



Department of
**AGRICULTURE
FISHERIES &
FORESTRY -
AUSTRALIA**



Impact of incentives on the development of forest plantation resources in the Asia-Pacific region

AUSTRALIAN CASE STUDY

**Report to the 19th Session,
Asia-Pacific Forestry Commission**

Mongolia 26-30 August 2002

Commonwealth of Australia
July 2002



AGRICULTURE, FISHERIES AND FORESTRY - AUSTRALIA

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Background Information

Readers are asked to note the following when reading this report:

- The Commonwealth of Australia is a federation of six States and two Territories, with each State and Territory having its own government in addition to the national “Commonwealth Government”. Unless otherwise stated, any reference to Australia’s States also includes Australia’s Territories;
- As such, any use of the term State(s) refers to one of Australia’s States and does not mean the country of Australia in an international sense;
- All monetary values are in Australian dollars (A\$);
- The Australian financial year is from 1 July to 30 June in the following year; and
- Areas of land are in hectares (1 hectare = 10,000 square metres). Conversion ratio is: 1 hectare = 2.471 acres; 1 acre = 0.4047 hectares

Readers are invited to discuss the report and find out more about forest plantations in Australia. Please contact:

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Disclaimer

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1 Executive Summary

1.1 Background

The Asia-Pacific Forestry Commission (APFC) is undertaking a comprehensive multi-national study on the "Impact of incentives on the development of plantation resources in the Asia-Pacific region". The study will cover 9 countries in the region¹ and be presented at the 19th Session of the APFC in Mongolia, August 2002.

Under the APFC's Terms of Reference, the study's purpose is to provide clear, balanced and objective information to support the development of forest plantation resources in this region. It focuses on private sector industrial timber plantations and those established to produce fuelwood and charcoal. Non-industrial plantations established primarily for public benefits and public sector plantations are excluded. However, public sector plantations can either discourage or encourage greater private sector involvement in plantation development. In Australia, where this is the case, the effects of public sector plantation efforts are analysed and presented to provide a more complete understanding of the incentives and their impacts on plantation development.

1.2 Incentives and plantation development

At 1.57 million hectares, Australia has substantial plantation resources and is increasingly dependent on them as a primary source of wood and forest products, both for export and domestic use. Their evolution largely reflect the timber industry's, and Australia's, transition from the goal of self sufficiency underpinned by commercial development with direct incentives, to ecological sustainable development both supported and driven by broader micro and macro economic reforms. In line with this change, indirect are replacing direct incentives in places, with the private sector progressively replacing government in terms of hands-on management and investment. Four distinct phases characterise this evolution and the role and impact of incentives are by.

Phase 1 from 1900 to 1960 concentrated on replacing softwood imports through establishing plantations. In the absence of a national forest policy, some State forestry agencies initiated trial plantation areas to assist with species and site selection. However, their efforts were largely ad-hoc with variable success. Direct incentives were minimal and largely focussed on employment as part of the States' response to the depression. Incentives therefore were mainly indirect, consisting of information transfer and lower risk from R&D undertaken by the States. Commonwealth incentives were largely non-existent. By the Phase's end, plantations were generally State owned and relatively small.

Softwood self sufficiency was the focus of Phase 2 from 1960 to 1980, in response to the post Second World War building boom and subsequent concerns over the level of softwood imports and sustainability of native (hardwood) forests. The central incentive was the Commonwealth Softwood Forestry Agreements from 1967 to 1982, arising from a joint Commonwealth and State policy directed towards self sufficiency in softwoods by the year 2000. These committed the Commonwealth to provide favourable loans (totalling \$78 million) to the States to establish and maintain softwood plantations.

The Agreements were very successful, expanding the plantation estate from around 170,000 hectares to nearly 900,000 hectares overall. This incentive was fundamental for the present large scale of Australia's softwood and expanding hardwood plantation sectors. The creation of industrial state-owned plantations attracted private investment through the associated creation of markets, logistic infrastructure, research and development and risk reduction. These plantations become the basis for the wide range of domestic wood processing facilities developed later in the 1990s. In 2001-02 dollars, the amount loaned was approximately \$390 million.

Phase 3 from 1980 to 1990 marked a transition from the dominance of government to private ownership of softwood plantations and the expansion of eucalypt (hardwood) plantations. This was in response to large changes occurring in the forest industry and Australian society, including increasing commercial and budgetary pressures on governments and industry from high interest rates and activism on native forest harvesting. To stimulate an expansion of the commercial hardwood timber resource, the Commonwealth Government supported research and funded the establishment of 6,000 hectares of hardwood plantations between 1987 and 1992. Through the National Afforestation Programme, nearly \$15 million dollars over three years was directly targeted mainly to State and large private industrial growers. Importantly, this was the first production forestry

¹ Incentive case study countries are Australia, China, India, Indonesia, Malaysia (Sabah), New Zealand, Philippines, Thailand and USA.

initiative that directly sought to engage private landholders. Other incentives included joint ventures between State or private landowners and investors.

Reflecting its transitional nature, the growth of plantations slowed during this Phase. Overall, incentives benefited State and large industrial growers only and even then with limited benefit, due to the underlying structural and logistic impediments and smaller, non-industrial growers being outside the scope of incentives. Nevertheless, gains made during the previous Phases were consolidated. Increased investment by States and large plantation owners created a supply driven demand for plantation timber (both softwood and hardwood), which reduced the capital risk and generated an incentive for other investors. Research into growth and management was undertaken. Importantly, it created the will to resolve the underlying broader structural impediments.

The fourth and ongoing Phase began in the 1990s. This Phase is largely the realisation of previous work and new incentives to overcome lessons learnt, from the preceding 30 plus years. The focus of plantations and accompanying incentives has grown from self sufficiency to the development of an internationally competitive plantation growing and processing industry, underpinned by a significant, long term and environmentally sustainable plantation resource facilitated through major private sector investment.

It has led to the highest sustained growth and total area in Australia's plantation development, achieved through various incentives. At the State level, incentives are predominantly direct mechanisms and include those initiated by large private companies targeting smaller private landowners, while the Commonwealth has moved towards indirect enabling mechanisms. Overall though, governments have increasingly distanced themselves from the hands-on participation and instead are focusing on removing impediments and attracting investors (existing and new). Collectively, incentives include:

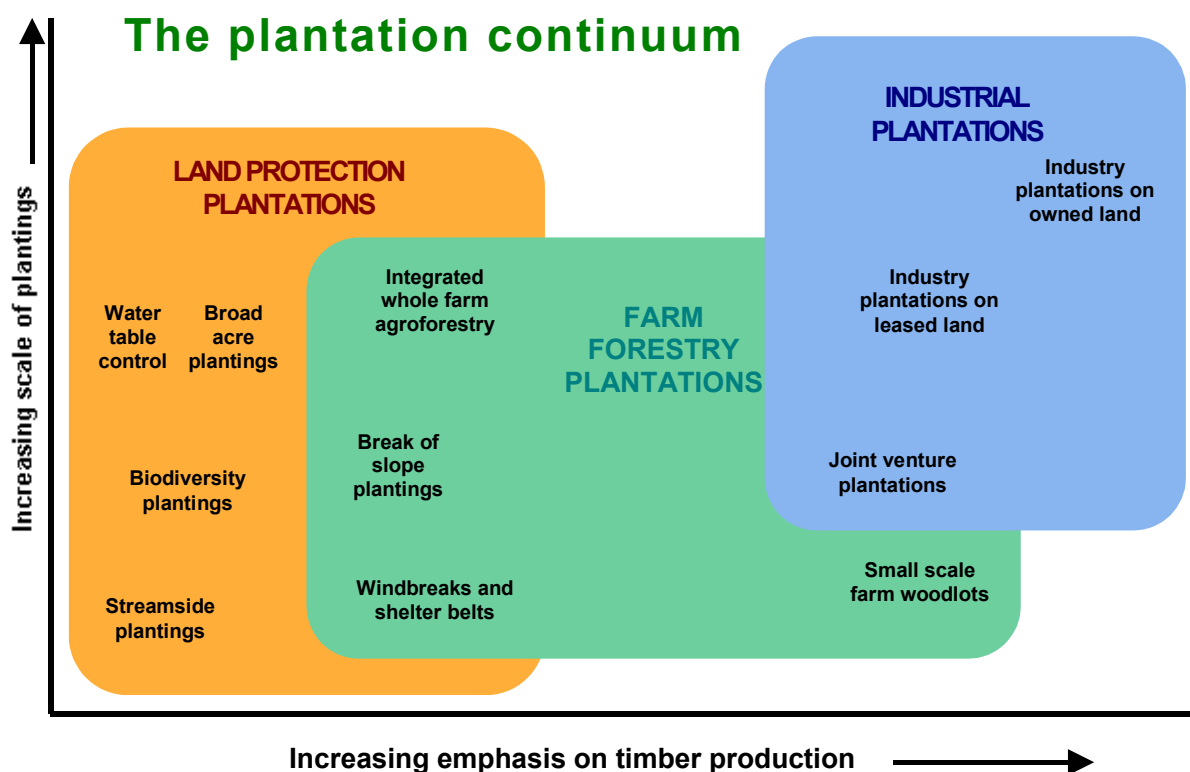
- Strategic joint Commonwealth, State and industry policies to facilitate forest plantations;
- Opening of the economy and increased foreign investment, through changes to the tax system to remove inequities between plantations and traditional land uses such as agriculture;
- Elimination of market distortions through the introduction of competitive neutrality principles, leading to progressive privatisation / commercialisation of State plantations;
- Progressive lifting of export controls on unprocessed wood sourced from plantations;
- Integrated land use planning, including farm forestry, to increase available private land for plantations and environmental benefits; and
- Promotion of environmental benefits from plantations eg. land and water restoration, greenhouse / carbon storage.

By 2002, many of impediments to plantation expansion (especially for private investment) had been addressed, either by removing the impediment (eg. woodchip export restrictions) or improving the commercial operating environment for private investors to establish plantations. The community has also begun to acknowledge the positive biodiversity and environmental benefits arising from plantations being incorporated into traditional agricultural areas, with most plantations now being established on previous agricultural land. Diverse ownership arrangements now exist, including joint venture and annuity schemes between public and private parties. Of the 2001 standing plantation estate of 1.57 million hectares, it is estimated the majority (54%) are now privately owned. Plantings are changing from softwood to hardwood in response to overseas demand. In 2001 hardwood plantings, mainly *Eucalyptus globulus*, were 75,100 hectares compared with 10,600 hectares of softwood. Notably, 87% of the total standing hardwood plantation has been planted since 1990.

1.3 Conclusions and future directions

Plantation incentives in Australia were initially driven by the sole desire for self sufficiency. However, this has evolved into the broader strategic goal of an internationally competitive plantation growing and processing industry, achieved by developing a significant, long term and environmentally sustainable plantation resource through major private sector investment. Hence, while there is now a wide variety of plantation uses in Australia, industrial plantations for forest and wood products remain the most significant as seen in the accompanying figure:

Australia's forest plantation continuum from environmental to industrial plantations



Incentives have correspondingly changed, reflecting the evolution of government, industry and community expectations of forestry. The Commonwealth Government, most State Governments and industry have tried a range of direct and indirect incentives with varying success. Specific plantation incentives now focus on creating an environment attractive to commercial plantations and processing facilities, including:

- A secure strategic policy framework;
- Removal of impediments through tax reforms;
- Resource security for industry investment;
- Elimination of market distortions through the introduction of competitive neutrality principles, leading to progressive privatisation / commercialisation of State plantations;
- Progressive lifting of export controls on unprocessed wood sourced from plantations;
- Development of internationally competitive and value adding forest based industries;
- Sustainable management of private forests;
- Integrated land use planning, including farm forestry, to increase available private land for plantations and environmental benefits; and
- Environmental benefits eg. land and water restoration, greenhouse / carbon storage.

R&D and an associated strong extension programme to distribute research findings to stakeholders have been underlying essential contributors to any incentive.

Non-plantation specific incentives arising from broader national agendas and institutional changes over the last 10 years have also benefited plantation development. These include:

- Relaxation of foreign investment restrictions;
- Expansion of rural development and employment opportunities;
- Provision of port and transport infrastructure; and
- Move to free market policies.

Based on Australia's experiences, conditions in which forest management and plantation investments may prosper include:

- Political and macroeconomic stability;
- Trade liberalisation and open foreign investment;

- Well defined and stable property rights for land resources;
- Government with adequate institutional capacity to enforce laws and administer possible incentive schemes;
- Availability of relevant technologies and basic infrastructure (roads, electricity, ports etc.) to support investment decisions;
- Availability of commercial knowledge and expertise required to establish, maintain, harvest, process and market the plantation products; and
- Critical mass of the plantation resource to support internationally competitive, integrated processing facilities.

These however, need to be supported by a well developed forest R&D system. Likewise, an active extension and information dissemination system is also essential to pass on research findings and advice to both private industry and landholders, on the benefits of plantations and the best growing and management techniques.

2 Introduction

2.1 Background and justification for the study

Forest plantations have long been recognised as offering significant potential for meeting the future increases in demand for wood. The International Conference on Timber Plantation Development held in Manila, the Philippines, 7-9 November 2000 concluded that timber plantation development is a key strategy to address the problem of deforestation and supplement the diminishing supply of timber from natural forests, in part due to timber-harvesting restrictions imposed over the last two decades in several Asia-Pacific countries. The conference recommended governments, with the private sector and other stakeholders, formulate and implement appropriate policies and strategies, and create effective incentive systems to support plantation development by large and small scale investors.

Little is known internationally about policy instruments, especially incentives, which encourage establishing plantations in Asia-Pacific countries, despite the region leading the world in plantation development. Even existing knowledge on policy support to forestry plantations, and their impacts, has not been organised or analysed clearly. As a result, countries of the region have not benefited from previous experiences.

In light of the above, the Asia-Pacific Forestry Commission (APFC), with support from FAO, the EC-FAO Partnership Programme and the USDA Forest Service, is undertaking a comprehensive multi-national study on the "Impact of incentives on the development of plantation resources in the Asia-Pacific region". The study will cover 9 countries in the region: Australia, China, India, Indonesia, Malaysia (Sabah), New Zealand, Philippines, Thailand and USA. The regional overview of the impacts of incentives on plantations will be complemented by lessons learned in other Asia-Pacific countries and countries of other regions, especially Chile, Uruguay, Argentina, Brazil, Japan and South Africa. The results will be presented to the 19th Session of the APFC in Mongolia, August 2002.

Under the APFC's Terms of Reference, the study's purpose is to provide clear, balanced and objective information to support the development of forest plantation resources in this region (Annex 1 provides definitions of plantations and incentives). The present study focuses on industrial timber plantations and those established for production of fuelwood and charcoal. Non-industrial plantations, established primarily for public benefits, are excluded. The study is limited to private sector (small and large scale) efforts. Plantations established by government agencies are excluded. However, it is recognised that public sector plantations can either discourage or encourage greater private sector involvement in plantation development. In the Australian situation, where this is the case, the effects of public sector plantation efforts are analysed and presented to provide a more complete understanding of the incentives and their impacts on plantation development.

2.2 Geographic and economic background (population and land use)

Most of Australia's population of 19 million is concentrated around the vegetated areas of the south east coast and the south west corner. Australia has a highly urbanised population. The most densely populated 1% of the continent contains 84% of the population. Less than 5% of the population is engaged in primary production. However the sector is highly mechanised and efficient and accounts for around 25% of Australia's exports. After the Second World War the economy relied mainly on agriculture and mining until manufacturing grew. Service industries have since led growth, rising to about 78% of GDP. Australia is very export oriented, with exports comprising over 21% of GDP. Table 1 provides a snapshot of land, population and forest data for Australia.

