

Challenges and opportunities in the Australian forest and wood products industry





AN INITIATIVE OF  AUSTRALIAN CLIMATE AND
BIODIVERSITY FOUNDATION

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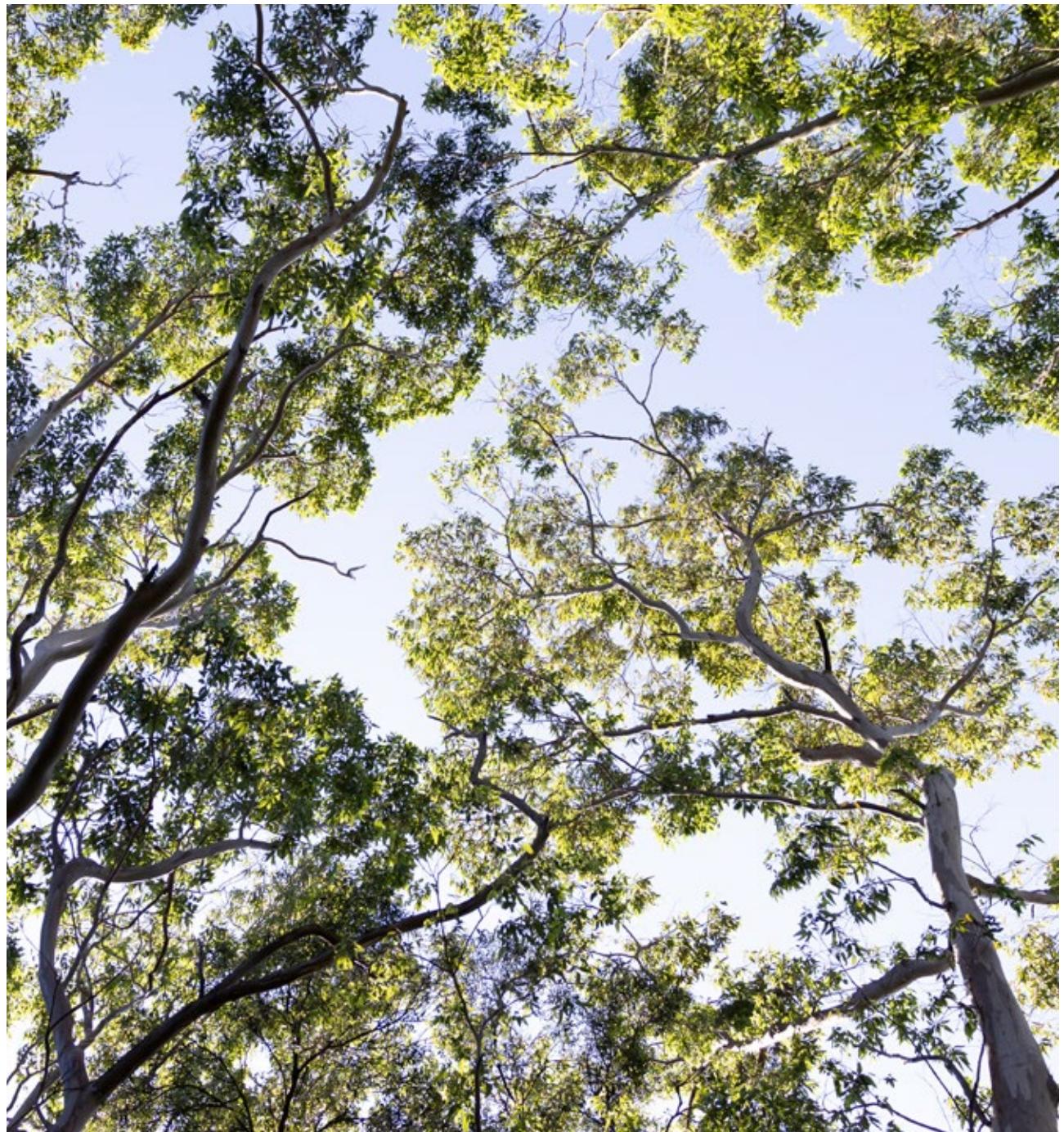
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Introduction

ACBF commissioned EY Port Jackson Partners to analyse challenges and opportunities facing the Australian forest and wood products industry, including assessing its current performance and potential outlook for the future.

EY Port Jackson Partners conducted modelling and technical analysis that informs the results in presented in this report.¹ However, statements involving value judgments should be considered to reflect the views of ACBF.

¹Please see the Appendix and Disclaimer for more detail on the assumptions and limitations of the analysis.



Glossary

Softwood	Wood obtained from coniferous trees, characterised by a high proportion of soft, lightweight fibres and commonly used for construction and paper production. Primarily harvested from softwood plantations (though cypress pine is harvested from native forests).
Hardwood	Wood derived from deciduous trees, recognized for its denser and often harder characteristics, frequently employed in furniture, flooring, and decorative applications. Can be harvested from hardwood plantations or native forests.
Plantation forestry	The establishment, cultivation, management and harvesting of specifically planted and tended tree species, primarily a mix of softwood pine trees and hardwood eucalyptus trees.
Native forestry	The management and harvesting of Australia's naturally forested areas, primarily composed of native eucalyptus hardwood (but also including native cypress pine, which is classified as a softwood).
Roundwood	Harvested but unprocessed wood in its natural cylindrical form, either as logs or other rounded timber, prior to undergoing further manufacturing processes.
Sawlog	A large, high-quality roundwood log harvested from a tree suitable for sawmilling, typically used in the production of lumber and other wood products.
Sawnwood	Roundwood that has been cut or sawn into specific dimensions and shapes for use in construction, carpentry, and other applications.
Pulplog	A smaller, lower grade roundwood log primarily utilised in the production of pulp and paper products.
Higher value uses	Some uses of wood are associated with higher value-added. These include e.g. construction and durable wood products such as structural timber, flooring, veneers, and furniture.
Lower value uses	Some uses of wood are associated with lower value-added. These include e.g. wood chips, pulp, mulch, and wood fuel.

EXECUTIVE SUMMARY: A HIGH-PERFORMING FORESTRY SECTOR CAN SUPPORT HOUSING SUPPLY, JOBS, CLIMATE, AND BIODIVERSITY OBJECTIVES

Forestry and wood products are a small but important part of Australia's economy

Australia's forests, plantations, and the associated wood products industry are a small but important part of the Australian economy

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Australia's forests underpin a wide range of valuable products and ecosystem services. They provide wood for construction, furniture, paper, packaging and fuel that contributes ~\$9b of value-added to the Australian economy. Forests support employment for over 50,000 Australians, including over 20,000 in regional Australia. They filter our air, regulate our water, and sequester carbon, as well as supporting recreation and tourism.

Australian wood consumption has been largely flat over the last two decades, declining over 20% in per capita terms. The decline has been most stark in hardwoods, which have fallen from half to less than a quarter of consumption between 1975 and 2020.

Softwoods and hardwoods serve different markets, and have experienced very different dynamics

Domestic demand for sawnwood and construction materials is primarily met from softwood plantations. Overall, softwoods represent ~75% of construction use, ~60% of total domestic wood use and ~70% of industry value-added.

Hardwood, including native hardwood, mostly goes to low value (mainly exported) products such as wood chips, pulp and wood fuel. A small portion is used to produce some high value durable products, such as flooring and veneers. Low value products account for over 90% of hardwood plantation and ~75% of native timber volumes. In contrast, small volumes of higher-value durable products account for around half of the value-added of native forestry output.

Downstream processing and manufacturing account for over 80% of industry value-add

Manufacturing of wood and paper products accounts for over 65% of industry value added, and primary processing another 15%. They also have higher wholesale margins (~10-13% on average) than logging (~3%).

Milling has consolidated to have fewer, typically larger mills and hardwood sawmills remain significantly smaller and less efficient than softwood mills.

Harvest areas are flat or declining, reflecting low rates of return, particularly for hardwoods

Native forest wood production is in structural decline. Production volumes fell ~60% from

2004 to 2014, and the end of native forest logging in Victoria and Western Australia from the start of 2024, has reduced volumes by another ~20% from 2004 levels (~80% overall).

