



Lao PDR Forest Plantation Policy Background Paper

Industrial Tree Plantations: Examining Their Effects and Contribution to Livelihoods.
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This paper explores the effects and contributions to local livelihoods from industrial tree plantations and discusses policy recommendations for the promotion of a sustainable commercial tree plantation sector in Lao PDR. It is based on analysis of the literature and preliminary results from household surveys and farmer interviews at case study sites in five provinces in Lao PDR.

Key Points:

1. There are different investment “models” in Laos for establishing tree plantations, including independent smallholders, contract arrangements, community land ‘leases’ and state land ‘concession’ investments. Joint venture, international and domestic investors are highly interested in securing more land for plantation development. However, issues around land allocation for tree plantations need to be addressed; these include protecting customary rights and access to land and resources, and equitable benefit sharing.

2. Household livelihood strategies are based upon an increasingly diverse portfolio of activities, but still dependent to a significant degree on agricultural land and forest use. Non-commercial use of local land and forest resources is still very important in the case study villages. It is recommended that these diverse livelihood strategies need to be taken into account while designing options for commercial plantations.

3. Informal (untitled) access to community forest-lands and natural resources is highly valued by the communities. In two case study sites assessed to date, cash and non-cash income (total income/household/year) from forest and fallow land were higher than those from forest plantations. Our detailed livelihood surveys confirm that forests, including rotational swidden fields, remain important sources of everyday livelihood for many Lao villagers. Therefore, tree planting should be organised within diverse landscape mosaics, and the importance of natural forests and swidden agroforestry systems should be recognised in land-use planning.

4. Three of the four plantation “models” investigated – i.e. plantations developed independently by farmers, community land leasing arrangements and concessions - deliver significant farmer income streams. Considered over full rotations, income from plantation employment appears much less significant. Opportunities to generate more substantial income from employment in plantation concessions and community land leasing arrangements need to be further explored. While some farmers can grow trees successfully without state extension support (e.g. a case study village where farmers grew yang bong), targeted training and extension services should be provided to better support out-grower schemes.

5. The design of plantation models should include measures and mechanisms to promote effective engagement with local communities, specifically through more participatory land use planning. Our result suggest that plantations development options should allow farmers to retain a high degree of livelihood flexibility, and foster their learning and adaptability.
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Introduction

Addressing poverty, improving the living standard of the population, and graduating from the list of Least Developed Countries (LDCs), are the highest priorities of the the Government of Lao PDR (GoL)¹. The Lao Government, like many other governments of developing countries, sees in the modernization and intensification of agriculture the pathway to transform the livelihoods of rural people. The Ministry of Planning and Investment and the World Bank Group found: “...for Laos to achieve its annual economic growth objective of 7.5%, the non-exploitation of land is not an option for the government.” (World WorldBank, 2011). Such transformations are reflected in policies that segregate forests and agricultural spaces, aim to eradicate shifting cultivation and foster more intensive and commercial agricultural practices (Castella et al., 2013; Lestrelin, Castella, & Bourgoïn, 2012), and eventually support some of the rural population to transition away from farming (Broegaard, Rasmussen, et al., 2017). Implicit in this approach is the view is that current and traditional land use practices are sub-optimally productive (Rigg, 2012).

In parallel, international and domestic investors are keen to secure more land for tree plantation development (Korhonen, Zhang, & Toppinen, 2016). Sustainable, well-managed plantations, established within an integrated landscape model, can provide important socio-economic (Bissonnette & De Koninck, 2015; Cramb & McCarthy, 2016) and environmental benefits (Cossalter & Pye-Smith, 2003; Grossman, 2015); however, plantation expansion also changes existing land uses, resource access and property rights, potentially with adverse consequences (eg Andersson, Lawrence, Zavaleta, and Guariguata (2016); (Gerber, 2011)).

The GoL views commercial plantation forestry as a key sector for promoting economic development in rural areas, particularly in upland and priority-poor districts where a significant proportion of the population resides (PDR, 2013). As an example, the Laos Forestry Strategy 2020 (FS2020) prioritises: “...tree planting and management by setting clear purposes with relevant target owners and markets, and investment schemes to strengthen wood supply base and farmers’ income...”.

