



STATE OF LAND IN THE MEKONG REGION

POLICY BRIEF 4

Creating agricultural landscapes with positive environmental outcomes

© Michel Arnault

Setting the stage

Environmental costs of the agrarian transition

The agrarian transition in the Mekong Region has led to the simplification of **agricultural landscapes**, targeting only a few ecosystem service functions, with the aim to boost agricultural production and economic outcomes. In such landscapes, the loss of other ecosystem functions and services – such as carbon sequestration, biodiversity conservation, the provision of medicinal and other resources, the regulation of nutrients and water flows, etc. – is a major sustainability challenge, risking the collapse of entire ecosystems.

To prevent irreversible and widespread environmental degradation, alternative agricultural systems are needed that combine high productivity and high diversity of ecosystem functions.

Agroecology as a possible solution

Agroecology is globally recognised as an approach that helps to **reconcile food security, economic development, and environmental sustainability**.^[1] As such, it is a serious candidate for an alternative to the excessive industrialisation of agriculture in the Mekong Region.

While there are diverse understandings of agroecology, all aim to make entire food systems more sustainable, from farms (producers), through value-chains (traders), to the table (consumers). Furthermore, agroecology aims to address all dimensions of sustainability: environmental, economic, and social. ^[2]

Objectives

This brief gives an overview of available knowledge on agroecological approaches in the Mekong Region, focusing on agroecological solutions that aim to **protect ecosystem functions** and thereby to **create environmentally positive agricultural landscapes**. More specifically, this brief:

- Puts agroecology on the map, by showing where experiences have been documented
- Assesses what agroecological solution types are used either in isolation or in combination, and what ecosystem services they target
- Identifies targeted transformations (modernisation of traditional systems, diversification of industrial systems, restoration of degraded land), and
- Assesses how women are integrated within agroecological initiatives, and how these initiatives can contribute to more gender equality.

Approach

This brief is based on a **meta-analysis** of literature found in seven repositories ¹ using an automated search string that returned over **3,000 candidates** (publications containing the terms mentioned in the search string). Candidates were included in the analysis only if: they were written in English between 2007 and 2021; they included a practical component in a concrete context in the Mekong Region (purely analytical or conceptual studies were disregarded); and they described agroecological solutions that aimed to improve ecosystem services or biodiversity. This manual eligibility check returned **271 publications that were taken up in the analysis**.

¹ Scopus, Web of Science, ALiSEA, FAO Agroecology Hub, The Mekong Land Research Forum, SRI-RICE and WOCAT. More information about these repositories are in the original article.

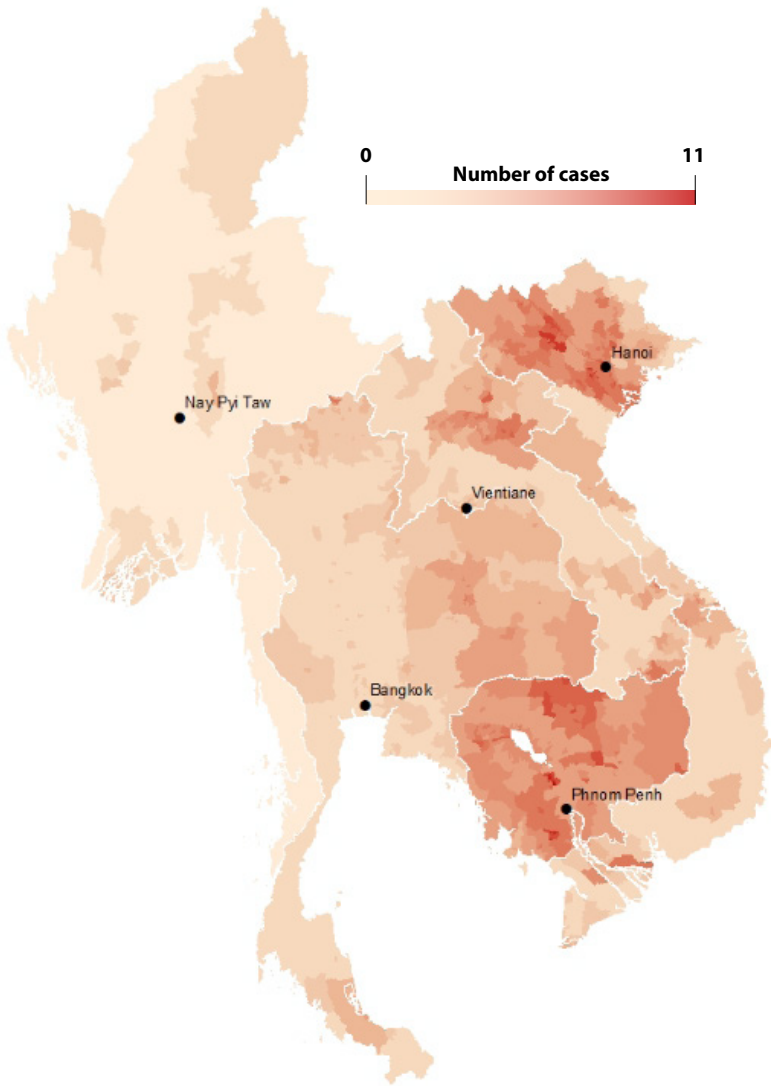
What are ecosystem services?

