



**MARGULES PÖYRY**

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# Review of Value-adding/Transformation Opportunities for the South East Queensland Wood and Wood Products Industry

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Prepared for

**Australian Bureau of Agricultural and Resource Economics and Department of Natural Resources (Queensland)**

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MARGULES PÖYRY PTY LTD

Rob de Fégely  
MANAGING DIRECTOR

13 April 1999

## Glossary

ABARE	Australian Bureau of Agricultural and Resource Economics
ADt	air dry tonnes
BDt	bone dry tonnes
BHKP	bleached hardwood kraft pulp (or bleached hardwood market pulp)
BKP	bleached kraft pulp
BSKP	bleached softwood kraft pulp
CIF	cost, insurance and freight delivered to the target market
cluster processing	Processing centres where similar inputs are purchased from a number of sources to achieve a scale of further processing and value-adding which is cost competitive and enables access to markets which require volumes which cannot be achieved by inputs from a single source. The suppliers may (but not necessarily) be joint owners of the cluster processor. For example: a kiln drying and dressing plant sourcing green sawn timber from a number of mills.
components	timber for furniture production, including for “modular” type furniture applications
CRA	Comprehensive Regional Assessment
DNR	Department of Natural Resources (Queensland)
DPI-F	Department of Primary Industry - Forestry (Queensland)
fob	free on board
ha	hectares
KD	kiln dried
m <sup>3</sup>	cubic metres
MDF	medium density fibreboard

mouldings	diverse range of engineered timber products including picture, door and window frames, architraves and skirting boards
MTH	mixed tropical hardwood
native softwood	plantation grown native softwoods, primarily <i>Araucaria</i> species. This definition does not include cypress pine.
pulpwood	non-sawlog material in log form
sawmill residue	residue from sawmilling operations



## Executive Summary

The Australian Bureau of Agricultural and Resource Economics (ABARE) and the Queensland Department of Natural Resources (DNR) have engaged Margules Pöyry Pty Ltd (Margules) to identify value-adding/transformation opportunities for the South East Queensland wood and wood products industry. The study region is defined as the South East Queensland RFA (Regional Forestry Agreement) region: the area from the Queensland/NSW border north to Gladstone, and west from the coast approximately to the escarpment. A map outlining the region is included in Appendix 1.

The background to this study is the inquiry into areas to be reserved under the Queensland/Commonwealth Regional Forest Agreement, otherwise known as the RFA process. As part of a Comprehensive Regional Assessment (CRA), the value of economic and industry development is to be assessed. Given certain predictions on resource availability and technological advances in processing forest products, it is possible to construct long term scenarios for the wood and wood products industry in the region to 2010 and 2020. Importantly, this industry must not only be technically efficient and competitive, but it must also have a solid market base and deliver products into this marketplace cost effectively. Hence, the markets for and costs of production of potential forest products have also been reviewed.

The core objective of this study is to project the potential development of a technically feasible and world competitive wood and wood products industry in the region to 2020. Snapshots of resource availability and industry development have been taken for 2010 and 2020.

The resource analysis has highlighted the need for significant change in all sectors; native hardwood, native softwood plantation and exotic softwood plantation wood processors. The most significant change is in the native hardwoods where the availability of sawlogs drops from the current harvest of 294,000 m<sup>3</sup> (107,000 m<sup>3</sup> compulsory from DPI-F managed areas plus 187,000 m<sup>3</sup> from private property) to an available volume of 125,000 m<sup>3</sup> in 2010 and then increasing slightly to 131,500 in 2020. This reduction is as a result of the sustainable cut from private native forest being significantly less than the current harvest. The exact magnitude of the reduction cannot be clearly defined as the area of private native forest available for future harvesting can only be estimated. It is clear, however, that the reduction will be significant.

The native softwood plantations, comprised almost entirely of hoop pine, provide increasing volumes of sawlogs through to 2010 but then reducing to the current level of 490,000 m<sup>3</sup> per annum by 2020. The exotic plantation sawlog yields increase steadily over the review period from the current 700,000 m<sup>3</sup> per annum to 800,000 m<sup>3</sup> by 2010 and 850,000 m<sup>3</sup> by 2020. Over this period, the available pulpwood volume drops from the current 850,000 m<sup>3</sup> per annum to only 257,000 m<sup>3</sup> by 2020. This is primarily as a result of the liquidation of the private plantation resource but also reflects the maturing of the public estate.

For the purposes of the study, it has been assumed that no expansion of the plantation estate will occur. This is in line with the basic assumption throughout the study that the status quo will apply through to 2020 in relation to area available for harvest, log specifications and silvicultural regimes for all resource categories.

The markets study showed the increasing importance of the plantation softwood industries, both sawn wood and wood panels. It also showed that the hardwood industry is still based on the production of green structural framing. Margules anticipates a shift from green hardwood framing products to dried and dressed products for a range of applications including flooring, decking, structural, panelling, mouldings and furniture components. These products take advantage of the strength, natural feature, hardness and high quality surface finish of native hardwoods.

There will continue to be a good market for green hardwood products where the end use takes advantage of the specific characteristics of the timber such as strength, stiffness, durability and hardness, for example, products such as cross arm and wharf timbers.

The exotic softwoods will continue to take market share from green hardwood framing and imported softwoods. The native plantation grown softwoods will, like the native hardwoods, be converted into products which take advantage of the inherent characteristics of the timber.

Market opportunities for all these products exist in Australia, however, export markets will need to be developed for the native hardwood and native plantation softwood products. The study shows that these products will be cost competitive in Asia Pacific markets, but they do not have a significant advantage over competing countries or the other Australian regions. Product definition and niche marketing will therefore be important if these markets are to be profitably exploited.

Wood panels utilising softwood sawlogs (plywood) and softwood and hardwood pulpwood (MDF and particleboard) will also be cost competitive in Asia Pacific markets. For MDF and particleboards there is strong competition, particularly from Indonesia and Malaysia. As a proportion of the plantation must be exported, manufacturers will need to concentrate on producing high quality and value-added products to avoid competing with commodity products from these countries.

There are pulp and paper market opportunities, however, the quantity, quality and variability of the resource prevents any industry development in this area.

As a result of the resource, markets and cost competitiveness analysis, it was concluded that the following developments would occur.

Hardwood sawmilling - there will be an expansion of the existing industry producing high value products such as flooring, decking, kiln dried structural, heavy green structural, mouldings and components. There will be a reduction in the production of green framing and fencing.

New industries will develop specifically for kiln drying, dressing and moulding.

Softwood sawmilling - the existing industry will expand to take up increasing volumes and to maintain world scale processing facilities.

Wood-based panels - expansion of the existing MDF, hardboard and particleboard industries will take place utilising both hardwoods and softwood pulpwood. There are opportunities for new plywood and LVL manufacture based on the exotic and native softwood plantation resources.

# 1.

## Introduction

The Regional Forest Agreement (RFA) process for South East Queensland is a joint Commonwealth/State Government undertaking which involves assessment of the environmental, heritage, economic and social values of the region. This assessment involves a staged process establishing economic profiles, the potential for development within each sector, and an analysis of the direct and indirect economic impacts of forest and land use management decisions.

This study and report presents and analyses information and data relevant to assessing technically feasible and world competitive development opportunities for the wood and wood products industry in South East Queensland. The study and report has assumed “business as usual” and has made no allowance for any impact of the RFA. Briefly, the report has:

- Analysed forest resources potentially available to industry in the region.
- Assessed current and future market trends, including market evolution in the region.
- Assessed the potential of substituting plantation softwood for native hardwood across the range of hardwood products produced in the region.
- Identified value-adding/transformation opportunities across the region.
- Identified an optimal development path for the wood and wood products industry in the region.

Key value-adding/transformation opportunities for the region will be consistent with the following:

- Native hardwood
  - Consolidation of mills.
  - Increased value-added production which may be in “cluster” processing centres.
  - Strong market focus driving production of value-added products.
  - Development of products which are cost competitive in both domestic and export markets.
  - United marketing efforts aimed at import replacement and the development of export markets.
  - Exploitation of the special and unique qualities inherent in products from this resource.

- Native plantation softwood
  - Expansion of existing industry consistent with resource availability.
  - Marketing into areas where inherent species characteristics give competitive advantage.
  - Import substitution for large end section North American and New Zealand softwood, and mouldings and components from tropical timbers.
  - Greater use of logs in veneer production for decorative and structural applications.
- Exotic softwood
  - Expansion of existing industry consistent with resource availability.
  - Increased substitution for native hardwood in domestic framing markets.
  - Increased import substitution, particularly from interstate and for structural softwood imports from New Zealand and North America.
  - Export of a range of solid wood products, particularly following Australia's self-sufficiency in sawn softwood by about 2007.

Product opportunities include:

- Native hardwood decking, flooring, mouldings, components, structural products and "specialty timbers".
- Native plantation softwood mouldings, components, furniture, veneer and quality sawn timber.
- Exotic softwood sawn structural timber and treated products.

The preliminary results of the study were discussed in an open industry forum to ensure options for development of the industry were technically feasible, economically viable and logical. Recommendations from the forum have provided critical inputs to the study.

## 2. Forest Resources in South East Queensland

Resource availability from State Forest has been based on yield data supplied by the Department of Primary Industries - Forestry (DPI) for both native forest and plantation resources. Estimates of private property native forest resource availability have been based on historical harvest levels which have remained stable since 1994. Plantation resources on private property in the region are relatively small. These resources are currently being harvested with no replanting. No large scale additional planting is currently planned that will have a significant impact on yields by 2020.

Harvesting from the forests in South East Queensland represents 86% of all harvesting in Queensland.

The Blackdown Tableland is a part of the South East Queensland biogeographic region, yet has been excluded from the wood and wood products development opportunities due to:

- Relative isolation in regard to the remainder of the region.
- Current status with regard to the Blackdown Stringybark and its conservation.
- Industry in the area has had operations directed away from the wet sclerophyll forests into other forest types within the Dingo-Duringa supply zone, while the status of the conservation listing is being assessed.
- Resource on the Tableland can't be separated from other resource in the supply zone, hence volume potentially available to industry can't be assessed. The resource can't actually be defined until the conservation status of the Blackdown Stringybark is decided.

Land tenure is an important issue in the region, as public leasehold lands cover nearly 80% of the total land area in Queensland. Each public lease contains different conditions such as term and type of management that may be practised on the land. There are two broad types of leases relevant to forest management and commercial timber production.

- Where the forest and timber resource remain a public asset with ownership vested in the Crown.
- Where the rights to the timber assets are conveyed to the lessee.

In the latter case, the Crown retains ownership of the land, but the forests upon that land may be managed and harvested for commercial return by the lessee, hence the resource is considered part of the private forest estate.

Details of the total area (Table 2-1) and public forest estate (Table 2-2) are shown below.

**Table 2- 1: Gross area of each forest type by tenure (ha)**

Broad forest type	TENURE CLASS						Grand total
	Freehold	National Parks & Reserves	Other crown land; No timber rights	Other crown land; With timber rights	State forest	Timber reserves	
Dry forest	341,536	192,474	25,905	74,682	98,423	1,324	734,344
Dry SPG	360,899	11,823	38,034	73,457	172,054	7,179	663,447
Moist forest	249,674	33,704	9,345	36,369	218,194	10,538	557,824
Moist SPG	38,463	4,186	38	698	4,317	161	47,862
Mix forest	62,014	3,978	966	4,523	31,959	0	103,439
Rainforest	68,906	58,375	1,229	2,797	117,517	3,215	252,039
RF with Eucs	1,296	32	0	0	244	35	1,607
Wet/Moist BBT	20,473	21,475	0	193	23,578	0	65,720
Wet sclero.	22,173	11,409	163	634	19,783	892	55,054
Plantations	15,775	497	0	2,517	159,442	131	178,361
Non-euc. Forest	25,866	20,051	253	5,040	2,829	351	54,390
Non-forest	3,070,273	127,594	58,032	75,922	40,427	162	3,372,408
Total forested	1,207,074	358,004	75,932	200,910	848,339	23,825	2,714,087
Total native forest	1,191,299	357,507	75,932	198,393	688,897	23,694	2,535,726
<b>GRAND TOTAL</b>	<b>4,277,347</b>	<b>485,598</b>	<b>133,964</b>	<b>276,832</b>	<b>888,766</b>	<b>23,987</b>	<b>6,086,495</b>

Source: SE 1.2 Public Forest Resource Description and Inventory - Queensland CRA/RFA Steering Committee (for further detail, see Appendix C of the quoted report)

Table 2- 2: Net area of each public forest type by tenure (ha)

Broad forest type	TENURE								Grand total
	Other crown land; With timber rights		Forest entitlement area		State forest		Timber reserves		
	ha	%	ha	%	ha	%	ha	%	
Dry forest	3,968	1.0		0.0	42,922	13.0	123	0.0	47,013
Dry SPG	16,901	5.0	988	0.0	88,209	26.0	1,105	0.0	107,203
Moist forest	6,985	2.0	114	0.0	125,081	37.0	961	0.0	133,141
Moist SPG				0.0	1,739	1.0	75	0.0	1,814
Mix forest	112	0.0		0.0	21,182	6.0		0.0	21,294
Wet/Moist BBT	172	0.0		0.0	16,461	5.0		0.0	16,633
Wet sclero.	54	0.0		0.0	10,757	3.0	186	0.0	10,997
GRAND TOTAL	28,192	8.0	1,102	0.0	306,351	91.0	2,450	1.0	338,095

Source: SE 1.2 Public Forest Resource Description and Inventory - Queensland CRA/RFA Steering Committee

The net area is effectively the total area considered to be available for wood production from the crown controlled estate. This table shows that there is a total net area of 338,100 ha of public forest estate in SEQ. The majority of this (91%) occurs in State Forests. The most extensive forest type is other moist forest followed by dry forest dominated by spotted gum and other dry forest.

## 2.1 Native Hardwood

Actual yields from harvesting operations on State Forests have generally indicated available volume lower than modelled predictions. Actual yields have been as high as 91% of predicted yields but the average is around 80%. This is typical of native forest yield modelling fluctuations. DPI-Forestry have recognised this and have recently undertaken a review of their modelling and estimates of sustainable yield. Importantly, the sustainable yields shown in Table 2-1 are based on this most recent modelling while maintaining the current



utilisation standards, operational practices, tree marking and harvesting techniques. The regional totals are shown in Table 2-1 with the details by zone included in Appendix 2.

These figures show that sustainable yield is below current harvesting levels, using current harvesting regimes and sawlog specifications. However, there may be an opportunity to increase the sawlog availability if these specifications are changed.

There is a study being undertaken for the joint Commonwealth/State Steering Committee which oversees the CRA entitled “An Inventory of Private Native Forests of South East Queensland”, to investigate the potential availability of private property resource. This study has been based on visual assessment of accessible private native forest. Main findings include:

- Seventy-nine percent of all “plots” assessed contained less than 2 m<sup>3</sup>/ha harvestable volume.
- The assessment system gave volume estimates for total available private property volume, excluding rainforest, from 1.2 million m<sup>3</sup> to 3.3 million m<sup>3</sup>, depending on the statistical method used.
- Results indicating 80% of the study area did not contain viable volumes of sawlogs.

Limitations in the method are discussed in the draft report which also estimates the sustainable yield from the private resource using the current harvestable volume, area and mean annual increment (MAI) previously calculated. The key results are:

- total predicted sustainable yield from private native forests in South East Queensland is 215,000 m<sup>3</sup> per annum excluding rainforest areas
- it is unlikely that all private native forest landowners will wish to harvest and that some areas will not be productive, ie regrowth areas will be used for grazing
- if only areas that currently contain harvestable volumes contribute to the sustainable yield, this will reduce to around 45,000 m<sup>3</sup> per annum
- management and the silviculture employed on the private native forest will have a significant impact on sustainable yield
- current harvest levels are unsustainable.

As a result of this study, Margules has had to form an opinion on sustainable yield available from private native forest. We have assumed that 45,000 m<sup>3</sup> per annum of sawlog is available and sustainable and that, in line with DPI-F's forecast, the equivalent volume of pulpwood is also available.

An important consideration is the amount of non-sawlog potentially available in the region. This may be classed as head and butt material once the sawlog has been removed from a felled tree, or standing trees of poor form (pulpwood), for which silvicultural treatment may consist of harvesting. This allows growth/increment to be concentrated on the best stems remaining in the stand. DPI modelling suggests that for each cubic metre of sawlog harvested, around 1 m<sup>3</sup> of pulpwood is technically available for utilisation. Other key points are:

- The total area of the region is around 6 million ha, excluding islands.
- Sawlog species mix is critical, particularly for those mills producing value-added products for specific markets, eg kiln dried flooring. The continuation of supply of suitable species will be one of the factors considered in investment decisions.
- Indications show high pulpwood volumes are potentially available to industry under fully integrated harvesting across the region. However, due to the scattered nature of the resource, it is unlikely all this volume will be within an economic haulage distance to port or industry for domestic utilisation. Species mix is also important as it will determine end use options.
- Additional pulpwood from sawmill residues will be between 30% and 40% of the total sawlog volume harvested.
- Harvesting methods vary depending on the regeneration requirements of different forest types.

Predicted yields per annum from the native hardwood resource are shown in Table 2-1.

**Table 2- 3: Native hardwood resource summary, South East Queensland (m<sup>3</sup> pa)**

TENURE	Current potentially available			Potentially available to 2010			Potentially available to 2020		
	Sawlog Compulsory	Sawlog Optional	Non- Sawlog*	Sawlog Compulsory	Sawlog Optional	Non- Sawlog*	Sawlog Compulsory	Sawlog Optional	Non- Sawlog*
State Forest <sup>1</sup>	80,000	16,000	64,000	80,000	16,000	64,000	86,500	17,300	69,000
Private Property	187,000 <sup>3</sup>	-	45,000 <sup>2</sup>	45,000 <sup>2</sup>	-	45,000 <sup>2</sup>	45,000 <sup>2</sup>	-	45,000 <sup>2</sup>
TOTAL	267,000	16,000	109,000	125,000	16,000	109,000	131,500	17,300	114,000

<sup>1</sup> Source: DPI Forestry 1998 (Chris Bragg). Includes Timber Reserves and other crown lands where DPI-Forestry retains timber rights.

<sup>2</sup> Note these figures are estimates only.

<sup>3</sup> Current harvest, not necessarily "available" Source: ABARE, Log processing survey of South East Queensland 1997.

The data in Table 2-1 indicate approximately 80,000 m<sup>3</sup> pa (latest figures from DPI-Forestry) of compulsory sawlog from State Forest is currently available. There is an estimated annual pulpwood availability of 64,000 m<sup>3</sup> from State Forest (non-sawlog resources). This availability continues through to 2010 and increases by 2020 to approximately 86,500 m<sup>3</sup> of sawlog and 69,000 m<sup>3</sup> pa of pulpwood. During the period of this study, DPI-Forestry has been reassessing silvicultural options and the impact that changed silviculture may have on sustainable yield. Importantly, the figures in Table 2-1 are for the status quo and do not take into account any alternative or enhanced silvicultural regimes.

Private property sawlog availability is estimated to remain at current harvest levels until 2020. The pulpwood estimate assumes the multiplier of 1 m<sup>3</sup> per 1 m<sup>3</sup> of sawlog.

Current State Forest sawlog allocation of 107,000 m<sup>3</sup> pa is higher than the availability figure indicated here. This is a function of both historical overestimation, continual refinements and revisions of the resource estimates, and the slow transition from processing an entirely old growth to a largely regrowth resource. Ignoring the RFA process, the sustainable yield figure may be revised. Private property sawlog appears to be fully utilised at present although this is difficult to confirm given the yields available from private property are not clearly known.

Industry studies indicate the percentage of optional or non-quota logs could be as high as 20% of the total crown volume. This is indicated in Figure 2-1. This is not represented for private property logs as compulsory and optional sawlogs are not treated separately. DPI-Forestry also has some native hardwood plantations in the South East Queensland RFA Region. Available yields are shown in Table 2-2.

**Table 2- 4: Native hardwood plantation resource summary, South East Queensland (standing volume only)**

Tenure	CURRENT YIELDS AVAILABLE		
	Sawlog	Small sawlog (20 cm SED)	Pulpwood and roundwood
State Forests	42,000	21,600	36,000

Source: DPI Forestry, 1998 (Chris Bragg)

This volume is not available on a sustainable yield basis but, as with all plantations, silviculture may be altered which changes the product mix available over time.

## 2.2 Native Softwood Plantations

- The native softwood plantation resource is comprised primarily of hoop pine, *Araucaria cunninghamii*, with smaller areas of bunya pine, *Araucaria bidwillii*.
- The hoop pine resource in the region is around 44,000 hectares in area, mainly located west of Gympie. This species prefers the well drained, fertile soils found in these areas and good rainfall.

Table 2-3 indicates resource availability (m<sup>3</sup> pa) for hoop pine to 2020.

**Table 2- 5: Native softwood plantation resource summary, South East Queensland**

TENURE	Current potentially available		Potentially available to 2010		Potentially available to 2020	
	Sawlog clearfelling	Sawlog thinnings	Sawlog clearfelling	Sawlog thinnings	Sawlog clearfellings	Sawlog thinnings
State Forest	349,000	142,000	446,000	126,000	395,000	90,000

Source: DPI Forestry, 1998 (Chris Bragg)

- Clearfall sawlogs, including logs which will be used for veneer production, are harvested down to 15 cm small end diameter (SED) and thinning sawlogs to 12 cm SED. No pulpwood roundwood is harvested. The small volume of roundwood preservation material is included in the sawlog figures.
- Total available volume of sawlogs is currently around 491,000 m<sup>3</sup> pa; 349,000 m<sup>3</sup> of this is from clearfelling with the balance of sawlogs from thinnings.
- Predicted future availability of sawlogs from clearfelling will rise to 446,000 m<sup>3</sup> pa by 2010 and then remain at 395,000 m<sup>3</sup> pa to 2020. Smoothing the availability over time, this allows for an average annual harvest of sawlogs from clearfelling of 397,000 m<sup>3</sup> pa to 2020.
- Predicted future availability of sawlog from thinnings will decrease from the current harvest to 126,000 m<sup>3</sup> pa to 2010, then 90,000 m<sup>3</sup> pa to 2020. Smoothing the availability over time, this allows for an average annual harvest of sawlogs from thinnings of 107,000 m<sup>3</sup> pa to 2020.
- Current commitments for the resource are around 302,000 m<sup>3</sup> pa for sawlogs from clearfelling and 122,000 m<sup>3</sup> pa for sawlogs from thinnings. Current harvest levels are about 100,000 m<sup>3</sup> below this figure.

## 2.3

### Exotic Softwood Plantations

- The exotic softwood plantation resource in the region is extensive, and is comprised primarily of slash pine, *Pinus elliottii*, Caribbean pine, *Pinus caribaea* var. *hondurensis*, with smaller areas of the F1 hybrid of these two species. This hybrid is highly suitable for planting on lowland sites. Some plantations of loblolly pine (*P. taeda*) also are present, predominantly in the Beerburum District.
- The total exotic pine resource in the region is around 120,000 hectares. This is split between a number of management areas or districts, with the major management areas being Beerburum and Tuan/Toolara. Smaller areas with concentrations of exotic pine include Passchendaele, Pechy/Esk and Gambubal.
- Around 10,000 hectares of exotic softwood has been established on private property in the region. However, this resource is currently being harvested and will not be replanted as the land is being converted to residential use.
- A summary of the exotic softwood plantation resource in the region is shown in Tables 2-7 and 2-8.

Table 2- 6: Exotic softwood (sawlog) plantation resource summary, South East Queensland

TENURE	Current potentially available		Potentially available to 2010		Potentially available to 2020	
	Sawlog clearfelling	Sawlog thinnings	Sawlog clearfelling	Sawlog thinnings	Sawlog clearfellings	Sawlog thinnings
State Forest	441,000	153,000	700,000	35,000	800,000	50,000
Private Property	110,000	0	65,000	0	0	0
<b>TOTAL</b>	<b>551,000</b>	<b>153,000</b>	<b>765,000</b>	<b>35,000</b>	<b>800,000</b>	<b>50,000</b>

Source: DPI Forestry, 1998 (Chris Bragg)

Note: sawlog figures include roundwood for veneer production

Table 2- 7: Exotic softwood (pulpwood) plantation resource summary, South East Queensland

TENURE	Current potentially available		Potentially available to 2010		Potentially available to 2020	
	Pulpwood clearfellings	Pulpwood thinnings	Pulpwood clearfellings	Pulpwood thinnings	Pulpwood clearfellings	Pulpwood thinnings
State Forest	100,000	494,000	39,000	250,000	17,000	250,000
Private Property	250,000	0	160,000	0	0	0
<b>TOTAL</b>	<b>350,000</b>	<b>494,000</b>	<b>199,000</b>	<b>250,000</b>	<b>17,000</b>	<b>250,000</b>

Source: DPI Forestry, 1998 (Chris Bragg)

Note: pulpwood figures include roundwood for preservation treatment

- Some important trends are in evidence with the exotic softwood resource, largely concerned with current harvest and likely future availability.
- Current commitments for utilisation of the exotic softwood sawlog resource from State Forest are about 456,000 m<sup>3</sup> from clearfall and 120,000 m<sup>3</sup> from thinnings. This is close to the volume harvested last year.
- Pulpwood commitments are around 420,000 m<sup>3</sup> per annum with 340,000 m<sup>3</sup> harvested last year.
- Thinning roundwood (which is included in the available pulpwood volume) commitments and harvest levels are around 60,000 m<sup>3</sup> per annum.
- In some cases, it appears current harvest is above the current resource available as presented in Tables 2-7 and 2-8. This is because availability levels are based on long-term sustained yields, and fluctuations in availability will be smoothed over time.

Importantly, it is assumed that no expansion of the plantation estate will take place. It is likely that plantation expansion will occur due to pressure from industry to remain at world competitive scale and following from the Plantations 2020 Vision and various farm forestry initiatives. An expanding plantation base would result in further expansion of existing industries over and above that discussed in Section 6 of this report.

