

The **Allen Consulting** Group

Victoria's Forest Industries

An Economic Impact Assessment

March 2006

Report to the Victorian Association of Forest Industries

The Allen Consulting Group

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Abbreviations

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACG	The Allen Consulting Group
AFS	Australian Forestry Standard
ANZSIC	Australia and New Zealand Standard Industry Classification
CGE	Computable General Equilibrium
COPS	Centre of Policy Studies at Monash University
DSE	Dept. of Sustainability and Environment
EMS	Environmental Management System
FEA	Forest Enterprises Australia
FFORNE	Farm Forest North East
FSC	Forest Stewardship Council
FWPRDC	Forest and Wood Products Research and Dev't Corporation
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GRP	Gross Regional Product
GSP	Gross State Product
MIS	Managed Investment Scheme
MMRF	Monash Multi-Regional Forecasting model
NEMMCO	National Electricity Market Management Company
NFPS	National Forest Policy Statement
NPV	Net Present Value
PAM	Pricing and Allocation Model
R&D	Research and Development
RFA	Regional Forest Agreement
TIS	Timber Industry Strategy
TPC	Timber Promotion Council
VAFI	Victorian Association of Forest Industries

Findings

The Victorian forests industry provides an important contribution to the State's economy, particularly in non-metropolitan regions where alternative employment opportunities can be scarce.

The industry, however, has been subject to major adjustment pressures in the last two decades as governments have made far-reaching policy changes designed to reserve more of the forest estate. This has meant that the area available for harvesting has been greatly reduced over time, thereby forcing the industry to rationalise its operations both by means of the exit of a significant number of firms and a movement up the value chain by the surviving companies.

While this may be quite appropriate when undertaken on a scientific basis in pursuit of legitimate sustainability objectives, the fact is that the goal posts for investors in the industry have been regularly shifted. Only shortly after having been subject to the lengthy and demanding regional forest agreement process, which promised resource security to the industry within the context of ecological sustainability, the sector faced a further reduction of around 35 per cent in the forest resource available for harvesting. This was due mainly to the *Our Forests, Our Future* policy change, but also by the sudden decision before the 2002 election to terminate logging in the Otways.

In light of these pressures, there is little wonder that the industry feels that it is constantly under threat. There is little indication that it is valued by government and by the community as a whole, despite continuing high demand for forest products. This, together with continuing uncertainty over the future resource, does not foster a climate that encourages investment.

Yet the industry generates a product for which there is a significant demand. It also produces it in a sustainable way, while providing increasingly skilled employment opportunities for regional communities. If the industry is allowed to decline further, the demand will be met increasingly from imported timber, some of which is not subject to the same stringent sustainability requirements as in Victoria.

In order to provide a climate in which sustainable investment in the industry is encouraged in the future, governments need to commit to providing greater policy certainty and no further shifting of the goal posts in the medium term. Licences need to have an average term that is longer than the pay-back period of necessary investments in the industry. If the harvesting of old growth forests in Gippsland is to be terminated, the government should commit to taking up the option of undertaking swaps with other appropriate areas that are currently locked up. While the auction system provides an appropriate means of allocating the resource in the future, it is not clear that the recent increase in charges for timber allocated under the existing licence system reflects market conditions.

With a more supportive policy framework, however, the industry can have a bright future. It is continuing to increase the value that it adds to Victoria's forest resources with a range of high quality and sophisticated products. This will be of benefit to the Victorian community. Investors in the industry deserve the support of the State government in providing a greater measure of policy certainty to underpin its future development.

Executive summary

Introduction

In 2002, the Victorian Government released a policy statement — *Our Forest Our Future* — that resulted in the establishment of new legislation to guide how public forestry resources are to be used by the Victorian community.¹ As part of this policy, the government initiated a licence buyback scheme to enable a 31 per cent reduction of harvesting in public native forests. The Victorian Government also established VicForests, a new state-owned enterprise, to manage the sale of the forest resource allocated for harvesting within Victoria.

VicForests will move to a market-based sawlog pricing and allocation system progressively during the second half of 2005, with a view to moving to a fully contestable market for sawlogs within 10 years. Existing supply licences held by current industry participants will not be renewed when they expire, although transitional arrangements to move to the new contestable system have been put in place.

In light of these recent reforms, the Victorian Association of Forests Industries (VAFI) has engaged The Allen Consulting Group to undertake an economic analysis of Victoria's forest industries, with a particular focus on the native hardwood sawlog market. The analysis focuses on the potential future economic impact of the industries, and also considers broader benefits that can be derived from the forest sector, as well as policy issues including resource allocation, security of supply, and the role of plantations in supplementing native forest resource supply going forward.

The project methodology consisted of three main tasks:

- *consultations* — the project team consulted with a range of key stakeholders during the course the project in order to ascertain their views on the challenges and policy issues facing Victoria's forest industries in coming years;
- *modelling* — the core of the analysis required us to undertake economic modelling to evaluate the impact of the Victorian forest industries throughout the economy, including on other industries and regional economies. This modelling was undertaken by the Centre of Policy Studies (COPS) at Monash University using the MMRF-Green dynamic general equilibrium model; and
- *analysis and development of recommendations* — the information collected via the consultations and economic modelling, together with a review of existing literature — was used to develop a range of conclusions about future policy issues for Victoria's forest industries.

¹ Department of Natural Resources and Environment 2002, *Our Forests, Our Future: Balancing Communities, Jobs and the Environment*, available at <http://www.dse.vic.gov.au>

Economic impact of Victoria's forest industries

The MMRF–Green model is recognised as one of the leading macroeconomic models in Australia. It has been used extensively for high profile public policy modelling projects — for example in relation to policy changes such as tariff reductions, the introduction of national competition policy and workplace deregulation — and clients have included both Commonwealth and State government departments as well as major private enterprises. Moreover, the Productivity Commission has concluded that MMRF–Green has a number of advantages relative to alternative models — particularly around the modelling of energy and environmental policy issues — and that the model is highly credible and amenable to peer review.²

The model was used to assess the impact of potential future growth in the two major components of forestry in Victoria — namely forest resource supply and wood products manufacturing — on future economic outcomes for the State. An industry growth scenario was modelled which comprised 10 per cent growth in the value of output from both the forestry and wood products industries relative to the model's base case projection between the years 2006 and 2020. This increase in growth was imposed linearly across the 15 years of the projection period so that the cumulative impact of the scenario is a 10 per cent increase in the value of each output in each of the two sectors in 2020.

The industry growth scenario acts to increase both the supply of forestry resource, and the demand for the wood products derived from this resource. On this basis, the main impacts of the scenario will be derived from increases in economic activity in both the forest harvesting and the processing sectors of Victoria's forest industries. This is the key mechanism driving the following key economic results:

- *GSP* — the industry growth scenario results in an annual increase in Victoria's gross state product (GSP) — relative to what would otherwise have been the case — in 2050 of over \$300m in 2020 (figure ES.1). In net present value (NPV) terms, the annual increases in GDP generated by growth in the forest industries over the entire 15-year forecast period are equivalent to \$1.2 billion in today's dollars (using a real discount rate of 5 per cent³).
- *Consumption and investment* — in line with the increase in GSP, Victoria's consumption and investment levels also increase relative to the base case as a result of the extra growth in forestry and wood products, by \$85 million and \$173 million respectively in 2020.
- *Employment* — the 10 per cent growth in both the forestry and wood products industries results in an increase in Victorian jobs — relative to the base case — of over 1 200 jobs in 2020.
 - Because of the concentration of the wood products industry in the Melbourne metropolitan region, the majority of new jobs created (805 out of a total of 1290) are in Melbourne. In non-metropolitan Victoria, the Barwon, Goulburn, Ovens Murray and Gippsland regions experience the most substantial employment growth.

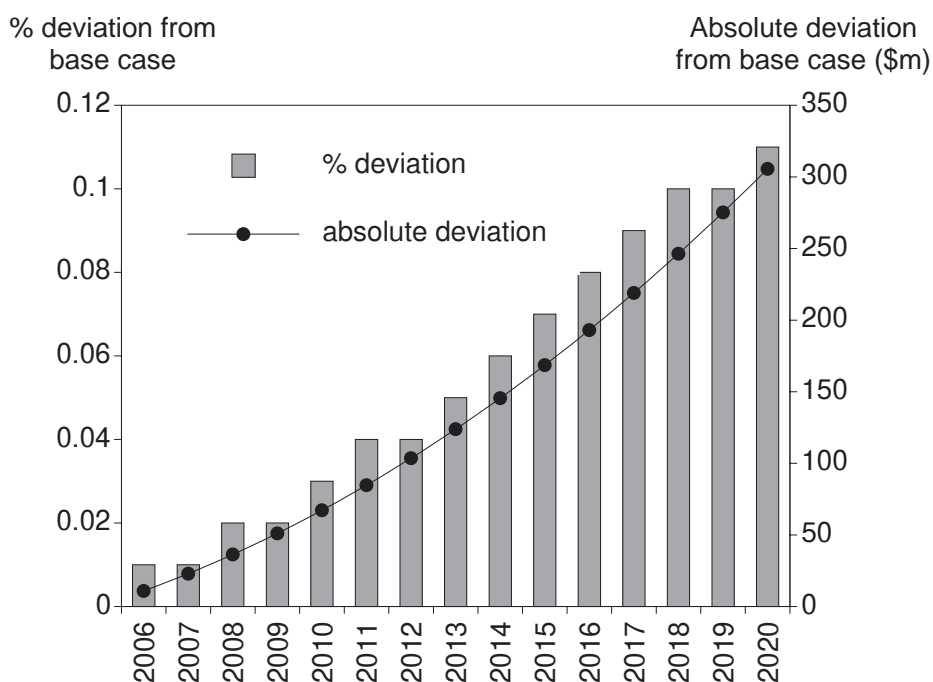
² Productivity Commission 2001, *CGE Models for Evaluating Domestic Greenhouse Policies in Australia: A Comparative Analysis*, April.

³ This discount rate is in real terms and as such is relatively conservative in comparison to alternative long-term interest rate projections.

- On an industry sector basis, the number of jobs in forestry and wood products increases by around 3 per cent in 2020 relative to the number of jobs that would have existed under the base case. This equates to 99 jobs in the forestry sector and 447 jobs in the wood products sector.
- *GRP* — the regions where gross regional product (GRP) experiences the greatest increases relative to the base case are Ovens Murray (0.3 per cent), the two Gippsland regions (0.24 per cent each) and the Western District (0.21 per cent). In absolute terms, the Melbourne region is the biggest ‘winner’ under the industry growth scenario, with an increase in GRP relative to the base case of \$170 million in 2020.
- *Industry impacts* — industries other than forestry and wood products to experience substantial growth in output are the manufacturing, construction services and cement sectors. These industries benefit from their direct links with the forest products industry.

Figure ES.1

GROSS STATE PRODUCT UNDER THE GROWTH SCENARIO: VICTORIA



Source: MMRF–Green

Broader benefits of Victoria's forest industries

As well as the substantial economic benefits for Victoria of strong and expanding forest industries, there is range of related benefits for Victoria in promoting the development of the hardwood timber industry.

Sustainable forest resource management

Managed appropriately, the forestry sector can make a major contribution to achieving environmental objectives for the State. This outcome is underpinned by:

- DSE's application of the concept of 'sustainable yield' in its timber resource planning process which helps to ensure that harvesting levels are consistent with sustainability principles;
- a range of additional forest management frameworks — such as the Forest Management Plans introduced under the Timber Industry Strategy (TIS) in 1986, the Code of Forest Practices for Forest Management introduced in 1989 — that work to ensure that forestry activity acts as a key component of broader sustainable forest resource management.⁴ In particular in recent years, changes to forest management techniques have vastly improved the utilisation of those resources that are harvested. The net impact has been to increase utilisation per hectare harvested at the same time as the area available for harvesting has fallen; and
- the inherent environmental advantages of hardwood timbers relative to major alternatives in the construction industry such as steel, concrete or aluminium, in particular in relation to the embodied energy component and greenhouse footprint of alternative construction materials.⁵

Import replacement

Victoria currently has a relatively high trade deficit in sawn timber (around \$140m). Imports of sawn timber are expected to increase further as a consequence of reduced sawlog supply from native forests and the inability of plantations to fill the supply shortfall.

While trade deficits alone do not necessarily signify a policy issue, where imports are currently sourced from unsustainable or illegal sources — and a recent report for the Department of Agriculture, Fisheries and Forestry suggest this is the case, at least to some degree — growing Victoria's domestic timber industry may help to promote the overall sustainability of the global forestry sector as a whole. Third party certification will be important in this context. Government, as well as some parts of industry, have demonstrated a commitment to certification, although much progress remains to be made in this area. It should be a priority for both government and the industry itself in the immediate future.

Value adding

As Victoria's forestry resource has contracted in recent years, the hardwood timber industry has responded by moving up the value chain, focusing more strongly on using the limited hardwood resource to produce higher value timber products.

- The value of the Victorian sawn hardwood industry is expected to be around \$246m in 2005 — an increase of \$36m in five years despite the fact that resource volume has fallen by around 40 per cent.⁶
- In value terms, appearance grade products — which represent the highest value-add in the industry — now account for around 57 per cent of total

⁴ G. Gooding 2005, *Continuous Improvement in the Protection of Environmental Values in Public Native Forests in Victoria Since the 1960s*, unpublished draft, commissioned by VAFI.

⁵ A. Woodard and B. Iskra 2005, *The Environmental Benefits of Sustainable Victorian Native Forest Timbers*, prepared for VAFI, October 2005.

⁶ Unpublished information provided by VAFI, October 2005.

market value (or \$140m), while low value-added green and sub-green structural products account for just 11 per cent.⁷

Discussions with industry stakeholders suggest that there may be a need for further rationalisation of the timber products industry in order to facilitate value-adding going forward, particularly in relation to those very small timber businesses currently operating at the lower end of the value chain. Similarly, enhanced cooperation between industry players is likely to be needed in order to capitalise fully on opportunities in appearance grade timber markets, both within Australia and overseas.

Policy issues

Pricing and allocation of the hardwood resource

In principle, a competitive, market-based auction system for pricing and allocation of Victoria's native timber resource — such as the pricing and allocation model (PAM) currently being implemented by VicForests — is the most economically efficient resource allocation model. It is an appropriate way to ration a scarce resource and ensure that it is correctly valued by the market. Moreover, by ensuring the resource is priced accurately, the system is likely to promote continued moves towards greater value adding, and further restructuring and rationalisation of the industry.

There does however appear to be an issue around the term of contracts available under the new system. The maximum contract term will be ten years, with VicForests aiming for an average term around seven years (compared to a maximum term currently of fifteen years). Notably however, some in the industry estimate that the average contract term will be significantly shorter than this, and that contract terms will be insufficient to provide the policy certainty required for investment.

Because VicForests is provided with 10-year absolute certainty on resource allocation from DSE — as well as the potential for some 15-year certainty (on the basis that it is unlikely the entire resource up for review would be withdrawn following a five-yearly review process) — it seems reasonable to suggest that some 15-year timber contracts could be auctioned.

Nevertheless it is also worth noting that the new system will arguably already provide industry with greater resource security than before, because under the previous system, the Minister was not bound to provide any notice of changes to the size of available timber resource. Under the guidelines contained in the new Allocation Order, ten years' notice must be provided in advance of any changes.

Resource security

The issue of resource security is a critical one for stakeholders — without adequate resource security, industry participants will be unwilling and unable to make the capital investments required to continue to increase their focus on greater value adding.

The industry has been faced with policy uncertainty since at least the early 1980s. The Regional Forest Agreement process was designed to provide resource security for the industry on the basis of a sustainable approach to harvesting native forests

⁷ Ibid.

on public land. Within two years of this highly demanding RFA process being completed, a substantial reduction in the area available for harvesting was announced by the government. In the same year, 2002, the Government's decision at the last State election to stop harvesting in the Otways came out of the blue. The impact of these two decisions was to reduce the area available for harvesting by about 35 per cent relative to the RFA outcomes.

According to the industry, uncertainty in relation to the allocation of land for harvest is continuing.⁸ Parallel resource estimates and modelling conducted by DSE and VicForests have resulted in differing estimated resource volumes that have the potential to negatively impact on Victoria's forest industries. The *Our Forests Our Future* policy provided for a sustainable yield of 575 000m³. However this has not yet been delivered to industry with the 2005–06 sawlog supply currently only 530 000m³. Further, VicForests current modelling provides for an additional progressive annual decline in estimated sawlog availability between 2005–06 and 2015–16. This dissonance between the resource estimates calculated by DSE and VicForests is another major source of uncertainty for industry.