Australia has a land area of 7.7 million square kilometres, almost as great as that of the USA and twice the size of India. Accompanied by large seasonal variations, 80% of the continent has a rainfall of less than 600 mm per year. The northern part of the continent experiences wet tropical summers influenced by tropical monsoons with dry winters, while southern Australia generally has relatively dry summers and cool winters. Due to its long geographical isolation, Australia's vegetation and animal species are unique, and have developed tolerance to Australia's climate regime of long droughts and fire. Most arable land is concentrated in a small band along the eastern coastline and the southwest corner of the continent. Only 6.5% of the land area is considered arable. Australia has substantial areas of natural forests, with Eucalyptus and Acacia (both hardwoods) being the most dominant and wide-ranging genera. Forest² covers around 20% of the country or 164 million hectares, most of

² Forests, as defined by Australia's National Forest Inventory (NFI), include native and plantation trees and areas of trees often described as woodland.

it open savannah woodland. The large area of native forests has long been a source of wood and other forest products but plantations are rapidly increasing in proportion.

Plantations make up less than 1% of the forest area but contribute 60% of the timber produced in Australia each year. Most of Australia's plantations are located in areas with adequate and reliable rainfall of more than 700 mm a year, where soils are suitable for tree growth and within reasonable transport distance to a major market or processor. These areas generally correspond to the more habitable parts of the country, as shown in the associated map.

To allow for quantitative regional and national information for management, decision-making and strategic-planning by government and industry, plantations have been broken into 15 National Plantation Inventory (NPI) regions, as shown in Annex 2. The regions represent wood supply regions rather than political boundaries, reflecting suitable plantation areas as discussed above.

Table 1: Snapshot of land, population and forest data for Australia for 2001

Total land area in '000 hectare *	768,203
Total forest area in '000 hectares ** (% of total land area)	165,896 (22%)
Total plantation area in hectares ** (% of total land area)	1,568,900 (0.2%)
Total softwood plantation area in hectares ** (% of total plantation)	979,633 (62%)
Total hardwood plantation area in hectares ** (% of total plantation)	587,856 (37%)
Total unknown type plantation area in hectares ** (% of total plantation)	1,411 (1%)
Population total (million) *	18.97
GDP per person *	\$32,539

(Source: * Australian Bureau of Statistics 2002
** Wood et al. 2002)

2.3 Role of the forest sector in the economy

Australia's wood and paper industries (based on plantations and native forests) presently turnover \$14 billion, and include sawmilling, plywood and panel products, pulp and paper and woodchip exports. The value of exports is substantial, valued at \$1.8 billion. Woodchips, representing 41% by value of total forest product exports, remain the most valuable export product (see Table 2 for additional information). This has steadily fallen in recent years though, with the growth of other export wood products including paperboard and paper, sawntimber and wood panels. In addition, Australia now produces 82% of its sawn timber needs of which softwood plantations provide about 66%, with the balance derived from native forests.

Nevertheless, Australia remains a net importer of forest products in value terms, mainly due to high imports of paper products. In 2000-01, Australia imported forest products valued at \$A3.83 billion, accounting for 3% of total merchandise imports. Imports for sawntimber, paper and paperboard accounted for 67% of the total value of forest products imports (54% of paper and paperboard products and 12% of sawntimber, mostly coniferous). Most sawntimber imported into Australia comes from New Zealand, Canada and the USA with radiata pine, Douglas fir and western red cedar forming the bulk of sawntimber imports. Malaysia is the main source of imported hardwood timber.

Consumption of sawn timber in Australia generally varies from about 4 million to 4.5 million cubic metres per annum and is closely linked to the level of building activity (see Table 3 for additional information). Recent increases in new homes drove consumption of sawn timber to almost 4.8 million cubic metres. However as existing plantations come to maturity, Australia is expected to become a net exporter of forest products by 2010 (ABARE Jaakko Poyry 1999).

The forest and wood products industries, based on native and plantation forests, account for about 1% of GDP and employment of about 75,000 people. There were 942 sawmills in Australia (674 hardwood and 268 softwood) in 1999-2000. The hardwood mills are generally small scale and scattered and the softwood mills are large and integrated with other processing facilities. There are also 22 pulp and paper mills and 30 veneer and panel-board mills. The number of sawmills has been declining in number as the average size increases. Increasing mechanisation and productivity has reduced total employment in processing over time. The increasing area of plantations has a significant potential to reverse this trend by creating new processing industries and employment opportunities in rural regions (Ministerial Council on Forestry et. al. 1997).

Table 2: Australian export of woodchips

Source	Financial Year				
	1996-97	1997-98	1998-99	1999-00	2000-01
Hardwood Volume* (kt)	2,470.9	3,270.4	2,851.8	3,582.2	3,904.0
Hardwood Value (\$'000)	400,191	495,719	43,3561	502,818	572,015
Softwood Volume* (kt)	852.3	1,044.7	1,033.2	1,046.2	1,114.8
Softwood Value (\$'000)	118,109	150,620	152,432	143,345	173,461
Total Volume* (kt)	3,323.2	4,315.0	3,885.0	4,628.4	5,018.8
Total Value (\$'000)	518,310	646,275	585,934	646,099	745,402

* bone-dry tonnes

Table 3: Apparent consumption of sawn timber in Australia (000m³)

Source	Financial Year				
	1996-97	1997-98	1998-99	1999-00	2000-01
Domestic Production					
Plantation logs	1,954	2,221	2,331	2,528	2,346
Native forest logs	1,430	1,436	1,274	1,455	1,314
<i>Sub-total</i>	<i>3,385</i>	<i>3,657</i>	<i>3,605</i>	<i>3,983</i>	<i>3,660</i>
Imports	756	784	775	970	718
Exports	60	38	51	90	87
Apparent Consumption	4,090	4,403	4,281	4,863	4,291

(Source: ABARE 2001)

Notably, the contribution of softwood plantation sawn timber to the total Australian sawn timber consumption increased from 33% in 1990-91 to 56% in 2000-01. This increase has primarily been through import replacement and, to a lesser extent, has filled a potential gap resulting from decreased native forest harvesting. This expansion has only been achieved with very significant investment in processing capacity, illustrating the success of the policies and industry investment in the 1960s and 1970s.

2.4 Role of Commonwealth (National), State, Territory and Local Governments in Australian forestry

The Commonwealth of Australia is a federation of six States and two Territories, each with its own government and underlying Local Government infrastructures, as defined under the Australian Constitution. The national Commonwealth Government is broadly responsible for such areas as taxation, defence, foreign policy, customs and telecommunications while the States are responsible for education, health, transport and land administration. While the prime responsibility for land use, forestry and conservation matters rests with the State Governments, each level of government in Australia has specific interests in, and responsibilities for, forest management.

The Commonwealth Government retains certain powers and interests, which can have significant implications for land use management practices. It is responsible for coordinating a national approach to both industry development and environmental issues including forest, land and water management. It also has an interest in achieving efficient and effective natural resources management, including a national approach to forest issues.

State Governments have primary responsibility for forest management, in recognition of their constitutional responsibility for land use decisions. The States have enacted legislation that allocates forest land tenures and specifies the administrative framework and policies within which public and private forests are managed. All Australian forest services are run by State forestry agencies, reflecting the constitutional demarcation of responsibilities. For this reason there is no national forest agency. The history of State forest agencies in Australia has been well documented by a number of authors (see Carron 1990 and Dargavel 1995).

Local Governments have responsibilities for local land use planning within the limitations set by their respective State Governments, which affect public and private forest management and use.

In practice, responsibility for policies affecting decisions on land use and the environment is shared between Commonwealth, State and Local Governments.

2.5 Role of public and private sector in forestry

Australia's State of the Forests (SoF) Report has identified that approximately 70% of the nation's forest resources are privately owned or managed (NFI, 1998). This is a significant milestone as State forestry agencies held the majority only 10 years ago. This turnaround is due to the privatisation of previous State owned pine plantations in several States and the expansion of private plantings.

The number of large-scale private sector investors is fairly small. Of the plantation estate 95% is considered industrial with only 5% actually held by small-scale landholders and communities (ie. plantations whose owners' total estate is less than 1,000 hectares).

Annex 3 shows charts of plantation areas by age class, species and ownership. Annex 4 contains detailed data on plantation ownership from the National Forest Inventory (NFI) report – Plantations of Australia (2001).

2.6 Key forest production and conservation policies

The principal national policy documents establishing priority actions for the sustainable management and use of Australian forests, relevant to plantations, are:

- National Forest Policy Statement (NFPS) (1992);
- Plantations for Australia – The 2020 Vision (1997); and
- Action Agenda for the Forest and Wood Products Industry (developed in 2000).

In addition, there is a range of initiatives at State and Commonwealth Government levels that further these policies. These include programmes promoting farm forestry and revegetation and removal of government impediments to investment in growing and processing forest products. There are numerous State acts (legislation) covering conservation issues which have implications for forestry, including Codes of Logging Practice, land use planning, and flora and fauna protection. There are also acts or other legislation that cover the establishment and administration of National Parks, and regulate water rights and use.

National Forest Policy Statement

In 1992, the Commonwealth and State Governments developed a common policy position on forests, known as the National Forest Policy Statement (NFPS). The NFPS is the primary means for integrating environmental sustainability and commercial production. The NFPS sets out objectives concerning conservation, wood production and timber industries development, private native forest use, plantation development, water supply and catchment area management, tourism development, employment, workforce education, public awareness and involvement, research and development (R&D), and the further development of intergovernmental arrangements and the decision making process. A copy of the NFPS and further information is available at this website: <http://www.affa.gov.au/content/output.cfm?ObjectID=D2C48F86-BA1A-11A1-A2200060B0A03131>.

Plantations for Australia: the 2020 Vision

In 1997 industry and government developed a partnership called "Plantations for Australia: the 2020 Vision strategy". It aims to develop plantation growing and processing industries that are commercially oriented and internationally competitive and sustainable. The Vision set the target of trebling the plantation estate to three million hectares by 2020. It also lists boosting the availability of suitable land for plantations as a strategic imperative and identifies the need to improve the tree growing skills of farmers through farm forestry.

Achieving the target will require more than an additional \$3 billion of investment in plantations (mainly private capital investment) and annual plantings of 80-90,000 hectares. The policy and further information is available at this website: <http://www.plantations2020.com.au>.

Action Agenda for Forest and Wood Products

Action agendas generally encourage particular industries to achieve global best practice and to work together to realise international markets. The Action Agenda for Forest and Wood Products initiative in 2000 provides a framework by which industry can pursue sustainable competitive advantages. Its market-driven focus is a natural progression from previous initiatives, which mainly concentrated on fundamental 'supply-side' issues. 'Demand-side' initiatives, encompassing such issues as value adding, expanding non-traditional forest and wood uses, and market and investment development, are further developed to take advantage of opportunities emerging from these

earlier initiatives. The Action Agenda for Forest and Wood Products and further information is available at this website: <http://www.affa.gov.au/content/output.cfm?ObjectID=D2C48F86-BA1A-11A1-A2200060B0A03643>.

Research, extension and training

R&D will underpin the global competitiveness of Australia's forestry, wood and paper industries over the next 20 years. It will assist resource development and sustainable management, improve wood and fibre performance, increase efficiency and environmental performance of wood and paper processing and increase value adding in wood and paper products.

There are three main Commonwealth research bodies, which are highlighted below. State Governments have similar organisations working on forestry research issues. Alongside these are the forestry and associated research departments within Australia's universities, in particular the Australian National University, Melbourne University and Southern Cross University.

In addition, there are Cooperative Research Centres, generally known as CRCs. They bring together researchers from universities, CSIRO and other government laboratories, and private industry or public sector agencies, in long-term collaborative arrangements to support R&D and education activities, in order to achieve outcomes of national economic and social significance. Further information on CRCs is available at this website: <http://www.crc.gov.au>.

The Forest and Wood Products Research and Development Corporation

As a key initiative under the NFPS, the Commonwealth Government established the Forest and Wood Products Research and Development Corporation (FWPRDC) in partnership with industry in 1994. By promoting effective R&D, it works to advance an internationally competitive, sustainable and environmentally responsible forest and wood products industry in Australia.

The Corporation invests in research for the industry and assists in the dissemination, adoption and commercialisation of the results of that research. Its legislative objectives are to invest in effective, coordinated research that has potential to:

- Develop and enhance resource sustainability;
- Maintain and promote environmental responsibility throughout the industry;
- Stimulate profitable value adding;
- Enhance market opportunities and product marketability for wood products;
- Stimulate effective and profitable utilisation of by-products and residues;
- Promote international best practice throughout the industry; and
- Improve processing technology to reduce production costs and enhance product quality.

Further information on the FWPRDC is available at its website: <http://www.fwprdc.org.au>.

The Commonwealth Scientific and Industrial Research Organisation

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) was formed in 1949. Its Forestry and Forest Products Division has a leading R&D role, with extensive experience and capability through its expertise in the following areas:

- Tree seed technology at the Australian Tree Seed Centre;
- Entomology;
- Pulp and paper testing;
- Scanning Electron Microscopy, Digital Imaging and Analysis Facility;
- Soil and plant nutrient analysis; and
- Wood technology.

Current research areas include:

- Forestry operations – their environmental and economic performance;
- Papermaking and paper quality;
- Risk management;
- Sustainable plantation forests;
- Sustainably managed native forests;
- Value enhancement in the forests; and

- Value-added wood products.

Further information on the CSIRO is available at its website: <http://www.csiro.au>.

The Australian Centre for International Agricultural Research

The Australian Centre for International Agricultural Research (ACIAR) is a statutory authority reporting to the Commonwealth Minister for Foreign Affairs and Trade. It was established in June 1982 to assist and encourage Australia's agricultural scientists to use their skills for the benefit of developing countries, and to help resolve agricultural, forestry, fisheries and animal husbandry problems common to Australia and partner countries. ACIAR also contributes to other international agricultural research councils worldwide.

ACIAR's Forestry Programme has four components:

- Domestication of trees and shrubs;
- Development of low-cost technologies to improve establishment and productivity of selected trees;
- Strengthening of institutional capability; and
- Development and improvement of a forestry information network.

Further information on the ACIAR is available at its website: <http://www.aciar.gov.au>.

3 Incentives and plantation development

3.1 Overview of plantation development

Efforts to establish plantations began with the State forest agencies in the early 1900s and are well described by Carron (1990) and Dargavel (1995). State Governments established most of the initial plantations to offset Australia's limited endowment of native softwoods. The State of South Australia took the lead in the 1870s establishing integrated operations based on *Pinus radiata* plantations, State owned sawmills and later private panel board and paper mills. Other States followed by establishing softwood plantations so that by 1940, more than 90% of plantations were State owned.

It was not until 1950 that any major expansion in private planting occurred, when large industrial companies commenced planting in order to supply pine (*Pinus radiata*) and eucalypt pulpwood to supplement resources from the States. These plantations, established by the larger timber companies, gradually supplied increasing quantities of sawlogs as well as pulpwood. Between 1936 and 1941 three pulp and paper mills were built in Tasmania and Victoria to use eucalypts and one in South Australia to use wood from softwood plantations. The mills expanded rapidly and new ones were built during the 1950s and 1960s. They were supplied with a combination of softwood from pine plantations and hardwood predominantly from native forests.

Various schemes to encourage smaller scale or woodlot planting on farms and other private lands were undertaken from the 1920s. The rate of planting on farms increased in the 1990s aided by incentives often associated with achieving broader environmental benefits. So far farm forestry incentives have made only a small contribution to industrial wood supplies.

The widening gap between forecasts of demand and domestic supply became clear after the Second World War. Native forests could not sustain high harvesting rates in the long term, let alone meet rising demands. Increased plantations were seen as the solution to increasing timber supply and reducing imports. Commonwealth and State Governments jointly advocated a significant increase in pine (*Pinus radiata*) plantations. The States aimed to increase their planting rate from 16,000 hectares a year to 28,000 hectares a year, so that Australia would be largely self sufficient through a plantation estate of 1.2 million hectares by the year 2000. In 1966 the Commonwealth provided generous, low-interest "Softwood Loans" to the States so their planting could increase by 26,000 hectares a year. In addition, private growers were encouraged to plant 4,000 hectares a year. The scheme succeeded in increasing the rate of planting and was extended to 1982.