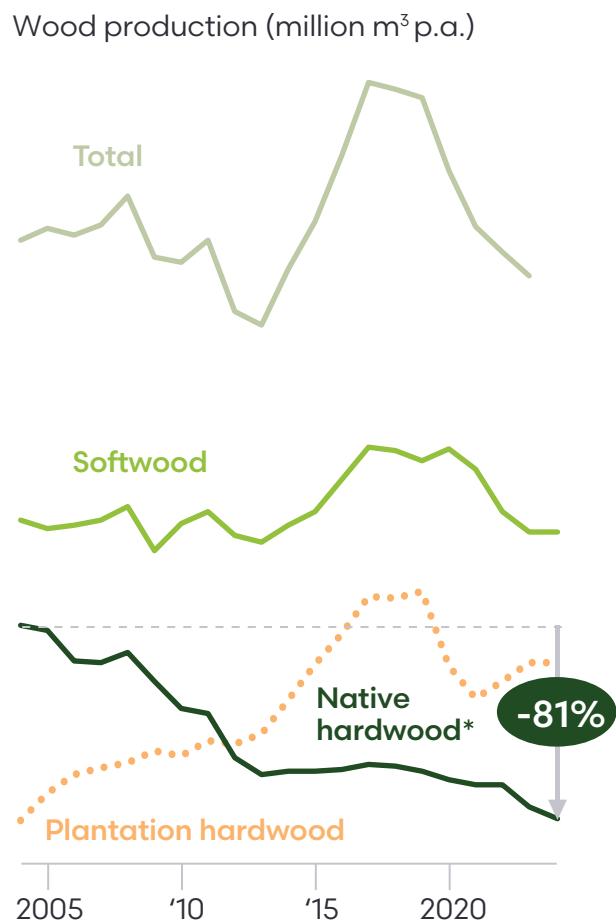
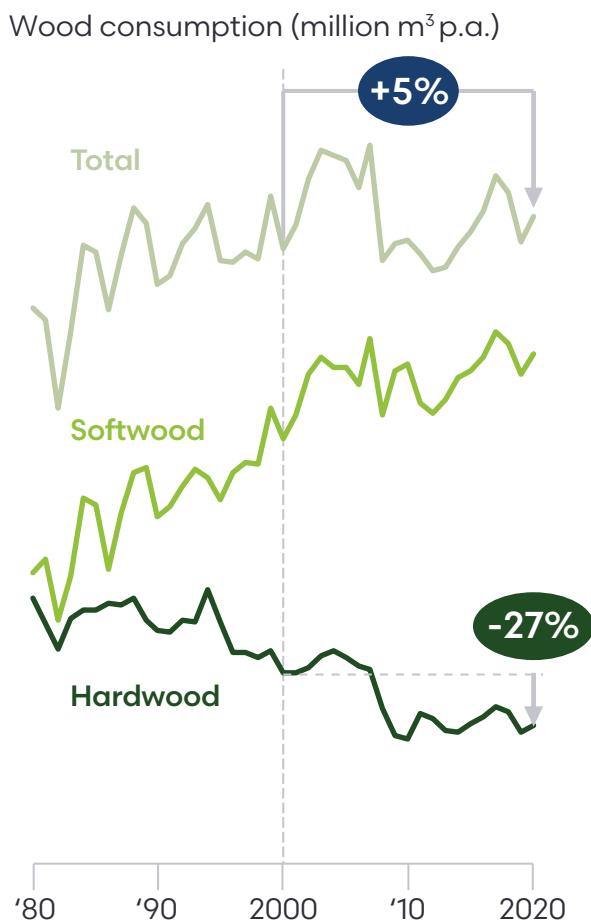
Australian plantation establishment has largely ceased since 2010, with the plantation area steady for softwoods and declining for hardwoods. On their own terms, returns on new plantation investments often appear unfavourable, particularly for hardwoods – though carbon credit (ACCU) revenues

and government grants have the potential to improve economics, and there has been a recent uptick in softwood plantation establishment.

Forestry is particularly important for some regional communities

While most industry employment is in downstream manufacturing, employment in logging and primary wood processing is highly geographically concentrated, and is particularly important to a small number of regional communities.

While Australia's population has grown >30% since 2000, wood use has grown only 5%, and native hardwood production has fallen >80%



* 2024 excludes Victoria and WA, where native logging has now ceased.

An innovative, high-performing forestry sector that supports jobs, housing, climate, and biodiversity objectives requires carefully coordinated policy support

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There are short-term pressures on construction timber supply, and potential for longer-term pressures in high construction scenarios

There are a range of plausible scenarios for how demand and supply for softwood sawnwood – which makes up the vast majority of construction timber – could evolve over time.

Most outlooks see short-term peaks in construction demand before 2030. Longer-term demand could vary between ~100-225k dwellings p.a. in different scenarios. However, this may require more completions than the construction sector has historically achieved.

This leads to short-term pressures on construction timber supply from existing softwood plantations and sawmills, and potential for longer-term pressures in scenarios with high construction activity.

Sawlog supply chains need to match log availability, mill capacity, and construction demand within feasible transport distances. The existing plantation and sawmill footprint appears unlikely to meet short-term demand peaks, and is also likely to face longer-term shortfalls under high construction scenarios.

The right combination of log supply, mill capacity, and imports to meet construction demand requires careful consideration – and different approaches in the short vs. longer term.

Plantations established now will not address short-term supply issues, and mills may be wary of overexpansion if there is a risk that demand peaks will not be sustained. This could result in increased import reliance in the short-term.

Over the longer-term, investments in the right mix of plantation supply and mill capacity will need to carefully manage risks of both under and over-capacity. (There is evidence of over-capacity in some local supply chains already.)

The recent uptick in plantation establishment is encouraging, but potential risks to future log availability will need to be managed.

Government grants and increasing ACCU incentives appear to be contributing to recent increases in both plantation establishment and mill capacity. However, some disestablishments may also occur if alternative uses of plantation land – either for agriculture or permanent carbon forestry – become more attractive.

The 2019-20 bushfires have had a material effect on future log supply, and future fire risks need to be managed carefully.

Potential reductions in native log supply need to be managed carefully

Fully accounting for the carbon and biodiversity benefits of native forests may make continued native logging increasingly uneconomic. If native logging were phased out across the remainder of Australia, it will be critical to support economic and social outcomes for affected workers, businesses, and communities.

Developments in carbon and biodiversity markets could support the growth of a sizeable non-extractive forestry sector

As ACCU prices rise, the revenue opportunities from carbon plantings will also increase. In conjunction with potential growth in biodiversity markets, this could support the growth of a sizeable non extractive forestry sector – but interdependencies with extractive forestry will need to be closely monitored.

Navigating these sector dynamics will require carefully coordinated responses

An innovative, high-performing forestry sector needs to play multiple roles in our society – supporting not only housing supply, but also jobs, climate, and biodiversity objectives.

Australia's forests, plantations, and the associated wood products industry are a small, but important, part of the Australian economy

Australia's forests underpin a wide range of 'ecosystem services'

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Forests filter our air, regulate our water, and sequester carbon. They support recreation and tourism. And they provide wood for construction, furniture, paper and fuel.

Efforts to value the full range of services Australia's forests provide are still under development.¹ But early attempts to value the contribution of Victoria's RFA regions,² and more developed woodland natural capital accounts in the UK³ both ascribe over 95% of the value of forest services to the recreation, regulation, and other services they provide, beyond wood alone.

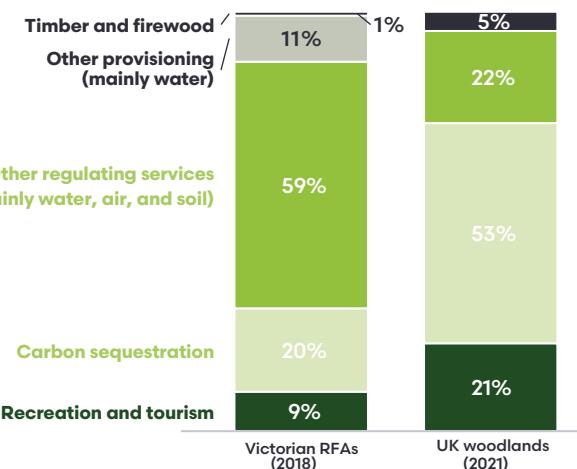
The forestry and wood products industry accounts for 0.4-0.5% of Australia's economy, mostly in manufacturing

The forestry and wood product industry contributes ~\$9b of value-added to the Australian economy,⁴ and employs more than 50k Australians – over 20k in regional Australia.⁵

Over 65% of value-added and employment are in downstream manufacturing of wood and paper products, ~20% in forestry and logging, and the remainder in milling.

Beyond the provision of wood, forests support a range of other valuable ecosystem services

Estimated annual woodland ecosystem service value (% of total)



