ACIAR PROJECT FST/2019/128

# ENABLING ENVIRONMENT AND SUPPORTING FUNCTIONS REQUIRED FOR EFFICIENT OPERATION OF THE EWP VALUE CHAIN

*Coconut and other non-traditional forest resources for the manufacture of Engineered Wood Products (EWP)*

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## List of Acronyms

| Abbreviation | Definition |
|---|---|
| ACCF | Accident Compensation Commission of Fiji |
| ACIAR | Australian Centre for International Agricultural Research |
| AFAS | Australian Fumigation Accreditation Scheme |
| ATIF | Australian Timber Importers Federation |
| BAF | Biosecurity Authority of Fiji |
| BLP | Business Link Pacific |
| CEF | Commercial Engagement Fund (ACIAR) |
| EFL | Energy Fiji Ltd (formerly Fiji Electricity Authority) |
| EIA | Environment Impact Assessment |
| EMA | Environment Management Assessment |
| EWPAA | Engineered Wood Products Association of Australia |
| EWPs | Engineered Wood Products |
| FCCC | Fiji Commerce and Competition Commission |
| FCM | Fiji Coconut Millers Pte Ltd |
| FDB | Fiji Development Bank |
| FNPF | Fiji National Provident Fund |
| FNU | Fiji National University |
| FPCL | Fiji Ports Corporation Ltd |
| FPTL | Fiji Ports Terminal Ltd |
| FRCS | Fiji Revenue and Customs Service |
| FSC | Forest Stewardship Council |
| IHRDP | Integrated Human Resource Development Programme |
| LTA | Land Transport Authority |
| MCTTT | Ministry of Commerce, Trade, Tourism and Transport |
| MIMS | Ministry of Infrastructure and Meteorological Services |

| | |
|---|---|
| MOA | Ministry of Agriculture |
| MOF | Ministry of Finance |
| MOF | Ministry of Forestry |
| MOWE | Ministry of Waterways and Environment |
| MRMD | Ministry of Rural and Maritime Development |
| MTA | Ministry of iTaukei Affairs |
| MTC | Ministry of Trade and Commerce |
| NDP | Northern Development Programme |
| NES | National Export Strategy |
| OHS | Occupational Health and Safety |
| PHAMA | Pacific Horticultural and Agricultural Market Access Programme |
| SPC | Pacific Community |
| TLTB | iTaukei Land Trust Board |
| VAT | Value Added Tax |
| VTB | Valebasoga Tropikboards Ltd |

# 1. Introduction

This report contributes to Activity 4.3 under project FST/2019/128.

**Activity 4.3** Assess the enabling environment and supporting functions required for efficient operation of the EWP value chain.

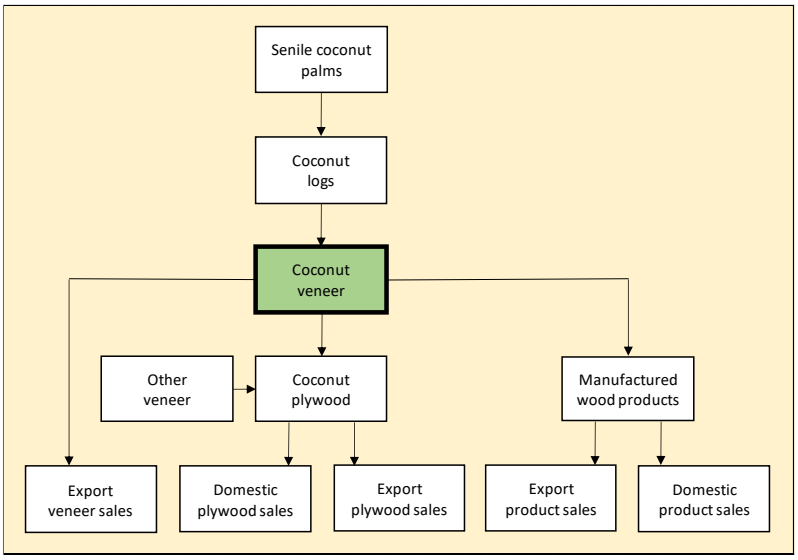
The report supplements an earlier value chain mapping report[1] on Activity 4.1. Both reports are intended to inform decision-making at all stages of the EWP value chain, particularly for private sector partners who are expected to invest in new equipment and processes. The reports will also support key policy decisions necessary to overcome any identified shortcomings in the enabling environment and supporting functions. They may also provide indications for other Pacific Island countries with large areas of senile coconut plantations, on the investment opportunities related to EWPs.

The report is based on work undertaken during 2022 by a team comprising Maika Tabukovu, Sefanaia Tawake and David Young. It included factfinding and consultations with stakeholders in Suva as well as extensive field work in the Northern Division. The team also worked with ACIAR's Commercial Engagement Fund (CEF) on the related project AGB/2021/172 "Defining priority commercialisation pathways, and potential private commercialisation partners for viable long-term commercialisation of products emerging from FST/2019/128".

# 2. Overview of the Potential Value Chain

Senile coconut stems are currently harvested in Fiji for production of furniture by Pacific Green at its Sigatoka workshop and showroom facility. There is currently no harvesting of coconut stems for production of EWPs although some trials have been undertaken at semi-commercial scale and produced promising results. Figure 1 therefore presents a picture of how a coconut EWP value chain might work, if it is proven to be commercially feasible, and the required investments are forthcoming.

