Australian Government
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ADVANCING ENHANCED WOOD MANUFACTURING INDUSTRIES IN LAOS AND AUSTRALIA

Study Tour - Vietnam

Written by Adam Redman - June 2018

VALTIP 3

This publication has been compiled by Dr Adam Redman of Department of Agriculture and Fisheries

Contents

Introduction

This study tour was undertaken as a component of VALTIP 3 Activity 3.2 of Objective 3 (Develop and conduct formal and informal training programs for industry) in the ACIAR co-funded aid project FST/2016/151 *Advancing enhanced wood manufacturing industries in Laos and Australia*. The aim of this Study tour was to expose Lao PDR ministerial policy makers, wood-processing managers and National University of Laos researchers to veneer-based peeling and product-manufacture operations at the village and industrial-scale levels. The objectives of the study tour were:

- To provide an update on the wood processing in Vietnam in particular veneer and plywood processing.
- To discuss options for Lao PDR on the development of veneer processing and engineered wood-product manufacture.
- To develop shared visions of the broader opportunities and benefits of both countries.

The expected mid to long-term outcome of this exposure is to facilitate the uptake of spindleless-lathe technology in Lao PDR as an alternative option to solid wood processing, to add value to small-diameter plantation-grown forest resource through veneer-based processing and product development.

Previous research conducted during ACIAR co-funded aid project: FST/2008/039 *Enhancement of veneer products from acacia and eucalypt plantations in Vietnam and Australia,* in Vietnam, identified spindleless-lathes as the most likely evolutionary technology to improve the productivity of processing small plantation-logs in Lao PDR. The veneer processing sector in Vietnam is well established and involves 4,200 wood processing and trading enterprises and in the order of thousands of household businesses employing over 300,000 labourers operating in over 300 traditional wood-processing villages (To and Quang, 2012). During surveys of small rural areas of Northern Vietnam, Ozarska et al. (2015) identified that exporters of peeled veneer to China and India cannot meet the demand of these countries. Therefore, this undersupply could provide potential export markets of processed veneer from small plantation-logs currently growing in Lao PDR.

At the time of writing this report, a number of companies in Lao PDR were 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.

Itinerary and Participants

A list of study tour participants is provided in Table 1. Participants consisted of Lao PDR ministerial policy-makers, wood-processing managers and National University of Laos researchers, as well as researchers from the University of Melbourne and the Queensland Government Department of Agriculture and Fisheries.

The tour itinerary is provided in Table 2. The tour occurred over 4 days from 30 January to 2 February 2018. The site locations were all within 150 km of Hanoi. Day 1 consisted of visits to large, medium, and small veneer processing and product manufacturing companies. Day 2 consisted of visits to small family run businesses as part of a village collective. During day 3 private veneer processing feedstock plantations were visited including discussions with plantation farmers. The final day consisted of visits to the Vietnamese Academy of Forest Sciences (VAFS) research facility and Forest Tree Improvement and Biotechnology Research Institute (FTIBRI) laboratories.

Table 1. Study tour participants

No		Organization	Position
1	MR.Niphonh Phaiboun	Furniture industry Luang Prabang	Value adding unit
2	MR. Khamla Manivong	Furniture industry Luang Prabang	Value adding unit
3	MR. Sayamone Phengmoungkoun	Phengmoungkhoun factory	Director
4	MR. Khanthong Wutthisak	Wood Industry Furniture Laos	Factory Manager
5	MR. Bounchanh Lattavongkhot	Luang Prabang Teak Program	LPTP Coordinator
6	MR. Samly Boutsady	Ministry of Industry and Commerce	DDG of Department of Industry and handicraft
7	MR. Pisa Keomanilay	Ministry of Science and Technology	Technical staff
8	MR. Sousath Sayakoummane	Ministry of Agriculture and Forestry	DG of Department of Forestry
9	Mrs. Latsamy Boupha	National University of Laos	Dean, Faculty of Forestry
10	MR. Vansy Phengthajaim	National University of Laos	Research Scientist
11	MR. Phouluang Chounlamounty	National University of Laos	Research Scientist
12	MR. Lothim Saetern	National University of Laos	Research Scientist
13	MR. Pongki Phoomachan	National University of Laos	Research Scientist
14	MRS. Barbara Ozarska	University of Melbourne	Project Leader
15	MR. Benoit Bellleville	University of Melbourne	Activity Leader
16	MR. Adam Redman	Queensland Government	Activity Leader
17	MR. Henri Bailleres	Queensland Government	Activity leader
18	MRS Thu Nguyen	GIZ	Vietnam Industry Liaison

