

PART A

BACKGROUND INFORMATION

The introductory chapters provide background information to the issues discussed in the remainder of the report, as well as some information about inquiry processes.

- *Chapter 1 briefly outlines the inquiry procedures and the broad approach adopted by the Commission.*
- *Chapter 2 considers international aspects of the forest products industries and their markets, as well as identifying some emerging trends.*
- *Chapter 3 profiles the Australian forest products industries. It identifies key characteristics and documents some of the more important structural changes that have occurred over the last two decades.*

1 INTRODUCTION

This report is about the Australian forest based industries which produce sawn timber, wooden panels, woodchips, pulp, paper and paper packaging. The industries constitute an important component of Australian manufacturing activity — around 4 per cent in 1989–90. Largely because of Australia's relative abundance of land, climatic conditions favourable to the growing of trees and the capital intensive nature of the production processes, many have for some time regarded the industries as well suited to Australian conditions and as having unrealised growth potential. Although there is a need to ensure that the industries' operations are compatible with environmental objectives, recognition of the environmentally benign characteristics of the industries' products — they are biodegradable, recyclable and based on a renewable resource — has reinforced such perceptions.

This introductory chapter provides background information about the origins of the inquiry, the terms of reference, the approach adopted by the Commission and certain procedural matters.

Origins and nature of the inquiry

This inquiry is one of the first of a new style of reference — industry development references — announced by the Treasurer in May 1992. The new references differ from the traditional style of reference in that they are industry specific in nature and are intended to promote the development of strategies which will foster growth and enhance employment opportunities.

In keeping with traditional references, industry development references provide opportunities to expose impediments to better performance. In addition, they require the Commission to identify measures which can be undertaken by government and the industries themselves to improve efficiency and to enable growth opportunities to be fully exploited.

Most domestic producers participating in this inquiry see the reference as primarily a means of expediting government action to overcome impediments to the industries' development. In this regard, there is an expectation by many in the industry that the report will lead to governments adopting measures which, first, improve resource security, second, remove what is perceived as inefficient regulation in a number of areas (eg export controls) and, third, reduce input costs by accelerating the pace of microeconomic reform. Most producers do not seek additional direct government assistance (eg tariff assistance, subsidies or

taxation concessions), nor do they seek the development by governments of policies and strategies which prescribe how they can best exploit growth opportunities. In essence, most producers participating in this inquiry consider that, if governments can remove inefficient regulation and improve the delivery of services by government bodies, the development of appropriate growth strategies is best left to individual firms.

There is greater variation in the outcomes sought by participants representing other interest groups. For example, participants representing foresters and research/training bodies generally sought increases in government funding, while the Australian Conservation Foundation argued for the removal of “subsidies” in the native forest area (eg under-recovery of costs by government forestry agencies).

The inquiry's terms of reference

The reference requests the Commission to assess the potential for adding further value to products produced by a number of important Australian forest products industries. Industries specified in the terms of reference are those engaged in producing:

- hardwood and softwood sawn timber;
- plywood and wooden panels;
- woodchips;
- pulp and paper; and
- paper packaging.

Additional matters on which the Commission has been asked to report include: the competitiveness of the local industries; impediments to efficiency and growth; the industries' potential for development; and certain matters relating to the level and distribution of assistance provided to the industries. The terms of reference, which require the Commission to submit its final report to the Commonwealth Government by 21 September 1993, are set out in full on page viii.

The Commission's approach

The Commission recognises that there have been many inquiries involving Australia's forests and the forest products industries in recent years. Most have focussed on forest management issues. In contrast, it is the downstream value adding activities which are central to this current inquiry. Nonetheless, as wood

is an integral input into all the activities covered by the inquiry, some overlap between the matters examined in previous studies and those explored in this report is inevitable. However, in accordance with its terms of reference, the Commission has tried to avoid duplicating the work of previous inquiries wherever possible.

Two terms whose meaning are central to the reference are ‘value added’ and ‘impediments’.

‘Value added’ is a measure of the value which a firm’s (or industry’s) prime factors of production (ie the land, labour and capital it uses) generate from the activities undertaken. Broadly, it is the difference between a firm’s total value of production and the costs of all the material inputs and purchased services which it uses.

Value adding is an important concept in determining the efficiency with which resources are used throughout the economy. This is because the sum of the value added by all firms (plus taxes minus subsidies) makes up a country’s Gross Domestic Product which is the standard measure used to indicate its total economic activity.

While all manufacturing operations add value to material inputs, it is common to equate high value added with the production of more highly processed products. As a result, some community groups advocate policies designed to promote downstream processing operations as a growth strategy for many of Australia’s resource based industries. It is seen as a way of increasing employment opportunities and, by broadening the range of products produced, reducing the exposure of Australian industries to fluctuating world commodity prices. In the context of the forest products industries, some also see it as a means of maintaining employment levels while reducing logging in state forests.

While more extensive processing of materials may be associated with relatively high levels of value added, it is important to recognise that this is not necessarily the case. The value added by the prime factors of production employed in the manufacture of some relatively lightly processed products (eg woodchips) can be just as high — or even higher — than the value added which may result if logs are subject to more extensive processing (eg used to produce panel products). To the extent that relatively lightly processed products are less labour intensive, a higher proportion of their value added would be in the form of profits, and less would accrue to labour as wages.

It is also important to recognise that further processing is not the only means of increasing value added. Value can be added to the prime factors of production in a variety of ways. For example, an increase in value added is achieved if:

- aggregate output expands (ie production increases from (say) 100 units to 120 units of output);
- unit input prices fall; or
- average selling prices increase.

For the purposes of this report, the Commission has interpreted the term ‘adding further value to Australia’s forest products’ to encompass all means of increasing value added.

In this report, the term ‘impediment’ is used to depict those barriers to improved economic performance which are directly controllable by governments, other than measures which relate to the management of the economy as a whole. Thus, impediments may encompass the provision of goods and services by government agencies (eg wood and transport services), as well as specific government policies and regulations which impact on the forest products industries. On the other hand, government measures intended to influence interest rates or exchange rates relate to economic management generally and, while they may adversely affect the forest products industries, they are not considered to be impediments for the purposes of this report.

In keeping with its policy guidelines, the Commission has adopted an economy-wide view. Thus, existing arrangements and options for change have been assessed having regard to the implications for other industries, users, taxpayers and the Australian community as a whole, and not simply from the perspective of the forest products industries.

The Commission’s policy guidelines also require it to have regard to the desire of the Commonwealth Government to encourage the development of efficient industries, facilitate structural adjustment, reduce unnecessary industry regulation and recognise the interests of other industries and consumers generally. In addition, the Commission is required to report on the social and environmental consequences of any recommendations it makes. The terms of reference for this inquiry require that measures proposed by the Commission be consistent with the principles of ecologically sustainable development.

Inquiry procedures

In preparing this report, the Commission has drawn on participants’ submissions, information tendered at public hearings, reports of previous inquiries and discussions with producers, importers and users of forest products, and with relevant government agencies. A staff member visited Canada and the United States to gather information about recent international developments and other factors which will influence the future development of the Australian

forest industries. Jaakko Pöyry Pty Ltd was engaged by the Commission to prepare a report on the international competitiveness of the Australian sawn timber and wooden panel industries.

A list of organisations and individuals that appeared at public hearings held in Perth, Sydney and Melbourne in December 1992 and in Perth and Melbourne in July 1993, along with those submitting written submissions only, is at Appendix A.

Structure of the report

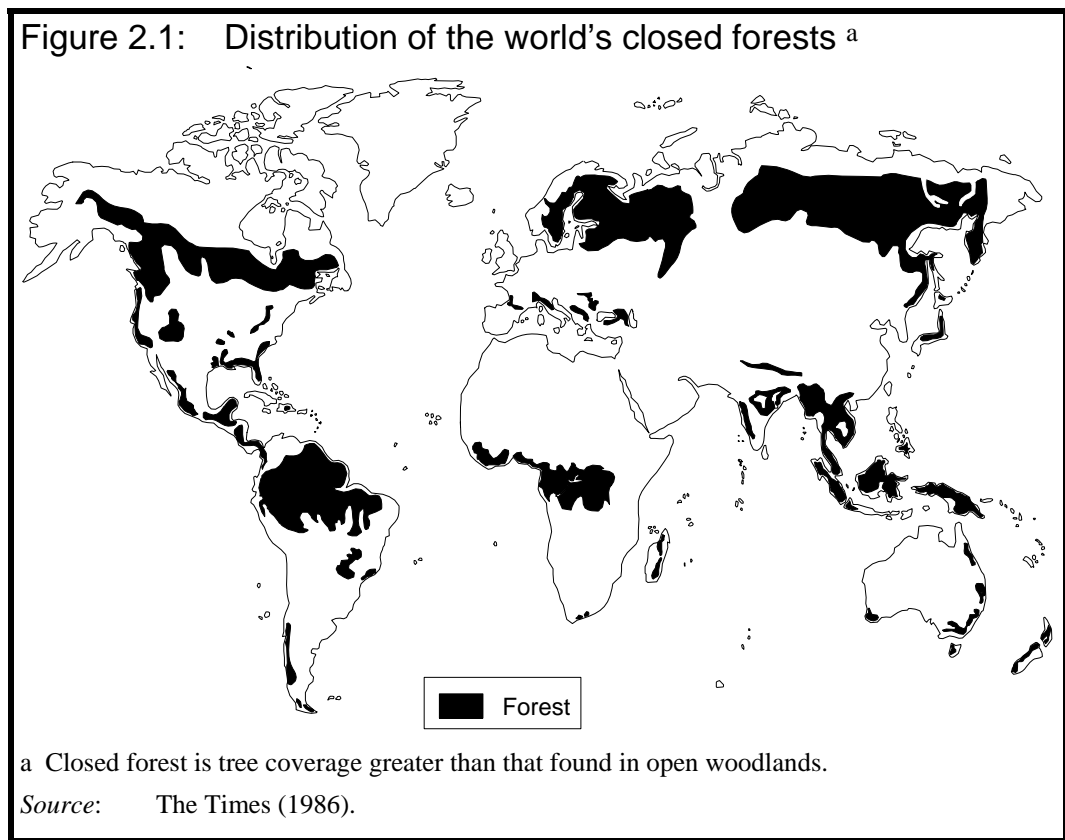
The report is divided into four parts. This initial part contains background information about the inquiry, a brief resume of international aspects of the forest products industries and a profile of the Australian industries covered by the reference. Part B examines the international competitiveness of Australia's forest products industries. The following part discusses impediments to competitiveness. The final part — Part D — explores the industries' potential for further development.

