# Leakage Modelling Review of the Proposed ‘Multiple-use Public Native Forests’ Method

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This report has been prepared by IndustryEdge Pty Ltd, for Forest & Wood Products Australia (FWPA) based on publicly available information, research and industry consultation to assemble industry information and has been prepared with due professional care and attention. All efforts have been made to cite references and provide evidence, while maintaining the confidence of information providers and protecting commercially sensitive information.

**Acknowledgements**
IndustryEdge acknowledges the custodians of the lands on which this analysis was prepared, the Wadawurrung peoples of the Kulin Nation.

**Disclaimer**
Although great care has been taken to ensure accuracy and completeness in this market review, no legal responsibility can be accepted by IndustryEdge Pty Ltd for any decisions taken by readers of this report.

# Executive Summary

This leakage modelling review provides a detailed market analysis focused on the critical issue of emissions leakage associated with the *Improved Native Forest Management in Multiple-use Public Native Forests Method* (INFM method).

The principal conclusion of this review is that the proposed INFM method entails a significant risk of emissions leakage, largely due to expectations of product substitution.

The review outlines how implementation of the proposed method could result in emissions greater than the abatement achieved under it.

Removing a source of supply of wood products does not reduce demand for those products, or for other products that can meet the same end use application.

Housing drives demand for wood products in Australia, accounting for 80% of sawnwood products.

The main cause of the leakage under this method will be that in removing a supply of logs, for processing into wood products that are sold into (mainly) Australian built environment markets, the method will have no impact on demand for building materials.

As a result, the cessation of harvesting and supply of wood products from one source will result in harvest and supply of wood products from another source of the same or similar supply or will result in the urgent need for housing to be met by increased use of other materials.

In the case of substitution to other wood products, emissions leakage can be expected to be at least equivalent and potentially greater than any abatement, including from other Australian jurisdictions, and from imports.

However, the proponents of the proposed INFM method concede substitution away from wood products altogether will arise from the proposal. Moreover, the proposal recognises the substitution will be into ‘high carbon’ products like steel, concrete and aluminium.

Australia has already experienced significant substitution away from wood products into high carbon materials, especially steel, concrete and aluminium over the last decade and longer.

There is a colander of potential leakage points under the proposed INFM method, with no mitigants available, largely due to the inexorable and continuing nature of dwelling demand and the pull that creates on supply of timber and wood products and high carbon substitutes.

In summary, there is a pronounced risk that emissions leakage under the proposed INFM method will entirely compromise the objective of reducing national emissions.

# Contents

# Introduction and background

A method has been proposed under the *Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth)* for approval under the Australian Carbon Credit Unit (ACCU) scheme's proponent-led method development process.

The proposed method is self-titled *Improved Native Forest Management in Multiple-use Public Native Forests Method* (the INFM method).

Proponents of the INFM method contend it involves low levels of potential leakage. This contention requires specific assessment to:

- **Identify** all material potential sources of leakage, whether included in the proposed method, or not;
- **Assemble** any known and available data related to the proposed method and the potential sources of leakage;
- **Assess** by data analysis, case studies and examples, the likelihood and extent of potential leaks associated with the proposed method;
- **Assess** appropriate levels of deductions for each material leakage from the proposed method.

IndustryEdge has been engaged to undertake this assessment, using publicly available data wherever available.

# About IndustryEdge

IndustryEdge is Australia and New Zealand's leading market information and analysis firm operating in the integrated plantations, forestry, fibre, wood products, sustainable building materials, pulp, recovered fibre, paper, paper products and fibre packaging supply chain.

Now in its thirty-fourth year of operation, IndustryEdge is wholly owned by its management. As a dedicated, sector focused, analysis firm with extensive experience, our small team are experts in:

- Supply chain volume and value analysis;
- Market dynamics, including policy and regulatory impacts;
- Trade analysis, including imports and exports;
- Economic analysis, including projections and forecasts;
- Project development and support.

IndustryEdge's work is focused on quantitative assessments, using granular data, much of it researched 'in the field' by IndustryEdge and our partners, as part of our ongoing and comprehensive industry liaison activities.

Each year we undertake extensive, manufacturing and supply chain focused consulting assignments, for a client base engaged, invested and operating in the sectors in which we operate.

IndustryEdge assembles and reports unique datasets each month, analysing, commenting and reporting on Australian, New Zealand and regional markets, dynamics and supply chains.

# Overview of leakage assessment of the INFM method

The following provides an overview of the assessment of the INFM method, the risks and likelihood of leakage, points and causes of potential leakage and the magnitude of the potential leakage.

## High risk of leakage arising from the proposed INFM method

This assessment demonstrates the INFM method will result in leakage, potentially of all its intended abatement and possibly, increased emissions on an economy-wide basis.

The proposed INFM method states (p6) that the most material integrity risks are related to 'additionality' and:

> "(b) **leakage** – particularly the risk that a decline in harvesting in multiple-use public native forests could trigger an increase in harvesting in private native forests."

This miscalculates leakage risks, which depend more on the supply and demand for wood products than on any specific leakage point.

In seeking to remove products from a market, the INFM method may be unique, as there is clear demand for harvested wood products in Australia being met by current harvest levels, and the proposed method has no influence over that demand.

Consumption dynamics recognise that demand determines what supply is required, that demand is national, not regional and therefore operates beyond State borders, that supply is accordingly national and that in the absence of the availability of wood products, substitutes from other substrates will be procured to satisfy demand.