Softwood plantings dominated until the 1980s with one species, *Pinus radiata*, contributing over two thirds of the area. Since 1990 the plantation sector has undergone a dramatic shift with plantings changing from softwood to hardwood. In 2001 hardwood plantings, mainly *Eucalyptus globulus*, were 75,100 hectares compared with 10,600 hectares of softwood. Notably, 87% of the total standing hardwood plantation has been planted since 1990.

A diverse range of ownership arrangements exists in the Australian plantation industry, including joint venture and annuity schemes between public and private parties. Of the 2001 standing plantation estate of 1.57 million hectares, it is estimated the majority (54%) are now privately owned. Since the 1990s there has been a dramatic increase in the establishment of private plantations with 89% of new areas planted being on private land in 2001 (Wood et al. 2002).

The end result is the evolution of Australia's forest plantations over four phases, with the standing estate having increased by 1,263,232 hectares (513%) since 1965-66 (when major growth in plantations began). These phases largely reflect the timber industry's, and Australia's, transition from the goal of self sufficiency underpinned by commercial development with direct incentives, to ecological sustainable development both supported and driven by broader micro and macro economic reforms. In line with this change, indirect are replacing direct incentives in places, with the private sector progressively replacing government in terms of hands-on management and investment. These phases are now discussed in detail.

3.2 Phase 1 – “Softwood import replacement” Plantations 1900 to 1960

The driving force for early plantation establishment can be described as a “softwood import replacement policy”. Australia had a surplus of hardwood species in the native eucalypt forests but softwoods were seen as having desirable qualities for a wide range of uses including building. Softwoods were being imported to meet this demand so it was a logical conclusion for forest agencies to see softwood plantation establishment as an important goal.

General investment climate with particular focus on plantations

Scale of private sector involvement

Dargavel (1995) notes that relief work during the depression enabled the area of plantations to be increased so that by 1939 Australia had 90,000 hectares of plantations (almost all softwood and predominantly *Pinus radiata*, over 40% of which were in South Australia). A number of these early schemes were experimental in nature as suitability and species selection were being refined. This resulted in some areas having poor growth or even failures on some sand-dune land that was initially thought to be suitable. (Dargavel 1995)

In this early Phase private sector involvement was limited in plantations. Almost all industrial wood came from Australia's extensive native eucalypt forests. Despite South Australia's success in growing *Pinus radiata* there was trouble initially convincing some sawmillers to process the wood.

Consumption and production of wood products

Information on areas planted for public and privately owned plantations is given in Wilson (1969).

3.3 Phase 2 – “Self sufficiency in timber” Plantations 1960 to 1980

This period, like Phase 1, focussed on softwood plantings but reflected a national goal towards “self sufficiency in timber”. This was in recognition that the growing softwood plantations were not only capable of replacing softwood imports, but also of replacing much of the hardwood harvest from native forests. Significant concerns were being expressed about the ability of the native forests to sustain the large increases in production caused by mechanisation and rapid development in the post-war years. Softwood plantations were again seen to be the answer.

General investment climate with particular focus on plantations

Scale of private sector involvement

Although the private sector developed much smaller areas of plantations than the States in the early years, 25% of the national total of 600,000 hectares of plantations was privately owned by 1977, of this about 90% was coniferous softwood and 10% native species and poplars (Carron 1990). By the late 1970s the private sector was planting over 10,000 hectares per year, mainly for industrial uses, predominantly for pulp and paper manufacture. Notable among these was the Australian Paper Manufacturers (APM) who established significant areas around their mill in Victoria. The Victoria Government set up an early system of leasehold to APM through a special Act of Parliament in the 1930s (Carron 1990). Both NSW and Victorian Governments set up

schemes of low interest loans for farm woodlots but these were of limited interest to farmers for the reasons described by Byron and Boutland (1987) in the next Phase.

Consumption and production of wood products

Information on consumption for industrial wood and fuelwood and sources of supply from natural forests, public or private owned plantations, as well as from imports, is given in Wilson (1969). The general picture is one of increasing consumption of wood products as a factor of both population growth and rapid growth in living standards after the Second World War.

Role of R&D and extension

Australia had developed an strong reputation in plantation forest research, with the majority of plantation research up until the 1980s focusing on exotic softwoods, notably *Pinus radiata*. This research was able to create a highly successful and profitable wood based industry from what many initially considered a fairly ordinary species. The strength and importance of Australia's research capability is well demonstrated by resolution of a problem that first appeared in the 1960s. The early 1960s the plantation industry in Australia was "profoundly shaken" by decreased productivity in the second and subsequent rotations of *P. radiata* in South Australia (Shepherd 1986 and Keeves 1966). Shepherd notes the issue received substantial research effort in both Victoria and South Australia and that the two States' research agency came up with quite different solutions. South Australia initially took a high technology solution and developed a "maximum growth sequence" using machinery and chemical fertilisers and herbicides (Woods 1976). In contrast Victoria focused on conserving nutrients through retention of the harvesting slash and also aiming at water conservation for the seedlings (Squire et al. 1979). Over time, with the publication of the research and sharing of information that is also part of the Australian forestry fraternity, the two States' practices converged and adopted a combination of practices to ensure continued productivity.

By comparison, surprisingly little large scale work was done on Australia's own native eucalypts until the late 1980s and 1990s. With researchers having a generally negative view of the potential of eucalypts at the time, there was little confidence by either public or private investors to put much money into them during this period.

Incentives during the time period

Types of direct incentives offered

Commonwealth Softwood Forestry Agreements Acts

Since most of Australia's timber imports consisted of softwoods in the 1960s, the States and Commonwealth formulated a policy of self-sufficiency in softwoods by 2000. This was formalised in agreements made under the Softwood Forestry Agreements Acts of 1967, 1972 and 1976. These committed the Commonwealth to provide favourable loans to the States to establish and maintain softwood plantations. The agreements commenced in 1966 with the aim of enabling States to expand their planting rate to 26,000 hectares per year with an additional 4,000 hectares per year expected to be contributed by private growers (Dargavel 1995). Under these Acts, loans made on annual basis from 1967 to 1982 enabled purchases of land as well as the establishment and tending of an additional 100,000 hectares (approximately) of new softwood plantations. These arrangements expired at the end of 1981-82, following a broader review of Commonwealth functions. The Commonwealth paid \$78.1 million under these arrangements.

The loans were attractive to the States because of a 10 year interest free period. Made from the Commonwealth's Consolidated Revenue Fund, they were repayable over 20 years with repayments commencing 15 years after the date of each advance. This 'grace' period of 35 years matched the planned harvest time of the trees, assuming sawlog rotations used at the time. The agreement also provided for interest to be either capitalised over the deferment period or paid as it fell due. Interest was paid at the long term bond rates prevailing at the time of payment.

Under the agreements the States undertook to carryout efficient planting and tending and in conformity with sound forestry, financial and environmental practices. The Commonwealth also required the States to keep full accounts, books vouchers, plans, documents and other records relating to planting and tending under the agreements. Planting and tending programmes were monitored by the then Australian Forestry Council, which was made up of State Ministers and chaired by the Commonwealth Minister responsible for forestry.

While not initially aimed at the private sector, this initiative was instrumental in enabling the State Governments to dramatically increase plantations during the 1960s and 1970s. These plantations became the basis for Australia's extensive wood processing industry. Victoria and Tasmania are progressively privatising their softwood plantations, parts of which were established under these loans.

Intended target groups for incentives

The Softwood Loans were from the Commonwealth Government to the States. There were no large scale incentive schemes for private investors at this stage.

Impacts of incentives

The Softwood loans were successful in the establishment of large scale softwood plantations especially *Pinus radiata* by State forests agencies across Australia. Indirectly these were also responsible for a rise in environmental awareness, due to large scale plantation of exotic species and clearance of some native forests for plantations.

Impact on land-use change

State forest agencies established the majority of plantations during this Phase. Given their already overstretched budgets servicing the plantation expansion, their cheapest land option was to use existing native forest land. The new market for woodchip exports gave added incentive to clear native forest for planting in some areas. This enabled moderate quality eucalypt forests to be clearfelled and sold for timber and woodchips to fund the *Pinus radiata* planting programme. However, this coincided with a rise in conservation and environmental awareness and the States became subject to criticism from a range of sources. Some of the early conservation activists launched bitter attacks on what the forest agencies had thought was in the national interest (Dargavel 1995). This marked the start of what would grow into a long campaign of forest protests and criticism of forest agencies.

Characteristics of incentives beneficiaries

This period saw few small scale forestry operations established. Companies were still largely Australian owned, as foreign investment in forestry businesses had not yet begun to make its mark.

Characteristics of plantations established

State agencies used the Softwood Loans mainly to plant trees for sawlogs, seen at the time to be the dominant timber need of the future. Species included *Pinus elliottii*, *Pinus pinaster*, *Pinus caribaea*, *Araucaria* spp, *Eucalyptus pilularis*, *Eucalyptus grandis* and *Eucalyptus regnans*. The species of choice was *Pinus radiata*, grown on various rotations of 30 to 40 years depending on the silvicultural regime. These rotations were considered to be remarkably short when compared to native forests rotations of 80 to 100 years or more. Annex 4 provides more details of the species and areas planted by age classes.

Period summary and lessons learned

Effectiveness of incentives in reaching intended target groups

The Softwood Loan Agreements were very successful, expanding the overall plantation estate from around 170,000 hectares to nearly 900,000 hectares. Without this incentive, the softwood plantation industry would not have reached its present large scale. These plantations became the basis for the wide range of domestic wood processing facilities developed subsequently (eg. pulp mills).

Costs of incentive scheme

Over \$78 million was loaned to the States during the 16 years the Softwood Loan Agreements operated. In 2001-02 dollars, this equates to approximately \$390 million.

3.4 Phase 3 – “Transition phase from government softwood to private hardwood” Plantations 1980 to 1990

General investment climate with particular focus on plantations

The period from 1980 to 1990 was a transition period for plantation development. Large changes were occurring in the forest industry and government, business and Australian society. For plantations, Phase 3 marked a transition from the dominance of government to private ownership of softwood plantations and the expansion of eucalypt (hardwood) plantations for industrial uses.

Other notable changes were increasing commercial and budgetary pressures on government and industry, with high interest rates dominating the decade. Forestry was a relatively unattractive proposition for all but large processing industries with economies of scale and linkages to downstream higher value products. In societal terms there was a growing concern about native forestry activities and a number of high profile environmental battles were played out during the decade (notably the Franklin Dam dispute in Tasmania which also raised community concerns against harvesting, especially of old growth native forests). These concerns were significant enough for governments to spend significant time and money to try to resolve them – over 30 enquiries were held into forestry around this time.

Scale of private sector involvement

Large scale private sector forestry investment occurred during the 1980s. Exporting woodchips became an important business in most States. This enabled some companies to convert significant areas of land to plantations, although less of it was conversion from native forests. Tibbits (1986) describes the extent of eucalypt plantations in Tasmania up to 1984. He notes the large increases from 20 hectares per year in the 1970s up to an average of 1500 hectares per year for the period 1982 to 1984.

Role of R&D, and extension

During this time, every State agency facilitated an active R&D programme to help resolve many of the technical issues facing the emerging industry.

Incentives during the time period

The report by Bhati et al. (1991) to the Commonwealth Resources Assessment Commission provides an excellent overview of the Australian plantation incentives in place in the 1980s and can be considered a useful synthesis and review of the major reports on forest plantation schemes throughout this period. It covers topics such as:

- Financial mechanisms for commercial plantation investment;
- Government financial assistance for plantations; and
- Effectiveness of financial mechanisms.

They identified economic research gaps and priorities and provide an annotated bibliography of relevant research and publications.

Types of direct and indirect incentives offered

National Afforestation Programme and associated programmes

Dargavel notes that the National Afforestation Programme (NAP) funded the establishment of 6,000 hectares of hardwood plantations between 1987 and 1992 and supported research on growth. A summary of the NAP and a useful overview of the major incentives and activities in relation to farm forestry programmes is provided by Donaldson (2001). Much of the information in this section is drawn from his analysis.

The Commonwealth established the NAP in 1987 to stimulate an expansion of commercial hardwood timber, and assist in land rehabilitation and control degradation through afforestation. Nearly \$15 million over three years was targeted at State and large private industrial growers. The programme was also the first production forestry initiative that directly sought to engage private landholders. However, the programme was not really designed to address the needs of non-industrial forest managers and lacked a supportive policy framework to address underlying social, economic and institutional impediments to plantation development (Donaldson 1998).

The NAP was later expanded and replaced by the One Billion Trees and Save the Bush programmes in 1989, as key elements of the Prime Minister's landmark statement on the environment "Our Country, Our Future" (Prime Minister of Australia 1989). These subsequent programmes had a clearer focus on biodiversity conservation and were later supplemented by initiatives like the Corridors of Green Programme and the Wet Tropics Tree Planting Scheme in North Queensland. These were all later incorporated in the Bushcare Programme with advent of the Natural Heritage Trust 1 (NHT 1) in 1997. Over this time, funding for programme delivery increased from about \$3 million over the first five years to over \$350 million over the five years 1997 to 2002.

Joint Venture arrangements

Joint venture arrangements first appeared to any extent in the mid to late 1980s, often between State Government forestry agencies and private landowners. With the Commonwealth Softwood Loan Scheme coming to a close, States saw joint ventures as one option to continue the growth in commercial plantations and well as promote smaller scale farm plantations. Since then, it has become an important tool in plantation development, especially as a mechanism to attract overseas investment

Western Australia is a good example, where farmers developed large eucalypt plantations, primarily for pulpwood, in joint venture arrangements with funding from overseas investors. The investors were mainly in the pulp and paper industry and sought to secure reliable high quality supplies from a stable location. The first agreement in 1993 was made with the Japanese Oji Paper company and Itochu, which expected to invest \$60 million over ten years (Dargavel 1995). This was considered sufficient to plant 20,000 hectares of *Eucalyptus globulus* in small farm woodlots and shelterbelts of 10 to 20 hectares. The plan is to harvest the trees at age 10 years and export the woodchips to Japan for papermaking. The stumps are planned to coppice for the second rotation crop. In addition to the substantial direct benefits of a wood processing industry, there were environmental benefits in reducing water tables and addressing dryland salinity problems. The Western Australian Government made a second similar agreement with the Korean Hansol Forest Products Company, to establish 15,000 hectares of plantations over 10 years.

A number of other private plantation companies have followed, with private investment now leading the industry. Readers are referred to the case study on eucalypt plantations in Western Australia in Annex 6.

Justification (rationale) or purpose of providing incentives

Rising awareness of a range of environmental problem during the 1980s led to a change in emphasis, stemming from historical land clearing for agriculture uses. A notable example is Western Australia where dryland salinity had become a major issue.

Intended target groups for incentives

Governments attempted to target farmers and smaller landholders (ie. of less than 1,000 hectares) with incentives rather than large companies, in order to increase investment in forest plantations in this sector. As discussed below though, the effectiveness of these incentives in attracting smaller investors was limited.

Impacts of incentives

Impacts measured by area of plantation established and productivity

Annex 3 shows the rise in plantation areas during the 1980s. Annex 4 details the areas of plantations standing in 2000 that were planted in the 1980s.

Impact on land-use change

Plantations were increasingly being established on previous farmland rather than native forest. Although this was a relief to the predominantly urban conservationists, it was beginning to raise concerns among the farming community that their traditional livelihoods would be altered.

Characteristics of incentives' beneficiaries

Most of the action in plantation development was still occurring in the large industrial sector. State Governments still used subsidies in the form of infrastructure grants to attract industries to their regions and rural areas in particular.