There appear to be two further threats to future resource security in the industry (in addition to the relationship between licence term and resource security addressed above):

- The possibility of ending the harvesting of *old growth forests*. This issue is of particular significance in East Gippsland, where old growth accounts for around 40 per cent of the total resource.

In the first instance, any reduction in the availability of old growth resource for harvesting should be dealt with under the provisions for 'swaps' in Victoria's regional forest agreements (RFAs) — that is, if existing harvestable areas are subsequently reserved, additional suitable land should be made available for the industry from within Victoria's non-harvestable land area.

It would also be prudent for industry to develop strategies for both improving the efficiency with which they use the existing old growth resource, and look to alternative sources of supply. In this context, there are a number of alternative forest management techniques — such as thinning of regrowth, improved utilisation and use of innovative harvesting processes— that could be employed. A State government project, supported by industry, has been set in train to address this issue.⁹

- The possibility that harvesting will be banned in *water catchment areas* in the future. However scientific evidence, as well as the water usage implications of alternative sources of timber for Victoria, is not clear with some expert opinion suggesting that the continued selective use of catchment areas for timber harvesting is justified.¹⁰

Role of plantations

The growth in the forest resource modelled for the purpose of the illustrative scenario in this report will need to be derived from a number of sources, including

⁸ All information in relation to shortfalls in supply projections provided by VAFI.

⁹ G. Gooding 2005, unpublished background notes provided by VAFI.

¹⁰ Department of Sustainability and Environment 2003, *Producing Timber and Water for Melbourne*, Forest Management fact sheet, available at <http://www.dse.vic.gov.au/dse/nrenfor.nsf/childdocs>.

increased establishment of plantations (noting the limitations on this because of the lead time required to obtain sawlogs from plantation timber). More particularly, in regards to the hardwood sawlog sector, while improved forest management techniques and better utilisation of existing sawlog resources can play some role in stimulating growth, it is almost certain that some part of any future growth in the supply of timber for hardwood sawlogs in Victoria will need to come from plantations managed specifically for this purpose.

Private forests represent another hitherto untapped resource in Victoria. As long as standards are congruent with those for public forests, they could provide a significant long-term resource. A project to identify such resources and propose a policy approach would be useful.

One of the by-products of restructuring currently underway in Victoria's forest sector should be stronger market signals to investors about the benefits of investing in plantations for sawlog markets. However in addition — given some market failures and the possibility that timber imports are sourced from illegal or unsustainable sources — there is also likely to be a role for government in creating a policy environment conducive to investment in long-rotation hardwood timber plantations.

The Commonwealth's current review of managed investment scheme (MIS) incentives for short rotation plantations can play a role in stimulating investment in hardwood sawlog plantations. A key issue in altering the incentives for short-term plantations in favour of sawn timber will be a need to ensure that plantations are still able to compete on economic grounds for available land.

Chapter 1

Introduction and background

1.1 The project

Over the past two decades, there have been significant structural changes to forest industries around Australia, including in Victoria. The native hardwood industry in particular has undergone rationalisation and downsizing, largely as a result of forest areas being set aside for conservation and other non-timber uses.

In 2002, the Victorian Government released a policy statement — *Our Forest Our Future* — that subsequently resulted in the establishment of new legislation to guide how public forestry resources are to be used by the Victorian community.¹¹ As part of this policy, the government initiated a licence buyback scheme to enable a 31 per cent reduction of harvesting in public native forests. The Victorian Government has also established VicForests, a new state-owned enterprise, to manage the sale of the forest resource allocated for harvesting within Victoria.

VicForests will move to a market-based sawlog pricing and allocation system progressively during the second half of 2005, with a view to moving to a fully contestable market for sawlogs within 10 years — the entire stock of native forest timber in 2015–16 will be auctioned. Existing supply licences held by current industry participants will not be renewed when they expire, although transitional arrangements to move to the new contestable system have been put in place.

In light of these events, the Victorian Association of Forests Industries (VAFI) engaged the Allen Consulting Group to undertake an economic analysis of the forest industries in Victoria. The analysis focuses on the potential future economic impact of the industries, and also considers broader benefits that can be derived from the forest sector, as well as policy issues including resource allocation, security of supply and the role of plantations in supplementing native forest resource supply going forward.

Terms of reference

The purpose of the project will be to undertake an economic assessment of the industries that will:

- identify the current context and key stakeholders of the industries;
- measure the size and importance of the industries, having regard to economic factors such as:
 - employment,
 - output,
 - investment, and
 - the value of the industries' contribution to the Victorian economy;

¹¹ Department of Natural Resources and Environment 2002, op. cit.

- analyse the governance of the industries, addressing the implications of having a regulator who is effectively the monopoly supplier;
- consider the global trends in forest industries and how they impact the Victorian industries; and
- explore the social, economic and environmental externalities of the industries.

Project methodology

The project methodology consisted of three main tasks:

- *consultations* — the project team consulted with a range of key stakeholders during the course of the project in order to ascertain their views on the challenges and policy issues facing Victoria's forest industries in coming years;
- *modelling* — the core of the analysis required us to undertake economic modelling to evaluate the impact of the Victorian forest industries throughout the economy, including on other industries and regional economies. This modelling was undertaken by the Centre of Policy Studies (COPS) at Monash University using the MMRF–Green dynamic general equilibrium model; and
- *analysis and development of recommendations* — the information collected via the consultations and economic modelling, together with a review of existing literature — was used to develop a range of conclusions about future policy issues for Victoria's forest industries.

Outline of this report

The remainder of this report is set out as follows:

- chapter 2 presents a description of the Victorian forests industry;
- chapter 3 provides the results of the economic modelling of the impact of Victoria's forest industries;
- chapter 4 examines other benefits of the industries for Victoria; and
- chapter 5 looks at the major policy issues facing Victoria's forest industries going forward.

Chapter 2

Victoria's forest industries

2.1 Key product segments

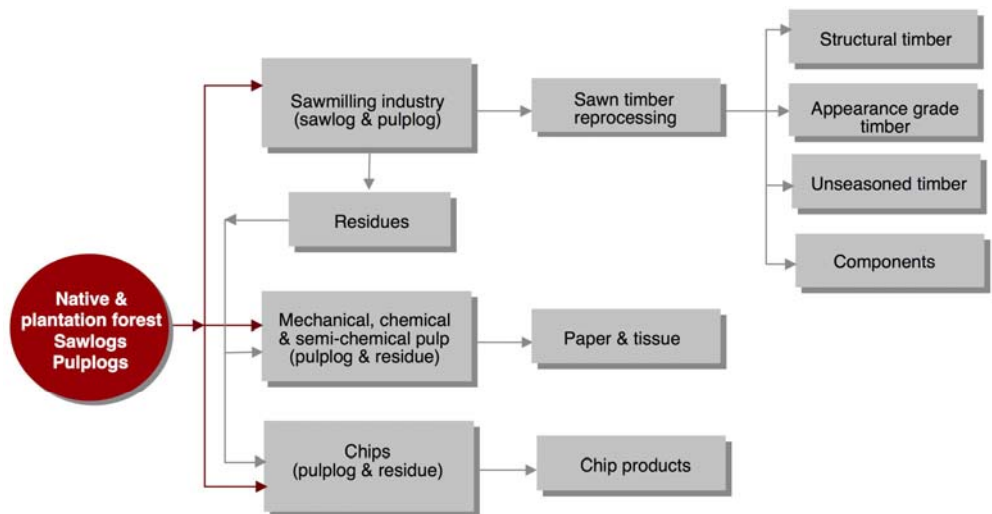
The forestry industry produces a number of different types of products that can be distinguished as either:

- native forest or plantation products;
- hardwood or softwood;
- sawlogs or pulplogs; and
- sawn timber or wood chips (residue).

The product chain is presented schematically in figure 2.1 and described further below.

Figure 2.1

PRODUCTION CHAIN



Source: Adapted from Department of Agriculture, Forestry and Fisheries 1997, *Summary report – Central Highlands Comprehensive Regional Assessment*.

Native and plantation sources

Native forest products refer to forest products that are harvested from plants grown in natural forest ecosystems. Plantation products are forest products derived from the cultivation of native and non-native plant species. Both native and plantation forests are used to produce sawn timber and a range of residue products such as woodchips, firewood and pulp.

Almost all native forest timbers harvested in Victoria are hardwood species.

Plantations, however, can be characterised by both hardwood and softwood species. The main species of hardwood used in plantations in Victoria are blue gums (*Eucalyptus globulus*), while the main softwood species planted is radiata pine.

Currently, the majority of available timber resources in Victoria lie in native forests (table 2.1). Victoria's native forests are located in the Gippsland, East Gippsland, North East, Central Highlands, West Victoria regions. Only a small fraction of this area, however, is actually harvested each year. The majority (around two-thirds) of Victoria's annual timber output is sourced from softwood plantations.

Table 2.1

FOREST AREA BY FOREST TYPE: VICTORIA

Forest type	('000 ha)
Native forest	
Not legally restricted from timber production ¹²	
Public (multiple use)	3312
Private and leasehold	1344
Other	3279
Total	7935
Plantation	
Hardwood	168
Softwood	215
Total	383
Total forest area	8318

Source: National Forest Inventory 2005, *Australia's forests at glance*.

Hardwood and softwood

Timber is generally either hardwood (or 'broadleaved') sourced primarily from native forests and some plantations, or softwood ('coniferous') harvested from plantations.

Historically, Victorians have used hardwoods due to their wide availability. However, with the introduction of plantation and imported timber, there has been increased substitution of hardwood timber by softwood timber in a number of uses.

In general terms, both hardwoods and softwoods can be used for structural and building applications, furniture manufacturing, and for pulp and paper. Despite their names, hardwoods are not necessarily stronger or denser than softwoods.

Notwithstanding this however, both timber groups have unique characteristics and can be targeted towards specific end-uses. For example, native hardwoods such as redgum have aesthetic qualities (that is, its dark colour and fine grain), which may be preferred in high-value furniture applications. Residues and fibre from

¹² Includes all multiple use forests, and forests on private and leasehold land. As a result of government policy, and physical/economic access constraints, only a fraction of this area (676 000 hectares) is available for harvesting by the forest industry.

hardwood sources are used to produce fine grade paper, while softwood residues and fibre are used in low grade paper such as newsprint.

Hardwood products are being shifted into applications such as flooring, structural and joinery where the qualities of durability, strength and appearance can attract premium prices. Softwood products are expanding their potential into engineered products such as laminated veneer lumber and oriented strand board while maintaining their share of the framing market.

Sawlogs and pulplogs

Logs (also known as roundwood) can be characterised as either:

- sawlogs; or
- pulplogs.

Sawlogs and pulplogs are essentially distinguished by of the amount of sawn timber that can be economically extracted from the logs. Logs with relatively little wood for sawn wood, and/or those which cannot be economically processed for sawn wood, tend to be classified as pulplogs and used for fibre production.¹³

The native forest industry is dominated by sawlog production,¹⁴ which is used for high value applications such as construction, furniture, joinery and flooring applications. The available public native forests are currently managed to produce a sawlog supply on the basis of an average 100-year rotation length — although rotations may vary from 60 to 120 years depending on forest types.

Unlike plantations, native forests comprise a mixture of young and old trees — and thus not all trees are suitable as sawlogs. By clearfelling — where nearly all trees in a selected area are taken in a harvesting operation — pulplogs become a by-product in native forest harvests. Pulplogs have a much lower value (relative to sawlogs) and are used by pulp and paper mills to produce a broad mix of products including newsprint, printing and writing papers, and packaging and industrial papers. Sawmill waste and residues from sawlog harvesting are also used in the production of pulp and paper.

In Victoria, hardwood sawlog production from public native forests was approximately 587 000 cubic metres per annum while annual pulpwood and low-grade sawlog (used for woodchips) production from native forests was in the order of 1 300 000 cubic metres (table 2.2) in 2003-04.¹⁵ Higher grade sawlog production is expected to decline to 530 000 cubic metres by the end of 2005-06.¹⁶

¹³ Productivity Commission 2001, *Competitive Neutrality in Forestry*, p. 7.

¹⁴ Conservationists, however, have argued that native forest logging is driven by the export of low value woodchips. Wood chipping is a by-product of clear fell logging and saw mill techniques.

¹⁵ VAFI website available at www.vafi.org.au

¹⁶ Information provided by VAFI.

Table 2.2

LOG SALES FROM PUBLIC NATIVE FORESTS IN VICTORIA, 2003–04

	Volume ('000 m ³)
Sawlogs (higher grade D+)	587
Sawlogs (low grade)	122
Pulpwood	1174
Total	1883

Source: Department of Sustainability and Environment 2004, *Annual Report*, p. 131.

In relation to plantations, whether they are harvested for sawlogs or pulplogs is dependent on the length of the crop rotation. The rotation length of plantations can be as short as 10 years, however wood products from these short rotation harvests are only suitable for fibre and pulp production. For sawlog production, a longer rotation period of between 25 and 35 years is required. In Victoria, such plantations are underdeveloped, with almost no high grade sawlogs likely to be available in the short to medium term.

Sawn timber and residue

Sawmills convert sawlogs into sawn timber which is ultimately used in furniture, cabinet and kitchen fit-outs, polished floors, windows and mouldings, high strength structural beams and so on. Retailing, furniture manufacturing and building industries all require timber inputs.

Total production of sawn timber in Victoria in 2003–04 was 827 000 m³, the majority of which (64.5 per cent) are softwood supplies (table 2.3).

Not all parts of a sawlog can be processed into sawn timber, and consequently, there are by-products (residue) associated with the saw milling process. The average recovery rate (the ratio of sawnwood produced to the volume of sawlogs milled) is around 40 per cent from plantation sourced softwood logs and about 33 per cent from native forest sourced hardwood logs. These residues can be used by the pulp and paper industries, or exported as woodchips.

Table 2.3

HARDWOOD AND SOFTWOOD SAWN TIMBER PRODUCTION IN VICTORIA, 2003/04

	Volume ('000 m ³)
Hardwood	293.1
Softwood	534.6
Total production	827.7

Source: ABARE 2005, *Australian Forest and Wood Product Statistics*. September and December Quarters 2004.

2.2 Key players and structure

The Victorian forest industry can be separated into four segments (see figure 2.2):

- forest management;
- harvesting;
- processing; and
- downstream markets e.g. manufacturing and construction.

Figure 2.2

THE INDUSTRY STRUCTURE***Forest management***

Forest management involves growing and managing forest coupes for harvest. After harvesting, this sector undertakes (or contracts out) activities including:

- seeding and silviculture;
- forest thinning;
- regeneration of soil and water;
- pest plant and animal control; and
- rehabilitation of forest and access roads.

In Victoria, these activities are carried out by VicForests for native forests on Crown land, on behalf of the Minister for the Environment. VicForests is also responsible for selling the timber resource that is available for harvest to sawmills. Regenerated forests are 'handed back' to the Department of Sustainability and Environment.

Private operators manage native forests and plantations on private land. Major local plantation growers include:

- AUSPINE;
- Green Triangle Forest Products; and
- Hancock Victorian Plantations (formerly Victorian Plantations Corporation)

Plantation operations are spread across regional Victoria. Some of these are large and vertically integrated companies. For example, AUSPINE is involved in the growing, harvesting and manufacturing of wood products and employs 700 staff

nationwide.¹⁷ Other companies such as Hancock Victorian Plantations only carry out forest management activities and allocate and sell timber to sawmills under contract.

Harvesting

Small private forest contractors conduct timber harvesting. In surveys of businesses in the Central Highlands and North East Region in 1997, the average number of employees in harvesting and transport contracting businesses was just over six employees.¹⁸

Their activities include sawlog harvesting, transportation and the construction of forest and access roads. VicForests engage these contractors to harvest and transport logs from the forest to the mill.

Forest contractors have investments in capital equipment such as harvesting gear and trucks. In 1996, it was estimated that the total value of capital in the log harvesting and transport sectors across the Central Highlands region was \$42 million — or approximately \$440 000 per business.¹⁹

Processing

Logs taken from forests can be processed through privately owned sawmills or pulp and paper processing plants. Sawmills that process native forest timbers are largely small to medium sized businesses and employment in sawmills can vary— ranging from only one employee to almost 100 employees per mill.²⁰

This industry is characterised by fundamentally different businesses, ownership structure and markets. In most cases, sawmills are dedicated to a particular input mix (eg. hardwood versus softwood, sawlogs versus pulplogs) and consequently, they have limited scope to source and compete for different log types. Hardwood mills are generally small and fragmented while softwood mills tend to be larger and integrated with other processing. The high cost of log transport also limits the ability of sawmills to source logs from forests outside of their region.²¹

The scale of processing operations varies markedly by sector. For example, in 1995–96, annual capital investment by sawn timber mills in the Central Highlands was approximately \$200 000 per sawmill. The total capital stock (measured by the replacement value) in the region was \$76.9 million, or about \$1.8 million per saw mill.²² In contrast, the pulp and paper processing sector comprise larger operators — for example, PaperlinX's Maryvale plant employed 940 staff in 1997–98.²³

¹⁷ Auspine website: <http://www.auspine.com.au/Company.htm>, accessed 29 August 2005.

