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Australian Centre for International Agricultural Research

Annual report

project	**Advancing enhanced wood manufacturing industries in Laos and Australia**
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approved by	

1 Progress summary

The project has made impressive progress during Year 1 with the active participation of all project partners.

A communication strategy was developed for the project. The *Basecamp* was selected as a communication platform for the project members to discuss and manage project activities, events, or other work they're collaborating on. Facebook “VALTIP3” was also established to allow the project team members to communicate with each other and external stakeholders frequently and in an informal way. Many photos and comments have been already posted by the project researchers in Laos and Australia.

The project research activities conducted within three project objectives are progressing well with significant achievements made which have been documented in reports and draft reports. Some of the activities are summarised below:

Objective 1

Analysis of relevant policy, governance and administrative environment is well advanced. Many changes have been identified to governance structure, law, policies and strategies occurring simultaneously. Some of the regulations have adopted recommendations from the previous ACIAR project in Laos, FST/2010/012.

Analysis of value chains of the Lao PDR smallholder plantation resource is well advanced. The field work and draft reports have been completed for teak value chains in Luang Prabang and Xayaboury, and network mapping has commenced. Initial analysis identified several significant issues for further investigation including: the role of value chain intermediaries and service providers; the impact of PMO15 including on the teak resource and price to growers, gender and labour outcomes; and the role of social and industry networks. The information collected through the VCA work is unique in its detail and is potentially significant for influencing future policy action, such as the Forest Law, Decree 96/PM on Plantation Investment and Promotion, and into industry and commerce reforms in the wood processing sector, particularly with respect to the Law on SMEs.

The characterisation of the current plantation resource in Lao PDR, and options for modelling future wood supply the Luang Prabang is in progress. Landscape analysis of teak is complete and the impact of current and future major land developments on the teak resource is ongoing. Mapping of plantations of different species in other provinces has begun.

The project is currently monitoring and participating in several government and development partner programs which are considering mechanisms for increasing participation in the plantation sector. The project is also actively engaged with plantation companies who have been testing different models for the participation of local people in plantation projects.

Objective 2

Studies on the characterisation of Lao eucalypt and plantation teak resource potential to produce EWPs have been completed. Specific objectives were to: characterise and assess quality of resource; determine recovery; and determine the influence of species, log position, and diameter on recovery and quality. Three eucalypt plantations, namely *Eucalyptus pellita*, *Eucalyptus camaldulensis*, and eucalypt hybrid clone K7 (*E. camaldulensis* × *E. deglupta*), located on two different field sites in the Bolikhamsai Province, Laos,were used in the study. Green veneer recoveries ranged between 57% and 67% with eucalypt hybrid clone K7 achieving the highest green recovery. A study on sawn and peeled recovery and grade quality of Luang Prabang teak was completed and the results are currently analysed.

A study tour to Vietnam was organised on 30 January - 2 February 2018 with aim to investigate options for Lao PDR on development of veneer processing and engineered wood-product manufacture. The tour created great interest with Lao government representatives and wood processing companies. A number of companies in Lao PDR are currently in the process of either investigating the potential of setting up veneer and veneer-based engineered wood-product facilities, or actually setting up such facilities.

Objective 3

The new building for research facility at NUoL has been completed, veneer and plywood equipment purchased and installed. The veneer peeling and plywood production research facility will allow the university to undertake research on Engineering Wood Products development for Lao PDR companies interested in investing in this technology. The plant can be used to characterise the quality and potential of different plantation wood species for veneer production and veneer-based product development. Veneer processing has already been added to the university curriculum involving hands-on practice and training.

Extensive training program has been developed for the project researchers and NUoL students. To date, the following training activities have been completed: value chain field work techniques, field inventory techniques, sawn and peeled recovery methods, peeled veneer grading and quality characterisation, and termite and fungal durability.

A researcher for a gender study was selected and a program for gender activities was developed.

Project reports and publications written during the reported period

Ling, S., Smith, H., Xaysavongsa, L., and Laity, R. (2018). The Evolution of Certified Teak Grower Groups in Luang Prabang, Lao PDR: An Action Research Approach. Small-Scale Forestry. https://doi.org/10.1007/s11842-018-9391-8.

Belleville, B., Redman, A., Chounlamounty, P., Phengthajaim, V., Xiong, S., Boupha, B., Ozarska, B. (2018). Potential of veneer peeled from young eucalypts in Laos. BioResources (Accepted).

Redman, A. (2018). Study tour to Vietnam. Report for VALTIP3 project.

