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International Agricultural Research**

Final report

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List of Acronyms

Acronym	Full Title
ACIAR	Australian Centre for International Agricultural Research
CEF	Commercial Engagement Fund
EWP	Engineered Wood Product / s
LRD	Land Resources Division
SPC	South Pacific Community
TUD	Timber Utilisation Division

1 Acknowledgments

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- **The Australian Government** which provided funding for the Pilot AGB/2021/172 CEF Project through the Australian Centre for International Agricultural Research (ACIAR). For further information, see <http://aciarc.gov.au/>;
- **Mr Howard Hall**; Agribusiness Program Manager, ACIAR
- **Mai Alagcan** ACIAR; Fiji based ACIAR Regional Manager for the Pacific and PNG
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- **PHAMA Plus** for the services of **David Young** to conduct the Value Chain Analysis and marketing opportunities for coconut veneer utilizing senile coconut stems;
- **SPC** for providing the services of **Sefanaia Tawake** to assist the CEF Fiji based team with his knowledge and forestry expertise in identifying prospective partner collaborators for the FST Project;
- **Jalesi Metabolo** SPC/LRD Fiji based team leader, for provision of facilities and being MC for the in-country final CEF Team meeting;

2 Executive summary

Overview

- Coconuts are pivotal in the livelihoods of quasi-subsistence smallholders who dominate Pacific primary production;
- Viability of this sector is being challenged by the increasing proportion of the coconut plantation estate becoming senile, characterised by significantly reduced fruiting capacity;

Problem

- There is an urgent need for the senile plantations to be regenerated through new plantings, however farmers are reluctant to remove existing palms due to the initial cost and reduced income until the newly planted palms reach an age that start to yield fruit;
- The Fiji Government will phase out harvesting of traditional native forest species in 2030, and alternative sources of harvestable product for general saw-milling, rotary veneer processing, and manufacture of engineered wood products (EWPs) will need to be sourced;
- Excess sawmilling capacity will follow, with flow on impacts of increased unemployment, and negative socio-economic outcomes within impacted communities;

Solution

- Utilisation of poor productivity and low economic value senile coconut stems has been the subject of considerable research;
- The sale of senile stems by farmers to the timber industry for manufacture of EWP's is a pathway being explored by the FST/2019/128 EWP project;
- The CEF project AGB/2021/172 in partnership with FST/2019/128, by creating market pull for senile coconut stems, is designed to provide incentives for farmers to remove senile stems of low productivity & economic value;
- The CEF project will inject critical assessment and develop strategies for commercial stakeholder engagement, private sector alignment, thinking and potential investment and enable market access.

Value proposition

- Removal and sale of senile stems will facilitate and subsidise replanting, leading to enhanced coconut productivity. At the same time, a new industry sector, **Coconut Engineered Wood Products (EWP)** will develop, providing increased opportunities across the supply & value chains (e.g. Employment, Regional Development, Skills Development, Export Markets etc);
- There are opportunities for coco-veneer derived EWP sourced from senile coconut palms in Fiji. This comes about due to a high demand for plyboard in the furniture and

joinery market. Also, there is huge demand for plyboard product from the building and construction market for interior house finishing works;

- Import replacement opportunities exist. At the time this report was prepared, Fiji was a net importer of plyboard, importing approximately 70- 80% of plyboard material for building and construction work. (Maika Tabukovu – CEF Team Market survey May 2022)
- The work undertaken by the research team of the FST/2019/128 EWP project is transferable to the wider Pacific coconut plantation sector with multiple benefits;
- Removal of senile stems and waste from harvesting will support biosecurity control measures for the Rhinoceros Beetle, particularly important for the coconut estate replanting program;

Conclusion

- Native forest harvesting licences will be phased out by 2030, and excess capacity of existing operations will result in decreased employment along the industry supply chain. This will have a negative socio-economic domino effect throughout the communities engaged in the forest harvesting and processing sectors;
- The FST/2019/128 EWP project has potential to add technical support to existing operators in terms of consistency of product quality and increase in premium grade coconut veneer recovery from harvested senile coconut stems;
- Market intelligence obtained by the CEF Team in Fiji identified a reliable supply of high-quality coconut veneer would be readily marketable. End users are keen to utilise the coconut veneer ply product, but only if quality and reliability of supply concerns are satisfied;
- A transition support role to work with both the private sector collaborators and the FST project team is recommended. Ideally this would be introduced and confirmed at handover of the CEF project. This role would act to support potential partnership dialogue, facilitate formal documentation and on-boarding of partner firms, and ensure a smooth and timely flow of information and technology improvements between parties in pursuit of the desired end result - high quality reliable supply of coconut stem veneer.

3 Background:



Figure 1. Senile coconut stands in Fiji.

Source: Development of Advanced Veneer and other Products from Coconut Wood to Enhance Livelihoods in South Pacific Communities: *Coco International* Vol 23, No. 2, 2016. *Associate Professor Gregory Nolan*¹

Coconuts are pivotal in the livelihoods of quasi-subsistence smallholders who dominate Pacific primary production. Coconuts are a key source of income as well as nutrition, important not only for the direct contribution of their products—copra, fresh nuts, and increasingly, oil—to livelihoods, but also because a significant proportion of the stands shade other food and cash crops in low-input production systems (PLIA/2007/019).

Viability of this sector is being challenged by the increasing proportion of the coconut plantation estate becoming senile, characterised by significantly reduced fruiting capacity. There is an urgent need for the senile plantations to be regenerated by replanting, however farmers are reluctant to remove existing palms and replant due to the initial cost and reduced income until the newly planted palms reach an age that start to yield fruit. Incentives are required to stimulate the coconut estate renewal.

The sale of senile stems by farmers to the timber industry for engineered wood product manufacture is a pathway being explored by FST/2019/128. It is worth noting here that one company, Pacific Green, has been active in purchasing senile coconut stems for many years which are processed as sawn coconut stem “wood”, for furniture manufacture.

The revenue from stem sales is expected to provide an incentive to remove the senile palms and offset the costs of replanting. The manufacture of coconut EWP’s is expected to be small initially, but once coconut-based EWPs are commercially produced, demand will regularly supplement farm income within the economic haul distance of EWP manufacturers.

Of greater economic impact will be the increase in profitability of coconut-growing from estate renewal. By stimulating demand for products derived from now largely discarded senile coconut stems, this research has the potential to enhance incomes for the more than half a million Pacific households primarily dependent upon coconut for their livelihoods (PHAMA 2019). The removal of senile stems will reduce on-site residue in which coconut rhinoceros beetles breed, reducing the risk that productivity and thus incomes will be compromised.

This SRA project, AGB/2021/172 Commercial Engagement Fund (CEF), was conducted in parallel and in partnership with the existing and overarching FST/2019/128 project team. The FST project has as its primary focus the technical and social elements of forming a new coconut veneer based EWP industry. The CEF project aimed to inject critical assessment and develop strategies for commercial stakeholder engagement, private sector alignment, thinking and potential investment and enable market access.

3.1 Development Issue & Rationale, Context, Research Needed

3.1.1 DEVELOPMENT ISSUE & RATIONALE

ISSUE

Renewal of the Pacific coconut estate is a priority among governments, development agencies, and researchers (Nampoothiri *et al.* 2018). This project AGB/2021/172 in partnership with FST/2019/128, by creating market pull for senile coconut stems, was aimed at providing incentives for farmers to remove low productivity & low economic value, senile stems.

Removal and sale of senile stems will facilitate and subsidise replanting, leading to enhanced coconut productivity. At the same time, a new industry sector, **Coconut Engineered Wood Products** will develop, providing increased opportunities across the supply & value chains (e.g. Employment, Regional Development, Skills Development, Export Markets etc).

This CEF project applied a specifically designed methodology to research the commercial operating environment in which any new commercially viable products and business opportunities are likely to compete and operate.

As part of the CEF scope, this project researched, assessed and identified high priority commercialisation pathways. It provided recommendations for the FST/2019/128 Project Management and Team, covering one or more commercial engagement pathways, and identified suitably qualified, private sector partners to work with the FST project.

RATIONALE

Key outputs from this pilot CEF project include a framework for undertaking this type of research as may be required as part of other ACIAR funded research projects. This framework will be applicable to other projects in which understanding the business operating environment and the early engagement of suitably qualified private sector project partners are important. Such an approach is destined to maximise the adoption and uptake of project lessons and outcomes.

Benefits from early and effective connection of the overarching FST project with private sector partners and thinking will influence and shape both supply and value chain design, and

operations from the place of origin of the raw material (non-traditional forest resources on farms, estates, community lands and other location types) to end market for the product.

Effective and early commercial engagement will also provide input, insights and potentially resources and support for mechanisms that may be needed to support and facilitate social change and adaptation amongst chain stakeholders and their communities.

This CEF project was also specifically designed to build the capacity and confidence of in-country personnel in designing and undertaking important research into the commercial or 'real-world' environments in which ACIAR projects and their participants and team members are active. Interacting and collecting data and information from people and organisations in the commercial sector is materially different to undertaking biophysical and socioeconomic research in a project environment. The make-up of the CEF project team reflected this with a mixture of experienced business, finance, marketing and project development professionals, as well as advisors and researchers from the FST project

A further aspect of this CEF project was the desire that it successfully facilitate the transitioning of relationships established with prospective commercial partners into the overarching FST project.

3.1.2 CONTEXT

The current FST project follows previous ACIAR-funded research project FST/2009/062, which demonstrated the technical feasibility of peeling senile coconuts and the manufacture of coconut-based EWPs.

FST/2019/128 will deliver and validate wood processing technologies to transform coconut and other currently low-value forest resources into high-value engineered wood products suitable for local and international markets.

To the input and expertise of the current FST project team, this CEF project added commercial experience and specialist expertise in private sector engagement, business development and opportunity evaluation, and business finance and investment. This is reflected substantially in the **Project Opportunity Prospectus** created as part of the CEF team's remit.

With both projects contributing directly to the establishment of new, profitable outlets for low-value log products, there is expected to be an increase in the returns from these materials to farmers, timber growers and processors, contributing to the renewal of the coconut estate, and expanding employment and trade.

3.1.3 RESEARCH NEEDED

Specifically, the CEF Project was to focus on the following;

- Markets, Demand, Commercial Partners, Value Chains, and in doing so, assess the Supply/Value Chains to identify opportunities and barriers to establishing sustainable, efficient and equitable value chains, from farmer / collector to consumer for products made from these non-traditional senile coconut stem plantation resources are defined, understood and documented.

3.1.4 AGB/2021/172 CEF was designed to research the following;

- | |
|---|
| a) Identification and sustainable commercial engagement of motivated and committed <u>commercial off-take firms</u> that currently have, or proactively develop, consumer demand for new end products, and |
| b) The ability of the producer of the intermediary (coconut veneer sheeting / other formats) products to <u>produce and consistently supply</u> these commercial off-take firms required volumes of fit for purpose products, within their required specifications, and to build and maintain effective business relationships with these commercial off-take firms |

To achieve the above, the project pursued the following objectives;

1. Acquire a sound understanding of the plywood manufacturing and timber end product manufacturing sectors in Fiji and the private sector firms that populate these sectors,
2. Develop a Project Opportunity Prospectus that defines and presents the precommercial and projected commercial opportunities and benefits for a potential private partner engaged in FST/2019/128,
3. Develop a research framework to identify private sector firms with propensity, ethical, financial and commercial reputation and credentials, and aligned business plans / directions to potentially partner with Project FST/2019/128, i.e. a Due Diligence assessment of identified potential private firms;
4. Synthesise recommendations and advice for the project team of FST/2019/128 regarding the ongoing engagement and relationship management of suitable private demand / market partners for the project and effectively transition the outcomes of the project back into the ongoing management of FST/2019/128, by that project team. Methodology.

3.2 Methodology

3.2.1 Research Methodology

An appropriate way to investigate and understand the potential pathways to sustainable commercialisation is to treat the private firms at each point in the chain as the primary respondents to a targeted industrial research process, not unlike a “Company Search” for a business or JV partner.

The **Methodology and Targeted Industrial Research Process**, is described in the **CEF Private Partner Selection: Research Methodology & Process Flow Chart**, developed specifically for the pilot CEF project (**Appendix 1**).

The Due Diligence Methodology adopted to identify eligibility of short-listed applicants, is described below;

The CEF team’s approach to determine potential project private sector partners was guided by an emphasis on identifying those firms most likely to be able to engage with the FST

project and translate the research outcomes into practical manufacturing operations in the near term to medium term. This is directly linked to 3.1.4 b), in the highlighted box above.

Theoretically, any entrepreneur with access to sufficient funds could be a potential partner, however from a commercial perspective, especially in the context of the general business environment in Fiji, there is only ever likely to be a very small cohort which has sufficient motivation, means and market access to commit to developing a commercially sustainable business.

Thus, the focus for the CEF team was principally on those businesses with a clear line of sight between current business activities and the demands of operating a fully functional veneer and plywood manufacturing plant. This meant, for example, that in the absence of any compelling argument to the contrary, furniture manufacturers, logging firms and similar entities with a broad interest in the project, but with no milling or processing experience were excluded from detailed consideration for suitability.

Another important factor was proximity to stocks of senile stems. Though a business might otherwise appear a credible potential partner, if its location meant that to secure adequate stocks it would incur significant additional transport costs effectively rendering it uncompetitive against other better situated manufacturers, then this business would not be considered as a probable partner.

The CEF team field work centred upon developing a quick understanding of the likelihood that any potential candidate business would be reasonably able, in the prevailing economic context, to finance and successfully operate a veneer and ply manufacturing plant. The outcome of this approach was that those firms with a current capacity in this field were regarded as the most likely to scale up to successfully process senile coconut stems. One of the two processors in Vanua Levu made considerable effort to comply with the Due Diligence process, the other rejected our efforts to secure cooperation. Both of these, however, indicated a clear interest in partnering with the over-arching FST project.

A further party, based on Viti Levu and currently undergoing a factory rebuild, was not ready for a Due Diligence review, but have at all stages indicated a strong desire to be included as a potential project partner.

In addition to these, another three firms were identified as having some scope for consideration as possible partners. One of these is currently a sawmiller in close proximity to senile coconut stocks, already with the capacity to produce green veneer. Another is similar, but without the equipment necessary to produce green veneer. The third was a major local firm with significant presence in the timber processing sector in Viti Levu, but which is not well located in terms of stem stock.

3.2.2 CEF Team Implementation Process:

The following tailored selection process was systematically employed to identify potential project collaborators for the FST project and achieve the CEF project objectives; **Refer Appendix 1.**

Activity	Result/Output
1. Research and collate, sector profile of private plywood manufacturing companies, industry organisations & drivers of sustainability. This Value Chain research was conducted by the Fiji based CEF team, with support from SPC, PHAMA Plus & FST/2019/128 research team members	Appendix 2
2. Create a Long List of possible candidates – Objective is to identify the active supply/value chain actors, through production to the market end users.	Appendix 2 (a) & (b)
3. Conduct screening of the “Long List”	Remove those not eligible
4. Develop a “Short List” of suitable prospective private producer/market demand partners identified as potential collaborators with the FST project; Identify private sector firms that maybe prospective FST project partners. Objective to narrow down those private sector operatives most likely to warrant further analysis;	Appendix 3
5,6,7 & 8; Conduct and refine Due Diligence screening of “Short List” to assess Ethical, Financial, Commercial as well as Environmental, Social & Governance (ESG) adoption and integration with potential collaborator operations.	Appendix 4 Due Diligence Assessment
9, 10 & 11. Conduct private partner interview process;	Though ideal for this work to have been fully completed, delays in responses by potential partners to Due Diligence enquiries, plus time constraints due to budget parameters, meant that this task remained outstanding at conclusion of the CEF project. It will need to be actioned post hand-over, ideally by the proposed Liaison Officer as expeditiously as possible to maintain a sense of progress and credibility with the private sector.