### 3.

## Market Analysis

#### 3.1

### Market evolution in the region

The major change in the South East Queensland wood and wood products market has clearly been the increasing importance of the plantation based softwood industries, including both wood panels and sawn timber products. Softwood products from native forests have been produced and consumed in Queensland since the commencement of the Queensland timber industry, however, these were primarily for speciality applications such as boat building, joinery and furniture. For structural applications, native hardwoods were used extensively, with the main alternative being imported softwood from North America. The latter was generally imported as flitch and resawn to the required domestic sizes. Plantation grown exotic softwood was originally only used in packaging and case grade products. Its increasing use as a structural timber is a relatively recent phenomenon and was brought about by:

- Rapid developments in kiln drying technology.
- An increase in the understanding of its structural properties.
- The dimensional stability of kiln dried softwoods compared to green hardwoods.
- The low cost of, and builder preference for, prefabricated wall frames and roof trusses.
- Decreasing availability of quality hardwood logs.
- Increasing availability of suitable softwood logs.

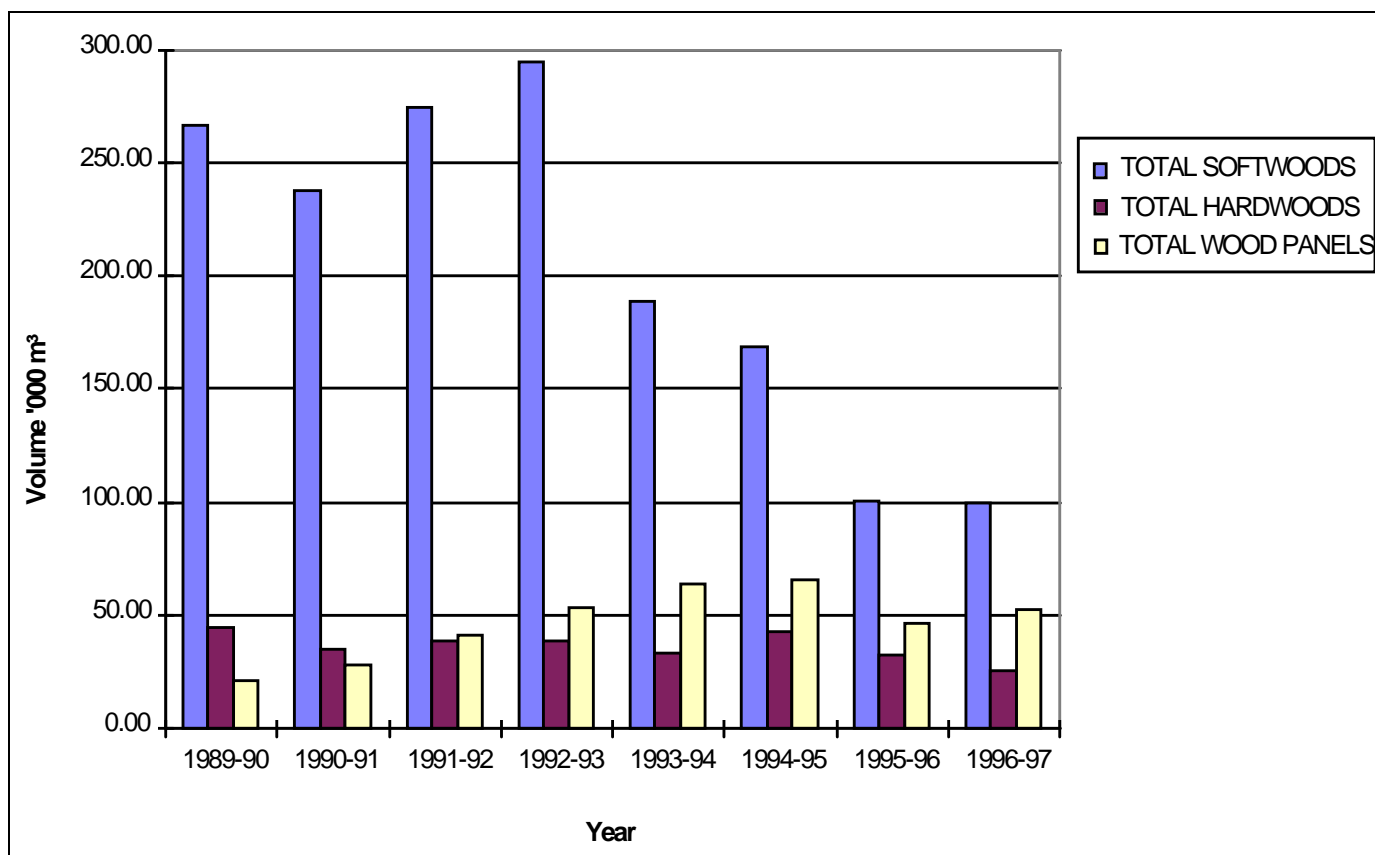
The growth in the wood panels industry in South East Queensland is linked to the growth of the exotic softwood sawmilling industry. The fibre inputs for three of the major panel products manufactured in the region (particleboard, dry processed hardboard and medium density fibreboard) are either from silvicultural operations (thinnings) undertaken to grow softwood sawlogs, or residues from sawlog harvesting and milling. The softwood plywood industry in the region also produces residues which are used as inputs for other panel products. The exotic plantation, wood panels and sawmilling industries are interdependent and have therefore grown together in South East Queensland.

The available data on historic consumption levels in individual states is not suitable for this analysis as it does not account for “imports” and “exports” to and from other Australian states. There is, however, good data on imports from overseas into Queensland. Based on the assumption that the vast majority of imports into Queensland will be consumed in Queensland and that the situation for all of Queensland is

a strong indicator of the situation in South East Queensland. Therefore an analysis of these imports will give an indication of changes in the market. Figures 3-1, 3-2 and 3-3 show Queensland imports by volume, value and average value per cubic metre respectively.

Further detail can be found in the ABARE publication. Australian Forest Products Statistics, December Quarter 1997.

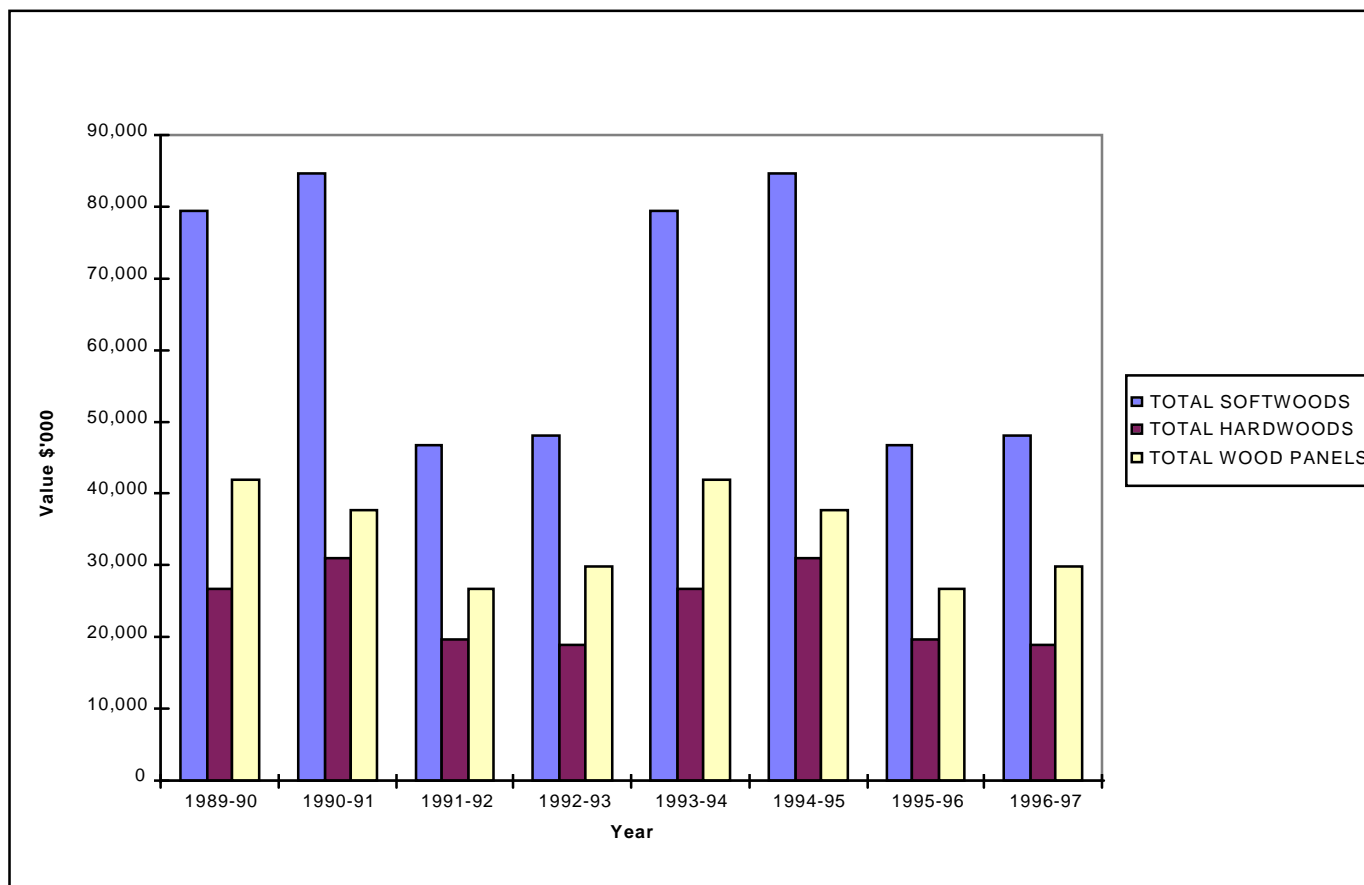
Figure 3- 1: Queensland wood product - imports by volume



Source: ABARE, Australian Forest Product Statistics, December Quarter 1997

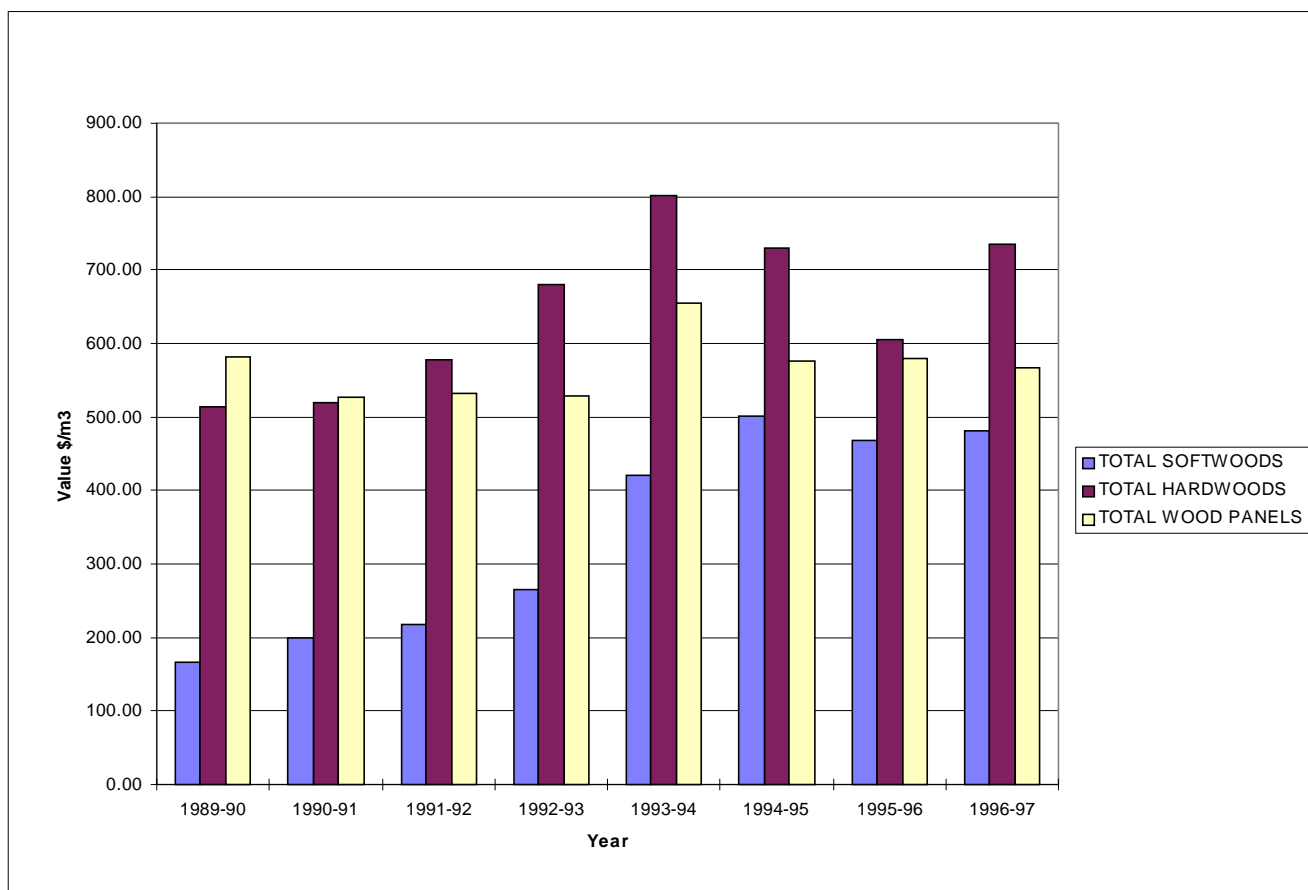


Figure 3- 2: Queensland wood product - imports by value (nominal)



Source: ABARE, Australian Forest Products Statistics, December Quarter 1997

Figure 3- 3: Queensland wood products - average price of imports (nominal)



Source: ABARE, Australian Forest Products Statistics, December Quarter 1997

## Sawn Softwood

- Although affected by the building cycle, there has been a significant reduction in the volume and value of softwoods imported.
- Total softwood imports are currently 100,000 m<sup>3</sup> per annum, equivalent to the output from one medium sized sawmill.
- There has been a sharp reduction in the import of rough sawn Douglas Fir from over 200,000 m<sup>3</sup> in 1989-90 to less than 6,000 m<sup>3</sup> in 1996-97.
- The reduction in rough sawn Douglas Fir imports has seen the Brisbane based resawing industry almost disappear.
- There has been a substantial increase in the imports of radiata pine from New Zealand from 13,000 m<sup>3</sup> in 1989-90 to 61,000 m<sup>3</sup> in 1996-97, with a peak of 92,000 m<sup>3</sup> in 1992-93 which coincided with the top of the last domestic housing cycle.
- The average value of imported sawn softwoods has increased significantly reflecting the increase in dry dressed products and the decrease in rough sawn products.
- Western red cedar imports have been relatively steady, indicating no locally manufactured cost competitive substitute has been available for its joinery and cladding applications.

## Sawn Hardwood

- The total volume of sawn hardwoods imported into the region has decreased from 45,000 m<sup>3</sup> in 1989-90 to 26,000 m<sup>3</sup> in 1996-97 although these figures appear to be partially affected by the building cycle.
- The decrease has been in rough sawn timber, the imports of dressed products actually increased.
- Although the total volume has decreased, the total value and average price per cubic metre is showing an increasing trend (Figure 3-3).
- These higher value products are primarily mouldings, decking and joinery timbers, some of which have substitutes that could be manufactured in South East Queensland from native hardwoods and, in some cases, plantation softwoods.

### Wood Panels

- Imported volumes have increased from 21,000 m<sup>3</sup> in 1989-90 to 53,000 m<sup>3</sup> in 1996-97, with a peak of 65,000 in 1994-95.
- Imports of plywood, particleboard and MDF have all increased over this period.
- The drop off over the last two years is a result of the down-turn in building activity and an increase in the local production capacity of MDF and particleboard.
- Plywood is the most significant import, however the volume is spread over a number of different product types, not all of which could be manufactured locally due to the resource available or size of the market.
- The average value of wood panel imports has not increased reflecting the decrease in the price of both particleboard and MDF.

The import figures show some significant changes over the last eight years and the important impact the industries based on exotic softwood plantations have had on the balance of the industry. They also show where there are opportunities for the substitution of imported products with those manufactured in South East Queensland. These opportunities exist for:

1. The exotic softwood based sawmilling industry in replacing both North American and New Zealand imports of structural softwoods.
2. The native softwood based sawmilling industry in replacing both North American and New Zealand imports of structural softwoods, particularly the larger end sections and both rough sawn and dressed hardwoods used as mouldings and in some joinery applications.
3. The native hardwood industry in replacing many of the imported hardwoods.
4. Locally manufactured wood panels replacing some of the imported products, particularly MDF and particleboard.

## 3.2

### Markets for wood and wood products in the region

Current markets are best illustrated by those products actually produced in the region plus imports. Where possible, these data have been gathered from existing industry in the South East region. Where data from industry are unavailable, generic trends based on Margules databases and the Jaakko Pöyry network have been used.

Current Queensland sawn timber consumption is around 660,000 m<sup>3</sup> pa, both hardwood and softwood. Local production supplies around 70% of this market, with the balance being imported from offshore and interstate. Offshore imports include:

- Hardwood decking from Indonesia and Malaysia.
- Sawn softwood from the Pacific North West (including Douglas fir and western red cedar).
- Radiata pine mouldings, clear boards, fascia boards, framing, primed and dressed boards, and treated pine products from New Zealand.
- Plywood (Indonesia), MDF products (Malaysia, New Zealand) and meranti (Indonesia) for mouldings, internal joinery and furniture.

Interstate imports consist of:

- Radiata pine framing, dressed boards and treated products.
- Hardwood decking and flooring.
- Mouldings.
- Panel products.
- Green sawn structural hardwood.
- Seasoned structural hardwood (primarily F17).

### 3.2.1

#### **Native hardwood**

Australian sawn hardwood consumption has continually exceeded production. “Traditional” harvest levels have been in decline since 1968 due to environmental restrictions on native forest harvesting and product substitution, predominantly by exotic softwood in the house framing market.

Imports of primarily tropical hardwood products have provided the shortfall between hardwood production and consumption. Import volumes of hardwood peaked in the mid 1970’s and have been declining steadily since 1988/1989.

Traditional domestic sawn hardwood production has focused on green structural timber. Increasingly, and in line with the national trend, the focus will be on production of kiln-dried, structural and appearance products and components used in furniture, joinery, flooring, decking and panelling. Importantly, this trend should be driven by market demand.

A large array of products are produced from the native hardwood forest resource in the region. These include:

GENERAL CATEGORY	PRODUCT
Boards, flooring and decking:	Weatherboards (chamferboards), decking, tongue and groove flooring and handrails
Specialty timbers:	Bridge timbers, furniture grade and posts
Construction and framing:	Kiln dried and green timbers
Fencing:	Including palings, landscaping, pegs, pallets and posts
Kiln dried structural:	KD structural timbers
Heavy structural:	Sleepers and cross arms
Treated timbers:	For lyctus borer - decking, external uses
Poles and piles:	Telephone and electricity poles and marine piles.

Currently, around 65% of total native hardwood sawn timber production is for the construction and framing market. Boards, flooring and decking make up another 18%, kiln-dried structural timbers around 7%, fencing and landscape timbers another 6%, specialty timbers (furniture, bridge timbers, posts etc.) around 1%, and the remaining 3% comprised of other (stakes, tile battens etc.) and heavy structural timbers.

Where transport distance permits, residues from hardwood sawmilling are currently sold for production of hardboard (HB) at Ipswich, and for landscaping. Small volumes are also used in the production of MDF. Hardwood woodchip exports have occurred periodically utilising sawmill residues. Price fluctuations, distance from mill to port and the variable quality of the chips from the South East Queensland hardwood sawmills have made it difficult to secure steady markets. Sawdust is sold as mulch or burnt to provide energy for the sawmill. If mills are distant from these markets, residues are burnt or dumped as landfill.

### 3.2.2 Native softwood

The even, light coloured grain of the native softwoods and their workability make them highly sought after for appearance grade products. These include furniture grade boards, mouldings and panelling. The timber is also suited to the manufacture of finger-jointed products such as mouldings and components. The strength and stability of the timber makes it suitable for large section structural beams (200, 250 and 300 x 50 mm) and is a direct substitute for imported oregon (Douglas fir) in these applications. Its appearance lends itself to uses as

exposed (internal) beams in raked or cathedral ceilings. Kiln drying is required to produce these high quality products. Other products produced from the native softwood resource include veneers for both decorative and plywood applications, treated posts from thinnings for external use, and residues for wood panel production.

### 3.2.3 Exotic softwood

Over 95% of sawn timber from exotic softwoods produced in the region is kiln dried for structural framing. This is strongly competitive in the market place and will continue to be so into the future. The scale and efficiency of the exotic softwood sawmilling industry ensures its cost competitiveness in the market.

The Australian (and New Zealand) exotic softwood industry is based on *Pinus radiata* plantations; however, this species is not suited to South East Queensland's higher humidity and temperatures, and mainly summer rainfall. *P. elliottii* and *P. caribaea* and the F1 hybrid of the two are the predominant species in the region. These species are native to the South Eastern United States and the Caribbean which have similar climatic conditions.

Structural grade timber from these species is usually sold at a small discount to *P. radiata*, particularly outside Queensland, and is generally less suitable for appearance grade applications. It does, however, have the advantage of being one strength group higher than *P. radiata*. The result is:

1. A greater proportion of sawn timber meets the structural grading rules.
2. More "heart in" timber meets F5 grade.
3. A high proportion makes F8 grade which is important given Queensland's wind loadings, building codes and the building practice of using 70 x 45 mm and 70 x 35 mm framing for load bearing walls.

Examples of other products from the exotic softwood resource include pallets, cases and boxes, tile battens, and preservative treated posts, landscaping products and handrails, and a small volume of DAR (dressed all round) boards and mouldings.

### 3.3

## External Market Factors and Trends

### 3.3.1 Domestic hardwood

This trend analysis highlights not only hardwood markets, but the industry as a whole in regard to recent restructuring to cope with a changing business environment.

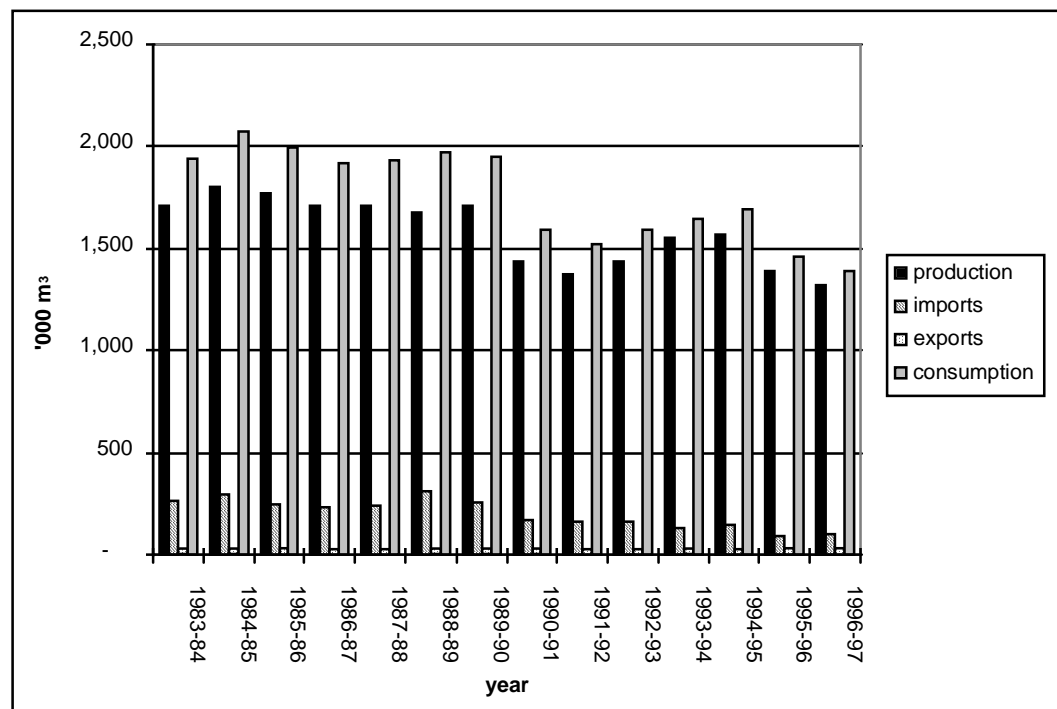
Traditionally, the Australian hardwood sawmilling industry has been comprised of a large number of small, independent businesses. Over the last 15 years, the industry has moved through a rationalisation process, brought about by a number of factors:

- Competition from exotic softwood.
- Trends away from bearers and joists in sub-floor construction to concrete slab.
- The use of kiln dried hardwood in prefabricated frames and trusses.
- Reduction in hardwood sawlog availability and quality.
- Increase in scale required to maintain cost competitiveness.
- Recognition of the strength and appearance qualities of native hardwoods, particularly after kiln drying and dressing.
- A recent market preference for timber flooring over carpet (relatively recent trends).
- The high capital cost of kiln drying and dressing plants and the extended drying times required relative to softwoods.

This has resulted in a drop in total consumption (Figure 3-4).



Figure 3- 4: Australian sawn hardwood - domestic trade trends



Source: ABARE, Australian Forest Products Statistics, December Quarter 1997

There has been consolidation through mergers and acquisitions, and a number of smaller mills have closed in favour of rationalised operations. Resource allocations from these mills have also been amalgamated to form larger, more competitive mills.

