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The Australian native forest sector: causes of the decline and prospects for the future

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Andrew Macintosh

TAI

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LPO Box 5096
University of Canberra, Bruce ACT 2617
Tel: (02) 6206 8700 Fax: (02) 6206 8708
Email: mail@tai.org.au
Website: www.tai.org.au

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Executive summary

Australia's native forest sector has experienced a significant contraction over the past five years. This is reflected in log production from native forests: roundwood removals over the period 2009-2011 were 30 per cent below the average from the previous 18 years. Similarly, woodchip exports, a mainstay of the hardwood sector, fell by 33 per cent between 2008 and 2012. The fall in production and exports has bankrupted the native hardwood industry's largest producer, Gunns Limited, and led to the closure of numerous processing facilities around the country. State forest agencies have also recorded substantial losses. For example, Forestry Tasmania (the agency responsible for public native forests in Tasmania) recorded a net loss before tax and other items of AU$64 million over the period 2009-2012 (or AU$16 million per annum). Over the same period, Forests NSW's (now the Forests Corporation of NSW) total net loss before tax (excluding net fair value adjustment, asset revaluation and impairment of assets) was AU$85 million (AU$21 million per annum).

The response of federal and state governments to the downturn has been to look for ways of assisting the sector to enable it to adjust to the new market conditions. The most high profile example of this is the Tasmanian Forests Intergovernmental Agreement (IGA), which was signed by the Commonwealth and Tasmanian Government in August 2011. The aim of the IGA is to:

> … support the restructuring of the industry towards future sustainability based on both public and private resource, create a significant conservation benefit by reserving and protecting High Conservation Value forest areas, and strengthen the partnership between the two Governments and other stakeholders to develop and diversify the Tasmanian economy, creating new sources of prosperity and opportunity for all Tasmanians.[1]

Under the IGA, industry representatives, unions and environment groups were charged with the responsibility of negotiating an agreement on key conservation and resource access issues. This would then provide the basis for government action, including the provision of Commonwealth and state government assistance for the forestry industry and other non-forestry projects that would be designed to help diversify the Tasmanian economy.

The agreement between the forestry industry, unions and environment groups — called the Tasmanian Forest Agreement 2012 (TFA) — was finalised in November 2012. It contains a number of elements, the most important of which are the support for the creation of an additional 504,012 hectares (ha) of forest reserves, a reduction in the high quality sawlog guarantee from 300,000 to 137,000 cubic metres (m^3) per year, and a restructuring package for the Tasmanian forestry industry. Prior to the release of the TFA, the Commonwealth had already provided Tasmania with approximately $130 million under the IGA. If the terms of the TFA are accepted, Tasmania is expected to receive an additional $300 million from the Commonwealth to subsidise restructured operations, compensate displaced forest workers, payout forest contracts, and help establish and manage the new reserves. All of the parties involved in the process believe it will deliver 'an ongoing, vibrant forestry industry in Tasmania based on native forests and, increasingly in the future, plantation'.[2]

While laudable, this ideal ignores the economic realities facing the native forest sector, particularly in Tasmania. There is a perception amongst some policy makers and the wider community that the contraction of the Australian native forest sector has been due to three main factors:

[1] Australian Government and Tasmanian Government (2011). *Tasmanian Forests Intergovernmental Agreement*, clause 3.
[2] Australian Conservation Foundation et al (2012). *Tasmanian Forest Agreement 2012*.

- the increase in forest reserves and changes in forest management practices that have occurred since the mid-1990s;
- the global financial crisis; and
- a loss of competitiveness in trade-exposed markets due to the appreciation of the Australian dollar.

The argument often advanced by the industry is that the conservation initiatives of the 1990s and 2000s triggered the initial decline in the sector; then the global financial crisis and high dollar caused the abrupt downturn seen after 2008. This analysis suggests that government assistance may only be needed on a short-term basis to see the sector through the current crisis. However, while these three factors have had a material impact on the industry, the underlying drivers of the contraction are related to structural changes in domestic and international wood product markets. These structural factors are likely to persist and raise questions about the merits of providing additional government assistance to the native forest sector when it is potentially financially unsustainable.

This report evaluates the causes of the decline of the native forest sector and prospects of recovery. The drivers of the contraction are analysed by separating out the sector's two main markets: the domestic solid wood product market (sawnwood and wood-based panels); and the woodchip market (international and domestic).

Causes of the contraction of the native forest sector

In the domestic solid wood product market, the sector has been adversely affected by six main issues.

- An increase in competition from domestic plantation softwoods in the structural timber market.
- An increase in competition from domestic and imported engineered wood products.
- Weak demand in the structural timber market over the past two decades due to a lack of growth in detached housing construction, a trend that was exacerbated by the economic slowdown associated with the global financial crisis.
- In some jurisdictions, a reduction in the public native forest estate and introduction of more stringent forest management regulations.
- Wood-saving innovations in production processes and related product substitution that have suppressed growth in global wood demand and helped constrain global solid wood prices.
- Increasing harvesting and haulage costs.

In international and domestic woodchip markets, native forest producers have faced a similar combination of pressures, most notably:

- an increase in competition from domestic hardwood plantations;
- an increase in competition from plantation hardwood chip exporters from developing countries in South East Asia, Africa and South America;
- a contraction in the Japanese pulp and paper industry, which has been driven by falling per capita paper and paperboard consumption, population decline, increasing competition from pulp and paper producers in developing countries, and the global financial crisis; and
- declining competitiveness due to high harvesting and haulage costs, the high Australian dollar and a market preference for plantation-sourced woodchips.

The most persuasive explanation of the trends in the sector is that, for the better part of the last two decades, it has been under pressure as a result of a combination of falling demand, increasing competition, loss of forest access and tightening forest management regulations. By the mid- to late-2000s, the sector was vulnerable to any economic disturbance. It had been displaced by softwoods and engineered wood products in the structural timber market. Gains had been made in appearance and some higher value-added structural markets but these had not been of a sufficient size to offset the losses in traditional solid wood markets. Further, the sector had become highly dependent on woodchip exports to Japan, a market that was competitive (and becoming more so) and in the initial stages of decline. The global financial crisis and high Australian dollar exacerbated the downward trend and made many native forest operations uneconomic. The ongoing ramifications of the initial financial crisis, and the 2011 Tōhoku earthquake and tsunami in Japan, have suppressed demand growth and caused further structural adjustment in the sector.

Prospects for the native forest sector

The problems that have beset the native forest sector look likely to continue into the foreseeable future. Crucially, there is no immediate prospect of relief from the market and social factors that have caused the contraction. Native forest sawnwood producers are likely to see continued weak demand in structural timber markets and strong competition from plantation sawnwood and engineered wood products. History also suggests that there will be ongoing community pressure for improved forest management practices and further increases in forest reserves.

The outlook in the woodchip market is dependent on three main factors: the state of the Japanese pulp and paper industry; the increase in paper and paperboard production and consumption in developing countries in Asia; and demand for wood for bioenergy and other biomass-dependent technologies (e.g. bioplastics). Japanese demand for Australian broadleaved native woodchips for paper production is likely to continue to fall. Since at least the mid-2000s, the Japanese pulp and paper industry has signalled its desire to reduce reliance on native woodchips for reasons of sustainability and improved yields. The industry also appears to be in decline, a trend caused by falling paper and paperboard consumption in Japan and increased competition from imports. It is possible that the Japanese industry could recover by reorientating itself toward growing markets in Asia, particularly China. However, the structure of the industry and that of its foreign competitors makes this unlikely.

While Chinese markets are unlikely to save the Japanese pulp and paper industry, they could provide a new source of demand for Australian native woodchip exporters. The first issue with this is that the Chinese paper industry has tended to import pulp rather than chips. This is in the processes of changing. In the three years between 2008 and 2011, Chinese chip and particle imports from all countries increased by 251 per cent. However, like Japan, Chinese importers prefer broadleaved plantation chips. Further, in at least the short- to medium-term, there is unlikely to be an acute shortage of broadleaved woodchips that could help revive international woodchip prices. Even within Australia, there will continue to be an abundant supply of pulplogs from plantations. While woodchip prices remained subdued, the domestic native forest sector will struggle, especially as harvest, haulage and energy costs are likely to continue to rise.

One possible source of assistance for native woodchip producers is bioenergy and other biomass feedstock markets. Over the past decade, the production and consumption of wood energy has risen considerably, with much of the growth being driven by renewable energy targets and related policy measures in Europe. The expansion of the wood energy market is expected to continue for at least the next two to three decades. The emergence of new biomass feedstock markets could also provide a source of demand for lower grade logs and residues.

Although there are potential opportunities associated with the rise of wood energy and other biomass-dependent technologies, these markets are unlikely to provide a panacea for the native forest sector's problems. The redirection of pulp and other lower grade native logs to bioenergy production is likely to attract considerable community opposition. There could also be a resistance to native-sourced pellets in international bioenergy markets, especially in Europe. The predicted explosion in wood energy markets is also subject to a degree of uncertainty. Energy demand in developed countries is slowing, while competition from other low-emission energy sources is increasing. Over the past five years, the cost of renewable energy technologies, particularly solar PV, has fallen considerably. Natural gas prices have also eased in some areas, including the United States. If wood energy costs increase, the scope for industry expansion could be reduced due to competition from these alternative energy sources. There is also significant excess pellet production capacity in Europe and North America, making the development of an expanded export-orientated domestic pellet industry unlikely. The other challenge for native forest producers is costs. Without government assistance, production costs are likely to make the native forest sector uncompetitive.

Implications

While there is uncertainty about future trends in wood markets, the factors that have caused the contraction of the native forest sector look likely to persist. There is the potential for a partial revival to occur as a result of growing wood product demand in Asia and/or bioenergy and other biomass feedstock markets in developed and emerging economies. However, with sluggish demand in many key markets, strong competition from Asian, South American and African producers, and a distinct market preference for plantation-sourced products, this looks unlikely. As a result, in the absence of additional government assistance, the sector is likely to continue to decline and, in some areas, it could collapse entirely.

This analysis is consistent with the findings of a report prepared for the IGA process by O'Hara, Farley and Smith.[3] The report evaluated the socio-economic impacts of the TFA and found that, in the absence of the agreement, log removals from Tasmania's public native forests could fall from 1.5 million m^3 to 125,000 m^3 per annum, direct employment could fall by 678 jobs and direct forest sector output could fall by $263 million. Even this scenario was seen as optimistic, with the authors commenting that:

> Scenario 2 does not address the substantial challenges in establishing a commercially viable supply chain for all participants and the processing and marketing structures that would be necessary to successfully implement Scenario 2. It is the authors' judgment that meeting these challenges would require significant investment that is beyond the investment appetite of the current Tasmanian forest industry.[4]

Given the precarious state of the sector, the critical policy question is whether the provision of further assistance is an appropriate use of government resources. Similar attempts to create a 'vibrant forestry industry' in the past failed due to an inability to overcome the market pressures facing the sector. There is a significant risk that any new government assistance package, including that proposed through the IGA, will encounter the same problems. The structural challenges are likely to remain, meaning the assistance package will merely postpone the inevitable. Federal and state governments should be wary of falling for a form of sunk cost fallacy, where they 'throw good money after bad' in a futile attempt to perpetuate an uneconomic activity.

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[3] O'Hara, T et al (2013). *Key socio-economic impacts in transitioning to wood supply arrangements detailed in Tasmanian Forest Agreement (TFA)*.
[4] O'Hara et al (2013) p 14.

Introduction

Australia's forest industry experienced significant structural change in the 1990s as a result of two major policy initiatives: the Regional Forest Agreement (RFA) process and *Plantations for Australia: The 2020 Vision*.[5] The RFA process was intended to resolve the conflicts over the management of native forests through 20-year strategic plans that guaranteed wood supply for the industry and established a new system of comprehensive, adequate and representative forest reserves. Ten RFAs across four states (Tasmania, New South Wales, Victoria and Western Australia) were ultimately created, and they led to the addition of approximately 2.9 million hectares (Mha) to the national reserve system.[6] The withdrawal of these reserve areas from commercial production had the potential to lead to a contraction in the industry. The *Plantations for Australia: The 2020 Vision* strategy was partly intended to address this by promoting the expansion of Australia's plantation estate; from 1.1 Mha in 1996 to 3.3 Mha in 2020.[7] Behind the strategy was the expectation that increased plantation wood production would replace that lost from native forests and that both the native and plantation sectors would experience an era of prosperity and stability brought on by the new policy settings and rising real (inflation adjusted) global wood prices. The forecasts of increasing wood prices were challenged by some, most notably Judith Ajani from the Australian National University,[8] but the Australian Government and major players from the industry maintained that 'faster wood demand growth relative to supply over the next 25 years' would place upward pressure on prices, thereby creating a favourable economic environment for the Australian forest products sector.[9]

Consistent with these buoyant predictions, and spurred on by generous tax concessions, particularly those available through managed investment schemes (MIS), the plantation sector underwent rapid growth in the late 1990s and early 2000s. Over the period 1990 to 1997, the average rate of hardwood and softwood plantation establishment (new plantings) in Australia was 34,718 ha yr^{-1}. The average over the eight years following the release of the *Plantations for Australia: The 2020 Vision* was 54,888 ha yr^{-1}, a 58 per cent increase.[10] Similarly, roundwood removals from native forests remained relatively stable in the early to mid-2000s, despite the RFA process and associated increase in reserves.[11] However, a confluence of events in the latter half of the 2000s triggered a major contraction in the industry.

Strains in the plantation sector began to show in the years leading up to the global financial crisis, which began in earnest in late 2008. Many forestry MISs had high cost structures that were designed to maximise tax deductions for investors.[12] Pressures within the financial services market had also resulted in the adoption of forestry MIS arrangements where

[5] Plantation 2020 Vision Implementation Committee (1997). *Plantations for Australia: The 2020 Vision*.
[6] Bureau of Rural Sciences (2003). *Australia's State of the Forests Report 2003*; Department of Agriculture, Fisheries and Forestry (2010). 'Protecting our Forest Environment'.
[7] Plantation 2020 Vision Implementation Committee (1997).
[8] Clark, J (2001). *The global wood market, prices and plantation investment: an examination drawing on the Australian experience*; Clark, J (2003). *Submission to Senate Rural and Regional Affairs and Transport References Committee Inquiry into Plantations*; Senate Rural and Regional Affairs and Transport References Committee (2003). *Australian forest plantations. A review of Plantations for Australia: The 2020 Vision*.
[9] Plantation 2020 Vision Implementation Committee (1997), p. 2.
[10] Department of Climate Change and Energy Efficiency (2011). *Annual Area Planted: Based on Table 5A from the National Inventory Report (unpublished data)*.
[11] Roundwood removals refer to the volume of wood that is felled and removed from the forest. It excludes bark and other biomass that is left on the forest floor after harvest. Unless otherwise stated, all references to roundwood removals exclude firewood (i.e. they are industrial roundwood).
[12] Parliamentary Joint Committee on Corporations and Financial Services (2009). *Aspects of agribusiness managed investment schemes*.

investors made upfront payments to cover establishment costs but not annual contributions to cover ongoing management costs.[13] This left MIS operators with cash flow problems, which were exacerbated by the fact that a significant proportion of the schemes had built their long-term viability on unrealistic yield predictions.[14] By 2007–2008, many forestry MISs were experiencing financial difficulties. The onset of the global financial crisis magnified the pressures on the sector and resulted in a number of operators going out of business, including the Great Southern Group and Timbercorp. The turmoil in the sector was also reflected in the rate of plantation establishment, which fell to 9,600 ha yr^{-1} in 2011.[15]

The native forest sector has experienced a similar, although arguably even more acute, downturn. Native forest roundwood removals over the period 2009–2011 were 30 per cent below the average from the previous 18 years.[16] Woodchip exports, a mainstay of hardwood sector (native and plantations), fell by 33 per cent between 2008 and 2012.[17] The fall in production and exports has bankrupted the native hardwood industry's largest producer, Gunns Limited, and led to the closure of numerous processing facilities around the country. State forest agencies have also recorded substantial losses. For example, Forestry Tasmania (the agency responsible for public native forests in Tasmania) recorded a net loss before tax and other items of AU$64 million over the period 2009–2012 (AU$16 million yr^{-1}).[18] Over the same period, Forests NSW's (now the Forests Corporation of NSW) total net loss before tax (excluding net fair value adjustment, asset revaluation and impairment of assets) was AU$85 million; or AU$21 million yr^{-1}.[19]

There has been conjecture about the causes of the downturn in the native forest sector. Industry sources and some academics have attempted to partially blame conservationists, alleging that they have turned foreign paper manufacturers away from native forest woodchips.[20] Others have pointed to structural problems in the industry and the impacts of the global financial crisis.[21] The controversy surrounding this issue has been intensified by the fact that much of the associated debate has occurred in the context of the Tasmanian Forest Agreement process, where the industry and conservationists, in conjunction with the Australian and Tasmanian Governments, have being trying to negotiate yet another 'lasting solution' for the native forest industry.

The objects of this paper are to analyse the causes of sector's demise and the prospects of recovery. To do this, the paper first provides an overview of the state of the sector. The drivers of the contraction of the sector are then analysed. In conclusion, the paper evaluates the sector's future prospects.

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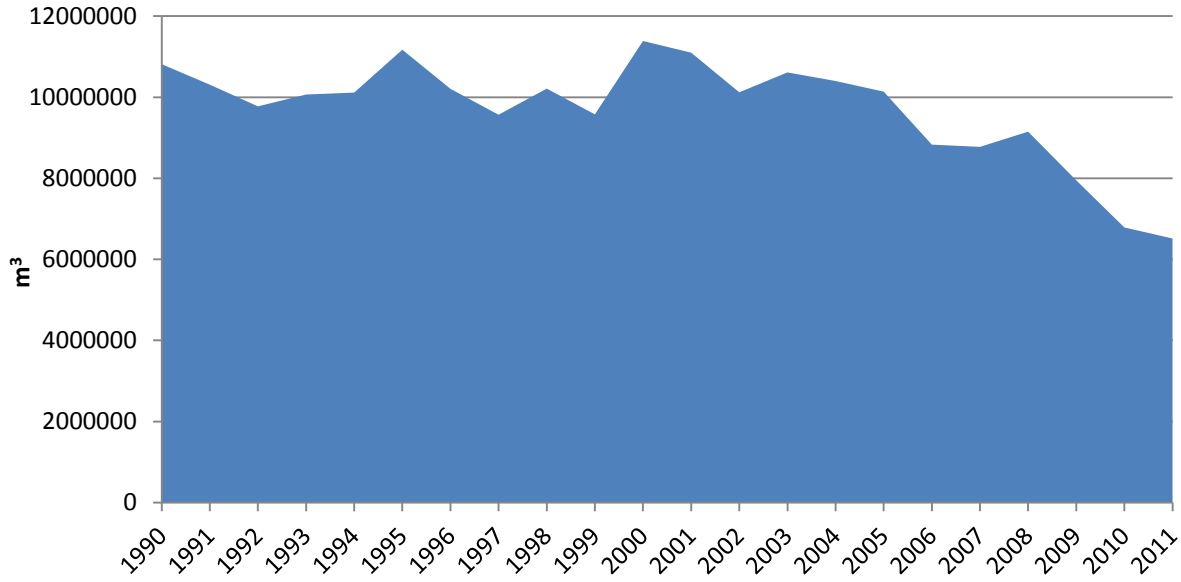
[13] Parliamentary Joint Committee on Corporations and Financial Services (2009); Senate Select Committee on Agricultural and Related Industries (2010). *Food production in Australia*.
[14] Parliamentary Joint Committee on Corporations and Financial Services (2009); Senate Select Committee on Agricultural and Related Industries (2010).
[15] Gavran, M (2012). *Australian plantation statistics 2012 update*.
[16] Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) (2012). *Australian Forest and Wood Products Statistics*.
[17] ABARES (2012).
[18] Forestry Tasmania (2009-2012). *Annual Reports*.
[19] Forests NSW (2009-2012). *Annual Reports*.
[20] Schirmer, J et al (2011). *Socioeconomic impacts of forest industry change: a baseline study of the Tasmanian forest industry*; Schirmer, J (2012). *Assessment of the employment and economic consequences of change in access to Tasmania's publicly owned native forests: overview of methodology*.
[21] Australian Bureau of Agricultural and Resource Economics (ABARE) (2010). *Tasmanian Forest Industry: An Overview*; Ajani, J (2011). *Australia's Wood and Wood Products Industry Situation and Outlook*.

State of the native forest sector

As Figure 1 shows, roundwood removals from native forests were relatively stable during the 1990s.[22] Over the period in which the RFAs were introduced (1997 to 2001), there was an increase in removals, most of which were from public native forests in Tasmania (see Figure 2). After this initial spike, the rate of removals dropped below the levels seen prior to the RFAs, then stabilised over the period 2006-2008. In the years following 2008, the sector has contracted sharply, with Tasmania being the most acutely affected.

Figure 1 Australian native forest roundwood removals, 1990-2011 (m^3)



Source: ABARES (2012).

The sector sources logs from two forest types:

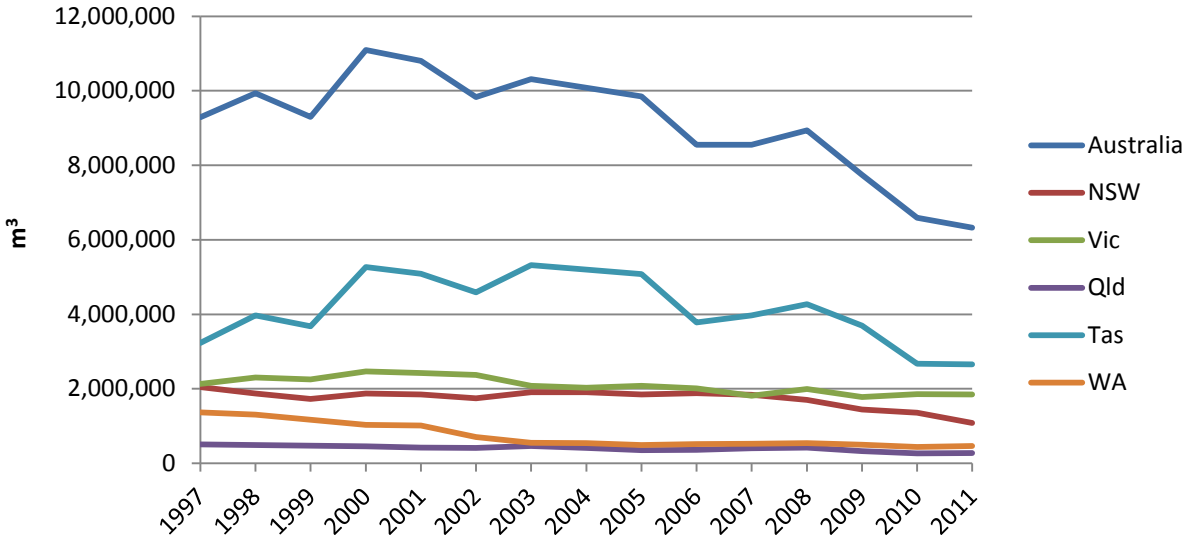
- multiple use public forests (here simply called 'public native forests' — they are forests located on Crown land that are managed for multiple uses, including commercial timber production); and
- private native forests (i.e. forests located on private freehold or leasehold land).

Of the two, private native forest producers have suffered most from the decline over the 2000s. As Figure 3 shows, log removals from private native forests in the two jurisdictions that have traditionally dominated private production, New South Wales and Tasmania, have fallen substantially since 2005-2006. The available data suggest the reductions experienced by private native forest producers in other jurisdictions have been less severe than those in New South Wales and Tasmania. However, they are responsible for a small proportion of total native roundwood removals (generally less than 5 per cent).[23]

[22] Australian native forests that are used for commercial purposes are predominantly broadleaved (hardwoods) (e.g. *Eucalyptus spp*.). The major exception is the cypress (*Callitris spp.*) forests of New South Wales and Queensland, from which are extracted coniferous sawlogs for structural and appearance purposes. However, cypress logs generally only constitute around 3 per cent of total native forest roundwood removals. Unless otherwise stated, all references to roundwood removals from native forests include both broadleaved and coniferous logs.

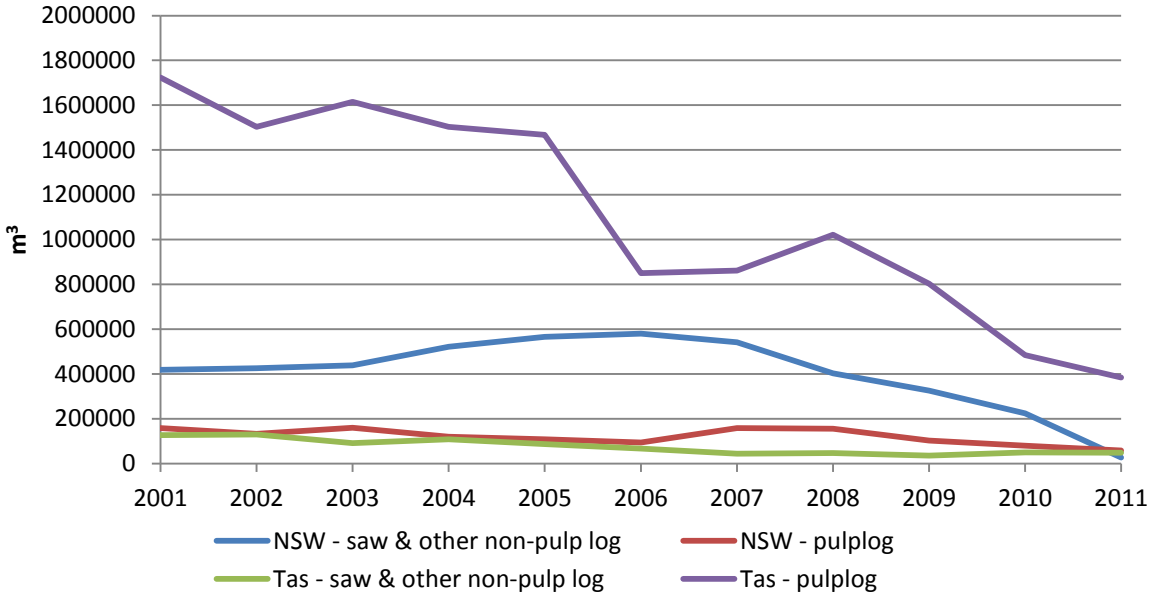
[23] ABARES (2012).

Figure 2 Australian broadleaved native roundwood removals, total (public and private) and by state, 1997-2011 (m^3)



Source: ABARES (2012).