In rural Lao PDR, most property rights to forest-land are still held on an informal or untitled basis (Dwyer, 2015), and there is strong evidence for continued reliance upon informal access to forest-land resources for livelihood production and food security. Local resources provide important sources of household cash income (Foppes & Ketphanh, 2000; Russell et al., 2013), that serves as a ‘non-commodified subsistence guarantee’ (Akram-Lodhi and Kay, 2010: 273; Baird and Barney, 2017). Thus, there exists a tension in forestry and development policy — between the identification of suitable areas

¹ In 2010, the United Nations Development Programme (UNDP) labelled Lao PDR as the sixth most successful country for improved human development in the past 40 years (Sims, 2017).

for tree plantations, and protecting existing customary rights to land and the livelihood benefits derived from land. Other policy questions relate to the optimal spatial and silvicultural organisation of plantations (including agroforestry and alleycropping options), and benefit sharing arrangements between private investors and local communities that can maximise a fair distribution of economic benefits.

This background paper provides a preliminary analysis of ACIAR-supported research examining the socio-economic outcomes of tree plantation models. The paper presents early empirical evidence that can inform policy deliberations on a sustainable commercial tree plantation sector in Lao PDR.

Research Design

In Lao PDR, there is a wide range of tree plantation “models” — from independent smallholders, contract farming arrangements, to community land leases and state land concession-style investments. Within these models, there are also different rotation periods, planting patterns, spacing designs, and silvicultural practices (Smith, 2016). A comparative analysis of the economic, social, and environmental implications of these different plantation models can contribute to identifying opportunities and policy reforms that would strike a better balance between key stakeholders, including smallholder households, local communities, private investors, and state institutions.

To provide a broad understanding of the phenomenon of plantation development, our research identified seven community case study sites, each representing a different approach to forest plantation establishment (Figure 1 below). The research collected data from surveys of 175 randomly selected households and accompanying open-ended interviews, photo-elicitation and participant observation, conducted in seven villages in five provinces between February 2016 - February 2017. Data contributing to this paper was derived from 100 HH surveys in four of the case study villages². Villages were selected based upon the extent and depth of their engagement in the different tree planting models.

The sites include: (1) a village where Burapha Agroforestry Co., Ltd (BUFARCO) manages more than 500 hectares of eucalypt on communal land following a 30 year-length ‘village partnership’ agreement. Here, farmers provide labour based on their household capacity and interest, and also have the option of intercropping rice in between rows of eucalyptus; (2) a village where farmers have independently developed an agroforestry system that combines yang bong trees on 7-year rotations with rice (year 1), and bananas (years 2-5); (3) a village where farmers have planted eucalypt under a ‘contract farming’ (2+3) model, in collaboration with Oji-Lao Plantation Forestry Ltd.; and (4) a village where Stora Enso Laos (SEL) manages just under 100 hectares of eucalypt under a 30-year lease agreement. In the latter case, labour opportunities are based on the company’s requirements, and local farmers are able to intercrop rice in between the alleys of eucalypt.

² At this stage of the project, we have only been able to digitise completely the data collected in 4 villages. Future project reports are expected to include results from the other 3 sites.

