MEETING FUTURE MARKET DEMAND

AUSTRALIA'S FOREST PRODUCTS AND FOREST INDUSTRY

A Strategic Directions Issues Paper

Forest Industry Advisory Council
March 2015

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Native and plantation forests near Bright, Victoria
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Foreword

Australia's forests have long played a part in our national identity. Indigenous Australians have had a long history of involvement with our forested landscapes and many Australians today can identify family members who have worked, or continue to work, in our forests.

All Australians use forest products in their daily lives, in our buildings, homes, workplaces and schools. We each used about 0.81 cubic metres of logs in 2012–13 (ABARES 2014a). The sector yields over $2 billion worth of exports and over $20 billion worth of manufacturing sales and services domestically (ABARES 2014a). Today, over 70 500 Australians (ABARES 2014a) are employed in industries associated with the forest products sector, with many of these people located in regional Australia. In addition to being a vital contributor to many regional economies, the sector is also an important part of the social fabric of these communities.

Just as wood processing, forest management and conservation practices have improved in response to new developments in science and technology, it is important that the policy settings for Australia's forest products sector are innovative, flexible and responsive to align with our changing times. We are certain there are yet-to-be realised opportunities for high-quality, high-value forest products for Australia. These products are renewable, recyclable and an excellent substitute for more carbon-intensive materials, offering us a positive and sustainable future.

However, in determining what the future may look like for our forest products sector, we cannot look to the future through the rear-view mirror—we need to look ahead and, importantly, to emerging opportunities and future demand for forest products. There are challenges in doing so and our collective response requires fresh, clear thinking.

We need to encourage more innovation, more productivity and more investment to drive more trade and more jobs. Greater productivity and improved competitiveness offers the opportunity for a vibrant future.

As Prime Minister Tony Abbott stated on 4 March 2014:

... we want the timber industry to have a vigorous and dynamic future, not just a past. We want the timber industry to be a vital part of Australia's economic future, not just something that was a relic of our history (Abbott 2014).

In forming the Forest Industry Advisory Council (FIAC), the government established an expert group from which it could seek advice on the future of the Australian forest products sector. To assist FIAC in this role, a discussion paper on a national wood and fibre plan is being developed. This issues paper is the first step in this process.

As co-chairs of FIAC, we invite you to contribute to, and comment on, the future of Australia's forest products sector. Together we can strengthen the sector and its contribution to a more prosperous and sustainable future for all Australians.

Richard Colbeck

Parliamentary Secretary to the Minister for Agriculture and Forest Industry Advisory Council Co-chair

Rob de Fégely

Forest Industry Advisory Council Co-chair

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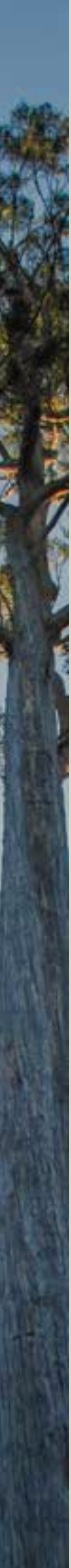


Introduction

Under its terms of reference, the Forest Industry Advisory Council (FIAC) is asked to provide timely information and advice to the Minister for Agriculture (or their delegate) on contemporary issues affecting Australia's forest products sector.

In support of this, FIAC is preparing a discussion paper on a national wood and fibre plan to underpin its provision of information and advice. As a first step in drafting the discussion paper, FIAC has prepared this issues paper and is seeking views from interested stakeholders on appropriate government policy settings and the role of industry to prepare the sector for meeting demand in the coming decades. Responses will be drawn on to assist and inform the recommendations that FIAC makes for the sector in the discussion paper.

The focus of the discussion paper will be on identifying how the forest products sector could best be positioned to capitalise on opportunities and address challenges over the medium to long term.

Australia's forest products are diverse and have many important uses. Examples include sawn and wood panel products for building, high volumes of paper and card for printing and packaging and, at the niche level, finely crafted furniture and other products.

The types and volumes of forest products, and the production methods and locations to obtain them, have changed considerably over recent years and have been driven by a complex range of factors. Forest products are no longer confined to traditional timber, reconstituted wood and paper products. New technologies are using cellulose in a range of products from medicines, industrial chemicals, biofuels and bioplastics. In a carbon constrained world economy, the prospects for wood to contribute to a range of materials are only just beginning.

To secure the sector's future profitability and competitiveness, it needs to be able to respond successfully to upcoming opportunities and challenges and ensure it is well-positioned to respond to future demand.

Australia has tremendous natural resources and has much to be proud of in its record of balancing environmental, social and economic considerations in relation to its forests. The discussion paper being prepared by FIAC will seek to reinforce and build on those achievements.

This issues paper poses a range of questions on a number of themes that will inform the development of the discussion paper. These questions include elements relating to:

- improving profitability and competitiveness
- emerging uses for forest products and increasing the utilisation of wood resources
- responding to relevant trends
- matching wood resources to evolving consumer demand

- opportunities for increasing innovation, skill levels, research and development
- adopting regional approaches to sector development
- addressing infrastructure capacity and cost issues
- stronger community engagement and recognition of the value of forest products.

FIAC is also seeking the views of interested stakeholders in determining a vision and objectives for Australia's forest products sector for the coming decades. Submissions are invited on the following questions and any other factors considered relevant to the development of a discussion paper on an Australian national wood and fibre plan.

Questions for consideration

The coming decades are expected to bring significant changes that will result in both opportunities and challenges for Australia's forest products sector. The questions that follow seek your views about issues that will affect the productivity, competitiveness and sustainability of the sector in responding to future demand over the coming decades. Your responses will assist FIAC in providing advice to the Australian Government about policy settings and the role of industry in supporting the sector into the future.

Vision and objectives

1. *What should the vision be for the forest products sector in the coming decades?*
2. *What specific objectives should underpin this vision?*

Issue 1: Market trends and pressures

3. *What forest products does Australia have a local and/or international competitive advantage in producing?*
4. *What is the potential demand for forest products in the coming decades?*
5. *How can Australia best position itself for this demand, both nationally and internationally?*
6. *What are the other drivers or disruptions that will potentially affect supply and/or demand?*

Issue 2: Emerging uses and markets

7. *Which emerging forest products have the greatest potential for Australia?*
8. *What are some of the barriers to the development and/or uptake of these emerging forest products in Australia?*
9. *What opportunities exist to better utilise wood resources?*

Issue 3: Forest resources

10. *What is required to ensure the plantation estate is able to meet future demand for forest products?*
11. *What is required to ensure the native forest estate is able to meet future demand for forest products?*
12. *What opportunities are there to increase wood supply from farm forestry, private native forestry and Indigenous owned and managed lands?*

Issue 4: Innovation, research and development

13. *What are the future research and development needs for Australia's forest products sector, and which of these needs are specific to strengths and opportunities in the Australian context?*
14. *What are the current inhibitors to private sector investment in research, development and extension and what role, if any, does the Australian Government potentially have in addressing these?*
15. *How can the framework for coordinating Australian forestry research and development be strengthened?*

Issue 5: Consumer and community engagement

16. *How can domestic and international consumers be better engaged on the environmental, economic and social credentials of Australian forest products?*
17. *How important are consumer awareness programs to the future prosperity of the sector?*
18. *Can forest certification be better leveraged to achieve stronger demand and better prices for Australian forest products and, if so, how?*

Issue 6: Strengthened regional approaches

19. *How could forestry hubs better utilise resources and promote greater efficiencies and innovation?*
20. *What have been the barriers to the establishment and efficient operation of forestry hubs to date, and what might be the role of the Australian Government in addressing these?*
21. *If additional forestry hubs are to be established, where would they best be located?*

Issue 7: Infrastructure

22. *What infrastructure will be required to respond to future demand for Australian forest products?*

23. *What can be done to ensure better recognition and understanding of the sector's infrastructure needs?*

Issue 8: Industry skills and training

24. *What are the skills and training needs of the sector over the coming decades, and where are the current gaps?*

25. *Are Vocational Education and Training and university training providers well-positioned to meet the future skills and training needs of the sector?*

26. *What improvements are required at an enterprise level to support the recruitment, development and retention of the sector's current and future workforce?*

Photo courtesy of Lucie Blom

Making submissions

Organisations and individuals are invited to provide written submissions by **5 pm Australian Eastern Standard Time on Friday 5 June 2015**.

Submissions can be made by post, email or online.

FIAC Secretariat
Forestry Branch
Department of Agriculture
GPO Box 858
CANBERRA ACT 2601

Telephone 02 6272 5229
Email fiacsecretariat@agriculture.gov.au
Web agriculture.gov.au/fiacissuespaper

Contact the secretariat if you need to make alternative arrangements for your submission.

Publication of submissions

Submissions will be available to the public on the department's website, unless you request otherwise.

Please indicate clearly on the front of your submission if you wish it to be treated as confidential, either in full or in part.

Under the *Freedom of Information Act 1982* (Cwlth), you may request a submission marked confidential to be made available. Such requests will be determined in accordance with provisions under that Act.

The Australian Government reserves the right at its discretion to refuse to publish submissions, or parts of submissions, which contain offensive language, potentially defamatory material or copyright infringing material.

Contact information, other than your name and organisation (if applicable), will not be published. Your name and organisation (if applicable) or state will be included on the website to identify your submission.

Overview of Australia's forest products sector

Australia's forest products sector is an important contributor to the Australian community and economy. The sector manufactures products that are used by Australians on a daily basis. For example, wood is used in the construction of our houses and furniture, and paper products are used for our printing, writing, packaging and sanitary needs.