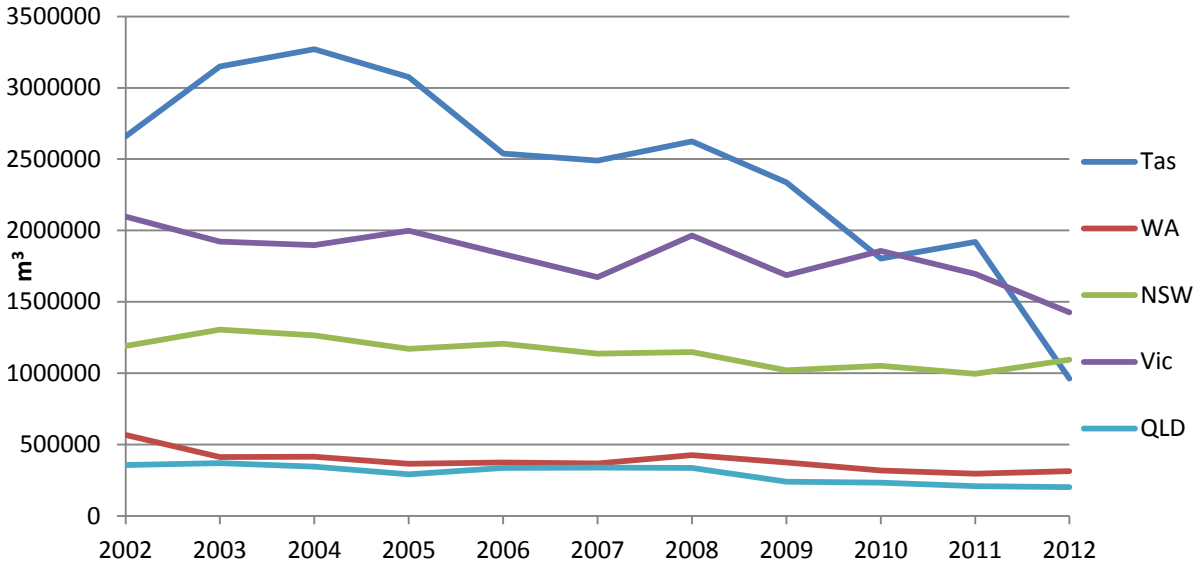
Figure 3 New South Wales (NSW) and Tasmania (Tas), private native forest roundwood removals, by log type*, 2002-2011 (m^3)



Source: Private Forests Tasmania (2001-2012). *Annual Reports*; State Forests of NSW (2000-2003). *Social, environmental and economic report*. Forests NSW (2004-2007). *Social, environmental and economic report*; Forests NSW (2008-2012). *Annual Reports*; ABARES (2012); Bureau of Rural Sciences (2003).
* 'Saw and other non-pulp logs' are defined for these purposes as including high and low quality sawlogs, sliced veneer logs, peelers, poles, piles, posts and sleepers (i.e. all non-pulp logs with the exception of firewood).

Although private producers have suffered the most, roundwood removals from public native forests have also fallen appreciably in all relevant jurisdictions since the early 2000s. As Figure 4 highlights, the impacts on public native forest log production have not been uniform, with Tasmania and Victoria being the most affected to date.

Figure 4 Roundwood removals from public native forests, coniferous and broadleaved, 2002-2012 (m^3)



Source: State Forests of NSW (2000-2003); Forests NSW (2004-2007); Forests NSW (2008-2012); Queensland Department of Agriculture, Fisheries and Forestry (2012). *Forest Products: Pocket Facts*; Queensland Department of Environment and Resource Management (2007-2011). *Forest Products: Pocket Facts*; Queensland Department of Environment and Resource Management (2011). *Cypress pine sawlog removals for Queensland*; Forestry Tasmania (2001-2008). *Annual Reports*; Forestry Tasmania (2009-2012). *Stewardship Reports*; Forestry Tasmania (2007-2008). *Sustainable Forest Management Reports*. VicForests (2006-2012). *Annual Reports*; VicForests (2007-2012). *Sustainability Reports*; Victorian Department of Sustainability and Environment (2005). *Victoria's State of the Forests Report 2003*; Victorian Department of Sustainability and Environment (2009). *Victoria's State of the Forests Report 2008*; Forest Products Commission Western Australia (2002-2012). *Annual Reports*; ABARES (2012); Bureau of Rural Sciences (2003).

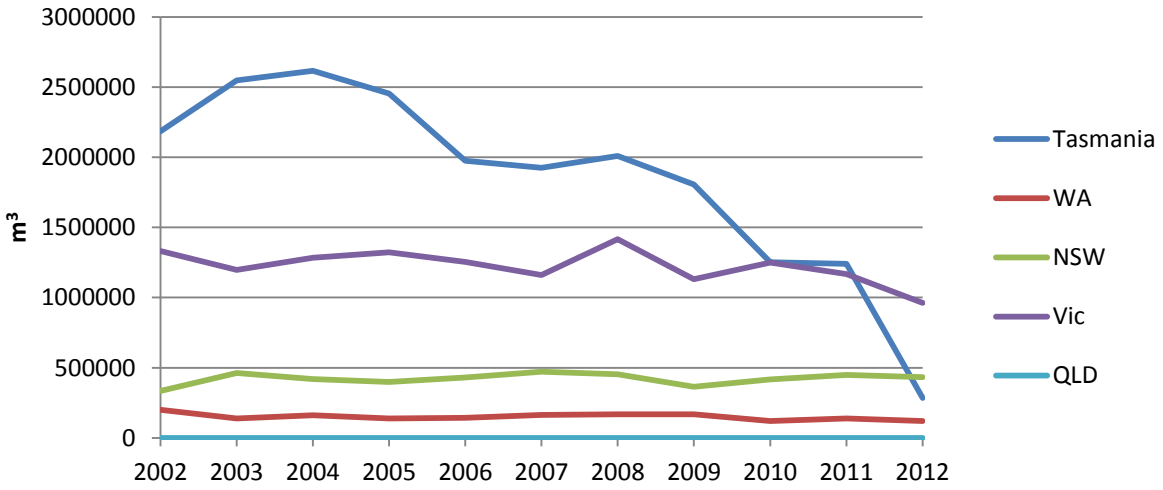
There have also been differences in the trends in the types of roundwood removals. For example, pulplog production has plunged in Tasmania in recent years, and also fallen sharply in Victoria. In contrast, according to the current statistics, neither New South Wales nor Western Australia has experienced the type of pulplog reductions seen in the other jurisdictions (Figure 5). Similarly, there have been significant declines in saw and other non-pulplog removals (e.g. sliced veneer, peelers, poles, and girders) from public native forest across the jurisdictions, with the exception of Tasmania (Figure 6). The upward trend in Tasmania in recent years is attributable to an increase in peeler log production (i.e. logs for the manufacture of rotary cut veneers), which has offset falls in standard saw and sliced veneer logs. The increase in peelers is due to the opening of Ta Ann's (a Malaysian timber company) two veneer mills at Smithton and in the Huon district in 2007 and 2008, and the subsequent redirection of many pulplogs to rotary veneer production. The veneers processed at these two facilities are primarily for export to Malaysia, where they are used to make flooring, laminated veneer lumber and other engineered wood products.[24][25] The other peculiarity in the sawlog data contained in Figure 6 is the slight increase in Victorian public

[24] Ta Ann Tasmania Pty Ltd (2013). 'About Us – Ta Ann Tasmania Pty Ltd (TAT)'.

[25] Engineered wood products are composite or derivative wood products that are manufactured by binding solid wood, wood particles, fibres, strands and/or veneers together using adhesives. They include various wood-based panels, such as particle board, fibreboard (e.g. medium density fibreboard, mediumboard and softboard), veneer-based products (e.g. glued laminated timber and structural composite lumber), and plywood (where veneer sheets are bonded together with the grain of adjacent layers generally at right angles).

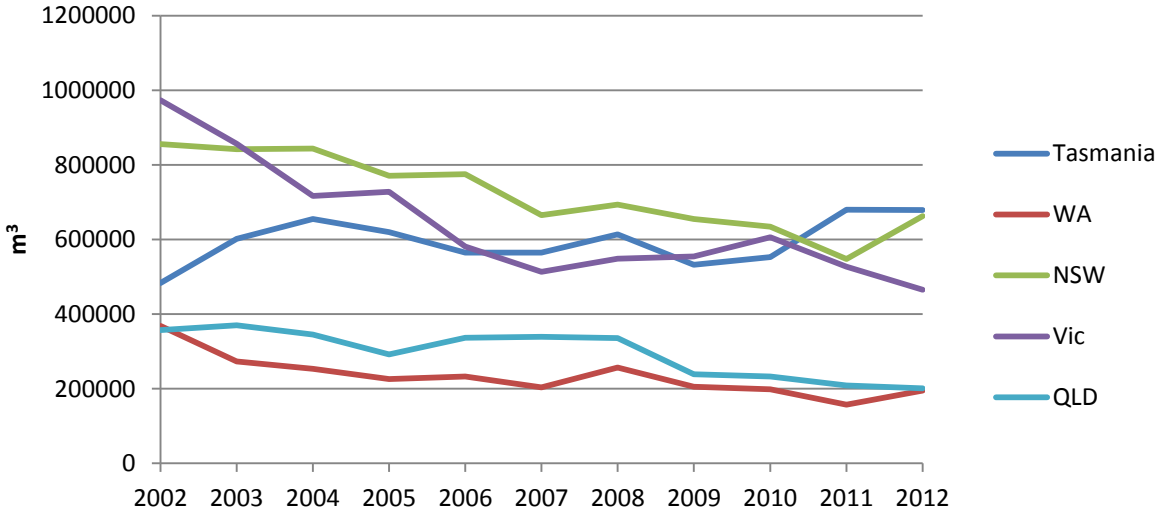
native forest production over the period 2008-2010. This is mainly a product of salvage operations following the 2007 and 2009 bushfires.

Figure 5 Pulplog removals from public native forests, by jurisdiction*, 2002-2012 (m^3)



Source: State Forests of NSW (2000-2003); Forests NSW (2004-2007); Forests NSW (2008-2012); Queensland Department of Agriculture, Fisheries and Forestry (2007-2012); Forestry Tasmania (2001-2008); Forestry Tasmania (2009-2012); Forestry Tasmania (2007-2008); VicForests (2006-2012); VicForests (2007-2012); Victorian Department of Sustainability and Environment (2005); Victorian Department of Sustainability and Environment (2009); Forest Products Commission Western Australia (2002-2012); ABARES (2012); Bureau of Rural Sciences (2003).
* Queensland does not produce significant quantities of pulplogs.

Figure 6 Saw and other non-pulplog removals from public native forests, by jurisdiction, 2002-2012 (m^3)*



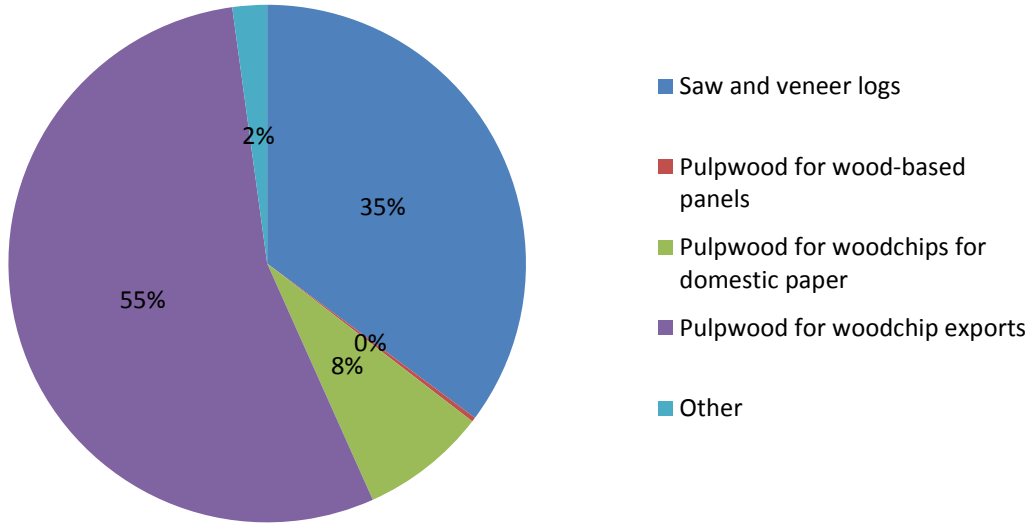
Source: State Forests of NSW (2000-2003); Forests NSW (2004-2007); Forests NSW (2008-2012); Queensland Department of Agriculture, Fisheries and Forestry (2012); Queensland Department of Environment and Resource Management (2007-2011); Forestry Tasmania (2002-2012); VicForests (2006-2012); VicForests (2007-2012); Victorian Department of Sustainability and Environment (2005); Victorian Department of Sustainability and Environment (2009); Forest Products Commission Western Australia (2002-2012); ABARES (2012); Bureau of Rural Sciences (2003).
* 'Saw and other non-pulp removals' are defined for these purposes as including high and low quality sawlogs, sliced veneer logs, peelers, poles, piles, posts and sleepers (i.e. all non-pulp logs with the exception of firewood).

Traditionally, the logs harvested in native forests have been directed toward two main markets:

- woodchips for export; and
- sawnwood for domestic structural uses (e.g. framing and structural uses in detached houses).

The extent of the reliance on woodchip exports is evident from Figure 7, which shows that, over the past decade, approximately 55 per cent of all roundwood removals from native forests were pulplogs destined for woodchip export markets. In addition, only 30 to 40 per cent of the volume of sawlogs is converted into sawnwood; the remainder becomes either woodchips (around 40 per cent) or waste (e.g. sawdust) (20 to 30 per cent).[26] A significant proportion of the woodchips produced from sawlogs are also usually exported.

Figure 7 Australian native broadleaved roundwood removals, by log type (%), 2002-2011



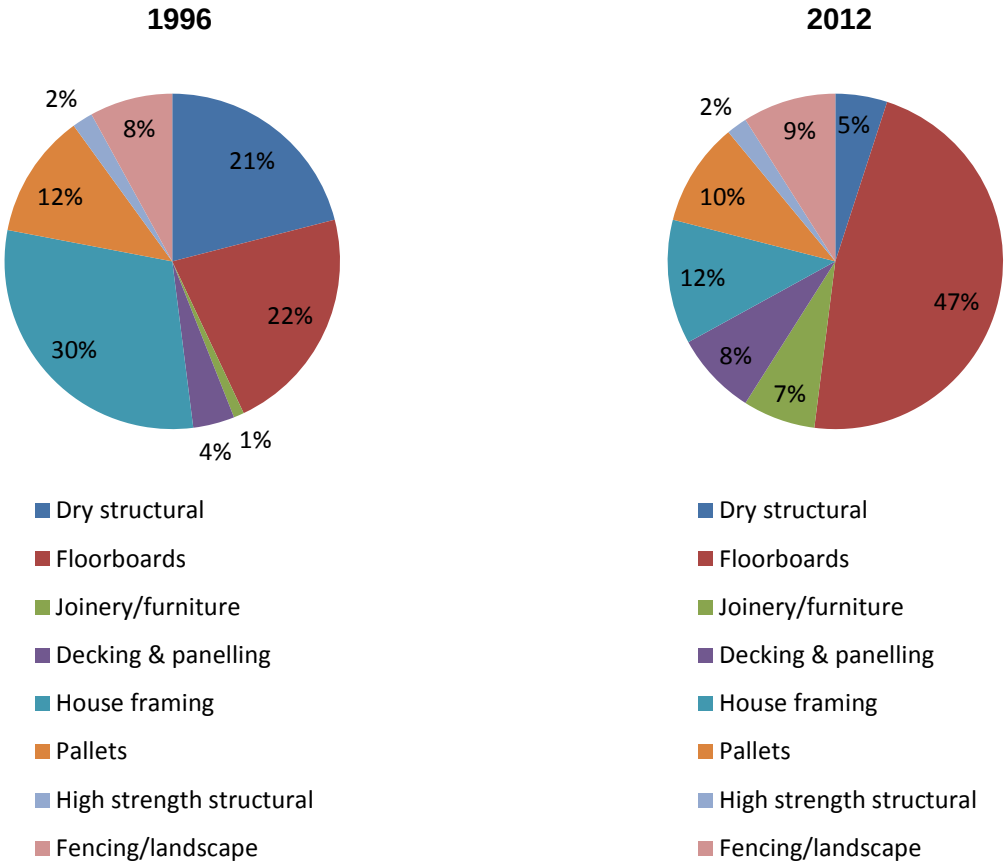
Source: ABARES (2012).

In the past, the sawnwood produced from native sawlogs has generally been used for structural purposes in detached housing construction. This has changed over the past 10-15 years, with an increasing proportion of sawlogs being directed toward appearance markets, particularly flooring, joinery, furniture, decking and panelling.[27] The extent of the shift is difficult to evaluate because of a lack of publicly available data on the use of native timber in appearance products. Where data have been released, the tendency has been to provide percentages based on an insufficiently documented volume and for native sawnwood to be aggregated with sawnwood sourced from plantations. This is the case with data published by Forests NSW (which is based on data from the URS Timber Market Survey) on the proportion of broadleaved sawlogs (native and plantation) that were used to make different end products in 1996 and 2012 (Figure 8). According to this, in 1996, 53 per cent of broadleaved logs in New South Wales were used to produce structural timber (dry and high strength) and framing. In 2012, only 19 per cent of sawlogs were used for these purposes.

[26] Jaakko Poyry Consulting (Asia-Pacific) Pty Ltd (1999). *Usage and Life Cycle of Wood Products*; Schirmer (2012).
[27] URS (2007). *Australia's forest industry in the year 2020*; Ximenes, F (2012). *Harvested forests provide the greatest ongoing greenhouse gas benefits*; Schirmer (2012).

Over the same period, the proportion of sawlogs used to produce floorboards, joinery, furniture, decking and panelling went from 27 per cent to 62 per cent.[28]

Figure 8 Product mix from NSW public broadleaved sawlogs (%), 1996-2012

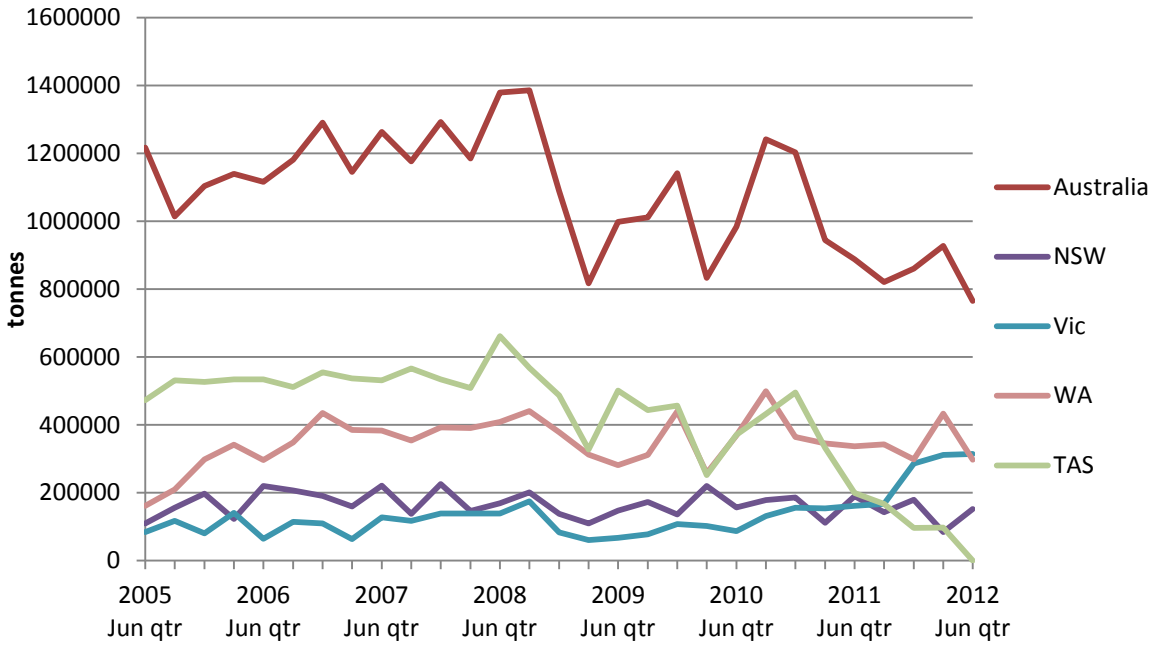


Source: Forests NSW (2012).

Both the native forest woodchip export and domestic structural timber markets have contracted significantly over recent years. The decline in woodchip exports is partially illustrated in Figure 9, which shows quarterly broadleaved (native and plantation) woodchip exports over the period 2005-2012. There was an abrupt drop in exports in the December quarter in 2008, which coincides with the onset of the global financial crisis. Since then, exports have remained below the pre-global financial crisis levels (the average over the period October 2008 to June 2012 was 20 per cent below the average from the period May 2005 to September 2008).

[28] Data reported by Burns, K et al (2009). *ABARE 2007 sawmill survey report*, suggest that most other jurisdictions produce a lower proportion of appearance and a higher proportion of structural products than New South Wales.

Figure 9 Australian broadleaved woodchip exports, by state of export, June 2005 to June 2012 (bone dry tonnes)

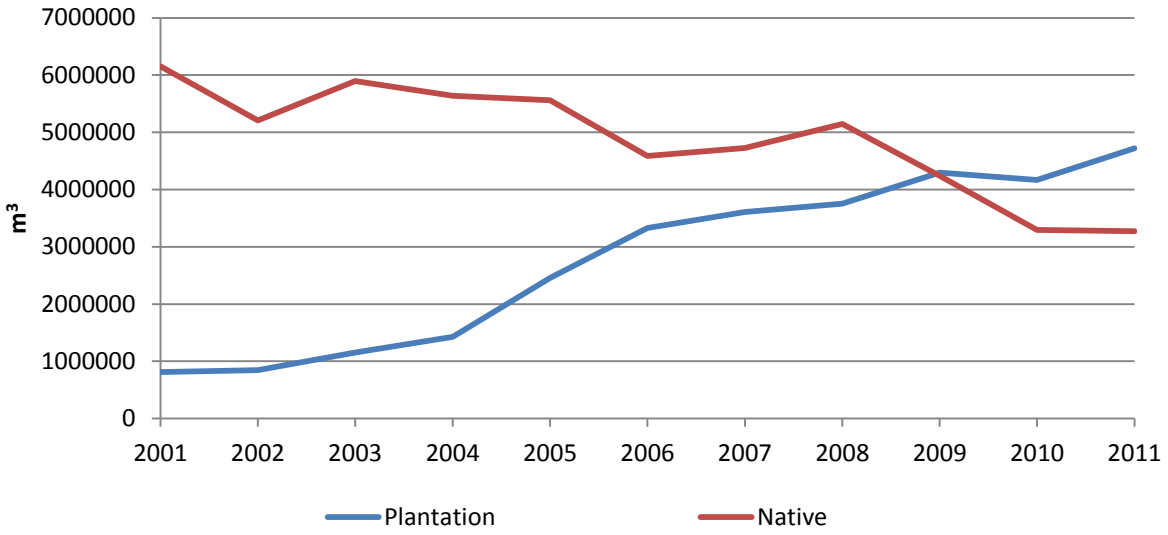


Source: ABARES (2012).

As Figure 9 shows, Tasmania has experienced the most severe downturn in broadleaved woodchip exports and this has had a profound impact on the national total. In the other relevant jurisdictions, the decline does not appear to have been overly severe, with most of the impact being confined to 2009 and early 2010. In Victoria, broadleaved chip exports have even bucked the national trend; in the first two quarters of 2012 they were more than double the levels seen in the lead up to the global financial crisis.

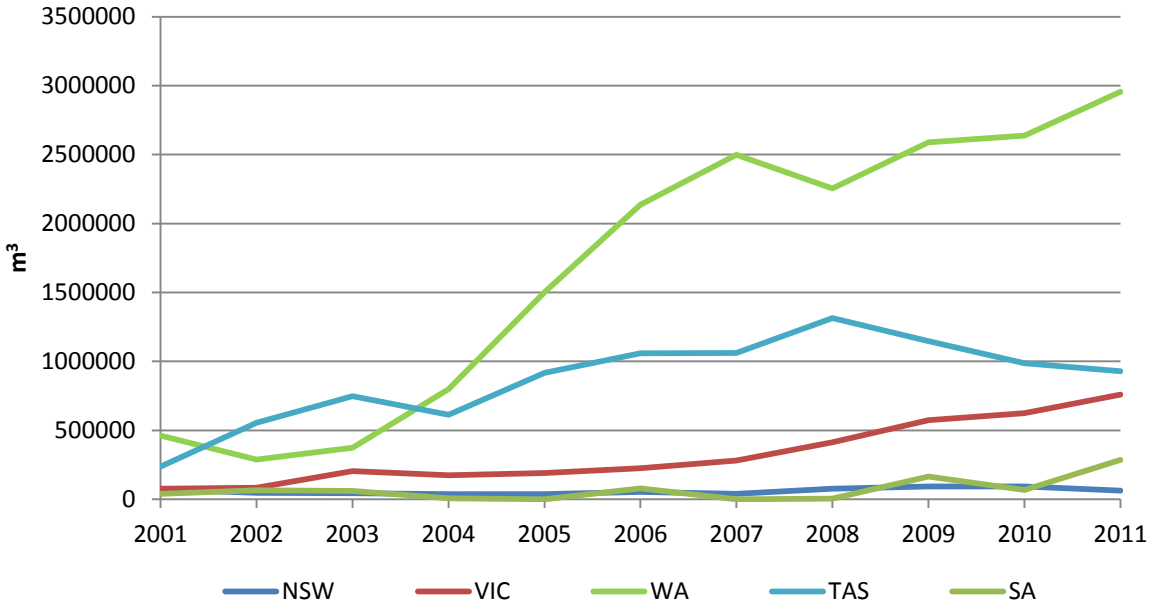
The primary explanation for the relative strength of broadleaved woodchip exports outside of Tasmania is that they have been driven by growth in the plantation sector. As native pulplog removals for woodchip exports have declined, production from plantations has increased (Figure 10). As Figure 11 shows, Victoria, Western Australia and South Australia have all experienced significant growth in broadleaved plantation pulplog production since the early 2000s.

Figure 10 Australian broadleaved native and plantation pulplogs for woodchip exports, 2001-2011 (m^3)



Source: ABARES (2012).

Figure 11 Australian broadleaved plantation pulplog production, by jurisdiction, 2001-2011 (m^3)



Source: ABARES (2012).

