the Program for Rural Development Focus Areas (PRDFA), initiated experiment of development approach to three ethnic groups in Luang Prabang such as Hmong, Khmu and Tai Dam. According to CHESH community development based on cultural identity is a process of effort to meet increasing needs of the people, and maintain balancing peaceful relationship between human and their natural resources, cultural identity simultaneously⁴⁷. One of the outstanding achievements is the production of native vegetables in Long Lan, a Hmong village in Luang Prabang province, for the market by applying the agro-ecology principles with respect to cultural identity. The entire village produces about 500 tons of various native vegetable varieties (without organic certification) per year and earns approximately 1.8 billion kip or around 52.57% of all village income. The average income earned per household is over 24 million kip annually⁴⁸.

Similar to Long Lan, without necessarily having certification organic or "clean agriculture" producers in some areas, particularly at the touristic hot spots, often directly contact restaurants, hotels or resorts. There are also ecotourism initiatives, like The Living Land Company⁴⁹, a community-run organic farm which aims to supply fresh vegetables, herbs and rice to hotels and restaurants. Another example is the Nam Khan Project,⁵⁰ a permaculture or eco-farm run by a foreigner, supplies year round tropical fruits, medicinal herbs, jam and vegetables to hotels and restaurants and hosts visitors to make a farm trip, to entertain, to learn the approach and to lodge. Pha Tad Ke (PTK)⁵¹ is another private initiative started in 2008 in Luang Prabang by the creation of the first Botanical Garden of Laos. PTK is an active member of the SSWG-ABD, and collaborates with the IDEP Foundation⁵² to develop and deliver trainings, community programs and media programs related to sustainable development through permaculture. The initiative particularly focuses on the flora of Laos with strong emphasis on ethno-botany and conducts research and promotes bio-diversity conservation through sustainable eco-agriculture system. PTK also receives trainees or interns from the Souphanouvong University. These initiatives are not limited to Luang Prabang area, but can also be found in other touristic spots like Vangvieng and many other areas countrywide.

Economic benefits are key driver of farmers' adoption innovative practices. Without market outlets the agro-ecology approach will have huge difficulties to up scaling. These markets contribute not only to add value to local products thus improving local income and livelihoods, and make healthy food for improved diets more easily accessible for consumer demand, but also to the conservation and sustainable use of biodiversity, simultaneously promoting soil health and reducing environmental degradation. It could be seen as a promising alternative solution for reducing the out migration of the labour force from rural

⁴⁷ CHESH evaluation report March 2009: Lesson learnt from community development approach based on cultural identity of Hmong, Lao Lum and Khmu ethnic groups in Luang Prabang, Laos

⁴⁸ Presentation of CHESH at the SSWG-ABD: Promoting agro-ecology farming for self-reliant livelihood of local upland farmers; Eco-vegetables of Hmong community in Long Lan village, Luang Prabang District, Luang Prabang province, Laos

⁴⁹ <http://www.visit-laos.com/luang-prabang/living-land-company.htm>

⁵⁰ Paul Bauer, 2017. The Director of the Nam Khan Project; <https://permacultureglobal.org/projects/2860-the-nam-khan-project>

⁵¹ Botanical garden in Luang Prabang; <https://www.pha-tad-ke.com>

⁵²Indonesia IDEP, founded in 1999

areas. LURAS and Lao Farmer Network initiated a program on promotion of agricultural youth entrepreneurship to attract interest of new generation in agriculture.

Green Community Development Association (GDCA)⁵³, a National NPA officially registered with the Ministry of Home Affairs since 2012, promotes green agriculture development, innovative and community-led development as well as market-based value chain development to improve farmers' livelihoods sustainably.

Lao Farmer Network (LFN) was established in 2014 with the main aim to contribute to poverty reduction and livelihood improvement of Lao farmers. One of the objectives is the engagement in policy dialogue and strengthening farmers' voice. LFN is a member of the ASEAN Learning Series and Policy Engagement on Agricultural Cooperative (ALSPEAC). Currently it has over 4,000 members, of which 1,832 women from 26 districts of 10 provinces countrywide.

