Introducing Integrated Rice-Fish Farming in Lao PDR: Policy Engagements

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09 August 2024

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Abbreviations

ADS	Agriculture Development Strategy
ASEAN	Association of Southeast Asian Nations
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement (French Agricultural Research Centre for International Development)
DAFO	District Agriculture and Forestry Office
DALaM	Department of Agriculture Land Management
DLF	Department of Livestock and Fisheries
IWMI	International Water Management Institute
MAF	Ministry of Agriculture and Forestry
NAFRI	National Agriculture and Forestry Research Institute
NPS	CGIAR Initiative on National Policies and Strategies
PAFO	Provincial Agriculture and Forestry Office
PTT	Policy Think Tank

Executive summary

This report outlines policies and recommended policy engagements to promote agroecology practices in food production systems in the Lao People's Democratic Republic (Lao PDR). These were consolidated through literature reviews and field consultation visits by the International Water Management Institute (IWMI), WorldFish and the National Agriculture and Forestry Research Institute Policy Think Tank through the CGIAR Initiative on National Policies and Strategies.

The aim was to understand the progress made toward institutionalizing agroecology principles in Lao PDR and to identify:

- factors concerning the local potential and challenges influencing the integrated rice-fish farming practices by farmer households in the target area; and
- policy engagements to enhance local potential and address challenges that may prevent further expansion and sustainable practices.

The study found 'good progress' in terms of policy and institutional framework, facilitating a gradual transition from conventional farming practice to agroecology into food production systems. However, while agroecology concepts are reflected in both national and sectoral development strategies, there are some implementation gaps in i) the National Green Growth Strategy to 2030, ii) the National Socio-Economic Development Plan 2021–2025 and iii) the Agriculture Development Strategy to 2025 and Vision to 2030.

While it was evident that different agroecological farming models were introduced and are still used in different parts of the country, including the CGIAR's integrated rice-fish farming trial in Sanamxay and Samakkhixay districts in Attapeu Province, more work needs to be done. CGAIR's participating households released fingerlings during wet-season rice cultivation and observed progress in terms of their adoption of farming techniques and fish growth. Before starting, the study team identified potential factors that could enhance success. These were:

- a positive perception of integrated rice-fish farming outcomes through learning from other experienced farmers in nearby villages;
- co-design with the agroecology team and target households to adopt rice-fish culture trials;
- a new district Tamoryort Fish Breeding Center in the target area increased the fingerling supply and created a favorable environment to facilitate the transition and further sustainable practices; and
- a traditional indigenous practice of trap ponds in rice fields called *loum pa* in the Lao language in the target community provides for regular household consumption and special events, demonstrating the importance of rice field fisheries and the need for increased fish production.

To facilitate the transition toward improved agricultural practices, the following policy engagements are recommended:

- Conduct regular recognition programs and knowledge dissemination events such as farmer-to-farmer peer learning support households in influencing uptake or scaling and farmer-led hatchery learning.
- Use evidence-based costs and benefits of the rice-fish farmer field trials in policy research.
- Conduct policy research to identify factors enabling integrated fish production in rice fields during dry seasons when many households experience lower production. Some incentives were outlined in the National Policy on the Promotion of Livestock and Aquatic Animal Production.
- Continuing to involve policymakers from sectors in the CGIAR Agroecology Initiative to maintain policy support for agroecological farming practices in the community and further expansions across the country.

1. Introduction and background

1.1. Introduction

This report outlines policies and the main actors promoting agroecology in agricultural food production. It provides policy engagement recommendations to encourage an integrated rice-fish farming model in Attapeu Province, as introduced by the CGIAR Initiative on Agroecology, based on the existing local potential and challenges. "Agroecology is a holistic approach to the analysis and management of farming and food systems that prioritizes diversity and synergies at all levels to produce environmentally, socially and economically sustainable outcomes." (Bartlett 2023, cited in Inphonephong et al. 2023).

The study included literature reviews by IWMI and WorldFish under the CGIAR Initiative on Agroecology and a field consultation with farmer households in the target area conducted by IWMI and the Policy Think Tank (PTT) of the National Agriculture and Forestry Research Institute (NAFRI) under the CGIAR Initiative on National Policies and Strategies (NPS).

The study aimed to assess the overall progress of policies and institutions promoting agroecology practices and identify other aspects, specifically:

- factors influencing the integrated rice-fish farming practices by farmer households in the target area; and
- policy engagements to enhance the local potential and address challenges that may prevent further expansion and sustainable practices.