**Figure 1: Potential Value Chain for Production of EWPs from Senile Coconut Stems**




[1] Young D, Tawake S and Tabukovu M (May 2022) Coconut EWP Value Chain Map. Coconut and other non-traditional forest resources for the manufacture of engineered wood products: ACIAR Project FST/2019/128

Figure 1 shows that the key node in the potential value chain is coconut veneer production. This is the critical activity which the upstream parts of the value chain (harvesting and transport of senile coconut palms) need to supply; and the source of EWPs that supply the downstream secondary processing, distribution, and marketing pathways. Figure 1 shows that there are a number of potential branches in the downstream parts of the value chain, whist the upstream activities in the supply or raw material for the veneer mill are more-or-less linear.

## 3. The Enabling Environment

Whilst all parts of the value chain depicted in Figure 1 need to function in order to create a viable coconut EWP industry, this is also dependent of a number of external factors, collectively termed the enabling environment. Annexes 1-8 describe the characteristics of the different aspects of the enabling environment as follows:

**Annex 1: Access to Resources**

- Land/raw materials
- Labour
- Technical expertise
- Energy
- Technologies
- Machinery and equipment
- Capital

**Annex 2: Access to Services**

- Financial services
- Business development services
- Technical services

**Annex 3: Legal and Regulatory Framework**

- Price controls
- Labour laws
- Occupational health and safety
- Environmental laws and regulations
- Indigenous affairs
- Transport regulations
- Product standards
- Codes of practice
- Gender and disability inclusion
- Import tariffs and duties
- Value added tax
- Biosecurity

- Sawmill licencing

**Annex 4: Policies and Institutions**

- Statutory bodies and agencies
- Government ministries

**Annex 5: Infrastructure**

- Roads
- Ports
- Electricity supply
- Water supply
- Telecommunications and data services

**Annex 6: Macro-Environment**

- Ease of doing business
- Taxation

**Annex 7: Industry Organisations**

- Saw Millers Assoication
- Fiji Crop and Livestock Council
- Tei Tei Taveuni

**Annex 8: Customers and End-users**

- Veneer and plywood manufacturers
- Building material wholesalers and retailers
- Timber manufacturers
- Builders
- Timber importers and distributors
- Home improvement retailers

## 4. Key Findings

Fiji has an established veneer and plywood industry based on both plantation and native forest timber resources. This suggests that there are unlikely to be any insurmountable constraints in the enabling environment for establishment of a coconut-base EWP industry. Moreover, dwindling supply of logs, especially from native forest, means that industry output is declining, processing facilities are under-utilised, and timber processors are looking for alternative sources of raw materials, including senile coconut stems.

However, there are some issues in the enabling environment that relate specifically to the use of senile coconut stems as feedstock for veneer and plywood manufacture, and these need to be considered in mapping the future of this potential new industry. These include:

- Uncertainties about the future supply of senile coconut stems for processing (Annex 1).
- The complexities of accessing coconut stems on customary (Mataqali) land (Annex 1).
- Sourcing supplies for Taveuni, in the light of electricity shortages and transport logistics (Annex 1).
- Access to capital among value chain actors to finance the necessary investments (Annex 1).
- The impact of price controls on veneer and plywood products in the domestic market (Annex 3).
- Concerns about the cost and time required for compliance with environmental laws and regulations (Annex 3).
- The lack of product standards for veneer and plywood products (Annex 3).
- The need to incorporate procedures for harvesting senile coconut plantations in the Forest Harvesting Code of Practice (Annex 3).
- Infrastructural constraints (roads, ports, electricity), particularly relevant for Taveuni.
- Uncertainties about the domestic and international markets for coconut veneer and plywood products.

## Annex 1: Access to Resources

| Element | Status | Implications |
|---|---|---|
| **Land/raw materials** | • There are significant uncertainties about the available stock of senile palms for harvesting.<br>• Best estimates suggest that the stock would be sufficient to supply one or two single-lathe processing facilities.<br>• Mahogany, pine and other lower value timber species are available for manufacture of EWPs to blend with coconut wood.<br>• Survey of coconut plantations proposed by MOA has not yet been conducted.<br>• There are 22 freehold estates growing coconuts, mostly in the southern coastal strip of Vanua Levu and on Taveuni.<br>• Coconut estates and mahogany plantations have been mapped.<br>• Estate owners on Vanua Levu and Taveuni are very keen to have their senile plantations harvested so that the land can be used for more productive purposes.<br>• Most estates are well serviced by roads east and west of Savusavu and also connecting to the cross-island road to Labasa.<br>• Mataqali landowners are also generally positive about the potential for harvesting senile palms. However careful consultations with communities are required to obtain their formal consent.<br>• Royalties are payable to Mataqali landowners for harvesting of native forests, as specified in the Forest Decree of 1992. Whilst these royalties do not apply to coconuts, landowners expect to be compensated for harvesting of senile palms on Mataqali land.<br>• Arrangements for harvesting on Mataqali land are likely to be more complex, and require endorsement by statutory bodies responsible for indigenous affairs and customary land administration. Each negotiated logging contract will only cover a small area of plantation. | • Uncertainties about the availability of senile palms for harvesting presents a significant risk and may constrain investment in coconut EWP production.<br>• Utilisation of other timber species in production of plywood products could be important to offset uncertainties about the supply of coconut wood.<br>• Contractual arrangements for harvesting senile palms on the freehold estates are likely to be relatively straight forward and provide an opportunity to harvest relatively large volumes in a concentrated area.<br>• Both freehold and mataqali landowners are only prepared to deal with people they know and trust.<br>• Timber processors and logging contractors are therefore likely to focus, initially at least, on sourcing logs from the freehold estates along the south coast of Vanua Levu, east and west of Savusavu. |