Table 2. Study tour itinerary

Day number	Company	Comments
1	Woodsland	Large enterprise producing plywood and furniture
1	Chau A. Ltd.	Medium enterprise producing sliced veneer and overlay furniture
1	Tien Bo.	Small enterprise producing laminated veneer/bamboo composite form ply
2	Am Ha village	Village with small to medium family run businesses producing peeled veneer and/or veneer based panel products
3	Acacia and eucalypt plantations Ba Vi	Three plantations visited where we were able to speak with the plantation owner at one company
4	FTIBRI laboratories	Forest Tree Improvement and Biotechnology Research Institute. Tree improvement and breeding program.
4	VAFS research facility	Discuss VAFS research capabilities and projects

Tour details

Day 1 – 30 January 2018

Woodsland Joint Stock Company

The Woodsland Company was established in 2002. It is a large company employing over 1000 employees. The company produces plywood, blockboard, furniture, and formply (film faced plywood for concrete moulding).

Participants were briefed on the company profile (Figure 1) prior to a tour of the factory where veneer peeling and product manufacture was observed. The company produces its own formaldehyde-based resins using a large 'cooker' or 'kettle'. Unfortunately, no photographs were allowed in the manufacturing plant and can therefore not be presented in this report.

(a)

(b)

Figure 1. Meeting brief on company details (a), veneer covered blockboard and plywood (b) source: (https://woodsland.trustpass.alibaba.com/company_profile.html?spm=a2700.8304367.coowfd0405.2.d94a7eebwYQOza)

Chau A. Ltd. Company

The Chau A. Ltd Company is of medium size and produces sliced veneer using native forest logs that are used in their furniture factory as a decorative overlay.

A Japanese Hattori brand veneer slicer was observed actively slicing thin sheets of veneer which were subsequently dried using a jet box type drier as shown in Figure 2.

Decorative furniture using dried, overlaid sliced-veneer was inspected in the company workshop (Figure 3).

(a) (b)

Figure 2. Veneer slicer (a) and sliced veneer being fed into the veneer drier (b)

Figure 3. Decorative furniture using overlaid sliced-veneer

Tien Bo Company

The Tien Bo is a small enterprise producing bamboo/veneer composite plywood and form ply. The company was previously a collaborator in ACIAR project FST/2008/039: *Enhancement of veneer products from acacia and eucalypt plantations in Vietnam and Australia*. The project supported Tien Bo to test the quality of bamboo/veneer hybrid formply, and gave advice on plywood drying, plywood pressing, mould prevention, and arrangement and storage in accordance with appropriate techniques. The project team cooperated with Tien Bo to shorten their hot-pressing time by 20%, resulting in improved productivity.

After a brief discussion of the company profile and successful impacts resulting from the previous ACIAR project, tour participants were able to observe the kiln drying of veneers (Figure 4a), and the process of applying phenol formaldehyde (PF) resin mix to bamboo bundles (Figure 4c), that are later pressed together with veneer sheets to make the finished plywood product (Figure 4d).

(a)

(b)

(c)

(d)

Figure 4. Tien Bo Company veneer drying (a), bundles of unglued bamboo trips (left and veneer sheets (bottom right) (b), bamboo bundles with PF resin applied (c) and the finished plywood product (d).

