Review of Studies of the Socio-Economic Impact of Forest Industries in Australia
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Prepared for the Forest and Wood Products Research and Development Corporation

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The purpose of this study is to provide the Forest and Wood Products Research and Development Corporation with an up-to-date survey of reports and other published and unpublished information relating to the socio-economic importance of the forestry and forest products industry on regional communities. Following a wide-ranging review, 57 reports were compiled and incorporated in an index of studies and an annotated bibliography summarising socio-economic elements.

Dominating this review are the projects undertaken as a part of the Comprehensive Regional Assessments (CRAs), that provided the basis for State and Federal Governments to sign Regional Forest Agreements (RFAs) for major forest regions. Estimates of potential changes in the level of wood supplied under the RFAs were used to derive flow-on effects to the regions directly associated with the forestry activities.

Concurrently, other socio-economic impact studies have taken place at national, State and regional levels to assess, for example:

- Impacts of plantation forestry on farming communities (Tonts, Campbell and Black, 2001, Petheram et al. 2000);
- Impacts of hardwood plantation development (Schirmer 2002, Access Economics 2002);
- Industry or sector impacts on regional economies and national economic contribution (Margules Groome Poyry 1995, Dargavel et al 1998); and

The key themes emerging from this review are:

- That **regional communities dependent on native forests** were deeply **concerned with resource security** and the high level of risk associated with future investments;
- **The forest industry is interlinked** with the rest of the economy. Its non-timber inputs represent the outputs of other industries, and its timber outputs represent the inputs of a range of industries;
- **Wood processing** has been consistently identified as **an important contributor to regional prosperity**. There are large differences in the direct and indirect socio-economic impacts of wood processing industries on regional communities, depending on the nature and scale of processing and the dependence of communities on these industries;
- The role of **plantations as a major contributor to regional and community development** through social, economic and environmental benefits is now widely recognised. However, in addition to a range of positive outcomes, the changes that new industry activities provide have brought their own level of uncertainty for local businesses; and
- The recent investment in hardwood plantation development has taken place across a number of regions, against the **backdrop of the long-term social trends in rural communities**. Trends include
ageing populations, diminishing interest in family members remaining on farms, and a significant increase in the average size of farms.

The coverage of socio-economic studies across key industry drivers is set out below. This coverage is based on the 57 published studies referenced for the review.

### Coverage of socio-economic studies across key industry drivers

<table>
<thead>
<tr>
<th></th>
<th>RFA resource allocations</th>
<th>Post-RFA resource allocations</th>
<th>Privatisation of public forest assets</th>
<th>Land use change to forestry</th>
</tr>
</thead>
<tbody>
<tr>
<td>National coverage</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Regional coverage</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>✓</td>
</tr>
</tbody>
</table>

This analysis shows that studies of socio-economic impacts have addressed several key industry drivers. One notable exception is the impact of privatisation of public forest assets. This review concludes that some ongoing and new processes notably the RFA reviews, the Montreal Process and forest management certification will extend upon the considerable body of literature devoted to the socio-economic impact of Australian forest industries in regional communities. Based on this review, there are three apparent information gaps that warrant further attention in due course. These are:

1. The development of **stronger linkages between social assessments and economic appraisals** of forestry-related activities, as the nature of the stakeholder or network interactions in regional communities commonly underpins the likely outcomes of changes to the forest industries;

2. **Longitudinal studies of the impacts** of Australian forest industries on regional communities, including development of a framework for comparative socio-economic assessment processes over time; and

3. **Further analysis of non-market values (eg recreation, water quality, aesthetics)** associated with native forest and plantations, and their flow-on effect is required. While there is extensive application of input-output analysis, minimal attention has been devoted to economic values for competing resource dependent activities within regions.
2.1 Introduction

There have been major changes in the Australian forest industries during recent years, including the ongoing shift from native forests to plantations for commodity wood products, privatisation of public resources and international investment in plantation forests and processing capacity.

This review provides a listing of socio-economic reports and other publications together with summaries of key documents. It has been prepared for the Forest and Wood Products Research and Development Corporation with the objective of providing an up-to-date survey of reports and other information relating to the socio-economic importance of the forestry and forest products industry in regional communities. Implications for further research have been identified with consideration of current research programs and new and ongoing processes requiring socio-economic assessments.

The time frame for studies covered in this review is over the past 15 years, that is, from 1988 to 2003. The socio-economic studies incorporate a range of objectives and consider major industry and external developments over this period. In preparing this report, every effort has been made to ensure that it provides a comprehensive coverage of available information, however there are unpublished sources and information on socio-economic impacts that have not been made available for inclusion in this review.

2.2 Methodology

The approach taken to review socio-economic studies relevant to the forest industries commenced with summarising studies undertaken as a part of the Comprehensive Regional Assessment (CRA) process in each state. These assessments underpinned the development of Regional Forest Agreements (RFAs) and have played a central role in strategic planning of forest resource utilisation over the past decade.

Commonwealth, State and regional agencies were contacted to obtain other studies relating to their areas of responsibility. Private studies undertaken as consulting projects for private and public bodies were identified and reviewed where available. The following organisations provided reference lists or assisted with inquiries:

- Agriculture, Fisheries, and Forestry Australia;
- Australian Bureau of Agricultural and Resource Economics;
- The University of Melbourne, Institute of Land and Food Resources;
- Australian National University, Centre for Resource and Environmental Studies;
- National Association of Forest Industries; and
- State and private forest management agencies.

Following this wide-ranging review, a list of reports was compiled as a base reference list. Annex 1 presents this list and a summary of socio-economic elements contained in these references. This index
provides a reference number and details of author, date, title, publisher and a brief statement of the subject of each document. The information on the subject of each document is intended to assist further reference to those documents that are likely to be of most use and is not comprehensive. The reference number given to each document in Annex 1 links the document with the summaries of contents of the documents in the annotated bibliography in Annex 2. Full details of the report locations, including organisations, telephone and facsimile numbers and webpage details where available, are provided in Annex 3.

The key quantitative results of each study were summarised including estimates of employment, revenue, turnover, value of production, contribution to gross state output as well as a range of measures of social structure. Important qualitative findings including community perceptions and attitudes, industry willingness-to-change, discussion of social capital and cultural influences were then reviewed.

In order to analyse the role of the timber industry in regional and State economies, State and national level, studies generally assessed impacts and at a regional or case study level. Local Government Areas (LGAs) or the Australian Bureau of Statistics (ABS) Statistical Divisions were a common means of dividing the larger areas. Due to the range of scale, focus and economic analysis employed in the studies reviewed, it is not possible to aggregate results. However, common themes and nation-level outcomes have been assessed and are presented in this report.
3.1 Study Descriptions

Projects undertaken as a part of the CRA process provided the basis on which State and Federal Governments signed RFAs for major forest regions. The socio-economic studies incorporated an economic profile of each CRA region and the forest industries within the region and a social profile developed for the communities that make up the region. CRAs were completed for the following regions:

- New South Wales – Southern Region, Eden, Upper North East and Lower North East;
- Victoria – East Gippsland, Gippsland, Central Highlands, North East and West Regions;
- Tasmania;
- Western Australia – South West Region; and
- South East Queensland.

The preparation of socio-economic appraisals involved wide-ranging consultation with stakeholder groups, from which a wide range of information and opinions were elicited. The economic component of the CRA comprised an appraisal of wood supply potential for the area, including future estimates of potential sustainable timber yields, followed by a review of the current position and future outlook of the timber industry in the region. Estimates were made of the value of current output (gross receipts) and the amount of direct employment generated, including downstream employment in wood products. From these estimates forecasts were made for different sectors of the forest products industry. Economic analysis of other commercial activities related to forest use included firewood removal, grazing, tourism and apiculture. Social assessment took place through a process of data collection, awareness raising, workshops and facilitation between multiple interests. Estimates of the impacts from potential changes in the level of wood supplied under the RFAs were then derived using multipliers to estimate flow-on effects to the region.

Over the last 15 years, other studies have taken place at national, state and regional levels to assess, for example:

- The impact of plantation forestry on farming communities;
- Rapid hardwood plantation development;
- Industry or sector impacts on regional economies and national economic contribution; and
- State-initiated or non-government organisation (NGO) studies relating to the impacts of a reduction in timber available from native forests.

These studies further contribute to the body of literature that has been reviewed on the significance of the forest industries to Australian regional communities.
4.1 Employment, turnover & international trade

One of the key measures of industry impact is employment, and the majority of studies reviewed included estimates of current and potential employment levels. The forest industries are particularly important to many rural areas and regional centres, directly employing staff and contractors in forest management, harvesting and haulage, sawmilling and timber processing and downstream manufacturing of wood products.

In 1999-2000 there was over 850 hardwood mills and almost 300 softwood mills in Australia (ABARE 2003). Most mills are small and employ between 5 to 20. In these mills, wages are generally low and occupational health and safety are key issues for employees and companies alike (Fenton, 2002). However, there are much larger, globally competitive mills operating in large regional centres, which are committed to attracting further investment to the region. There are vast differences in the direct and indirect socio-economic implications for regional communities, depending on the nature and scale of processing (Dwyer Leslie and Powell 1995, Industry Strategy Steering Committee 2001). For example, an export focused, large-scale, integrated mill may employ 10–15 times the number of people and have 10 times the capital investment of a locally focused, small-scale sawmill of high value timber (Curtis and Race 1998).

The following provides an overview of the significance of employment and other key economic impacts generated by the forest industries. In 2000-01, the most recent year for which national statistics are available, 58,700 Australians were employed in forest industries (ABARE 2003). In the same year, the value of turnover for the forest industries was estimated to be $7.126 billion. Exports in 2000-01 totalled over $1 billion, with woodchip exports contributing almost $745 million to the economy.

<table>
<thead>
<tr>
<th>Industry contributions</th>
<th>Units</th>
<th>1989-99</th>
<th>1999-00</th>
<th>2000-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover - log processing</td>
<td>$M</td>
<td>2,355</td>
<td>2,685</td>
<td>2569</td>
</tr>
<tr>
<td>Turnover - other wood manufacturing</td>
<td>$M</td>
<td>4,245</td>
<td>5,161</td>
<td>4557</td>
</tr>
<tr>
<td><em>Turnover – subtotal</em></td>
<td></td>
<td>6,600</td>
<td>7,846</td>
<td>7,126</td>
</tr>
<tr>
<td>Employment - Forest &amp; logging</td>
<td>'000</td>
<td>14.1</td>
<td>8.8</td>
<td>13.4</td>
</tr>
<tr>
<td>Employment - log processing</td>
<td>'000</td>
<td>12.5</td>
<td>13.5</td>
<td>13.9</td>
</tr>
<tr>
<td>Employment - other wood manufacturing</td>
<td>'000</td>
<td>30.9</td>
<td>33.3</td>
<td>31.4</td>
</tr>
<tr>
<td><em>Employment – subtotal</em></td>
<td></td>
<td>57.5</td>
<td>55.6</td>
<td>58.7</td>
</tr>
<tr>
<td>Imports – sawnwood</td>
<td>$M</td>
<td>416.7</td>
<td>548.1</td>
<td>427.7</td>
</tr>
<tr>
<td>Imports - wood panels</td>
<td>$M</td>
<td>142.4</td>
<td>189.3</td>
<td>151.6</td>
</tr>
<tr>
<td>Exports – sawnwood</td>
<td>$M</td>
<td>42.8</td>
<td>51.2</td>
<td>58.9</td>
</tr>
<tr>
<td>Exports - wood panels</td>
<td>$M</td>
<td>100.9</td>
<td>143.2</td>
<td>205.4</td>
</tr>
<tr>
<td>Exports – woodchips</td>
<td>$M</td>
<td>585.9</td>
<td>646.1</td>
<td>743.8</td>
</tr>
</tbody>
</table>

Source: ABARE Australian Forest & Wood Products Statistics, 2003
4.2 Native forest resources

A number of changes have occurred in the structure and direction of the native timber industry in Australia in recent years. There is an increasing range of products (e.g., steel and reconstituted boards) that compete with traditional forest products and an emerging market for environmental services and biodiversity values. Decision-makers have recognised the need to evaluate trade-offs between alternative combinations of outputs (Midas Consulting 2001).

The influence of expanding urban populations, or ‘growth corridors’, was commonly thought to place increased demands on resources from public forests, such as demand for recreational opportunities and for employment. Furthermore, demand for water supply to meet requirements of expanding population number places additional pressure on land use decisions in these regions (Henshall Hansen Associates and Reed Sturgess Associates 1992). Australia is widely acknowledged as needing a timber industry for employment and other economic benefits (CIE 1995) and Australian forest management is regarded as superior to that in many other countries (Forest Protection Society 2002). People in the community appear willing to accept both that the timber industry is more accountable and more effectively regulated than in the past, and also that industry’s use of timber resources is increasingly more efficient and less wasteful (Fenton 2002).

While the resource base and associated industry are extensive and a major contributor to economies in some regions the total area available for timber production is declining. Factors related to the structure of the native hardwood industry (McGuffog and Western 1993, Rush Social Research 1997), the changing nature of the resource (VicRFASC 1999), the introduction of new technology and competition from exotic species have prevented the smooth transition of dependant industries and communities (Gooding 2000). There is a common theme across regional Australia that communities dependent on native forests were concerned primarily with resource security (Tracey 1995, DPIE Forests Branch 1995, VicRFASC 1997, Forest Protection Society 1999).

Policies associated with the RFAs such as the Forest Industry Structural Adjustment Packages were prepared to assist in restructuring the forest-processing sector in light of the politically-driven constraints on harvesting of native forests. There are reports in some cases that these policies have had a positive impact through the maintenance of industry within local communities (Powell, Chalmers and Gillespie 1998).