Market trends indicate that traditional markets for sawn hardwood have changed, and the last 5 to 10 years have seen a major shift into kiln dried products, most of which initially was structural grade F14/F17/F27. However, this is changing with a move away from structural grades into appearance grade products. This situation is particularly evident in Victoria and to a lesser extent, Tasmania. It is most likely

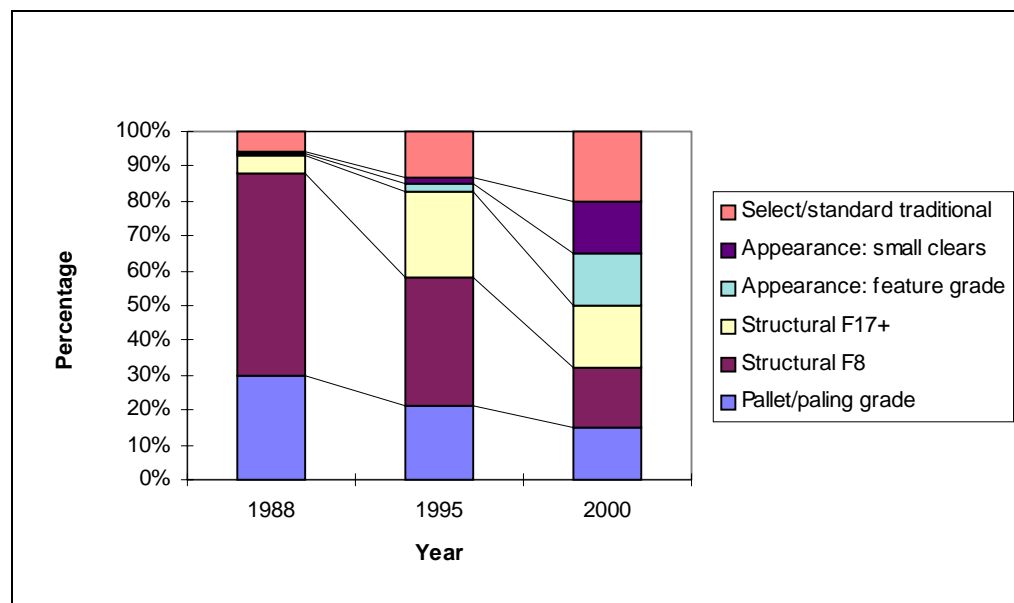
this trend will also occur in South East Queensland. Given increasing softwood supplies at highly competitive prices and reduced domestic demand, it is possible that Australia could have exportable sawn hardwood surpluses by the year 2000.

As an example of this, the Victorian hardwood industry through the Timber Promotion Council (TPC) has been actively promoting value-adding of sawn hardwood from the region and throughout Victoria. Aims have included:

- Further development of traditional select/standard markets including species previously not seasoned.
- Further development of small clear/select grade markets - including glue-laminated and finger-jointed products, parquetry, components, and end-matched flooring.
- Development of a remanufacturing grade - wide boards/slabs quartersawn with gum vein (or other defect) for export to Asia (Japan in particular) for ripping, docking and gluing into a clear grade product.
- Better targeting and use of structural properties to capitalise on high strength, using in-grade testing results.
- Natural feature grade - probably backsawn - in flooring and furniture. Export markets need to be pursued, and may include the USA for furniture.

It is likely the industry in South East Queensland will follow the Victorian trend indicated in Figure 3-5 although in a more condensed timeframe.

Figure 3- 5: Example of value- adding trends



Source: Victorian Timber Promotion Council (TPC), 1996

The need to increase the pace of change, to 'reposition' hardwood out of traditional structural/framing markets which still represent 65% of South East Queensland hardwood sales and where hardwood competes directly with exotic, native and imported softwood, will be important. The process will involve an initial shift to kiln drying, following through to more value-added products such as mouldings, components, flooring, decking and panelling where available resource permits, and general landscape, pallet and paling grade products from lower quality raw material as fall-down products. This transitional process is already in evidence in the region, particularly where competition for resource has been high and producers have been forced through market pressure to manufacture products at the upper end of the price spectrum (eg: value-added flooring products).

Importantly, this process must be strongly market-focused, ensuring products are delivered to the specifications the market demands at acceptable cost. The production process, in particular, needs to keep the market firmly in focus as value-adding adds significant cost to production, hence, requiring market know-how to maintain margins.

### 3.3.2 **Asia-Pacific hardwood**

Trends for hardwood imports into the major Asia-Pacific countries are shown in Figures 3-8 to 3-11. These trends, relatively consistent across the Asia-Pacific region, represent significant market opportunities for sawn hardwood from South East Queensland, particularly given its freight advantage over other parts of Australia, since it is closer to target markets. The natural strength, hardness, excellent surface finish and durability of native hardwoods provide opportunities in a number of Asian markets, particularly Japan.

The current economic turmoil in Asia will have an impact on potential markets for Australian hardwood. On the positive side, Australia's competitiveness compared to American hardwoods has improved significantly. New investment in processing is also likely to stall in Malaysia and Indonesia. Products from South East Queensland will, however, face stronger price competition from Malaysia and Indonesia. Also, as economic growth slows, increases in demand will not be great. Margules sees the current Asian situation as a correction rather than a collapse with the basic demand drivers still in place, ie increasing per capita disposable income, population growth and urbanisation. China, where there has been little impact to date, will have the major impact on the region due to its continued strong growth and huge population.

#### JAPAN

- While the overall sawn hardwood market appears static, there has been significant growth in imports of mouldings and components.
- High labour and land costs are forcing more furniture manufacturers offshore, contributing to rising imports of semi-finished products.
- The Japanese market for imported hardwood veneers is most strongly influenced by Malaysian exports. However, other exporters into this market seem to maintain their volumes during times when Malaysian exports fluctuate.

#### SOUTH KOREA

- South Korean hardwood component imports from Malaysia, Indonesia and Thailand have risen from being insignificant in 1990 to over 50% of all component imports by 1996.
- The flattening of supply in tropical hardwood mouldings from Indonesia has been offset by increased supply from Malaysia.
- The value of veneer imports has shown little growth, relative to other hardwood imports.

## TAIWAN

- The total value of hardwood imports peaked during 1993/1994 in Taiwan, and has since declined very slightly.
- Value of imports increased strongly pre-1993, but has since remained relatively stable, while volumes have dropped, indicating the increasing value of imported material.

## CHINA

- Combined CIF values for mouldings and components have risen consistently, apart from 1996. However, components peaked in 1994.
- The CIF values for veneer and sawn timber have maintained a steady rise since 1992 with a relatively sharp increase in 1996.
- Overall, the total CIF value of Chinese imports seems to be becoming more stable.

### 3.3.3

#### **Sawn hardwood - production and consumption**

- Annual production of sawn hardwood (predominantly tropical) in Asia-Pacific is around 34 million m<sup>3</sup> (Figure 3-6).
- Consumption trends have virtually mirrored production and over 50% of end-use is in furniture, mouldings and decorative timbers, with housing, flooring and panelling around 30%. However, consumption is significantly higher than production (Figures 3-6 and 3-7).
- Indonesia, Malaysia and China are the largest producers of sawn hardwood in Asia-Pacific, and China, Indonesia and Japan are the major consumers. Other important markets are South Korea and Taiwan.
- Production is expected to continue to increase reaching around 37 million m<sup>3</sup> pa by 2010 (Figure 3-6).
- SE Asia is an important exporter of hardwood timber, but exports are expected to decline as local demand increases.
- Japan, China and the SE Asian countries are all expected to increase imports in the future.

Over time, sawn hardwood production trends have been the result of a number of factors including actual resource availability, macroeconomic factors (Indonesia - production increased dramatically following the oil crisis of 1973) and governmental/institutional constraints to supply (China). A summary of sawn hardwood production in Asia-Pacific is shown in Figure 3-6:

Figure 3- 6: Sawn hardwood production - Asia- Pacific region

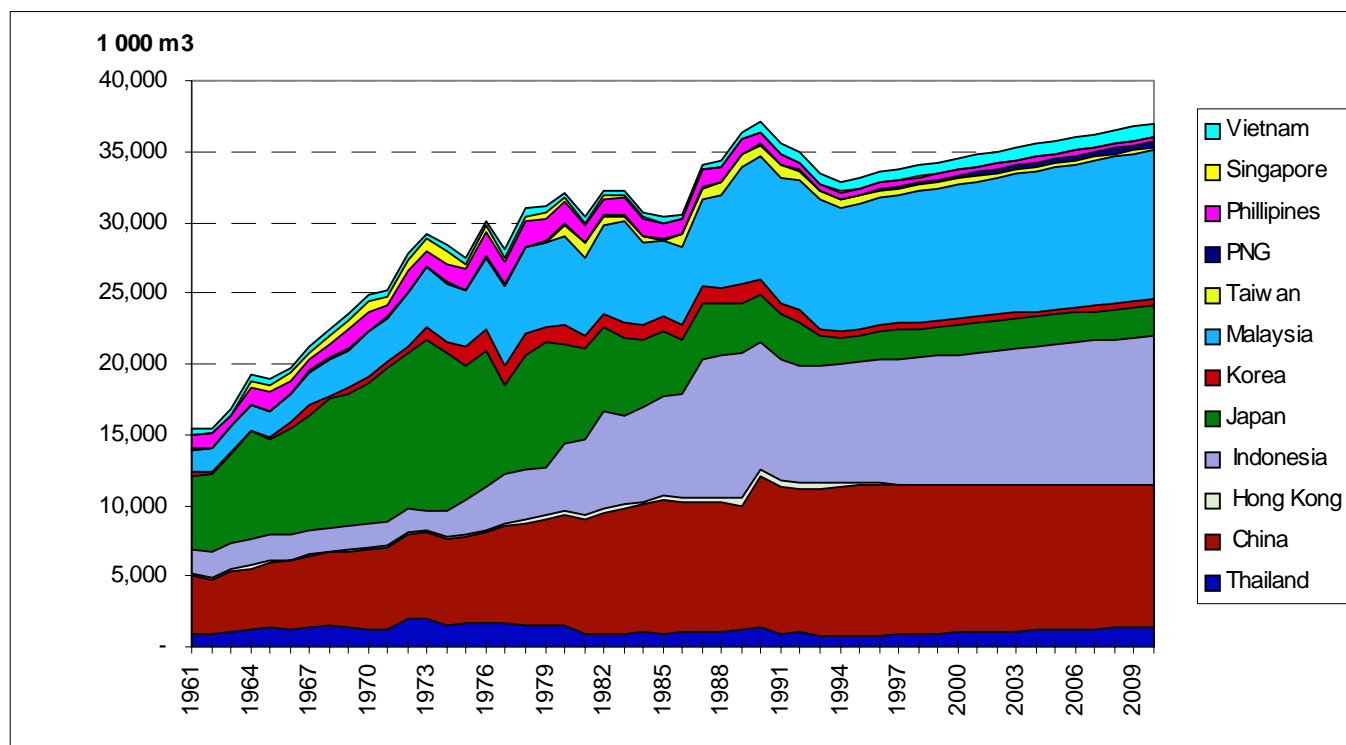
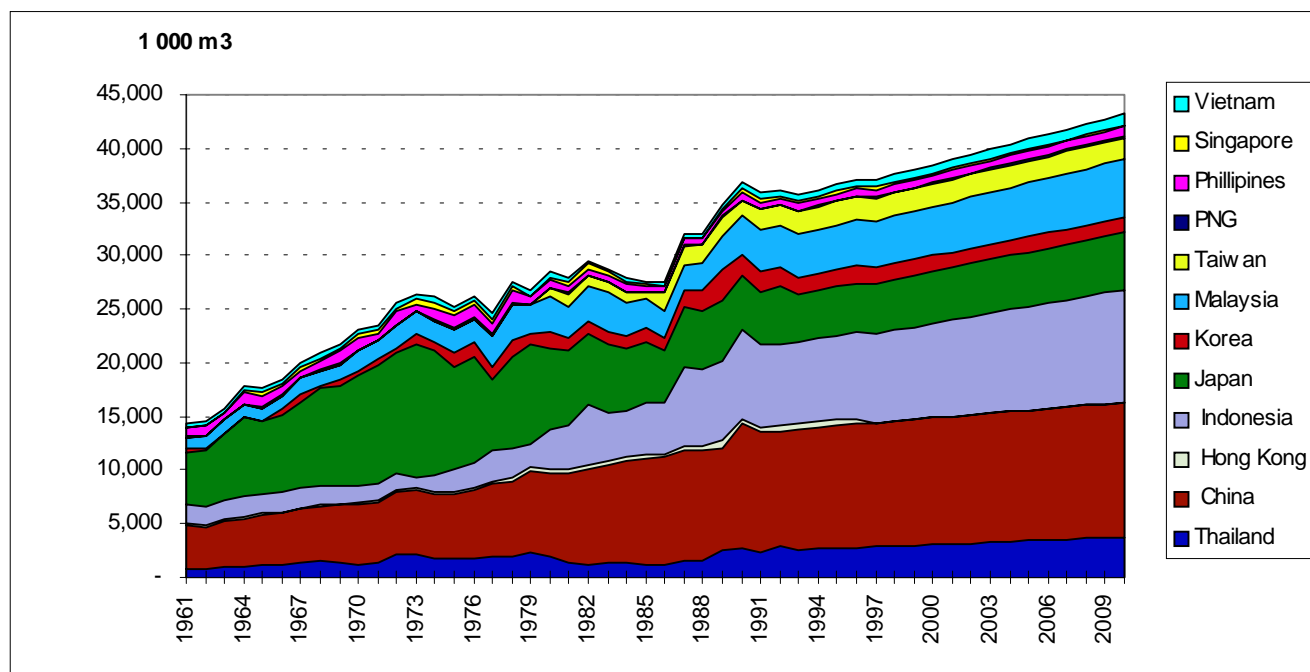


Figure 3- 7: Sawn hardwood consumption - Asia-Pacific region



Sawn hardwood consumption in Asia-Pacific is increasing steadily overall (Figure 3-7). Japan is the notable exception, where softwood has substituted for hardwood in some structural end uses. Japan, nonetheless, will remain the largest importer of sawn hardwood in the region, followed by Thailand, Taiwan, China and South Korea. China will become the second largest importer by 2010.

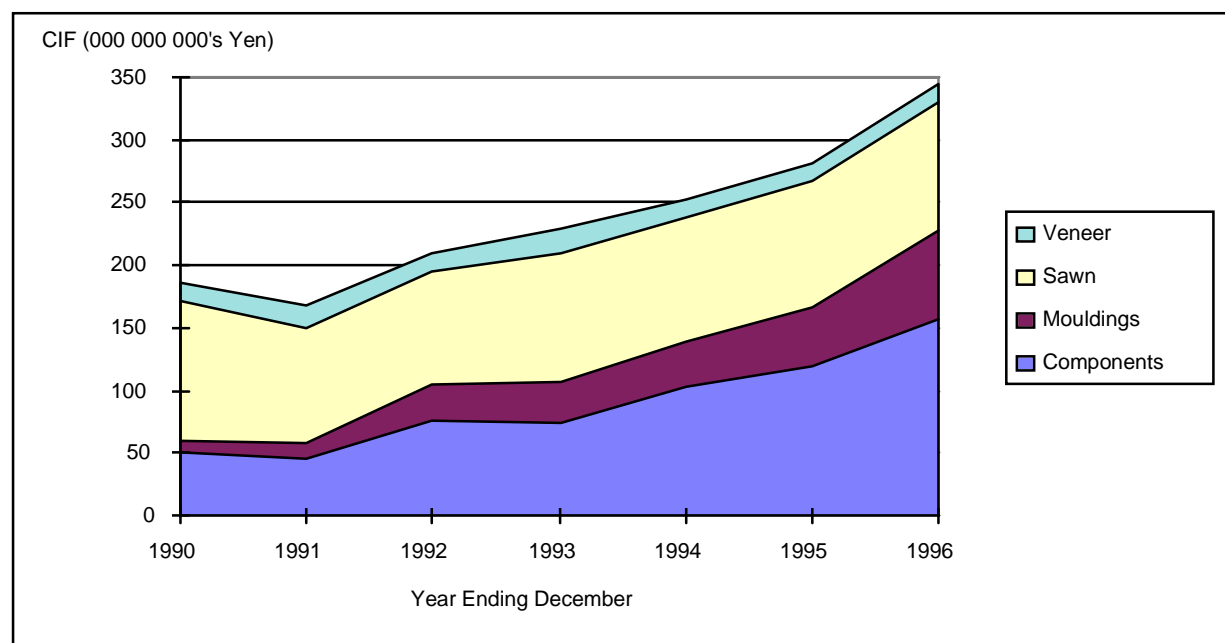
### 3.3.4 Hardwood mouldings and components- production and consumption

The following details the imports of hardwood decorative veneer, rough sawn timber, mouldings and components into the major Asia-Pacific markets from 1990-1996, indicating most recent trends in market movements. These products are extremely important to South East Queensland because:

- Many of them can be produced from native hardwoods.
- Volume and quality from traditional suppliers are becoming less certain.
- Prices from traditional suppliers are set to increase.

## JAPAN

Figure 3- 8: Total annual value of hardwood imports into Japan from Jan 1990 to Dec 1996



Source: NZFRI WoodWide forest products database.

Figure 3-8 shows the total annual CIF value of hardwood imports by Japan.

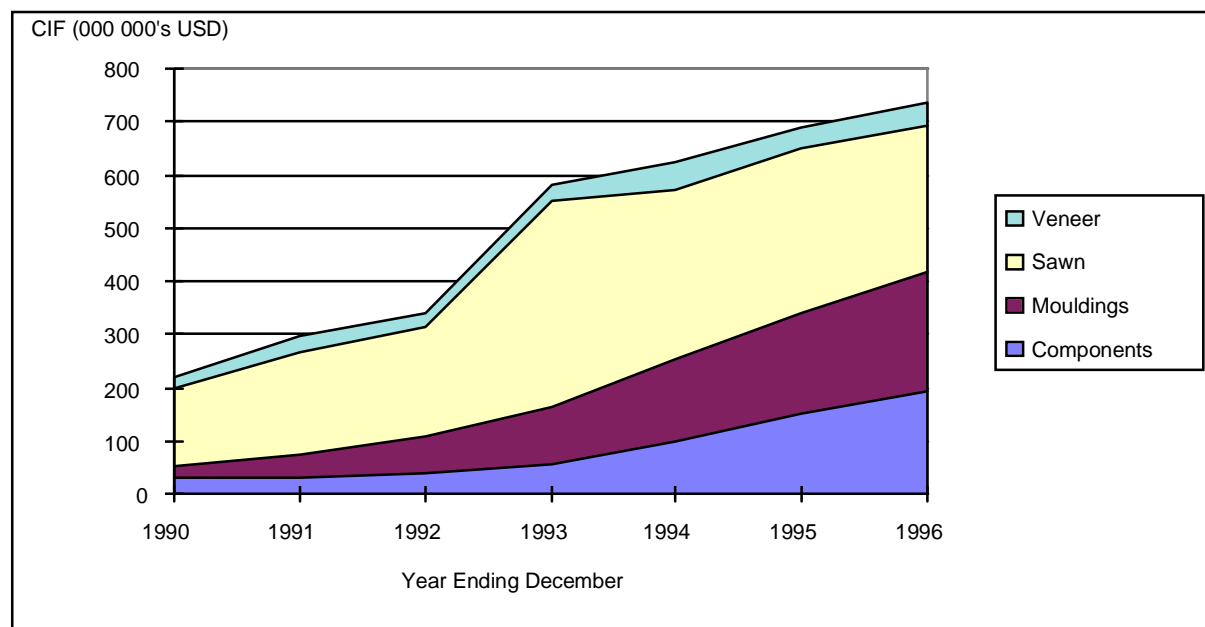
- The value of hardwood mouldings imported by Japan has increased nearly sixfold between 1990 and 1996.
- Sawn hardwood has been replaced by hardwood components as the most valuable hardwood product group imported by Japan.



- Hardwood components are usually seasoned, dressed and finished pieces for use in doors, windows and other high quality joinery and in furniture manufacture. These simply require putting together either in a factory or “in situ”. They thus represent the ultimate in value-added production and marketing.
- Currently hardwood component imports equal a little under half the total value of all hardwood products imported by Japan.
- It seems likely, in the near future, the combination of hardwood mouldings and components will account for 75% of the value of all Japanese value-added hardwood imports.

### SOUTH KOREA

Figure 3- 9: Total annual value of hardwood imports into South Korea from Jan 1990 to Dec 1996



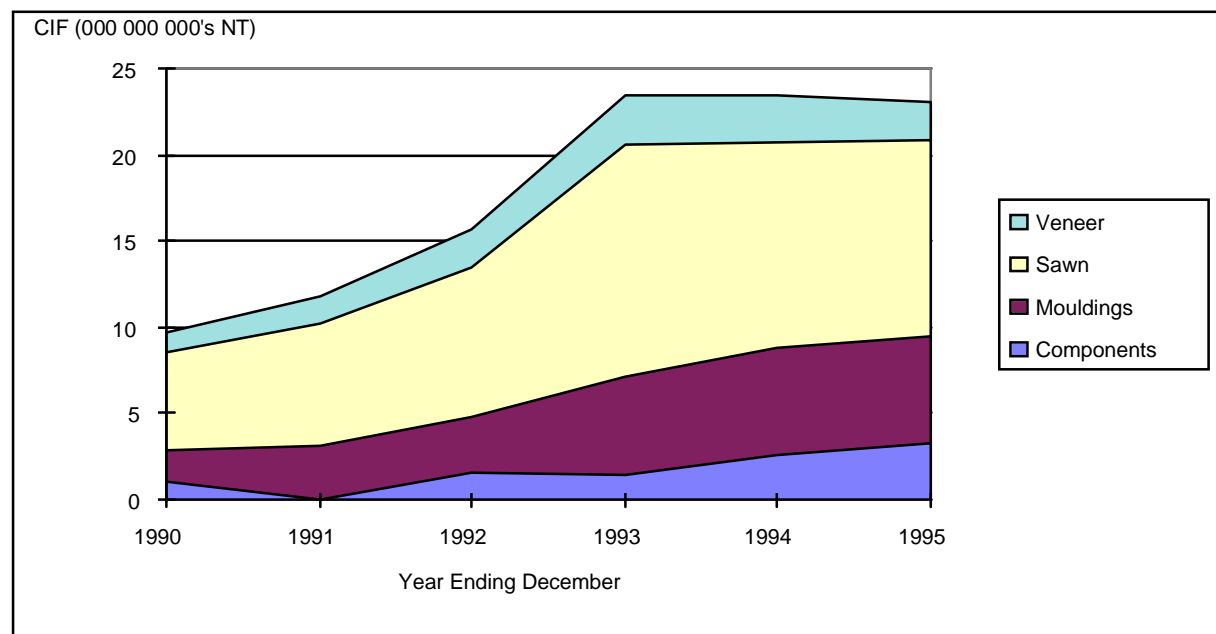
Source: NZFRI WoodWide forest products database.

Figure 3-9 shows the total annual value of hardwood products imported by South Korea.

- The combined value of components and mouldings now exceeds the value of sawn timber imports.
- The landed volume of hardwood components and mouldings in South Korea would be much less than the volume of sawn hardwood of an equal CIF value.
- There is a lower unit freight cost involved in the export of components and mouldings to South Korea (per unit value of product), thus the opportunity to capture an increased margin may exist.

#### TAIWAN

Figure 3- 10: Total annual value of hardwood imports into Taiwan from Jan 1990 to Dec 1995



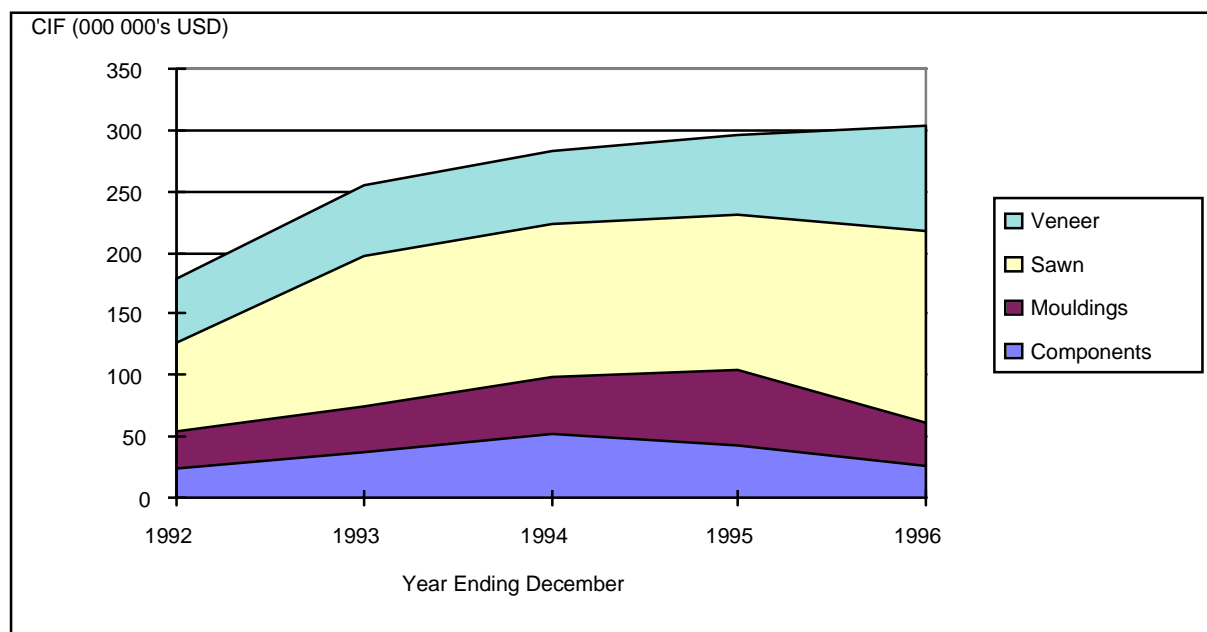
Source: NZFRI WoodWide forest products database.



- There were sharp increases in the total annual CIF value of hardwood imports to Taiwan from 1990 to 1993.
- Thereafter, this value remained static (Figure 3-10).
- The CIF value of sawn hardwood imported by Taiwan from 1990 to 1995, has remained at about half the total CIF value for the four categories in Figure 3-10.

