



# Attracting Investment in Hardwood Sawlog Plantation Resources.

A Literature Review of Australian and Overseas Experience.

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Prepared for the Victorian Association of Forest Industries (VAFI) by:

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## **Background**

In order to strengthen the long term resource security of the Victorian hardwood sawmilling industry, the Victorian Association of Forest Industries (VAFI) is examining how industry can support the substantial and rapid expansion of hardwood sawlog plantations in Victoria. VAFI has therefore commissioned this study to examine sawlog plantation development models both in Australia and overseas to:

- highlight the success factors relevant to the Victorian situation; and
- develop recommendations for models to attract investment in hardwood sawlog plantations.

The study is being undertaken in three stages:

1. A literature search and benchmarking exercise on hardwood sawlog plantation models in Australia and overseas that highlights factors relevant to the Victorian hardwood industry;
2. An issues paper outlining those issues that need to be addressed; and
3. A final briefing paper providing recommendations on models and ways ahead.

## **Introduction**

Plantations have formed an important component of forest and wood products industries in numerous countries in both temperate and tropical climates over many centuries. Until the 20<sup>th</sup> century, plantations were generally established in small holdings on private land primarily for solid wood products and fuel. Over the past century, there has been substantial expansion of wood plantations in many parts of the world, often in countries that previously had either limited areas of natural forest or low levels of timber processing. Large industrial plantations have been developed and the re-establishment of forests on farms has created substantial new resources that now support major manufacturing and export industries.

While much recent plantation expansion has occurred in the southern hemisphere, many parts of Europe and Asia have also increased their forest resources. For the purposes of this study, a representative sample of countries has been reviewed to provide a broad overview of the factors supporting the expansion of plantations, with an emphasis on hardwood sawlog.

The countries/regions reviewed were:

1. Europe (Scandinavian region and Ireland)
2. South Africa
3. Brazil
4. Australia (Queensland and Victoria)

A number of publications and websites were reviewed and these are listed in the reference section at the end of the report. Discussions were also held with industry representatives involved in plantation development, including: Jaakko Poyry Consulting, Willmott Forests and Woollybutt, as well as state government officials in Queensland and Victoria.

## **Overview**

### **Overseas countries**

Many countries have initiated publicly-funded or subsidised plantation expansion to:

- overcome forecast shortages in building materials resulting from rapid community development (South Africa and Australia);
- meet their own wood requirements where natural forest reserves have been depleted by agricultural development (Scandinavia and Ireland);
- capitalise on perceived natural advantages in growing timber (Brazil);  
or a combination of these factors.

The following points outline the main factors behind the success of plantation expansion in these countries:

#### **Governments provide incentives and support**

1. Governments have always played a central role in initiating large scale plantation expansion and establishing the sustainability of related industry sectors. In some developing countries, governments have used incentive programs to jump-start the initial development of national forest industries.
2. Strategic, long-term government support has typically been provided through a range of fiscal, tax and trade assistance measures. These measures are applied over the complete supply chain involving establishment, production, processing and marketing of wood products. They are also extended to research and educational support.
3. Generally, the highest levels of government subsidy for forest plantations can be found in developed countries.
4. Even where an industry sector has successfully developed on a self-sustaining basis (possibly over 100 - 200 years), governments continue to support further growth for a range of socio-economic and environmental motives. In these countries, apart from tax relief measures, direct government assistance for plantation establishment is generally restricted to expanding the small scale farm forestry.

#### **Industry is strongly integrated with plantation establishment**

5. Strong integration of timber production with established processing industries and secure end-markets has been a significant factor in successful sawlog plantation expansion (Scandinavia and Brazil).
6. The initiative for continuing expansion of farm forestry plantations is generally provided by these industries, together with support services and funding assistance.
7. Where industry is well integrated with growers, there is a stronger focus on productivity and efficient utilisation of plantation products into pulp, panels, solid wood and biomass for energy production.

8. The establishment of a eucalyptus-based pulp and paper industry provided the impetus for development or expansion of hardwood sawlog plantations and milling in Brazil and South Africa. In Brazil, this occurred even though there was already an existing sawmilling industry based on natural forest resources. Early signs of a similar development can be seen in Tasmania with one prominent grower (Forest Enterprises Australia) now producing hardwood sawn timber on a small scale from Shining Gum plantations originally established for woodchip production.

#### **Community culture supportive of wood production industries**

9. Plantation industries are highly regarded in many countries with long histories of farm forestry as an important element in rural economies (Scandinavia and Europe). In regions without this history, plantations are generally well accepted where they can be readily integrated into existing agricultural systems and industry and government provide the necessary end-markets and support services.
10. The development of grower associations and networks has been an important element in consolidating resources and improving productivity in some countries (Scandinavia and Europe). Governments have channelled subsidies and services to growers through these associations.