¹⁸ Commonwealth and Victorian Regional Forest Agreement Steering Committee 1998, *North East Victoria — Social Assessment Report*.

¹⁹ Department of Agriculture, Forestry and Fisheries 1997, *Summary report - Central Highlands Comprehensive Regional Assessment*.

²⁰ Commonwealth and Victorian Regional Forest Agreement Steering Committee 1998, *op. cit.*

²¹ Productivity Commission 2001, *op. cit.*

²² Department of Agriculture, Forestry and Fisheries 1997, *op. cit.*

²³ Commonwealth and Victorian Regional Forest Agreement Steering Committee 2000, *Gippsland — Social Assessment Report*.

Downstream markets

Sawlogs can be produced into appearance grade timbers, which are used for high value manufacturing (for example furniture and floorboards), used as lower grade materials by the construction industry for structural applications. Appearance grade timber is also used in window joinery and internal joinery (such as staircase applications) — most of which is manufactured in Melbourne.

Major downstream players also include wholesale construction merchandisers and major retail hardware chains.

2.3 Value of the industry

The forest sector in Australia is a major value-producing industry for the national economy. The sector generated turnover of \$18.1 billion in 2003–04:²⁴

- In terms of value added (proxied by the value of wages and salaries paid), the industry directly contributed \$2.7 billion to national income (table 2.4). The majority of value and employment in Australia is generated in the wood and paper manufacturing industries.
- In terms of log inputs, the estimated gross value of logs delivered at mill door was \$1.4 billion in 2003–04, of which \$583.5 million was sourced from native forests.

Table 2.4

SIZE OF FOREST PRODUCTS INDUSTRIES IN AUSTRALIA, 2003–04

	Log sawmilling and timber dressing	Other wood processing	Pulp and paper manufacturing	Total
Turnover (\$m)	4 136	5 836	8 133	18 105
Capex (\$m)	n.a.	n.a.	n.a.	760
Wages (\$m)	598	1 042	1 151	2 792
Employment ('000 persons)	18	36.0	18	83

Source: ABARE 2005, *Australian Forest and Wood Product Statistics*. September and December Quarters 2004.

There are various estimates surrounding the economic contribution that forest and forest products industries make to the State. According to a socio-economic impact analysis carried out for VAFI in 2005, 19 518 people were directly employed in Victoria's forest industries (table 2.5).²⁵ This includes those employed in processing and manufacturing activities that are located mostly in metropolitan Melbourne. This total direct employment figure corresponds to a net value of production of \$3 034 million.

²⁴ ABARE 2005, *Australian Forest and Wood Product Statistics*. September and December Quarters 2004.

²⁵ Cameron Consulting 2005, *Socio-economics of the forest and forest products industry in Victoria*, produced for VAFI, October 2005, p. 17.

Table 2.5

PRODUCTION, EMPLOYMENT AND ECONOMIC OUTPUT FROM VICTORIA'S FORESTS

Region	Log production ('000 m ³)	Direct employment (no. of people)	Net output (\$m)
Gippsland	3 039	3 124	948
Nth East	1 429	1 717	276
Central	1 231	976	233
Sth West	1 012	1 081	252
Nth West	62	213	23
Metro	—	12 407	1 303
TOTAL	6 773	19 518	3 034

Source: Cameron Consulting 2005, *Socio-economics of the forest and forest products industry in Victoria*, produced for VAFI, October 2005, p.17.

In line with the structure of the industry, VAFI's analysis of the socio-economic contribution of forests to Victoria shows that this impact is derived approximately 40 per cent from native forests and 60 per cent from plantations. In terms of value generated per cubic metre of land harvested, Victoria forests generate 2.9 jobs and output of \$450 000 per thousand cubic metres harvested.²⁶

Importantly, the above estimates may be overstated. Assessments carried out during the RFA process in 1997 indicates that there were around a hundred sawmills in Victoria directly employing approximately 1740 people.²⁷ In addition, there were over 200 forest contractor businesses operating in regional Victoria, employing approximately 1000 people. Since these regional assessments, the Victorian Government has reduced the native forest resource available for timber production by 30 per cent, and a number of sawmills have exited the industry. Moreover, the industry has become more capital intensive, with many labour intensive activities now becoming mechanised. These regional assessments did not cover employment in downstream markets.

2.4 Industry trends

The forest industry has undergone significant structural change over the past decade.

There has been a gradual decline in the production of hardwood sawn timber in Victoria over the past decade — this has fallen by an average of 5.3 per cent per annum between 1995 and 2004.²⁸ As a result, a number of sawmills have exited the

²⁶ Ibid.

²⁷ Department of Agriculture, Forestry and Fisheries 1997, *East Gippsland Victoria: Resources and Economics Report*, Commonwealth and Victorian Regional Forest Agreement Steering Committee 1999, *West Victoria — Social Assessment Report*, Department of Agriculture, Forestry and Fisheries 1997, *Summary report - Central Highlands Comprehensive Regional Assessment*, Commonwealth and Victorian Regional Forest Agreement Steering Committee 2000, *Gippsland — Social Assessment Report*. Commonwealth and Victorian Regional Forest Agreement Steering Committee 1998, *North East Victoria — Social Assessment Report*.

²⁸ Industry Edge 2005, *Forest and Wood Strategic Review 2005*, p. 59.

market, with the government buying back timber licences with an annual volume of 268 000m³.²⁹

Conversely, the number of plantations in Australia has risen over the past decade through the culmination of:³⁰

- tax incentives through managed investment schemes (MIS);
- foreign investment in industrial plantation projects — primarily used for exporting woodchips; and
- state government schemes aimed at plantation sawlog production.

Victoria now has the largest area of plantations of any state or territory — 383 000 hectares, or 22.3 per cent of Australia's total plantation resource. The vast majority of these plantations have been planted for the purposes of woodchips.

2.5 Governance

Prior to the establishment of VicForests in 2004, the Department of Sustainability and Environment (DSE) had both regulatory and commercial functions in relation to Victoria's forests. Long-term licences (15 years) that guaranteed a certain amount of timber were granted to sawmills, with the State Government setting the price and royalty payments for various grades of sawlogs. These licences are currently being phased out.

Under the new legislation — the *Sustainable Forests (Timber) Act 2004* — DSE maintains its responsibilities for safeguarding the environmental values of Victoria's native forests and sets the area of land available for harvest from native forests. The timber resource planning process conducted by DSE is intended to be based on the best available science and the balancing of the competing demands on forest ecosystems.

After determining what areas may be harvested without risk to ecosystem sustainability, DSE gives VicForests access to the timber resources through an 'allocation order'. The orders operate for a 15-year period and are reviewed every five years. Allocation orders are published in the Government Gazette.

VicForests is a new State enterprise and its ultimate shareholder is the Victorian community through the Department of Treasury and Finance. It is accountable to the Victorian Parliament through the Minister for Agriculture. VicForests is responsible for managing the sale of the allocated timber resources on a commercial basis. It has exclusive entitlement to sell timber in the allocated areas to sawmills. VicForests' other key functions also include harvesting and thinning operations, and regeneration of harvested coupes. Following completion of harvesting and regeneration works, VicForests returns the land to DSE after regeneration works.

As well as the stewardship of DSE and VicForests, the forest industry in Victoria operates under the *Code of Forest Practices for Timber Production*, covering timber production and fire management on public land. Compliance with this code is a condition of any lease, licence or permit to use State Forests, including those held by VicForests.

²⁹ Department of Sustainability and Environment 2004, *Annual Report*, p. 131.

³⁰ *Ibid.*, p. 67.

The purpose of Victoria's *Code of Forest Practices for Timber Production* is to ensure that commercial timber growing and timber harvesting operations are carried out on both public land and private land in such a way that:

- promotes an internationally competitive forest industry;
- is compatible with the conservation for the wide range of environmental values associated with the forest; and
- promotes the ecologically sustainable management of native forests proposed for continuous timber production.

The *Code of Forest Practices for Timber Production* was developed through a process of scientific review and community consultation and was ratified in accordance with section 55 of the *Conservation, Forests and Lands Act 1987*. The Environmental Protection Authority is responsible for the independent auditing of compliance with the Code, which is currently being reviewed.

Chapter 3

Economic impact of Victoria's forest industries

3.1 Introduction

The core purpose of this project was to assess the economic impact of Victoria's forest industries. This impact was determined using general equilibrium economic modelling undertaken by the Centre of Policy Studies (COPS) at Monash University. Specifically, COPS' MMRF-Green model was used to assess the impact of potential future growth in the two major components of forestry in Victoria — namely forest resource supply and wood products manufacturing — on future economic outcomes for the State.

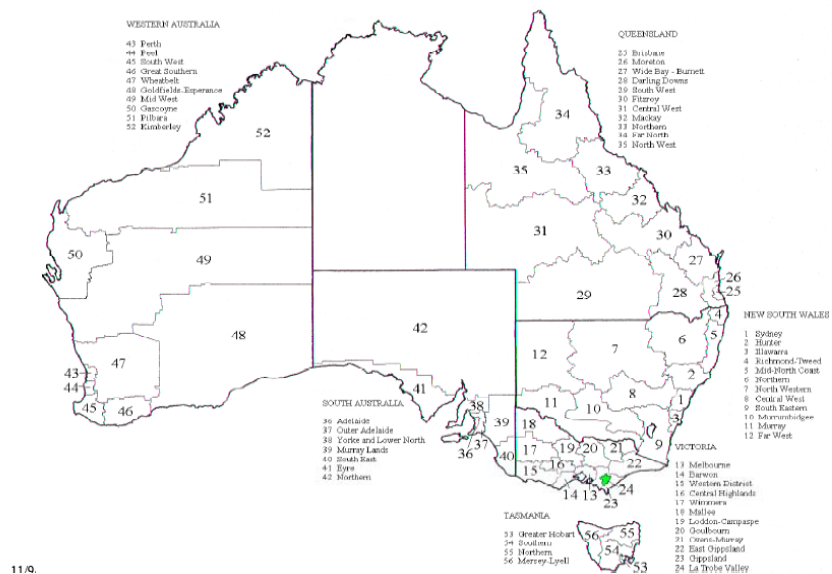
The model

MMRF-Green is a detailed, dynamic, multi-sectoral, multi-regional computable general equilibrium (CGE) model specifically designed to evaluate the impact of environmental policy changes. CGE modelling is intended to trace the impact of a change in one or more particular sectors throughout the entire economy. This makes it ideal for assessing the impact of changes to activity levels in Victoria's forestry industries because such changes can be expected to result in corresponding changes in a range of other, often not directly related, sectors of the economy. More information on MMRF-Green is contained in Appendix A.

The current version of MMRF-Green distinguishes 49 industries, 54 products, eight States/Territories and 56 sub-State regions. Within Victoria, the model is able to determine the impact of economic changes on the Melbourne, Barwon, Western District, Central Highlands, Wimmera, Mallee, Loddon Campaspe, Goulbourn, Ovens Murray, East Gippsland and Rest of Gippsland regions (Figure 3.1).

Figure 3.1

REGIONS IDENTIFIED IN MMRF-GREEN



Source: MMRF-Green

The methodology for using MMRF–Green to determine the impact of an economic or policy change involves imposing a ‘shock’ onto the model’s business–as–usual projection for future economic outcomes. The comparison between outcomes under the business–as–usual projection and outcomes under the ‘shock’ scenario then provides an indication of the impact of the specified economic change. The details of this methodology applied to growth in Victoria’s forest industries, and the results of the modelling simulation, are the focus of the remainder of this chapter.

3.2 Modelling assumptions

The ‘base case’

A key component of the economic modelling for this project is the MMRF–Green model’s ‘base case’ (or ‘business–as–usual’) projection. This projection shows what the model projects will happen to the Australian economy over time if current trends and major policy settings continue. In the context of Victoria’s forest industries, the model assumes that there are no further reductions or policy decisions that result in reduced access to the forestry resource.

In generating the base case forecasts, COPS use:

- State/Territory macroeconomic forecasts from Access Economics and State treasury departments for the years to 2010;
- national–level assumptions for changes in industry production technologies and in household preferences from COPS; and
- forecasts through to 2008 for the quantities of agricultural and mineral exports, and estimates of capital expenditure on major minerals and energy projects from various sources, such as state government agencies, the Australian Bureau of Agricultural and Resource Economics (ABARE), and the National Electricity Market Management Company (NEMMCO).

For the later years of the forecast period COPS use, in the main, extrapolations of earlier–year trends.

Industry details

MMRF–Green uses the Australia and New Zealand Standard Industry Classification (ANZSIC) for the ‘forestry’ and ‘wood products’ industries to capture activity in the forestry sector. Specifically, these two MMRF–Green industries include:

- ‘Forestry’ is ANZSIC group 030 – ‘Forestry and Logging’. It includes class 0301 Forestry, class 0302 Logging and class 0303 Services to forestry; and
- ‘Wood products’ is ANZSIC group 231 – Log sawmilling and timber dressing, and group 232 – Other wood product manufacturing.

The primary activities undertaken in each sector are outlined in table 3.1.

Table 3.1

PRIMARY ACTIVITIES IN THE FORESTRY AND WOOD PRODUCTS INDUSTRIES

Sector	Primary activities
Forestry	Growing standing timber in native forests, plantations or timber tracts
	Felling trees for logs
	Cutting and shaping trees for rough hewn products such as mine timbers railway sleepers etc
	Firewood cutting
	Other forest products gathering
	Forest conservation services
	Reforestation services
	Pest control services
	Timber plantation and tract maintenance
	Tree pruning and thinning
	Wood products
Wood chipping	
Production of dressed timber e.g. floorboards, mouldings	
Manufacturing plywood and veneers	
Fabricated wood manufacturing	
Wooden structural component manufacturing	
Wood product manufacturing e.g. wooden containers, pallets	

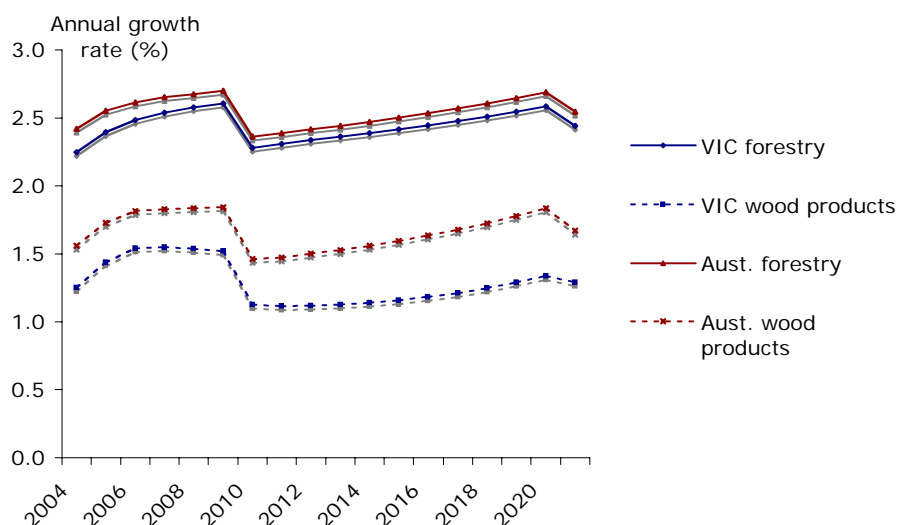
Source: Australian Bureau of Statistics (ABS) 2005, *ANZSIC detailed classification, Division A–Agriculture, Forestry and Fishing, 030 Forestry and logging, 231 Log Sawmilling and Timber Dressing, and 232 Other Wood product Manufacturing*, available at abs.gov.au.

The MMRF–Green base case currently projects that (figure 3.2):

- in Victoria, the forestry industry will grow between 2005 and 2020 at an average annual rate of 2.4 per cent per annum and the wood products industry will grow at an average annual rate of 1.3 per cent per annum; and
- across Australia, the forestry industry will grow between 2005 and 2020 at an average annual rate of 2.5 per cent per annum and the wood products industry will grow at an average annual rate of 1.7 per cent per annum. The differential between Victoria's and Australia's growth rates is driven larger by relatively high projections for growth in Queensland and Western Australia.

In terms of employment, under the base case, the number of jobs in the forestry and wood products sector increases by 293 and 951 respectively over the period 2006 to 2020.