4.3 Regional development

4.3.1 Plantation establishment

The total industrial plantation resource in Australia was 1,567,480 hectares in 2001 (NFI 2002). Over 12% of the total industrial standing resource was planted in 2000 (including first and second rotation plantings), and over half of this occurred on private land. The majority of plantation development was on land previously used for agriculture against the backdrop of the long-term trends in agriculture. That is, ageing populations, diminishing interest in family members remaining on farms, and a significant
increase in the average size of farms (Curtis and Race 1996, Tonts, Campbell and Black 2001, Schirmer and Tonts 2002).

Rural development through farm forestry has been promoted as driving increased employment and diversified farm incomes to revitalise rural communities (Ministerial Council on Forestry, Fisheries and Aquaculture 1997). Many of the studies reviewed cited how beneficial this development could be (Dwyer Leslie and Powell 1995, Prospect Consulting 2002) and in some regions there is clearly a strong culture and acceptance of the timber industry, where it is understood the industry contributes to valuable diversification of local economies (Clark, 1995, Petheram et al 2000).

An economic impact study undertaken by Access Economics (2002), commissioned by Timbercorp Limited found that Timbercorp’s blue gum resource could potentially generate $180 million in annual exports and $85 million of value added, supporting around 840 full time equivalent (FTE) jobs. Using input output multiplier techniques, it was estimated that expenditures by the timber business would support a further 1,300 FTE jobs, contributing around $100 million to Gross State Product through the effects on suppliers and subcontractors.

In addition to the range of positive outcomes, plantations have been a contentious issue for regional decision-makers and the emergence of plantation forestry on cleared agricultural land is contributing to significant restructuring in smaller regional communities (Petheram et al 2000). Plantations have been associated by local media and lobbyists with the decline in local populations and economies, levels of social interaction, the provision and condition of local infrastructure, public health and the environment (Schirmer, 2002). Loss of productive agricultural land, neighbour issues such as shade and root competition, fire risk, pest control and reduction in water yields are further common community concerns.

Benefits associated with plantation forestry are likely to be concentrated in larger regional centres and research suggests that farmers who lease or sell their properties to timber companies do not remain in their local communities but tend to migrate to larger and/or coastal areas (Tonts, Campbell and Black, 2001). Plantation forestry has been reported to have greatest negative outcomes at a local community level in those areas that are already suffering adverse consequences of rural decline (ibid).

To offset the adverse trends affecting communities, employment opportunities and income levels in rural and regional areas, the forest and timber industries have offered a number of opportunities for supporting growth. Benefits include new enterprise development, increased regional investment attractiveness and the contribution of timber industry employees’ and subcontractors’ families in local communities (Curtis and Race 1996, Stewart 2002, Access Economics 2002).

### 4.3.2 Wood processing

Regional processing has been identified as important for converting increased activity in primary production into regional prosperity. Dwyer Leslie and Powell’s (1995) comprehensive study revealed that the addition and expansion of timber processing in the town of Oberon led to increased economic activity for a range of local businesses. Population grew due to improved employment opportunities, with
additional employment opportunities for farming families, higher economic activity, all resulting in improved health, educational and social services.

The notion of ‘Social Capital’ was employed in a number of studies to present the significance of forest industry employees and families to local communities, particularly in the context of the impact of reduced access to native forest (VicRFASC 1999 and 2000, Coakes Consulting 2002). Social capital can be defined as defined as ‘the rules norms, obligations, reciprocity and trust embedded in social relations, structures and institutional arrangements which enables its members to achieve their individual and community objectives’ (Stewart 2002). At a regional and local level, the importance of community social structure and the state of rural prosperity were common themes across studies (Gibbs 1992, Petheram et. al 2000, ERM Mitchell Cotter 1995).

### 4.4 Investment

Since the early 1990s the Australian forest and wood products sector has attracted investment in new processing, rebuilds of existing production lines, takeovers and buy outs of existing processors, and new plantation development. Restructuring in the processing sector has seen investment by leading international forest product companies in the Australian industry, with the majority of investment taking place in regional areas (URS Forestry 2002).

The current strong international demand for building materials, high levels of domestic residential housing activity and strong domestic demand from the printing industry have helped sustain growth in industry output over the last few years (Prospect Consulting 2002). The key drivers for investment include an attractive domestic market and Australia’s proximity to Asia (Prospect Consulting 2002, Margules Goome Poyry 1995). Key themes for future investment include:

1. New bleached kraft pulpmill investments, using hardwood plantation fibre (Industry Strategy Steering Committee 2001);
2. Sawntimber production from hardwood plantation (Prospect Consulting 2002);
3. Engineered wood products and new innovative products (Bennett and Bell 2002, Felingham 2002); and

These opportunities are based primarily on increasing utilisation of Australia’s plantation resources and, with the possible exception of environmental services, do not rely on Australia’s native forests. This is not to suggest that investment in the management of native forests or processing of regrowth timber will be or should be limited. However, the uncertainty over ongoing access to native forests is expected to constrain new investment in this sector. A need to increase the proportion of timber that is value added is commonly identified as an effective way for the native timber industry to overcome the challenges posed by resource constraints. However, the task of improving workforce skill levels and attracting investment (Powell, Chalmers and Fenton 2000) is often compromised by ongoing changes to the industry’s resource base.
4.5 Identification of flow-on effects

Direct economic indicators do not provide a complete picture of the importance of the forest industry because they measure economic aspects in isolation. The forest industry is interlinked with the rest of the economy, its non-timber inputs represent the outputs of other industries, and vice versa (indirect production effects). Firms operating in the forest industry employ people who, in turn, spend some of their earnings on goods and services that are provided by other industries (indirect consumption effects).

4.5.1 Input Output Analysis

These complex relationships have been quantified in many of the studies reviewed, using input-output tables and economic multipliers (SPIS 1991, Dywer Leslie Pty 1995, Margules Groome Poyry 1995, Grist and Yainshet 2001, Felmingham 2002). These techniques permit estimation of the level of flow-on activity to other sectors of the economy that can be linked to an industry. The input-output method is important in projecting how a change in expenditures by the final demand sector affects the distribution of income, employment and revenues among a region’s industrial sectors.

Input output multiplier analysis shows the total employment, value added or gross output supported by a given stream of expenditure. However, it does not incorporate impacts that operate through other economic channels. Furthermore the estimates depend on the validity of the data in the input output tables. It is important to note the results of economic activity analysis, such as output or revenue effects, including output multipliers should not be interpreted as economic value or economic benefit. It is important to recognise that neither input-output analysis nor multipliers represent benefit-cost analysis.

4.5.2 Benefit Cost Analysis

Benefit-cost analysis is about net economic value and economic efficiency. It involves examining the private return to an investment project (or other change), and adjusting it so that the private costs and benefits associated with the project more closely equate to the net benefit to society as a whole.

The potential social and economic effects of recommendations for box-ironbark forests and woodlands in Victoria were assessed using a benefit costs analysis (Midas Consulting 2001). On the basis of the benefit cost evaluations, the study found, at a State economy level, changes in net economic value or contribution were important, while evaluations from the perspective of the region were more concerned with changes in economic activity. In this case, the implications for biodiversity conservation, tourism and recreation, commercial timber harvesting, gold mining and prospecting, and eucalyptus oil production were discussed.
5.1 Current and Ongoing Research

5.1.1 Ongoing Processes

It is important to recognise that there are ongoing and emerging processes within Australia’s forest industries serving to identify social and economic impacts and support the resolution of conflicts between economic, social and environmental objectives. These include:

RFA Reviews: The 5-year reviews for RFAs have begun, and should present some important data and qualitative information on the socio-economic impacts of forest management under the respective RFAs. However, the breadth of socio-economic assessment undertaken in the CRA process will not be repeated. Discussion will be focussed on industry value-adding opportunities and efficient use of wood resources as the basis for expansion in wood products industries, which are intended to provide continued national and regional economic benefits;

Montreal Process: Australia’s Governmental commitment to the Montreal Process for sustainable forest management should further its assessment and analysis of socio-economic impacts, particularly through reports under Criteria 6: Maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies; and

Certification: Under the Australian Forestry Standard and Forest Stewardship Council, the two forest management certification initiatives prominent in Australia, economic and social impacts of the forest management are assessed and monitored. As certification becomes more common in Australia, it is expected that reporting of socio-economic impacts by industry stakeholders and industry sectors will be more prevalent.

5.1.2 Current Projects

Topics relating to the impact of plantation expansion are currently being researched at the Australian National University, and include investigation of social conflict resolution effectiveness over time (taking a historical approach). An analysis of case study regions concerned with plantation forestry is scheduled for release at the end of 2003. A report on conflict resolution techniques used by plantation companies to address community concerns will also contribute to the body of social research on plantation expansion (Schirmer, pers.comm 2003). Forthcoming State and regional studies include:

Western Australia: A benchmarking study of community attitudes to plantation and farm forestry, is proposed for the Great Southern region of Western Australia under the economic and social objectives of the Timber 2020 initiative (Levinson and Wettenahall pers. comm 2003).
Victoria  Socioeconomic impacts of the forest industries in the Central Victoria and North West regions are currently being prepared for the Department of Sustainability and Environment (DSE). A similar assessment for Gippsland is expected to commence in late 2003.

Queensland  The Queensland Timber Board and Forest Protection Society continues to survey the native timber industry in South East Queensland to develop further economic and social profiles of the timber industry and timber industry employees.

New South Wales  The Resource and Conservation Assessment Council in New South Wales is completing further assessment of economic and social values of forest and non-forest land systems, focusing on conservation, land management and regional planning in forest regions not covered by RFAs in New South Wales.

5.2 Further Research

Based on this review, there are three apparent information gaps that warrant further attention, these are:

1. Linkages between social assessments and economic appraisals of forestry-related activities;

2. Additional longitudinal studies of impacts of Australian forest industries on regional communities, including development of a framework for comparative socio-economic assessment processes; and

3. Analysis of non-market values associated with native forest and plantations, and their flow-on effects;

Each are described in further detail below.

Linkages between social elements and economic appraisals are somewhat under-developed, yet the socio-economic reports assessed in this review suggests the nature of the stakeholder or network interactions in regional communities underpins the likely outcomes of proposed or historical changes to the forest industries. Recognition of the flow-on effects of spending in different sectors has been given minimal attention outside the boundaries of input-output analysis. Economic assessment emphasises the monetary effects of an action or proposal, social impact assessment is concerned with assessing benefits and costs in non-monetary terms, and their respective assessment processes need to be combined to provide a complete picture of impacts and their meaning.

A replicable framework for the assessment of socio-economic impacts over time may address some of the issues regarding the need for ongoing evaluation and a clearly defined assessment process. Despite the considerable body of socio-economic research, time constraints associated with assessments have often curtailed any ongoing assessment of the impacts identified. Similarly, while increased use of participatory techniques in forestry-related policy development has emerged, the outcome of these has generally not yet been evaluated in ex-ante or ex-post analyses. Further research on the forest industries in a longitudinal context could also provide evaluation of the predictive techniques applied to estimate the impact of policy
and investment decisions. There is also scope for socio-economic assessment processes involved in longitudinal assessments to potentially form the basis for participatory resource management planning.

An apparent omission in the processes associated with the preparation of the CRA-based socio-economic studies is that the economic analyses have not valued the non-market values associated with native forests and plantations. Early non-market valuation studies in Australia generated criticism from both government agencies and potentially affected industry players. While other countries have moved towards acceptance of certain techniques of non-market benefit estimation, Australia continues to use non-economic approaches to resolving conflicts between economic production and conservation. There is scope for further research to be directed at assessing non-market benefits and costs related to the traditional forest industries compared with emerging environmental services.

Recommendations:

1. Linkages between social assessments and economic appraisals of forestry-related activities.

2. There is scope for the key themes identified in this review to be incorporated into additional longitudinal studies that monitor changes in qualitative and quantitative measures of socio-economic impacts in representative regions and industry sectors, against national trends. These themes include:
   - Native forest resource security;
   - Industry adjustment to the changing nature of the resource;
   - The impact of privatisation of publicly owned forest estate;
   - Institutional investment in regional forest industries;
   - Regional development opportunities for forest industries;
   - Developing markets for environmental services;
   - Social structures and trends; and
   - Community attitudes to forestry.