GRET⁵⁴ has developed a pragmatic and integrated approach of agro-ecology from a perspective of agro-ecological transition, with projects active in the region (i.e. Laos, Cambodia, Vietnam and Myanmar). The organization has developed numerous partnerships with academia and research institutions, civil society and government institutions in those four countries. In Laos since 2004 GRET has been active on a regular basis with two main sectors, but began to set up an official permanent office in 2009. The first sector is focusing on the basic social services such as drinking water in Vientiane and Bolikhamsay province and community-based health insurance in 5 districts of Savannakhet province. The second sector is the fair economic development, which included eco-tourism in Konglor and Natan villages of Khammouane province and the sustainable bamboo production and marketing in 40 villages of Huaphan province.

The International Fund for Agricultural Development (IFAD) provided support to the relevant institution within MAF for innovative, adapted approaches and technologies in relation to climate-smart agriculture. Through this support smallholders had access to inputs, rural finance, technical support, new technologies and innovated farming practices. The projects created a number of job opportunities for both male and female rural youth with increased incomes.

Agrisud assists farming families in 40 villages in the implementation of sustainable agricultural practices allowing the diversification of self-consumption products and the increase of the households' income. Agrisud promotes the principles and practices of agro-ecology for nutritional food quality and quantity of the communities, while preserving natural resources. Other actions aim to develop supply chains, complementarity between livestock-culture farming, as well as access to technical services (seed banks, veterinary care, etc.).

5. Challenges in Promoting Agro-ecology

Lao PDR is rich in policies, but relatively weak in the implementation with inadequate information flow within and between agencies due to poor capacity and under-resourced of key responsible government bodies. The development of CSO is in nascent stage coupled with under-development of the private

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⁵⁴Pierre Ferrand — ferrand@gret.org

sectors and producers' organizations. While the policies, strategies, laws and regulations regarding agro-ecology have been formulated and are being implemented, there is not always coherence in the promoted policies. Actually a number of policies have negative consequences for agro-ecological practices. A clear example is the promotion of foreign direct investment (FDI), which is closely linked to large scale plantations, mining, hydropower plants and land tenure insecurity that contribute to deforestation, loss of biodiversity and degradation of aquatic resources. The land use system has rapidly changed from subsistence to industrial crop plantations leading to steep increase in the use of agro-chemicals and contributing to rapid depletion of soil fertility, erosion and environmental destruction. The land use conflicts are increasing. Policy makers believe that through commercial and industrial agriculture in plantations (e.g. rubber, cassava, sugar, eucalyptus and etc.) poverty will be reduced. Land, forest and water sources, on which people depend for food and medicinal herbs, are being taken away and make people actually more food insecure. Stephane Parmentier postulates that the industrial agriculture and the consolidation of the corporate food regime is not an option for meeting sustainability challenges today and in the future. On the contrary, it would only aggravate the current food, climate, ecological and energy crisis (2014)⁵⁵.

Through the turning land into capital policy of the GoL, land tenure is changing hand from poor rural people to elite local and foreign groups, who most practice conventional agriculture. Land is used for economic growth and infrastructure development with the main aim to create employment and inclusive economic development of the country. This policy impacts to the household land use pattern; the percentage of average cultivated area per crop and per household in Nonghet district of Xiengkhouang province is increasing from 2005 to 2015⁵⁶ and makes the agricultural landscape more uniform with less number of cultivated crops, focusing on strengthening global value chains, ignoring the important role of local and regional markets. The shift from subsistence to a more commercial farming and the influx of foreign investment into Lao PDR agriculture pushed to augment the chemicals use. Imported hybrids varieties are replaced seeds produced locally leading unfortunately to loss of traditional skills and knowledge on seed selection and collection, which is primarily done by women.

Average Cultivated Area per Crop & per Household in Nonghet District, Xiengkhouang Province

Year	2005 (%)	2015 (%)
Maize Hybrid	32	91
Maize Traditional	18	3
Upland Rice	39	3
Beans	1	-
Chilies	7	-
Fruit Trees	3	-
Improve Pasture	-	3

Table 1: 2005 to 2015 Average cultivated area per crop per household in Nonghet district Xiengkhouang province (adapted by Lesterin 2015)

⁵⁵Stéphane, Parmentier, 2014: Scaling-up agro-ecological approaches: what, why and how?