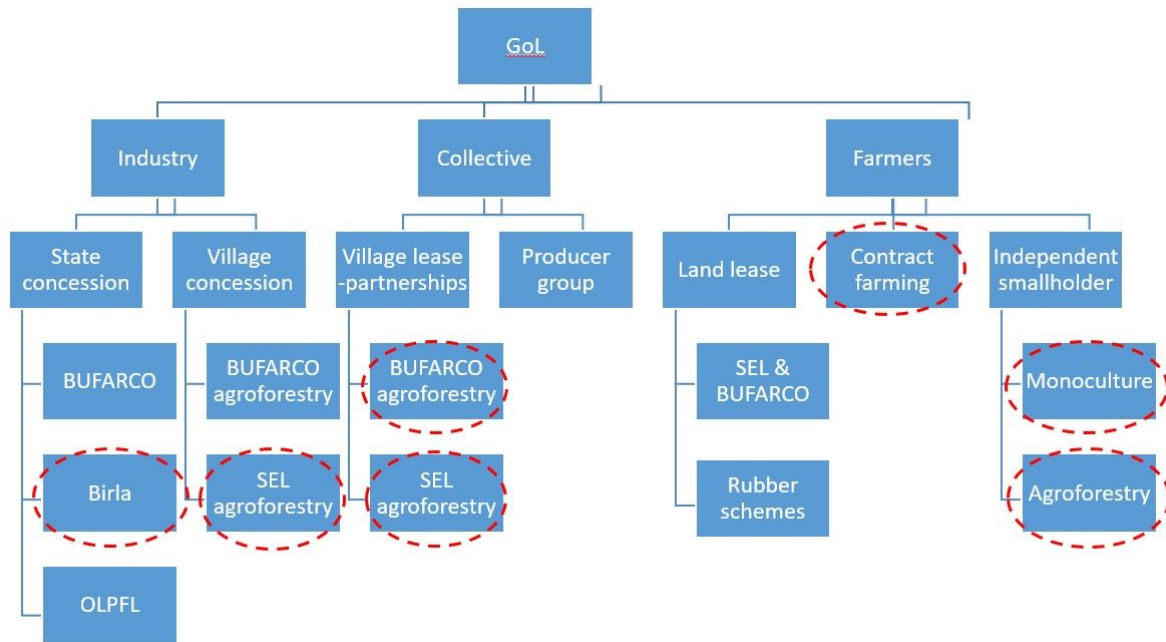


Figure 1: Different tree plantation models implemented in Laos based on land tenure and produce ownership. Red circles highlight the seven models included in this research. [SEL: Stora Enso Laos; BUFARCO: Burapha Agroforestry Co.,Ltd, OLPFL: Oji Lao Plantation Forestry Ltd.; Birla: Birla Lao Pulp and Plantations Ltd.]

Key Findings

Household livelihood strategies are highly diverse

Household (HH) income sources in the case study villages are illustrated in Figure 2. It is evident that (HH) livelihood strategies are highly diverse, and based to a significant extent upon the use of agricultural land and forests. The total average annual HH income (cash and non-cash values) in the surveyed HH's from four villages ranged between US \$2,641 (SEL agroforestry site) to US \$8,105 (yang bong agroforestry site)³. The non-cash economy (i.e. based upon consumption and exchange of products) is still important, accounting for between 27% and 47% of the total HH income in the case study villages. These data indicate that a significant portion of the Lao rural economy remains encompassed within the so-called "subsistence sector".

Our results show as well that incomes from 'forest and fallow lands' – which combine timber, fuelwood, NTFPs, aquatic products from ponds (not rivers), and rice from swidden agriculture fields – play an important role in supporting the livelihood of farmers in all villages. If we account for both cash and non-cash benefits, forests and fallows' annual contribution to the household economy in the case study villages ranges from US \$771 to US \$1,508. In two of the villages in 2015-16, forest and fallow lands were the first and second most important source of surveyed household income. Our results indicate

³ The latest World Bank Economic Monitor estimated GNI per capita reaching US \$1,730 in 2015 (World WorldBank, 2016). Our figures suggest that assessments such as the World Bank's – which are based on staff estimates and projections based on data provided by the Lao Authorities - may have overlooked the important contribution that forests and fallows make to the livelihoods of smallholders, underestimating the importance of 'environmental' income in overall economic development.

that what is often defined as ‘degraded’ or ‘unstocked’ forests does not represent the actual importance of these sorts of land for the livelihoods of farmers (see also Broegaard, Vongvisouk, & Mertz, 2017). The real value of forest and fallow land would be even higher if we included livestock which, in most households, are left to roam freely and with little supervision in fallow lands.