Activity	Result/Output
12. Partnership Agreements confirmed - Commencement dates to be agreed.	Given the limited progress on the private sector partner interview process, it was not possible to proceed to securing Partnership Agreements. These will now need to be addressed post-handover. An example of a tailored Collaboration Agreement is provided. An important element of any agreement must be a detailed description of inputs, actions, outputs and M&E feedback required of both parties to ensure effective management of expectations. Appendix 5 Tailored Cooperation Agreement template
13. Create project liaison role - to work with both FST and private sector collaborator. TOR to be prepared.	Recommendation TBC
14. Transition Support provided – Term TBA - Liaison Officer to drive implementation of CEF project recommendations & FST uptake.	Recommendation TBC -
15. Commence partnership Agreement & production. There is an agreed transition process (TBC) that ensures that recommendations from the CEF project research and identified market led pathways, and the private firms that are key to those commercialisation pathways are effectively handed over to the FST team for ongoing participation and collaboration at the completion of the drop in module	Recommendation TBC

3.3 Achievements against activities and outputs/milestones

Objective 1: To Acquire a sound understanding of the plywood manufacturing and timber end product manufacturing sectors in Fiji and the private sector firms that populate these sectors.

No.	Activity	Outputs/ Milestones	Completion date	Comments
1.1	Review previous Research into Coco veneer production, FST research to date, Value chain actors and market intelligence	Compile sector profiles of supply/value chain actors and drivers of sustainability Create Long List	20 May 2022	Support & research provided to the Fiji based CEF team provided by SPC, PHAMA Plus, FST team members

1.2	Refinement of industry actor list to focus on supply/value chain actors to market.	Create Short List of probable collaborators for the FST project	10 June 2022	Potential project partners selection guided by an emphasis on identifying those firms most likely to be able to engage with the FST project and translate the research outcomes into practical manufacturing operations in the near term to medium term.
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Objective 2: To Develop a Project Opportunity Prospectus that defines and presents the precommercial and projected commercial opportunities and benefits for a potential private sector partner engaged in FST/2019/128.

No.	Activity	Outputs/ Milestones	Completion Date	Comments
2.1	Collate information progressively	Draft opportunity prospectus	26 Aug 2022	Draft presented at CEF Team meeting in Suva on 26 August 2022

Objective 3: Develop a research framework to identify private sector firms with propensity, ethical, financial and commercial reputation and credentials, and aligned business plans / directions to potentially partner with Project FST/2019/128. **Refer Methodology section 3.2 above.**

Objective 4: Synthesise recommendations and advice for the project team of FST/2019/128 regarding the ongoing engagement and relationship management of suitable private demand / market partners for the project and effectively transition the outcomes of the project back into the ongoing management of FST/2019/128, by that project team. **Recommendations in Section 5.2 of this Report.**

4 Key results and discussion

4.1 Key Results;

Value Chain analysis of the senile coconut resource, manufacturing capability and end market user assessment indicated the following;

- All stakeholders have **positive views** on potential coconut veneer EWP industry;
- **Spare mill capacity** exists and will likely grow in timber industry due to dwindling supply;
- Fiji has become a substantial **net importer** of plywood;
- Reliable supply of high-quality coconut veneer would be readily marketable. End users are keen to utilise the coconut veneer ply product, but only if quality and reliability of supply issues are satisfied;
- Greenfield transportable veneer mills could be an option, however high capital cost and associated operational issues for isolated locations raise viability questions;
- Potential Partners:
 - Initially only 2 existing manufacturers are considered early prospects for private sector partnerships covering both veneer and ply board (EWP) manufacture:
 - **Long Investments** at Savusavu;
 - **Valebesoga Tropik Board (VTB)** at Labasa, but may require assistance with identifying and securing appropriate financial support;
 - An additional operator, **Fiji Ply**, has commenced rebuilding after their facility was damaged by fire. They have indicated a strong interest in developing coconut veneer production capacity. To accomplish this, they will need some assistance with securing the necessary financial support.
 - Two firms have been identified as potential partners given their interest in green veneer production. They would be likely suppliers to existing ply manufacturers:
 - **Houyilin Wood (Fiji)** which currently has the capacity to produce green veneer
 - **Pacific Trade Investments** – sawmiller with no current capacity
 - A further single firm **Tropik Wood**, (100% owned by Fiji Pine, a government funded entity) has been identified as a possible “wild-card” partner. Their scale and broad expertise in timber processing (pine), and the fact that they are government owned may embolden them to step into coco-veneer processing and EWP manufacture once other parties begin producing.
 - Also worthy of inclusion as a potential partner in some form is the Ministry of Forestry, Timber Utilisation Division (TUD) facility in Suva. This Division currently has capacity to process coconut logs and dry veneer sheets, and reportedly provides sawing / peeling services on a fee for service basis.

- Other stakeholders within the coconut sector may become involved at a later stage. High capital costs to establish the veneer process from senile stems to production of quality veneer may inhibit new entry;
- Other product lines in addition to plywood could be considered. One example is laminated veneer lumber (LVL) used in the building & construction sector. This might provide a viable end-use for secondary grades of veneer not suited to those markets where visual appeal of the end product is the key consideration (e.g. furniture manufacture and resort fit-outs. this could be a viable value add for veneers not suited to high-end architectural products, furniture manufacture etc;
- The current FST project has potential to provide technical support to existing operators in terms of product quality, consistency of supply, and increase in prime grade coconut veneer recovery from harvested senile coconut stems;
- However, there are significant issues for new entrants to consider such as;
 - High capital cost required for machinery and equipment to produce coconut veneer; and,
 - Volume, access and reliability of the senile coconut stem resource available for harvesting, to justify the investment of establishing a start-up coconut veneer stem or LVL production line;

4.2 Discussion:

Comment:

- End market response to the prospect of a Fiji coconut veneer product being manufactured has generated significant interest, with indicative purchase volumes verbally indicated during CEF team meetings.
- Research into the use of senile coconut stems for veneer production has been conducted over many years. Research conducted to date indicates refinement of the production process will be ongoing under the FSTWEP project.
- Taking the above two factors into consideration, to propel the research work forward into the commercial space quickly, a four-way collaborative arrangement involving the two existing veneer / plywood manufacturers, Modern Furniture as the offtake partner and the FST project as coordinator should be prioritised as a means of “bench testing” the advanced stage the research has now reached.

5 Impacts

5.1 Scientific impacts

- The CEF module is not designed to address scientific issues
- However, the research methodology used for this CEF module, using the decision tree process and tailored due diligence process to select prospective project partners, provides a disciplined and structured approach to addressing gaps to present outcomes that are transferable from research phase to private sector partnership and collaboration.

5.2 ACIAR Project Enabling or Research Adoption Impacts

- AGB/2021/172 is a Pilot Commercial Engagement Fund module tasked to work with the strong FST/2019/128 project team. As a pilot project it has helped flesh out a significant number of learning points, the adoption of or response to which has potential to improve the project enabling environment and the impact of research undertaken in terms of its uptake by the private sector.
- The CEF project contributed to the overarching FST project through strength and specialist expertise in private sector engagement, private sector business and product development and investment insights, new product commercialisation alignment and business economics.

5.3 Capacity impacts

- The pilot CEF project provided a sound and disciplined commercial perspective into identifying opportunities to transition an existing research project with identifiable commercial application, to private sector partnership and collaboration leading to sustainable and viable socio-economic outcomes. Additionally, it increased understanding of the commercial perspective which researchers need to more fully embrace to ensure effective connection with private sector.

5.4 Research Knowledge Impacts

- The CEF project led to the development of a methodology for identifying potential private sector partners for a specific project. This applied a combined decision tree and commercial due diligence methodology to provide a structured and disciplined approach to achieve the required objectives.

5.5 Community impacts

- Adoption of the CEF project findings will provide opportunities for existing senile coconut stem to be harvested and processed into a commercially acceptable and marketable product. This will establish a new industry which will provide benefits to the wider communities involved through employment, alternative income and regeneration of the coconut plantation sector, when operating at commercial scale.

5.5.1 Economic impacts

- The CEF team assessed Value Chain Research from initial resource supply chain stakeholders (senile stem supply), to end market users (Value Add actors) for coconut veneer.
- These findings are included within the Project Opportunity Prospectus (Appendix 6) developed during the execution of the CEF project module. Indications are that provided product quality and reliable supply criteria are met, then positive economic outcomes should follow.

5.5.2 Social impacts

- Coconut veneer production is likely to provide positive socio-economic impacts in the following areas:
 - Coconut growers – estate and smallholder/mataqali
 - Logging contractors
 - Plywood manufacturers
 - Shipping firms (between Vanua Levu and Viti Levu)
 - Distributors/wholesalers, retailers

5.5.3 Environmental impacts

- Addressed under the Environmental Considerations within the Opportunity Prospectus.

5.6 Communication and Dissemination Activities

The following communication and dissemination activities were undertaken during the conduct of this CEF project:

- Inception meeting on 6 April in Suva – introduce project to stakeholder groups;
- Virtual CEF Team progress meetings conducted May 20; June 10 & July 21;
- Final CEF team workshop held in Suva on 26 August at SPC/LRD and Chaired by SPC;

6 Conclusions and Recommendations

6.1 Conclusions

- Enthusiastic domestic demand and willingness of market to purchase coconut veneer product exists, provided product quality and reliability concerns addressed – **Refer opportunity Prospectus;**
- A Furniture and Joinery Manufacturers Survey conducted by the Fiji based CEF team in June 2022, identified plywood utilisation (Average No. of Sheets) to be approximately 52,780 sheets/yr;

The team concluded from this survey that there are clear opportunities for coco-veneer based ply product in Fiji and there is a high demand for plyboard in the Furniture and Joinery market. Further, that there is huge demand for plyboard product from the building and construction market for interior house finishing works, with 70-80% of this currently being covered by imports.
- There is a willingness of existing millers to partner and enter into partner cooperation agreements with the FST project to produce coconut veneer product;
- Partnerships with the 2 existing shortlisted plywood producers (Long Investments at Savusavu & VTB at Labasa) should proceed in the first instance. Research work on this particular project has been conducted for several years and sufficient progress has been made in the understanding of the issues involved with coconut stem veneer production. That now needs to be tested on a commercial basis;
- To support the above, there are willing domestic end users (**e.g. Modern Furniture**) registering interest to participate in collaborative off-take positions to support end market quality testing, as supported by the CEF team market assessment – **Refer Opportunity Prospectus Annexure 8.3;**
- Realistically, caution should be exercised as to how many private sectors partner co-operation agreements are entered into, due to the largely untested supply chain for senile coconut stems. Exact quantification of the resource is not yet possible and estimates vary markedly. Available data translates to as little as 10 years and as much as 30 years of stock availability. This is dependent upon such factors as the scale of processors activity, selected private business co-operator, the ease or difficulty of accessing stock, and the rate at which the currently productive coconut palm stock transitions to senility.
- This does not exclude others from partnering with the FST project at future date;
- A transition support role in the FST/2019/128 project to liaise with both the selected private partner collaborator and the FST team, to ensure adoption and 2-way flow of information and technology improvements between partners was identified as crucial - for communicating and strengthening the co-operative relationship between the project partner and the FST research team supports the end result desired- i.e. high quality reliable supply of coconut stem veneer.

6.2 Recommendations:

6.2.1 A transition support role to be created to act as the link between the FST/2019/128 Project and the cooperating private sector partner. Issues to consider include:

- ACIAR will be required to provide & confirm budget support for this role;
- The appointee should have appropriate financial and business support experience for the position, initially for a 6month engagement, and possibly longer as not all parties will engage simultaneously.

6.2.2 Terms of Reference for Transition Support Role to be established, and should include the following;

- Act as the liaison between FST Project and selected private sector partner/s;
- Provide support to the co-operating private sector partner to establish the co-operative agreement terms and conditions;
- Prepare tailored co-operative agreements clearly outlining technical support required by private sector partner and services provided by the FST project. **Refer sample co-operation agreement as a guide in Annexure 8.2.**
- Scope available supporting agencies for provision of financial grants to SME businesses provided under Adaptation Grants or similar avenues to support processing upgrades etc;
- Timely communication and feedback from end market back to FST and private sector partner;
- Other terms as determined by FST and ACIAR to ensure successful transition from Research to commercial sustainability and viability.

6.2.3 To retain the goodwill of industry, a cooperative partnership agreement to be established with key existing producers identified (Long Investment & VTB) in the first instance;

6.2.4 Opportunities for additional entrants to be canvassed subject to ability to produce quality product reliably and consistently;

6.2.5 Off-take agreements or Purchase Agreements with end market users introduced to provide confidence to producers of coconut veneer ply product or other EWP. These could be structured similarly to the cooperation agreements referred to in 5.2.2 above;

7 References

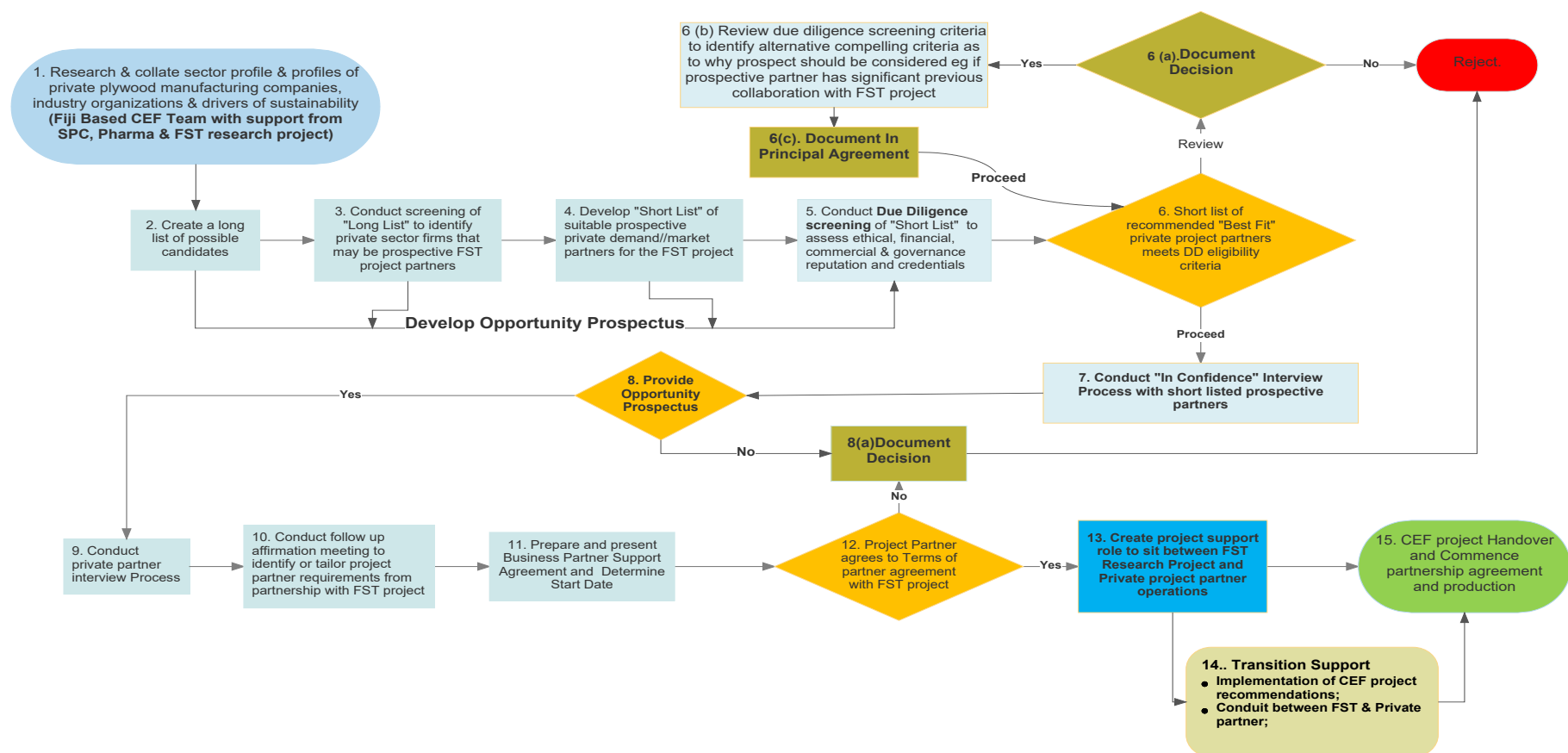
List of papers and publications utilised for background information pertaining to research conducted into various aspects and opportunities on utilisation of senile coconut stems to produce veneer.