3. Further socio-economic research should be directed at the economic valuation of non-market costs and benefits arising from forest management.
### Annex 1 - Socio-economic Index

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Study</th>
<th>Agency/Publisher</th>
<th>Resource</th>
<th>Study Area</th>
<th>Employment</th>
<th>Multipliers</th>
<th>Revenue Impacts</th>
<th>Value of Timber Industry to Economy in the Study Area</th>
<th>Unique/Key Themes</th>
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<tr>
<td><strong>VICTORIA</strong></td>
<td></td>
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<tr>
<td>1 VaRFASC</td>
<td>1997</td>
<td>Comprehensive Regional Assessment East Gippsland</td>
<td>Commonwealth and Victorian Regional Forest Agreement Steering Committee</td>
<td>Native Forest</td>
<td>Victoria</td>
<td>Net value of production</td>
<td>Not referred to but it is assumed State based multipliers were used</td>
<td>Further value adding proposed for sawmills within the region could contribute nearly 1800 jobs to the Victorian economy and $248 million to State output by 2005-06</td>
<td>Timber industry contributes approximately 27% of manufacturing turnover in the region</td>
<td></td>
</tr>
<tr>
<td>2 VaRFASC</td>
<td>1998</td>
<td>Comprehensive Regional Assessment Report Central Highlands</td>
<td>Commonwealth and Victorian Regional Forest Agreement Steering Committee</td>
<td>Native Forest</td>
<td>Victoria</td>
<td>Output: 1.87 Sawmilling Employment: 2.1 Forestry sector</td>
<td>Commercial forestry GVP</td>
<td>Incorporates an economic survey of sawmills receiving logs from the West region (ABARE 1999)</td>
<td>Timber industry contributes approximately 27% of manufacturing turnover in the region</td>
<td></td>
</tr>
<tr>
<td>3 VaRFASC</td>
<td>1999</td>
<td>Comprehensive Regional Assessment North East - Social &amp; Economic Report</td>
<td>Commonwealth and Victorian Regional Forest Agreement Steering Committee</td>
<td>Native Forest</td>
<td>Victoria</td>
<td>Output: 1.87 Sawmilling Employment: 2.1 Forestry sector</td>
<td>Commercial forestry GVP</td>
<td>Incorporates an economic survey of sawmills receiving logs from the West region (ABARE 1999)</td>
<td>Timber industry contributes approximately 27% of manufacturing turnover in the region</td>
<td></td>
</tr>
<tr>
<td>4 VaRFASC</td>
<td>2000a</td>
<td>Comprehensive Regional Assessment, West Victoria</td>
<td>Commonwealth and Victorian Regional Forest Agreement Steering Committee</td>
<td>Native Forest</td>
<td>Victoria</td>
<td>Gross value of turnover</td>
<td>Output: 1.87 Sawmilling Employment: 2.1 Forestry sector</td>
<td>Commercial forestry GVP</td>
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<td>Comprehensive Regional Assessment Gippsland</td>
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<td>Victoria</td>
<td>Forest industry household expenditure</td>
<td>Output: 1.87 Sawmilling Employment: 2.1 Forestry sector</td>
<td>Commercial forestry GVP</td>
<td>Incorporates an economic survey of sawmills receiving logs from the West region (ABARE 1999)</td>
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<td>6 EPIS</td>
<td>1991</td>
<td>State Plantations Impact Study Report and Recommendations</td>
<td>State Plantations Impact Study Steering Committee, Melbourne</td>
<td>Plantation Softwood</td>
<td>Victoria</td>
<td>Comparative economic contribution of plantations and agriculture</td>
<td>Extensive multipliers developed for plantation management activities and agriculture</td>
<td>Over a 35-year rotation, pine plantations generate more employment compared to farming and they have higher economic multiplier effects at a regional level</td>
<td>Timber industry contributes approximately 27% of manufacturing turnover in the region</td>
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</tr>
<tr>
<td>7 Henshall, Hansen Associates and Read Sturgess &amp; Associates</td>
<td>1993</td>
<td>A social and economic impact assessment of draft proposed recommendations for land use in the Central Highlands (Melbourne Study Area, District 2), Victoria</td>
<td>Land Conservation Council, Victoria</td>
<td>Native Forest</td>
<td>Victoria</td>
<td>Investment in timber industry, Central Highlands</td>
<td>Extensive multipliers developed for plantation management activities and agriculture</td>
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<td>Timber industry contributes approximately 27% of manufacturing turnover in the region</td>
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<tr>
<td>8 Gooding, G</td>
<td>2000</td>
<td>Market movements and opportunities for hardwood products</td>
<td>Victorian Association of Forest Industries</td>
<td>Native Forest Processing</td>
<td>Victoria</td>
<td>GVP</td>
<td>Extensive multipliers developed for plantation management activities and agriculture</td>
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<tr>
<td>9 Pattham, Patterson, A., Williams K., Jenkin B., and Nettle, R.</td>
<td>2000</td>
<td>Socio-Economic Impact Study of Changing Land Use in South West Victoria</td>
<td>Institute of Land and Food Resources, University of Melbourne</td>
<td>Plantation Hardwood Softwood</td>
<td>Victoria</td>
<td>Value of production for a range of land use activities</td>
<td>Extensive multipliers developed for plantation management activities and agriculture</td>
<td>Over a 35-year rotation, pine plantations generate more employment compared to farming and they have higher economic multiplier effects at a regional level</td>
<td>Timber industry contributes approximately 27% of manufacturing turnover in the region</td>
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<tr>
<td>10 Midas Consulting</td>
<td>2001</td>
<td>Potential Social and Economic Effects of Recommendations for Box-Ironbark Forests and Woodlands</td>
<td>Environment Conservation Council</td>
<td>Plantation Hardwood Softwood</td>
<td>Victoria</td>
<td>Value of annual timber production in the Box-Ironbark study area</td>
<td>Extensive multipliers developed for plantation management activities and agriculture</td>
<td>Over a 35-year rotation, pine plantations generate more employment compared to farming and they have higher economic multiplier effects at a regional level</td>
<td>Timber industry contributes approximately 27% of manufacturing turnover in the region</td>
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<tr>
<td>11 Prospect Consulting Pty Ltd</td>
<td>2002a</td>
<td>The Timber Industry in North East Victoria: A Socio-Economic Assessment</td>
<td>Plantations North East Inc.</td>
<td>Plantation Hardwood Softwood</td>
<td>Victoria</td>
<td>Log processing industries GVP</td>
<td>Extensive multipliers developed for plantation management activities and agriculture</td>
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<td><strong>TASMANIA</strong></td>
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<tr>
<td>1 Tasmanian Public Land Use Commission</td>
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<td>Comprehensive Regional Assessment - Tasmania</td>
<td>Commonwealth and Victorian Regional Forest Agreement Steering Committee</td>
<td>Native Forest</td>
<td>Tasmania</td>
<td>Expenditure, GVP, contribution to GSP</td>
<td>Expenditure, GVP, contribution to GSP</td>
<td>Applied a Cost Benefit analysis to determine whether there is a net gain or loss to the Victorian economy from the ECC's recommendations - found a net benefit of $2 million, using biodiversity values</td>
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<tr>
<td>2 Damos Consultancy Services Aust Pty Ltd</td>
<td>1987</td>
<td>The Economic Impact of Resource Withdrawal Upon Tasmanian Communities</td>
<td>Tasmanian Forest Workers Taskforce</td>
<td>Native Forest</td>
<td>Tasmania</td>
<td>Income Effect: 1.88 Output:2.03</td>
<td>Extensive use of multipliers, employed to assess the contribution of a proposed wood processing site</td>
<td>Applied a Cost Benefit analysis to determine whether there is a net gain or loss to the Victorian economy from the ECC's recommendations - found a net benefit of $2 million, using biodiversity values</td>
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</tr>
<tr>
<td>3 Felmingham, B.B.</td>
<td>2002</td>
<td>The Economic Contribution of the Circular Head Wood Centre. Forestry Tasmania &amp; Symetrics Pty Ltd</td>
<td>Forestry Tasmania</td>
<td>Native Forest</td>
<td>Tasmania</td>
<td>Revenue Impacts</td>
<td>Output: 1.88</td>
<td>Extensive use of multipliers, employed to assess the contribution of a proposed wood processing site</td>
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<td>Value of Timber Industry to Economy in the Study Area</td>
<td>Employment</td>
<td>Multipliers</td>
<td>Revenue Impacts</td>
<td>Unique/Key Themes</td>
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<td>ERM Mitchell Cotter</td>
<td>1995</td>
<td>Social Impacts of Deforested Forest Assessments - Huon Valley Case Study</td>
<td></td>
<td>Native Forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Found that mill closure and employment loss caused significant stress on community and family relationships. Rationalisation of services, community decreased morale and vitality were further effects</td>
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<tr>
<td>NSW CRA/RFA Steering Committee</td>
<td>1998</td>
<td>Comprehensive Regional Assessment - Eden</td>
<td>New South Wales Government &amp; Commonwealth Government</td>
<td>Native Forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Occupational flexibility is low for forest workers</td>
<td></td>
</tr>
<tr>
<td>Rush Social Research</td>
<td>1997a</td>
<td>Local Impacts of Forest Industry Expenditure in the Eden CRA Region</td>
<td>New South Wales Government &amp; Commonwealth Government</td>
<td>Native Forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Identified 3-tiered structure to the industry and observed a ‘highly monopolistic’ industry</td>
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<tr>
<td>NSW CRA/RFA Steering Committee</td>
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<td>Comprehensive Regional Assessment - North East</td>
<td>New South Wales Government &amp; Commonwealth Government</td>
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<td>Community Sensitivity Index</td>
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<td>NSW CRA/RFA Steering Committee</td>
<td>1999b</td>
<td>Comprehensive Regional Assessment - Southern Region</td>
<td>New South Wales Government &amp; Commonwealth Government</td>
<td>Native Forest</td>
<td></td>
<td>Output: 1.6</td>
<td></td>
<td></td>
<td>Provides socio-economic assessment of alternate land management regimes and practices</td>
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<tr>
<td>Dwyer Leslie Pty. Ltd. and Powell, R.</td>
<td>1990</td>
<td>Oberon: Rural community Development Study year One: the economic impact of forestry</td>
<td>Forestry Commission of NSW</td>
<td>Native Forest Native Forest Plantation Softwood Harvest</td>
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<td>Established base-line for evaluation of changes in economic, social and commercial developments centred around the town of Oberon</td>
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<tr>
<td>Dwyer Leslie Pty. Ltd. and Powell, R.</td>
<td>1995</td>
<td>Oberon: Rural community Development Study: Final Report</td>
<td>Forestry Commission of NSW</td>
<td>Native Forest Native Forest Plantation Softwood Harvest</td>
<td></td>
<td></td>
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<td></td>
<td>Socio-economic benefits of expansion of softwood processing; economic and employment multipliers; use of regional input-output model. Found significant timber industry contribution and scope for value adding</td>
<td></td>
</tr>
<tr>
<td>Tracey, J.</td>
<td>1995</td>
<td>Coping with insecurity: family firms in the NSW logging industry. PhD Thesis</td>
<td>Australian National University Dept. of Forestry</td>
<td>Native Forest Native Forest Plantation Softwood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Examination of the structure and nature of the logging industry in northern NSW.</td>
<td></td>
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<tr>
<td>Margules Groome Pty</td>
<td>1995</td>
<td>The Economic Impact of the New South Wales Timber Industry</td>
<td>State Forests of New South Wales</td>
<td>Native Forest Native Forest Plantation Hardwood Softwood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>An economic profile of the timber industry in NSW, impact on regions and the NSW economy, linkages between the forest products industry and the wider economy</td>
<td></td>
</tr>
<tr>
<td>Powell, Chalmers &amp; Gillespie</td>
<td>1998</td>
<td>Regional Economic Impact Assessment for the Southern NSW CRA Region</td>
<td>Resource and Conservation Assessment Council</td>
<td>Native Forest</td>
<td></td>
<td>Output: 1.6</td>
<td></td>
<td></td>
<td>A model of the forestry industry was constructed to indicate how forestry industry activities relate to each other and how changes in the amount of wood available from State Forests impact on other forestry activities</td>
<td></td>
</tr>
<tr>
<td>Powell, R., Chalmers, L., Fenon, M</td>
<td>2000</td>
<td>Economic and Social Assessment for the Brigalow Belt South</td>
<td>Resource and Conservation Assessment Council</td>
<td>Native Forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Assessment of the native timber industry</td>
<td></td>
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<tr>
<td>Commonwealth of Australia and Western Australian Government</td>
<td>1998</td>
<td>Comprehensive Regional Assessment Volumes 1 and 2.</td>
<td>Joint Commonwealth and Western Australian Regional Forest Agreement (RFA Steering Committee)</td>
<td>Native Forest</td>
<td></td>
<td>General output: 1.2</td>
<td></td>
<td></td>
<td>Utilises the ABARE FORUM to simulate impacts of forest industries</td>
<td></td>
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</tbody>
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## Annex 1 - Socio-economic Index

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<tr>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>2000</td>
<td>To Trees or Not to Trees? An Assessment of the Social Impact of the Plantation Industry on the Shire of Plantagenet</td>
<td>Curtin University of Technology</td>
<td>Plantation Hardwood</td>
<td>Employment Multipliers Revenue Impacts</td>
<td>Recommends longitudinal assessment of direct and indirect employment impacts of the plantation industry on rural communities.</td>
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<tr>
<td>3</td>
<td>2001</td>
<td>Assessment of the Scientific, Economic and Community Values and the Impact of Logging on Salinity on Areas Subject to a Moratorium on Logging</td>
<td>Prepared for Conservation Commission of Western Australia</td>
<td>Native Forest</td>
<td>Revenue</td>
<td>Economic impacts of moratorium blocks were found to be largely dependent on the structure of the hardwood timber industry.</td>
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<tr>
<td>4</td>
<td>2002</td>
<td>Socio-Economic Assessment of the Forest Management Plan</td>
<td>Forest Products Commission</td>
<td>Native Forest</td>
<td>Expenditure</td>
<td>Impacts of supply reduction scenarios assessed on business and community viability thresholds.</td>
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<tr>
<td>5</td>
<td>2002</td>
<td>Overview of social and economic impacts associated with the draft Forest Management Plan</td>
<td>Conservation Commission Forest Products Commission</td>
<td>Native Forest</td>
<td>Expenditure</td>
<td>Highlights wider potential benefits of the Oil Mallee Project - employment, net present value of project is compared with existing land use.</td>
</tr>
<tr>
<td>6</td>
<td>2002</td>
<td>Regional Benefits of an Integrated Oil Mallee Processing Plant</td>
<td>Institute for Sustainability and Technology Policy Murdoch University and NRMC Pty Ltd</td>
<td>Plantation Hardwood</td>
<td>Net present value, revenue impacts</td>
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### QUEENSLAND