Ecosystem services are defined as the contributions that natural, semi-natural, or modified ecosystems make to human wellbeing. ^[1] For example, a forest stores carbon and thus contributes to climate regulation which benefits humans; or sustainably used agricultural land provides crops, which benefit humans in terms of food security or income generation.

Ecosystem services are divided into categories: **Provisioning services** are products directly obtained from ecosystems, such as food, fibres, timber, etc. **Regulating services** are benefits obtained from the regulation of ecosystem processes, e.g. climate and water regulation, or pest and disease regulation. **Supporting services** are indirect services that are necessary for all the other services, for example soil formation, nutrient cycling, etc. Finally, **cultural services** are nonmaterial benefits people obtain from ecosystems, such as aesthetic values, sense of belonging, recreational values, etc.



Figure 1: Map of the hotspots (dark red) and blind spots (light red to white) of agro-ecological initiatives in the Mekong Region



Putting agroecology on the map

Background

Where are agroecological approaches documented in the Mekong Region? To find out, we mapped the 271 cases of our meta-analysis using the smallest identifiable spatial units in each case. For example, if one of the publications reported on an agroecological initiative implemented in a river catchment in Lao PDR, we identified the village areas belonging to that catchment and ascribed the case to these village areas.

Results

Our mapping (see Figure 1) shows that there are **hotspots** of reported agroecological initiatives in upland areas of northern Vietnam and north-eastern Lao PDR, in the lowlands of northern and central Cambodia, and (to a lesser extent) in the Isan region of Thailand. Sometimes, these hotspots are the result of the long-term engagement of individual researchers, research communities or implementation projects. For example, many cases in the north-eastern part of Lao PDR are described in publications of the ALiSEA (the Agroecology Learning Alliance in South-East Asia) network members or in publications of The Agro-Biodiversity Initiative (TABI), an SDC-funded project implemented in the region from 2009 to 2020.

The map also shows **blind spots** of documented agroecological practices, particularly in almost all of Myanmar (except for the Irrawaddy delta, some areas north-east of Naypyidaw, and single cases in the north of the country), most of central and southern Lao PDR (except for some areas in Savannakhet, Salavan, and Attapeu provinces, southern Vietnam (apart from the Mekong delta), and western and southern Thailand.

As our assessment focused on initiatives with an explicit implementation component in a real-world context, most of them are found at **sub-national scales**, either in villages, districts, river catchments, or protected areas. National-scale initiatives have been included in Thailand, Lao PDR, and Vietnam, which focus mainly on policy or value-chain aspects.