| Element | Status | Implications |
|---|---|---|
| | • Both freehold estate owners and mataqali landowners report negative experiences in supplying coconut stems to another processor. | |
| **Labour** | • Seasonal employment schemes in Australia and New Zealand are creating some labour shortages in rural areas, although these are not as acute as in some other Pacific Island Countries.<br>• The closure of Fiji Pine's plywood mill in 2019 released around 100 skilled timber workers, many of whom have been re-employed by VTB and Long Investments.<br>• Some issues with cost of labour in agricultural sector – usually about $30/day, some asking for more.<br>• The national minimum wage was set at FJD 3.67/hour in October 2022.<br>• A coconut EWP industry will require improved labour skills in palm felling/harvesting, log peeling, drying etc. | • Salaries and conditions need to be competitive.<br>• Need to do some operator training when specialised (spindleless) lathes installed.<br>• Possible labour shortages suggest that logging and processing operations need to be fully mechanised. |
| **Technical expertise** | • Logging operators are experienced in harvesting and transporting timber.<br>• Two companies in Vanua Levu (VTB and Long Investments) have technical expertise in production of veneers and plywood products.<br>• Whilst the equipment and techniques for peeling coconut logs are well defined, the mills will need to develop their practical skills in utilising these on a commercial scale. | • Technical training and capacity building will be required during the early stages of commercialisation. |
| **Energy** | • Overall, 65% of Fiji's electricity comes from renewables (mainly hydro), but generation on Vanua Levu and Taveuni is mainly from diesel fuel.<br>• On Vanua Levu, reliable electricity supplies are available from the electricity authority, Energy Fiji Limited (EFL).<br>• Taveuni experiences significant electricity shortages, but a new hydro scheme is in the pipeline. www.hydrotaveuni.com<br>• Veneer and plywood mills use timber residues to generate steam for heating and drying. | • Apart from Taveuni, energy supplies are generally adequate.<br>• It would be preferable to transition to renewables in order to produce a "green/low carbon" product. |
| **Technologies** | • Adequate development work was completed under previous ACIAR projects, but not fully tested at commercial scale. | • Technologies need commercial application and fine tuning at commercial scale. |

| Element | Status | Implications |
|---|---|---|
| **Machinery and equipment** | • The two existing plywood manufacturers have most of the equipment needed to produce coconut veneers but need to purchase spindleless lathes and/or log conditioning (heating) equipment.<br>• Logging contractors have all of the machinery and equipment for harvesting coconut stems. | • Only two of Fiji's timber millers are close to being suitably equipped to produce coconut veneers and plywoods.<br>• There are no suitably equipped facilities on Taveuni. |
| **Capital** | • Investment in coconut EWP production carries some risk due to uncertainties about the availability of raw material, and market demand for the finished product.<br>• Both of the two plywood manufacturers are considering investment in coconut EWP suitable equipment but so far only one has ordered the necessary equipment.<br>• There are a number of national schemes offering finance for certain types of investment. These are detailed in the Ministry of Forestry's Forestry Business Guide 2021-22 and include:<br>  ○ The National Export Strategy (NES) which provides grants to exporters.<br>  ○ The Integrated Human Resource Development Programme (IHRDP).<br>  ○ The Northern Development Programme (NDP) which offers grants of FJD 100k-FJD 1.0 million to help improve rural livelihoods in the Northern Division.<br>  ○ The Ministry of Agriculture offers support for coconut replanting.<br>  ○ Fiji Development Bank (FDB) provides loan finance and advisory support.<br>  ○ The Import Substitution and Export Finance Facility operated by the Reserve Bank.<br>  ○ The COVID-19 Recovery Credit Guarantee scheme<br>• The Fijian Affairs Trust Fund managed by the Fijian Affairs Board can provide capital assistance to iTaukei individuals or enterprises. | • International sources of capital to be further elaborated in 2023. |

| Element | Status | Implications |
|---|---|---|
| | • There are a number of internationally funded investment support facilities, including those labelled as “climate finance” but these generally involve complex/detailed project design and application procedures.<br>• Financing needs and opportunities for sourcing international funding will be further explored in 2023 under Activity 4.5. | |

## Annex 2: Access to Services

| Element | Status | Implications |
|---|---|---|
| **Financial services** | • Fiji's financial services sector is generally well developed but cautious about supporting start-ups or high-risk ventures.<br>• Venture capital finance is not readily available. | • Applications for finance need to be supported by well-developed and documented business plans. |
| **Business development services** | • Accountancy, taxation and management consultancy services are readily available and used by the corporate sector.<br>• The NZ-supported Business Link Pacific (BLP) programme (Business Link Pacific) has trained and accredited a number of business development support providers targeting the SME sector in Fiji.<br>• The Fiji Affairs Board can assist and support business development and training for iTaukei.<br>• ACIAR's Commercial Engagement Facility has developed an investment prospectus for the coconut-based EWPs.<br>• PHAMA Plus provides assistance on export market access.<br>• FDB provides business advisory services to its customers.<br>• ICT support is readily available | • The availability of business development services is not considered to be a significant constraint on the development of the EWP industry. |
| **Technical services** | • Veneer/plywood mills know how to operate and maintain the requisite equipment.<br>• Quality standards for EWPs are under preparation but the industry will need some technical support to familiarise and adopt. | • Awareness and capacity building is needed for adoption of the forthcoming quality standards. |