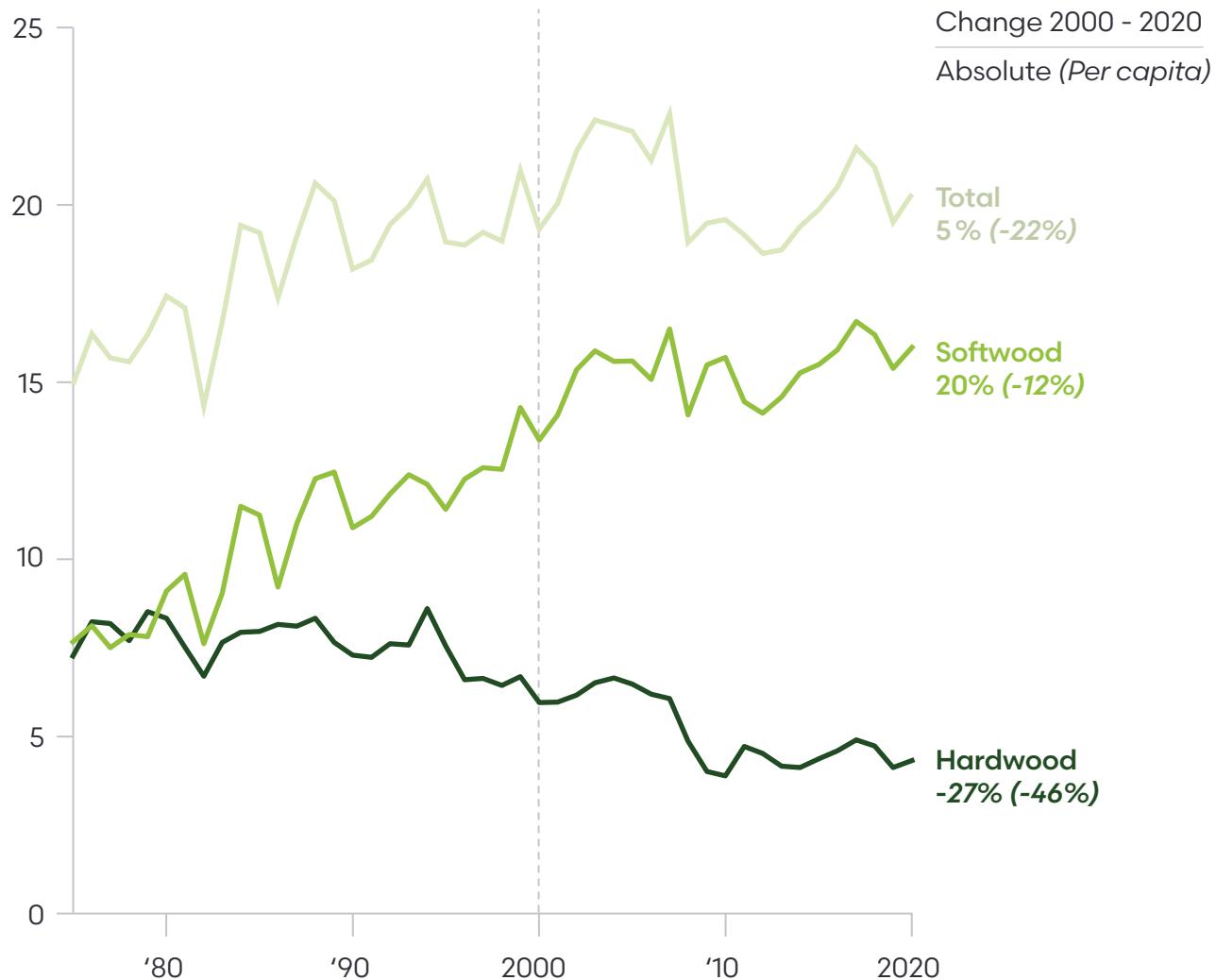
Australian wood consumption is declining in per capita terms

Overall Australian wood consumption has been largely flat since 2000 and has fallen over 20% in per capita terms. The decline has been particularly stark in hardwoods, which have fallen from half of consumption in 1975 to less than a quarter in 2020.⁶

Even softwood consumption, which grew ~20% in absolute terms since 2000, has fallen over 10% in per capita terms.

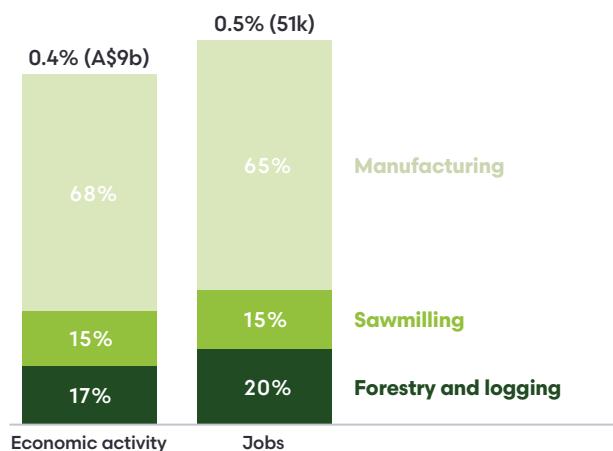
Australian wood use declined >20% in per capita terms since 2000

Million m³ per year



Forestry and wood products account for 0.4 - 0.5% of Australia's economy, ~2/3 of that in manufacturing wood and paper products

Forest and wood products share of Australian economy (%)



Softwoods and hardwoods serve different markets, and have experienced very different dynamics



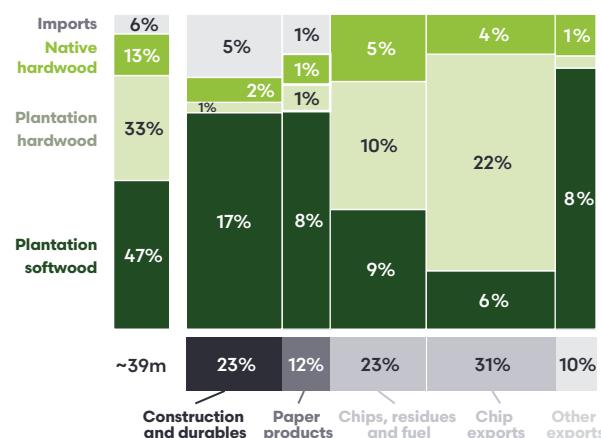
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Domestic demand for sawnwood and construction materials is primarily met from softwood plantations

Overall, softwoods represent ~75% of construction use, ~60% of total domestic wood use and ~70% of industry value-added.⁷

Softwoods dominate high-value use for construction and durables, while hardwoods dominate low-value use as fuel, chips, and exports

Volume (m³ wood fibre equivalent, %)

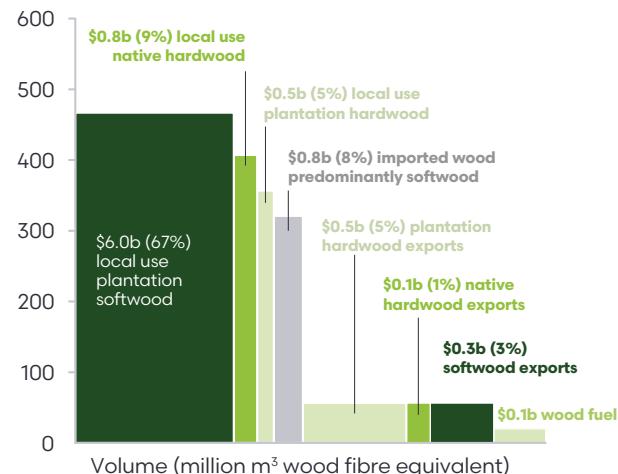


A small share of hardwood output is used for high value durable products

A small portion of hardwood volumes is used to produce relatively high value durable products, such as flooring and veneers. These higher-value durable products account for around half of the value-added of native forestry output.⁸

Softwoods dominate higher value timber uses, particularly structural uses

Value-added (A\$ / m³ wood fibre equivalent)





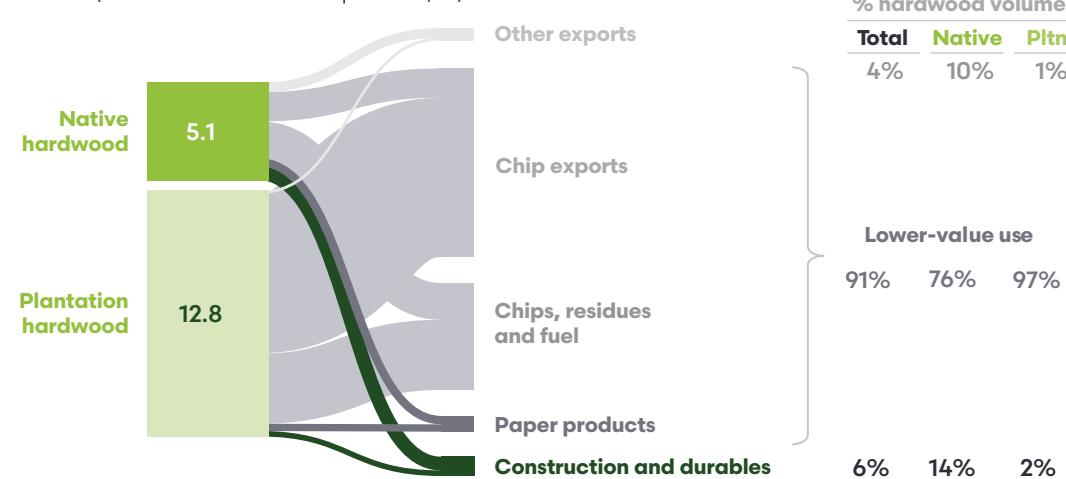
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Over 90% of all hardwood volume goes to lower value products

Hardwood, including native hardwood, mostly goes to lower value products such as wood fuel, pulp and wood chips (much of which is exported). These products account for over 90% of hardwood plantation and 75% of native timber volumes.⁹

Hardwood, including native hardwood, mostly goes to lower value products such as wood chips, pulp and wood fuel

Volume (Million m³ wood fibre equivalent; %)



Manufacturing and milling comprise over 80% of industry value-added

Manufacturing of wood and paper products accounts for around two thirds of industry value added - mostly from plantation softwoods

Manufacturing of wood and paper products accounts for ~67% of industry value added, with ~40% from wood product manufacturing, and ~30% from pulp and paper production.¹⁰

This share is slightly higher for softwoods, and manufacturing of plantation softwood products accounts for 50% of total industry value-added.

In contrast, because most hardwood is exported as wood chips, hardwood

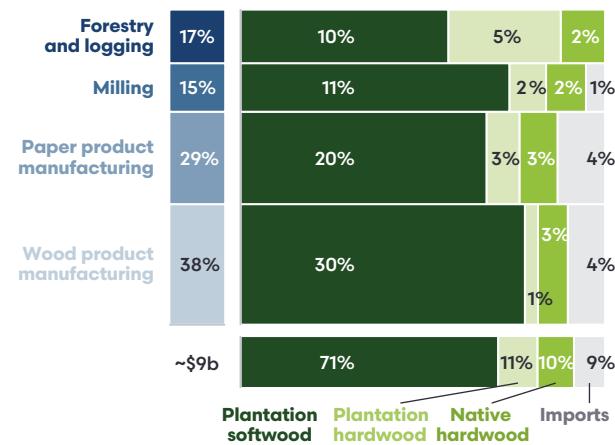
manufacturing accounts for only ~10% of total industry value-add (or around half of hardwood value-added).