In Victoria and Western Australia, the trends in exports are attributable to the increase in plantation chips shipped out of Portland, Albany and Bunbury.[29] The opening of the South West Fibre woodchip mill at Myamyn in western Victoria in 2009, and the construction of the Gunns woodchip export facility at the Port of Portland in 2010 (which was subsequently sold to Australian Bluegum Plantations Pty Ltd in 2012), have been major contributors to the recent surge in Victorian broadleaved woodchip exports. The logs for both of these facilities

[29] The Port of Geelong is also a significant exporter of woodchips; however, data discrepancies prevented a detailed evaluation of recent trends.

are drawn from hardwood plantations in the Green Triangle region in Victoria and South Australia and their primary markets are pulp and paper mills in Japan and China.[30]

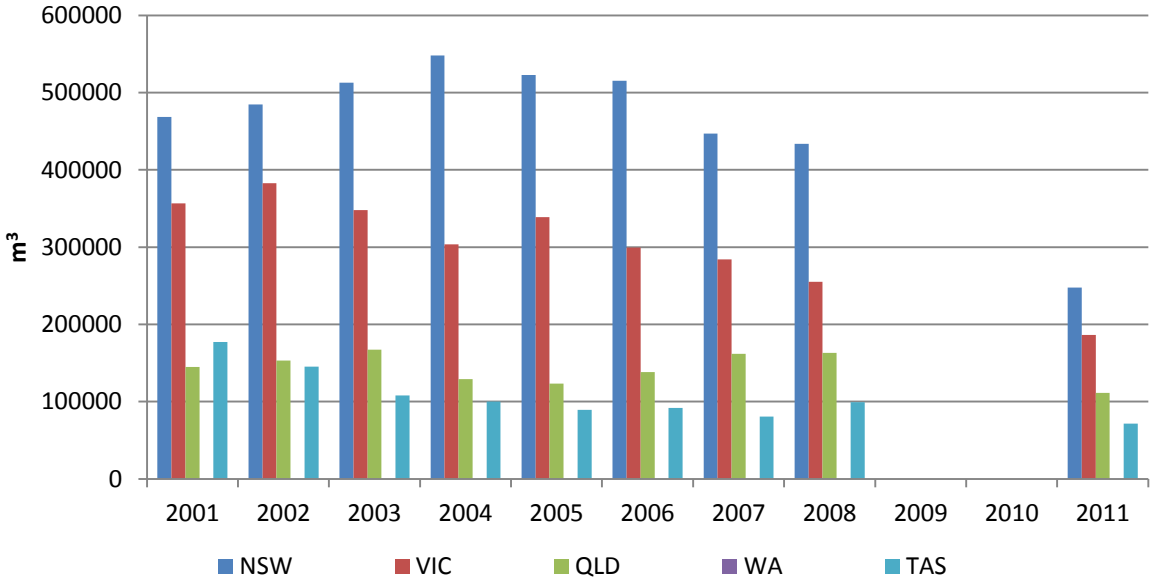
The commencement of woodchip exports from Albany in 2002, and final completion of the Albany Chip Terminal in 2006, saw woodchip exports from Western Australia rise sharply over the first half of the 2000s.[31] Since then, with the exception of the downturn in 2008-09, exports have remained relatively stable. Notably, as in Portland in Victoria, the chips exported from Albany are predominantly from plantations. Bunbury is the other main port that services the woodchip export trade in Western Australia, with exports being made by Bunbury Fibre Exports Ltd and WA Plantation Resources.[32] Bunbury Fibre Exports Ltd produces blue gum (*E. globulus*) woodchips from plantations in southwest Western Australia and its main market is Japan.[33] WA Plantation Resources has two major chip mills, the Bunbury Port Mill and the Diamond Mill, near Manjimup. The Bunbury Port Mill commenced operations in 2007 and processes blue gum chips from plantations. The Diamond Mill processes mostly native logs and residues.[34]

New South Wales is the other major exporter of broadleaved woodchips, most of which are from native pulplogs processed by the South East Fibre Exports Pty Ltd woodchip mill in Eden. The available statistics suggest there was a marked downturn in woodchip exports from New South Wales in 2008-09 but the levels recovered in 2010 and 2011 (Figure 9). Although the full year data are not yet available, native woodchip exports are likely to be down significantly again for 2012 as South East Fibre Exports Pty Ltd cut back production (and a third of its workforce) in the later part of the year.[35]

In addition to the trends in native woodchip exports, the native forest sector has also seen a fall in sawnwood markets. This is reflected in the trends in broadleaved sawnwood production. As shown in Figure 12, production in all relevant jurisdictions fell significantly between 2008 and 2011, with New South Wales (43 per cent) and Queensland (32 per cent) experiencing the largest percentage declines.

[30] Victorian Department of Primary Industries (2011). *Victoria's Timber Plantation Industry – 2011*. Victorian Department of Primary Industries (2012). *Victoria's Timber Plantation Industry – 2012*; Mitsui & Co. (Australia) Ltd (2013). 'Mitsui Bussan Woodchip Oceania'; Gunns Ltd (2011). *Annual Report 2011*.
[31] Albany Port Authority (2005-2012). *Annual Reports*.
[32] Bunbury Port Authority (2012). 'Woodchips'; Bunbury Port Authority (2011-2012). *Annual Reports*.
[33] Bunbury Fibre Exports (2013). 'Products and Services'; Mitsui & Co. (Australia) Ltd (2013).
[34] WA Plantation Resources (2012). *Wood Chipping*. (WA Plantation Resources, 2012).
[35] ABC News (2012). 'MPs say chip mill will remain open'.

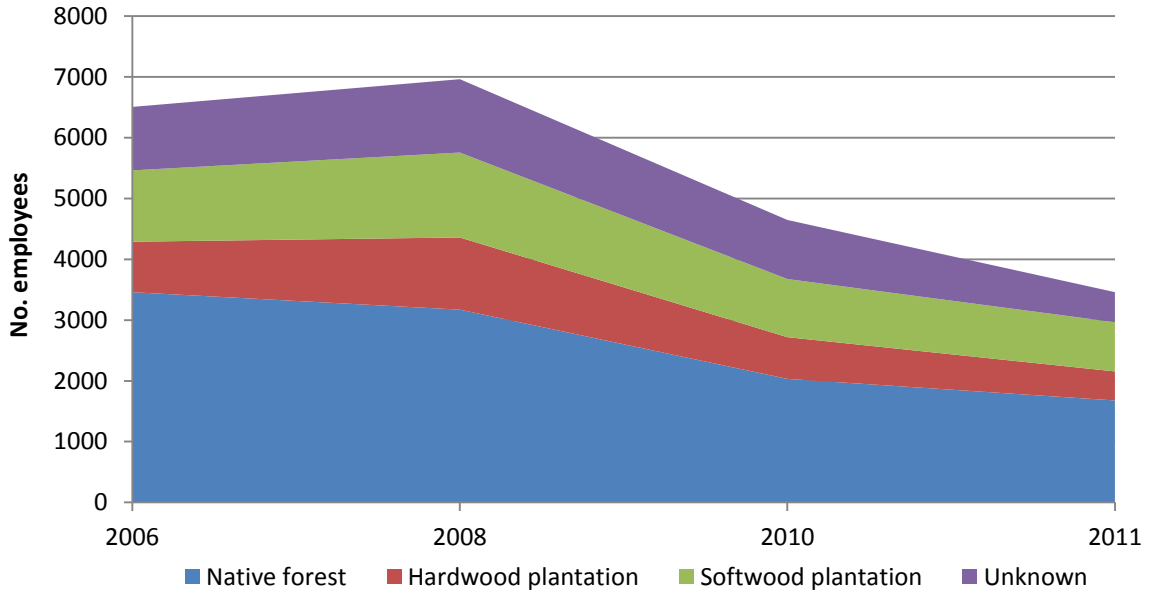
Figure 12 Broadleaved sawnwood production, by state, 2001-2011 (m^3)



Source: ABARES (2012).

The reductions in native log production and downstream processing have led to mill and business closures, and job losses. In Tasmania, the number of forestry businesses (native and plantation-based but excluding woodcraft-related businesses) fell from 510 in 2006 to 372 in 2011.[36] Similarly, employment in Tasmania's forestry industry (forest managers, processors, silviculture contractors, nurseries, harvest and haulage contractors, and other related service providers) over the period 2006–2011 fell from 6,508 to 3,460.[37] Almost 60 per cent (1,781) of the job losses over this period came from the native forest sector (Figure 13).

Figure 13 Employment in Tasmania's forestry industry, by sector, 2006-2011



Source: Schirmer, J et al (2011).

[36] Schirmer, J et al (2011).
[37] Schirmer, J et al (2011).

The causes of the decline of the Australian native forest sector

The most commonly cited causes of the contraction of the Australian native forest sector are:

- the increase in forest reserves and changes in forest management practices that have occurred since the mid-1990s;
- the global financial crisis; and
- a loss of competitiveness in trade-exposed markets due to the appreciation of the Australian dollar.[38]

The argument often advanced by the industry is that the conservation initiatives of the 1990s and 2000s triggered the initial decline in the sector; then the global financial crisis and high dollar caused the abrupt downturn seen after 2008. While these three factors have had a material impact on the industry, structural changes in domestic and global wood markets over the past two decades have also contributed to the state of the native forest sector.[39] Each of these factors is discussed below.

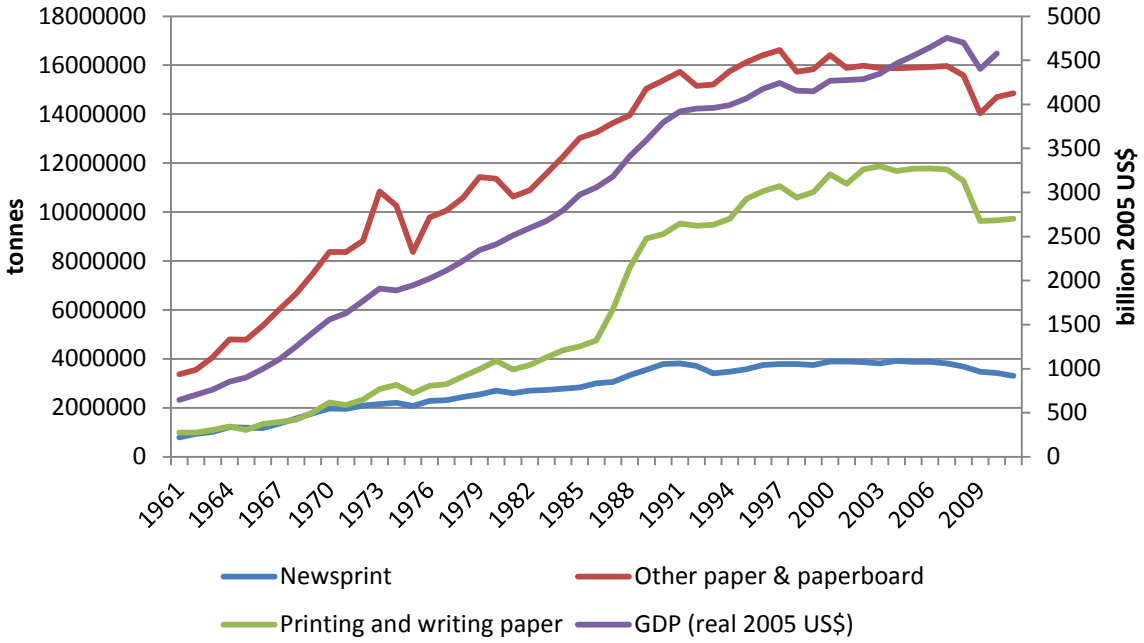
Global financial crisis and the appreciation of the dollar

The global financial crisis caused a dramatic downturn in global wood markets in 2009, with the traditionally dominant markets of Europe and North America experiencing some of the most acute effects.[40] Since then there has been a slight recovery but the ongoing economic instability and sluggish growth in many developed countries have continued to dampen demand and prices.

While the global financial crisis did not affect Australia as badly as most other developed nations, it caused a notable drop in demand in the native forest sector's main markets. For native woodchip exporters, the country of greatest relevance is Japan. Over the period 1988 to 2012, 88 per cent of Australian broadleaved woodchip exports went to Japan, where they are mainly used to make printing and writing paper (hardwood chips are generally used to make printing and writing paper, while softwood chips are used to make newsprint and packaging products).[41] Traditionally, most of the paper and paperboard products manufactured in Japan (more than 95 per cent), including printing and writing paper, have been destined for its domestic market.[42] The financial crisis resulted in real GDP in Japan falling by approximately 6 per cent in 2009 (Figure 12).[43] This triggered a sharp drop in apparent paper and paperboard consumption — it fell by 3 per cent in 2008 and by a further 11 per cent in 2009 (Figure 14).[44]

[38] ABARE (2010); Schirmer, J et al (2011); Schirmer, J (2012); Low, K et al (2011) *Australia's role in Asia-Pacific forestry*; Clancy, J and Jeyasingham, J (2012). *Risk analysis of the Australian timber industry*.
[39] Low, K et al (2011); ABARE (2010).
[40] UNECE and FAO (2010-2012). *Forest Products Annual Market Reviews*; FAO (2012). *FAO Yearbook of Forest Products*.
[41] Hardwood chips can also be blended with softwood chips to make newsprint and other paper and paperboard products. See ABARES (2012); Nelson, R (2003). *Australian woodchip exports: future commercial benefits of plantation hardwood chip production*; URS (2007).
[42] URS (2007); FAO (2013), *FAOSTAT: ForesSTAT*.
[43] OECD (2013). *Economic Outlook No.92*; IEA (2013). *CO_2 Emissions from Fuel Combustion Statistics*.
[44] Apparent consumption is calculated throughout the report as production plus imports less exports.

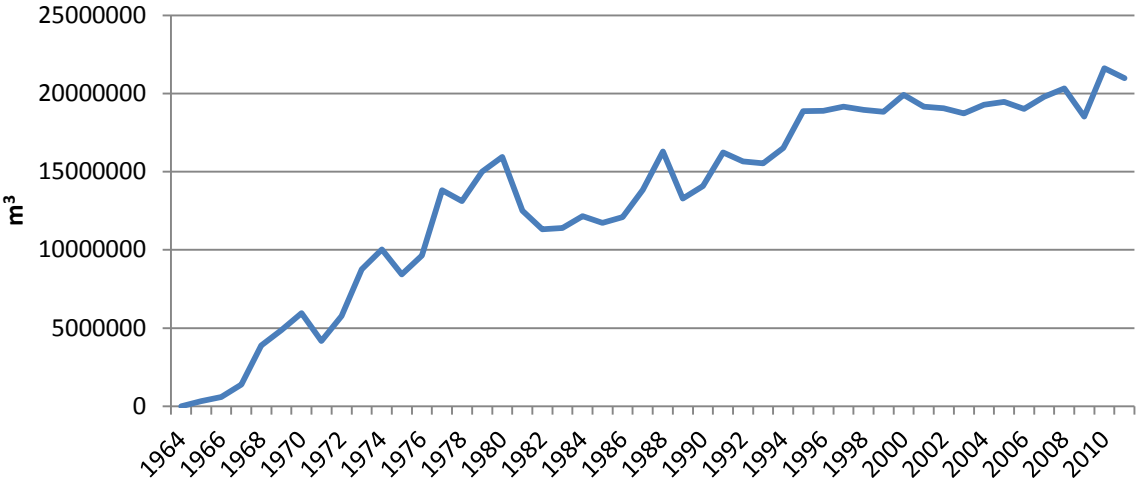
Figure 14 Japanese apparent paper and paperboard consumption (tonnes), and real GDP (billion 2005 US$), 1961-2011



Source: FAO (2013); IEA (2013).

The drop in the consumption of paper and paperboard flowed through into production and woodchip imports. As Figure 15 shows, Japanese chip and particle imports fell by 9 per cent in 2009, although they rebounded sharply in 2010.

Figure 15 Japanese chip and particle imports, 1961-2011 (m^3)



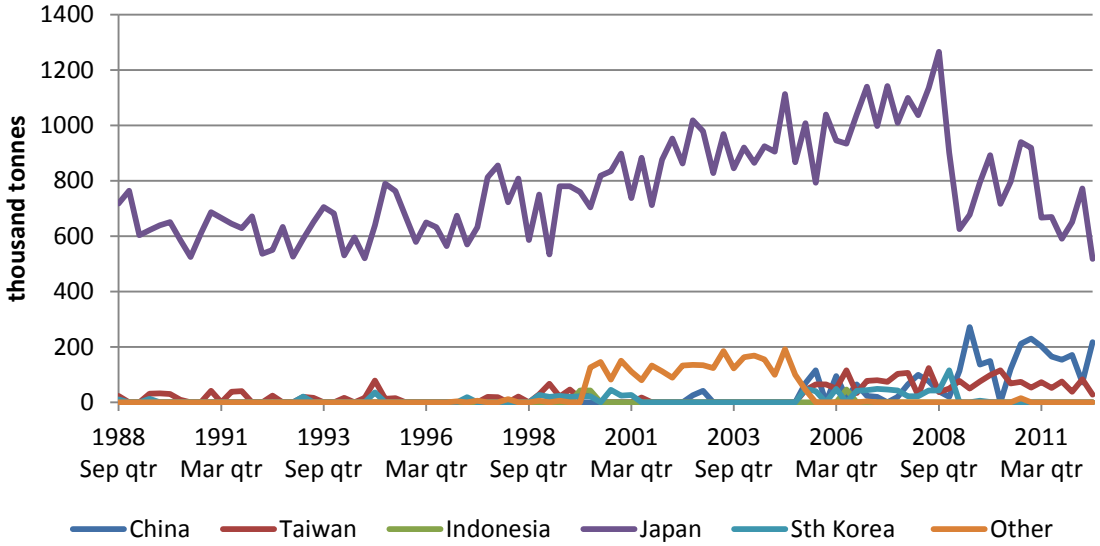
Source: FAO (2013).

The extent of the native forest sector's reliance on woodchip exports to Japan has left it exposed to any fluctuations in the fortunes of the Japanese pulp and paper industry. The global financial crisis highlighted this, as woodchip exports to Japan decreased substantially in 2009 (by 19 per cent).[45] However, as Figure 16 shows, Australian broadleaved chip exports to Japan have continued to trend downward since the onset of the global financial crisis, with some of this decline being offset by an increase in exports to China. A

[45] ABARES (2012).

contributing factor to the ongoing decline in Japanese woodchip exports was the 2011 Tōhoku earthquake and tsunami. Among other things, the disaster hindered the Japanese economic recovery and caused the temporary closure of a number of pulp and paper facilities, including three of Nippon Paper's mills; Iwanuma, Nakoso and Ishinomaki (the Nippon Paper Group is Japan's largest paper products manufacturer and also owns Paper Australia Pty Ltd, which trades as Australian Paper and owns the Maryvale and Shoalhaven Pulp and Paper Mills).[46]

Figure 16 Australian broadleaved woodchip exports, by country of import, 1988-2012 (bone dry tonnes)



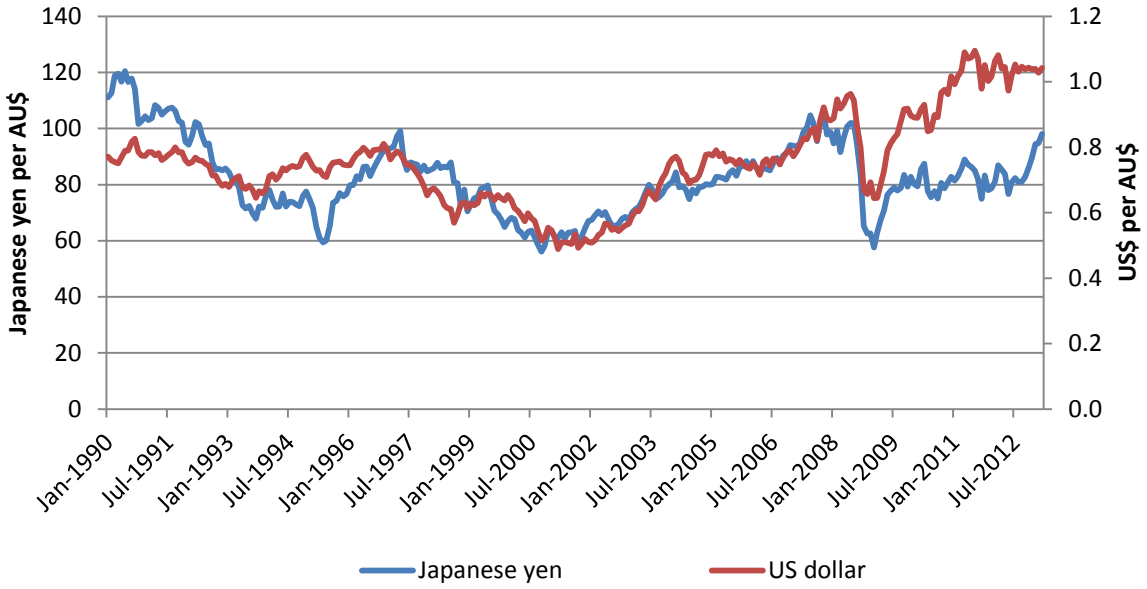
Source: FAO (2013).

A further challenge for native woodchip exporters has been the appreciation of the Australian dollar. As shown in Figure 17, the value of the Australian dollar increased against the Japanese yen through the early- to mid-2000s, dropped sharply with the onset of the global financial crisis, and then stabilised at around 80 yen per Australian dollar until late 2012. Since then, the value of the yen has fallen sharply and, at the time of writing, the Australian dollar was trading at above 100 yen for the first time since the early 1990s. The recent fall in the value of the yen has been brought on by structural changes in the Japanese economy and the announcement, in April 2013, that the Bank of Japan would double money supply in an attempt to spur inflation and growth. The appreciation of the Australian dollar against the yen is likely to exacerbate the difficulties facing the native forest sector but these impacts have not yet flowed through into the production statistics. The only exchange rate issue that has had a material impact to date has been the appreciation of the Australian dollar against the US dollar. This has eroded the competitiveness of Australian woodchip exporters because many of their international competitors supply in US dollars.

The majority of native saw and veneer products are processed and sold domestically. This has partially shielded this aspect of the native forest sector from international events. However, the appreciation of the Australian dollar has made imported structural and appearance products cheaper for domestic consumers, particularly wood-based panels. Further, Australia has not been immune from the impacts of the global financial crisis. The economic slowdown in Australia in 2009 affected housing construction, which resulted in lower demand for structural timber products (Figure 18). This partly explains the trends in broadleaved sawnwood production shown in Figure 12.

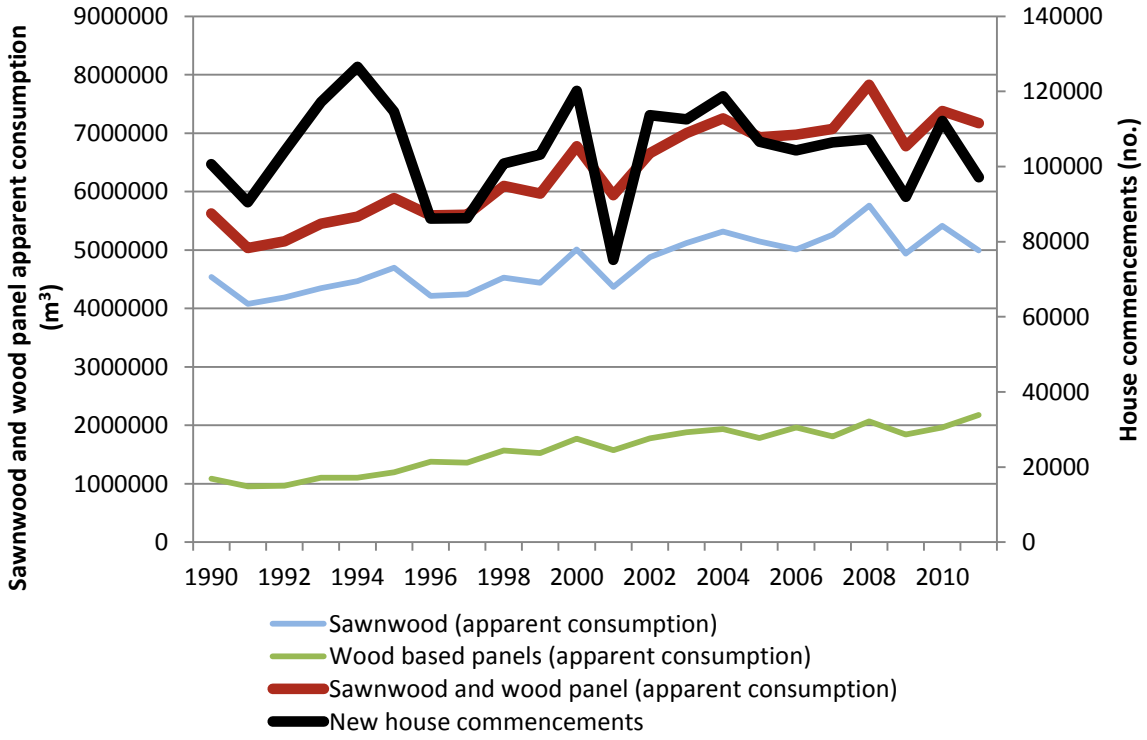
[46] Nippon Paper Group (2012). *Annual Report 2012 — 2012: Renewing our path toward the future*.

Figure 17 Exchange rates, US dollar and Japanese yen per AU$, January 1990 to March 2013



Source: Reserve Bank of Australia (2013). *Exchange rate data: monthly data*.

Figure 18 Australian sawnwood and wood-based panel apparent consumption (m^3), and house commencements, 1990-2011



Source: FAO (2013); ABS (2013). *8752.0 – Building Activity, Australia*.

While there is no doubt that the global financial crisis and appreciation of the Australian dollar have affected the native forest sector, and especially native woodchip exports, the argument that they have been primary drivers of the contraction is contradicted by the trends in the plantation sector. As Figures 10 and 11 show, with the exception of a slight decline in 2010,

broadleaved plantation woodchip production and exports have grown continually since the late 1990s. This increase has been fuelled by the tax incentives provided in accordance with the *Plantations for Australia: The 2020 Vision*. However, if the state of the native forest sector was due mainly to the financial crisis and currency appreciation, log production and woodchip exports from plantations should have experienced a similar decline. This has not occurred. As noted, since the mid- to late-2000s, there has been a rationalisation in the MIS sector and a slowdown in the rate of plantation expansion. There is also the real prospect that a significant proportion of the hardwood plantations established since the early 1990s will be converted to other land uses (mainly agriculture) after one or two rotations. Despite this, broadleaved plantation pulplog production has continued to increase and is likely to continue to do so over the next 10 to 15 years.[47] Other factors have affected the native forest sector, one of which is the increase in forest reserves and changes in forest management practices.

Increase in reserves and changes in forest management practices

Since the mid-1990s, there have been a number of policy processes that have led to additions to the national reserve system and changes to forest management practices. The main aims of these changes have been to protect high conservation forests and reduce the environmental impacts of forestry operations. In many cases, the changes in management practices and related regulatory measures have reduced the forest areas available for harvest and/or directly reduced removals.

The RFAs brought the most significant changes to the public native forest estate. As discussed, they resulted in the creation of almost 3 Mha of new reserves. However, other state-based policy processes both before and after the RFAs have resulted in important management changes and additions to the reserve system. For example, soon after taking office in March 1995, the Carr Labor Government in New South Wales created a series of new national parks and cut hardwood sawlog quotas by 30 per cent, a measure that took effect in July 1996.[48] Through the RFAs and related state processes over the period 1996-1998, 1.6 Mha of public native forest was transferred to reserves.[49] In later years, further additions were made to the reserve system, including 61,000 ha on the north coast and 347,000 ha in the Western Region, the latter of which led to a 14,260 m^3 yr^{-1} reduction in cypress sawlog commitments.[50]

In Queensland, no RFA was ever concluded. The role of the RFA was effectively played by the South East Queensland Forests Agreement (SEQFA), which was signed by the Queensland Beattie Labor Government and the other parties (the Australian Rainforest Conservation Society, the Queensland Conservation Council, The Wilderness Society and the Queensland Timber Board) in 1999. The main terms of the SEQFA were that:

- 425,000 ha of public native forests in south-east Queensland would be transferred to reserves;
- the remaining public native forests in the region would be progressively transferred over the period 1999-2025 to reserves after one further harvest;

[47] Gavran, M et al (2012). *Australia's plantation log supply 2010-2054*.
[48] Smith, S (1999). *Forests in NSW: An Update*; URS (2007).
[49] The RFA process in New South Wales was highly controversial. Disputes between the Commonwealth and New South Wales Government resulted in the latter announcing separate forestry agreements in 1998. Ultimately, three RFAs were signed between the Commonwealth and New South Wales relating to Eden (in August 1999), the North East (in March 2000) and the Southern Region (in April 2001). See Smith (1999); Bureau of Rural Sciences (2003); URS (2007).
[50] State Forests of NSW (2000-2003); Forests NSW (2004-2007); Forests NSW (2008-2012).

