Development of advanced veneer and other product from coconut wood to enhance livelihoods in South Pacific communities
Project Objectives

1. Identify markets
2. Forestry: stem harvesting
3. Peeling in S. Pacific
4. Peeling trials
5. Assemble and test products

By-product utilisation

Advanced veneer and other product from coconut wood
Objective 1 – Identify Markets

**Objective 1** – Identify the most promising product options for the veneer from coconut stem

1.1 – Market assessment and product development

1.2 – Value-chain analysis

1.3 – Stakeholder engagement
Objective 1 – Identify Markets
Objective 1 – Identify Markets

1.1 – Market assessment and product development

- Engagement with building designers, builders, producers and industry bodies in local and export markets
- Determine suite of appearance and structural products to develop all-cocoveneer and composite products
Objective 1 – Identify Markets

1.2 – Value-chain analysis

- Analysis performed in association with ACIAR’s PARDI network
- Costs and recoveries of each stage of production determined
  - This work runs in parallel with technical program
- Explore potential production models.
Objective 1 – Identify Markets

1.3 – Stakeholder engagement

- Regular stakeholder engagement meetings.
  - Impact in partner countries is fundamental to the project
- Website and resource packages
- Training days organised
Objective 1 – Identify Markets

Key completion dates –

- Initial markets and products defined – Jan 2013
- Interim value chain analysis – January 2014
- Final value chain analysis – October 2015
- Cocowood website updated – October 2012
- Stakeholder meetings –
  - July 2013
  - May 2014
  - May 2012
Objective 2 – Forestry

- Identify markets
- Forestry: stem harvesting
- Peeling in S. Pacific
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By-product utilisation

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Objective 2 - Develop protocols and capacity for sustainable low-impact coconut wood harvesting, plantation rehabilitation, and log grading, handling and transport

2.1 - Local resource assessment and harvesting

2.2 - Development and training in harvesting and handling protocols
2.1 - Local resource assessment and harvesting

- Representative resources identified in each partner country
- Stems harvested and transported for use in peeling trials
- Sustainable harvesting practices
Objective 2 – Forestry

2.2 - Development and training in harvesting and handling protocols

- Protocols developed for low impact harvesting and transportation practices
- Training provided to ensure best practice is followed
Objective 2 – Forestry

*Key completion dates* –

- Local resources assessed and obtained for peeling trial 1 – Sep 2012
- Local resources assessed and obtained for peeling trial 3 – Nov 2013
- Local resources assessed and obtained for peeling trial 4 & 5 – Nov 2014
- Harvesting and handling protocols developed – May 2015
- Training sessions – November 2015
**Objective 3** – Establish experimental veneer-peeling capacity in the South Pacific

3.1 – Commissioning a spindleless lathe equipment

3.2 – Assessing the potential of a regional trial and demonstration program
3.1 – Commissioning a spindleless lathe equipment

- Lathe equipment suite procured and commissioned at DEEDI
- Lathe modifications carried out at DEEDI
- Peeling facility then established in Fiji
3.2 – Assessing the potential of a regional trial and demonstration program

- Feasibility of transporting the lathe suite between regional centres will be assessed
  - Technical
  - Economic
  - Physical
Key completion dates –

- Lathe procured and commissioned at DEEDI – August 2013
- Lathe suite relocated to Fiji – January 2014
- Assessment of potential regional peeling program – July 2014
Objective 4 – Peeling trials

**Objective 4** — Determine the optimum processing parameters & protocols for peeling coconut stems & the properties of the recovered veneer

4.1 – Assessing veneer processing parameters from cocowood disks
4.2 – Calibrating processing parameters at DEEDI in Queensland
4.3 – Initial compact experimental peeling trial in Fiji
4.4 – Compact commercial peeling trial in Fiji
4.5 – Broad industrial peeling trial in Fiji
4.6 – Properties and recovery assessment
Objective 4 – Peeling trials

4.1 – Assessing veneer processing parameters from cocowood disks

- Optimum peeling parameters assessed from disc trials at ENSAM in France
- Micro-lathes used to determine lathe settings and stem pre-conditioning requirements
Objective 4 – Peeling trials