Characteristics of plantations established

Annexes 3 and 4 show changes to notable tree species in the 1980s.

Period summary and lessons learned

Factors facilitating and constraining the effective use of incentives

Plantations and timber production started to bring significant employment and income to regional centres, creating an incentive to other investors and those already there. Provided a critical mass of plantation resource was achieved, processing industries developed, such as in the Green Triangle in southeast South Australia and southwest Victoria, and the Murray Valley in north east Victoria and the south west slopes of NSW. Enterprises included sawmills, papermills, fibreboard or particle board mills, and pole and post production and treatment plants. Timber would be processed as close as possible to the plantation area to avoid high transport costs.

The structural impediments to the development of commercial plantations included:

- Taxation provisions (inadequate recognition for inequity between agricultural and forestry rotational periods and time for returns, lack of adjustment for inflation);
- Monopolies (lack of competitive neutrality between State forest agencies and private growers);
- Trade interventions and protection from imports of forest products;
- Land use interventions through government policies (for example assistance to other land using industries such as dairying or sugar cane); and
- Other impediments associated with problems of internalising external benefits and costs of plantations, imperfect knowledge, bargaining power of small growers in the log market and fire risk.

Bhati et al. (1991) summarise the key finding of a number of reports during the 1980s. They note that a case study done by Dunchue (1990) of eucalyptus woodlot scheme offered by APM Forests in Victoria found the scheme established only about half its target area. Reasons farmers gave for not participating included: loss of productive land, initial cost of establishment and lack of information about forestry investments (uncertainty and risk)

Effectiveness of incentives in reaching intended target groups

Byron and Boutland (1987) reviewed the effectiveness of many incentive schemes operating. They claim farmers and other smaller landowner target groups did not take up incentive schemes because they were designed with the interests and resources of the sponsors in mind, rather than the needs of the client landholders.

Reasons for lack of success included:

- Cost of finance (investment loan interest rates up to 20%);
- Many farms were too small to support viable woodlots in combination with agriculture;
- Decision-making was influenced by agricultural priorities;
- Varying levels of expertise [of growers?] from innovative and successful to very poor;
- Slow return on investment;
- Uncertainty of markets, exacerbated by a lack of political or marketing leverage; and
- Doubts about the future taxation liabilities.

They suggest future schemes including joint venture may hold out more hope for success. Importantly, they note that others can learn from experiences if information is shared. For example, Western Australia learnt valuable lessons from the experience that Tasmania gained through the setting up of the Tasmanian Private Forestry Division (after the Everett and Gently Inquiry of 1976-77).

3.5 Phase 4 – “Private plantation boom” From 1990 to present

General investment climate with particular focus on plantations

This Phase is the largely the realisation of previous work and lessons learnt from the preceding 30 plus years, leading to what is presently the highest sustained growth in Australia’s plantation development and total area. There has been a range of factors driving this growth, largely underpinned by:

- Commonwealth and State recognition for, and agreement on, dedicated strategies and programmes to promote Australian forest plantations (including farm forestry) nationally and internationally;

- Opening of the economy (free-market) and increased foreign investment, facilitated by institutional changes to the tax system arising from broader generic changes and changes specifically designed to improve the competitiveness and attractiveness of plantations;
- Market demand for pulpwood, especially in the Asia-Pacific region where supplies are forecast not to meet demand; and
- Sustained lower commercial interest rates combined with stable economy and low inflation.

The broader farming and city communities have also acknowledged the biodiversity and environmental benefits arising from plantations being incorporated into traditional agricultural areas and, in some instances, even replacing them.

Types of direct and indirect incentives offered

Tax Policy

The Australian Taxation Office (ATO) is the Commonwealth Government's main revenue collector, responsible for collection of around 96% of revenue. The ATO has implemented a range of direct and indirect incentives to support primary production generally, including plantations. These incentives include tax equity, recognising the unique challenges of plantation establishment as against other primary production that are annual or have shorter rotations. This aims to directly assist plantations to remain a competitive alternative to other primary production.

The following forestry operations are considered to be primary production for accessing tax benefits specific to primary production:

- Planting or tending trees in a plantation or forest that are intended to be felled;
- Felling trees in a plantation or forest; and
- Transporting trees or parts of trees that have been felled in a plantation or forest to the place where they are first to be milled or processed, or from which they are to be transported to the place where they are first to be milled or processed.

Further information about the ATO is available at this website: <http://www.ato.gov.au>.

Review of Business Taxation

The Review of Business Taxation (commonly known as the Ralph Report) was released in July 1999. Its recommendations are expected to benefit the timber industry where a 'right to harvest' is sold separate to land. The recommendations do this by shifting the *profits à prendre* into the income tax stream. The change may stimulate the development of secondary markets for immature plantations, the establishment of technical and cost effective plantations and increasing joint venture arrangements with landowners growing trees on the basis of a guaranteed market for timber. Further information about the Review of Business Taxation is available at this website: <http://www.rbt.treasury.gov.au>.

New Tax System

The New Tax System (NTS) was introduced on 1 July 2000. A major change under the new system is the introduction of a broad based 10% Goods and Services Tax (commonly referred to as the GST) and the abolition of wholesale sales tax and some State taxes. Before the introduction of GST, Australia had an indirect system with taxes levied at varying rates on a specific group of goods. Thus the NTS, combined with changes to the marginal tax rates and the tax brackets, will lower indirect taxes; thereby lowering business cost operations and assisting businesses to be internationally competitive. Currently, business taxation rates are at 30%. The main benefits for forestry and associated industries such as transport will be through the removal of a number of State taxes, a reduction in the embedded taxes and lower on-road transport costs for wood products. In effect the GST affects plantations all the way from establishment down to processing and marketing. Further information about the NTS is available at this website: <http://www.taxreform.ato.gov.au/default.htm>.

Diesel and Alternative Fuels Grants Scheme

This Scheme is part of the NTS and assists Australian business through lower transport and production costs for on-road transport. It is separate from the Diesel Fuel Rebate Scheme for off-road fuel use. The grant is based on a flat rate per litre of fuel (except for gas, which is calculated per cubic litre). For diesel, the rate is presently 18.51 cents per litre.

Prepayments also known as 12 month rule

Prepayments or “12 month rule” taxation amendments came into effect in 2002. These amendments on prepayment are specific to forestry activities and apply to expenditure incurred on or after 2 October 2001. The concession allows investors to claim an immediate deduction for certain prepaid expenditure invested in a plantation forestry managed agreement. The 12 month rule applies to "seasonally dependent agronomic activities" that occur during the establishment period of a particular planting of trees. The prepaid activities must be completed within 12 months of the activity commencing and by the end of the following income year. The concession applies to plantation activities such as ripping and mounding the site and planting seedlings.

Managers of plantation forestry agreements need to include the prepayments in their assessable income in the year in which the investors can claim deductions, rather than when the work is done. Where deductions are first claimed by an investor in either the 2001-02 or 2002-03 financial years (whichever is the 'first year of use') the manager receiving the payments has a choice to spread the assessment of that income from the first year of use equally between that year and the following year.

The amendment met industry concerns. It is expected the rule will boost industry investment by providing greater flexibility and help to better plan their land, contractor and seedling requirements.

Non-Commercial Losses

The Non-Commercial Losses taxation amendment came into effect in 2002. The rule applies from the 2000-01 financial year. It prevents losses from a non-commercial business activity being offset against other income in the year in which they occur. In the plantation industry, thinnings may produce a one-off profit making it ineligible to claim deductions from that year on. However under the rule the Commissioner of Taxation can exercise discretion prospectively over a number of income years until the activity is expected to produce a profit or pass one of the tests on a sustained basis rather than each income year. The impact of this discretion will also help to reduce compliance cost for industries. In essence the tax will be realised only when income from the investment is realised.

Capital Gains concessions

Since September 1999 Capital Gains Tax (CGT) was effectively reduced and rules streamlined. The CGT discount enables trusts and individuals to reduce capital gains from assets owned for at least 12 months by 50%. Small business operators satisfying certain conditions may also qualify for one or more of the following CGT concessions:

- The 15 year exemption. This provides a full exemption for capital gains from an asset continuously owned for at least 15 years.
- The 50% active asset reduction. This provides a 50% reduction of a capital gain from an active asset.
- The retirement exemption. This provides an exemption for capital gains from active assets, up to a lifetime limit of \$500,000, if proceeds are used for retirement.
- The small business roll-over. This defers a capital gain if a replacement asset is acquired.

The CGT is relevant to forest plantations as they normally have rotations of many years. This also impacts commercial plantation based annuity schemes being promoted by several States and private companies. Many plantation based annuity schemes promote the tax benefits, though the onus is on the investor to clarify and claim such benefits from the ATO.

Immediate deductibility of non-capital expenditure

Non-capital expenditure on plantations such as plantings, establishment costs and management fees can be claimed as an immediate tax deduction. Expenditure on items of capital nature, such as roads, dams are deductible over a period of time, as specified in the recent tax changes mentioned above.

Farm Management Deposits Scheme

This scheme is a tax-linked saving scheme. It allows primary producers to preserve some of their income from good years for use in those years where farm income is relatively low or outlays are quite high.

Income tax averaging for primary producers

In primary production the application of marginal tax rates and income brackets for taxable income implies a relatively high average tax rate that is not compensated by a lower average tax rate in poor income years. To

overcome this fluctuation, primary producers may use an arrangement where they average their income for five years. This incentive is useful for plantation companies in reducing the average tax rate that may apply to the rather 'high' income occurring during years for thinning or clearfelling. While introduced before 1985 it remains ongoing.

Spreading insurance recoveries for loss of timber or livestock

Like the income tax averaging, insurance recoveries from loss of timber or livestock and net income from forced disposal of livestock can be spread over five income years. It was introduced before 1985.

Landcare deduction

While introduced prior to 1985 it remains ongoing. Primary producers and users of rural land can claim an immediate deduction for capital expenditure on soil conservation, prevention of land degradation and related measures. Though not a direct incentive for plantation establishment, it boosts land rehabilitation that indirectly aids plantation establishment (especially in the case of farm forestry).

Landcare offset

This was introduced in 1998. Primary producers and users of rural land, with taxable income of up to \$20,000 a year, can claim a 30 cents in the dollar tax offset for capital expenditure on soil conservation, prevention of land degradation and related measures. This measure can be claimed as an alternative to the Landcare deduction and may provide an incentive for plantation establishment in degraded lands which provide commercial and conservation benefits.

Thin Capitalisation

With some exceptions, when an Australian company pays interest to a party offshore, tax is payable to the ATO. This tax is termed "withholding tax". The thin capitalisation rules may apply to such a withholding tax of Australian forestry companies with foreign partners. Under the rule the Australian company may claim a tax deduction for such interest payments. However the rule does not apply if the foreign controller's investment in the Australian company has a debt to equity ratio of more than 2:1.

De minimis exemption for thin capitalisation

The De minimis exemption was introduced in 2001. It allows taxpayers to claim debt deductions of up to \$250,000 without being subject to thin capitalisation rules. An additional de minimis rule is included in the thin capitalisation regime for outward investing entities, where the foreign assets of that entity and its associates represent up to 10% of the total combined assets of that entity and its associates. Though the rule is not directly related to forests, it again has benefits for forestry companies with foreign assets.

Prepaid Expenses - Tax shelters

Under the tax shelter rules, prepaid expenses that would otherwise be immediately deductible are required to be apportioned over their eligible service period (ESP). Broadly, the ESP is the period during which the activity under the agreement (eg. management services) is to be done. Subject to some exceptions, the tax shelter rules apply to prepaid expenditure incurred under a tax shelter arrangement after November 1999. The tax shelter rules apply to all taxpayers and there are no transitional rules. The tax shelter rules does not apply to that part of a prepayment that represents "seasonally dependent agronomic expenditure". (See earlier explanation of the "12 month rule".)

Income tax exemption for funds established for scientific research

Income of funds established for the purpose of enabling scientific research to be conducted by, or in conjunction with, a public university or hospital is exempt from income tax. This exemption has been in effect since 1985.

R&D refundable tax offset for small companies

This offset, announced in 2001, encourages smaller companies to undertake R&D. Eligible companies must have an annual turnover of less than \$5 million and undertake R&D of up to \$1 million. Companies meeting the criteria receive tax offset equivalent to the value of the R&D tax concession.

R&D tax concession

The concession was introduced in 1985. Expenditure on R&D activities generally received an immediate 125% deduction. Until 29 January 2001, eligible expenditure on R&D plant was deductible at 125% over three years. From that date, expenditure on plant is deductible over its effective life. Expenditure on 'core technology' that relates to R&D activities is deductible at a rate of 100% over the period of the related R&D activities.

Premium tax concession for additional R&D expenditure

Further to the tax concession above a premium tax concession became available from 1 July 2001. It provides for companies that increase their R&D expenditure to receive a 175% concession. The 175% premium covers all R&D expenditure excluding plant, pilot plant, contracted plant, plant leases, core technology, R&D related interest and items excluded from the 125% R&D tax concession.

The National Forest Policy Statement

The Commonwealth and State Governments jointly released the NFPS in 1992. This was in response to three major reports on forest issues in Australia - those of the Ecologically Sustainable Development Working Group on Forest Use, the National Plantations Advisory Committee, and the Resource Assessment Commission's Forest and Timber Inquiry. It outlines agreed objectives and policies for the future of Australia's public and private forests and contains specific commitments to improve the management of commercial plantations. Primarily, the policy states that decisions to establish plantations for wood production should rest on their economic viability. Recognising the long term nature of plantation investments, governments see the importance of secure long term policies including the need to enable trading of capital, the establishment of 'pooled development funds' with concessional taxation rates and simplified planning procedures.

In many ways, this statement and its strategic objectives and policies became (and remain) the basis for all subsequent forestry policies and programmes for the Commonwealth, and for the States to a lesser degree.

The National Landcare Programme

The National Landcare Programme, established in 1992, incorporated elements of the former Federal [Commonwealth] Water Resources Assistance Programme and had a much broader focus on natural resource management, including whole farm or property management planning.

The National Landcare Programme embraced catchment management to coordinate government and community activities across whole catchments. Of greater significance, however, was its encouragement of community involvement in rural land degradation issues and its emphasis on a self-help approach (SCARM 1995). In essence, the concept of Landcare provided a way to integrate several strands of natural resource management policy within a social context of community development.

The Programme was focussed by the establishment of the One Stop Shop process to incorporate the community grants component of the One Billion Trees and Save the Bush programmes. While significant, these are primarily environmental planting schemes, which are outside the scope of this study and so will not be covered.

Collection and dissemination of quantitative plantation information

Quantitative information on the national plantation resource is an essential ingredient for decision making and strategic planning, nationally and regionally, by all stakeholders. The provision of data by growers and their representatives ensures governments and industry use correct information and that a realistic picture of the industry is portrayed nationally and internationally. The National Forest Inventory (NFI) therefore established the NPI in 1993 to provide up-to-date quantitative reporting of Australia's plantation resource and monitor plantation expansion under the 2020 Vision. This includes the provision of regional plantation woodflow estimates critical to business plans, attracting new investment and marketing. The NPI focuses on collecting plantations data from growers whose total estate is greater than 1,000 hectares. Another programme of the NFI, the National Farm Forest Inventory (NFFI) was developed in 1998 to collect and collate of information on smaller scale plantations of less than 1,00 hectares (generally those within the NFFP). The first coordinated findings of these two inventories were published in the Plantations of Australia 2001 report.

Collectively, the NPI and NFFI therefore provide a reliable and transparent data series to assist regional and national resource planning and guides investment in plantations and associated downstream industries.