- there would be no clearfelling of native forests, no woodchip export industry and no harvesting of non-sawlog material and residues (other than for products already produced);
- the industry would receive 25 year wood supply agreements; and
- the state government would implement a strategy to develop hardwood plantations to enable the industry to transition out of native forests.[51]

The success of the SEQFA led to the creation of the Statewide Forests Process in 2000, with the aim of resolving management issues concerning public native forests outside of south-east Queensland. The process had five elements: (a) the Western Hardwoods Process in the Brigalow Belt; (b) the Cypress Process (covering the cypress forests in southern and central Queensland); (c) Rockhampton; (d) Mackay-Proserpine; and (e) North Queensland ecotone forests. Through the process, the Beattie and Bligh governments developed a plan to gradually transition hardwood production away from native forests and to transfer a significant proportion of remaining public native forests to reserves over several decades. In preparation for the implementation of the plan, a number of hardwood mills and allocations in the Western Hardwoods region were acquired by the state government in the mid- to late-2000s and approximately 1.25 million ha was identified for future transfers to reserves. However, the plan's finalisation was interrupted by the 2012 state election. At the time of writing, the status of the Statewide Forests Process and SEQFA was uncertain following the decision of the new Newman Liberal-National government in January 2013 to open up areas that had previously been excluded, or earmarked for exclusion, for commercial harvesting. This included the 'Part A areas' from the SEQFA, the 1.25 million ha of proposed reserves in the Western Hardwoods and Cypress Regions and 'the remaining State forests areas in central Queensland, the Mackay-Proserpine area and the north Queensland ecotone forests'.[52]

The Tasmanian RFA was first signed in 1997 and it led to the creation of an additional 442,000 ha of reserves.[53] As in the other RFA jurisdictions, the agreement did not end the debate about the management of native forests or lead to the promised stability in policy settings. Reflecting this, a number of changes have been made to the Tasmanian RFA since 1997, the most notable being as a result of the Tasmanian Community Forest Agreement in 2005. Among other things, the Tasmanian Community Forest Agreement provided additional protection for 135,450 ha of public native forest and included commitments to phase out the conversion of native forest to plantations by 2010 and to reduce clear-felling of old-growth forests.[54]

Victoria had a similar experience to New South Wales. Five RFAs were signed in Victoria over the period February 1997 to March 2000, leading to the creation of 760,000 to 900,000 ha of new reserves. In 2002, the Bracks Labor Government launched its 'Our Forests, Our Future' policy, which made changes to timber licensing and forest management practices, including a 31 per cent reduction in sustainable sawlog targets across the state.[55] Further

[51] Beattie, P et al (1999). *South East Queensland Forests Agreement*.
[52] Noye, J (2013). *Letter to Dr John Glaister dated 16 January 2013*.
[53] Bureau of Rural Sciences (2003); URS (2007).
[54] Australian Government and Tasmanian Government (2005). *The Tasmanian Community Forest Agreement – Overview of the Tasmanian Community Forest Agreement*; Australian Government and Tasmanian Government (2005). *Supplementary Tasmanian Regional Forest Agreement*.
[55] Bracks, S and Garbutt, S (2002). *Victorian Government Policy Statement on Forests — Our Forests, Our Future*.

adjustments in the allowable sawlog harvest have since been made to account for the impacts of the 2003, 2007 and 2009 bushfires.[56]

In Western Australia, the RFA (signed in 1999) was to reduce the sustainable yield targets for first and second grade sawlogs from 482,000 m^3 yr^{-1} to 286,000 m^3 yr^{-1} for jarrah and from 203,000 m^3 yr^{-1} to 178,000 m^3 yr^{-1} for karri over the period 1999 to 2004. In the lead up to the 2001 state election, the Liberal-National Coalition government led by Richard Court helped persuade the state's major native forest woodchipping company, Wesfarmers (Bunnings), to accelerate a transition to plantation pulplogs.[57] The Gallop Labor Government then took power at the 2001 election and moved quickly to implement its 'Protecting Our Old-growth Forests' policy, which ended harvesting in old-growth forests and created additional reserves. To reflect the impacts of the policy change and new management practices, the first and second grade sawlog sustainable yield targets for jarrah and karri for the period 2004-2013 were subsequently reduced to 131,000 m^3 yr^{-1} and 54,000 m^3 yr^{-1} respectively.[58]

Through the RFAs and the various state processes, approximately 4.8 Mha of native forest were added to national reserve system between 1997 and 2007. Roughly 80 per cent of this came from public native forests (Table 1). The combined impact of the increase in reserves and changes in forest management practices has been to reduce the sustainable yield from public native forests. However, the extent to which the contraction of the sector over the past decade can be attributed to these policy changes is unclear.

Table 1 Public native forests available for timber harvest (multiple use forests) and public native forests included in nature reserves, by jurisdiction, 1997-2012 ('000 hectares)

Public native forests available for timber harvest (multiple use forests)									
	ACT	**NSW**	**NT**	**Qld**	**SA**	**Tas**	**Vic**	**WA**	**Aust.**
1997	5	3095	0	3983	27	1285	3346	1612	13351
2003	0	2496	0	2925	5	1062	3312	1600	11400
2007	0	1980	0	1991	0	1026	3163	1248	9410
2012	0	1763	0	nd	0	1025	3163	1205	9146*
Public native forests included in nature reserves									
	ACT	**NSW**	**NT**	**Qld**	**SA**	**Tas**	**Vic**	**WA**	**Aust.**
1997	93	3060	2709	2870	1252	523	2710	4364	17580
2003	106	4471	12	5000	3943	1105	3050	3805	21492
2007	108	5148	16	4576	4029	1121	3505	3868	22371
2012**	nd	nd	nd	nd	nd	nd	nd	Nd	nd

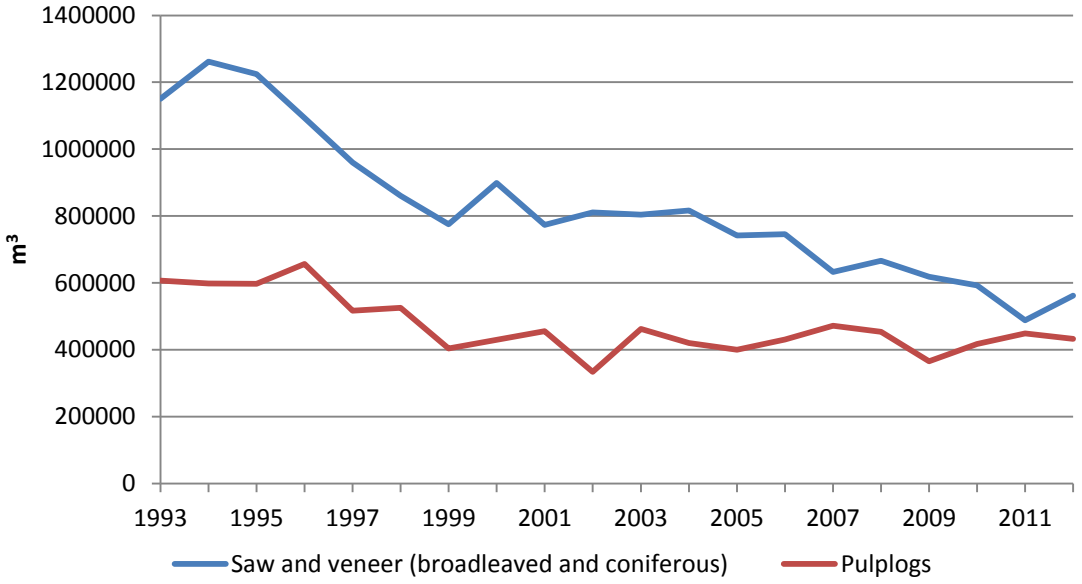
* Estimate derived on basis that Queensland public native forests are unchanged from 2007.
** nd = no data available.
Source: ABARES (2012); Bureau of Rural Sciences (2003); Montreal Process Implementation Group for Australia (2008). *Australia's State of the Forests Report: Five-yearly report 2008*. Forests NSW (2008-2012); Queensland Department of Agriculture, Fisheries and Forestry (2007-2012); Forestry Tasmania (2008-2012); VicForests (2008-2012); Conservation Commission of Western Australia (2012). *Draft forest management plan 2014-2023*.

[56] VicForests (2006-2012); VicForests (2007-2012); Victorian Department of Sustainability and Environment (2005); Victorian Department of Sustainability and Environment (2009).
[57] Ajani, J (2007). *The Forest Wars*.
[58] The annual gross bole volume targets were also reduced. Australian Labor Party (2001). *Protecting Our Old-growth Forests*; Western Australian Department of Conservation and Land Management (1994). *Forest Management Plan 1994-2003*; Conservation Commission of Western Australia (2004). *Forest Management Plan 2004-2013*; Forest Products Commission Western Australia (2002-2012).

A significant proportion of the areas transferred from the public native forest estate to reserves were not harvestable, or unlikely to be harvested, due to nature of the forest types, terrain or proximity to roads and mills. Further, as noted, over the period 1997 to 2001 when the RFAs were first introduced, there was an increase in removals, after which production fell to levels slightly below those in the 1990s until the onset of the global financial crisis. The net result across all jurisdictions was that average native forest removals (broadleaved and cypress) were 10.2 million m^3 in the 1990s, compared to 9.9 million m^3 over the period 2001–2008 — a reduction of only 3 per cent (Figure 1).

These aggregated numbers on removals mask variability within jurisdictions and between log and forest types. In New South Wales, the reduction in sawlog quotas and associated policy changes that started in 1995 appear to have been a significant driver of a notable drop in both sawlog and pulplog production from public native forests over the latter half of the 1990s (Figure 19). The effect of the policy changes on removals in the 2000s is less clear; pulplog production has remained stable, while sawlog removals have continued to decline. The effect has been to make the sector more dependent on pulplogs and woodchips.

Figure 19 New South Wales public native forests sawlog (hardwood saw and veneer plus cypress sawlog) and pulplog production, 1993-2012 (m^3)



Source: State Forests of NSW (2000-2003); Forests NSW (2004-2007); Forests NSW (2008-2012); Bureau of Rural Sciences (2003).

The primary drivers of the continuing decline in sawlog production in New South Wales public native forests in the 2000s appear to have been a lack of demand and increasing harvest and haulage costs. The slowdown in demand is evident from the fact that, while there has been some variability between regions, sawlog production across the state has consistently been below the sustainable yield and committed levels under supply contracts since the late 1990s.[59] In its 2006 social, environmental and economic report, Forests NSW clarified that a lack of demand was a major driver of this trend, commenting that, 'the harvesting of major products remained well within allowable limits mainly due to the slowdown in the housing and construction markets'.[60] Similarly, in the New South Wales

[59] State Forests of NSW (2000-2003); Forests NSW (2004-2007); Forests NSW (2008-2012).
[60] Forests NSW (2006).

Auditor-General inquiry in 2009, the agency attributed the under-harvesting to 'production lags and downturns in the industry, rather than insufficient timber resources'.[61]

The other main contributing factor to the downward trend in sawlog production appears to have been increasing harvest and haulage costs that are at least partly due to the agency's management of the public native forest estate. Over the past two decades, Forests NSW has concentrated its harvesting operations in the most productive and accessible forests. As supplies in these areas have been exhausted, the agency is increasingly being forced to seek sawlogs in areas that are harder, and more costly, to access, and that have less reliable yields. This is putting financial pressure on its activities and creating regional supply problems. Consistent with this, in 2009, the NSW Auditor General found:

> Over the last five years, harvest and haulage prices for all north coast products increased 45 and 36 per cent respectively. Central Region advised that harvesting is becoming more difficult as they are moving into more remote areas with lower yield per hectare and steeper terrain. … Regional staff believe that the last five years of wood supply agreements for the north coast (i.e. 2018-2023) will be the most difficult, with Forests NSW increasingly accessing timber further away from sawmills.[62]

Similarly, in its yield forecast for the South Coast sub-region, Forests NSW acknowledges that:

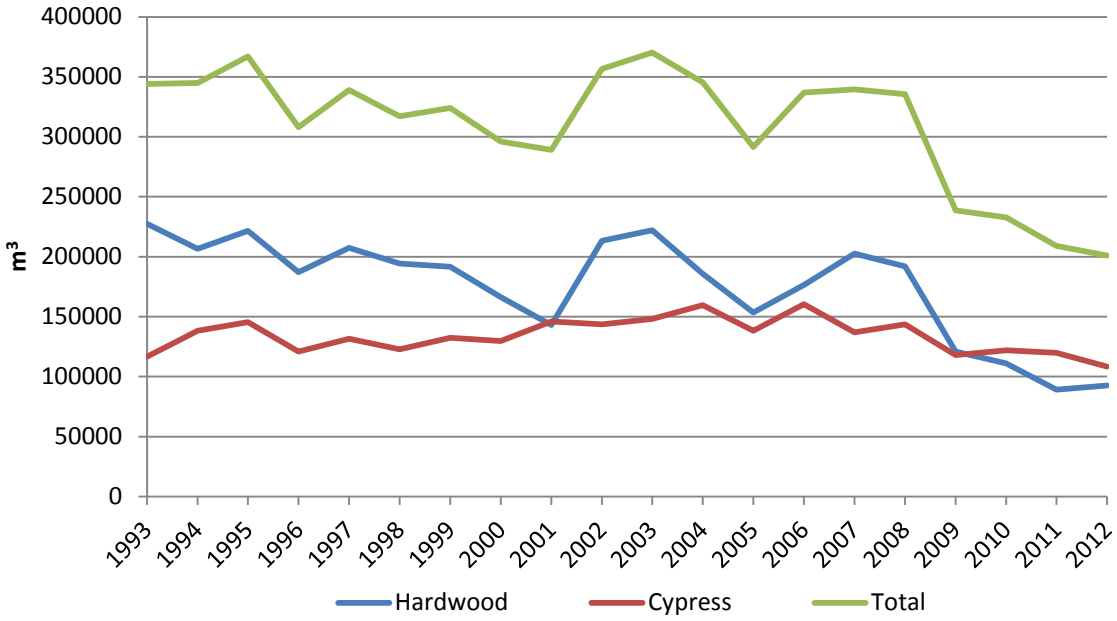
> As approximately 18 per cent of HQL [high quality large sawlog] volume is currently located in difficult to access terrain, the economics of recovering volume in remote areas and on difficult terrain will be a significant challenge for future harvesting operations.[63]

There have also been instances where Forests NSW has been unable to meet contractual log supply commitments, which has led to the provision of compensation and buyback of wood supply allocations.[64]

In Queensland, the SEQFA and Statewide Forests Process have not yet had a substantial impact on the net output from the native forest sector. As Figure 20 shows, over the period 1993 to 2008, log production from public native forests in Queensland remained relatively stable. There was a gradual decline in hardwood production through the 1990s, which was partly offset by a small increase in cypress production. In the early- to mid-2000s, there was considerable volatility in hardwood sawlog production, much of which appears to be attributable to market factors, particularly housing construction. Since 2008, there has been a sharp downturn, particularly in hardwood production. These trends suggest that the conservation measures and agreements have not had a major impact on production to date. Had the Newman government adhered to the terms of the SEQFA and implemented the plans devised under the State Forests Process, there would have been a notable decline in native forest production. However, it now appears that these processes have effectively been terminated.

[61] New South Wales Auditor-General (2009). *Sustaining Native Forest Operations: Forests NSW*, p 28.
[62] New South Wales Auditor-General (2009). *Sustaining Native Forest Operations: Forests NSW*, p. 37.
[63] Forests NSW (2011). *Yield Forecasts — Southern Regional Forest Agreement, South Coast sub-region*.
[64] New South Wales Auditor-General (2009). *Sustaining Native Forest Operations: Forests NSW*.

Figure 20 Queensland public native forest hardwood (broadleaved) and cypress (coniferous) sawlog production, 1993-2012 (m^3)

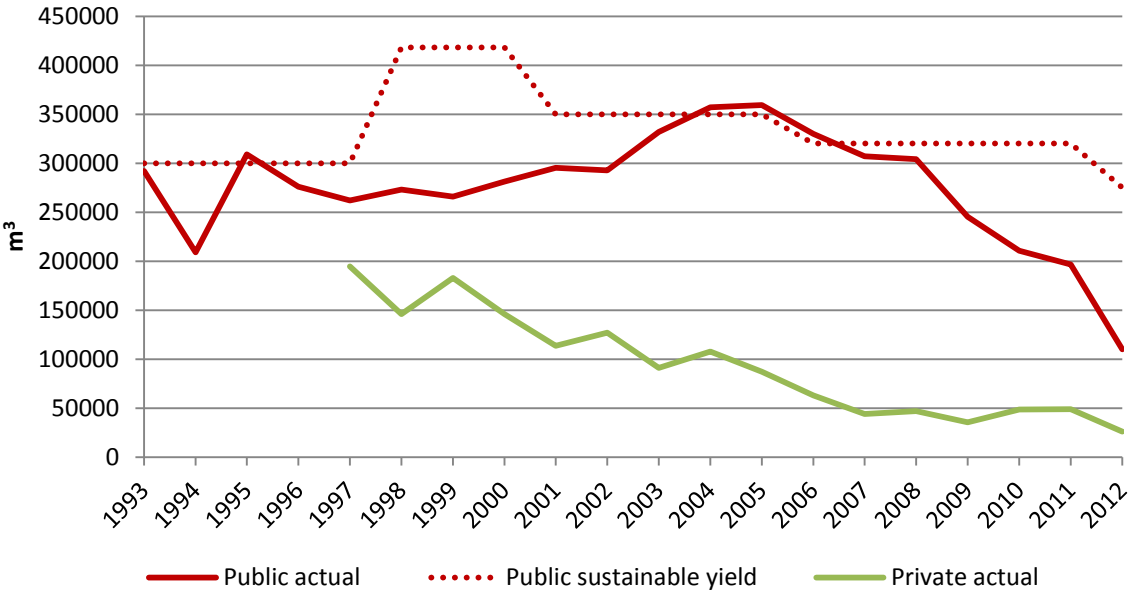


Source: Queensland Department of Agriculture, Fisheries and Forestry (2012); Queensland Department of Environment and Resource Management (2007-2011); Queensland Department of Environment and Resource Management (2011); Bureau of Rural Sciences (2003).

The national trends in roundwood removals over the late 1990s and early 2000s were, to a large extent, a product of those in Tasmania, which in 2000 accounted for approximately 46 per cent of removals from Australia's native forests.[65] Here, the introduction of the RFAs initially led to an increase in both sawlog and pulplog production from public native forests. High quality sawlog (Category 1 and 3) and sliced veneer production rose from 262,000 m^3 in 1997 to almost 360,000 m^3 in 2005, before heading into decline (Figure 21).

[65] ABARES (2012).

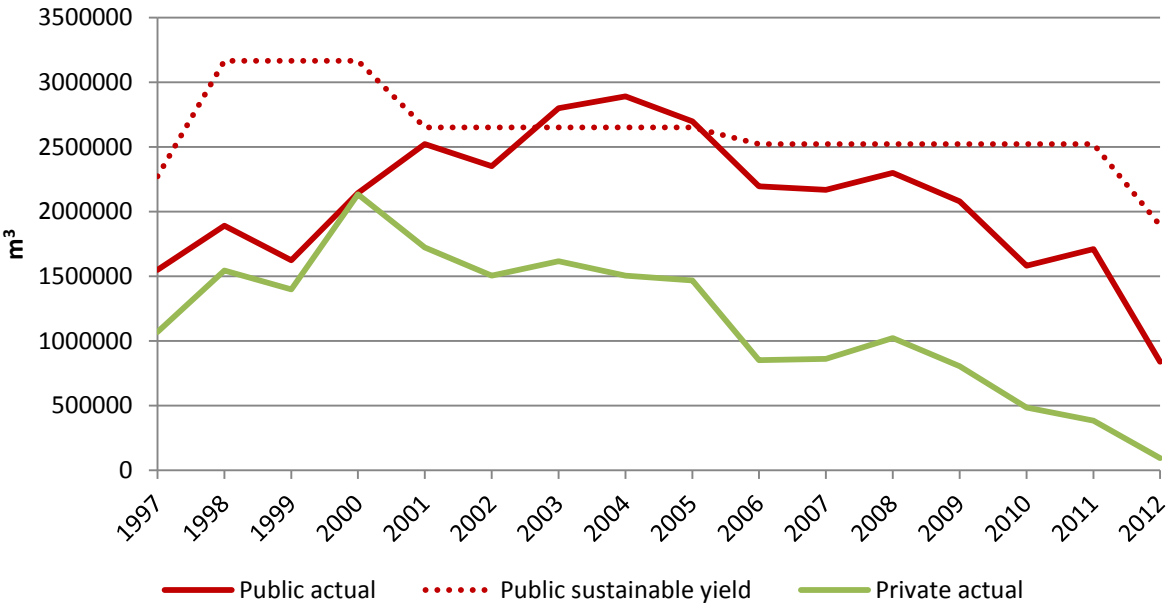
Figure 21 Tasmania public and private native forests high quality (Category 1 and 3) and sliced veneer log production, 1993-2012 (m^3)



Source: Forestry Tasmania (2001–2008); Forestry Tasmania (2009–2012); Forestry Tasmania (2007–2008); Private Forests Tasmania (2001–2012); Bureau of Rural Sciences (2003).

Pulplog production (here defined as Category 2 and 8 sawlogs, peeler logs and pulplogs) from public native forests followed a similar trajectory to high quality sawlogs. Production went from 1.55 million m^3 in 1997 to a high of 2.89 million m^3 in 2004. Since then, it has trended downward and, in 2012, was only 840,000 m^3 (Figure 22).

Figure 22 Tasmania public and private native forests pulplog production, 1993-2012 (m^3)



Source: Forestry Tasmania (2001–2008); Forestry Tasmania (2009–2012); Forestry Tasmania (2007–2008); Private Forests Tasmania (2001–2012); Bureau of Rural Sciences (2003).
* Pulplogs are defined for these purposes as low quality (Category 2 and 8) sawlogs, peeler logs and pulplogs.

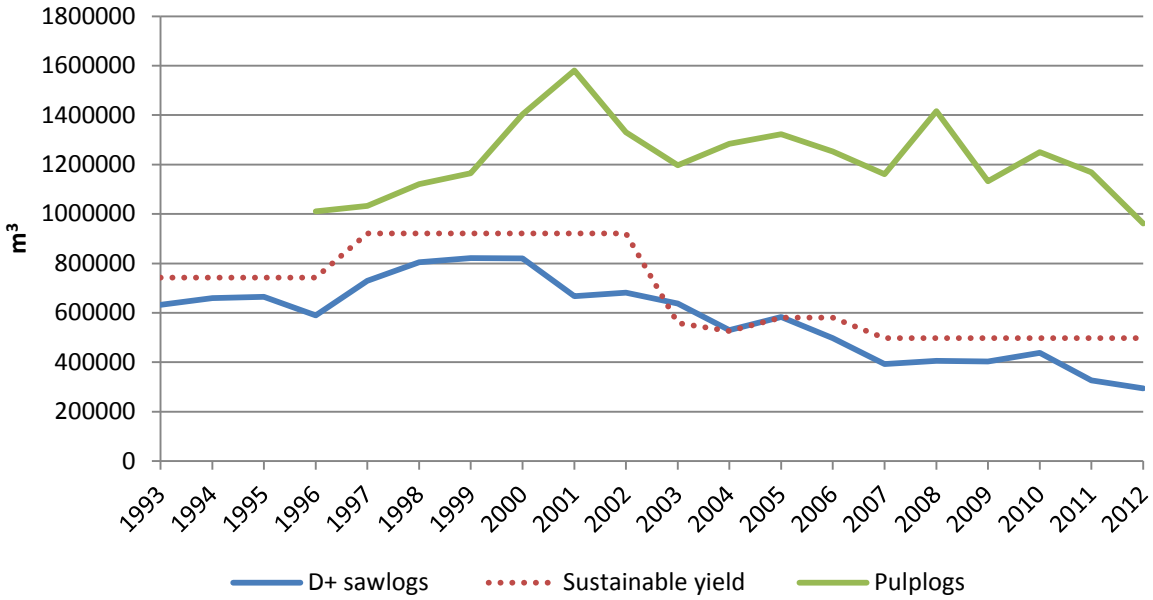
As both Figures 21 and 22 show, the increase in removals from public native forest coincided with an abrupt and sustained fall in production from private native forests. This suggests there was weak demand, or excess supply, which ensured that much of the short-term growth in public native production came at the expense of removals from private forests. Given this, the extent of the increase in production from public native forests over the period 1993-2005, and the fact that both sawlog and pulplog production have remained below the sustainable yield since the mid-2000s, it is difficult to sustain the argument that the RFAs and related forest management changes have been a major cause of the contraction. In the future, this is likely to change as it is expected that there will be a gradual shift away from native forest wood products as a result of a combination of the conservation measures and simultaneous attempts to promote plantations. However, to date, the impacts of these measures on industry output appear to have been relatively limited. Further evidence in support of this view is provided by the fact that, despite the reduction in public native forests and more restrictive forest management requirements, there has been no noticeable reduction in the diameter of high quality sawlogs from public native forests.[66]

In Victoria, the data suggest that the RFAs and reforms that commenced in 2002 were one of the factors behind a significant fall in sawlog production in the early- to mid-2000s (Figure 23). The sustainable sawlog yield targets were reduced, and production fell roughly in line with the targets. However, this fall was offset by a significant increase in pulplog production as the sector took advantage of the loosening of woodchip export regulations. Reflecting the trends in other states, the Victorian industry has progressively become more dependent on, and driven by, pulpwood and woodchip production to service Japanese pulp and paper companies, including Paper Australia Pty Ltd. Soft demand for sawlogs has also affected production, as have supply-side issues in certain areas – particularly the availability of mixed species sawlogs and an increasing dependence on low yield forests in areas that are difficult and costly to access.[67] The shift toward more remote and less productive forests appears to be due to a number of factors, including management practices and the impacts of three major fires of the 2000s.

[66] FT Stewardship Report 2012

[67] VicForests (2009). *Annual Report 2009*; Victorian Department of Sustainability and Environment and VicForests (2008). *Joint Sustainable Harvest Level Statement*; URS (2010). *VicForests Review 2010*.

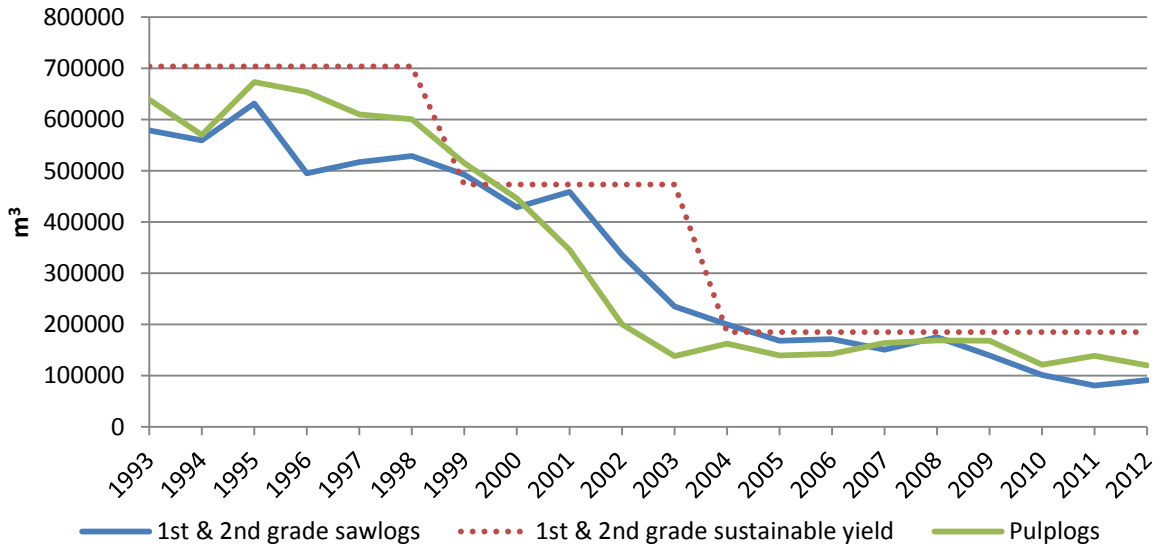
Figure 23 Victoria public native forests sawlog (D+ logs) and pulplog production, and sawlog sustainable yield, 1993-2012 (m^3)



Source: VicForests (2006-2012); VicForests (2007-2012); Victorian Department of Sustainability and Environment (2005); Victorian Department of Sustainability and Environment (2009); Victorian Department of Sustainability and Environment and VicForests (2008); Bureau of Rural Sciences (2003).