## Demand drives supply and will result in leakage

Put at its simplest, the cessation of harvesting and supply of wood products from one source will result in harvest and supply of wood products to meet demand being delivered from another source of the same or similar supply, or by another material.

Our assessment is that the proposed method will result in absolute leakage and may result in increased emissions, measured on an economy-wide basis.

That is, there is the real possibility of the leakage emissions being higher than the measured abatement, including because of additional transport-related activities, and especially because of substitution towards 'high carbon' materials, in particular, concrete, steel and aluminium.

It is noted there is evidence product substitution to high carbon materials has been occurring for more than a decade and is accelerating. [1]

## Points and causes of leakage

While leakage to private native forests (as the proponents identify) is a risk and its materiality is real, it is one of the potential *points* of leakage, not the sole likely point. Importantly, the

[1] THE FIFTH ESTATE, 2025, Australia's Timber Fibre Strategy – Final Report, Department of Agriculture, Fisheries and Forestry, Australian Government, Canberra

evidence demonstrates private native forests will not be the largest point of leakage under this proposed method.

Our assessment is that the *cause* of leakage under the proposed method is likely to be more important than the specific points at which it will occur.

The main cause of the leakage under this method will be that in removing a supply of logs, for processing into wood products that are sold into (mainly) Australian built environment markets, the method will have no impact on demand for building materials.

The demand that was met with supply from harvesting of relevant mixed-use public native forests will be transferred to other sources of logs and wood products, and to other materials, including what the proponents concede are 'high carbon' materials, such as aluminium, steel and concrete.

The proposed method identifies some leakage points and proposed mitigations for them. These are summarised at page 15 of the proposal.

The proponents have identified six risks or points of potential leakage, three of which relate to the proponent jurisdiction, two to leakage into native forestry activity in other jurisdictions (states in Australia and other nations) and one into more carbon-intensive products.

Our assessment identifies five additional leakage points or risks (**Fig. 1**).

**Fig. 1: Identified Points of Leakage Under Proposed INFM Method**

| Risk/point of potential leakage | | ID'd in Method? | Proponent's Proposed Mitigant |
|---|---|---|---|
| 1 | Direct, activity shifting by proponent within their total native forest estate | Yes | (a) Projects must cover at least one whole forest region |
| 2 | Direct leakage through cross-subsidisation in other areas of total native forest estate | Yes | (a) Projects must cover at least one whole forest region |
| 3 | Indirect leakage to private native forests in the same jurisdiction | Yes | (d) Application of a leakage deduction within the jurisdiction |
| 4 | Indirect leakage to public native forests in other states | Yes | (e) Aggregate 5% indirect leakage deduction |
| 5 | Indirect leakage into forests in other countries | Yes | (e) Aggregate 5% indirect leakage deduction |
| 6 | Indirect leakage into more carbon-intensive products | Yes | (e) Aggregate 5% indirect leakage deduction |
| 7 | Indirect leakage into private native forests in other states | No | Nil |
| 8 | Indirect leakage into private native forests in other countries | No | Nil |
| 9 | Indirect leakage into plantations in the proponent jurisdiction | No | Nil |
| 10 | Indirect leakage into plantations in other states | No | Nil |
| 11 | Indirect leakage into plantations in other countries | No | Nil |
| 12 | Indirect leakage from all sources associated with increased transport-related emissions | No | Nil |

Source: IndustryEdge

# Understanding forestry and wood products supply chains, demand and consumption dynamics

The INFM method proposes to intervene in the forestry and wood products supply chain, by removing a source of supply. In assessing the proposed method, it is therefore necessary to understand the interaction of supply with demand and consumption to determine the likely impact of the method.

Demand and consumption do not evaporate because a source of supply is removed.

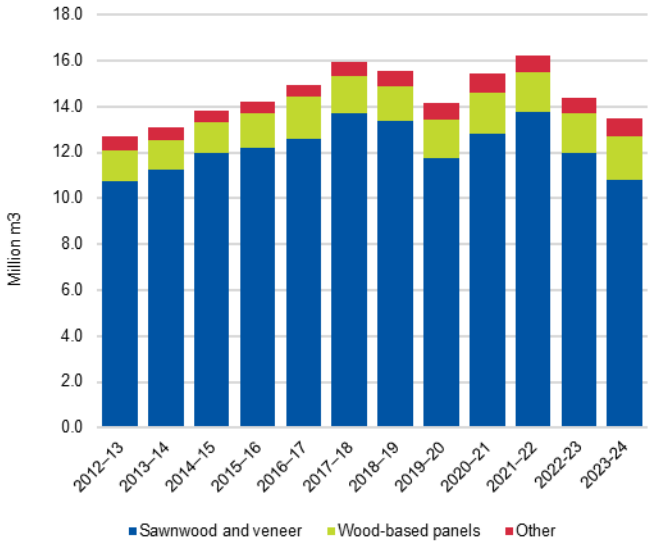
Harvesting of native forests and plantations occurs for a purpose. Other than for natural resource management purposes (eg. fire breaks), harvesting is demand-driven, represented by consumption. That is, harvesting occurs to supply products required in Australia, and to a much smaller extent, other countries.

## Demand for wood products is driven by housing needs

Australia's consumption of solid wood products has been growing continually, consistent with population growth and in accordance with dwelling construction demand cycles (**Fig. 2)**.

As an example of the impact of demand, 2021-22 saw Australia's consumption of wood products hit its second highest fiscal year annual level on record, reaching 16.205 million $m^3$ of gross roundwood equivalent. This occurred as the nation's most recent dwelling construction boom peaked. Demand has subsequently declined as dwelling construction activity fell, but is forecast to rise again, as Australia seeks to address the very significant housing supply shortage.