## Annex 3: Legal and Regulatory Framework

<table>
<tr><th>Element</th><th>Status</th><th>Implications</th></tr>
<tr><td>Price controls</td><td>
<ul>
<li>Fiji Commerce and Competition Commission (FCCC) administers price controls for hardware items including plywoods.</li>
<li>FCCC specifies maximum markups by importers, wholesalers and retailers as follows:
<table>
<tr><th>Timber Products</th><th>Importer</th><th>Wholesale</th><th>Retail</th></tr>
<tr><td>Imported</td><td>8%</td><td>5%</td><td>15%</td></tr>
<tr><td>Local</td><td>-</td><td>10%</td><td>20%</td></tr>
<tr><td>Plywood</td><td></td><td></td><td></td></tr>
<tr><td>Imported</td><td>8%</td><td>8%</td><td>15%</td></tr>
<tr><td>Local</td><td>-</td><td>8%</td><td>15%</td></tr>
</table>
Source: Fiji Government Gazette November 2022</li>
<li>Price controls are announced in the Government Gazette and cover basic food items, cement, gas, building supplies etc.</li>
<li>Prices are updated from time to time. Details are available from the FCCC website. Contact Us – Fijian Competition & Consumer Commission (fccc.gov.fj)</li>
</ul>
</td><td>
<ul>
<li>Price controls apply only to the domestic market, suggesting that exports may be a more attractive option.</li>
<li>Official price controls on plywood in Fiji results in much lower prices for these products in Fiji compared to Australia, New Zealand and Europe. The price controls also mean that most imported plywood products available on the local market are of lower grades.</li>
</ul>
</td></tr>
<tr><td>Labour laws</td><td>
<ul>
<li>The former government announced that the national minimum wage would be increased by 9% to FJD 4.00 per hour in 2023.</li>
<li>Workers Compensation insurance is mandatory – 1% of gross salary. Goes to Fiji Accident Compensation Commission.</li>
<li>Details available on Ministry of Employment, Productivity and Industrial Relations. Ministry of Employment, Productivity & Industrial Relations</li>
<li>Employers and employees are required to contribute 10% and 8% respectively of remuneration to the Fiji National Provident Fund (FNPF)<br>FNPF – Securing your future (myfnpf.com.fj)</li>
</ul>
</td><td>
<ul>
<li>Compliance with labour laws not considered to be onerous, but labour availability and skill issues are a growing concern – see comments under Access to Resources: labour and technical expertise.</li>
</ul>
</td></tr>
<tr><td>Occupational health and safety (OHS)</td><td>
<ul>
<li>Logging and timber processing are high risk activities requiring rigorous application of OHS standards.</li>
</ul>
</td><td></td></tr>
</table>

| Element | Status | Implications |
|---|---|---|
| | • There are no specific standards or OHS protocols for the timber industry. Companies may formulate their own standards that comply with the Health and Safety at work Act 1996.<br>• Compliance with OHS standards in timber mills and logging operations could be improved. | |
| **Environmental laws and regulations** | • Production of coconut veneer in existing mills is covered by their current environmental permits and licences.<br>• Logging operations are subject to environmental approvals which require an Environment Management Assessment (EMA), and in some cases an Environment Impact Assessment (EIA).<br>• The EMA/EIA has to be completed at the expense of the logger and/or landowner and can take some time to complete and approve.<br>• Timber mills and loggers complain about the cost and time taken to obtain environmental approvals from the Ministry of Waterways and Environment (MOWE). www.mowe.gov.fj | • Environmental approvals are considered by loggers and millers to be a major impediment to doing business, especially where harvesting native forest is concerned.<br>• Harvesting senile coconuts is not expected to present any insurmountable challenges in relation to environmental laws and regulations. |
| **Indigenous affairs - TLTB** | • As the custodian of native land, the iTaukei Land Trust Board (TLTB) has to approve everything that happens on Mataqali land. Standard procedures apply. TLTB - Home<br>• 60% of landholders must give their consent for coconuts to be harvested on Mataqali land.<br>• Approval is not required for registered leases – similar to freehold. | |
| **Transport regulations – land and sea** | • The Land Transport Authority (LTA) imposes load limits for logging trucks. These are very unpopular and are considered unreasonable by logging contractors. https://www.lta.com.fj/weight-limits<br>• Current load limits are approximately one tonne per wheel: 12 tonnes for a 12-wheel truck and 9 tonnes for a 10-wheeler – these are well below the limits that apply in Australia.<br>• Some bridges also have load limits.<br>• There are no specific regulations for sea transport of logs or timber products. These are covered by the general maritime regulations. | • Truck road limits suggest that a single-lathe veneering unit processing about 48$m^3$ of coconut stems per shift would require around three 12 tonne loads per day (assuming average log density of 700 $kg/m^3$).<br>• The load limits are considered to be restrictive for all logging and transporting operations and are not specific to coconuts. |