In Western Australia, the impacts of the RFA and policy changes introduced by the Court and Gallop governments in the early 2000s are relatively clear. Sawlog production from native forests was already declining prior to the changes but their introduction resulted in a marked fall in line with the adjustments to the sustainable yield (Figure 24). Pulplog production also dropped abruptly, reversing an increasing trend since the mid-1980s.

Figure 24 Western Australia public native forests sawlog (first and second grade) and pulplog production, and sawlog sustainable yield, 1993-2012 (m^3)



Source: Western Australian Department of Conservation and Land Management (1994); Conservation Commission of Western Australia (2004); Forest Products Commission Western Australia (2002-2012); Bureau of Rural Sciences (2003).

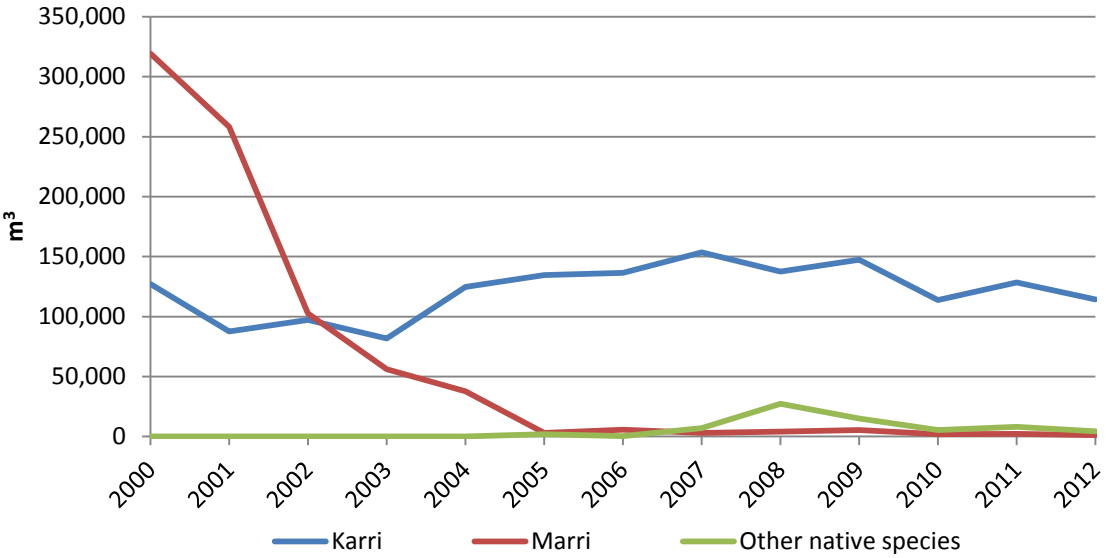
Like most of the other jurisdictions, the conservation and forest management measures imposed by government have not been the only drivers of the reduction in log production in Western Australian public native forests. The decline in sawlog production has been partly due to a lack of demand for jarrah and marri logs. Through the early- to mid-2000s, this was mostly related to the absence of a market for low grade logs; a fact reflected in the under-harvesting of 'other bole logs' relative to the sustainable yield over this period (Figure 25). More recently, there has also been a lack of demand for higher quality sawlogs. Another notable feature of the trends in jarrah log production is the decline in the proportion of higher quality sawlogs. In the early 2000s, over 90 per cent of jarrah sawlogs were first and second grade. By 2012, this had fallen to 33 per cent.

Figure 25 Western Australia public native forests sawlog (first and second grade) and other bole logs, sustainable yield versus actual production, 2001-2012 (m^3)

Source: Western Australian Department of Conservation and Land Management (1994); Conservation Commission of Western Australia (2004); Forest Products Commission Western Australia (2002–2012).

The sharp downturn in pulplog removals from Western Australia's public native forests is also partly market related. There has been no market for marri chips and, as a result, marri pulplog production decreased from over 300,000 m^3 in 2000 to less than 3,000 m^3 in 2005 — a decline that was only partially offset by an increase in karri and other native species pulplog production over this period (Figure 26).

Figure 26 Western Australia public native forests pulplog production, by forest type, 2000-2012 (m^3)



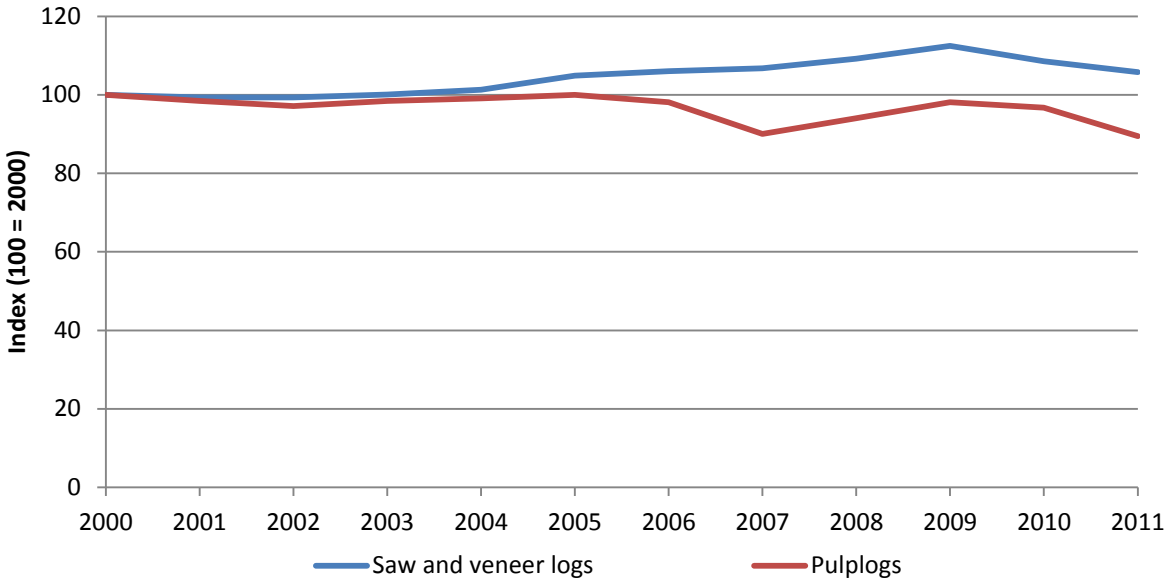
Source: Forest Products Commission Western Australia (2002-2012).

Overall, the impact of the RFAs and forest management changes has been mixed. In New South Wales and Western Australia there is clear evidence that the increase in reserves and new management regulations were significant contributory factors in the downturn in production witnessed in these jurisdictions in the 1990s and 2000s. Policy changes were also a factor in the reduction in sawlog production in Victoria; however, this was offset by an increase in pulplog production. In these three jurisdictions, several other factors have played a role in the trends in the industry, but the regulatory changes have been a significant driver of the contraction in the sector. This contrasts with the situation in Tasmania and Queensland, where the evidence suggests that the shrinking in the size of the industry has been largely unrelated to the introduction of new conservation measures. The policy changes in these jurisdictions have (or had in the case of Queensland) the potential to lead to the downsizing of the industry but, to date, they have not been a major driver of the production trends. Tasmania is of particular importance because of the fact that it has accounted for 40 to 50 per cent of Australian native forest production for most of the post-2000 period.

In support of this assessment, if the fall in native forest production was driven primarily by the increase in reserves and other regulatory changes, real log and end-product prices should also have increased significantly. This has not occurred. As Figure 27 shows, the real price of pulplogs has trended downward since the early 2000s (the average annual growth rate was -0.6 per cent yr^{-1}).[68] Real broadleaved native saw and veneer log prices were stagnant in the early 2000s and rose over the period 2005–2009 before heading into decline. The average real growth rate of these logs over the period 2000–2011 was 1.0 per cent yr^{-1}. Even if the period is confined to 2000–2009 to exclude the post-global financial crisis effects, the annual real increase was only 1.4 per cent yr^{-1}.

[68] All growth rates in the report were calculated using an ordinary least squares regression in order to avoid the distortions associated with compound growth rates calculated using end-of-period data.

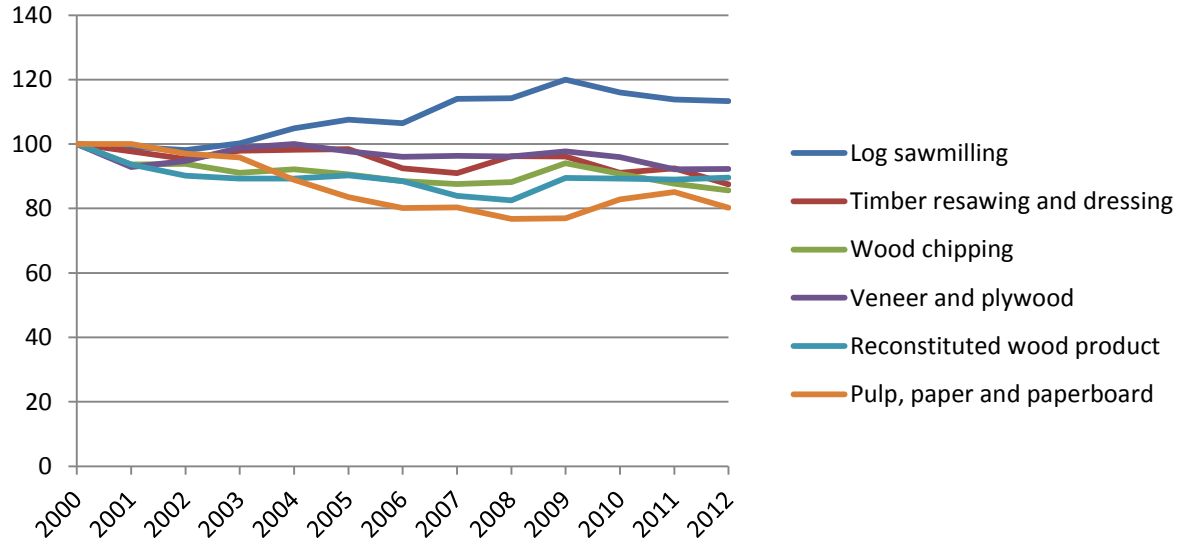
Figure 27 Broadleaved native real log price indexes, saw and veneer logs and pulplogs, 2000-2011



Source: ABARES (2012); ABS (2012). *6401.0 – Consumer Price Index, Australia*.

The ABARES real (inflation-adjusted) price indexes of articles produced by wood manufacturing industries have shown similar trends to those relating to native log production — with the exception of log sawmilling, the indexes from all major manufacturing categories have fallen since 2000. The prices received by sawmillers increased until 2009, before falling and settling to levels around 13 per cent above those seen in 2000 (Figure 28). Over the period 2000–2012, the average annual growth rate of prices received by sawmillers was 1.6 per cent yr^{-1}.

Figure 28 Real price indexes of articles produced by wood manufacturing industries, 2000-2012

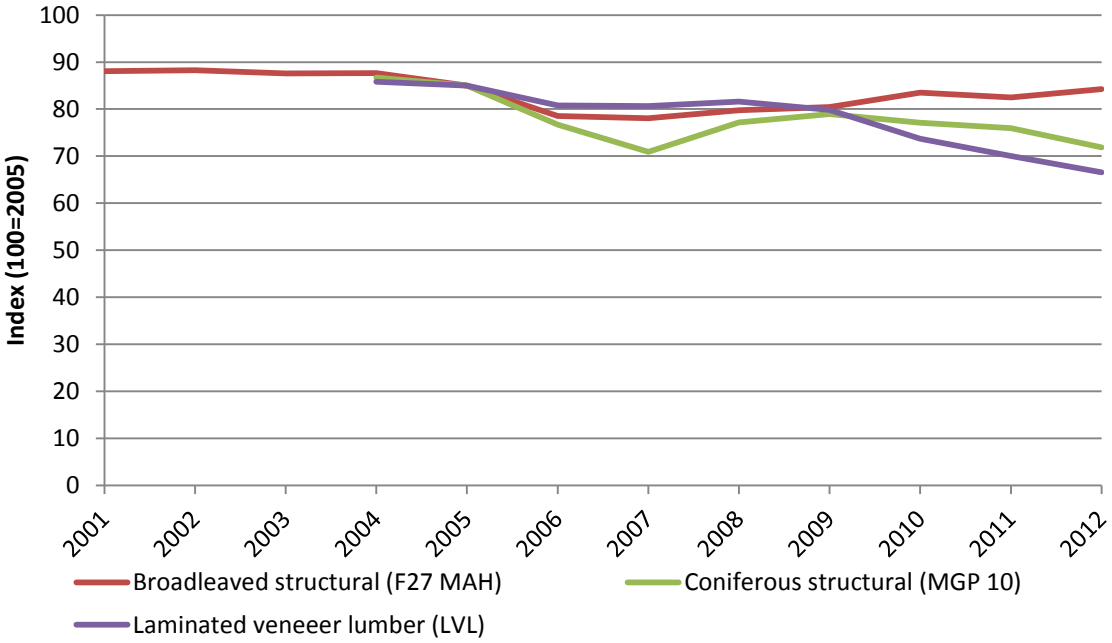


Source: ABARES (2012); ABS (2012).

An improved picture of the trends in native forest products can be obtained by looking separately at prices for structural timber, appearance products and woodchips. Figure 29

shows the real price indexes of F27 kiln-dried mixed Australian hardwood structural products (New South Wales), machine grade pine (MGP 10) (weighted average of New South Wales, Queensland and Victoria) and laminated veneer lumber (LVL) (weighted average of New South Wales, Queensland and Victoria). The real prices of the coniferous and engineered structural products have trended downward since the early- to mid-2000s, reflecting increasing supply of domestic coniferous sawlogs from plantations and increased imports of engineered wood products (see below). The real price of F27 broadleaved structural products was stagnant in the early 2000s, fell in the mid-2000s and has since recovered slightly. Despite the recovery, the real price of F27 broadleaved structural products in 2012 was still 4 per cent below the level seen in 2001.

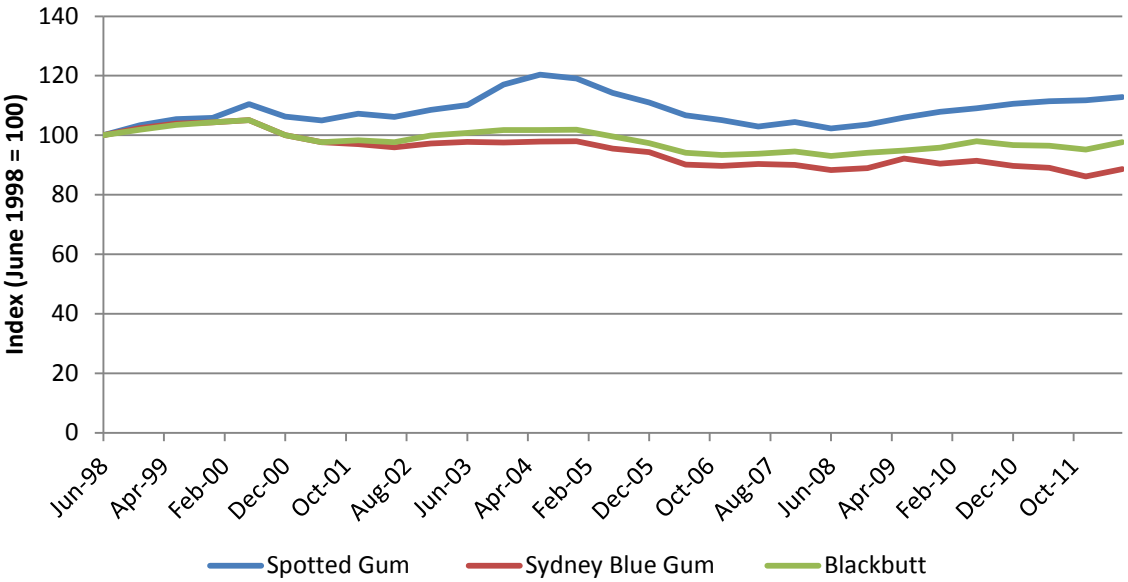
Figure 29 Real price indexes of structural timber products, 2001-2012



Source: ABARES (2012); ABS (2012).

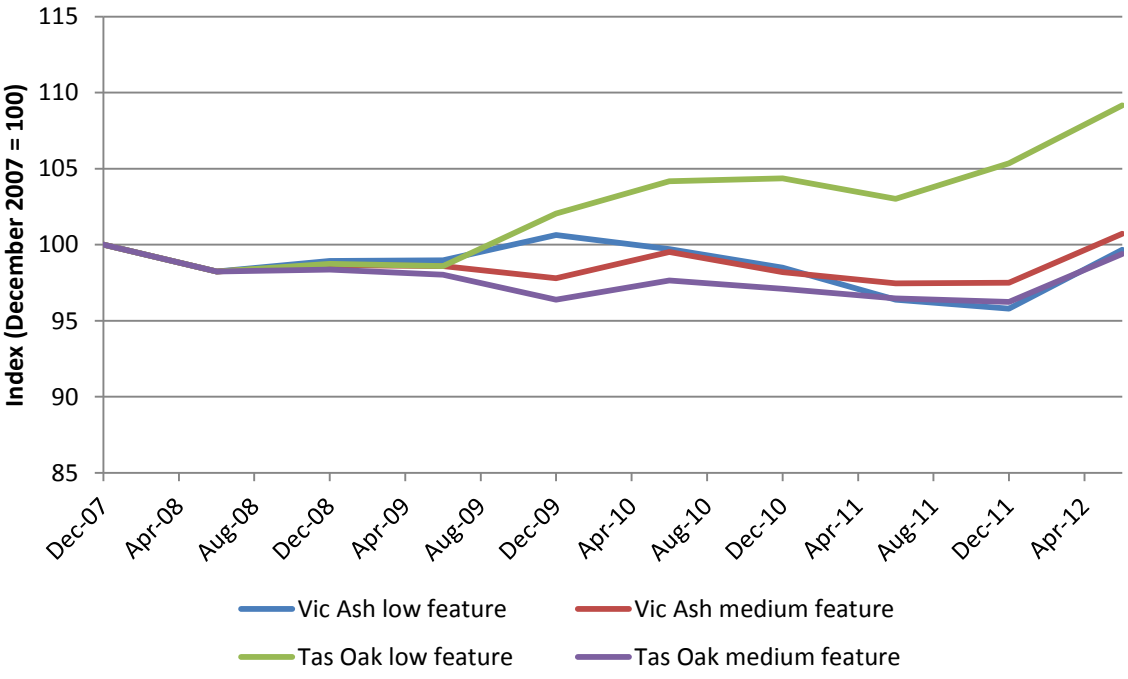
Even in appearance markets, prices have been subdued. Figure 30 shows the wholesale real price trends of major select grade flooring products in New South Wales over the period 1998–2012. Figure 31 shows the real price indexes of select and standard grade flooring products in the Victorian market from December 2007 to June 2012. Both suggest that real broadleaved wood flooring prices have been relatively stagnant, with real increases being confined to the premium end of the market where there has been slight growth.

Figure 30 URS Timber Market Survey six monthly real price indexes of select grade flooring products, New South Wales market, June 1998 to June 2012



Source: URS (2012). *Timber Market Survey*; ABS (2012).

Figure 31 URS Timber Market Survey six monthly real price indexes of select and standard grade flooring products, Victorian market, December 2007 to June 2012

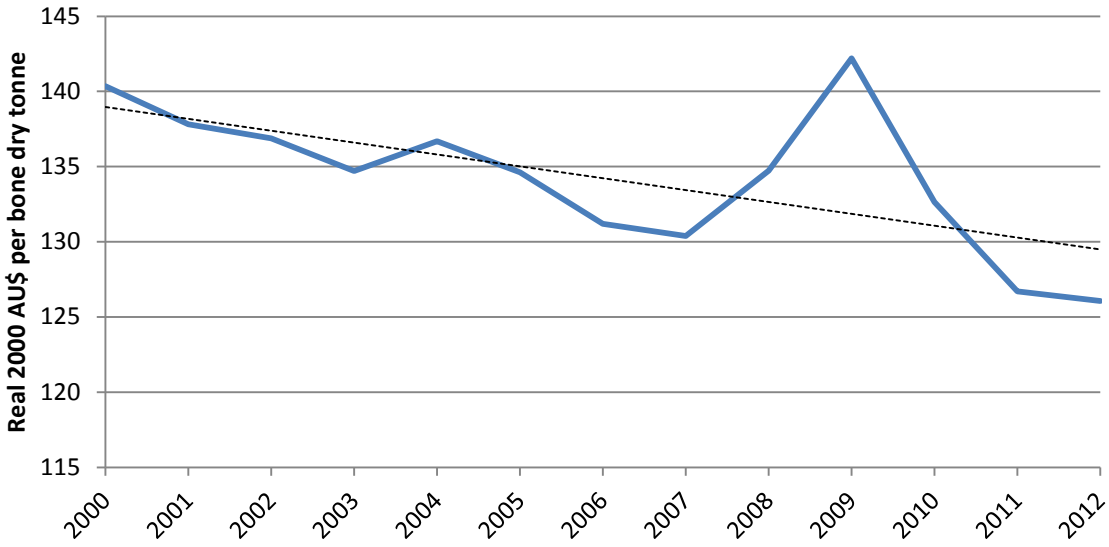


Source: URS (2012); ABS (2012).

Of particular importance to the sector has been the downward trend in export woodchip prices over the past two decades.[69] As Figure 32 shows, the real value of export woodchips per bone dry tonne (FOB) has fallen by an average of 0.6 per cent yr^{-1} since 2000.

[69] Nelson (2003).

Figure 32 Real value of Australian broadleaved woodchip exports (FOB), 2000-2012 (real 2000 AU$ per bone dry tonne) (with trendline)



Source: ABARES (2012); ABS (2012).

As with the global financial crisis and appreciation of the Australian dollar, the increase in reserves and changes in forest management requirements have contributed to the decline of the native forest sector. However, the state of the sector cannot be wholly, or even largely, attributed to these changes. If the reserves and forest management requirements were central drivers, and they were 'artificially' suppressing supply, real prices should have increased significantly. In most cases, they have been stagnant or falling. There has been a longer-term decline in the sector that has been caused by other structural issues.

Domestic structural changes

The sharp contraction in the native forest sector post-2008 has occurred against the backdrop of four longer-term domestic structural changes:

- increasing harvest and haulage costs for native forest producers;
- increased competition in woodchip markets from domestic hardwood plantations;
- weak demand in the domestic structural timber market; and
- increased competition from coniferous sawnwood and engineered wood products in solid wood product markets.

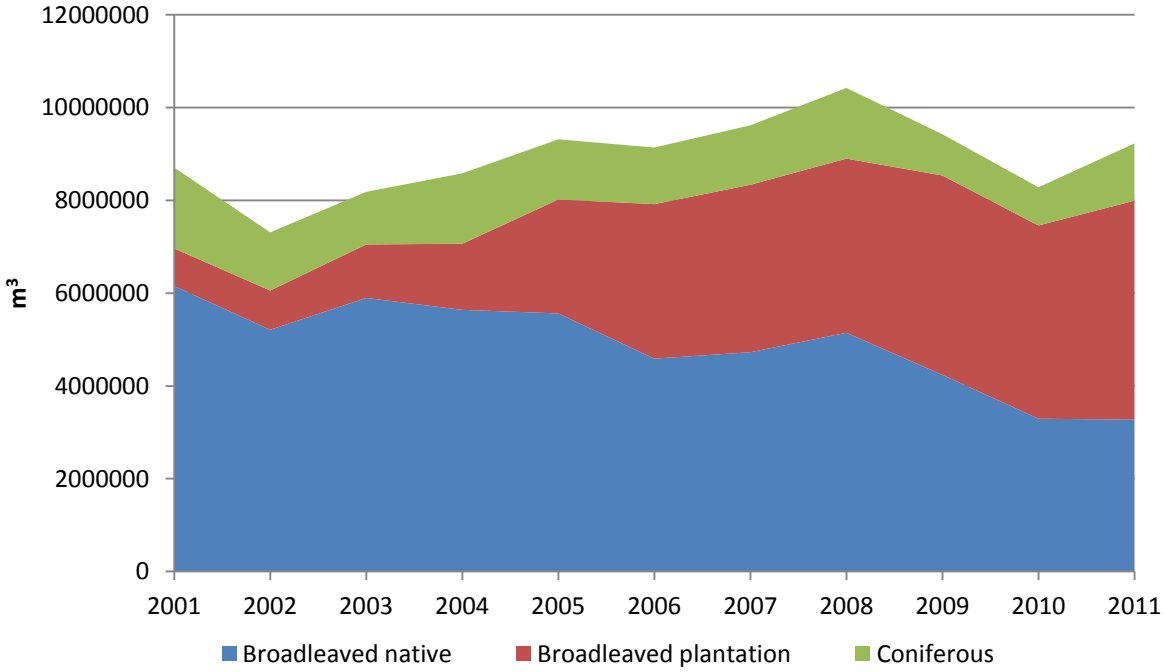
As discussed above, in a number of jurisdictions, native logs are increasingly being supplied from areas that are harder, and more costly, to access.[70] Labour and transport costs have also increased through the 2000s. The combined effect has been to raise harvest and haulage costs for native forest producers, which has reduced margins and made the native forest sector less competitive. In basic economic theory, if producers in a competitive market face stagnant or falling prices and increasing costs, output should fall. This is what has occurred in the native forest sector.

