COCONUT WOOD HIGH QUALITY FLOORING
A NEW POTENTIAL INDUSTRY FOR THE PACIFIC

AN INTRODUCTION
WHY COCONUT?

– WE HAVE LIVED WITH COCONUTS FOR A LONG TIME
– ENTWINED WITH OUR EVERYDAY LIFE
– REDUCED IMPORTANCE GAUGED BY ONE PRODUCT ONLY
– EXISTING RESOURCE READY TO BE TAPPED
– POTENTIAL TO PROVIDE RURAL LIVELIHOODS
EXTENT OF RESOURCE

- PACIFIC – 0.5 MILLION HECTARES
- SAMOA 93,000 HA (16% SENILITY)
- FIJI 60,000 HA (60% SENILITY)
  - i.e. 3.6m stems
  - total log volume of 3.5 m m3
  - potential millable volume of 1.0 m m3
  - high density sawn timber volume 0.3 m m3
  - estimated sawn timber value $F210 m
  - high quality flooring valued at $F600 m
  - issues relating to inventory, ownership, accessibility
  - component of any coconut replanting program
  - potential to source from other Pacific countries
ORIGIN OF PROJECT

• 2004 REGIONAL WORKSHOP
• REVIEW OF POTENTIAL END USES
• HIGH QUALITY FLOORING
• APPROVED BY ACIAR IN 2007 (FIJI & SAMOA)
• PARTNERS – QLD DEEDI, SPC LRD, FIJI & SAMOA FD, CIDA FIJI, SSTT, PALMWOOD, STRICKLAND BROTHERS SAMOA
OBJECTIVES OF PROJECT
Technical properties of coconut wood
Coconut wood is not wood... it is an herb

Cocowood

- Fibrovascular bundle
- Parenchymatous ground tissue
- Sclerenchyma fibres
- Vascular tissue (Xylem and Phloem)
Spotted gum

Teak - European Beech
COCONUT WOOD HIGH QUALITY FLOORING
LOGGING, LOG SELECTION AND MILLING
Outline

• Coconut Logging
  – Fiji
  – Samoa
• Palm and Log Selection
  – Palm selection
  – Log selection
• Milling Process
  – Sawing
  – Treatment
  – Stacking and drying
Coconut Logging - Samoa

- Coconut logging in Upolu (Mulifanua & Samatau) and Savaii (Salalevalu) – Wood properties trial.
Coconut Logging - Fiji

Coconut Logging in Savusavu (Nagigi) and Taveuni (Vunivasa estate) – For the wood properties trial.
Palm Selection

- Age of trees
- Trees not bearing nuts

- Height
- Absence of bark scars (fallen branch)
Log Selection

- High density wood – darker part of the stem
- Straightness
Milling Process - Sawing

- Band saw cutting – Forestry Band sawmill (Suva)
- Circular saw cutting – Strickland Bro. Portable mill (Apia, Samoa)
• Susceptible to stain, mould and insect damage
• Old treatments not safe
• New treatments found to protect cocowood
Milling Process - Stacking & Drying

- Stacking by grade - high, medium and low dense
- Packet to be filleted before drying
- Cocowood stacks to be dried under cover.
Secondary processing and products
Secondary processing

- grading
- drying
- machining
Grading

• boards sorted by hardness

• high and medium hardness required for flooring
Drying

• Improves
  – stability
  – hardness
  – transport costs
  – strength and stiffness
  – resistance to pests
Kiln drying

– essential to reach target moisture content for export
– high energy costs offset by faster throughput
– complete control over drying conditions and quality
10 m³ gas-assisted solar kiln was installed at Forestry Department to run research trials ($100,000 FJD).
Machining

• Compared with most hardwoods, cocowood machines require:
  – sharper tool edges
  – more frequent maintenance
  – slower feed speeds

• Optimised feed speeds are now known for planing, moulding and sanding to produce excellent quality
Products

• Engineered flooring
  – Laminated pancake construction
  – Re-sawn
  – Glued to plywood
  – 133 mm x 15 mm
Secondary products

- Plant growing media and mulch
  - properties within suitable range (water retention, pH, etc)

- Ethanol
  - lower starch content than anticipated
  - probably not feasible

- Coreplate, blockboard
  - cocowood has suitable properties
  - competition from existing products
Cocowood website

Bringing cocowood production and markets together
Welcome to cocowood

The cocowood project is helping cocowood enter the Australian and international flooring market.

The ACIAR project "Improving the value and marketability of coconut wood" is providing the science to underpin coconut wood production, engineering and marketing initiatives and address gaps in our understanding of cocowood properties and suitable processing technologies.

Cocowood properties and processing facts
This technical fact sheet provides information about properties as well as processing cocowood with particular reference to flooring products. Download

Coconut palms — the timber of the future
We see them along our beachfronts and in many streets and gardens, but the iconic palm tree may soon have a new place in the Queensland lifestyle as a high quality timber product. Read more.

Precision drying technology for cocowood processors
Forestry and timber specialists from Fiji and Samoa learned how to dry coconut stem "wood" to produce high value "timber" products in Brisbane, recently Read more.
Discussion forum and cocowood mailbox

- importing cocowood products
- acquiring engineered boards
- contact with sawmillers
- advice about kiln drying
- cocowood natural durability
- market potential of cocowood
- developing the plantation resource
Next steps
Possible ways forward