Primary processing, which accounts for ~15% of value added, has seen significant consolidation over time

Both softwood and hardwood mills have seen significant consolidation over time towards fewer, bigger mills. But softwood sawmills remain significantly larger and more efficient: processing over 160k m³ of wood per annum, vs. ~11k m³ for hardwood mills (over 15x higher).¹¹ The average softwood mill is also closer to 'best practice' industry productivity than the average hardwood mill.¹²

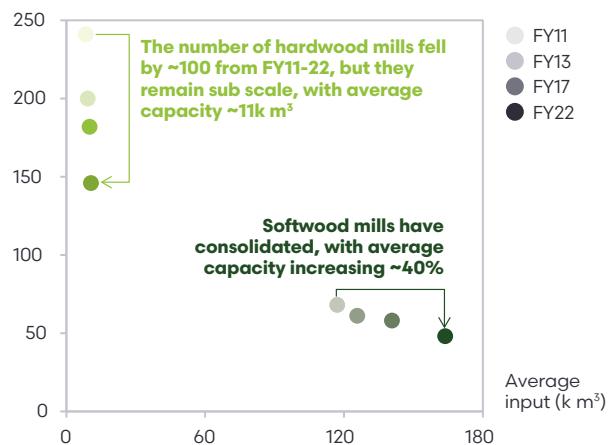
Manufacturing of wood and paper products accounts for around two thirds of industry value added – mostly from plantation softwoods

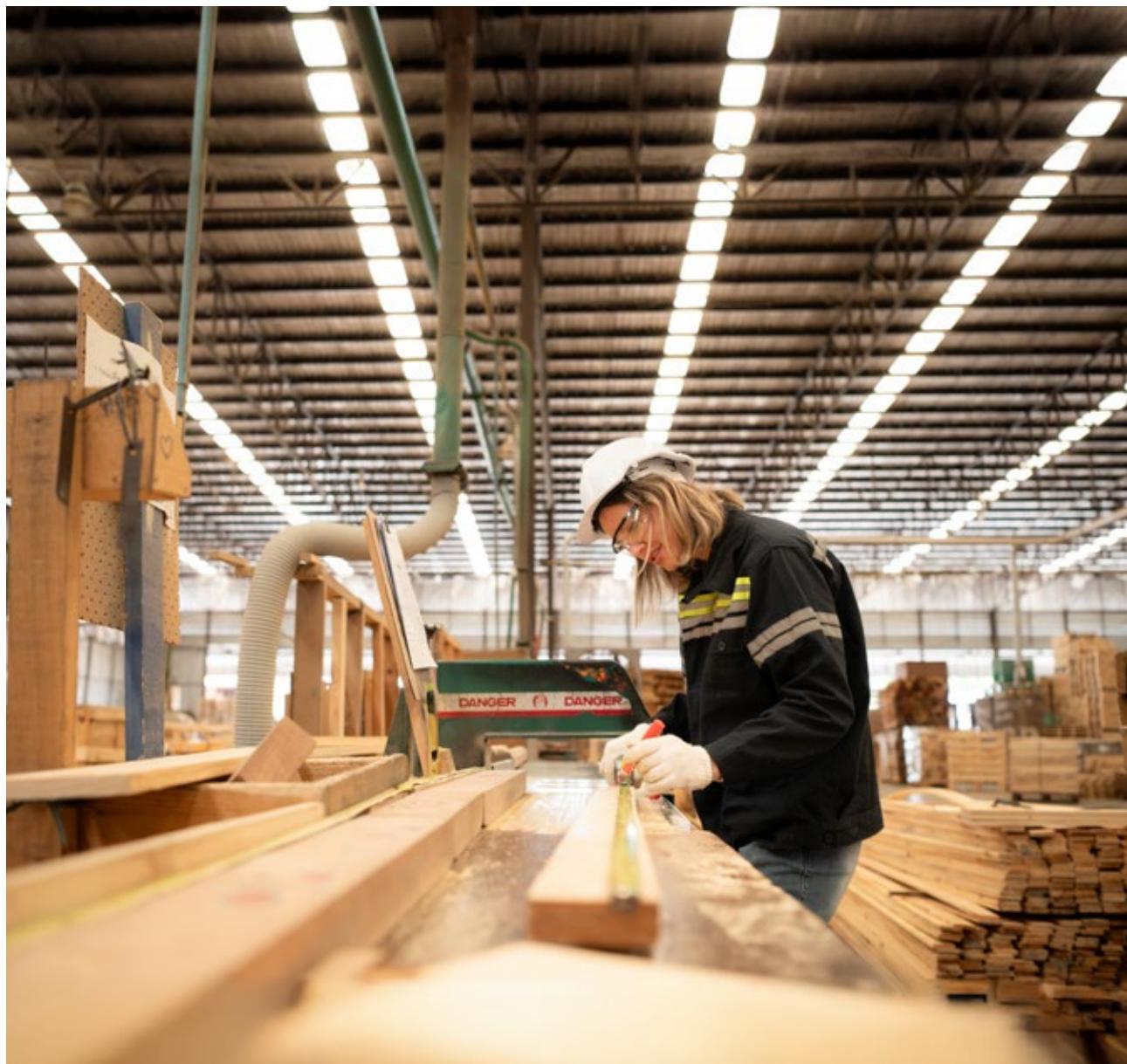
Value-added (A\$, %)



Mills have consolidated from FY11-22: while softwood mills have increased capacity, hardwood mills remain sub-scale

Number of mills





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Wholesale margins are higher in manufacturing and milling than forestry and logging

Margins appear significantly higher in milling and manufacturing than logging.¹³

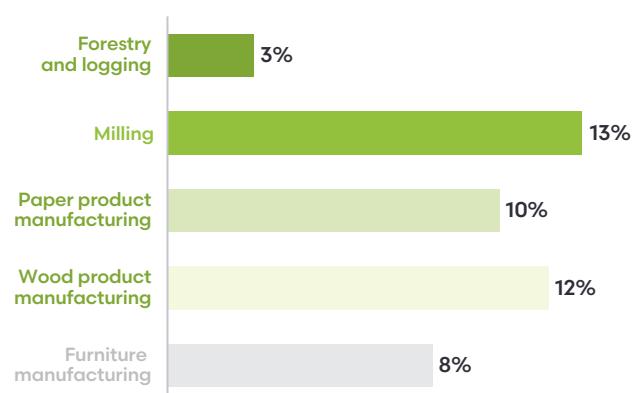
Wholesale margins in milling average ~13% (albeit with significant variation across products, which range from dressed veneers to woodchips).

Paper and wood product manufacturing margins average 10-12% (with variation between high margin product such as panels and lower value ones such as cardboard).¹⁴

In contrast, wholesale margins in logging average only around 3%.

Wood industry wholesale margins are highest in milling and manufacturing and lowest in forestry and logging

Wholesale margin (% sales)



Harvest areas have been flat or declining, reflecting low rates of return, particularly for hardwoods

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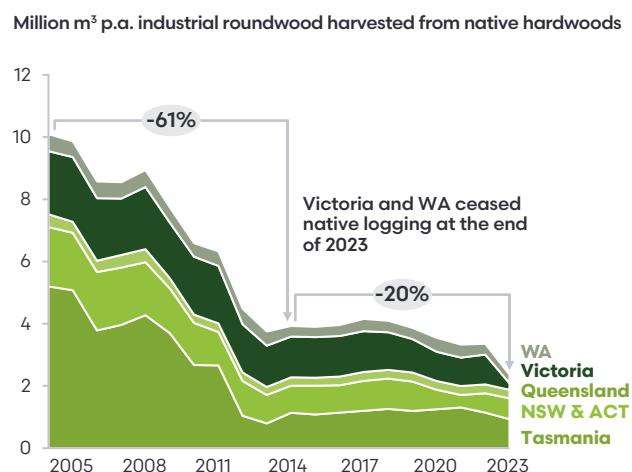


Native forest wood production is in structural decline

Native logging has been primarily conducted by government businesses. While the full economics of these businesses – combining plantation forestry, native logging, and other services – are difficult to disaggregate, many appear to earn sub-commercial returns (under 3% in recent years and sometimes negative).¹⁵

Production volumes fell ~60% from 2004 to 2014, and the end of native forest logging in Victoria and Western Australia from the start of 2024 has reduced volumes by another ~20% from 2004 levels (~80% overall).¹⁶

Native hardwood production has fallen ~80% from 2004 to 2024 (including the impact of end of native logging in Victoria and WA)





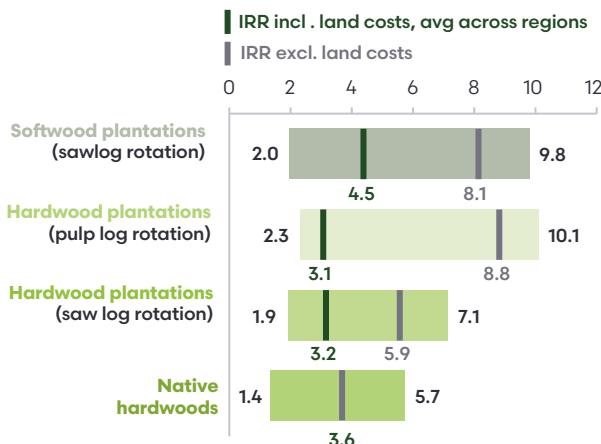
Returns on many new plantation investments appear unfavourable, particularly for hardwoods

Plantations are long-term investments that require confidence in future demand and typically do not generate revenue for decades after establishment.