Figure 3.2

MMRF–GREEN BASE CASE PROJECTIONS FOR FORESTRY AND WOOD PRODUCTS

Source: MMRF–Green

Where new and credible information can be cited, aspects of the existing base case can be amended to reflect more accurately the key parameters that will drive results for this specific project. In this instance, the MMRF–Green base case was amended to account for the ‘Our Forests Our Future’ policy introduced by the Victorian government in 2002, and for the subsequent decision to phase–out logging activity in the Midlands and Otways regions. Supply of forest resource in Victoria was reduced by 31 per cent and 4 per cent respectively in 2002 to account for these changes.³¹

3.3 Industry growth scenario

The economic modelling for this project involves imposing a growth ‘shock’ on both the forestry and wood products industry in order to ascertain the impact of growth in these industries on future economic outcomes for Victoria.

Specifically, the industry growth scenario comprised 10 per cent growth in the value of output from both the forestry and wood products industries relative to the base case between the years 2006 and 2020. This increase in growth was imposed linearly across the 15 years of the projection period so that the cumulative impact of the scenario is a 10 per cent increase in the value of each output in each of the two sectors in 2020. The scenario was justified as follows:

- in the ‘forestry industry’ the 10 per cent growth was primarily sourced from an increase in the availability of land for native forest harvesting (including through better utilisation of existing resource allocations) and from expansion of plantations; and

³¹ Cameron Consulting 2005, op. cit., p. 7. ‘The Our Forests Our Future’ policy and the virtual phase out of logging in the Midlands and Otways regions will result in a decrease in sawlog commitments in Victoria by 286 000m³ or 35 per cent.

- in the ‘wood products industry’ the 10 percent growth was sourced from increased demand for wood products.

More discussion of the potential sources of industry growth is provided in chapters 4 and 5.

3.4 Modelling results

Results for the industry growth scenario are presented below. In all cases, results are presented as deviations from the base case.³²

The industry growth scenario acts to increase both the supply of forestry resource, and the demand for the wood products derived from this resource. On this basis, the main impacts of the scenario will be derived from increases in economic activity in both the forest harvesting and the processing sectors of Victoria’s forest industries. This is the key mechanism driving the economic changes outlined below.

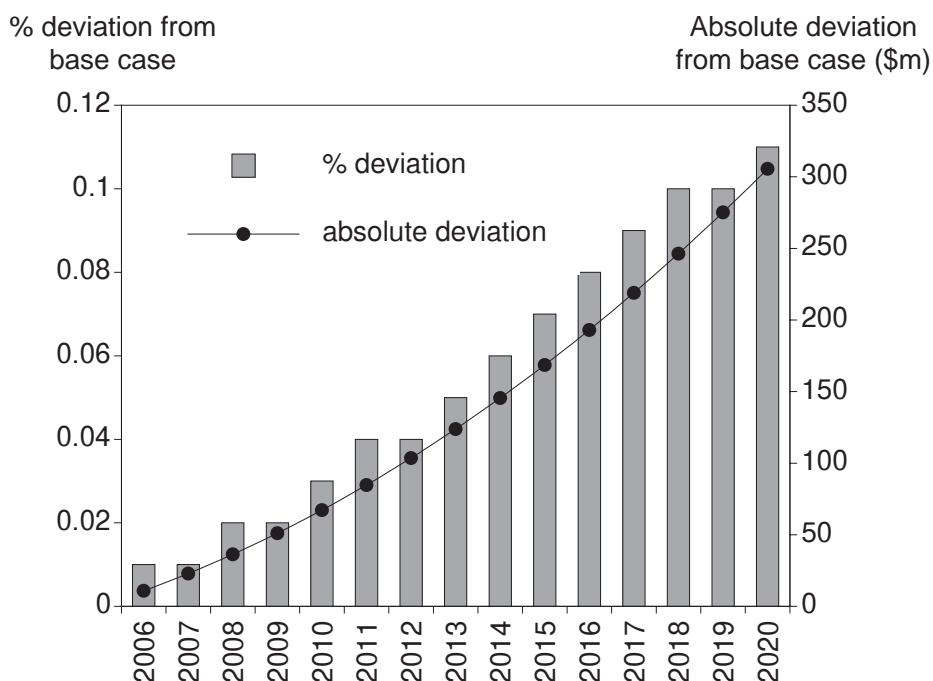
Impacts on Victoria’s key macroeconomic indicators

Gross State Product

The industry growth scenario results in an increase in Victoria’s gross state product (GSP) — relative to what would otherwise have been the case — in each year of the forecast period, with an annual increase relative to the base case in 2020 of over \$300m in 2020 (figure 3.3).

Figure 3.3

GROSS STATE PRODUCT UNDER THE GROWTH SCENARIO: VICTORIA



Source: MMRF–Green

³² For example, a GSP impact of 2 per cent relative to the base case under the industry growth scenario indicates that GSP was 2 per cent higher in the scenario than would have been the case in the absence of the industry growth (i.e. in the base case). It does not mean that GSP was 2 per cent higher in absolute terms because of the industry growth.

In net present value (NPV) terms, the annual increases in GDP generated by growth in the forest industries over the entire 15-year forecast period are equivalent to \$1.2 billion in today's dollars (using a real discount rate of 5 per cent).

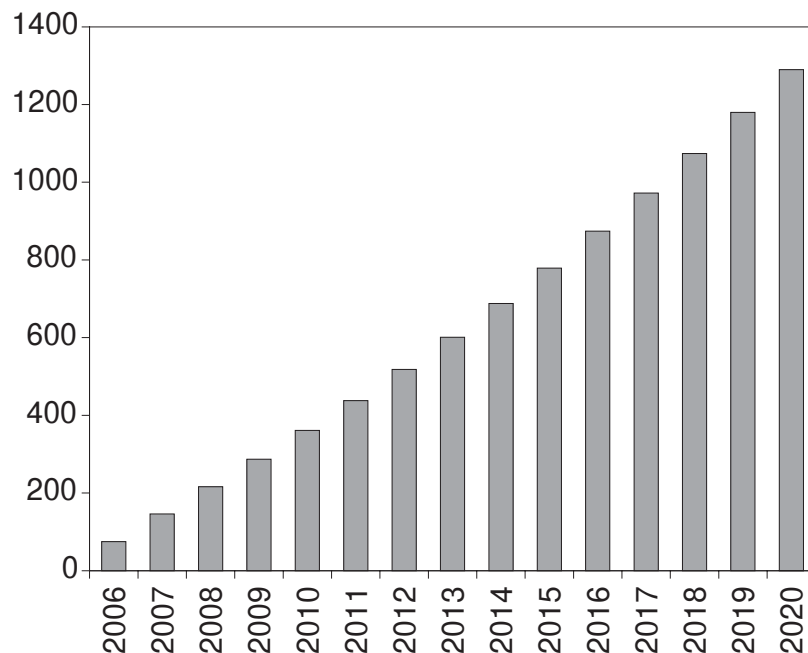
Employment

In terms of new employment, the 10 per cent growth in both the forestry and wood products industries results in an increase in Victorian jobs — relative to the base case — of over 1 200 jobs in 2020 (figure 3.4).

Figure 3.3

EMPLOYMENT UNDER THE GROWTH SCENARIO: VICTORIA

Absolute deviation
from base case
(no. of jobs)



Source: MMRF-Green

Consumption and investment

In line with the increase in GSP, Victoria's consumption and investment levels also increase relative to the base case as a result of the extra growth in forestry and wood products:

- consumption by around 0.55 per cent (or \$85 million) in 2020; and
- investment by around 0.22 per cent (or \$173 million) in 2020.

The increase in consumption in Victoria is significant because it is a proxy measure for the community's economic welfare. This suggests that a modest expansion of the industry would have a discernible positive impact on the economic wellbeing of Victorians.

Regional impacts

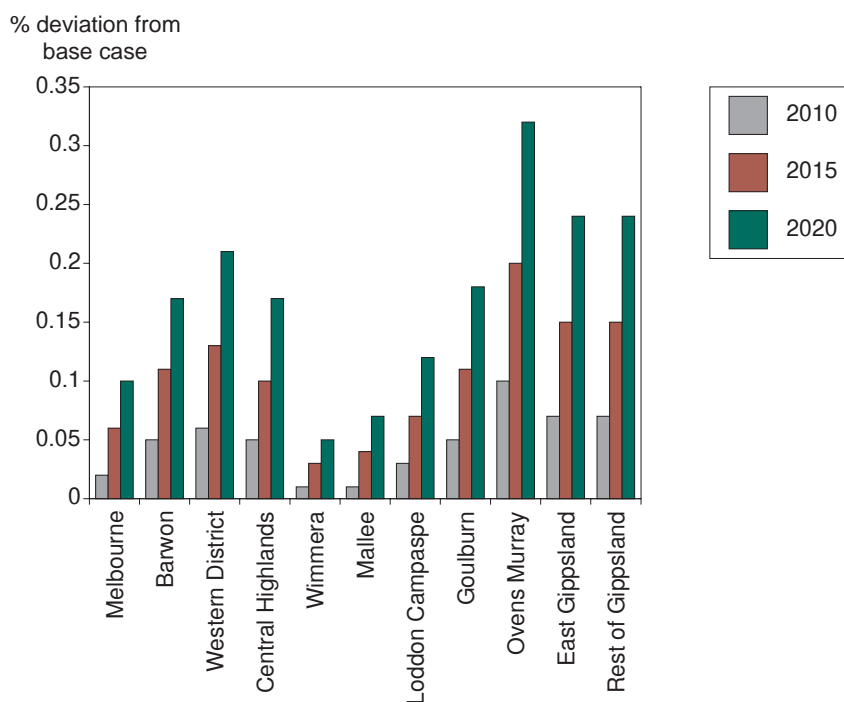
Figures 3.5 and 3.6 below show the impact of the industry growth scenario on gross regional product and employment levels in Victoria's regions. Generally, the regional impacts under the industry growth scenario reflect the location of the forestry and wood products industries respectively.

In percentage terms, the regions where gross regional product (GRP) experiences the greatest increases relative to the base case are Ovens Murray (0.3 per cent), the two Gippsland regions (0.24 per cent each) and the Western District (0.21 per cent). In absolute terms, the Melbourne region is the biggest 'winner' under the industry growth scenario, with an increase in GRP relative to the base case of \$170 million in 2020. Barwon (\$18 million) and the Rest of Gippsland (\$16 million) also grow substantially relative to the base case.

Because of the concentration of the wood products industry in the Melbourne metropolitan region, the majority of new jobs created in 2020 under the industry growth scenario (805 out of a total of 1290) are in Melbourne. In non-metropolitan Victoria, the Barwon, Goulburn, Ovens Murray and Gippsland regions experience the most substantial employment growth.

Figure 3.4

GROSS REGIONAL PRODUCT UNDER THE GROWTH SCENARIO

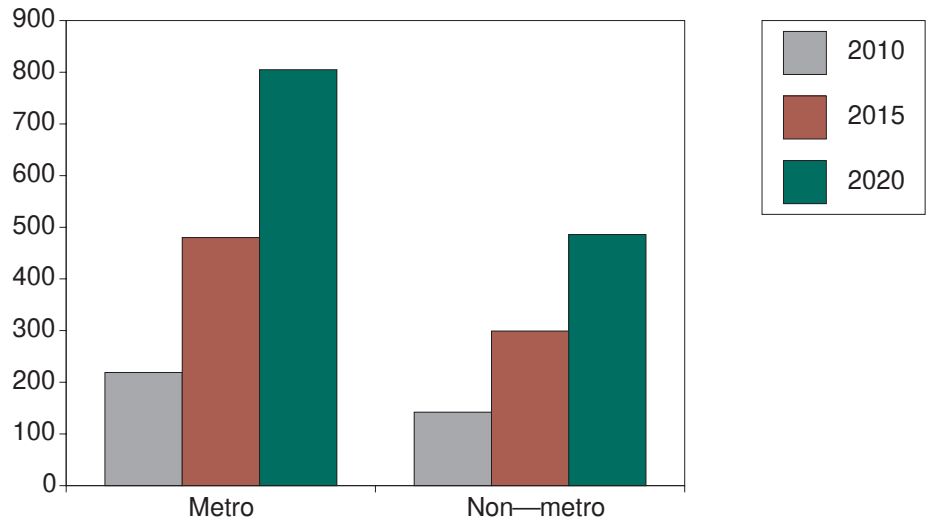


Source: MMRF-Green

Figure 3.5

METROPOLITAN AND NON-METROPOLITAN EMPLOYMENT IMPACTS UNDER THE GROWTH SCENARIO: VICTORIA

Absolute deviation
from base case
(no. of jobs)

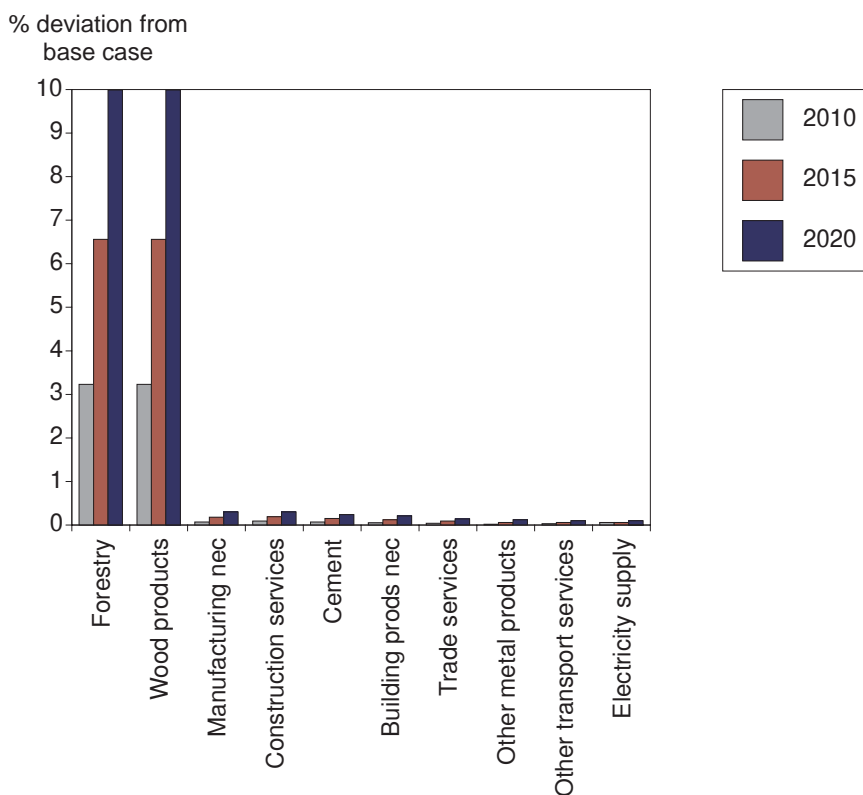


Source: MMRF-Green

Industry impacts

Figure 3.6

INDUSTRY OUTPUT IMPACTS UNDER THE GROWTH SCENARIO: VICTORIA



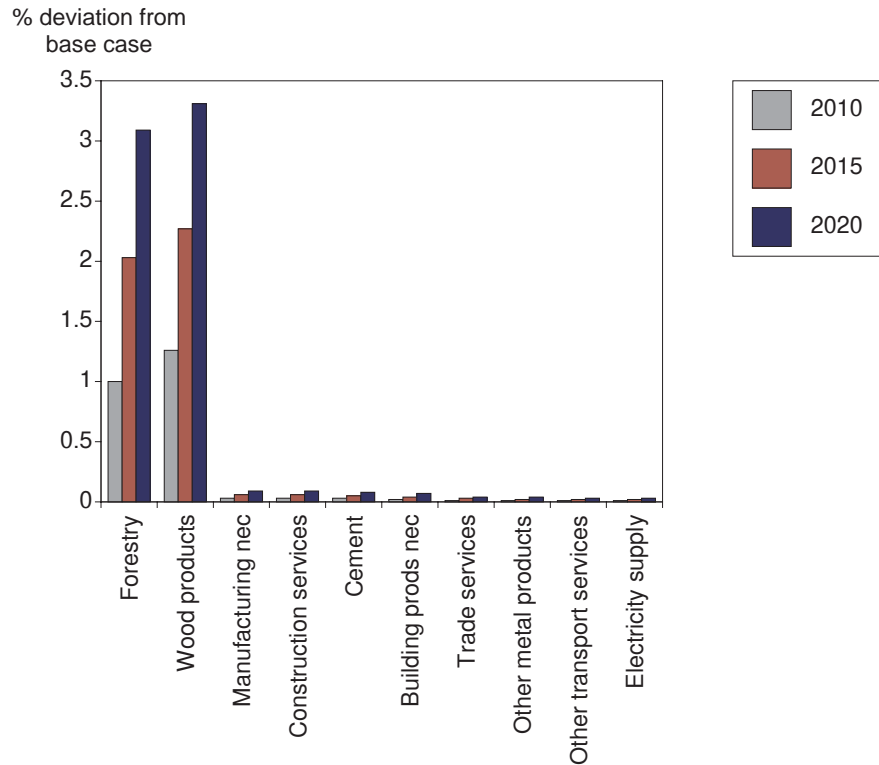
Source: MMRF-Green

In line with the specification of the industry growth scenario, both the forestry and wood products industries grow by 10 per cent relative to the base case by 2020 (figure 3.7). Other industries to experience substantial growth in output are the manufacturing, construction services and cement sectors. These industries benefit from their direct links with the forest products industry.