⁵⁶Lesterin, 2015: Lao Upland Conference, Landscape approaches: engaging upland communities in designing their own development pathways; March 13, 2017 Luang Prabang

Specialized market oriented production of high value crops is often seen as a panacea to improve the economic status of farmers. It is true that some, mainly wealthier, farmers are (temporarily⁵⁷) able to improve their living standard and increase their income through the transition from traditional food production mainly for self-consumption to high-value crops production for markets. The farmers managing to improve their situation are mostly frontrunners, who have better access to technical knowledge, financial resources and to market information. At the same time a massive number of poor and ethnic farmers are left behind or exposed to high risks of production failures due to dependency on external factors such as imported inputs and fluctuating international market prices. Moreover these less diverse and high external input production systems are proven to be unsustainable as they damage the environment, cause loss of biodiversity and of native species as well as traditional knowledge.

The mis-interpretation of the green economy and the modernization of the GoL policy is another issue. It is commonly understood by most of the Lao authorities and extension workers that traditional agriculture is a backward, unproductive, environmental destructive, unsustainable production system and source of poverty and underdevelopment. Therefore policies are implemented to eradicate or stabilise shifting cultivation since the nineties and promote intensive cash crop plantations through land concessions and contract farming. Recently based in the Country Partnership Framework 2017-2021 focusing on inclusive growth, investing in people, and protecting the environment, the World Bank allocated USD 25 million Lao PDR Agriculture Competitiveness Project supporting 28,000 farming households in 224 selected rural villages to improve their yields and product quality, and increase labor productivity and crop sales⁵⁸. The project is clearly focusing on the use high quality seeds, machinery and irrigation schemes to reduce transaction costs and enable higher returns for farmers, which is clearly reflecting the modernization of the agriculture sector of the Lao government. It is true that the project is addressing environmental issues, and enhancing the productivity in terms of labor and yields, but who are the project beneficiaries. Poor and marginalized farmers having a chance in this type of project is still questionable.

An increase of labour migration out of the agriculture sector and ageing farmers have pushed the GoL to prioritize mechanization, modernization and intensification of the agriculture production policy to ensure sufficient production and income without expansion of arable land⁵⁹. It is not really different from what is called sustainable intensification, in which yields are increased without adverse environmental impact and without the cultivation of more land, which governments of developed countries, financial institutions, agri-business companies, International Research Centres, International Organizations etc. see as a panacea solution for small farmers in developing countries⁶⁰. This may seem close to agro-ecological farming, Holt-Giménez and Altieri (2013), however, concludes that the sustainable intensification agriculture agenda is a reformist one that complements the conventional approaches and inherits from the Green Revolution model. The sustainable intensification agriculture agenda in practice seems to focus primarily on a technology based approaches including GMOs, further consolidating industrial agriculture, with all

⁵⁷ High value crops often have boom and bust cycles (see e.g. the rubber boom in Laos)

⁵⁸ Vientiane Time April 26, 2018

⁵⁹ 8th NSEDP

⁶⁰The Royal Society, 2009; IFAD, 2010; Gattinger et al., 2011; Diamond Collins and Chandrasekaran, 2012; Trócaire, 2012; Holt-Giménez and Altieri, 2013)

aspects of food production (seeds, pesticides, fertilizers and all processing facilities) in the hands of big agri-business.

Even with the ADS in place but it is still too premature to conclude that Laos is now fully gearing for the green economy development. Evidence shows that the strategy has been formulated with clear dual directions, which create confusion at the implementation. On the one hand the market oriented economy is strongly promoted the commercial, large scale production and mechanization as well as modernization of the agriculture production. On the other, as the Lao agriculture production still in its infancy level in using the synthetic chemical substances, the clean agriculture production and food safety is promoted through the adoption of GAP and OA in order to take competitive advantages.

Despite many successful agro-ecological experiences in Laos, there is a lack of awareness among key decision-makers of the potential of agro-ecology to tackle to multiple challenges and contribute to achieving the SDGs. The policies of promoting a market-based economy and the monetization of the economy are still dominant. Better market access through improved infrastructure with lack of proper management systems lead to intensive harvest of forest products for commercial purposes, contributing to the rapid losses of bio-diversity. This affects strongly to poor small farmers who relatively depend on food gathering for their livelihood. Agro-ecological transitions require greater integration horizontally and vertically across scales. In particularly agro-ecological systems require a governance system that coordinates actions at the landscape and territorial scale.