The second structural change is the increased competition native forest producers have faced in woodchip markets from domestic hardwood plantations. Up until the early 1990s,

[70] VicForests (2006-2012); New South Wales Auditor-General (2009); URS (2010); Forest Products Commission Western Australia (2002-2012).

approximately 90 per cent of Australia's plantations (by area) were coniferous (softwoods).[71] However, over 70 per cent of the almost 1 Mha of plantations established since 1990 have been broadleaved (hardwoods).[72] Most of these have been short-rotation plantations designed to produce tax benefits for investors and woodchips for export.[73] As these plantations progressively reached harvest age during the 2000s, they captured market share from native forest suppliers in broadleaved woodchip export markets (Figure 33). The success of plantation sourced woodchips is attributable mainly to the quantity of supply, lower harvest costs, and a market preference for plantation-sourced chips because they provide higher pulp yields and are considered more sustainable than native chips.[74]

Figure 33 Broadleaved native, broadleaved plantation and coniferous pulplogs for woodchip exports (m^3), 2001-2011



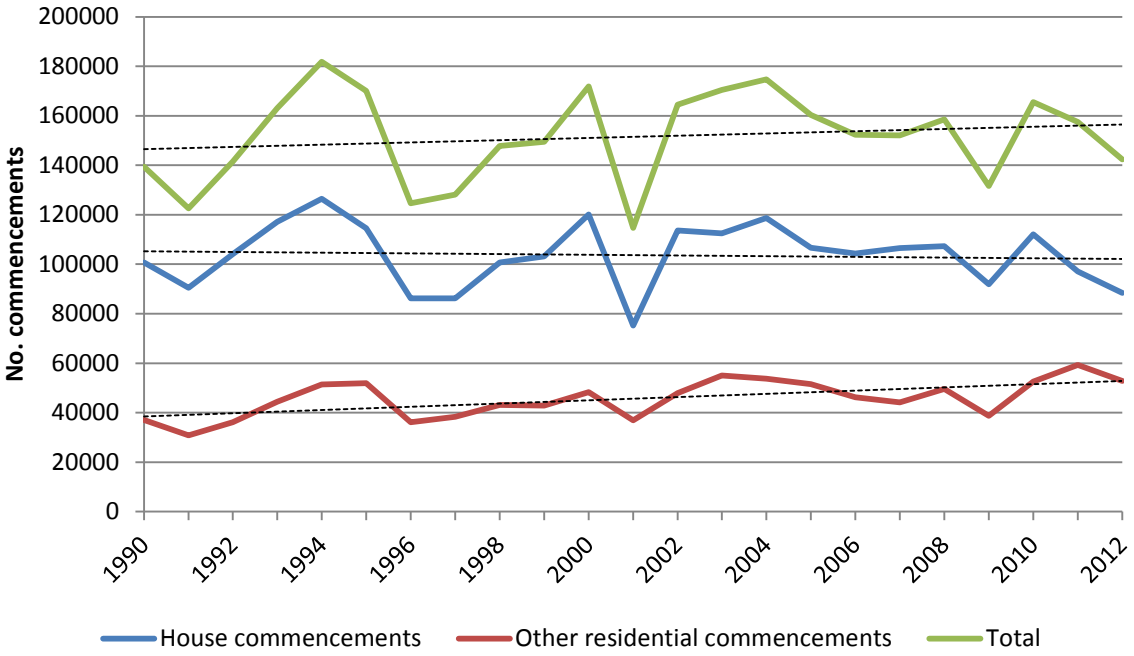
Source: ABARES (2012).

The third issue that has affected the native forest sector is weak demand in the structural timber market. The majority of native broadleaved sawnwood has traditionally been sold into the domestic structural timber market, where most of the wood is used for the construction of detached houses. Concrete and steel are the preferred construction material for most other residential and non-residential (commercial and industrial) buildings due to their perceived superior performance characteristics, including in relation to strength, fire, deterioration, and ease and cost of erection.[75] A difficulty for the native forest sector is that, since the early 1990s, detached housing construction has trended slightly downward, as flats, apartments and semi-detached houses have increased their share of new domestic residential building

[71] Department of Climate Change and Energy Efficiency (2011).
[72] Department of Climate Change and Energy Efficiency (2011).
[73] URS (2007); Ajani (2011); Gavran, M (2012).
[74] URS (2007); Tasmanian Government and Australian Government (2007). *Sustainability Indicators for Tasmanian Forests 2001-2006.*
[75] Bayne, K and Taylor, S (2006). *Attitudes to the use of wood as a structural material in non-residential building applications: opportunities for growth*; Bayne, K and Page, I (2009). *New applications of timber in non-traditional market segments: high rise residential and non-residential (commercial) buildings*.

construction (Figure 34).[76] Construction techniques have also changed (e.g. use of concrete slabs), which has resulted in less sawnwood being used in detached houses.[77]

Figure 34 Number of dwelling unit commencements, Australia, detached houses and other residential buildings, 1990-2012 (with trendlines)



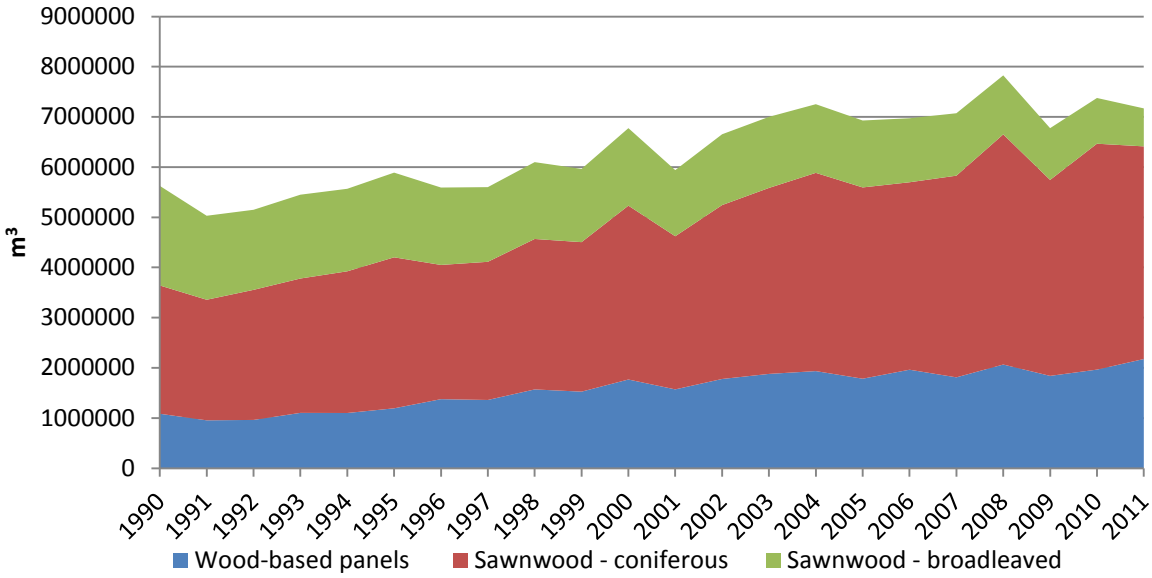
Source: ABS (2013).

The combination of new construction techniques and a lack of growth in housing construction have contributed to a stagnation of solid wood product (wood-based panels and sawnwood) consumption since the early 2000s (Figure 35). Over the period 2002–2011, the apparent consumption of solid wood products in Australia grew at only 0.7 per cent yr^{-1}.

[76] Note that the ABS category 'other residential building' is defined as a 'building other than a house primarily used for long-term residential purposes and which contains (or has attached to it) more than one dwelling unit'. As a result, it includes flats and apartment buildings, as well as home units, attached townhouses and semi-detached houses. Generally, multi-unit dwellings such as townhouses and semi-detached houses use less timber framing per unit of floor area than detached houses. ABS (2013).

[77] URS (2007); Ximenes et al (2012).

Figure 35 Australian apparent consumption of solid wood products (wood-based panels and sawnwood), 1990-2011 (m^3)

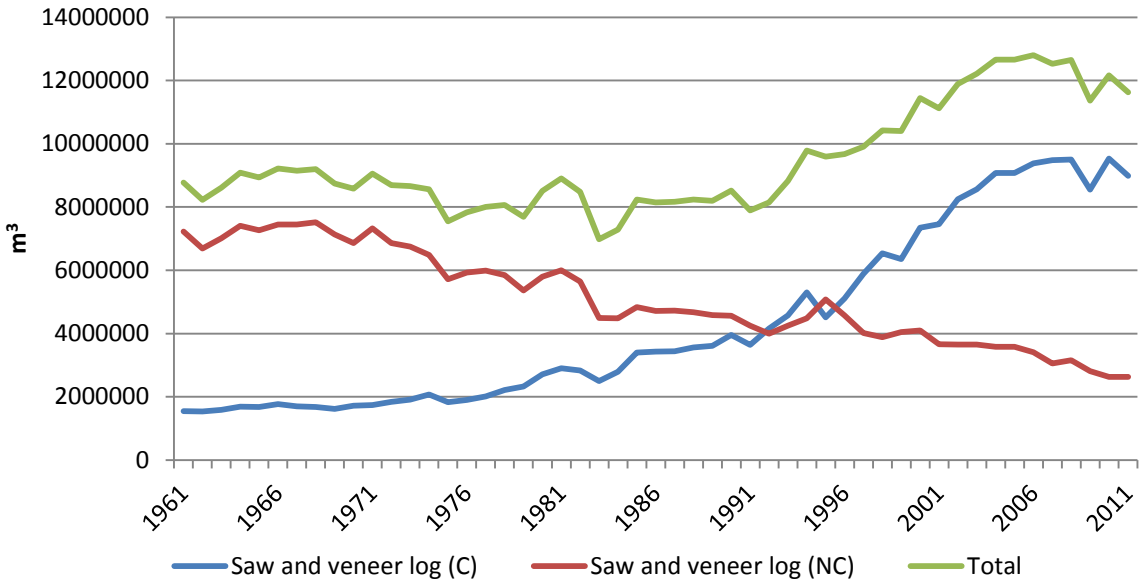


Source: FAO (2013).

The fourth factor that has affected native producers is the increased competition they have faced from coniferous sawnwood and engineered wood products in solid wood product markets. Over the period 1940–1990, approximately 820,000 ha of new plantations were established in Australia, 89 per cent of which were softwoods (Pinus spp.).[78] These plantations have resulted in an almost 500 per cent increase in coniferous saw and veneer log production since the early 1960s (Figure 36). Much of the growth in coniferous sawlog and sawnwood production has come at the expense of native broadleaved sawnwood producers. Between 1990 and 2011, Australia's apparent consumption of coniferous sawnwood increased by 66 per cent, while broadleaved sawnwood consumption fell by 62 per cent (Figures 35 and 37). The changes in sawnwood production were even more dramatic — coniferous sawnwood production increased by 172 per cent, compared to a 58 per cent drop in broadleaved sawnwood production (Figure 37).

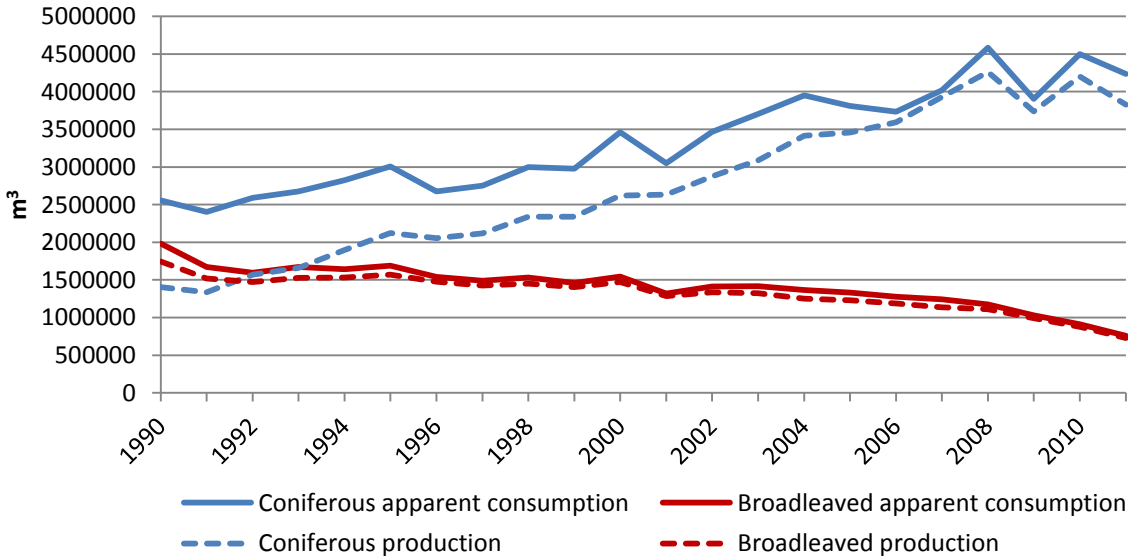
[78] Department of Climate Change and Energy Efficiency (2012). *National Inventory Report 2010*.

Figure 36 Australian saw and veneer log production, coniferous and broadleaved, 1961-2011 (m^3)



Source: FAO (2013).

Figure 37 Australian apparent consumption and production of sawnwood, coniferous and broadleaved, 1990-2011 (m^3)



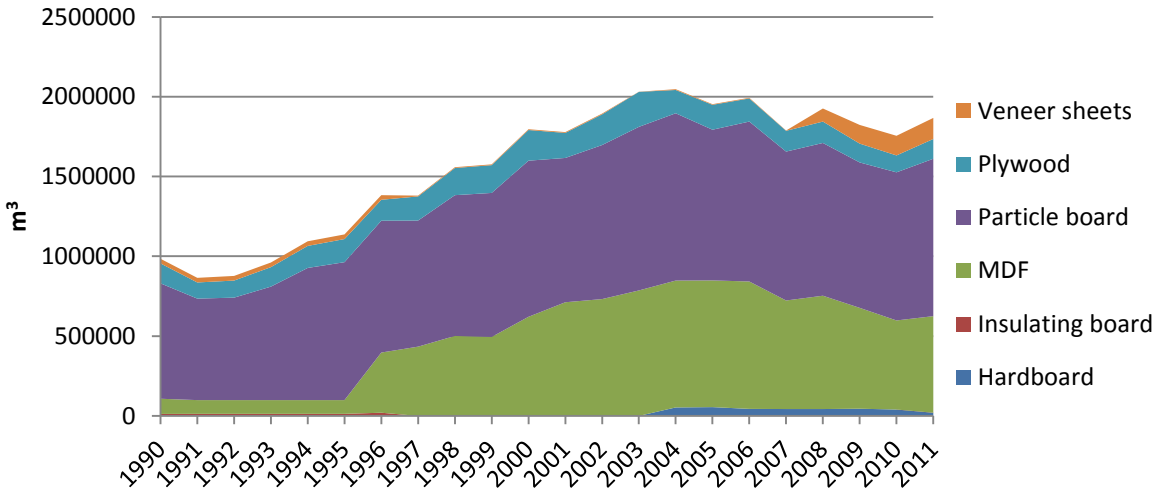
Source: FAO (2013).

Coniferous sawnwoods have not been the only source of competition; domestic and imported wood-based panels have also captured market share from native hardwoods over the past two decades (Figure 35).[79] Between 1990 and 2011, Australia's apparent consumption of wood-based panels doubled; growing at a rate of almost 4 per cent yr^{-1}.[80] The supply that enabled this growth has come from three main sources: domestic production of medium density fibreboard (MDF) and particle board (Figure 38), and imported plywood (Figure 39). Notably, most of the wood used in the manufacture of domestic MDF and particle board

[79] Wood-based panels are veneer sheets, plywood, particle board, and fibreboard (e.g. hardboard and MDF).
[80] FAO (2013).

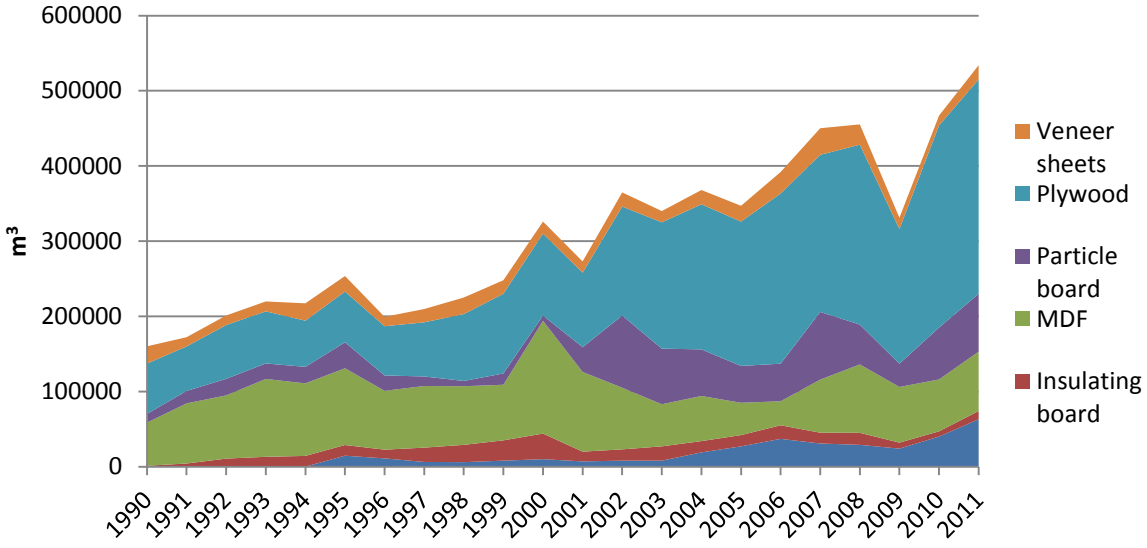
comes from plantation softwoods, meaning the native forest sector has derived little or no benefit from the rise in the production and consumption of these products.[81]

Figure 38 Australian production of wood-based panels, 1990-2011 (m^3)



Source: FAO (2013).

Figure 39 Australian imports of wood-based panels, 1990-2011 (m^3)



Source: FAO (2013).

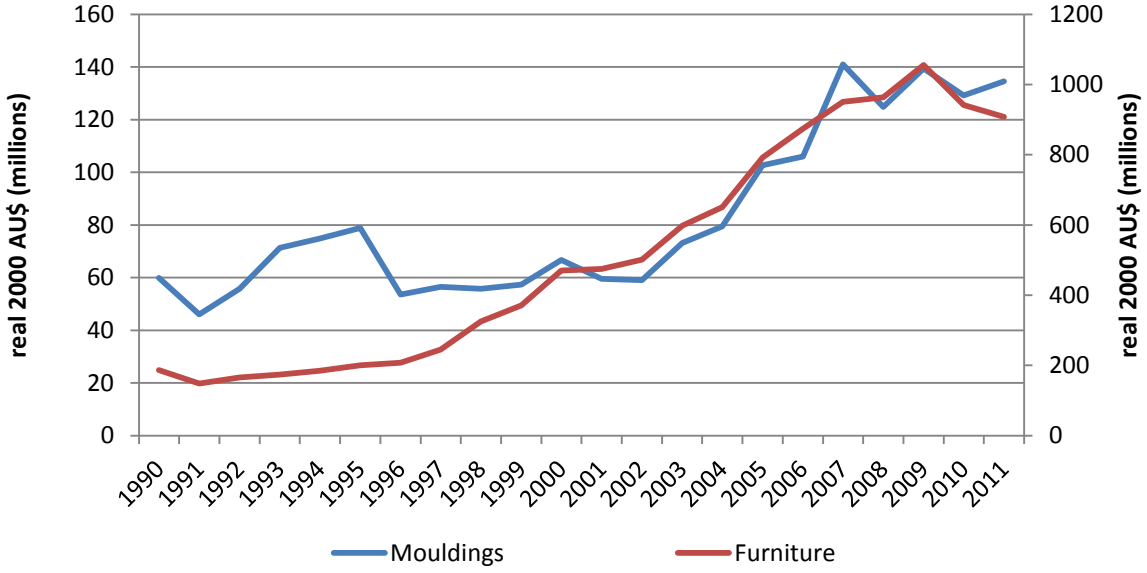
A number of authors have suggested that, despite the native forest sector's declining competitiveness in the structural timber market, there are opportunities and signs of growth in appearance markets, particularly flooring and furniture. For example, Schirmer states:

> … there is strong qualitative evidence that markets for appearance products produced from native forest timber have been largely maintained in recent years, and in some cases may be growing.[82]

[81] Department of Climate Change and Energy Efficiency (2012).
[82] Schirmer (2012); Ximenes et al (2012).

As discussed, it is clear that the proportion of broadleaved sawlogs that are used to make flooring, decking and wooden furniture has increased significantly since the early 1990s. Notwithstanding this, the long-term downward trend in broadleaved sawlog and sawnwood production (Figures 35-37) suggests that any growth in appearance and other high value-added markets is not of a sufficient size to offset the losses in traditional structural markets. Further, as URS has noted, there is considerable competition in domestic appearance markets, a fact reflected in the upward trend in the real value of moulding and wooden furniture imports (Figure 40), and the absence of growth in real wood flooring prices in all but the premium end of the market (Figures 30 and 31).[83] Due to this, the scope for these markets to arrest the long-term contraction in the native forest sawnwood sector appears to be limited.

Figure 40 Real value of moulding (left vertical axis) and wooden furniture (right vertical axis) imports, 1990-2011 (real 2000 AU$)



Source: ABARES (2012).

Structural changes in global wood markets

In addition to the domestic structural shifts, changes in global wood markets have also had a significant impact on the native forest sector. Four major global factors stand out:

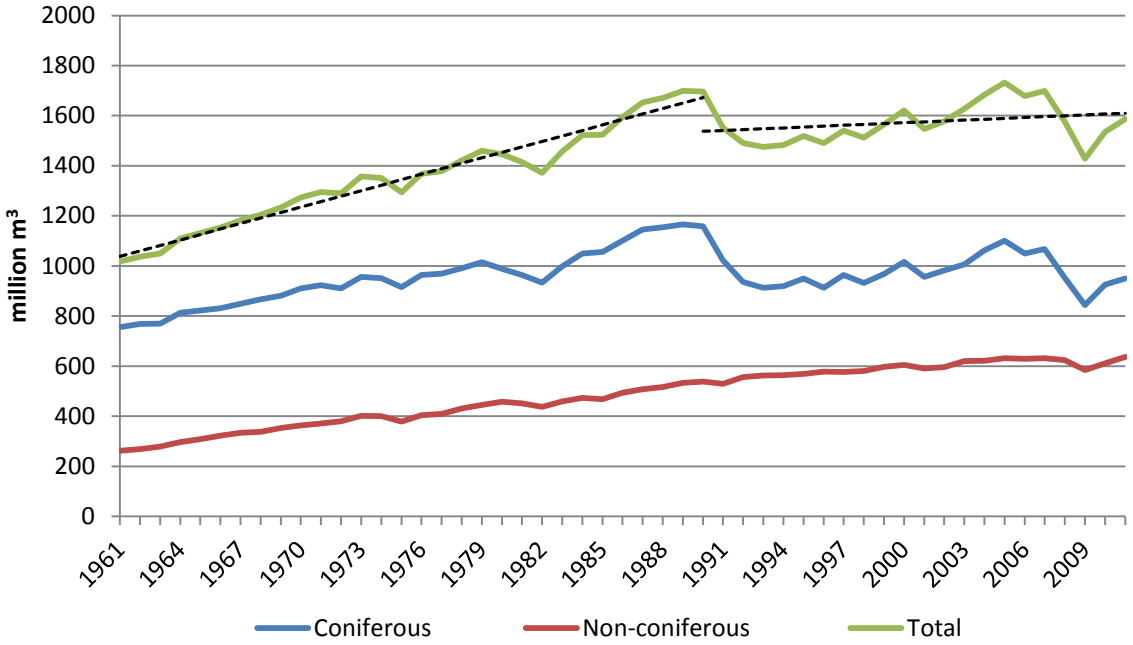
- wood-saving innovations in production processes and related product substitution that have suppressed growth in global wood demand and prices;
- stagnant and falling per capita paper and paperboard consumption in developed countries, particularly Japan;
- a shift in paper, paperboard and pulp production to developing countries, particularly in Asia and South America; and
- increased production and export of plantation woodchips from developing countries in Asia.

[83] URS (2007).

Wood-saving innovations in production processes

As predicted by Ajani, the expected strong growth in global demand for wood as an input to finished wood products has not occurred.[84] This is reflected in the lack of significant growth in global industrial roundwood consumption since the early 1990s. As shown in Figure 41, between 1961 and 1990, global industrial roundwood consumption grew at an average rate of 1.7 per cent yr^{-1}. By comparison, over the period 1990-2011, the growth rate was just 0.2 per cent yr^{-1}.

Figure 41 Global industrial roundwood consumption, coniferous and broadleaved, 1961-2011 (million m^3) (with 1961-1990 and 1990-2011 trendlines)

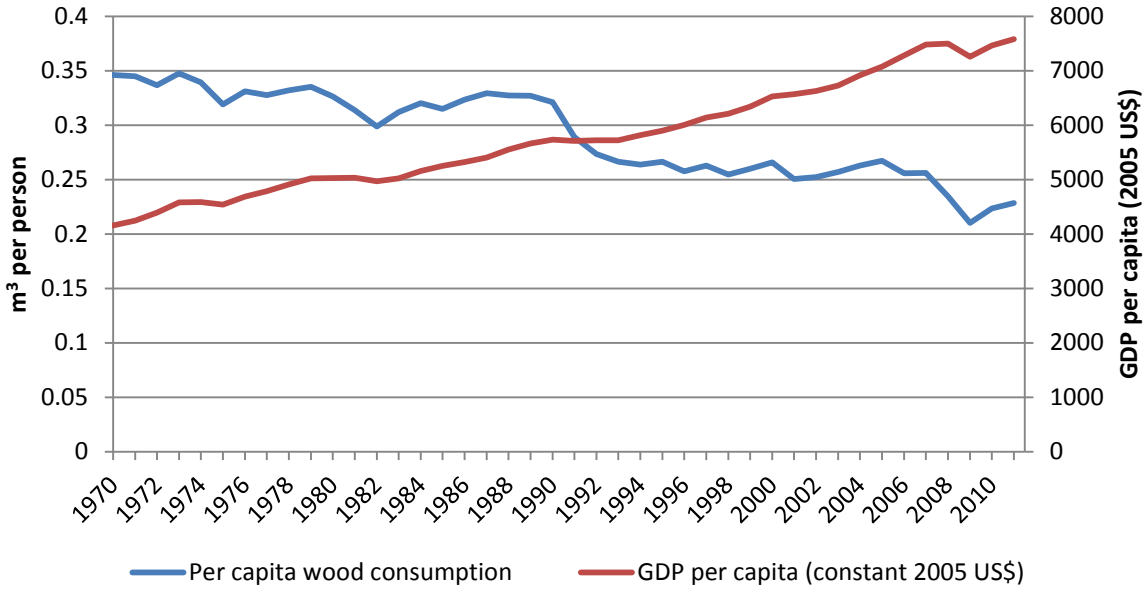


Source: FAO (2013).

The average growth rate for the period 1999-2011 is partially distorted by the impact of the global financial crisis. However, the growth rate between 1990 and 2007 was still only 0.6 per cent yr^{-1}. Over the same period, global population increased by 1.3 per cent yr^{-1} (producing a 0.8 per cent yr^{-1} drop in per capita roundwood consumption) and global GDP per capita rose by 1.7 per cent yr^{-1} (Figure 42).

[84] Clark (2001; 2003); Ajani, J (2011). *The global wood market, wood resource productivity and price trends: an examination with special attention to China*.