Conclusions

Two conclusions can be drawn from these results:

- 1. Agroecology is an interesting approach to contribute to more sustainable agricultural landscapes in the Mekong Region: most authors in the meta-analysis indicate that the solutions described in their publications have been successful in achieving the desired objectives.
- 2. Experience with agroecology is not evenly distributed in the region, at least with regard to agroecological solutions aiming to protect the diversity of ecosystem functions. Therefore, there is a need for up- and out-scaling efforts, which would help to share the experiences gleaned in some areas with stakeholders and decision-makers in others.

Implications for research, policy, and practice

We recommend that researchers, policy-makers and practitioners contribute to efforts to make documented knowledge on experience with agroecology available in regions where less has been done and documented. They might also help to foster the exchange between practitioners and policy-makers between regions to encourage out-scaling of best practices. A reasonable strategy would be to prioritise the out-scaling effort to areas where solutions are most urgently needed.

For example, the south of Lao PDR has experienced a major boom in agricultural investments in the past 20 years, leading to land dispossessions among local communities. At the same time, this area features only a few cases. Experiences in designing more inclusive and sustainable commercial agricultural landscapes using agroecological approaches, would be helpful to development partners in this region.

Figure 2: Occurrences and combinations of the four solution types. Most initiatives implement only one solution types (alone).



Types of agroecological solutions

Background

The 271 cases were divided into four types: (a) practical and technical solutions at farm-level (e.g. substituting synthetic with organic fertilisers); (b) territorial governance at landscape-level (e.g. participatory land use planning); (c) alternative food networks (e.g. sustainable value chains); and (d) policy dialogue and advocacy (e.g. promoting farmer field schools as part of agricultural extension service portfolios). [3] The aim of this classification is to find out what types are over- or under-represented in the region and what this implies for future research, implementation, and policy-making.

Results

We found a strong dominance (54%) of **practical and technical solutions** (Figure 2). These solutions range from organic soil amendments to various types of crop rotations, or the establishment of living fences, etc. We also found that practical and technical solutions are mostly implemented in isolation: less than one quarter of the cases combined them with other solution types.

Territorial governance solutions are found in 17% of the cases. They include approaches such as participatory land use planning and scenario development, payment for environmental services, and the delineation of cropland areas, etc. Around 45% of the cases including this solution type combined it with another type.

Alternative food networks are found in only 13% of the cases. They include solutions such as the setting-up of cooperatives, awareness-creation to change consumer preferences, and the establishment of seed banks, etc. This is the type of agroecological solution that is most often (68%) implemented in combination with others.

Policy dialogue and advocacy solutions are represented in 16% of the cases. They include initiatives such as the development of regulations on environmental accountability, the setting-up of learning and dissemination centres, or the adaptation of agricultural extension service portfolios. This solution type was implemented in combination with others in 63% of the cases.



Conclusions

Among agroecological solutions aiming to protect ecosystem services in the Mekong Region, there is a bias towards technical solutions, and there is a clear tendency to describe, test, or implement solution types in isolation: 60% of all cases are single-type cases.

In contrast, the multi-faceted sustainability challenges of the agrarian transition require holistic agroecological approaches that can be adapted to the requirements of specific contexts.

Implications for research, policy, and practice

If actors in research, policy and practice wish to do justice to the complexity of the agrarian transition, they must increasingly direct attention towards integrated, combined and highly adaptable agroecological solutions.

This requires scientists who are willing to work across disciplines to come up with innovative approaches for sustainable food systems [4], and development agencies and policy-makers who are willing to avoid simple, short-term development objectives. At a practical level, it requires the establishment of trans-disciplinary science-policy-society interfaces to negotiate and operationalise innovative approaches and complex development agendas.