Another important driver is the increasing use of the so called High Yielding Varieties (HYV) which often comes with a package of fertilisers and pesticides in order to be well performing. The use of pesticides in some areas seems to be higher than in Cambodia and Vietnam. According to newly released information in the workshop organized by the World Vegetable Centre, at least 63 percent of vegetable growers in Laos use more than one pesticide in a single spray, and farmers in Laos spray more frequently than in Cambodia and Vietnam, which points to the need for safer vegetable production⁶¹. Porous borders have a role to play in difficulty of controlling illegal acts e.g. pesticide, herbicide and inorganic fertilizers imported as well as price competitive agricultural produces invaded into the country led to weakening and destroying the emerging or scaling up of agro-ecology.

There are some governance structures and government policies as well as strategies are in place and implemented via different actors, that the agro-ecology transition or development could consider as advantages of the transition by strategically elaborate the most appropriate one and start with it rather than create new or doing more with low impact (results) as many programs or projects have done in the recent past. Moreover the policy implementation is also constrained by the fact that the government agricultural extension system is extremely under-resourced, overstretched and basically ineffective without donor support, which is unsustainable. There are a number of projects working on various forms and approaches to sustainable agriculture since the eighties until now. These include agro-ecology, green extension, organic agriculture, clean agriculture, good agricultural practices (GAP), agro-biodiversity and sustainable intensification. It is not clear how these different practices fit together and streamlined into a coherent set of policies and implementation measures that could support the ADS and in line with the

⁶¹ Vientiane Time, November 21, 2017: Workshop organized by World Vegetable Centre in Vientiane from 20-22 November 2017.

Government policy. Partly due to the government officials, and particularly at sub-national offices, have poor understanding of their role in the changing political context and relatively little experience on how to implement the ADS. This is caused by the low investment of the government into the human resource capacity to implement agriculture priorities as set in the strategies and policies. According to the 2010/11 Lao Census of Agriculture only 18% of the main source of agricultural information came from the extension services, while 55% from farmer to farmer approach.

While lot of farmers effectively apply agro-ecological principles, they don't seem to be very aware potential of its benefits. Despite government efforts to promote organic agriculture, farmers, especially those growing temporary crops, still prefer chemical fertilisers, most of which are cheaply imported from China, Vietnam and Thailand. Evidences have shown that the conventional agriculture production with intensive use of chemical substances created harms to people's health and environment as the bad example with the Chinese owned banana plantations recently in the northern parts of Lao PDR. Agro-chemicals, particularly insecticides, are being used more frequently in the current agricultural production systems. This disrupts the natural biological control that exists in the more traditional integrated farms.

A lot of the work on the promotion of agro-ecology is project or program based with short cycles and shifting priorities. But the adoption of agro-ecological approaches can sometimes decrease yields in the short term. Once the soil is improved and organic matters increased, yield will increase. This can however take 2 to 3 years for farmers to learn and adapt the practice to the new conditions, for regaining soil fertility and for establishing a balanced pest-predator relationship. So at least a five year period would be needed from setting up an agro-ecological system to achieving full productivity. Yield is often a debatable issue between the conventional and agro-ecology approach in terms of feeding the world and decent economic returns. From this perspective it is necessarily to improve understanding of producers, extension workers and policy makers on mechanisms or approaches used as well as factors that affects positively to yield increase.

In the Lao context, the same political or administrative ranking person, the inter-sectorial mechanism often does not effectively function. Coordination within and between ministries as well as subnational levels (horizontal and vertical coordination) proved as crucial weaknesses in many inter-sectorial mechanisms. Silo approach is still heavily dominated in the Lao bureaucracy system. However, it is feasible to develop intern-sectorial cooperation and mechanism to deal with the agro-ecology transition at national and sub-national levels, but bearing in mind that in the Lao context, many bilateral programs have promoted this approach and confronted with various difficulties. A heavy structure and unclear responsibilities of ministries without proper fund and human resources allocation often lead to failure or malfunctioning. At the end the key leading ministry works harder while other ministries are passively participated. High staff turnover rate and weak internal sharing information mechanism often lead to loss of the continuity to make things going forwards.