2 INTERNATIONAL PERSPECTIVE

The future of the Australian forest products industries is closely linked to developments in international markets. This chapter considers international aspects of the forest products industries and their markets. It commences by discussing the extent and location of the key resource — forests — and subsequently considers the structure of the industries, the major markets and emerging trends. This discussion provides a basis for assessing the implications for Australia of recent international developments (see Chapter 9).

2.1 Forest resources

Around one-fifth of the Earth's land area is covered by closed forest (see Figure 2.1). This amounts to over 2800 million hectares of land, of which approximately 70 per cent is considered viable for the harvesting of wood. The remainder is unproductive due, primarily, to problems of access. As shown in Table 2.1, the Russian Federation accounts for the largest area of forest, although South America represents the greatest source of available wood.



The species mix of the global forest is roughly 60 per cent hardwoods (broadleaf) and 40 per cent softwoods (coniferous). South America has the most significant proportion of the world's hardwood resource. The former USSR and North and Central America account for around 85 per cent of the world's softwood resource. While the USSR contains the largest softwood forests — mainly in Siberia — considerable upgrading of infrastructure is required before a significant increase in regional supply can be expected.

Plantations represent less than 5 per cent of the total forest area, but provide higher yields than native forests. Two-thirds of the world's plantation resource is of softwoods.

Table 2.1: Closed forest areas

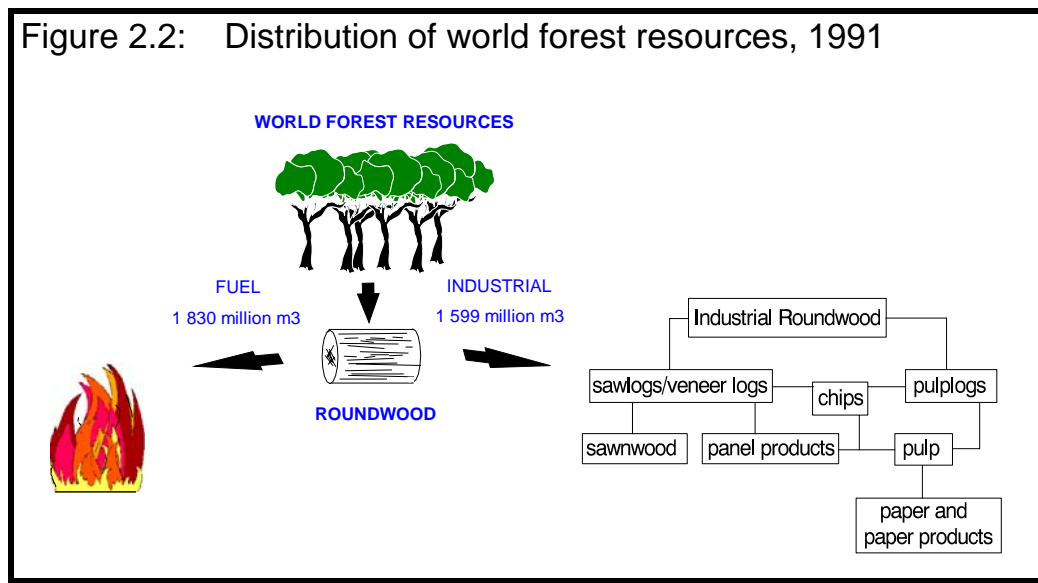
	<i>Coniferous (softwood)</i>	<i>Broadleaf (hardwood)</i>	<i>Total closed forest</i>	<i>Productive forest area</i>
	million ha			%
South America	26	666	692	26.9
USSR	645	147	792	20.4
Nth & Central America	301	168	469	20.0
Asia	69	388	457	15.1
Africa	3	216	219	8.1
Europe (excluding USSR)	75	57	132	6.5
Oceania	6	70	76	3.0
TOTAL	1125	1712	2837	100
- of which plantation is:	62	31	93	

Source: Edgar, Lee and Quinn (1992).

The global removal of roundwood (wood in the rough) is in excess of 3.4 billion cubic metres per annum. As shown in Figure 2.2, under half of this is processed as industrial roundwood — the basic input for the forest products industries. The remainder is used mainly for energy-related purposes, such as cooking and heating. Hardwood is the major species used for fuel, while softwood accounts for two-thirds of industrial roundwood (ie sawlogs, veneer logs and pulp logs). Nearly 90 per cent of fuelwood is produced and consumed in developing countries.

The majority of industrial roundwood is harvested in North and Central America (37 per cent) and Europe (18 per cent). Over the last two decades, the USSR's share of production has fallen from 23 to 17 per cent, while removals of timber for industrial uses have increased significantly in Asia and South America.

Figure 2.2: Distribution of world forest resources, 1991



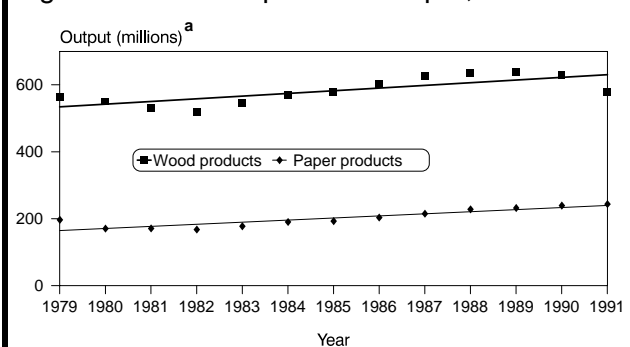
2.2 Industry characteristics

The forest products industries are substantial international industries, producing a wide range of products using a common raw material — wood fibre. This section considers the size, location, recent performance and structure of the industries.

Size and location

Forestry and the production of wood and paper products account for a significant part of the world's resource and manufacturing base. According to Wardle (1990), forestry and forest products have a global output of around US\$ 300 billion, contributing 2.5 per cent to world GDP. As shown in Figure 2.3, the trend for both wood and paper products has been one of increasing output during the 1980s.

Figure 2.3: Forest products output, 1979-91

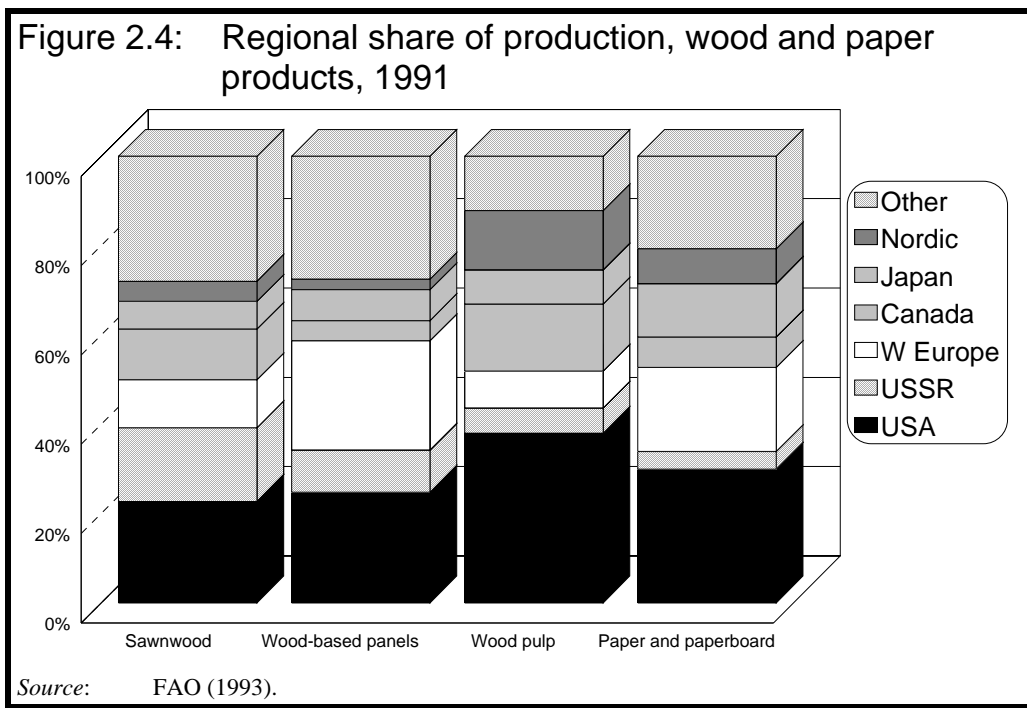


a Wood products (cubic metres); paper products (tonnes).

Source: FAO (1993).

In some regions, the forest products industries constitute the major component of the economy. For example, in Finland and Sweden, which are close to Western European markets and have large resource bases, forestry accounts for over 40 per cent of GDP contributed by the agriculture and mining sector. In addition, the production of wood and paper products represents close to 30 per cent of manufacturing GDP in both nations.

On a worldwide basis, however, total production of forest products has traditionally been dominated by the United States. While Asian and South American countries are emerging as important producers of roundwood and some wood and paper products, the overwhelming bulk of value-adding processing continues to be undertaken by the United States and other developed nations (see Figure 2.4).



Information on the growth in output and emerging trends for some of the more important wood and paper commodities is set out in Table 2.2.

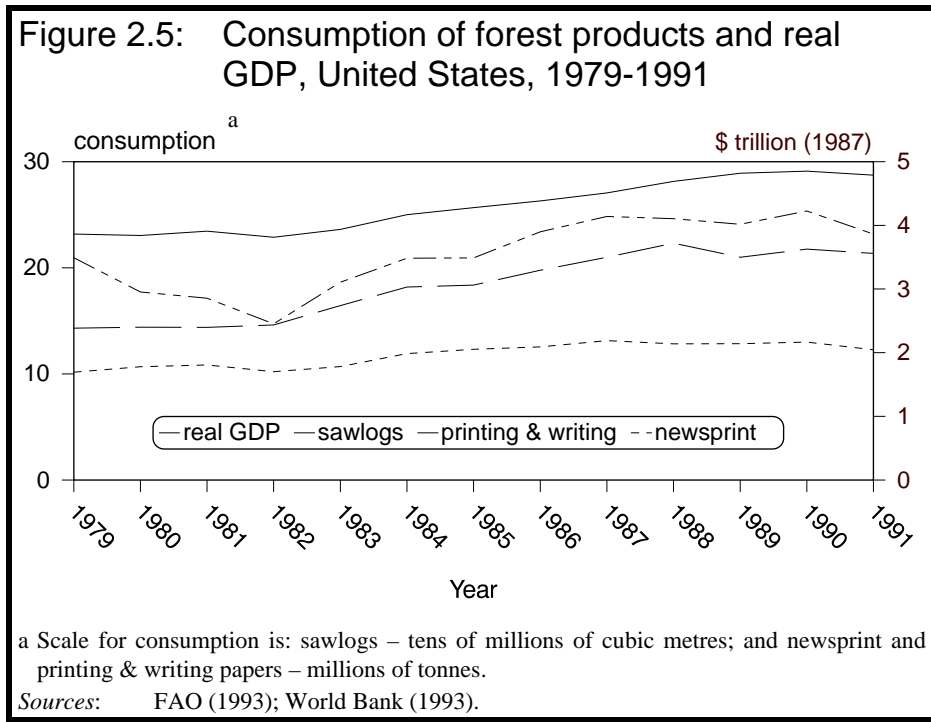
Table 2.2: Output for major forest-related commodities, 1980 to 1991