| Element | Status | Implications |
|---|---|---|
| **Product standards** | • Fiji does not have official standards for veneers and plywoods, so there is no legal basis of control of product quality – neither domestic, imported or exported products.<br>• The Australian and New Zealand standards are currently used in some circumstances but are not officially endorsed. Compliance is voluntary and is only applied to exports.<br>• There is some activity in collaboration with the Ministry of Trade and Commerce (MTC) and the Ministry of Forestry (MOF) to prepare product standards for Fiji, based on the Australian and New Zealand standards, which may be officially approved and gazetted. | • The creation and enforcement of product standards should limit the flow of low-quality imported plywoods on the market. |
| **Codes of practice** | • All timber harvesting operations in Fiji are required to be compliant with the Fiji Forest Harvesting Code of Practice (Second Edition, 2013) – see Annex 9.<br>• However this does not make specific provisions for harvesting coconut plantations.<br>• It is proposed to develop specific guidelines for coconut logging in 2023 which could be converted to a Code of Practice if required. This will include a grading system for coconut logs (see Annex 10) and selection criteria for senile coconut palms.<br>• Forest Stewardship Council (FSC) certification systems apply to Fiji Pine and hardwoods, but there are no protocols for FSC certification of coconut wood products.<br>• If available, FSC certification may be advantageous in marketing coconut-based EWPs. | |
| **Gender and disability inclusion** | • Traditionally low rates of female participation exists in Fiji's timber harvesting and milling – to be further elaborated under Activity 5: Social Outcomes:<br>  ○ 5.1 Establish a set of principles to promote gender equity and women's empowerment.<br>  ○ 5.2 Opportunities and action plans for promoting gender equity and empowerment are included in conversion and product manufacturing protocols. | |

| Element | Status | Implications |
|---|---|---|
| | ○ 5.3 Identify opportunities within the value chain to empower women and promote gender equity.<br>○ 5.4 Examine potential for gender balanced participation in the Fiji forest products industry more broadly. | |
| **Import tariffs and duties** | • Fiji Revenue and Customs Service (FRCS) levies tariffs on imported wood and timber products. www.frcs.org.fj<br>• The general tariff rate on processed wood products, processed and un-processed is 5% plus 9% VAT.<br>• For all veneer and plywood products the corresponding rates are 32% and 9%. | • The relatively high (32%) import tariff on veneer and plywood provides the domestic veneer/plywood industry with a significant level of protection against imported products. |
| **Value Added Tax (VAT)** | • All imports and domestic sales of wood products incur 9% VAT.<br>• Exports of these products is VAT free. | • VAT exemption on exports favours exports over domestic sales. |
| **Biosecurity - Fiji** | • Any export requires a permit from the Biosecurity Authority of Fiji (BAF) certifying compliance with the biosecurity regulations of the importing countries. Home - Biosecurity Authority of Fiji (baf.com.fj)<br>• Fiji has established biosecurity protocols for export of timber products to Australia, New Zealand and USA, as well as Dominican Republic (for mahogany) and Japan and China (for woodchips and raintree timber).<br>• MOF also provides export licences for timber products once BAF has issued an export certificate.<br>• Timber product exports generally have to be fumigated by an accredited fumigation operator. Accreditation comes under the Australian Fumigation Accreditation Scheme (AFAS).<br>Australian Fumigation Accreditation Scheme - DAFF (agriculture.gov.au)<br>• Fumigation must comply with AFAS Methyl Bromide Fumigation Standard Version 2.3, August 2015. There are three master trainers for AFAS in Fiji.<br>• The Forestry Department issues import permits for all timber products, which are generally required to be fumigated with Methyl Bromide. | • Export of coconut veneer and plywood products should initially target markets with established biosecurity protocols, viz Australia, New Zealand and USA. |
| **Biosecurity – importing countries** | • Need to develop export pathways/protocols for export to countries other than Australia/NZ/USA, to be approved by importing country – this can take many years. | |

| Element | Status | Implications |
|---|---|---|
| **Sawmill licencing** | • All sawmills have to be licenced. Licences are issued by the Conservator of Forests and have to be renewed annually.<br>• Licences are subject to OHS clearance by the Ministry of Employment, Productivity and Industrial Relations under the Health and Safety at work Act 1996.<br>• Sawmill licences are also conditional upon issuance of a Waste Disposal Permit by MOWE. | |

## Annex 4: Policies and Institutions

| Element | Status | Implications |
|---|---|---|
| Accident and Compensation Commission of Fiji (ACCF) https://accf.com.fj | • Administers compulsory workers compensation insurance scheme. | |
| Biosecurity Authority of Fiji (BAF) https://baf.com.fj | • Issues phytosanitary certificates for exports where this is required by the importing country.<br>• For timber products this may involve inspection and fumigation. | |
| Energy Fiji Limited (EFL) – formerly Fiji Electricity Authority https://efl.com.fj | • Provide efficient and cost-effective power supply to domestic and commercial electricity users | |
| Fiji Coconut Millers Pte Ltd (FCM) https://www.coconut.com.fj | • Parastatal company that operates a coconut oil mill at Savusavu<br>• Buys whole coconuts from growers | |
| Fiji Competition and Consumer Commission (FCCC) https://fccc.gov.fj | • Administers price controls on timber products and determines electricity tariffs. | |
| Fiji Revenue and Customs Service (FRCS) https://frcs.org.fj | • Statutory organisation under the Ministry of Economy<br>• Sets customs and revenue rates and policies | |
| iTaukei Land Trust Board (TLTB) https://itlb.com.fj | • Statutory trust to control and administer iTaukei land on behalf of its indigenous owners.<br>• Oversees commercial use of iTaukei land through issuing and registering leases of such land.<br>• May require issue of licences for harvesting of senile palms on iTaukei land. | |
| Land Transport Authority (LTA) https://lta.com.fj | • Vehicle registration, driving licences and load limits.<br>• Load limits restrict the number of logs that can be carried on trucks. | |

