

Co-creating solutions for the sustainable development of benzoin landscapes in Laos: A case study to reveal the aspirations and needs of local residents

Report on key findings from the Learning Field 10 of the NRP-73 project “Sustainable Trade Relations for Diversified Food Systems”

By Cornelia Hett¹, Simone Vongkhamo², Elisabeth Bürgi Bonnanoni¹

¹ Centre for Development and Environment (CDE), University of Bern, Switzerland

² National Agriculture and Forestry Research Institute (NAFRI), Ministry of Agriculture and Forestry, Lao PDR

Summary

- To stay within the planetary boundaries, a radical transformation of all economic systems is needed. This includes rural areas in the Global South, where the quest to overcome poverty all too often focusses on short-term economic growth with detrimental dis-benefits for of natural resources and biodiversity.
- Sustainable landscape investment is promising to operationalize transformative pathways towards sustainability as it seeks to contribute to multiple elements of landscape sustainability and human well-being: economic production, ecosystems, biodiversity, social bonds as well as financial returns.
- Together with local benzoin farming communities in shifting cultivation landscapes of Laos we co-developed desirable and most feasible scenarios for the future land use. We identified opportunities that facilitate, and obstacles that hinder the realization of these scenarios by use of backcasting, a transdisciplinary research method.
- Our study showed that benzoin farming communities see their unique heritage on sustainable benzoin resin production as key asset to reach their vision for the future. They strive for socio-economic development: They developed scenarios based on the intensification of agricultural land use and diversification of income sources through the production of agricultural commodities. Villagers had no knowledge on how to integrate the safeguarding of natural resources and biodiversity conservation into their portfolio of livelihood activities, and financial schemes for these activities had so far not been explored with them.
- Village communities desired investments in social infrastructure in their villages and material wealth for their families. They identified main obstacles for sustainable benzoin farming as (1) lack of technical innovation and local processing, (2) lack of government support for marketing ; (3) lack of market knowledge and price negotiation power; and finally (4) lack of rule of law (theft, illegal benzoin trading).
- Our results and learnings provide base knowledge for the establishment of a living-lab for sustainable landscape investment in benzoin resin production landscapes of Norther Laos. They furthermore feed into current discussions in Switzerland on how to further sustainable trade of agricultural products and provide insights on potential future contributions from Swiss development cooperation for supporting just transitions in shifting cultivation areas.

Introduction

Balancing local needs and global claims: A need for innovative pathways

Sustainable development can be seen as a normative concept, with three key moral imperatives: satisfying needs, ensuring equity and, respecting environmental limits. The importance of balancing of these imperatives is anchored in the Brundtland Report entitled “Our Common Future” in 1987 (Goodland and Daily, 1996), which placed sustainable development on the global political agenda more than 30 years ago. The concept of limits has gained significant recognition over the past decade, particularly with the introduction of the concept of “global planetary boundaries”. At the global level it is well understood that there exist thresholds for environmental sustainability and that as a global community we must act swiftly to (1) mitigate the overstepping of planetary boundaries and at the same time (2) find novel solutions for development pathways that allow staying within the planetary boundaries. The recent operationalization of the Sustainable Development Goals (SDGs) has propelled the pronounced focus on the safeguarding of global even more. Currently there are several international policy frameworks in the making, which focus on the safeguarding of commons, most prominently the international climate agreements and new legislation for trade regulations of the European Union.

Such new governance mechanisms at the international level bring new claims and pressures to agricultural production landscapes. In the Global South, agricultural production landscapes are often characterized by poverty. The need for socio-economic development is pronounced. Against the clashing of interests and claims on these production landscapes new and context sensitive solutions for equitable development are needed. They need to bring socially and environmentally just development, and fulfil the needs of local communities, while at the same time the need to contribute to the globally postulated safeguarding of the natural environment – not only for the sake of conservation of commons at the global level, but also to prevent the severe effects of classic brown growth¹ models. Transforming the agriculture sector and building resilience for farmers will not be possible without significantly increasing the amount of capital available for environmentally-friendly fair investments in agriculture. Access to finance has long been a challenge for agriculture due to perceptions of low profitability and high risks. This calls for a need of novel approaches that take a holistic view of products and services of agricultural landscapes and uses different financial instruments to create a unique bundle for long-term financing of landscape goods and services that suitable for a particular landscape at hand. Integrated landscape investment (Shames and Scherr, 2020) offers an entry point to developing such solution (see Box 1). This concept takes into account the opportunities of flow-based governance of natural resources but aims to bundle them into a territorial approach. Tailored solutions designed on the principles of sustainable investment landscapes centre on a set of goods and services (including ecosystem services) from a landscape and use a package of different financial instruments to ensure that the solution is economically viable.