Australia's forest products sector is also a key contributor to growth and employment in many regional areas. Australia's total employment in the forest products sector (forestry, wood, pulp and paper manufacturing) in 2013–14 was 70 500 (ABARES 2014a). These workers were spread across the country, with 28 towns or communities identified as being dependent on forest product related industries in 2011 (MIG & NFISC 2013). The sector also supports service industries located in these towns and communities.

Australia's forest products sector utilises a natural resource that is renewable and that sequesters and stores carbon. Australia's forests are well-managed to balance their full range of values and benefits now and into the future.

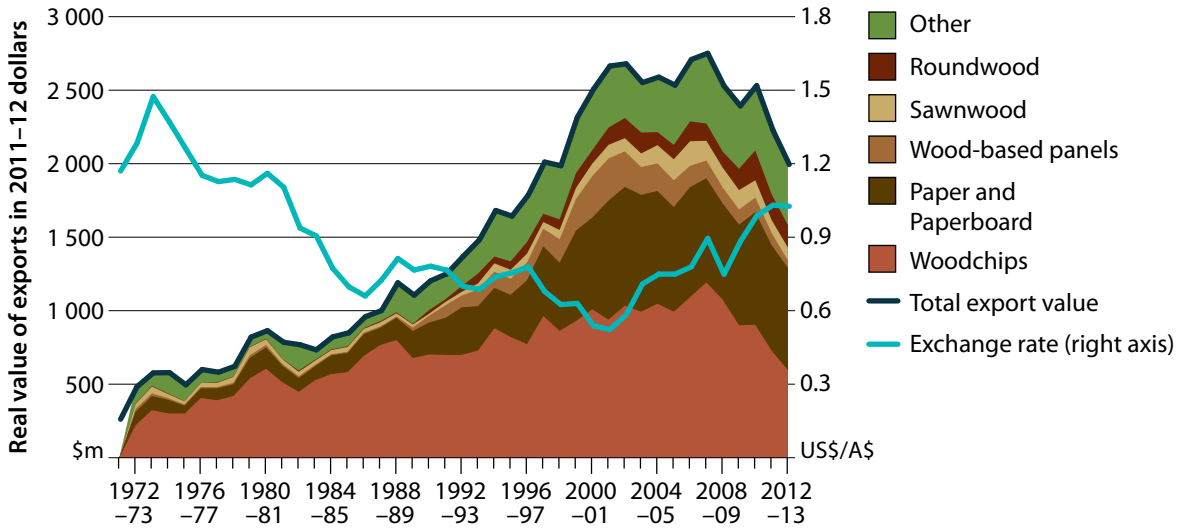
Each Australian was estimated to have consumed the equivalent of 0.81 cubic metres of logs in 2012–13 (ABARES 2014a). This wood was used in many different forms, including solid wood, wood-based panels, engineered wood products, and paper and paperboard products. The demand for forest products is expected to continue to increase in line with Australian and world population growth.

The volume of logs harvested in Australia in 2012–13 was 22.8 million cubic metres. Of this, 18.9 million cubic metres was harvested from industrial plantations and 3.9 million cubic metres from native forests (ABARES 2014a).

Australia also exports and imports forest products. In 2013–14, the value of Australia's forest product exports was $2.5 billion (ABARES 2014a). Figure 1 illustrates trends in the value of these exports and the exchange rate since the 1970s. While there is an inverse correlation between the exchange rate and Australia's forest product exports, a number of other factors have affected exports over time, such as the availability of wood for harvesting and processing.

The total value of forest product imports was $4.6 billion in 2013–14. Key imported products include printing and writing paper, packaging and industrial paper, softwood sawnwood and plywood. Australia imports more forest products than it exports and had a trade deficit of around $2 billion in value per year between 2002 and 2013 (ABARES 2014b).

FIGURE 1 Historical forest product exports and the Australian dollar exchange rate

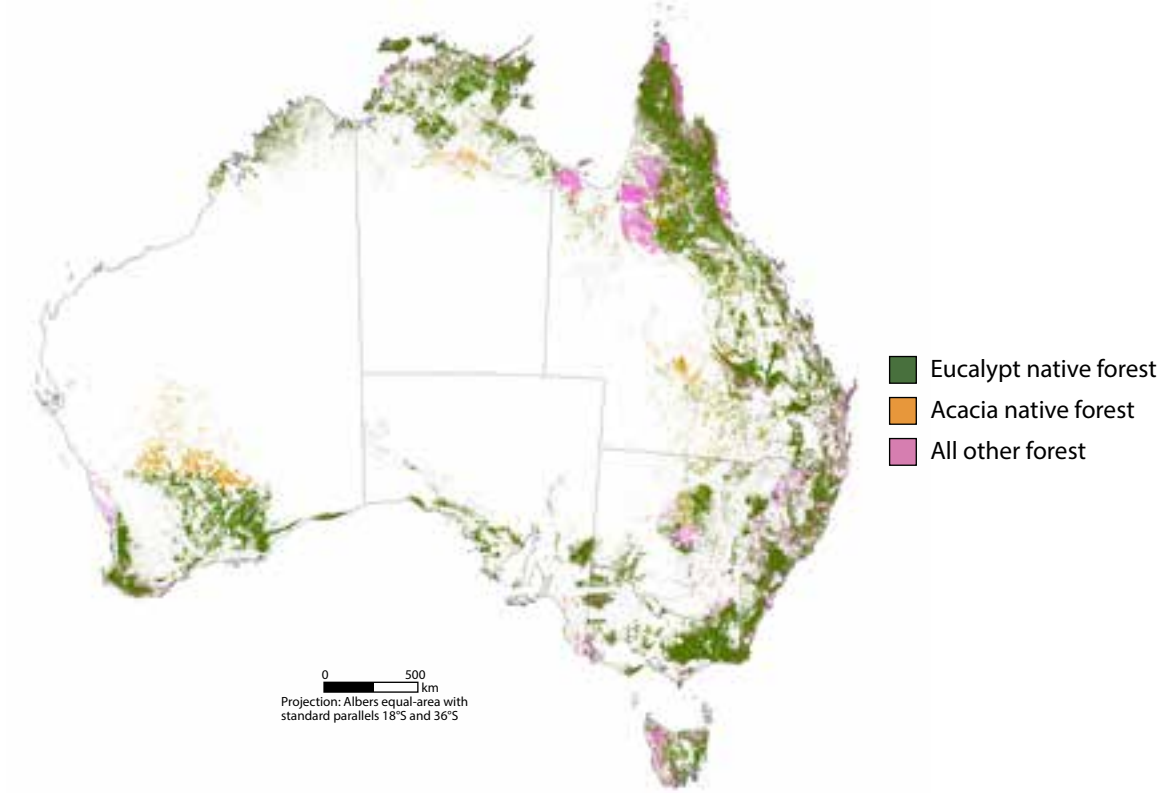


Source: *Australian forest and wood products statistics, March and June quarters 2014* (ABARES 2014a)

Australia's forested landscape covers 125 million hectares or 16 per cent of Australia's land area (MIG & NFISC 2013). Globally, in 2010 forests covered just over 4 billion hectares or 31 per cent of the land area (FAO 2010). Australia has about 3 per cent of the world's forest area, making it the seventh largest reported forest area for any country worldwide (MIG & NFISC 2013).

Of the 123 million hectares of native forests, around 36.6 million hectares is potentially available and suitable for commercial wood production. This comprises 7.5 million hectares of multiple-use public forests and 29.1 million hectares of leasehold and private forests. The commercial quality of the native forests located on this leasehold and private land is variable. The suitability for harvesting depends on factors such as the terrain and remoteness of the forest, the intent of the landholder and the requirements of forest product markets (Davey & Dunn 2014). The application of regulatory arrangements related to vegetation management and forest harvesting also affects the availability and suitability of the wood resources on leasehold and private land (Davey & Dunn 2014).

FIGURE 2 Australia's forests



Source: *Australia's State of the Forests Report 2013* (MIG & NFISC 2013)

Australia's plantation estate has remained relatively stable since 2008–09 with just over 1 million hectares of softwood, dominated by radiata pine (*Pinus radiata*) mostly managed for sawlog and veneer product for the domestic market, and just under 1 million hectares of hardwood, dominated by southern blue gum (*Eucalyptus globulus*) and shining gum (*Eucalyptus nitens*) which are primarily aimed at the pulpwood market. In 2012–13, these plantations produced around 83 per cent of the total wood supply from Australia's forests (Gavran 2014).

Research and development (R&D) in the forest products sector assists in the adoption of new and improved wood processing techniques and forest management practices. In recent years, there has been a reduction in spending in Australia on R&D for forestry, wood products and pulp and paper products, from around $164 million in 2005–06 to around $112 million in 2012–13 (ABS 2013a).

Australia's forest products sector faces a number of issues and opportunities. These are discussed in the following eight sections of this document.

Vision and objectives for the sector

The Australian forest products sector has been supported by vision statements and objectives that have been identified in several plans developed by governments and industry; for example, the National Forest Policy Statement (Commonwealth of Australia 1992) at the Commonwealth level, and the *Blueprint for the future South Australian forest and wood products industry (2014–40)* (South Australian Forest Industry Advisory Board 2014) at the state level.

As part of the discussion paper, FIAC is seeking to develop a contemporary and forward-looking vision statement for the forest products sector that will be underpinned by specific objectives. The vision and objectives being developed are intended to outline the way forward for the sector over the coming decades. Importantly, the vision and objectives should be developed and accepted by the sector. For this reason, input from interested stakeholders is being sought.

The vision should be a high-level statement that outlines where the entire sector is headed in the coming decades and that communicates the purpose and values of the sector. Elements of the vision could include: that the sector is innovative and profitable, underpins sustainable development and regional employment, and that it has strong community support.