| Element | Status | Implications |
|---|---|---|
| Ministry of Agriculture (MOA) https://agriculture.gov.fj | • Responsible for agricultural sector policy.<br>• Research and extension support for coconut growers.<br>• Agricultural census and statistics. Proposed to undertake a coconut survey in 2022, but this has not been completed.<br>• Breeding hybrid coconuts – at Mua Research Station on Taveuni.<br>• Raising coconut seedlings (hybrids and Fiji tall varieties) and free distribution to growers for replanting. | |
| Ministry of Economy https://economy.gov.fj | • Responsible for providing economic and financial advice to Government including management of the economy consistent with the Government's macroeconomic and financial objectives. Key policy instruments include:<br>  ○ Five-Year & 20-Year National Development Plans<br>  ○ Green Growth Framework<br>  ○ National Climate Change Policy | |
| Ministry of Employment, Productivity and Industrial Relations | • Incorporates the National Occupational Health and Safety Division<br>• Administers the 1996 Health and Safety at Work Act (HASAWA | |
| Ministry of Forestry (MOF) https://forestry.gov.fj | • Responsible for forestry and timber sector policies.<br>• Undertakes research on coconut veneer, plywood and related products.<br>• Issues logging licences for coconut stem harvesting – subject also to EIA approval from MOWE.<br>• Inspects timber products for the purpose of issuing export licences.<br>• MOF provides a forestry business guide which details all licencing requirements, tax and duty concessions and financial assistance schemes for forestry and timber industry businesses. | |
| Ministry of Infrastructure and Meteorological Services (MIMS) https://mims.gov.fj | • Responsible for Construction and maintenance of all transport infrastructure.<br>• Transport Department has been transferred to the Ministry of Commerce, Trade, Tourism and Transport (MCTTT) https://mctt.gov.fj | |

| Element | Status | Implications |
|---|---|---|
| Ministry of iTaukei Affairs (MTA) https://www.itaukeiaffairs.gov.fj/ | • Preservation of Fijian culture and economic and social development of indigenous Fijians.<br>• Oversees Provincial Offices and District and Village Councils.<br>• Provincial Offices need to be consulted on any proposals to harvest coconut stems on mataqali land. | |
| Ministry of Justice https://justice.gov.fj | • Operates companies registry – digital since 2020. | |
| Ministry of Rural and Maritime Development (MRMD) www.ruraldeve.gov.fj | • Administers freehold coconut estates.<br>• Able to coordinate meetings with freehold coconut estate owners.<br>• Includes Maritime Safety Authority of Fiji Maritime Safety Authority of Fiji (msaf.com.fj) | |
| Ministry of Waterways and Environment (MOWE) https://mowe.gov.fj | • Responsible for Environmental policies, legislation and regulations.<br>• Oversight and approval of environmental permits including Environment Management Assessment (EMA) and Environment Impact Assessment (EIA). EMA is a general assessment report and EIA is a full environmental screening process.<br>• EMA and probably EIA will be required for logging of senile coconut plantations.<br>• May require an environmental bond to be lodged before approval is given to log. | |

## Annex 5: Infrastructure

| Element | Status | Implications |
|---|---|---|
| **Roads** | • Road network managed by the Fiji Roads Authority<br>• The main road system on Vanua Levu is generally good, but is limited in extent and quality on Taveuni. All roads and some bridges are subject to load limits.<br>• Road transport of timber (and other items) is subject to load limits which are considered by the logging contractors to be particularly onerous and costly.<br>• Harvesting coconut stems on freehold estates will use internal tracks, which may require some upgrading.<br>• Logging on Mataqali land will generally require logging tracks connecting plantations to main or secondary roads.<br>• These tracks will need to be carefully constructed to avoid damage and will require consent from the 60% of the landholders under the logging agreement. | • The road network on Vanua Levu and Taveuni is critical to the harvesting and transport of senile coconut stems.<br>• Road access has a major impact on the spatial distribution of coconut wood supply. |
| **Ports** | • The smaller domestic ports are operated by the Fiji Ports Corporation Ltd (FPCL), and the two international ports (Fiji and Lautoka) are operated by Fiji Ports Terminal Ltd (FPTL) – both are PPPs.<br>• Roll-on-roll off ferry currently operates twice weekly between Taveuni and Savusavu and can accommodate timber trucks.<br>• Logs could also be transported to Savusavu by barge but wharf loading facilities are limited. | • Wharf facilities will be an issue if coconut logs sourced from Taveuni.<br>• International container port facilities are adequate for export of containerised timber cargoes. |
| **Electricity supply** | • Timber processing facilities on Vanua Levu have adequate electricity supply from Energy Fiji Limited (EFL) - formerly FEA.<br>• On Taveuni there is currently a major shortage of electricity, especially on the south-eastern end of the island where most of the senile coconuts are located.<br>• Any processing to be undertaken on Taveuni would need to use self-generated electricity until the proposed Taveuni hydro-power project is in place. | • Electricity supply is a significant constraint to coconut wood processing on Taveuni. |

| Element | Status | Implications |
|---|---|---|
| **Water supply** | • The existing processors in Labasa and Savusavu use the town water supplies.<br>• Production of veneers and plywood does not consume large volumes of water, except in the log conditioning (hot water soaking/steaming) part of the process. | |
| **Telecommunications and data services** | • Services are generally satisfactory and improving. | |