1.2. Country background

The agricultural sector in Lao PDR makes an essential contribution to national socioeconomic development and improving Lao household livelihoods. In 2022, agriculture comprised 18% of the national Gross Domestic Product (GDP), followed by the service sector at 37% and the industrial sector at 34% (MPI 2023). The agricultural sector also employed 61% of the Lao workforce, followed by the service sector at 26% and the industrial sector at 13% (ILO 2022). Rice is the main crop throughout the country, covering 60% of the total cultivated land (FAO 2023). Lao PDR claimed rice-self-sufficient status in 1999 (Manivong and Cramb 2020). However, rice production deficits are still reported at the village and household levels (Cramb 2020). Malnutrition among women and children remains a main challenge. This is caused by a lack of access to nutritious foods (MOH 2021). To address malnutrition and promote food security and agricultural commercialization, the current Agriculture Development Strategy to 2025 and Vision to 2030 (MAF 2015) promotes clean, safe and sustainable agricultural practices.

2. Food production in Lao PDR

Food production in Lao PDR mainly comprises rice cultivation, livestock husbandry, fisheries and non-timber forestry products (FAO 2023). Rice is mainly cultivated for household food consumption, while some production surpluses are sold for income (Cramb 2020). According to the Agricultural Yearbook 2019 (MAF 2020), the total rice cultivation area was 966,614 hectares (ha), followed by vegetable cultivation (180,957 ha) and maize production (151,740 ha).

Lao PDR has three main rice production systems: i) rainfed lowland, ii) rainfed upland and iii) irrigated lowland rice cultivation (ADB 2018). According to the Agricultural Statistics Yearbook 2019 (MAF 2020), rainfed lowland rice constitutes the largest cultivated area (877,632 ha) or 80% of the total. Many farmers do not plant a second crop in the dry season due to limited irrigation and ineffective water control for production needs (World Bank 2022). Other reasons include non-farm employment opportunities, the high cost of energy for irrigation, and low prices (Dubois et al. 2024).

Rice cultivation is not considered intensive because it is only planted once a year during the rainy season with a minimum application of inputs. Fertilizers and pesticides are not applied intensively due to high costs and health risk concerns (Newby et al. 2020). The average use of nitrogen, phosphorus and potassium by major rice producers in the south and central regions was 150 kilograms per ha, about half the recommended benchmark of 250–300 kilograms per ha (FAO 2020).

Livestock and fisheries are also major contributors to food production and agricultural development. Their shares in the national GDP in 2022 were 2.5% and 2.4% (MPI 2023). Many rural households practice livestock husbandry, in particular pigs, goats and small ruminants as a means of income generation and savings (ADB 2017). However, only a small proportion of the production is commercialized. The majority of the livestock are local breeds (ILRI 2002). Similarly, fishing activities are part of a livelihood diversity strategy among rural households and provide food security, nutrition and additional income (Phonevisay 2013). Fishing is often seasonal and capture-fish are often categorized by water source, such as the Mekong River, natural pools and wet-season rice fields.

3. Policies and key governing actors for food production

This section outlines the main policies and ministries governing agricultural food production. These are:

- The Ministry of Agriculture and Forestry (MAF) has a direct role in agricultural production. The current Agricultural Development Strategy runs until 2025

and Vision to 2030 (MAF 2015) is the sectoral strategy that directly guides agricultural production toward modernization and industrialization by ensuring diversity, productivity, sustainability and climate resilience.

- The Ministry of Natural Resources and Environment (MONRE) plays a major role in cross-sectoral cooperation to facilitate agricultural production. MONRE has a mandate over land allocation and water resources management for food production and other socioeconomic development initiatives at the macro level through various legislative acts. These include the National Master Plan on Land Allocation and the Strategy on Water and Water Resources Management to 2030. These initiatives will facilitate cross-sectoral cooperation with MAF and the Ministry of Energy and Mines on agricultural production and resource management.
- The Ministry of Health (MOH) promotes diversified and nutritious food production to address malnutrition. MOH acts as the secretariat to the National Nutrition Committee led by a vice minister. There is a National Plan of Action on Nutrition (NPAN) 2021–2025 to coordinate sectoral and multisectoral interventions to address malnutrition (MOH 2021). For example:
    - MAF contributes to interventions in food production, sustainable uses of non-timber forest products and agricultural value chains.
    - The Ministry of Education and Sports facilitates food production and supply through school garden and lunch programs.
    - Organizations such as the Lao Women's Union, the Lao People's Revolutionary Youth Union and the Lao Front for National Construction play an advocacy and community mobilization role to facilitate equal participation in the implementation of the NPAN led by different sectors.