Day 2 – 31 January 2018

Am Ha Village

Am Ha village contains many small to medium family run businesses producing peeled veneer and/or veneer based panel products. One such family run business was visited, who are successfully value-adding to peeled small-diameter (approx. 8-10 cm) plantation-acacia logs to make high-quality decorative plywood. The small plantation-logs (Figure 5a) are peeled using a low-budget (less than $10,000 USD) spindleless lath (Figure 5b), air dried (Figure 5c), coated with adhesive and laid up into plywood panels (Figure 5d), covered with a very thin (approximately 0.5 mm) thick sheet of high quality veneer sourced from China (Figure 5e) and then hot pressed to cure the adhesive (Figure 5f). The panels are then trimmed and stored ready for sale and dispatch (Figure 5g).

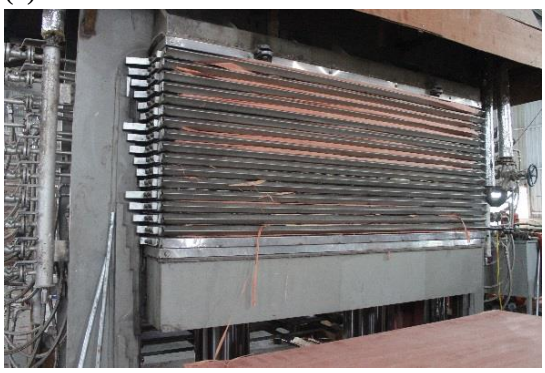
(a)

(b)

(c)

(d)

(e)



(f)

(g)

Figure 5. Am Ha village business peeling small plantation-acacia logs (a) using a Chinese brand lathe (b). Veneer is then air-dried (c), glued and laid up into plywood (d), covered with a thin high-quality veneer (e), hot-pressed (f). The final product is trimmed and stored for dispatch (g).

Day 3 – 1 February 2018

Plantation visits

Three acacia plantations in the Ba Vi province were visited with ages ranging from 4-8 years-old. Two of the plantations are publicly owned planted from trees germinated by the VAFS nursery (Figure 6) while the third was privately owned. Discussions with the owner of the private plantations centred on the lack of impediments for plantation owners to sell their trees in Vietnam compared with the more heavily regulated Laos environment.

(a)

(b)

Figure 6. Tour participants visit public acacia plantation (a) and discuss growing and selling practices with a private grower (b)

Day 4 – 2 February 2018

Forest Tree Improvement and Biotechnology Research Institute (FTIBRI)

The Forest Tree Improvement and Biotechnology Research Institute was established in 2012. It is a public institution under VAFS and its function is the implementation of scientific research, technological transfer, international cooperation, consultancy and participation in training in the field of forest tree improvement and biotechnology in Vietnam. FTIBRI employs 73 staff and manages 215 ha of plantation forests and forest lands, biotechnology laboratories, tissue culture workshops, a seed storage bank and three industrial nurseries.

The study tour delegates visited the FTIBRI headquarters located in the DucThang Ward, North Tu Liem District of Hanoi City. Active tissue culture laboratories (Figure 7a) and associated nurseries (Figure 7b) were observed and discussed.

(a)

(b)

Figure 7. FTIBRI tissue culture laboratory (a) and plantation nursery (b)

Vietnamese Academy of Forest Sciences (VAFS)

The final leg of the tour was the headquarters and laboratories of the Vietnamese Academy of Forest Science located in Đuc Thang, Bac Tu Liem, Hanoi. The Forest Research Institute was a precursor of the Forest Science Institute of Vietnam, which was established in 1961. The Forest Research Institute developed from 1961 to 1971, then divided into three institutes (Forestry Institute 1972-1988, Forest Industry Institute 1974-1988, and Forest Economic Institute 1981-1988); and finally consolidated into The Forest Science Institute of Vietnam from 1988 to now. In 2011, the Prime Minister issued Decision No. 2099 on the structure and operation of the Vietnamese Academy

of Forest Sciences (VAFS) as a special scientific organization under the Ministry of Agriculture and Rural Development (MARD).