<i>Product</i>	<i>Major producing nations</i>	<i>Annual growth in output 1980-1991 (%)</i>	<i>Comments</i>
Sawn softwood	United States USSR Canada	1.2	Russia has recently reduced output by 30-35% following the USSR's break-up. Production in the US and Canada fell considerably in the late-1980s.
Sawn hardwood	United States India USSR	1.7	Indonesia more than doubled output over the 1980s. It is now one of the five largest producers.
Particleboard	United States Germany USSR	3.1	Particleboard is the major wood-based panel. In recent years, output in Italy and Portugal has increased rapidly.
Plywood	United States Indonesia Japan	2.4	Over the period, Indonesia increased output from 1.0 to 9.2 million cubic metres per annum. Little significant production occurs in Western Europe.
Fibreboard	United States USSR China	2.7	China more than doubled output, while Sweden reduced production by 40%. Output of non-compressed fibreboard fell over the period.
Veneer sheets	Italy Canada Malaysia	0.9	World production peaked in the mid-1980s. Italy has been one of the few nations to increase output in recent years.
Chemical pulp	United States Canada Japan	2.5	US output is more than four times larger than Canada. Bleached kraft (BK) is the major grade. Output of BK grew by 4.5% per annum.
Mechanical pulp	Canada United States Finland	3.3	Although not major producers, there was significant expansion in India, the UK, Australia and Mexico.
Newsprint	Canada United States Japan	2.7	North America accounts for close to half of world production. Canadian output fell by 9% in the two years to 1990.
Printing & writing	United States Japan Germany	5.5	Output grew fastest in developing countries. Major expansions occurred in Sth Korea and Japan.
Packaging	United States Japan Germany	3.7	Production more than doubled in Sth Korea.
Tissue	United States Japan Germany	4.0	Output from developing countries grew by 6.6% per annum.

Sources: FAO (1993); Payne (1992).

Recent performance

Activity levels in the forest products industries are linked to the level of economic activity generally (see Figure 2.5). For example, demand for most timber products is reliant on construction activity which, in turn, tends to reflect general economic activity. Similarly, the consumption of most paper products bears a strong relationship to overall levels of economic growth (further discussion on factors affecting demand for forest products can be found in Chapter 9).



Largely because of this relationship, the forest products industries are generally characterised by pro-cyclical fluctuations in output. During the late-1980s, for example, the industries experienced a sustained period of prosperity and expansion, in line with strong growth in most of the world’s major economies. This was followed by a significant slowdown and a ‘shake-out’ within the industries, resulting in many firms restructuring and rationalising operations during the early-1990s.

The downturn resulted in falling sales for most companies, particularly those with operations in the sawnwood sector. This was largely attributable to reduced building activity in North America and many European countries. In 1991, for example, the construction of new homes in the United States fell by 16 per cent to its lowest level in over 45 years. In the paper and paperboard sector, Japanese production in 1992 fell by 2.5 per cent to 28.3 million tonnes. This was the first decline in output since 1981.

The majority of the world’s largest forest products companies experienced lower returns in 1991 (see Table 2.3). The most severe falls in earnings were recorded by firms in North America and the Nordic countries. For example, publicly listed Canadian forestry companies moved from a combined net profit of C\$ 2.4 billion in 1989 to a net loss of C\$ 2.5 billion in 1991. Only two of Canada’s top 20 companies returned an after-tax profit in 1991. Losses for 1992 were approximately C\$ 1.2 billion, while a smaller loss — C\$ 0.5 billion — is

forecast for 1993. In Finland, where similar losses were incurred, 1991 ranked as the worse year for the industries since World War Two (Rinne 1992).

Table 2.3: The world's 20 largest forest products companies, 1991 ^a

	<i>Base Nation</i>	<i>Total sales</i>		<i>Return on assets</i>		
		<i>1991</i>	<i>1990</i>	<i>'91</i>	<i>'90</i>	<i>'89</i>
		US\$ m		%		
International Paper	USA	12 703	12 690	1.2	4.2	7.5
Georgia-Pacific	USA	11 524	12 665	-1.3	4.2	9.4
Stora	Sweden	11 136	10 534	0.6	3.0	3.7
Weyerhaeuser ^b	USA	7 096	7 406	-1.1	4.0	na
Kimberly-Clark	USA	6 777	6 407	9.0	8.2	8.6
Fletcher Challenge ^b	NZ	6 621	6 730	0.6	2.5	na
Repola	Finland	5 527	6 041	-6.5	1.1	3.7
Svenska Cellulosa	Sweden	5 435	5 257	1.9	2.9	5.3
Stone Container	USA	5 384	5 756	-0.7	1.4	4.6
Scott Paper	USA	4 977	5 356	-1.1	2.1	6.5
Champion International	USA	4 786	5 090	0.5	2.7	5.7
Oji Paper	Japan	4 757	4 486	2.2	3.8	4.1
Mead	USA	4 579	4 772	0.2	1.0	5.9
James River	USA	4 562	5 950	1.4	3.9	4.6
Arjo Wiggins Appleton	UK	4 396	4 638	6.2	7.7	10.3
Jujo Paper	Japan	4 034	3 854	1.2	2.6	2.8
Boise Cascade	USA	3 950	4 186	-1.7	1.6	6.5
Noranda Forest	Canada	3 564	3 903	-3.5	-1.6	3.3
Amcor	Aust	3 451	3 363	6.1	4.7	4.3
Honshu Paper	Japan	3 420	3 135	0.9	1.0	0.8

a Companies must be publicly listed and derive at least 50% of sales from forest products although, unless otherwise indicated, figures are for all operations. The survey excludes companies based in Eastern Europe, Russia and China. The year is the fiscal year ended 31 December, apart from companies based in Australia and New Zealand (year ended June 30) and Japan (year ended March 31).

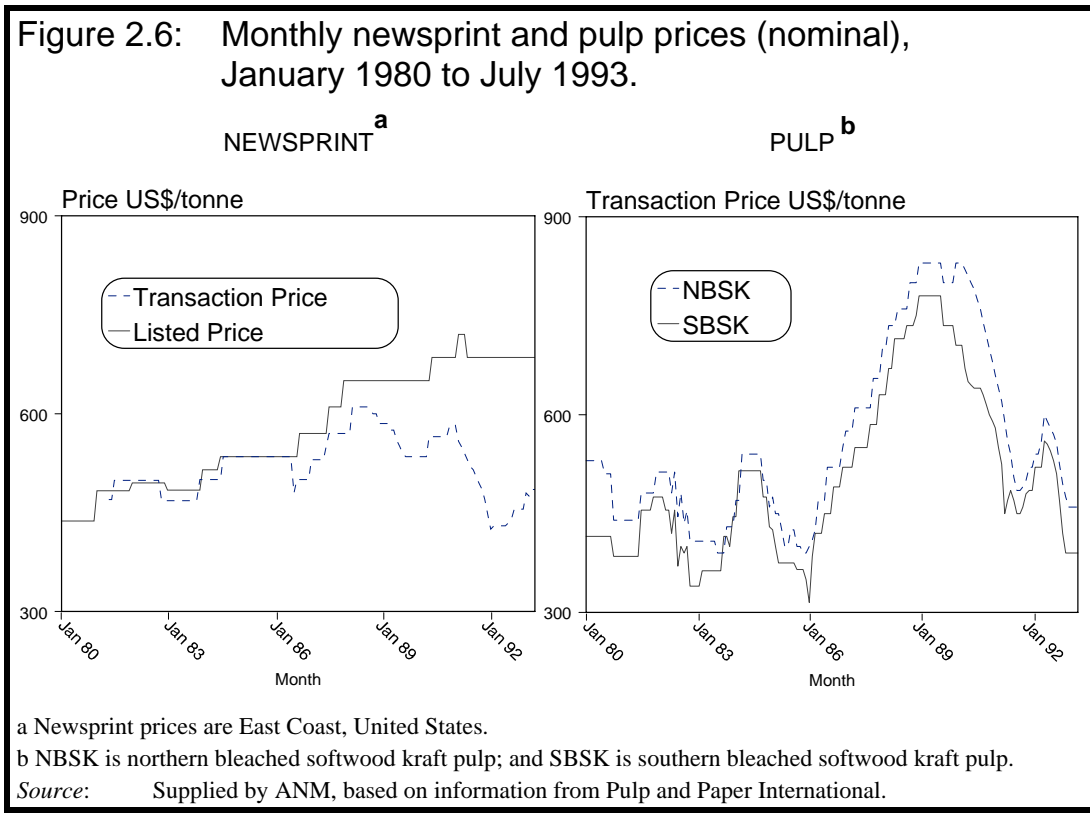
b Excludes all non-forestry operations.

Source: Price Waterhouse (1992).

Over-capacity in the pulp and paper industry during the early-1990s — estimated at 2 million tonnes for newsprint alone — has put considerable downward pressure on prices and led to falls in capacity utilisation. In Japan, for example, average capacity utilisation fell to 74 per cent in 1991 from a peak of 94 per cent in 1989. In response, many plants have been mothballed. In Canada, 800 000 tonnes of newsprint capacity and 300 000 tonnes of pulp capacity have been decommissioned in the last three years.

Prices of major traded items — such as market pulp and newsprint — have plummeted in the last three years. As shown in Figure 2.6, the level of discount offered on traded newsprint (the difference between the listed and transaction price) since 1990 is unprecedented for the last decade, while the drop in pulp prices has been more dramatic than previous falls. Between April 1990 and November 1991, for instance, northern bleached softwood kraft (NBSK) pulp

fell by 38 per cent. This compares with falls of 23 per cent in downturns occurring in 1977-78 and 1982-83, and a 27 per cent reduction during 1984-85.



The fluctuating fortunes of the industries over the last few years have created pressure for restructuring in several major producing nations. In general, restructuring has been associated with:

- the adoption of more integrated production arrangements;
- the introduction of more capital-intensive manufacturing processes; and
- a greater recognition of the need to adopt a global rather than a regional outlook.

The OECD (1989, p. 24) indicated that these developments reflect:

External pressures emerging from changing raw material supplies, alterations in demand, growing environmental concerns and technological advance, as well as internal pressures related to surging financial requirements for investment, rapidly increasing economies of scale, and the need to control energy and production costs...