4. Progress on agroecology implementation

4.1. Policies and institutions for agroecology promotion

Lao PDR is making continued efforts to promote agroecology to achieve green and sustainable development. In October 2013, the Sub-Sector Working Group (SSWG) on Agroecology was established as a stakeholder platform for exchanging knowledge on agroecologically-based transformations of food systems (ASSET 2023). Under this initiative, semi-annual and annual stakeholder meetings were organized to support implementation progress reporting from MAF's main Sector Working Group on Agriculture and Rural Development to the Round Table Meeting platform between the government and its development partners. A SSWG on agroecology is convened by MAF's Department of Agricultural Land Management (DALaM). DALaM has also convened the Lao Facilitated Initiative on Agroecology (LICA) for the Association of Southeast Asian Nations (ASEAN) since its endorsement in 2017 (Saphangthong 2023). Through LICA, Lao PDR volunteered to take the lead in the development of Policy Guidelines on Agroecology Transition in ASEAN Countries.

Although there is no specific agroecology development strategy, the agroecological concept has been reflected in the government's socioeconomic development agenda for over a decade. For example:

- The National Green Growth Strategy 2030 outlines the fundamental characteristics of the social, economic and environmental pillars of the green growth concept as a broad guideline for sectoral development plans (GOL 2018).
- The National Socio-Economic Development Strategy (2016–2025) and Vision to 2030 outlines seven priority strategies, including a sustainable and green economic development strategy and a strategy for the protection and sustainable and effective use of natural resources (MPI 2016). The country's current Five-Year National Socio-Economic Development Plan (2021–2025) also set fundamental directions for sectoral socioeconomic development plans in line with the green and sustainable development direction, i.e., developing clean, modern and sustainable agriculture due to emerging market demands and promoting tourism related agricultural production and natural conservation (MPI 2021).

At the ministry and sectoral level, MAF also has the Green and Sustainable Agricultural Framework (GSAF) for 2030, in addition to its Agriculture Development Strategy for 2025 and Vision for 2030. GSAF outlines the agroecology concept through five agricultural production diversity measures, including the integration of crop and livestock production systems, agroecology landscape management, environmentally sustainable weed and pest control, natural and sustainable nutrient inputs and post-harvest storage and processing facilities (MAF 2021).

Another flagship initiative is the government's direction on green growth and sustainable development articulated by the private sector. In 2021, the Lao National Chamber of Commerce and Industry (LNCCI) developed a guidebook on Responsible Agriculture and Forestry Investment in Lao PDR advocating for cooperation with foreign investors, in particular, Chinese investors as the major investor group doing business in the country, to comply with socially and environmentally responsive business operations (LNCCI 2021). This was an initiative from the private sector through LNCCI, the national private sector's representative organization.

However, the implementation of these policies still needs to be improved as part of their intention was to guide foreign development projects and investments. On the other hand, development projects or development partners also have their own intervention mandates which may not be fully covered by the policy plans and creates implementation gaps.

4.2. Agroecological farming practices

This section outlines several of the agroecological farming models led by different development partners. For example:

- Rice-duck farming in Xiengkhouang is under the Agroecology and Safe Food System Transitions (ASSET) project, which aims to enhance integrated pest management and improve rice yields (ASSET 2023). DALaM is the main government partner at the central level, with support from the French Agricultural Research Centre for International Development (CIRAD) through co-funding from the French Development Agency and the European Union. More details about the activities and project partners are available on the project's website (https://www.asset-project.org/).
- A rice-fish farming system through FAO-supported projects, i.e., a Building Climate-Resilient and Eco-Friendly Agriculture Systems and Livelihoods or Climate REAL in Attapeu (KPL 2022). The project worked in partnership with the Department of Livestock and Fisheries with funding from the Korean International Cooperation Agency.
- Other integrated agroecology models, such as organic farming, conservation agriculture and agroforestry were introduced in an Eco-Friendly Intensification and Climate-resilient Agricultural Systems (EFICAS) project in five provinces: Phongsaly, Houaphan, Sayabouly, Louangprabang and Xiengkhouang (EFICAS 2016). DALaM and CIRAD also helped implement this project. More details are available at https://www.eficas-laos.net/.