- Development of Advanced Veneer and other Products from Coconut Wood to Enhance Livelihoods in South Pacific Communities: Coco International Vol 23, No. 2, 2016. *Associate Professor Gregory Nolan*^{2019/128}
- Coconut EWP Value Chain Map ACIAR FST/2019/128 Prepared by David Young, PHAMA Plus, Sefania Tawake, SPC, Maika Tabukovu, FNU; 30 May 2022;
- A guide to the rotary veneer processing of coconut palms; Robert McGavin, William Leggate, Henri Bailleres, Gary Hopewell and Chris Fitzgerald; ACIAR 2019;
- A guide to manufacturing rotary veneer and products from small logs: Editors: William Leggate, Robert McGavin and Henri Bailleres; Forest Product Innovations, Salisbury Research Facility, Department of Agriculture and Fisheries, Queensland, Australia 2017;
- ACIAR FST/2009/062 Development of advanced veneer and other products from coconut wood to enhance livelihoods in South Pacific communities: DAF Report - Coconut palm stem veneer processing Trial 4 March 2016;
- Coconut and other Non-Traditional Forest Resources for the Manufacture of Engineered Wood Products (EWPs); Skeleton Value Chain Model; Version 2: 16th January 20;
- Republic of Fiji - Fiji Forest Harvesting Code of Practice, Second Edition 2013, Ministry of Fisheries & Forests;
- CEF Project EWP Furniture and Joinery Manufacturers Survey for Viti Levu and Vanua Levu Report; Maika Tabukovu CEF Team member survey - briefing paper for the commercial engagement fund project (CEF) 21st July 2022.

8 Appendices

8.1 Appendix 1: Private Partner Selection: Research Methodology & Process

ACIAR AGB/2021/172 Commercial Engagement Fund



8.2 Appendix 2: Long List

2 (a) Wood Processing and Wood Manufactures - 2021

Sawmill license issued last year 2021 (including Veneer/Plymills)

COMPANY	ADDRESS	LOCATION	TYPE	LICENSE	DATE LICENSED
Location: Northern Division					
Waiqele Sawmill	P.O Box 140, Qelewaqa	Labasa	Static	40	05/01/2021
Houyilin Wood (Fiji)	P.O Box 525, Savusavu	Dreketi	Static	290	08/01/2021
Prasad Timber Supplies	P.O Box 286, Nabua, Suva	Nasuva, Bua	Static	146	10/12/2020
Valebasoga Tropik Board	P.O Box 528, Naiyaca, Sub division	Labasa	Static	150	08/01/2021
Jay Dills Logging	P.O Box 89, Nabouwalu	Coboi, Bua	Static	208	19/01/2021
Long Investment	P.O Box 525, Savusavu	Naqelewaqa, Savusavu	Static	165A/B	14/01/2021
Wairiki Chip Mill	Port Access Road, Nabouwalu, Bua	Wairiki, Bua	Static	261	09/12/2020
Raviravi Sawmill	Nasuva, Bua	Nasuva, Bua	Static	160	19/01/2021
Vanua Levu Pallet	P.O Box 3150, Vunika	Labasa	Portable	210A/B	14/01/2021
Pinto Industries Ltd	P.O Box 120	Labasa	Portable	251	08/01/2021
Sidhartha Sharma	P.O Box 1, Savusavu	Savusavu	Portable	PA	11/01/2021
Nazia Hire Service	P.O Box 281, Natua, Seaqaqa	Seaqaqa	Portable	260	19/01/2021
Nivis Motor Sawmill	P.O Box 131, Labasa	Namara, Labasa	Portable	292	14/01/2021
Lekutu Trading	P.O Box 08	Nasarawaqa, Bua	Portable	245	9/12/2020
Pyare Industries	P.O Box 3139, Labasa	Labasa	Portable	222	03/02/2021
Pacific Trade Investments	P.O Box 380, Savusavu	Valaga Bay, Savusavu	Portable	296	30/03/2021
Qaqa Investment	P.O Box 83, Seaqaqa	Seaqaqa Macuata	Portable	297	24/06/2021
Green Ridge	P.O Box 398, Savusavu	Valaga Bay, Savusavu	Portable	298	13/08/2021
Costless Construction	P.O Box 521, Dreketi	Dreketi, Macuata	Portable	189	23/08/2021
Voloca Logging	P.O Box 1329, Dreketi	Dreketi Macuata	Portable	169 (PL)	14/09/2021
A. Khan	P.O Box	Tabia, Labasa	Portable	(PL)	10/10/2021
Location: Central Division					
Vitiana Timbers Fiji Ltd	P.O Box 1151, Lot 1 Nokonoko Road	Laucala Beach Estate	Static	171	22/12/2020

Rups Investment	Viwawa Road	Navua	Static	126	05/01/2021
TUD Sawmill	P.O Box 2218 Government Building	Nasinu	Static	72	25/02/2021
Pride Mahogany	P.O Box 8166, Nakasi	Kasavu, Verata, Nausori	Static	291	02/03/2021
Yarawa Sawmill	Serua	Serua	Static	235 (PL)	14/09/2021
Miliaka Investment	Lot 1, Lakena Road, Nausori	Nausori	Portable	288B	05/01/2021
Green Gold Sawmill	P.O Box 7097, Nasinu	Sawani, Nausori	Portable	229A	08/02/2021
Real Engineering	P.O Box 315, Navua	Navua	Portable	269	03/02/2021
Ali Azam	Wainadoi, Navua	Navua	Portable	247	05/03/2021
Resource Management	Nukurua, Tailevu	Nukurua, Tailevu	Portable	176	28/02/2020
Southern Forest	P.O Box 55, Pacific harbor, Deuba	Daniva Rd, Valelevu	Portable	134	05/03/2021
Naiyacayaca Enterprise	Nukurua, Tailevu	Nukurua	Portable	176	07/07/2021
Eco Lumber	Manoca, Nausori	Manoca, Nausori	Portable	287 (PL)	24/08/2021
Touchwood	Nabukavesi	Nabukavesi	Portable	93 (PL)	27/08/2021
Ply Fiji	Lot 40, Sawakasa	Sawakasa, Tailevu	Portable	249 (PL)	02/09/2021
Abeez Engineering	Lakena, Nausori	Lakena, Nausori	Portable	PA	15/09/2021
Location: Western Division					
Mahesh Investment	P.O Box 3150, Lautoka	Vuda, Lautoka	Static	96	14/01/2021
Shan Trading	P.O Box 1009, Nadi	Koroisa, Momi, Nadroga	Static	286	08/01/2021
K.K.Komave	P.O Box 10124, Nadi	Nalovo, Nadi	Static	145	22/12/2020
Dayal Saw millers	P.O Box 1121, Ba	Ba	Static	136	10/12/2020
Designtech	P.O Box 2486, Lautoka	Lautoka	Static	172	19/01/2021
Tropik Forest	P.O Box 247, Ba	Valele, Ba	Static	166	23/02/2021
Rons Sawmill	9 Karawa Street, Samila, Lautoka	Wairabetia, Lautoka	Static	225	08/01/2021
Tropik Wood Industries	Private Mail Bag, Lautoka	Drasa, Lautoka	Static	81	05/01/2021
Mahogany South Pacific	P.O Box 9585 Nadi Airport	Drasa, Lautoka	Static	129	15/02/2021
H.K Hardware	Drasa Vitogo, Lautoka	Kerebula, Nadi back road	Portable	269	05/01/2021
Subrails Funiture	P.O Box 5081, Lautoka	Lautoka	Portable	230	05/01/2021
Dayal Saw millers	P.O Box 1121, Ba	Ba	Portable	136	10/12/2020
Seurobo Enterprise	Davuilevu Housing, Nausori	Sabeto, Nadi	Portable	239	03/02/2021

Metro Civil	Sautamata Street	Lautoka	Portable	207	08/01/2021
Navunisareki	P.O Box D1142, Lautoka	Navutu Industrial, Lautoka	Portable	244	08/02/2021
Totoka Island	Drasa, Lautoka	Drasa, Lautoka	Portable	299	28/08/2021
Kali & Madrai	Tunalia, Nadi	Tunalia, Nadi	Portable	182 (PL)	30/10/2021

(2b) Wood Manufacturing Companies – 2021 (Main Furniture Manufactures)

Division	Company	Location	Remarks
Western	Mahogany Industry Fiji	Lot 3&4 Royal Palm Rd, Navutu, Lautoka	Furniture and other wood products
Western	Modern Furniture	Nadi	High end cabinetry and resort upgrades
Western	Subrail Furniture	Vitogo, Kings Rd, Lautoka	Furniture and other wood products
Western	Pacific Green Industries (Fiji) Ltd.	Queens Highway, Sigatoka	Coconut Furniture
Western	Amira Furniture	Nadi Back Rd, Nadi	Furniture and other wood products
Central	Rups Industry	Grantham Rd, Suva	Furniture and other wood products
Central	Comfort Home Furnishing Ltd.	Queen Elizabeth Dr, Suva	Furniture and other wood products

8.3 Appendix 3 : Initial Long List Assessment.

Initial Long list Assessment				
Business Name	Location	Business Activity	Prospect (Y/N)	Comment
The following list broadly met the CEF Project Short List Prospect eligibility criteria				
Valebasoga Tropik Board	Labasa	Static mill. Veneer & Ply/ panel mfg	Y	Fijian owned. Long term cooperator with FST. Will require additional financial support to upgrade mill equipment.
Ply Fiji	Sawakasa, Tailevu	Existing ply mfg business, but not in operation due to fire damage	Y	Fijian owned. Have received insurance payout for fire damage and now re building.
Long Investment	Naqelewaqa, Savusavu	Static mill. producing ply product for domestic & export markets	Y	Chinese owned. Long term collaborator with FST. Requires Technical support only.
Tropik Wood	Lautoka	Not producing coconut veneer	Y	100% owned subsidiary of Fiji Pine (100% Government owned enterprise). Indicated interest in procuring additional equipment to produce coconut veneer product.
Houyilin Wood (Fiji)	Dreketi	Saw milling	Y	Current producer of green veneer
Pacific Trade Investments	Valaga Bay, Savusavu	Sawmilling.	Y	Locally owned. Possible producer of green veneer with the support of ACIAR technical staff. (Feeder source for Long Inv?) Significant stock of senile coconuts close to their mill
			6	

The following list did not meet CEF Project Prospect eligibility criteria				
Wairiki Chip Mill	Wairiki, Bua		N	Eligibility criteria not met – inability to <u>produce and consistently supply</u> these commercial off-take firms required volumes of fit for purpose products,
Jay Dills Logging	Coboi, Bua		N	Ditto
Waiqele Sawmill	Labasa		N	Ditto
Raviravi Sawmill	Nasuva, Bua		N	Ditto
Prasad Timber Supplies	Nasuva, Bua		N	Ditto
Vanua Levu Pallet	Labasa		N	Ditto
Pinto Industries Ltd	Labasa		N	Ditto
Sidhartha Sharma	Savusavu		N	Ditto
Nazia Hire Service	Seaqaqa		N	Ditto
Nivis Motor Sawmill	Namara, Labasa		N	Ditto
Lekutu Trading	Nasarawaqa, Bua		N	Ditto
Pyare Industries	Labasa		N	Ditto
Pacific Trade Investments	Valaga Bay, Savusavu		N	Ditto
Qaqa Investment	Seaqaqa Macuata		N	Ditto
Green Ridge	Valaga Bay, Savusavu		N	Ditto
Costless Construction	Dreketi, Macuata		N	Ditto
Voloca Logging	Dreketi Macuata		N	Ditto
A. Khan	P.O Box 260, Tabia, Labasa		N	Ditto
Vitiana Timbers Fiji Ltd	Laucala Beach Estate Suva		N	Ditto

Rups Investment	Navua	Furniture manufacture / retail (potential end user)	N	Ditto
MoF Timber Utilisation Division Sawmill	Nasinu	MoF research facility	N	Potentially could be a multi-timber veneer producer – but question commercial viability of such operation, if indeed TUD wants to pursue commercial possibilities at any scale
Pride Mahogany	Kasavu, Verata, Nausori		N	Eligibility criteria not met – inability to <u>produce and consistently supply</u> these commercial off-take firms required volumes of fit for purpose products
Yarawa Sawmill	Serua		N	Ditto
Miliaka Investment	Nausori		N	Ditto
Green Gold Sawmill	Sawani, Nausori		N	Ditto
Real Engineering	Navua		N	Ditto
Ali Azam	Navua		N	Ditto
Resource Management	Nukurua, Tailevu		N	Ditto
Southern Forest	Daniva Rd, Valelevu		N	Ditto
Naiyacayaca Enterprise	Nukurua		N	Ditto
Eco Lumber	Manoca, Nausori		N	Ditto
Touchwood	Nabukavesi	Timber milling	N	Potential connection with Ply Fiji
Abeez Engineering	Lakena, Nausori		N	Ditto
Mahesh Investment	Sausauboro, Vuda, Lautoka		N	Ditto
Shan Trading	Koroisa, Bavu, Momi, Nadroga		N	Ditto

K.K.Komave	Nalovo, Nadi		N	Ditto
Designtech	Lautoka		N	Ditto
Tropik Forest	Valele, Ba		N	Ditto
Rons Sawmill	Wairabetia, Lautoka		N	Ditto
Mahogany South Pacific	Drasa, Lautoka		N	Ditto
H.K Hardware	Kerebula, Nadi back road		N	Ditto
Subrails Furniture	Lautoka	Furniture manufacture / retailing (potential end user)	N	Ditto
Dayal Saw Millers	Ba		N	Possibly has the financial base necessary to secure equipment to green veneer stage at least. Proximity to senile stock?
Seurobo Enterprise	Sabeto, Nadi		N	Ditto
Metro Civil	Lautoka		N	Ditto
Navunisareki	Navutu Industrial, Lautoka		N	Ditto
Totoka Island	Drasa, Lautoka		N	Ditto
Kali & Madrai	Tunalia, Nadi		N	Ditto
Pacific Green Industries (Fiji) Ltd.	Western	Furniture Manufacturers operating for many years; purchase coconut stems used in manufacturing coconut wood furniture.	N	Approaches made by the Fiji Team to engage with PG but not reciprocated.