## CHINA

Figure 3- 11: Total annual value of hardwood imports into China from Jan 1992 to Dec 1996



Source: NZFRI WoodWide forest products database.

The total annual CIF value of hardwood imports into China (Figure 3-11) has increased from about USD 180 million in 1992 to USD 300 million in 1996.

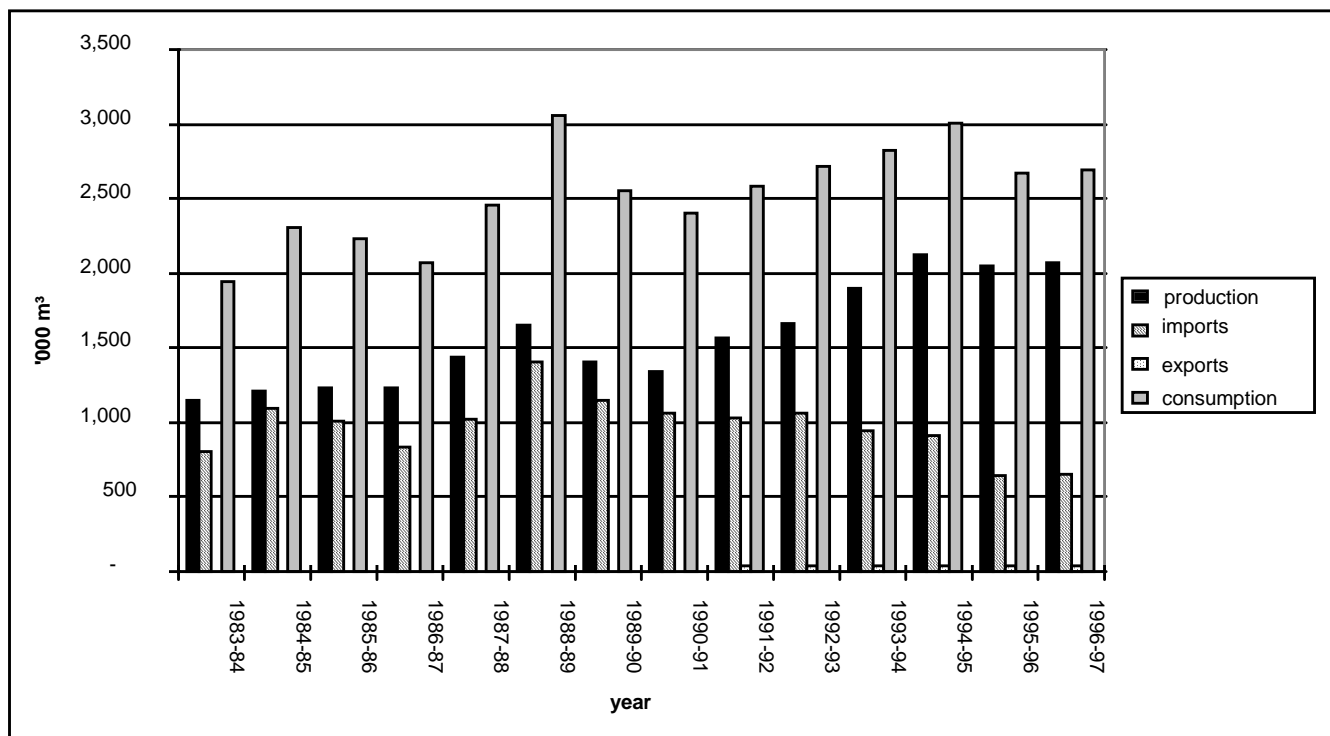
- This increase has been against the trend in terms of the relative importance of each of the products, ie sawn timber has increased its share of the total while mouldings and components have reduced.
- This is probably a reflection of China's stage of development and the sophistication of its markets.

### 3.3.5 Domestic softwood

Production of sawn softwood in Australia has doubled over the last 15 years (Figure 3-12), largely due to increasing availability of raw material. This trend is expected to continue, as significant additional resource becomes available across Australia. Hardwood substitution and import replacement will provide domestic markets as an outlet for this increased production until around 2007, when it is predicted Australia will have exportable sawn timber surpluses. Alternatively, sawlogs could be exported to other processing countries, primarily throughout the Asia-Pacific region.

Correspondingly, however, consumption has only increased by 30% in the same period, with a drop in imports accounting for the difference. Steady consumption increases are forecast, albeit with the vagaries of fluctuations in the Australian building cycle.

Figure 3- 12: Australian sawn softwood market



Source: ABARE, Australian Forest Products Statistics, December Quarter 1997

Future market trends for sawn softwood in Australia indicate increased import replacement and substitution of softwood for hardwood products, particularly in the structural (framing) market. Other areas for growth are in treated products, where the end use demands durability and exposure to the elements (eg: rails, poles, piles). The latter is the combined result of the burgeoning alterations and additions market in Australia (as shown in Table 3-1), and recent changes to building codes preventing the external use of Douglas fir (Oregon) in most applications. There is also a significant market for vineyard poles with the rapid growth in the wine industry in Australia.

Table 3- 1: Australian sawn timber end uses 1996

Sector	% of market
Detached housing	38
Alterations and additions to dwellings	26
Non- residential building	10
Furniture	9
Multi- unit dwellings	7
Other	10
	<b>100</b>

Source: Housing Industry Association

Market opportunities also exist in the Asia-Pacific region, particularly in Japan and China, but also potentially in South Korea and Taiwan. Reductions in supply from traditional zones (Asia, North America) will create opportunities for Australian sawn softwood. Competition from the vast softwood resources in Far East Russia is likely to increase, although this will be in the form of logs rather than sawn softwood. However, infrastructure problems and increasing domestic demand will dampen the impact.

### 3.3.6 Asia- Pacific sawn softwood - production and consumption

The current economic crisis in Asia will impact on sawn softwood markets in the region. Traditionally, softwood logs have made up the bulk of the trade with Japan and Korea, with a significant proportion of the milled output used for packaging. Demand for these products could increase as Asian countries strive for an export driven recovery. Demand for structural and appearance grade products is, however, likely to slow in the short term (see Section 3.3.2 for comment on longer term demand).

In the Asia-Pacific region, sawn softwood production has remained relatively stable since 1979 (Figure 3-13):

- Japan is the largest producer of sawn softwood (currently 23 million m<sup>3</sup>, down from 33 million m<sup>3</sup> in 1970).
- China produced around 17 million m<sup>3</sup> in 1995, and
- Korea produced around 3 million m<sup>3</sup> in 1995.

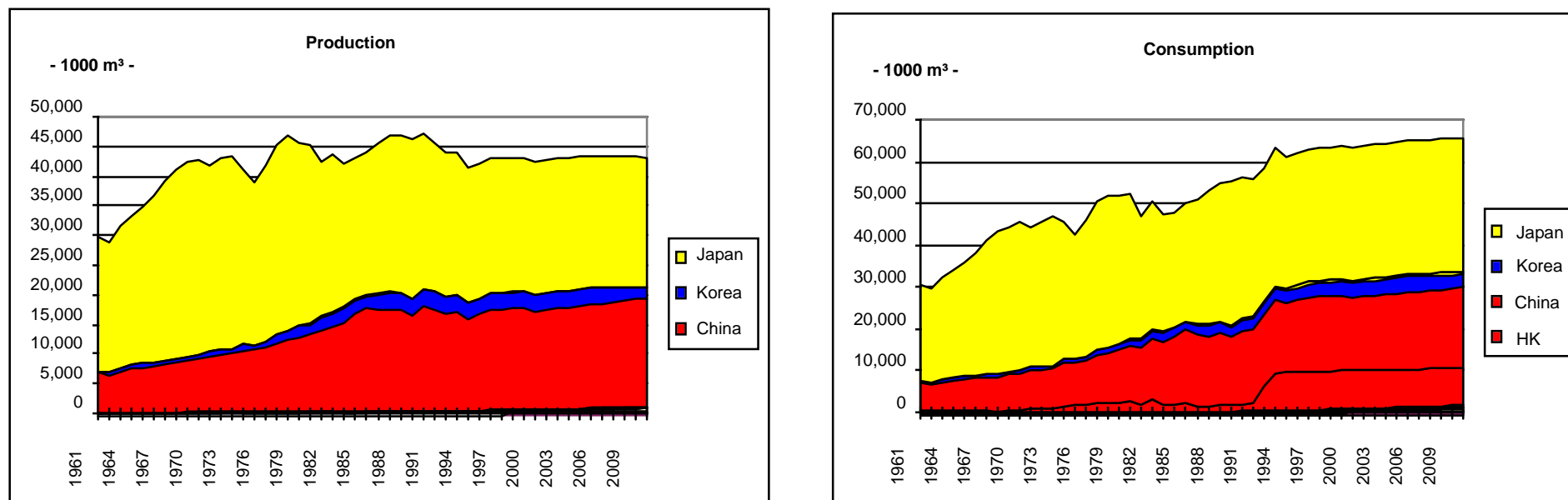
The trends for sawn softwood consumption are as follows (Figure 3-13):

- Japan's softwood sawnwood consumption has increased to 32 million m<sup>3</sup> from 23 million m<sup>3</sup> in 1961. This trend is expected to stabilise.
- China's consumption has increased to 17 million m<sup>3</sup> from 7 million m<sup>3</sup> in 1961. Consumption is expected to reach around 28 million m<sup>3</sup> by 2020.

Notably, none of the countries in the Asia-Pacific region export sawn softwood (the region excludes Australia/New Zealand/Chile).



Figure 3- 13: Asia-Pacific sawn softwood production and consumption



Source: Groome Pöyry

- Annual Asia-Pacific production of softwood timber is around 50 million m<sup>3</sup>. However, consumption is higher at around 60 million m<sup>3</sup> due mostly to imports from North America.
- The total market in Asia-Pacific is expected to increase from 62 million m<sup>3</sup> in 1994 to 68 million m<sup>3</sup> in 2010.
- Major importers will be Japan and increasingly China. The major exporters will be from North America and increasingly from Oceania; Australia only after 2005-7.
- End-use is roughly evenly divided between structural applications and packaging.
- Japan is the largest market and largest importer. However, increasing volumes will go to China.

- Sawn production in Japan has been declining due to falling log imports from North America which are being replaced partly by radiata pine logs from New Zealand and Chile and partly by imported sawn timber.
- Although constrained by availability, the production of softwood timber in China has been increasing due to strong economic growth.
- Consumption of softwood timber will continue to develop in Asia-Pacific. China is expected to demonstrate the strongest growth in consumption, driven by the rapid economic developments and need for housing.
- Large resources in Eastern Russia will fill part of the growing Asia-Pacific demand, however, poor infrastructure and increasing domestic demand will limit supply from this resource to Asia-Pacific.

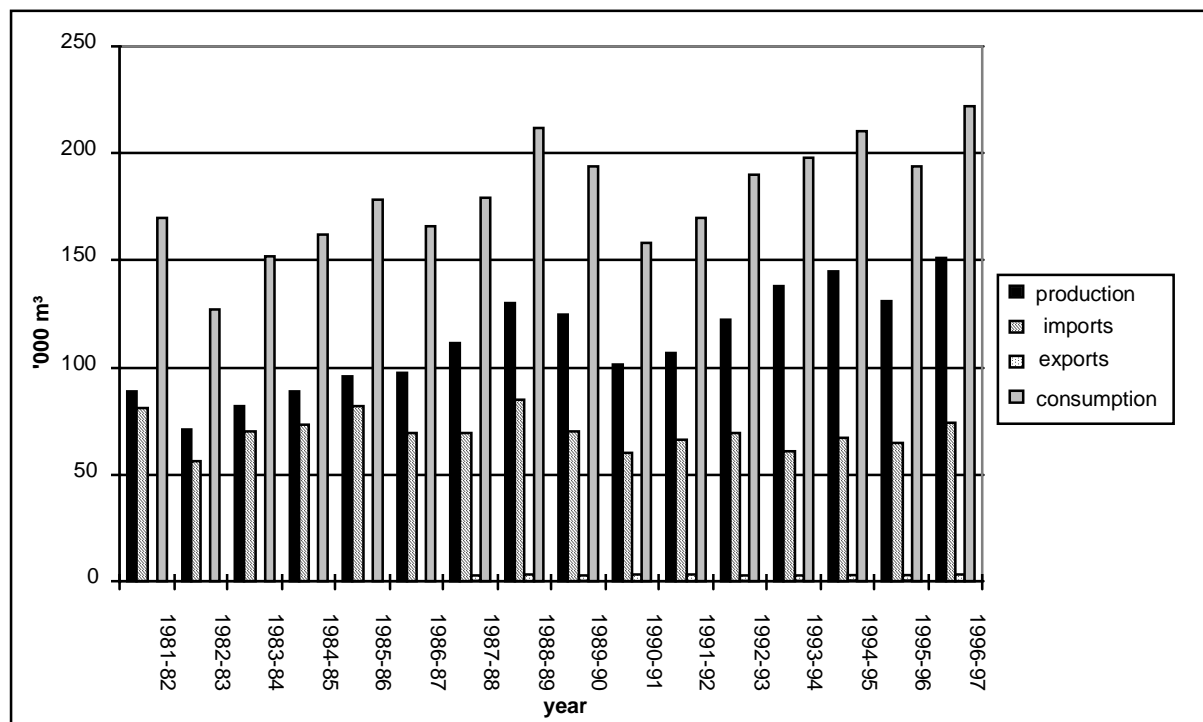
### 3.3.7

#### Plywood

##### AUSTRALIA

- Both hardwood and softwood plywood are produced in Australia, with the largest mills based on plantation grown timber resources.
- In 1996/1997, around 150,000 m<sup>3</sup> of plywood was produced. Less than 10% of this is hardwood (Figure 3-14).
- Consumption of plywood in Australia was above this for the same period at around 200,000 m<sup>3</sup>. Growth in consumption of structural grades is expected, and import replacement is likely to continue. There are, however, some plywood products where Australian consumption could not support a domestic production facility. These products will continue to be imported. Major sources of imports are Indonesia and Malaysia (both hardwood), and New Zealand (softwood).

Figure 3- 14: Australian plywood market



Source: ABARE Australian Forest Products Statistics, December Quarter 1997

#### ASIA PACIFIC

- Plywood in the Asia-Pacific region is produced mainly from mixed tropical hardwood, and has increased by almost 50% from 15 million m³ in 1980 to 23 million m³ in 1994.
- Production in Indonesia and Malaysia is based on low cost labour, high quality logs and log export restrictions. A single export company, APKINDO, licences and sells all plywood from Indonesia.
- Consumption has increased strongly, from 12 million m³ in 1980 to over 20 million m³ in 1994.

- Major end-uses are construction 54% and furniture 28%.
- Indonesia is by far the largest global producer at around 10 million m<sup>3</sup> pa, and Malaysia's production growth has also been significant.
- Japan is the major consumer at around 4 million m<sup>3</sup> pa.
- Domestic production in Japan is currently less than half the installed capacity due to high production costs and declining log imports. Similar situations exist in Korea and Taiwan. To counter this, some production is moving to softwood plywood using logs imported from New Zealand and Far East Russia.
- Production in Japan is expected to decline, while in China and South East Asia it will increase, although increasing domestic demand will see a net reduction in exports.
- Strong growth in consumption has come from Malaysia, Thailand, Korea, Taiwan and China. In the case of the latter, the economic boom has resulted in strong foreign capital investments in the plywood industry.
- The current economic turmoil in Asia will probably see a short term reduction for construction products such as formply. The longer term impact and the impact on other grades is unclear. For general comments see Section 3.3.2.

Future demand for plywood in Australia will be closely linked to the building cycle. However, in Asia-Pacific markets, consumption will be limited by supply, as raw material in these regions diminishes. Prices will increase as a result, making plywood production in South East Queensland more attractive. Market access will depend upon overcoming the following hurdles:

- The need to increase decorative use eg: high-value hardwoods, hoop pine.
- Adequate strength properties for structural uses (eucalypt and slash pine ply can satisfy this requirement).
- MTH (mixed tropical hardwood) market acceptance.
- Significant sales of South East Queensland produced softwood plywood have recently been secured into South East Asia confirming cost competitiveness and improving market acceptance.

Marketplace advantages include:

- Plywood's perception as a natural wood product rather than a reconstituted panel (particularly important in Japan).
- High value face veneers may be combined with lower value species in the core.

- Plywood's general market acceptance.
- Plywood's durability in a range of climatic conditions.

## **LVL**

Australian production and consumption of LVL is around 40,000 m<sup>3</sup>. Domestic demand for long length structural LVL is strong - the product is a replacement for large end section structural softwood, predominantly Douglas fir. LVL has excellent strength and dimensional stability in these applications.

Structural LVL is in an early life cycle stage, with consumption throughout the Asia-Pacific region expected to increase dramatically over the next ten years.

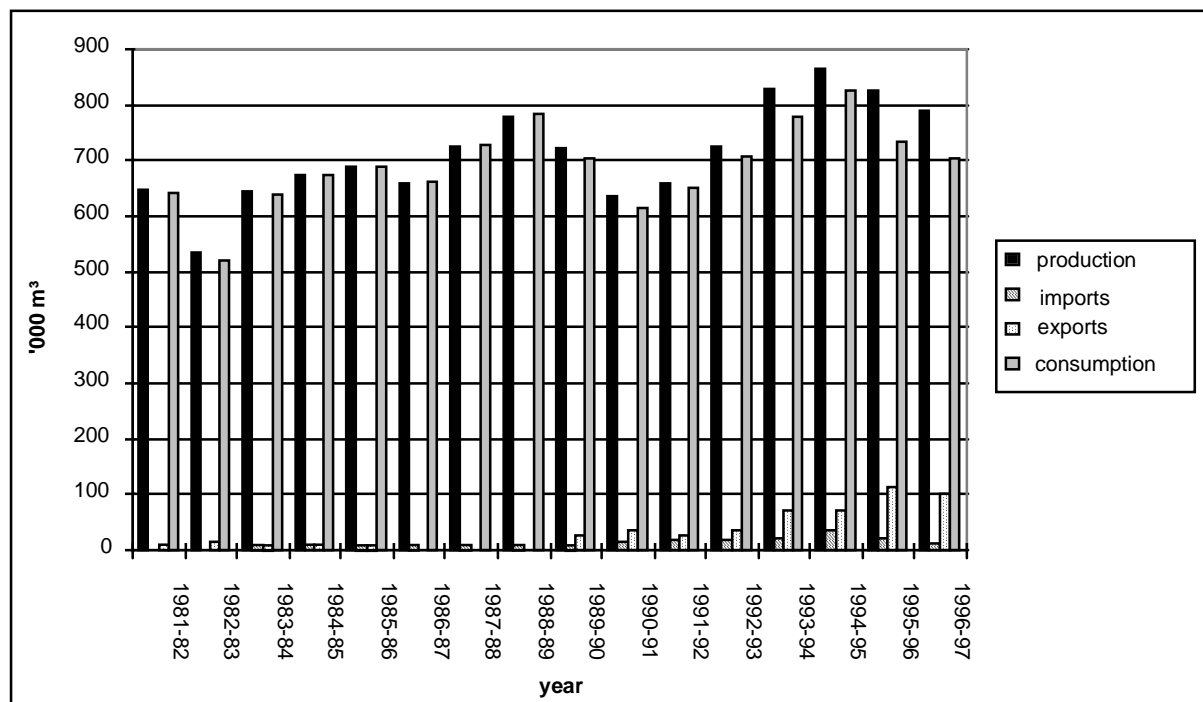
Softwood LVL has a competitive advantage over hardwood in that its strength is comparable for much less weight.

- Rapidly growing market in Japan for both structural and non-structural LVL. Other Asian countries likely to follow this trend.
- Potential low cost supplies to Japan from Indonesia and Malaysia where LVL lines can be added to existing plywood mills.
- Australia has one long line LVL plant which is based on plantation softwood in South Australia.
- Domestic market is steadily growing with almost all production used as structural beams or "I" beams.

## **Particleboard**

- Australian particleboard markets are mature, with surplus production exported (Figure 3-15). This is primarily melamine-coated product for Asian furniture manufacturers, where the Australian product has developed a significant market based on a quality product.
- Quality issues will be important in the future, as Australian particleboard manufactured from plantation grown softwoods is in demand in Asian markets and is preferred to MTH particleboard.

Figure 3- 15: Australian particleboard market



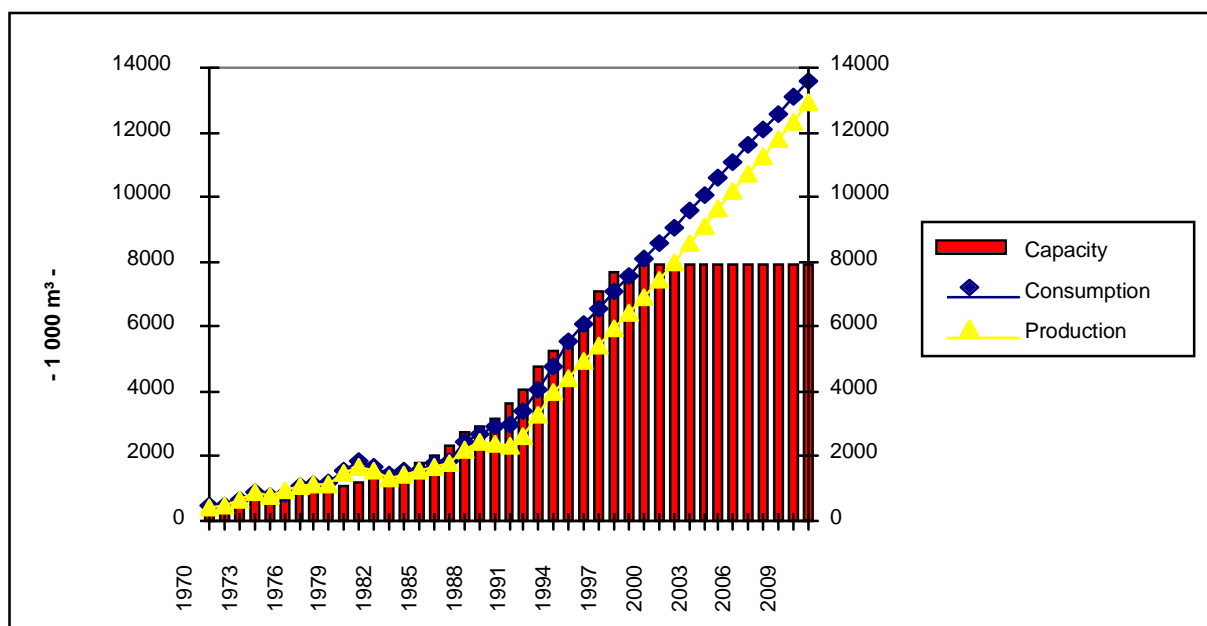
Source: ABARE Australian Forest Products Statistics, December Quarter 1997

With the exception of Japan, particleboard production is relatively new in Asia where 75% is used in furniture (Figure 3-16). Traditional furniture manufacturers preferred solid wood and plywood while little to no fitted furniture was used. As furniture manufacturing methods are changing, and increasingly fitted furniture is used, particleboard consumption has increased rapidly from 2.3 million m³ in 1980 to 5 million m³ in 1994. Consumption is predicted to reach 14 million m³ by 2010 (Figure 3-16).

- Major producers and consumers are SE Asia, Japan, China, Korea and Indonesia with the latter being the only significant exporter. The largest net importers are Korea, Japan and Taiwan with most of the production from Taiwan being re-exported as furniture.

- As particleboard production utilises “waste” material (sawdust, wood and chip residues, recycled plywood etc) and the manufacturing technology is well understood, increased production is anticipated, particularly in relatively low cost countries such as in SE Asia.

Figure 3- 16: Actual particleboard capacity, and production/consumption development - Asia- Pacific region



Source: Jaakko Pöyry 1997

Figure 3-16 illustrates the actual particleboard capacity and known expansions up to 2000. Important points to consider when reviewing capacity are as follows:

- Actual production has been consistently below available capacity.
- Although capacity expansion has been rapid in the past years, production has lagged behind consumption levels.
- Asia-Pacific is not expected to produce excess amounts of particleboard.

- Main future capacity increases are concentrated in Thailand, Malaysia, Indonesia and China.
- Due to its relatively low cost of production, the proportion of distribution costs of the total landed cost in Asian markets is high. This advantages South East Asian producers over Australia but also increases South East Queensland's advantage over other Australian regions.
- The Asian economic crisis will see some planned capacity expansion in the region either postponed or dropped altogether.