5. CGIAR's integrated rice-fish farming in Attapeu

5.1. Project background

This research-based integrated rice-fish farming project was implemented by IWMI, WorldFish and their local partners and led by the Provincial Agriculture and Forestry Office (PAFO). The aim was to support ecological advantages, improve rice productivity and soil fertility and increase the benefits of both rice and fish production. The field trial started in July 2024 in the rainy season with rice cultivation. There were seven participating households from Hom Village in Samakkhixay District and Donemuang in Sanamxay. The field trial was part of an International Network of Agroecological Living Labs implementation in seven countries, including Lao PDR, under the CGIAR Initiative on Agroecology (CGIAR 2022).

5.2. Provincial background

Attapeu is the southernmost province of Lao PDR, with an area of 10,320 square kilometres. It shares its borders with Vietnam to the east, Cambodia to the south, Champasack Province to the west and Sekong Province to the north. The province has mountainous areas and a large lowland area surrounded by three main rivers: the Xekong, Xekhaman and Xetsou.

In terms of agricultural production, Attapeu has similar practices and challenges similar to those in the national context (Section 2). Rice is the main crop for household consumption, supplemented with non-timber forest products, fish and livestock (UNDP et al. 2018). Rice is also a main source of income in addition to agricultural cultivation such as coffee, sugar cane and cassava (Clayton et al. 2023). However, rice production yield in its northern area remains low. The annual yield of upland rice farming was 1.87 tons per ha in 2019, which was much lower than the average yield of 4.04 tons for the entire province (MAF 2020).

In addition to rice and other cash crops, fish and other aquatic animals are essential sources of food and income for rural households. Fish trap ponds (*loum pa*) in rice fields are commonly used by farm households in Attapeu (Clayton et al. 2023). This makes the food production system in Attapeu different from other areas. Developing high-value market chains for indigenous fish species is seen as having potential, however, the local capacity to intensify fish production remains limited (Clayton et al. 2023). The fish consumption rate in the province is low when compared to regional and national rates. The average annual consumption of fish per capita was 28 kilograms for the southern region and 24.5 kilograms nationwide (Phonevisay 2013), while the consumption rate in Attapeu is 19 kilograms (Clayton et al. 2023).

5.3. A field consultation visit

Field consultations were arranged before the start of the trial. The most recent consultation visit was to understand policy engagements based on the potential and challenges in the target community. The visit was led by the Policy Think Tank in December 2023 to Donemuang and Donephay villages in Sanamxay District, Attapeu Province. During the visit, the PTT team learned from Donephay villagers who practice another rice-fish farming system under FAO's Climate REAL project and met with target households and the village chief in Donemuang to understand factors influencing their decision to conduct the integrated rice-fishing farming trial in the CGIAR project. Details of the consultations are discussed below.

PHOTO 1: Dr Latsamy from PTT leading a discussion with some target household members in Donemuang Village. *Photo Credit:* Ammala Chanthalath/IWMI.

Potential and factors influencing willingness to adopt the practice

- A positive outcome on fish farming productivity in Donephay was an influencing factor for the target households to adopt the integrated rice-fish farming model introduced under the CGIAR project.
    - The households found that their fish were big enough for consumption when the rice was ready to be harvested. For example, five or six common carp from their rice fields could weigh a kilogram.
    - They also noted other advantages of rice-fish farming, for example, a reduction in time to catch fish and find food from natural sources, which are often far away, and the farmed fish served as additional food for household consumption.
- Having a more available supply of fingerlings is seen as a favorable factor for a transitional and sustainable rice-fish farming practice in the target area.
    - A new district-based Tamoryort Fish Breeding Center is an important source of fingerlings in addition to suppliers in nearby markets, visiting

suppliers and the Provincial Fish Breeding Center in the provincial capital.

The commonly traditional practice of having trap ponds in rice fields is seen as a potential opportunity to promote other fish production systems, i.e., integrated rice-fish farming in the province.

Challenges and suggested policy engagements

Challenges faced by the target community to the introduced farming model and traditional farming practices were identified during the field consultations and some responsive policy engagements were as follows:

PHOTO 2: A trap pond (*loum pa)* in a rice field in Attapeu. *Photo Credit:* Ammala Chanthalath/IWMI.