Wood and Paper Industry Strategy (WAPIS)

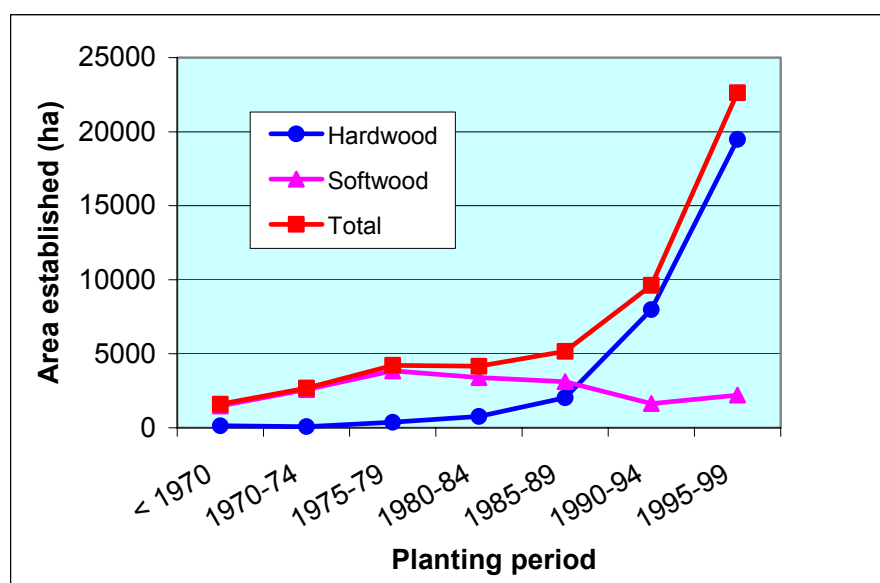
In December 1995, the Commonwealth launched a four-year Wood and Paper Industry Strategy (WAPIS), aimed at developing the wood and paper industries while protecting forests for future generations. It focused on industrial development, value adding and new investment.

WAPIS activities promoted greater investment, research and downstream processing in Australian forest industries, expansion of farm forestry and the plantation sector, a skilled and flexible workforce and improved regional job opportunities. Improved information on plantation areas and wood flows was one of the key achievements of this Strategy, significantly aided by the 1997 NPI.

Farm Forestry Programme

The Commonwealth's National Farm Forestry Programme (NFFP) operated from 1996 to 2001, funded from NHT 1. Its aim was to encourage the incorporation of commercial tree growing and management into farming systems for wood and non-wood production, increasing agricultural productivity and sustainable natural resource management. This was aided at the regional level by establishing Regional Plantation Committees (RPCs), to promote information networks, increase the skill base, initiate demonstration projects and design regional strategies. The adoption of farm forestry was assisted by farmers wanting to diversify and enter new market as a risk management strategy, investors establishing plantations on farmland through joint ventures or annuity schemes, agricultural gains (eg. increased agricultural yields) and environmental services (eg. soil and water conservation). This was mitigated to some extent by the initial establishment costs and long lag-time for returns, future market uncertainty and initial lack of information and support networks.

Figure 1: Farm forestry plantation establishment rates



(Source: Wood et al. 2001)

Nevertheless, more than a third of the current total farm forest resource was planted since 1995 (see Figure 1). This period has seen a major shift from softwood to hardwood establishment, mirroring a national trend in plantations. By the Programme's end, farm forestry had contributed approximately 5% to the total plantation resource and 12% to the total privately owned resource. A further 11% approximately of industrial plantations came from leased or joint venture arrangements of farm land. For more information please look at the NFFP website: <http://www.affa.gov.au/content/output.cfm?ObjectID=F1B8B992-08B9-4EF9-959F6F06E8978BA4>.

Regional Forest Agreements

The Commonwealth and several State Governments have together developed Australia's Regional Forest Agreements (RFAs). These agreements emerged from the NFPS and are a long-term plan for Australia's native forests. Beginning with the first agreement signed in 1997, each RFA operates for 20 years with five yearly reviews. The RFAs are designed to create jobs and protect forests through:

- A comprehensive, adequate and representative (CAR) reserve system based on nationally agreed criteria (the [JANIS criteria](#));
- Support for innovative, internationally competitive forest industries; and
- Sustainable forest management of the whole forest estate.

Important changes for the plantation industry followed the RFAs. They included allowing the Commonwealth Government to remove the requirement for export woodchip licences because special values such as rare species now had agreed management frameworks through the RFA process. The Commonwealth's export controls on plantation sourced unprocessed timber have gradually been lifted over the last five years removing what industry considered a deterrent to plantation investment. The removal signals the Commonwealth Government's endorsement of full participation by the plantation industry in global wood markets and gives potential growers access to a greater range of markets. For more information see the RFA website: <http://www.rfa.gov.au>.

Plantation for Australia: the 2020 Vision

Released in 1997, the Plantations for Australia: the 2020 Vision is the most important strategic policy setting the current direction of plantation development in Australia, with many of the present incentives a direct result of this policy.

It is a framework of actions designed to achieve an internationally competitive plantation growing and processing industry that is commercially focused, market driven and market oriented. It aims to develop a significant, long term and environmentally sustainable plantation resource through major private sector investment, which will enhance the growth of Australia's forest industries and the contribution made by plantations to the Australian economy, rural and regional communities and the environment.

The 2020 Vision details the main actions to encourage plantation establishment to meet the target of trebling the plantation area from 1.1 to 3.3 million hectares by 2020. The Vision partners (the National Association of Forest Industries (NAFI), Plantation Timber Association of Australia (PTAA), Australian Forest Growers (AFG), and the Commonwealth / State Governments) are working jointly to implement these actions. Recent trends indicate that the current expansion in plantations is on track to meet this target. The focus is on boosting the availability of suitable land, getting incentives right, establishing a culture of commercial plantations and improving information flows. The government partners recognise their role as:

- Setting the overall attitude to plantations;
- Instilling market confidence;
- Providing information;
- Establishing rules and processes;
- Providing education; and
- Providing infrastructure for basic research.

In the initial phase, emphasis has been on increasing awareness of the Vision, particularly at the regional level, involving local government and seeking commitment from State Governments to provide a regulatory environment which does not discriminate against plantation growing and focuses on overcoming impediments to the development of plantation forestry.

The 2020 Vision is currently being reviewed. While the revised Vision has kept the need to remove some remaining impediments such as the question of property rights, it also looks to maximise the benefits from plantation expansion. The revised Vision also focuses stakeholders on the potential for tree plantings to make a contribution to the maintenance and improvement of our environment, while retaining land under production and profiting from these activities. It is expected to result in increased emphasis on addressing social issues of water and land degradation, fire management and competing land uses.

Besides building an internationally competitive and environmentally sustainable plantation sector, other expected benefits of the 2020 Vision are reducing Australia's net greenhouse gas emissions, turning around the wood and wood products trade deficit, rural development (including creation of up to 40 000 jobs) and improved land management outcomes.

In line with the increasing production of softwood, the hardwood sawmillers have begun diversifying their mills to produce kiln-dried timber for furniture, flooring, mouldings, and other value-added products. As a result of increased domestic production, sawn timber imports are expected to decline, and a surplus is expected in the next five years. A similar trend is projected for wood panel products, including particleboard and plywood.

Action Agenda for Forest and Wood Products

Launched in 2000 by Commonwealth / State Governments and industry, the Action Agenda's vision is maximising sustainable and profitable activity for tree growing, value adding and marketing of Australian forest and wood products. In committing to this vision, industry and other stakeholders recognise:

- Australia's public and private forests (including plantations) generate a diversity of wood and non-wood products and services, the benefits of which are not always recognised by the Australian community;
- Forestry operations in Australia must be, and must be clearly demonstrated to be, environmentally and economically sustainable;
- Future viability of the industry will depend on its ability to compete in both domestic and overseas marketplaces; and
- An innovative and cooperative approach is necessary to optimise the potential of the industry in traditional and non-traditional areas.

The Action Agenda therefore has been designed to provide an overarching environment, within which industry can pursue sustainable competitive advantages. It identifies six broad themes considered vital in dealing with those impediments and in pursuing emerging opportunities:

- Credibility of Forest Products (eg. implement an Australian Forestry Standard);
- Intelligence Development and Diffusion (eg. establish consolidated industry database);
- Product Development and Innovation;
- Market and Investment Promotion (eg. integrated approach to market investment development);
- Human Capital; and
- Coordination and Collaboration.

Justification (rationale) or purpose of providing incentives

Incentives in this Phase are largely the realisation of previous work and new incentives to overcome lessons learnt, from the preceding 30 plus years. The driving rationale has grown from self sufficiency to the development of an internationally competitive plantation growing and processing industry, underpinned by a significant, long term and environmentally sustainable plantation resource facilitated through major private sector investment.

Impacts of incentives

Impact on land-use change

Since European settlement most forest land has been cleared for agriculture. This has been reversed since the 1980s with most plantations now established on previous agricultural land. Encouragingly, planning approval processes in most States now prohibit clearance of native forest for establishing plantations.

Characteristics of incentives' beneficiaries

Increasing numbers of small-scale plantings were undertaken in some areas, notably Western Australia. In other areas such as what became known as the "Green triangle" in southeast South Australia / southwest Victoria, the plantings were larger in size and often in contiguous blocks.

Investment companies, sometimes driven by tax advantages of various schemes, established many of the plantations during this period. Often they did not have direct links to processors at the outset, although once they obtained sufficient critical mass they negotiated sales agreements usually for woodchip export to Japan or Korea. The largest plantation companies are closely tied to foreign companies, notably the Japanese pulp and paper companies.

Period summary and lessons learned

Major changes were achieved during the 1990s to open up Australia's economy and move to a more free market based approach. This is reflected in the incentives now employed and has led to the highest sustained growth and total area in Australia's plantation development. At the State level, incentives are predominantly direct mechanisms and include those initiated by large private companies targeting smaller private landowners, while the Commonwealth has moved towards indirect mechanisms. Overall though, governments have increasingly

distanced themselves from the hands-on participation and instead are focusing on removing impediments and attracting investors (existing and new).

For example, the Commonwealth Government initiated the 1990 RAC inquiry (see Bhati et al. 1991), with the Government and other stakeholders progressively acting on the recommendations, so that many of the impediments identified had been addressed by the end of the 1990s. Where possible this was achieved through removing the impediment entirely (eg. tax averaging, woodchip export restrictions); alternatively significant improvements were made towards improving the commercial operating environment for private investors.

Factors facilitating and constraining the effective use of incentives

Table 4 sets out a comparison of factors constraining the effective use of incentives in plantation forestry in the early 1990s and how these have been reduced or overcome in the following 10 years.

Table 4: Comparison of effectiveness for forest plantations incentives between the early 1990s and the early 2000s

1991 constraints	2002 situation
<i>Taxation provisions</i>	
Long lead time between establishment costs and revenue from harvesting made forestry unattractive, compared with traditional agricultural crops	Tax policy changes, including tax averaging, 12 month rule and farm management deposits scheme
Lack of competitive neutrality between State forest agencies and private growers affecting (depressing) log pricing and log allocation	By 2002 many of the largest State forest agencies corporatised during the preceding 10 years (NSW State Forests, Tasmanian and Victorian pine plantations, the privatised agencies now pay some taxes, putting them on a more level playing field than in the late 1980s / early 1990s)
<i>Trade interventions</i>	
Export approvals required for unprocessed wood and woodchips	For RFA regions export controls for woodchips have been removed, with no ceilings in place for private plantation wood
Protection from imports of forest products	By 2002 tariffs had been reduced to between zero and 5%, to open up markets
Land use interventions through government policies (for example assistance to other land using industries such as dairying or sugar cane)	By 2002 many of these subsidies had been reduced or eliminated
Much uncertainty in the supply of forest resources and hence in forest investment overall	The RFA process was finalised in 2001, with 10 agreements in effect. The Agreements provide a 20 year certainty to forest industries as well as setting out extensive reserve systems for conservation purposes
<i>Marketing for logs from commercial plantations</i>	
Other impediments are associated with problems of imperfect knowledge	By 2002 market intelligence reports being done by several firms (eg. the comprehensive but expensive "AUSNEWZ" by URS Forestry aimed at large industrial growers and processors, and the free Australian National University (ANU) Forestry Market Report which is primarily aimed at Australia's small forest growers (see Bhati 2002))

<p>The reliability and availability of information on the full nature and extent of Australia's forests and plantations was limited as it was compiled individually by the States and not reported in a consistent way</p>	<p>The Commonwealth Government initiated the NFI programme in 1995. This grew to include statistics on plantations and culminated in the first comprehensive statistics on the plantation estate through the initial NPI reports of 1997 and the more comprehensive report of 2001 (Wood et al. 2001). This important resource information is vital for government policy makers and industrial processors and investors to make better informed decisions. This reduction in uncertainty over the information and consequent reduction in risk is very important for investor confidence.</p>
<p>Limited bargaining power of small growers in the log market</p>	<p>By 2002 several co-operative schemes for private forest owners have developed (eg. Tasmania) and these are assisting small growers to collectively market their wood with regular and increasing sales even into the international markets such as Korea</p>

(Source for 1991 constraints outlined is Bhati et al. (1990). 2002 analysis is preliminary only)

Effectiveness of incentives in reaching intended target groups

Collectively the incentives have proven highly effective. Combined with an eager pulp market and the freeing up of the export restrictions and foreign investment, they have produced an explosion in the planting rate (see Annexes 3 and 4).

Competition for land with other sectors

Since the 1980s, most plantations have been established on previously agricultural land. Planning approval processes in many States now prohibit clearance of native forest for establishing plantations. Plantation growers actively compete for land with other sectors on a commercial basis.

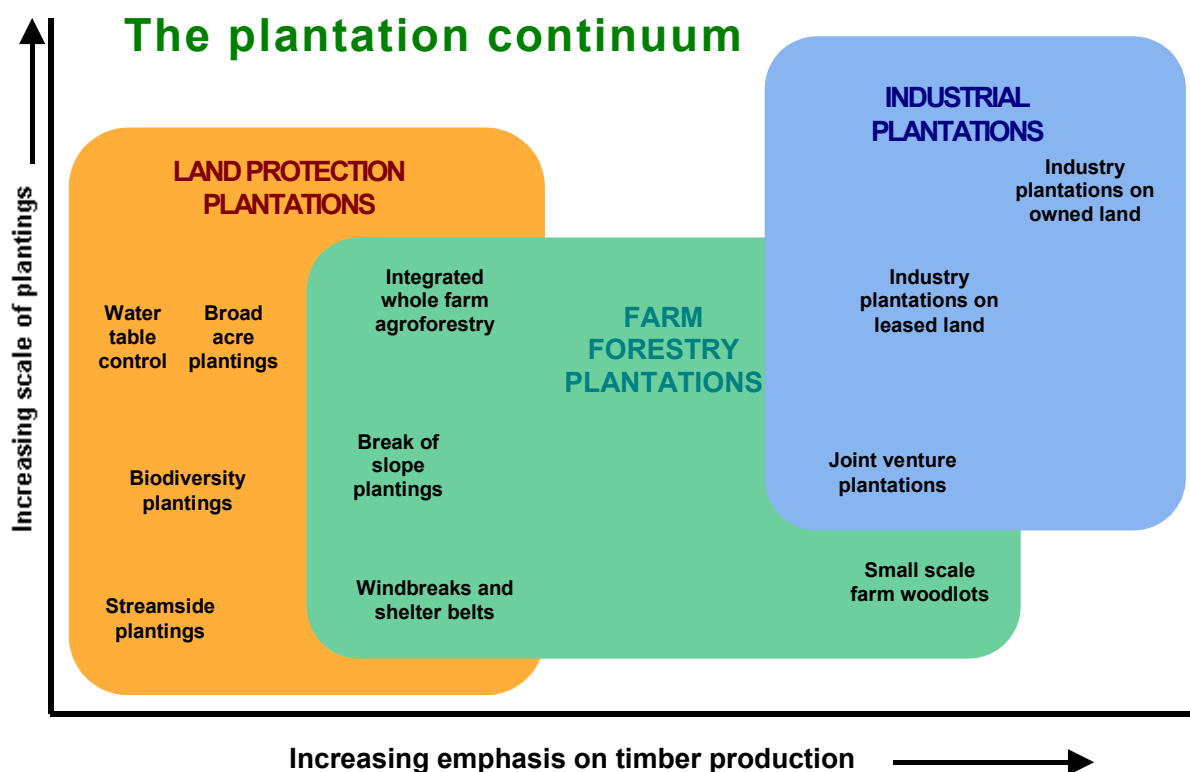
4 Conclusions and future directions

4.1 Conclusions

Through international competitiveness and value adding, Australia's native forest and wood products sector is increasingly targeting niche markets utilising the unique characteristics of these timbers. Nevertheless, Australia has substantial plantation resources and is placing increasing dependence on them as a primary source of wood and forest products, both for export and domestic use. Plantations cover just 1% of the total forest area but contribute 54% of all roundwood and 66% of all sawlogs.