To design sustainable investment landscapes it is imperative to apply a fair process of co-design. Only in this way can we ensure the three key moral imperatives of sustainable development. One key aspect of this co-design process is to understand and make the needs of the local residents explicit. After all, they are key agents of change for such sustainability transitions that are to take place in their landscapes.

¹ Brown growth describes economic development that relies heavily on the exploitation of the natural resource base and does not consider the negative side effects that economic production and consumption have on the environment.

Through the study at hand, we aim to contribute to the development of sustainable investment landscapes in Northern Laos. Concretely, we take the example of landscapes relevant for global benzoin resin production and develop and test a co-design process stakeholders. In a first step, we focused on researching the needs of local farmers and co-develop long-term visions for their future land use and livelihood activities. For this purpose we designed and carried out one-day workshops with benzoin farming communities. Here we present our developed approach, which is based on the backcasting methodology, and the results from two case study villages.

Box 1: Sustainable landscape investment in a nutshell

Sustainable landscape investment (SLI) is an innovative way to use a combination of financial mechanisms such as payment for ecosystem services schemes, particularly climate finance, and impact investment to improve and increase access to finance for smallholder farmers and small and medium enterprises (SMEs) in the agriculture sector. The aim of SLI is to support the transition of existing agricultural production landscapes on a gradient between traditional and industrialized production, towards production landscapes with positive climate outcomes, such as increased resilience, reduced emissions intensity, and which guarantee the safeguarding of biodiversity and ecosystem services.

Key characteristics:

- *Contribute to multiple elements of landscape sustainability—human well-being: economic production, ecosystems, biodiversity, and social bonds—as well as financial returns*
- *Take into account socio-ecological processes, spatial interactions, and off-site impacts in the landscape*
- *Align with public land use sustainability plans and rules*
- *Align with the landscape vision and action plan developed through a stakeholder process*
- *Generate synergies with other investments in the landscape to meet these objectives.*

based on Shames and Scherr, (2020)

Benzoin resin production landscapes in Northern Laos at the crossroad between landscape degradation or conservation, and precarious or sustainable livelihoods

Benzoin Lao also called *Benzoin Pierre* or *Benzoin Siam* is a resin that is of high demand in the global perfumes, cosmetics and fragrances sector. The resin has a sweet, vanilla-like aroma and fixative properties. The benzoin resin is produced by the *Styrax Tonkinensis* tree. This tree species is a pioneer plant and found in forest fallows where local residents practice shifting cultivation. This agricultural system is based on rotation between several plots of land for cultivation of crops and for the regeneration of natural forest vegetation.

To obtain benzoin resin, trees are scarred by farmers. In an effort to close the wound, new wood forms that contains cavities filled with a resinous secretion, the raw benzoin. This raw benzoin resin is then collected by local farmers and sold to international markets. Prices for Benzoin Lao resin are stable and have increased over time making the resin a most important income source for local farming communities.

Benzoin production through scarring and harvesting practices is only possible after several years that the benzoin trees have grown. Tapping starts when the styrax trees are between 6 and 7 years old and ends after the trees reach around 12 years of age (Vongkhamho, S., et al. 2016). This timeframe of optimal benzoin resin yield and the fact that benzoin is produced within traditional systems of shifting cultivation has important positive implications on the landscape-level biodiversity and ecosystem services provision of the farming system: it puts a requirement for long rotation periods forward which again provides for a sustainable level of intensity for farming in the hilly landscapes which are prone to erosion, land degradation and soil fertility loss when farmed at higher intensity. Permanent farming or short rotation cycles of shifting cultivation systems have proven to bring area-wide environmental degradation. Long fallow periods also provide for high levels of (agro-)biodiversity in these farming landscapes.

