

ASIA-PACIFIC FORESTRY SECTOR OUTLOOK STUDY

WORKING PAPER SERIES

Working Paper No: APFSOS/WP/13

COUNTRY REPORT - AUSTRALIA

by

**Forests Branch
Commonwealth Department of Primary Industries and Energy
Australia**



Forestry Policy and Planning Division, Rome
Regional Office for Asia and the Pacific, Bangkok

August 1997

The Asia-Pacific Forestry Sector Outlook Study is being undertaken under the auspices of the Asia-Pacific Forestry Commission.

This report comes under Workplan Number C16.

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INFORMATION NOTE ON ASIA-PACIFIC FORESTRY SECTOR OUTLOOK STUDY

At its sixteenth session held in Yangon, Myanmar, in January 1996, the Asia-Pacific Forestry Commission, which has membership open to all governments in the Asia-Pacific region, decided to carry out an outlook study for forestry with horizon year 2010. The study is being coordinated by FAO through its regional office in Bangkok and its Headquarters in Rome, but is being implemented in close partnership with governments, many of which have nominated national focal points.

The scope of the study is to look at the main external and sectoral developments in policies, programmes and institutions that will affect the forestry sector and to assess from this the likely direction of its evolution and to present its likely situation in 2010. The study involves assessment of current status but also of trends from the past and the main forces which are shaping those trends and then builds on this to explore future prospects.

Working papers have been contributed or commissioned on a wide range of topics. They fall under the following categories: country profiles, selected in-depth country or sub-regional studies and thematic studies. Working papers are prepared by individual authors or groups of authors on their own professional responsibility; therefore, the opinions expressed in them do not necessarily reflect the views of their employers, the governments of the Asia-Pacific Forestry Commission or of the Food and Agriculture Organization. In preparing the substantive report to be presented at the next session of the Asia-Pacific Forestry Commission early in 1998, material from these working papers will be an important element but will be blended and interpreted alongside a lot of other material.

Working papers are being produced and issued as they arrive. Some effort at uniformity of presentation is being attempted but the contents are only minimally edited for style or clarity. FAO welcomes from readers any information which they feel would be useful to the study on the subject of any of the working papers or on any other subject that has importance for the Asia-Pacific forestry sector. Such material can be mailed to the contacts given below from whom further copies of these working papers, as well as more information on the Asia-Pacific Forestry Sector Study, can be obtained:

Rome: Mr. Mafa Chipeta
Senior Forestry Officer
Policy and Planning Division
Forestry Department
Food and Agriculture Organization of the
United Nations
Viale delle Terme di Caracalla
Rome, 00100, ITALY
Tel: (39-6) 5705 3506
Fax: (39-6) 5705 5514
Email: <mafa.chipeta@fao.org>

Bangkok: Mr. Patrick Durst
Regional Forestry Officer
FAO Regional Office for Asia and the
Pacific
Maliwan Mansion
Phra Atit Road
Bangkok 10200
THAILAND
Tel: (66-2) 281 7844
Fax: (66-2) 2800445
Email:
<Patrick.Durst@field.fao.org>

1. CONTEXT IN WHICH THE FORESTRY SECTOR IS DEVELOPING

1.1 Highlights of social and economic situation

The Australian economy grew by 4.3% in 1995–96, due mainly to increased private consumption expenditure, business investment spending and net exports (Woffenden et al. 1997). Australia's economic growth is expected to slow to 3.2% in 1996–97, before strengthening to 3.7% in 1997–98. The Australian economy is assumed to grow by an annual rate of 3.5% to 2000. Australia's inflation rate is expected to remain low at around 3% in the medium term. Interest rates are expected to remain relatively unchanged with prime lending rates expected to average 9.3% in 1997–98.

The two key influences on the Australian economy in the medium term will continue to be the business cycle and structural change, that is, changes in the composition of activity, whether in response to changes in policies (such as reductions in tariffs and interest rates), or in consumer preferences (for example, more spending on recreation, travel and eating out at the expense of clothing). Accelerating structural change in the 1990s is a major reason for the erratic nature of the recovery from recession in 1990–91 (Shields 1997). Structural change in the sawntimber sector is being driven by a dramatic change to the supply of softwood plantation sourced timber and changes to the building market where alterations and additions to dwellings are projected to increase in importance over new dwellings. Softwood production (which exceeded hardwood production for the first time in 1990–1) is projected to become increasingly important in meeting building sector needs. (Neufeld).

Exports in the forestry and fisheries sector to 2001 are predicted to decline slightly. No projections have been made for the forestry sector alone.

Australia currently has a population of approximately 17.5 million. In 1995 the forestry and associated industries (including wholesaling and retailing of forest products) had an annual turnover of approximately A\$10 billion. The contribution of forest harvesting activities to Australia's 1996 GDP of A\$429.6 billion was approximately A\$0.5 billion.

1.2 Highlights of long-term objectives and goals

Australia's aim is to achieve ecologically sustainable management and use of Australia's public and private forests, whilst increasing wood production and achieving greater industry and regional development. Australia has a target to treble its plantation estate by 2020. Australia is in the process of setting aside forest areas in secure comprehensive, adequate and representative reserves in order to achieve environmental outcomes whilst giving greater certainty to industry in terms of areas which will be available for timber harvesting in future. Forest industries are important for economic and environmental reasons in a number of areas in Australia. Integration of forestry activities in farming operations are seen as a good way of achieving land rehabilitation and enhancing forest industries and regional development.

Australia is a Federation which necessitates a division of power between the Commonwealth government, State and Territory governments (“State governments”) and Local government (which exists under State government legislation). Under Australia’s Constitution State governments have control over most land in Australia—they maintain registers of ownership (and in some cases registration of leasehold and other interests in land), own significant tracts of land (a proportion of which they have used for forestry activities) and together with Local government regulate land use.

Despite this formal structure all levels of government have a role to play in land management. In 1992 the Commonwealth and State governments developed a common policy position on forests known as the National Forest Policy Statement (NFPS). An Intergovernmental Agreement on the Environment concluded in 1992, established a cooperative national approach to environmental issues and better defined the roles of the different levels of government. It establishes principles through which environmental considerations are taken into account in government decision making and includes agreement on specific areas of environmental concern including nature conservation.

The NFPS sets out objectives concerning conservation, wood production and industry development, use of private native forests, development of plantations, water supply and catchment management, tourism development, employment, work force education, public awareness and involvement, research and development and the further development of intergovernmental arrangements and decision making processes.

The Commonwealth launched a four year Wood and Paper Industry Strategy (WAPIS) in December 1995 which aims to develop the wood and paper industries whilst protecting forests for our future generations. Its focus is on industrial development, value adding and new investment. It contains a package of measures to help forest industries become more internationally competitive and innovative.

Specific goals within the NFPS and WAPIS include:

- establishing a comprehensive, adequate and representative forest reserve system;
- to increase the use of farm forestry for commercial purposes;
- increasing value adding opportunities creating greater regional employment and development opportunities; and
- increasing the competitiveness and efficiency of Australian forest and timber based industries including increased recycling.