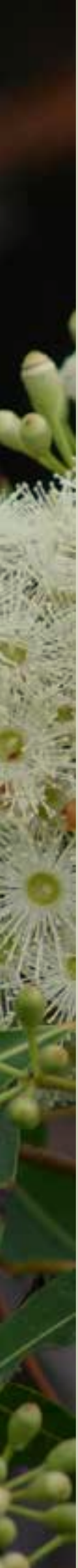
The objectives for the sector should be specific and measurable. They could be related to, for example, reducing Australia's trade deficit in forest products, increasing the level of investment in the sector or increasing the sector's contribution to Australia's gross domestic product.

Questions for consideration

1. *What should the vision be for the forest products sector in the coming decades?*
2. *What specific objectives should underpin this vision?*

PLANTATIONS IN TASMANIA

Photo courtesy of Mark Parsons



ISSUE 1

Market trends and pressures

The Australian forest products sector produces a range of products for the domestic and international market. The future of this sector depends on its ability to successfully compete against international forest products in domestic and export markets and to harness opportunities to better utilise wood resources for higher value products.

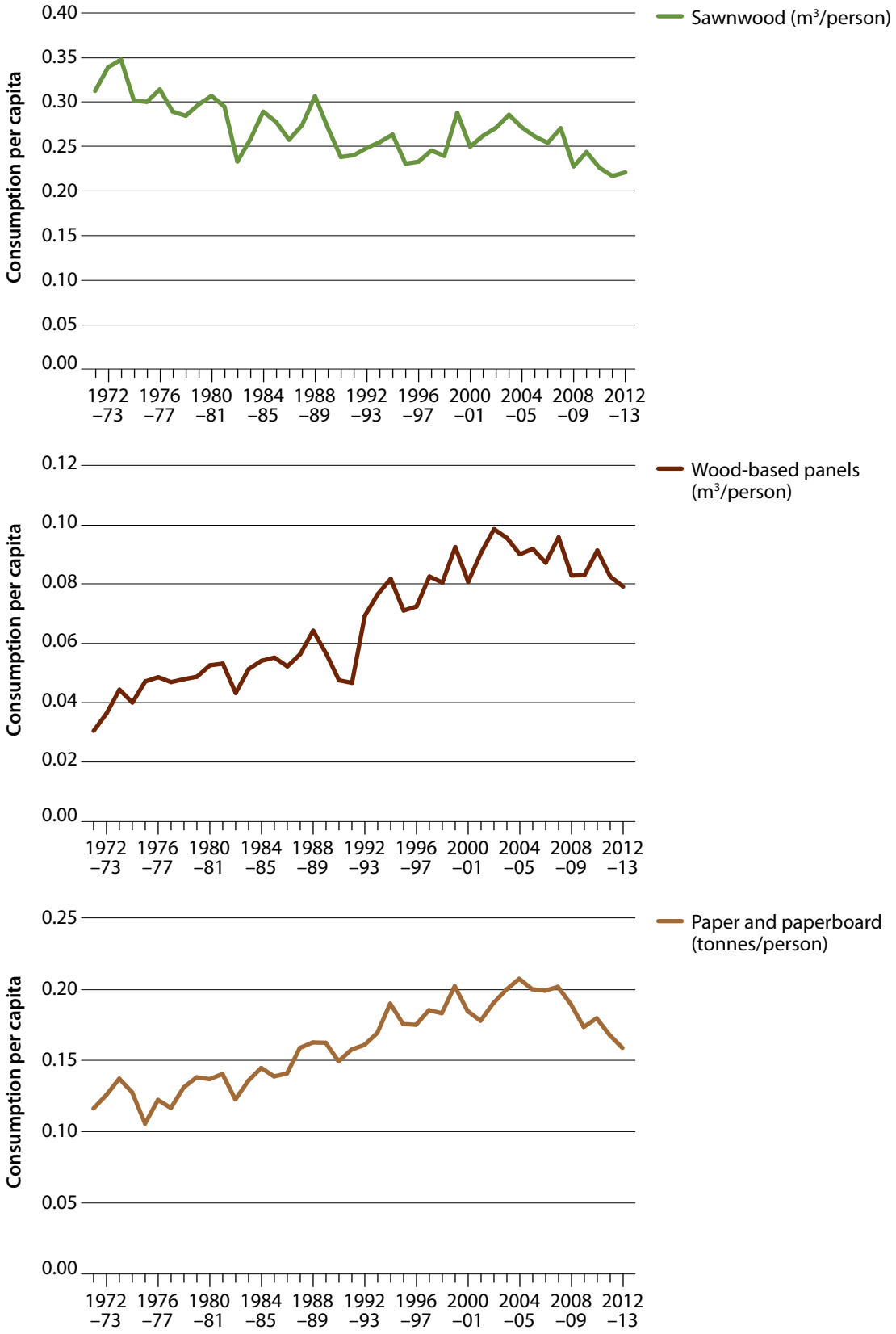
In 2012–13, Australia produced 4.6 million cubic metres of sawnwood products, 1.4 million cubic metres of wood-based panel products, and 3 million tonnes of paper and paperboard products (ABARES 2014a). Forest products manufactured in Australia are consumed domestically or exported. Domestic and global demand for forest products is likely to grow as populations increase. Demand is also likely to change as lifestyles change, whether due to the emerging global middle class, the global shift from rural to urban living or other factors (FAO 2014a). While increased consumption of forest products over the long term presents opportunities, the Australian sector is competing against increasing volumes of imported and substitute products.

Current forest products market

Forest products are consumed in Australia in many different forms. For example, softwood sawn timber is used in housing construction for wall framing and roof trusses, while hardwood sawn timber is often used in flooring, joinery and furniture. Wood-based panels, such as medium-density fibreboard and particleboard, have applications in flooring, joinery and housing construction. The paper and paperboard products consumed in Australia include newsprint, printing and writing paper, sanitary paper and packaging. These products are manufactured from a cascading value chain that originates from wood in log form. For example, sawnwood products and veneer products are obtained from the highest quality logs. Lower quality logs and residues from sawmilling are used to produce engineered wood products and paper products. Other uses of wood fibre include biochemicals and bioenergy. The Australian forest products sector features a degree of reliance on having markets for all forest products; for example, a market for the residues generated from wood processing is vital for the viability of many sawmills in Australia.

Overall consumption of forest products in Australia has risen over the past 40 years. However, for some product areas, this growth has not increased at the same rate as Australia's population growth. While the consumption per capita of sawnwood products has fluctuated as a result of demand factors such as housing construction and product substitution, there has been a downward trend in consumption per capita of sawnwood products over the past four decades, falling by almost 30 per cent over the period (Figure 3). In contrast, consumption per capita of wood-based panel products has increased by over 150 per cent, while consumption per capita of paper and paperboard products has also increased by around 40 per cent over the same period.

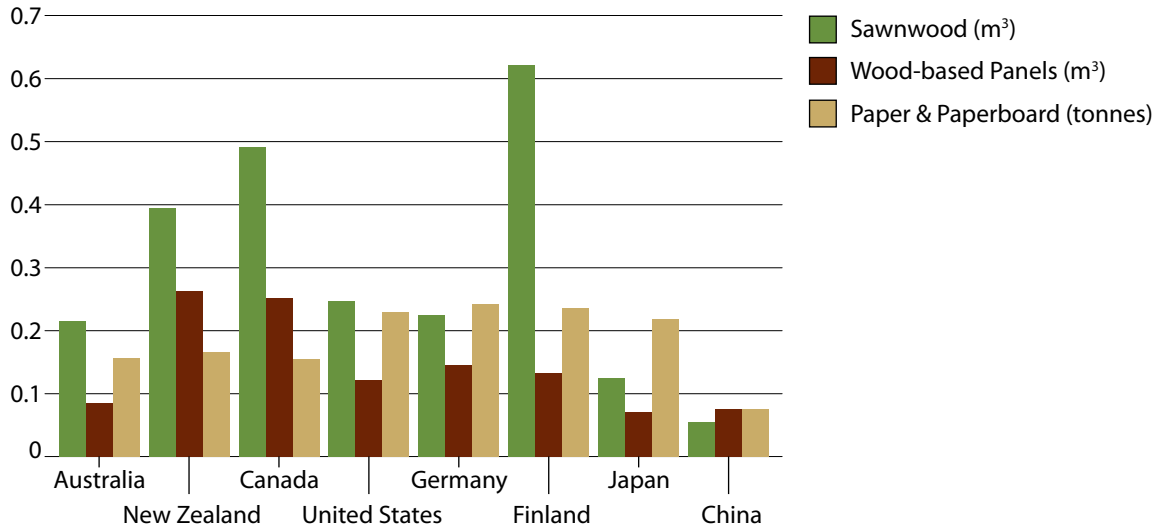
FIGURE 3 Consumption per capita of major forest product groups, Australia



Source: *Australian forest and wood products statistics, March and June quarters 2014* (ABARES 2014a)

A comparison of consumption per capita of forest products in other countries shows that Australia consumes less sawnwood and wood-based panel products per capita than a number of other countries. A factor that may be influencing this is the greater use of wood in residential construction in those countries. The consumption per capita of forest products in China is lower than the other countries examined, which may indicate scope for increased consumption and demand from China for these products (Figure 4).