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<tbody>
<tr>
<td>1</td>
<td>1999</td>
<td>Comprehensive Regional Assessment - South East Queensland</td>
<td>Commonwealth and Queensland Regional Forest Committee Steering Committee</td>
<td>Native Forest</td>
<td>GSP, value of production</td>
<td>Forest industries in the region generate high levels of household expenditure, employment and contribution to local economies.</td>
</tr>
<tr>
<td>2</td>
<td>1993</td>
<td>Social impact assessment of the cessation of logging on Fraser Island - an evaluation of the workers special adjustment package</td>
<td>Social Research Consultancy Unit, Dept. of Anthropology and Sociology, The University of Queensland</td>
<td>Native Forest</td>
<td>Expenditure</td>
<td>Evaluates the effect on timber industry workers of the adjustment package provided following cessation of logging, including subsequent employment, costs and recommendations for future structural adjustment packages.</td>
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<tr>
<td>3</td>
<td>1999</td>
<td>The Value of Native Forest Industries to Communities in South East Queensland</td>
<td>Forest Protection Society</td>
<td>Native Forest</td>
<td>GVP, sales</td>
<td>Extends on CRA findings to provide a detailed financial analysis of timber mills.</td>
</tr>
<tr>
<td>4</td>
<td>2002</td>
<td>Social and Economic Assessment of the Timber Industry in the Western Hardwoods Region of Queensland</td>
<td>Queensland Timber Board</td>
<td>Native Forest</td>
<td>Output, expenditure</td>
<td>Assessed business dependency on timber industry.</td>
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### SOUTH AUSTRALIA

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<th>Author</th>
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<tbody>
<tr>
<td>1</td>
<td>2001</td>
<td>Economic impact of the timber industry in the South East of Australia</td>
<td>Forestry SA</td>
<td>Plantation Hardwood</td>
<td>GVP, revenue</td>
<td>Directly and indirectly the wood products and forestry industry contributed around 6,800 jobs to the south east region, approximately 25% of total employment.</td>
</tr>
<tr>
<td>2</td>
<td>2001</td>
<td>South East Forest Industry Development Strategy</td>
<td>Green Triangle Regional Plantation Committee</td>
<td>Plantation Hardwood</td>
<td>Revenue</td>
<td>Wood processing in the south east produces 10% of the total value adding generated by manufacturing in South Australia.</td>
</tr>
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### NATIONAL

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<thead>
<tr>
<th>Author</th>
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<tr>
<td>1</td>
<td>1992</td>
<td>Forest and Timber Inquiry</td>
<td>Australian Government Publishing Service</td>
<td>Native Forest Plantation Hardwood</td>
<td>GVP, expenditure, revenues</td>
<td>Applied Contingent Valuation analysis to forest uses of the South East forests.</td>
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<tr>
<td>3</td>
<td>1993</td>
<td>Adding Value to Australia's Forest Products</td>
<td>Commonwealth of Australia</td>
<td>Native Forest Plantation Hardwood</td>
<td>GVP</td>
<td>Forest products industries comprise and important component of Australia’s manufacturing sector.</td>
</tr>
<tr>
<td>4</td>
<td>1995</td>
<td>Social impacts of closure of 399 coupes to woodchipping</td>
<td>Forests Branch Department of Primary Industry and Energy</td>
<td>Native Forest</td>
<td>Revenue</td>
<td>General recommendations on the need for structural adjustment programs.</td>
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<tr>
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<td>Employment Multipliers</td>
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<td>Hardwood Softwood</td>
<td>Revenue</td>
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<td>1995</td>
<td>Social Impacts of Deferred Forest Assessments, Four Additional Case Studies</td>
<td>Dept. of Primary Industries and Energy</td>
<td>Native Forest</td>
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<td></td>
<td>Revenue</td>
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<td>ABARE</td>
<td>1995</td>
<td>Financial and Employment Implications of 1995 Woodchip Export Licences</td>
<td>Dept. of Primary Industries &amp; Energy, Aust. Bureau of Agricultural and Resource Economics</td>
<td>Native Forest</td>
<td>A range of multipliers were applied in case studies, derived from associated studies</td>
<td>Value of log royalties, GDP, GSP</td>
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<td>Employment and industry impacts of hardwood resource withdrawal</td>
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<td>1995</td>
<td>Links Between Farm Forestry Growers and the Wood Processing Industry</td>
<td>Rural Industries Research and Development Corporation</td>
<td>Plantations</td>
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<td>Prerequisites and practices effective links improve adoption of farm forestry</td>
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<td>1995</td>
<td>Direct and indirect employment in the forest sector and forest sector employment as proportion of total employment</td>
<td>Forest and Wood Products Research and Development Corporation</td>
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<td>Plantation Hardwood</td>
<td>Revenue to forest managers from selected forest activities, East Gippsland</td>
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<td>Sustainability Indicator 6.5a – Direct and Indirect Employment in the Forest Sector</td>
<td>AFFA - Montreal Process Implementation Group - Australia</td>
<td>Native Forest</td>
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<td>Plantation Hardwood</td>
<td>Extensive multipliers developed on State and National bases</td>
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<td>Australian Conservation Foundation</td>
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<td>Capital expenditure in forest product manufacturing industries</td>
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<td>Socio-Economic Impacts of Farm Forestry</td>
<td>RRDC/LWRDCC/FPWRDCC Joint Venture Agroforestry Program RRDC</td>
<td>Native Forest</td>
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<td></td>
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<td>Assessment of State forest management agencies performance in native hardwood forestry in relation to employment, investment trends and the National Competition Principles Agreement</td>
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in terms of employment and its associated financial hardship. A reduction in forest industry activity within the region could adversely impact on their communities and private land clearing for conversion to plantations subject to native vegetation retention policy prohibiting the clearing of native forest on public land for the establishment of plantations. Constraints included Victorian Government policy prohibiting the clearing of native forest on public land for the establishment of plantations and private land clearing for conversion to plantations subject to native vegetation retention controls to protect flora and fauna, and local government planning requirements. Consequently, plantation development opportunities were identified as being public lands that do not contain forest, and some areas of private land. Private land represents 156,900 ha (13 per cent) of the land area of East Gippsland.

A number of wood based industry development opportunities were proposed for the region. These industry development opportunities may be summarised into two broad categories: opportunities for further value adding of hardwood sawmills; and, opportunities for the increased utilisation of residual logs. While the proportion of kiln-dried and dressed sawn timber to total production was considered moderate, around 5.4 million was recently invested by sawmillers in kiln-drying or sawing facilities designed to increase the proportion of dried and dressed sawn timber over time. Land availability and suitability in East Gippsland limited the potential development opportunities for plantations. Constraints included Victorian Government policy prohibiting the clearing of native forest on public land for the establishment of plantations and private land clearing for conversion to plantations subject to native vegetation retention.

The timber industry played an important role in the regional economy accounting for approximately 27 per cent of manufacturing turnover within the East Gippsland statistical division. In 1995, 19,049 people were employed in the East Gippsland statistical division. Direct employment associated with the timber industry within the East Gippsland region is estimated at 1,505 people. In 1994-95, there were 23 hardwood sawmills receiving logs from State forests located within East Gippsland. Twenty-two of these mills were operating within the region. There were 21 hardwood sawmills receiving logs from State forests located within the East Gippsland region, reflecting recent changes in mill processing activities compared to 1984-95. There were also two woodchip companies, located in Geeelong and Eden, which received sawmill residues from the East Gippsland region.

The total net value of production for 1994-95 for the hardwood sawmilling industry in East Gippsland was estimated at $8.1 million. The total value of turnover (gross receipts) for the industry was estimated at around $22.5 million in 1994-95. Information collected on the average net returns to the industry in 1994-95 was also used, in conjunction with future anticipated log allocations, to provide a broad estimate of the likely magnitude of the total net returns to the industry in 1995-96 and 1996-97. Assuming real constant costs and prices over these two years, and future anticipated log allocations, the total net economic value of sawmilling production was estimated at $10.3 million in 1995-96 and $12.8 million in 1996-97.

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The majority of timber industry employees were employed on a full time basis (88.2 per cent) and had worked within the industry for an average of 13.2 years. Twenty nine per cent of employees had relocated in order to retain their employment within the industry. The majority of employees within timber processing industries, which receive timber resources from the region. While the APP Maryvale Mill was the single most significant industry contributor, timber processing industries at other centres including Alexandra and Heyfield also contributed to generating significant levels of household expenditure through their employment. The potential value adding proposed for sawmills within the region, sawmill activities was estimated to potentially contribute nearly 1800 jobs to the Victorian economy and $248 million to State output by 2005-06.

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The commercial forestry, sawmilling and residual log processing based industries using wood sourced from the North East region contributed 363 and 28 jobs respectively to the Victorian economy. These estimates were based on a State employment multiplier of 2.3 for the sawmilling sector (with 158 direct jobs) and 3.1 for the pulpwood sector (with 9 direct jobs).

It was also estimated that the commercial forest management sector (with 15 direct jobs) and logging and haulage sectors (with 30 direct jobs) from the North East region contributed 94 jobs to the Victorian economy, using a State employment multiplier of 2.1 for the forestry sector. The total level of employment attributable to hardwood resources sourced from the North East region was $23.2 million in annual household expenditure. Of this, the APP Maryvale mill alone generated $18 million in annual household expenditure. Forest contracting businesses employees involved in native sawlog harvesting, transportation and forest road construction and logging and haulage within the Gippsland region. Forest contracting businesses employees involved in native sawlog harvesting, transportation and road contracting were estimated to generate an additional $1.4 million in annual household expenditure.

Within the Gippsland region, it is estimated that the timber industry directly employed 3394 people in 1996, accounting for 3.4 per cent of total employment in the Gippsland region and 11.4 per cent of employment in the Victorian timber industry in that year. The forestry and logging industry directly accounted for 0.7 per cent of employment in the Gippsland region in 1996, and the wood and paper products industry accounted for 2.7 per cent of regional employment. Between 1991 and 1996 employment in the forestry and logging sector, and the wood and paper products sector decreased by 13 per cent, from 3891 to 3394 people.

The commercial forestry, sawmilling and residual log processing industries using wood sourced from the Gippsland region accounted for an estimated 867 direct jobs. The estimated gross value of production of the sawmilling industry in the Gippsland region was $24.6 million, for confidentiality reasons it was not possible to provide an estimate of the total value of production for the pulpwood based industry in the region. The flow-on effects industry to the State economy from the wood based industries using wood sourced from the Gippsland region was broadly estimated using appropriate input-output and employment multipliers. Drawing on available multipliers for wood based industries in the Victorian economy, it was estimated that the value of turnover from the sawmilling industry drawing hardwood resources from the Gippsland region contributed around $46 million to State output in 1997-98. This estimate was based on a State output multiplier of 1.87 for the sawmilling sector.


The West region contributed around $5.2 million in log royalties in 1997-98, or 13.2 per cent of total State forest log royalties received in that year. In addition to royalty payments, in 1997-98 sawmill licence fees for the West region were around $584,000. There were approximately 30 full time logging and transport crews employed by the four main contracting companies, employing 186 persons in total. These crews harvested and transported State and private logs utilising approximately $31 million in capital and receiving over $21 million for services provided.

The quality and volume of available sawmill resources, the scale of the sawmill operations and further processing capacity largely determined the range of products produced at each mill. The forestry and wood-based industries using wood sourced from the West region presently accounts for an estimated 546 direct wood-based industry jobs. The estimated gross value of turnover of the sawmilling industry in the West region was $29.9 million, while the gross value of pulpwod (assessed at the point of leaving the chip mill prior to being further processed) was estimated at $23.2 million.

The flow-on effects industry to the State economy from the wood-based industries using wood sourced from the West region were broadly estimated using appropriate input-output and employment multipliers. Drawing on available multipliers for wood-based industries in the Victorian economy, it was estimated that the value of turnover from the sawmilling and residual log-based processing industries drawing hardwood resources from the West region contributed around $99.3 million to State output in 1997-98. This estimate is based on a State output multiplier of 1.87 for the sawmilling sector. The sawmilling and residual log-based processing industries receiving hardwood resources from the West region contributed 713 and 294 jobs respectively to the Victorian economy in 1997-98. These estimates are based on a State employment multiplier of 2.3 for the sawmilling sector (with 310 direct jobs) and 3.1 for the pulpwood sector (with 64 direct jobs). It is also estimated that in the West region, the commercial forest management sector (with 33 direct jobs) and logging and haulage sectors (with 139 direct jobs) contributed 361 jobs to the Victorian economy in 1997-98, using a State employment multiplier of 2.1 for the forestry sector. The total level of employment attributable to hardwood resources sourced from the West region from the forestry, logging and haulage, sawmilling and residual log-based processing industries is therefore estimated at 1272 jobs for the Victorian economy in 1997-98.

The native hardwood resources sourced from the region also contributed to a range of further solid wood manufacturing activities, such as furniture, joinery and craft wood industries. In 1996 there were 585 people employed in the furniture and joinery based industries who were resident in the North East region. The wood-based industries (including both sawmilling and pulpwood) accounted for around 1224 direct jobs, or around 1.9 per cent of total regional employment.


There were 22 timber processing industries drawing their resource from native forest in the Gippsland region, comprising 20 hardwood mills and 2 pulpwood processors. The timber processing industries employ 1508 people. The APP Maryvale mill employed 940 people - approximately two thirds of all employment, however, only part of the resource was drawn from native forest in the region. An estimated 78 contracting businesses were involved in native sawlog harvesting, transportation and forest road construction, access forest resources within the Gippsland region. Timber processing industries located in the region generated $26.1 million in annual household expenditure. Of this, the APP Maryvale mill alone generated $18 million in annual household expenditure. Forest contracting businesses employees involved in native sawlog harvesting, transportation and road construction were estimated to generate an additional $7.4 million in annual household expenditure.