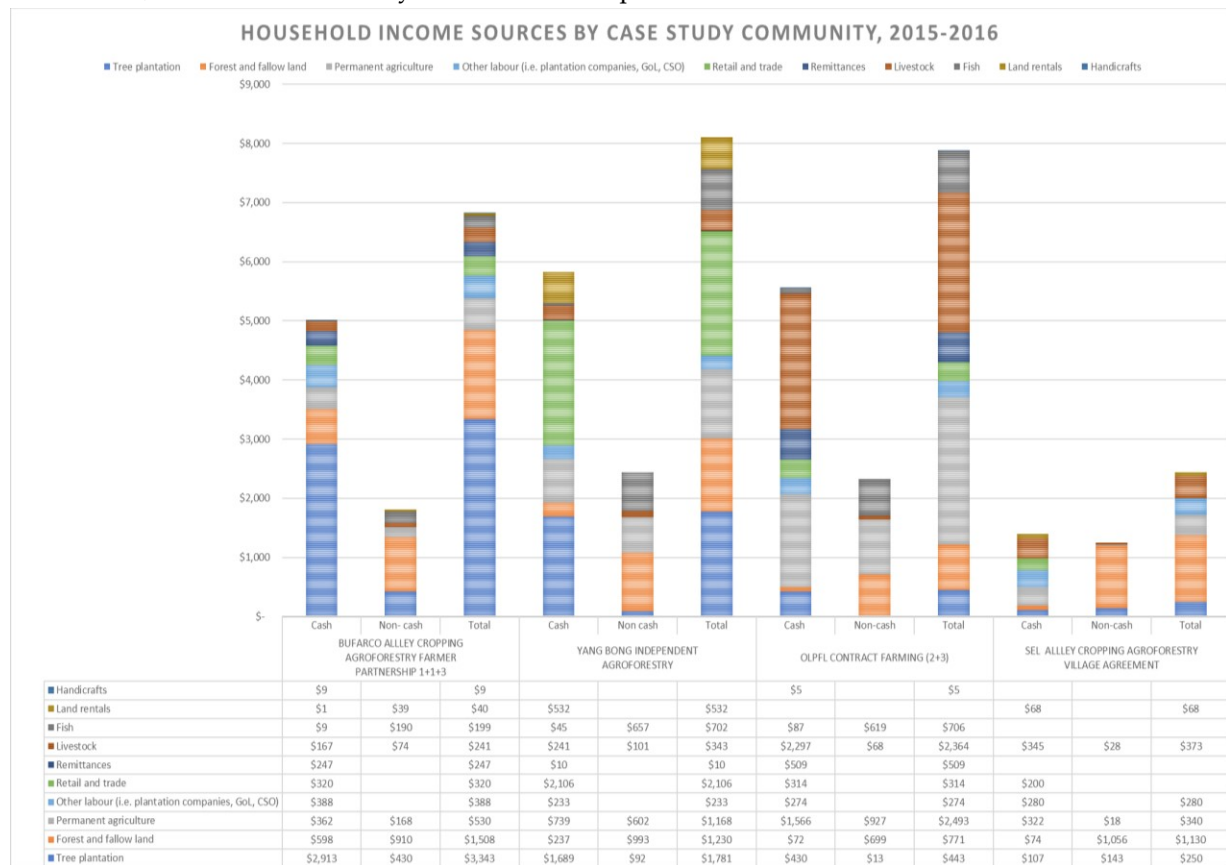


Figure 2: Household Income Sources for Case Study Communities, 2015-2016⁴.

Moreover, despite expectations that livelihoods might become ‘divorced from farming and, therefore, from the land’ (Rigg, 2006, 2007), and with (overseas) remittances becoming increasingly important for understanding agrarian transformations in Laos (Barney, 2012), our results indicate that livelihoods in rural Lao PDR remain strongly linked to land-use and farming activities - e.g. local tree plantations, swidden and permanent agriculture, keeping, selling or trading livestock, etc (see also Martin & Lorenzen, 2016). At least 88% of the average household income in all villages came from land-use and farming activities (see table 1). Remittances from permanent migrants – e.g. former household members, relatives or friends -which were mainly from urban areas in Lao PDR, contributed between

⁴ Legend: Average household incomes – both cash and non-cash – from the identified tree plantations are represented in blue at the base of each column. Where applicable, cash income includes wage labour, and smallholder plantation product revenues (i.e. wood, bark and intercropped products). Where applicable, non-cash income includes company-sponsored community development programmes – such as electrification and the construction of household water systems - and self-consumed intercropped products (i.e. rice, fuelwood, bananas). Note that in none of our calculations we include land lease or land concession fees that any of the companies included in this study may pay to district, provincial and national authorities. As we have noted, we do include payments to communities such as ‘village development funds’, which in all cases were made in kind.

0% - in two villages – and up to a maximum of 6% of the household income – in one village. A second form of off-farm livelihood diversification, which we define as ‘other labour’, includes off-farm employment opportunities that household members hold in the secondary and tertiary sectors- e.g. work in construction, charcoal industry, transport, public services, local administration, plantation surveillance. This sort of off-farm employment represented between 3 and 11% of the average household income in the four case villages in 2015-16.

Table 1. Income shares in different activities in the four case study villages.

	BUFARCO alley cropping agroforestry farmer partnership 1+1+3	Yang bong independent agroforestry	OLPFL contract farming (2+3)	SEL alley cropping agroforestry village agreement
Other labour	5.7%	2.9%	3.6%	11.5%
Remittances from permanent migrants	3.6%	0.1%	6.5%	0.0%
Farming and other land use activities	90.6%	97.0%	90.0%	88.5%

Incomes from from tree plantations, agroforestry and land leasing are significant

It is apparent from Figure 2 above that the tree plantation models contributed to local livelihoods to varying degrees. As an example, commercial tree plantations were the largest source of income in the ‘BUFARCO’ case study village, where households derived US \$3,343 on average over the previous 12 months from plantation-based sources (i.e. US \$2,913 cash and US \$430 from consumed alleycropped rice). The returns from this plantation model thus represented 49% of the total HH incomes (cash and non-cash together). In the yang bong agroforestry site, the plantation model studied constituted the second most important economic HH livelihood source (22% of total income). In this community, surveyed households obtained an average income of US \$1,781, including US \$1,689 from sales of yang bong bark and intercropped bananas, and US \$92 from consumed intercrop rice and fuelwood collected from the agroforestry system. Conversely, between 2015-2016, the eucalyptus plantation model in the ‘contract farming’ and the ‘SEL agroforestry concession’ cases provided households with US \$444 and \$250 total income (cash and non-cash), which constituted only 6% and 10% of the total household incomes, respectively.