## Annex 6: Macro-Environment

| Element | Status | Implications |
|---|---|---|
| **Ease of doing business** | • The World Bank's ease of doing business index (now discontinued) ranked Fiji in the mid-range of countries along with Samoa, Tonga and Vanuatu. Solomon Islands and PNG are somewhat lower, and Kiribati much lower.<br>• Fiji was ranked lower than average for the following criteria:<br>  ○ Starting a business<br>  ○ Dealing with constrution permits<br>  ○ Registering property<br>  ○ Paying taxes<br>  ○ Enforcing contracts.<br>• Requirements and procedures for establishing and operating a forestry business are detailed in the Forestry Business Guide 2021-22. | • Nationally owned businesses know how to navigate the complexities of doing business in Fiji.<br>• However potential foreign investors may be deterred by some aspects of doing business in Fiji.<br>• |
| **Taxation** | • The forestry and timber sectors enjoy some taxation concessions as detailed in the Forestry Business Guide. These are complex and subject to frequent changes. Current concessions include:<br>  ○ Accelerated depreciation allowances for buildings constructed for agriculture, fisheries and forestry.<br>  ○ Export income deductions for agriculture, fisheries and forestry of 90%, compared to 60% for other industries.<br>  ○ Income tax and stamp duty concessions for SMEs with turnover under FJD 500,000.<br>  ○ Income tax exemptions for new ventures established in the Northern Division – including Vanua Levu and Taveuni.<br>  ○ Income tax exemptions for any new activity in commercial agricultural farming and agro-processing – not clear if this includes forestry and timber processing.<br>• All machinery, equipment and materials used for manufacturing can be imported duty free under Concession 290 of the Customs and Tariff Act.<br>• Businesses located on Vanua Levu and Taveuni are eligible for tax holidays as follows:<br>  ○ Investments above FJD 250,000 – five years | • |

| Element | Status | Implications |
|---|---|---|
| | ○ Investments of FJD 1-2 million – seven years<br>○ Investments of over FJD 2.0 million – 13 years | |

## Annex 7: Industry Organisations

| Element | Status | Implications |
|---|---|---|
| Sawmillers Association | • Represents sawmiller's interests, mainly in the mahogany sector.<br>• Sawmillers are financial members and logging companies and timber processers are associate members. | |
| Fiji Crop and Livestock Council (FCLC) https://fclc.org.fj | • Aims to raise the profile of farmers involved in crops and livestock production. 60,000 registered farmers.<br>• Apex forum for advocacy and key services to the agricultural sector.<br>• Umbrella organisation for 17 different commodity/industry groups including Coconut Producers and Millers | |
| Tei Tei Taveuni | • Farmer organisation in Taveuni which includes many members who are coconut growers. | |

## Annex 8: Customers and End-Users

| Element | Status | Implications |
|---|---|---|
| **Veneer and plywood manufacturers** | • The Fiji Sawmillers Association represents the interests of Fiji timber enterprises at all stages in the value chain from loggers to retailers. The key challenges identified by the Association include supply of logs for processing and shortages of qualified staff.<br>• Two active veneer and plywood manufacturers: VTB (Labasa), and Long Investments (Savusavu), both on Vanua Levu.<br>• Houlin Fiji Ltd (a sister company of Long Investments) does log peeling at its Dreketi (Vanua Levu) mill but does on produce plywood.<br>• Taiwan Timber in Dreketi has a log peeler but it is not currently in use.<br>• A plywood manufacturing facility on Viti Levu operated by Ply Fiji was destroyed by fire and has not yet been re-built. | |
| **Building material wholesalers and retailers** | • There are a number of wholesalers and retailers who offer local and imported EWPs and are potential buyers of coconut-based EWPs. These include:<br>  ○ Vinod Patel www.vidondpatel.com.fj<br>  ○ R C Manubhai Ltd www.rcmanubhai.com.fj<br>  ○ Kasabias Industries<br>  ○ G M R Muhammad and Sons Ltd www.gmr.com.fj<br>  ○ Carpenters Hardware www.carphardware.com.fj<br>  ○ Delta Timber Supplies<br>• Wholesale and retail prices for plywood products in Fiji are about half of the price for comparable products in Australia and New Zealand. | |
| **Timber manufacturers** | • ACIAR's Commercial Engagement Fund (CEF) undertook a study of commercialisation pathways for coconut EWPs[2].<br>• The study identified a number of timber manufacturers and joineries that are potential buyers of coconut veneer and plywood products | |

[2] Tawake s. (July 2022) Field Trip Technical Report – CEF Project EWP Furniture and Joinery Manufacturers Survey. Coconut and other non-traditional forest resources for the manufacture of EWP.