In terms of industry employment, the number of jobs in forestry and wood products increases by around 3 per cent in 2020 relative to the number of jobs that would have existed under the base case (figure 3.8). This equates to 99 jobs in the forestry sector and 447 jobs in the wood products sector that would not have been created in the base case.

Figure 3.7

INDUSTRY EMPLOYMENT IMPACTS UNDER THE GROWTH SCENARIO: VICTORIA



Source: MMRF–Green

3.5 Economic impact of a 10 per cent reduction in native forest output

The results from the above growth scenario can be used to obtain an approximate picture — using a ‘back-of-the-envelope’ analysis³³ — of the economic impact on Victoria if output in the forestry industry were *reduced* by 10 per cent over the same time period.

Because this project is largely concerned with the policy issues around the native hardwood sawlog industry, this analysis targeted a 10 per cent reduction in the approximately 35 per cent of the ‘forestry and logging’ industry sector that is related to native forest hardwood sawlogs. A realistic assumption along these lines would be to assume a reduction in the supply of native forest for harvesting (for example, due to a further change in forestry resource policy), while the plantations industry continues to operate on a business as usual basis.

In 2020 — *relative to the base case* — this 10 per cent reduction would result in approximately:

- 190 jobs less in the forestry and wood products industry sectors;
- 450 jobs less across Victoria as a whole;
- GSP of around \$100m less; and

³³ These figures assume that the results generated by the MMRF–Green model for the modelling scenario documented in this report are approximately linear for all changes in output growth,

- consumption — a proxy for the community's economic welfare — would be around \$30 million lower across the State.

Chapter 4

Broader benefits of Victoria's forest industries

As well as the substantial economic benefits for Victoria of strong and expanding forest industries (chapter 3), there is range of related benefits for Victoria in promoting the development of the hardwood timber industry. In particular:

- *sustainability* — managed appropriately, the forestry sector can make a major contribution to achieving environmental objectives for the State;
- *import replacement* — where imports are currently sourced from unsustainable or illegal sources, growing Victoria's domestic timber industry will help to promote the sustainability of the global forestry sector as a whole; and
- *value adding* — as Victoria's forestry resource has contracted in recent years, the hardwood timber industry has responded by moving up the value chain, focusing more strongly on using the limited hardwood resource to produce higher value timber products. Continuation of this trend has the potential to create a world class timber industry in Victoria.

These issues are discussed in turn below.

4.1 Sustainable forest resource management

The management of forestry activity in Victoria is currently conducted on a highly sustainable basis. This outcome is underpinned by:

- DSE's application of the concept of 'sustainable yield' in its timber resource planning process;
- a range of additional forest management frameworks that work to ensure that forestry activity acts as a key component of broader sustainable forest resource management; and
- the inherent environmental advantages of hardwood timbers relative to major alternatives.

These issues are discussed below.

Sustainable yield

The concept of sustainable development is crucial to the management of Victoria's forest industries. In particular, the current legislative framework (*Sustainable Forests (Timber) Act 2004*) states that the Government must take into account the principles of *ecologically sustainable development* in managing the state's forest estate. The application of this principle has significant implications for the mix of forest conservation reserves and timber harvesting within Victoria's forests.

The Brundtland Commission defined sustainable development as 'development that meets the needs of the present without compromising the ability of the future to meet its own needs.'³⁴ This definition is now widely regarded as the standard

³⁴ World Commission on Environment and Development 1987.

explanation of the sustainability concept and has been adopted by governments worldwide as a guiding principle for sustainable resource management.

The Victorian Government has adapted the Brundtland principle to derive the following definition of ecologically sustainable forest management:³⁵

Integrating commercial and non-commercial values of forests so that the welfare of society is improved, whilst ensuring that the values of forests, both as a resource for commercial use and for conservation, are not lost or degraded for current and future generations.

A fundamental step in managing State forests sustainably is to ensure that the number of logs harvested from the forests does not exceed the rate at which they grow. This concept is referred to as the 'sustainable yield'. The formal definition of sustainable yield in Victoria is:³⁶

... the estimated annual rate of harvesting of hardwood sawlogs that is capable of being produced without impairment of the long term productivity of the land, taking into account the structure and condition of the forest.

DSE is responsible for ensuring that commercial harvesting operations in Victoria are managed on a sustainable basis. Sustainable yield estimates are a fundamental part of DSE's timber planning process. In 2002, the Government identified that, for harvesting in State forests to be sustainable, the sustainable yield must decrease significantly — by around one-third on a Statewide basis and by up to 80 per cent in some areas.³⁷ Over time, further adjustments to the sustainable yield rate will be made if they are deemed necessary to maintain harvesting at sustainable levels (although further changes are not currently anticipated).

Broader forest management

In recent decades, a wide range of forest management initiatives has been introduced to improve environmental outcomes in Victoria's forests. For example, initiatives such as the Forest Management Plans introduced under the Timber Industry Strategy (TIS) in 1986, the Code of Forest Practices for Forest Management introduced in 1989, and the RFAs developed between State/Territory governments and the Commonwealth, all put in place broad and comprehensive forest management controls.

In addition to controls on the amount of land that can be harvested, changes to forest management techniques in recent years have vastly improved the utilisation of those resources that are harvested. In particular:³⁸

- the TIS incorporated changes to harvesting management that allowed logs to flow to their highest and best use, in the process assigning value to low grade logs that were previously unutilised— it has been estimated that this added 10 to 20 per cent to the available sawlogs in most areas;
- improvements to processing techniques in the drying and milling of timber have reduced wastage. One example is the emergence of 'natural feature grade' timber which has successfully marketed 'imperfections' as features thus reducing wastage; and

³⁵ Department of Natural Resources and Environment 2002, *Our Forests, Our Future: Balancing Communities, Jobs and the Environment*, Sustainable Yield fact sheet, available at <http://www.dse.vic.gov.au>

³⁶ Ibid.

³⁷ Ibid.

³⁸ Ibid.

- the TIS also allowed the full utilisation of pulpwood for export woodchip markets, again reducing considerable wastage of the sawlog resource.

The net impacts of these measures has been to reduce the area available for harvesting, reduce the volume of sawlogs sold and reduce the area of Victoria's forests that has been harvested.³⁹ Currently, only around 10 per cent of Victoria's 6.6 million ha. of public forest is legally available and suitable for timber production. At the same time, utilisation per hectare harvested has increased.

Environmental benefits of native hardwood timbers

Recent analysis published by VAFI shows that hardwood timber products have a number of major environmental benefits relative to alternative inputs in the construction sector such as aluminium, concrete and steel.⁴⁰ In particular:

- Hardwood timber has a substantially lower *embodied energy component* — that is, the level of energy used to obtain, process, transport and use a construction input — than each of its major competitors in concrete, steel and aluminium. For example, in terms of the energy used in the manufacture of common building materials, concrete uses around six times the amount of energy as rough sawn timber, steel around 355 times and aluminium nearly 1 500 times the energy of timber in the construction process (table 4.1).
- Timber has a much lower *greenhouse footprint* than steel, concrete or aluminium. Hardwood timber-based construction materials both generate relatively less greenhouse gas (GHG) emissions as part of their production than alternative materials, and act as a carbon sink by storing GHGs when used for long-life products such as building components (table 4.2).
- Harwood timber construction products generate less pollution, consume less resources, and are less toxic than steel, aluminium, cement and concrete.⁴¹

As the challenge of addressing climate change, and environmental management issues more generally, gathers pace in coming decades, the environmental advantages of hardwood timber will become increasingly important.

Table 4.1

FOSSIL FUEL ENERGY USED IN THE MANUFACTURE OF BUILDING MATERIALS

Material	Fossil fuel energy per kilogram (MJ/kg)	Fossil fuel energy per cubic metre (MJ/m ³)**
Rough sawn timber*	1.5	750
Steel	35	266 000
Concrete	2	4 800
Aluminium	435	1 100 000

*The embodied energy component of timber products will rise as the level of processing rises. The range is 1.5 MJ/kg for rough sawn timber to 24 MJ/kg for hardboard (hardwood).

**These figures provide the embodied energy component on a per mass basis — different products and construction processes use different amounts of materials.

Source: A. Woodard and B. Iskra 2005, *The Environmental Benefits of Sustainable Victorian Native Forest Timbers*, prepared for VAFI, October 2005.

³⁹ G. Gooding 2005, op. cit.

⁴⁰ A. Woodard and B. Iskra 2005, op. cit.

⁴¹ Ibid.

Table 4.2

CARBON DIOXIDE RELEASED AND STORED BY VARIOUS BUILDING MATERIALS

Material	Carbon released per tonne (kg/t)	Carbon released per cubic metre (kg/m ³)	Carbon stored (kg/m ³)
Rough sawn timber	30	15	250
Steel	700	5 320	0
Concrete	50	120	0
Aluminium	8 700	22 000	0

Source: A. Woodard and B. Iskra 2005, *The Environmental Benefits of Sustainable Victorian Native Forest Timbers*, prepared for VAFI, October 2005.

The role that forestry plays in sustainable forest management, continuing measures to improve the utilisation of the forest resource, and the unique and inherent advantages of hardwood timber relative to its major competitors suggests that expansion of the forest industries in Victoria — such as that modelled in chapter 3 — may have net environmental benefits for Victoria.

4.2 Trade impacts

Import replacement

Wood products are a large item in Australia's trade deficit. In 2003–04, Australia recorded a \$1.8 billion trade deficit in forest products. A large proportion of the trade deficit (around 70 per cent) was in paper products that have undergone further processing and manufacturing — such as paper and paperboard. In terms of raw sawn timber, its contribution to the national trade deficit was \$429.8 million. On a state basis, Victoria's trade deficit in raw sawn timber was \$141.2 million (table 4.3).

Table 4.3

IMPORTS OF SAWN TIMBER IN VICTORIA, 2003–04

	Volume ('000 m ³)	Value (\$m)
Imports		
Hardwood	232.4	—
Softwood	32.1	—
Total imports	284.6	155.0
Total exports	19.5	13.8
Trade deficit	(265.1)	(141.2)

Source: ABARE 2005, *Australian Forest and Wood Product Statistics 2003–04*.

Currently, the countries from which Australia imports most for its sawn timber are:

- New Zealand (50 per cent of total sawn timber imports);

- Canada (14 per cent);
- Czech Republic (8 per cent);
- Malaysia (6 per cent);
- Indonesia (5 per cent); and
- Papua New Guinea (3 per cent).⁴²

The volume of imported sawn wood to Victoria increased by about 24 per cent between 2001–02 and 2003–04.⁴³ Imports of sawn timber are expected to increase further as a consequence of reduced sawlog supply from native forests and the inability of plantations to fill the supply shortfall.

Prima facie, large and increasing levels of sawn timber imports are not necessarily a policy issue for Victoria — the purpose of trade between countries is to capitalise on each individual country's comparative advantage, and imports in a particular sector, such as timber, may free up domestic resources for use in relatively more productive endeavours for the State. Of course, market imperfections may result in a high level of imports even where a domestic competitive advantage exists. Moreover, the increasing level of timber imports may be a concern if this timber is being sourced from unsustainable, or even illegal, forest management activities. The extent to which imported timber is sourced from legal and sustainable harvesting activities is unknown, although Greenpeace claims that illegal activities represent half of all harvesting activities worldwide, primarily in the Amazon Basin, Central Africa, Southeast Asia and the Pacific, the Russian Federation and some of the Baltic States.⁴⁴ More recently, Jaakko Poyry — in a report for the Department of Agriculture, Fisheries and Forestry estimated that illegal harvesting impacts around 9 per cent (\$400 million) of Australia's forest products and wooden furniture imports.⁴⁵ The major problem areas identified were Indonesia, Malaysia and possibly China. Imported timber from these areas tends to be competitively priced due to non-compliance with social and environmental standards — consequently this also has impacts on the ability of the local industry to compete.

With the currently difficulties for authorities in stopping the importation of illegal timber (see box 4.1), it is possible that more timber will be sourced from unsustainable areas given supply constraints in Australia. Measures to promote growth in the industry of the levels modelled in chapter 3, may serve to prevent increases in the imports of unsustainable and illegally sourced timber products from overseas.

⁴² ABARE 2005, *Australian Forest and Wood Product Statistics 2003–04*, p. 14.

⁴³ *Ibid.*, p. 13.

⁴⁴ Greenpeace 2004, *Towards an Australian Initiative to Combat Illegal and Destructive Logging*, A Discussion Paper prepared by Greenpeace Australia Pacific for the Australian Commonwealth Government.

⁴⁵ Jaakko Poyry Consulting 2005, *Overview of Illegal Logging*, prepared for the Department of Agriculture, Fisheries and Forestry.

Box 4.1

THE IMPACT OF ILLEGAL TIMBER IMPORTS ON AUSTRALIAN MARKETS

Since 2000, the quantity of rough sawn timber imported to Australia from Papua New Guinea has almost doubled. In the 12 month period from April 2000–March 2001, 7909.093 cubic metres were imported, compared to 15604.12 cubic metres in the 12 months from April 2003–March 2004. Almost 70 per cent of this timber comes into Australia through Brisbane. Such a large amount of cheap, uncertified, destructive and illegal timber entering the Queensland market has a significant impact on the local forest industry, operating in compliance with acceptable environmental and legal standards. Despite this being a common pattern, customs officers in Australia are powerless in stopping such imports, even if they have concrete evidence that such products are from illegal or destructive sources.

Source: Greenpeace 2004, *Towards an Australian Initiative to Combat Illegal and Destructive Logging*, A Discussion Paper prepared by Greenpeace Australia Pacific for the Australian Commonwealth Government.

Third party certification

In this context — with increasing value being placed on wood harvested from sustainable sources — there are likely to be substantial benefits for the local forest industry in greater adoption and recognition of third party certification regimes. Certification of forest products enables customers to recognise that the timbers they purchase are managed in a sustainable manner. Under these regimes, Australia has the potential to become the preferred seller of the world's wood supplies and a global player in sustainable wood exports.

The Victorian government is committed to the introduction of third party certification and chain of custody. DSE have initiated the development of the state forests Environmental Management System (EMS), using principles from the Australian Forestry Standard (AFS), to be implemented from late 2005, with certification to ISO 14011 scheduled for June 2006. Forests certification is planned for June 2007, probably to the AFS, although other stakeholders — including some green groups — favour alternative certification regimes such as that developed by the Forest Stewardship Council (FSC).

Industry has indicated its support for certification via the AFS and, over time, the FSC standards. Some parts of the industry have also already demonstrated a commitment to certification, with several companies producing third party certified timber products in Victoria, although only on a very small scale. Since 2003, 12 Australian forest managers have achieved certification, involving native forest and plantations.⁴⁶ This includes seven companies certified with AFS and five with the FSC. Four of these organisations – Timbercorp, Integrated Tree Cropping, Hancock Victorian Plantations and Midway – manage plantations within Victoria. A number of other forest managers are currently in the advanced stages of certification assessment. Nevertheless, much progress remains to be made in the adoption of third party certification regimes in Victoria, and this should be a priority for both government and the industry itself in the immediate future.