In general, the semi-natural landscapes of the uplands of Laos are under great pressure. Firstly, through commercialization of the agricultural space. The general trend is a transformation towards intensification of the farming system and developing towards monoculture production systems of commodity crops (e.g. banana, maize, job's tear, rubber) which generally require high levels of agrochemical inputs and drive region-wide landscape degradation. A second pressure put on these landscapes relates to international claims for natural forest conservation to safeguard biodiversity and reduce CO₂ emissions. This leads to the delineation of protected areas with limitation or even prohibition of natural resource use. With these two pressures and very insecure land tenure regimes prevailing in Laos, local farming communities lack decision power and freedom of action for their choice of livelihood system.

Against this background, we hypothesise that the creation of sustainable investment landscapes with benzoin as key farming product could be a concrete solution for a holistic approach to equitable and sustainable development. One that provides stable incomes while at the same time promotes biodiversity and ecosystem services conservation.



Figure 1: Upland landscapes of Laos with low-intensity farming and significant delivery of ecosystem services and biodiversity are transformed. Mainstream development pathways focus on the production of agricultural commodities such as rubber (top) and banana (bottom).

Methods

Backcasting as a tool to co-develop visions for the future sustainable land use

In order to initiate a process to co-design a concrete solution for benzoin farming landscapes that adheres to the principles of integrated landscape investment, we employed visioning workshop with two benzoin-farming communities. We used backcasting, a transdisciplinary research method, to (1) investigate the long-term visions of local residents; (2) co create realistic scenarios; and (3) identify opportunities that facilitate, and obstacles that hinder the realization of these scenarios (Andreotti et al. 2020). Backcasting is an approach that focuses on what should happen in the future rather than what could happen. With backcasting, we could hence put emphasis on the freedom of action of farmers and jointly investigate the most desirable, yet realistic options for a sustainable future. The backcasting exercise we developed aimed to support the discussion of social, economic and environmental aspects of sustainability transition at the landscape level.

The exercise was divided into four steps in which the participants collectively developed their view on the: (1) the current situation, (2) their vision of the ideal situation in ten to fifteen years, (3) realistic scenarios for land use and livelihood activities as means to approximate their vision in the best possible way, and (4) the backwards steps on identifying most significant opportunities and obstacles to get from the current situation to the realistic scenario. Figure 2 visualizes the four main steps of our developed approach.



Figure 2: Conceptual design of the backcasting exercise for envisioning sustainable benzoin farming futures.

We developed a one-day workshop agenda with five sessions that relate to four main methodological steps of the backcasting approach and was completed by a final session for joint reflection of the day's work and results. Each session was designed to allow for open discussions amongst the participants in order to jointly reflect, share and co-produced knowledge. Accordingly, one or a set of lead questions guided each workshop session and moderators were equipped with a set of follow-up questions to contribute to the group discussions to keep the discussions going. Table 1 below provides details on the workshop session topics, lead questions and session outputs.

Table 1: Structure of the backcasting workshop sessions for the co-design of sustainable futures of benzoin farming communities.

Session 1: Understand the current farming situation, land use dynamics and the context of benzoin production	
	Aim: Set the scene for a constructive workshop collaboration and to develop a common understanding of the current situation among the workshop participants
	Lead question: How has benzoin farming been in the past, how is it today and where is it going?
Session 2: Envision the dream for the future for benzoin production	
	Aim: (1) To sketch out the big future vision for the village community and the village land; (2) Identify elements of sustainable production of benzoin by villagers and define what they think is important for long-term sustainability of their livelihoods and for environmental integrity.
	Lead questions: What is your big dream for the future? What does your village look like? What do your children do? And, is benzoin farming an important part of this future dream?
Session 3: Develop concrete future scenarios for sustainable benzoin farming	
	Aim: To co-develop a concrete scenario for sustainable benzoin farming and further livelihood activities that villagers can imagine and best match the dream for the future (previous exercise) yet seem "feasible" as well as "desirable" to participants.
	Lead questions: What do you think are activities that you undertake in the village (or outside the village) that enable the outcome of the future dream? What activities will your family and other members of the village community engage in?
Session 4: Identify opportunities, challenges and barriers to get from the current situation to the scenarios	
	Aim: To identify the main challenges, opportunities and barriers to get from the current situation to the envisioned future scenario(s).
	Lead question: what are the main challenges, what are the opportunities and what are the barriers to get to the future desired scenarios?
Session 5: Plenary reflections on the produced results	
	Aim: To jointly reflect on the workshop outputs and discuss topics that came up during the work
	Lead question: What did you learn today?