- Many indigenous households have their system of enhancing fisheries in rice fields (Photo 2), and may have a different perspective on the benefits of integrated rice-fish culture-based systems, although it is seen as having potential for promoting fish production.
- The visiting team was told that some non-participating households in Donemuang are reluctant to use part of their rice fields for fish farming trenches and thereby reducing paddy yield. This perception may prevent further replications and expansion if the target community does not see any need to adopt integrated rice-fish farming practices. With research-based evidence, it can be demonstrated that farmers can retain or increase their yields through better management practices and having fish in the system eating pests and fertilising the rice.
    - The project team and local authorities should collaborate regularly to disseminate practical guidelines and the benefits of the integrated rice-fish farming model on the overall yield of rice and fish production, cost reduction and income generation to all households.
    - The proposed policy engagement was built on a recommendation to promote agroecology practices in Lao PDR by the PTT and senior

officials from MAF's Department of Planning and Cooperation based on lessons learned from their institutional learning visit in Vietnam in 2023 (Inphonephong et al. 2023).
    - Local public agencies, for example, the District Agriculture and Forestry Offices (DAFOs) and village authorities, may organize formal recognition programs to acknowledge participating farmers and encourage them to continue advocating for wider adoption among other villagers.
    - The idea to propose this policy support was from MAF's incentive program of the National Policy on the Promotion of Livestock and Aquatic Animal Production, endorsed in July 2022 on policy support to enterprises and laborers working in livestock and fish farming (MAF 2022).
    - However, the proposed implementation of recognition programs should be guided by evidence of favorable outcomes and support from the participating households and whether the proposed recognition and support are considered feasible by authorities at both the village and higher levels.
- Many farmer households practiced only one rainy season rice cropping per year for both household consumption and for sale and left their rice fields empty during the dry season. Some chose to plant cassava in other fields because it was a higher income generator and less time intensive.
    - It may be worth promoting the expansion of fish production during the dry season integrated with rice or other commercial crops and vegetables by using water from available irrigation schemes. Policy support and incentives may be required.
    - Additional research on the existing policy support and additional needs to cope with production challenges during the dry season and technical constraints should be conducted to guide support and policy engagements. The proposed research should start by assessing the implementation progress and outcomes of the National Policy on the Promotion of Livestock and Aquatic Animal Production.
    - To disseminate the research findings and engage government partners at the national level and other key stakeholders, it is recommended that i) NPS and PTT maintain its regular presence in the semi-annual and annual stakeholder meetings of SSWG-Agroecology and ii) engage both technical experts and policymakers from the departments of MAF, i.e., DLF in the International Network of Agroecological Living Labs field interventions at different stages.

6. Conclusion

The main perceived benefits of adopting integrated rice-fish farming included having fish as an additional food source for household consumption, pest management in rice fields and saving time when compared to catching fish from natural sources. These benefits were learned from their neighbors who practiced the rice-fish farming model and the CGIAR Agroecology Initiative orientation meetings.

An important favorable factor facilitating the transition to sustainable rice-fish farming in the target area is a nearby supply of fingerlings from the new district-based Tamoryort Fish Breeding Center. With this decentralized approach to fingerling distribution, future promotion of farmer-led hatcheries may be worth considering, as farmers could generate income from the initiative. Another intervention could be farmer peer learning to facilitate the exchange of lessons learned and influence practice.

The promotion of fish production in the province has potential because many farmer households already have conventional fishponds in their rice fields.

Continued policy engagements are still needed to facilitate the transition and further sustainable integrated rice-fish farming practices. These include:

- Regular dissemination of the benefits and user-friendly, practical guidelines for integrated rice-fish farming. These events should be arranged at both formal and informal venues by the authorities and public agencies (e.g., DAFO). These should aim to enhance the understanding of more farmer households and facilitate their future practice.
- Formal recognition programs to acknowledge farmers should be arranged by public agencies and village authorities to advocate for further adoption among other households.
- Further study should be conducted to guide implementation based on the recognition and support needed by local households and existing resources of the authorities.
- Research on policy support and engagements should be conducted to understand factors enabling integrated fish production with rice or other crops during dry seasons. The study should begin with understanding the implementation outcomes of the National Policy on the Promotion of Livestock and Aquatic Animal Production and other existing support available in the community as well as further needs.
- Continued involvement of policymakers and senior officials from departments of MAF in An International Network of Agroecological Living Labs field interventions is recommended. This would be beneficial for the target communities as Living Lab achievements and lessons learned could be reflected in their existing stakeholder platforms. This will benefit further agroecology promotion in Lao PDR.

In terms of policies and institutional arrangements, Lao PDR made progress in introducing agroecology concepts into food production systems. The

agroecological farming concepts are reflected in the government's strategic development direction toward sustainable and green development, i.e., the National Green Growth Strategy to 2030 and the current National Socio-Economic Development Plan 2021–2025, although there are no specific agroecology policy documents. These national strategies are articulated in different sectoral development plans (Agriculture Development Strategy to 2025 and Vision to 2030). As part of underpinning the Agriculture Development Strategy and the Sector Working Group on Agriculture and Rural Development, the Sub-Sector Working Group on Agroecology was established under the Department of Agriculture Land Management (DALaM) to facilitate stakeholder cooperation, implementation and formulation of responsive policies, including the development of the Policy Guidelines on Agroecology Transitions in ASEAN Countries. MAF and its implementing departments (DALaM and Department of Livestock and Fisheries) strengthen links with different development partners to promote farming practices.