8.4 Appendix 4: Partner Due Diligence Process

Partner Due Diligence Assessment Criteria

A private sector review and analysis process suitable for application in this project requires: identifying possible candidates (Long List) , qualifying, Short Listing, further qualifying and finally selecting and recommending a 'best fit' private project partner for Project FST/2019/128.

This process should ideally incorporate collection and analysis of information and selecting a successful candidate based on the following selection criteria:

1. Legal, reputation and operating principles

- a. Business history and stability,
- b. Relationship to veneer and timber products value chains and governments,
- c. Competing interests and the risk that these may compromise project outcomes,
- d. Values and ethics,
- e. Legal or reputational risk;
- f. Environmental & Social Governance.

2. Strategic and investment alignment with proposed project outcomes

- a. Business strategy regarding inclusive veneer and timber products value chains
 - b. Approach to innovation

3. Resources

- a. Capacity to co-invest particularly in regard to public good outcomes
- b. Capacity to scale out interventions
- c. Expertise and skills
- d. Linkages and leverage to other value chain members
- e. Access to finance

4. Collaboration performance

- a. Track record in business partnerships e.g. joint ventures
- b. Past participation in development/public good projects
- c. Business policy regarding intellectual property

The project team will incorporate these key selection criteria in the Due Diligence process

8.5 Appendix 5: Methodology Approach to the Due Diligence Process

PARTNER DUE DILIGENCE:

Implementation Methodology Adopted by the CEF Team conducting the Due Diligence Assessment.

Introduction

Outlined below is the suggested process of how to carry out due diligence on potential partners and in order to try and ensure that all the regulatory requirements are met the first step required is to identify the players and develop a Value Chain of the proposed product – in this case the coco-veneer.

Central to the successful development of the product reaching the market is to ensure that all legal and regulatory aspects of the business are covered. In Fiji, these regulatory requirements cover various laws – please see **Attachment 1**.

This of course does not negate the need to do carry out the normal due diligence on other aspects of a possible partner such as their technical know-how, financial, management, marketing, etc. Understanding and clearing the legal and administrative aspects ensures that the business or the relationship is built on firm foundations, and the commercialization of the business will not be unnecessarily held up because of ‘technical’ difficulties due to non-compliance.

Compliance has a cost and it is advantageous to be aware of these from the outset.

How to identify potential partners in the Values Chain on which Due Diligence is to be carried out

(a) Identify possible members of the list – industry association if any; (b) Yellow pages; (c) research papers; (d) talk to existing players and other stakeholders. Develop as comprehensive a list as possible.

For veneer/ply there were initially four (4) players, Fiji Forest Industries Ltd; Valebasoga Tropikboard Ltd, Long Investments Limited and Ply Fiji Limited. Fiji Forest Industries is no longer in operation. Ply Fiji Limited, is currently repairing and rehabilitating its operations following a massive fire. This factory specializes in manufacturing ply board only. Will probably come online by the end of 2022. There are only two possible players: Valebasoga Tropikboard in Labasa and Long Investments in Savusavu.

(b) How do you qualify members of the list: Check on compliance with regulatory laws, site visit to discuss the opportunity presented, discuss future plans and get a general feel about the management, the business, factory presentation, etc., Gathering of publicly available information and also getting general information from the businesses that they will feel comfortable releasing. Nothing sensitive at this stage.

*A questionnaire was prepared and sent out. Please refer to attached **Attachment 2***

(c) Legal, reputation and operating principles.

a. Business history and stability. Carry out company searches, bankers’ opinion, if possible, compliance with regulatory and statutory requirements, talk to other players, the industry etc.

b. Relationship to veneer and timber products VC and governments. - Site visit and discuss with principals. Discuss compliance to regulatory requirements with regulatory bodies – especially in terms of the operational aspects of the business.

- c. Competing interests and risk that may compromise project outcome- get to understand the business, what it does, related entities etc., and how it may affect the project.
- d. Values and ethics. These are difficult to assess unless. One would need to talk to the principals of the business to get an understanding of their business and their values and ethics. Compliance with labour laws and other regulatory requirements will be a good indicator or point the enquirer in the right direction.
- e. Legal and reputational risk. Checking the newspapers for any news – negative or positive about the company, checking with the regulators on compliance issues, etc. A search of the newspapers is always a good place to start and information gathered can be used as a basis for developing further inquiries.

The questions raised in the Questionnaire also covers these areas should be used as a basis for further discussions.

(d) Strategic and investment alignment with proposed project outcomes.

Discussions need to be held with the principals of the business to determine

- a. Business strategy regarding inclusive veneer and timber products value chains
- b. Approach to innovation
- c. Willingness to get involved
- d. Strategic plan if any

Discussions with the two possible partners indicated a willingness to participate in the coco veneer project, and more importantly, it was viewed as a possible alternative to native timber. Due to the proposed banning of the harvesting of indigenous logs in another 8 years' coco veneer is looking like a real alternative while supplies last. Both operators also indicated that an alternative available to them is to import veneer and continue to produce ply board.

iii) Resources

- a. Capacity to co-invest particularly in regard to public good outcomes
- b. Capacity to scale out interventions
- c. Expertise and skills
- d. Linkages and leverage to other value chain members
- e. Access to finance

There is real interest from the two operators (Long Investments and VTB). However, between the two, Long Investment is better placed to proceed with implementing the project once all its newly acquired equipment is in place, and the agreements for the provision of relevant technology from the FST project team is agreed.

VTB maybe be financially weaker of the two in terms of ability to finance its own production – it will need financial support in acquiring new or more robust lathe and working capital to commence purchase of stems etc.

iv) Collaboration performance

- a. Track record in business partnerships e.g., joint ventures
- b. Past participation in development/public good projects
- c. Business policy regarding intellectual property

Attachment 1

Legal and regulatory requirements that may have an impact on the development of the coco veneer project.

All forest harvesting operations are conducted in accordance with the requirements of these legislation (or its successor):

1. Forest Decree 1992
2. Fiji Pine Decree 1990
3. Fiji Mahogany Industry Development Decree 2010
4. Fiji Mahogany Act 2003
5. Environment Management Act 2005
6. Endangered and Protected Species Act 2002
7. Biosecurity Promulgation 2008
8. Coconut Industry Development Authority Act 1998
9. Fijian Affairs Act Cap 120
10. Land Conservation and Improvement Act Cap 141
11. Native Land Trust Act. Cap 134
12. Land Development Act Cap 142
13. Land Sales Act Cap 137
14. State Lands Act Cap 132 and
15. Surveyors Act Cap 260
16. Property Law Act Cap 130
17. Land Transport Authority Act 1998
18. Health and Safety at Work Act 1996
19. Factories Act Cap 99
20. National Fire Service Authority Act 1994

Attachment 2 - Questionnaire Adopted for the Due Diligence process

1.0 Ownership:

Authorized capital of the company: \$

Shareholders Name	No. of shares held	Percentage
-------------------	--------------------	------------

(i)

(ii)

(iii)

(iv)

(v)

Directors:

(i)

(ii)

(ii)

Company Secretary:

Registered Office:

Solicitors:

Accountants/Auditors:

Main contact person:

Mailing address:

Telephone and cell contacts:

Website/Facebook/ Viber/ WhatsApp/Twitter, contacts.....

Physical Location:

Are the shareholders of the company involved in other businesses? Please list companies and type of business or industry involved in.

2.0 Current Products produced.

2.1 Please provide a current list of your firm's 5 major products, average production over the last 3 years and percentage exported – please see first worked example:

Product	Average production last 3 years	(m ³)	Export %
---------	---------------------------------	-------------------	----------

- 2.1.1
- 2.1.2
- 2.1.3
- 2.1.4
- 2.1.5

3.0 Manufacturing and Production

3.1 Please provide a general description of the type of machinery and equipment available and used to produce your top 5 products. Please indicate age and projected replacement date.

Product	Age	Due for replacement? When? (years)
3.1.1		
3.1.2		
3.1.3		
3.1.4		
3.1.5		

3.2 Personnel

3.2.1 No. of employees employed directly in the manufacturing process.....

3.2.1.1 Male

3.2.1.2 Female

4. Logging Operations.

4.1.0 How much of your logging operations do you perform yourselves? How much is contracted out? Estimated percentage.

4.1.2 On what basis would you contract out your logging operations compared to doing it yourself.

4.1.3 Value of investments in your logging operation?

4.1.4 No. of employees

4.1.4.1 Male.....

4.1.4.2 Female.....

5.0 General Information

5.1 Total Personnel

5.1.1 Male.....

5.1.2 Female.....

5.2 Annual Salary and wages for the business for last 3 years?.....

5.3 Can you provide us with your latest tax compliant certificate?

5.3 Yes. Attached.

5.4 No. We cannot.

5.3 Annual Lodgements filed with the Registrar of Companies?

5.4 Are your financial statements audited? What is the end of your financial year? What is the date of your last set of financial statements?

Final Assessment

Attachments 3,4,5, & 6.

Summary of findings:

Valebasoga Tropikboard

Although one of the largest timber milling factories in Fiji and one of the two remaining ply board manufacturers in the country, the company (from face value) appear to be facing some working capital challenges. They will need financial support if it is to continue to engage in this project. The company will also have to provide the relevant documentary evidence to confirm that it follows the required regulatory requirements. This company should be a viable candidate for future collaboration, although some hand holding will be required to assist them access funds from the market to acquire the machinery and equipment needed to proceed with the project.

Long Investments

Based on discussions it appears that the company has the wherewithal to funds its own expansions into coco veneer. What they need is the extra knowledge that the project can provide. The company is ready to be assisted in this regard and all effort should be made to see how the project can engage with them. The company appears to be well capitalized, and they also have the capability of looking for alternative technology to deal with the coco veneer, if it desires. They are well aware of the need to deal with the landowners including the need to clear stumps and replanting of coconuts for indigenous landowners. Whilst the freehold estate owners may not want to replant coconut, for the Fijian landowners I believe their outlook is different. Coconuts have traditional, medicinal and cultural values to Fijian culture and will remain an intrinsic part of their society - this came through in discussions with the company's local manager. The company appear to be well managed and appears to be in control of its finances. Its compliance to regulatory requirements is not known, and these needs to be verified with documentary proof provided if they are to be a partner.

Ply Fiji Limited

Whilst the company is currently not operational, they should not be discounted as a possible partner in the future, and it is suggested that the FST team visit them to acquaint them with the CEF project objectives, and the relationship with the ongoing FST project. The company is already in the business and this maybe an opportune time for them to consider this coconut veneer product since they may be able to acquire the machinery and other equipment as part of their overall “re-starting” program.

Modern Furniture Pte. Limited

As a possible partner, this company appears well place to be part of the commercial marketing effort to bring coco veneer project to market. Modern Furniture has a reputation for producing high-end cabinetry and high-end resort upgrades. Discussions indicate that the company is interested and is willing to try the products (veneer) on a commercial basis. This company would provide good market feedback to the team and should be encouraged to be a partner, provided other normal - regulatory requirements are met.

CONFIDENTIAL

Attachment 3

BUSINESS PROFILE

1	Name	Valebasoga Tropikboard Pte. Limited		
2	Company No.	103491		
3	Date of Incorporation	07/04/1993		
4	Governance	Standard for Articles of Association		
5	Registered Office	Loy 1, Naiyaca Subdivision, Labasa		
6	Principal place of business	As above		
7	Directors	Name	Citizenship	Office Held
		Muktar Ali	Fiji	Director
		Niwaz Ali	Fiji	Director
8	Authorised shares	3,813,385		
9	Value per share	\$1.00		
10	Shareholders	Name	Shares held	Fully paid
		Muktar Ali	3813382	Yes
		Niwaz Ali	1	Yes
		Altaf Ali	1	Yes
		Jamila Bi	1	Yes
11	Due Diligence Questionnaire Returned	Yes		
12	Comment:			

(i)The response to the questionnaire is attached. The company has indicated that they are in compliance with all the statutory requirements. This is satisfactory but documentary evidence will need to be provided if they are to be a partner in the development of this product. It is difficult to make any real assessment on the condition of the company based on these responses. More information and time would be required to make any real conclusive assessment.

(ii) The major shareholder of this company, Mukhtar Ali is the son of the founder of VTB, Bahadur Ali who passed away several years ago. Bahadur's assets were divided between Mukhtar and his younger brother Niwaz Ali (also a director and shareholder of this company). Niwaz took over the Suva operations - specifically the Vitiana Timber Mills operating out of the Baily Bridge area. Their father Bahadur was a colourful character and was also involved in gravel crushing operations, water bottling and owned properties in the centre of Labasa Town.

(iii) The company manufactures and average of 7,200m³ of ply board and 6,000m³ of timber annually. Their major machines (the lathe and pressing machines) are around 28 years old and there are no plans to replace any of these soon - planned repairs and maintenance is how they will keep the equipment operational. They have their own logging crew and employ around 132 people in the veneer and ply board factory.

(iv) The site visit was in my opinion a better indicator of the overall status of the company. Manufacturing operations had been closed for a while due to the delay in approval of their logging license. Be that as it may, the general outlook of the factory premises was not encouraging, it was 'untidy' and tired looking. However, inside the ply mill itself the working floor was clean but it was obvious that the factory was "tired".

(v) During discussions the management appeared positive but there was I believe an undercurrent of desperation brought about by several factors - including the uncertainty of future log supplies and I believe a tight working capital situation.

(vi) The company search did not reveal any encumbrances on the company's assets but personal knowledge of the company leads me to believe that the company will be carrying some debt on its books.

(vii) Opinion. Although one of the largest timber milling factories in Fiji and one of the two remaining ply board manufacturers in the country, the company (from face value) appear to be facing some working capital challenges. They will need financial support if it is to continue to engage in this project. The company will also have to provide the relevant documentary evidence to confirm that it follows the required regulatory requirements. This company should be a viable candidate for future collaboration, although some hand holding will be required to assist them access funds from the market to acquire the machinery and equipment needed to proceed with the project.

Attachment 4

BUSINESS PROFILE

Name	Long Investments (Fiji) Limited		
Company No.	Not obtained		
Date of Incorporation	11/06/2008		
Governance	Standard for Articles of Association		
Registered Office	Nagelekula, Savusavu, Vanua Levu, PO Box, 88, SAVUSAVU.		
Principal place of business	As above		
Directors	Name	Citizenship	Office Held
	Shanbao Chen	Australia	Director
	Lei Shang	Chinese	Director
Authorised shares	290,000		
Value per share	\$1.00		
Shareholders	Name	Shares held	Fully paid
	Shanbao Chen	261,000	Yes
	Lei Shang	29,000	Yes
Company Secretary	Lei Shang		
Due Diligence Questionnaire Returned	No		
Comment			

(i) A due diligence questionnaire was sent to Long Investments at the same time that it was sent to VTB. Upon follow up, the company advised that the forms had been sent to China for the directors to respond to. The directors were expected back into Fiji by July 2022, this has been moved back to August 2022.

(ii) The Directors of the company are also directors in the following companies: Sunpac Enterprises Limited and Aurum Exploration (Fiji) Limited.

(iii) Lei Sang's 10% Shareholding in Long Investments were transferred to Poseidon Development Limited on 23/12/2014. No attempt was made to find out anything further about these associate companies.