To achieve the goal of increasing the area under plantation threefold from one million hectares to three million hectares by the year 2020 farm forestry will need to provide a significant proportion of additional plantings.

Australia’s progress to 1997 in achieving the above goals include the signing of the first of twelve Regional Forest Agreements (RFAs) which will among other things refine production and non production areas of forests. Considerable work has been done towards two other RFAs. The process of removing impediments to the development of forestry and forestry industries due to tax and planning laws is well underway and should make growing trees a more attractive investment option.

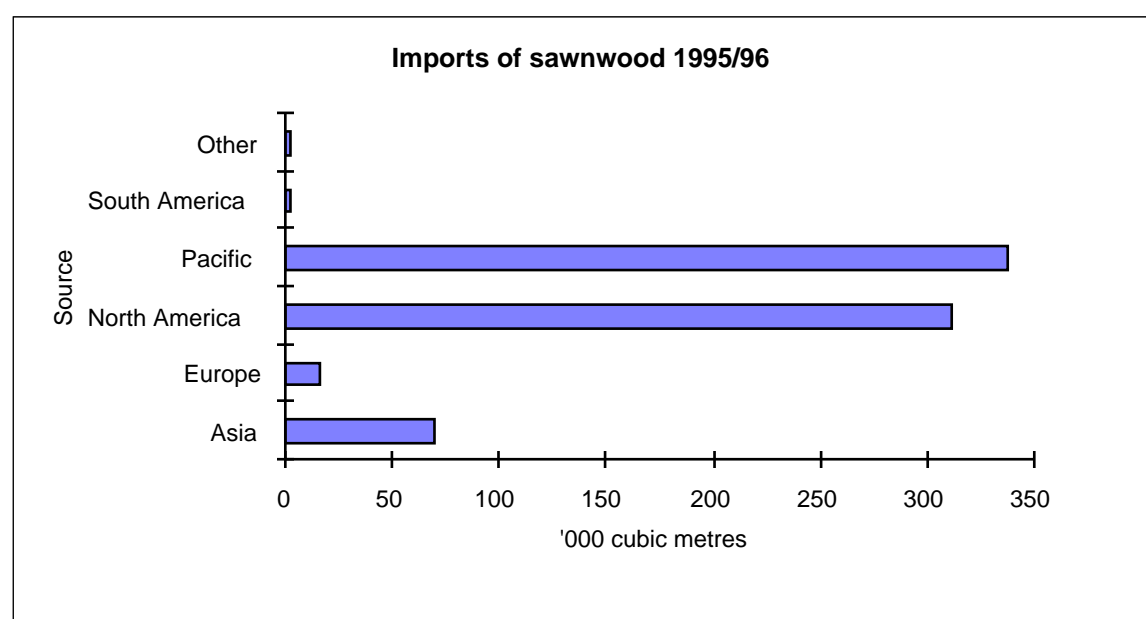
1.3 Role of country in a regional context

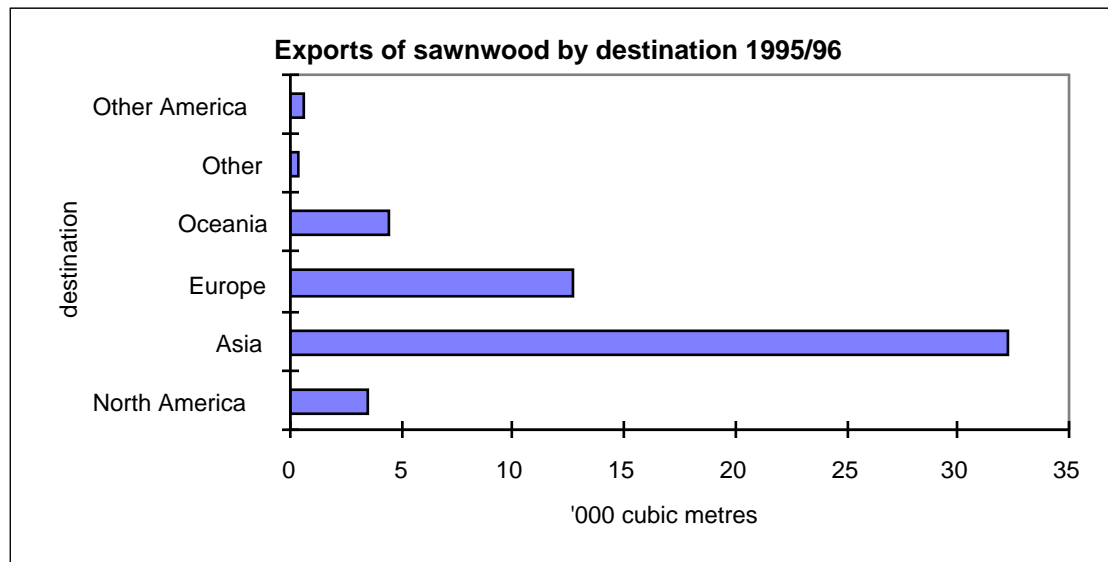
1.3.1 Trade

From an international perspective, Australia, with 1.2% of the world's forest, is a relatively small player in the world market for most forest products, except hardwood woodchips. In 1995–96 Australia exported \$A1.02 billion worth of forest products, of which woodchips made up \$A544 million (53%), and exports of paper and paperboard were \$A245 million (24%).

Australia's imports of forest products in 1995–96 totalled \$A2.9 billion, of which the two largest components were paper and paperboard (\$A1.7 billion), and sawnwood (\$A367 million). New Zealand, Finland and the United States are important sources of paper and paperboard for Australia, while the bulk of Australia's sawnwood is sourced from Canada, New Zealand and the United States (ABARE 1996).

Australia, as part of the Asia Pacific region, also participates in tropical timber trade, although tropical timber imports have fallen in recent years as the local softwood resource has expanded (see Johnson 1997 and Neufeld 1997).





1.3.2 Sustainable management techniques for forestry and research and development

Australia has considerable expertise in sustainable forest management techniques both in research organisations and in State government forest agencies. In addition there are a number of Australian private consultancy firms working in the forestry area which also undertake work in the Asia Pacific region. There are a number of private companies conducting research particularly in provenance testing and plantation management and harvesting techniques.

1.3.3 Sustainable management of Australia's forests

In pursuance of the NFPS Australia is engaging in a forest assessment process which will lead to Regional Forest Agreements (RFAs). RFAs will be based on scientific assessments of environmental and heritage values of forests, assessments of their economic value and the vulnerability of forest dependent communities to changes in the uses of forests. Public consultation with the communities living in areas to be covered by an RFA is an important component in the process of developing an RFA. RFAs will provide a blueprint for the future management of our forests, and the basis for an internationally competitive and ecologically sustainable forest products industry. RFAs last for 20 years and provide for a performance review every five years. Forest management under the RFAs will continue to be scientifically based and harvesting will be supervised by University qualified foresters. The States and Territories have in place comprehensive legislation and policies governing forest management.