Case study villages

We conducted the visioning workshops in two case study villages: Markphouk village, in Nambak Districts of Luang Prabang Province and Piangdee village, in Samneua District of Houaphan Province. Figure 3 below shows the village locations. We selected these villages, as they are both typical benzoin communities within their respective districts, yet with distinct differences regarding some base characteristics such as accessibility, ethnicity and the degree of reliance on benzoin resin production as well as the percentage of households involved in it. Furthermore, we chose villages where there exists abroad knowledge base on the currently land use and agricultural production situation, and where villagers were acquainted to collaborate with researchers through previous engagement with the village community through prior development interventions and research projects.

Markphouk village (as administrative unit) is a typical consolidated village and consists of originally two village locations and two distinct village communities, Markphouk village and Mokchong village. The former is Hmong-ethnic group, the latter Khmu ethnic group. Mokchong village was located further away from the main road has been relocated by the Lao Government and households moved to the existing village of Markphouk along the national road. Although the two ethnic groups have the similarly local knowledge of integrated shifting cultivation practices for many centuries together with harvesting of non-timber forest products (NTFPs), the rotational shifting cultivation-based styrax fallow system is

practiced largely by the Khmu households while Hmong households are not involved and focus on different crops such as rice, maize, cassava and job's tears. For Markphouk, we could profit from detailed participatory land use planning and management of the Agrobiodiversity Initiative (TABI), a ten-year collaboration between the Swiss Agency for Development and Cooperation and the Lao Government with focus on livelihood diversification through the sustainable use of agrobiodiversity products as a means for poverty alleviation (Hett et. al 2020, Rodericks 2020).

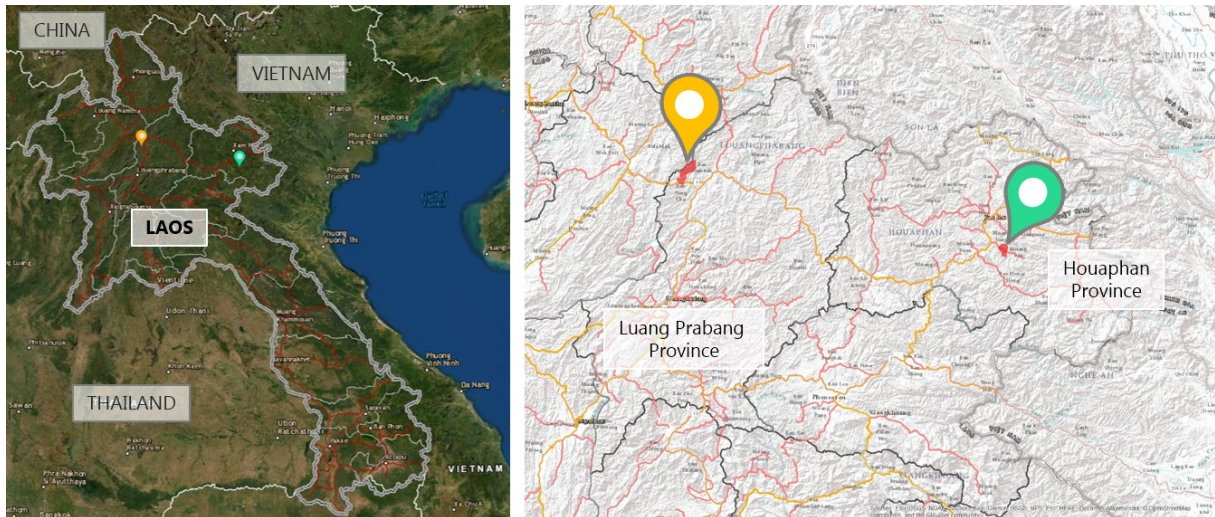


Figure 3: Location of case study villages: Markphouk village in Nambak District of Luang Prabang Province (yellow), and Piangdee village in Samneua District of Houaphan Province (green), network of national roads (dark red) and provincial roads (orange).