FIGURE 4 Consumption per capita of major forest product groups, selected countries, 2012



Source: *Yearbook of forest products 2008–12* (FAO 2014b)

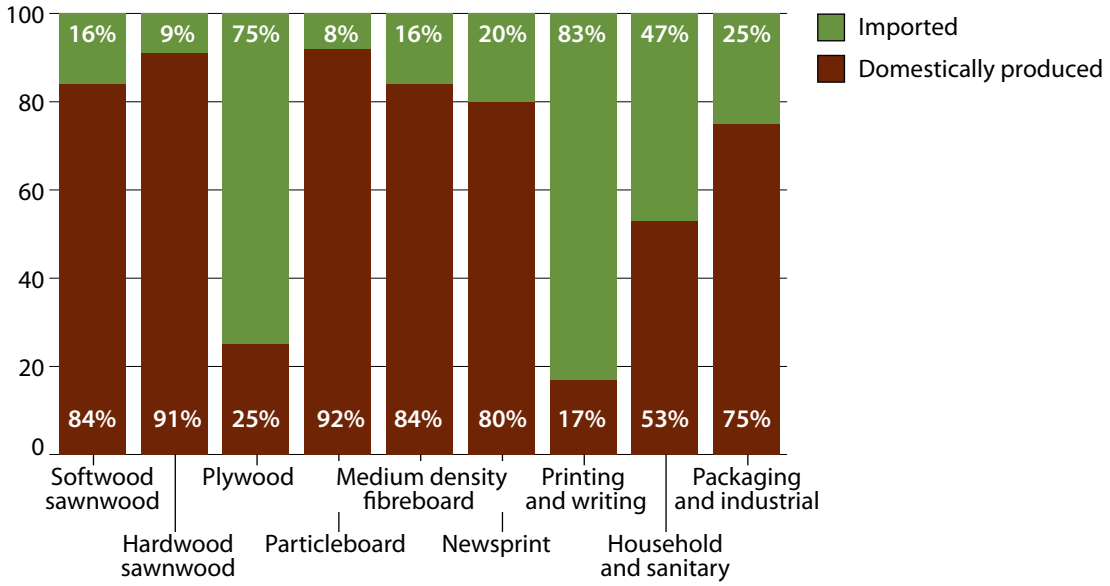
In 2012–13, for all but two product categories, Australians consumed more domestically manufactured forest products than imported products (Figure 5). Factors that influence demand for and competition between Australian manufactured and imported products include housing construction, exchange rates, comparative price and volumes of supply.

NETBALL CENTRAL, SYDNEY OLYMPIC PARK

Architect, Interiors + Landscape: Scott Carver Pty Ltd

Photo courtesy of Geoff Ambler

FIGURE 5 Australian consumption of selected forest products, 2012–13



Source: *Australian forest and wood products statistics, March and June quarters 2014* (ABARES 2014a)

The international trade of products is a key influence on Australia's forest products sector. Overall, Australia imports more forest products than it exports, with an average trade deficit of around $2 billion in value per year between 2002 and 2013 (ABARES 2014b). Australian forest product exports declined after the 2008 global financial crisis. However, exports of all product categories recovered in 2013–14 (ABARES 2014a).

Australia exported significant volumes of raw wood commodities and imported a range of manufactured products in 2013–14 (Table 1). A key issue for the sector is how value could be added to the raw material being exported.

TASMANIAN OAK FLOORING

Photo courtesy of Gregory Nolan

TABLE 1 Value of exports and imports, selected forest products, 2013–14

Product type	Value exported ($m)	Value imported ($m)
Hardwood sawnwood	29.7	76.5
Softwood sawnwood	78.2	392.0
Plywood	2.9	209.9
Particleboard	1.4	35.5
Hardboard	2.0	71.6
Medium density fibreboard	25.7	35.2
Woodchips	767.7	3.2
Roundwood	292.4	0.8
Newsprint	59.1	48.9
Printing and writing	139.3	1193.8
Household and sanitary	48.7	208.2
Packaging and industrial	605.5	653.8
Recovered paper	241.1	2.0
Pulp	0.0	203.3

Source: *Australian forest and wood products statistics, March and June quarters 2014* (ABARES 2014a)

While imported forest products increase competition for Australian manufacturers, imported products will remain a key part of Australia's forest products sector. For example, imported forest products provide an important resource for construction and other applications, particularly where products are not manufactured in Australia or not in volumes sufficient to meet local demand. The total value of forest product imports was $4.6 billion in 2013–14, which was an increase of 11.7 per cent from 2012–13 (ABARES 2014a).

Over the past five years, the value of total wood-based panel imports (including plywood, particleboard, veneer, hardboard, softboard and other fibreboards) increased by 36.6 per cent, from $271.2 million in 2008–09 to $370.3 million in 2013–14. The value of plywood imports has increased by 44 per cent, from $145.4 million in 2008–09 to $209.9 million in 2013–14. On average, plywood accounts for more than half the value of Australia's total wood-based panel imports. China, New Zealand and Malaysia are Australia's primary sources of plywood imports (ABARES 2014a).

The value of total paper and paperboard imports increased in 2013–14 to $2.1 billion. Printing and writing paper imports accounted for 56 per cent of this total value, while imports of packaging and industrial paper were 31 per cent of the total value. Most of Australia's packaging and industrial paper imports come from China and New Zealand (ABARES 2014a).

Another important product category for imports is miscellaneous forest products, which includes wood products for carpentry, mouldings, packing cases, frames, oils and resins. The value of miscellaneous forest product imports increased from $731.1 million in 2012–13 to $906.6 million in 2013–14 (ABARES 2014a).

The total value of sawnwood (softwood and hardwood) imports to Australia was $468.5 million in 2013–14, an increase of 10.8 per cent from 2012–13. The main sources of Australia's softwood sawnwood imports are New Zealand, the Czech Republic, Canada and Chile (ABARES 2014a).

Demand, competition and investment

Domestic demand for forest products is expected to grow in line with an increasing population in Australia. Australia has around 23.7 million people and this is projected to increase to around 34 million by 2040 (ABS 2013b). If consumption per capita of forest products in Australia was to remain at 2012 levels, Australian demand for these products would increase by around 43 per cent by 2040. Global demand for forest products is also expected to increase with projected increases in the world's population, continued economic growth and growth in demand from emerging economies such as China and India (FAO 2009).

With demand for forest products affected by a range of drivers and influences, it is important to note that changes to forest resources, economic cycles and demographic factors may influence demand in the long term. The use of forest products varies in different countries and is influenced by a range of factors. These include changes in housing demographics to higher densities, construction of multistorey residential buildings that use fewer wood products, and replacement of timber with other construction materials (for example, steel and concrete). Demand for paper and paperboard products is influenced by population and economic growth and its flow-on effect on general consumption.

The global trade in forest products provides both opportunities and challenges (for example, increased competition) for the Australian forest products sector. Competition between Australian manufactured and imported forest products has been strong in recent years and will continue to shape Australia's sector. Factors that influence the export market for Australian manufactured products and the market for imported products in Australia include: international and country specific demand; exchange rates; costs of production; supply volumes; shipping costs; and comparative costs of forest products from competing countries.

The increased competition from imported forest products requires Australian manufacturers to remain internationally competitive. The competitiveness of Australian manufactured products is largely determined by their cost in comparison with imported products. This issue is heavily influenced by exchange rates, which have been an issue for the sector in recent years with the strong Australian dollar. High exchange rates reduce the competitiveness of Australian products on international markets and result in lower prices for imported forest products on the Australian market. The value of the Australian dollar reached US$1.05 and €0.85 in August 2012 but has dropped to US$0.77 and €0.70 as at 10 March 2015 (XE.com Inc. 2014). As such, the impact of a high exchange rate is likely to have reduced and may no longer be an ongoing problem for the sector. However, a key issue for the sector is how it can improve its resilience to fluctuating exchange rates in the future.

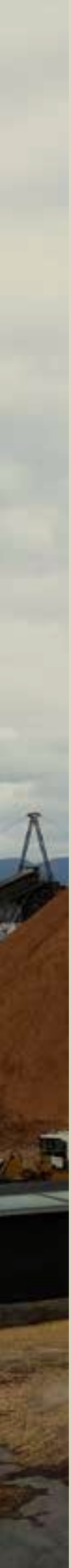
In many forest product categories, Australians are consuming more domestically manufactured products than imported products (Figure 4). This may reflect where Australian manufactured products are competitively priced against imports. Other competitive advantages that may be influencing the higher consumption of Australian products are: large volumes of reliable supply; close proximity to manufacturers; successful product promotion; product certification; and perceptions of better product quality, appearance and sustainable sourcing. Desire to support a local forest industry may also be a factor.

The scale and operation of wood processing facilities in Australia influences our competitiveness; for example, the level of mechanisation and technology in the facility, the volume of log input and product output and the facility's hours of operation. The growth rates, scale and location of wood resources are also influences on the sector's competitiveness. An ongoing commitment to innovation is required to maintain and improve productivity in forest growing and processing. The production of forest products in Australia also involves costs for wood resources, infrastructure, energy, transport and labour, which also influence competitiveness.

New investment in wood resources and processing facilities is vital if the sector is to meet future demand and remain internationally competitive. Since 2006–07, investment in new plantations in Australia has decreased substantially. In addition, the total number of sawmills in Australia declined in this period, from 610 in 2006–07 to 281 in 2012–13 (Gavran et al. 2014). There are a number of factors that influence the ability of the sector to attract private investment in wood resources, new processing facilities, or changes in existing processing capacity or product lines. These include sufficient and secure access to wood volumes at a competitive price, appropriate infrastructure to assist competitiveness, opportunities that align processing scale with the resource and market, access to technology and a well-trained and skilled labour force (JP Management Consulting 2001).

Questions for consideration

3. *What forest products does Australia have a local and/or international competitive advantage in producing?*
4. *What is the potential demand for forest products in the coming decades?*
5. *How can Australia best position itself for this demand, both nationally and internationally?*
6. *What are the other drivers or disruptions that will potentially affect supply and/or demand?*



ISSUE 2

Emerging uses and markets

Emerging and innovative uses for forest products present opportunities for Australia's forest products sector to increase the demand, utilisation and value of its wood resources.