1.3.4 Australia's involvement in the Asia-Pacific region

Australia supported the development of the Code of Conduct for Logging of Indigenous Forests in Selected South Pacific Countries which was endorsed by all regional Heads of Government at the South Pacific Forum in Madang in 1995. Australia is assisting Indonesia, the Task Manager, in the preparation of the Asia Pacific Code of Practice for Forest

Harvesting by funding an Australian consultant to draft a Code of Practice for consideration by governments. Australia's aid programme contributed \$A15.6 million to the forests sector in 1995–96 through both projects under country and regional programmes, and contributions to multilateral agencies. Aid to the forests sector has doubled in nominal terms over the last five years, reflecting increased attention to sustainable forest management in the Asia-Pacific region.

Australia supports a range of forestry research activities through the Australian Centre for International Agricultural Research (ACIAR). ACIAR commissions bilateral collaborative research projects addressing problems in developing countries, promotes interaction between Australian and developing country scientists and formal and informal training of scientists. The objective of commissioned research is to provide solutions to agricultural, forestry, fisheries and natural resource management problems common to Australia and the partner countries. ACIAR undertakes provenance testing of Australian tree and shrub species for use in reforestation and agroforestry and helps fund the Australian Tree Seed Centre which provides seed, information and training to developing countries. ACIAR also provides Australian support to International Agricultural Research Centres.

Australia's diverse flora and fauna and landscapes are an important part of Australia's attractiveness for overseas tourists though it is difficult to attribute a dollar value to the contribution Australia's forests make to this attraction.

In recognition of the importance of forests to tourism in Australia the NFPS committed \$1.9 million over four years to the Forest Ecotourism Programme (FEP). FEP's aims were to make tourist experiences in forested areas more user friendly and educational whilst minimising impacts on the environment. FEP also funded development of planning and management strategies for future growth of forest ecotourism for some regions. Some State governments expend considerable amounts on forest based tourism and recreation and State government agencies have expertise in forest based ecotourism management.

It is difficult to attribute a proportion of tourist dollars spent to the existence of forests in particular areas but it is clear Australia's flora, fauna and landscapes are a major attraction for international tourists visiting Australia. 50% of inbound tourists report visits to National/State Parks/reserves/caves. Many of these parks/reserves are set aside, in part at least, to protect the forests which they contain. Overseas tourists represent approximately 7% of visits to National Parks. RFAs should also provide resource security to tourist operators who rely on forests to provide a viable industry.

1.4 Summary of major issues

Australia will continue to work towards greater efficiency and sustainability of its agricultural and forestry sector and to develop a more productive relationship between the two sectors. Expansion of the plantation estate and greater incorporation of tree growing as a part of farming operations (for profit and environmental/sustainability benefits) are a priority and should lead to a greater total resource and greater certainty of resource availability in the future.

For over 10 years Australian governments have been encouraging the planting of trees for environmental and development purposes through programmes involving local communities.

State governments have had farm forestry programmes for a number of years which, like the Commonwealth Farm Forestry Programme, aim to encourage the incorporation of commercial tree growing and management into farming systems for the purpose of wood and non-wood production, increasing agricultural productivity and sustainable natural resource management. Farm forestry has the potential to provide substantial environmental benefits, including greenhouse and biodiversity, as well as landcare, regional development and employment benefits.

A major plank in improving the overall productivity and sustainability of use of Australia's forest resource is the development of RFAs. RFAs aim to provide certainty to industry on areas available for harvesting, ensure sustainable management systems for forests and the protection of biodiversity, heritage, wilderness and other values. The first of twelve RFAs has been concluded, the remaining significant forest areas of Australia will have RFAs by the turn of the century. These agreements will improve the climate for long term investment in timber industries. The Commonwealth is funding (with matching State Government funding in the case of one State, New South Wales) a Forest Industry Structural Adjustment Package to assist adversely affected native forest industry businesses and workers adjust to changes in the sector and facilitate structural change arising from the development of Regional Forest Agreements. Measures under this Package include assistance for unviable native forest businesses to exit the industry and for viable businesses to remain and invest in further downstream processing. Assistance for displaced workers to retrain or be redeployed is also available under the Package.

Privatisation or corporatisation of State government owned forests will continue and is likely to have been completed by 2010. This may increase competition in log supply, improve efficiency of wood production and reduce the potential for conflicts of interest arising between government's role as forest owners and regulators. The changes taking place in State government forestry operations may increase opportunities for investment in forestry industries including in the forest services sector.

2. THE STATE OF FORESTRY IN THE COUNTRY AND MAJOR TRENDS

2.1 The forest resources—status and trends

The Australian continent covers a land area of 768 million hectares. A large portion of the country, particularly the interior, is arid or desert land, however, there is still a large potentially forestable land area. Australia has 156 million hectares of wooded land meeting the FAO definition of forest. Within Australia the word forest is restricted to open and closed forests (>50% crown cover), which cover only 5% of the land area, but are still sufficiently extensive to give Australia the largest forest resource in the South Pacific. An additional 15% of the land is classified as woodlands and mallee (multi-stemmed eucalypts). A portion of the woodlands are also harvested. The vast majority of the Australian forest resource is natural forest, dominated by eucalypts, with the balance being a made up of acacia (*Acacia spp*), cypress pine (*Callitris spp*), paperbarks (*Melaleuca spp*), and tropical rainforest. Natural

forests comprise 99.3% of the forest resource. The remaining forest (1.1 million hectares) is plantations. Of this, 73% is softwood (mainly radiata pine) and 26% is native hardwoods. Plantations are being established at a current rate of around 20,000 hectares per year although government policy (Vision 2020) aims to accelerate planting to treble the plantation estate by 2020.

Around 17% of open and closed forest land is reserved for conservation purposes in National Parks and reserves. The remainder is in state forests (27%), private forests (41%) and other Government lands (15%). The state forest resource is generally of considerably higher quality than the private resource and around 60% of the state forest resource is available and accessible for harvest within a multiple use framework. Forests contribute as a focus for tourism and recreation. They also provide fuelwood and a range of non wood forest products. The large area of woodlands are also important for timber, fuelwood and non-wood products. All harvesting on public lands and some private lands is covered by comprehensive codes of forest practice.

2.2 Environmental initiatives, protected areas and wildlife resources: status and trends

Both Commonwealth and State and Territory governments have legislation covering assessment of the environmental impact of forestry proposals and the protection of endangered species and wilderness.

There are numerous State and Territory Acts (legislation) covering conservation issues with implications for forestry including land use planning laws, flora and fauna protection Acts, Acts establishing and governing the administration of National Parks and Acts regulating water rights.

Australia is a party to the Convention for Biological Diversity and the World Heritage Convention and already has a number of World Heritage areas containing significant forest, including the Tasmanian Wilderness World Heritage Area, the Wet Tropics of Queensland, Fraser Island, the Central Eastern Rainforest Reserves (Australia), and Kakadu National Park.

Australia is in the process of establishing a representative system of protected areas including forest conservation reserves.