Plantation incentives in Australia were initially driven by the sole desire for self sufficiency. However, this has evolved into the broader strategic goal of an internationally competitive plantation growing and processing industry, achieved by developing a significant, long term and environmentally sustainable plantation resource through major private sector investment. Hence, while there is now a wide variety of plantation uses in Australia industrial plantations for forest and wood products remain the most significant, as seen in Figure 2.

Figure 2: Australia's forest plantation continuum from environmental to industrial plantations



Incentives have correspondingly changed, reflecting the evolution of government, industry and community expectations of forestry. The Commonwealth Government, most State Governments and industry have tried a range of direct and indirect incentives with varying success. Specific plantation incentives now focus on creating an environment attractive to commercial plantations and processing facilities, including:

- A secure strategic policy framework;
- Removal of impediments through tax reforms;
- Resource security for industry investment;
- Elimination of market distortions through the introduction of competitive neutrality principles, leading to progressive privatisation / commercialisation of State plantations;
- Progressive lifting of export controls on unprocessed wood sourced from plantations;
- Development of internationally competitive and value added forest based industries;
- Sustainable management of private forests;
- Integrated land use planning, including farm forestry, to increase available private land for plantations and environmental benefits; and
- Environmental benefits eg. land and water restoration, greenhouse / carbon storage.

R&D and an associated strong extension programme to distribute research findings to stakeholders have been underlying essential contributors to any incentive.

Non-plantation specific incentives arising from broader national agendas and institutional changes over the last 10 years have also benefited plantation development. These include:

- Relaxation of foreign investment restrictions;
- Expansion of rural development and employment opportunities;
- Provision of port and transport infrastructure; and
- Move to free market policies.

A summary of the more significant direct and indirect incentives is provided in Annex 5.

The result has been a sustained increase in total plantation area since the 1950s, particularly in the 1960s and early 1970s with the Softwood Loans and more so since the early 1990s following national agreement of a secure strategic policy framework through the NFPS and 2020 Vision, and broader macroeconomic reforms. In

2001 the total plantation area increased by 6%, the majority of plantations were privately owned (54%) and growing, with 89% of new areas being planted on private land (Wood et al. 2002). A diverse range of ownership and partnership arrangements has evolved, reflecting the success of these recent initiatives in attracting private investment. This includes a variety of joint venture and annuity agreements for tree ownership, where both public and private parties have some equity in the tree crop. Farm forestry is a growing area for such arrangements.

4.2 Future directions

Based on Australia's experiences, conditions in which forest management and plantation investments may prosper include:

- Political and macroeconomic stability;
- Trade liberalisation and open foreign investment;
- Well defined and stable property rights for land resources;
- Government with adequate institutional capacity to enforce laws and administer possible incentive schemes;
- Availability of relevant technologies and basic infrastructure (roads, electricity, ports etc.) to support investment decisions;
- Availability of commercial knowledge and expertise required to establish, maintain, harvest, process and market the plantation products; and
- Critical mass of the plantation resource to support internationally competitive, integrated processing facilities.

Creating a favourable climate for plantation establishment and growth

Australia's plantations largely began through the investment loans to the States by the Commonwealth Government. This led to the States developing their own plantations, the success of which drew increasing private investment. The increase in plantation area was sufficiently large to meet Australia's concerns for increasing self-sufficiency in timber and the sustainability of its native forests, allowing the Commonwealth Government to then gradually wind-down the Softwood Loans. Despite this lessening of direct support and an, plantings ultimately increased, facilitated by removing a range of tax inequities and general impediments and supportive Commonwealth and State Government policies and programmes. This pattern is not limited to Australia. Other countries that previously used substantial subsidies to encourage plantation establishment or developed plantations (eg. New Zealand, Chile, Brazil and Uruguay), have experienced similar increases in plantings, despite reducing or eliminating the support. This demonstrates the important role governments can play in establishing a plantation industry nationally.

This is enlarged upon by Adams and Castano (2000), who note pre-conditions for establishing plantations are similar to those required to sustainably manage natural forests, namely: security of tenure, effective planning, yield control and environmentally sound harvesting (Poore et al. 1989). As such, simply possessing large areas of natural forest is not sufficient to maintain wood production. The initial relative advantage of countries with substantial natural forests will ultimately decline, if the underlying infrastructure and support mechanisms are not maintained and developed (Durst and Brown 2000). As such, countries with initially small areas of natural forests but which possess well-developed forestry infrastructure, access to capital and the ability to shift their wood production to plantations and grow trees quickly, are well placed to capture existing markets and create new products and markets.

However, growth rates are only part of the equation for financial competitiveness. Overall rates of return are of critical importance. While rates of return do relate to growth rates, they also depend crucially on factors such as initial investment costs, interest rates, transport costs and the final product's price. Many developed temperate countries continue to have significant advantages in infrastructure, technology, labour and skills, and have lower interest rates compared with developing countries. Economic efficiencies arising from integrated processing are important. Likewise, having processing industries close by is also important. The crucial point is that the ability to grow trees quickly is only one of a complex set of factors determining success in forestry.

Political will and policy stability

The Australian Government's policies have been refined over time, yet remain remarkably consistent in supporting plantation establishment over the decades. This stability provides confidence to investors that the Government is not likely to suddenly change the ground rules.

The Commonwealth and State Governments have a range of policy instruments to promote natural resource management for the public good. These include regulation, education and provision of information, and the provision of economic incentives such as taxes, subsidies, grants and market-based instruments (OECD, 1999; Commonwealth of Australia, 2001). Some recent changes to taxation legislation and the RFA Act 2002 are examples. Increasingly, Australia is moving away from direct subsidies and incentives to a market based investment approach. The Commonwealth Government achieves this through enabling incentives based on a policy and legislative framework, to remove impediments (disincentives) and provide a conducive environment for private industry and capital. The aim is long-term sustainable and profitable plantation industries. The 2020 Vision is a good example of industry-specific policy at the micro-level.

A nationally applied policy initiative by the Commonwealth Government is the National Competition Policy (NCP). In the past, many government business activities were able to obtain business advantages over their private sector rivals because of their public ownership, leading to unfair market advantage to government owned businesses, regardless of their efficiency. Under the NCP, competitive neutrality principles apply. As such, governments should apply full taxes or tax equivalent payments, debt guarantee fees and private sector equivalent regulation. An essential element of the obligations is that government business activities, like their private sector counterparts, set prices that enable them to earn sufficient revenue to cover their costs, including the cost of capital. This ensures these businesses face the same costs and commercial pressures as their private sector competitors.

As noted previously, State Government plantation ownership has been a critical driver in the growth of Australia's plantation industry. However, some critics claim there has been market distortion and lack of competitive neutrality, caused by the continued dominance of some State owned forest agencies as softwood suppliers, leading to a monopoly in many regions. Under the NCP, the Commonwealth Government has taken substantial measures to ensure that public agencies move to competitive neutrality, by separating their business and regulatory functions. Several State forest agencies have now been corporatised with some States selling off most or all of their plantation estate. Most now pay taxes and adhere to price transparency, thereby creating a level playing field for timber sales. Further information on the NCP is available from the website:

<http://www.ncc.gov.au/articleZone.asp?articleZoneID=72#Article-94>.

Tariffs and trade barriers

Adams and Castano (2000) note that, in recent years, tariff barriers have declined in most of the main timber import markets and that tariffs worldwide will continue to fall through bilateral, regional and global trade negotiations (WTO, NAFTA, GATT, ASEAN etc). Non-tariff measures can also influence trade. These include a wide variety of rules and procedures ranging from health and technical standards to measures influencing price. Restrictions on log exports have traditionally been associated with promotion of the domestic processing industry in timber producing countries.

In a recent market report, Bhati (2001) highlights the issue of tariff barriers facing Australian exports of forest products. A further Commonwealth Government economic study gives long term projections of Australia's trade in forest products. The projections show that within 10 years, Australia's net exports of logs and wood based panels will rise significantly and Australia should change from a net importer to a net exporter of sawntimber. Paper imports will fall as a percentage of total paper consumption. A take-home message from the projections is the Australian forest products industry will soon transform from largely a domestic market oriented to an export oriented industry.

Australia nevertheless imposes tariffs. Its general tariffs on imports of forest products are between 0% to 5%. However, due to the policy of preferential tariffs for the developing countries, forest products from such countries enter Australia duty free. Bhati (2001) argues that for this reason and the fact that Japan and Korea (developed countries) impose higher and escalating tariffs on some products than does Australia, it is in Australia's interest to take the initiative to have tariffs removed against its exports in Asian markets (assuming it can retain and increase access to overseas markets).

The issue is already on the Commonwealth Government's agenda. But the lowering of tariffs, let alone their removal, involves complex and lengthy international negotiations. It often takes years to achieve the desired outcome. Hence, in Bhati's view, it would be advantageous for Australia to tackle the issue expeditiously in bilateral, regional and multilateral forums.

Institutional changes supporting incentives

Full Privatisation

There is a clear and increasing trend in Australia to privatise many government business-like ventures. This has ranged from telecommunications to banking and has occurred to some extent in two State owned plantations. The State of Victoria has sold its pine plantation estate of several hundred thousand hectares to Hancocks Pty. Ltd., a subsidiary of the international firm Hancocks USA. Likewise Tasmania has entered into a 50% joint venture of their pine plantations with the North American investment company GMO Renewable Resources.

Part Privatisation or other arrangements including leasing

Foy (2001) describes how South Africa assumed a major role in establishing forest plantations. However, South Africa's new forest policy calls for radical changes including the withdrawal from commercial forestry operations and transfer of these functions to the private sector. The government made a policy decision not to sell the land, but to arrange long terms leases for use rights for forest products.

Extension mechanism to promote plantations through involvement of private sector

Australia's strong information and dissemination mechanisms

Commonwealth and State Governments have extension and information dissemination systems actively providing information and advice to private industry and landholders on the benefits of plantations and the best techniques to establish and manage them. An example is the RPCs established by the Commonwealth Government in 1996 in Australia's main plantation regions. Their aim is to promote wood production on cleared agricultural land and integrate commercial tree growing for wood and non-wood products with other agricultural land uses, with an emphasis on developing commercial uses of native species, through the coordination of stakeholder activities and the development of strategies for industry development. Since then, RPCs have worked with local and regional stakeholders, including landholders, State and Local Governments and industry to:

- Address planning, infrastructure and coordination issues;
- Undertake feasibility studies;
- Develop regional plantation and farm forestry strategies to encourage commercial forest-based industries in the region;
- Formulate related marketing, investment and wood flow plans;
- Facilitate communication between stakeholders;
- Identify national R&D priorities for the plantation sector; and
- Improve information flows on marketing and management of plantations and private native forests.

The RPCs have the potential to further contribute to improving linkages at the national and regional levels.

There are other projects that prepare and provide information aimed at developing the plantation industry. For example, the ANU Market Report project aims to contribute towards creating more informed forest product and input markets in Australia, primarily for small-scale forest growers. The project has produced 20 reports, available on the website: <http://sres.anu.edu.au/associated/marketreport/index.html>.

Strong R&D capability

Australia has a well-developed system of forest R&D that underpins much of the long-term success of new initiatives. Organisations such as CSIRO have world-class expertise in forestry and are recognised leaders in their fields. Much of the growth of Australia's plantations can be attributed to this research and a correspondingly strong extension programme to distribute the research finding to stakeholders.

Possible future drivers

The Kyoto Protocol, greenhouse gas and carbon credits

Inclusion of 'sinks' in the Kyoto Protocol has created expectations of increased investment in forest plantation development for carbon storage. Grant and Keenan (2000) note that because the total area that might be converted to plantations is limited, increased carbon storage in forest plantations is generally regarded as part of a transitional strategy to reduce atmospheric concentrations of greenhouse gases over the next 50 years or so.

However, before greenhouse can become a significant driver in global plantation development, the Kyoto Protocol has to be ratified and come into effect internationally.

Even so, this has not prevented investment. In the State of New South Wales, the Tokyo Electric Power Company has signed a contract to establish a planted forest estate for carbon sequestration and timber products over a 10 year period. The contract is for the planting of 1,000 hectares initially, with a target total planted forest area of between 10,000 and 40,000 hectares. The planted forests estate is expected to comprise 50% hardwood species and 50 per cent softwood species. The investment opportunity is attractive because the underlying forestry asset achieves a positive return over time, even assuming no value for carbon. Hence, if the Kyoto Protocol is not ratified, or if, ultimately, the value of carbon sequestration from the carbon sink is not realised, there is still an underlying valuable asset.

Other commercial and market driven activities are resulting in plantation investment for carbon offsets. Commonwealth and State Governments have developed specific policy initiatives to facilitate carbon related investments, including:

- Bush for Greenhouse (1997) (Commonwealth);
- National Greenhouse Strategy (1998) (Commonwealth);
- Carbon Rights Legislation Amendment Act (1998) (State);
- Renewable Energy (Electricity) Act (2000) (State); and
- Replanting Victoria (1999) (State).

Even so, a number of issues require resolution before carbon can be a significant driver in plantation development:

- Risks from trade barriers;
- Transaction costs;
- Measurement of above and below ground biomass and verification; and
- Social and community concerns.

Plantations as a financial investment

Plantation investments may provide portfolio diversification, long term returns and improve risk management through reduced portfolio volatility. Experience of large institutional investors in North America and Europe indicate that plantation returns are often counter-cyclical to the returns from financial assets such as stocks and bonds. As such, they may be worthwhile investments for superannuation funds because the long maturity periods match the fund's rising long term obligations.

Annex 1: Definitions

(Note: definitions are reproduced from the APFC's Terms of Reference for this case study series.)

Forest Plantations

To many people, a forest plantation is considered to be of a single species, uniform density and even-aged trees intensively grown for the production of industrial wood or fuelwood. A simple definition given by the Commonwealth Forestry Terminology is "a forest crop raised artificially, either by sowing or by planting".

The Forest Resource Assessment (FRA) 2000 of FAO has defined forest plantations as:

"forest stands established by planting or / and seeding in the process of afforestation and reforestation. They are either:

- of introduced species (all planted stands), or
- intensively managed stands of indigenous species, which meet all the following criteria:
 - one or two species of plantations;
 - even age class; and
 - regular spacing."

Incentives

Incentives and disincentives are policy instruments that change the comparative advantage of any economic activity and thus stimulate or deter specific behaviour. In the case of plantations, effective incentives lead to investments in plantation establishment and better management, while disincentives deter investments in tree growing.

Incentives can be direct or indirect. Direct incentives include among others:

- Free inputs such as seedlings;
- Provision of local infrastructure;
- Grants and subsidies;
- Low interest loans; and
- Tax exemptions on sale proceeds and similar schemes.

Indirect incentives can be divided into variable and enabling incentives. The first comprise sectoral incentives (eg. guaranteed input and output prices and tariffs) and macro economic incentives (eg. exchange rate stability, low interest rates and other fiscal and monetary measures).

Enabling incentives mediate investors' potential response to variable incentives. They include land and security and availability, accessibility and distance to major markets, market development, credit facilities, strength of the judicial system, policy consistency and national security. In the case of forest plantations natural advantages are also important including low biological and physical risks.