Finding uses and markets that allow for greater utilisation of harvested logs is a key challenge for the Australian forest products sector. In many regions, the viability of forest harvesting and wood processing is influenced by the need for reliable markets for wood residues. Wood residues include harvested logs not suitable for processing into sawnwood or veneer products and offcuts, chips and sawdust generated from wood processing operations.

Emerging forest products could increase demand for wood and help overcome some of the resource utilisation and value-adding challenges in Australia. For example, finding alternative markets for hardwood residues is a key issue for those Australian wood processors and forest managers that are heavily reliant on the woodchip export market for the residues generated from their operations. Australia's hardwood plantation estate has been largely planted and managed for the production of pulplogs destined for the woodchip export market. It would be worth examining whether these plantations can provide a resource for other higher value products in addition to pulplogs for the domestic and export market.

These emerging products and uses include using wood and wood fibre to produce new building systems, transportation fuels, biochemicals, biomaterials, electricity and heat. Integrating these emerging products with established industries in the sector could enhance the product mix manufactured by the sector and improve the profitability and resilience of the sector. The commercialisation of these emerging products will largely be determined by market demand; however, development of these products could be assisted by greater collaboration among businesses across the value chain.

Internationally, there is growing interest in the use of engineered wood products (EWPs), such as cross-laminated timber and laminated veneer lumber, in the construction of taller and larger buildings. The benefits of using EWPs over more conventional non-wood construction materials include: that they can be a lighter and more manoeuvrable material, can be cost effective, can reduce the time taken to construct buildings, and are manufactured from a renewable and carbon-storing material. Increased use and production of EWPs in Australia will depend on a range of factors, including the properties of Australian tree species, consumer acceptance, awareness among building architects and engineers, development of building codes and regulations, local and international demand and achieving the scale needed for competitive production.

Recognition of the environmental credentials of forest products provides further opportunity for greater use of wood in construction projects. These credentials include: wood sequesters carbon, it is a renewable resource and that it generally produces lower emissions during production than many other construction materials. There is recognition of the environmental benefits of using wood in construction under rating systems that evaluate the environmental design and construction of buildings (WoodSolutions 2013). Some local, state and national governments are also promoting or mandating the use of wood in the construction of public buildings (Planet Ark 2014).

The use of forest residues as a feedstock for liquid biofuels is an emerging technology that could present additional markets for wood residues and provide an additional liquid fuel source in Australia that is renewable. Australia does not have any commercial scale second-generation liquid fuel plants. However, commercialisation activities in other countries could enable the use of wood biomass as feedstock for the production of transport fuels such as ethanol and synthetic diesel (Enecon Pty Ltd et al. 2010).

Innovative uses for wood and cellulose are emerging internationally, such as producing nanocrystalline cellulose (NCC) from processed wood pulp. NCC has a high strength-to-weight ratio and is considerably cheaper to produce than other nanomaterials (Ferguson 2012). The properties and potential forms of NCC could allow many uses, such as films, inks, paper coatings and electrically conductive membranes (FPInnovations 2013).

Biobased chemicals and polymers produced from wood cellulose could be used for packaging and coating (for example, bio-plastics). Traditional plastic is made from petroleum. In contrast, bioplastic is renewable and biodegradable and could replace or be blended with traditional plastics. Factors that could increase the demand for these biobased products include changes in raw material resources and prices, availability of landfill and consumer concerns over the environmental impacts of products (Ahlqvist et al. 2013).

Generation of bioenergy from wood biomass could allow the Australian forest products sector to increase wood utilisation, improve efficiency in wood processing operations and expand the use of renewable energy in Australia. Biomass feedstock from the forest products sector largely comes from residues from wood processing operations, such as offcuts, chips and sawdust. Factors affecting the commercial viability of bioenergy plants include the quality of available feedstock, collection and transport logistics, the existing energy framework and relative costs compared with other energy generators (Ahlqvist et al. 2013). Another opportunity for wood biomass is the manufacturing of wood pellets and briquettes from residues generated from wood processing operations. These pellets and briquettes can be a fuel source for domestic heating and in some cases industrial heat and power applications (Enecon Pty Ltd et al. 2010).

There would be significant changes to wood demand if successful domestic and international markets were developed for these emerging products. There are inherent challenges in forecasting future forest product markets and planning for the wood resources and processing facilities needed. The potential for these emerging products to be developed in Australia, as well as their commercialisation overseas, will need to be regularly evaluated to ensure Australia is able to meet future demand for forest products.

Questions for consideration

7. *Which emerging forest products have the greatest potential for Australia?*
8. *What are some of the barriers to the development and/or uptake of these emerging forest products in Australia?*
9. *What opportunities exist to better utilise wood resources?*

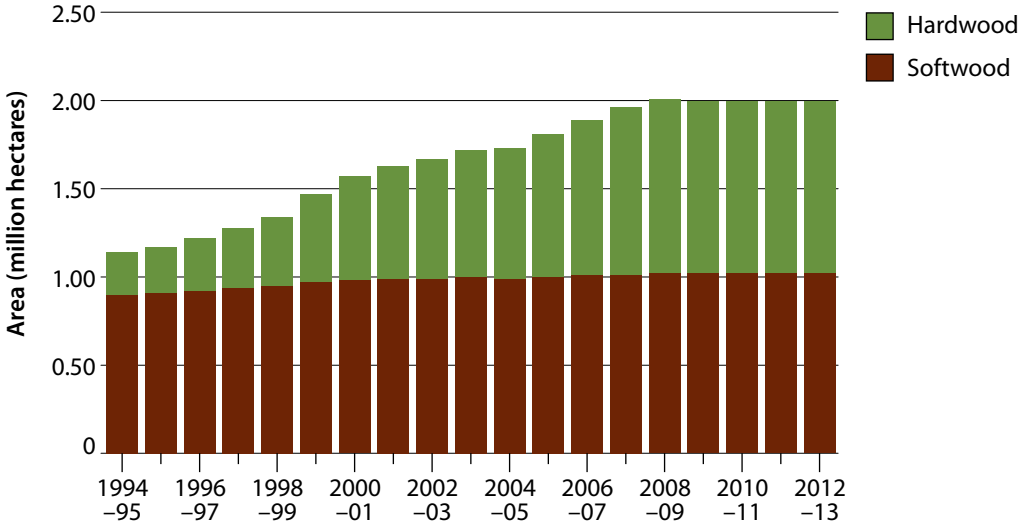
Australia has a two million hectare industrial plantation estate and areas of native forest available for wood production. The future of Australia's forest products sector depends on a secure and sustainable wood supply from traditional and new domestic sources.

Plantations

Australia's two million hectare industrial plantation estate currently accounts for more than 80 per cent of the total wood supply from Australian forests. Just over half of the plantation estate comprises softwoods (mostly pine) grown mainly for sawlogs, with the remainder comprising hardwoods (mostly eucalypts) grown mainly on short rotation for the pulp and paper industries. In 2012–13, almost 14 million cubic metres of logs were harvested from softwood plantations and 5.5 million cubic metres were harvested from hardwood plantations, with a combined gross value of $1.16 billion (Gavran 2014).

The softwood plantation area has been stable since 1990. In contrast, the hardwood plantation area expanded rapidly from 1996 to 2009, mainly driven by managed investment schemes (MIS). This period of expansion was severely affected by the 2008 global financial crisis and total plantation area has been steady since 2008–09 (Figure 6). Consequently, Australia's plantation estate is unlikely to reach 3 million hectares by 2020, as envisaged by the 1997 *Plantations for Australia: The 2020 Vision* (Plantations for Australia 2002).

FIGURE 6 **Total Australian plantation area, by type, 1994–95 to 2012–13**



Source: *Australian plantation statistics 2014 update* (Gavran 2014)

If the current plantation area is maintained, total wood production from softwood plantations is expected to plateau by 2035 at 18 million cubic metres per year. Total production from hardwood plantations will peak at around 15 million cubic metres per year by 2030 (MIG & NFISC 2013). However, a large

proportion of the hardwood plantation estate established under MIS will be harvested in the near future and there is no surety that these areas will be replanted. It is therefore possible that the plantation hardwood estate, specifically the short-rotation fibre plantations, may shrink in coming years. The lack of investment in expanding both the softwood and hardwood plantation estate is a key issue for the sector.

Australia's industrial plantations are complemented by farm forestry plantings. Farm forestry has traditionally included plantations, wood lots, timber belts, alleys and wide-spaced tree plantings. Australia had an estimated 155 000 hectares of farm forestry plantations in 2008 (RIRDC 2008).

Extension efforts for farm forestry have enjoyed some success by emphasising the multiple benefits of farm forestry and its contribution to farm income diversification. On-farm benefits include: shelter for stock and crops; soil conservation, salinity mitigation and water catchment protection; and improving biodiversity, habitat and other landscape and aesthetic values. However, to be adopted by more farming enterprises, farm forestry also needs to generate good economic returns. The integration of forestry into farm landscapes—as opposed to the replacement of farms with broadscale forestry plantations—is more likely to be accepted by farming communities. However, this approach presents challenges in terms of achieving economies of scale for forestry activities on-farm and regionally. Other factors influencing the feasibility of farm forestry include: harvest and transport logistics and costs; knowledge of forest product markets and forest management practices; and regulations for establishing and managing on-farm plantations.