We note that these plantation-derived incomes depend largely on how much land was allocated to plantation forestry activities in each village, and the proportion of households in each village that participated in plantation activities. Adoption rates ranged from 85% of the households the BUFARCO case study to 50% in the contract growing case. The poor performance of the contracting case is due, at least in part, to the failure of 28 of the 45 farmers (63% of those who planted trees) to sell their contracted trees, notwithstanding that the trees were planted more than 7 years ago (a full rotation cycle) and assurances – verbal and written – from the company that trees would be purchased. Our fieldwork established that the contracting party advised farmers it lacked a market for their trees and advised farmers to sell their trees through an intermediary middleman. At the time of writing, this middleman also had a total debt of over US \$9500 with 21 households whose trees had been felled.

As the surveys revealed, significant farmer income streams were derived from the BUFARCO company-farmer leasing model, revenues which local people have in turn invested in livelihood assets, such as construction of high value housing stock. In the SEL research site, household income streams from land leasing have been used for hiring tractors, for creating new areas of wet rice paddy that will be a productive HH asset into the future.

While our results identify that different plantation models can provide important livelihood streams for rural households, they also challenge the idea that fallow forests represent 'idle' or 'unproductive' lands. In fact, the returns from forests and fallows were higher than the returns from tree plantations in a number of sites (see results from OLPFL SEL agroforestry sites in Figure 2). Consequently, the diversity of farmers' existing livelihood strategies need to be understood and taken into account in designing options for commercial plantations that will benefit farmers as well as companies.

Incomes from plantation labour might not be significant

The provision of employment in plantation operations is often advanced as a benefit of plantation forestry development. Our analysis suggests that the issue of labour provision through tree plantations requires closer consideration, specially in the cases where the management of the plantations are a company's responsibility – i.e. under the concession and community land-lease models. Based on information provided by SEL and BUFARCO, these companies estimate that 1 hectare of tree plantation can provide 112 and 162 person-days of labour, over a full rotation cycle (of 7 years?). Based on this information, we can estimate that a household supplying one unskilled plantation labourer, on a wage of 50,000 kip (US \$6) per day, would earn between US \$96 to US \$138 per year per hectare, respectively, from wages for the complete plantation cycle. Even under such optimal conditions (unskilled labourers are typically not involved in tree harvesting with chainsaws in Laos), this would represent approximately 10% of cash income in the poorest village, and only a few percent in the others, and so it appears unlikely that plantation-based labour itself could represent a sustainable livelihood.

More plantations in the future?

As part of our surveys, we asked informants whether, given their accumulated experience with the plantation model in question, they would advocate for more commercial tree plantations in their communities. Responses varied: those in the BUFARCO case were open to more plantations, if the company paid higher land lease fees than at present and/or paid them according to the volume of timber produced in addition to the current payment system, which is based on the area cleared and planted. All surveyed informants in the SEL case study village agreed that there was no more community land available for plantations; they did not wish to release any more of the c. 500 ha of 'degraded' land under different stages of fallow to establish more tree plantations. In the 'contract farming' case, the general view was that the company should purchase the trees that they had planted and assure the purchase of their future timber production if they wanted farmers to continue to participate in tree growing. In the yang bong case, only those with 6 or more plots of yang bong – that is, households selling yang bong nearly every year – said they would consider establishing a new plantation plot. In this village, the majority of households favour leasing land to Vietnamese for banana plantations, or the construction of paddy land for irrigated rice.

Conclusions

This paper found that household livelihood strategies are highly diverse, and largely based on agriculture and forests use from both household and collective land. While income streams from plantations, agroforestry and land leasing are significant in the case study villages, the non-cash economy remains important. The high dependency of the poorest case study village on 'degraded' land is reflected in their unwillingness to make further land available for plantations. Commercial plantations can spur local economic activity at the village level, and also provide a pathway of upgrading into more intensive and higher value agro-forest production. However, some of the conventional assumptions about the contributions of plantations appear not to hold; and the benefits to households depend on the design of plantation models, as well as the level of adoption. One of the case studies provided evidence for spontaneous adoption where market signals are strong; conversely, non-fulfilment by the company of contractual commitments in another case was a disincentive for continued tree growing. Overall, the results illustrate the challenges of, as well as some opportunities for, promoting integrated, sustainable and economically productive livelihoods for farmers in Lao PDR.

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