Wilderness areas are managed with minimal human interference. Conservation reserves are managed primarily to conserve biological diversity and ecosystem processes but also provide valuable tourism and recreational resources. Under the National Forest Policy, Governments have agreed to maintain an extensive and permanent native forest estate and manage that estate in an ecologically sustainable manner so as to conserve the full range of values that forests can provide for current and future generations.

National criteria on the levels of forest to be preserved within RFA areas are as follows:

- 15% of the distribution of each forest ecosystem existing prior to European arrival in Australia
- 60% or more of existing old growth forest

- 60% or more of existing vulnerable forest ecosystems
- 90% or more of high quality wilderness; and
- remaining occurrences of rare and endangered forest ecosystems including old growth.

Within the National Forest Policy framework, specific policies have been developed in relation to nature conservation and wilderness reserves, ecologically sustainable management and codes of practice, data collection and analysis (including continued development of the National Forest Inventory), and the protection of forests from diseases, weeds, pests, chemicals and wildfire.

Australia has a National Strategy for the Conservation of Australia's Biodiversity reliant on community support and community-based actions for its successful implementation.

Further information on the Commonwealth government's environment policies and programmes is available on the internet at:

<http://kaos.erin.gov.au/erin.html>

Further information on forests policies and programmes is available on the internet at:

<http://www.dpie.gov.au/dpie/forestry.html>

2.3 Wood based industries (including pulp and paper): status, trends and transitions

2.3.1 Sawntimber

The Australian market for sawntimber in 1994/95 was about 4.7 million m³ of which about 3 million m³ was softwood. Domestic production represented about 3.7 million m³ (79%) (equally divided between softwood and hardwood). Imports were 1 million m³ (mainly softwood) whilst exports were only 500,000 m³.

Sawn timber consumption in Australia fell in 1995–96, reflecting a fall in the number of houses and other dwellings commenced. With commencements expected to remain relatively low in the short term, consumption is expected to fall again in 1996–97. Production is also forecast to fall due to the lower demand for sawn timber and a surplus of stock (see ABARE 1997).

The building industry has historically been the dominant influence on the domestic production and consumption cycles for Australian sawntimber. The building construction cycle is well into a downturn and expectations are that the industry will enter an upward phase in 1997–98 (Neufeld 1997).

The consumption and the production of sawn timber is projected to rise in the medium term as housing activity recovers, new production capacity and plantations are established, and existing softwood plantations mature. An export surplus of softwood sawn timber may emerge in the first decade of the next century (ABARE 1997).

2.3.2 Wood panels

In 1994/95 Australian production of plywood was 145,000 m³, imports 67,000 m³ whilst exports were negligible (apparent net consumption (ANC) approximately 212,000 m³). Particleboard production was 864,000 m³, imports 35,000 m³ and exports 71,000 m³ (ANC = 828,000 m³). Medium Density Fibreboard production was 436 000 m³, imports 102,000 m³ and exports 128 000 m³ (ANC = 410,000 m³).

The consumption of wood based panels fell in 1995–96 and is expected to fall further in 1996–97. However, consumption is projected to recover in the medium term. Exports, particularly of medium density fibreboard, are also projected to rise, based on expected higher production from recent and planned additions to capacity (ABARE 1997). Production of medium density fibreboard (MDF) will exceed consumption toward the end of the decade and import substitution and exports will drive the industry (Neufeld 1997).

2.3.3 Paper and paperboard

There is a clearly established trend to increased production, import substitution and increased exports in paper and paperboard (Neufeld 1997). Fixed capital investment rose in the pulp and paper industry by 23.5% during 1995–96 including significant investment in plantations. Sales revenue rose by 9.5% due to increased prices in the early part of the year and a run down of stocks held by retailers. Export sales grew by 4% in 1995–96.

Australian production in 1994/95 was 2.3 million tonnes, imports 1 million tonnes and exports 272 kilotonnes (ANC about 3 million tonnes). The majority of imports were for printing and writing papers (60%) whilst exports were mainly packaging papers (80%).

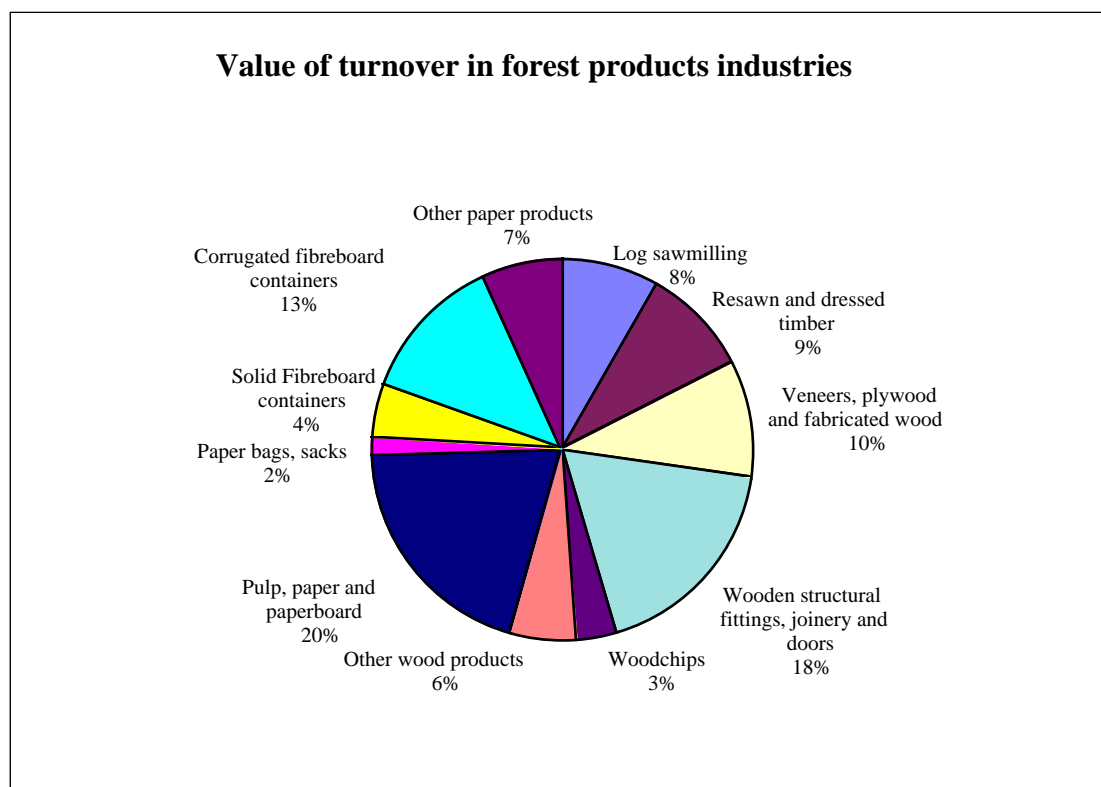
The balance of trade on pulp and paper products continued to decline going from \$1.7 billion in 1994–95 to \$1.8 billion in 1995–96 though its decline slowed. The Commonwealth Government considers there is considerable scope for additional investment in the pulp and paper industry including recycling, which could result in import replacement. Import substitution and increased recycling are objectives of both industry and government.