### 3.3.8

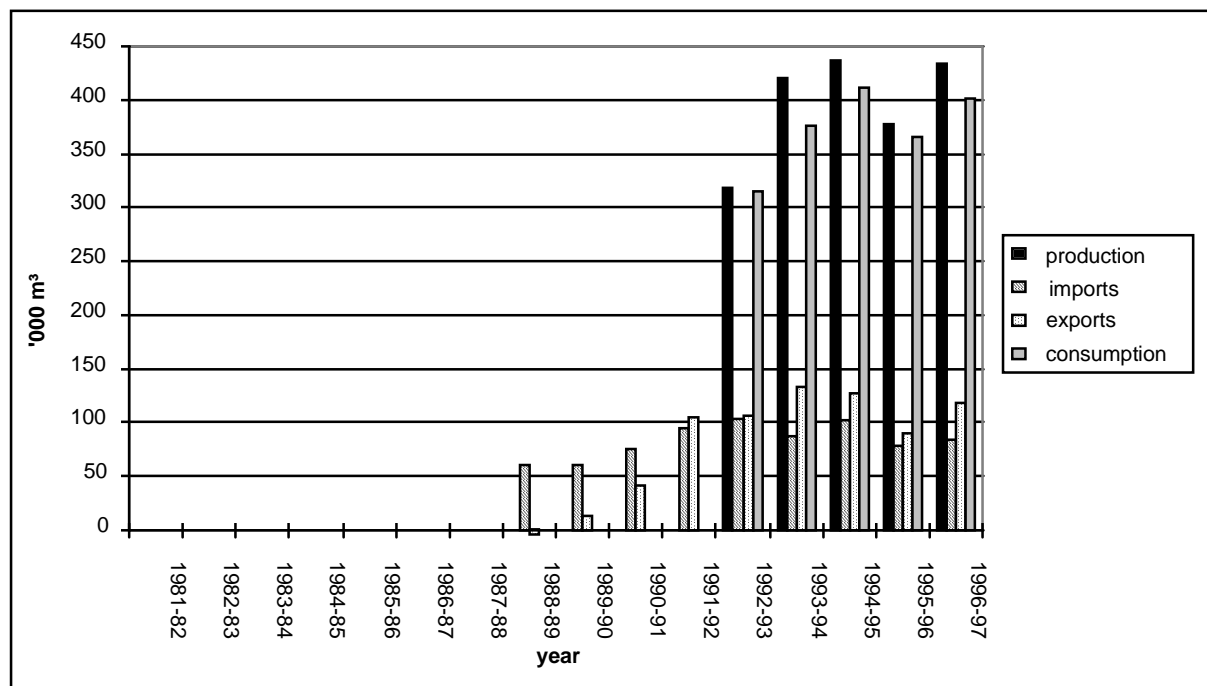
#### **MDF**

MDF production in Australia is relatively new, starting in 1982. Present consumption is around 400,000 m<sup>3</sup> pa (Figure 3-17). Since 1992, significant production capacity has been added, and Australia now exports around 100,000 m<sup>3</sup> pa of MDF. This will increase as new facilities (Starwood, Dominance, CSR) come on line. Value-adding facilities such as mouldings and veneer overlays are frequently included in new MDF developments. These areas, including low pressure melamine overlays, represent the greatest market potential for MDF manufactured in Australia.

MDF manufactured in Australia has traditionally used softwood roundwood and sawmill residues as the fibre source. Overseas manufacturers have used hardwood in some instances (eg rubberwood from mature plantations in Malaysia). The most recently completed MDF plant in Australia, Starwood in Tasmania, plans to use between 30% and 50% hardwood fibre. Other MDF mills in Australia are now using small volumes of hardwood. It is likely that more hardwood will be used in domestic MDF manufacture, providing it has a lower mill door cost for the manufacturer and quality issues can be overcome.



Figure 3- 17: Australian MDF market



Note: Statistics on MDF in Australia were not collected until 1988.

Source: ABARE Australian Forest Products Statistics, December Quarter 1997

Increasing demand in Australia and the Asia-Pacific is expected to absorb the current excess production capacity, both actual and announced, some time between 2000 and 2004. Those MDF mills with specific advantages such as transport to the region's markets, as is the case in South East Queensland, will be able to capitalise on this market opportunity.

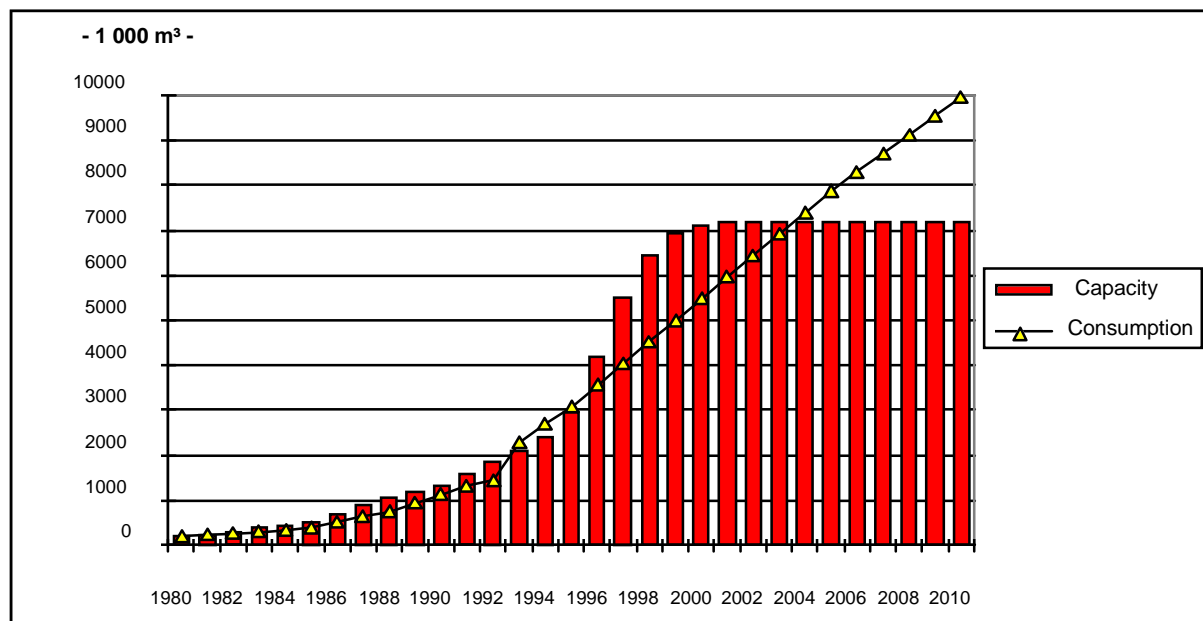
- MDF is a new product in Asia. In recent years a dramatic increase in installed capacity has seen the production of MDF increase throughout the region. Thin MDF is a product which competes favourably with plywood used in furniture and door manufacture. Its competitive advantage is through the utilisation of low cost raw materials, such as mixed tropical hardwood residues from plywood

mills and sawmills, as well as rubberwood, and other plantation wood. However, premium grade MDF is still considered to be made from plantation grown Pinus species.

- Light coloured board without dark surface spots is the most valuable as both raw board and for value-added applications.
- Consumption of MDF increased from 1 million m<sup>3</sup> in 1988 to around 3 million m<sup>3</sup> in 1995. The major end-uses are furniture (60%) and construction and shop and office fittings and features (20%).
- Although present production is still small, SE Asia is expected to become a major producer.
- Major consumers and producers are Japan, Korea and China. Future increases in Japanese consumption are expected to be supplied by imports.
- Production of MDF in China will increase dramatically but will not meet demand and is generally in small inefficient mills.
- Australia and New Zealand will be major exporters, as production greatly exceeds consumption.
- Throughout Asia, distinct supply and demand areas will develop for MDF. South East Asia will develop as a major supply region, while Japan, Korea, Taiwan, Hong Kong, Vietnam and China will import increasing volumes.
- The future of MDF in Asia provides numerous opportunities, as it can also substitute for a range of products whose availability is declining.

Figure 3-18 indicates the current and planned capacity potential for MDF in Asia-Pacific.

Figure 3- 18: MDF demand and capacity development in Asia-Pacific & Oceania



Source: Jaakko Pöyry 1997

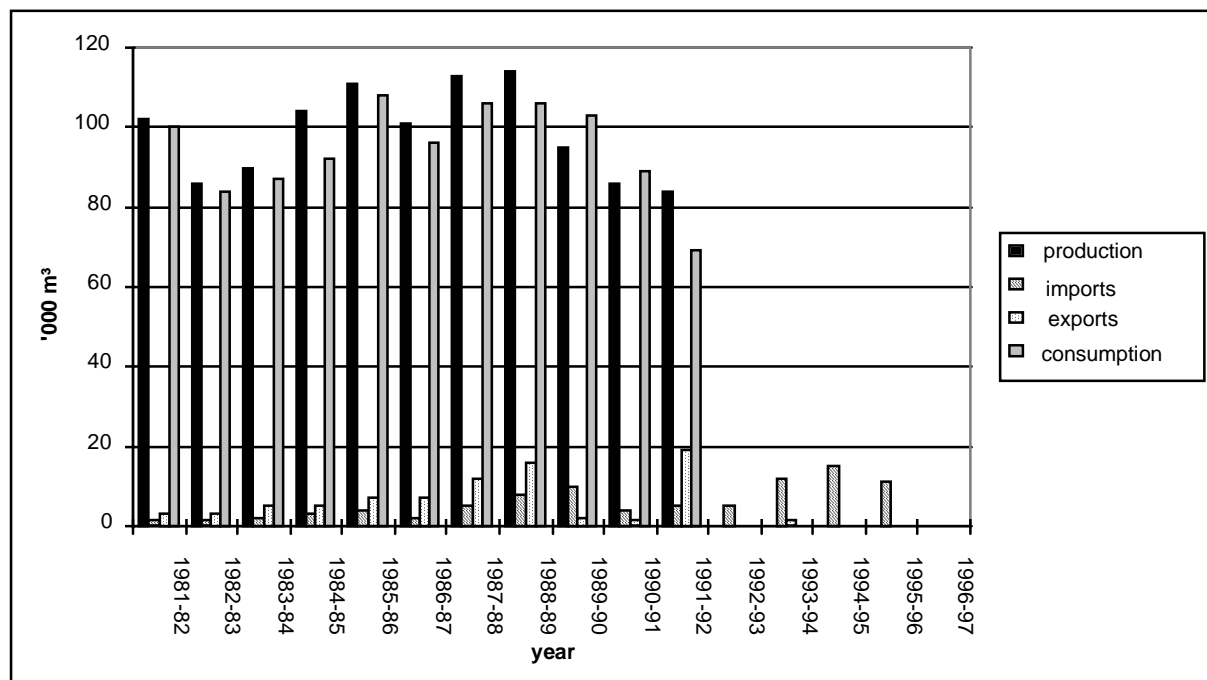
- MDF capacity started to surpass consumption levels during 1995, leading to uncertainty in the market and a rapid decline in prices.
- Asia-Pacific and Oceania will experience “over capacity” for the next 5 years.
- Investments in MDF are expected to be moderate in the coming years, although continued expansion of the industry is expected.
- There have been significant recent investments in Australia, eg Dominance (Wangaratta), Hokushin (Starwood - Bell Bay), Laminex (Gympie) and CSR (Oberon). In New Zealand, Carter Holt Harvey, Rayonier and Fletcher Challenge have made major recent investments in MDF production.

## **Fibreboard - Hardboard and Softboard**

Within Australia, hardboard is a mature product. Trends indicate the decline in consumption of the early 1990's has been arrested (Table 3-19), with production steady and maintaining domestic demand. Markets are likely to have stabilised as hardboard's unique qualities are used for a variety of end uses. Other important issues are:

- Only one company (CSR) produces hardboard in Australia. They have two mills, one of which is in Ipswich, South East Queensland.
- The Ipswich mill manufactures all the hardboard products made in Australia except the exterior product, "Weathertex".
- The hardboard mill in Ipswich is one of the few purchasers of hardwood roundwood and sawmill residues in the region.

Figure 3- 19: Australian hardboard market



Source: ABARE Australian Forest Products Statistics, December Quarter 1997

- There are no statistics for production and consumption of hardboard after 1992 as there is only one Australian company manufacturing hardboard.
- Eucalypt species are well suited to the manufacture of hardboard, either from native forest pulpwood and sawmill residues or plantations.
- Brazilian hardboard ("Eucatex", "Duratex"), made from eucalypt plantations, is a very high quality product much in demand in Europe and the United States, primarily for automotive use.

## OSB

The present annual consumption of Oriented Strand Board (OSB) in Asia is relatively small at around 200,000 m<sup>3</sup>. The product has been developed as a substitute for softwood plywood, which is used extensively in housing construction in North America. Asian dwelling construction methods, with the exception of Japan, are focused on concrete and brick, using only limited volumes of structural plywood. Opportunities for OSB throughout Asia are therefore limited and its present main use in the region is for packaging, which restricts its price potential.

Japan offers some potential for utilisation of OSB, as housing construction methods utilise wood and wood-based panels and some limited volumes are being used by Japanese house makers converting to North American building systems. As a result, OSB is becoming better understood. Total consumption of OSB in Asia is expected to reach 1.5 million m<sup>3</sup> in 2010, of which the majority will be imported.

OSB may be produced from thinnings, small roundwood from native forests including regrowth, and hardwood and softwood plantations. The emerging Asia-Pacific market provides an opportunity for OSB production in the region, however cost competitiveness is an issue, particularly compared to North American producers. Most of the world's OSB production and consumption is in North America where capacity will exceed consumption for at least the next 5 years.

### 3.3.9

#### **Pulp and paper production and consumption**

Australia currently exports around 7 million green tonnes per annum of pulpwood (woodchips) and imports 1.1 million tonnes per annum of pulp and paper products.

The Asia-Pacific region has a shortage of most paper making fibre and, in particular, is a significant importer of bleached softwood kraft pulp and recovered fibre. The region consumed 86 million tonnes of paper and paperboard grades in 1996, of which 8 million tonnes were imported. The main import grades were newsprint, mechanical printing papers, kraftliner board and pulp based cartonboard, ie products based predominantly on softwood fibre.

Pulp and paper production is integrated at most Australian mills, so that Australia's only substantial pulp import of bleached softwood kraft. However, there is a need for additional pulp production to allow increased production of paper and paperboard grades. Australia has a serious deficit in paper and board production and imports about one third of its consumption of 3.3 million tonnes per annum. Australia imports significant quantities of newsprint and printing and writing grades. Containerboard is the only grade where exports have been achieved.

A summary of pulp and paper product markets is as follows:

#### BLEACHED SOFTWOOD KRAFT PULP (BSKP)

- No domestic production of market pulp of this grade.
- Imports totalled 110,000 t/a in 1996, forecast to grow to 210,000 t/a by the year 2010.
- For the Asia-Pacific region, the demand/supply balance indicates a growing deficit, reaching 4 million t/a by the year 2000.

#### BLEACHED HARDWOOD KRAFT PULP (BHKP)

- Demand supply/balance for the Asia-Pacific region indicates that it will become self sufficient in BHKP in the medium term and possibly a net exporter depending on developments in new pulp mills in Indonesia and Malaysia.
- Eucalypt fibre is very suitable for production of BHKP for high quality printing and writing paper grades, so that BEK pulp has a quality advantage over pulps from mixed tropical hardwoods.
- Economic stability in Australia relative to Indonesia and Malaysia increase its attractiveness to investors.
- A new world scale mill in Australia could probably find domestic markets for about half its output, particularly if there are additional investments in paper production and/or some older pulp capacity is closed down.
- Requires significant wood resources at a world competitive scale (>2 M tonnes pa).

#### OTHER MARKET PULPS

- Markets for other pulp grades such as mechanical/semi-chemical, unbleached kraft, sulphite and dissolving pulps, are considerably smaller than those of BSKP and BHKP and are mainly produced in integrated mills.
- There are significant imports of these other pulp grades into the Asia-Pacific region.
- The competitive scale of new mills making these grades is such that considerably smaller volumes of wood resource are required.
- At present there is no domestic consumption to support an Australian dissolving pulp mill, however, should there be investments in processing industries, the market situation would change and immediately favour a local mill.

## NEWSPRINT

- In 1996, Australia imported 280,000 tonnes of newsprint, indicating there is a market opportunity for a world scale newsprint mill in Australia.
- The Asia-Pacific region is a major net importer of newsprint, with 1996 imports totalling 2.7 million tonnes.
- However, recently announced projects will significantly reduce this import requirement.
- Over the last five years, two-thirds of Australia's newsprint imports have come from a Fletcher Challenge mill in New Zealand.

## PRINTING AND WRITING PAPER

### Uncoated woodfree paper

- The Asia-Pacific region is self sufficient in uncoated woodfree printing and writing paper.
- However, in Australia, there has been an import deficit which has been slowly growing.
- While this represents a definite opportunity, Amcor is currently building a 160,000 t/a uncoated woodfree paper machine at its Maryvale mill in Victoria. This machine will start up in 1998 and effectively remove this deficit.

### Coated woodfree paper

- There are good domestic market opportunities for coated woodfree grades.
- Australia imported 170,000 tonnes, or 75% of its requirements in 1996.
- With no new capacity additions, imports are forecast to grow to 400,000 t/a by 2010.
- The supply/demand balance in Asia-Pacific, however, does not encourage new coated capacity.



### Mechanical paper

- Australia and the Asia-Pacific region have a large and growing deficit in mechanical papers.
- In 1996 Australia imported 282,000 tonnes of mechanical papers and Japan imported 450,000 tonnes, making them the two largest importers in the region.
- There is little production of these grades in Asia-Pacific outside Japan.
- While Australia would not have to compete with low cost producers in Asia-Pacific, it would face strong competition from large integrated producers, particularly those in Scandinavia who currently supply 60% of the regions Light Weight Coated (LWC) imports.
- These mechanical paper grades typically use approximately 50% softwood mechanical pulp and 50% BSKP (some eucalypt BCMP could be used also).

### CORRUGATING MATERIALS

- Australia is a net exporter of corrugating materials. The recently opened Visy plant in Brisbane is an example of the boom in manufacture of these materials from 100% recycled paper products.
- Existing capacity is higher than forecast domestic demand up to 2010, so that exports are expected to continue. A small quantity of kraftliner is imported.
- While the Asia-Pacific region is self sufficient in recycled fibre based corrugating materials, the region is a significant importer of kraftliner board.
- Kraftliner is based predominantly on softwood virgin pulp.

### CARTONBOARDS

- Australia imports around 50,000 t/a of coated carton boards per annum.
- Visy Paper's recent entrance to coated cartonboard production may close this gap in the near future, although imports of virgin fibre based grades and liquid packaging are expected to continue.
- While recovered paper is available locally to allow production of recycled fibre based white-lined chipboard, there are limited opportunities to sell this grade on the domestic market.

## TISSUE

- Tissue is not suitable for long transportation due to its bulk.
- Little is traded internationally and most countries in the region are self sufficient.

### 3.3.10

## Conclusions - Markets

The following conclusions may be drawn in relation to the wood and wood products market in the Asia-Pacific region:

- The current economic turmoil in Asia will have an impact on markets for Australian wood products in this region. These impacts are not fully known; however, the key points are:
  - the supply factors remain unchanged, ie decreasing availability of MTH logs and an increasing dependence on imported products.
  - In the short term we may see an increase in MTH products from countries under economic stress as they seek to maximise exports.
  - the basic demand drivers of increasing population, increasing urbanisation and increasing per capita GDP remain in place.
  - new investment in processing facilities in Malaysia and Indonesia will slow dramatically.
  - Asian processors will use their deflated currencies to enhance their competitiveness in export markets.
  - short term demand for some products will fall off.
- Decreasing supplies from tropical forests will create an apparent wood deficit in the Asia Pacific of around 60 million m<sup>3</sup> pa by 2010.
- Availability of traditional hardwood sawn timber and plywood will decline due to a reduction in the availability of suitable logs.
- Exports of tropical plywood will decline through redirection to local markets and falling harvests.
- Plywood consumption levels will be met by increasing use of softwood and reconstituted products. An opportunity exists for temperate hardwoods as concrete formply.
- Market development will be rapid providing more choice to consumers as the number of suppliers increases.
- Market success will depend on product quality, reliability of supply and cost of production rather than any major increase in prices, apart from some specialty products.

- The market will be competitive, due to developing technology particularly in resins for new products.
- MDF production is likely to stay in oversupply until around 2004.
- Demand for Particleboard is strong, and additional production will be required sooner.
- OSB and LVL will remain small by comparison with MDF and particleboard.
- SE Asian producers of MDF and particleboard will increasingly seek to export products to the other, non Asian markets.
- Increasing presence of non Asian based suppliers in the market, as the wood products market becomes increasingly global.
- China will remain the great uncertainty in the Asian market. Any slow down or increase in activity in this market can change supply demand balances considerably.
- India is showing increasing signs of more rapid development and has the capability to increase demand for wood products from Asia-Pacific substantially, potentially eliminating oversupply.
- Supply from Far East Russia could have an impact on the supply/demand balance. However, impediments such as political and infrastructural risk will need to be overcome prior to any further increase in supply from this source.

## 4. Competitiveness Analysis

Where possible, these data have been gathered from existing industry in the South East Queensland region. Where data from industry are unavailable, generic trends based on Margules' databases and the Jaakko Pöyry network have been used.

The general cost level in the region, compared with the region's main competitors in New Zealand, South East Asia and other mainland States, is higher than average. However, in future, with increasing export quantities, more efficient transport methods and reforms on the waterfront (such as those achieved in New Zealand), costs are likely to decrease, thus giving a better position for the industry with both domestic and overseas competitors. Some factors will, however, remain a disadvantage, eg the scattered nature of some of the resource, transport distances and low yields per hectare. Still it is likely the cost level for the forest industry in the region will remain average. Competitiveness may be enhanced by the ability to achieve excellent customer service, rapid delivery and turnaround time, and quality product.

The competitive analyses are based on costs and exchange rates prior to the Asian currency crisis in the last quarter of 1997. A conversion rate of USD 0.78 to the AUD 1.00 was used. The potential impact of the devaluation of Asian currencies on markets is discussed in Section 3. In terms of cost competitiveness, the devaluations will result in a significant increase in some costs for Asian producers but will also allow them to offer attractive prices to export customers. Exchange rates will continue to fluctuate and the situation in the Asia Pacific will be volatile for at least the short term. One clear result of the Asian currency crisis is that investment in Australia will be much more attractive than in Asian countries for the next few years. Also, developments which have lower reliance on Asian markets will be more attractive. It is also important to note the analysis relates to new mills of a scale appropriate to both product and markets. Comparisons should not be made between these and existing mills in the region. For this reason, generic data have been utilised for the analyses where these examine products presently produced in the region.

## 4.1 Sawnwood

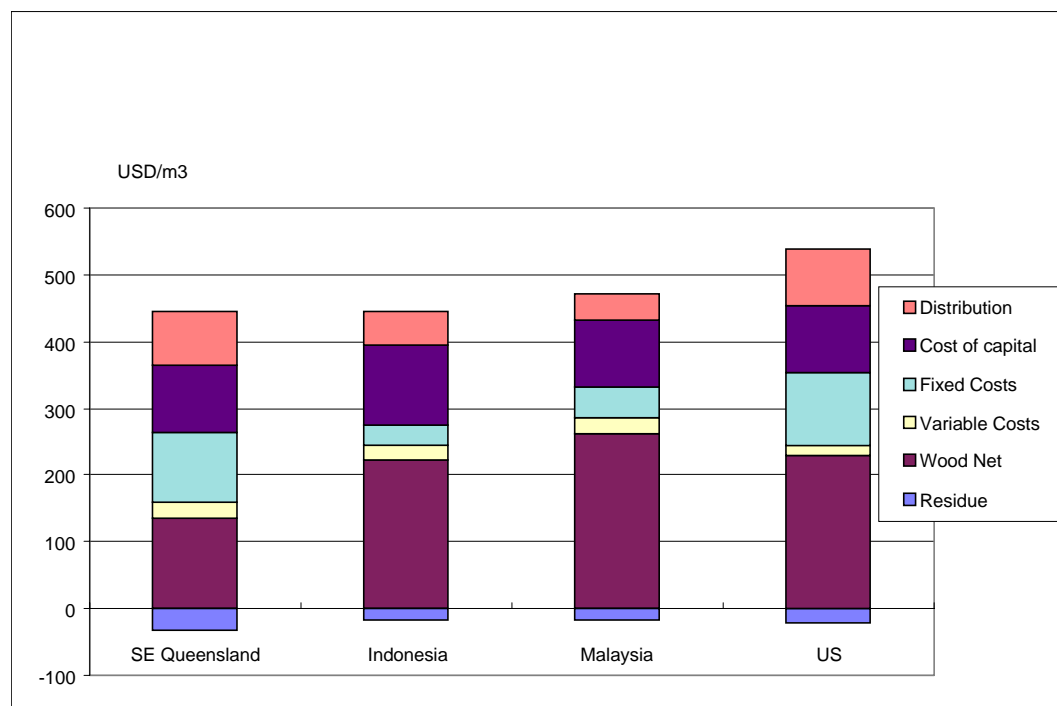
### 4.1.1 Native hardwood

Green sawn hardwood is exclusively a domestic product: as such, international competitiveness analysis is focused on dried and dressed products into the main market, Japan. Experience has shown if these products are competitive in the Japanese market, they will be competitive in other Asian markets and in Australia. The analysis assumes all residues can be sold. This is not the case for much of the region's sawmills due to a lack of domestic markets and transport distances and low chip quality, making export unprofitable. Where this is not the case, the figure below the line on the graph should be added to net wood costs.

The major competition for dried and dressed sawn hardwood is from Indonesia and Malaysia. It is anticipated supply restrictions and declining log quality over time will impact on these operations, assisting the cost competitive position of Australian producers. Once again, the relatively close transport distance to export markets from Queensland producers is a crucial issue.

The competitive analysis following is for new sawmills with drying and dressing facilities and a log input capacity of 20,000 to 30,000 m<sup>3</sup> pa. Existing sawmills have lower capital costs, however, they may be less productive and may have lower recoveries, thus increasing their fixed, variable and net wood costs.

Figure 4- 1: Sawn, dried and dressed hardwood cost competitiveness into Japanese markets



Source: Margules Pöyry

Figure 4-1 provides indicative cost competitiveness of South East Queensland sawn, dried and dressed hardwood into the Japanese market as compared to major producers in Indonesia, Malaysia and the USA. Important details are:

- The region has a significant advantage in net wood costs (log cost divided by recovery, less residue sales)
- Log recoveries are higher in competing countries due to better log quality.

- Mill residues have a slightly higher market price from South East Queensland producers, as they are mostly suitable for export chip and domestic board production as opposed to the lower pulp value of mixed tropical hardwood residues and high transport costs from Eastern USA. Securing export markets for sawmill residues from South East Queensland has, however, proven difficult.
- The landscaping industry currently provides a good market for residues from sawmills close to urban areas. This market is, however, fickle in relation to both volume and price.
- Energy is a major non-wood variable cost.
- A major fixed cost is labour. New mills require personnel with a high level of technical expertise - the cost of these employees does not differ greatly between countries.
- Cost of establishing mills is similar between countries, although capital cost is less in the region and the USA due to lower perceptions of in-country risk, and a higher availability of in-country expertise and equipment.
- Indonesia and Malaysia have lower distribution costs into the Japanese market.