(iv) Discussions with the local manager Sarina indicated that the company started operations in 2012 after it took over the operations of a Korean timber company - and expanded existing operations into manufacturing plywood.

(v) They were interested in coconut veneer, and are already working towards getting ready to process coco veneer: had access to a spindle less lathe but were waiting for heater and the baths to drench the stems before the peeling process. The outbreak of COVID in China delayed the acquisition process

(vi) They viewed coco veneer as an alternative source of raw material because of the forthcoming restrictions on use of indigenous timber etc. They wanted to improve the lives of the landowners and considered the removal of senile plants as a better outcome for all stakeholders. They were also looking at assisting landowners with the land clearing, removal of stumps and re-planting

(vii) The company does not do LVL.

(viii) They are a member of the EWPA, do not do marine ply yet but are considering importing the relevant components (glues, etc.,) to enable them start assembling locally.

(ix) The site was visited in April 2022. Minimum sawmilling activities were taking place on the day, but, employees were busy loading timber for transportation to Viti Levu. The overall outlook of the mill and the factory was clean and well managed. The company had about 150 workers in total. The ply factory was closed.

(x) There are no encumbrances recorded against the company's assets.

(xi) Opinion. Based on discussions it appears that the company has the wherewithal to fund its own expansions into coco veneer. What they need is the extra knowledge that the project can provide. The company is ready to be assisted in this regard and all effort should be made to see how the project can engage with them.

The company appears to be well capitalized, and they also have the capability of looking for alternative technology to deal with the coco veneer, if it desires. They are well aware of the need to deal with the landowners including the need to clear stumps and replanting of coconuts for indigenous landowners.

Whilst the freehold estate owners may not want to replant coconut, for the Fijian landowners I believe their outlook is different. Coconuts have traditional, medicinal and cultural values to Fijian culture and will remain an intrinsic part of their society - this came through in discussions with the company's local manager.

The company appear to be well managed and appears to be in control of its finances. Its compliance to regulatory requirements is not known, and these needs to be verified with documentary proof provided if they are to be a partner.

Attachment 5

BUSINESS PROFILE

Name	Ply (Fiji) Limited		
Company No.	Not obtained		
Date of Incorporation	20/03/2014		
Governance	Standard for Articles of Association		
Registered Office	93 Mistral Lane, Manoca, Nausori. PO Box 10152, Laucal Beach Estate		
Principal place of business	As above		
Directors	Name	Citizenship	Office Held
	Waisale L Mata	Fiji	Director
	Joni Duikoro	Fiji	Director
	Naveen Prasad Nischal	Fiji	Director
Authorised shares	10,000		
Value per share	\$1.00		
Shareholders	Name	Shares held	Fully paid
	Waisale L Mata	22	Yes
	Joni DUikoro	22	Yes
	Naveen Prasad Nischal	56	Yes
Company Secretary	Naveen Prasad Nischal		

Due Diligence Questionnaire None given
Returned

Comment:

(i) Prior to a fire in 2018, the company was involved in importing and processing veneer into ply board. This business is currently not operational and is in the process of carrying out repairs to the factory and from information gathered, the factory should be operational by the end of 2022.

(ii) Comment. Whilst the company is currently not operational, they should not be discounted as a possible partner in the future, and it is suggested that the team visit them to acquaint them with this project. This company is already in the business and this maybe an opportune time for them to consider this product since they may be able to acquire the machinery and other equipment as part of their overall “re-starting” program.

Attachment 6

BUSINESS PROFILE

1	Name	Modern Furniture Pte Limited		
2	Company No.	8141		
3	Date of Incorporation	07/07/1989		
4	Governance	Standard for Articles of Association		
5	Registered Office	2 Mal Street, Suva, Viti Levu.		
6	Principal place of business	Lot 17, Kaua Road, Laucal Beach Industrial Estate, Suva		
7	Directors	Name	Country of Birth	Office Held
		Truman Bradley	NZ	Director
		Roneane Bradley	Australia	Director
		Janet Rosemary Patridge	Fiji	Director
8	Authorised shares	440,000		
9	Value per share	\$1.00		
10	Shareholders	Name	Shares held	Fully paid
		Truman Bradley	160,000	Yes
		Roneane Bradley	60,000	Yes
		Janet Rosemary Patridge	220000	Yes
	Company Secretary	Truman Bradley		
1	Due Diligence	None given		
1	Questionnaire Returned			
2	Comment			

(i) Modern Furniture is a well-known and well-established upmarket furniture and joinery operation in Fiji based both in Suva (Laucala Beach Estate) and Nadi, (Lot 2 Enamanu Road). Discussions have been held with Managing Director Truman Bradley and feedback obtained through another team member. Information from this company is reported elsewhere.

(ii) As a possible partner, this company appears well placed to be part of the commercial marketing effort to bring coco veneer project to market. Discussions indicate that the company is interested and is willing to try the products (veneer) on a commercial basis. This company would provide good market

feedback to the team and should be encouraged to be a partner, provided other normal - regulatory requirements are met.

8. Annexures

8.1 Annexure 1: Supporting documentation for implementation of the CEF due diligence process.

Step 1. Develop Value Chain and identify all players critical to meeting project objectives.

This is critical to ensure that none of the critical steps required in the development of getting a product to market are omitted.

Note that in the VC below that central to all the participant activity is the need to comply with all the relevant regulations and laws pertaining to each component of the VC.

The model adopted below is adapted from Maika Tabukovu's paper.



1. Resources Owners

The three major type of land ownership in Fiji falls under any of these three categories.

- (I) Freehold estate landowners
- (II) Tribal/Mataqali owned land
- (III) State owned lands - if any are still available then proof of ownership also needs to be obtained.

It is critical to ensure that the due diligence exercise is undertaken with the right person – whether it is the registered owner of the property, or the legal representative, proper documentation must be produced.

At this point landowners in Vanua Levu – specifically Savusavu and the northern tip of Vanua Levu maybe the easiest to target because of the location of the two veneer mills and because the stands of coconut are in the Northern Division. See distribution of coconut planted in Fiji below.

Fiji coconut population			
Division	No. of Households	No. of trees planted	Area Planted (ha)
Central	700	26205	212
Eastern	623	60594	490
Western	863	18498	149
Northern	1992	328651	2660
Fiji Total	4178	433948	3511

Extracted from the 2020 Agriculture Census

2. Harvesting – due diligence legal and legislative requirements.

The steps required to carry out any due diligence on harvesting logs in Fiji are clearly outlined in the various publications produced by the Ministry of Forestry and the Department of Environment. The publications are detailed, and clearly outline the steps to be undertaken by any entity wishing to harvest timber. Any due diligence undertaken for a potential partner needs to be based on carrying out the assessment against the publications produced by the two institutions.

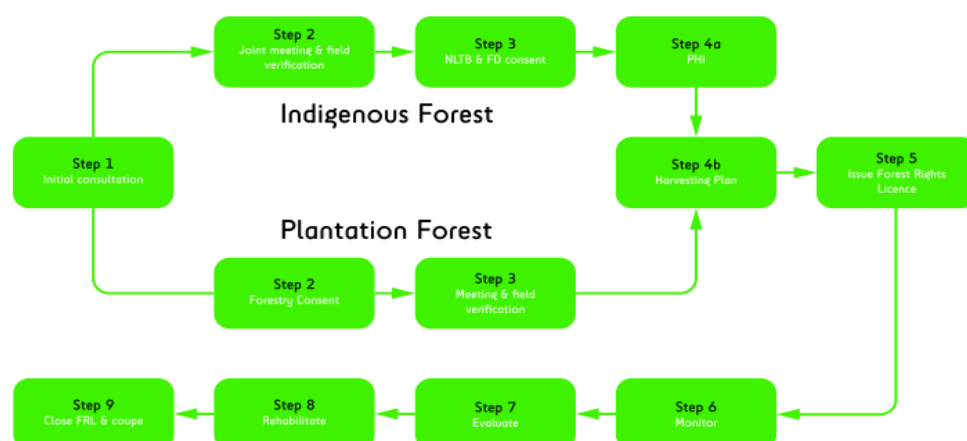
A. Harvesting Code of Practice

1. The Fiji Forestry Harvesting Code of Practice, was approved by Cabinet in October 2010 and implemented as of January 2011. This document is available online and can be downloaded from the Ministry of Forestry's website.

Harvesting of senile coconut stems does not fall under Harvesting Code of Practice, as coconut is classified as a grass. The coconut industry is regulated by the Ministry of Agriculture however it does not have any legislation covering the harvesting of stems. The Ministry's major concern is the harvesting of nuts, processing of copra, and the manufacture of coconut oils, including virgin coconut oil.

2. The Ministry of Forestry regulates the harvesting of logs and has indicated that it could include it as part of the Code of Practice. **It is suggested that a formal request be made to the Ministry to include the harvesting of senile coconut stems as part of its logging code.**
3. The Harvesting Code of Practice lays out very clearly the terms and conditions for the granting of a harvesting license. Compliance will be an issue for the landowner/logger or a contract logger given the volume of work required and the expected return per log. See below.

Figure 1 – Summary of Harvest Licence procedures



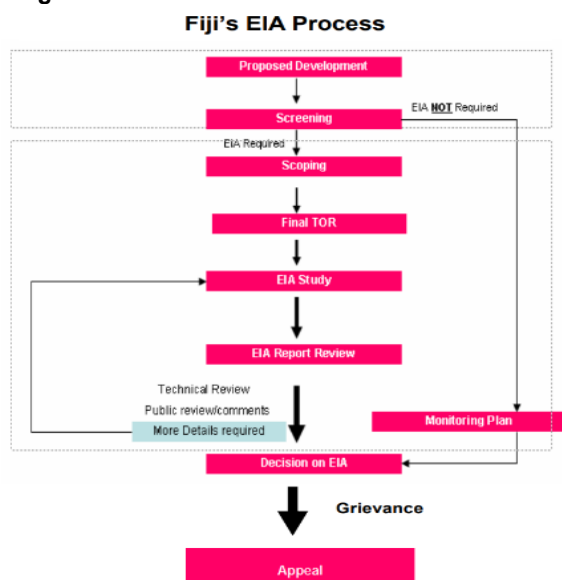
1. There may be a case to suggest to the Ministry of Forestry that the application of its normal rules for the harvesting of senile coconut stems be relaxed for the following reasons: Trees are easily accessible so there is really no need for logging roads; Trees are at end of its economic life (c.f. with trees in the forests which are most likely to be in the prime of its life) and there is limited opportunity for the landowner to benefit from it (once it falls it is useless to the landowner); For the Mataqali Landowner – individual holding may be small and the cost of going through the process just not justify the activity; Clearing senile trees creates opportunities for the landowner for other economic activities; As most of these senile coconuts were planted and people have been harvesting them for ages, without following the Harvesting Codes.

B. Environment Impact Assessment

1. In line with the Harvesting Code of Practice any logging operation, whether on freehold estates or on mataqali owned lands, an Environmental Impact Assessment is a requirement prior to any harvesting activity taking place. However, the depth of assessment required will depend on the initial screening carried out by the Department on the proposed development once a request for an EIA is lodged. Please see Figure 2 which outlines the process.
2. The Department of Environment publication 'Environmental Impact Assessment Guidance' clearly outlines the steps required to comply with this, and can be downloaded from the Department's website. This document should be used as a basis for carrying out due diligence.
3. The EIA requirement to comply with the Harvesting Code is straight forward for the freehold estate land owner, whilst the initial requirement for the **Mataqali land owner is to first obtain** a signed letter of consent from the owning Mataqali (60% of all members over the age of 18 years) and submit to the Provincial office, who will assist to verify by checking against the Vola ni Kawa Bula (VKB) and iTaukei Lands & Fisheries Commission (iTLCF) records that the names on the letter are consistent with each Mataqali members to confirm ownership and approval for the activity. Whilst this requirement was put in place to cater for logging activities in the forests around Fiji, it is still currently applicable to all logging activities in the country. This is a tedious process and the returns for the land owner may not be sufficient to enforce compliance. The possibilities of non-compliance or landowner lethargy and dis-engagement is real. **It is suggested that discussions be held with the Ministry of Itaukei Affairs to discuss and arrive at a solution where the rules can be relaxed for the harvesting of senile coconut palms – if this project is to contribute to the overarching project aims of rural and gender involvement is to be achieved.**

4. The Department of Environment have advised that landowners can follow the first two processes outlined – i.e., prepare and document the proposed project and submit the proposal for the Department to carry out its Screening Process. The Department will review the project proposal and determine whether the proposed harvesting operations will result in major physical disturbances, the use of heavy machineries, harvesting impact on waterways, noise impact on the surrounding villages, etc., and make a determination whether a full EIA will be required.
5. All projects fall into three categories which are clearly outlined under the Act. Category 1 includes those proposals that require EIA and which must be sent to the Administrator at the Ministry of Environment for processing; Category 2, includes those proposals that require EIA and which must be processed by the approving authority and Category 3, are proposals that may not require an Environmental Impact Assessment unless required otherwise by the EIA Administrator.
6. The Department currently treats harvesting of pine and mahogany under Category 3, their products being sourced from plantations and it appears that they will also use the same basis of assessment for senile coconut stems.

Figure 2



7. As depicted in Figure 2, if the screening indicates that an EIA is not required then the landowner/logger must prepare an Environment Management Plan (EMP). The EMP does not need the services of a professional environmentalist and can be prepared by their business consultant. **A sample EMP had been requested from the Department and it is suggested that a template be prepared ready for potential loggers to use if required.**

8. EIAs are site specific and applicants can be in the form of an estate, a village, or a district.

9. Once the EIA/EMP has been approved, then a harvesting license can be considered by the Ministry of Forestry, if they are to be the

authority to be responsible for regulating the harvest of senile stems. For the freehold estate owner, the process is straightforward after the EIA/EMP is approved. The process for the owners of stems in Mataqali owned lands are

C. Harvesting – Operational - Due Diligence

Harvesting Plan

1. Again the Fiji Forestry Harvesting Code clearly outlines the required certification required by the personnel working in the field, right up to how the roads are to be developed etc. Compliance requirements will involve certification and due diligence being carried out that the harvesting crew meet minimum standards.

2. Chain saw operators and anyone operating any machinery involved in the harvesting process will need to be certified as being competent to operate the equipment. The Ministry goes around the country carrying out certificate programs for chainsaw operators as part of its normal operations.

3. Transportation – due diligence

1. The Land Transport Authority's publication "General Vehicle Mass and Dimensions Limit" is the publication that articulates the weight and dimensions restrictions that can be loaded onto a truck.
2. Each truck operators need to be well acquainted with these limits and are responsible for compliance. Non-compliance can be an expensive affair for the truck operator.
3. Financial capacity of the operator, Compulsory Third-Party Insurance, and comprehensive insurance cover for the vehicles also need to be checked. Appropriate driving license – for heavy duty vehicles is a requirement.

4. Peeling/ Veneer & Plywood processing

1. These steps are grouped together – as the compliance requirements are the same and the completion of one process (making veneer) is the commencement of another – plywood making.
2. The current model being discussed is that all stems are transported to the two mills for the veneer processing to take place. This step is practical and can be implemented immediately as all the equipment and the facilities to commence coconut veneer processing are in place or can be put in place quickly. Long Investments are getting the last piece of its equipment by August 2022 and VTB can commence but is looking at upgrading its spindle less lathe to get a more robust version.
3. An alternative being discussed is to develop a transportable veneer operations model to be located in or close to where stems are collected. Stems are processed closer to where it is harvested, and only semi-finished products are transported. This is a more efficient method. If this alternative method is developed further and then a similar due diligence developed below will be followed. Proof of ownership of site where the veneer operations will be located will be an extra requirement if the operator is not a landowner.
4. Due diligence questionnaire sent to both VTB and Long Investment itemizes the relevant areas to be complied with. The Ministry of Forest's Forestry Business Guide is the relevant document to be used as a basis for due diligence.