In order to reduce our dependence on imports a new 150 kilotonne paper machine, to produce printing and writing papers is being installed and this is expected to be operational in mid 1998. Feasibility studies are underway for two kraft pulp mills (an unbleached softwood mill and a bleached eucalypt mill). Significant new investment in machinery and plantation establishment is expected in the outlook period.

Australian consumption of printing and writing paper fell in 1995–96 due to high international paper and pulp prices and surplus local stocks. World prices fell in early 1996, however, and printing and writing paper consumption is forecast to recover to some extent in 1996–97. Population growth and rising incomes are expected to increase consumption of paper and paperboard products in the medium term (ABARE 1997).

2.3.4 Forest products trade prospects

Australia's wood panel production is expected to exceed domestic requirements in the long term. Prospects for exporting panel products will depend on cost competitiveness with expanding industries in Asia and North America. Prospects to expand export oriented process of pulp and paper products will depend on whether the Japanese price of woodchips remains high, and international cost competitiveness (Cameron 1997 and de Fégely 1997).



2.4 Wood energy/fuelwood

Residential consumption of fuelwood collected by householders is difficult to measure and is estimated from various assumptions regarding capacity and use. Bush et al. (1997) estimate that around five million tonnes of fuelwood are consumed each year in Australia for residential heating.

Industrial consumption is derived from biennial surveys conducted by ABARE, and is estimated to be around 300,000 tonnes a year. The bulk of this is consumed by the wood, paper and printing industries (Bush, S., Harris, J. and Ho Trieu, L., 1997).

Fuelwood does not constitute a major source of electricity production though there are examples of wood by-products being used to generate electricity in particular industrial plants or regions. Fuelwood collection is not a major source of employment in comparison to employment derived from other forest industries.

2.5 *Non-wood forest products*

One of the most significant non-wood forest product produced from Australia's forests is honey, and native forests comprise an estimated 85% of the industry's resource base (Federal Council of Australian Apiarists Association personal communication 1995). Around 20,000 tonnes of honey are produced annually in Australia (ABS AgStats), with a retail value of around \$100 million in 1995. Honey production has been integrated into forest management techniques. Wildflower harvesting from native forests is also a significant industry in some parts of Australia. In Western Australia the wholesale value of the wildflower industry is \$50 million annually, half of production is estimated to come from forest land.

There is a small scale industry comprising about 160 firms/individuals harvesting bush foods relying on more than 300 plant species. The industry, worth about A\$13 million per annum, supplies a domestic niche market. Oils are produced from a range of eucalypt species and oil production has been successfully integrated with wheat farming in some areas of Western Australia. Some bush foods are being investigated for their potential for wider commercialisation under Australia's Farm Forestry Programme.

2.6 *Services of the forest: status and trends*

Governments are anxious to better educate the public on the complex issues involved in managing forests and the balance to be struck between industry and conservation concerns. Educational materials have been produced by State forestry agencies, industry and conservation groups presenting perspectives on the issues. The governments distribute information concerning their forest policies and consult widely before making policy.

Australia has a number of forestry and forest products research organisations. The Commonwealth Scientific and Industrial Research Organisation's Division of Forestry and Forest Products is the largest national forest industries R & D organisation and undertakes research on species and provenance selection, genetic research including solid wood conversion and processing, composites, pulp and paper and protection of wood in science. The State forest agencies undertake R & D in support of their own forest management and development activities while industry undertakes most of its research in the forest products area.

A Forest and Wood Products Research and Development Corporation was established pursuant to the NFPS. Its purpose is to promote effective research and development which fosters an internationally competitive, sustainable and environmentally responsible forest and wood products industry in Australia. The Corporation has five year research and development plans progressively implemented in annual operational plans. The Corporation's role is to improve the level and relevance of research by identifying priorities and commissioning, administering and subsequently evaluating research into a broad range of issues relating to wood production, extraction, processing, economics and marketing. It is funded by industry levy and by government.

The Farm Forestry Programme aims to increase funding to research activities relevant to farmers and industry. It has funded research concerning the viability of low rainfall agroforestry (species, products, markets); high value timber species, products and markets;

non-wood products; improving the availability and coordination of seed, site selection and silvicultural information for farm forestry systems. The Farm Forestry Programme aims to forge stronger links between researchers and the broader farm forestry community.

Tourism is an important and fast growing sector of the Australian economy. Distinctions between ecotourism and “ordinary tourism” motivated by a desire to experience different ecosystems and see different species are difficult to draw. Australia’s unique forests and the species they contain are important in providing industry development opportunities for tourism.

Survey data do not directly measure visits to forests or the extent to which Australian forests or forest dwelling species motivated visits to Australia or particular areas within Australia. Almost half of international tourists to Australia visit a botanical garden or park whilst in Australia and almost half visit a zoo or wildlife sanctuary indicating a high degree of interest in Australian flora and fauna (Preece, N. et al 1995). Domestic interest in ecotourism is strong, a survey concerning holiday plans revealing 53.2% of participants planned to visit a natural attraction or National Park to enjoy nature during their next holiday (Bureau of Tourism Research 1995).

There were estimated to be approximately 600 ecotourism operators in Australia in 1995, employing 6,500 people (equivalent to 4,500 full time jobs) and having a turnover of about A\$250 million. The extent to which ecotourism operates in forests varies from region to region. In Tasmania 80% of ecotourist operators conducted activities inside State Reserves many of which comprise forests. The study providing the estimate took the view ecotourism comprised educationally aimed operations designed to teach participants in tours about the environment they were travelling through. These operations which are based in nature experiences comprise a small (total employment in tourism is 130,000 directly and indirectly) but growing segment of Australian tourism. Of course many tourist operations are nature based to the extent they involve looking at or travelling through the natural environment.

Visits to National Parks have generally increased since the early 1990’s. In some Parks the number of visits have increased substantially—at over 10% per annum. Visits by people from overseas are a small proportion of visitors—approximately 7% though this may increase due to the strong growth in the number of overseas visitors interested in bushwalking and outback safari tours (both with average annual growth of 11% between 1989–94 compared with annual growth in visitation to Australia of 9%). Over the same period the number of international visitors undertaking bushwalks increased by 66% and the number who undertook outback safari tours increased 70%. The bulk of this growth is comprised by European and Japanese visitors. On average bushwalkers and safari tourers spend more money in Australia than other tourists (58% more and 100% more respectively). A 1993 survey indicated 11% of international tourists go bushwalking. In 1994 13% of the 3.1 million of the over 15 year old inbound tourists went bushwalking. 12% of those in bound tourists also went on rainforest walks and 50% visited National or State Parks or Reserves.