Piangdee village is located alongside the provincial road and all households belong to the *Kniang Pong* minority ethnic group with a distinct and unique culture, heritage, and local knowledge of agricultural production practices, including the rotational shifting cultivation with styra fallow management for the production of benzoin resin. The village produces benzoin resin for commercial purposes since 1992 and the entire village community is involved. Benzoin resin plays a significant role for income generation, recently this has been estimated to about 40% of total annual household income on average. In the case of Piangdee the National Agriculture and Forest Research Institute (NAFRI) has long-standing research activities focussing on the marketing of benzoin value chains.

The fieldwork was conducted in on the 2nd of March 2021 in Markphouk and on the 5th March in Phiangdy. This timing of the fieldwork was set to optimally fit in with farming activities of the villagers and furthermore provided a window of opportunity for in-country travel during the otherwise very restricted COVID -19 pandemic related travel bans. All fieldwork was conducted by Lao nationals in Lao language. In Markphouk a total of 16 villagers participated in the workshop and were distributed into two groups of eight participants each, in Piangdee a total of 15 villagers participated in small five small groups of three participants each.

Results

Local perspectives on the current land use situation in the case study villages

In both our cases, villagers value benzoin resin collection as part of the shifting cultivation system not only as an economic activity, but as an integral part of their farming system and associated culture . In the workshop session they expressed their care for the state of the near-to-nature agricultural land use system that provides for co-benefits of further NTFPs, which are key for food security as well as selling purposes. Both village community however expressed their concerns regarding the overharvesting of NTFPs and their associated declining abundance. Villagers are highly knowledgeable regarding the

extent and locations of zones with highest benzoin production and were able to locate those on geographical maps. Villagers expressed the strong desire to conserve those areas for benzoin production and to increase the security of tenure for these areas through their official registration and possible ownership of land titles. Under current Lao legislation, however this is not possible. They also expressed the need to put in place an effective management system to guarantee the continued production of benzoin. Villagers however preferred to switch to other land uses for areas currently included as benzoin fallow areas, but with consistently low yields. Villagers would prefer to use these areas for cash crop farming such as job's tears in Piangdee. Both village communities reported that over recent times they had to put in more efforts and time for the production of agricultural goods, there was a pronounced need for more weeding activities while at the same time the productivity of the land for upland rice has decreased and soils were degradation. Together with the notion of declining abundance of NTFPs we interpret this as a general overuse of natural resources through collection and agricultural activities.

Local residents' visions for a prosperous future

In both our cases, the workshop participants divided their visions for the future into two main aspects, (a) their vision for a prosperous community and (b) their vision for reaching a high quality of live for themselves and their families. In Markphouk, the discussions on the prosperous village community centred on improvements of existing, and the installation of new social infrastructure, namely a village health centre, market facilities, and an access road to benzoin high-yield production areas to render benzoin farming activities more efficient. In Piangdee, the visions for the future for the village community also included an access road to the benzoin production areas as well as a paved road to the village. In contrast to Markphouk, Piangdee is not located at a provincial road and village access is tedious and time consuming, especially during the rainy season. Further elements to provide for a bright future for the village community named by workshop participants were the provision of a school and a health centre. Besides wishes for infrastuctural development for the benefit of the village community, Piangdee villagers also stressed the need to maintain and further solidarity within the community and the wish for the maintenance of a healthy ecosystem able to provide a variety of ecosystem services and most importantly a constant supply of a variety of NTFP. Finally, both village communities emphasized the need for stable markets and prices for benzoin in the long term in order to be able to have a more stable livelihood situation.

The visions for the personal future centred on the desire to have a steady career and income in both case study villages. This wish for the future also included the ability to accumulate material wealth (ownership of a bigger house and car) as well as the ability to provide quality education for their children. The plenary discussions in both case study villages centred on the need for a stable economic environment, in particular the need for stable prices for their agricultural goods, and stable market condition as a basis to guarantee a stable income².