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The native hardwood resources sourced from the region also contributed to a range of further solid wood manufacturing activities, such as furniture, joinery and craft wood industries. Estimates were provided for employment by major industry category for people working in wood-based industries in 1996. Based on these figures, the wood-based industries accounted for 3718 direct jobs in 1996, or 1.3 per cent of total regional employment.


Land purchase by governments and corporations for plantation establishment has led to concern by some landholders and rural communities about population decline, leading to loss of community services and erosion of local government rate bases, falls in land value, and costs of maintaining road networks. To address the issues, the Victorian Government initiated a State...
and $71 million from the native forest sector. This estimate does not include the value of goods produced by the secondary processing industries. Although most goods produced by the timber industry in the North East was estimated to be $296 million, comprising $225 million from the plantation softwood sector.

The total value of delivered goods produced by primary processing/export industries in 2000–01 was $71 million from the native forest sector. This estimate does not include the value of goods produced by the secondary processing industries. Although most goods produced by the timber industry in the North East was estimated to be $296 million, comprising $225 million from the plantation softwood sector.

Prepared for Plantations North East Inc. 80 pages


The report developed a methodology for evaluating public land resource use conflicts and applied this to native forest timber and water protection. The influence of expanding urban populations, or ‘growth corridors’, was commonly thought to place increased demands on resources from public forests, such as demand for recreational opportunities and for energy. Furthermore, demand for water supply to meet requirements of expanding population number places additional pressure on land use decisions in these regions. Perceptions of communities on the urban fringe have been found to be generally more concerned with the environmental impacts of forestry activities as presented in the media.


The report argued that the development of high value markets for Australian hardwood was achievable, if the challenges can be successfully tackled by an innovative industry working in cooperation. To achieve these changes the industry would require a more skilled workforce, new plants using improved technology in sawing, kiln drying, machining, gluing and finishing products under improved quality controls to detailed specifications and standards for the new generation of value added products. The importance of support market development programs such as those administered by the Timber Promotion Council was highlighted. The hardwood sector in Victoria was largely made up of small to medium family companies while other State sectors are largely dominated by a few large companies. On the one hand experts saw the Victorian structure as an impediment to overcoming the challenges ahead for hardwood and most agree with the need to rationalise the number of companies. However, on the other hand Victoria’s small to medium producers were identified as leading the way by innovatively and cooperatively tackling the issues at hand.


The Institute of Land and Food Resources was commissioned in April 2000 to undertake research on land use change and community attitudes to the impacts of change in south west Victoria. The study documented current community perceptions of these changes, focusing on three land uses that have increased rapidly: blue gum plantations, crop growing and dairy farming. The study provides evidence that community response to land use change varies with the land use types involved. Thus it was not land use change itself – the movement away from traditional commodities and enterprises – that was seen to have negative impacts for the region. Rather, some land uses were seen to have positive impacts for the community while others are viewed less favourably. In evaluating the impacts of dairy farming, blue gum plantations and crop growing, residents of large town centres more often reported the outcomes to be positive. It is likely that larger towns, drawing on a broader social and economic base, are in a better position to harness such benefits. Although one might anticipate flow on benefits for the surrounding rural district, these were not apparent the responses of rural residents in this research.


This report provides an assessment of potential social and economic impacts, which may arise from implementation of the ECC’s Box Ironbark Forests and Woodlands Investigation final recommendations. The assessment was based on a benefit cost analysis, which determine whether this is a net gain or loss to the Victorian economy from the ECC’s recommendations. A regional impact analysis was also completed, to identify the effect of the recommendations on communities in the study area, in particular, expenditure, gross incomes and employment. The original predictions of the social and economic effects were based on output from the Department of Natural Resources and Environment’s (NRE) Box-Ironbark Forests and Woodlands Assessment model for the Bendigo FMA forests were widely criticised during the public consultation phase. A new assessment was completed and a scenario of a 39% reduction in current sawlog volume harvested was proposed. The benefit cost analysis determined there was likely to be a net gain of around $2 million per year.

However, the consequences for the region were not as attractive, the benefit cost analysis indicated only a model net gain for a conservative reduction scenario and net job losses to the order of 14 full time equivalents, spread over a larger number of full time and part time workers. The biodiversity benefits were estimated using a willingness to pay methodology, and the report recommended the beneficiaries pay via contribution directly through conservation funds, or indirectly through taxation, to various forms of government assistance. A substantial portion of the losses to the region were identified as being likely to arise under RFA processes, whereby disadvantaged timber workers would have been eligible for various forms of financial assistance. The analysis supported the adoption of the ECC’s recommendations from an economic viewpoint, but the social implications suggest that substantial assistance is required to disadvantaged forest workers and their families.


The timber industry in the North East was found to provide significant economic benefits in terms of value of goods produced, direct and indirect employment, payments to local, State and federal governments and contribution to the development of infrastructure. The total value of delivered goods produced by primary processing/export industries in 2000–01 was estimated to be $296 million, comprising $225 million from the plantation softwood sector and $71 million from the native forest sector. This estimate does not include the value of goods produced by the secondary processing industries. Although most goods produced by the timber
depopulation of townships; and a decrease in community morale and vitality. Continued growth retrenched labour force; a loss of income to local business; increased stress on community and employment loss in the forest industry without alternative job opportunities to absorb the affected by reduced logging operations. Potential impacts included: the closure of some mills, the report concluded that the local communities in the Huon Valley were likely to be significantly on the local economy; impacts on employment; impacts on individuals and families; impacts on forest products in 1995/96. This was about 27 per cent of Australia’s forest product export workforce in 1995/96. In the same year, wood processing industries employed about 17 per cent of the State’s agricultural sector forestry and logging activities employed about 15 per cent of the State’s agricultural sector increased by 46 per cent between 1989/90 and 1995/96. There has been strong growth in employment in forestry and logging and in wood and wood product manufacturing over the period. The growth has been in response to improved conditions in the building and construction sector, following depressed conditions in the 1980s and early 1990s. Forestry and logging activities employed about 15 per cent of the State’s agricultural sector workforce in 1995/96. In the same year, wood processing industries employed about 17 per cent of the workforce involved in the manufacturing sector. Tasmania exported $288 million of forest products in 1995/96. This was about 27 per cent of Australia’s forest product export earnings, Tasmania’s exports of printing and writing products, pulpwood and roundwood accounted for more than one third of Australian export earnings for these products in 1995/96. The majority of Tasmanian export earnings came from woodchips, produced from pulpwood and sawmill residues. It was estimated that between 460 and 500 people were employed harvesting logs from public and private forests. Most harvesters worked in natural forest logging operations, while about 60 people were employed in softwood logging operations. Approximately 80 per cent worked within the district in which they lived. The sector was identified as being increasingly capital intensive, with the harvesting machinery for a typical operation now being worth in excess of $1 million. The gross value of production is estimated to be $152 million in sawn products, and $212 million in woodchip exports. The paper and woodchip values in 1994/95 include chips produced from 500 000 cubic metres of sawmill offcuts

Tasmania


A range of stakeholders at the State, regional and local level have been involved in the social assessment process. The hardwood-based forest industries made a substantially greater contribution to Tasmania’s economic activity than to activity in other Australian states. In 1994/95 hardwood-based industries contributed just over 8 per cent of gross state product (GSP). Before processing, the value of hardwood logs harvested in 1994/95 was estimated to be $336 million. Of this, processing, including sawmilling, paper manufacture and production of export woodchips, the gross value of production is estimated at $811 million in 1994/95. A little over half of this value was attributable to newsprint and paper products. When forest-based industries such as printing and furniture manufacture were considered, the contribution to gross state product was slightly higher. The contribution of Tasmania’s native forest-based and allied industries was estimated at about 17 per cent of gross state product in 1989. Tasmania had a higher proportion of its workforce employed in the forest industries than for other Australian states. In 1996 the industry directly employed 6558 people. Of these 2484 were in forestry and logging, 2239 were in wood and wood products processing and a further 1735 were in paper and paper products manufacturing. These represent about 3 per cent of total employment in the State. The proportion was higher when further downstream processing and indirect employment in related sectors such as transport were included. Employment in the forestry and logging sector increased by 46 per cent between 1989/90 and 1995/96. There has been strong growth in employment in forestry and logging and in wood and wood product manufacturing over the period. The growth has been in response to improved conditions in the building and construction sector, following depressed conditions in the 1980s and early 1990s. Forestry and logging activities employed about 15 per cent of the State’s agricultural sector workforce in 1995/96. In the same year, wood processing industries employed about 17 per cent of the workforce involved in the manufacturing sector. Tasmania exported $288 million of forest products in 1995/96. This was about 27 per cent of Australia’s forest product export earnings, Tasmania’s exports of printing and writing products, pulpwood and roundwood accounted for more than one third of Australian export earnings for these products in 1995/96. The majority of Tasmanian export earnings came from woodchips, produced from pulpwood and sawmill residues. It was estimated that between 460 and 500 people were employed harvesting logs from public and private forests. Most harvesters worked in natural forest logging operations, while about 60 people were employed in softwood logging operations. Approximately 80 per cent worked within the district in which they lived. The sector was


Although not within the nominated 15-year scope of studies, this report provides an overview of the development of the woodchip industry in Tasmania. This overview is supplemented by a more detailed examination of two case studies - the municipalities of Esperance (Southern Region) and Spring Bay (East Coast). The case study areas are profiled in terms of their historical development and their present socio-demographic structure. The significance of the woodchip industry to the local communities is discussed. At a regional level, the study revealed differences in the communities of Esperance and Spring Bay. In Esperance, the woodchip industry filled an employment gap resulting from the collapse of ‘box’ sawmilling. Jobs were re-distributed within the municipality rather than created. Esperance remained a strong cohesive inward looking community. In Spring Bay, the establishment of the woodchip industry created new forest related job opportunities that attracted an influx of workers and their families to the area. Newcomers in Spring Bay helped stabilise the age structure of the community and contributed to the local economy. Despite community-wide support for the woodchip industry, new residents expressed more concern over the environmental impacts of the industry.


The main feature of this report is detailed analysis of employment issues at a local community level. The report discussed economic issues in a local social context. Seven case study areas were profiled: Deloraine, Kentish and Westbury, Bothwell and Green Ponds, Hamilton, Norfolk, Huon and Port Cygnet, and Esperance. The studies were based on census data and interviews with forest industry representatives, forest workers, local government representatives and local business people

The submission concluded that local communities, such as Esperance, New Norfolk, Hamilton and Deloraine, which have a high dependence on forestry resources, would be most negatively affected by a withdrawal of such resources. A criticism of the economic claims put forward by the Tasmanian Forest Workers Taskforce was that they had not given weight to the potential forest dependent industries to adapt to change.


The study was produced for the Interim Forest Assessment to protect forest areas pending completion of a Regional Forest Agreement. Five areas of assessment were identified: impacts on the local economy; impacts on employment; impacts on individuals and families; impacts on community services; and impacts on community viability.

The report profiled four case studies, one of which was the Huon Valley in Tasmania. The report concluded that the local communities in the Huon Valley were likely to be significantly affected by reduced logging operations. Potential impacts included: the closure of some mills, employment loss in the forest industry without alternative job opportunities to absorb the retreated labour force; a loss of income to local business; increased stress on community and family relationships caused by high unemployment; some rationalisation of services caused by depopulation of townships; and a decrease in community morale and vitality. Continued growth

Annex 2 - Annotated Bibliography
in the aquaculture industry in Dover and the community's willingness to work together to cope with change, as demonstrated in the past, was expected to cushion to some degree the above impacts. Across all the four case study areas, the potential for the timber industry to adapt to change was recognised as important in off-setting negative impacts such as employment loss and business failure.


The report assesses the contribution of the proposed Circular Head Wood Centre (CHWC) to the following Tasmanian economic aggregates: Output, GSP (total income), and employment. It examines the special significance of the CHWC for employment in the Circular Head District and identifies cost savings flowing from the integrated nature of the CHWC. Using input/output tables and a range of statistical sources, the report found the CHWC including sawmill expansion will create:

- Additional output in all Tasmanian industries of $72.322 million p.a.
- Additional GSP (total income) of $52.239 million p.a.
- Additional employment of 208 jobs in all Tasmanian industries.
- Effects on the Circular Head District: the CHWC will reduce the unemployment rate in the Circular Head municipality from its March 2002 level of 6.6 per cent to 4.8 per cent well below the Tasmanian average unemployment rate.
- Cost Savings: Cost Savings from scale/scope economies associated with the multiproduct nature of the CHWC are represented by a reduction in fixed cost of 42 cents per unit of output to 24 cents per unit of output.
- 49 jobs will be created in the construction industry during the construction phase of the CHWC.

The substitution of veneer and saw log production for wood chip production is a quality improvement worth $130 per tonne of timber processed.

New South Wales


The Social Assessment Report for the Eden region, made up of the whole of the Bega Valley Shire, Bombala township, and the south eastern corner of the Cooma-Monaro local government area found that timber industry workers are predominantly male, aged between 37 and 44 years. Occupational flexibility was low, despite 55 per cent of sawmill workers having worked in other industries. 90 per cent of timber industry workers left school at or before year 10 level of education. Only 13 per cent had tertiary qualifications. The majority of chipmill workers earned between $25,000 and $40,000 pa. Approximately 80 per cent of sawmill workers earned less than $25,000 per annum. Fifty per cent of State forest workers left school at year 10 or earlier and 6 per cent had tertiary qualifications and were working in their current job for an average length of 12.4 years. A high proportion of timber industry employees and forest management agency workers live in Eden and Bombala and surrounding hamlets. Lack of employment opportunities and the lack of services and facilities were cited by all respondents as the major dislikes about living in the area.