2.7 Institutions and policies

Intergovernmental institutions concerned with the development and coordination of forestry policy include the Ministerial Council on Forestry, Fisheries and Aquaculture (MCFFA)

involving Ministers from the Federal, State and Territory Governments and the Standing Committee on Forestry comprising senior officials from those governments. Coordination of major policy commitments occurs through the MCFFA or through the Council of Australian Governments (COAG), a meeting of State Premiers and the Federal Prime Minister.

The NFPS represents the guiding policy document for management of Australian forests and forest industries, supplemented by the WAPIS. Implementation of the NFPS and WAPIS are the priority activities for governments for the foreseeable future. Priorities in advancing implementation of the NFPS and WAPIS are the establishment of RFAs in the major forested regions in Australia, the removal of impediments to industry development contained in planning and tax laws removing export controls on unprocessed timber and wood chips sourced from RFA areas and plantations and providing a sound legal basis for separating ownership of trees from the land to enhance tradability of growing timber as an investment.

Each State has a forestry agency though the institutional arrangements vary considerably between them. There has been a recent trend to combine forestry and agriculture agencies within State Governments. Most State Governments are in the process of privatising or corporatising their plantation operations leading to greater private investment opportunities.

Establishing farm forestry as a self-perpetuating part of Australia's agricultural landscape is a major priority. If Australia is to meet its target of trebling its plantation area by 2020 much of the land planted will come from the farm sector. The Commonwealth is fostering a regionally integrated community involvement approach to farm forestry by working in partnership with the States, local government, regional development organisations, industry, landholders, and landcare and community groups. In the outlook period the programme will increase its support for activities in lower rainfall regions, including the development and promotion of wood and non-wood products, especially where these activities address biodiversity and land degradation issues.

3. THE FUTURE

3.1 Assessment of future supply and demand for forest products and services

Australia's total exploitable forest area is projected to increase during the outlook period (from 16.6 million hectares to 17.8 million hectares) due to the increase in the plantation estate. The native forest resource in both area available for exploitation and quantities of timber cut are projected to remain static. Removals of all timber are projected to increase from 19.5 million m³ in 1995 to 21.2 million m³ in 2010, the increase made possible by large areas of plantation reaching maturity towards the end of the outlook period and beyond and because of increased regrowth in native forests.

The factors affecting future demand for forest products are discussed in the following section and section 2.3 *Wood based industries (including pulp and paper): status, trends and transitions*.

The consumption of sawntimber in Australia is highly cyclical, depending on the housing industry, but also on other end uses and the economy. The average annual level of sawntimber consumption over the next fifteen years is projected to be approximately 4.2-4.3 million cubic metres, consisting of around 1.4 million cubic metres of hardwood, and 2.8 million cubic metres of softwood. By 2006-07, over 30% of timber consumption is expected to be in the alterations and additions sector, compared with 26% in 1994-95, and to exceed consumption in the detached dwelling sector (which accounted for approximately 38% of sawntimber construction in 1994-95). As a result of an increasing availability of plantation radiata pine and a decline in the availability of native hardwood, there is expected to be a shift to a greater proportion of softwood consumption in all end use categories, particularly in residential construction (Neufeld 1997).

Over the longer term, sawntimber production capacity is expected to expand, as a result of maturing softwood plantations and investment by domestic and international investors in new softwood and hardwood plantations and production facilities. Annual average production of sawntimber for the five year period to 2010-11 is expected to total almost 5 million cubic metres, well above the 3.7 million cubic metres produced in 1995. The increase is expected to result mainly from a projected 70% increase in the production of plantation softwood. The production of hardwood sawntimber is projected to remain stagnant over the same period, at around 1.3 million cubic metres a year, mainly because of restrictions on production from native forests (Neufeld 1997).

As a result of increased domestic production, sawntimber imports are expected to decline rapidly over the five years to 2005-06, and in the five years to 2010-11, Australia may have an annual average surplus of sawntimber exceeding 700,000 cubic metres. Because of restrictions on supply, however, the hardwood deficit is expected to remain substantially unchanged for the future (Neufeld 1997).

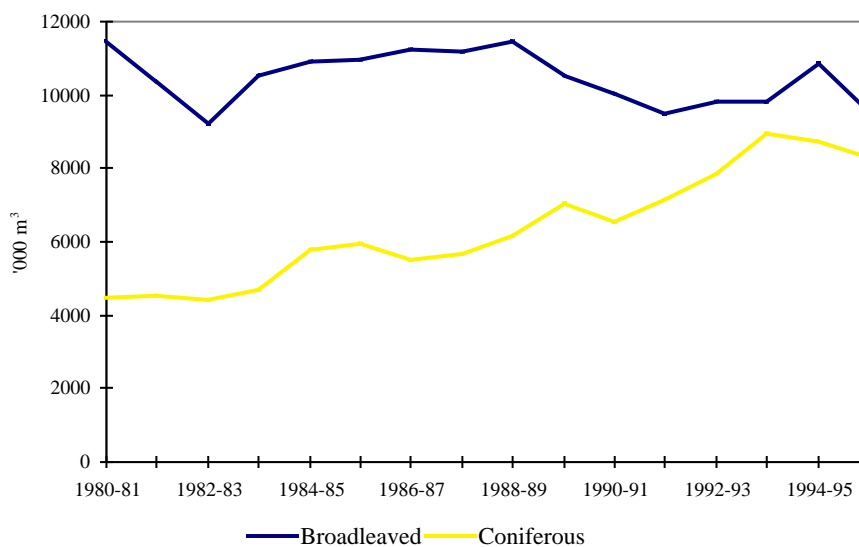
The longer term outlook for panel products is similar to the outlook for sawntimber. Traditionally, imports constitute a significant proportion of total consumption of panel products. However, Australia now is able to meet its requirements for particleboard and

plywood from domestic sources, although softboard is virtually all imported. In future, driven by a rapid expansion in production capacity, the panel industry will become more competitive and export oriented, especially so in the case of medium density fibreboard (MDF) (Neufeld 1997).

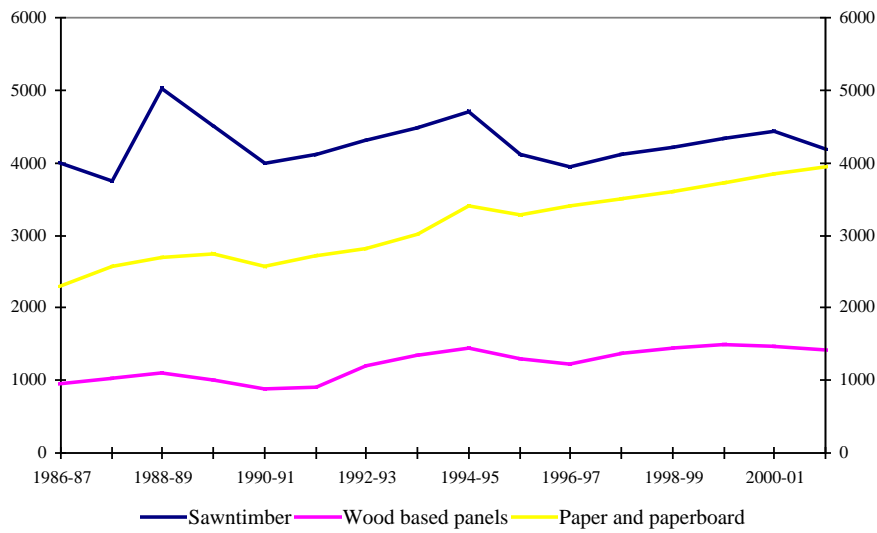
The four Australian MDF projects underway will require a substantial lift in exports to secure an adequate market and should result in Australia achieving a positive trade balance for wood based panels (Cameron 1997). As a result of investments in new capacity, annual production capacity of MDF is expected to reach 1 million cubic metres by the year 2000, well beyond Australia's consumption requirements, and annual MDF exports could be as high as 400,000 cubic metres (Neufeld 1997).