6. Marketing due diligence

1. Discussed in the opportunity prospectus.

COMPLIANCE

1.0 **As a foreign investor** are following the requirements of Investment Fiji? Please ignore if you are a locally owned company.

(Investment conditions requires that the Investor must have at least 30% equity held by Fiji Citizen(s) and the foreign investor must have at least \$500,000 in owner's contribution or paid-up capital for companies in the form of cash from the operational date, to be fully brought into Fiji within the implementation period. 2. Investment Approval process includes: i. Register with Investment Fiji; ii. Submit Investment Project proposal to Investment Fiji; iii. Obtain Work permit from Immigration.

Yes/ No. If answer is No, please explain steps being taken to rectify situation, if any

.....

2.0 Harvesting License Requirements.

Is your company in compliance with the requirements?

2.1 Current Environment Impact Assessment approval for area to be logged. Yes/ No

.....

2.2 When was the last Volume Assessment carried out. Is it still applicable for your firm? Yes/No

.....

2.3 Are premiums and royalty payments due to ITLTB up to date? Yes/No.

If not, please explain reasons and steps being taken to rectify position.

.....

2.4 Do you have a current Rights License and when does this expire? (Rights License = Licensee to Harvest).....

2.5 Are you operating and complying with the terms of the Fiji Forest Harvesting Code of Practice 2013 (FFHCOP 2013) Yes/ No

.....

2.6 When was the last OMF (Objective Monitoring Form) for your concession completed and has there been any negative report made on you License?

3.0 Licenses.

Please complete the table below by ticking the appropriate column. If there are any other conditions imposed as part of your licenses (Item 14) then please list these. If not, then state NA (Not Applicable) in the appropriate column. Please use the Remarks column if you wish to comment further. Please feel free to use additional pages.

	Requirements	Sawmilling & Other Wood Processing	Treatment Plant	Export License	Date of Expiry	Remarks
1	Business Registration - Current (Y/N)					
2	Business License - Current (Y/N)					
3	FNPF Registration - Current (Y/N)					
4	Tax Registration - Current (Y/N)					
5	NFA Registration - Current (Y/N)					
6	EIA Approval - Current (Y/N)					
7	Waste Disposal Permit - Current (Y/N)					
8	OHS Inspection Report - Current (Y/N)					
9	Site approval from the DTCP - Current (Y/N)					
10	Do you export any products? Is export license current?					
11	Please provide a list of products exported.					
12	Do you import timber products? Is your import license current?					
13	Please provide a list of products imported.					
14	Any other terms and conditions imposed by the Director Timber Utilization Research Division					

4.0 Government incentives to support the industry.

4.1 Are you aware of the following incentives by the Government and are you utilizing these benefits?

- (a) Tax Rate 20%
- (b) Extension allowance for extensions and renovations – minimum capital expenditure of \$50K.
- (c) Accelerated depreciation
 - buildings constructed up to 2018
 - 100% write off on year incurred for water storage facilities and renewable energy plant and machineries
- (d) Loss carried forward
- (e) Export Income Deduction
- (f) Duty concessions on raw materials used for manufacture and not available locally - 0% Fiscal Duty (Production Input)
- (g) Duty concession on capital expenditure for manufacturing purposes 0% Fiscal Duty.
- (h) Employment Taxation Scheme
- (i) Reduce duty for purchase of prime movers, road tractors and trucks over 3 tons

4.2 Does your company benefit from being located in a TFR – what benefits does the company get out of this classification?

8.2 Annexure 2: Sample Co-operation Agreement Template

This Co-Operation Agreement (the “Agreement”) is effective [DATE],

BETWEEN: **[FIRST PARTY NAME], (“First Party”)** a company organized and existing under the laws of the [State/Province] of [STATE/PROVINCE] with its head office located at/Individual having address at:
[YOUR COMPLETE ADDRESS]

AND: **[SECOND PARTY NAME], (“Second Party”)** a company organized and existing under the laws of the [State/Province] of [STATE/PROVINCE] with its head office located at/Individual having address at:

[YOUR COMPLETE ADDRESS]

Whereas, the present Agreement is between two Parties who wish to enter into a working relationship together and the present Agreement shall outline the intentions and goals as well as the conditions of the future working relation/partnership between the Parties.

Now, therefore the Parties hereto agree as follows:

1. PROJECT DESCRIPTION

- 1.1. The Parties shall cooperate on the working and strategizing of the Project [PROJECT TITLE]. The Project is [DESCRIBE WHAT THE PROJECT ENTAILS].

2. FUNDING AND BUDGET

- 2.1. [NAME OF PARTY RESPONSIBLE FOR FUNDING] shall raise/provide all funds necessary to carry out the Project. A budget for the Project is provided in Attachment A in this Agreement and is incorporated herein by reference. In succeeding years of this Agreement, the Parties shall work together to develop a mutually agreeable annual budget modelled on Attachment A.

3. PROJECT SCHEDULE

- 3.1. The Project schedule is set forth in Attachment B to this Agreement and is incorporated herein by reference. In succeeding years of this Agreement, the Parties shall work together to develop a mutually agreeable Project schedule modelled on Attachment B. The Project shall commence from [DATE].

4. TECHNICAL SPECIFICATIONS

- 4.1. Attachment C to this Agreement contains technical specifications for the Project. Attachment C is incorporated herein by reference.

4.2. **RIGHTS AND RESPONSIBILITIES:** The Parties shall work together to determine the key creative elements of the activities under this Agreement. No Party may unreasonably withhold its approval of any key creative element. The Parties' respective rights and responsibilities are as follows: [ENTER RESPONSIBILITIES].

5. CREDIT

5.1. The Parties, and third-party contributors, are to receive credit in connection with the Project as follows: [ENTER CREDIT DETAILS].

6. PUBLICITY AND USE OF PROPRIETARY MARKS

6.1. Each Party shall obtain prior written approval from the other Party prior to using the other Party's trademarks or trade names, images or holdings (collectively, "Proprietary Marks") in connection with the activities under this Agreement. This applies to all uses, regardless of whether on the web, in print, or in any other media. Once approved, similar uses in the same context and format will not require additional approval. In the event that this Agreement expires or terminates for any reason, each Party shall immediately discontinue using the other Party's Proprietary Marks, except as follows: [ENTER EXCEPTION].

7. COPYRIGHT, CLEARANCES, AND OWNERSHIP

7.1. [NAME OF PARTY] will own the physical and intellectual property resulting from the Project.

7.2. [NAME OF GRANTING PARTY] hereby grants [NAME OF THE PARTY TO WHOM GRANTED] a fully paid-up/royalty-free, perpetual, irrevocable, worldwide, nonexclusive, non-transferable license to use, reproduce, transmit, display, perform, prepare derivative works from, distribute, and authorize the redistribution of [DESCRIPTION OF WORK].

7.3. [NAME OF PARTY] is solely and exclusively responsible for obtaining any necessary clearances, permissions, and/or releases necessary to carry out the activities contemplated in this Agreement. Such clearances, permissions, and/or releases may pertain to but are not limited to copyright, right of publicity, trademarks, trade names, contracts, patents, literary, artistic, dramatic, personal, private, civil or property right or right of privacy or "moral rights of authors," defamation, or any other right whatsoever.

8. WARRANTIES AND INDEMNIFICATIONS

8.1. Each Party represents and warrants that it has the full right and power to enter into this Agreement and that it is fully ready, willing, and able to perform all its obligations hereunder.

8.2. [NAME OF PARTY] warrants that it has obtained or will obtain all necessary clearances, permissions, and/or releases as provided above.

8.3. Each Party shall indemnify the other against any and all claims, damages, liabilities, losses, costs, and expenses (including reasonable attorneys' fees) arising out of any facility or thing furnished by the indemnifying Party in connection with the activities under this Agreement, or arising out of any acts done or words spoken by persons furnished therefore by it and/or any use of any material furnished therefore by it, or arising out of or caused by its breach of any warranty or agreement contained in this Agreement. Each Party shall provide the other Party with prompt written notice of any such claims of which the first Party is aware, and the Parties shall cooperate in the defence and resolution of such claims.

9. TERM AND TERMINATION

- 9.1. The term of this Agreement is [NUMBER OF YEARS/MONTHS] from the Agreement's effective date. In the event that either Party breaches this Agreement and fails to cure such breach within sixty (60) days after receiving written notice of such breach from the other Party, the Party sending such notice may terminate this Agreement by giving the Party in breach written notice of its election to terminate.

10. RECORDS

- 10.1. Each Party shall retain all its records relating to this Agreement for a period of three (3) years following expiration or termination of the Agreement, or following resolution of a dispute under this Agreement, whichever occurs later.

11. AMENDMENT OF AGREEMENT

- 11.1. This Agreement may be amended by, and only by, written consent of the Parties

12. SUCCESSORS

- 12.1. This Agreement shall be binding as upon all successors of the Parties, which includes, but is not limited to, executors, personal representatives, estates, trustees, heirs, beneficiaries, assignees, nominees, and creditors of the Parties.

13. LANGUAGE AND GOVERNING LAW

- 13.1. This Agreement shall be governed by and construed and enforced in accordance with the laws of the [STATE/PROVINCE] of [STATE/PROVINCE], which law shall prevail in the event of any conflict of the Parties.
- 13.2. The Parties hereto acknowledge that they requested that this Agreement and all related documents be drafted in English, that any notice to be given hereunder be given in English, and that any proceedings between the Parties relating to this Agreement be drafted in English.

14. ALTERNATIVE DISPUTE RESOLUTION

- 14.1. The Parties to this Agreement agree to attempt in good faith to resolve any conflicts, disputes, or claims arising out of this Agreement by negotiation between the Parties. If applicable, the Parties agree to consider the utilization of Alternative Dispute Resolution (ADR) procedures in situations concerning disputes between the Parties.

15. NOTICES

- 15.1. All notices required to be given hereunder shall be in writing and sent to the registered addresses of the Parties or to their official email addresses.

16. ASSIGNMENT OF AGREEMENT

- 16.1. This Agreement may not be assigned or otherwise transferred by any Party in whole or in part without the express prior written consent of the other Party. In the event any Party shall change its corporate name or merge with another corporation, assignment shall be mutually agreed upon by all Parties.

IN WITNESS WHEREOF, the Parties have executed this Agreement on [DATE]FIRST PARTY
SECOND PARTY

Authorized Signature

Authorized Signature

Print Name and Title

Print Name and Title

OPTIONAL INFORMATION

ATTACHMENT A TAILORED TECHNICAL SUPPORT AGREEMENT

Enter the details of the Technical Support to be provided to Partner Co-operator :

ATTACHMENT B PROJECT SUPPORT SCHEDULE

Enter the details of the Project Schedule:

ATTACHMENT C TECHNICAL SPECIFICATIONS

Enter the Technical Specifications:

8.3 Annexure 3: CEF Project Opportunity Prospectus

Opportunity Prospectus

In support of Project FST/2019/128 Coconut and other non-traditional forest resources for the manufacture of engineered wood products project.

Engineered Wood Products Derived from Senile Coconut Stems



Introduction:

This document is intended to provide information and clarity on the pre-commercial and projected commercial opportunities and benefits for potential private partners engaged in Australian Centre for International Agricultural Research (ACIAR) Project FST/2019/128.

In the context of this project, there are a number of activities which represent a degree of commercial opportunity. The largest in scale of these is in the process of transforming senile coconut stems into rotary veneer sheets which can be traded or further processed to create plywood or other engineered wood products (EWPs).

Success in this primary value chain is dependent upon commercial activity on the supply side (felling, transportation and processing), and on the demand side (end-product purchasers for direct use or on-selling). Secondary value chain activities also exist (e.g. possible conversion of waste into saleable products) and though such activities are referenced within the Prospectus, the key focus is on the opportunity in processing of veneer and the manufacture of EWPs.

Disclaimer:

This Prospectus has been developed on the basis of knowledge obtained under ACIAR projects FST/2019/128 and AGB/2021/172 to identify commercial opportunities in the processing of senile coconut stems into veneer and the manufacture of EWPs in Fiji. Though best

endeavours have been employed to ensure accuracy, no warranty or guarantee is offered or implied. Readers are advised to use their own discretion when considering the information contained herein, specifically

acknowledging that no part of this document shall be construed as investment advice or a recommendation to undertake or not undertake an investment of any kind.

Background:

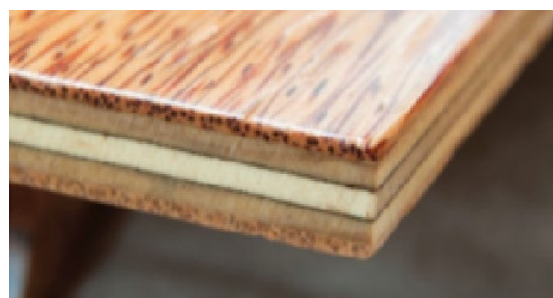
The information presented in this Prospectus reflects the substantial contribution to the renewal and sustainability of the coconut sector by several projects supported by ACIAR and conducted in Fiji during the past decade. There is a significant body of information available and accessible to stakeholders who might be considering options for engagement in the sector.

This research work has identified opportunities to utilise the vast stock of senile coconut palms for profitable investments along the value chain, as well as engaging with private sector firms interested and participation.

Based upon the 2018 Ministry of Agriculture (MOA) survey of coconut plantations in Cakaudrove province, it has been suggested that upwards of 50% of Fiji's stock of coconut palms will fall into the senile age category (50 + years old)¹ in the next 10 years, and without alternative use, represent an asset of minimal economic value. In fact, as a known host for pests such as the rhinoceros beetle, such palms represent a significant threat to the productivity of remaining stock.

Work already undertaken has demonstrated the potential for senile palms and other currently low-value forest resources to be transformed into high-value engineered wood products (EWPs) suitable for local and international markets. By providing new, profitable

outlets for what has traditionally been low-value log products, there is opportunity to increase the returns from these materials to farmers, timber growers and processors, contributing to the renewal of the coconut sector, and expanding employment and trade.



Decorative panel made from coconut veneer overlaid on softwood veneers Source: ²

Maximising the potential opportunities identified is dependent upon the establishment of a value chain with sufficient incentive at each step to ensure ultimate end-market demand for finished EWPs is able to be met by a stable,

¹ ACIAR Project FST/2019/128 Value Chain Analysis Draft Report: 26th April 2022

² *A guide to the rotary veneer processing of coconut palms* Robert McGavin, William Leggate, Henri

Bailleres, Gary Hopewell and Chris Fitzgerald © Australian Centre for International Agricultural Research (ACIAR) 2019 Decorative plywood panel made from coconut palm face veneers.