In 1995/96 there were 13 hardwood mills sourcing product from the Eden region although some mills were located outside the region. Approximately 78 per cent of the mills’ raw product was sourced from the Eden region. Two softwood mills also operated in the region employing 49 people. Employment in the hardwood timber industry in 1996/97 was 301 persons, made up of 46 in forestry management, 152 logging and 103 in milling (both sawmill and pulpmill). Firewood accounted for the largest value of minor forest product.

Annex 2 - Annotated Bibliography


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As at June 1997 there is a three-tiered structure to the timber industry, comprising two mills, one wood chip mill Harris Daishowa (Aust) P/L and one sawmill Tablelands Sawmills (Bombala) P/L, together with NSW State Forests, supporting 163 full-time and three part-time and casual employees. 12 timber harvesting companies supporting sixteen bush crews and 127 bakers and eight part-time and casual employees and ten haulage contractors with 16 full time and six part-time and casual employees. The industry in the region is dominated by HDA, which is responsible for over 50 per cent of employment and over 75 per cent of final sales. The structure of the industry is highly monopolistic, with businesses at each tier providing services to a very small number of clients (customers): 83 per cent of businesses in the industry having five or less clients. The size of the timber industry – measured in terms of sales or employment – has decreased slightly over the last eighteen months. Much more significant decreases in size occurred prior to June 1996. Expenditure locally by the timber industry, including wages and salaries, local authority rates and local current purchases, is estimated at $23.04 million annually. The key concern amongst businesses in the industry is for resource security and reliable long-term policy. Levels of optimism for the future are on average relatively high amongst the mills and State Forests, somewhat less amongst harvesting contractors, and less again amongst haulage contractors.

Timber Industry Supplying businesses generally have a much broader client base than timber industry businesses, the exception being specialised, relatively technically advanced businesses such as machine engineering and repair, which are heavily dependent on the timber industry. Businesses range in size up to several with an annual sales of greater than $5 million, with a median size on the basis of sales of between $0.5 million and $1 million, and a median staff size of 5-6 full-time staff equivalents. The major issues affecting individual businesses in the region is their concern for resource security for the timber industry and the need for new economic initiatives such as the proposed recovery mill and Eden wharf. The need to diversify business, source work from elsewhere, and remain competitive is also a significant concern for many respondent businesses. Levels of optimism amongst these businesses are higher on average than for businesses in the timber industry.


A survey of structural adjustment and mitigative processes in the Eden CRA has been carried out from a social research perspective. The study has focused on the experiences of workers and contractors in the native hardwood timber industry who have been laid-off in the period December 1995 to June 1997. The study also describes the mitigative measures available to refretched workers and businesses, and access to these and other forms of assistance. Employment changes during the period December 1995 to June 1997. The study also describes the mitigative measures available to refretched workers and businesses, and access to these and other forms of assistance. Employment changes during the period December 1995 to June 1997. The study also describes the mitigative measures available to refretched workers and businesses, and access to these and other forms of assistance. Employment changes during the period December 1995 to June 1997. The study also describes the mitigative measures available to refretched workers and businesses, and access to these and other forms of assistance. Employment changes during the period December 1995 to June 1997. The study also describes the mitigative measures available to refretched workers and businesses, and access to these and other forms of assistance.
The work entailed the development of a database of key economic variables and the methods used were primarily regional economic impact modelling using input-output analysis. The regional model was used to analyse the distribution of the flow-on effects between Oberon and the surrounding region. The approach taken to social assessment was to make an assessment of the sensitivity to forest industry presence through analysis of primary research data. The work entailed the development of a database of key economic variables and the interpretation of those data. The social assessment was to make an assessment of the sensitivity to forest industry presence through analysis of primary research data. The work entailed the development of a database of key economic variables and the interpretation of those data. The social assessment was to make an assessment of the sensitivity to forest industry presence through analysis of primary research data.

The Upper North East CRA region has been a high growth area in terms of population and employment, especially in the areas near to the coast. However, unemployment remains high as more people are attracted to the region, and the number of dependents is well above the average for NSW. Employment in 1996 was of the order of 110,000 and Gross Regional Product was $4,948 million. The forestry industry appeared to have adjusted rapidly to the reductions in wood supply under the Interim Forestry Agreement that came into effect in July 1996. A combination of further value adding and additional wood supply from private land has offset the reductions in wood available from State Forests. The industry in 1997-98 involved processing 445,000 m³ of wood while all forestry-based activities contributed, directly and indirectly, $250 million to Gross Regional Product (4.2 per cent of the economy) and 5,000 jobs (4.5 per cent of total employment). One-half of this contribution was associated with the growing, harvesting and processing of native hardwood. Alternative wood supply scenarios were designed to provide an indication of the likely economic effects of changes in wood supply to the stakeholders involved in the CRA process. The alternatives studied involved changes in the wood processed of between 15 per cent increase and a 35 per cent reduction in wood supply relative to the base case. The impacts of these changes on the regional economy varied between an increase in employment of 296 and a decrease of 749 jobs.

The social profiles identified a number of communities where forestry provided a significant level of employment. However, there was considerable variation among those communities in terms of other social characteristics that were used as indicators of the capacity of that community to adapt to changes in key industries and their economy. Those results indicate that the local impact of changes in forestry will be variable among the centres in the CRA region.

The Southern Tablelands sub-region and the Upper North East sub-region are high growth areas in terms of population and employment, especially in the areas near to the coast. However, unemployment remains high as more people are attracted to the region, and the number of dependents is well above the average for NSW. Employment in 1996 was of the order of 50,000 and Gross Regional Product was $790m. This smaller economy is specialised on forestry and tourism, especially tourism that related to the snowfields. The region has relatively low population growth and unemployment has been under the NSW average for most of the recent years. Generally, the region reflects the stability, limited growth and low incomes of rural regions. In the base year, the Southern Tablelands timber industry activities accounted for between 15 per cent and 20 per cent of economic activity depending on the measure used (the majority of which was due to the softwood component of the industry). Base year total employment was 2231 all of which was in forestry and primary processing. This region has moved from native forests to a high level of softwood plantations that supply a range of processing activities. The negotiated outcome for the South Coast sub-region involves a very minor change in the level of logging from that permitted in 1998-99. This reflects a history of adjustments to the level of logging over recent years along with additions to the areas reserved for national parks. In the Southern Tablelands sub-region in 1996 total employment was of the order of 15,000 and Gross Regional Product was $3,331 million. This smaller economy is specialised on forestry and tourism, especially tourism that related to the snowfields. The region has relatively low population growth and unemployment has been under the NSW average for most of the recent years.

This long-term study (5 years) was commissioned by the Forestry Commission of NSW and was designed to track and monitor changes in economic, social and commercial developments centred on the town Oberon and its surrounding region that arise out of the continuing development of forestry and forestry-based industries in the area (predominantly exotic plantation based industries).

This report, at the end of year 1, establishes the baseline for the evaluation over the five year period and establishes the economic methods used. It relates primarily to the development phase (1985/86 - 1987/88) and the operating phase (1988/89 - 1992/93) of the expansion of the plantation based industries. Thus, the negotiated outcome has the potential to add about $6m to the 1998-99 gross output and around 60 jobs.


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construction of analytical models. The third part applies the models to analyse the economic impact of the timber industry in 1985/86 and the economic impact of forestry-based developments. The fourth part concludes and salient points are highlighted along with some discussion for the implications for management and policy.

During the course of the research, the following reports were issued:

- Year One Report 1990
- Year One Report – The Social Impacts of Forestry, which includes the results of the first household survey, carried out in 1989.
- Year One Report – Economic Impact ofForestry.
- Year Two Report, which includes the 1990 Business and Employer Survey


The Oberon economy grew by around 30 per cent over the study period, compared with 12 per cent for all of New South Wales. The report suggests the performance of Oberon is associated with local factors influencing particular industries. Among others, forestry-based activities were favoured by local factors. Forestry contributed the largest share of economic activity and was estimated to have contributed to 85 per cent if the growth in terms of output and just over 60 per cent in terms of employment, the lower growth in employment reflecting productivity gains over the period.

The report indicates it is likely that the patterns of growth revealed in this analysis would be repeated with subsequent expansion of the forest based industries. There was little evidence to suggest that agglomeration effects leading to the establishment in Oberon of other specialist firms related to forestry production and processing or a substantial broadening of the array of service activities. Within the Central Tablelands economy, forestry contributed to growth but its share in the larger economy is around 3-4 per cent.

The Final Report found that the timber industry in Oberon has prospered without recent major infrastructure developments apart from the gradual improvements of the roads linking the area to markets and ports. Developments in communication and information technology are critical as well as the attraction of professional people who have high income earning potential and a capacity to contribute significantly to the development of rural communities. It was expected further developments on improving infrastructure would occur.

There is high potential for value-adding in the timber industry when compared with other primary activities such as grazing. Plantations were recognised as being a feasible and successful substitute for reductions in harvesting from native forest given the presence of established plantations in the region. However, it was apparent that the benefits accruing from plantations may take up to 30 years to reach a similar level of high value integrated processing.

Appendix B presents a range of multipliers and impact estimates for Oberon and the Central Tablelands. Multipliers are calculated in terms of output and income as the effect per dollar change in final demand and for employment as the number employed per $’000 of output. The ratio of this multiplier effect to the initial effect (known as a Type II ratio) for Oberon was 1.61 in 1992-1993. Total industry effect was $119,286 million, income from the forest based industries was $23,791 million with 871 people employed. The ratio of total industry effect to the initial effect for Central Tablelands was 2.12 in the same year. Total industry effect was $187,390 million, income from the forest based industries was $44,179 million with 1684 people employed.


In 1982 a decision was made by the NSW Government to halt all rainforest logging in the State. This resulted in revocation of 119,953 ha of State Forest and related lands, of which 62,866 were in the far North Coast. 19.6 per cent of the volume of timber lost to the industry was rainforest species, the remaining amount was hardwood timber. This loss of resource significantly affected both the rainforest and hardwood forest industries.

Total sales of sawlogs in the industry were 85, 000 m3 lower in 1991 than 1981 and hardwood log sales dropped by 55, 000 m3. Loss in annual output from the industry is estimated to be $1 million (using 1991 prices) and 600 timber-related jobs being lost. Gibbs estimates that after multiplier effects the total volume of output in 1991 could be more than $24 million less than it was in 1981 and regional employment could have declined by over 1,300 jobs.

Gibbs argued that a large share of this contraction in the industry is due to the rainforest decision and economic wealth has been lost, in contrast to predictions made at the time the policy was enacted. She concluded that such a political process may not be the most effective mechanism for allocating resources if regional community welfare is to be enhanced.


This report provides an assessment of the impact that the South East Forest Protection Bill would have on the timber resource available to the industry and the socio-economic effects this would have on the Eden region. It looks at both the immediate economic impacts and the longer term impacts and assessed the economic and social characteristics of the Eden region (Shires of Bombala and Bega Valley) based on official statistics.

The report also examined the contribution made by the timber industry to the regional economy using census data. It analyses the direct contribution of the industry in terms of employment, income and output, its contribution on public sector finances, and the multiplier effects on economy. The report argues that the costs imposed on the regional economy by the enactment of this Bill are substantial and that the costs imposed during the moratorium period are significant even if no areas are revoked.


The purpose of this study was to gain a better understanding of the forest products industry in NSW. The study was undertaken by Margules Groome Poyry Pty. Ltd., Roy Powell and David James. Study objectives were defined by State Forests of NSW, the Office of Economic Development, the Department of Business and Regional Development and the Office of Forestry. The study objectives were to provide an economic profile of the timber industry in NSW, estimate its economic impact on regions and the NSW economy, analyse linkages between the forest products industry and the wider economy and develop multipliers which reflect these linkages at a regional, state and sector level.

Businesses comprising the forest products industry were categorised in eight sectors: forest management, contractors, basic processing (hardwood), basic processing (softwood), basic processing (cypress pine), export woodchipping, wood panels and paper, further processing and fabrication.

Information was obtained from a comprehensive industry-wide survey and from other sources.
impacts on employment in the value-added wood processing and manufacturing sectors of the moratorium areas were expected to impact on 106 jobs throughout the South-West Forest. The economic impacts of the moratorium blocks were found to be largely dependent on the Helms block near Nannup.

- Helms block near Nannup.

Include, but are not limited to apiary, grazing and tourism and recreation. In addition to the use the South Brigalow assessment region's forest for timber approximately $1980m, including $925m paid to households as wages and salaries, in 1999. Employment totalled 34,970 people and the average wage and salary earned was $26,452 per person. In addition, 22 people were employed as contractors in the region's forests. The region's statistics and documented evidence.

The cumulative business, family and personal effects of these are discussed. These findings result from nearly three years of fieldwork using data collection techniques of participant observation, unstructured and semi-structured interviews, demographic and firm surveys, official statistics and documented evidence.

The structure of the logging industry is examined and the nature and dynamics of logging firms analysed. Logging firms are categorised into three main types based on the relative amount of capital utilised, labour employed and in terms of variations in the family labour process. Gender and family are defining features of the labour process in these small firms and women play an important role. Notions of family and kinship are also important in shaping employment relations between employers and owners. These categories were useful in understanding the different ways in which family logging firms respond to the main sources of insecurity and uncertainty they face: the flexible contract system in the timber industry and the environmental movement's anti-logging campaigns which have resulted in disruption to work, changes in forest policy and practice, and created a high level of uncertainty over the future of logging in this region.

The report found there were 12 native crown timber mills sourcing timber from the South Brigalow assessment region, providing direct employment for 201 people in 1999. Of these 12 mills, 10 were located within the assessment region, directly employing approximately 173 people. In addition, 22 people were employed as contractors in the region's forests. The region's five mobile mills and one private property mill provided employment for an additional 16 people.