Types of sustainability transitions

Background

Agroecological solutions aim to transform (partly or entirely) unsustainable agricultural landscapes to more diverse, multi-functional systems. Some aim to modernise traditional agricultural systems and improve their overall productivity, while retaining or improving environmental sustainability (Types 1a and 1b in Figure 3). Other solutions diversify the ecosystem services of industrial agricultural landscapes while minimising their productivity loss (Type 2). Finally, some solutions contribute to restoring systems that have been environmentally degraded through unsustainable farming practices (Type 3).[5]

Results

Our meta-analysis shows that **most initiatives** describing agroecological solutions aiming to improve ecosystem services **focus on modernising traditional systems**, either as stand-alone approaches (Type 1a) or by combining them with nature conservation (Type 1b). Additionally, many initiatives aim to optimise existing agroecological solutions (Type 4). It is likely that a large share of them target traditional systems as well. Type 1a initiatives are more frequent in NGO and project reports, and Type 1b initiatives are almost exclusively found in scientific literature.

By comparison, **there are only a few initiatives that aim to improve the sustainability of industrial agricultural systems (Type 2) and even fewer focusing on the restoration of degraded systems (Type 3)**. Type 2 initiatives are mostly found in research papers and rarely implemented in practice, while the few Type 3 initiatives are represented in both types of sources.

Interestingly, initiatives aiming to up-scale and out-scale agroecological practices to other parts of the Mekong Region (Type 5) are also rare. They are mainly described in reports, but researchers rarely investigate how to accelerate the uptake of best practices.

Conclusions

While agricultural commercialisation and large-scale agricultural investment lead to massive environmental impacts in the Mekong Region (see Brief 3 of this Series), agroecological research and practice targeting the improvement of the ecosystem services still focus mainly on modernising traditional agricultural systems. Scientists seem to have spotted this research gap only recently (75% of the sources dealing with Type 2 were written after 2015) and practitioners have clearly neglected this important aspect of the sustainability transition. Only eight non-scientific sources deal exclusively with Type 2. This illustrates how poorly this transition type is represented in agroecological projects that aim to improve ecosystem services. Further, the lack of research about how to accelerate the uptake of practices is a serious gap in view of the urgency to improve the sustainability of agricultural systems and to combat land degradation.

Implications for research, policy, and practice

Agroecological research and practice in the Mekong Region need to complement their current focus on improving smallholder systems by giving equal attention to how to improve the sustainability of large-scale commercial agriculture and how to restore degraded land systems. This will require more than the fine-tuning of existing agroecological practices focused on smallholder contexts: researchers will have to test and propose innovative solutions for reverse-engineering industrial agricultural systems; practitioners will need to integrate such solutions into their strategies and create new alliances with the private sector; and policy-makers will need to provide the required incentives and policy framework conditions for such solutions to become implementable and attractive.

Agroecology and gender

Background

The gender dimension is still poorly represented in agroecological research and practice: in our sample of 271 studies, 62 include gender keywords, while only 18 address the gender dimension of agroecological initiatives. For each of these, we assessed whether the agroecological intervention (i) had no gender focus, (ii) focused on women specifically, or (iii) focused on gender relations. We also looked at the type of attention paid to gender: (i) only methodological; (ii) women-specific or comparative (women-men); or (iii) analysis of gender as a relational construct.

Figure 3: Agro-ecological transitions. Adapted from Tittoneil (2020).