The primary function of VAFS is implementing scientific research, technology transfer, post-graduate training, international cooperation, advisory services and business regarding forest research, development and extension in Vietnam. Research and development extend to silviculture and tropical forest ecology, natural forest regeneration, genetic improvement and tree breeding, forest protection, forest policy development and wood processing and product development.

The VAFS tour began with a presentation by Forest Products Division leader Dr Nguyen Trung of the history and role of VAFS (Figure 8a). The tour continued with inspection of the wood sample collection and identification laboratory (Figure 8b), durability laboratory (Figure 8c) and tissue culture laboratory (Figure 8d).

(a) (b) (c) (d)

Figure 8. VAFS tour including presentation (a), wood library (b), durability laboratory (c) and tissue culture laboratory (d)

Outcomes

At the conclusion of the tour, the Laos industry and ministry tour members were given an evaluation survey form to fill out to gauge the success of the study tour and identify strengths and weaknesses. In total eight participants took part in the survey; the first eight listed in Table 1.

The survey contained six general questions to gauge the industry and ministry tour members general satisfaction of the study tour as shown in Table 3. Overall the participants surveyed were highly satisfied with the study tour particularly in the areas of new knowledge gained and potential for adoption in Laos.

Table 3. General survey questions to gauge participant satisfaction (the numbers represent study tour members)

General Questions	Disagree	Agree	Strongly Agree
Overall, the activity was stimulating and relevant		4	4
The activity has been well coordinated and presented		4	4
The duration of the activity was appropriate		5	3
The activity has been supported by appropriate translation and discussion		5	3
I learned new ideas, approaches and/or skills which I will be able to apply in the future		2	6
The practices observed should/could be adopted in Lao PDR		3	5
Total		**23**	**25**

The survey also contained three specific questions to gain more detailed feedback from the study tour. The three questions and their responses are summarised below:

1. What did you gain from the study tour?
    - We have gained some ideas for improving our factories and improve our service.
    - A better understanding of environmentally friendly plantations and Government support of wood industry and handicraft of Vietnam.
    - That changing from natural forest timbers to using plantation timbers and value-adding using plantation wood is a real possibility.
    - Small size of timbers utilization to make valuable products is possible using veneer peeling technology.
2. How could the practices which you observed in Vietnam be adopted in Laos? Who should be involved in the adoption?
    - We need to improve our plantation policy and reduces barriers for smallholders such as inspection processes.
    - Promote veneer products to make more value-adding for Lao products
    - Understand plantation wood processing better for sustainable and renewable outcomes to reduce using natural timbers.
    - All private sectors need to change their vision to use plantation timbers and relevant government policies need to support this.
    - Determine policy of land allocation to local people and promote plantation timber uses and value-adding.
    - Implement some peeling factories in Laos first to promote this industry sector.
    - Support more SMEs on wood processing.
    - Need to do research on species for fast growing and short rotation but with quality suited to the end product.
3. How could the tour be improved?
    - We agree that we need to have more study tours like this for getting relevant information for Lao plantation and wood industry improvement.

- The timetable could have been better explained and more exchange discussion would have been good.

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References

Ozarska B., Dang V., Thang D. (2015). Report on survey of small scale peeling veneer mills in rural areas of Northern Vietnam. FST/2008/039 *Enhancement of veneer products from acacia and eucalypt plantations in Vietnam and Australia* ACIAR project report.

To Xuan Phuc and Dang Viet Quang. (2012). Village-Based Wood Products Manufacturing in Vietnam: Implications for FLEGT and REDD+ Implementation. Forest-Trends information brief. Forest-Trends. http://www.forest-trends.org/publication_details.php?publicationID=3268.