Another critical factor is market perception. The Malaysian industry has an excellent reputation of supplying consistent quality and quantity to the Japanese marketplace, whereas Indonesia does not. Also, although the cost of production from the USA is significantly higher, this product is gaining market share in high value products due to the efforts of the American Hardwood Export Council, an encouraging sign for Queensland producers.

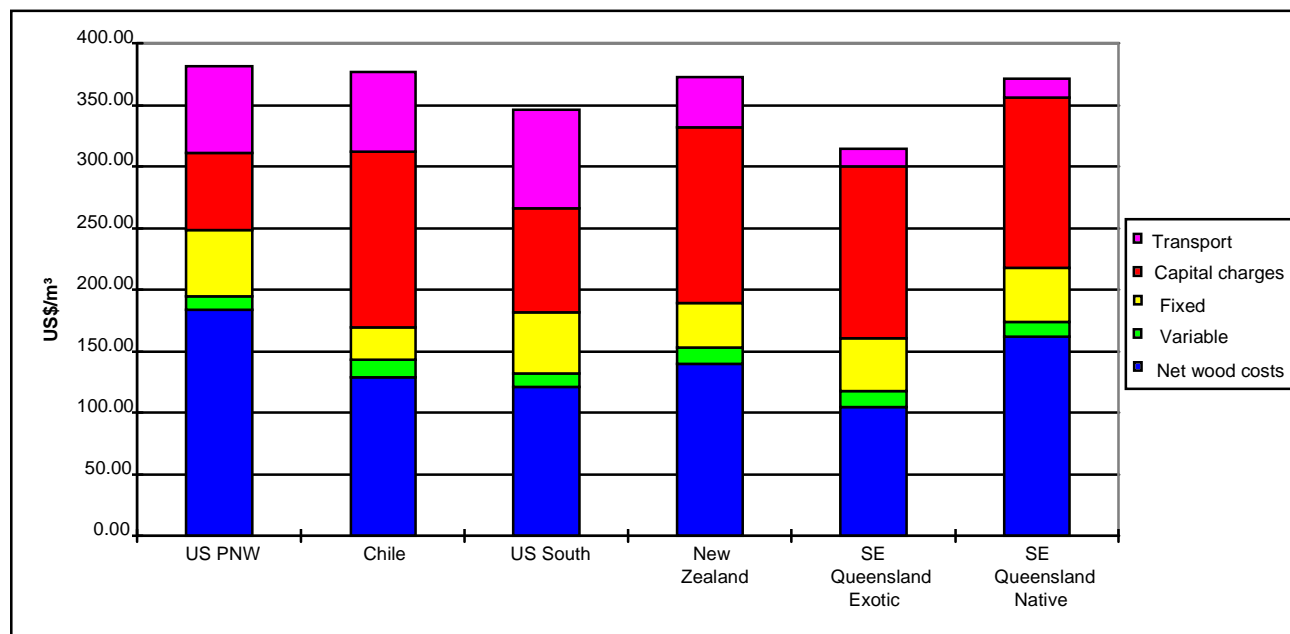
Initially, although indications for markets into Asia are positive, the Queensland product will have to overcome:

- Lack of knowledge of local hardwood species in the marketplace, requiring acceptance for quality and applications, and
- Scale issues as products will initially be supplied in relatively small quantities, reducing their potential applications.

#### 4.1.2 Sawn softwood

Figure 4-2 shows the cost competitiveness of both native and exotic softwoods produced in South East Queensland for the Australian markets. This is important as Australia imports around 650,000 m<sup>3</sup> of sawn softwood per annum. The main sources of imports are the Pacific North West of the US and Canada, and New Zealand.

Figure 4- 2: Native and exotic pine sawn softwood cost competitiveness into domestic markets



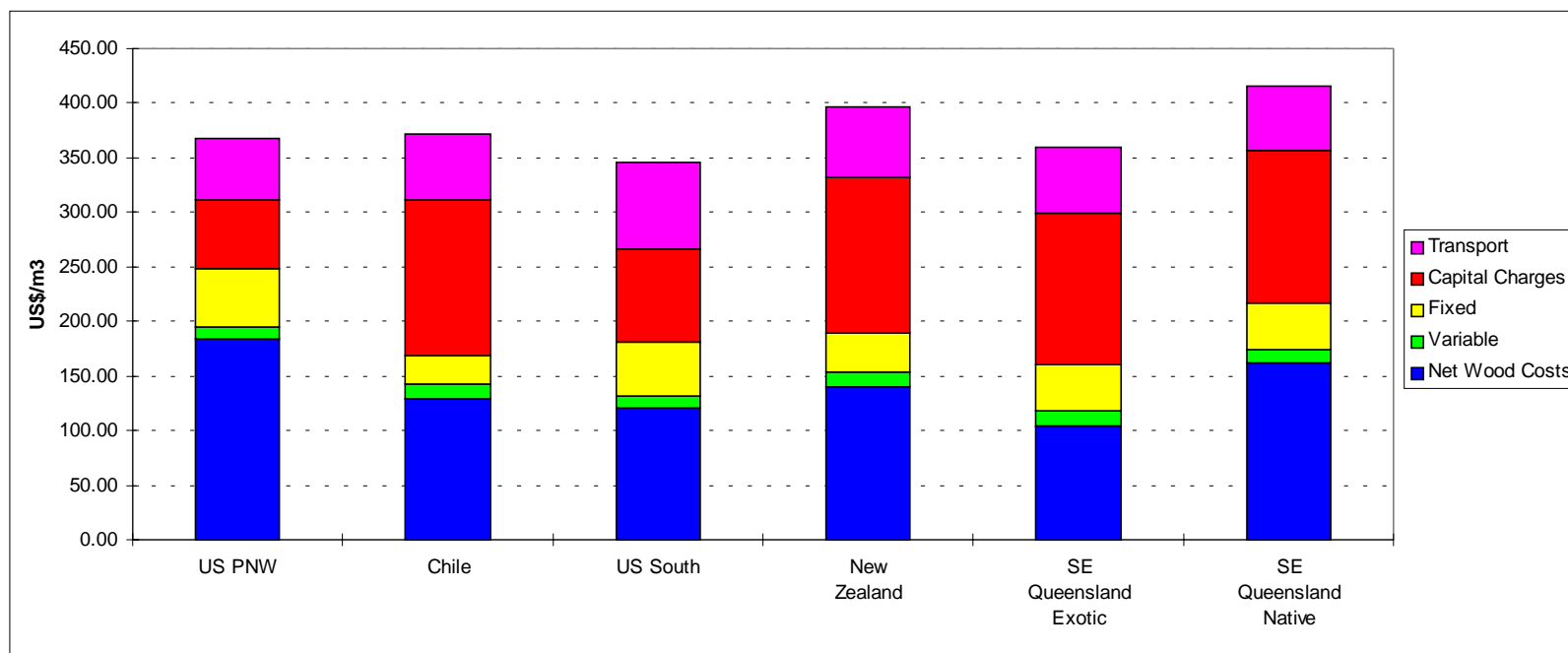
Source: Margules Pöyry

- Delivered log costs are low in South East Queensland for exotic softwoods due to mechanised harvesting and proximity of mills to resource.
- Stumpages for exotic softwoods are also lower, partly offset by lower recovery rates in sawmills.
- Native softwood stumpages are considerably higher, with the exception of the Pacific North West.
- Apart from wood costs, variable costs are similar between competing regions.
- Fixed costs (personnel) are lower in New Zealand and Chile.



- Initial mill investment is lower in the USA.
- Cost of capital is the lowest in the region.
- Distribution costs, as expected, are lower for Queensland mills into the domestic market (Figure 4-2).

**Figure 4- 3** Native and exotic pine sawn softwood cost competitiveness into Japanese and Korean markets



Source: Margules Pöyry

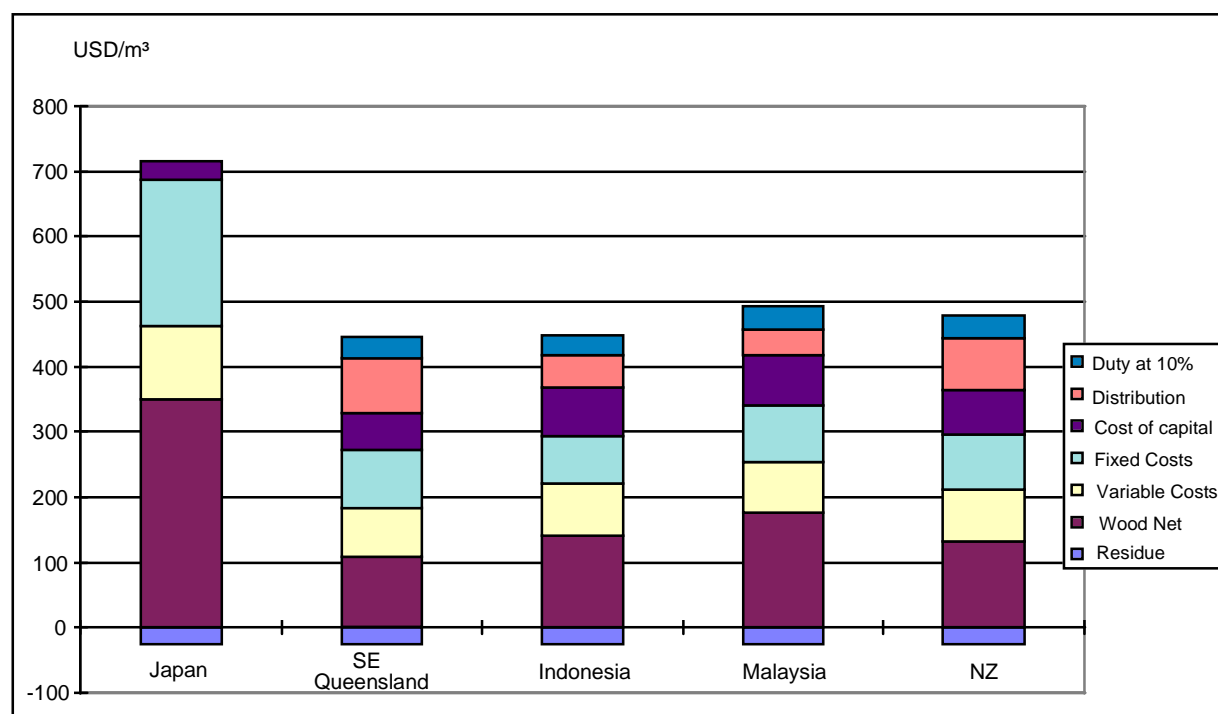
- Exotic softwood production is cost competitive in Japan and South Korea (Figure 4-3). However, it would have to be sold at a discount to Douglas fir and radiata pine due to perceived quality differences.
- Native softwoods are the most expensive into Japan and Korea and would need to be sold on the basis of their high quality and inherent timber characteristics.

## 4.2 Wood based Panels

### 4.2.1 Plywood

Analysis of cost competitiveness has focused on plantation resources. Potential opportunities exist for hardwood plywood or combi-ply mills, however insufficient data exists for detailed analysis, particularly for production of high quality face veneer from the region's hardwood species. Plywood produced from softwood, particularly higher strength grade slash pine, will compete with hardwood plywood in structural applications. The Japanese market is used for comparison (Figure 4-4).

Figure 4- 4: Plywood cost competitiveness in Japan



Source: Margules Pöyry

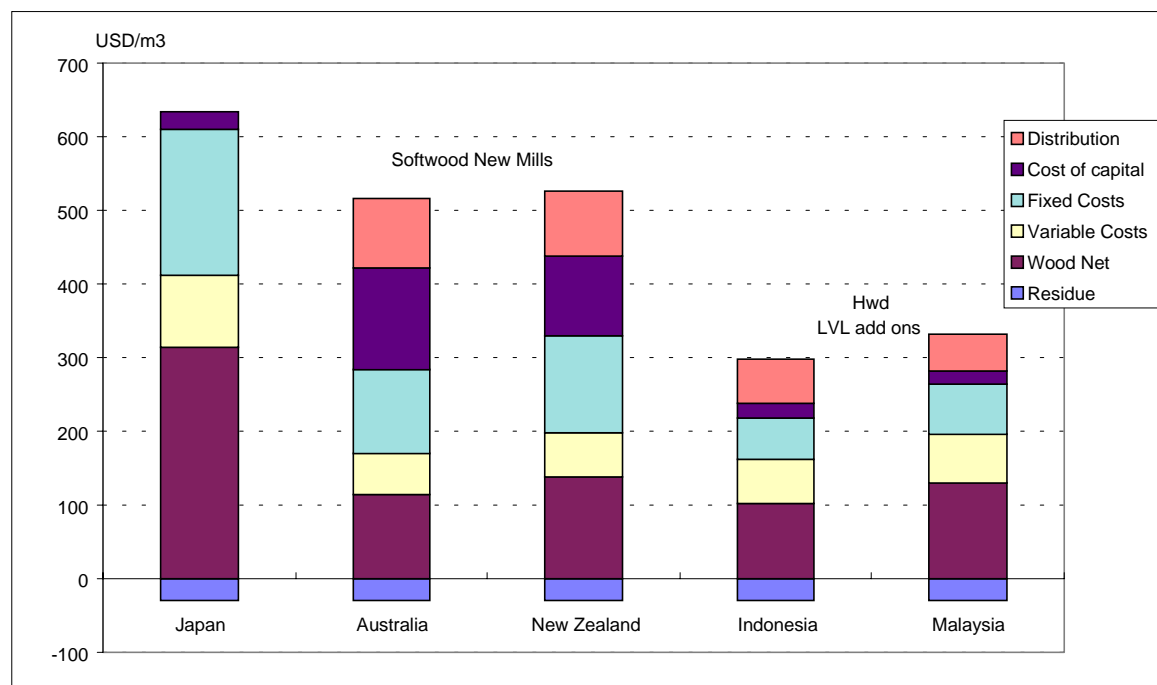
Review of value-adding/transformation opportunities for the  
South East Queensland wood and wood products industry

- Plywood from the region has the lowest net wood cost of all countries (the wood cost is for exotic softwood).
- Lower recovery rates are offset by lower stumpages, harvesting and delivery costs.
- Indonesian and Malaysian stumpages are likely to increase at a faster rate as log supplies contract. Likewise, as log quality decreases, so will recovery rates.
- Variable costs other than wood are similar for all countries.
- Fixed costs for the South East Queensland mill are higher due to operating labour costs.
- The region has a capital cost advantage due to lower mill construction costs and cost of capital.
- Indonesia and Malaysia have a distribution cost advantage into the Japanese market except to Japanese production.
- Recent sales successes in South East Asia confirm the competitiveness of softwood plywood from South East Queensland.

#### 4.2.2 LVL

As LVL is a relatively new product in the Australian market, accurate cost competitive data are difficult to obtain. However, indicative costs of production as compared to New Zealand, Indonesia and Malaysia are shown in Figure 4-5:

Figure 4- 5: LVL cost competitiveness in Japan



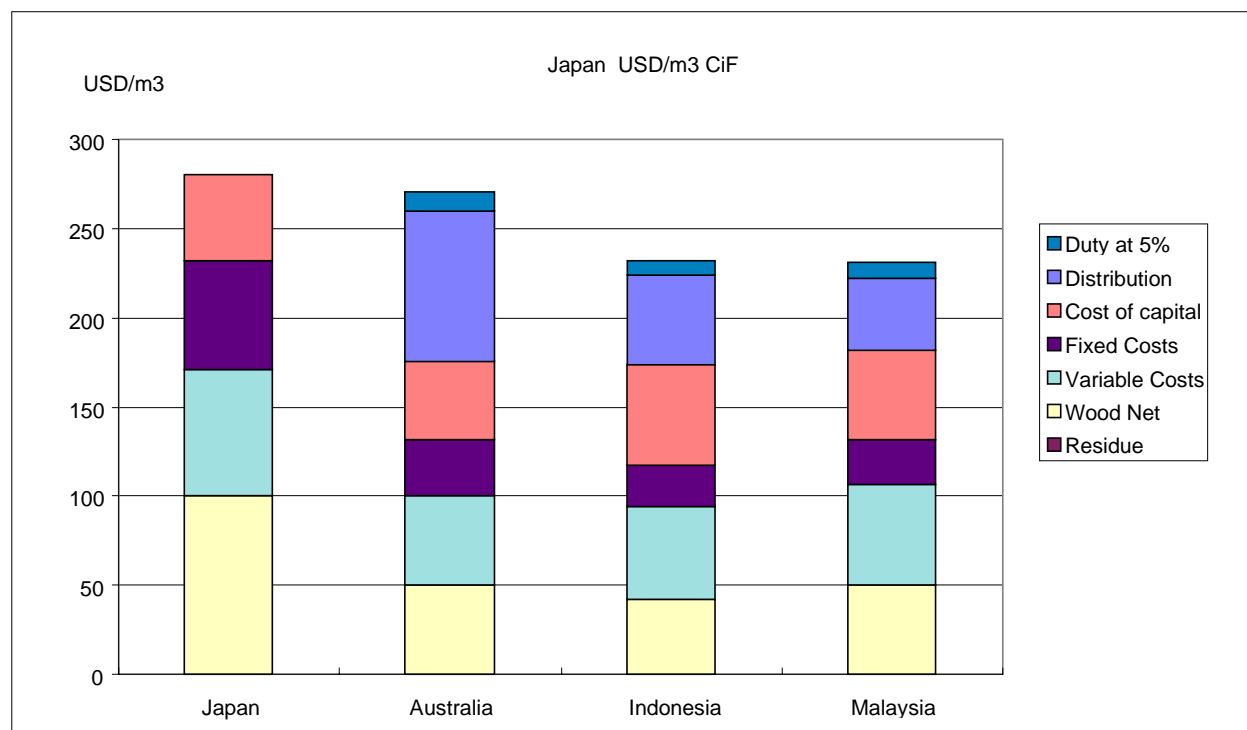
Source: Margules Pöyry

- The low costs for Indonesia and Malaysia are as a result of LVL manufacture added to lines in existing plywood plants, thus reducing capital costs. A similar, low capital cost processing facility is a possibility in South East Queensland.
- There is increasing Japanese interest in LVL manufactured from Australian plantation grown softwoods. The region's freight advantage over other potential Australian locations makes this type of investment a strong possibility for South East Queensland.

### 4.2.3 Partideboard

Export markets for particleboard include Japan (on which the analysis has been based), South Korea and Taiwan. Cost competitiveness of particleboard production in the region is shown in Figure 4-6:

Figure 4- 6: Partideboard cost competitiveness in Japan



Source: Margules Pöyry

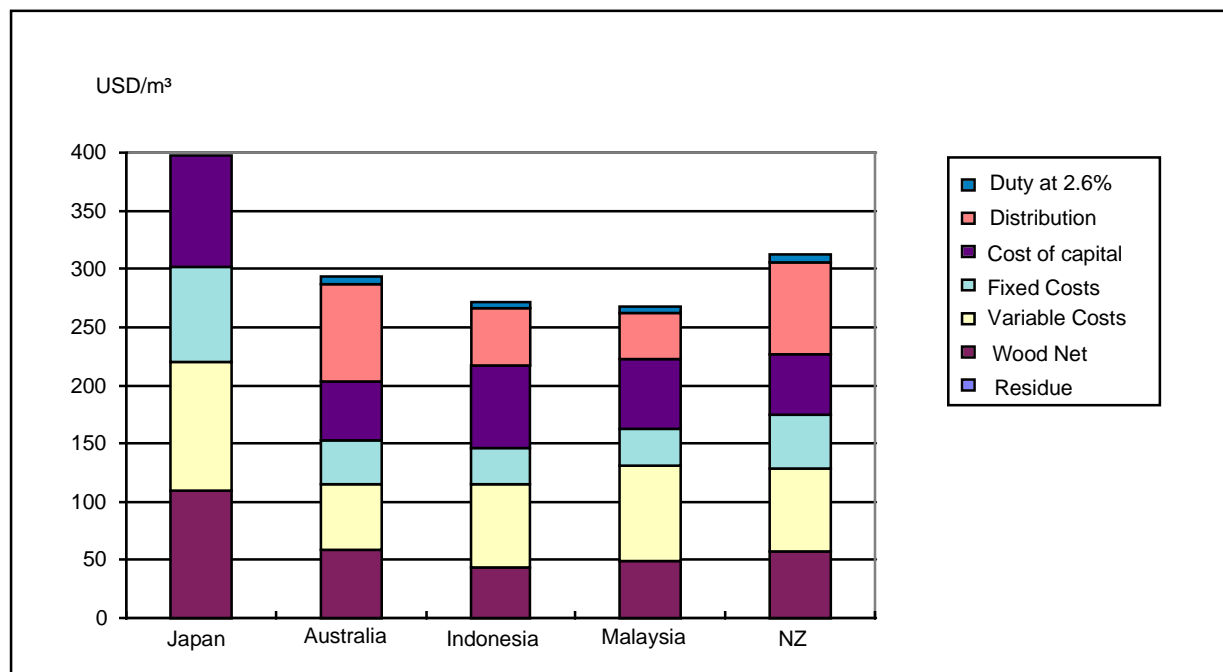
- Malaysia and Indonesia are Australia's main competitors in the Asian market.
- Australian particleboard is a higher quality, more consistent product as it is manufactured from light coloured plantation grown pines and residues.
- Wood costs are similar between the competing regions.
- Variable costs other than wood are similar, although fixed costs for the Queensland mill are higher due to operating labour costs.
- Australia has an overall capital cost advantage due to lower mill construction costs and cost of capital.
- Indonesia and Malaysia have a distribution cost advantage into the Japanese market.
- Competitiveness will be greatest where quality is important and with value-added products such as melamine overlay, edged and cut to size.

#### 4.2.4

#### **MDF**

The region's cost competitiveness is compared to New Zealand, Indonesia and Malaysia in the Japanese market. Other significant markets, where the relative competitiveness position is similar, are Korea and Taiwan.

Figure 4- 7: MDF cost competitiveness in Japan



Source: Margules Pöyry



- Australian and New Zealand wood costs are based on plantation softwood thinnings, sawmill residues and roundwood. The region's pulpwood roundwood is purchased at export parity prices, representing slightly higher wood costs than New Zealand.
- Malaysian wood costs are based on low quality rubberwood and MTH mill residues. Both Malaysian and Indonesian wood costs are lower than Australia.
- Variable costs other than for wood are similar, although fixed costs for the Australian mill are higher due to operating labour costs.
- Australia has an overall capital cost advantage due to lower mill construction costs and cost of capital.
- Indonesia and Malaysia have a distribution cost advantage into the Japanese market.
- Australia can overcome some of the distribution cost disadvantage by producing MDF of higher quality and through value-adding.

#### 4.2.5 Hardboard

Cost competitiveness of the industry is difficult to establish given:

- It is a mature product in the marketplace.
- Only one hardboard manufactures hardboard in Australia.
- Only two new company plants have been constructed in the last 20 years, and
- Substitute products exist for almost all hardboard applications.

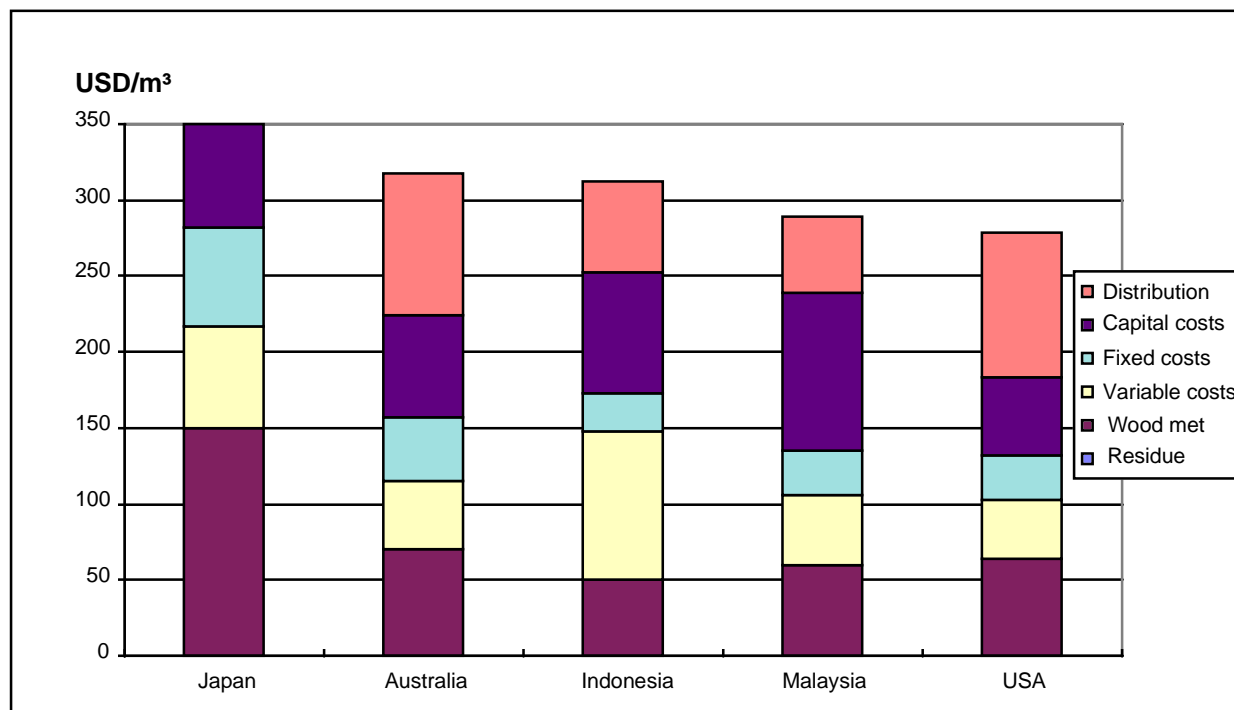
If, however, new markets are established, which utilise the unique qualities of hardboard, as has recently been evidenced with "TechBoard" in the UK, it is likely a new mill would be cost competitive into the target markets, particularly given the unutilised volumes of hardwood residues in the region.