Annex 2: National Plantation Inventory regions of Australia

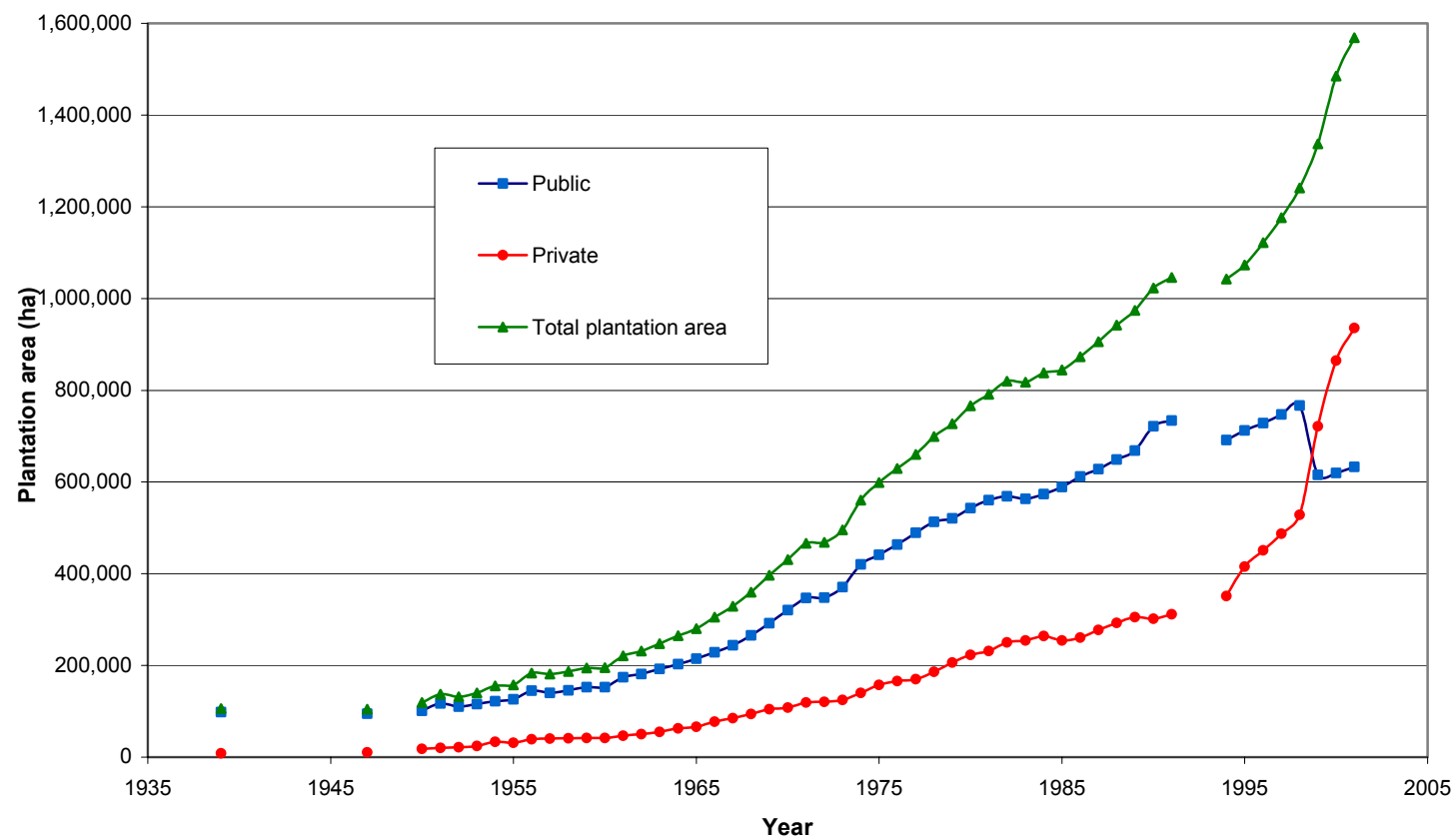


Key to Region

- | | | |
|---------------------|--------------------------|--------------------------|
| 1 Western Australia | 6 Murray Valley | 11 Northern Tablelands |
| 2 Tasmania | 7 Central Gippsland | 12 North Coast |
| 3 Green Triangle | 8 East Gippsland/Bombala | 13 South East Queensland |
| 4 Lofty Block | 9 Southern Tablelands | 14 North Queensland |
| 5 Central Victoria | 10 Central Tablelands | 15 Northern Territory |

Annex 3: Australia's forest plantation development

Figure 3: Australian forest plantation development over time, by tree ownership[#]



Notes:

1. The 2000-01 period was derived from only two years data and may be higher than the long term plantation expansion rate.

Figure 4: Increase in Australian forest plantation area averaged, over five year periods by tree ownership, showing the four developmental Phases[#]

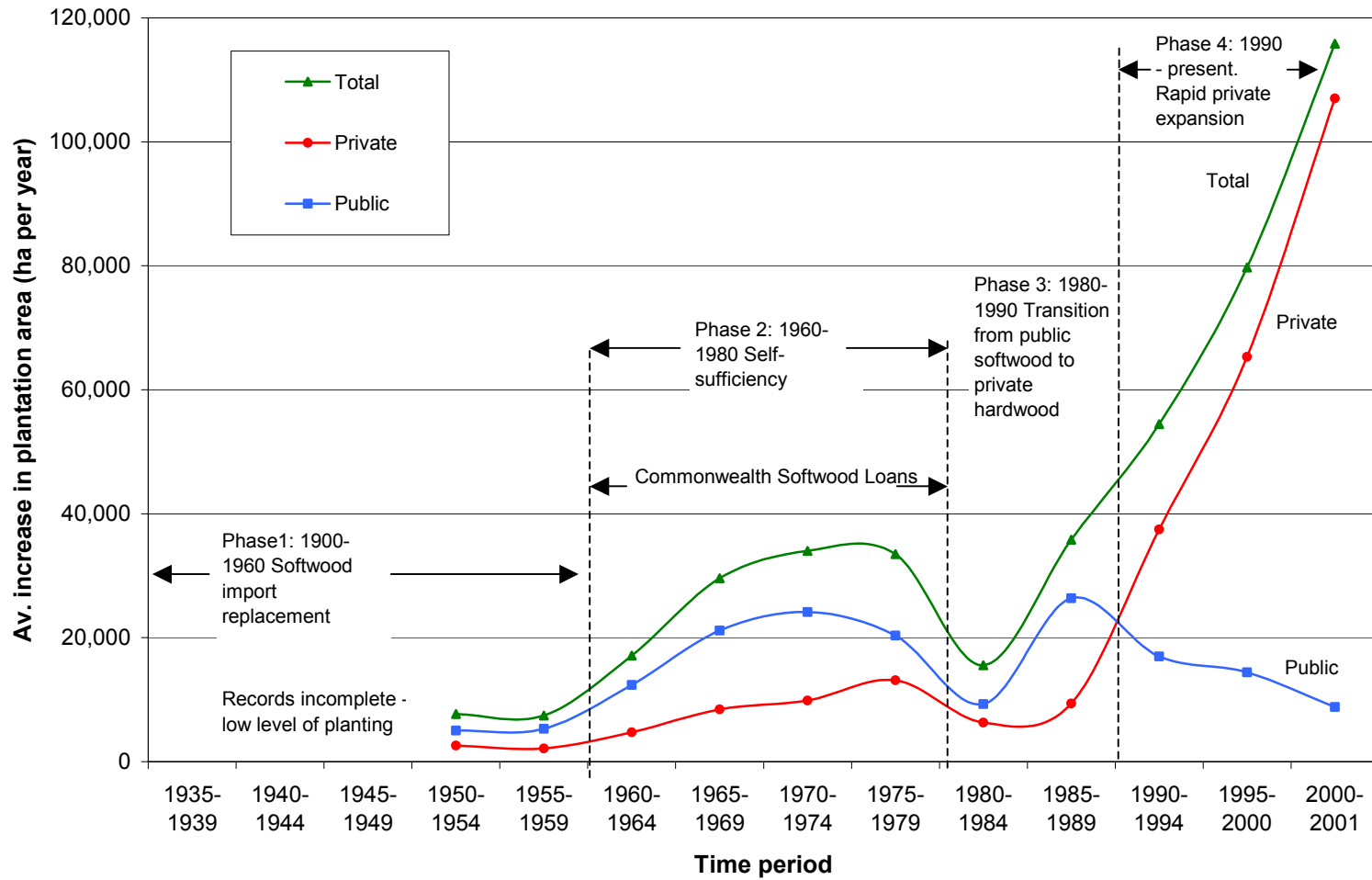
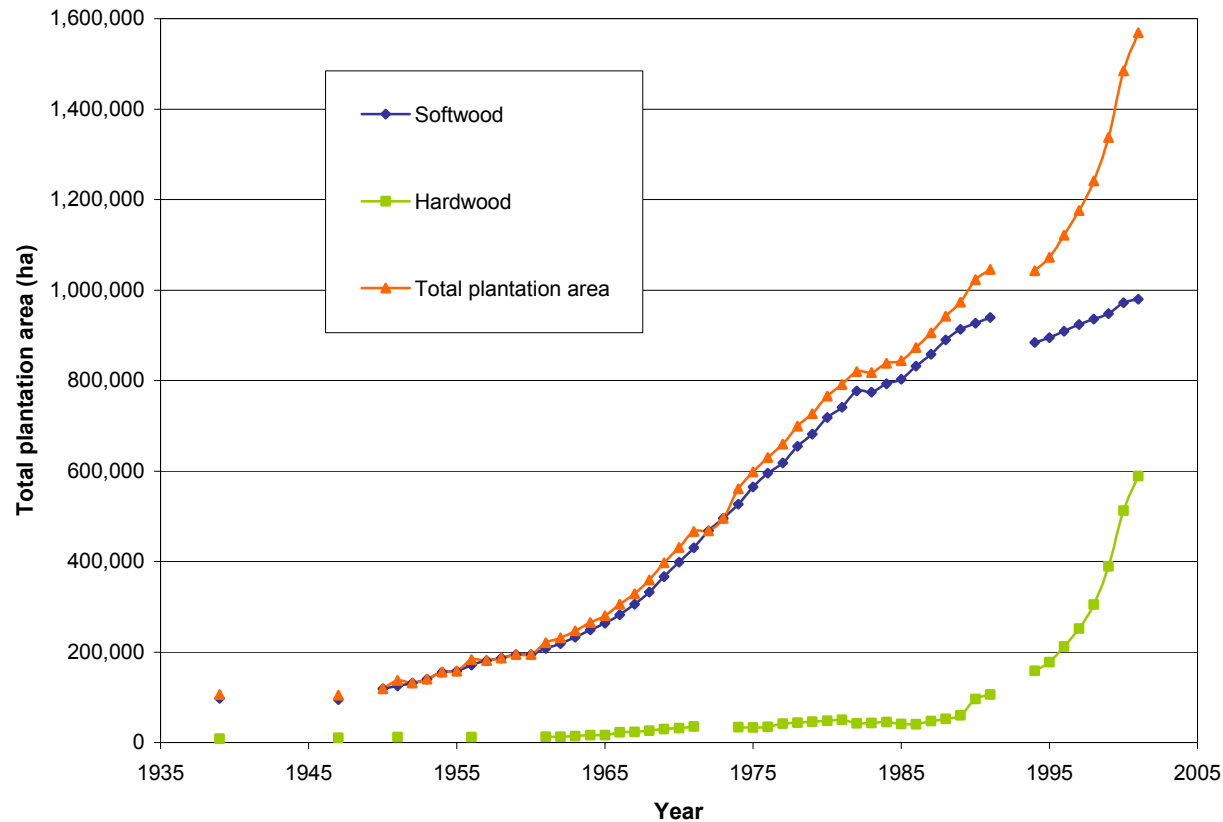


Figure 5: Australian forest plantation development over time showing softwood and hardwood areas[#]



[#] General notes for Figures 3-5:

1. Data has been derived from several different sources: the Commonwealth Forest and Timber Bureau (pre 1975), ABARE (1976 to 1991) and BRS National Plantation Inventory (since 1994). Methods used for collection of this data have changed over time. Hence there are some breaks in the data (eg early 1990s in Figures 3 and 5).
2. To make analysis of trends clearer, data was averaged over five year periods to minimise annual variability. Date points are mid way of each five year period.
3. Early records before 1950 are incomplete and only readily available for 1939 and 1947. Therefore, planting rates and trends in this early period cannot be quantified other than to say the general planting rate was low and probably less than a few thousand hectares per year.
4. For this study, areas reported for ownership other than "public" have been treated as "private". This includes all joint ventures, annuities and unknown ownership.
5. Large areas of plantation land were transferred from public to private in the late 1990s, through privatisation/corporatisation of State (public) plantations.

Annex 4: Table of areas of plantation standing as at September 2000 by age class and species

	Planting period	<i>E. globulus</i>	<i>E. pilularis</i> and <i>E. grandis</i>	<i>E. nitens</i>	<i>E. regnans</i>	<i>E. dunnii</i>	Minor Eucalypt spp.	Minor hardwood spp. (1)	Unidentified hardwood spp.	Total hardwood	<i>P. radiata</i>	<i>P. elliotii</i>	<i>P. pinaster</i>	<i>P. caribaea</i>	<i>Araucaria</i> spp.	Minor Pinus spp. (2)	Minor softwood spp.	Unidentified softwood spp.	Total soft wood	Mixed spp. (3/4)	Unknown	Total
Industrial plantations	Unknown	767	118	151	0	60	194	6	704	2,000	5,844	0	0	1,010	0	7	5	72	6,938	0	0	8,938
	<1940	2	56	0	9	0	1,033	122	222	1,445	1,594	8	845	22	1,072	1,250	258	18	5,067	0	30	6,543
	1940-44	2	16	0	0	0	7	17	74	117	1,533	0	131	0	968	25	45	31	2,733	0	0	2,850
	1945-49	3	72	0	149	0	70	8	46	348	2,054	38	178	3	2,547	29	13	4	4,866	0	1	5,215
	1950-54	0	64	0	8	0	16	14	183	285	3,420	503	1,665	4	4,239	206	11	28	10,076	0	6	10,367
	1955-59	3	121	0	27	0	67	17	154	389	2,901	608	1,260	363	3,446	172	15	18	8,784	0	4	9,176
	1960-64	1	589	0	829	0	144	7	108	1,678	10,762	577	2,552	1,037	4,628	386	432	10	20,384	0	2	22,064
	1965-69	43	2,658	1	1,960	7	675	7	183	5,534	40,817	3,947	5,808	1,822	6,474	799	1,399	107	61,173	0	12	66,720
	1970-74	267	7,121	0	2,692	0	686	4	350	11,119	89,797	14,381	4,253	2,902	6,914	1,266	1,088	397	120,998	0	14	132,131
	1975-79	94	2,445	4	2,263	0	1,139	3	798	6,746	107,500	20,950	4,237	8,008	4,821	290	76	2,107	147,988	0	0	154,734
	1980-84	924	444	131	1,246	0	2,880	1	2,928	8,554	112,412	7,490	3,435	15,613	3,028	1,278	14	3,135	146,405	1	16	154,975
	1985-89	7,310	352	1,069	1,901	35	1,929	5	12,245	24,846	122,026	4,544	1,972	20,801	2,641	1,692	51	3,319	157,045	4	177	182,072
	1990-94	37,145	712	5,823	767	87	1,569	32	23,431	69,566	80,533	8,262	1,026	4,823	2,155	1,079	3	4,416	102,298	18	33	171,915
	1995-99	135,497	6,384	7,859	117	4,535	1,865	7,163	29,447	192,867	98,627	15,230	7,389	1,149	3,519	1,670	10	2,900	130,494	334	163	323,858
	2000	116,187	4,997	3,783	43	2,640	313	3,527	12,131	143,621	14,885	2,219	4,729	70	17	150	0	500	22,571	2	5	166,200
Total	298,245	26,147	18,822	12,011	7,365	12,586	10,937	83,004	469,117	694,705	78,758	39,479	57,627	46,470	10,301	3,420	17,061	947,821	359	462	1,417,760	
Farm forestry	Unknown	1,188	2	3,601	0	0	1,011	8	377	6,186	5,156	0	0	0	0	0	0	422	5,578	1,577	0	13,341
	< 1970	33	0	0	0	0	17	5	45	100	1,296	0	3	0	1	0	0	175	1,476	29	0	1,605
	1970-74	60	0	0	20	0	5	0	0	85	2,446	0	0	0	0	0	0	141	2,587	0	0	2,672
	1975-79	0	0	0	115	0	170	0	13	298	3,506	0	22	50	0	0	0	268	3,845	69	0	4,212
	1980-84	127	0	300	35	0	204	9	43	718	2,765	0	3	150	31	2	2	439	3,391	53	0	4,162
	1985-89	500	8	1,151	53	0	58	20	76	1,865	2,970	0	0	20	0	0	0	127	3,116	175	0	5,156
	1990-94	3,566	43	1,900	16	4	364	66	285	6,243	1,495	0	0	0	25	0	0	124	1,644	1,736	5	9,628
	1995-99	7,455	198	2,176	24	6	4,658	736	241	15,495	1,818	0	0	0	62	0	0	330	2,210	3,985	943	22,632
	2000	170	32	174	1	0	2,086	25	27	2,516	386	0	107	0	0	0	0	5	498	560	0	3,575
	Total	13,099	283	9,302	264	10	8,574	868	1,106	33,506	21,838	0	135	220	118	2	2	2,029	24,344	8,186	948	66,983