The trend toward larger scale production is typified by developments in the United States pulp and paper sector. As shown in Figure 2.7, mills with an annual capacity of 500 000 short tons or more accounted for the largest

proportion of paper and paperboard capacity in 1990. In contrast, the smallest mill category (100 000 short tons and less) predominated in the 1980s.

Figure 2.7: Distribution of paper and paperboard capacity in the United States, 1980 and 1990



Note: Mill size is based on short tons. One short ton equals 0.907 tonnes.

Source: Slinn (1992b).

Apart from acquisitions and construction of overseas plant, there is also evidence that forest product companies are looking beyond traditional areas of supply. For example, many Nordic companies, faced with little scope for expanding local supplies, are increasingly sourcing wood from European countries, such as Germany, France and Italy. Similarly, companies in the United States and Japan are investing in holdings of wood in South America, Australia and New Zealand (see Box 2.1).

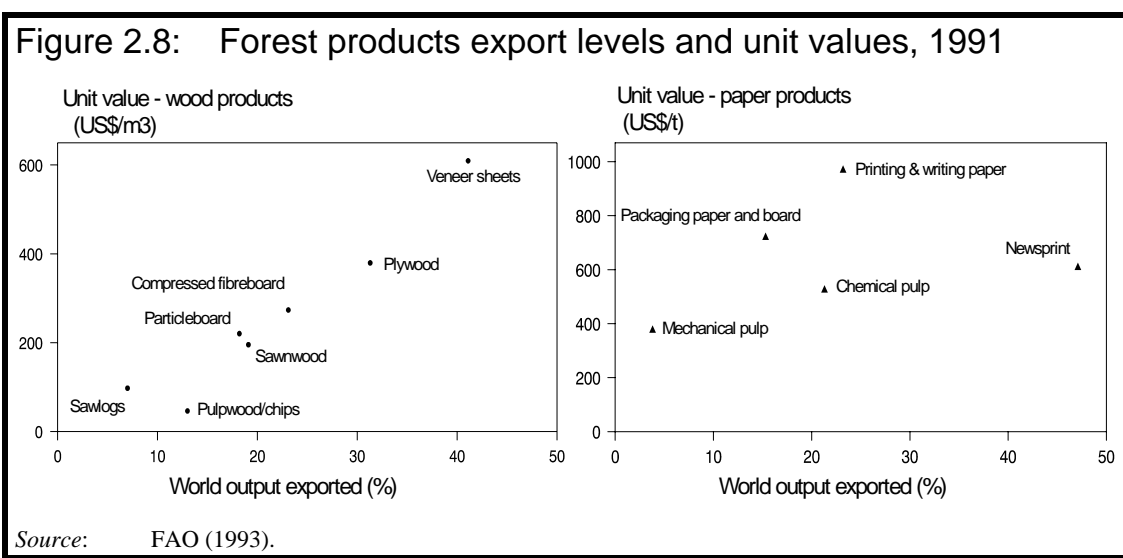
Box 2.1: The globalisation of the forest products industries

- During the 1980s, Fletcher Challenge acquired companies with newsprint mills in British Columbia, Chile and Australia.
- The Japanese company, Oji Paper, and Korean-based, Hansol Forest Products, have both announced plans for plantation developments in Western Australia (see Chapter 6 for more details).
- In 1991, the American company, International Paper, gained a 16 per cent share in Carter Holt Harvey (CHH) through a joint venture with Brierley Investments. CHH has considerable forestry interests in Chile and New Zealand.
- International Paper (US), Kimberly-Clark (US), Svenska Cellulosa (Sweden) and Scott Paper (US) all have operations in 18 countries or more. Kimberly-Clark, for example, has operations in Australia, Colombia, Indonesia, Mexico, the Netherlands, South Africa and Thailand. In terms of tissue production, around 58 per cent of its total capacity is presently located in plants outside North America.
- The reform process in Eastern Europe is providing further opportunities for forest products companies to expand internationally. International Paper, for example, has acquired an 80 per cent share in the Kwidzyn pulp and paper mill in Poland. The mill, which is the second largest producer of paper in Poland, represents the third such sale to foreign interests.

2.3 Trade in forest products

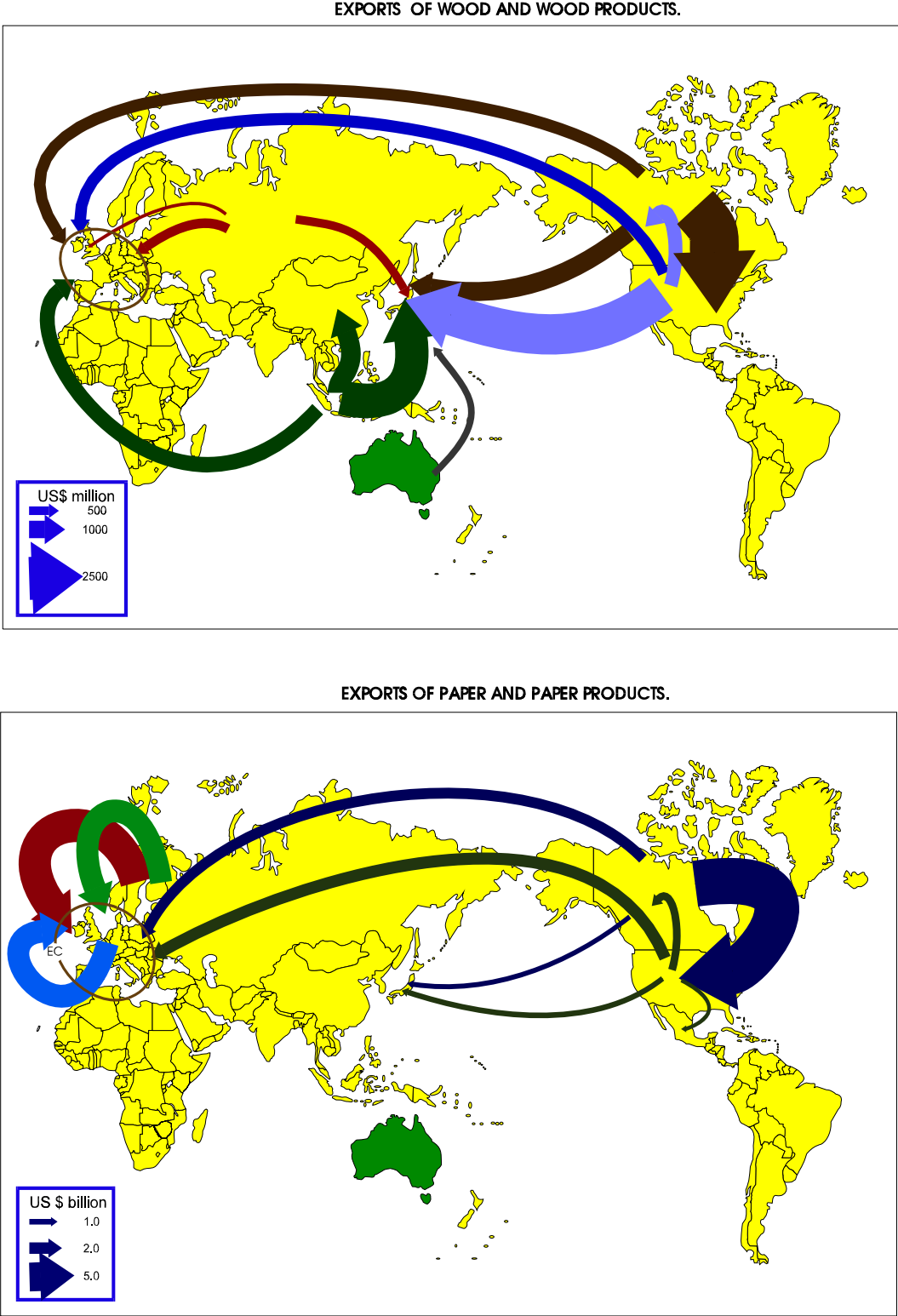
Between 1969 and 1991, international trade in forest products, as a proportion of the volume of world production, increased from 8 to 14 per cent. In 1991, trade in forest products amounted to more than US\$ 100 billion, with some two-thirds of this attributable to paper and paper products. In the Asian region, trade is worth around US\$ 24 billion and is growing faster than in most other areas of the world.

For some forest-based commodities, trade constitutes a significant proportion of production. As shown in Figure 2.8, the portion of output which is traded is closely related to unit value. In general, higher value products are traded more extensively because transport costs constitute a smaller proportion of unit value. Thus, over one-third of the world production of veneer sheets and plywood is traded, compared with 18 per cent for lower-value particleboard. Newsprint is an exception. Whilst close to half of all output is traded, the unit value of basic newsprint (around \$600/tonne) is low relative to other paper products, such as printing and writing papers (\$970/tonne).



The pattern of trade in wood products is dominated by flows between Canada, the United States and Japan (see Figure 2.9). In the case of paper products, the most significant trade flows are from Canada to the United States, and from the Nordic countries to Western Europe. The major exporters and importers of the main forest-based commodities, in terms of volume, are shown in Table 2.4.

Figure 2.9: World trade in forest products



Source: United Nations International Trade statistics.

Table 2.4: Major exporting and importing nations, 1991

(US\$ million)

	<i>Softwood sawnwood</i>	<i>Hardwood sawnwood</i>	<i>Wood-based panels</i>	<i>Woodchips</i>	<i>Pulp</i>	<i>Paper</i>	<i>Packaging</i>
EXPORTERS							
World exports	<i>12 132</i>	<i>5 247</i>	<i>10 196</i>	<i>1 239</i>	<i>11 138</i>	<i>51 514</i>	<i>4 755</i>
Canada	4 635	Malaysia 1 248	Indonesia 3 061	USA 499	Canada 3 833	Canada 7 715	Germany 1 051
Sweden	1 744	USA 923	USA 825	Australia 418	USA 2 291	Finland 6 959	USA 549
USA	1 436	France 297	Germany 806	Chile 245	Sweden 841	Sweden 6 402	Netherlands 372
Australia	2	Yugoslavia 216	Finland 575	Canada 126	Australia 8	USA 4 599	France 334
		Australia 6	Belgium Lux 516			Australia 129	Belgium-Lux 332
			Australia 17				Australia 17
IMPORTERS							
World imports	<i>13 007</i>	<i>5 877</i>	<i>10 462</i>	<i>2 095</i>	<i>12 067</i>	<i>53 845</i>	<i>4 709</i>
USA	2 991	Japan 776	Germany 1 246	Japan 1 701	USA 2 052	USA 7 766	France 545
Japan	2 062	Italy 429	Japan 1 199		Germany 2 015	Germany 7 292	Netherlands 523
UK	1 403	Germany 661	UK 1 146		Japan 1 173	UK 6 505	Germany 470
Australia	243	Taiwan 448	USA 1 137		France 931	France 4 546	UK 349
		Korea RP 503	China 652		Australia 93	Italy 3 553	Belgium-Lux 306
		Spain 487	Australia 62			Australia 821	USA 263
		Australia 95					Australia 24

Notes: Countries listed here are responsible for more than 50 per cent of world trade of the product groups considered. Due to difficulties in data collection, export figures may not necessarily match imports of the same products. Figures in italics are estimates based on UN data.