INGOs, NPAs and Farmer Organizations are playing a growing and active role, but due to restrictions of the political space, they are mainly focusing on promoting the technical-led agro-ecology approaches (increase the number of farmers, horizontal scaling-up) rather than address the need for an enabling policy context (vertical scaling-up) for sustainable agriculture e.g. advocate to secure access to land or sustain land tenure of the poor landless farmers. On the one hand and most of the existed NPAs and Farmer Organizations are politically weak and inexperienced. The social movement component is not well

addressed or sometimes has been neglected, even “adopted” the self-censure approach in order to avoid any negative political complication that may arise. This was clearly reflected at the regional workshop, in which the representatives of the four countries having closed political systems (Myanmar, Yunan (China), Vietnam and Laos), did not voice their expectation to empower the civil societies and facilitating the recognition of NPAs towards a Great Mekong Sub-region agro-ecology network to develop synergies amongst stakeholders in the Mekong countries⁶². On the other targeted beneficiaries are unfortunately forced to “voluntary” join a group, which is “artificially” formed just to receive subsidies and benefits from a proposed program or project. As a consequence, these types of group formation often are ended with conflicts of interests leading to collapse and dissolution once the project ends. This means a loss of momentum of a long term engagement to strengthen a social movement and scaling up agro-ecology.

The common practice in rural areas of Laos is during the rice planting season animals are fenced and kept away from the crops based on community agreements or regulations. Once rice or other crops are harvested, animals are allowed to roam freely in the village. This can become a major constraint to agro-ecological practices like permaculture that needs rotation with the growing of cover crops and the use of agricultural residues to improve soil fertility. Fencing the areas is quasi impossible when only a small number of farmers in the village apply agro-ecological practices. It thus becomes necessary to seek engagement and consensus of the whole community to participate in the design and implementation of agro-ecology practices so that community rules and regulations can be adapted and enforced. Individuals adopting agro-ecological practices will face more difficulties. This not only applies with regard to animals. Successful adoption and adaptation at scale in the uplands is conditional on the engagement of the whole community into the design and implementation of soil-carbon friendly practices and the definition of rules and regulations regarding forest preservation and animal roaming control. It is one of the big challenges for expanding or scaling up the agro-ecology development for Laos.

The unchecked import of cheap food that invades Lao markets makes it very difficult for organic vegetables to be competitive in terms of price and appearance. As a result, an organic production group in Bolikhamsay has to sell their organic (non-certified) products at the same price as non-organic product, which is imported from Thailand. The group unfortunately dissolved after two active years due to low competitiveness capacity.

The acquirement of organic certification product is time consuming due to long process and many steps to go through. The certification cost is high and usually beyond the capacity of the farmers or farmer groups to afford without external financing assistance. Until now only 5 private companies and 7 production groups are organically certified their products, while 3 of each are in the certification process⁶³.

The consumers are happy to pay higher price once they have trust that the produces are really free of toxic chemical, but they are small in number, mostly middle class Lao citizen and foreigners, who mainly concerned about health risks. A survey of the Agro Asie Shop revealed that over 95% of the consumers are foreigners⁶⁴ and only 5% are Lao⁶⁵. Food consumption is culturally determined. It is challenging in

⁶²Jean-Christophe Castella and Jean-François Kibler, 2015 : Towards an agro-ecological transition in South East Asia: Cultivating diversity and developing synergies

⁶³ Thavisith Bonyasouk, Laos Certification Body, Standard Division, Department of Agriculture

⁶⁴ 85% are Europeans and Americans and 10% are Japanese and Korean

⁶⁵ Rob Kelly, Bruno Feuillerat, Ger Her & Ian Dierden, 2009: Market Survey of Agro Asie Group; Vientiane, Lao PDR

terms of production and labor availability for farmers to satisfy two or more consumer groups with substantially different preferences. It is often seen similar products are sold at the market places. Changing market places is another constraint for organic producers. Farmers have difficulty to maintain their old clients and at the same time to reach new consumers. It is feared that the relocation will affect the sales and thus reduce the income of the producers.