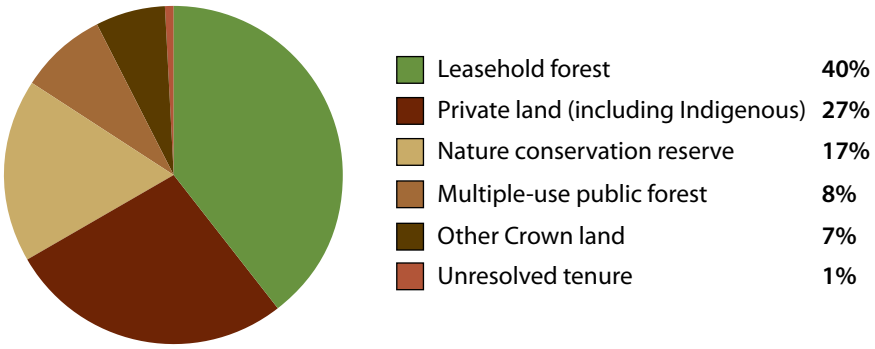
YOUNG RADIATA PINE (*PINUS RADIATA*) PLANTATIONS

Photo courtesy of HVP Plantations

Native forests

Australia has 123 million hectares of native forest on six main categories of land tenure: nature conservation reserve; multiple-use public forest; private land (including Indigenous owned land); leasehold forest; other Crown land and unresolved tenure (Figure 7). The major wood-producing areas of public native forest in Australia, other than in Queensland, are covered by Regional Forest Agreements (RFAs). The RFAs established an agreement on native forest management that balances their economic, social and environmental values.

FIGURE 7 Tenure class across Australia's native forest estate



Source: *Australia's State of the Forests Report 2013* (MIG & NFISC 2013)

In 2012–13, native forests produced around 3.7 million cubic metres of logs, with a gross value of $338 million (ABARES 2014a). Native forests remain an important source of timber valued for its appearance, strength and durability. The yield of high-quality hardwood sawlogs from plantations in any state is small compared with the yield of high-quality hardwood sawlogs from multiple-use public native forests in the same jurisdiction.

Native forests across all tenures account for around 95 per cent of the volume of hardwood sawlogs harvested annually (MIG & NFISC 2013). The plantation estate is unlikely to replace native forests as a major source of high-quality hardwood sawlogs in the short to medium term because of the historical management intent of establishing and growing hardwood plantations for short-rotation pulplogs, which are generally of lower quality than native forest sawlogs.

Multiple-use public native forests are the main source of forest products derived from native forests. However, large areas of native forest are also under other management and ownership arrangements that are potentially available for wood production; for example, Indigenous owned and managed forests and privately owned native forests.

More than 41.9 million hectares of Australia's forests are within the Indigenous estate (MIG & NFISC 2013). There is considerable potential to increase the utilisation of these resources in a way that achieves the social, environmental, cultural and economic aspirations of Indigenous landholders, and at the same time enhance commercial wood supply.

More than 30 million hectares of native forest is on private land, but only small areas are known to be managed for sustainable wood production. Unlike the public native forest estate, relatively little is known about the suitability and productive capacity of the private native forest estate to support wood production. This lack of information may reflect the level of awareness among landowners of the potential scope for commercial wood production from their forests. An estimated 16.3 million hectares of the private native forest estate could support commercial wood production (MIG & NFISC 2013), substantially augmenting wood supply from the public native forest estate. A factor that would influence the availability of this resource for wood production is government regulation on vegetation management on private land.

In practice, most private forest managers make limited use of their native forests for wood production, only responding to immediate needs and market opportunities. There is insufficient information nationally and regionally to assess whether the rate of wood harvest from private native forests is sustainable (MIG & NFISC 2013). Moreover, apart from Tasmania, there is limited data on the volume of wood available in private native forests (MIG & NFISC 2013).

A changing climate is also expected to affect the forest resources available to the sector. For example, changes in forest growth and productivity may affect the distribution of forest resources that are available and suitable for harvesting. A changing climate could also increase the fire risk in some forested areas.

Questions for consideration

10. *What is required to ensure the plantation estate is able to meet future demand for forest products?*
11. *What is required to ensure the native forest estate is able to meet future demand for forest products?*
12. *What opportunities are there to increase wood supply from farm forestry, private native forestry and Indigenous owned and managed lands?*

NATIVE FOREST

Photo courtesy of Department of Agriculture

ISSUE 4

Innovation, research and development

Research and development (R&D) drives innovation and improves productivity in the forest products sector. However, R&D has significantly declined in Australia in recent years. This decline has affected all areas of the sector from growing through to processing.

Research, development and extension (RD&E) are important in maintaining and enhancing the competitiveness of the Australian forest products sector. As with all sectors, long-term growth of the sector requires innovation across all parts of the value chain. RD&E is a key driver of productivity growth. Industries that do not innovate will inevitably lose market share to those that do.

The public sector, through Australian, state and territory governments, has traditionally been the main investor in forestry research and development (R&D). State governments have historically invested heavily in forestry research within their own forestry agencies. The Australian Government has historically invested through agencies such as CSIRO, cooperative research centres (CRCs) and rural R&D corporations (RDCs).

The level of government RD&E funding for the sector has declined in recent years, which has resulted in a decline in the number of people employed by forestry-based scientific research organisations by about a third between 2008 and 2011 (Turner & Lambert 2012). More recent work reports that this trend has continued, with employment in forestry-related R&D in 2013 estimated to be less than a third of 1985 levels (AFPA 2013).

Private sector investment in forestry RD&E has traditionally sought to improve vertical integration and value-adding in companies in the forest products sector. However, this private sector investment has declined in recent years due to restructuring of companies involved in both forest growing and wood processing. The changing nature of industry ownership in Australia, in particular the rise in private ownership of plantations, provides an opportunity for the private sector to increase its research investment.

Forest and Wood Products Australia (FWPA) is the industry-owned RDC for the forest products sector and provides a means for coordinating private and government investment in the sector. FWPA has identified strategic investment areas for R&D through consultation with the sector. FWPA's current investment priorities include: increasing the use of timber and wood construction systems in multi-residential and commercial buildings; maximising product yields and values from current forest resources; improving wood quality and yield; and tools for forest management.

Similar to other primary industry sectors, Australia's forest products sector has a levy system for the collection of funds from industry members to contribute funding to FWPA for its R&D, marketing and other industry service activities. The Australian Government provides funding to FWPA to match its spending on eligible R&D activities up to a cap of 0.5 per cent of the forest industry's gross value of production (GVP). In 2013–14 the government contributed more than $2.9 million to FWPA in matching funds, while the sector contributed almost $4.9 million in levies. The industry contribution included a component that was spent by FWPA on marketing and promotion activities, which is not matched by the Australian Government.

While the Australian Government can potentially match spending on eligible R&D activities up to 0.5 per cent of the industry's GVP, the amount of spending by FWPA on eligible R&D activities has resulted in the actual rate of matching funds provided by the government averaging only 0.2 per cent of GVP in recent years. There is scope to increase matching contributions from the government provided that industry agrees that FWPA should increase its expenditure on eligible R&D activities.

One factor influencing greater industry investment in R&D is the perceived cost of and benefits arising from forestry R&D. Analyses of the benefits and costs arising from 11 projects funded by FWPA from 2012 to 2014 found the benefit/cost ratios ranged from 1.5 to 44 (Kile, Nambiar & Brown 2014).

While knowledge arising from R&D may exist, its application depends on the capacity of businesses in the sector to innovate. Factors that influence innovative capacity include: financial resources available for capital investment; the size and age of businesses; resources available to investigate and plan for innovation; collaboration; information management; and the risk management and decision-making culture of a business.

A range of stakeholders have an interest in forestry RD&E priorities, including: research funders, providers and users, such as FWPA and other rural RDCs, CRCs, CSIRO (including resource management and manufacturing divisions); universities and other research entities, including state government agencies; product designers; architects and engineers; commercial forest growers and managers; and wood processors. A key issue affecting Australia's forestry research capacity is how well these stakeholders are working together to determine RD&E priorities.

However, despite the support for RD&E, a question remains as to whether Australia—as a small player in the global forest industry—should undertake its own research or acquire it from foreign providers. This is especially the case for forest industry technology, such as harvesting equipment and mill technology (including software and systems design). Currently Australia conducts and buys research—the issue is achieving the right mix to be of greatest benefit to the sector.

A range of RD&E priorities could be considered by the sector. For example: promoting the use of forest products; leveraging particular strengths and opportunities that are unique to the Australian context; tree growing and productivity; the use of wood in buildings; and developing new uses for wood (for example, plastics and biofuels). It is important that forest products research investigates opportunities across the full value chain, from the forest to the final consumer.

The development of research priorities needs to remain alert to the emergence of disruptive technologies or factors that displace established products or create new products. It will still be important for research on forest growing and management to continue, in order to improve productivity and ensure that the wood being produced meets the changing requirements of the sector and the market. Again, the issue is achieving the right mix for the greatest benefit. The sector should determine its requirements.

There have been proposals for Australian forestry research to be aggregated under the umbrella of a national centre, similar to the models being used in Canada, New Zealand and elsewhere. Such centres attract significant government funding—about two-thirds of the total research centre's budget in the two countries mentioned—noting that the forest industry in those countries contributes a much higher share to each country's national GVP than does the industry in Australia (Burvill 2013).

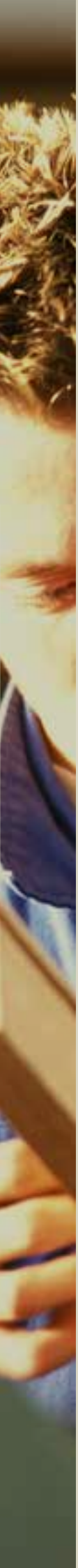
If the sector wished to progress such an aggregated model, it could be pursued in several ways. For example, the establishment of a new national institute with a significant injection of funds upfront or a gradual process where several small steps are taken to better align current resources resulting in the eventual establishment of a coordinated framework for forest industry research.