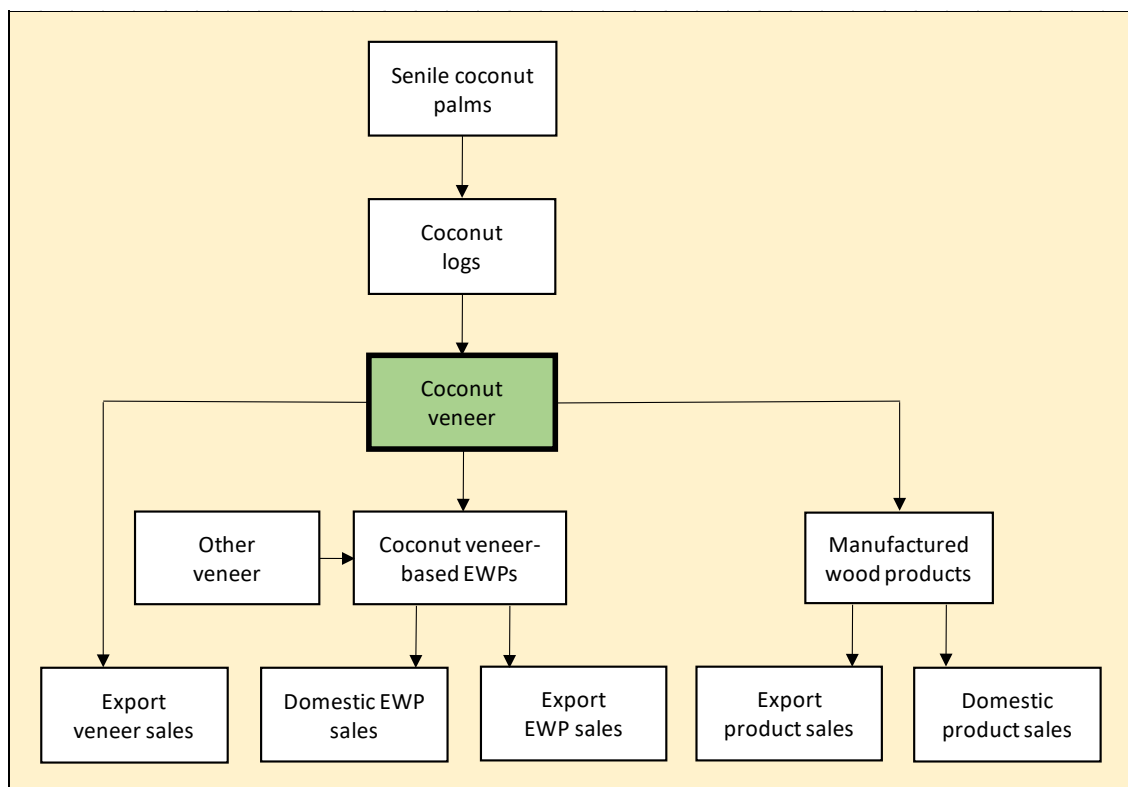
sustained supply of suitable coconut stems.

together attain a durable equilibrium in challenging circumstances.

This implies that felling, log removal, waste-management, replanting, transportation to processing facilities, primary and further levels of processing and manufacturing, grading, sale and distribution of end products must

Value Chain and Market Description:

The potential value chain for senile coconut palm stem processing is depicted below:



Source: Potential Coconut Wood Value Chain for EWPs,
M. Tabukovu, S. Tawake, D. Young

Supply Side: Quantification of the resource available remains inexact. Uncertainties regarding the total area of coconuts gives way to widely varying estimates of the overall size of the

resource varying from 18,000³ up to 65,000⁴ hectares.

In addition, varying stand densities (*i.e.* palms per hectare) as well as the age profile of standing stock and the degree of attrition due to cyclone damage, all act to reduce the accuracy of any available estimates.

Further considerations are the unknown percentage of stock which will be unusable by processors due to size, stem form, pest damage or other factors such as inaccessibility and other logistic constraints.

³ ; Fiji, Department of Agriculture, Economic Planning and Statistics Division. Report on the Fiji National Agricultural Census, 2009

⁴ Coconut Industry Development Programme (July 2017) Pacific Coconut Sector Value Chain Workshop, Section 5.1

Notwithstanding these limitations, there is general agreement among industry specialists that around 70% of Fiji's coconuts are grown in the three provinces of the Northern Division, with most of these on the islands of Vanua Levu and Taveuni in Cakaudrove Province.

This is made up of predominantly older, long-established freehold plantations intermixed with smaller *Mataqali* controlled holdings.

Almost half of the available coconut stems are located in Vuna district which is at the south-western end of Taveuni island, whilst the two existing rotary veneer operations capable of producing veneer and potentially able to process coconut wood are located on Vanua Levu, at Savusavu and Labasa.



Taking all the above factors into account, the preliminary value chain analysis undertaken by project FST/2019/128 suggests an indicative net figure of around 240,000 m³ of senile coconut logs could be available for processing over the next 10 years from Cakaudrove Province. This extrapolates out to approximately 430-460,000m³ of senile coconut logs

nationally, an as yet undetermined percentage of which will remain inaccessible on a commercial basis given the costs involved in exploiting the resource.

Of any volume processed, research trials have demonstrated, approximately 45% of the peeled stem is recoverable as usable veneer.

Demand Side: the requirement for senile stems suitable for processing is directly related to end-product demand. End-product demand for veneer-based products falls into two broad categories: dried sheet veneer (for further product manufacture), and manufactured veneer-based EWPs.

Market investigations indicate a modest level of demand for premium veneer and EWPs in the domestic market (furniture manufacture, wall panelling, door manufacture, top-end residential, commercial and resort fit-out). There are however, strong indications of interest in the product, provided that it consistently meets quality expectations.

As for international markets, there is confidence that providing prices are comparable with those of competitor products, premium grade coconut veneer and EWPs will find ready markets, not only in close-proximity markets such as Australia and New Zealand, but also in locations such as Japan, Middle East, and Europe.

Early market enquiry indicates that the commercial value of EWPs will be significantly enhanced with their transformation into products with demonstrated “green” credentials. By leveraging the unique visual appeal of coconut products and its established “clean, green” image, this may be where Fiji producers can maximise returns.

Importantly, for both domestic and international markets, effective market

development will be best achieved through prioritising prototype products which can be confidently presented to the market for consideration and evaluation.

Meanwhile, based on initial enquiries, it is considered highly probable that the total output of premium grade veneer and EWP would be easily matched, or even exceeded by demand.

The greater market related challenge for processors will likely be securing markets for lower-grade output, which is expected to constitute the larger volume of output. In this regard, Laminated Veneer Lumber (LVL) may offer opportunities, as may the domestic and regional islands market for wall and flooring materials suitable for use in low-cost dwelling construction.

Some such options are being explored by the FST/2019/128 project and may warrant further focused consideration once the quality profile of the veneer produced and product testing is better understood.



Example of coconut veneer multilaminar block

Source:⁵

Commercial Opportunities:

The potential value chain for coco-veneer production consists of a number of activities which have an economic value and are important to create a sustainable coco-veneer processing industry. These include:

- Felling
- Removal of logs to collection points
- On-farm waste-management
- Replanting
- Transportation to processing facilities
- Primary and further levels of processing and manufacturing, (log preparations, green veneer, dry veneer, products), grading
- Post-processing waste management
- Sale and distribution of veneer and EWPs.

The absence of any one of these activities compromises the integrity of the value chain. It is noted however, that a number of these activities are better regarded as secondary value chain opportunities, not being of a commercial scale which

warrants formal collaborative engagement with the FST/2019/128 project.

Consequently, while it is appropriate that every step in the value chain be considered through the lens of commercial opportunity, the key opportunity of scale rests in the transformation of stems into saleable veneer-based products. With this as the

primary focus, discussion on the secondary value chain opportunities is presented in Appendix 1.

Accurate quantification of the scale of this opportunity is limited by the data available. But, based on this information, processors based in Vanua Levu could have access to approximately 320,000 m³ of senile palm logs over the next 10 years.

⁵ A guide to the rotary veneer processing of coconut palms Robert McGavin, William Leggate, Henri Bailleres, Gary Hopewell and Chris Fitzgerald ©



Felled senile coconut stems awaiting conditioning prior and debarking

Source:

Working with the minimum equipment set-up required (1 x 2.4m spindle-less lathe with an input capacity of 60m³ per shift), this translates to processing of 12,000m³ of stems per year yielding approximately 5,400m³ of veneer per annum. The value of this is dependent upon quality mix, what EWP's are manufactured, and market prices.

At this level of processing, subject to there being sufficient demand, there would appear to be an opportunity for between 2-3 full-time coconut veneer specialist processors to draw on stocks from Vanua Levu for a period of approximately 10 years.

That said, one critical consideration is the state of local logistics. Within Vanua Levu, a number of regulatory and other factors conspire to limit trucks to maximum 12 tonnes gross weight. This means that the proximity of processors relative to raw material will be a significant determinant

in the cost of inputs, and ultimately the prices needed from the market to sustain a profitable processing operation.



Debarked and rounded coconut logs set on spindleless lathe ready for peeling into veneer.

Source: ⁶

A further important factor relates to Taveuni. Vuna district (south-western end of the island) holds almost half of the available senile coconut stems in Fiji. With no facilities to produce veneer or ply currently present on the island, there may be an opportunity here of appeal to investors keen to secure potentially exclusive access to a large volume of feed-stock. Any such development would also deliver significant social and economic benefits to this part of the country.

However, any intending investors would need to contend with the high initial capital costs involved in establishing a greenfield operation. Key here is

⁶ Source: ACIAR FST/2009/062 Development of advanced veneer and other products from coconut wood to enhance livelihoods in South Pacific communities DAF

addressing the predicted substantial costs of installing infrastructure for generating heat and steam, essential for conditioning stems prior to peeling, drying veneer and in the manufacture of many EWPs.

The alternative could be to fell and transport stems to a different island for processing. In this option, the challenge moves from capital costs to operational costs related to road and sea-freight and minimising stem degradation with delayed processing.

Project FST/2019/128 will continue to explore ways to overcome various cost and technical barriers that might limit investor appetite. Meanwhile, to advance the ambition of establishing capacity for coco-veneer and related EWP production, it is apparent that existing operators are better positioned to avail themselves of the opportunity at an early stage.

In doing so, a focus on producing high-margin products pitched to the premium end of the market (premium grade face veneers and "green" products) will enhance financial returns. However, it is expected that a considerable proportion of veneer output will be lower grade, where competition from other sources will be encountered.

Technical Considerations:

Technical: Processing of senile coconut stems through to veneer or EWP, such as plywood, involves multiple steps and the utilisation of a large assortment of specific equipment. The process is depicted in the diagram below. This demonstrates why existing plywood

manufacturers face a significantly lower investment threshold than a greenfield operation.

The technical parameters for processing have been addressed in considerable detail by the current and earlier ACIAR projects.⁷

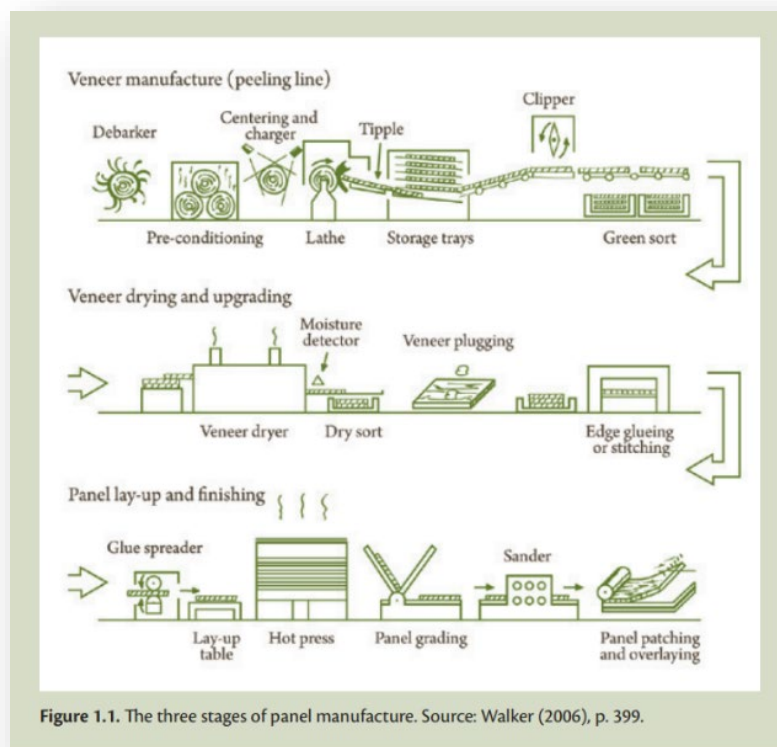


Figure 1.1. The three stages of panel manufacture. Source: Walker (2006), p. 399.

For the most part, equipment found in any standard plywood manufacturing plant can be used for manufacturing products using coconut veneer. However, trials identified challenges with the peeling of coconut palm stems due to their unique fibrous characteristics. Subsequently, the use of an appropriate spindle-less lathe

set-up with correct settings proved to be successful at various trial scales of operation and was identified as the preferred option for the log peeling process.

A variety of equipment options are available in the market. Information on

⁷ Reports are available via the Publications page in the ACIAR website

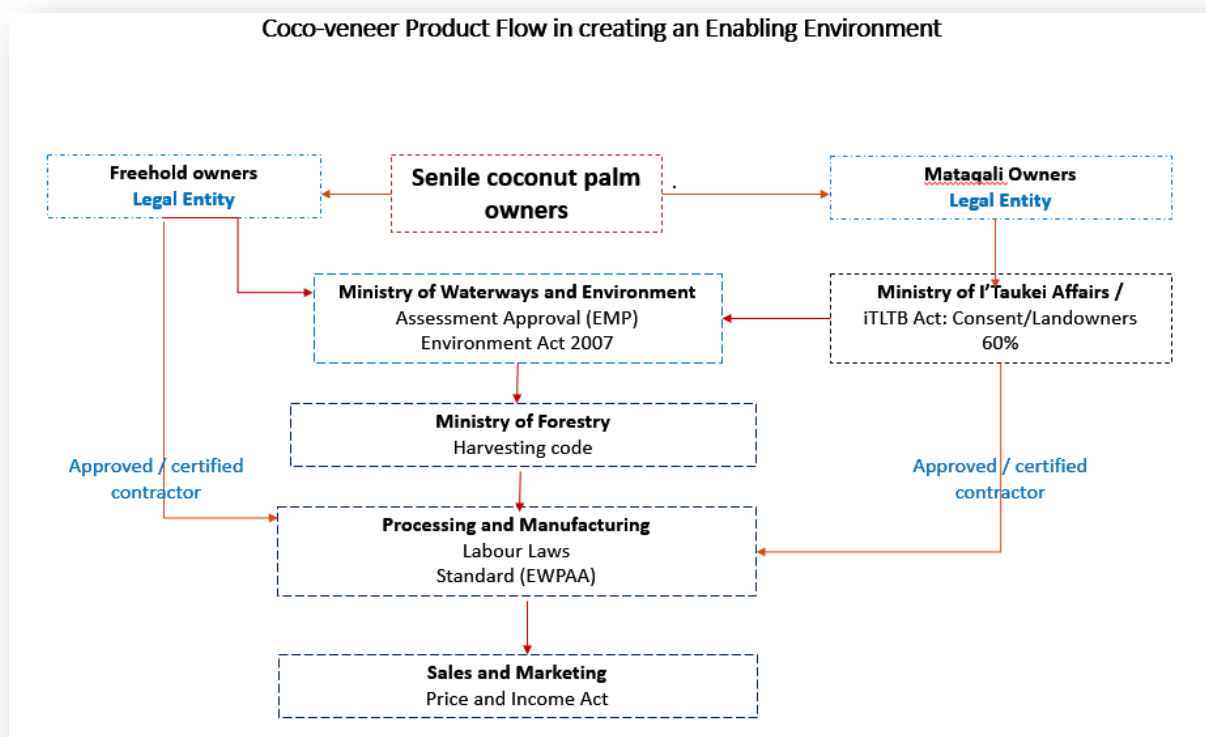
technical specifications and suppliers is available to interested parties. Further information on equipment requirements

can be found in the Financial Considerations section below.