| Element | Status | Implications |
|---|---|---|
| | • A total of 43 furniture and joinery manufacturing workshops were visited and interviewed. Total plyboard utilisation by these workshops was estimated to be around 15,000 $m^3$ per annum. | |
| **Builders** | • Fiji has many building companies which are potential customers for coconut EWPs.<br>• The best prospective customers are those specialising in high end housing and tourist resort construction and fit-outs. | |
| **Timber importers and distributors – Australia and NZ** | • Australia and New Zealand have a number of timber importers and distributors who are potential customers. These supply the building industry directly as well as the major home improvement retailers:<br>• In New Zealand these include:<br>  ○ Independent timber merchants (ITM) - 90 stores in NZ;<br>  ○ Place makers;<br>  ○ Robert Grice<br>  ○ J.Scott & company<br>• In Australia the Australian Timber Importers Federation (ATIF) represents the business interest of timber and wood-based importing and wholesaling companies. https://atif.asn.au<br>• ATIF includes more than 20 member companies, each with a large range of products on offer. | |
| **Home improvement retailers** | • The large homewares retailers obtain their own supplies of timber products from domestic and foreign suppliers as well as purchasing from the importers/distributors<br>• Bunnings is the market leader in both Australia and New Zealand. The list of EWPs on offer is extensive and can be accessed from the websites https://bunnings.com.au and https://bunnings.co.nz<br>• No coconut wood products are stocked by the Australian and New Zealand home improvement retailers. | |

## Annex 9: Forest Harvesting Code of Practice

**Box 1: Fiji Forest Harvesting Code of Practice**

- The Code applies to all harvesting operations in Fiji in conjunction with any wood-sales agreement between the owner(s) of wood resources, the buyer(s) and the licensing authority (Forestry Department).
- The Code prescribes desirable practices aimed at protecting the forest environment, its assets and its users, while allowing the execution of economically viable operations within acceptable safety standards.
- The provisions of the Code are legally binding on all parties and individuals involved in marking, felling, extracting, loading and hauling wood and wood products from all forests in Fiji.
- The Code must be used in conjunction with the Harvesting Licence Procedures issued by the Forestry Department, which lists the processes involved in acquiring a Forest Harvesting Licence.
- The Code governs the operational phase of the Harvesting Licence Procedures for both plantations and indigenous forests. All harvesting operations must be licensed and therefore must comply with the relevant provisions of the Code. This includes any harvesting by portable sawmills, fuel wood collectors etc within the area covered by the Harvesting Plan.
- The Code aims to optimise the utilisation of forest resources in an ecologically sustainable manner. All harvesting operations must comply with the utilisation standards prescribed in the Harvesting Licence.

The code of practice does not currently incorporate specific protocols for harvesting coconut stems. However, the principles and procedures prescribed in the Code for plantation forests would be applicable to coconut plantations. Future revisions of the Code should consider the need for specific measures applicable to the harvesting of senile coconut palms. FST/2019/128 Activity 2.5 will develop harvesting protocols including residue management, specifically targeting coconut logging operations which will be useful if a specific coconut harvesting code of practise is required.

A key element of coconut logging practice is site rehabilitation with the objectives of minimising pest and disease risks, retaining nutrients on the site, and facilitating sustainable post-harvest land utilisation. Good post-harvest management should incorporate the following elements:

- Removal of stumps and un-useable parts of stems to appropriately managed (e.g. burned or buried). This is important to reduce the risk of pest and disease transmission, particularly coconut rhinoceros beetle (CRB).
- Mulching of palm tops and other biomass to retain nutrients on the site.
- Making good any damage incurred by logging operations, including roads/tracks, waterways and infrastructure (e.g. fencing).
- Where the landowner(s) opt to replant coconuts, the logging contractor could prepare planting pits using an auger of excavator.
- MOA could provide coconut seedlings at a discounted price or free of charge, of either hybrid on Fiji tall varieties to facilitate replanting.

## Annex 10: Log Grading

Since transporting logs to the mill can be an expensive process, especially if they are to be sourced from Taveuni and processed on Vanua Levu, it is important that the logs are graded in the field to ensure that money is not wasted in transporting poor quality or reject material. Many coconut producers and loggers have incurred losses supplying coconut stems to Pacific Green that were rejected on delivery. This calls for the development of a grading protocol for coconut logs that avoids expenditure on transporting low grade or reject logs. The basic principles involved in grading peeler logs are summarised in Box 2.

**Box 2: Key Principles in Grading Peeler Logs**

Log grading systems vary internationally although the principles are essentially the same. The process aims to:

- Identify grade limiting defects.
- Measure and/or assess those defects.
- Determine other important aspects such as size and species requirements.
- Assign a grade to the log.

Grading a log destined for veneer production entails evaluating the log quality and hence the quality of the veneer that can be expected from that log. Log grading is based on a visual assessment of specific log features that are set out for each grade classification. Ideally, the grading rules should be easily understood so they can be applied quickly and accurately. However different interpretation of the rules can lead to small differences of opinion and sometimes written rules are not adequate to describe all scenarios. Then it is for the experienced grader to use their discretion. Factors to consider when grading a peeler log are:

- The dimensions of the log (length and diameter).
- The form of the log (the degree to which the log deviates from a true cylinder) including sweep, taper and ovality.
- The presence of defects in the log (external and internal).

Source: Leggate, McGavin and Bailleres (2017)

Protocols for grading coconut logs will be developed under FST/2019/128 Activity 2.4 – “Develop Log Grading Standard”.