Potential returns will vary based on a range of factors, including species and rotation choices, site quality, and proximity to existing supply chains. However, increasing land costs appear to have made new plantation investments challenging – at least without additional support from carbon revenues or government.¹⁷

The economics of Australian production forestry appear challenging, particularly for potential new establishments

Estimated underlying real IRR, 2023 (%)



Australian plantation establishment has largely ceased since 2010

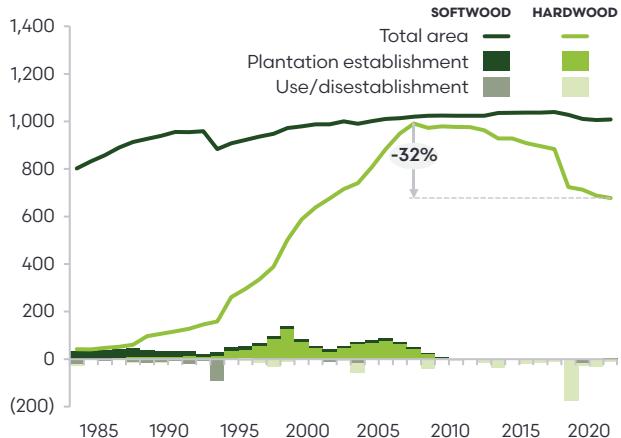
A range of incentives (including loans and tax incentives) have driven waves of plantation establishment over time.

However, since 2010 hardwood plantation area has declined by ~30%, and softwood plantation area has been largely flat (despite a slight uptick in establishments in 2023).¹⁸

The ability of plantations to produce wood over time has also been affected by fires, such as the 2019-20 bushfires, which affected 130 kHa of commercial plantations, particularly in NSW and South Australia.¹⁹

Australian plantation establishment has largely ceased since 2010, and ~30% of hardwood area has been disestablished since

Total plantation area and establishments p.a. (kHa)



Forestry is particularly important for some regional communities

The industry directly employed over 50k people in 2021, mostly in downstream manufacturing

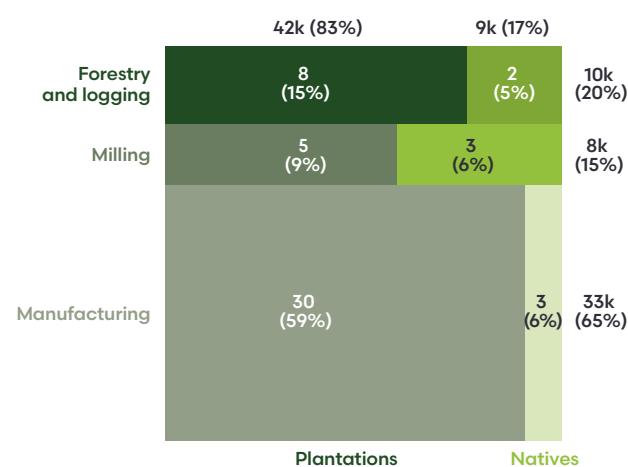
Across the full value chain, the forestry and wood products industry employed ~51k people in 2021, with ~65% of employment in downstream manufacturing of paper and solid wood products.²⁰

In contrast, of around 9k people estimated to be employed in the native forestry value chain, the majority were upstream logging and milling. A substantial proportion of these (~ 3k) will have been affected by the cessation of native logging in Victoria and WA.

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Most forestry jobs are in downstream manufacturing, but most native jobs are in upstream logging and milling

Jobs (k, 2021)

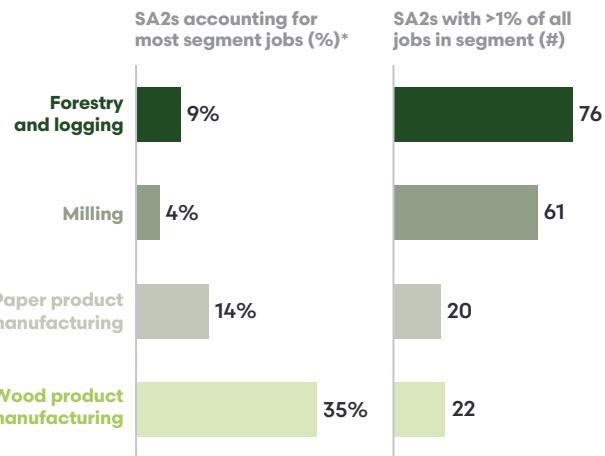


Upstream employment in logging and milling is geographically concentrated

Industry employment is geographically concentrated – particularly in milling and logging. A small number (fewer than 10%) of communities account for most jobs in these parts of the value chain, and there are ~60-75 communities where logging or milling account for more than 1% of total community employment.²¹

Communities dependent on logging and milling also tend to have lower median incomes. For example, communities with over 1% of employment in milling have median incomes 1/6 to 1/3 lower than other communities.²²

Upstream employment is concentrated, with ~60-75 communities 'highly-exposed' to logging or sawmilling





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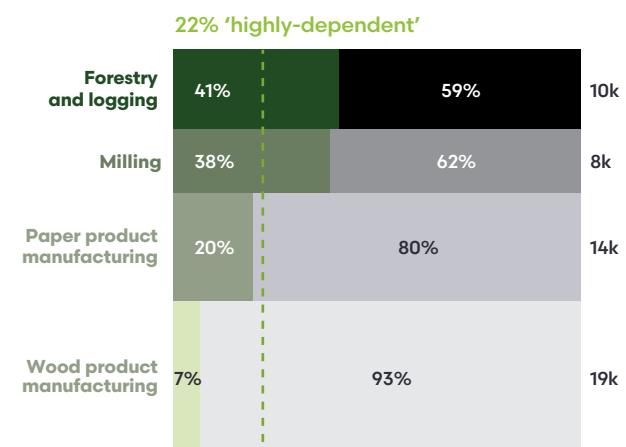
~20% of workers are highly dependent on the industry for employment – more in upstream logging and milling

Upstream workers are also likely to be more dependent on the forestry industry for employment (i.e. likely to have fewer alternative employment options).²³

Across the industry, ~80% of workers are estimated to have viable local employment options in the same or similar occupations. However, in upstream logging and milling, this reduces to around 60%.

~20% of industry workers and ~40% of upstream workers are highly dependent on the industry for employment

Jobs (k)



An innovative,
high-performing
forestry sector
that supports
jobs, housing,
climate, and



biodiversity
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There are short-term pressures on construction timber supply, and potential for longer-term pressures in high construction scenarios

There are a range of plausible scenarios for how demand and supply for softwood sawnwood – which makes up the vast majority of construction timber – could evolve over time

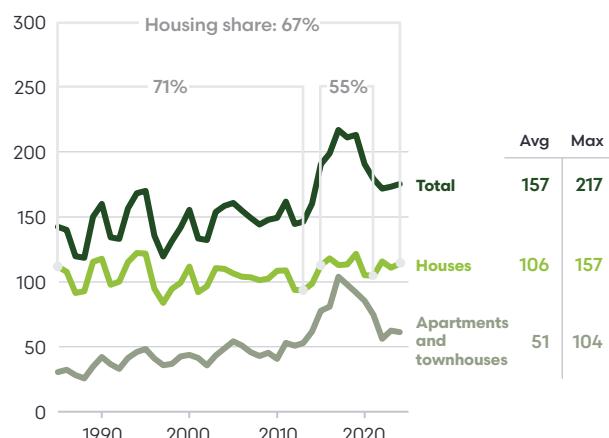
Future demand for softwood sawnwood depends on the evolution of population growth, household size and housing form. This analysis models three core scenarios for these.²⁴

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- **Surging suburbia** assumes population growth in line with the high end of ABS population projections alongside continued declines in household size. Houses as a share of residential construction are assumed to shift towards 63%, an increase from recent levels of ~55%, but without reverting to pre-

Dwelling completions have averaged ~160k p.a. with a peak of ~220k driven by high apartment and townhouse completions

Dwellings p.a. (k)



2010 levels.²⁵ (Noting that completions near 200k dwellings p.a. have historically required a high share of apartment construction.)