**Fig. 2: Australian Consumption of Solid Wood Products, Defined as Gross Roundwood Equivalents: 2012-13 – 2023-24 (Million m3)**




Source: ABARES, Australian Forest & Wood Products Statistics and IndustryEdge

Demand for wood products in Australia, similar to most countries, is driven by two main end-uses: the built environment (especially housing) and to a lesser extent, packaging (especially pallets and in conjunction, fibre-based corrugated boxes).

## Unmet demand results in substitution

When one source of supply of wood products is no longer available, demand does not disappear (the economy still requires dwellings and needs goods moved on pallets and in boxes), even in the jurisdiction where the supply has ceased. Demand is instead supplied from another source of the same material (from within Australia or imported) or is met by substitution to a different material.

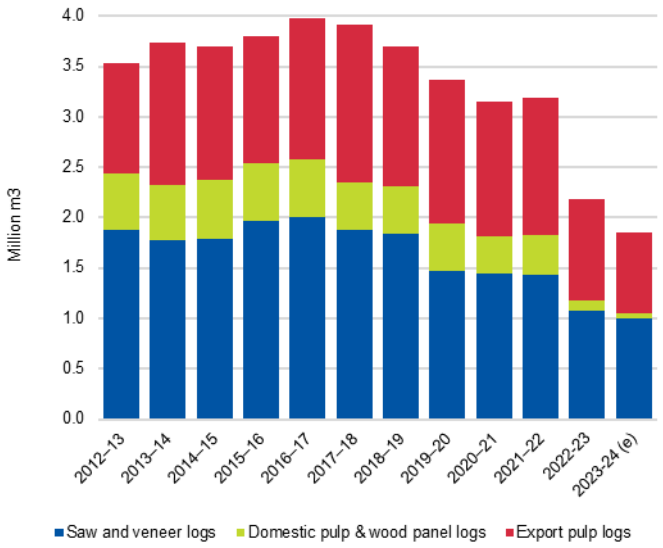
In the built environment, the substitute materials are usually – as the INFM proponents concede – concrete, steel or aluminium, each of which is manufactured with and embodies significantly higher emissions than timber.

A pertinent example is provided by the long-term reduction in access to native forests for production of wood products. Those reductions are evident in the declining harvest from Australia's native forests (**Fig. 3**).

Relevantly, this decline in the supply of logs from Australia's native forests did not cause a direct decline in the consumption of wood products as the previous figure demonstrates. Instead, the supply chain sought alternative sources of supply.

This underscores the reality that some of the likely leakage from the proposed method will occur in Australia, could occur in the proponent jurisdiction or could arise in other Australian jurisdictions, or be sourced from import supply.

**Fig. 3: Australian Native Hardwood Log Harvest by Type: 2002-03 – 2023-24 (e) (Million m³)**




Source: ABARES & IndustryEdge Note: estimate by IndustryEdge

# Leakage could occur into all forestry and plantation types and many wood products

As commercial access to public native forests has declined over recent decades, alternative sources of supply have provided required wood products, with supply increasing from a variety of sources.

Accordingly, a reduction in supply associated with the application of the INFM method should be expected to result in wood products substitution and emissions leakage into all broad forest and plantation types in Australia, and also overseas. That is:

- Public native forests in other Australian jurisdictions
- Public native forests in other countries
- Private native forests in the proponent jurisdiction
- Private native forests in other Australian jurisdictions
- Private native forests in other countries
- Public or private hardwood plantations
- Public or private softwood plantations

The proponents appear to be operating under the mistaken apprehension that the only replacement for wood products derived from public native forests would come from other native forests (public or private).

As commercial access to public native forests declined over recent decades, there were four points of replacement of the wood products derived from them. These are set out below.

1. ***Substitution to public and private native forests in other jurisdictions***

   When harvesting allowing production of specific wood products declined in public native forests in a jurisdiction, direct substitution occurred to provide the same product, in many cases. This substitution occurred into other public native forests in Australia, into private native forests, and to a lesser extent into other countries.

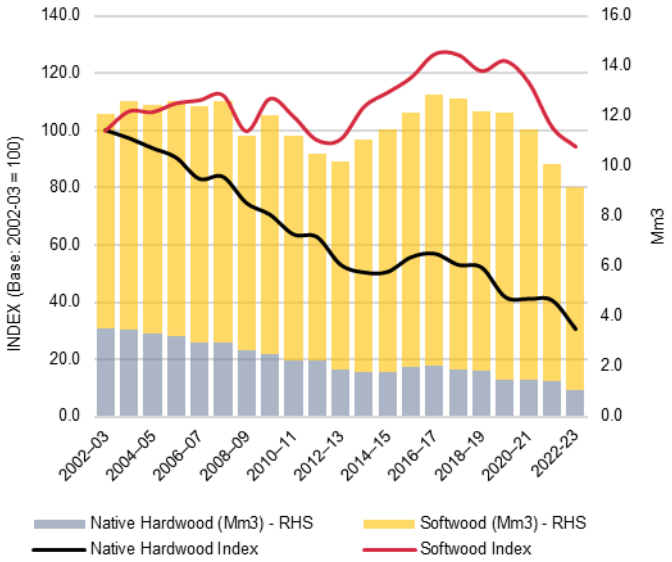
2. ***Accelerated harvest of Australian softwood plantations***

   When specific hardwood products are no longer available due to cessation of harvesting in public native forests, there has been increased utilisation of plantation softwood timber. Where that occurs, not only does it place pressure on already 'stretched' plantations, resulting in more softwood being used to achieve the same strength properties as those previously available from the hardwood products.