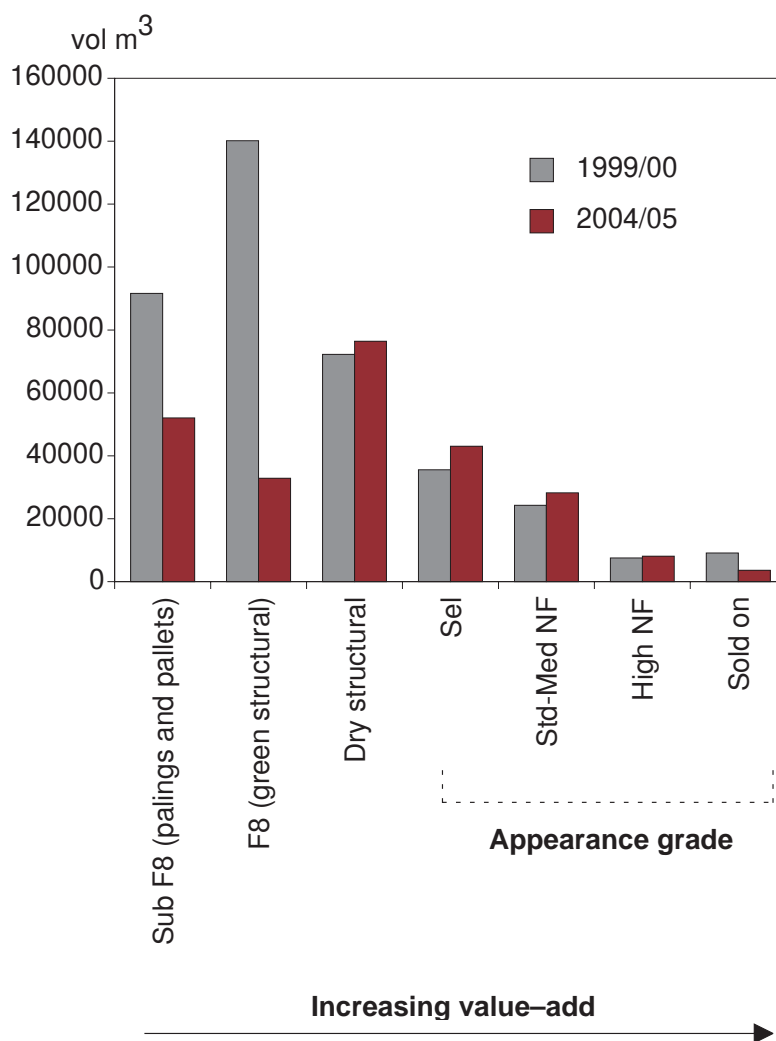
⁴⁶ H. Crawford 2005, *Victorian Timber Industry: Plantations — A Hardwood Industry Perspective*, prepared for VAFI, August 2005.

4.3 Value-adding in Victoria's forest industries

In response to a contraction in the native hardwood resource in recent years, the Victorian hardwood timber industry has significantly increased the value-added components of its timber processing activities. According to VAFI, the value of the Victorian sawn hardwood industry is expected to be around \$246m in 2005 — an increase of \$36m in five years despite the fact that resource volume has fallen by around 40 per cent.⁴⁷

Figure 4.1

VICTORIA, HARDWOOD PRODUCT SEGMENT VOLUMES: 1999/00 AND 2004/04



Source: VAFI

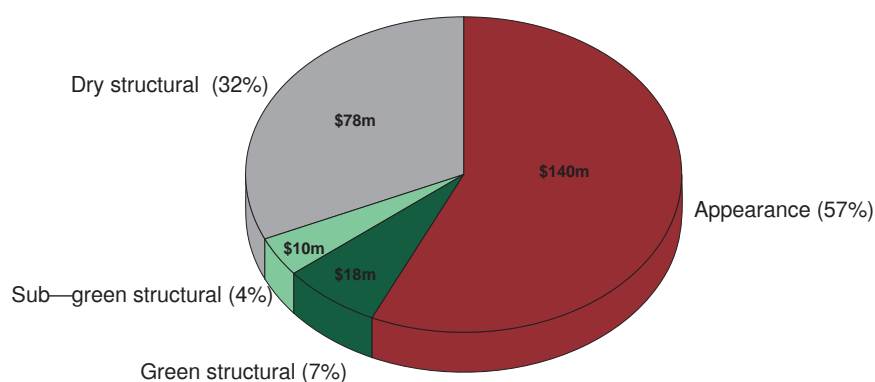
Figure 4.1 above shows the breakdown of this improved value adding by product type. The products derived from sawn hardwood range from green structural and sub-green structural products at the low end of the value chain to dry structural and appearance grade timbers at the higher end. Of most interest is a comparison of the proportion of hardwood resource being used for green structural products — which

⁴⁷ Unpublished information provided by VAFI, October 2005.

have a very low value-added component — in 1999/2000 and 2004/05: five years ago, 31 per cent of the total resource was being devoted to this product compared to just 13 per cent today. In contrast, production of appearance grade products — select and natural fibre products which are used primarily for flooring, furniture and windows — has increased from 38 per cent of total production in 1999/00 to 66 per cent in 2004/05.

In value terms, appearance grade products — which represent the highest value-add in the industry — now account for around 57 per cent of total market value (\$246m), while green and sub-green structural products account for just 11 per cent (figure 4.2).

Figure 4.2

VALUE OF THE VICTORIAN SAWN HARDWOOD INDUSTRY: 2005

Source: VAFI

As well as value-adding of hardwood sawn timber, there are also opportunities for value adding of woodchips and other residues. For example, the proposed Australian Paper expansion at Maryvale will utilise residual wood from sawlog harvesting and sawmill woodchips from existing native forest harvesting supplies initially (although all of the additional wood required would be supplied from plantations as soon as practicable, probably starting in 2019). According to the project proponents, any transitional wood supply volumes made available by VicForests would be met by diversion of woodchips that would otherwise have been exported.⁴⁸

Continued improvements in value-adding will be necessary to secure the future of the hardwood sawn timber industry in Victoria. Much of the structure of Victoria's forest industries currently is reflective of a historical context in which timber prices were set arbitrarily and the market was distorted as a result. Subsequent increases in timber prices and restrictions in its supply have acted to increase the value of raw sawn timber, and this increase in value must be reflected in the uses to which the timber is put. This was recognised by the Productivity Commission in their review of competitive neutrality in the forest sector⁴⁹:

⁴⁸ Australian Paper Pty Ltd 2004, *Environment Protection and Biodiversity Conservation Act 1999 Referral Form*, submitted to Department of Environment and Heritage.

⁴⁹ Productivity Commission 2001, op. cit.

Underpricing by forestry agencies of logs from native forests has hampered the development of private wood growing enterprises. However, with the reforms of the last decade or so, and with harvesting controls limiting the output of most forestry agencies, other factors — such as the future competitiveness of Australia's wood processing sector — may be more important for the future development of private wood supplies.

Discussions with industry stakeholders suggest that there may be a need for further rationalisation of the timber products industry in order to facilitate value-adding going forward, particularly in relation to those very small timber businesses currently operating at the lower end of the value chain. Similarly, enhanced cooperation between industry players is likely to be needed in order to capitalise fully on opportunities in appearance grade timber markets, both within Australia and overseas.

4.4 Other social impacts

Victoria's forest industries also play a crucial role in maintaining a range of forest-related infrastructure from which a range of stakeholders derive benefits. In particular, the forestry industry supports and maintains roads to transport logs from the forest to the sawmill. External parties also use this road infrastructure for a range of other purposes including:

- fire management and suppression;
- recreation; and
- eco-tourism.

Moreover, the industry has also traditionally been a source for skilled operators and capital equipment within regional areas. Alternative sources of these types of resources would need to be found in the absence of a viable Victorian forest industry.

Chapter 5

Policy issues

Chapters 3 and 4 outlined the substantial benefits — both economic and otherwise — that could arise from future growth in the hardwood timber industry in Victoria, and in the forestry and wood products sectors more generally. This chapter will discuss government policy settings consistent with promoting this growth in the industry, particularly given the reductions occurring in resource supply from native forest. We will address three issues:

- pricing and allocation of Victoria's timber resource;
- the need for resource security, including in particular how 'old growth' forest is managed; and
- the role for plantations in supplementing Victoria's native forest resources.

5.1 Pricing and allocation of the hardwood resource

As part of the general reform program of recent decades to improve the efficiency of public sector bodies, government forestry agencies across Australia have been subject to considerable change. This has encompassed initiatives to place forestry agencies on a more commercial footing and to remove or reduce their regulatory responsibilities.

This general reform agenda is reflected in the establishment of VicForests to oversee the sale of Victoria's forest resource in 2002. While other state governments (such as Western Australia) have separated the forest management and commercial activities associated with public native forests, Victoria is the only state that has implemented a new market-based pricing and allocation model (PAM) for native forest timber in Victoria (see box 5.1 for details). Under law, VicForests is required to operate under prudent commercial principles and deliver a dividend to the Victorian community.

Current price increases

Until recently, and since the mid-1980s, mills have had 15-year licences that were almost automatically renewed at the end of that period. Prices for licences and contracts under this model were set by DSE, and subsequently by VicForests when they took over responsibility for management of the timber resource. This system will progressively be replaced by the PAM in the next few years.

In order to provide security of supply during the transitional period, VicForests will issue new five-year contracts to existing operators from the date of expiry of their licences. For allocations under existing licences and contracts, VicForests is responsible for setting sawlog prices. The recent significant increases in prices have been a cause of dissatisfaction in the industry, and the basis for these rises is not transparent. Clearly, price setting for allocation under existing contracts needs to take account of a number of issues, including prices in other states and what the market is telling us. The increasing use of the auction system (see below) will enable a reality check to be made on these administered prices.

The new pricing and allocation model (PAM)

With the implementation of the new PAM, contestable online auctions will progressively be used to allocate and price the timber resource in the future. This is a major change for the industry, and may lead to greater rationalisation over time.⁵⁰

VicForests began to implement the market-based system progressively during the second half of 2005, with a view to move to a fully contestable market for sawlogs within 10 years. The first online auctions will be held in March 2006. The maximum license term available under the new system is ten years. According to the government in announcing this policy change:⁵¹

Long term (15 years) timber licences were struck in the 1980s and 1990s with a view to providing a viable investment horizon for value adding and the establishment of new markets. While some will not expire until later this decade, many are due to expire this year and in 2003.

While sections of the industry are seeking new 15 year licences, it is vital that licensing strategies are consistent with the latest sustainable yield/resource data and reflect the amount of timber available.

The independent Expert Data Reference Group chaired by Professor Jerry Vanclay has provided unequivocal advice that based on the best information available at present, the Government is not well placed to make long term commitments to industry.

Box 5.1

KEY FEATURES OF VICFORESTS' NEW PRICING AND ALLOCATION SYSTEM**5 year contracts for sawlogs**

- Five year contracts issued to existing licence holders from the expiry of the current licence.
- Contracts will have annual reductions in sawlog quantities from 2005/06 of 17 per cent.
- Contracts will encourage sawlogs to be produced locally.

Reduced sawlog supply over five years

- 10 per cent reduction of overall sawlog supply to match sustainable yield over the next five years

Open market of future timber supply from 2005/06

- Commence auctions of forward sawlog supply contracts of up to 10 years in 2005/06.
- Preclude companies and directors that received complete Voluntary Licence Reduction packages, and were intending to entirely exit the industry, from auction bidding process for two years.
- Contracts to encourage buyers to process sawlog timber locally and improved levels off workplace safety and environmental performance.

Source: VicForests 2005, *New System to ensure timber industry future*, Media Release 31 March 2005.

⁵⁰ VicForests 2005, *New system to ensure timber industry future*, media release, 31 March 2005.

⁵¹ Victorian Government 2002, *Our Forests, Our Future: Balancing Communities, Jobs and the Environment*, A Government Statement by the Premier of Victoria The Hon Steve Bracks MP and Minister for Environment and Conservation The Hon Sherryl Garbutt MP.

VicForests notes that following the implementation of the PAM, between 2005 and 2020:⁵²

- 24 per cent of the resource will be allocated to those holding secure licences that will expire progressively up to 30 June 2010;
- 18 per cent of the resource will be allocated to those that have been offered five year transitional contracts; and
- 58 per cent of the resource will be allocated through the new pricing and allocation model.

According to VicForests, sufficient timber is available from Vicforests and other sources (e.g. from plantations, interstate and private property) to allow sawmills to continue operating at current level of activity for some time.⁵³ However according to VAFI, recent estimates suggest the native forest resource supply is likely to fall further over time — this is discussed further below under the issue of resource security.

Issues around the PAM

In principle, a competitive, market-based auction system for pricing and allocation of Victoria's native timber resource is the most economically efficient resource allocation model. It is an appropriate way to ration a scarce resource and ensure that it is correctly valued by the market. Moreover, by ensuring the resource is priced accurately, the system is likely to promote continued moves towards greater value adding and further restructuring and rationalisation of the industry.

While most of the industry seems accepting of the auction system, however, there are three broad areas of concern:

- managing the transition;
- the term of the auctioned licences; and
- the possibility of market dominance by one or two players.

Managing the transition

In terms of the transition, the concern is that businesses may have invested in the past on the expectation that the licence system would be continued and now they no longer have guaranteed access to a similar level of resource. The government, on the other hand, would argue that the issue has been addressed both by the fairly lengthy period over which licences are to be phased out, and by the assistance packages that have been offered for firms to exit the industry. While some of the smaller sawmills raised this as a concern, this may reflect more on their planning processes than on the system itself. Overall, this does not appear to be a major issue.

Licence term

The term of the auctioned licences is an important issue. VicForests intends to auction licences with terms of one, five and ten years, with an average term of around seven years. The industry argues that this is insufficient to provide the

⁵² VicForests 2005, *New System to ensure timber industry future*, media release, 31 March 2005.

⁵³ Ibid.

policy certainty required for investment. A comparison is made with NSW and Tasmania where twenty-year licences are available.

The Allocation Order governing forest resource allocation in Victoria describes the timber available to VicForests for the next 15 years, divided into three rolling five year periods. A review is undertaken every five years. The Minister for Environment must give ten years' notice of any change in the Allocation Order, unless a shorter period is mutually agreed by VicForests. The Order can also be reviewed and varied by the Minister in certain circumstances, for example, after a major bushfire in a forest. Again, ad hoc reviews of this type need to be mutually agreed between DSE and VicForests.⁵⁴

VicForests maintain that because the Minister can essentially review the entire Allocation Order every ten years that they are not given the long-term resource certainty from DSE required to provide the industry with 15-year licence security. Accordingly, 10-year licences are the maximum that will be issued by VicForests. However it could be argued that because VicForests are provided with 10-year absolute certainty — as well as the potential for some 15-year certainty (on the basis that it is unlikely the entire resource up for review would be withdrawn following a five-yearly review process) — that some 15-year timber licences could be auctioned. Nevertheless, it is also worth noting that the new system will arguably provide industry with greater resource security than before, because under the previous system — while common practice included a period of notice in advance of supply changes — the Minister was not bound to provide any notice of changes to the size of available timber resource. Under the guidelines contained in the Allocation Order, notice must be provided as outlined above.

Overall, on advice from DSE, there seems to be no reason why some 15-year licences cannot be made available. This would increase the certainty for investors and provide similar levels of resource security as are available in other States.

Market dominance

The final area of concern is the fear of market dominance by one or two players. On this view, by virtue of their scale, capital-intensiveness and productivity, the larger firms will have an advantage in bidding for timber and will gradually force the medium and smaller-sized players out of the game.

This may be true to some degree. Some in the industry see room for only three large players, each with an annual production of at least 80,000 m³, together with a few small family producers with their own niches. While there will be adjustment costs (including in some regions), which the government may want to address, this could in fact be a desirable outcome if it leads to a rationalised and more efficient industry.

There are, on the other hand, some factors that would constrain such an outcome. First, the larger players are interested only in processing Mountain Ash and preferably higher-grade timber. Mixed species and D- and E-grade timber, of which there is a large quantity, may largely be left to medium-sized and smaller firms. Secondly, the advantages held by the larger players in bidding for timber will be reduced in cases where the logs would be transported over long distances.

⁵⁴ Consultations with DSE representatives.

Thirdly, some of the medium-sized players source some of their logs from other States, particularly NSW.

5.2 Resource security

The issue of resource security is a critical one for stakeholders in Victoria's forest and forest products industries — without adequate resource security, industry participants will be unwilling and unable to make the capital investments required to continue to increase their focus on greater value adding. This will compromise the continued prosperity of the industries, and put at risk the economic benefits the industries are capable of generating for the State.

The industry has been faced with an inexorable decline in its resource base for years. The Government's decision at the last State election to stop harvesting in the Otways came out of the blue and is frequently cited as evidence of policy uncertainty.

Regional forest agreements

The industry is clearly concerned that it has been subjected to very considerable policy change in the last few years. These concerns are warranted. Ten years ago it was hoped that the Regional Forest Agreement (RFA) process, agreed after much debate between the Commonwealth and State governments and the industry, would provide both an environmentally sustainable framework for development and the resource security the industry needed in order to be able to invest with any certainty.

In 1992, the Commonwealth, State and Territory Governments agreed on the *National Forest Policy Statement* (NFPS). This policy document provided a 'blueprint' for the future management of Australia's forests, particularly its native forests. The underlying goal of the NFPS was the development of an economically viable and ecologically sustainable forest industry.