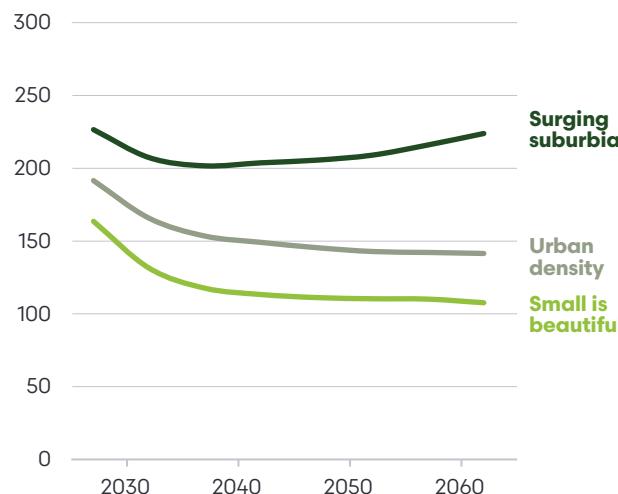
- **Urban growth** assumes population growth in line with the mid-range of ABS population projections, continued declines in household size, and a fall in housing share of residential construction to ~50% (part way between recent Australian experience and dwelling patterns seen overseas, e.g. in Canada²⁶).
- **Small is beautiful** assumes population growth in line with the low end of ABS population projections, stronger declines in household size, and a housing share of residential construction of 71%, in line with Australian history prior to the 2010s.

Three scenarios have been modelled to reflect a range of possible futures for construction demand

	Surging suburbia	Urban growth	Small is beautiful
Population by 2060	High ABS 42m	MedABS 37m	Low ABS 34m
Household size by 2100	2.4	2.4	2.3
Houses (% of new dwellings by 2050)	63%	50%	71%
Dwellings p.a. Avg. 2025-65	~210k	~155k	~120k
Sawnwood demand 2060s (million m ³)	5.4m	3.9m	3.5m

Construction demand scenarios see short-term peaks before 2030, but longer-term demand varies between ~100-225k dwellings p.a.

Dwellings p.a. by 5-year window (k)



Although not the focus of this analysis, each scenario also reflects growing demand for non-residential uses of softwood sawnwood, such as commercial, outdoor and packaging use.

Most demand outlooks see short-term peaks in construction before 2030, but longer-term demand could vary between ~100-225k dwellings p.a. in different scenarios

These assumptions generate average underlying construction demand across scenarios of ~120-210k dwellings p.a., on average, and peak sawnwood demand (in the 2060s) of 3.6-5.2 million m³.

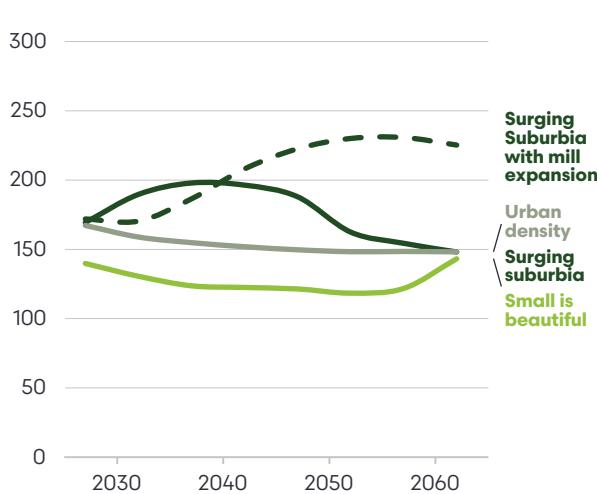
High construction scenarios could see demand peak at ~225k dwellings p.a. before 2030, and increase towards this level again by the 2060s. However, this would require more completions that the construction sector has been able to achieve historically.

Low and moderate scenarios could still see short-term peaks of ~150-200k dwellings p.a., followed by declines to 100-140k dwellings p.a. over the longer term.

These scenarios all assume that demand is driven primarily by new household formation (with allowance for vacancies, second homes and renovations), so there is potential for more pronounced peaks in the short-term to address 'catchup' demand from previous population growth.

The existing plantation and sawmill footprint could deliver ~180-200k dwellings p.a., or more with targeted mill expansion

Dwellings p.a. by 5-year window (k)



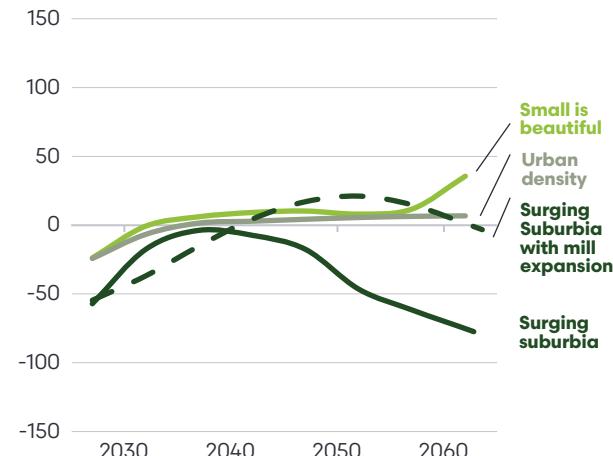
This leads to short-term pressures on construction timber supply from existing softwood plantations and sawmills, and potential for longer-term pressures in high construction scenarios

Sawlog supply chains need to match log availability, mill capacity, and construction demand within feasible transport distances.

Accounting for potential supply chain frictions, existing plantations and sawmills may be able to supply enough sawnwood to build ~180-200k dwellings p.a. (or more, if sawmill capacity expanded with demand). This could meet long-term construction needs under low or moderate demand scenarios. However, there

The existing plantation and sawmill footprint may face short-term sawlog deficits, and longer-term deficits under high demand paths

Dwellings p.a. by 5-year window (k)



There may be ~10% excess mill capacity, and ~30% excess log supply between on average from 2025-65

Share of capacity/availability-high construction scenario (avg. 2025-65, %)



Potential investments in plantation supply and mill capacity will also need to balance the benefits of retaining spare capacity in the supply chain (to respond to potential demand spikes and supply shocks) against the risks of both under and over-capacity in local supply chains.

There may already be excess capacity in parts of some local supply chains. Even under high construction scenarios, ABARES data suggests that, over the period 2025-65, ~10% of existing mill capacity could be underutilised, due to lack of local log supply or of local sawnwood demand. (Modelling suggests this underutilisation is likely to fall over time.)²⁷

Over the same period, ~30% of potential log availability could be underutilised due to lack of local mill capacity or of local sawnwood demand. (Modelling suggests this could increase with higher long-term log availability). This potential may be even higher in low or moderate construction scenarios.

The recent uptick in plantation establishments is encouraging, but further shocks to log availability are possible - and will need to be monitored and managed

A combination of government grants for plantation establishment, and carbon incentives for plantations appear to be contributing to recent increases in both plantation establishment and mill capacity.²⁸

The potential to earn additional (and typically earlier) revenues from plantation ACCU methods can make a material difference to plantation returns – in some cases potentially doubling project returns.

This increases confidence that, despite short-term challenges, log availability may be sufficient to meet Australia's construction needs over the longer term. But there remain risks to future supply that will need to be monitored and managed.

For example, the 2019-20 bushfires have had a material effect on future log supply, and future fire risks need to be managed carefully.

are short-term shortfalls in domestic supply across all scenarios, and expanded production is likely to be needed to avoid long-term shortfalls if construction demand remains high.

The right combination of log supply, mill capacity, and imports to meet construction demand requires careful consideration – and different approaches in the short vs. longer term

New plantations cannot address short-term supply pressures, and mills may be wary of overexpansion if there is a risk that short-term demand peaks will not be sustained. Immediate supply pressures are therefore likely to increase import reliance to some extent.

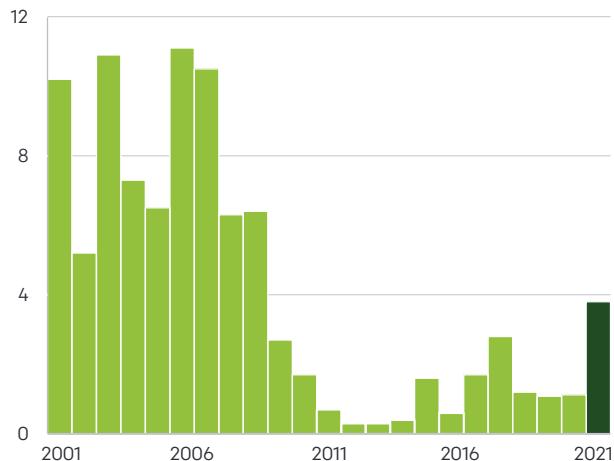
Over the longer-term, the most cost-effective mix of plantation establishment, sawmill expansion and imports needed to meet local construction demand will depend on local conditions – including the productivity and cost of potential plantation land, mill expansion costs, and relative proximity to end markets.

There may also remain some risk of disestablishments if alternative uses of plantation land – either for agriculture or permanent carbon forestry – become more attractive.

Higher agricultural land prices increase both barriers to establishment, and (in some cases) potential for disestablishment. And with sufficiently high ACCU prices, conversion to permanent carbon plantings could become attractive, particularly to financially challenged plantations. For this reason, ongoing land-use changes should continue to be monitored.

After being relatively flat for the last decade, plantation establishments increased in 2023

Softwood plantation establishments (kHa)



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An innovative, high-performing forestry sector that supports jobs, housing, climate, and biodiversity objectives requires carefully coordinated policy support

Potential reductions in native log supply need to be managed carefully

Fully accounting for the carbon and biodiversity benefits of native forests could make continued native logging uneconomic.