   One way to understand this situation is via an index of Australia's harvest of native forest sawlogs, compared with an index of softwood sawlogs, over the last two decades. (**Fig. 4**) The index – on the lefthand vertical axis of the figure - demonstrates that as the native forest hardwood sawlog harvest has declined, the softwood sawlog harvest has grown when market demand peaked and remained largely stable when market conditions deteriorated.

   That is, when there is less native hardwood available, in general, there has been increased reliance on plantation softwood.

**Fig. 4: Australian Sawlog Harvest: Native Forest v Plantation Softwood: 2002-03 – 2023-24 ($Mm^3$ & Index)**




Source: ABARES & IndustryEdge

The pressure on the softwood plantations to do more 'work', over time, has been a driver for increased imports of softwood products. Accelerated harvest also has the dual effect of displacing use of the resource to manufacture other products, which are themselves then subject to substitution with high carbon non-wood products and reduces the age-class and potential carbon carrying capacity of the softwood plantations.

### 3. *Significant increases in the use of engineered wood products (EWPs)*

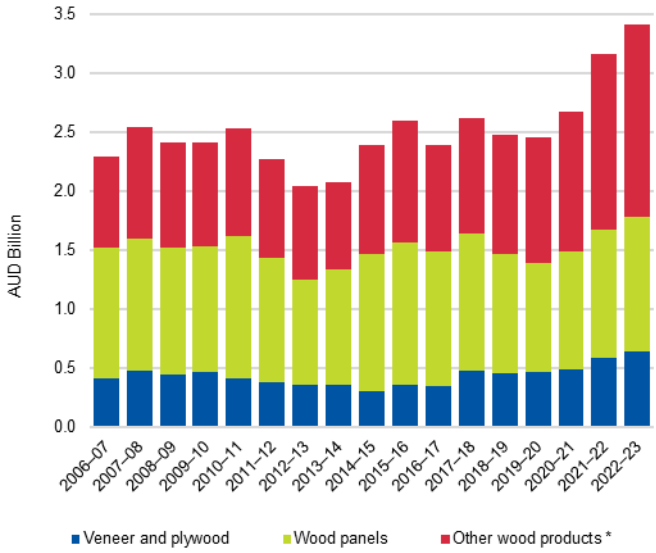
Recent decades have seen engineered wood products deployed more extensively in the built environment. EWPs are, in many instances, direct replacements for the large, strong hardwood timbers that have progressively become less available as access to native forests has diminished.

These EWPS are mainly laminated veneer lumber (LVL), glued laminated timber (GLT), cross laminated timber (CLT) and I-Beams, which perform 'strength and span' functions that were once the domain of sawn hardwood products.

The last decade has seen significant expansion in the use of these wood products. (**Fig. 5**) The industry sales value of the main engineered wood products (including LVL, GLT, CLT and I-Beams) defined as *Other wood products*, rose an average 7.6% per annum over the decade to 2022-23, *Veneer & plywood* by 6.0% per annum and Wood panels (defined as *Reconstituted wood products*) by 2.4% per annum over the same period.

It will be noted that since the closure of access to the Victorian native forests in 2022, the value of sales of these products has grown sharply and significantly.

**Fig. 5: Industry Sales of Engineered Wood Products by Main Type: 2006-07 – 2022-23 (AUD Billion)**




Source: ABARES & IndustryEdge

EWP use in Australia has extended to replacements for the high carbon steel and concrete products and are a fundamental input to Australia's capacity to decarbonise its built environment, by replacing steel and concrete in structural functions and applications, wherever possible.

EWPs also allow for more efficient building systems, including the types of prefabrication and modularity of dwelling construction that is at the forefront of Australia's efforts to address the housing crisis. [2] [3] [4]

It is noted that the sources of fibre resources required to manufacture EWPs are the same as those used to produce all other wood products and are therefore under the same demand pressures.

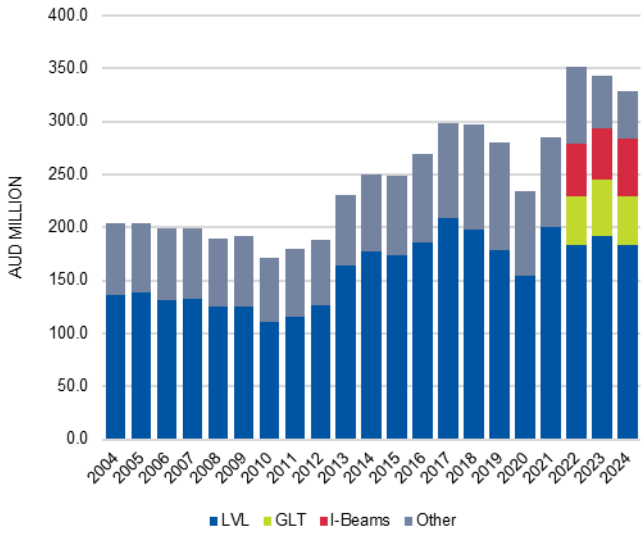
Australian fibre resource uncertainty and pressures on existing supply have led to an increasing proportion of Australia's EWPs being imported (**Fig. 6**).