Acknowledgments

This work is part of the CGIAR Initiative on National Policies and Strategies (NPS). CGIAR launched NPS with national and international partners to build policy coherence, respond to crises and integrate policy tools at national and subnational levels in six countries in Africa, Asia and Latin America.

IWMI, WorldFish and NAFRI's Policy Think Tank prepared this publication based on literature reviews and a field consultation visit to a target project site of the International Network of Agroecological Living Labs under the CGIAR Initiative on Agroecology in Attapeu Province in Lao PDR. These exercises were conducted in response to the policy demand objective "introducing agroecology concepts in agricultural food production systems through integrated rice-fish farming practices".

We would like to thank farmer households and their village authorities who shared their experiences, lessons and thoughts during the field consultation by the research team. We also appreciated coordination support from the local partners of PAFO and DAFO and colleagues in the IWMI Field Office in Attapeu during the visit.

Suggested citation:
Inphonephong, S.; Mam, K.; Phounvisouk, L.; Dubois, M. 2024. *Introducing integrated rice-fish farming in Lao PDR: policy engagements.* Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Initiative on National Policies and Strategies. 21p.

References

ADB (Asian Development Bank). 2017. *Lao PDR: Accelerating Structural Transformation for Inclusive Growth: Country Diagnostic Study*. Manila, Philippines: Asian Development Bank (ADB). Available at: https://www.adb.org/sites/default/files/publication/378726/lao-pdr-accelerating-structural-transformation.pdf. (accessed on July 17, 2024).

ADB. 2018. *Lao PDR: Climate-Friendly Agribusiness Value Chains Sector Project*. Manila, Philippines: Asian Development Bank (ADB). Available at: https://www.adb.org/sites/default/files/linked-documents/48409-004-sd-06.pdf (accessed July 17, 2024).

ASSET (Agroecology and Safe Food System Transitions). 2023. *Laos organizes First Sub-Sector Working Group on Agroecology (SSWG-AE) meeting*. Vientiane Capital, Lao PDR: Agroecology and Safe Food System Transitions (ASSET). A French Agricultural Research Centre for International Development (CIRAD). Available at: https://www.asset-project.org/news/laos-organises-first-sub-sector-working-group-on-agroecology-sswg-ae-meeting (accessed on July 17, 2024).

Bartlett, A. 2023. *Presentation slide on Agroecology – Concepts, Practices and Challenges in Lao PDR*. Vientiane Capital, Lao PDR: Agroecology and Safe Food System Transitions (ASSET). A French Agricultural Research Centre for International Development (CIRAD). Available at: https://www.asset-project.org/news/laos-organises-first-sub-sector-working-group-on-agroecology-sswg-ae-meeting (accessed on July 17, 2004).

CGIAR. 2022. *CGIAR's Agroecology Initiative: Transforming Food, Land, and Water Systems Across the Global South*. CGIAR. Available at: https://www.cgiar.org/news-events/news/cgiars-agroecology-initiative-transforming-food-land-and-water-systems-across-the-global-south/ (accessed on July 17, 2024).

Clayton, T.; Douangsavanh, S.; Sinavong, P.; Phimmachanh, P.; Nhuong, T.; Kosal, M.; Dyna, E.; Viossanges, M.; Dubois, M. 2023. *Context Assessment: Analysis of the biophysical, sociopolitical, economic and agroecological context in Attapeu Province Lao PDR*. CGIAR. Available at: https://www.cgiar.org/research/publication/context-assessment-analysis-biophysical-sociopolitical-economic-agroecological-context-attapeu-province-lao-pdr/ (accessed on August 2, 2024).