Figure 42 Global per capita roundwood consumption vs. real GDP per capita, 1970-2011

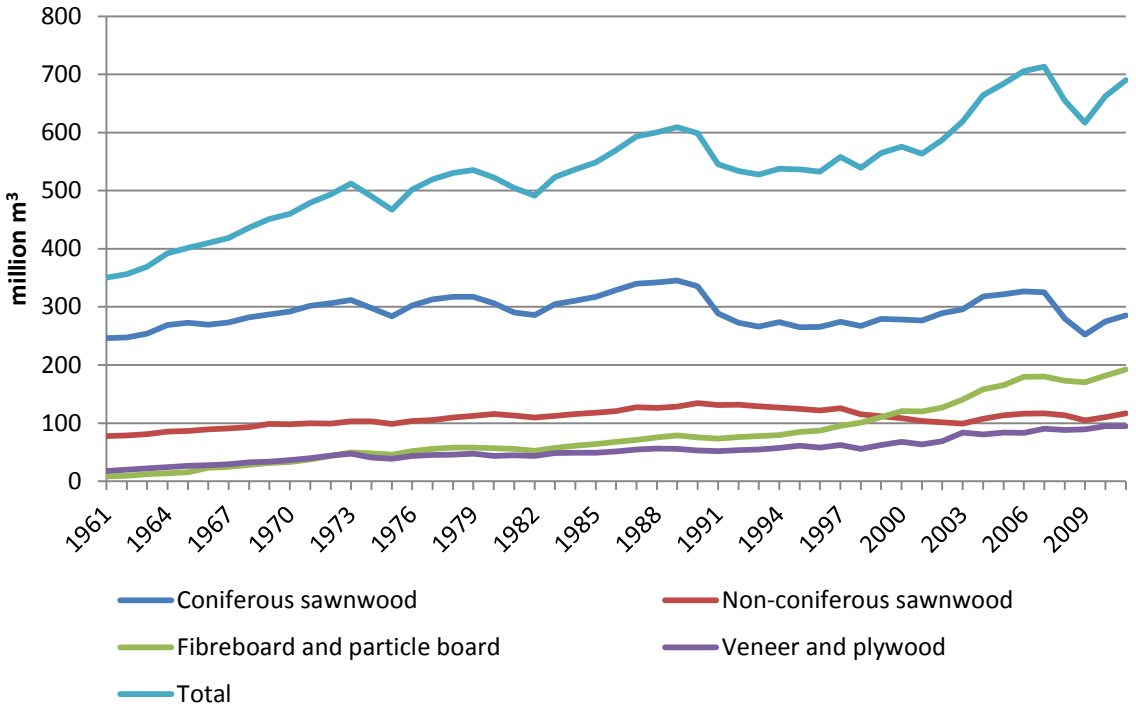


Source: FAO (2013); United Nations Statistics Division (2013). *National Accounts Main Aggregates Database*.

A major driver of these trends in wood input consumption has been wood-saving innovations in production processes and related product substitution. In solid wood product markets, the issue of greatest significance has been new product development and increased competition from wood-based panels.[85] Similar to the trends seen in Australia, since the mid-1990s there has been a sharp rise in global fibreboard and particle board consumption. Plywood and veneers have also experienced significant growth over this period, especially since the early 2000s (Figure 43). Much of the growth in these products has come at the expense of sawnwood, a fact reflected in sawnwood's shrinking share of the global solid wood product market (Figure 44). The relevance of the rise of these products is that, generally, particle board and fibreboard require less wood inputs per unit of finished product than plywood and veneers, which in turn require less wood inputs than sawnwood.[86] Consequently, as the market share of these products has increased, the wood input requirements per unit of finished product have fallen.

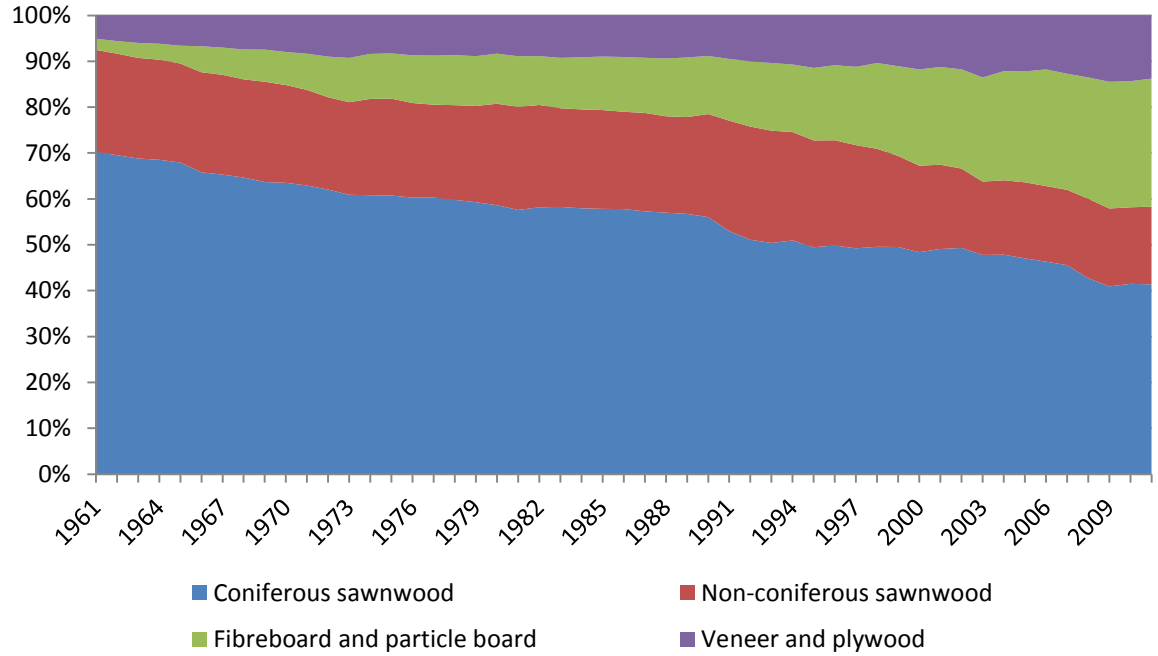
[85] Clark (2001); Ajani (2011).
[86] Jaakko Poyry Consulting (Asia-Pacific) Pty Ltd (1999); Ajani (2011); Schirmer (2012).

Figure 43 Global consumption of sawnwood (coniferous and broadleaved), fibreboard and particle board, and veneer and plywood, 1961-2011 (million m^3)



Source: FAO (2013).

Figure 44 Proportion of global solid wood consumption, by product type, 1961-2011 (%)

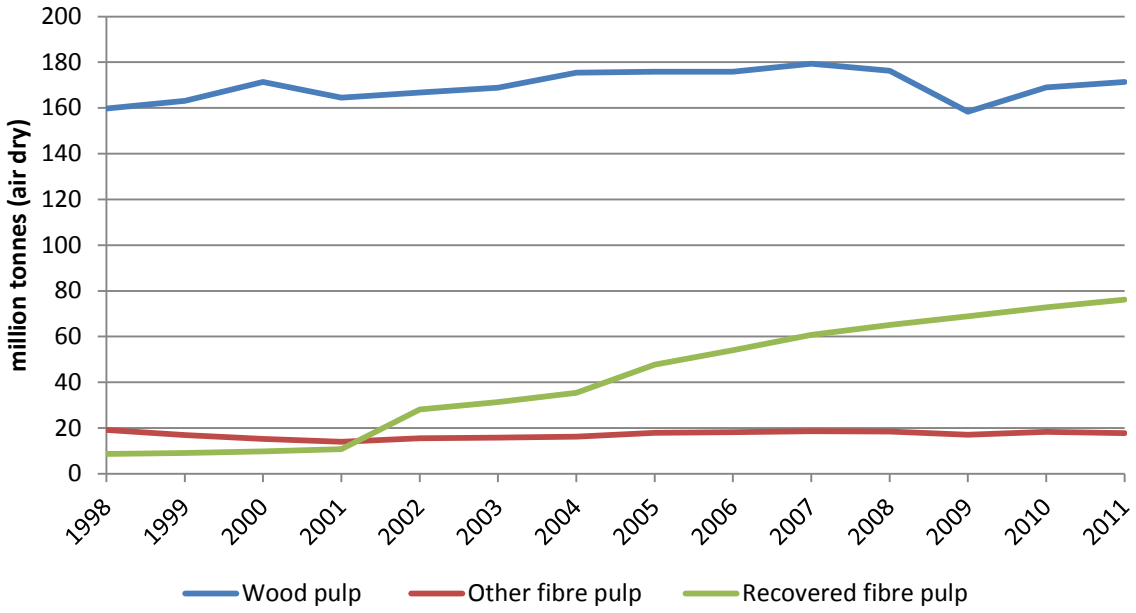


Source: FAO (2013).

Similar wood-saving trends have been witnessed in global paper markets. Since the late 1990s, the proportion of paper made from recovered fibre pulp (i.e. recycled paper and

paperboard) and non-wood pulp (i.e. pulp from fibrous vegetable materials other than wood (bamboo, bagasse, straw etc.)) has increased from 15 per cent to 35 per cent, while the proportion derived from wood pulp has fallen from over 85 per cent to 65 per cent.[87] This has enabled pulp consumption (and paper and paperboard consumption) to increase significantly, with only slight growth in wood inputs. For example, between 1998 and 2011, total pulp consumption increased by 3.0 per cent yr^{-1}, while wood pulp consumption was effectively stagnant; growing at a mere 0.3 per cent yr^{-1} (Figure 45). Over the same period, paper and paperboard consumption rose by 2.2 per cent yr^{-1}.[88]

Figure 45 Global pulp consumption, by pulp type, 1998-2011 (million tonnes, air dry)

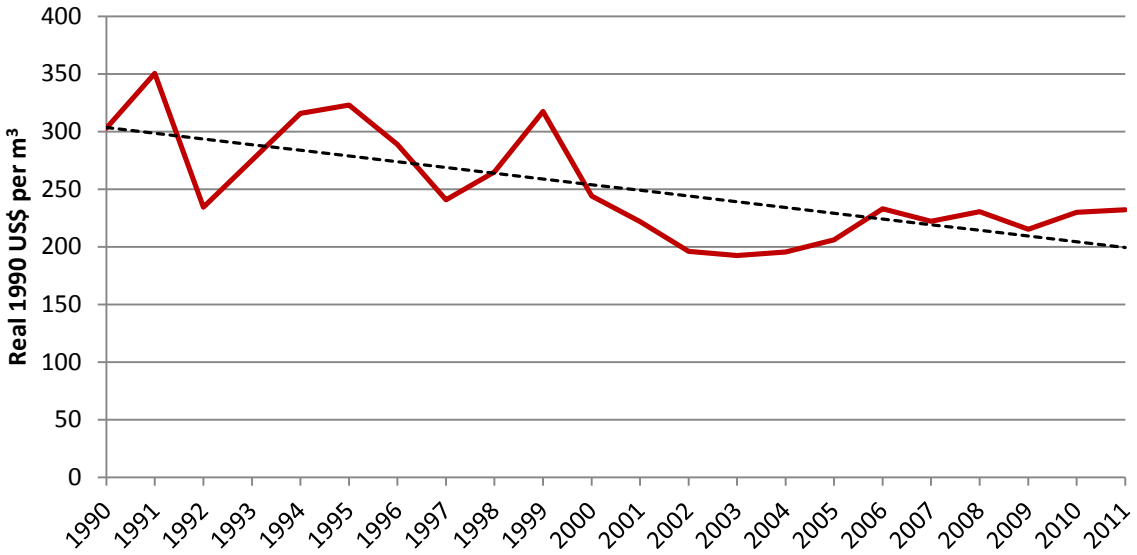


Source: FAO (2013).

To date, the rise of alternatives to sawnwood in structural timber markets, and increased reliance on recovered fibre in paper markets, has suppressed growth in global wood demand, which in turn, has been a contributing factor in the stagnation and decline in real global wood export prices.[89] This is reflected in the trends in the unit value of Chinese imports of broadleaved sawnwood – China is the world's largest importer of broadleaved sawnwood products, Figure 46 – and the unit value of Japanese imports of woodchips and particles – Japan is the world's largest woodchip importer, Figure 47.

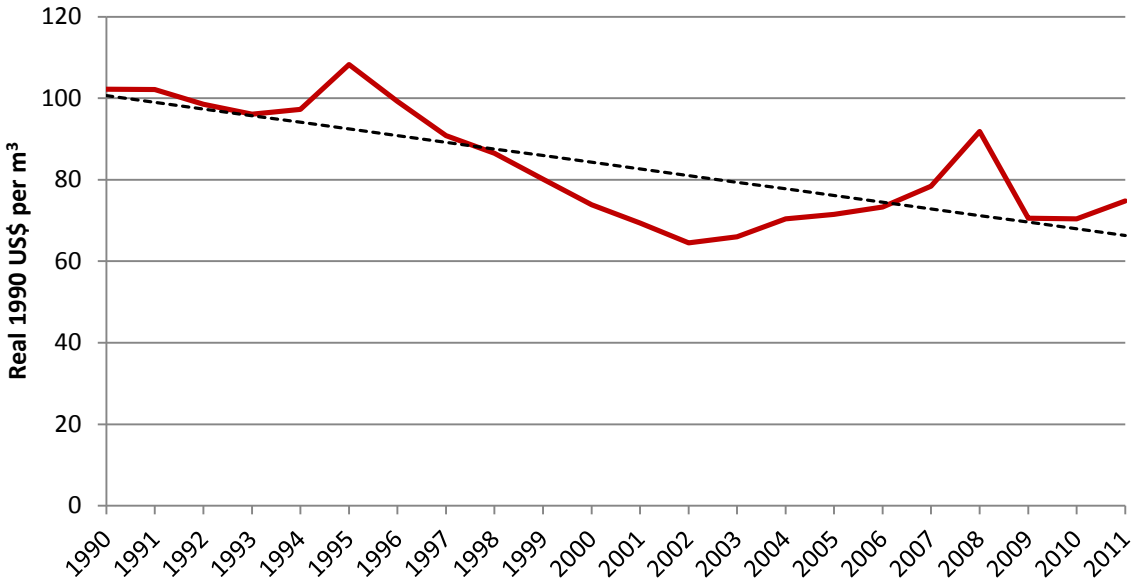
[87] Ajani (2011); FAO (2013).
[88] FAO (2013).
[89] Ajani (2011).

Figure 46 Unit value of Chinese broadleaved sawnwood imports, 1990-2011 (real 1990 US$ per m3) (with 1990-2011 trendline)



Source: FAO (2013).

Figure 47 Unit value of Japanese woodchip and particle imports, 1990-2011 (real 1990 US$ per m3) (with 1990-2011 trendline)



Source: FAO (2013).

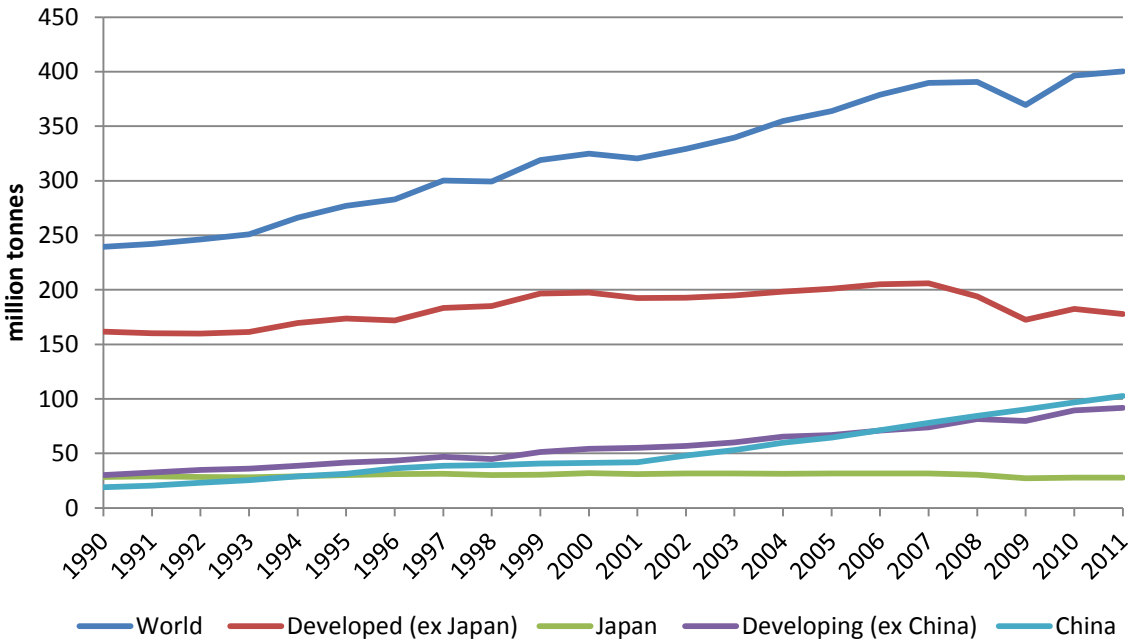
A notable aspect of the trends in global markets is the increase in prices and consumption that occurred in the years immediately preceding the global financial crisis. This was due to a combination of factors, most notably rapid demand growth driven by Chinese production and consumption of wood products and European demand for wood pellets for bioenergy, higher fuel prices increasing harvest and haulage costs, and increases in ocean freight costs.[90]

[90] UNECE and FAO (2008).

Stagnant and/or falling per capita paper and paperboard consumption in developed countries

In the early 2000s, paper and paperboard consumption in most developed countries began to slow (the major exceptions being the countries of Eastern and Southern Europe) and, just prior to the onset of the global financial crisis, it began to decline.[91] This downward trend was accelerated and magnified by the crisis.[92] As Figure 48 shows, to date, strong growth in consumption from developing countries, especially China, has more than offset the slowdown in developed countries and ensured that global consumption has continued to rise (with the exception of the global financial crisis-induced dip in 2009).

Figure 48 Paper and paperboard apparent consumption, by country or country group, 1990-2011 (million tonnes)

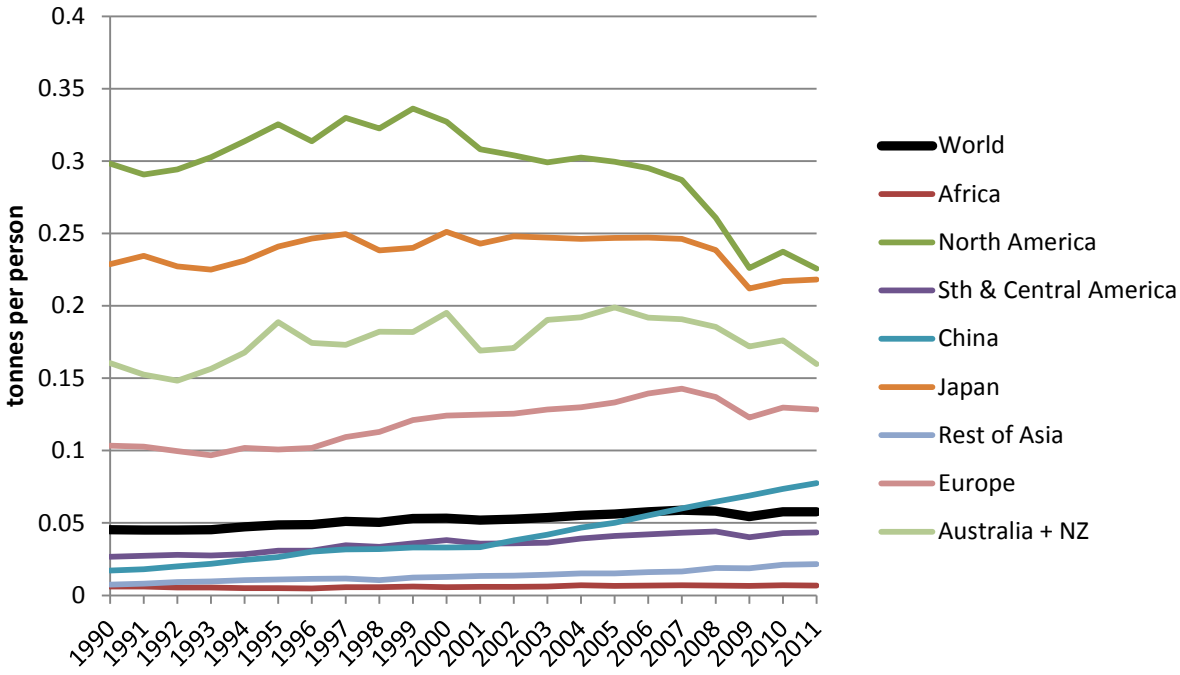


Source: FAO (2013).

The downward trajectory in paper and paperboard consumption in developed countries is attributable to a number of factors, including the relatively slow rate of population growth, declining newspaper circulation, and the emergence of direct and indirect electronic substitutes for paper products and paper-based communication.[93] The impact of these demand-side factors is reflected in the marked downturn in per capita paper and paperboard consumption in developed countries since the mid-2000s (Figure 49).

[91] For simplicity, developed and developing countries are defined here in a manner similar to Annex B and non-Annex B countries under the United Nations Framework Convention on Climate Change. Developed countries are those from Europe (including Russia and other former Eastern Bloc countries) and North America, and Japan, Australia and New Zealand. Developing countries are the remainder.
[92] Mery, G et al (eds) (2010). *Forests and Society — Responding to Global Drivers of Change*.
[93] Mery, G et al (eds) (2010); UNECE and FAO (2006-2012).

Figure 49 Per capita paper and paperboard apparent consumption, by country group, 1990-2011 (tonnes per person)

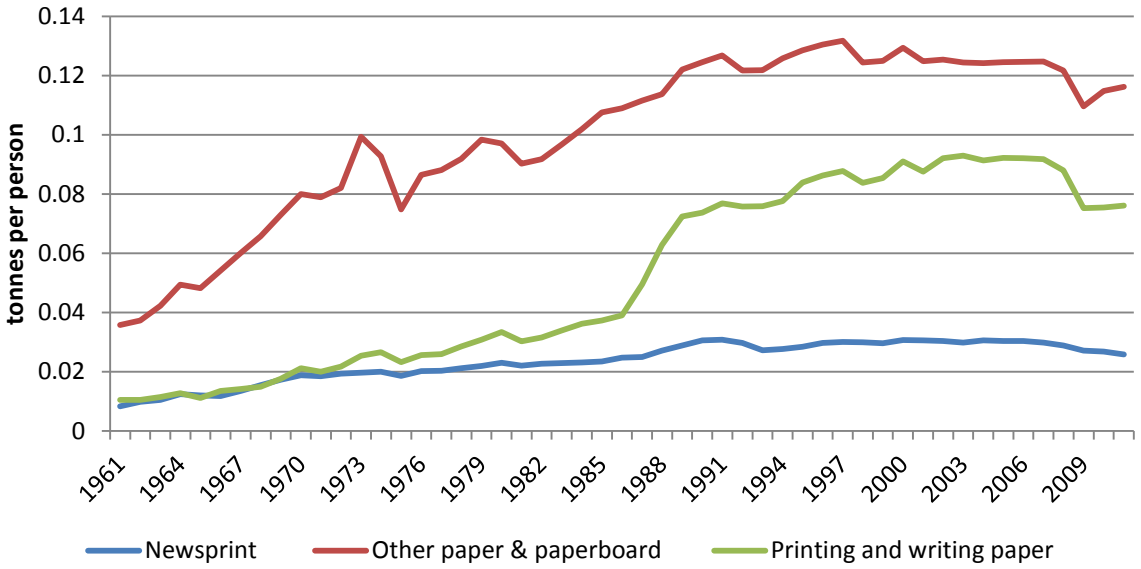


Source: FAO (2013); United Nations Statistics Division (2013).

For Australia's native forest sector, the country of greatest relevance in the context of paper and paperboard consumption is Japan. As discussed, the vast majority of Australian native woodchip exports have traditionally gone to Japan, where they are mainly used to make printing and writing paper for the Japanese market. The difficulty for Australia's native forest sector is that, as shown in Figures 49 and 50, per capita Japanese paper and paperboard consumption has followed the general developed country trend. Growth stagnated in the early 2000s, began falling immediately prior to the global financial crisis and then collapsed in 2009. It rebounded slightly in 2010 and 2011 but remains well below the levels seen in the mid-2000s. Given the demand-side pressures from digital products and ongoing attempts to encourage wise use of paper products, it is likely that Japanese per capita paper consumption will continue to decline over the medium- to long-term.[94]

[94] ABARE (2010); Mery, G et al (eds) (2010).

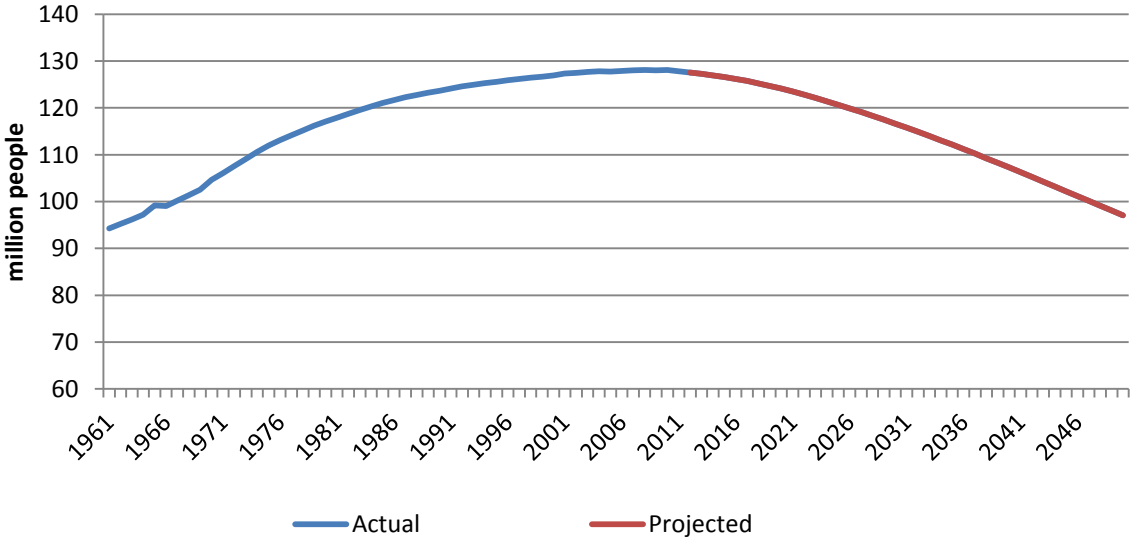
Figure 50 Japanese per capita paper and paperboard apparent consumption, by product group, 1961-2011 (tonnes per person)



Source: FAO (2013); Japanese Statistical Research and Training Bureau (ed) (2013). *Japan Statistical Yearbook 2013*.

An additional problem for Australian woodchip exporters is that Japan's population is also declining and is expected to continue to fall throughout the 21st century (Figure 51). Due to the extent of the native forest sector's reliance on woodchip exports to Japan, the profile of this market — with falling population levels and declining per capita consumption — poses a significant threat to its financial viability.

Figure 51 Population of Japan, actual and projections, 1961-2050 (million people)



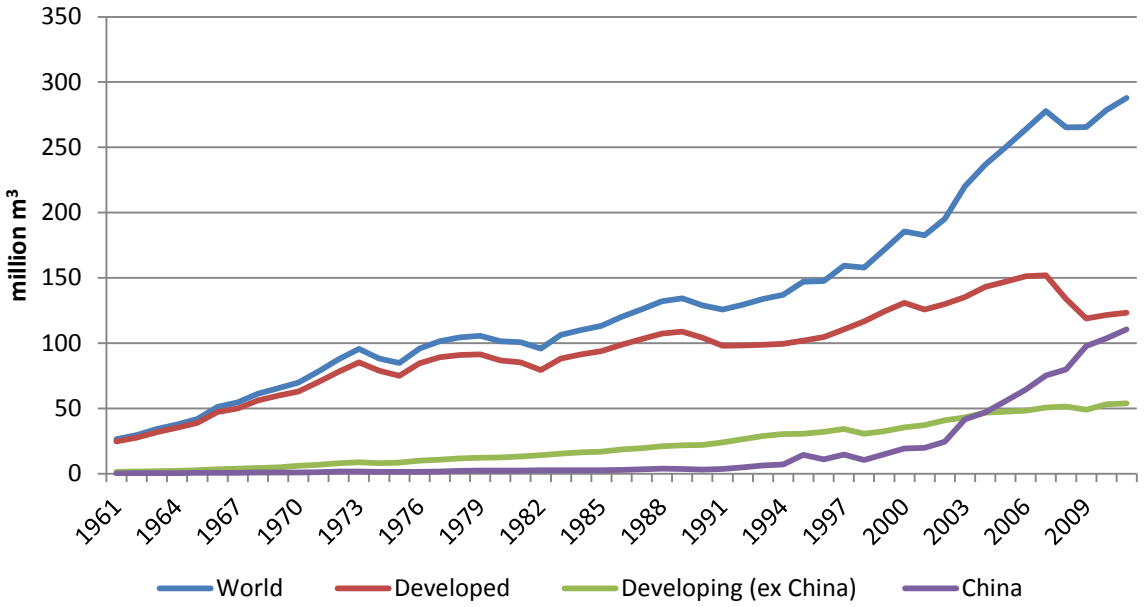
Source: Japanese Statistical Research and Training Bureau (ed) (2013).