In 1999, 62,830m3 of High Quality Large and High Quality Small Cypress timber was supplied to the native timber industry from State Forests within the assessment region. In addition, 10,810m3 of High Quality Large and High Quality Small Hardwood and 10,250 tonnes of hardwood firewood was supplied to the native timber industry from the region's State forests. Gross Regional Product for the South Brigalow assessment region was estimated to be $650 million and the industry employ more than 20 000 people either directly or indirectly. The hardwood sector is the larger and more geographically dispersed component of the industry. Calculation of the direct economic impacts of varying the processing opportunities or level of resource available to the timber production sector was estimated for employment, income (wages and salaries) and the gross value of production. The ABARE model - FORUM (Forest Resource Use Model) - was used to simulate impacts. FORUM is a regional linear programming model of production forestry, designed to measure the direct impacts to local or regional timber industries of changes in woodflows. Studies completed for the RFA make a general assumption that 1.2 people are employed indirectly for every direct job in the timber industry.

To Trees? or Not to Trees? An Assessment of the Social Impact of the Plantation Industry of the Shire of Plantagenet. Curtin University of Technology, 83 pages

The assessment forms part of larger doctoral study investigating the adaptation to change in rural communities. Scoping the impact of the growth of plantation industry in the Plantagenet region revealed that the greatest number of properties to be planting in trees are whole sale farms, the majority involved in sheep farming. The largest age group category of farmers selling or leasing their properties for plantations is the 50-60 year age group. The report documents the vast range of positive and negative impacts of the plantation industry on the communities within the Shire.

The document contains 13 recommendations relating to policy and planning guidelines for State and local government to address the social, economic and environmental concerns of small rural communities affected by the plantation industry. Other recommendations included the provision for assessment of direct and indirect employment in the plantation industry, and ongoing assessment of actual and potential loss in the declining agricultural industries, associated service and retail businesses and movement of workers from the native forest industry. Development of new marketing infrastructure and continued research and development in value-added enterprises, and their impacts on communities, were further key recommendations of the report.

Western Australia


The timber industry in Western Australia is concentrated in the south-west of the State. Industry activity ranges from the production of tree seedlings, growing, tending and managing the forest estate, harvesting, through to sawm timber conversion and secondary processing to provide a wide variety of wood-based products. In 1999/1997 the annual turnover of the combined hardwood and softwood sectors was estimated to exceed $850 million and the industry employ more than 20 000 people either directly or indirectly. The hardwood sector is the larger and more geographically dispersed component of the industry. Calculation of the direct economic impacts of varying the processing opportunities or level of resource available to the timber production sector was estimated for employment, income (wages and salaries) and the gross value of production. The ABARE model - FORUM (Forest Resource Use Model) - was used to simulate impacts. FORUM is a regional linear programming model of production forestry, designed to measure the direct impacts to local or regional timber industries of changes in woodflows. Studies completed for the RFA make a general assumption that 1.2 people are employed indirectly for every direct job in the timber industry.


3. URS Forestry (2001). Assessment of the Scientific, Economic and Community Values and the Impact of Logging on salinity of Areas Subject to a Moratorium on Logging. Conservation Commission of Western Australia, 128 pages

The WA Government ‘Protecting Our Old-Growth Forests’ policy included a commitment to:

- Place an immediate moratorium on logging to undertake an assessment of the scientific, economic and community values, and the impact of logging on salinity, of:
  - The proposed 25 000 hectare expansion of Wellington National Park near Collie;
  - Palmer and Leach blocks near Collie; and
  - Helms block near Nannup.

The economic impacts of the moratorium blocks were found to be largely dependent on the future structure of the hardwood timber industry. The sawlogs potentially foregone from the moratorium areas were expected to impact on 106 jobs throughout the South-West Forest region in forestry, harvesting, haulage and primary processing. This did not include potential impacts on employment in the value-added wood processing and manufacturing sectors of the
Annex 2 - Annotated Bibliography

native forest industry. When these sectors were included in the analysis the actual impact of the moratorium areas on industry employment was estimated to be 2-3 times higher. The total annual turnover foregone by the industry as a result of the moratorium is estimated to be $7.8 million, made up of $2.8 million per annum in the sawmilling sector and $5 million per annum in processing and re-manufacture.


This report details the social and economic impact assessment of the draft Forest Management Plan (FMP) for South West Western Australia. It suggests that the three Local Government Areas (LGAs) most likely to be impacted by the implementation of the FMP are Bridgetown-Greenbushes, Collie and Manjimup. These three LGAs were identified as having a combination of low resilience and moderate levels of relative dependence on the timber industry. The three areas accounted for 51 per cent of all timber mill employees.

Under a 10 per cent volume reduction scenario, an estimated total loss of 198 mill employees was predicted. Of this total number, 136 (69 per cent) of these employees would be drawn from these three critical LGAs with the lowest social resilience. In addition it is estimated that 64 per cent of these employees would need to leave the area in order to find alternative employment.


An independent assessment of the potential social and economic impacts associated with the draft Forest Management Plan (FMP). This overview of social and economic impacts replaces the earlier version and draws on the consultant’s report (Coakes Consulting, 2002), together with additional information from the FPC, the Department of Industry and Technology, and from the draft FMP. The report presents impacts resulting from the Protecting our old-growth forests policy relating to the direct job losses that have occurred to date as a result of implementation of the Government’s policy from February 2001. Estimates of the likely employee and family dependent out-migration from each LGA and associated losses in salaries and wages and household expenditure are also provided. To August 2002, 85 jobs have been lost and 510 are estimated as still to be lost. These losses apply to various sectors of the industry, and to both jarrah and karri. Analysis of jarrah and karri sawmilling, harvesting and management suggests total job losses of at least 750 as a result of restructuring ahead of the FMP.

Estimated employment and investment outcomes in sawmilling, drying and partial value adding of possible jarrah volume scenarios were provided. One scenario leads to a lower limit for the sustained yield of 1st and 2nd grade jarrah and karri sawlogs (106,000 m³), and the other to an upper limit (164,000 m³). The lower scenario estimate employment of 400, $13 million in new investment and $9.4 million in household expenditure. The upper scenario estimate employment of 610, $18 million in new investment and $14.3 million in household expenditure. Manjimup, the Perth greater metropolitan area, and Bunbury have been most impacted to date, in terms of job losses. It is likely that Manjimup, the Perth greater metropolitan area, Bunbury and Busseton will be further impacted to the greatest extent as a result of industry restructuring.


The Oil Mallee Project has been under way for over a decade. This report highlights the wider potential benefits of the Oil Mallee Project, specifically the proposed 5MW Integrated Wood Plant at Narrogin, to regional communities, the state and nation. The plant would create an additional 88 permanent jobs and 447 temporary job years within the Australian Economy. Twenty five people would be directly employed in permanently operating and supplying the plant in the Great Southern Region. The Net Present Value (NPV) of the project to the owners of the

Annex 2 - Annotated Bibliography

IWP would be $7.78 million. For landholders the NPV of planting mallees to supply the IWP compared to the existing land use would be $6.16 million. Additional economic activity, including employment would be generated within the regional and national economies from the operating and capital expenditure and profits from the IWP.

Queensland


It was found that timber processing industries (sawmills) associated with native forest within the SEQ RFA region generated $20 million in employee annual income per annum. $15 million in annual household expenditure was distributed through local communities and towns within the SEQ RFA region. Including timber harvesting, transport and processing industry employees, these industries employed 872 individuals and generated an estimated $24 million in annual employee income and $18 million in annual household expenditure. Gross Value of Production was estimated to be $69 million. The expanding softwood sector contributed around $207 million in GVP, employing 1100 individuals with an estimate annual employee income of $18.6 million. When the high levels of local expenditure by forest industries within the region are considered along with the high levels of local household expenditure by forest industry employees, forest industries provide a significant contribution to local and regional economies within the SEQ RFA region.


The Commonwealth and Queensland Governments provided $38 million for a ‘growth and development package’ in recognition of the negative economic and employment impacts of the cessation of logging on Fraser Island. The growth and development package included a ‘Workers’ Special Adjustment Package’ (WSAP) which was expected to cost a total of $3.5 million between 1991/2 and 1994/5. The objective of this package was to mitigate the negative effects of redundancy on the 90 affected people and their families. Of that number, 70 were eligible ex-timber industry workers, all of whom were placed in alternative employment or have retired from the workforce; 12 were workers from an affected downstream business and 8 were logging contractors. The authors concluded that the WSAP had been successful, well resourced and well managed. Recommendations for future structural adjustment packages related to three issues: the location of alternative employment with respect to worker’s home locations needs to be considered; government employees should receive equal treatment to private sector employees and future assessments of business compensation should involve people with a social or behavioural sciences background.


This report presents an overview of the native timber industry and employment in South East Queensland and identifies the timber industry and employment profile for several towns within the study area. The research extends the existing research on social and economic impact assessment undertaken by Commonwealth and State governments. The CRA assessment focused on the conservation of the native forest industry. When these sectors were included in the analysis the actual impact of the moratorium areas on industry employment was estimated to be 2-3 times higher. The total annual turnover foregone by the industry as a result of the moratorium is estimated to be $7.8 million, made up of $2.8 million per annum in the sawmilling sector and $5 million per annum in processing and re-manufacture.


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South Australia


The forest industry is a long established and important contributor to the economy of the south east. At September 2000, the total plantation estate in the south east stood at 114,168 ha net planted area, of which softwood comprised 96,603 ha and hardwood 17,565 ha. Nearly all processing of the Green Triangle forest resource occurs in South Australia. The region's processing industry produces 10 per cent of the value added generated by the manufacturing industry in South Australia, and is the largest regionally based manufacturing industry in the State.

The report stated that the wood processing industry produces ten times more value added than the dairy industry in the south east, and employs six times more people in the region. Wood and paper manufacturing employ 40 per cent more South Australians than the wine industry, and contributes 40 per cent more wages and salaries into the South Australian economy than the wine manufacturing industry. From less than 10 per cent of the total land area in the south east, the industry generates, directly and indirectly, around 29 per cent of total gross regional product, and 25 per cent of regional employment. The latest data on economic activity in the region reflect the contribution that recent increased hardwood plantings have made to the region's economy.

The value added by the forestry sector increased by 30 per cent between 1995-96 and 1998-99 to $69 million. Employment in the industry increased by 47 per cent, and forestry's contribution to regional household income grew by 40 per cent. Industry estimates of the plantation expansion that will be required over the next ten years are an average annual 2,000 ha for radiata pine, and 5,000 ha for blue gum. The industry has examined land capability and suitability in the region that could provide for this moderate level of expansion. Analysis show that around 10 per cent of the remaining unplanted land in the region is suitable for plantations. Overall, just over 102,000 ha are considered suitable for plantation development.


Econsearch constructed an input output table for the south east region of South Australia in 1998/99 in order to estimate the significance of forestry and timber processing. They found that the direct value added generated by the wood and paper products sector was around $220 million (from output valued at $599 million). Value added in the forestry sector was almost $70 million (from output valued at $130 million); the flow-on to other sectors in the region summed to $190 million. The largest impacts in the trade and transport sectors; directly and indirectly the forestry and wood products industry contributed more than $480 million to gross regional product, around 29 percent of the total. Direct employment in wood products was approximately 2,700, and 700 in the forestry sector; flow-on employment to other sectors in the region summed to over 3,400.

Directly and indirectly the wood products and forestry industry contributed around 6,800 jobs to the south east region, approximately 25 percent of the total. Compared with similar estimates for 1995/96, there was a marked increase in forestry activity, with increased areas of new plantings, particularly hardwoods. The decline in processing sector employment was offset by increases in the forestry sector. The survey indicated a similar trend between 1998/99 and 2000/01. The growth in plantation development continued, with substantial increases in employment and expenditure, while sales in the processing sector remained level, with a slight easing in employment.

National


The Resource Assessment Commission undertook a comprehensive inquiry into forest management and timber production, examining extensive evidence on the environmental impact of logging in native forests. The inquiry found that production of timber from native forest was a legitimate use of natural resources and could be conducted in a sustainable manner. It found also that the timber industry was of fundamental importance to many regional and rural economies. In general terms, it found Australia's forests provided a broad range of economic and social opportunities, including tourism, mining, grazing, and pharmaceutical, honey and seed production. It identified recreation and employment opportunities as the major social benefits that forests can provide. Wood production was the key commercial use of Australia's forests. The wood products industry was described as dependent on wood from a mix of sustainably managed softwood and hardwood plantations and native forests. It recommended the benefit to the community from using forests for wood production could be increased through the efficient use of wood by industry. The report identified the need for governmental commitment to provide certainty and security for existing and new wood products industries to facilitate significant long-term investments in value-adding projects in the forest products industry.

A major concern of the inquiry was to investigate management options for the 'South-East forests' (south east NSW and East Gippsland, Victoria). One of several research projects undertaken by the inquiry was a contingent valuation (CV) study directed at estimating preservation values. The importance of enabling those that may be directly affected by policy decisions to have input into the policy development process was emphasised. Local governments were identified as having an important interest in decision-making processes that can influence regional land use and as a consequence the nature of regional communities and economies. It recommended strategic land use decision making in relation to forests should be based on comprehensive evaluation of the potential uses and values of a particular area. The National Forest Policy Statement, signed in 1992, formed the joint response of the federal government and the state and territory governments to three major reports on forest issues, the Forest and Timber Inquiry being one of these. The recommendations from this inquiry contributed to the development of the CRA process.
Annex 2 - Annotated Bibliography


Data from the 1986 Census of Population and Housing were used to describe changes in the logging workforce and to compare logging with other sectors of the economy. Changes in the logging workforce were recorded for numbers, type of occupation, occupational status, hours worked, age, birthplace and gender.