Figures for "Germany" are for the unified Germany.

Exports from Chile and Canada are based on imports into Japan.

Source: Derived from United Nations International Trade Statistics

Countries such as Canada and Sweden are major exporters of many forest-based commodities. However, exports by most nations are confined to one or two product categories. Furthermore, they are often off-set by considerable imports of other forest products. Germany, for example, is a significant exporter of paper and paperboard — especially high-quality papers — but is also a major importer of sawnwood, pulp and most wood products. Some Asian nations (eg Malaysia) are net exporters of many wood products, but are reliant on imports for most paper products.

The United States is unusual in that it is both a major exporter and importer of most wood and paper products. In the case of wood pulp, for example, it is the world's largest importer and second-largest exporter (see Table 2.4).

Australia's relatively high level of imports and limited exports has often been attributed to its small population and isolation from major European markets. Nevertheless, it is apparent that several relatively small nations have been successful in exporting forest products to distant markets (eg Finland and Canada with paper-in-bulk and Austria with coated and uncoated papers). Moreover, New Zealand, which is smaller and just as isolated as Australia, exported US\$ 700 million worth of forest products in 1991. This compares with Australian exports of around US\$ 400 million. In addition, New Zealand's exports are relatively diversified (eg sawn timber, medium density fibreboard, pulp and newsprint), whereas Australia's are dominated by woodchips.

Trends and key features of trade in products within major commodity groups include:

- *Woodchips* - Japan imports approximately 80 per cent of all woodchips traded internationally. The United States and Australia are the main suppliers of woodchips, although Australia's export share has fallen over the last few years as a result of increased exports from countries such as Chile and South Africa.
- *Sawnwood* - The United States, Canada and Japan account for around half of world trade in sawnwood. Japanese imports of sawnwood are now more than double the level of the mid-1980s. In recent years, both Chile and New Zealand have emerged as significant exporters of sawn softwood.
- *Wood-based panels* - During the 1980s, trade in wood-based panels grew by 6.8 per cent per annum. A large portion of this growth can be attributed to plywood, which averaged around 9 per cent annual growth over the period. Between 1981 and 1991, for example, Japanese imports of Indonesian plywood increased from around 30 000 to 2.9 million cubic metres per annum. This expansion was due largely to the Indonesian

Government's support for greater processing of the local forest resource, a key element of which included the banning of log exports in 1980.

- *Chemical pulp* - The volume of chemical pulp exported from chief suppliers such as Canada and Sweden has been relatively static during the 1980s. The United States, however, has increased exports in recent years. Portugal and Spain are now also important exporters of chemical grade pulp, much of which is derived from eucalypt plantations.
- *Secondary fibre* - A large amount of recycled paper and paper products is traded between North America and East Asia. In 1989, for example, Japan, Taiwan and Korea imported a total of 3.2 million tonnes of secondary fibre. Approximately 40 per cent of all secondary fibre used in paper and paperboard production in Korea and Taiwan is imported.
- *Printing and writing papers* - Trade in high-grade papers more than doubled during the 1980s. The majority of this growth was accounted for by the main exporters (ie Finland, Germany, Canada and Sweden). Nevertheless, smaller exporting nations — including the United Kingdom, Indonesia, Brazil and Belgium — have also experienced rapid growth in recent years.
- *Packaging papers* - During the late-1980s, there was a substantial increase in the trade of packaging papers within Western Europe. For most countries, both exports and imports of such papers have risen. This suggests an increasing degree of specialisation of packaging paper production within the region. Apart from regional trade, several European nations have also increased exports to Asia.

Institutional arrangements affecting trade

Governments affect the level of production and trade in forest products in many ways. Two major areas of involvement have been the environment and tariffs.

Environment

Environmental regulations and guidelines which apply to the forest products industries have important implications for new investment and plant location, as well as future trade patterns. They often differ considerably, both within and between countries. As a consequence, annual commitments by firms in the area of environmental protection can vary from between 10 and 30 per cent of total capital expenditure.

In recent years, the cost associated with meeting environmental commitments has risen sharply in many major producing nations. In the United States, for example, the paper industry spent a total of US\$ 4.1 billion on capital

improvements for pollution abatement between 1980 and 1989. In the two subsequent years, however, combined expenditure was US\$ 2.6 billion.

Some of the major environmental issues currently impacting on the industries include:

- *Consumption of tropical hardwoods* - The export of timber from developing countries, such as Malaysia and Brazil, has been reduced significantly in the last two years amidst environmental concerns that former levels of production were unsustainable. With the International Tropical Timber Agreement due to expire in 1994, many European nations are presently demanding that all tropical timbers be harvested from 'sustainably' managed forests by the year 2000. The subsequent effect on demand for substitute timbers, such as temperate species, will largely depend on whether similar guidelines are applied to all other sources of timber.
- *Access to forests* - In some countries, there is an emerging concern that access to private forests and plantations may be restricted. This is a particularly important development in the United States, where 75 per cent of timber is harvested from privately owned land. According to Slinn (1992a, p. 10):

... the established perception of the rights of private forest owners is changing. Those owners are increasingly perceived as subject to public scrutiny over the management of their so-called "private property" and therefore operate under the uncertain conditions of an ill-defined social franchise.

One element of the debate in the United States is the claimed threatened habitat of the spotted owl. Supplies of wood from public forests and, to a lesser extent, private land in the Pacific-north west region of the United States, have been severely affected by government decisions to protect the spotted owl. According to the US Department of Commerce (1993), over 100 timber and panels mills in the region have closed recently due to inadequate log supply.

- *Recycling measures* - Many developed countries have policies which encourage companies to include certain levels of recycled material in paper and packaging production. The degree of obligation varies: in some cases guidelines exist while, in others, usage of recycled fibre is mandated in legislation. Requirements to incorporate specified proportions of waste have already influenced trade patterns. For example, Canadian exports of newsprint to the United States have fallen following Government action in the United States to raise the wastefibre content in newsprint. This requirement has increased the competitiveness of US producers as they are located nearer the source of waste material.

- *Emissions* - Since the mid-1980s, there has been increasing concern over emissions associated with the production of some wood and paper products — in particular, formaldehyde from the production of wood-based panels and organochlorines in waste water emitted by pulp and paper mills. In response to consumer pressures (and threats of regulation), many firms supplying pulp and paper into Western Europe — particularly Germany — are now actively marketing goods which are produced under conditions above the agreed standards (eg completely chlorine free papers).

Other Government policies

Many other government policies impact on the trade patterns for forest products. The most important of these include:

- *Tariffs and duties* - Most countries apply tariffs to imported forest products. Moreover, they often vary according to the degree of processing. In Indonesia, for example, basic wood pulp attracts a 5 per cent tariff, while tariffs on imports of paper and paperboard are levied at an average rate of 25 per cent. Similarly, in Malaysia, woodpulp attracts a tariffs of 3 per cent, while kraft paper has a 55 per cent tariff.

Apart from general tariffs, some countries apply duties to specific products. For example, in an attempt to avert the introduction of US duties, the Canadian Government, in 1986, imposed a tax on exports of softwood into the United States. In 1991, the tax was abolished, following Canada's lowest penetration of the US softwood market in 13 years. However, the US has subsequently applied a preliminary countervailing duty of 6.5 per cent on Canadian softwood. The duty is based on the US claim that, by restricting log exports, Canadian provincial governments are effectively subsidising the price of logs to local mills.

- *Non-tariff barriers* - Apart from tariffs and quotas, non-tariff barriers also impede the free flow of traded forest products. For example, according to Associated Pulp and Paper Mills (APPM) (sub. 38, p. 38), in Japan “there are non-tariff barriers which have prevented large volume imports of either pulp or paper” (see Box 2.2). Non-tariff barriers also affect trade within ‘free-trade’ regions, such as the European Community. According to the GATT (1991, p. 187):

...intra-EC trade [in wood and paper products] is hampered by a large number of technical trade barriers such as national standards, major differences in approval procedures, and susceptibilities to specific aspects of use (eg emissions from components).

Government influence also extends to the export of some forest products. In Indonesia, for example, the export of newsprint is ‘supervised’ by the Ministry of Trade. Similarly, the export of Korean roundwood requires government approval.

Box 2.2: Exporting forest products into Japan

The OECD (1992, p. 69) reported that major Japanese non-tariff barriers to trade include “corporate groupings (*keiretsu*), restrictive business practices (cartels), complex distribution networks and excessive regulatory interference with market pricing mechanisms in more sheltered sectors”.

In 1990, Japanese imports of printing and writing papers represented around 1 per cent of local production. As expressed by Simons (1991, p. 13):

It is widely known that the Japanese pulp and paper industry is not competitive from a price point of view in the world market. For example, domestic newsprint in Japan is sold at twice the average market price and is of lower quality than the North American product. Yet, many have tried but no one has been successful in selling newsprint in the lucrative Japanese market.

In April 1992, the Japanese and United States Governments agreed to a five-year plan aimed at improving foreign access to Japanese paper markets. According to the GATT (1993), planned measures include:

- policy assistance for foreign paper producers in the areas of import incentives and direct foreign investment in Japan;
- the establishment of an internal Anti-monopoly Act; and
- the ‘promotion’ of the buyer-supplier relationship by the Japanese Government.

In addition, the Japan Fair Trade Commission is presently investigating conditions in the paper sector from a competition perspective.

- *Political reform* - The move towards a more market-oriented economy in eastern Europe and the former Soviet countries has important implications for trade in many forest products. For example, nations within the former Soviet Union have already abandoned several bilateral trade agreements with western European governments. This has significantly reduced trade of forest products between Russia and the Nordic countries.

3 AUSTRALIA'S FOREST PRODUCTS INDUSTRIES

This chapter provides a brief profile of the Australian forest products industries covered by the inquiry. It discusses their economic significance, the structure of the industries and their products. A more detailed examination of each of the industries is outlined in Appendix B. Information on the markets supplied by the industries and the factors which influence the demand for forest products is provided in subsequent chapters of this report.

3.1 Size and significance¹

The forest products industries are an important component of Australia's manufacturing sector.² In 1989–90, they accounted for 4.2 per cent of value added by the manufacturing sector and employed 4.1 per cent of the manufacturing workforce. In 1968–69, the industries accounted for 5.3 per cent of both value added and total manufacturing employment.