Smith, H., Ling, S. and Boer, K. (2017). Teak plantation smallholders in Lao PDR: what influences compliance with plantation regulations? Australian Forestry, Vol. 80, No. 3, pp. 178–187. DOI: 10.1080/00049158.2017.1321520.

Sayavong, O., Belleville, B. (2017). Manual handling of a peeling knife following sharpening. Standard Operating Procedure #1. ACIAR Internal Report [Lao language].

Sayavong, O., Belleville, B. (2017). Cleaning a peeling knife after sharpening. Standard Operating Procedure #2. ACIAR Internal Report [Lao language].

Sayavong, O., Belleville, B. (2017). Installing a peeling knife on a support bar. Standard Operating Procedure #3. ACIAR Internal Report [Lao language].

2 Training activities

Objective 1 training

Activity 1.2 - One PhD student (Ms Soytavanh Mienmany, ANU), one Graduate student (Ms Sangkhan Bounthaphan NUoL FoF) and two LPTP staff (Mr Bouthan Souksavath, Mr Sichanh Chandiphit) were trained in value chain field work techniques. Ms Mienmany, Mr Souksavath and Mr Chandiphit participated in three weeks of field work for value chain assessment of the Luang Prabang teak value chain and Ms Bounthaphan and Mr Chandiphit participated in 2 weeks of field work for value chain assessment of the Xayaboury teak value chain.

Figure 1: Mr Stuart Ling, Mr Bounthan Souksavath, Ms Soytavanh Mienmany and Mr Sichanh Chandiphit doing value chain training in Luang Prabang Province.

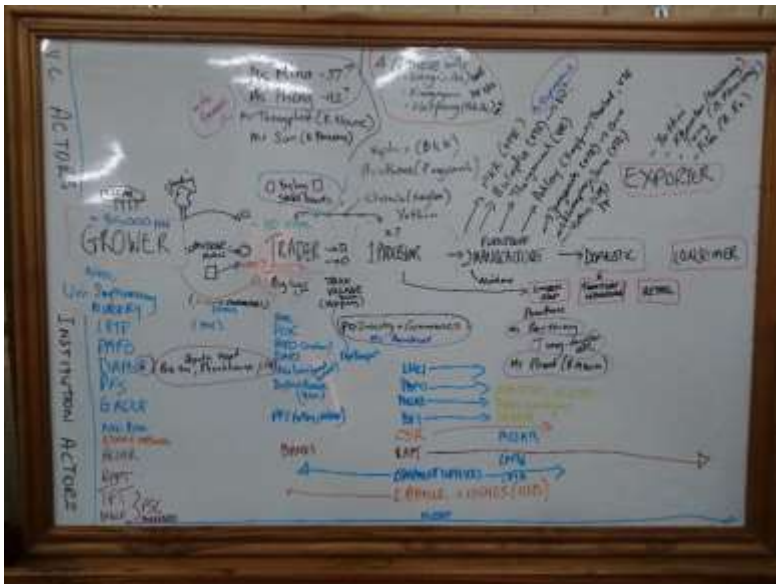

Figure 2: Value Chain Mapping for Luang Prabang Teak

Activity 1.3 - Four LPTP staff were trained in field inventory techniques, two staff were trained in inventory supervision including map production, data checking and entry, and problem solving. One LPTP staff member (Mr Hongkham Seananachak) has been further trained in plantation mapping and GIS analysis techniques.

Figure 3: Inventory training in Luang Prabang

Training on veneer peeling

Researchers and students from Faculty of Forestry, NUoL, were trained in peeled veneer grading and quality characterisation as part of eucalypt and teak veneer recovery studies (Figure 12 and 13). Ten FoF students were involved in the eucalypt recovery study and nineteen in the teak study which allowed them to learn about the procedures involved in the trials.

Dr Adam Redman provided training in log grading for quality at the Burapha company (Vientiane) to the industry staff and NUoL students (Figure 14).

Figure 4: National University of Laos students attend the training in peeled veneer grading and quality characterisation as part of a study for New Forests company.

Figure 5:Teak recovery study involving NUoL students

Figure 6: Dr Adam Redman (second from right) providing industry staff and student training in log grading for quality at the Burapha company (Vientiane).

Mr Jack Norton (wood durability consultant) and Dr Adam Redman undertook a termite and fungal durability workshop with participation from Laos Government policy makers, company managers, university researchers and students. An intensive training for VALTIP3 researchers and FoF students was also undertaken on establishing long term termite and fungal durability trials at the National University of Laos (Figure 15). The training attracted thirty-six trainees.