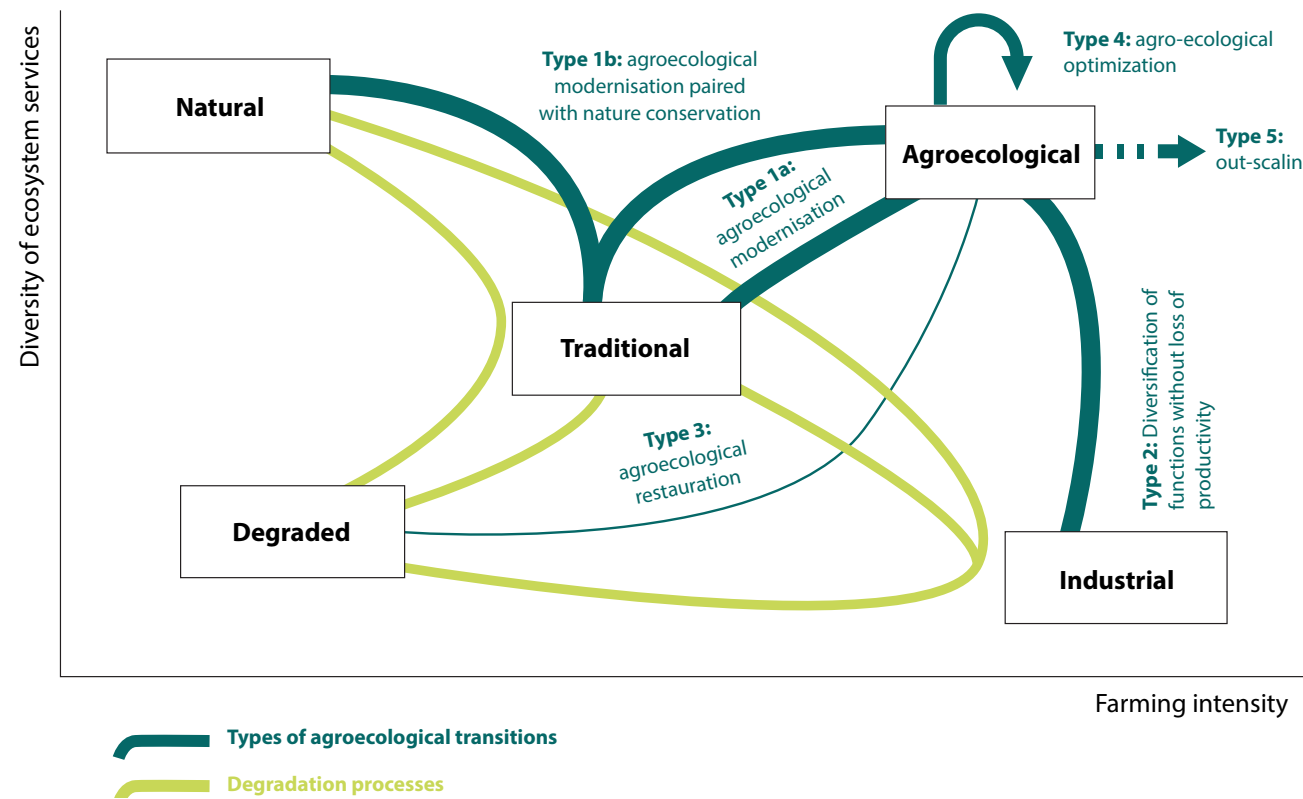
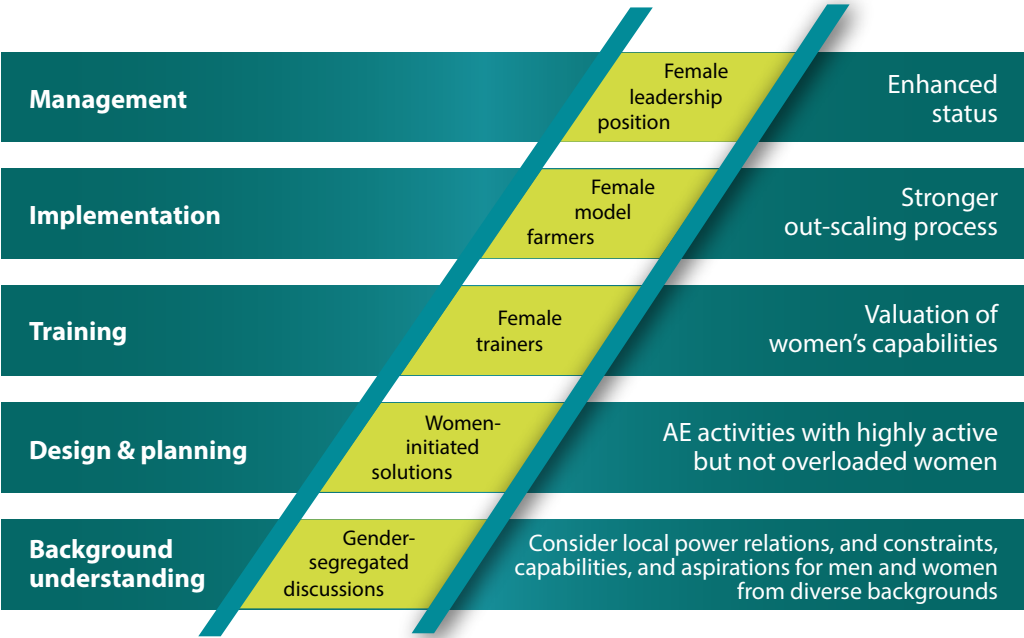