² While a stable income is surely a central concern under normal circumstances it shall be noted here that both village communities were heavily impacted by the consequences of the COVID-19 pandemic. Closing of borders impeded heavily on their ability to sell benzoin resin to traders and hence villagers were in many cases forced to convert benzoin production areas and focus on the production of other, sellable cash crops, thereby satisfying their short-term need for income, but at the same time increasing the vulnerability to price fluctuations for cash crops. Under normal circumstances, the prices for benzoin are in fact rather stable and consistently rising. During COVID-19 farmers did not receive any state support to cover their losses of income.

Villagers develop and evaluate their preferred scenarios for a future farming-based lifestyle

Optimization of benzoin production and intensified farming of cash crops: The scenario of workshop participants of Markphook

The preferred scenario for Markphook workshop participants centres on the continuation and optimization of benzoin-based farming. The motivation of villagers for this scenario is grounded in their understanding that benzoin production is their key asset and a unique expertise that they have. Benzoin also plays an important part of the cultural heritage, which they would like to preserve and build upon for the future development of their community. According to the workshop participants the rotational practices of shifting cultivation with managed styrax fallow system is the best option for them to lead to a good quality of life. Furthermore, villagers build this scenario on the assumption that benzoin resin will in the future continue to constitute a well thought-after product for international value-chains for the production of fragrances. There is a clear market demand and in prices for the resin were estimated to rise continuously by villagers.

Markphook workshop participants envisioned a land use scenario, where benzoin resin is only produced in zones that consistently yield high-quality resin. These areas are located predominantly on steeper and dry slopes. They envision the conversion of less productive areas which are currently part of the managed styrax fallow system to agricultural areas where other high-value goods, namely cardamom, galangal and broom grass can be cultivated. Villagers intend to diversify and optimize their agro-forest system in this way, however due to limited time for the workshop exercise the participants could not go into further in-depth discussions regarding the effects that this conversion of styrax fallow areas may have on the stability and level of income. Furthermore, the discussion could not be continued on the potential positive or negative impacts of such a new land use scenario on the environment. We believe that these are, however, crucial aspects that need to be assessed and taken into consideration for the next step of co-design process of the future sustainable farming scenario.

Opportunities to be taken to achieve the envisioned scenario

For their future scenario Markphook villagers expressed the desire to take more responsibility for the region-wide coordination and production of benzoin. They see the establishment of an agricultural cooperative-for benzoin resin production as key element to drive this positive change. The cooperative system would contribute to overall knowledge sharing and coordination of benzoin production and harvesting operations. Furthermore, villagers see opportunity in taking charge of further steps of the value chain. Concretely, they envision taking charge of benzoin resin processing. They discussed that a processing facility and benzoin resin storage warehouse within the district could be an opportunity to gain authority over their product. Specifically, it would allow them to assess and control the total amounts and quality of harvested resin, and increase their negotiation power towards intermediaries and traders with (e.g. pricing and the time of purchase within the year).

Barriers and obstacles that may hinder the development of the scenario

Markphook villagers identified a series of barriers to the success of their scenario. The main internal barriers included the lack of innovation in production methods, negative work attitude towards traditional benzoin farming, and the direct dependence on international markets and value-chains for benzoin product prices and product purchase at village level. The traditional practice of benzoin harvesting was regarded as inefficient and dangerous by workshop participants. This concerns especially the tapping of benzoin trees several meters above ground using traditional simple tree ladders (see Figure 4). Benzoin harvesting is labour-intensive and there is an increasing reluctance in the work attitude of the younger generation towards this activity as other jobs seem less strenuous. While a stable or increasing market demand was assumed as a condition providing opportunity, knowledge on and control over selling prices and stability in product purchase by traders as well as the parallel existence of a formal and an informal market with competing product purchasing prices was mentioned as key obstacles to overcome. Villagers considered the lack of expertise on agricultural cooperatives and with regard to the marketing of benzoin in the agricultural extension system as key barrier for them to take better control of the benzoin resin marketing. Finally, the major political barrier identified was the lack of formal tenure recognition for benzoin production areas. This barrier is prone to the shifting cultivation system in Laos in general, and while various attempts of participatory land use planning, most notable through the TABI initiative have paved the way towards innovative land tenure regimes, no formal tenure exists as of today for shifting cultivation systems.