[2] https://www.minister.industry.gov.au/ministers/husic/media-releases/building-ministers-progress-modular-housing-and-new-national-construction-code

[3] https://builtoffsite.com.au/news/federal-government-backs-prefabrication-and-modular-construction-with-54-million-boost/

[4] https://www.sustainablebuildingawards.com.au/news/can-prefab-modular-fix-our-affordable-housing-crisis/#:~:text=With%20the%20federal%20government%20putting%20%24900%20million%20on,sustainability%20challenges%2C%20construction%20waste%2C%20quality%20issues%20and%20more.

**Fig. 6: Australian EWP Imports by Main Type: 2003-04 – 2023-24 (AUDMFob)**




Source: ABS, ABARES and IndustryEdge

Note: Global trade system separation of GLT and I-Beams from "Other' only commenced in 2022

The application of the INFM method should be expected to further increase substitution toward EWPs and would therefore deliver leakage across forest and plantation types, across jurisdictions, and either into increased use of imported EWPs, or, worse, the high carbon alternatives.

### *4. Large increases in imports of all wood products relative to local production*

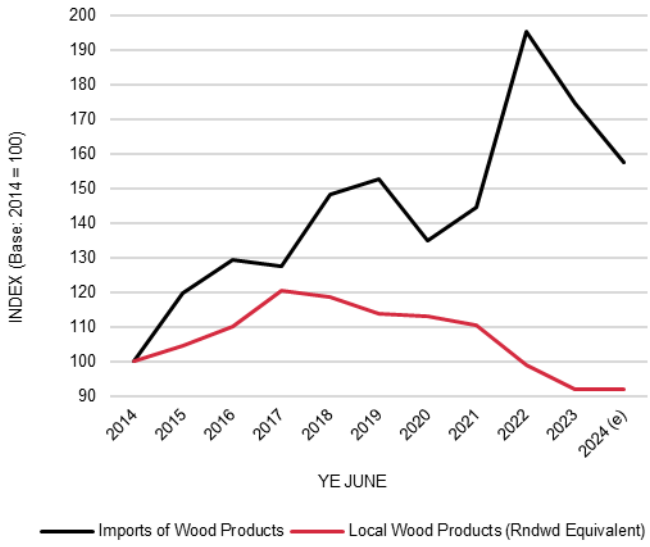
Australia's imports of wood products for use in the built environment, include sawnwood, wood panels and engineered wood products (see above).

Total wood product imports, measured by ABARES on a value basis, have increased an average 4.7% per annum since 2013-14.

Over the same period, Australia's total supply of wood products has declined an average 0.8% per annum, measured by ABARES on a roundwood equivalent basis. (**Fig. 7**)

That is, as access to native forests has declined, imports of wood products have increased.

**Fig. 7: Indexed Growth in Wood Product Supply: Local v Import: 2013-14– 2023-24 (INDEX)**




Source: ABARES and IndustryEdge

Note: IndustryEdge estimated local production in 2023-24 at the same level as the prior year, despite the softer reported industry sales and housing market.

# Substitution into high carbon materials

Where wood products are unavailable, substitution occurs to alternative products. As the proponents concede, substitution for most wood products will be into high carbon products, such as steel, cement and aluminium.

Substitution already occurs in Australia, due in part to the restriction of supply of wood products arising from the cessation of access to native forests for commercial harvesting.

Emissions leakage associated with this substitution is significant and must be of greater concern than substitution to other wood products. This is because the emissions profile per unit of production is dramatically higher for all substitutes to wood products.

That is, emissions from high carbon substitute products will always be greater than for the equivalent wood product.

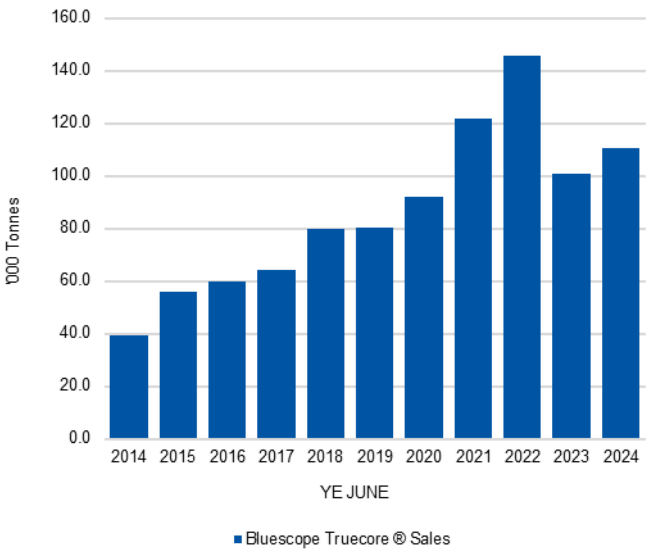
### Case Study – Substitution to high carbon materials

During the global pandemic, there was a shortage of sawn timber and other wood products, relative to demand. That this was caused by stimulus-fuelled superheating of demand in the housing market, coupled with historically low interest rates is less relevant than the result of the relative shortage.