In 1989–90, value added by the forest products industries was around \$2.9 billion. This was slightly higher than the value added of other major manufacturing industries, such as the clothing and footwear industries and the chemical industry, and somewhat less than that of the Australian motor vehicle and the iron and steel industries (see Figure 3.1).

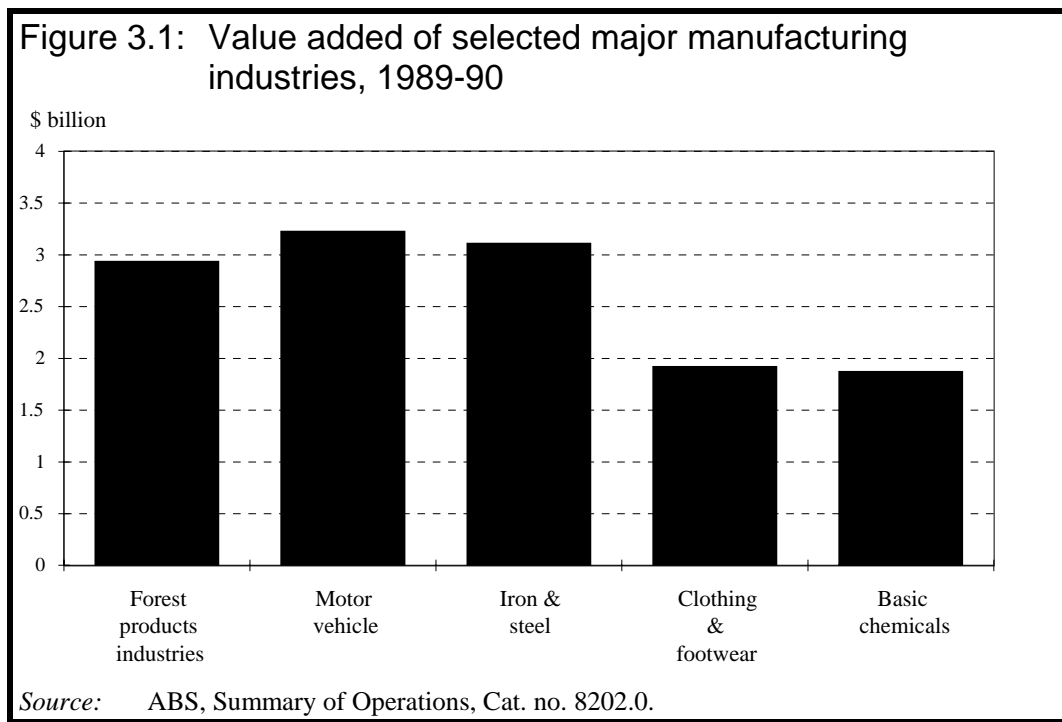
As a considerable proportion of activity is undertaken in country areas, the industries are far more prominent in some regional economies than they are nationally. For example, in the Mount Gambier-Portland area (the 'green

¹ Manufacturing census data are available for 1990–91 but, as only a 'minor' census was undertaken, some of the more important industry aggregates (eg value added) are not available. Consequently, the ABS data used in this chapter mainly relate to 1989–90. The data exclude establishments employing fewer than four employees.

² Throughout this chapter, the term 'forest products industries' is used to describe only those forest industries under reference in this inquiry. The industries, which are based on the Australian Standard Industrial Classification (ASIC), are as follows:

- Hardwood and softwood sawmilling (ASIC 2531 & ASIC 2532);
- Veneer and wood panels (2533);
- Hardwood woodchips (2537);
- Pulp and paper (2631);
- Paper packaging (2632 & 2633 & 2634); and
- Paper products nec (mainly tissue papers) (2635).

triangle'), the Latrobe region, Northern Tasmania and in the Bathurst-Oberon region, the production of timber and paper products is the major manufacturing activity and accounts for a substantial proportion of employment in the region. The South Australian Government stated that in Millicent, in south-eastern South Australia, 92 per cent of manufacturing employment was associated with forest related activities in 1985–86.



The two largest forest products industries are sawmilling and pulp and paper, each of which accounted for around 30 per cent of the aggregate output of the forest products industries in 1989–90 (see Table 3.1). The share of total output accounted for by sawmilling has, however, declined markedly over the past 20 years, largely because of a decline in the output of sawn hardwood. In contrast, there has been a significant increase in the contribution of the pulp and paper sector to total output.

The average annual growth in real value added by producers of timber products was negligible between 1968–69 and 1989–90. Over the same period, real value added by producers of paper products increased at an average annual rate of 0.5 per cent. The corresponding figure for the manufacturing sector as a whole was 0.9 per cent.

Table 3.1: Output of the forest products industries

	<u>Value added</u>		<u>Share of industry value added</u>	
	1968-69 ^a	1989-90	1968-69	1989-90
	\$m	\$m	%	%
Sawmilling	879	852	35	29
Veneers and panels	239	307	10	10
Hardwood chips	55	137	2	5
Pulp and paper	467	785	19	27
Paper packaging	521	570	21	19
Tissue products etc	323	289	13	10

a In 1989-90 prices

Source: ABS, Summary of Operations, Cat. no. 8202.0, various issues.

Although real value added increased considerably, aggregate employment by the forest products industries fell by nearly 37 per cent between 1968–69 and 1989–90 (see Table 3.2).³ Employment decreased in all sectors other than woodchips, in which a modest increase was recorded (about 300 persons). The decrease was most pronounced in the sawmilling sector, with employment falling by around 15 000 persons. Over the corresponding period, employment in the manufacturing sector as a whole declined by around 20 per cent.

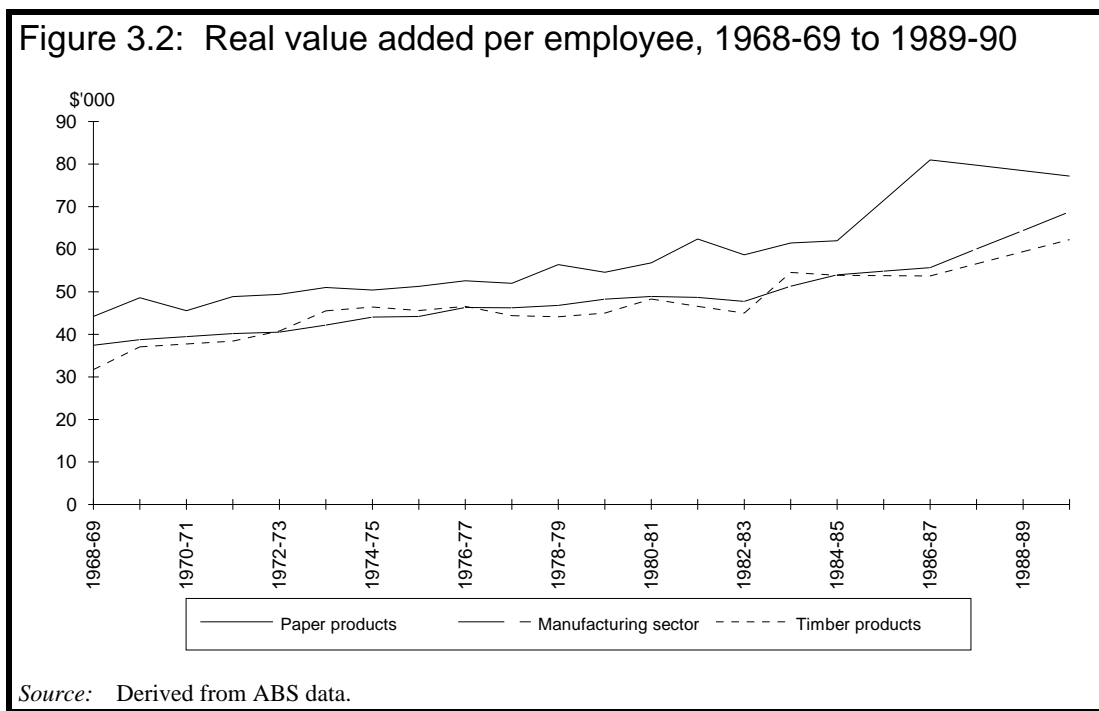
Table 3.2: Employment by the forest products industries

	1968/69	1989/90	% change
	'000	'000	
Sawmilling	29.1	14.2	-51
Veneers and panels	7.2	5.6	-22
Hardwood chips	0.7	1.0	38
Pulp and paper	10.2	7.9	-23
Paper packaging	14.3	9.0	-37
Tissue papers etc	5.1	4.4	-14
Total	66.5	42.1	-37

Source: ABS, Summary of Operations, Cat. no. 8202.0, various issues.

³ Employment continued to decline in 1990–91. Total employment at the end of June was approximately 39 000.

Constant or increasing levels of real value added, coupled with falling employment, have resulted in significant increases in output per employee (see Figure 3.2 below). Between 1968–69 and 1989–90, the increase was similar for both the paper and the timber sectors (around 3 per cent per annum). However, in absolute terms, value added per employee was significantly higher for the paper products sector. Value added per employee for paper products in 1989–90 was about 12 per cent higher than the average for the manufacturing sector while, for timber products, value added per employee was about 10 per cent lower than the manufacturing sector average.



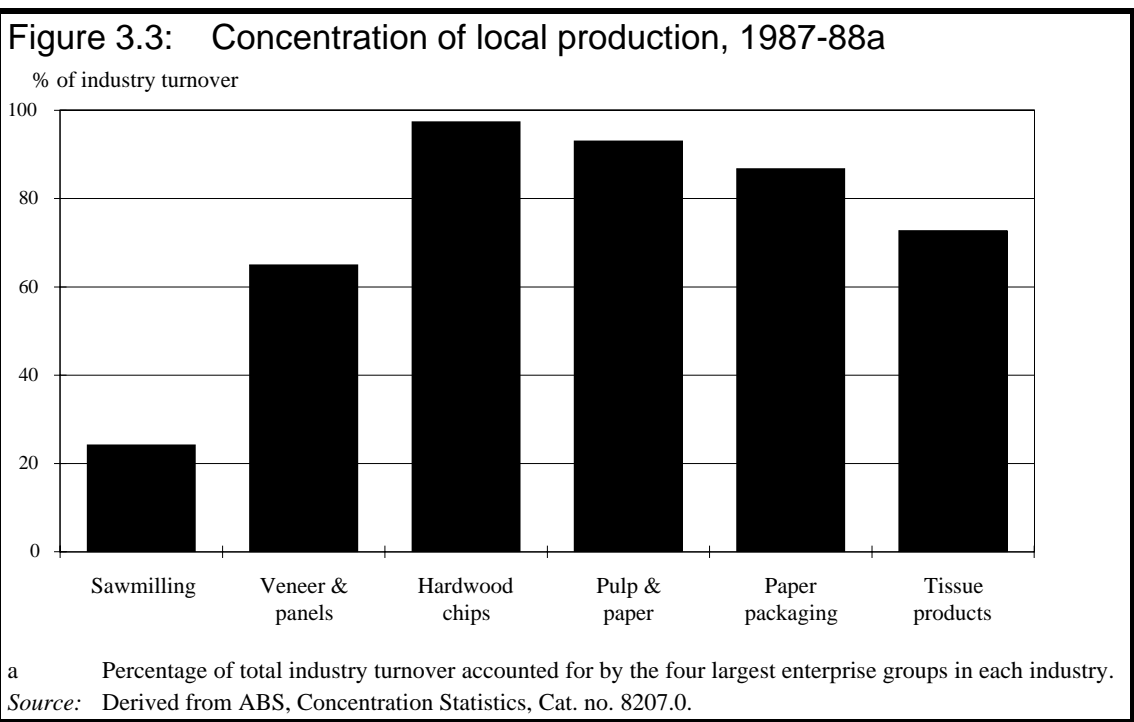
3.2 Industry structure

For the most part, output by each forest products industry is dominated by a small number of relatively large producers. The concentration of local production in each industry is illustrated in Figure 3.3 which shows the percentage of industry turnover accounted for by the four largest enterprise groups in each industry in 1987–88. In general, concentration is higher in the paper products sector than in timber products.