Figure 4: Scenes from the production of benzoin resin.

Basket-approach of marketable agricultural goods and maintaining semi-natural areas for consumption and sale of NTFPs: The scenario of workshop participants of Piangdee

The workshop participants in Piangdee compiled a wide range of elements that would be needed in order to achieve their vision for an increase of material wealth, social infrastructure and at the same time preservation of the natural environment. As most desirable yet feasible scenario participants co-developed the idea of an NTFP-based and market-oriented diversified agro-forestry system. Piangdee villagers envisioned an approximate share of to the long-term income from benzoin resin (40%), rice (20%), livestock (20%), and Job's tears (20%). The implications of the management for the village area for this approach of diversified livelihood were not mapped and spatially analysed. This was not possible during the workshop as data on land use and zoning was lacking. Hence, the spatial feasibility and implications of this scenario were not discussed. Participants however identified the need for a follow-up activity that would centre on the most suitable land zoning and a re-evaluation of the scenario with regard to feasibility of the scenario. Workshop participants also agreed that they wanted to increase the farming area to allow for more cash cropping. There was no further discussion on how well this aspect of the scenario matches the vision of the future with regard to environmental safeguarding. Unlike In

Markphook, an intact natural environment was a key component of the vision for the future in Piangdee. However, an expansion of the agricultural space and the farming of cash crops like job's tears as envisioned in the scenario would lead to loss of forest areas and forest biodiversity, including prominent NTFPs of Piangdee such as wild tea and Markkor (palm fruit) used both as food and for marketing.

Opportunities to be taken to achieve the envisioned scenario

As in Markphook, the workshop participants in Piangdee considered their traditional knowledge and the cultural heritage related to benzoin resin production as a unique asset that they would like to leverage for their future scenario. Equally as prominent in terms of asset was their long-standing good relationship with the formally recognized traders who provided fair prices for the resin and who supply the main buyer, Agroforex Company, based in Vientiane. This company provides for consistent demand for produce and has previously invested in a village school as a social contribution. Unlike in Markphook, Piangdee workshop participants did not propose to initiate a cooperative system for benzoin resin production. Villagers discussed that contract farming from benzoin resin production could be a new way to organize the farming system.

Barriers and obstacles that may hinder the development of the scenario

In Piangdee the main barriers to overcome in order to enable their scenario were similar to Markphook: there is a lack of technical knowledge and financial means to innovate benzoin production techniques towards decreasing labour input and increasing work safety. Related to this barrier the lack of support by the Lao government to build a road to the benzoin resin production areas was mentioned. Again, similarly to Markphook the workshop participants in Piangdee considered the existence of a significant informal market for benzoin as well as the general lack of market information and lack of negotiation-power to influence market prices as key barrier to overcome. Finally, a lack of implementation of rule of law and high corruption as well as criminality rate in the context of benzoin marketing was considered a key barrier to overcome to provide for a more safe and just environment for benzoin farmers. Relatedly, in order to enable their preferred and most feasible scenario for the future, workshop participants suggested to implement more strict law enforcement and protection against theft of benzoin resin, provide innovation and investment for new harvest tools; and increase the government support to promote sustainable benzoin resin marketing. They see this as key element that fits into the existing government policy of strengthening the local production and commercialization of NTFPs.



Figure 5: Impressions from the backcasting workshops conducted with benzoin farmers in Piangdee and Markphouk.

Discussion and Outlook

The presented case studies provided a detailed account on the aspirations that local communities have regarding the development of their communities and the land they farm to make a living. The case studies clearly demonstrated that the priorities of local upland farmers with an active forest fallow management to produce benzoin resin lay in the socio-economic development of their villages and advancing their lives in terms of building their capacities as benzoin resin producers and, in the case of Markphouk to take control and improve further steps of the benzoin resin value chain. Through a co-design workshop, villagers were able to identify preferred pathways of development and the associated opportunities and obstacles.