Figure 4 : The ladder of women's participation in agro-ecological initiatives.



Results

Sixteen articles provide disaggregated data and analyses by gender, including five that analyse specific results for women and provide comparisons between men and women. Ten articles address gender norms and power relations. Some agroecological initiatives are women-centred. For example, they engage female farmers in setting up demonstrations and trainings in organic fertiliser or compost production. Others take a gender relational approach, exploring local power relations between and among women and men, and ensuring that women and men from different backgrounds take part in discussions and activities. ^[6]

The articles show that women are more likely to engage if agroecological initiatives are complementary to, or an extension of, their gendered roles. ^[7] As women are often responsible for feeding their family, they are motivated and more concerned than men are by such initiatives ^[8] and sometimes they have more knowledge than men about the proposed agroecological solutions. Conversely, women might be reluctant to engage if they are not involved in project design or adequately informed about innovative farming practices. This can result in poor implementation. ^[9]

Gender sensitive agroecological initiatives can result in income and knowledge gains for women. ^[8] They also provide an additional safety net for women during lean periods, increase their mobility and earnings, and foster women-run business and access to employment. Engaging women in agroecological initiatives as trainers and leaders allows a better dissemination of information to women farmers through their established community networks.

Several initiatives helped to reduce women's workload. These include, for instance, eco-tourism, system of rice intensification, and mechanised dry direct-seeding. This finding is important, as one of the potential problems with agroecological innovations targeting women is that they may contribute to a 'double burden' of increased farm and household labour for them. ^[10]

Agroecological initiatives may also fail to benefit women and unintentionally reinforce gender inequalities when they fail to pay attention to patriarchal power dynamics. This is the case when innovations are not gender-equitable by design. ^[7] ^[9] There is little discussion about how gender inequality shapes agroecological innovations, and there are even examples in the literature of agroecological initiatives reshaping gender inequalities or pointing to the limited capacity of e.g. conservation NGOs or State agencies to address structural causes of gender inequality.

Conclusions

While there is no evidence that women are more likely to implement agroecological practices, the literature shows that there are conditions that foster women's engagement, and that gender sensitive agroecological initiatives have positive implications for both gender equity and the environment.

Implications for research, policy, and practice

Literature points to the importance of: (i) taking a gender-equity lens to agroecological innovations from the design stage and throughout the process; (ii) implementing gender-sensitive participatory approaches; (iii) building on activities in which women play an important role; and (iv) engaging women as trainers and managers.



Sustainability pathways

Summary of findings

There is little doubt about the urgency to address the unsustainable developments linked to agrarian transition in the Mekong Region. The risk that these developments will lead to severe negative environmental and social consequences has been corroborated by numerous scientific publications and by practitioners on the ground. Therefore, it is necessary to accelerate the scaling-out of sustainable agriculture in the region.

Agroecology – as a practice, science, and social movement – can help to reverse unsustainable outcomes of the agrarian transition. However, uptake of agroecological approaches in the Mekong Region has been slow and geographically uneven. Innovation leans heavily towards practical and technical support on smallholder farms and tends to neglect industrial and degraded agricultural landscapes. Integrative approaches are rare as solutions are often tested or implemented in isolation. Finally, ignoring gender dimension reduces the potential for uptake and the sustainability of initiatives. We encourage decision-makers in the region to explore the pathways outlined below to address these issues.