Cramb, R. 2020. *White gold: The commercialisation of rice farming in the lower Mekong Basin* (p. 456). Springer Nature. DOI: https://doi.org/10.1007/978-981-15-0998-8

Dubois, M.; Inphonephong, S.; Vongxay, V.; Phanthavong, K. 2024. *Stakeholder Forum of the Sub-sector Working Group on Irrigation (SSWG-IR): insights from the Lao PDR irrigation sub-sector review in 2018/2019*. Report of the Stakeholder Forum of the Sub-sector Working Group on Irrigation (SSWG-IR), Vientiane, Lao PDR, 20 March 2024. Colombo, Sri Lanka: International Water Management Institute (IWMI); Manila, Philippines: Asian Development Bank (ADB). 18p. Available at: https://www.iwmi.cgiar.org/Publications/Other/Reports/PDF/stakeholder_forum_of_the_sub-sector_working_group_on_irrigation.pdf (accessed on July 17, 2024).

EFICAS (Eco-Friendly Intensification and Climate-Resilient Agricultural Systems). 2016. *Co-design of agroecological alternatives for sustainable agricultural intensification in the mountainous provinces of northern Laos*. Vientiane Capital, Lao PDR: Eco-Friendly Intensification and Climate-resilient Agricultural Systems (EFICAS). A French Agricultural Research Centre for International Development (CIRAD). Available at: https://www.eficas-laos.net/content/download/4448/33016/version/1/file/Eng_EFICAS_Leaflet.pdf (accessed on July 17, 2024).

FAO (Food and Agriculture Organization). 2023. *Special Report: 2022 AFO/WFP Crop and Food Security Assessment Mission to the Lao People's Democratic Republic*. Rome, Italy: World Food Programme (WFP) and Food and Agriculture Organization (FAO). DOI: https://doi.org/10.4060/cc4748en

GOL (Government of Lao PDR). 2018. National Green Growth Strategy of Lao PDR till 2030. Vientiane Capital, Lao PDR: The Government of Lao PDR (GOL). OpenDevelopment Laos. Available at: https://data.laos.opendevelopmentmekong.net/library_record/national-green-growth-strategy-of-the-lao-pdr-till-2030 (accessed on July 17, 2024).

ILO (International Labour Organization). 2022. *Lao People's Democratic Republic: The Employment - Environment - Climate Nexus: Employment and environmental sustainability factsheet*. Switzerland: International Labour Organization (ILO). Available at: https://www.ilo.org/publications/lao-peoples-democratic-republic-employment-environment-climate-nexus (accessed on July 17, 2024).

ILRI (International Livestock Research Institute). 2002. *Review of the Livestock Sector in Lao People's Democratic Republic*. Manila, Philippines: International Livestock Research Institute (ILRI). Available at: https://cgspace.cgiar.org/bitstream/handle/10568/21136/adb_livestock_review.pdf (accessed on July 17, 2024).

Inphonephong, S.; Phounvisouk, L.; Sonethavixay, S.; Maniphet, P.; Soulinh, T.; Vanhnalat, B.; Sisengnam, K.; Vongthilath, S. 2023. *Policy Think Tank (PTT): institutional visit report on policy research and agroecology farming in Vietnam*. Vientiane, Lao PDR: International Water Management Institute (IWMI). CGIAR Initiative on National Policies and Strategies. 17p. Available at: http://www.iwmi.cgiar.org/Publications/Other/PDF/policy_think_tank-institutional_visit_report_on_policy_research_and_agroecology_farming_in_vietnam.pdf (accessed on July 17, 2024).

KPL (Lao News Agency). 2022. *FAO workshops held to discuss rice-cum-fish farming in Attapeu*. Vientiane Capital, Lao PDR: Lao News Agency (KPL). Available at: https://kpl.gov.la/en/detail.aspx?id=66798 (accessed on July 17, 2024).

LNCCI (Lao National Chamber of Commerce and Industry). 2021. *Guide on Responsible Agriculture and Forestry Investment in Lao PDR*. Vientiane Capital, Lao PDR: Lao National Chamber of Commerce and Industry (LNCCI). Available at: https://lncci.la/wp-content/uploads/2021/09/Chinese%20Guildeline%20for%20Agriculture%20and%20forestry%20Investment%20in%20Laos_%5BEng%5D_17Feb2021(2).pdf (accessed on July 17, 2024).

MAF (Ministry of Agriculture and Forestry). 2015. *Agriculture Development Strategy to 2025 and Vision to the year 2030*. Vientiane Capital, Lao PDR: Ministry of Agriculture and Forestry (MAF). Available at: https://www.maf.gov.la/wp-content/uploads/2016/01/MDS-2025-and-Vision-to-2030-Eng.pdf (accessed on July 17, 2024).

MAF. 2020. *Agricultural Statistics Yearbook 2019*. Vientiane Capital, Lao PDR: Ministry of Agriculture and Forestry (MAF). Available at: https://ali-sea.org/aliseaonlinelibrary/laos-agricultural-statistics-year-book-2019/ (accessed on July 17, 2024).