Both village communities put forward scenarios for their future farming lifestyle that are composed of a set or “basket”³ of marketable agricultural and forest goods. We examine that workshop participants relied heavily on a set of current activities and the production of agriculture and forest goods for drawing a scenario for the future. During the workshop Session 3, entitled *Develop concrete future scenarios for sustainable benzoin farming* the facilitators presented a series of novel livelihood activities to the workshop participants. The aim was to inspire participants to envision complementary livelihood activities to farming including eco-tourism, paid labour in processing factories, becoming a custodian for nature through adoption of payment for ecosystem services schemes or conservation finance. Proposed activities directly relating to the benzoin resin value chain and marketing of NTFPs were taken up and discussed. Participants also proposed innovative ideas for the organisation of their activities and the expansion into processing, storage and distribution of benzoin resin. Other alternative activities such as eco-tourism or the incorporation of payment for ecosystem services schemes were not taken up. Such schemes and activities could potentially create non-farming based additional income. However, we believe that currently it is difficult for local farmers to incorporate such activities into a future scenario, as they are largely unknown and foreign to them.

The findings from the case studies exemplify that, against the moral imperative to ensure equity, it is challenging to reconcile claims at the global level for safeguarding of commons by the international community – in our case the safeguarding of (agro-)biodiversity and ecosystem services of forest environments (carbon storage, watershed services) – in agriculturally used landscapes with high forest cover. It is difficult, as local communities have set priorities on socio-economic development, a very justifiable priority, given their high poverty status and general low status of socio-economic development of their areas. Activities to safeguard the (semi-)natural environment and which are at the same time economically attractive first need to be co-designed with the local communities of these biodiversity-based farming systems. Given the high value that the local communities of our case study villages put on natural environment we can assume that there is high interest by local communities to incorporate activities related to the conservation of nature in their portfolio of livelihood activities.

Our approach based on backcasting proved highly successful the development of future land use and livelihood scenarios with village communities. We therefore propose this approach as a first step of the process of co-creating solutions to reconcile the safeguarding of nature and natural processes, with socio-economic development in traditional agricultural landscapes. In a next step, different existing sectoral financing schemes should be evaluated and combined in order to facilitate the design of a landscape investment strategy. Schemes include i.A. conservation finance mechanisms for biodiversity or ecosystem service – here tapping into the emerging carbon market seems the most imminent opportunity⁴-, funding from private sector initiatives for sustainable sourcing (several corporate businesses in the fragrance and flavours sector have such schemes), philanthropic funding, and the Lao government’s inclusive Green Growth Promotion Fund for the Agriculture and Forestry Sector as promoted through the National Green Growth Strategy of the Lao PDR (GoL 2018).

In parallel to designing sustainable landscape investment for benzoin farming landscapes other instruments that contribute to a socially and environmentally just development of these farming landscapes need to be leveraged. For example, an encompassing insurance system should be designed to protect farmers against yield risks, price risks, and investment risks. Farmers face frequent exposure to natural disasters, and against current climate change models these risks are likely to increase. A good

³ We refer to such scenarios as basket approaches where a set of multiple products adds up to create a context-specific bundle of commercial goods produced in a particular landscape.

⁴ Note: Laos is a UN-REDD Programme Partner Country

insurance scheme could go a long way to provide stability for the agricultural production over time. It could also prevent farmers from need to adjust their crop type according to short-term price fluctuations.

Finally, under the umbrella of an integrated landscape investment scheme, development cooperation could contribute by the provision of support to the Lao government for filling several previously identified policy gaps (NAFRI 2016), and shortcomings in the rule of law, some of which were also explicitly mentioned as barriers for the sustainable development of benzoin farming by the workshop participants in our case study villages. Foremost, this concerns the prevention and control of illegal and informal benzoin resin trade. Lao, Chinese and Vietnamese informal and unregistered traders are very active in Laos and offer higher prices to Lao benzoin farmers than the official traders. It is estimated that around 50% of the benzoin resin trade in Laos is conducted via the informal market, with severe impacts in multiple dimensions. These include the disruption of formal and official trade operations (decrease of quality of product and total available amounts on the formal market), inability to assess total harvested and sold amounts from different regions, which is a key variable for assessing sustainability thresholds for harvesting operations, potential tax evasion, and generally contributes to increase in theft of benzoin resin. Other known policy gaps which villagers also mentioned concerned the need to officially register land for benzoin resin production and the provision of land titles.

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