Foster exchange

Knowledge about agroecological solutions is not wide-spread in the region. Therefore, actors need to improve the availability of knowledge. They can do this by promoting the use and development of existing **global and regional knowledge platforms**, such as the online repositories of ALiSEA, the Mekong Land Research Forum, or others. Another important pathway is to foster **exchange between researchers and practitioners** to jointly identify and address research gaps (e.g. how to out-scale agroecological solutions more efficiently) and to test the practicality of research findings (e.g. does the idea of combining agroecological modernisation and nature conservation in traditional systems work in practice?).

Diversify approaches

Sustainability challenges of the agrarian transition will not be solved if agroecological research and practice focus mostly on technical solutions to modernise traditional smallholder systems. A much **greater emphasis on transforming industrial agricultural systems** is needed to minimise their environmental and social impacts. This will require solutions that narrowly focus on farm-level support to be complemented with more holistic approaches that integrate those complementary solutions at farm, landscape, value chain, and policy levels.

Harmonise policies

Regional initiatives, such as the ASEAN Climate Resilience Network (CRN), or the Lao-facilitated Initiative on Agroecology for ASEAN (LICA) are a good basis by which governments can harmonise policy frameworks and consolidate cross-sectoral cooperation with a view to efficiently promoting agroecological innovation across the region. Consensus-building at policy level is key to establish adequate frameworks and incentives for a broad-based agroecological transition.

Contextualise

The analysis of the cases considered in this meta-analysis shows that considering context specificities is crucial for the success of agroecological practices. Thus, it is important for national governments in the region to aim for the greater involvement of sub-national authorities and other stakeholders in contextualising national agricultural strategies, particularly in relation to the promotion of agroecology. This could be in the form of context-aware policy frameworks or adapted agricultural extension service portfolios, etc.

Account for environmental costs

Re-evaluating the value of ecosystem services, and ensuring that those that have a substantial impact on them to contribute to their preservation, could incentivise agricultural investors to adopt agroecological practices to reduce their footprint on these services to avoid costs. For example, pushing for ecosystem services taxation, 'producers pay' or 'true costs' schemes, which factor the value of ecosystem services (e.g. healthy soils and clean water) into the taxation of land-based investments, could help to accelerate the uptake of agroecological practices in large-scale land investments.

Land degradation neutrality

Agroecological initiatives that aim to restore degraded lands are under-represented in the region. Apart from Myanmar, all countries in the region have defined voluntary land degradation neutrality targets under the UNCCD.² They can form alliances with development partners working on agroecology and request the convention's partners (e.g. WOCAT³) to help them to achieve these targets.