Industrial comparisons for the above mentioned characteristics were also drawn between logging, and the rest of the rural sectors (represented by agriculture, forestry and fishing), manufacturing and the workforce as a whole. Measures to provide a statistical basis for industrial planning were then suggested.


Social and environmental impacts research found that further timber industry workforce rationalisation were inevitable. Consequently, employment growth will lag behind increases in the industries’ output. Indeed, if little or no improvement in competitiveness is achieved, employment will decline. Given the decentralised nature of wood processing operations, this would impact most severely on rural centres. An increase in the output of higher value added products would, in most instances, imply an increase in processing operations and in employment opportunities. This would reduce the decline in employment which would otherwise be expected to accompany future initiatives to improve productivity.

The forest products industries comprise an important component of Australia’s manufacturing sector. The industries employ about 40000 people and have an annual value added of around $6 billion. This represents a little over 4 per cent of both manufacturing employment and value added. However, in many regions (eg Mt Gambier and Gippsland), the industries constitute a far more significant proportion of economic activity.


The report presented a national profile of the timber industry, using Tasmania as examined as a case study. The report was based on secondary data and interviews with community leaders. The report examines employment impacts, income impacts, insecurity and uncertainty, social impacts, impacts in terms of small business debt and contractual agreements, social and community issues, and social adjustment impacts. It highlights the limited alternative employment options available to forestry workers, the insecurity of the present industry, the loss of purpose and self-esteem felt by communities and the reduction in local businesses, services and community groups. The report was able to make some general recommendations regarding the need for structural adjustment programs, but lacks any detailed assessment of small timber towns and regional economies.

Impacts to be expected on forestry communities if the 399 coupes were not made available for woodchip export are identified. Includes case studies of Eden, NSW, Manjimup, WA and Tasmania to show the social characteristics and recent analyses of each of the three areas, and the social dislocation the communities are experiencing. Employment impacts representing $65.5 million in lost wages in one year has been estimated by ABARE. Direct impacts on employment would be 1871 workers displaced. Localised flow on effects to community employment in timber towns and regional economies is estimated by ‘community leaders’ to be 20-30 per cent. Combined loss of Gross State Production by the respective regional economies is estimated to be $256 million. The report recommended short-term financial relief for families threatened with displacement due to coupe closure.

Annex 2 - Annotated Bibliography


This study assessed the potential for social and economic impacts from changes in the amount of forest available for logging resulting from the Deferred Forest Assessment (DFA) process to ensure that the process takes into account the socio-economic impacts on timber dependent areas. Four case studies (Shires of Waroona, Harvey and Collie in WA; Shire of Bombala, NSW, Shire of Wingham and City of Greater Taree, NSW; Shire of Huon Valley, Tas.) were assessed. First, to determine the social impacts that have resulted since forest coupes were withheld in the Commonwealth Government January 1995 decision and, second, to determine the vulnerability of the community to social impacts if more coupes are withdrawn or if withdrawals were made permanent. Chapter 2 identifies five impact areas: 1) impact on the local economy; 2) impact on employment; 3) impacts on individual and families; 4) impacts on community services; and 5) impacts on community vitality. It discusses these areas and defines relevant indicators of vulnerability for each based on previous studies. For each of the case study regions the economic structure is discussed, dependence on forest industries assessed, employment and labour force characteristics analysed, the likelihood of alternative employment studied, and the impact of the process on individuals and families, community services and vitality analysed.
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In 1995, the Commonwealth Government identified 399 coupes as having high conservation values, these coupes were placed under interim protection, requiring they be set aside from logging until their conservation values were assessed. This report describes the financial and employment implications of Commonwealth restrictions on the export of woodchips from 316 coupes under interim protection. The values of estimated royalties were provided by State authorities, totalling $42.4 million. The gross value of forest products at the mill gate, including woodchips totalled $278.6 million, which was equivalent to 12 per cent of the value of total Australian production in the hardwood sawmilling and woodchips industries in 1994. The impact of loss of production, after value adding beyond the mill gate as well as multiplier effect on regional communities, was estimated to reduce the GDP in affected States by $256 million in 1995. Over the two years 1995 and 1996, the total estimated impact was $512 million.

A total of 463 forestry and logging jobs, valued at $16.2 million in wages would be lost. The estimated flow-on effects to employment in downstream wood processing industries was estimated at 1407 persons, or $50.9 million in lost wages.

This report documents findings from assessments of links between small-scale growers and the forest industry in three important farm forestry regions in Australia: 1. Green Triangle region of south east South Australia and south west Victoria; 2. Tasmania; and 3. south west Western Australia.

The study highlights that despite its apparent potential for economic, environmental and social gain, the link between small-scale growers and the wider community, viable farm forestry industries were still in developmental phases. Assessment of the links between small-scale growers and industry was presented to identify current arrangements and their strengths and weaknesses; and explore the principles and practices of effective links which could improve the adoption of farm forestry. Recommended strategies include:

- Investment by industry to provide greater assurance of returns and government to improve access to competitive markets. Provide evidence that growers are likely to get fair returns.
- Regional appraisals of farm forestry viability and findings widely disseminated.
- Detailed and regular assessments (eg. every 5 years) of markets. Assessments to include competitiveness of small-scale growers in changing global markets.
- Improved coordination between all levels of government and reciprocal involvement of representatives in research and development forums.
- Recognition that farm forestry viability will vary widely between regions. Improved information exchange between regional stakeholders, with regional plantation committees encouraged to facilitate this process.
- Grower cooperatives and/or market brokers to aggregate supplies from small-scale growers.

This report addressed the application of the Montreal Process, specifically 'Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies'.

8. ABARE (1995). Financial and Employment Implications of Restrictions on 1995 Woodchip Licences (399 Coupe Assessment). Dept. of Primary Industries & Energy; Aust. Bureau of Agricultural and Resource Economics. 35 pages. This study assessed direct and indirect employment to measure the contribution of the forest sector in meeting community needs (Montreal Process indicator 6.5). The majority of direct employment data was compiled using the ABS Labour Force and Manufacturing Industries surveys. Indirect employment was calculated using the Monash Multi-Regional Forecasting and Forestry (MMRF-For) model, which disaggregates the forest sector from other primary production sectors such as agriculture. It found forest based industries employ around 75,000 people nationally, and accounted for 0.17 percent of total employment. The report provided forest based industry employment and employment multipliers by sector under short term economic scenarios, to reflect the way supply of labour and capital are determined. It recommends indirect employment multipliers should be updated following significant changes in the structure of forest industries.


10. Dargavel, J., Conley, I., Proctor, W., Ferguson, I., Bhati, U. N. (1998). Direct and indirect employment in the forest sector and forest sector employment as proportion of total employment. Forest and Wood Products Research and Development Corporation. 32 pages. This study highlighted that the ABS surveys of employment in forest-based industries do not draw the necessary distinctions between sectors. It implied the growing importance of the plantations sector from native-forest based industries was hidden, and over-inflated in favour of the contribution of employment by the native forest sector. Employment subsidies associated with residual value pricing for sawlogs, chips and residues, may mean that timber harvested from remove areas is sold at a lower return or loss and similarly, arrangements for shipping logs over significant distances to maintain logging or sawmilling activity, were both identified as inhibitors to the growth of plantation-based employment.

11. Grist, P., and Vainsheet A., (2001). Sustainability Indicator 6.5a – Direct and Indirect Employment in the Forest Sector. AFFA (Montreal Process Implementation Group for Australia). 24 pages. This study assessed direct and indirect employment to measure the contribution of the forest sector in meeting community needs (Montreal Process indicator 6.5). The majority of direct employment data was compiled using the ABS Labour Force and Manufacturing Industries surveys. Indirect employment was calculated using the Monash Multi-Regional Forecasting and Forestry (MMRF-For) model, which disaggregates the forest sector from other primary production sectors such as agriculture. It found forest based industries employ around 75,000 people nationally, and accounted for 0.17 percent of total employment. The report provided forest based industry employment and employment multipliers by sector under short term economic scenarios, to reflect the way supply of labour and capital are determined. It recommends indirect employment multipliers should be updated following significant changes in the structure of forest industries.

12. Marsden Jacob Associates (2001). Forestry and National Competition Policy. Australian Conservation Foundation. 152 pages. This report provides an assessment of State forest management agencies performance in native hardwood forestry in relation to employment, investment trends and the National Competition Principles Agreement. The focus of the assessment was on Western Australia, Tasmania, Victoria and New South Wales. While the primary objective was to report on compliance of each of the four States with the Competition Principles Agreement in regard to forestry, there was also discussion about employment, in particular the data available on forestry sectors. The report notes that employment in forestry and wood processing industries based on Census statistics are not very reliable and accurate data on forest types as the variables. Recommendations for further research were directed toward the development of a more appropriate form for the indicators identified. The study revealed a number of problems with the data available for monitoring the forest-based employment, including the inability to separate it from other forms of employment recorded in industry classification categories. It recommended research to further develop an associative method of maintaining employment indicators for Australia’s forest sector and an investigation of the data collection systems by ABS and ABARE to assist with Montreal Process reporting.
individuals objecting to establishment of forest plantations over the potential social, economic establishment also increased. The study found a wide range of concerns were held by forest plantations has increased, the incidence of disputes relating to plantation forest and Tasmania. The qualitative research indicated that as the rate of establishment of new The report was based on five case studies of disputes over plantation establishment in Victoria Forest Production, Department of Forestry, Australian National University. 113 pages.

$100 million to Gross State Products through the effects on suppliers and subcontractors. Cooperative Research Centre for Sustainable Plantation forestry disputes: Cases studies on concerns, causes, processes and paths towards resolution. Cooperative Research Centre for Sustainable Forest Production, Department of Forestry, Australian National University. 113 pages.

59 pages.


The report presents the findings of a study into the socio-economic implications of farm forestry for rural regions and communities. Based on these findings, the report recommends strategies to maximise socio-economic benefits and minimise any negative socio-economic impacts associated with farm plantation forestry in rural communities. At a broad regional level, forest plantation forestry has the capacity to offer important economic and employment benefits associated with servicing the industry and, in the longer term, downstream processing activities. While the regional impacts of farm plantation forestry can be positive, they can also mask negative economic and employment impacts at more local levels. The findings of this project indicate that the economic and employment benefits associated with farm plantation forestry are likely to be concentrated in larger regional centres. In smaller rural communities, the emergence of plantation forestry on cleared agricultural land is contributing to significant restructuring in local economies.

Volatility commodity prices, falling farm incomes, farm amalgamation, and farm family out migration have been affecting some rural communities for at least four decades. The emergence of farm plantation forestry might well be regarded as a symptom of broader processes of restructuring in Australian agriculture. Nevertheless, it is evident that the rapid expansion of farm plantation forestry is accelerating processes of rural economic restructuring. Consequently, some businesses and residents in small towns are finding it difficult to adjust to both the nature and the pace of change. In some localities, the potential negative social and economic impacts of farm plantation forestry appear to be mitigated (or at least obscured) by the diversity of the local economy. Conversely, those communities with a narrow economic base and few alternative prospects for diversification are particularly susceptible to negative impacts associated with land use change. In addition to the regional and community level impacts, farm plantation forestry has important economic implications at the individual farm level. By purchasing or leasing land, the plantation industry offers some farmers a means of exiting agriculture in a stronger financial position than might otherwise be the case. Following an extensive review of the literature on the social and economic implications of farm forestry, two regions that have experienced a rapid recent expansion of farm plantation forestry were chosen as case studies. The regions selected were the south-west of Western Australia and the Green Triangle region of South Australia and Victoria.

14. Forest Industries Branch of the Department of Agriculture, Fisheries and Forestry – Australia (AFPA) and the Forest and Vegetation Program of the Bureau of Rural Sciences (BRSC) (2002). Impact of Incentives on the development of forest plantation resources in the Asia-Pacific region. Australian Case Study for the Asia-Pacific Forestry Commission 12 pages.

The forest and wood products industries, based on native and plantation forests, account for about 1 per cent of GDP and employment of about 75,000 people. There were 942 sawmills in Australia (674 hardwood and 268 softwood) in 1999-2000. The hardwood mills are generally small scale and scattered and the softwood mills are large and integrated with other processing facilities. There are also 22 pulp and paper mills and 30 veneer and panel-board mills. The number of sawmills has been declining in number as the average size increases. Increasing mechanisation and productivity has reduced total employment in processing over time.

15. Schirmer, J (2002). Plantation forestry disputes: Cases studies on concerns, causes, processes and paths towards resolution. Cooperative Research Centre for Sustainable Forest Production, Department of Forestry, Australian National University. 113 pages.

The report was based on five case studies of disputes over plantation establishment in Victoria and Tasmania. The qualitative research indicated that as the rate of establishment of new forest plantations has increased, the incidence of disputes relating to plantation forest establishment also increased. The study found a wide range of concerns were held by individuals objecting to establishment of forest plantations over the potential social, economic and environmental impacts. Most objectors preferred farm forestry styles of tree planting as opposed to industrial scale plantations. They were reported to object primarily to the placement, off-site impacts and scale of development of plantations, rather than to the plantations themselves. The results of the study indicated a need to gather further independent information on the impacts of plantation forestry, and to develop more appropriate conflict resolution processes that allow objectors concerns to be heard and responded to. Involvement of local communities in decision making on a community-wide scale may have the potential to uncover mutually acceptable establishment strategies and management practices.
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15. Schirmer, J (2002). *Plantation forestry disputes: Cases studies on concerns, causes, processes and paths towards resolution*. Cooperative Research Centre for Sustainable Forest Production, Department of Forestry, Australian National University. 113 pages

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