Questions for consideration

13. *What are the future research and development needs for Australia's forest products sector and which of these needs are specific to strengths and opportunities in the Australian context?*
14. *What are the current inhibitors to private sector investment in research, development and extension and what role, if any, does the Australian Government potentially have in addressing these?*
15. *How can the framework for coordinating Australian forestry research and development be strengthened?*

EUCALYPT SEEDLINGS

Photo courtesy of Department of Agriculture



ISSUE 5

Consumer and community engagement

Ongoing efforts should be made to expand market share of Australian forest products by continuing to build the environmental credentials of the sector and its products in domestic and international markets.

Australia's forest products enjoy wide acceptance domestically and internationally. Wood products are highly valued for their look, feel and naturalness. Consumer studies have shown that wood is positioned over other materials as the most environmentally-friendly, sustainable and visually appealing material—and also recognised for its role in carbon storage (Parry-Husbands & Parker 2014). However, there is scope to expand market share by further engaging consumers on the environmental credentials of Australian forest products and the role these products can play in sustainable consumption. There is also scope for greater consumer understanding of the unique qualities of Australian hardwoods; for example, their appearance, strength and durability.

The management of Australia's forests seeks to take into account their full range of values and uses. Multiple-use public native forests make up about 8 per cent (10.2 million hectares) of Australia's 123 million hectares of native forest area. Of this, 5.5 million hectares is available for commercial wood production after local restrictions to manage non-wood values are taken into account (MIG & NFISC 2013). Each year, around 1 per cent of this area is harvested for wood production, which equates to about 0.06 per cent of Australia's total native forest area (adapted from MIG & NFISC 2013). All harvested areas are regenerated for future generations, consistent with the principles of sustainable forest management.

The forest products sector continues to be responsive to community views. Harvesting operations are governed by stringent codes of practice and management prescriptions that take account of social and environmental considerations. In fact, most of Australia's multiple-use public native forests have attained independent and internationally recognised forest certification (AFS 2015)—verifying that these resources are being sustainably managed for a range of values.

Australia has an internationally recognised record of sustainable forest management, which is supported by Commonwealth and state policies and legislation. State forest management agencies and private sector organisations are certified under voluntary standards, such as the Australian Forest Certification Scheme (AFCS) and the Forest Stewardship Council (FSC). Despite this, anti-forestry campaigns have affected some trade in international and domestic markets. A positive and consistent industry-led narrative, supported by government, is needed to inform local and international consumers about the sustainability of Australian forest produce.

Internationally, forest certification plays a leading role in providing assurance to consumers and the supply chain on the sustainability and legality of the forest product they are purchasing. Around 10.7 million hectares of Australia's native and plantation forests are certified, with about 400 000 hectares certified by both schemes. This high level of forest certification should be a major market advantage for Australian forest products domestically and abroad.

An increase in the number of participants in the sector could also add weight to its legitimacy and drive stronger advocacy for the sector in the wider community. This could be achieved through greater participation in private native forestry and the expansion of farm forestry. However, one factor that may affect greater participation in private native forestry and farm forestry is the cost to landowners for certification of their forest management practices.

In Australia, when it comes to trusted sources of information about the environmental credentials of forest products, it has been shown that the most trusted are well-known environmental and industry organisations and brands (Parry-Husbands & Parker 2014). The success of a recent consumer program lends support to this finding (Box 1).

Box 1 'Wood. Naturally Better.' consumer program

The 'Wood. Naturally Better.' consumer program—a joint initiative of Forest and Wood Products Australia and Planet Ark—was supported by a television commercial that aired from 2011 to 2014. The commercial was hosted by Peter Maddison, an award-winning architect and host of the television show Grand Designs Australia, under Planet Ark's Environmental Edge brand.

The commercial showcased wood's aesthetic values. It explained that wood stores carbon and that using more wood has positive environmental benefits. The commercial enjoyed wide coverage and was seen at least once by more than 60 per cent of people in metropolitan markets.

Tracking research showed the commercial contributed to an increased understanding among consumers of the advantages of wood. It was also thought to have indirectly improved 'the social licence for the industry to operate' (FWPA 2014).

According to a 2014 survey, 76 per cent of Australian consumers want companies sourcing certified material from sustainably managed forests to use certification labels. Half those surveyed in Australia agreed that shopping for a labelled product can make a positive difference to the world's forests. Interestingly, the same study found that only 19 per cent of Australian consumers actively look for a certification label before making a purchasing decision—below the global average of 33 per cent (AFS 2014).

Perhaps even more interestingly, another study undertaken in the same year showed that there is virtually no awareness among Australian consumers (on a spontaneous level) of any domestic or international standards developed to give consumers confidence that products have come from sustainably managed forests (Parry-Husbands & Parker 2014). This suggests that stronger promotion of existing schemes is needed to engage consumers about forest certification in Australia.

Questions for consideration

16. *How can domestic and international consumers be better engaged on the environmental, economic and social credentials of Australian forest products?*
17. *How important are consumer awareness programs to the future prosperity of the sector?*
18. *Can forest certification be better leveraged to achieve stronger demand and better prices for Australian forest products and, if so, how?*

THE LIBRARY AT THE DOCK, MELBOURNE (INTERIOR)

Photo courtesy of Lend Lease

ISSUE 6

Strengthened regional approaches

The development of forestry hubs that build on the forest resource and wood processing capability in a region could improve the productivity, competitiveness and profitability of Australia's forest products sector.

The Australian forest products sector features a diverse range of wood resources and processors that are dispersed across large geographical areas. For the sector to be viable in the long term, it will have to maintain its international competitiveness and add greater value to wood resources. The development of forestry hubs could allow the sector to focus its development in line with the resource and value-chain characteristics of a particular region. This targeted approach to industry development could strengthen the role of the forest products sector and promote growth and employment in regional areas. It could also encourage greater collaboration within the sector and with other sectors and lead to improved research, innovation, productivity, resource use and business development outcomes.

Forestry hubs would comprise broad regional areas of varied, high-quality wood resources that are within a viable proximity to wood and wood fibre processors and export facilities. The forestry hub also envisages a group of businesses utilising this wood resource that are concentrated in close proximity to each other and connected through their 'value chains, use of resources, technology, complementary products and labour needs' (USEFC 2009).

This approach could improve the profitability and competitiveness of the sector. For example, by improving the security and confidence in wood supply and investment and by promoting innovation, better economies of scale, and increased utilisation of wood resources. It could also lead to improved viability and quality of small-scale forest holdings, such as on-farm plantations and private native forests. Community support for any increase in small-scale forest holdings would likely require forest growing to be viewed as a complementary land use to agriculture, rather than as a competing land use.

By locating their production and services within a hub, businesses could also improve their access to raw materials, transportation networks and skilled labour. As a result, companies participating in a hub would have 'lower costs than if they were operating in isolation' (USEFC 2009). In addition, the hub would feature collaboration among businesses that are seeking to innovate to improve their business operations and develop new uses and markets for wood and fibre.

A hub could optimise cascading uses of the wood resource, for example sawn timber, veneers, engineered wood, particle-based products, fibre-based products, chemical and biomaterials, and energy. The benefits of such an approach include close access to input materials for businesses, which can be favourable for information flow, sales, support and logistics (USEFC 2009). This proximity to input materials and a focus on cascading use could lead to higher value products being derived from the entire log. A hub could also include companies that produce both complementary and competing products. In order to improve resilience in the forest products sector, it is important that regions have high demand for their wood resources and that their industry is not overly reliant on any one market or product.

Pursuing a coordinated approach to wood resources and processing facilities could also assist with identification and provision of infrastructure needs to ensure that processing, transport and port facilities are adequate and within economic range of the wood resource. It could also strengthen opportunities for collaboration with other sectors in identifying and making a case for emerging regional infrastructure needs.

The development of forestry hubs would also require an examination of the regulatory requirements that apply to forest growing, management and processing. It is important that these regulations are consistent across the jurisdictions where the hub is located.

Other potential benefits could be that, collectively, companies in the hub are better positioned to attract investment in the research, educational and training facilities needed for their businesses (USEFC 2009). A Finnish example of industry clustering highlights that 'firms thrive in the proximity of companies, investors, educational institutions and research centres' achieved by processing hubs (Competitiveness Consultancy n.d.).

The development of forestry hubs could also assist those regions where the forest products sector is an important contributor to the regional economy. For example, a strong and diverse forestry hub could contribute to stable economic growth of a community through direct and indirect employment. Forestry hubs could also support the social fabric of a region; for example, through promoting linkages between people and their forest resources and through companies and their employees supporting community initiatives.

The hub approach would require a plan for each region to be developed and implemented. It would need a detailed understanding of a region's forest industry, such as information on existing wood resources, future supply forecasts, processing facilities, markets and infrastructure. The strengths and competitiveness of regions should also be considered.

A hub approach also requires communication, interaction, cooperation and collaboration among forest growing and wood processing businesses. Ongoing research and innovation will play a key role in ensuring that the industry in each region can respond to changes in its operating environment and improve its profitability and competitiveness (USEFC 2009).

The growth and success of a hub would take time and is likely to be based on the 'advantages of their location, such as availability of raw materials and qualified workers, positive business environment, research expertise, education, infrastructure, and innovativeness' (USEFC 2009).

Questions for consideration

19. *How could forestry hubs better utilise resources and promote greater efficiencies and innovation?*
20. *What have been the barriers to the establishment and efficient operation of forestry hubs to date, and what might be the role of the Australian Government in addressing these?*
21. *If additional forestry hubs are to be established, where would they best be located?*

ISSUE 7

Infrastructure

Australia's forest products sector is dependent on reliable, efficient and accessible infrastructure to grow the sector's profitability, underpin its competitiveness and boost its contribution to economic growth, innovation and productivity.