The use of steel for framing dwellings increased over the period timber was in short supply. Although some of this supply switch appears to have been temporary, anecdotal evidence suggests steel increased its national market share of Australian housing, on a continuing basis. [5]

Since 2014, BlueScope Steel has reported its Truecore® sales have increased 181.5% or an annual average rate of 10.9% per annum. (**Fig. 8**)

**Fig. 8: BlueScope Steel 'Truecore' ® Sales: 2013-14 – 2023-24 ('000 tonnes)**



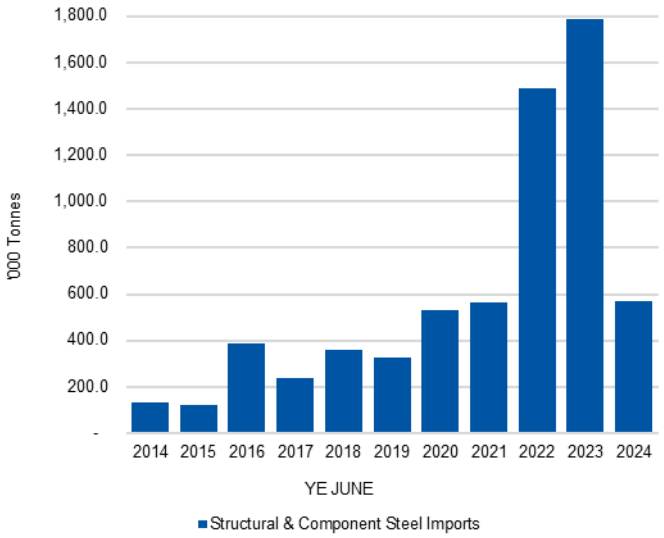

Source: BlueScope Investor Presentations

[5] THE FIFTH ESTATE, 2025, Australia's Timber Fibre Strategy – Final Report, Department of Agriculture, Fisheries and Forestry, Australian Government, Canberra

BlueScope is the most prominent and largest producer or supplier of steel framing for housing. There are other local producers and there are also imports of steel framing, other structural steel and components, including windows and doors.

Since 2014, imports of these steel products have increased 333.8% or an annual average of 15.8% per annum. It is evident that at different times, imports of these products have been higher than reported for 2023-24. (**Fig. 9**)

**Fig. 9: Imports of Steel Framing, Structural Steel and Components: 2013-14 – 2023-24 ('000 tonnes)**




Source: ABS and IndustryEdge

Note: Extracted from ABS International Merchandise Trade import data, specifically Chapter 73 – Articles of iron or steel. This analysis does not include imports of similar aluminium products (Chapter 76) or other base metal equivalents (Chapter 83, specifically products reported under 8302)

Rapid and sustained growth in the use of high carbon substitutes for wood products places the various carbon profiles of building products into specific contrast.

This is a matter which had long been foreshadowed as a major environmental issue related to substitution of wood products. As far back as 2016, extensive research on hardwood timber products demonstrated:

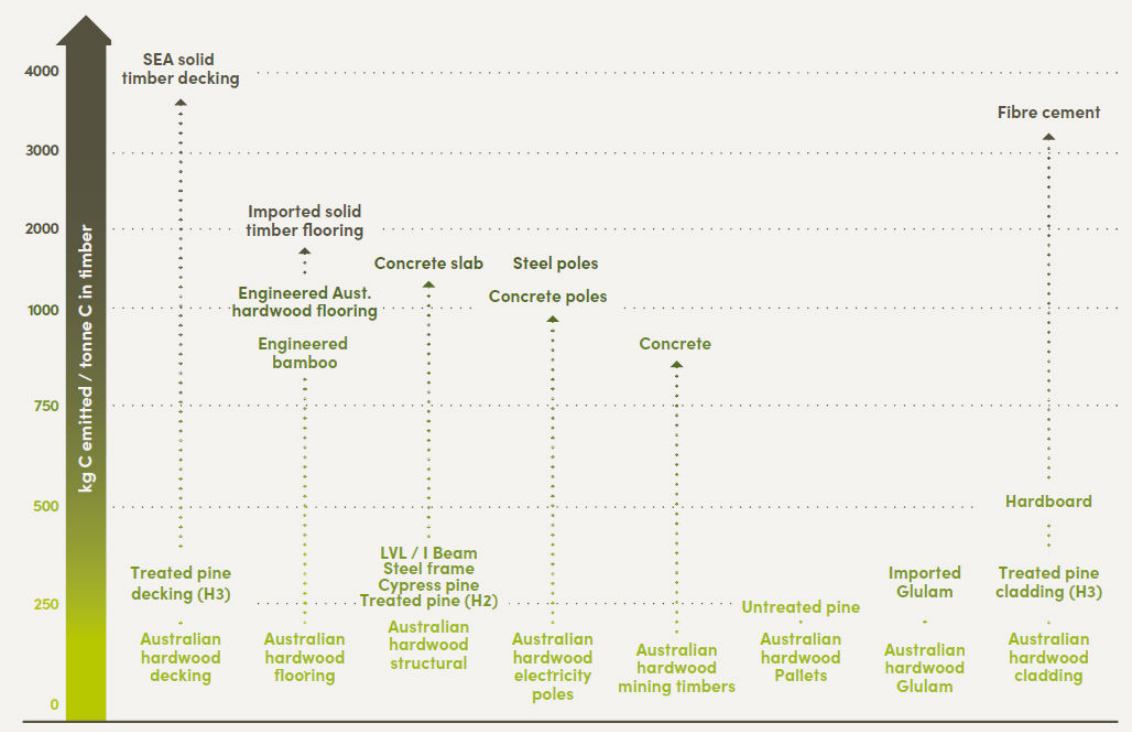
> "The HWPs from this study typically required lower fossil-fuel based energy in their extraction and manufacture than alternative materials such as aluminium and concrete. The biggest substitution impacts related to the replacement of hardwood products with imported hardwood (decking and flooring), fibre-cement cladding, concrete slabs and steel and concrete transmission poles." [6]
>
> *Note: HWPs is harvested wood products*