#### **Industry development is a long term program**

11. National sawlog plantation industries have developed over extended periods, from many decades (South Africa, Brazil) to hundreds of years (Scandinavia and Europe). Recent attempts to rapidly expand sawlog plantation resources have required substantially greater support from governments by way of subsidies and tax relief (Ireland).

### **Australia**

The following points indicate the similarities or otherwise between the development of Australia's plantation industry compared to overseas countries:

1. The Australian softwood plantation industry has essentially followed the development sequence (involving direct government investment in plantations and strategic industry support) adopted in many overseas countries to establish a national sawlog plantation industry. However, due to the relative abundance of hardwood sawlogs being sourced from Australia's natural forests during this development phase, there was little imperative for the parallel establishment of hardwood sawlog plantations.
2. The Australian softwood industry is now in the mature phase of the development cycle with governments transferring public plantation assets to the private sector, thereby shifting the initiative for further industry development.
3. Because hardwood sawlog production is being phased out from Queensland's natural forests, substantial government funding is supporting the establishment of a new hardwood sawlog plantation resource to sustain the existing sawmilling industry. Importantly, a 25 year phase-out period has been set to achieve this resource supply transfer.
4. In Victoria, government fiscal support for farm forestry expansion suffers from a lack of strategic focus, funding and incentives, absence of plantation sawlog "champions" and low levels of landowner and community support. It is therefore currently unable to provide the impetus for rapid expansion of hardwood sawlog plantations.

## Literature Reviews

### Victoria (Hardwood Sawlog Plantations)

- The Victorian government has sought to encourage and facilitate hardwood sawlog plantation expansion during the past 8-9 years. However, despite the efforts of Regional Plantation Development Committees with fully funded staff and facilities located in Gippsland, the north east, central and south west Victoria, hardwood plantation expansion has continued to be dominated by corporate MIS players establishing Blue Gum for short export woodchip rotations.
- Accordingly, Victorian hardwood sawlog plantation expansion has been almost wholly reliant on government subsidies made available to selected landowners through taxpayer-funded programs such as FFORNE (1996-98), Plantations for Greenhouse (2000-01, 2003-05), and West RFA Sawlog Project / GroWest (2001-04).
- These programs offered landowner grants to assist establishment and included indirect financial assistance in site selection, planning, and operational supervision and monitoring.
- The approximate areas of plantation established under these programs since 1996 is estimated to be:
  - 1700 ha. planted throughout north east Victoria via FFORNE project (1996-98)
  - ~ 2000 ha. planted throughout Victoria via the Plantations for Greenhouse project (2000/01, 2003-05). Note: About a third of this was Radiata Pine.
  - About 800 ha. planted throughout western Victoria under the West RFA / GroWest projects (2001-05). About half of this was located in low rainfall areas.
- Overall, about 4,000 ha. of hardwood sawlog plantation has been established via government subsidised programs in small blocks (mostly 5 – 15 ha.) widely scattered throughout Victoria, including a substantial area in dry low productivity zones, although most are in moderate productivity zones. This equates to an average annual rate of establishment of about 500 hectares per year.
- In terms of future wood productivity, the effectiveness of this government expenditure is likely to be low because many plantations have been established on low productivity sites, often far from established processing industries. Even where plantations are productive, there is a high likelihood that many will never be harvested due to their aesthetic value when they reach millable size.
- An additional program to encourage landowners to grow sawlogs was the Farm Tree\$ Planning Service (1999 – 2004) which offered landowners subsidised planning services through property-specific advice provided by accredited forestry consultants.
- Government and industry have generally demonstrated a reluctance to develop partnerships in pursuing commercial sawlog plantation developments. Thus far, the primary focus has been on growing trees rather than establishing an integrated industry.
- Current tax relief measures are unsupportive of long rotation sawlog plantations and in some areas planning impediments discourage the establishment of plantations. Commitments are also lacking on the introduction of incentives such as carbon trading, environmental services payments and supportive planning regulation, although this is likely to be addressed in the future.