The NFPS provides for the integrated management of forest resources through comprehensive regional assessments of forest regions and Commonwealth-State regional forest agreements (RFAs). These agreements are intended to provide greater certainty and security about both forest conservation and timber resource supply. More specifically, RFAs are intended to:

- reduce uncertainty for industry and duplication in government processes for land use decision-making;
- produce long-term solutions which meet the requirements of governments, the community and industry, and which are consistent with the principles of ecologically sustainable development;
- equitably balance competing objectives and coordinate the policies and activities of governments;
- maintain regional, environmental, heritage and social values; and
- provide secure access to resources for the forest industry.

The RFA process was an extensive process involving wide ranging stakeholder consultation and scientific studies. As noted by the Department of Agriculture, Forestry and Fisheries:⁵⁵

The RFA process broke new ground along the way and added volumes to Australia's storehouse of knowledge about forest uses and values. Each RFA involved at least 50 assessment projects in disciplines ranging from biology and zoology to economics and sociology.

The social assessment process for the RFAs is another major development in land management policy. It added to the stockpile of information about how regional and rural communities use and value native forests. One of its legacies was the establishment of a national social sciences centre.

The RFAs that were signed in Victoria cover:

- *East Gippsland* — which coincides with the East Gippsland Regional Forest Management Area. This RFA was signed in 1997 and set aside nearly half the region's 1.2 million hectares in a reserve system.
- *Central Highlands* — which includes the western part of the Central Gippsland Forest Management Area and the majority of Dandenong and Central Forest Management Areas. Signed in 1998, this agreement added 115,000 hectares of public land to reserves, an increase of nearly two-thirds.
- *North East Victoria* — which encompasses North East and Benalla–Mansfield Forest Management Areas; this RFA increased the area set aside for conservation by 42 per cent in 1999.
- *Gippsland*, comprising the Tambo Forest Management Areas. Concluded in 2000, this RFA increased the area set aside for reserves by over 50 per cent.
- *West Victoria* — which includes the Midland, Otways, Portland and Horsham Forest Management Areas. This RFA was also signed in 2000 and saw a significant increase in the area set aside for conservation.

The RFA process, which was both time and resource intensive for government and industry, dominated the policy debate in the 1990s. It was designed to produce long-term outcomes that provided future resource security to the industry within an ecologically sustainable regime for Victoria's forests. While the RFAs produced substantial reductions in the areas that could be harvested, however, the industry welcomed the degree of policy certainty that appeared to have been established for the future.

Our forests, our future

Unfortunately, this confidence was short-lived. Soon after the last RFAs were signed, a concern arose within the State government as to whether the forests allocated for timber production under the agreements were managed in an ecologically sustainable way, that is, in a way that maintains species diversity, water resources, and soil structure and quality. In addition to this, there were concerns that the State did not receive a 'fair return' for the sale of forest resources as the prices set by the State Government for native forest products were considered to be relatively low.

⁵⁵ Department of Agriculture, Forestry and Fisheries Regional Forest Agreements website, last accessed 3 February 2005.

In response to this, in March 2001, the Victorian government commenced a review of the sustainable yield figures and the process for licensing of sawlogs from public forests. The review concluded that sawlog supply levels must be reduced by a third across the State to achieve sustainable forest management, particularly in East Gippsland, Central Gippsland and Midlands Forest Management Areas.

Subsequently, in 2002 the Victorian government implemented the *Our Forests Our Future* policy which reduced the amount of forested land set aside for harvesting by about 32 per cent. While this may have been justified on the grounds of sustainability, nevertheless it clearly compromised the resource security and associated policy certainty for investment that had been promised to the industry as a result of the RFA process.

The Otways decision

Following this policy change, also in 2002 the Government announced that there would be no further logging in the Otways. This decision, which occurred just two years after the relevant RFA was concluded, appeared to have been taken for political rather than scientific reasons. At any rate, even though it only reduced the State-wide resource available for harvesting by around 4 per cent, the impact of this decision on the industry's confidence was severe. The industry representatives interviewed in the course of this project generally regarded the Otways decision as a watershed and felt that they no longer felt there was any policy certainty as regards the future resource available for harvesting.

As part of the *Our Forests Our Future* policy, the State Government provided \$80 million for a structural adjustment package to industry comprising:

- a Voluntary Licence Reduction Program where licensees were invited to surrender their forest produce licences in return for financial compensation; and
- a Workers Assistance Program.

According to VAFI, uncertainty in relation to the allocation of land for harvest is continuing.⁵⁶ Parallel resource estimates and modelling conducted by DSE and VicForests have resulted in differing estimated resource volumes that have the potential to negatively impact on Victoria's forest industries. The *Our Forests Our Future* (OFOF) policy provided for a sustainable yield of 575 000m³. However this has not yet been delivered to industry with the 2005–06 sawlog supply sitting at only 530 000m³. Further, VicForests current modelling provides for an additional progressive decline in estimated sawlog availability of approximately 80 000m³ per annum between 2005–06 and 2015–16. This dissonance between the resource estimates calculated by DSE and VicForests is a major source of uncertainty for industry.

Other resource security issues

There appear to be two further threats to future resource security in the industry (the relationship between licence term and resource security was addressed above.):

- Ending the harvesting of *old growth forests*. While old growth accounts for only a relatively small proportion of the native hardwoods that are available for

⁵⁶ All information on shortfalls in supply projections was provided by VAFI.

harvesting annually in Victoria as a whole — around 80 per cent of all old growth statewide is in reserves or otherwise unavailable for harvesting — the issue is of particular significance in East Gippsland, where old growth accounts for around 40 per cent of the total resource.

- The possibility that harvesting will be banned in *water catchment areas* in the future.

Old growth

The Victorian Government has a policy of protecting old growth forests. The definition of old growth forests currently accepted by all State governments is:⁵⁷

...an ecologically mature forest where the effects of disturbances are now negligible.

In order to define and map old-growth forests, some States — notably Victoria and New South Wales, as well as the Commonwealth — have developed operational interpretations based on the above definition. In Victoria, old growth forests are defined as:⁵⁸

Forest which contains significant amounts of its oldest growth stage in the upper stratum — usually senescing trees — and has been subjected to any disturbance, the effect of which is now negligible. A maximum regrowth crown cover of 10 per cent applied. Areas with regrowth crown cover of more than 10 per cent are almost always associated with significant unnatural disturbance.

It follows from the above definition that ‘old-growth’ does not necessarily mean that a forest is pristine and free from European disturbance — which is a common misconception when forests are referred to in this way.⁵⁹ Rather, old growth forests are those forests that have ecologically matured and exhibit characteristics of a forest in its older growth stages. However the public perception of ‘old growth’ forests as untouched and unique has often led to opposition to harvesting in these areas.

Community concern about the sustainability of harvesting from old growth forests means that the security of this resource for industry is not certain. In the first instance, any reduction in the availability of old growth resource for harvesting should be dealt with under the provisions for ‘swaps’ in Victoria’s RFAs — that is, if existing harvestable areas are subsequently reserved, additional suitable land should be made available for the industry from within Victoria’s non-harvestable land area.

It would also be prudent for industry to develop strategies for both reducing the footprint with which they use the existing old growth resource, and look to alternative sources of supply. In this context, there are a number of different forest management techniques that could be employed. If necessary, these techniques may be particularly useful in helping the industry in the short to medium-term to transition away from old growth harvesting. For example:⁶⁰

⁵⁷ JANIS 1997, *Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia*. a report by the Joint ANZECC/MCFFA National Forest Policy Statement Implementation Sub-Committee.

⁵⁸ Department of Agriculture, Fisheries and Forestry, Bureau of Rural Sciences 2004, *Science for decision makers — Old growth forests in Australia: Conservation status and significance for timber production*, p. 4.

⁵⁹ Department of Natural Resources and Environment Victoria 1996, *Study of Old-growth Forest in Victoria's Central Highlands*, Forests Service Technical Reports 96-3, November.

⁶⁰ G. Gooding 2005, unpublished background notes provided by VAFI.

- *thinning regrowth* — this will allow sawlogs to grow faster and be harvested sooner;
- *removal of overwood in mixed age forest* — there are large areas of mixed age forest that were selectively cut in the 1960s and 1970s in East Gippsland, which carry patchy regrowth. The release of the regrowth by removal of overwood will have an immediate impact on the sustainable yield;
- *mixed age harvesting* — where there are mixed age forests that have been traditionally clearfelled, advanced regrowth mixed with mature trees may be harvested before it reaches sawlog grade. Mixed age harvesting may allow these trees to grow on to become sawlogs;
- *innovative harvesting processes* — currently, some areas are excluded from harvesting because of current harvesting practices i.e. operators cannot extract the trees without guaranteeing the tree will not fall into reserved streamside buffers. The OFOF policy estimates this might involve as much as 18000 m³/yr of potential sustainable supply. Innovative harvesting systems may allow the harvesting of this wood;
- *opening up hitherto uncommercial areas* — similarly, some areas have been excluded to date due to the low non-commercial sawlog yields. OFOF estimates that, given markets for the associated residual logs, an additional 8000 m³/yr of sustainable sawlog supply is available;
- *mechanical harvesting* — FWPRDC research indicates this may be used to increase yields;
- *improved utilisation* — residual logs, particularly in East Gippsland, have not been fully utilised. Market opportunities exist for woodchip, structural veneers, charcoal manufacture and fuel for renewable energy; and
- *specialisation of milling techniques* — there may be opportunities for specialist sawmills to utilise logs currently not considered viable for traditional sawmills – small logs from thinning or larger defective logs.

Many of these techniques are currently being explored as part of the 'East Gippsland Project' to reduce the impact of harvesting in these forests.

The issues related to harvesting in old growth areas will become increasingly important if — as VAFI contends — mature forests with little historical or ecological value are gradually redefined as old growth forests in the years to come and harvesting is restricted in these areas. In addition to better utilise the existing resource, on-going strict application of the agreed definition of 'old growth', as well as measures as ensuring that 'right to harvest provisions' are written into relevant contracts, should alleviate some of these concerns — there is however currently no overarching legislation or policy in Victoria to guide this.

The government has a provision for making 'swaps' between areas currently available for harvesting and some native forest that is presently locked up in reserves but has a relatively low conservation value. If harvesting of old growth were to be stopped, the industry should be provided with additional resources — ideally in the form of appropriate 'swaps' — be means of compensation.

Harvesting in water catchments

A further major threat to resource security for Victoria's forest industries lies in the controversy surrounding harvesting in Victoria's major water catchment areas. The contention is that harvesting in these areas swaps 'water for trees' and results in water shortages and detrimental downstream environmental impacts across the State.

DSE have conducted an analysis on the effects of timber harvesting in catchment areas and concluded that:⁶¹

- in terms of *water quantity* — while timber harvesting and regeneration results in relatively more water usage than no harvesting — because mature forests use less water than young, regrowth trees — the impact of harvesting is considerably less than the potential impact of bushfires on water usage in catchment areas, and additional water generated by stopping harvesting in some of Melbourne's largest catchments could not be utilised in any case because of storage and pipeline capacity issues;
 - further scientific studies show conclusively that timber harvesting has not contributed to water restrictions in Melbourne; and
- *in terms of water quality* — the impact of well-managed timber harvesting on water quality is small and temporary at the source. The impact becomes negligible the further away from the source (that is, by the time the water reaches the dam).

Moreover, alternative wood supply — such as plantations — use more water than native forest regrowth, re-growth also provides a sink for greenhouse gases (a positive externality), and more water is lost from pipeline wastage than from forest harvesting. On this basis, it is difficult to see a justification for a policy change in this area.

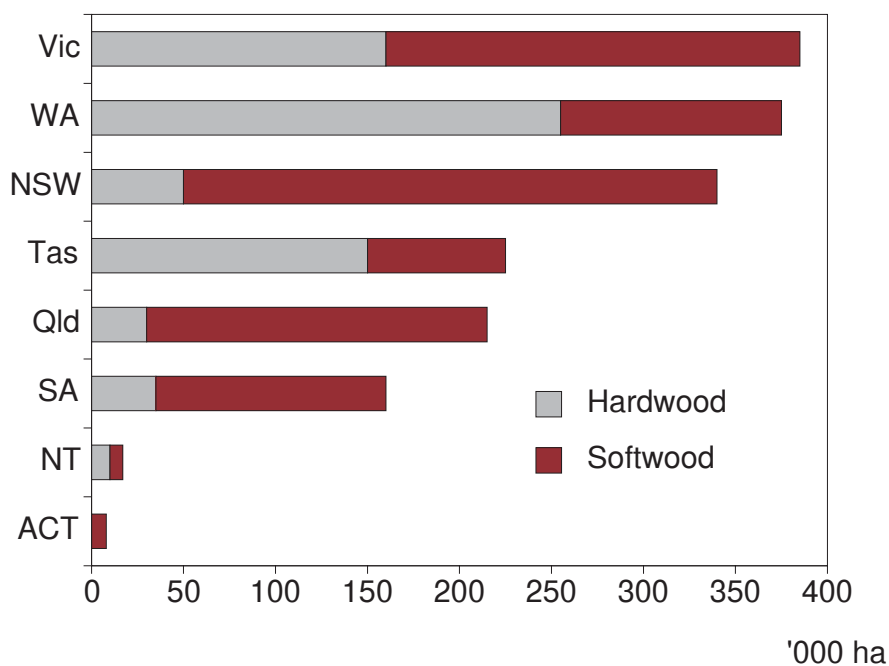
5.3 Role of plantations

Victoria currently has the largest plantation estate in Australia (around one quarter of the national total), with around 200 000 ha of softwood plantations and 170 000 ha of hardwood plantations. The vast majority of these plantations (about two thirds) are privately owned, largely by MIS companies.⁶² While most existing plantations are softwoods (figure 5.1), most of the new plantations established over the last decade have been short rotation hardwoods. These resources are currently managed predominantly to supply pulplogs and woodchips for pulp and paper product markets, both within Australia and overseas.

⁶¹ Department of Sustainability and Environment 2003, *Producing Timber and Water for Melbourne*, Forest Management fact sheet, available at <http://www.dse.vic.gov.au/dse/nrenfor.nsf/childdocs>.

⁶² H. Crawford 2005, *op. cit.*

Figure 5.1

HARDWOOD AND SOFTWOOD PLANTATIONS ACROSS AUSTRALIA: 2004

Source: National Plantation Inventory 2005, in H. Crawford 2005, *Victorian Timber Industry: Plantations — A Hardwood Industry Perspective*, prepared for VAFI, August 2005.

Hardwood sawlog plantations in Victoria

The growth in forest resource modelled in chapter 3 will need to be derived from a number of sources, including increased establishment of plantations. In general terms, socio-economic analysis of the economics of Victoria's forest industries concluded that about 55 000 ha of new plantations — in addition to the 25 000 ha pa of Victorian new planting already planned under existing policies (see box 5.3) — will be required just to replace the loss of resource resulting from the Our Forests Our Future and Otways policy decisions.⁶³

More particularly, in regards to the hardwood sawlog sector, while improved forest management techniques and better utilisation of existing sawlog resources can play some role in stimulating growth, it is almost certain that some part of any future growth in the supply of timber for hardwood sawlogs will need to come from plantations managed specifically for this purpose. It is important to note in this context that the length of time required to manage plantations appropriately for sawn timber will restrict the usefulness of this strategy somewhat in the short to medium-term.

⁶³ Cameron Consulting 2005, op. cit.

Box 5.3

PLANTATIONS FOR AUSTRALIA: THE 2020 VISION

In July 1996, the Commonwealth and State governments agreed on a national goal of trebling the nation's plantation estate (to around 3 million ha) by 2020 through both large-scale industrial plantings and small plantings on farms. Key factors identified as necessary to achieve significant growth in the private plantation estate included:

- boosting the availability of suitable land;
- increasing the commercial attraction of private investment in plantations;
- developing a plantation culture within local communities and improving information on plantation profitability and prospects; and
- removing policy impediments to the expansion of private plantations in areas such as taxation, property rights and inefficient pricing of substitute products (including logs from State forests).

Since the development of the 2020 vision, more than half a million hectares of new plantations have been established since 1997 at an average planting rate of around 85,000 hectares per annum. The majority of these plantings are hardwood (eucalypt) plantations, mostly established with private capital in managed investment scheme (MIS) plantation projects. The planting rate based on these projects has been highly cyclical, reflecting frequent changes in the Government regulatory environment. In the softwood (pine) sector, most planting has been in second rotation forests to replace trees already harvested, with around 11,000 hectares per annum of new pine forests established since 1997.