4.2 – Calibrating processing parameters at DEEDI in Queensland

• Stem peeling trials in order to calibrate parameters from those established at ENSAM
• Trial includes
  — Pre-conditioning
  — Peeling
  — Grading
  — Drying
  — Handling
Objective 4 – Peeling trials

4.3 – Initial compact experimental peeling trial in Fiji

- Stems from two sites in Fiji processed to verify parameters developed
- Recovered material used for production trials
- Stems to be
  - Peeled
  - Dried
  - Graded
Objective 4 – Peeling trials

4.4 – Compact commercial peeling trial in Fiji

- Trial to assess viability of commercial production
- Stems from two sites in Fiji processed at VTB mill at Labasa
- Lathe setup verified
- Processing and handling protocols tested and refined
- Recovered material used for product trials
Objective 4 – Peeling trials

4.5 – Broad industrial peeling trial in Fiji

- Peeling trial at experimental facility in established in Fiji
- Stems from each resource centre peeled
- Material characteristics determined
- Peeling, handling and grading protocols tested
- Recovered material used for product tests
Objective 4 – Peeling trials

4.6 – Properties and recovery assessment

- Recovered veneer quality assessed
- Dried material from each resource centre to be graded
- Strength, dimensional stability, gluing characteristics etc will be determined
- Recovery data collected for economic assessment
Objectives 3 & 4 - Peeling

**Key completion dates** –

- Disc peeling at ENSAM micro-lathes – Feb 2013
- Calibration peeling trials at DEEDI – Sep 2013
- Peeling trial in Fiji – Sep 2014
- Compact commercial peeling trial in Fiji – Jan 2014
- Commercial peeling trial - August 2015
- Recovered material assessments – after each peeling trial
Objective 5 - Products

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By-product utilisation

Advanced veneer and other product from coconut wood
Objective 5 – Assemble the product suite and establish its characteristics and in-service performance

5.1 – Experimental product assembly
5.2 – Product characterisation and testing
5.3 – Product assessment in-service
Objective 5 – Products

5.1 – Experimental product assembly

- Suitable products assembled from the recovered veneer
- Products developed based on suitable of veneer obtained from different density material
- Products assembled on experimental scale then broadened to commercial
Objective 5 – Products

5.2 – Product characterisation and testing

- Mechanical properties of assembled products determined in accordance with relevant standards
- Properties assessed include
  - Strength, glue-bond, dimensional stability
Assemble and test products

5.3 – Product assessment in-service

• Demonstration appearance and structural products placed in simulated service conditions
• Products will be benchmarked against existing products
• Work in associated with the Engineered Wood Products Australasia (EWPAA)
Objective 5 – Products

Key completion dates –

• Experimental product assembly, characterisation and testing –
  — Sep 2013
  — Oct 2014
  — Aug 2015

• Product in-service assessment –
  — Ongoing
  — Report 2015

Assemble and test products

Advanced veneer and other product from coconut wood
Objective 6 – By-product utilisation

1. Identify markets
2. Forestry: stem harvesting
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By-product utilisation

Advanced veneer and other product from coconut wood
Objective 6 – By-product utilisation

**Objective 6** - Determine the costs and benefits of using the residual cortex and soft, central cores for bio-char and other agricultural products

6.1 – Collaboration with agricultural projects

6.2 – Biochar trials
Objective 6 – By-product utilisation

6.1 – Collaboration with agricultural projects

- Residue use could include chip, mulch, bio-char, or growing medium
- The use of forestry residues and peeling residues in agriculture will be coordinated with existing agricultural research projects in the region
- Soft core material supplied for agricultural trials
Objective 6 – By-product utilisation

6.2 – Biochar trials

- Residues obtained will be tested to determine calorific value
- Residues will be tested to assess viability of biochar production
Objective 6 – By-product utilisation

**Key completion dates** –

- Collaboration with agricultural projects – November 2014
- Assessment of cocowood bio-char potential – November 2013
- Biochar produced and trialed – November 2014
Questions