#### 4.2.6 OSB

No separate statistics are kept on OSB in Australia since there is no production and little consumption at present. Applications for OSB include bracing in mobile homes and webs in engineered timber "I" beams. There is strong competition in these markets from LVL and plywood.

Given the scale of OSB mills in the Pacific North West of the USA and Canada, it will be difficult for Australian produced OSB to compete, even though it will have cost advantages in variable and capital costs against the main Asian competitors.

Figure 4- 8: OSB cost competitiveness in Japan



Source: Margules Pöyry

## 4.3

### Pulp and Paper Products

In general, Australia's average unit costs for the main production inputs for pulp and paper grades are in the middle of the cost range of its main competitors.

- Australian hardwood pulpwood costs are at a similar level to those of Indonesia, North America, and Brazil, and below those of Europe and Japan.
- Australian softwood pulpwood costs are above those of North and South America but below those of Scandinavia and Japan.
- Australian labour costs are considerably higher than those of South East Asia, but below those of Europe, North America and Japan.
- Australia's closeness to Asia-Pacific gives it a freight advantage over competitors in South America and Europe. However, freight costs are higher than those of producers in the Asia-Pacific region.

The capacity of a mill is an important factor in its competitiveness. A larger mill will have lower fixed costs and lower capital charges per tonne of production. Hence, a new Australian mill is most cost competitive if it has the market opportunity and the resource availability to support a world scale plant.

Jaakko Pöyry considers that a world scale mill would be:

- BSKP – in excess of 500,000 t/a with a wood input of around 2.0 to 2.5 million t/a.
- BHKP – in excess of 500,000 t/a with a wood input of around 2 million t/a.
- Mechanical/chemi-mechanical pulp mill – above 250,000 t/a with a wood requirement of 600-800,000 t/a.
- Paper machine – 300,000+ t/a depending on the grade.

#### 4.3.1

##### Bleached Softwood Kraft Pulp (BSKP)

- Analysis of the cost competitiveness of a world scale mill of 500,000 t/a capacity in Australia indicates it would be competitive supplying market pulp into the Asia-Pacific region, as would be expected given raw material costs and location in the region.

#### 4.3.2 Bleached Hardwood Kraft Pulp (BHKP)

- Analysis of the cost competitiveness recently undertaken for a proposed new Tasmanian mill has shown that a mill could operate in the lowest cost quartile and supply to the Asia-Pacific region but only where wood prices were in line with costs, and not at current export prices.
- Cost differences between a new Tasmanian mill and the new mills in Indonesia are relatively small.
- Production costs in Queensland would be similar and wood costs should not be prohibitive.

#### 4.3.3 Kraft mill opportunities

A number of options could be considered to allow a BSKP mill to be feasible:

- A world scale mill producing both BSKP and BHKP in campaign. This is done in many mills overseas.
- A smaller 200-300,000 t/a mill. This size mill is generally not considered viable as an export market pulp mill. However, it may be possible to improve the competitiveness of a smaller mill by focusing mainly on domestic markets and/or having integrated paper production.
- A world scale mill which would import woodchips initially while establishing additional plantations. A mill requiring imported woodchips is likely to struggle to be competitive, so the establishment of additional plantations, followed by a mill in ten years time would be an alternative.

#### 4.3.4 Other market pulps

- The competitive scale of new mills making these grades is such that considerably smaller volumes of wood resource are required.
- There would be strong competition from North America in these markets, so an Australian mill would need to maximise its strategic advantages by having captive markets and/or some integration with either a paper machine or possibly a large modern sawmill.

#### 4.3.5 Newsprint

- A new machine could be very competitive in the domestic market, but not particularly cost competitive in the Asia-Pacific region.

#### 4.3.6 Printing and writing paper

##### Uncoated woodfree paper

- An Australian machine would be in a reasonable cost competitive position against main overseas suppliers.
- The main threat would be the rapidly increasing and very cost competitive Indonesian supply.

##### Coated woodfree paper

- An Australian machine would only be cost competitive on the domestic markets.
- A coated woodfree machine or mill, or an off-machine coater at an existing mill producing a variety of coated papers to meet the current domestic demand would be competitive.

##### Mechanical paper

- A new Australian mill would not be as cost competitive as the Scandinavian mills. However, it would be more cost competitive than the Western European mills which currently supply around 25% of the Asia-Pacific LWC market.

#### 4.3.7 Corrugating materials

- The current level of manufacturing costs for kraftliner board is about the same as for North America, so Australia is still reasonably cost competitive in Asia-Pacific.
- Australia is less competitive against those mills in Asia-Pacific producing recycled fibre based testliner.
- Nevertheless, Australian mills have been successful selling testliner and corrugating medium to the region, partly on the basis of performance and quality.

#### 4.3.8

##### Cartonboards

- Australia is unlikely to be cost competitive in the Asia-Pacific markets for these grades. Thus a new mill does not represent a particularly good business opportunity.

#### 4.3.9

##### Tissue

- Australia would be in a good cost competitive position to supply domestic markets, particularly in the higher quality grades.
- However, currently installed capacity in Australia is forecast to be in excess of domestic demand until after the turn of the century, thus restricting opportunities.

## 5. Development Options for Industry in South East Queensland

Development options only occur where there is enough resource of suitable quality; where markets are available; and where industry can process the resource at a competitive cost. In formulating potential industry growth scenarios for the region, assumptions are made about development possibilities which include the minimisation of impediments to investment in the respective industries. These assumptions are:

- long-term access to secure raw material supply
- availability of electric power and energy at competitive prices for future expansions
- possibility of utilising cost-efficient and rational transport methods and harbour operations
- internationally comparable pricing and allocation of forest products, consistent with National Competition Policy objectives
- comparable road tolls and other similar payments/taxes for industry in the region
- no import duty protection in either the Australian or main export markets
- provision of other infrastructural requirements (eg minimum road standards) for industry.

This environment will mean that within the physical limits of the wood supply, those product/process options having good market prospects and competitive strength may be successfully implemented in the medium to long term.

Based on the findings of the resource analysis, market review and competition possibilities, the development opportunities and options for the region's wood and wood products industry are illustrated in Tables 5-1 and 5-2.

Table 5- 1: Summary of wood and wood products industry development opportunities

	to 2010		to 2020	
	Growth of existing industry	New industry	Growth of existing industry	New industry
Hardwood sawmilling:				
- kiln dried boards/flooring/decking	✓	✓	✓	
- green off saw boards				
- specialty timbers	✓			
- construction/framing				
- fencing				
- kiln dried structural	✓			
- heavy structural	✓			
- mouldings	✓	✓	✓	
- components/feature grade timber	✓	✓	✓	
Native softwood sawmilling				
- finger jointed and clear mouldings	✓		✓	
- structural sawn timber	✓		✓	
- components	✓		✓	
Exotic Softwood sawmilling				
- kiln dried and dressed framing	✓		✓	
- appearance grades	✓		✓	
- green sawn product	✓		✓	
- treated products	✓		✓	
Wood-based panels				
MDF (exotic swd, hwd, hoop)	✓	✓	✓	
PB (exotic swd, hoop)	✓			
HB (hwd roundwood, chip)	✓			
Plywood (hoop, exotic softwood)	✓	✓	✓	
LVL		✓	✓	



**Table 5- 2: Potential development options**

Opportunity	Domestic markets	Asia-Pacific markets	Region's competitiveness
Hardwood "cluster" processing	Small	Good	Good but market recognition required
Softwood plywood	Small	Excellent	Good
LVL	Growing	Growing	Good
Particleboard	Mature	Good	Good for high quality board
MDF	Currently oversupplied	Currently oversupplied	Good for high quality board
Sawn softwood	Good	Good	Good

## 5.1 Profile of Existing Industry

The existing log processors in South East Queensland are summarised in Tables 5-3 to 5-5 below.

**Table 5- 3: Hardwood sawmills**

Log input	No. of mills	Average input (m³)	Average maximum capacities (m³) *
1,000 m³	46	334	1,035
>1,000 m³ 5,000 m³	29	2,466	2,939
>5,000 m³ 10,000 m³	13	7,065	7,483
>10,000 m³	10	24,287	29,819
<b>TOTAL</b>	<b>98 **</b>	<b>421,000</b>	<b>528,000</b>

\* includes change in shift structure

\*\* includes 6 mills located out of the SEQ RFA region which source a portion of their input from within the region

Source: Economic survey of South East Queensland sawmills 1995-96, ABARE

**Table 5- 4: Softwood sawmills**

Log input	No. of mills	Average input (m³)	Average maximum capacities (m³) *
10,000 m³	8	6,096	8,453
>10,000 m³ 50,000 m³	12	23,673	34,781
>50,000 m³	7	176,808	329,872
<b>TOTAL</b>	<b>27 **</b>	<b>1,526,309</b>	<b>2,794,100</b>

\* includes change in shift structure

\*\* includes 1 mill located out of the SEQ RFA region which sources a portion of its input from within the region

Source: Economic survey of South East Queensland sawmills 1995-96, ABARE

The following industries also operate in South East Queensland.

**Table 5- 5: Other South East Queensland industry**

Industry	Input type	Number	Volume input (m³)
Woodchip export	SWD	2	>200,000
Hardboard	SWD and HWD	1	35,000
Plywood	SWD	2	<10,000
		1	>50,000
Particleboard	SWD	1	130,000
MDF	SWD and HWD	1	>200,000

## 5.2

### Native Hardwood

As a result of the resource analysis (Section 2.1), market (Section 3) and the competitive analysis (Section 4), Margules believes the best opportunities for the native hardwood industry will focus on:

- Increasing hardwood value-adding and establishing marketing efforts to target domestic (new markets and import substitution) and Asian markets with consistent quality, processed and semi-finished products. This will include furniture and joinery components, mouldings, flooring, decking and panelling. These products take advantage of the appearance, hardness and high quality finish of the region's hardwoods.
- Joint investments in kiln-drying, dressing and manufacturing of components to enable smaller sawmillers access to these markets.
- Increased production of short length timber, enabling higher utilisation of existing resource.
- Production of specialised, seasoned structural products from green sawn timber, possibly in conjunction with joint kiln drying, dressing and manufacturing facilities.
- Hardwood pulpwood production through silvicultural improvement, for making panel products where transport economics, species mix and volumes allow.

Further developments in hardwood value-adding will be achieved through:

- Technological developments in processing.
- Investment to take advantage of technological developments.
- Development of "stand-alone" secondary facilities for further processing into components, semi-finished and finished products.
- Developments in sales and marketing.

Assistance to industry to enable this to occur could include:

- Resource security.
- Assistance in making use of research and development and technological advancement.
- A supportive and attractive investment environment.
- Assistance in establishing "stand-alone" secondary processing facilities.
- Co-ordinating industry marketing efforts to ensure scale, quality and regularity of supply.
- Assistance in establishing export markets.

### **Solid wood products - sawnwood, mouldings/components**

Sawn hardwood, with a focus on high value end products, represents the most feasible opportunity for development in the region. The existing industry has been gradually moving down this path, particularly where competition for sales has forced millers to seek higher value or niche markets.

The number of hardwood sawmills in the region will decrease as production is expected to be concentrated in fewer, larger plants. This will be determined to some extent by the location of each mill and its proximity to resource. The most likely areas for this to occur are in the Kilcoy-Woodford supply zone, focusing on the high value blackbutt forests for value-added products, and in the Maryborough supply zone, focusing on converting the spotted gum into high-value flooring, decking and kiln dried structural uses. Another likely area for this to occur is north of Maryborough, in the Builyan/Gladstone area, also focusing on spotted gum but including ironbark and mahogany species.

Milling technology will enable higher value products to be recovered from the resource as it changes from the traditional mix of “compulsory logs” to smaller logs and more optional logs. This will include development of technology which enables the handling of short logs, smaller diameter and regrowth logs, and an increasing quantity of sawn pieces. Investment will also occur in kiln drying; in dressing and moulding; and in the application of finishes. Investment in hardwood remanufacturing is also expected.

Outputs could include appearance grade seasoned products such as flooring, decking, panelling, furniture grades, window and door components including door jambs, staircase components, parquetry, mouldings and edge-glued panels. Seasoned structural products could include F17, F27, and kiln dried bearers and joists for specialty applications, eg sports floors.

Opportunities exist for increasing production of native hardwood decking and engineered flooring systems. The strong market demand in these sectors will continue, based on an outdoor lifestyle. At present, South East Asian hardwood decking, because of its cost, is favoured but this could be replaced by the local product providing quantity and quality is consistent and price is competitive.

Opportunities also exist for the production of natural feature grade timbers for furniture, as has been the case with Jarrah in Western Australia. Improvements in technology and development of new markets will result in increased finished product recoveries. The numbers in Figures 5-2 and 5-3 reflect these anticipated improvements.

### **Solid wood products - hardwood roundwood**

These products are essentially poles, piles, girders (for bridge members etc) which are historically produced from coastal species of high strength, including grey ironbark, grey box, spotted gum, turpentine and blackbutt. Because of their low cost compared to other materials, markets for these products will remain strong. At the time of writing, no data was available on the current harvest or future yields of these

products so no industry development options have been presented although harvesting is likely to continue. It should be noted that the hardwood sawmilling industry is concerned about the harvesting of poles as these trees represent the future high quality sawlogs.

### **Solid wood products - hardwood veneer**

Hardwood veneer represents an unlikely opportunity for production in the region for the following reasons:

- The forests carry high levels of defect, making them mostly unsuitable for veneer production. If, in future, severe fire can be excluded, veneer quality material might become available. However, this is very long term.
- Although blackbutt and spotted gum, for example, are suitable for decorative veneer, further research would need to be done, particularly with respect to yield and gluability.
- There is insufficient resource for an industry based solely on this type of product, although potential exists for combi-ply or small quantities of decorative hardwood veneer.

### **Hardwood pulpwood**

Hardwood pulpwood, primarily for the production of woodchips for export, is an important commodity in the international marketplace.

- In 1996, Japan imported 17.6 million m<sup>3</sup> of hardwood woodchips per annum. Australia provided approximately 23% of this volume in 1995/1996 (Source: ABARE, Japan Paper Association).
- Japanese purchasers place importance on regularity and dependability of supply and, as such, pay a premium for woodchips from Australia. The Japanese paper industry, because of its domestic size and protected market, can afford to pay this premium for a quality product.
- The capacity of the export woodchip industry to pay for its raw material (hardwood pulpwood and sawmill residues) is much higher than comparable industries in other countries.
- Since the price for export woodchips is higher than that for domestic woodchips, sawmills within an economic haulage distance may have the option to sell woodchips for export (depending on quality), generally achieving a higher price and hence making their operations more profitable. However, woodchips which may be suitable for manufacturing hardboard, for example, may not be suitable for paper.

Species and their distribution are important considerations. For example, species generally unsuitable for export woodchip within the region include the ironbark, box and bloodwood groups, Angophora species and turpentine. While a small percentage of these species may be

accepted by customers, in quantity they are unacceptable either because of their dark colour, their very high basic density, their extractives, or a combination of all or any of these. Species suitable for export woodchips include the gum and stringybark groups.

Although the level of information about the pulpwood resource is improving, the species mix and the relative isolation of viable quantities of resource from export facilities will most likely prevent the development of an export woodchip market for the region. However, during periods of peak demand, an export hardwood woodchip operation may be viable, even given the variable nature of the resource. Pulpwood and sawmill residues are more likely to be used in panel production, notably hardboard and mixed with softwood to produce particleboard and MDF. Supply into the landscaping market will continue, again subject to haulage distances, however, due to the reduction in sawmill residue production, it is possible that all hardwood pulpwood could be utilised in wood panel production.

Other potential uses for hardwood pulpwood are in charcoal production and as alternative fuel sources. Charcoal production is currently being investigated in the region, however, a previous study has suggested that the existing resource and current technology cannot produce charcoal economically. The use of alternative or 'bio-fuels' is becoming more common overseas. This may represent a longer term option for the Queensland hardwood pulpwood resource.

## 5.3 Native Plantation Softwood

Resulting from the native plantation softwood resource analysis (Section 2-2), market review (Section 3) and competitive analysis (Section 4), Margules believes that:

- Development of this industry will be successful where it takes advantage of the specific characteristics of hoop pine.
- Expansion of native softwood sawmilling and processing, panel manufacture, mouldings and veneer production will be consistent with resource availability.
- There is potential to export high quality logs.
- Production will tend towards high value appearance grades and large end section products, thus avoiding direct competition with exotic softwoods.
- There is excellent opportunity to substitute for imports of mouldings and joinery timbers, particularly of meranti (Pacific maple) from Malaysia.

- The domestic furniture market is small, and unlikely to offer much new potential. However, rapidly developing markets in Asia-Pacific for low cost solid wood furniture could utilise appearance grade native softwood.
- Brazilian plantation-grown softwood is being used for low cost furniture in North America. Potential may exist to enter this market, if the right quantity and quality can be supplied consistently.
- The greatest potential exists with the expansion of the existing plywood industry and/or the establishment of a new plywood/LVL mill.
- Technological improvements and the development of new markets will result in increased recoveries in both sawn timber and plywood production as shown in Figures 5-5 and 5-6.

## 5.4

### Exotic Plantation Softwood

In Margules' opinion, and as a result of the exotic plantation softwood resource analysis (Section 2.3), market review (Section 3) and competitive analysis (Section 4), developments may include:

- Expansion of the exotic softwood sawmilling industry across the region in line with resource availability.
- Expansion of the existing industry using softwood pulpwood.
- New reconstituted panel production based on exotic softwood, including particleboard, MDF, plywood and LVL.

Opportunities will exist for additional production of structural grades in both treated and untreated products through import substitution and replacement of structural hardwoods. Export opportunities will increase as supplies of MTH logs decline. Australian companies have had some success in the Japanese market with prefabricated or kit homes using sawn softwood as a structural component. The additional strength, compared to radiata pine, would be an advantage here.

Improvements in technologies will result in increased recoveries for both plywood and sawn timber production as shown in Figures 5-8 and 5-9. Figures 5-6 and 5-9 shows that by 2020, the softwood woodchip export industry will total only 110,000 m<sup>3</sup> per annum. Although these figures show that it is the native plantation softwood residues which will be exported, they could be substituted for exotic softwood plantation woodchips in panel production and the exotic softwood woodchips would then be exported

## 5.5 Possible Development Paths

The Figures 5-1 to 5-9 show possible development paths for the native hardwood, native plantation softwood and exotic plantation softwood industries. Recoveries are based on actual size for green products and finished size for sawn timber reprocessing

Figure 5- 1: Current structure of South East Queensland native hardwood forest industry

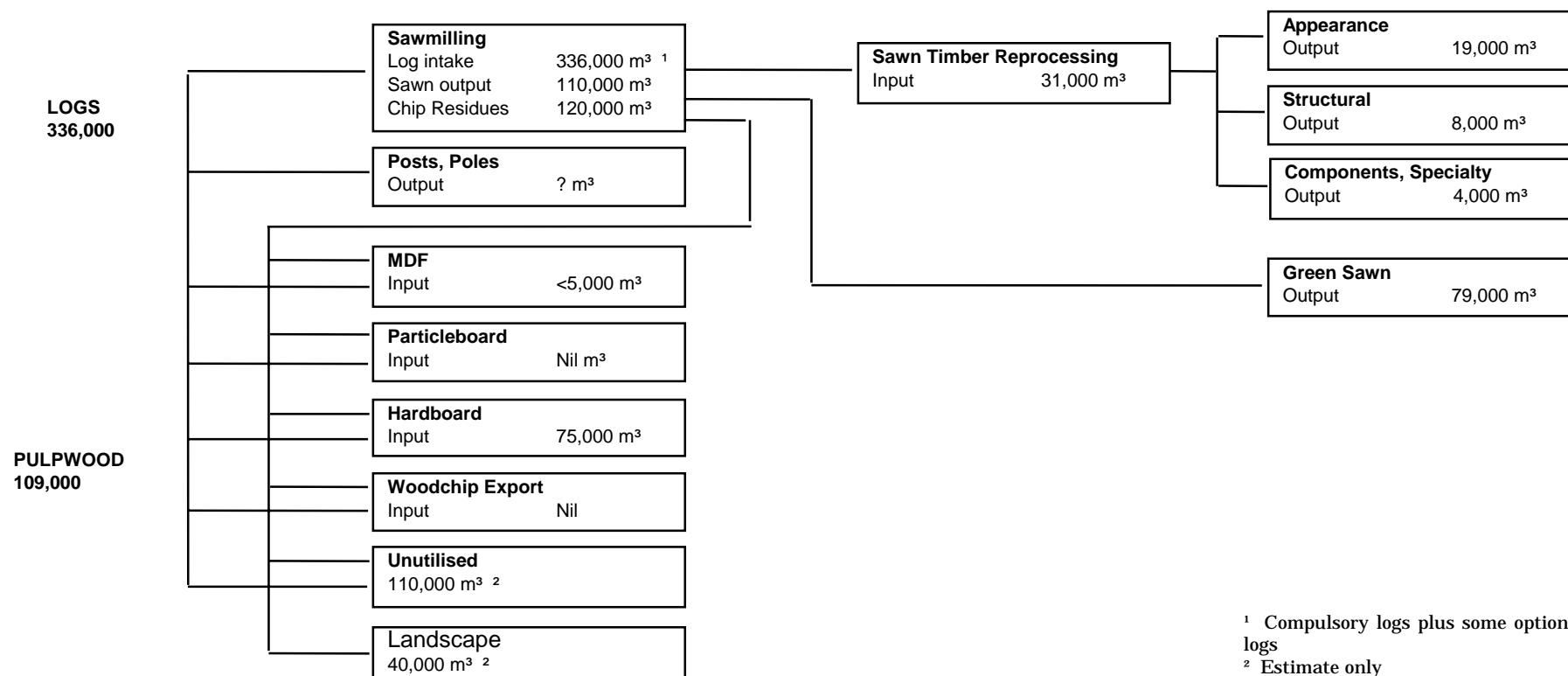




Figure 5- 2: Possible structure of South East Queensland native hardwood forest industry in 2010

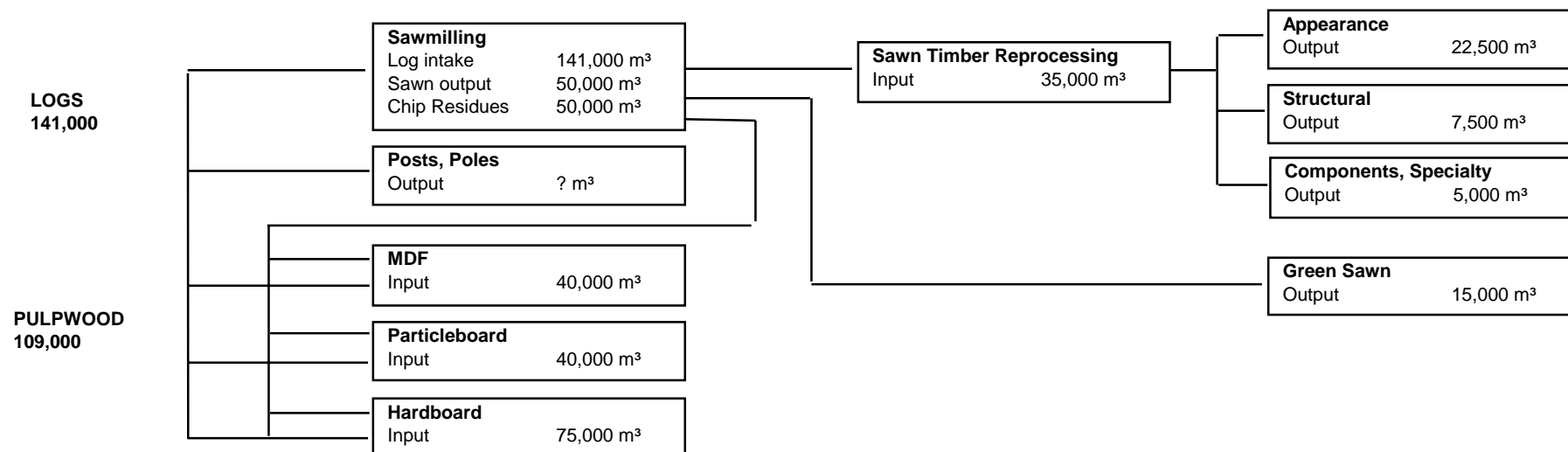


Figure 5- 3: Possible structure of South East Queensland native hardwood forestry in 2020

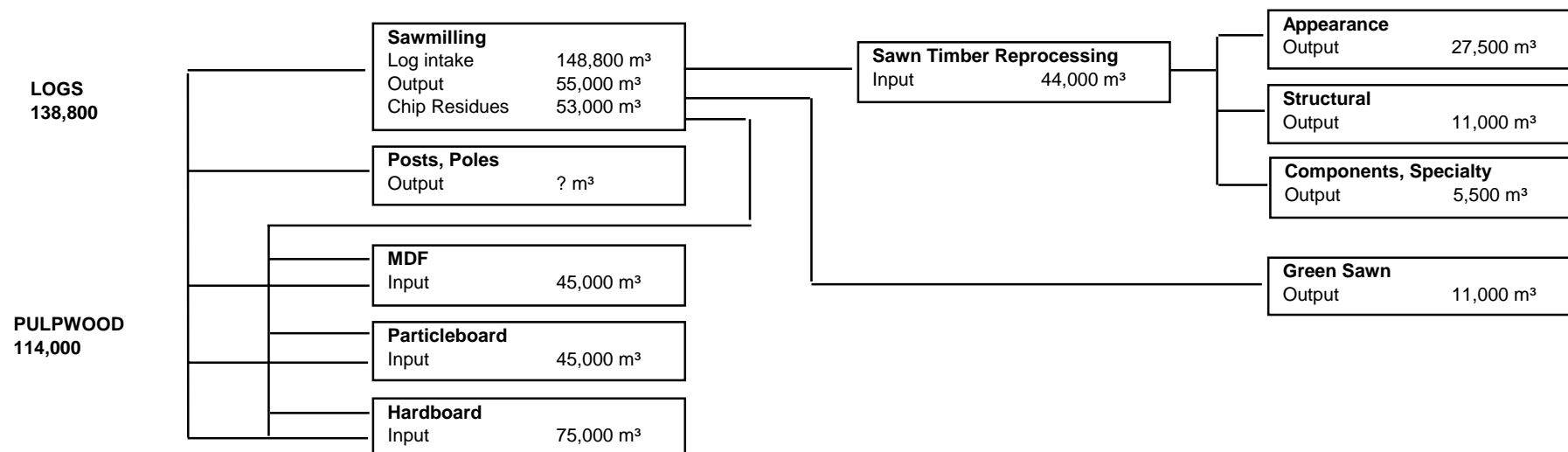


Figure 5- 4: Current structure of the South East Queensland native plantation softwood forest industry