## Queensland

- In 1999, the Queensland government abandoned the partially-completed South East Queensland RFA process in favour of an agreement with a range of conservation groups and the hardwood timber industry. Known as the SEQ Forest Agreement, it committed the government to a phase out of sawmilling from south east Queensland's public native forests over a 25 year period, and an immediate program to fund the establishment of a replacement hardwood plantation sawlog resource.
- The public native forests of south east Queensland were at the time, producing about 80,000 m<sup>3</sup> of hardwood sawlog annually, so only a relatively small replacement plantation estate was required. Given 25 years to grow to millable size at an assumed average sawlog productivity of 12 m<sup>3</sup>/ha./annum (as per DPI Forestry), a mature estate of only about 6700 ha. would be required to sustainably yield 80,000 m<sup>3</sup> per annum.
- By the end of 2003, a total of 6,165 ha. of hardwood plantation had been established by the Queensland government, with a further \$30 million being recently committed to establish an additional 5,000 ha. by 2009. Although the required area of plantation has already been achieved, the government is continuing to fund hardwood plantation expansion as an investment in the future, whilst they consider the fate of harvesting in the western Queensland public native forests that currently yield some 200,000 m<sup>3</sup> of sawlog per annum.
- Plantations are funded by the government under three options – land rental (about 70% of plantations), land purchase (about 25-30%), and crop sharing with landowners (very small demand).
- Average land rentals are relatively low – averaging \$100 /ha./annum for land worth between \$2,500 – 3,000 /ha. (ie. about 3-4% of land value cf. with the accepted industry standard of 5%).
- The Queensland model is one that should facilitate rapid plantation expansion, but is wholly funded at the taxpayer's expense. DPI Forestry's Hardwoods Program Manager is adamant that the model is commercially viable on the basis of the assumed productivity being realised, (which at this early stage is questionable), and the current value of hardwood sawlogs. Low rental payments, and commercial thinning will assist viability, but the significant early costs of pruning and non-commercial thinning would mitigate against it.
- It could be that the SE Queensland hardwood plantation expansion program is viable because its costs are absorbed in the wider timber production activities of DPI Forestry, which is the agency required to meet a target rate of return on investment (not specified). This would need to factor in the ongoing land rental commitment of \$1M./year for every 10,000 ha. of plantation (based on the average rent of \$100/ha.).

## Brazil

- Brazil has 4.2 million hectares of plantation, with eucalyptus plantations representing 65% (2.7 million hectares). Favourable climatic conditions (relatively high temperatures in most of the country and high precipitation rates) and good soils make the country highly suitable for biomass production, including sugar cane (Brazil is the world's largest producer) and short rotation forest plantations.
- Fiscal incentives were important factors in the development of a pulp and paper industry and a charcoal-based iron and steel industry in Brazil. The growth of the pulp and paper industry, however,

was probably the single most significant factor that promoted the development of large-scale eucalypt plantations in the 1970's.

- Sawmilling of plantation-sourced eucalypt logs is increasing. Aracruz Cellulose owns 247,000 ha of eucalypt plantations and is the world's leading producer of bleached eucalyptus pulp. Aracruz also produces solid wood furniture, flooring and other products under the *Lyptus* name and sold through Weyerhaeuser. Annual production is increasing from 44,000 to 100,000 m<sup>3</sup>. Some of these products are now being marketed in Australia.
- Agroforestry is of growing importance in Brazil, accounting for some 20% of the total plantation area, with some forestry companies expecting to increase this to 50%. In the mid-1980's with the removal of federal tax incentives and objections by environmentalists to large-scale plantations, forestry companies began contracting with private farmers. Aracruz operates a Forestry Partners Program with some 58,000 ha under contract to 2,600 landowners.
- Typically, forestry companies provide materials and technical advice for plantation establishment and contract to purchase harvested materials for an agreed price that incorporates repayment for the initial inputs and services. A small proportion of the plantation production, including harvesting residues, can be preserved by farmers for their own use.
- Brazil's experience indicates that successful plantation establishment efforts have direct links to an existing or planned end user. Successful development of large scale plantation initially requires government support through funding and/or tax relief and educational and research institutions. Brazil has used a combination of subsidies and taxation incentives to encourage forest plantation establishment in the past. Continuing growth in plantations now requires less direct involvement of government as private companies take on the investment and development role.

### South Africa

- South Africa ranks in the top 10 of developing countries in terms of forest plantation development, with 1.35 million hectares of plantations (almost all industrial plantations). Eucalyptus species comprise some 39% of the plantation area and provides the feedstock for pulp and paper manufacture, chip exports and some sawmilling.
- Due to the limited area of natural local forest resources and high demand for construction timber and mining supports, state-owned plantations were first established in the 19<sup>th</sup> century. Following WW1, governments continued rapid afforestation with increased private sector participation in the 1950's. A system of incentives and guaranteed prices (fixed by the state) provided ideal conditions for the industry's development.
- This period also saw the emergence of the pulp and paper industry in South Africa with major industry players – such as Sappi and Mondi – becoming established. While much of the pace and initiative for plantation development came from the private sector, the state continued to play a central role in the industry's development. Sawmillers enjoyed the dual benefits of low cost raw material provided from state run plantations and guaranteed minimum prices for their products ensured through a government approved timber pricing mechanism. Governments also provided significant incentives to investment in processing facilities in the form of subsidized and guaranteed loans.
- Through to 1994, rapid expansion of the plantation estate permitted significant development of new pulp and paper capacity. Government assistance aimed at developing the sector included tax incentives, an

export incentive scheme and import tariffs on various pulp, paper and board products. These incentives contributed significantly to the rapid expansion of the pulp and paper industry during the 70's and 80's. All have now been removed leaving the industry to compete on level terms with international processors.