Source: <http://www.plantations2020.com.au>

Despite the high level of plantations in Victoria, currently, plantations play only a small role in the provision of timber for hardwood sawlogs in the state. Less than 20 000 ha of plantations have been established for the purpose of hardwood sawlog production in Victoria, compared with the utilisation of a native forest resource for hardwood sawlogs of around 600 000 ha.⁶⁴ The only key areas within Victoria currently being managed for sawlog production are in Gippsland, with 13,916 ha. The situation is similar, although less pronounced, nationally — a review by the Forest and Woods Products Research and Development Corporation (FWPRDC) found that in the six key regions that comprise over 90 per cent of Australia's hardwood plantations, only around 17 per cent of hardwood plantations are being managed for sawlog production.⁶⁵ According to VAFI, concerns regarding the quality of these short rotation plantation sawlogs have also been raised.

The main reason for the low proportion of plantations currently devoted to hardwood sawlog production is the existence of investment incentives for plantations with short-term rotations, which are generally unsuitable for sawlogs. Tax incentives related to MIS investments favour maximising the number of trees per hectare and harvesting these trees when they are relatively young (eight to ten years). However timber suitable for sawlogs, particularly appearance-grade timber, needs to have been thinned and pruned (unless the particular species regularly sheds branches) and allowed to grow for around 30 years. The MIS incentives are reflected in investment patterns:

- Softwood plantation investment in the 1990s (which are now available for harvest) is predominately short rotation crops — suitable only for fibre in pulp paper and panel products.

⁶⁴ H. Crawford 2005, op. cit.

⁶⁵ Ibid.

- Current hardwood plantations have also been established for the purposes of pulp rather than for sawn timber production.⁶⁶

The forecast increase in sawlog supply from hardwood plantations is therefore considerably less than the forecast decrease in supply of hardwood sawlogs from native forests. The FWPRDC forecast that by 2035, across Australia, plantation sawlogs are likely to make up:

- less than 15 per cent of the 2001 native forest supply level based on owner/grower forecasts; and
- about 18 per cent of total estimated log availability.⁶⁷

This has implications for imports of hardwood products and/or substitution of hardwoods for other materials. The situation was summed up by the FWPRDC that concluded:⁶⁸

... under current policies, the estimated sustainable hardwood log availability from Australia's public forest is expected to fall by 36 per cent or 776,000 m³ between 2001 and 2039 and by 25 per cent of 115,000 m³ from private forests. If policies change and more native forests are reserved, these falls could be extreme. By 2035, log availability from hardwood plantation is estimated to reach only about 376,000 m³ ... unless more plantations managed for hardwood sawlogs are established in the near future, Australia will have to meet its demand for high quality hardwood appearance timber for building and furniture with increased imports.

Policy issues

The recent reform of Victoria's forest industries is likely to result in a restructuring of the sector such that any price-based and allocative distortions generated in the past will begin to resolve. As the industry adjusts to market-based pricing and allocation, the true value of Victorian hardwood sawn timber products will be more apparent. Strategies such as value-adding and using third party certification to distinguish Victorian hardwood timber products from competitors — particularly imports — will help in this regard. One of the by-products of this restructuring process should be stronger market signals to investors about the benefits of investing in plantations for sawlog markets.

However in addition, there is also likely to be a function for government in promoting the use of plantation timber for hardwood sawlog products. The time required for structural adjustment to take place, as well as the various market failures associated with the forest industries currently — in particular around the potential importation of illegally and unsustainably sourced timber, and the existence of strong incentives for investment in short-rotation plantations — signal a role for government in creating a policy environment conducive to investment in long-rotation hardwood timber plantations.

Particular issues that government may need to address in devising a strategy to promote further expansion of Victoria's plantation estate include:⁶⁹

⁶⁶ Forest and Woods Products Research and Development Corporation (FWPRDC) 2005, *Eucalypt Plantations for Solid Wood Products in Australia – A Review*, p. v.

⁶⁷ A. Woodard and B. Iskra 2005, op. cit.

⁶⁸ Ibid.

⁶⁹ H. Crawford 2005, op. cit.

- the prospect for continuation of the current taxation regime, given notice by the federal government of sunset provisions, and the current review of the MIS taxation provisions;
- investor preference for short term over long term investments — this may influence take-up of hardwood sawlog opportunities;
- the increasing cost of suitable land in key plantation growing regions, as forestry companies and other land users compete;
- the difficulty in assigning a market value to environmental services from plantations, particularly in lower rainfall zones;
- the potential replanting of harvested softwood plantations with hardwoods as forest owners look for higher investment returns.
- the removal of planning impediments, particularly as these relate to access to land and water;
- the level of integration and support from within the industry — a review of successful strategies to promote investment in plantations concluded that strong integration of timber production with established processing industries and secure end markets has been a successful factor in sawlog plantations expansion overseas;⁷⁰ and
- the resolution of the 'old growth' classification issue — investors may be discouraged from investing in the longer term rotation plantations that are needed to produce sawlogs, because certainty about the ability to harvest these later on is reduced by the risk that they will eventually be classified as old growth.

A number of possible responses by government are discussed below.

Taxation

The provisions of the Commonwealth Government's MIS, with its tax incentives for short rotation plantations, biases the industry towards fast returns and intensive planting. As discussed above, this translates into blue gums for woodchips and pulp, and provides a disincentive to produce plantations for sawn timber.

The Commonwealth Government is currently conducting a review of these provisions. The review's of reference incorporate an examination of whether the current commercial and taxation arrangements for plantation investment are appropriate, including those affecting long-term investment in plantations. In particular:⁷¹

- the commercial viability and current tax treatment of plantation investment;
- whether the operation of the Income Tax Assessment Acts impedes investment in longer term forest rotations which produce higher value products;
- the role of State and Territory Governments in plantation industry development as investors, growers and land managers, and any implication this has for competitive neutrality with regard to tax liabilities and incentives;

⁷⁰ M. Poynter and B. Pigdeon 2005, op. cit.

⁷¹ Commonwealth Minister for Revenue and Assistant Treasurer 2005, *Review of the Taxation of Plantation Forestry*, available at <http://assistant.treasurer.gov.au/mtb/content/pressreleases/2005/056.asp>

- the capacity to adapt existing tax policies to contribute to achieving the Australian and State Governments' desire to achieve a greater integration of plantation and natural resource management policies to improve the management of salinity and water quality; and
- the relative roles and effectiveness of tax system and expenditure programmes in the delivery of assistance to the industry.

If it were decided to alter the incentives for short-term plantations in favour of sawn timber, a key issue would be a need to ensure that plantations are still able to compete on economic grounds for available land. It is not clear that the economics of the industry — as currently structured — offer any advantage when it comes to bidding for suitable land. In particular, the favoured species, Mountain Ash, is difficult to grow in plantations and grows best at higher altitudes, where available land is scarce. Without some incentives, the outlook for plantations to produce sawlog timber would be bleak.

R&D support — a role for the Victorian government

The Victorian government has been active in recent years in encouraging and facilitating hardwood sawlog plantation expansion, albeit on a very small scale (box 5.4 below outlines progress in relation to this).

Box 5.4

VICTORIAN GOVERNMENT EFFORTS TO PROMOTE PLANTATIONS FOR SAWLOGS

The Victorian government has offered a range of subsidies to selected landowners through taxpayer-funded programs such as the Farm Forest North East (FFORNE) project, Plantations for Greenhouse and West RFA Sawlog Project/GroWest. 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:

- 1 700 ha. planted throughout north east Victoria via the FFORNE project;
- around 2 000 ha. planted throughout Victorian via the Plantations for Greenhouse project (note that about one third of this was radiata pine); and
- about 800 ha. planted throughout western Victoria under the West RFA/GroWest projects (although about half of this was 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, in moderate and low productivity zones.

However, the average coupe size of these plantations is small and the dispersed nature of these plantations would impact on harvesting costs and their commercial viability.

Source: M. Poynter and B. Pigdeon 2004, *Attracting investment in hardwood sawlog plantation resources*, prepared for VAFI, October 2004.

However further efforts are clearly required if hardwood from plantations is to play any substantial role in providing additional forestry resources for sawlog production in Victoria going forward.

A key area where government support could be provided is in relation to the technologies required to allow the use of short rotation plantations to produce sawn timber. Work has been undertaken to develop technology to a point where companies can saw and convert very young plantation grown eucalypt into higher

value sawn timber. This is being done by Forest Enterprises Australia (FEA) in Tasmania. Innovative technology developed at FEA's Bell Bay sawmill has enabled the sawing of 8–10 year old plantation trees, with the sawmillers drying the product to a point where it has application in the furniture and, potentially, the building industry.⁷² Appropriate government support in areas such as this could hasten the use of Victoria's vast plantation resource for sawn timber products in the future.

Public investment in plantations

Another option open to governments wanting to promote sawn timber plantations is direct investment. While the context is very different to that which exists in Victoria, the Queensland government has been successful in using public investment to promote the establishment of hardwood sawlog plantation resources in that state, albeit on a scale much smaller than that required to meet Victoria's long term supply needs (box 5.5).

Box 5.5

QUEENSLAND GOVERNMENT SUPPORT FOR HARDWOOD SAWLOG PLANTATIONS

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 saw milling 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 000m³ 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 m³/ha./annum (in line with estimates from DPI Forestry), a mature estate of only about 6 700 ha. would be required to gain a sustainable yield of 80 000 m³ 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 m³ of sawlog per annum.

Plantations are funded by the government under three options – land rental (about 70 per cent of plantations), land purchase (about 25–30 per cent), 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. (i.e. about 3-4 per cent of land value cf. with the accepted industry standard of 5 per cent).

The Queensland model is one that should facilitate rapid plantation expansion, but is wholly taxpayer funded. Government representatives are 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.).

Source: M. Poynter and B. Pigeon 2004, *Attracting investment in hardwood sawlog plantation resources*, prepared for VAFI, October 2004.

⁷² Australian Forest Grower Magazine, Spring 2003.

As with all use of taxpayer resources, investment in hardwood sawn timber plantations by the Victorian government would need to be compared to the full range of available alternative investments. The ability of the government to ensure that timber imports to Victoria were sourced from legal and sustainable sources, as well as the extent of continuing community concern about harvesting in native forest areas would be key issues in this context.

Appendix A

The MMRF–Green model

The Monash Multi–Regional Forecasting (MMRF) Green model is a very detailed dynamic, multi–sectoral, multi–regional model of Australia. The model has its origins in the Centre of Policy Studies' (Monash University) family of computable general equilibrium models of the Australian economy, with the original version having been first developed in the mid-1970s. The Monash models are transparent, thoroughly documented and subject to extensive national and international peer review.

The model is ideally suited to modelling the industry, regional, State/Territory and national impacts of public policy changes, particularly energy and greenhouse–related policies. The model recognises:

- domestic producers classified by industry and domestic region;
- investors similarly classified;
- up to eight region–specific household sectors;
- an aggregate foreign purchaser of the domestic economy's exports;
- flows of greenhouse gas emissions and energy usage by fuel and user;
- up to eight state and territory governments; and
- the Federal government.

MMRF–Green is the ideal general equilibrium model for projecting macroeconomic outcomes under different scenarios and for examining the industry–specific and regional impacts of greenhouse and energy policy options. It is a dynamic, general equilibrium model — and so is ideally suited to estimating the direct and indirect impacts of policies designed to operate over a number of years — and was designed specifically to model the impacts of greenhouse policies on Australia's regions.

The model contains explicit representations of intra–regional, inter–regional and international trade flows based on regional input–output data developed at COPS, and includes detailed data on state and Federal governments' budgets. As each region is modelled as a mini–economy, MMRF–Green is ideally suited to determining the impact of region–specific economic shocks. Second round effects are captured via the model's input–output linkages and account for economy–wide and international constraints. Outputs from the model include projections of:

- GDP and aggregate national employment;
- sectoral output, value–added and employment by region;
- export earnings, import expenditure and the balance of trade;
- greenhouse gas emissions by fuel, fuel user and region of fuel use;
- energy usage by fuel, energy user and region of energy use;

- State and Territory revenues and expenditures;
- regional gross products and employment; and
- regional international export earnings, international import expenditures and international balance of payments.

Numerous applications of MMRF–Green have been commissioned by commercial and government organisations. Some of these studies simulated:

- the regional effects of national policies;
- the effects of region–specific infrastructure projects;
- the effects of alternative regional forestry policies;
- the effects of different policies to reduce Australian emissions of CO₂ in line with Kyoto commitments.

MMRF–GREEN has been enhanced in a number of areas to improve its capability for environmental analysis. These enhancements include:

- an energy and gas emission accounting module, which accounts explicitly for each of the 49 industries and eight regions recognised in the model;
- equations that allow for inter–fuel substitution in electricity generation by region; and
- mechanisms that allow for the endogenous take–up of abatement measures in response to greenhouse policy measures.

Table A1.1 below provides details on the 49 industry sectors contained in MMRF–Green.

TABLE A1.1

INDUSTRIES IN MMRF-GREEN

Name	Description of major activity
1. Agriculture	All primary agricultural activities plus fishing
2. Forestry	All forestry activities, including logging and management
3. Iron ore	Mining of iron ore
4. Non-iron ore	Mining of non-iron ores, including gold and base ores
5. Black coal	Mining of black coal – thermal and metallurgical
6. Crude oil	Production of crude oil
7. Natural gas	Production of natural gas at well
8. Brown coal	Mining of brown coal
9. Food, bevs and tobacco	All secondary agricultural activities
10. Textiles, clothing, f'twear	Manufacture of textiles, clothing and footwear
11. Wood and paper products	Manufacture of wood (including pulp) and paper prods
12. Chemical prods.	Manufacture of basic chemicals and paints excl. petrol
13. Petroleum products	Manufacture of petroleum products
14. Building prods (not cement & metal)	Manufacture of non-metallic building products excl. cement and metal
15. Cement	Manufacture of cement
16. Iron and steel	Manufacture of primary iron and steel.
17. Alumina and aluminium	Alumina refining and aluminium smelting
18. Other metal products	Manufacture of other metal products
19. Motor vehicles and parts	Manufacture of motor vehicles and parts
20. Other manufacturing	Other manufacturing including electronic equipment
21. Electricity – black coal	Electricity generation from black coal thermal plants
22. Electricity – brown coal	Electricity generation from brown coal
23. Electricity – gas	Electricity generation from natural gas
24. Electricity – oil prods.	Electricity generation from oil products thermal plants
25. Electricity – hydro	Electricity generation from renewable sources – hydro
26. Electricity – biomass	Electricity generation from renewable sources – biomass
27. Electricity – biogas	Electricity generation from renewable sources – biogas
28. Electricity – solar	Electricity generation from renewable sources – solar
29. Electricity – wind	Electricity generation from renewable sources – wind
30. Electricity supply	Distribution of electricity from generator to user
31. Urban gas distribution	Urban distribution of natural gas
32. Water and sewerage	Provision of water and sewerage services
33. Construction services	Residential building and other construction services
34. Trade services	Provision of wholesale and retail trade services
35. Road transport– direct	Provision of road passenger transport services
36. Road transport – freight	Provision of road freight transport services
37. Rail transport – direct	Provision of rail passenger transport services
38. Rail transport – freight	Provision of rail freight transport services
39. Water transport – direct	Provision of water transport for international freight and passenger carriage.
40. Water transport – freight	Provision of water freight transport services within Australia
41. Air transport – passenger	Provision of air transport services for international freight and passenger carriage.
42. Air transport – freight	Provision of air freight transport services within Australia

Source: COPS

The Productivity Commission undertook an evaluation of the four main, large-scale CGE models that could be used to assess the economy-wide and industry-specific impacts of greenhouse policies.⁷³ The Commission identified a number of additional advantages that MMRF-Green has over its main rivals. In particular, MMRF-Green was found to have the most detailed energy sector representation, allowing substitution of power generated by different sources on the basis of relative price differentials. The Commission also identified that MMRF-Green:

- has the most household detail, allowing it to provide estimates of the impact of greenhouse policies on households in each of Australia's 57 regions;
- is one of only two models to explicitly model electricity generation from renewables. Recent updates to the model have incorporated five separate renewable generation sectors (wind, solar, hydro, biomass and biogas) — we are not aware of any other model with this capability;
- accounts for an extended range of greenhouse gases (many models are only able to account for CO₂); and
- is one of the two most thoroughly documented models in terms of description, mathematical equations and source code — this facilitates peer review of MMRF-Green modelling results and boosts the model's credibility relative to those models that are not well documented.

MMRF-Green has been used recently to successfully model the economic impacts of a range of greenhouse policy alternatives including:

- both national and international emissions trading;
- the NSW greenhouse benchmark scheme for electricity retailers;
- an emissions intensity requirement, similar to the NSW scheme, applied at the national level;
- the Commonwealth's Mandatory Renewable Energy Target (MRET);
- a carbon price;
- energy efficiency standards; and
- demand-side measures.

⁷³ Productivity Commission 2001, op-cit.