Shift in paper, paperboard and pulp production to developing countries

Over the past 15 years, there have been dramatic changes in the global wood markets that have arisen as a result of the rapid growth of developing countries. One of the most notable trends has been the relative shift in production, away from developed countries and toward

developing countries and those in transition. This is seen in relation to wood-based panels, where production has increased rapidly in developing countries, particularly China, since the early 2000s (Figure 52).

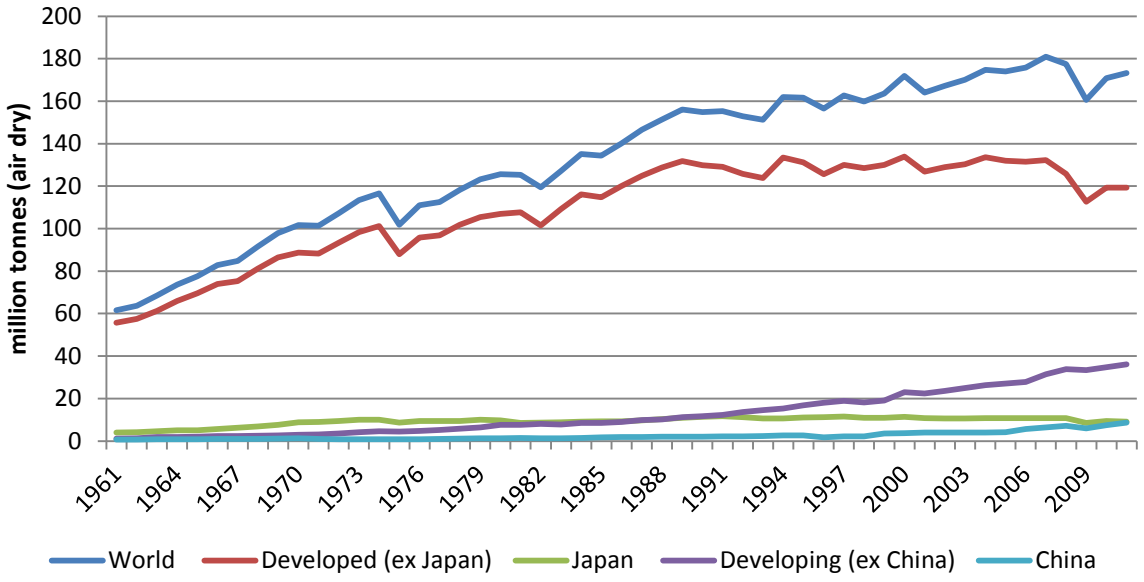
Figure 52 Production of wood-based panels, by country group, 1961-2011 (million m^3)



Source: FAO (2013).

Likewise, there has been a sharp increase in wood pulp production in Asia, South America and Africa, which has eaten away at the traditional dominance of developed countries from North America and Europe (Figure 53). This shift has been led by Brazil, China, Indonesia, Chile, India and South Africa, all of which are now in the top 15 wood pulp producing countries in the world.[95]

Figure 53 Wood pulp production, by country group, 1961-2011 (million tonnes, air dry)

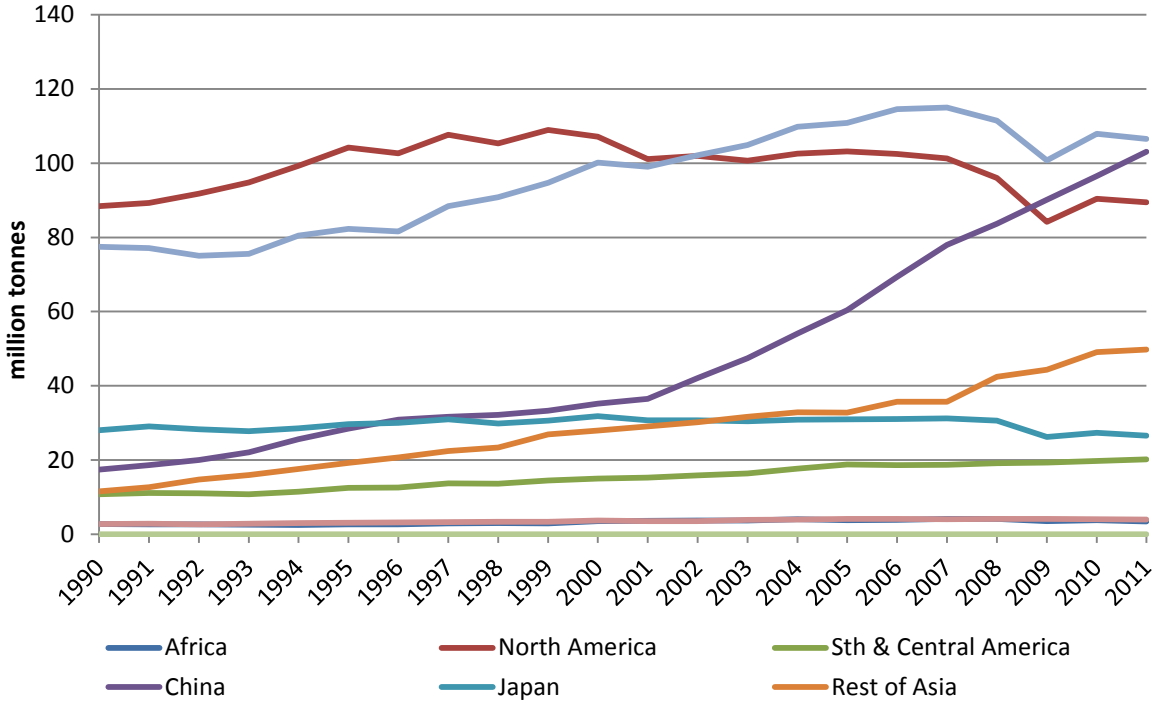


Source: FAO (2013).

[95] FAO (2013).

Paper and paperboard production has followed the same trajectory. Whereas production was once dominated by Europe, North America and Japan, the last decade has seen a relative shift toward the emerging economies in Asia (Figure 54). Even within Europe, since the mid-1990s, an increasing proportion of production has come from the economies in transition in Eastern Europe, most notably Russia and Poland.[96]

Figure 54 Paper and paperboard production, by country and country group, 1961-2011 (million tonnes)



Source: FAO (2013).

Because of the extent of the Australian native forest sector's dependence on the Japanese pulp and paper industry, the shift in production toward developing countries has brought challenges. The Japanese industry is facing waning domestic demand and increasing competition from producers from Asia (e.g. China, Indonesia and Thailand), South America and Africa. In recent years, there has been an increase in Japanese wood pulp and printing and writing paper exports as producers have looked to fill the gap left by declining domestic demand. However, the increase has been off a low base and Japan still only accounts for 1 per cent of global paper and paperboard exports, and less than 1 per cent of global wood pulp exports.[97] Further, it is unlikely that the Japanese pulp and paper industry will be able to compete in export markets with the low-cost producers from emerging economies. Most of Japan's pulp and paper facilities are dated and uncompetitive, and in the past five years a number of mills have closed. As the then Australian Bureau of Agricultural and Resource Economics (ABARE) noted in 2010:

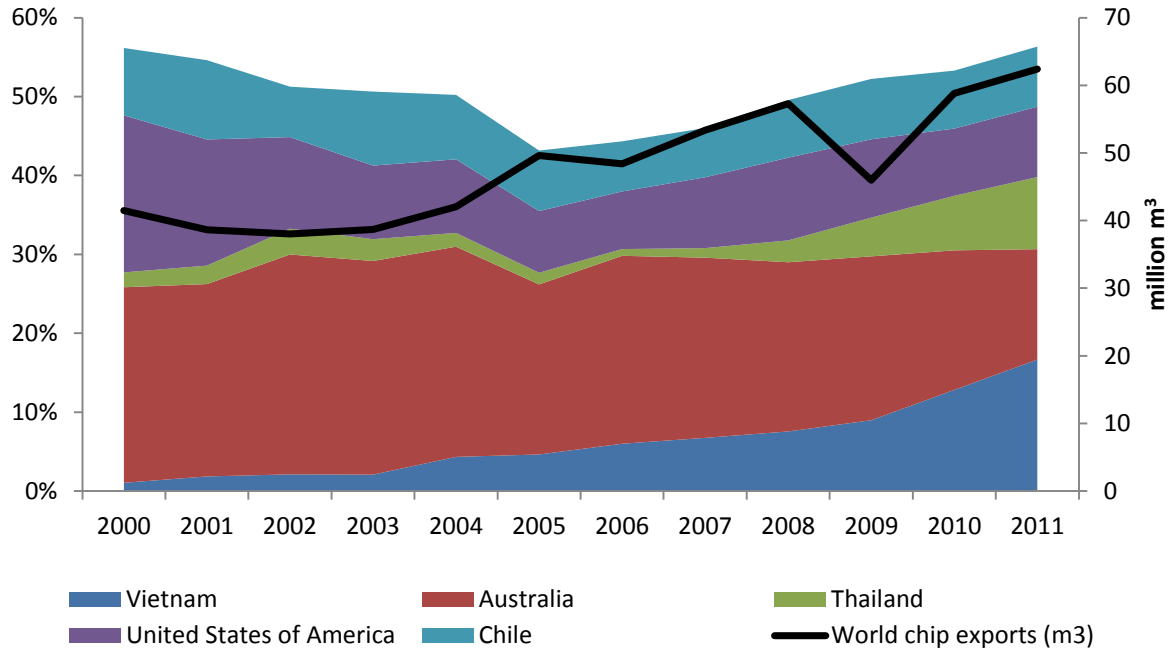
> … two-thirds of Japan's mills are ranked among the least competitive producers of pulp in the world. While Japanese demand for woodchips may return in future, it is highly unlikely that the industry output will grow much beyond the levels of 2007 and 2008.[98]

[96] FAO (2013); UNECE and FAO (2006-2012).
[97] FAO (2013).
[98] ABARE (2010).

Increased production and export of plantation woodchips from developing countries in Asia

The problems faced by Australian native forest woodchip exporters have been compounded by the increase in woodchip production in, and exports from, developing countries, particularly Chile, South Africa, Vietnam and Thailand. During the 1990s and early 2000s, Australian hardwood woodchip exporters faced growing competition from producers in Chile and South Africa. The rise of Chile and South Africa in the export woodchip market, and expected increases in plantation pulpwood production in Australia and these countries, led ABARE to warn in 2003 that 'the prospects for Australian woodchip exports are poor'.[99] In the late 2000s, Vietnam and Thailand emerged as two other major competitors in hardwood woodchip markets. By 2011, they had become the world's largest and third largest chip and particle exporters. The increase in competition has helped drive down real woodchip prices (Figure 47) and seen Australian exporters lose market share to its developing country competitors. This is illustrated in Figure 55, which shows the proportion of the world woodchip export market held by the top 5 exporters in 2011 (left vertical axis), and trends in world chip exports (right vertical axis), over the period 2000-2011. The difficulty that the Australian native forest sector has had in competing with developing country producers is due to the market preference for plantation-sourced chips, higher production costs, and the high Australian dollar. The success of Australian plantation chip exporters (evident in Figures 9-11) in recent years highlights the importance of the first two of these factors and suggests that the high dollar has been a secondary issue.

Figure 55 Proportion of the world woodchip export market held by the top five exporters in 2011 (%) (left axis), and trends in world chip exports (million m^3) (right axis), 2000-2011



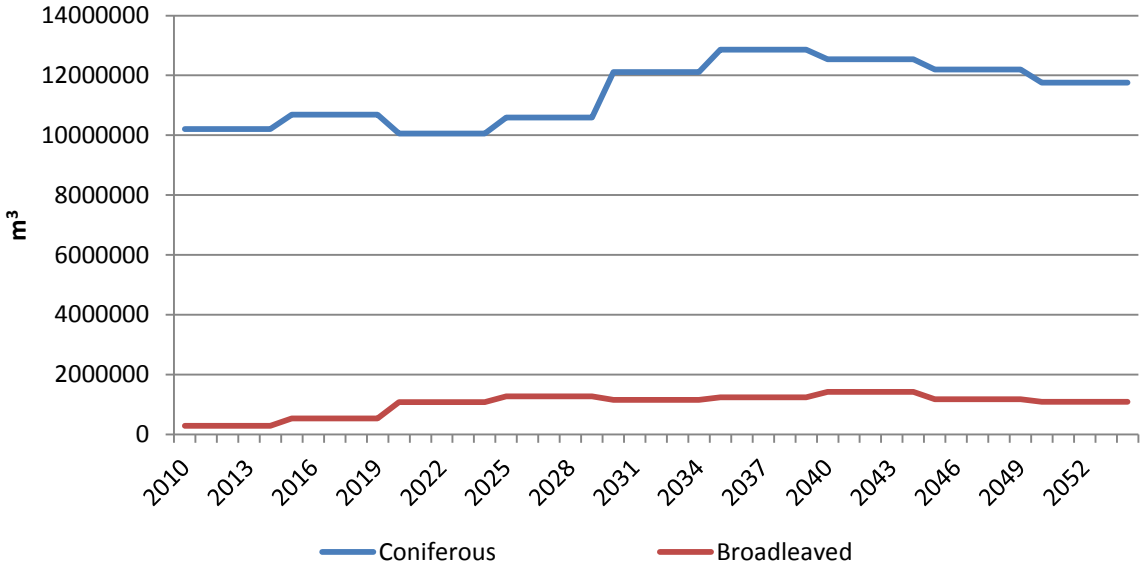
Source: FAO (2013).

[99] Nelson (2003).

The prospects for the native forest sector

The problems that have beset the native forest sector over the past decade look likely to continue into the foreseeable future. Crucially, there is no immediate prospect of relief from the market and social factors that have caused the contraction. Native forest sawnwood producers are likely to see continued weak demand in structural timber markets and strong competition from plantations. Production of coniferous plantation sawlogs is expected to remain relatively stable over the next two decades before increasing significantly after 2030. The supply of broadleaved plantation sawlogs is projected to increase by over 300 per cent in the next two decades, albeit off a low base (Figure 56). Native sawnwood producers will also face ongoing competition from engineered wood products, both in structural and appearance markets. In addition, history suggests there will be continued community pressure for improved forest management practices and further increases in forest reserves.

Figure 56 Forecast plantation sawlog supply, by forest type, 2010-2054 (m^3)



Source: Gavran et al (2012).

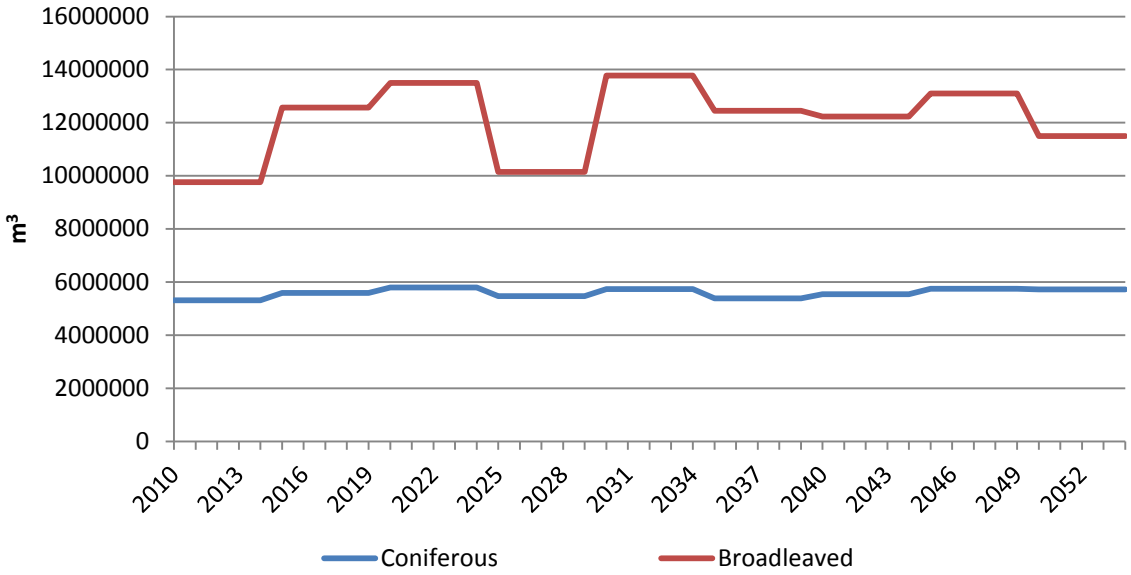
The outlook in the woodchip market is dependent on three main factors: the state of the Japanese pulp and paper industry, the increase in paper and paperboard production and consumption in developing countries in Asia, and demand for wood for bioenergy and other biomass-dependent technologies (e.g. bioplastics). Japanese demand for Australian broadleaved native woodchips for paper production is likely to continue to fall. Since at least the mid-2000s, the Japanese pulp and paper industry has signalled its desire to reduce reliance on native woodchips for reasons of sustainability and improved yields.[100] The industry also appears to be in decline, a trend caused by falling paper and paperboard consumption in Japan and increased competition from imports. It is possible that the Japanese industry could recover by reorientating itself toward growing markets in Asia. However, the structure of the industry and that of its foreign competitors makes this unlikely.

While Chinese markets are unlikely to save the Japanese pulp and paper industry, they could provide a new source of demand for Australian native woodchip exporters. With rapidly increasing production and consumption of paper products, China is seen by some as the natural replacement market for native chips. The first issue with this is that the Chinese paper industry has tended to import pulp rather than chips. This is in the process of

[100] URS (2007); Nippon Paper Group (2012).

changing. In the three years between 2008 and 2011, Chinese chip and particle imports from all countries rose from 3.6 million m^3 to 12.6 million m^3 (a 251 per cent increase).[101] However, like Japan, Chinese importers prefer broadleaved plantation chips. Further, in at least the short- to medium-term, there is unlikely to be an acute shortage of broadleaved woodchips that could help revive international woodchip prices. Even within Australia, there will continue to be an abundant supply of pulplogs from plantations (Figure 57). While woodchip prices remain subdued, the domestic native forest sector will struggle, especially as harvest, haulage and energy costs are likely to continue to rise.

Figure 57 Forecast plantation pulplog supply, by forest type, 2010-2054 (m^3)



Source: Gavran et al (2012).

One possible source of assistance for native woodchip producers is bioenergy and other biomass feedstock markets. Over the past decade, the production and consumption of wood energy has risen considerably.[102] To date, much of this growth has been in Europe, where renewable energy targets and related policy measures have been the primary driver of industry expansion.[103] Between 2000 and 2011, primary energy production from wood and wood waste in Europe (EU-27) increased by almost 50 per cent.[104] This growth has been mainly fuelled by wood pellets, the production of which rose from 0.84 million tonnes in 2000 to 9.29 million tonnes in 2010; a more than tenfold increase.[105] Approximately 80 per cent of the pellets consumed in the EU-27 are from producers within the region, the remainder being imports from mainly Canada, United States and Russia.[106] Recently, pellet imports have risen sharply as production capacity has increased in the major exporting countries. In just three years, between 2009 and 2011, pellet imports to the EU-27 increased by 82 per cent, rising from 1.8 to 3.2 million tonnes.[107]

[101] FAO (2013).
[102] Lamers, P et al (2012). *Developments in international solid biofuel trade—An analysis of volumes, policies, and market factors*.
[103] UNECE and FAO (2012).
[104] European Commission (2013). *Eurostat*.
[105] Lamers et al (2012); Cocchi, M et al (2011). *Global Wood Pellet Industry Market and Trade Study*.
[106] Cocchi et al (2011); UNECE and FAO (2012).
[107] European Commission (2013). *Eurostat*.

The expansion of the wood energy market is expected to continue for at least the next two to three decades. In the EU-27 alone, consumption is forecast to increase by between 100 and 400 per cent by 2020.[108] Additional growth could come from North America and Asia, including China, Japan and South Korea. There may even be a renewed push to encourage the development of the wood energy industry in Australia. This worldwide expansion of wood energy production could provide a new source of demand for native forest pulplogs and other residues. Woodchips could be used directly for combustion, as they are already in many places.[109] Native pulp and other low grade logs, as well as associated residues, could also be used to make pellets. The primary feedstock for wood pellets at the moment is sawdust and other wood waste from sawmilling. This dependence on sawmilling residues has exposed wood pellet producers, and consumers, to fluctuations in supply caused by changes in solid wood product markets. In response, the industry is seeking more reliable sources of supply, with the focus being on lower grade logs and harvest residues.[110] Apart from providing new markets for native wood, the other benefit that could stem from the expansion of the wood energy industry is that it could drive up wood prices, as occurred just prior to the global financial crisis.[111]

Although there are potential opportunities associated with the rise of wood energy and other biomass-dependent technologies, these markets are unlikely to provide a panacea for the native forest sector's problems. The redirection of pulp and other lower grade native logs to bioenergy production is likely to attract considerable community opposition. There could also be a resistance to native-sourced pellets in international bioenergy markets, especially in Europe. The predicted explosion in wood energy markets is also subject to a degree of uncertainty. Energy demand in developed countries is slowing, while competition from other low-emission energy sources is increasing. Over the past five years, the cost of renewable energy technologies, particularly solar PV, has fallen considerably.[112] Natural gas prices have also eased in some areas, including the United States.[113] If wood energy costs increase, the scope for industry expansion could be reduced due to competition from these alternative energy sources. There is also significant excess pellet production capacity in Europe and North America, making the development of an expanded export-orientated domestic pellet industry unlikely. The other challenge for native forest producers is costs. Without government assistance, production costs are likely to make the native forest sector uncompetitive.

The native forest sector is aware of its predicament and is looking at three ways to arrest its decline.

- The sector is seeking Forest Stewardship Council certification of the areas of public native forest that remain available for commercial harvest.[114] It is hoped this will deal with the aversion in domestic and international markets toward native forest products.
- The sector is seeking government subsidies to assist in shifting production toward higher value-added and specialist products, including structurally engineered wood products.[115]

[108] Cocchi et al (2011).
[109] Lamers et al (2012).
[110] Cocchi et al (2011).
[111] UNECE and FAO (2007-2012).
[112] Bureau of Resources and Energy Economics (2012). *Australian Energy Technology Assessment*.
[113] BP Group (2012). *BP Statistical Review of World Energy*.
[114] Australian Government and Tasmanian Government (2011). *Tasmanian Forests Intergovernmental Agreement*.
[115] O'Hara, T et al (2013). *Key socio-economic impacts in transitioning to wood supply arrangements detailed in Tasmanian Forest Agreement (TFA)*.

- To deal with the lack of demand for pulpwood and other lower grade logs and residues that are unable to be used in solid wood product manufacturing, the sector is seeking government subsidies for the construction and operation of biomass burners. The form these subsidies might take could include direct payments or adjustments to the federal Renewable Energy Target scheme to allow native forest 'wood waste' to be eligible to receive renewable energy certificates.[116]

Another possible avenue for the provision of government assistance is through carbon credits, which might be generated through changes in forest management practices. While possible, the current structure of the Carbon Farming Initiative makes it unlikely that credits could be generated for projects in areas that remain available for commercial harvest. As a result, the only way carbon credits could assist the sector is if parts of the public native forest estate are put aside and the revenues from the sale of credits are then used to cross-subsidise continued harvesting.

With the current state of the relevant wood product markets, the prospects for the native forest sector look bleak. It is likely to continue to contract and, in some areas, it could collapse entirely. While ongoing decline is likely, the demise of the native forest sector is not inevitable. Growth in demand for wood products from Asia or the expansion of bioenergy and other biomass feedstock markets could revive the fortunes of the sector, at least temporarily. As has happened in the past, federal and state governments may also be tempted to provide financial assistance to shield the sector from market forces and ensure its survival.

Conclusion

The decline of Australia's native forest sector is attributable a number of factors. In solid wood product markets, the sector has been adversely affected by six main issues.

- An increase in competition from domestic plantation softwoods in the structural timber market.
- An increase in competition from domestic and imported engineered wood products.
- Weak demand in the structural timber market over the past two decades due to a lack of growth in detached housing construction, a trend that was exacerbated by the economic slowdown associated with the global financial crisis.
- In some jurisdictions, a reduction in the public native forest estate and introduction of more stringent forest management regulations.
- Wood-saving innovations in production processes and related product substitution that have suppressed growth in global wood demand and helped constrain global solid wood prices.
- Increasing harvesting and haulage costs.

In international and domestic woodchip markets, native forest producers have faced a similar combination of pressures, most notably:

- an increase in competition from domestic hardwood plantations;
- an increase in competition from plantation hardwood chip exporters from developing countries in South East Asia, Africa and South America;
- a contraction in the Japanese pulp and paper industry, which has been driven by falling per capita paper and paperboard consumption, population decline, increasing

[116] Ximenes et al (2012).

competition from pulp and paper producers in developing countries, and the global financial crisis; and

- declining competitiveness due to high harvesting and haulage costs, the high Australian dollar and a market preference for plantation-sourced woodchips.

The most persuasive explanation of the trends in the sector is that, for the better part of the last two decades, it has been under pressure as a result of a combination of falling demand, increasing competition, loss of forest access and tightening forest management regulations. By the mid- to late-2000s, the sector was vulnerable to any economic disturbance. It had been displaced by softwoods and engineered wood products in the structural timber market. Gains had been made in appearance and some higher value-added structural markets but these had not been of a sufficient size to offset the losses in traditional structural markets. Further, the sector had become highly dependent on woodchip exports to Japan, a market that was competitive (and becoming more so) and in the initial stages of decline. The global financial crisis and high Australian dollar exacerbated the downward trend and made many native forest operations uneconomic. The ongoing ramifications of the initial financial crisis, and the tsunami in Japan, have suppressed demand growth and caused further structural adjustment in the sector.

While there is uncertainty about future trends in wood markets, the factors that have caused the contraction of the native forest sector look likely to persist, at least in the short- to medium-term. There is the potential for a partial revival to occur as a result of growing wood product demand in Asia and/or bioenergy and other biomass feedstock markets in developed and emerging economies. However, with sluggish demand in many key markets, strong competition from Asian, South American and African producers, and a distinct market preference for plantation-sourced products, this looks unlikely. As a result, in the absence of additional government assistance, the sector is likely to continue to decline and, in some areas, it could completely collapse.

Governments are faced with a choice of continuing to provide subsidies to an economically marginal sector, or looking for alternative uses of native forests. Historically, policy makers have been faced with two mutually exclusive land use options: commercial production and conservation. The emergence of policy-driven carbon and bioenergy/biomass feedstock markets has complicated the choices available to governments. To date, insufficient attention has been given to whether the economic returns from conservation and carbon mitigation outweigh those offered by extractive forest uses.

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