Since 1987–88, the level of concentration apparent in the paper products sector has increased. This mainly reflects rationalisation in the paper packaging

segment following the sale in 1989 by the Smorgon Group of its fibre container business and, more recently, the sale of APPM's pulp, paper and paper merchanting businesses to AMCOR — Australia's largest paper and packaging company.

A feature of the data is the low level of concentration in sawmilling compared with the other industries. Although separate data for hardwood sawmilling are not published, the available information suggests that its concentration is considerably lower than that shown in Figure 3.3 for hardwood and softwood sawmilling combined.



The companies producing forest products are predominantly Australian owned. The major exceptions are Australian Newsprint Mills (ANM), which is now jointly owned by the New Zealand-based Fletcher Challenge group and News Corporation, and a major tissue producer — Kimberly-Clark — which is jointly owned by AMCOR and the Kimberly-Clark Corporation of the United States.

Many of the larger producers have ownership links with enterprises producing other forest products.

- *Softwood sawmilling* – a few large producers, namely CSR, Boral, Brown and Dureau (owned by AMCOR), Australian Forest Industries (owned by Bowater Industries), SEAS Sapfor and plants owned and operated by the

South Australian Government in the Mount Gambier region account for the bulk of Australian production.

- *Veneers and panels* – CSR, the South Australian Government, ACI, Westralian Forest Industries, ANM and APPM, a subsidiary company of North Broken Hill-Peko, are among the larger companies engaged in the production of veneers and/or wood panels.
- *Hardwood chips* – there are nine major hardwood woodchip exporters, of which the largest are APPM — the world's largest exporter of hardwood chips — Forest Resources (owned by Boral), Harris-Daishowa and WA Chip and Pulp (part of the Bunnings group). There are also three softwood woodchip exporters. Most of the major paper manufacturers and some panel producers also produce woodchips for internal use.
- *Pulp and paper* – five producers — Australian Paper Manufacturers (APM) (part of the AMCOR group), ANM, Kimberly-Clark, Bowater and Visy Board (a Pratt group company) — produce virtually all paper and paperboard (including tissue products) manufactured in Australia.
- *Paper packaging* – companies owned by AMCOR and the Pratt group produce the bulk of Australia's corrugated packaging and folding carton needs.

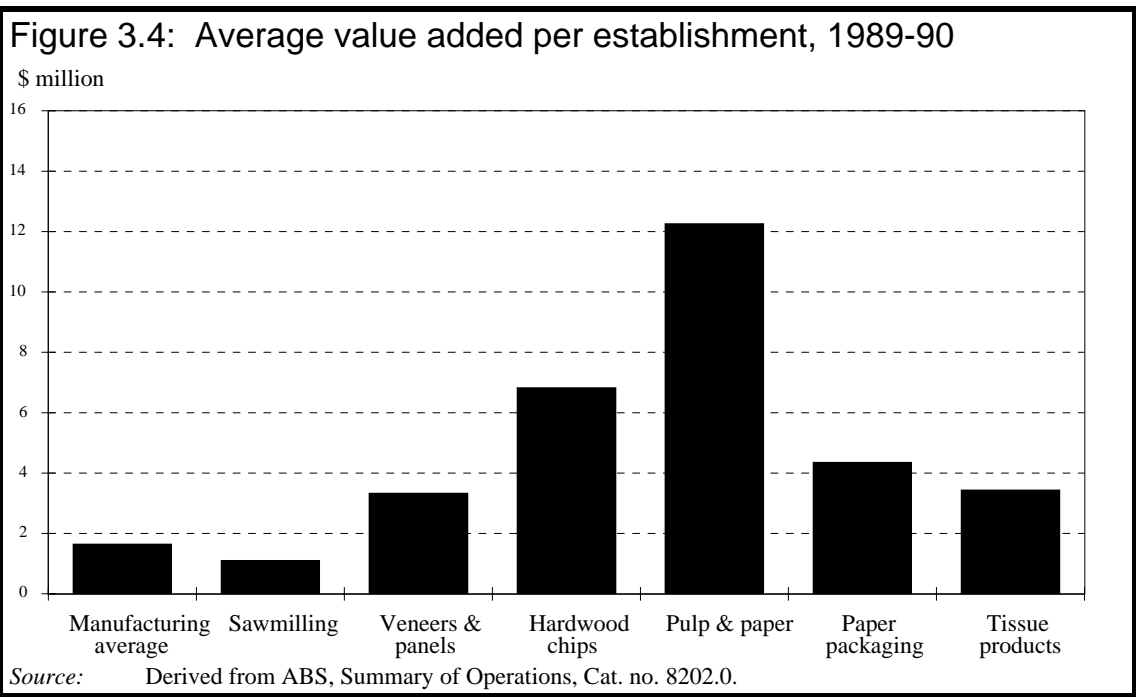
The major exception to this concentration of production is hardwood sawmilling. Although there are some large companies involved — such as Boral and Bunnings — hardwood sawmilling is fragmented and the average scale of production is small.

There have been significant reductions in the number of hardwood sawmillers in recent years. For example, in Victoria, sawmill numbers have declined by 80 per cent over the last twenty years. Nonetheless, around 80 per cent of Australian hardwood sawmills currently have an annual log intake of less than 3000 cubic metres. Collectively, however, they produce only about 25–30 per cent of all sawn hardwood. Variations in the physical dimensions and in the quality of Australian hardwood that complicate the adoption of automated processing have contributed to this fragmentation, although other factors — such as log allocation procedures and the availability of suitable logs — are also said to have delayed rationalisation.

As discussed later, the companies involved in producing forest products acquire wood from a diversity of public and private sources (eg public old growth and new growth forests, public and private plantations, and private property primarily used for general farming purposes). Some wood processing companies import all, or part, of their wood requirements.

With the exception of sawmilling, the average size of establishments in each forest products industry is considerably larger than the manufacturing sector average (see Figure 3.4). The aggregation of hardwood and softwood sawmilling activities in the one category masks a large discrepancy in the average size of sawmilling establishments. Although data are not available to quantify the difference, the average size of softwood sawmilling establishments is considerably greater than hardwood sawmills and also larger than the average for the manufacturing sector as a whole.⁴

One feature of the data is the high level of value added by woodchip establishments. This largely reflects relatively high returns to non-labour factors — mainly capital (see Appendix B). As expected in a capital intensive activity, the value of output accruing to labour is relatively small.



⁴ The data shown in Figure 3.4 encompass establishments of varying vintage and scale. Consequently, they do not reflect accurately the value added by new plants presently under consideration, many of which are considerably larger than the average size of existing plant.

Integration

To fully understand the forest products industries and their value adding potential, it is important to recognise the significance of the integrated and interrelated nature of wood processing activities. The present industry structures are characterised by extensive vertical integration. As suggested by the preceding discussion, there is also a degree of horizontal integration by larger producers.

Vertical integration

Over the last decade, it has become more common for large producers of forest products to undertake tree planting programs on freehold or leased land close to their operating sites. Some have also acquired areas of privately owned native forest and some have entered into contracts with private growers. These actions have been motivated by a range of factors, including a desire by some producers to reduce their reliance on supplies from government agencies (and, hence, their exposure to political interference) and beliefs that yields can be improved and wood costs reduced if the improved species now available are grown in plantations dedicated to wood production. In some cases, new species are propagated and seedlings grown for new plantings by the companies themselves.

The investment by forest products producers in wood production is substantial. APPM, for example, has 125 000 ha of freehold land in Tasmania. About 32 000 ha is eucalypt and pine plantation, with the remainder being natural woodland and forest. APM also has large tracts of freehold and leasehold land (around 85 000 ha) committed to wood production. Large pine plantations established by wood products producers include those owned by SEAS Sapfor (about 35 000 ha) and CSR (20 000 ha) in the Mt Gambier-Portland region.

Although not as significant, some producers have also integrated production of other inputs into their core businesses. Many, for instance, generate a significant proportion of their own energy needs. Others manufacture chemicals in-house (eg Westralian Forest Industries has commissioned new resin manufacturing facilities at its particleboard and medium density fibreboard plant at Dardanup, Western Australia).

There is also considerable integration within the forest products activities covered by the inquiry. For example, all paper produced by Visy Board, Kimberly-Clark and Bowater is converted into paper products (packaging, tissues and sanitary goods) by the companies themselves. Similarly, a large proportion of APM's output is used by other AMCOR companies to produce

paper packaging⁵ while, in the case of ANM, a considerable proportion of its newsprint production is sold to one of its joint owners — News Corporation. Following its acquisition of APPM's three paper merchanting businesses (Dalton Fine Paper, The Paper House and Tomasetti), AMCOR — which also has a 46 per cent holding in another large paper merchanting company (Spicers Paper) — now has an interest in each of Australia's major national paper merchanting companies.

Downstream integration by producers of wood products appears less than in the paper sector. In part, this may be due to the more fragmented nature of the direct users and wholesalers of sawmill products. As a result, it is more difficult for producers of sawmill products to guarantee market access for their products by participating in downstream activities. One example of extensive downstream integration is, however, provided by Bunnings. In addition to its core sawmilling activities, Bunnings manufactures a range of timber products such as roof trusses, garden furniture, parquet flooring and doors. Bunnings also engages in extensive merchandising operations through a string of company-owned retail outlets. Until recently, these operations were mainly undertaken in Western Australia, but the company has now acquired retail outlets in Victoria, South Australia and southern New South Wales, most of which formerly traded as McEwans. SEAS Sapfor also has extensive merchandising operations.