Regulatory Considerations:

Exploitation of the senile coconut palm stock is subject to regulation by the Ministries of Agriculture, Forestry, Waterways and Environment and i'Taukei Affairs.

The diagram below provides an overview:



Source: M. Tabukovu

The need for regulatory certainty is recognised and considerable work has already been undertaken to identify and address the concerns of the various ministries involved.

Dialogue with relevant Ministerial officials has been extremely positive. The Ministries of Forestry and Agriculture are generally supportive of the harvesting of senile palms. To the extent that any regulatory control is necessary, then this

would more likely sit with Forestry as an addition/variation to its existing codes of practice.

For the prudent investor, an appropriate risk mitigation strategy would be to ensure that ahead of any financial commitment, formal acknowledgement of regulatory comfort or applicable parameters for senile coconut palm felling and processing was secured from all Ministries involved.

Due Diligence:

A Due Diligence process has been adopted to assist in qualifying, short listing, final selection and recommendation of 'best fit' private sector partners for Project FST/2019/128.

This process incorporates collection and analysis of information addressing the following:

1. Legal, reputation and operating principles

- a. Business history and stability;
- b. Relationship to veneer and timber products value chains and governments;
- c. Competing interests and the risk that these may compromise project outcomes;
- d. Values and ethics; and
- e. Legal or reputational risk.

2. Strategic and investment alignment with proposed project outcomes

- a. Business strategy regarding inclusive veneer and timber products value chains; and
- b. Approach to innovation.

3. Resources

- a. Capacity to co-invest, particularly in regard to public good outcomes;
- b. Capacity to scale up interventions;
- c. Expertise and skills;
- d. Linkages and leverage to other value chain members; and
- e. Access to finance.

4. Collaboration performance

- a. Track record in business partnerships e.g. joint ventures;
- b. Past participation in development/public good projects; and
- c. Business policy regarding intellectual property.

It is anticipated that all individuals or organisations indicating serious interest in partnering with the FST/2019/128 project maybe subject to the above due diligence process.



Financial Considerations:

With a number of elements yet to be fully appraised, any financial projections that might be made regarding the opportunity under consideration would need to include a number of assumptions. It is therefore not appropriate at this stage to include financial projections in this prospectus.

An example of this is end product pricing. While research on market prices for veneer and plywood products both within Fiji and several target markets has been undertaken, none of this specifically addresses the range of prices Fijian sourced coco-veneer might attract.

Further, there are no samples available to assist with essential market research / scoping activities. Price points and demand are yet to be established. Equally, it will not be until after several production

runs that there will be improved understanding of the output mix in terms of grade and quality, which in turn directly impacts average prices and potential revenues achieved.

Consequently, work to improve the understanding of costs and potential revenue streams under project FST/2019/128 will continue. This includes completion of the financial modelling component which aims to develop a comprehensive model taking into account the multitude of factors along the value chain which impact costs and revenues.

What can be provided at this stage are the broad financial parameters for potential producers of coconut veneer and related EWPs, derived from the work undertaken and reports of earlier ACIAR activities:

Estimated Resource Availability

Resource Assessment			Comments
Area of coconuts in Cakadrove Province (2018)	ha	10,300	From MOA survey
Older than 50 years in 2018	%	31	From MOA survey
Available to harvest in next decade	%	50	
Available to harvest in next decade	ha	5,150	
Average harvestable stems per ha	No	60	Range 40-70
Timber per stem:	m ³	0.74	
Length 15 m (6 x 2.5m billets)			Based on 2016 trials
Diameter 0.25 m			Based on 2016 trials
Timber per ha	m ³	44	
Total raw material available over 10 years		m³ 227,612	

Source; ACIAR Project FST/2019/128 Value Chain Analysis Draft Report: 30th May 2022

Processing Capacity: one 2.5 m spindleless lathe			
Lathe capacity	m ³ /shift	60	McGavin estimate
Capacity utilisation	%	80	
Timber processed	m ³ /shift	48	Gross volume before rounding
Shifts per year	No	250	
Timber processed per year	m ³ /year	12,000	
Area of coconuts harvested per year	ha	272	
Recovery rate (percent of gross volume)	%	45	Based on 2016 trials
Veneer produced	m ³ /year	5,400	

Reference Pricing:

The domestic market for plywood in Fiji offers a range of standard plywood products classified as either interior, exterior or marine, but are otherwise ungraded. There is little difference in retail prices of interior and exterior plywood prices, both of which average around FJD 2,070/m³ (ex. VAT) with a range from FJD 1,800 to FJD 2,700. Marine plywoods retail for FJD 3,200-3,277/m³ (ex. VAT). Fiji retail prices are generally lower than in Australia and New Zealand, with little product differentiation and a very limited offer of premium priced plywood products, other than marine ply. Allowing for a 30% retail margin, ex-mill prices for undifferentiated plywood products in Fiji are estimated to be around FJD 1,500-1,600/m³.

In Australia, retail prices for plywood products average AUD 3,360/m³ (ex. GST), equivalent to FJD 5,230/m³ which is 2.5 times the Fiji average. The Australian market is much more differentiated, with prices ranging between FJD 1,800 and FJD 10,300/m³. The undifferentiated products (mostly CD grade) at the lower end of the product range sell for little more than Fiji retail prices, and would not compensate for the costs of transport from Fiji to Australia. However, in the upper half of the range, AA through to BC grade products retail for between FJD 5,000 and FJD 10,000/m³ (ex.

GST). Well manufactured coconut plywoods could be expected to achieve prices in this range. The much higher prices would easily compensate for the cost of

transporting product to this market and suggest that ex-mill prices could be in the range of FJD 3,000 to FJD 6,000/m³.⁸

New Zealand prices are a little lower than Australia but with a similar price spread between the standard and premium grade products. Given the lower cost of shipping to New Zealand and the less stringent and costly biosecurity protocols, similar returns could be expected in this market.

Based upon this information, returns for coconut plywood manufacturers will be maximised by a focus on the higher end of the plywood markets in Australia, New Zealand and possibly other Pacific Rim countries. Products with single or double high-quality veneer faces using lower grade / cheaper mid layers can be reasonably expected to attract premium pricing in the market, on the proviso that quality consistently meets or exceeds expectations. The challenge for manufacturers will be in securing acceptable prices domestically or further afield for the volume of products that use the lower grade veneer that will also be produced.

⁸ *Plywood Market Assessment 2022 (D. Young / M. Tawake).*

Equipment Cost:

Information contained in the following tables was derived from a theoretical exercise undertaken by the FST/2019/128 project team to determine the possible capital costs involved in establishing an operational greenfield plant in South-East Queensland. This looked at producing green veneer, plus the additional costs of advancing to dry veneer capability.

The costs are in AUD, include the estimated costs of installation, but exclude land related costs. As such, the information is best regarded as indicative only and a useful guide to understanding the range of equipment required for a greenfield plant. In practice, shipping and installation costs in the context of a specific location in Fiji need to be factored in.



Green veneer sheet fed from spindleless lathe to a veneer clipper. Source:⁹

Item	Ind. Cost (AUD)
Water storage	82,500
Log steaming/ bathing chamber	75,000
Biomass boiler	3,150,000
Log docking saw	23,000
Log charger	7,100
Log conveyor	15,900
Log debarked/rounder	52,000
Waster chipper	230,000
Waste wood conveyor	20,700
Fuel bin for boiler	5,000
8-foot spindleless lathe	130,740
Veneer conveyor	20,700
Veneer clipper	58,030
Knife grinder	33,000
Control room	90,000
Veneer trolleys	10,000
Wrapping machine	17,250
Industrial bin	5,000
Forklift (2 nd hand)	30,000
Buildings (360m ²)	270,000
Total (Green veneer production)	4,379,350

Item	Cost (AUD)
Jet drier (small)	417,190

⁹ Unknown

Automatic feeder	69,000
Dry Veneer conveyor	20,700
Veneer trolleys	10,000
Forklift	30,000
Buildings (360m ²)	270,000
Total Additional for Dry Veneer	816,890

Environmental Considerations:

Direct environmental considerations related to the project arise primarily in the two areas detailed below.

Post-Harvest Waste Management:

Effective post-harvest waste management is required to address both the potential biohazard presented by the coconut rhinoceros beetle (CRB), and the appropriate disposal or re-purposing of large volumes of heads, offcuts and stumps.



It is in their own best interest that both large and small resource owners take ownership of both challenges, and earlier work undertaken with the support of ACIAR can provide significant guidance on both issues.¹⁰ Strategies can be adopted which limit the spread of CRB, and green waste can be processed as a soil

conditioner or used as biomass for power generation.

Processing Waste Management:

A number of environmental considerations arise with regard to the processing of coconut stems. Effective management strategies need to be considered for organic waste (offcuts, trimmings and saw dust). Use of this waste as biomass for power generation can be an effective means of addressing the issue. Attention must also be paid to any potential chemical waste related to timber treatment (if applicable) and glues; and petroleum products such as waste machine oils; as well as the appropriate storage and handling of fuel for power generation and heavy machinery.

Given the increased emphasis financiers place on the environmental credentials of projects under consideration, it is anticipated that intending collaboration partners will pay due attention to the environmental risks associated with their commercial activities.

¹⁰ Development of Advanced Veneer and Other Products from Coconut Wood to Enhance Livelihoods in South Pacific Communities - Final

Avenues for Support: Opportunities may exist for potential investors to attract external support for initiatives with positive environmental impacts. An example would be utilisation of a biofuel generator or boiler rather than a diesel power system. Further research on this is required but early enquiry indicates a variety of potential options exist from within and outside Fiji.

Risks:

As with any commercial endeavour, partners to this project will be exposed to a variety of risks. These include:

1. *Impediments to consistent supply of raw material:* Agribusiness supply chains are subject to disruptions caused by weather or other events, at times with short notice. This can particularly be the case when seeking access to senile palms on customary land.

Mitigation tactics include establishment of sufficient onsite stock of suitable logs to act as a 2-4-week buffer to cover unexpected breaks in supply.

2. *Quality Management:* One of the key challenges to be addressed from the outset for both financial and marketing reasons. Margins and market appeal will be maximised through close attention to consistent and appropriate quality.

This will require a pre-emptive approach to quality management rather than a reactive approach.

3. *Excessive exploitation of resource:* the longevity of the industry depends on the rate at which the resource is exploited.

The economics of the industry will change once stocks with ready access are fully utilised.



Conditioned and rounded logs awaiting peeling
Source¹¹:

4. *Waste management:* Due to the biohazard risks associated with pests, effective waste management is a high priority and stands as a potential risk to the initiative.

Waste management practices must mitigate spread of pests and optimise use of organic material.

5. *Equipment break-down / supply of spare parts and consumables:* Especially as Fiji will be entering the market as a new supplier,

¹¹ [ACIAR Coco-veneer Basic Equipment Operation - YouTube](#)

inconsistencies in supply could seriously damage project viability.

Partners will need to reflect this risk in their maintenance regimes and stock holdings of equipment spare parts, most of which will not be available locally.

mix of marketing and engineering innovation.

6. *Domestic competition:* the scale of the resource suggests that Vanua Levu could potentially host two to three processors running single lathe operations without excessive competition for raw material for at least 10 years or so. Viti Levu currently has no active veneer. plyboard processor, but this situation is expected to change with the re-emergence of a previous producer at some stage in 2023. Running a single lathe operation, it is believed that this would comfortably absorb the accessible stock of raw material locally.

On either island, the advent of an additional processor is likely to put pressure on stem prices as demand increases.

7. *End-product market competition:* Fiji-sourced coconut palm derived EWPs will be entering an international market already supplied by other processors / manufacturers, although not necessarily coconut-based products. The pressure here may be mitigated by delivering unique or bespoke products through a

Next Steps:

Recipients of this Prospectus who want further information or who wish to be considered for possible collaboration / partnership should approach the ACIAR FST/2019/128 Project team as soon as possible.

To progress beyond this point as a potential partner, the Due Diligence process should be undertaken. The process will be expedited by the timely provision of all required information.

Prospective partners which satisfy the due diligence requirements will be shortlisted and further discussions held with the Project team. This may also include initiation of discussions with potential financiers.

Positive indications regarding access to necessary finance will lead to the signing of a MoU / Letter of Intent / Business Services Agreement and formalisation of the relationship with the Project.

Working with the Project team, a detailed scope of activities and indicative timeline will be determined and initiated ahead of any formal engagement.

Progress will be monitored throughout the period of formal engagement.

Appendix 1

Other commercial opportunities

Secondary value chain opportunities are present throughout the supply chain. Some of these are well suited to small scale enterprises with limited access to capital, whilst others are more capital intensive and may be better suited to existing business operators.

Felling:

On both small and larger holdings, this activity can be undertaken by owners, or especially in the case of larger holdings, by contracted crews which would likely be supplied by an existing logging operator with capacity to haul logs as well. For smaller (Mataqali) holdings, there may be some opportunity for collaborative / shared resource endeavours.

In some situations, there may be added value in de-barking and log rounding being undertaken in-situ, prior to transport to a processor. This would ensure a lower percentage of waste material in transported stems. However, the merit of this is dependent upon access to cost-effective equipment, and the value the bark/residue (*e.g.* biomass for power generation at the processing plant).

On-farm Waste Management:

Effective on-farm waste management has been the subject of some earlier ACIAR

supported work, but will likely require ongoing intervention and research to fully understand the scope of any commercial enterprise related to it.

Biohazard containment related to the rhinoceros beetle is critical. Beyond that, transformation of waste into a viable form of organic matter for soil improvement is the next logical step.



There may also be a commercial opportunity based on waste and stump removal and processing into value-added products. Validation of the opportunity requires further research on options for transforming the waste into saleable products. Given the remoteness of plantations relative to markets of any scale, this research needs to include consideration of logistics costs on commercial viability.

At the same time, the potential for transforming waste into biomass for power generation to replace diesel powered generators can be explored.

Other potential uses include conversion to an activated carbon compound.

Replanting:

Replanting with suitable varieties is crucial to the revival and survival of the coconut sector. Production of seedlings might represent some degree of commercial opportunity, but this will be somewhat dependent upon the actions that various government departments take as well as the expectations of resource owners.



The Ministry of Forestry has indicated that coconut palm replanting may be covered under its 30 million trees in 15 years initiative. The Ministry of Agriculture may also have free coconut seedlings available. How this transpires in practice may differ between traditional larger scale plantations and the smaller Matakaali owned plantations.

Given the interest in revitalisation of the sector, notwithstanding the role government departments may play, any

entities with significant interest may consider partnering with the project. In this regard, it would be important to establish the level of financial resource such entities could commit to targeted investment.

Transport:

Provision of transport services will be critical to the success of the initiative. A number of logging contractors whose businesses have suffered as access to native forest resources has been curtailed, have indicated a strong desire to provide senile palm harvesting and transport services

Further Resources

https://www.youtube.com/watch?v=bP_I3KbN9dE

<https://www.youtube.com/watch?v=TTbyoisJQ1U>

A guide to the rotary veneer processing of coconut palms

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Further Information:

Further information is available by contacting:

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