This analysis was consolidated into an even more extensive and recent study in 2023 (**Fig. 10**), which demonstrates the specific emissions footprint for Australian hardwood wood

[6] Ximenes, F. et al (2016) Carbon stocks and flows in native forests and harvested wood products in SE Australia, http://www.fwpa.com.au/images/resources/Amended_Final_report_C_native_forests_PNC285-1112.pdf

products and their likely replacement products. Notably, the analysis finds that all substitutions from Australian hardwood products result in additional emissions. [7]

**Fig. 10: Emission Footprint for Australian Hardwood Wood Products and Their Likely Replacement Products**




Source: Ximenes, and Forest & Wood Products Australia

This recent analysis supports the 2021 findings of the Clean Energy Finance Corporation (CEFC) that the more engineered timber used in new office and mixed-use buildings, the better its embodied carbon reduction. [8]

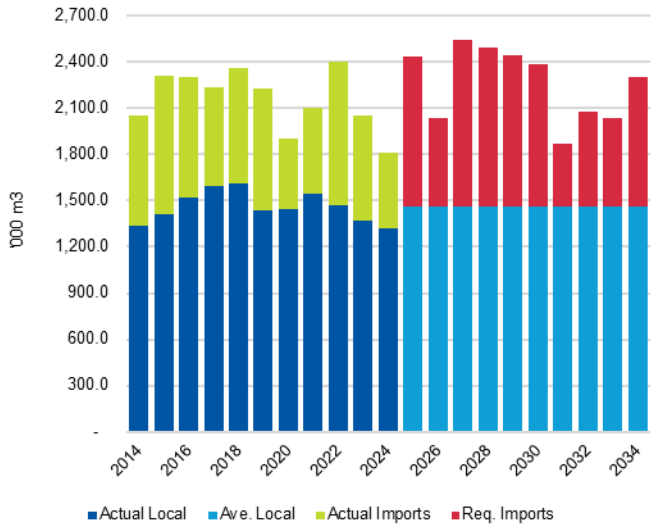
[7] Ximenes, F. et al (2023) Forests, Plantations, Wood Products & Australia's Carbon Balance, Forest & Wood Products Australia, https://fwpa.com.au/report/forests-plantations-wood-products-australias-carbon-balance/
[8] CEFC, (2021), Australian buildings and infrastructure: Opportunities for cutting embodied carbon, https://www.cefc.com.au/media/ovrkk5l3/australian-buildings-and-infrastructure-opportunities-for-cutting-embodied-carbon.pdf

# Demand for wood products is growing

As Australia's population continues to expand, the nation requires more dwellings. Recent analysis indicates that to 2034, to house a continually growing population, Australia needs to build around 2.5 million new dwellings, at a consistent annual rate that has only ever been achieved for a single year, forty years ago, in 1985. [9]

The 'More Houses Sooner' base case demonstrates that to meet housing demand to 2034, Australia will require more sawn timber and other wood products than ever before. The reference case is sawn structural softwood required to manufacture dwelling frames and trusses (**Fig. 11**).

**Fig. 11: Australian Sawn Structural Softwood Demand, Actual and Forecast: 2014 – 2034 ('000 m³)**




Source: ABS, FWPA & IndustryEdge

Although this base case is anchored to existing levels of sawn timber use per dwelling, the use of timber in the built environment is increasing, partly as a method to decarbonise construction activities in Australia.

Australia is already struggling to meet increasing demand for wood products, with the native forests and softwood plantation estate and processing base unable to meet total demand, without unsustainably increasing the rate of harvest, and/or increasing reliance on imports.

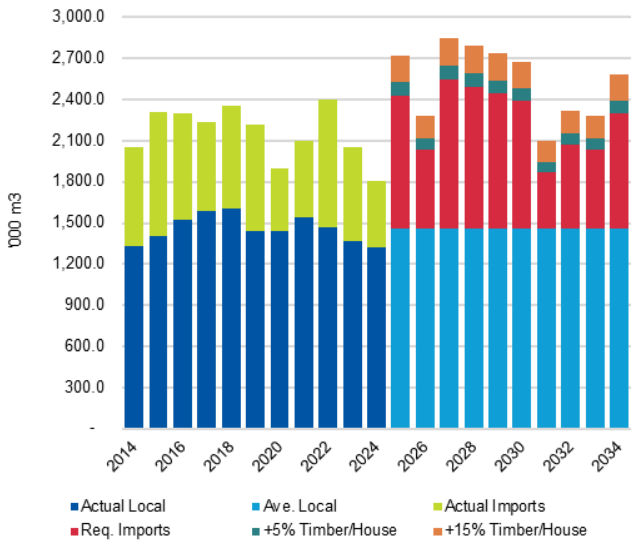
Further restricting domestic supply by application of the INFM method will contribute to accelerated harvest from other forests and plantations in Australia, and increased wood product imports of all types and species, and from any potential source.

Relevantly, modelling shows that for every 5.0% increase in the amount of sawn structural timber used per house (**Fig. 12**), total national demand for sawn timber rises by 4.0%. (Woods & Houghton, 2022).

That is, 80% of sawn timber is used in houses, in Australia, underscoring the primacy of dwelling demand in consumption dynamics for wood products.