In Laos there is a trend of rural depopulation or de-peasantization, which poses a serious threat to the adoption of agro-ecological approaches. Since 1995 the percentage of workers in agriculture declines from 85.4 percent to 78.5 percent in 2005 and further to 71.9 percent in 2010. Recently the government plans to free more labour force from agricultural sector for other economic sectors. This is exacerbated by low agricultural wages, which are conducive to migration out of the rural areas. Lieber et al. found huge difference between the labour productivity of the three economic sectors such as agriculture, service and industry. In 2005 the labour productivity of agriculture, the sector that accommodates most workers, was stagnant at 0.2 million kip to 0.3 million LAK, while 0.9 million LAK and 3.4 million LAK for labour productivity of service and industry sector respectively⁶⁶. Worsening is with low interest in taking agriculture courses, labour shortage in agriculture sector will be increased in the future. According to the Student Affairs Department of MOES only 97 students or 1.9 percent out of the total 5,042 students taking courses abroad in 2016 have interest in agriculture and veterinary courses⁶⁷. Similar situation occurs at the Faculty of Agriculture of the NUOL, even with free entrance and financial support offered to agriculture students, but it was still lacking of applications.

Agro-ecological production methods often are labor intensive. In Vientiane Capital the average land size per family of the 11 organic vegetable production groups is 0.84 hectare, while in the provinces the average size is between 0.3 hectare and 0.5 hectare. Farmer with over 0.5 hectare land has to hire external labour in particularly for weeding and harvesting⁶⁸. The out migration of the youth from rural area for seeking decent paid jobs in the cities and sending back money to assist family is increasing and challenging the agro-ecology development of the country. Situation is much aggravated once parents encourage their children to quite the agriculture jobs, work elsewhere and send money back to support the family, particularly for home improvement, health and education for children and purchasing means of transportation and agricultural inputs. Since most of the rural household has own farmland, the daily basic food requirements are commonly met by subsistence farming. The International Fund for Agricultural Development (2013) reported that of all remittance sent to Laos, 56% went to rural area.

6. Details of Organizations Working on Agro-ecology

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⁶⁶ Lieber Leebouapao, et al., 2011: Assessment of Inclusive Development in Lao PDR

⁶⁷ Vientiane Times 16 March 2018

⁶⁸ Khamlouang, K. and Nico, B., 2018: Comprehensive Analysis of existing and potential local resources and their contributions to an agro-ecology approach in food production

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Hongnapha Phommabouth	Technical staff of CGDA	National Facilitator AliSEA and of Honey Network
Somchit Phankham	Panyanivej Organic Farm	A social enterprise with working principles: 1. develop best practices on OA suitable in Lao context; 2. be self-sustained as small scale business; 3. be a learning organization
Phaphoungueun Phonpaseuth	LFN	020 54302400, 305042178
Anousone	Fair Trade Laos	Standards
Bounmy Rattanatray,	Programme de Capitalisation en Appui aux Politiques de Développement Rural (PCADR)	DMC maize mono-cropping (a no-till system with residues conservation of the previous season), association of maize and rice-bean (a no-till system maize inter-cropped with rice-bean) and a bi-annual maize-rice-bean rotation (a rotational sequence between maize and rice-

		bean under a no-till residue management system)	
Phouvong Chittanavanh	Co-manager, PROFIL/ Helvetas		phouvong@laoprofil.org
Jaruvanh Bouathong	IRAS	climate change adaptation	
	Farmers		
SouthiYankham	Farmer Sayaboury	CA	02022980863
Phoutthasone Phaengvilay	Youth Farmer	participants of ASEAN-EU Youth Forum for Engagement in Food Production and Value Chains October 2017 in Jakarta, Indonesia	
Bouachanh Sivilay	Organic Farmer Association of Paek district, Xiengkhouang (OFA); Lao Farmer Network	Promote OA	
Teum	Farmer in Nong Phack Bong village , Boten district , Xayaboury province	Promote CA	030 482 0035
Laut Lee	Hmong farmer in Nong Het, XiengKhouang	agro-ecological transition	

7. Tentative Agenda

June 2018: Draft Recommendations for improving contract farming policy, regulatory framework and model contractual framework, DAFO/PAFO capacity development approach

December 2018: Develop capacity development tools for DAFO and Farmer Organization Strengthening and dialog with investors on equitable (win-win) approaches to contract farming

Policy Think Tank will complete in 2018 the ongoing research topics, amongst them the green agriculture policies, sustainable commercialization of cattle, banana and white charcoal, and sustainable fisheries and aquaculture for food security and nutrition

Alternative futures in the Lao Uplands – presenters DoPLA, NIER, NAFRI, CDE, TABI, MAF – timeframe: 2 May 2018

SWG-ARD is scheduled for June 2018 with anticipate presentations of AFD, FAO and MAF

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