Horizontal integration

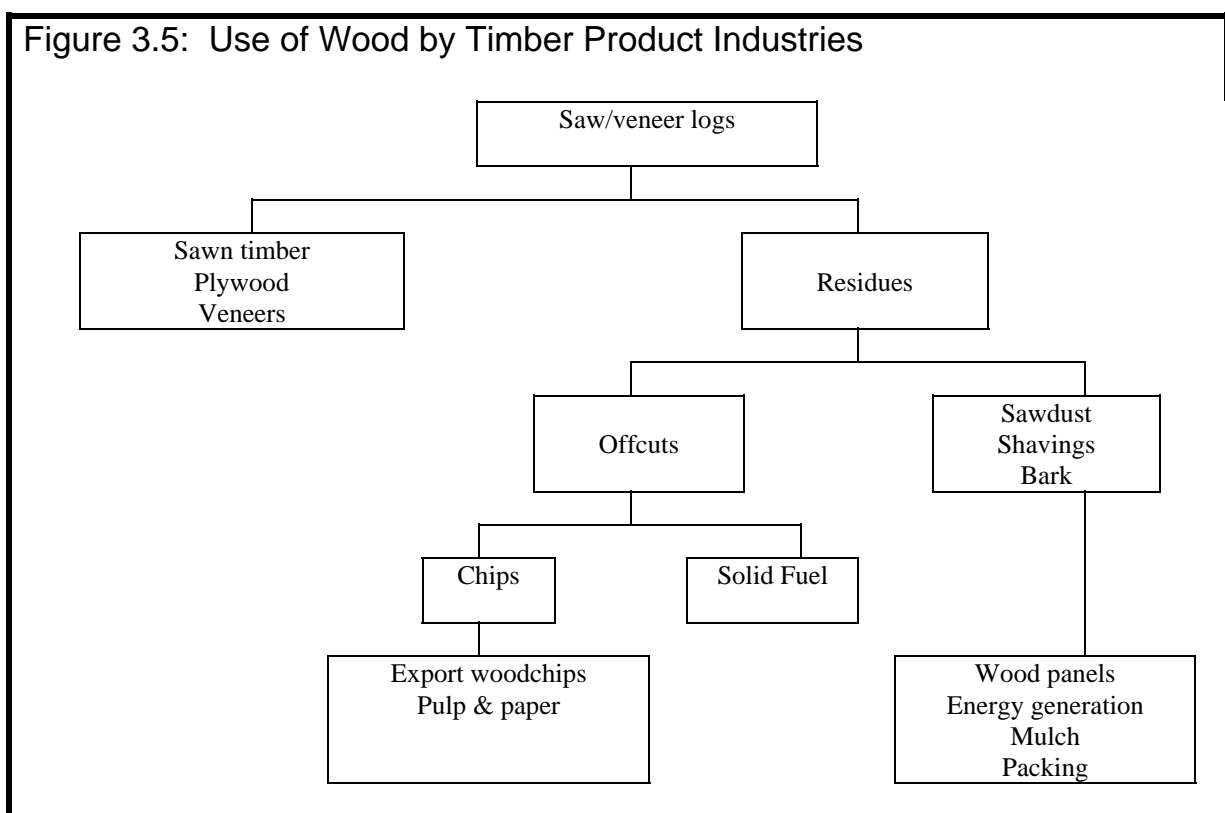
There is only limited horizontal integration within the pulp and paper sector. Prior to the recent sale of APPM's pulp and paper interests, the three largest integrated pulp and paper producers (APM, APPM and ANM) had specialised in the production of packaging and industrial papers, printing and writing papers, and newsprint respectively. Kimberly-Clark and Bowater produce paper for tissue products only, while Visy Board only manufactures papers for use in its own packaging businesses.

Horizontal integration is more apparent in the wood products sector. To a large extent, this is driven by a need to efficiently use wood — to optimise the quantity of sawn timber extracted from each log and to minimise waste by utilising wood residues in other wood processing operations. This is particularly important in hardwood sawmilling where sawn timber constitutes only 30–40 per cent of log volumes. Boral, for example, stated that the sawn output of its New South Wales and southern Queensland operations is about

⁵ AMCOR also owns Containers Packaging which operates facilities throughout Australia that produce aluminium, steel and a range of plastic packaging.

145 000 cubic metres from an annual log input of 449 000 cubic metres. This represents a recovery rate of 33 per cent of the gross log volume.

In practice, efficiency is promoted by using log residues internally (eg as fuel for electricity generating plant and for generating heat for drying kilns), for other wood processing activities (eg for producing reconstituted wood panels) or for producing other products (eg sawdust and bark are used for mulch and other garden products). Research is also being undertaken into the feasibility of producing ethanol from forest industry by-products. The end result is that there is a concerted attempt to ensure that virtually all parts of logs are productively used. The major wood flows are illustrated in Figure 3.5.



The availability of thinnings from forests and plantations servicing sawmills, coupled with the residual wood available from the sawmills themselves, has encouraged centralisation of different timber processing activities in regions close to wood supplies and, in addition, some integrated sawmilling and other wood processing operations. CSR, for example, operates sawmills, a plywood plant and a particle board plant in the Tumut region, and sawmills and a particle board plant in the Mt Gambier region. Similarly, Boral has sawmilling and export woodchip facilities in central and northern New South Wales.

3.3 Major products

The most comprehensive commodity statistics available are those compiled by ABARE (1992c). The data, which cover the major products produced by both timber and paper producers, are available in physical terms only.

Timber products

The most significant feature of the production of timber products over the ten years to 1991–92 has been a large decline in sawn hardwood and a corresponding increase in sawn softwood (see Table 3.3). Participants stated that these trends reflect resource availability (a decrease in hardwood logs and an increase in plantation grown softwood logs) and, in recent years, more aggressive marketing by softwood producers. As a result, softwood has displaced hardwood in some markets (eg for structural timber used in residential dwelling construction). Production of export woodchips increased in the five years to 1986–87, but has since remained relatively stable.

In terms of volume, local production of wood products accounts for around three-quarters of domestic consumption, with the balance being met by imports, the majority of which is sawn softwood. Market share information is provided in the following chapter.

Table 3.3: Production of Major Timber Products^a

	1981-82	1986-87	1991-92 ^p	Change
	'000m ³	'000m ³	'000m ³	81-82 to 91-92 %
Sawnwood				
- hardwood	1976	1708	1387	-30
- softwood	1181	1240	1560	32
Plywood	89	97	107	20
Particleboard	647	660	655	1
Hardboard	102	101	84	-18
Railway sleepers	207	195	100	-52
Export woodchips	3821	5020	5258	38

a No data are available for medium density fibreboard.

p Preliminary

Source: ABARE (1992c).

Although not revealed by the statistics, there have been on-going initiatives to increase the efficiency of log utilisation by developing new products, some of which utilise offcuts and poorer quality wood. Products developed in recent

years include laminated veneer lumber (LVL), which involves the use of veneer sheets to produce high strength, long length, structural timbers, and Valwood, a process for using mainly poorer quality timbers to produce laminated panels (see Appendix I).

Paper products

Although their growth has been relatively small over the last decade (on average, about one per cent per annum), packaging and industrial papers are the largest component (by volume) of local paper production (see Table 3.4). Reflecting the significant increase in computers and copying machines, the highest growth has been in printing and writing papers — 67 per cent over the ten years to 1992. The increase in local production of these papers mainly reflects the entry of APM and ANM into this market segment. About one-third of the volume of Australia's paper consumption is met by imports (see Chapter 4).

The amount of wastepaper collected increased considerably in the decade to 1991–92. The quantity collected in 1991–92 represented a recovery rate of around 35 per cent.

In 1991–92, wastepaper constituted around 40 per cent of all wood fibre used in paper production. At present, virtually all recovered wastepaper is used to produce packaging and industrial papers. However, ANM plans to install a de-inking plant at its Albury mill to enable it to produce newsprint from recycled newsprint and magazine paper. In addition, the Western Australian Department of State Development (now the Department of Resources Development) stated that a newsprint mill and a plant to produce unbleached semi-chemical pulp and corrugated medium based on wastepaper are proposed to be developed in Western Australia.

Table 3.4: Production of major paper products

	1981-82	1986-87	1991-92 ^p	Change 81-82 to 91-92
	'000 tonne	'000 tonne	'000 tonne	%
Pulp	753	906	1019	35
Packaging & industrial	965	1058	1105 ^a	15
Printing & writing	193	262	323 ^a	67
Newsprint	307	386	404	32
Tissue	na	na	143	-
Wastepaper collected	606	580	875	44

a 1990-91 data
p preliminary
Source: ABARE (1992c).

Value added

The wood processing activities of all forest products industries involve some degree of value adding. The extent of value adding activity is largely determined by individual firms according to their perception of the returns which are achievable from products incorporating varying levels of processing. (In recent years, some governments have intervened with the aim of increasing the level of processing of Australia's forest resources — see Chapter 10.)

Participants stated that there has been a trend towards production of higher value added products. In the paper sector, this is illustrated by the increase in production of higher value added printing and writing papers. In the wood products sector, there has been a significant shift towards higher value added products by hardwood sawmillers. In the face of increased competition from softwood, increasing numbers of hardwood sawmillers are processing timber beyond the green sawn timber stage. This trend is most evident in the larger mills. For example, kiln drying techniques are increasingly being used to improve the recovery of appearance grade timber and greater emphasis is being placed on the production of higher value added dried products such as flooring, panels and specialty products. Higher value added panel products include laminated and decorative panels and medium density fibreboard panels.

Table 3.5 shows the ratio of value added to turnover for each of the forest products industries.

	1981-82	1986-87	1989-90
Sawmilling	0.47	na	0.55
Veneers and panels	0.39	0.35	0.34
Hardwood chips	0.38	0.39	0.37
Pulp & paper	0.40	0.40	0.41
Paper packaging	0.34	0.36	0.38
Tissue papers etc	0.44	0.40	0.40
na	Not available		
Source:	Derived from ABS, Summary of Operations, Cat. no. 8202.0, various issues.		

The data *cannot* be used to compare the extent of processing undertaken by different industries,⁶ but it does provide a broad indication of changes in the

⁶ The measure used will show, all other things being equal, lower values for downstream industries than it will for industries involved in processing raw materials.

level of processing undertaken *within* industries. The data suggest that the most significant change has occurred in sawmilling. Value added per dollar of sawn timber increased by 20 per cent to about 55 cents between 1981–82 and 1989–90. There was also a significant shift towards higher value added products in the paper packaging industry.

The data also suggest a decline in the level of processing undertaken by the veneers and panels industry. However, it is possible that its relatively heterogenous output and changes in the product mix during the 1980s impair the comparability of the data.