- This period also saw, firstly, an increasing level of concentration and vertical integration within the industry, particularly pulp and paper and secondly, the industry emerge as a significant international player.
- By the time of South Africa's first democratic elections in 1994, the forest industry had emerged, in a comparatively short time span, as a successful sector making a significant contribution to the national economy. This success was underpinned by a number of key factors, specifically:
  1. the initial direct role played by the government in creating forest resources, which formed the basis for the subsequent development of processing industries.
  2. supportive government policy which emphasised self-sufficiency and industrial development through import controls and export incentives.
  3. the availability of suitable land to permit the rapid expansion of plantations yielding high-quality wood at internationally competitive cost.
  4. strong local demand for forest products combined with limited overseas competition due to early protection (essentially of the saw-milling industry) and the distance from competitors.
- The South African hardwood sawn timber industry processes 260,000 m<sup>3</sup>/yr (predominantly eucalypts) to produce a range of sawn hardwood products. The market is dominated by Hans Merensky Holdings, producing 70% of all hardwood timber.

### Scandinavian and European countries

- The private forest resource in Scandinavian and European countries is largely based on the aggregation of small farm forestry plantings established on cleared farming land with the prolonged assistance of government landowner subsidies, in some countries extending back for 200 years.
- The development of this resource arose from concerns about over-clearing of forest for agriculture, eventually reaching a point where countries were unable to meet their wood requirements, thereby sparking government action (ie. Denmark had only 2% forest cover in 1805 – now 12%; Finland had only 25% forest cover in 1907 – now about 70%). Another interesting case is Hungary which lost 84% of its high quality forests due to the Treaty of Versailles signed after WW1 – but has since planted 300,000 ha. of Black Locust plantation.
- It is difficult to now determine the level of government subsidisation of initial farm forest establishment in European and Scandinavian countries. However EU countries are still offering incentives to growers of 25 Euro/ha./year (~\$40) to off-set long rotation management costs. In some countries such as Germany, there are also incentives or cost share arrangements to assist in covering road maintenance, thinning and harvesting. In Finland the use of forestry residues for biomass energy is encouraged by taxing fossil fuel-derived energy, and subsidizing the costs of forest thinning (~\$3/m<sup>3</sup>), transport of thinnings to processing plants (~\$11/m<sup>3</sup>), and the cost of chipping (~\$3/m<sup>3</sup>).
- European and Scandinavian countries generally have a much healthier cultural attitude to forest management and use, unlike in Australia where decades of anti-logging campaigning have created a popular culture that has marginalised the forestry profession and the hardwood timber industry to an

extent that could impact on the ability to manage mature private plantations for timber, as would eventually be required.

## Ireland

- Ireland is the least forested country in the EU, reflecting past prolonged clearing for agriculture and later forest exploitation by occupying English forces.
- A concerted program of reforestation began in western Ireland in the early 1980's, mostly on low productivity sites including peat bogs. Plantings are on private land and are stimulated by large EU and Irish government subsidies.
- The 1996 Irish Forestry Strategy set the goal of doubling the country's forest cover by 2035, through an ambitious planting target of 20,000 ha. per annum.
- The planting target was to be met by private land plantings stimulated by government grants of up to 75% of establishment costs to landowners, communities, and the State Forestry Agency, Coillte. Additional incentives were provided in the form of exemptions from income tax, inheritance tax, and capital gains.
- Despite the level of government assistance, only 55% of the planting target was met during the period 1996 – 99, and a similar level of under performance has continued through to the present time.
- In response, the Irish government has recently (during 2004) revamped its grants scheme – increasing grants by an average of a third in an attempt to increase landowner uptake.
- With EU and Irish government support, 15,000 landowners had received planting subsidies as of 2002, and up to 20 small grower cooperatives have been established in western Ireland – each with about 150 members, each with an average planted area of 6 hectares.

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- Brian Wall, Jaakko Poyry Consulting
- David Smith, Senior Executive, Forestry Operations, Willmott Plantations Pty Ltd.
- Jon Lambert, Director, Woollybutt Pty Ltd

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