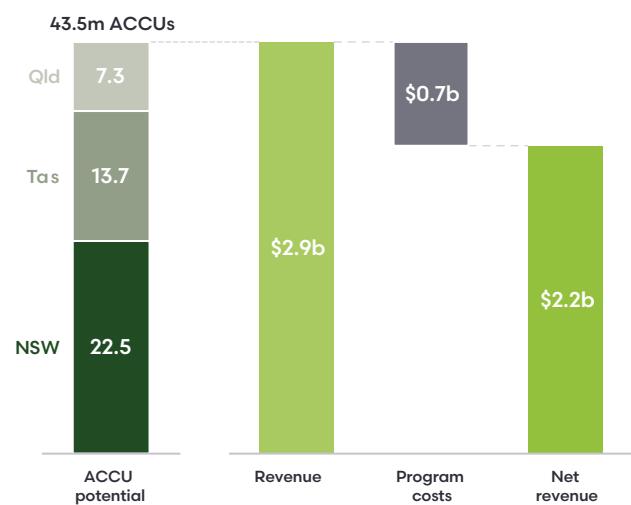
26

For example, introducing the proposed Improved Native Forest Management (INFM) ACCU method would allow states who have not already done so to earn ACCU revenues for the emissions avoided by ceasing native logging.²⁹

Some of this revenue could be used support

The INFM method could generate up to 43.5m ACCUs, support ~600 jobs and provide \$2b in net revenue over 15 years

Million ACCUs; Program revenue and costs (\$b, real)



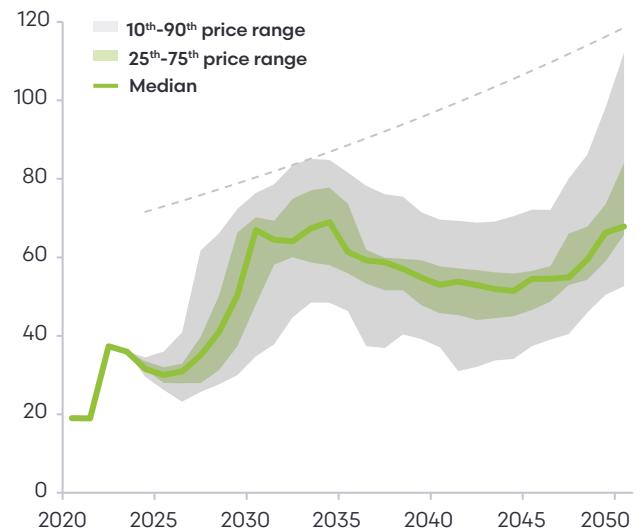
social and economic outcomes for affected workers, businesses, and communities – as well supporting ongoing active forest management.

Developments in carbon and biodiversity markets could support the growth of a sizeable non-extractive forestry sector

Reforms to Australia's Safeguard Mechanism have led to increases in ACCU prices, and are expected to continue to do so – particularly if there is further demand for high-quality carbon credits from other sectors of the economy.³⁰

ACCU prices are likely to rise as a consequence of SGM reforms

A\$ per ACCU (real 2023)



In conjunction with potential growth in biodiversity markets, this could support the growth of a sizeable non extractive forestry sector. But interdependencies with extractive forestry will need to be closely monitored.

Navigating these sector dynamics will require carefully coordinated responses

An innovative, high-performing forestry sector needs to play multiple roles in our society – supporting not only housing supply, but also jobs, climate, and biodiversity objectives.

Coordinating across policy domains is complex, but will achieve better outcomes for Australians, and, broader stakeholder support.

Forestry policy needs to balance jobs, housing, climate, and biodiversity objectives

Forestry industry & employment

Local employment that creates opportunities in and for vibrant regional communities

Biodiversity & nature

Reduction of forest-related nature loss + transition to nature-positive forest-based industries



Climate & emissions

Forest-based industries contribute to emissions reduction targets

Housing & cost of living

Secure supply of wood products, particularly for Australian housing and construction



Appendix





Assumptions and limitations of the analysis

The analysis in this report draws primarily on publicly available data

The analysis in this report draws primarily on publicly available data, from sources including the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), the Australian Bureau of Statistics (ABS), Jobs and Skills Australia (JSA), and the United Nations Food and Agriculture Organization (FAO). However, some assumptions have been necessary to address gaps in this data, e.g. to allocate employment across forestry types (plantation vs. native forestry), regions, and stages of the value chain.

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It adopts cubic metres of wood fibre equivalent as a standard measure of wood volume through the value chain

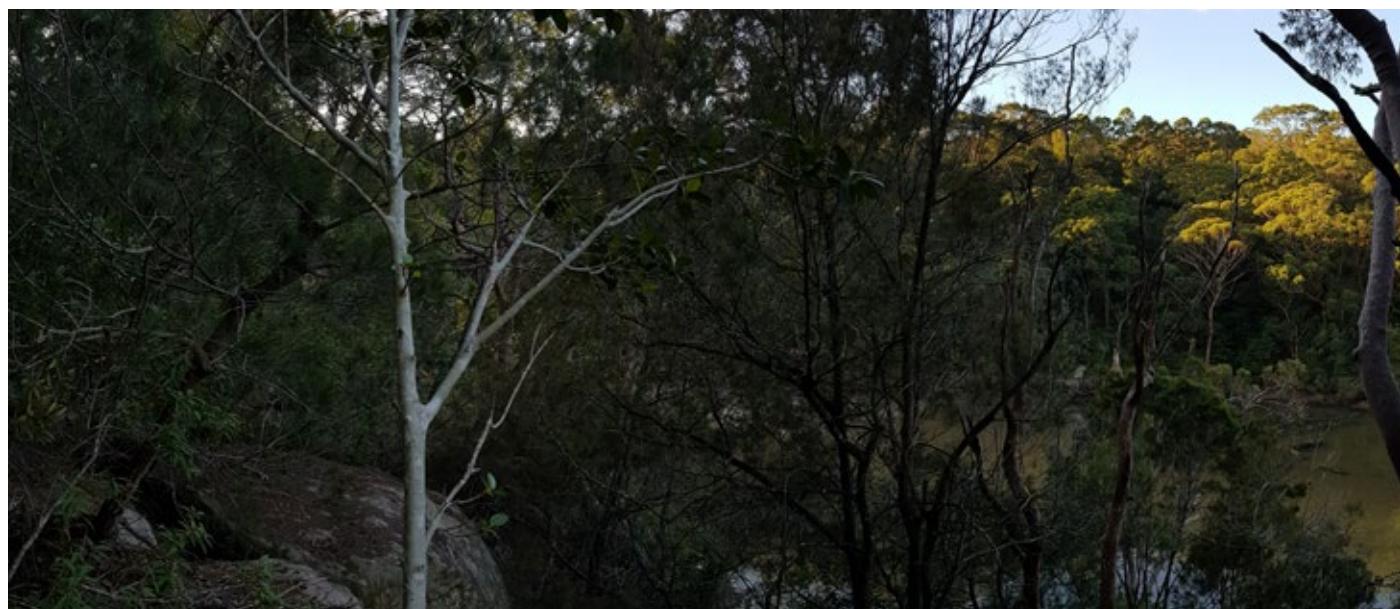
Wood products are processed and consumed in many ways, and the units used to measure

them often vary (e.g. tonnes vs. m^3 , dry vs. wet, bark on vs. bark off, glue vs. no-glue weight). This analysis uses m^3 of wood fibre equivalent as a standardised unit for tracing wood volume through the value chain, based on UNECE / FAO (2015) *The wood fibre equivalent*. These figures may therefore differ from those used in other contexts.

Softwood market outlook scenarios are based on plausible assumptions, but forecasts are subject to uncertainty.

The market outlook scenarios presented in this analysis reflect a range of potential outcomes, based on alternative assumptions about the evolution of future demand and supply for softwood sawnwood.

Assumptions on population growth, household size, and housing form are addressed in the body of the report. Other modelled drivers of



demand and supply are set out on the following page – with assumptions for these drivers informed by analysis of historical and forecast data from multiple sources, including ABARES (for sawlog and sawnwood supply), the ABS (for construction demand), and Forest and Wood Products Australia (for wood use).

Illustrative supply and demand balances are modelled at a regional level to complement national analysis