MAF. 2021. *Green and Sustainable Agriculture Framework for Lao PDR to 2030*. Vientiane Capital, Lao PDR: Ministry of Agriculture and Forestry (MAF). LaoFab. Available at: https://laofab.org/document/download/4916 (accessed on July 17, 2024).

MAF. 2022. *National Policy on the Promotion of Livestock and Aquatic Animal Production*. Vientiane Capital, Lao PDR: Ministry of Agriculture and Forestry (MAF). Available at: https://www.maf.gov.la/%e0%ba%99%e0%ba%b4%e0%ba%95%e0%ba%b4%e0%ba%81%e0%ba%b3/ (accessed on July 17, 2024).

Manivong, V.; Cramb, R. 2020. From subsistence to commercial rice production in Laos. In: *White Gold: The Commercialisation of Rice Farming in the Lower Mekong Basin* (pp. 103–119). Singapore: Palgrave Macmillan.103–119. https://doi.org/10.1007/978-981-15-0998-8_5

MOH (Ministry of Health). 2021. *National Plan of Action on Nutrition (NPAN) 2021–2025*. Vientiane Capital, Lao PDR: Ministry of Health (MOH). Scaling Up Nutrition: Civil Society Alliance in Lao PDR. Available at: https://suncsalaos.org/document/npan-2021-2025-eng/ (accessed on July 17, 2024).

MPI (Ministry of Planning and Investment). 2016. Vision 2030 and Ten-Year Socio-Economic Development Strategy (2016–2025). Vientiane Capital, Lao PDR: Ministry of Planning and Investment (MPI). Open Development Laos. Available at: https://data.laos.opendevelopmentmekong.net/library_record/vision-2030-and-tenyear-socioeconomic-development-strategy-20162025 (accessed on July 17, 2024).

MPI. 2021. 9th Five-Year National Socio-Economic Development Plan (2021–2025). Vientiane Capital, Lao PDR: Ministry of Planning and Investment (MPI). National Information Flatform for Nutrition (NiPN). Available at: https://rtm.org.la/wp-content/uploads/2022/12/ENG-9th-NSEDP_FINAL_PRINT_21.Oct_.21_V1_CLEAN.pdf (accessed on July 17, 2024).

MPI. 2023. *2022 Statistical Yearbook*. Vientiane Capital, Lao PDR: Lao Statistics Bureau, Ministry of Planning and Investment. Available at: https://laosis.lsb.gov.la/board/BoardList.do?bbs_bbsid=B404 (accessed on July 17, 2024).

Newby, J.; Manivong, V.; Cramb, R. 2020. Economic constraints to the intensification of rainfed lowland rice in Laos. In: *White Gold: The Commercialisation of Rice Farming in the Lower Mekong Basin* (pp. 201–223). Palgrave Macmillan, Singapore. https://doi.org/10.1007/978-981-15-0998-8_10

Phonevisay, S. 2013. *An Introduction to the Fisheries in Lao PDR*. Phnom Penh, Cambodia: Mekong River Commission (MRC). Mekong Development Series No. 6. Available at: https://data.laos.opendevelopmentmekong.net/dataset/fisher (accessed on July 17, 2024).

Saphangthong, T. 2023. *Presentation on Sub-Sector Working Group on Agroecology (SSWG-AE)*. Vientiane Capital, Lao PDR: Agroecology and Safe Food System Transitions (ASSET). A French Agricultural Research Centre for International Development (CIRAD). Available at: https://www.asset-project.org/content/download/5090/37843/version/1/file/Topic+1_SSWG_AE_kick_off_20231124_ts_s_f.pdf (accessed on July 17, 2024).

UNDP (United Nations Development Programme); MRC (Mekong River Commission); IUCN (International Union for Conservation of Nature); AI (Actionaid International). 2018. *Participatory Poverty Assessment: Attapeu Province, Lao PDR*. Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme. Open Development Mekong. Available at: https://data.opendevelopmentmekong.net/library_record/participatory-poverty-assessment-ppa-attapeu-province-lao-pdr (accessed on July 17, 2024).

World Bank. 2022. *Developing the Agribusiness Potential in the Laos-China Railway Corridor: Opportunities and Challenges*. Washington DC, New York: The World Bank. Available at: https://documents1.worldbank.org/curated/en/099555008262242083/pdf/P1778530b6d1670690826a036cf3037a8f8.pdf (accessed on July 17, 2024).

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We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund: www.cgiar.org/funders.

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