The efficient and cost-competitive development and delivery of forest products requires well-developed and efficient infrastructure. In Australia, the forest products sector is supported by a range of national infrastructure:

- national air, rail, road and sea networks for moving inputs and outputs through the value chain and to the domestic market
- a national energy grid
- ports for access to international markets
- communications networks.

However, forested lands are often at the end of these networks and processing plants are often remote from the markets for their products. For economic viability and enhanced profitability all elements of the forest growing and processing sector are dependent on the efficient operation of these networks. The costs of access to and availability of infrastructure are significant influences on the sector's viability.

The freight network, including road, rail, intermodal facilities and sea and air ports, is vital for the sector. Efficient transport and logistics systems are required between forests, processing plants and markets. The profitability and competitiveness of the forest products sector can be compromised where physical access is constrained or where access costs are higher than for competitors.

Coastal shipping plays a significant role in fulfilling Australia's domestic freight requirements. However, the lack of competitiveness of Australian shipping, particularly when compared with transport by road or rail, has led to a decline in its participation in domestic coastal trading (Commonwealth of Australia 2008). Factors that are thought to have affected its competitiveness and viability include: excessive administration and regulation costs; increased coastal shipping costs and market rates; regulations that are inconsistent with business needs; and regulatory uncertainty (Business Council of Australia 2014).

Addressing infrastructure capacity constraints and lowering costs can contribute to expanding market opportunities—both domestic and international—and drive productivity improvements for the sector. Ownership of and responsibility for key infrastructure is fragmented and strategies for addressing the unmet needs of the sector are usually addressed in locally specific, case-by-case engagements. Examples of studies examining transport infrastructure issues include the Timber Industry Road Evaluation Study in Victoria (Timber Towns Victoria 2011) and the Visy pulp and paper mill in Tumut, New South Wales (NSW Government Department of Planning 2007).

The sector and its value-chain logistics are often widely dispersed and distances can be great. A given transport route can, for example, cross jurisdictions, tenures and modes—and parts of the network can be enterprise specific. The 1992 National Forest

Policy Statement recognised that infrastructure development underpinned wood production and industry development (Commonwealth of Australia 1992).

In regions where the sector is concentrated, more effective and targeted infrastructure planning and investment could be encouraged; and the results of successful regional or national approaches could be broadly disseminated for others to adopt.

The sector is an important consumer of energy, with scope for being a producer of energy through the generation of bioenergy from wood biomass. It is important that energy infrastructure is able to support any increase in bioenergy generation by the forest products sector.

Effective and affordable telecommunications systems, including consistent and reliable access to fixed and mobile phone and broadband networks, are also important for the sector in engaging with markets and value-chain partners. Mobile voice and data connectivity is vital in remote harvesting locations for occupational health and safety reasons and to assist with harvesting and haulage logistics. The importance of telecommunication networks will likely expand over the coming decades and infrastructure provision and pricing structures in the regions where the sector operates will need to keep pace with that demand.

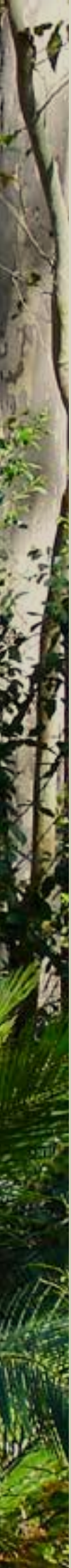
Questions for consideration

22. What infrastructure will be required to respond to future demand for Australian forest products?

23. What can be done to ensure better recognition and understanding of the sector's infrastructure needs?

LOG TRANSPORTATION

Photo courtesy of Tim Clancy



ISSUE 8

Industry skills and training

The forest products sector requires a workforce with skills that align with current and emerging jobs. Increased productivity, efficiency and innovation will rely upon a workforce at all levels that is skilled, flexible and able to meet industry development priorities.

Like all sectors, the forest products sector relies on suitably skilled workers, managers and leaders. The skill requirements of the sector are very broad, from heavy vehicle drivers, qualified foresters and timber engineers, specialists in wood harvesting and processing, manufacturing workers to market development analysts and scientific researchers. A key challenge for the sector is identifying current and future skill development and training requirements and attracting and developing new recruits for all levels of employment across the sector.

The forest products sector obtains skilled workers through tertiary education pathways, usually combined with employment and in-house training. Tertiary education comprises Vocational Education and Training (VET) and university. Approximately 60 Registered Training Organisations (RTOs) deliver VET courses in forestry, wood and timber processing. Enrolments in courses were stable at around 6 000 per year until 2011, but in 2012 enrolments dropped to fewer than 4 000 (ForestWorks 2014). VET pressures affecting training delivery include: declining Australian and state government funding (to RTOs and in the form of incentives to employers); reduced demand from employers for accredited qualifications; and increased fees and tighter standards of regulation of RTOs (ForestWorks 2014). In addition, the dispersed regional locations of many forest harvesting sites and wood processing facilities affects the volumes of trainees requiring courses and the feasibility of training providers being able to deliver them.

There has also been a steady decline in forestry graduates at university level, especially those with forest production skills (de Fégely 2010). Undergraduate pass degree completions declined in forestry by more than 50 per cent between 1994 and 2007 (Pratley, Kanowski & Bull 2010). This decline has resulted in Australian forest organisations recruiting international graduates, particularly from South Africa and New Zealand (de Fégely 2010).

Undergraduate bachelor degrees in Forest Science are offered at three universities in Australia: the Australian National University (ANU), the University of Melbourne and the Southern Cross University (SCU). Postgraduate level courses are offered at four universities across Australia: ANU, SCU, the University of Melbourne and the University of Tasmania (UTAS). Of these, UTAS is the only one to offer university level training in wood processing and the use of timber in building.

Tertiary education providers are market driven and respond to student and industry demand for courses. Depending on the degree of specialisation, undergraduate courses with fewer than 20 students in any year group are considered unviable. Current enrolments in forestry undergraduate courses are below this, placing the remaining courses in danger of further loss of specialist teaching capacity and/or closing (de Fégely 2010). Findings of a review of Australian forestry and wood products education and training needs (de Fégely 2010), suggest that tertiary education in forestry in Australia suffers from a lack of coordination, resulting in an inefficient use

of resources and inconsistencies in program objectives. The broad scope and large number of forest products sector organisations tends to disperse education and training resources rather than consolidating them.

However, VET training and Forest Science degrees are not the only areas of people development required by the sector. All forms of timber, wood and wood fibre processing require management of extensive value-chain relationships, logistics and technology implementation. Attempts have been made over the past 20 years to introduce specific skills development opportunities for timber processing managers. However, limited demand for training in this area has resulted in limited uptake and success for these courses. Factors that may be influencing demand include the training culture in an organisation and the ability of management teams to release staff for development programs.

Technological advancements in harvesting and processing and the production of increasingly innovative forest products require more workers with the necessary skills to operate more high-tech equipment. It also requires management of businesses to be able to extract the full capabilities of the opportunities offered via this technology. It will be necessary to increase and maintain the technical depth that covers the skills required across the full spectrum of job roles in the sector.

There is an increasing recognition of the environmental, social and cultural benefits of employing Indigenous Australians in the forest products sector due to their historical connection with the land and traditional natural resource management practices (Loxton, Schirmer & Kanowski 2012). In 2011, 1 110 Indigenous people were employed in the forest and wood industries (MIG & NFISC 2013). Despite various cultural and social barriers for Indigenous people seeking to enter the forest products sector exist (Loxton, Schirmer & Kanowski 2012), a range of state programs are dedicated to increasing the skill base of Indigenous Australians.

The ForestWorks 2014 Industry Skills Scan lists skills shortages that are occurring in many areas of the forest products sector, including forest growing and management, sawmilling and processing, pulp and paper manufacturing, timber manufactured products and wood panel and board production (ForestWorks 2014). Some of the skills gaps identified include business management skills, resource analysis and critical thinking skills, as well as digital literacy. Several trends have been identified as being responsible for the shortfall of skilled workers available to be employed in the sector:

- during the recent downturn in the sector the demand for workers was reduced, resulting in institutional memory loss and a perception that the sector has poor job security
- increased mechanisation of harvesting processes requires a higher level of training and literacy, yet fewer people are necessary to undertake the work
- the existing workforce is ageing and the number of people entering the sector to replace them is decreasing
- university level programs, VET qualifications and short courses specific to the sector have all been affected by the decline in industry enrolments and the cost pressures facing each delivery organisation
- skill development is increasingly being delivered in-house (informally) as a way for companies to reduce costs and focus on immediate business viability during economic uncertainty. More than 90 per cent of forest products sector training is done in-house, diminishing the capacity of RTOs to deliver services to the sector (ForestWorks 2014).

Attracting people to a career in forestry will be vital to provide the sector with a skilled workforce. A challenge to this is the migration of forestry workers to other sectors with higher wages and better job security (ForestWorks 2014). Poor community awareness of the benefits of working in and supporting the forest products sector, the range of careers it offers and how it contributes to society, also affects the sector's ability to attract new and high quality recruits. Several national campaigns have tried to address these problems in recent years, such as Growing Careers, a website resourced by Forest and Wood Products Australia that provides career information for current and potential recruits (FWPA 2011).

Questions for consideration

24. What are the skills and training needs of the sector over the coming decades, and where are the current gaps?

25. Are Vocational Education and Training and university training providers well-positioned to meet the future skills and training needs of the sector?

26. What improvements are required at an enterprise level to support the recruitment, development and retention of the sector's current and future workforce?

SAWMILL EMPLOYEE GRADING FRESHLY SAWN TIMBER

Photo courtesy of Isaac Overton

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