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	Planting period	<i>E. globulus</i>	<i>E. pilularis</i> and <i>E. grandis</i>	<i>E. nitens</i>	<i>E. regnans</i>	<i>E. dunnii</i>	Minor Eucalypt spp.	Minor hardwood spp. (2)	Unidentified hardwood spp.	Total hardwood	<i>P. radiata</i>	<i>P. elliotii</i>	<i>P. pinaster</i>	<i>P. caribaea</i>	Araucaria spp.	Minor Pinus spp. (3)	Minor softwood spp.	Unidentified softwood spp.	Total soft wood	Mixed spp. (4)(5)	Unknown	Total
Total resource	Unknown	1,954	120	3,752	0	60	1,205	14	1,081	8,186	11,000	0	0	1,010	0	7	5	494	12,516	1,577	0	22,279
	<1940	2	56	0	9	0	1,033	122	222	1,445	1,594	8	845	22	1,072	1,250	258	18	5,067	0	30	6,543
	1940-44	2	16	0	0	0	7	17	74	117	1,533	0	131	0	968	25	45	31	2,733	0	0	2,850
	1945-49	3	72	0	149	0	70	8	46	348	2,054	38	178	3	2,547	29	13	4	4,866	0	1	5,215
	1950-54	0	64	0	8	0	16	14	183	285	3,420	503	1,665	4	4,239	206	11	28	10,076	0	6	10,367
	1955-59	3	121	0	27	0	67	17	154	389	2,901	608	1,260	363	3,446	172	15	18	8,784	0	4	9,176
	1960-64	1	589	0	829	0	144	7	108	1,678	10,762	577	2,552	1,037	4,628	386	432	10	20,384	0	2	22,064
	1965-69(5)	76	2,658	1	1,960	7	692	12	228	5,634	42,113	3,947	5,811	1,822	6,475	799	1,399	282	62,649	30	12	68,325
	1970-74	327	7,121	0	2,712	0	691	4	350	11,205	92,243	14,381	4,253	2,902	6,914	1,266	1,088	537	123,585	0	14	134,803
	1975-79	94	2,445	4	2,378	0	1,309	3	811	7,044	111,005	20,950	4,258	8,058	4,821	290	76	2,375	151,833	69	0	158,946
	1980-84	1,051	444	431	1,281	0	3,084	10	2,971	9,271	115,177	7,490	3,438	15,763	3,058	1,280	16	3,574	149,796	54	16	159,137
	1985-89	7,810	360	2,220	1,954	35	1,987	25	12,321	26,711	124,995	4,544	1,972	20,821	2,641	1,692	51	3,445	160,161	179	177	187,229
	1990-94	40,711	755	7,723	783	91	1,933	98	23,716	75,810	82,028	8,262	1,026	4,823	2,180	1,079	3	4,540	103,942	1,754	38	181,543
	1995-99	142,952	6,582	10,036	141	4,541	6,523	7,899	29,688	208,362	100,444	15,230	7,389	1,149	3,581	1,670	10	3,230	132,704	4,319	1,105	346,490
	2000	116,357	5,029	3,958	44	2,640	2,399	3,553	12,158	146,138	15,271	2,219	4,836	70	17	150	0	505	23,069	563	5	169,775
Grand Total		311,344	26,430	28,123	12,276	7,374	21,160	11,805	84,111	502,623	716,543	78,758	39,614	57,847	46,588	10,303	3,421	19,090	972,165	8,545	1,411	1,484,743

Note: Column and row totals may not add up due to rounding.

(1) Includes *Corymbia* and *Acacia* spp.

(2) Includes *P. taeda* and *P. ponderosa*.

(3) For industrial plantations, this component contains mixed hardwood and softwood species.

(4) For farm forestry, this component contains predominately group plantings of mixed hardwood species.

(5) Includes all farm forestry planted prior to 1970.

Annex 5: Summary of forest plantation incentives used in Australia

Date started / ended	Brief description of incentive	Initiated by: <ul style="list-style-type: none"> • Commonwealth • State • timber industry • private 	Target group (eg. State, timber industry, private landowners, other)	Direct / indirect funding ¹	Outcome / impacts ¹
Ongoing	Infrastructure provision (eg. roads and port facilities)	Commonwealth and State	Regional Australia and associated rural industries	Indirect	Attracts and facilitates investment, reduced cost of production, opens new areas to forestry
2002 - present	Tax equity package	Commonwealth	Timber industry	NA	A range of tax measures for current and future investors in plantations. Removed impediments will ensure forest plantations are treated equally with other rural industries, especially agriculture.
2002 - present	Natural Heritage Trust 2 (restructure of NHT 1 with additional funding)	Joint Commonwealth and State	States, timber industry, private and communities	Direct	More strategic focus on environmental services and improved natural resources management. Mainly assists farm forestry
2001 - present	Investor attractiveness framework eg. reduced interest rates, attractive exchange rate, incentives for large scale processors	Commonwealth	Timber industry	NA	Attracts and facilitates investment, reduced cost of production, improved competitiveness of operations
2000 - present	Australian Forestry Standard	Joint Commonwealth, States and industry	Timber industry	NA	Provides credibility of Australia's SFM practices and improved sale of forest products to global markets
2000 - present	Action Agenda for Forest and Wood Products	Commonwealth	Timber industry	NA	Promotion of demand side initiatives, encompassing such issues as value adding, expanding non-traditional forest and wood uses, and market and investment development

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Date started / ended	Brief description of incentive	Initiated by: <ul style="list-style-type: none"> • Commonwealth • State • timber industry • private 	Target group (eg. State, timber industry, private landowners, other)	Direct / indirect funding ¹	Outcome / impacts ¹
1998 - present	National Farm Forest Inventory	Joint Commonwealth, State and industry	Farm forestry	NA	Support the development of farm forestry and plantations generally by the collection, interpretation and dissemination of data, and assist to monitor the outcomes of the NFFP
1997 - present	Plantations 2020 Vision strategy	Joint Commonwealth, State and industry	Timber industry	NA	A trebling of Australia's forest plantation area by 2020 through removing impediments, encouraging value-adding and regional development, and contributing to environmental services and a market driven timber industry
1997 - 2001	Natural Heritage Trust 1	Joint Commonwealth and State	Commonwealth, States, timber industry, private and communities	Direct	Assists farm forestry programmes and contributes to broader environmental services by, in part, community involvement and stimulating additional investment in the natural environment in a sustainable manner
1996 - present	Removal of Export Controls on plantation sourced wood	Commonwealth	Timber industry	NA	Increased access to export markets, creating additional demand for forest products
1995 - present	Regional Forest Agreements	Commonwealth	State, timber industry and conservationists	Direct to State	Certainty of resource availability, comprehensive reserve system and sustainability
1995 - present	Establishment of networks to provide advice and streamline planning approvals (Regional Plantation Committees)	Commonwealth	Timber industry and private landowners	Indirect	Provide focal point in 17 regions to disseminate information and encourage plantation establishment and farm forestry
1995 - present	National Competition Policy	Joint Commonwealth and State	Timber industry	NA	Removal of unfair competitive advantage of State owned forest corporations

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Date started / ended	Brief description of incentive	Initiated by: <ul style="list-style-type: none"> • Commonwealth • State • timber industry • private 	Target group (eg. State, timber industry, private landowners, other)	Direct / indirect funding ¹	Outcome / impacts ¹
1995 - 1999	WAPIS	Commonwealth	Timber industry and processors	NA	Greater research and downstream processing, expansion of farm forestry and the plantation sector, and improved information on plantation areas and wood flows
1993 - present	Joint Venture Agroforestry programme	Commonwealth	Timber industry (including farm forestry)	Direct	Integrating sustainable and productive agroforestry within farming systems
1993 - present	National Plantation Inventory	Joint Commonwealth and State	Timber industry	NA	Support the <i>2020 Vision</i> , through provision of reliable and transparent quantitative data series to aid regional and national resource planning and guide investment in plantations and associated downstream industries
1992 - present	National Forest Policy Statement	Joint Commonwealth and State	Timber industry	NA	Integrated environmental sustainability and commercial production for Australia's public and private forests, with specific commitments to improve the management of commercial plantations
Early - mid 1990s	Numerous development incentives designed to attract and encourage new investors to forest plantation, maintain and improve quality and quantity of existing plantations, incentives for large scale processors	State and private (normally larger timber and paper companies)	Private landholders	Direct	Numerous - often specific according to who funded the incentive eg. encourage reforestation within reasonable distance of paper mills, establishment of private softwood and hardwood plantations, increased pulpwood supply, reestablishment of plantations in suitable lands after harvesting, growing commercial trees by farmers
1990 - present	Relaxation of foreign investment rules	Commonwealth	International timber industry	NA	Increased foreign investment in plantations with improved attractiveness to potential new investors

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Date started / ended	Brief description of incentive	Initiated by: <ul style="list-style-type: none"> • Commonwealth • State • timber industry • private 	Target group (eg. State, timber industry, private landowners, other)	Direct / indirect funding ¹	Outcome / impacts ¹
1990s - present	Dissemination of information for investors and landholders	Commonwealth, States and industry	Timber industry	NA	Greater awareness of government programmes, superior decision making, increased plantation rates and areas
1990	Grants to downstream processors	Commonwealth	States	Direct	Improved integrations and efficiency, value adding, greater market demand
1989 - present	Landcare: environmental issues an additional factor in planting trees	Joint Commonwealth and State	Timber industry and Conservationists	Direct	Enhanced environmental gains arising from community participation and strategic targeting of national environmental issues, greater public awareness and acceptance of forest management practices
1987 - 1989	National Afforestation Programme	Commonwealth	State and Private Forests	Direct	Contributed to a 6,000 hectare increase in hardwood plantations
1980 - present	Taxation deductibility arrangements for plantation establishment. Managed investment schemes, reduction of company tax rates	Commonwealth	Timber industry	Direct	Improved attractiveness of plantations as investments vehicles and viable alternative options for diversification
1966 - 1982	Commonwealth Softwood Loan Agreement Act	Commonwealth	State forest agencies	Direct	Large increase in softwood planting

Notes:

1. A quantitative assessment of each incentive and its costs was not possible, as many incentives were generic to the whole timber industry – not just plantations, they operated in union with other incentives and are unable to be isolated, impacts have changed over time and with the development of different aspects (eg. farm forestry), and individual costs are not available as many incentives were/are part of broader natural resource management and general government policies and programmes.

Annex 6: Case study – forest plantations in Western Australia

Western Australia provides a case study of the development of the plantation industry in regional Australia. The State's Forest Products Commission (FPC) manages more than 112,000 hectares of plantations and tree crops. By the year 2020, 800,000 hectares of tree crops could be established on Western Australian farms. Trial plantings to find conifers suitable for local conditions began in 1896. The first softwood plantations were established in the 1920s. The first hardwood plantations were of mallet (*Eucalyptus astringens*) and were planted between 1926 and 1962 to support the tannin industry. Mallet plantations now support an industry making tool handles.

The early softwood plantations were maritime pine (*Pinus pinaster*), established on sandy areas north of Perth. Decades of tree breeding in Western Australia have produced a tree that grows faster and straighter, producing valuable timber. Significant areas of Monterey pine (*Pinus radiata*) were established south of Perth.

During the late 1980s, the focus changed from large plantations on Crown land to developing tree crops on agricultural land. FPC developed the legal instruments and the scientific foundations for tree farming - the integration of trees with traditional agricultural practices on farms (see '[Integrating Tree Crops and Farming](#)' at the website: <http://www.fpc.wa.gov.au>).

The State's biggest environmental threat comes from dryland salinity, which stems from the use of annual crops and pasture in agricultural areas. Deep-rooted perennial plants are critical to redressing the water balance in these areas. There are 18 million hectares of cleared farm land in the south west. Scientists estimate that 30% of this needs to be returned to perennial vegetation if salinity is to be controlled. This provides an opportunity for new industries in rural areas as well as greenhouse sinks on a massive scale.

Commercially-driven reforestation

Only commercially driven tree planting can provide investment funding on the required scale, and, at the same time, provide continuing income to help farmers stay profitable and work the land. To encourage this, in 1988 and 1989 FPC planted about 4,000 hectares of *Eucalyptus globulus* on farms along the State's west and south coasts, demonstrating the potential of bluegum crops to landowners and investors.

This and other incentive schemes led to major overseas companies agreeing to invest in the project. FPC is contracted to manage three multi-million dollar projects. These projects have a combined planting target of at least 60,000 hectares, which will be established at a cost of more than \$150 million over 10 years. Another \$200 million will be paid to landowners over the life of the projects. At the end of the winter 1999 planting season, FPC had planted 25,000 hectares.

By the end of 1998, the State Government and private investors had established more than 100,000 hectares of bluegums across hundreds of south west properties. Altogether, about 125 million tree seedlings have been planted - one of the fastest planting rates in Australia.

New tree crops

In 1996, FPC launched the Maritime Pine Project, a major expansion of the tree crops on farms programme into the lower rainfall areas of the State and selected catchments on the coastal plain, as a significant component of the State Government's Salinity Action Plan. The first 700 hectares of maritime pine tree crops were planted on farms in 1996. Another 2,000 hectares were planted in 1997 and nearly 2,500 hectares in 1998. FPC's target is to plant 150,000 hectares of maritime pine in partnership with private landowners within a decade.

Another 15,000 hectares of mainly native trees will be planted under the Maritime Pine Project. Landowners can choose from more than 20 species of commercial and non-commercial trees, to plant in areas too rocky or too saline for pines, or where landowners prefer native trees for landscaping reasons. Extending the area of trees planted beyond those sites suitable for pines increases the Landcare benefits. It will also increase biodiversity and help create corridors of native vegetation, which in turn will benefit native wildlife.

In January 1999, FPC signed an agreement with British Petroleum marking the beginning of the first pilot study in Australia to examine the potential for planting tree crops as carbon sinks to offset greenhouse gas emissions. The crops will be planted on farmland in partnership with farmers. The pilot study is the basis for a project proposal involving the planting of maritime pine and Landcare species.

(Source: Western Australia's Forest Products Commission 2002)

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