2 United Nation's Convention to Combat Desertification

3 World Overview of Conservation Approaches and Technologies

Sources

- [1] A. Wezel, B. G. Herren, R. B. Kerr, E. Barrios, A. L. R. Gonçalves, and F. Sinclair, 'Agroecological principles and elements and their implications for transitioning to sustainable food systems. A review', *Agron. Sustain. Dev.*, vol. 40, no. 6, p. 40, Oct. 2020, doi: 10.1007/s13593-020-00646-z.
- [2] S. Gliessman, 'Defining Agroecology', *Agroecol. Sustain. Food Syst.*, vol. 42, no. 6, pp. 599–600, Jul. 2018, doi: 10.1080/21683565.2018.1432329.
- [3] P. Bottazzi and S. Boillat, 'Political Agroecology in Senegal: Historicity and Repertoires of Collective Actions of an Emerging Social Movement', *Sustainability*, vol. 13, no. 11, Art. no. 11, Jan. 2021, doi: 10.3390/su13116352.
- [4] Independent Group of Scientists appointed by the Secretary-General, *Global Sustainable Development Report 2019: The Future is Now – Science for Achieving Sustainable Development*. New York: United Nations, 2019.
- [5] P. Tiftonell, 'Assessing resilience and adaptability in agroecological transitions', *Agric. Syst.*, vol. 184, p. 102862, Sep. 2020, doi: 10.1016/j.agry.2020.102862.
- [6] A. Rodericks, 'Living Landscapes. Embracing Agro-Biodiversity in Northern Laos', 2020. www.phakhaolao.la/en/publications/living-landscapes-embracing-agro-biodiversity-northern-laos.
- [7] T. T. H. Hoang *et al.*, 'Impact of tourism development on the local livelihoods and land cover change in the Northern Vietnamese highlands', *Environ. Dev. Sustain.*, vol. 22, no. 2, pp. 1371–1395, Feb. 2020, doi: 10.1007/s10668-018-0253-5.
- [8] R. Kelly, 'Adoption of Agroforestry in Mai District, Phongsaly Province', *LaoFAB Repository*, 2014. laofab.org/document/view/2641..
- [9] A. Neef, 'Fostering incentive-based policies and partnerships for integrated watershed management in the Southeast Asian uplands', *Southeast Asian Stud.*, vol. 1, no. 2, 2012.
- [10] A. Beban and J. Bourke Martignoni, "'Now the Forest Is Over": Transforming the Commons and Remaking Gender in Cambodia's Uplands', *Front. Sustain. Food Syst.*, vol. 5, 2021. www.frontiersin.org/articles/10.3389/fsufs.2021.700990

Authors:

Cornelia Hett, Zar Chi Aye, Rasso Bernhard, Albrecht Ehrensperger, *Centre for Development and Environment (CDE), University of Bern, Switzerland*

Alice Beban, *School of People, Environment and Planning, Massey University, New Zealand*

Christophe Gironde, *Geneva Graduate Institute, Switzerland*

Layout and Design: Watcharapol Isarangkul Na Ayuthaya

Citation: Hett C., Aye Z.C., Bernhard R., Beban A., Gironde C., and Ehrensperger A. (2024). *Creating agricultural landscapes with positive environmental outcomes*. State of Land in the Mekong Region Series, Policy Brief Nr 4. Vientiane: MRLG and CDE.



This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (CC BY-NC-SA 4.0)

Disclaimer

The views, opinions and interpretations expressed in this publication are those of the authors and contributors. They should not be interpreted as representing the official or unofficial views or positions of SDC, Germany, Luxembourg, or any donor agency.

This Policy Brief was produced in partnership with the Agroecology and Safe Food System Transitions project **(ASSET)** (www.asset-project.org).

This brief summarises findings published by the same authors in a research article published in the *Journal of Land Use Science*:

Hett C., Aye Z.C., Bernhard R., Beban A., Gironde C., and Ehrensperger A. (2022). Agroecological initiatives in the Mekong Region: A systematic review and mapping with a particular emphasis on their impacts on ecosystem services. *Journal of Land Use Science*, 18(1), pp.334-355. <https://doi.org/10.1080/1747423X.2023.2248980>

The Series: This brief is part of a series of four on the agrarian transition in the Mekong region. It highlights issues that emerged as critical concerns in a consultation involving inputs from more than 100 experts from the region.

Brief 1 'Pathways towards sustainable land systems'

Brief 2 'Agricultural commercialisation: Balancing efficiency, equity, and justice'

Brief 3 'Recognition of customary tenure in the forest landscapes of the Mekong'

Brief 4 'Creating agricultural landscapes with positive environmental outcomes'

The Mekong Region Land Governance Project (MRLG) aims to improve the land tenure security of smallholder farmers in the Mekong Region and has been operating in Cambodia, Laos, Myanmar and Viet Nam since April 2014. MRLG is an initiative of the Government of Switzerland, through the Swiss Agency for Development and Cooperation (SDC), with co-financing from the Government of Germany and the Government of Luxembourg.

Please visit www.mrlg.org

The Centre for Development and Environment (CDE) is an interdisciplinary research centre at the University of Bern. CDE's commitment is to advance innovative approaches in research and education that are appropriate for transforming highly complex sustainability problems into widely supported sustainable development pathways.