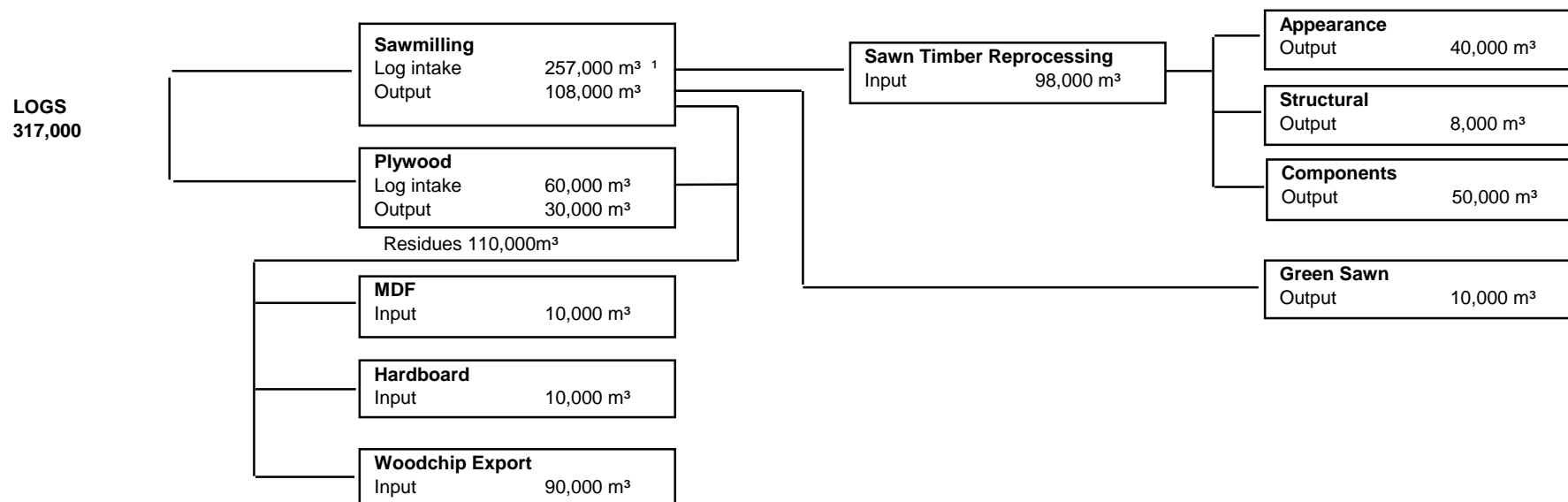


Figure 5- 5: Possible structure of the South East Queensland native plantation softwood forest industry in 2010

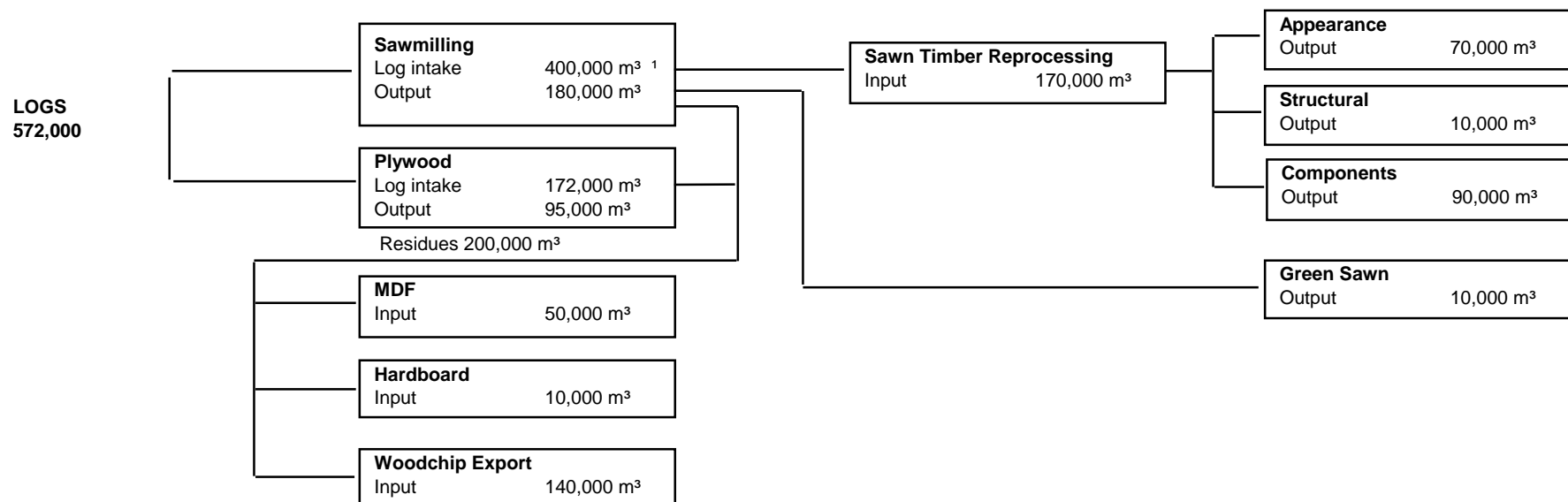


Figure 5- 6: Possible structure of the South East Queensland native plantations softwood forest industry in 2020

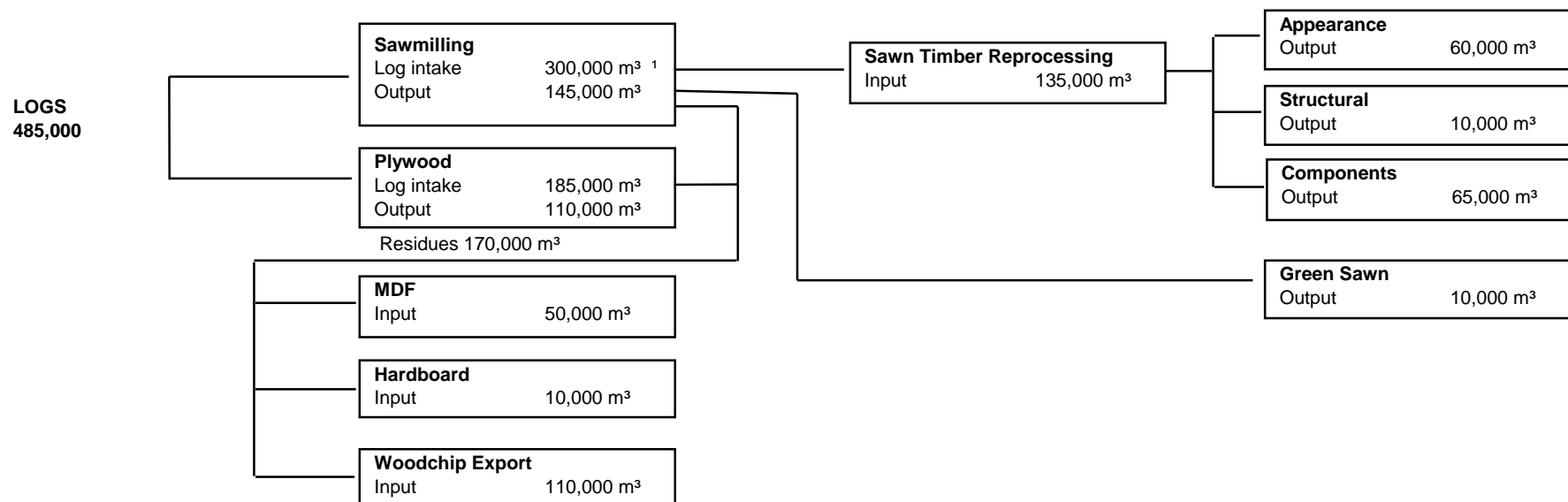


Figure 5- 7: Current structure of the South East Queensland exotic plantation softwood forest industry

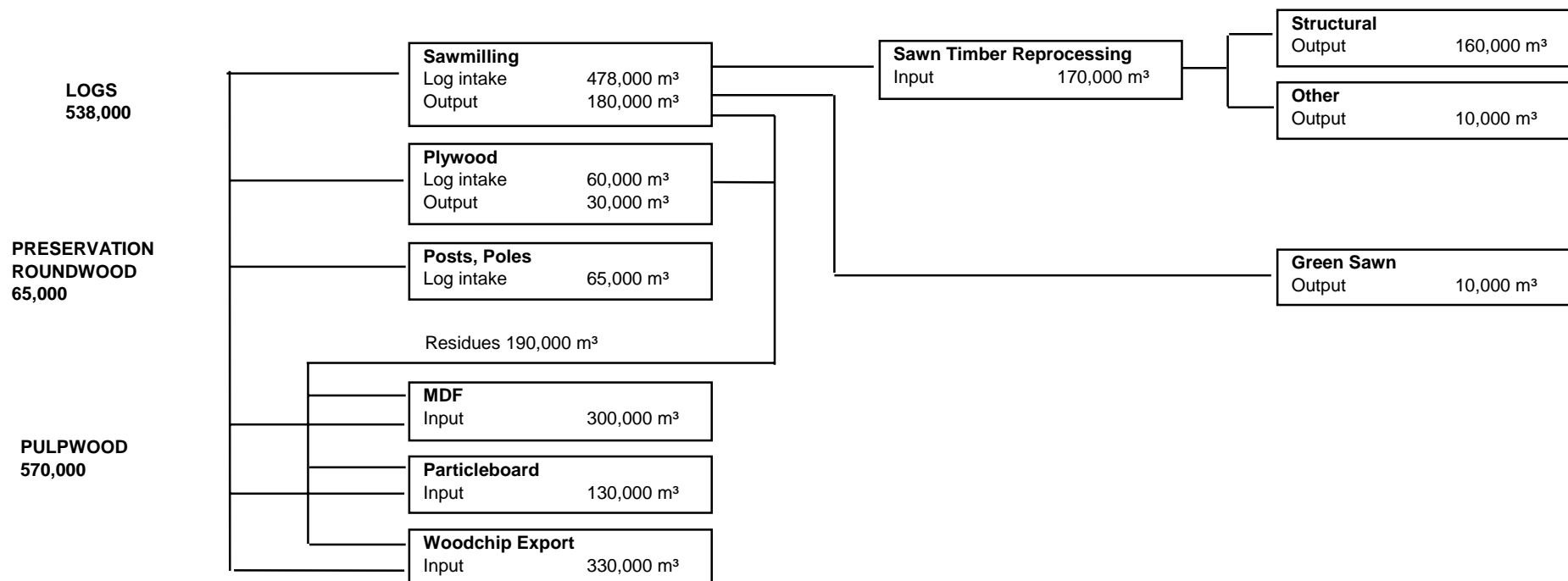


Figure 5- 8: Possible structure of the South East Queensland exotic plantation softwood forest industry in 2010

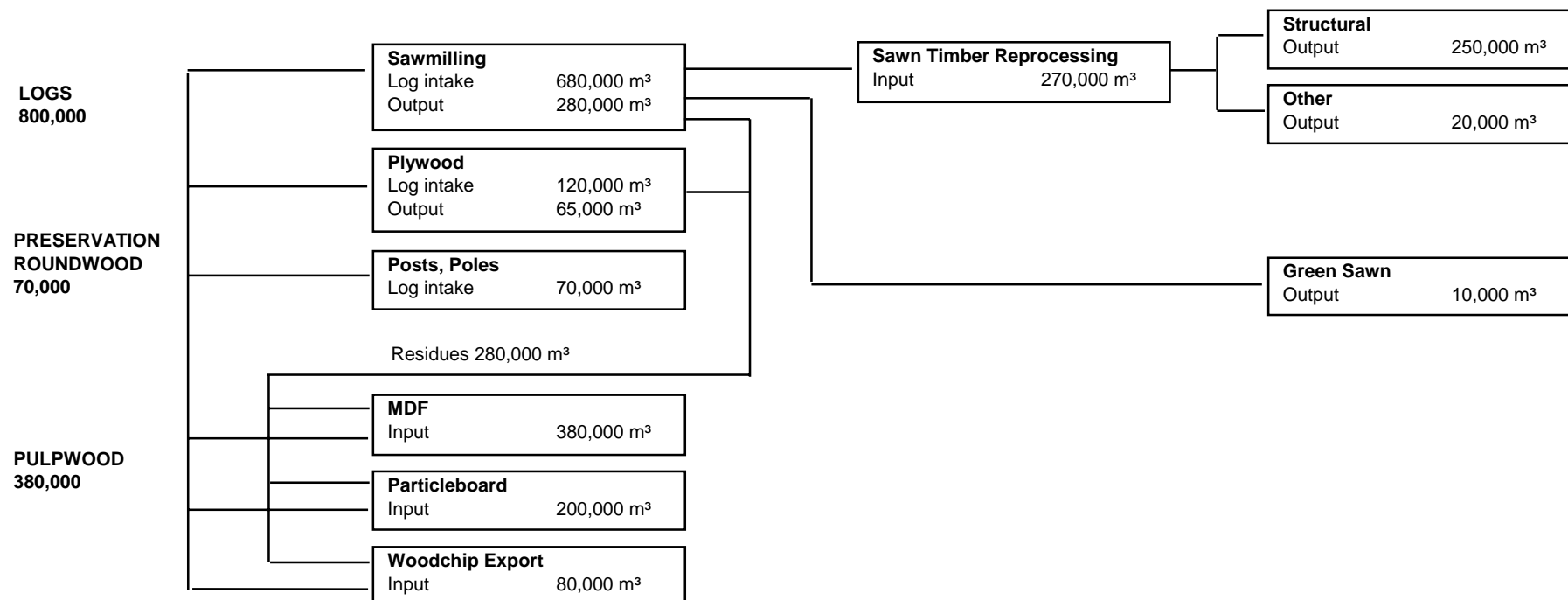
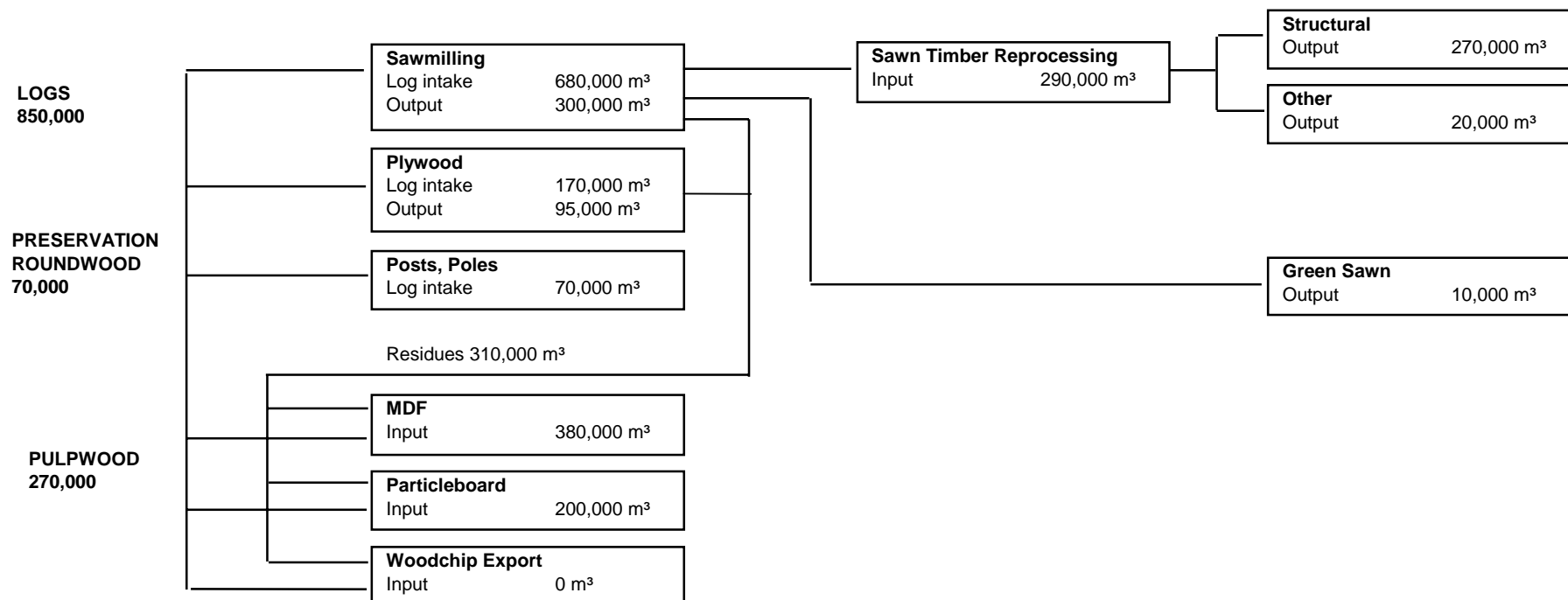


Figure 5- 9: Possible structure of the South East Queensland exotic plantation softwood forest industry in 2020





## 5.6

### Substitution Issues and Industry Development

Product substitution is an important issue in industry development. Some general issues regarding competition and its effects on hardwood consumption include:

- Traditional sawn hardwood production trends in areas where the resource exists.
- Use of wood-based panels such as MDF in furniture manufacture;
- Scarcity of hardwood resource (eg: Asia-Pacific), leading to substitution with plantation species (hardwood and softwood);
- Increased market share of rubberwood furniture and MDF (Asia-Pacific, Australia). This will increase as rubberwood plantations expand and old plantations are replaced.
- As supply dynamics change and export log bans continue, international processors are keen to ensure regular reliable suppliers to existing processing facilities.

## 5.7

### Potential Substitution: Sawn Softwood for Sawn Hardwood

Table 5-3 gives some indications of where softwoods can substitute for hardwoods.

Table 5- 6: Potential product substitution: softwood for hardwood

Hardwood Product	Market acceptance of softwood as a substitute?	Is softwood suitable for application?	Preservative treatment required?	Is softwood price competitive with hardwood?
Seasoned dressed boards and flooring	In limited situations	yes	no	yes
Seasoned rough sawn boards	no	no	Not applicable	Not applicable
Green off saw boards	Possible	In limited situations	for some applications	yes
Speciality timbers	no	no	Not applicable	not applicable
Construction and framing	yes	in most situations	in limited situations	yes
Fencing	yes	yes	yes	no
KD Structural	yes	In limited situations	in limited situations	yes
Heavy Structural	no	no	Not applicable	Not applicable
Other	In limited situations	In limited situations	Not applicable	Where applicable

- The most likely area for substitution is in construction and framing, particularly of 100 x 50 mm, 100 x 38 mm, 75 x 50 mm and 75 x 38 mm sizes.
- Substitution of softwood for large end section, kiln dried structural hardwood will be limited to where a standard softwood size with the engineering capability is available.
- Although price competitive, softwood is not substitute where hardwood is chosen for its appearance, hardness, surface finish and durability. This applies to many flooring, decking, panelling and furniture applications.
- Softwoods, particularly *Pinus* spp., have not yet gained market acceptance in many Asian countries for furniture or structural uses.
- In positions exposed to the weather, softwoods will need to be treated if they are to substitute for durable hardwoods.
- Softwood can't substitute for speciality hardwood timbers, by definition.

## 5.8

### Wood-based Panel Products: Potential Opportunities

#### 5.8.1 MDF

The expanding market for MDF and the cost competitive position of the industry indicate that MDF would be a viable option for development. Also, the existing plant near Gympie is expected to expand by 2010 to remain at world scale. MDF could utilise a proportion of hardwood pulpwood as already illustrated by the Gympie plant. Starwood, in northern Tasmania, is planning to use 70% hardwood and 30% softwood in its board.

By 2020, the existing MDF facility at Gympie could expand to an annual intake of around 500,000 m<sup>3</sup>. Production would be of thick and thin MDF for the growing domestic and Asia-Pacific markets. MDF will also substitute for other panel products, particularly MTH plywood. The mill will have 10-15% of hardwood from both roundwood and sawmill residues. This will improve cost competitiveness, as hardwood pulpwood and sawmill residue can be purchased cheaper than exotic softwood, for which export parity prices are paid.

#### 5.8.2 Partideboard

Production of particleboard from new mills will be at a competitive disadvantage. As a result, it is unlikely new production capacity will be developed in the region. However, expansion of the existing facility in Gympie is expected to satisfy domestic market demand since its cost competitiveness is favourable. An increasing quantity of hardwood, particularly sawmill residues could be used in the expanded mill.

Existing exports are primarily for low-pressure melamine coated board. This is a growth area as markets are established, hence expansion of paper treatment and pressing facilities is likely to occur.

#### 5.8.3 Oriented Strand Board (OSB)

OSB represents a potential opportunity for utilising softwood pulpwood (as roundwood only; mill residues can't be used). However, the market in Australia and Asia-Pacific is underdeveloped and the main producers in North America currently have substantial excess capacity. There are, however, new technological developments which would allow smaller scale plants to be competitive and, if linked to a major market via a consumer or agent, then this type of product could have a future. However, cost levels for the traditional North American style plant are high compared to international producers, and mill scale is an issue for plant location given the available resource.

#### 5.8.4 Plywood

Existing plywood capacity will expand, selling into the export market as a substitute for MTH plywood. Domestic markets will grow slowly for both high quality face veneers from native softwoods and structural plywood made from exotic softwoods.

#### 5.8.5 LVL

A new LVL production facility is an option for the region due to the suitable resource and growing domestic and Asia Pacific markets. However, the cost competitiveness of a new LVL mill compared to one added to an existing ply mill suggest the latter is the more likely option.

#### 5.8.6 Hardboard

Given the existing facility is the only one in Australia producing a range of hardboard products (excluding Weathertex), hardboard will continue to be produced. New markets could be developed, based on marketing the specific qualities of hardboard, ie: its high strength to thickness ratio, stiffness, surface hardness and the ability to take a high quality painted finish. Should new markets be established, production will expand in the region.

### 5.9

#### Other Potential Developments

A number of alternative developments have been investigated. Of these, charcoal, or activated carbon, production is the most attractive. Virtually all species of hardwood pulpwood and mill residues available in the region are well suited to charcoal production; a minimum of 20,000 t/a is required. CSIRO has demonstrated that production of high quality charcoal is technically feasible. It is still not clear, however, that charcoal production will be economically viable. As commercial knowledge of charcoal production increases, this may become a value-adding opportunity.

## 6. Impediments to Investment/Risks

It is important to understand the impact of investor uncertainty on investment decisions, and what factors can reduce uncertainty and thereby enhance the likelihood of investment.

Fundamentally, what drives most companies to invest in forestry processing ventures, whether a small sawmill or a pulp and paper mill, is the prospect of making an acceptable financial return on the capital invested (ROI).

What represents an “adequate return” or, as it is often termed, the “hurdle rate” for ROI varies with different investors, but at the very least, it must be more than can be achieved in passive investment options such as risk free bank accounts (the “risk free” rate). More generally, it may be defined as a rate of return which cannot be bettered by other options open to the investor that entail similar levels of risk. In general, the higher the perceived risk in a project, the higher the “hurdle rate”.

A risk assessment and risk minimisation strategy is critical to any prudent analysis of an investment.

In a general sense, risks associated with new forestry projects are viewed from three perspectives:

- i. business risks - eg the capacity to meet supply agreements in both volume and quality terms, log pricing policies, infrastructural impediments, fluctuations in the cost of utilities and inputs, financial risks and market fluctuations, including supply, demand and price.
- ii. environmental risks - drought, fire, storm and tempest, pests and diseases.
- iii. political or sovereign risks - risks associated with political forces, for example, changes that may occur in forest policy, resource access, taxation, licences, duties etc. These risks are difficult to quantify yet nonetheless real, and may include adverse impacts through external environmental restrictions on either the market (certification, labelling), raw material supply (resource access) or unforeseen environmental problems in regulations on processing etc. These risks can include both perception and reality.

Key factors on which forest product investors focus are:

- end product price
- production cost

- security of necessary raw material supply, and
- security of access to key markets.

Uncertainty or risk associated with any of these factors will affect the likelihood of investment.

Risks specific to the region include a high degree of uncertainty in the RFA process, difficulties with pricing and allocation of forest resources, cumbersome business and resource management by what are essentially still State Government agencies, a lack of a united marketing front giving rise to perceived weakness/instability of supply in the marketplace, and inflexibility of environmental planning measures.

A number of studies affiliated with but separate to the RFA process are currently underway addressing these issues.

## 7. Employment Figures

Following comment on the draft report, Margules has included the following figures for reference. These are based on internal best estimates of industry employment figures. This request is not in the Terms of Reference and these figures have been included as a guide only. More detailed study is required specifically investigating new mill options and employment effects.

Table 7- 1: Predicted industry employment 2010- 2020

Product		Direct employment	
		2010	2020
HARDWOOD	Sawn dried and dressed products	85	100
	Roundwood products		
SOFTWOOD	Sawn dried and dressed products	444	316
	Roundwood products		
WOOD PANELS	MDF	134	134
	Particleboard	80	80
	Hardboard	200	200
	Plywood/LVL	120	180