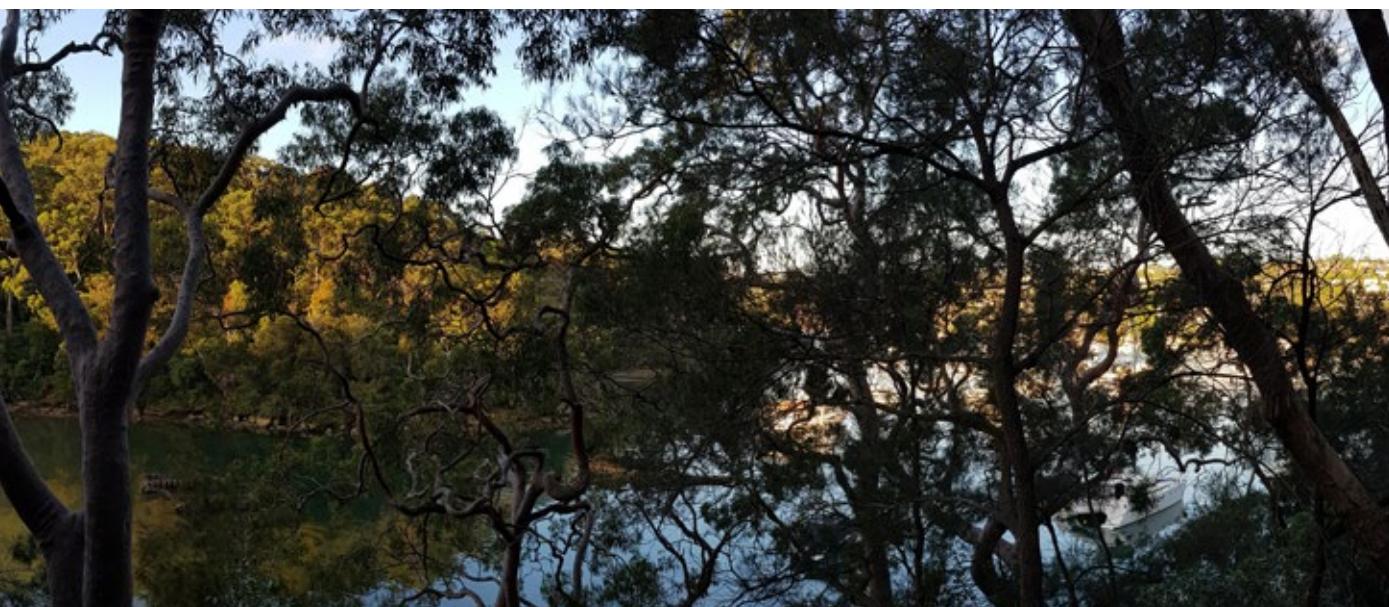
Aggregate national analysis suggests that (with some mill expansions) there may be sufficient log availability by 2060 to produce over 6m m³ of sawnwood (based on ABARES forecast sawlog availability of over 13m m³ at 45-50% yield).

However, the analysis also attempts to adjust for potential mismatches between regional supply and demand in different parts of the value chain, including:

- Matching NPI-level log availability to NPI-level sawmill input capacity – based on ABARES data on each.³¹
- Matching NPI-level sawmill output to regional sawnwood demand – based on ABS regional population projections, and assuming that sawmill output from an NPI region will primarily serve the state(s) in which it is located,³² but that some excess capacity can be exported.³³ Exactly how sawnwood supply would be prioritised across different regions in reality is not modelled in detail. But the analysis assumes that this prioritisation broadly works to reduce local supply and demand imbalances, without completely eliminating them.

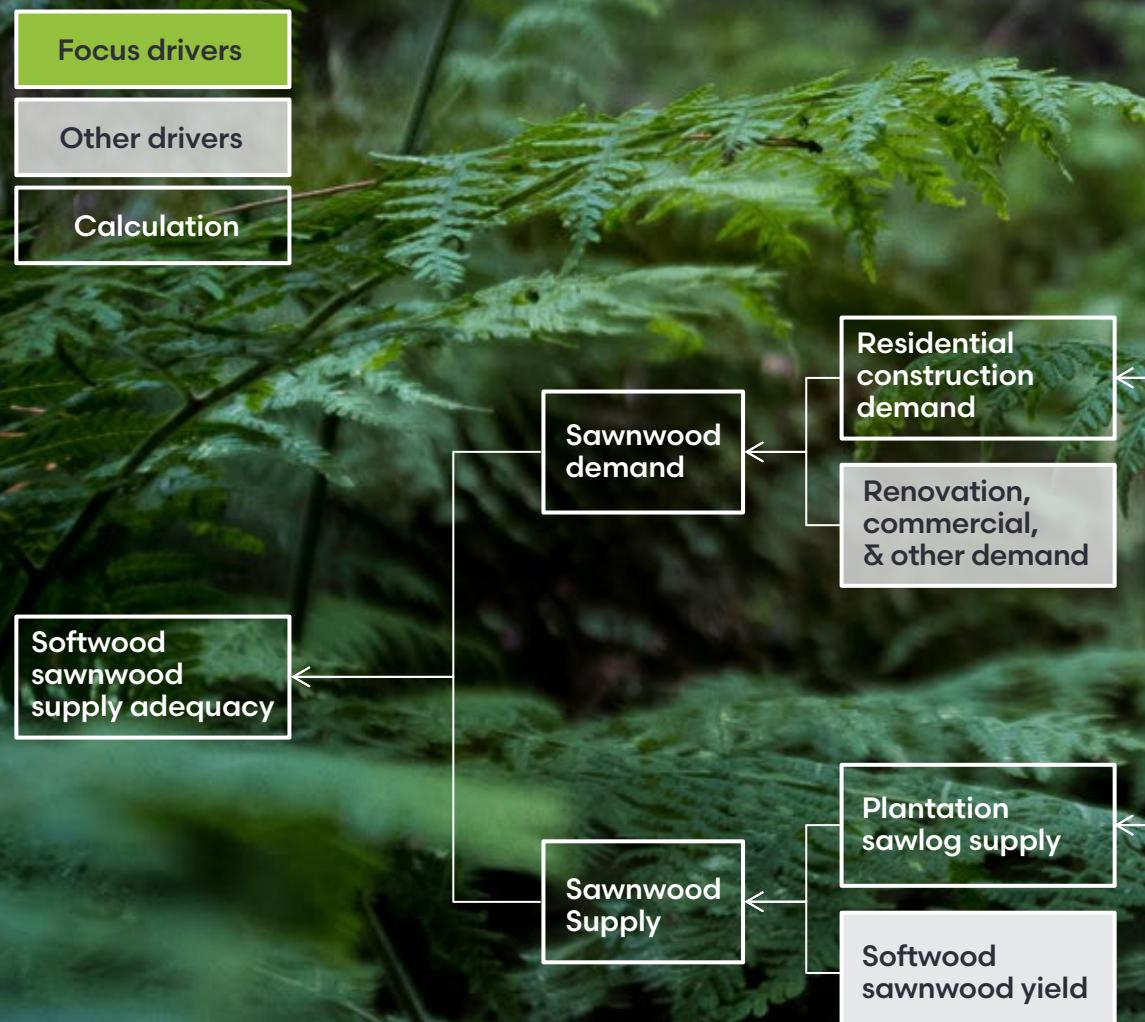
This regional analysis should be considered as illustrative rather than definitive, and further work could explore local dynamics and needs in more detail – ideally with more and/or better data.

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Softwood sawnwood market outlook scenarios are based on fundamental drivers of demand and supply

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Endnotes

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¹Australia's National Ecosystem Accounting Project aims to deliver Australia's first set of national ecosystem accounts in early 2025.

²Victorian Department of Environment, Land, Water and Planning (2019) Ecosystem services from forests in Victoria.

³Office for National Statistics (2024) Woodland natural capital accounts.

⁴ABS (2018-22) Australian Industry Statistics.

⁵ABS (2021) Census.

⁶ABARES Australian Forest and Wood Products Statistics.

⁷The volume analysis in this report uses m³ of wood fibre equivalent as a standardised unit for tracing wood volume through the value chain, based on UNECE/FAO (2015) The wood fibre equivalent. EY PJP analysis of ABARES, FAO, and Forest and Wood Products Australia data.

⁸Ibid.

⁹Ibid.

¹⁰Ibid.

¹¹ABARES Wood Processing Surveys. Softwood mill figures exclude cypress pine mills.

¹²While the average softwood mill is ~75% as efficient as the frontier, the average hardwood mill is only around 50% as efficient, based on estimated Total Factor Productivity from ABARES (2020) Productivity and efficiency of the Australian sawmilling industry.

¹³ABS Australian National Accounts: Input-Output Tables.

¹⁴Wood furniture wholesale

margins are around 8%, though this is not included in the definition of wood products used by ABARES, and is therefore not reflected in the other volume, value, and employment figures in this document.

¹⁵VicForests, Forestry Corporation of NSW, and Sustainable Timber Tasmania Annual Reports. These low returns are evidence even setting aside the impact of e.g. bushfire-related asset revaluations.

¹⁶ABARES (2024) Australian forest and wood products statistics.

¹⁷EY PJP analysis of ABARES data.

¹⁸ABARES Australian plantation statistics.

¹⁹Ibid.

²⁰EY PJP analysis of ABS (2021) Census data.

²¹Ibid.

²²Ibid.

²³EY PJP analysis of ABS (2021) Census, Jobs and Skills Australia (2023) occupational similarity data and Victoria University Employment Project forecasts.

²⁴The results presented in this section are based on EY PJP Softwood scenario modelling. See the Appendix for further details on the methodology.

²⁵ABS Dwelling completions.

²⁶Statistics Canada Housing stock by dwelling type.

²⁷EY PJP analysis of ABARES log availability forecasts and ABARES data on sawmill capacity by NPI region from ABARES (2019) Upscaling the Australian softwood sawmill industry.

²⁸ABARES Australian plantation statistics.

²⁹Extrapolation based on Barraband estimates of INFM ACCU potential for NSW, Queensland, and Tasmania, and Mandala estimates of management costs and net revenues for NSW.

³⁰EY PJP ACCU market scenario modelling. Central scenario.

³¹EY PJP analysis of ABARES log availability forecasts and ABARES data on sawmill capacity by NPI region from ABARES (2019) Upscaling the Australian softwood sawmill industry.

³²For this purpose, the analysis treats NSW and the ACT as part of the same region.

³³The analysis allows for exports of excess production from Tasmania to Victoria and South Australia, from the Green Triangle to Western Australia, from the North Coast and Northern Tablelands to Queensland, and from the southern states to the Northern Territory.

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