Australia's \$1.9 billion a year trade deficit in forest products is dominated by net imports of around 550,000 tonnes of printing and writing paper, 280,000 tonnes of newsprint, 40,000 tonnes of packaging and sanitary paper, and 75,000 tonnes of pulp. The 945,000 trade deficit in pulp and paper is equivalent to around 3 million cubic metres of pulpwood. There is potential to reduce or even eliminate this trade deficit if chip exports could be diverted to domestic processing. However, assembling sufficient secure volume within economic haul of new worldscale pulpmills may be a considerable challenge (Cameron 1997).

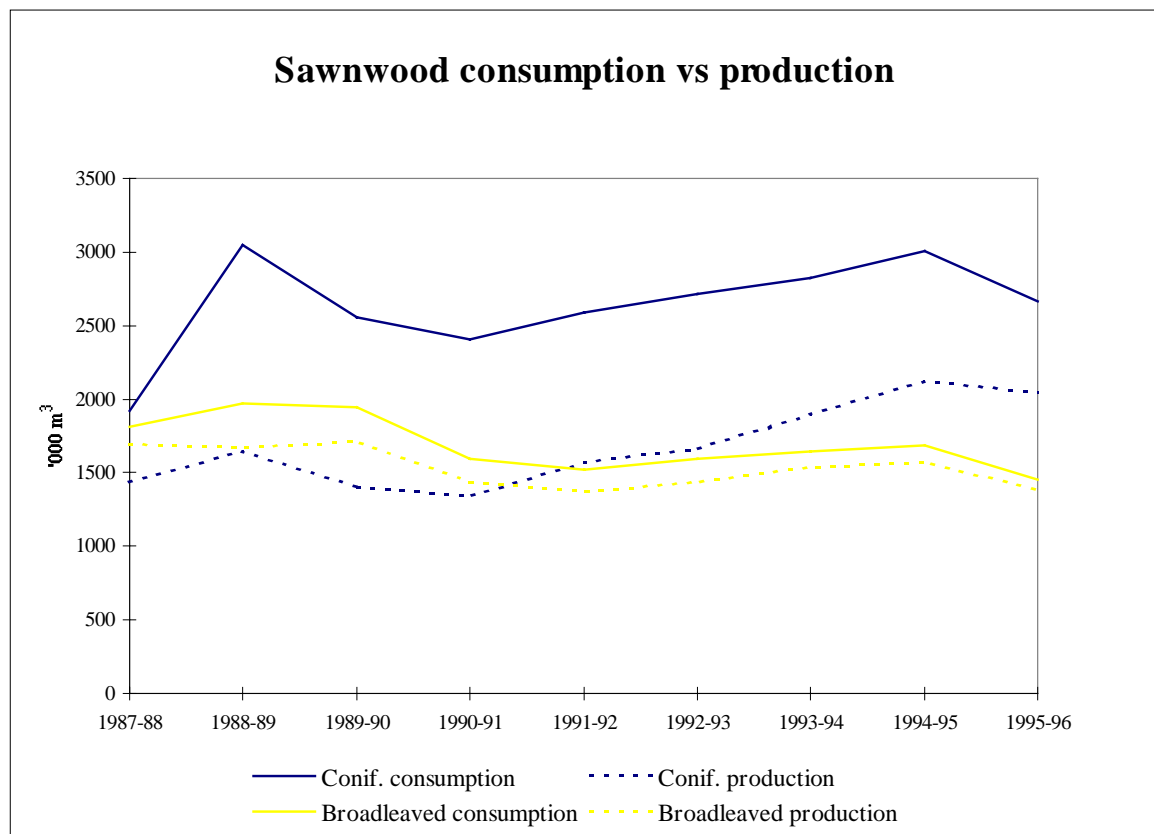
Removals of logs - broadleaved vs coniferous



Outlook for the consumption of forest products



Sawnwood consumption vs production



3.2 *Future development and development objectives*

The future of the sawnwood and wood based panel industries in Australia will be significantly influenced by changes to Australia's forest estate. While the specific implications of the Regional Forest Agreement process for Australia's native forest industry are yet to emerge, there is increasing availability of plantation softwoods and increasing competition from imports, particularly from New Zealand.

Consumption of sawnwood beyond 1996–97 is projected to increase by an average of 1% a year to reach 4.3 million m³ in 2000–01, while consumption of wood based panels is projected to increase by an average 3.5% a year. Australia has significant areas of plantation softwoods which will reach maturity during the outlook period and are likely to be used to meet these projected increases in consumption and to supply export markets.

The growth in consumption is based on a projected increase in new dwelling construction, and growth in alterations and additions and non-residential construction activity over the outlook period to 2001. However, growth in the consumption of sawnwood and wood based panels is projected to remain subdued in 1996–97, with the residential housing market depressed. A recovery in the residential housing market is predicted for 1997–98.

Australian hardwood sawmillers face a decrease in the availability of high quality hardwood logs over the outlook period. Consequently, domestic supply of hardwood sawnwood, which has remained at around 1.6 million cubic metres a year since 1990–91, is projected to fall over the medium term and keep hardwood prices high relative to softwood prices. State forestry agencies began planting softwood plantations from the 1970's onwards with a long term view to producing timber for house and other construction purposes and to enable hardwood species to be used for higher value uses. Recently hardwood sawmillers have begun diversifying into kiln-dried timber for furniture, flooring, mouldings and other value-added markets as greater volumes of the softwood resource reach maturity. Over the medium term, growth in softwood sawnwood consumption is expected to be largely determined by its price competitiveness, not only against domestically produced hardwoods, but also against imported softwoods from New Zealand and North America.

Over the medium term, consumption of softwood sawnwood is projected to continue to increase, reaching around 70% of total Australian consumption of sawnwood in 2000–01, as logs available for production from plantation forests increase and as softwood timbers displace higher priced imported and domestic hardwood timbers. To facilitate increased softwood production, mill capacity expansions are being organised.

Australian exports of particle board, mainly to South East Asia, reached a record 71 000 m³ in 1994–95, growing by an average 46% a year for the two previous years. Exports, particularly of medium density fibreboard, are projected to rise, based on expected higher production from recent and planned additions to capacity (ABARE 1997). Production of medium density fibreboard (MDF) will exceed consumption toward the end of the decade and import substitution and exports will drive the industry (Neufeld 1997).

