



2.4 Local processing of logs to increase small-holder share, Lao PDR

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Smallholder teak plantations were established in Northern Lao PDR in the early 1980s. They cover about 25,000 hectares (ha) and are concentrated in the area around Luang Prabang province. An important element in the rural economy, they constitute between 25 and 55% of annual household income.

A study in 2005 analyzed the marketing channels of teak logs from Luang Prabang province (Midgley et al. 2007). At that time, trading of roundwood to processing centres was carried out by traders and intermediaries; local people were not involved in any way. Only 5% of the sawn timber remained in the region and was processed locally, 95% was transferred via Vientiane-based traders to Thailand, Vietnam and China. Midgley et al. (2007) did not find any considerable secondary processing of teak in the Vientiane region.

Current problems

Currently, none of the processing units based in Vientiane have direct access to teak growers. Traders and intermediate regional wood processing units seem to have a monopoly on the raw material in the region.

The prices of plantation teak logs at the dimensions and quality levels presently found in Laos are US\$ 250/m³ or higher at processing factories in Vientiane; this is high compared to international prices. This is partly due to the fact that the transport costs of finished products are extraordinarily high, since Lao PDR is landlocked. These prices also reflect the lower recovery rates in young plantation timber of high-value heartwood (Kokutse 2002; Perez and Moya 2007; Thulasidas and Bhat 2009). If these high prices cannot be reduced, Lao PDR will lose any competitive advantage as a wood-producing country.



CHAINSAW MILLING PROVIDES A VIABLE SOLUTION FOR PROCESSING LOGS AND FACILITATING EXTRACTION AND ROAD TRANSPORT OF LOGS FROM YOUNG TEAK PLANTATIONS IN LAO PDR.

Teak plantations mainly provide household income; whenever people need cash, they harvest trees. Unfortunately, trees are often harvested prematurely, before they reach optimum diameter, and in most cases are sold to intermediaries and traders as standing

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trees without an assessment of their volume, quality grades and subsequent timber market value. In order to address this issue efforts are underway to use standing teak trees — documented in plantation management inventories — as bank collateral in local village banking and micro-credit schemes.

One fundamental problem is the low volume of plantation teak logs (Efthymiou 2002), leading to increased handling and processing costs. Low recovery rates by participants in the first stage of value addition are further decreased by the imprecise cutting methods.

Plantation teak is harvested by hand; in many cases, handsaws are used for felling trees. Logs are cut into lengths that can be handled manually. Some local traders have chainsaws and improvised loading devices to move the relatively small logs to the roadside for transport to primary processing sites.

The issue of limited technology in the hands of small-scale farmers and tree cultivators has been discussed in several studies (FAO 1996; Lux 2005; Mohns 2006; Macqueen 2008). Teak logs are processed locally using basic technologies with great losses in both wood volume and financial return. Unless more sophisticated technology is made available to producers they are basically excluded from realizing any reasonable value addition in the initial steps of the timber processing chain. A lack of access to credit for necessary investments in the required machinery, weak organization at the producer level and managerial weakness further worsen this situation.

Forest certification and value chain analysis

Forest certification can trigger considerable benefits for primary producers, as shown in a scheme on smallholder teak timber in Luang Prabang, Lao PDR, implemented by the Tropical Forest Trust (TFT). The scheme introduced plantation management certificates that clarify rights to use land for teak plantations over at least one rotation time of 25 to 30 years, including the subsequent right to harvest, process and transport the logs.

The scheme also highlighted the limited (below 10%) share that the producers received in the timber value chain. Improvements in harvesting and transport to roadside and grading according to market requirements by producers has increased their share to around 18%. Local chainsaw milling and stationary bench sawmilling (log squaring) are expected to increase their share to nearly 50%.

The use of management certificates has led to verifiable quantification of the log value and has triggered the use of logs as collateral for micro-credit ventures. There are no other recorded cases of this elsewhere in Southeast Asia.

Chainsaw milling

The log extraction process from plantation sites

Chainsaw milling (BCNet 2005; Pasiecznik et al. 2006) is one element of the log extraction process from plantation sites to the nearest roads (FAO 1982a and 1982b; Pasiecznik et al. 2006; Sessions 2007). Presently, teak logs with diameters of up to 35 cm are sawn into logs three to four metres (m) long, each weighing about 200–300 kg. In most cases logs are hand-carried over distances of up to 1000 m by teams of two or four men.

If the terrain permits, hand-held two-wheel tractor trailers are used to transport logs. Such situations are rather limited given the country's mountainous geography. For larger log sizes and greater extraction distances chainsaws are sometimes used to square the logs, reducing the weight by up to 40%.

The TFT project is also working on systems to extract logs by hand-operated logging skid-ies, horse or buffalo and possibly, converted hand-held tractors, following the example of Scandinavian mini-skidders (FAO 1982a and b; Lawlor, Akwah and Greenberg 2004).

Initial tests with horses and mini-skidders in the northern part of the country indicate extraction costs ranging from US\$5–30 per log for distances up to 3,500 m (FAO 1982b; Forestry Commission 1997; Lawlor, Akwah and Greenberg 2004; Mohns 2006). These studies show the limitations of manual extraction, which seems to be financially and ergonomically viable only up to 500 m. It is anticipated that log squaring may reduce delivery costs from felling sites to roads over distances greater than 500 m by about 30%.

On roadsides or central processing points

CSM can also be part of the road transport of logs. Transport distances from plantation sites in Northern Lao PDR to the main processing centres in Vientiane or to Vietnam and Thailand can exceed 1,000 km. Squaring logs can reduce road transport costs by up to 40% by removing non-useable material and reducing weight through initial loss of moisture of up to 15% in the remaining wood. Savings of up to US\$30/m³ are estimated. CSM in this context can be considered a first step to mobile sawmilling; mobile band saws may be used at a later stage (Stockhausen 1999). This technology would be more efficient and economical, especially when discarded material is used for local applications.

Constraints of chainsaw milling

The existing legal situation of ownership and operation of chainsaws make the application of this technology extremely complicated in Lao PDR. Chainsaws can be purchased by individuals but must be registered with the Department of Forests and kept at the respective provincial or district forest offices. The chainsaws are released on request to the owners after payment of considerable fees. They have to be returned after use and owners must submit transport permits for the harvested timber. This cumbersome procedure is a serious disincentive for improving local harvesting and processing.

Lack of training and technical support services

There are no facilities or institutions to provide training in basic logging and chainsaw processing operations or chainsaw maintenance to individual forest owners or producer groups. A recent study has shown that there is considerable potential for private investment in this training in Lao PDR (Lindh 2009). Supply of spare parts is also not well established; this leads to considerable losses in operating time.

Conclusion

To increase the timber revenue of teak plantations to local producers, primary processing could be introduced. Chainsaw milling provides a viable solution for processing logs and facilitating extraction and road transport of logs from young teak plantations in Lao PDR.

Considerable legal reform on the possession and operation of chainsaws is needed, however, as is the improvement of support services for chainsaws and other tree harvesting and processing equipment. This is necessary to ensure the full potential of tree harvesting and processing as part of a poverty alleviation strategy.

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