Figure 15: FoF students and researchers participate in establishing long term termite and fungal durability trials

Mr Outhit Sayavong (Tony) of NUoL held a training workshop for 13 final year FoF students who had low scores of their study. The training included the following topics:

- Log grading before sawing.
- Kiln drying of timber;.kiln operation and maintenance.
- Production stages after timber is dried.
- How to repair various woodworking machines**.**
- Safety requirements in using woodworking machines.

Mr Outhit Sayavong has also provided support to 16 final year FoF students in completing their projects.

Training for companies

Training and technical advice to Burapha company.

Burapha has manufactured and is now using concrete weights as rack tops to minimise distortion of the upper layers of their eucalypt material. The company is also in the process of constructing baffles (made from wood offcuts) in all of their kilns. These are impacts from VALTIP2 project as these recommendations to the company were made during this project.

Adam Redman provided training and technical advice to the Burapha company on how to improve product quality and develop new products which may open new markets.

An advice was provided on solar pre-heating water prior to entering the boiler as a means to save energy.

Technical support to Niphone wood processing enterprise in Luang Prabang

A kiln was built as part of a joint Japanese NGO project but it was not properly designed. Adam Redman and Outhit Sayavong improved the airflow in the kiln by constructing baffles using metal sheeting and structural steel. The baffles were put in place and were hinged so that they can accommodate different timber pack sizes (Figure 16). Vast improvements were made in the airflow where very little airflow was recorded through the stack originally compared with at least a tripling of the airflow after baffling. This modification to the kiln has already improved the quality of dried timber and decreased the drying time by 50% which will provide significant savings and faster production times. Mr Niphone, the owner of the company was extremely grateful for the support provided.

Figure 16: Installation of baffling in Mr Niphone's kiln in Luang Prabang (left: before baffles were installed, right: timber stack with baffles installed)

Appendix 1: List of NUoL students' projects

Title of the project	Name of the student	Supervisor of the project	Report written (Yes or Not)	Comments
Assessment of teak with two prototype products which veneer and lumbers at the faculty of forestry Science	Mr.Chanthanakhone InthiLard	Dr. Oudone Sichaleune Phouluang Chounlamounty	Yes	presentation on 19th June 2018
Comparison of two criteria log and lumber grading at Km 10 village, Luang Prabang district of Luangprabang province	Mr.Phonesavanh Chanthavongsa	Douangta Buaphavong Si Xiong	Yes	presentation on 20th June 2018
Comparison veneer qualities of air-dry and solar prototype techniques	Miss. Orlathai Inthapunya	Dr. Oudone Sichaleune Vansy Phengthajaim	Yes	presentation on 19th June 2018
Furniture production technique (office cabinet) use of teak plantation from LPB	Mr.Phonesai Veopaserth	Khunsai Si Xiong	Yes	presentation on 19th June 2018
Lamb production of reused wood waste at Faculty of forestry science	Miss. Visouda Sihalard	Si Xiong Phouluang Chounlamounty	Yes	presentation on 19th June 2018
Assessment of students and teachers attitude with computer suit from teak plantation test study in faculty of forestry science	Mr.Thidpasone	Somsuk Punyasid Lothim Saetern	Yes	presentation on 19th June 2018
Inter-glue bond testing of LVL product from *Peltophorum dasyrrhachis* (Miq.) Kurz, in Ban nav village, Thaphabark district, Bolikhamxay	Mr Mitthiphong Kongsana	Sithatha Boupha Dr. Oudone Sichaleune	Yes	They use FoF lab for experimental test
Assessment of sawing efficiency with *Peltophorum dasyrrhachis* (Miq.) Kurz, in Ban nav village, Thaphabark district, Bolikhamxay	Mr.Monglor	Dr. Oudone Sichaleune Phouluang Chounlamounty	Yes	

Physical and Mechanical property testing of LVL from from *Peltophorum dasyrrhachis* (Miq.) Kurz, Ban nav village, Thaphabark district, Bolikhamxay	Mr.Jinda Khounnavong	Dr. Oudone Sichaleune Sithatha Boupha	Yes	
Dining table product processing from *Peltophorum dasyrrhachis* (Miq.) Kurz from Ban nav village, Thaphabark district, Bolikhamxay	Mr Soudthiphone Saiynamlin	Dr. Oudone Sichaleune Vansy Phengthajaim	Yes	
Financial Analysis of teak plantation of smallholder, a case study in Kengsao Village, Paklaiy district, Xaiyabury province.	Miss Sangkhan Bounthaphan	Dr.Bounthavy Duangphosy and Phouthasone Vannouvong.	Yes	
Assessment of wood Physical and Mechanical properties *Fokienia hodgnisii (*Dunn) from Papaek village, Houaphan district, Houaphan province.	Miss Daivong	Dr.Latsamy Boupha Pongki Phommachanh	Yes	