Australian producers are able to meet domestic consumption of plywood. The major factors influencing the outlook for plywood industries are the expected growth of the building and construction sector and the availability of high quality veneer logs.

3.3 *Implications and scenarios*

Forest policy in Australia over the outlook period is likely to be driven by the NFPS and WAPIS with focuses on increasing the competitiveness of Australia's wood products industries and ensuring wood based industries are conducted sustainably. Reducing sovereign risk in forest industry investments will result from implementation of these policies. The result for Australia should be decreasing reliance on imports particularly in the pulp and paper sector and in sawn wood and greater employment in regional Australia through greater downstream processing. As a relatively small player on the world market the Australian forest industries are subject to world market influences making precise outcomes difficult to predict.

Reafforestation through farm forestry and plantations will be pursued for forest industry and environmental objectives such as greenhouse benefits. Australia's plantation estate is likely to shift more in the direction of native species (currently only 26% of plantations are eucalypts) though softwood will remain important.

There are likely to be efforts to improve efficiency in other areas of the economy which impact on forestry such as the transport sector, particularly on the waterfront. Export controls are in the process of being removed and are likely to be completely removed during the outlook period. Further efforts will be made to make investment in tree growing more attractive including measures to make the buying and selling of growing trees (as distinct from the land on which they are grown) simpler.

Australia's low population densities, extensive forests and recreation facilities make it likely that it will attract tourists interested in ecotourism or nature based experiences. Forests will continue to contribute to the development of regional tourism based industries.

Research, particularly provenance testing and genetic improvement of Australian species, will continue as will Australia's engagement with the Asia Pacific timber producing countries with a view to improving forest management practices.

It is likely there will be greater opportunities for private investment in forest industries and tree growing. There are large scale private plantations in a number of States, some foreign owned, some domestically owned. Opportunities for further plantation expansion exist in a number of areas to supply the long term needs of domestic industry. Smaller scale plantations on farms are likely to increase bringing environmental and economic benefits to regional Australia.

There should be greater opportunities for downstream processing in Australia particularly in pulp and paper and Medium Density Fibreboard plants. There will be regional variation in the need for investment in additional sawmills influenced in part by the location of plantation resources and Regional Forest Agreement outcomes. Transport infrastructure investment opportunities may arise potentially in railways and port facilities.

Research and development activities are likely to have continued significant government involvement particularly in the forest production sector due to the long term nature of the activity and the level of risk involved though larger plantation owners are expected to engage in significant provenance testing and silvicultural techniques research. Provision of Australian forestry expertise to the Asia Pacific region is likely to increase through consultancy firms involvement in the region and through graduates from Australian universities working in the region. Australian expertise in sustainable forest management and increasing work on criteria and indicators of SFM could be a valuable case study for other countries in the region seeking to improve their own forest management practices.

KEY INFORMATION SOURCES RELEVANT TO STATUS, TRENDS AND FUTURE OF FORESTRY IN AUSTRALIA

Australian Report to ITTO on Progress Towards the Year 2000 Objective and Country Market Statement, November 1996

National Forest Policy Statement

Wood and Paper Industry Strategy

ABARE 1996, *Australian Commodity Statistics 1996*, Australian Bureau of Agricultural and Resource Economics, Canberra.

ABARE 1997, *Outlook for forest products in Australia*, in ABARE 1997, *Outlook 97*, Proceedings of the National Agricultural and Resources Outlook Conference, Canberra, 4–6 February, vol. 1, Commodity Markets and Resource Management.

Bureau of Tourism Research, *The Nature of Ecotourism*, 1995

Bush, S., Harris, J. and Ho Trieu, L., 1997, *Australian Energy Consumption and Production, Historical Trends and Projections to 2009–10*, ABARE Research Report 97.2, Canberra.

Cameron, J., 1997, *The potential for Australian pulpwood—opportunities, competitiveness and constraints*, in ABARE 1997, *Outlook 97*, Proceedings of the National Agricultural and Resources Outlook Conference, Canberra, 4–6 February, vol. 1, Commodity Markets and Resource Management.

de Fégely, R., 1997, *Forest products trade—the supply challenge from plantations in New Zealand, Chile and Brazil*, in ABARE 1997, *Outlook 97*, Proceedings of the National Agricultural and Resources Outlook Conference, Canberra, 4–6 February, vol. 1, Commodity Markets and Resource Management.

Johnson, S., 1997, *Outlook for tropical forest products trade in the Pacific Rim*, in ABARE 1997, *Outlook 97*, Proceedings of the National Agricultural and Resources Outlook Conference, Canberra, 4–6 February, vol. 1, Commodity Markets and Resource Management.

- Neck, M., Curtotti, R., Sar, L. *Outlook for forest products in Australia*, contained in Proceedings of Outlook '96, 6–8 February 1996, Volume 1, Australian Bureau of Agricultural and Resource Economics
- Neufeld, B., 1997, *Key influences on domestic production and consumption of forest products*, in ABARE 1997, *Outlook 97*, Proceedings of the National Agricultural and Resources Outlook Conference, Canberra, 4–6 February, vol. 1, Commodity Markets and Resource Management.
- N Preece and P van Oosterzee, Ecoz-Ecology Australia and D James, Ecoservices Pty Ltd *Two Way Track: Biodiversity Conservation and Ecotourism* May 1995
- Shields, B., 1997, *The economic outlook*, in ABARE 1997, *Outlook 97*, Proceedings of the National Agricultural and Resources Outlook Conference, Canberra, 4–6 February, vol. 1, Commodity Markets and Resource Management.
- Woffenden, K., Penm, J., Sheales, T., and Fisher, B., 1997, *Commodities sector outlook and issues to 2001–02*, in ABARE 1997, *Outlook 97*, Proceedings of the National Agricultural and Resources Outlook Conference, Canberra, 4–6 February, vol. 1, Commodity Markets and Resource Management.

List of Working Papers already printed

APFSOS/WP/01	Regional Study - The South Pacific
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APFSOS/WP/03	The Implications of the GATT Uruguay Round and other Trade Arrangements for the Asia-Pacific Forest Products Trade
APFSOS/WP/04	Status, Trends and Future Scenarios for Forest Conservation including Protected Areas in the Asia-Pacific Region
APFSOS/WP/05	In-Depth Country Study New Zealand
APFSOS/WP/06	In-Depth Country Study Republic of Korea
APFSOS/WP/07	Country Report - Malaysia
APFSOS/WP/08	Country Report - Union of Myanmar
APFSOS/WP/09	Challenges and Opportunities: Policy options for the forestry sector in the Asia-Pacific Region
APFSOS/WP/10	Sources of Non-wood Fibre for Paper, Board and Panels Production: Status, Trends and Prospects for India
APFSOS/WP/11	Country Report - Pakistan
APFSOS/WP/12	Trends and Outlook for Forest Products Consumption, Production and Trade in the Asia-Pacific Region
APFSOS/WP/13	Country Report - Australia