[9] Woods, T. & Houghton, J. (2025). More Houses Sooner, Finding the Australian dream, Australian Housing demand and timber use scenarios to 2034, February 2025, Forest & Wood Products Australia, https://fwpa.com.au/wp-content/uploads/2025/02/FWPA-Report-SE-More-Houses-Sooner-2025-02-26.pdf?hsCtaAttrib=186237016664

**Fig. 12: Australian Sawn Structural Softwood Demand: 'More Houses Sooner – Scenario 3' Forecast: 2024 – 2034 ('000 m³)**

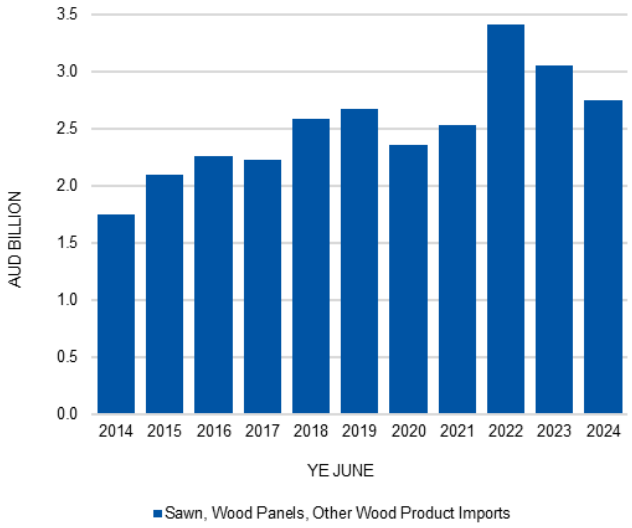



Source: ABS, FWPA & IndustryEdge

## Imports to Australia have increased

Imports of wood products to Australia have been increasing for many years (**Fig. 13**), expanding at an average annual rate of 4.7% per annum, measured on a 'goods alone' or free-on-board basis. [10]

**Fig. 13: Australian Imports of Wood Products: 2015 – 2024 (AUD Billion)**




Source: ABS & IndustryEdge

The measure of total imports includes hardwood products, almost all of which are grown in native forests, enlivening the prospect that substitution and leakage from the INFM proposal

[10] A value-based measure is required for aggregated international trade flows because many products defined under the Harmonised Tariff Item Statistical Code (HTISC) and the Australian Harmonised Export Commodity Classification (AHECC) are only reported by value.

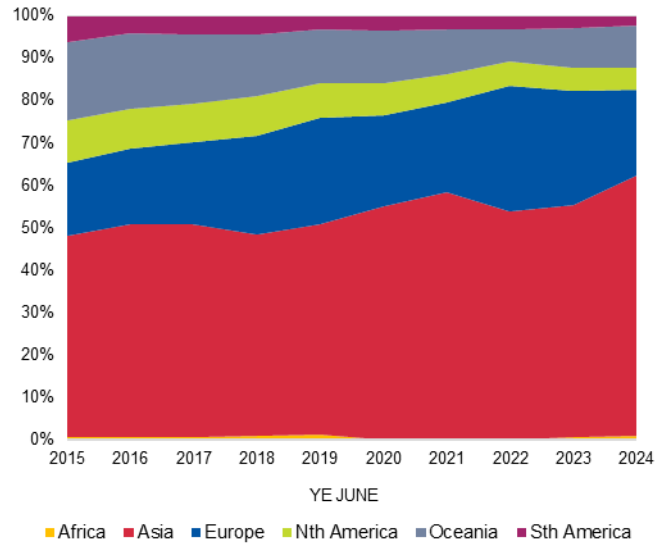
could simply shift production from Australian native forests to native forests in other countries.

In addition to imports of sawnwood and sawnwood products like flooring, imports of engineered wood products (EWPs) have also increased substantially. As local supply has declined, import supply has increased, including substitution to a wider range of wood products, including EWPs.

## Import supply by region

Australia's wood products imports (**Fig. 14**) are dominated by shipments from Asia, which accounted for 61.7% of all imports in 2023-24, valued at AUD1.740 billion, with Europe supplying 20.1% (AUD0.566 billion) and Oceania – effectively New Zealand – supplying 10.1% (AUD0.284 billion).

**Fig. 14: Australian Imports of Wood Products: 2015 – 2024 (Proportion)**

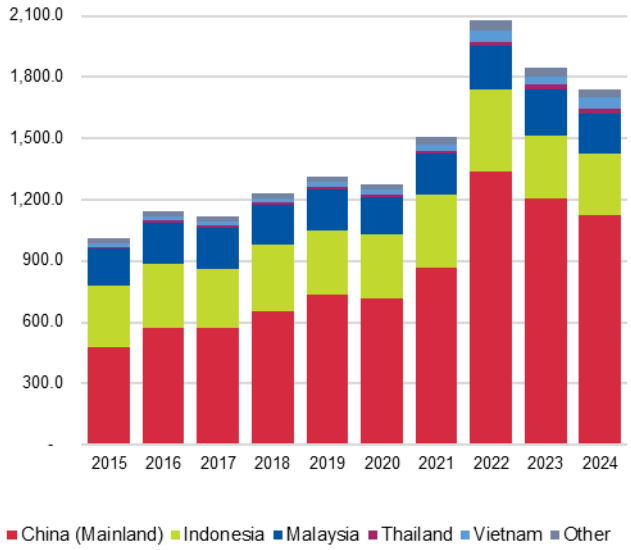



Source: ABS & IndustryEdge

## Imports from countries in Asia

The countries in Asia currently supplying Australia with imports of hardwood products are predominantly from the tropical and sub-tropical regions of southeast Asia (**Fig. 15**). In 2023-24, the top five countries from Asia supplying imports accounted for 98.0% of total wood products imports from Asia.

**Fig. 15: Australian Wood Products Imports from Asia by Country: 2015 – 2024 (AUD Million)**

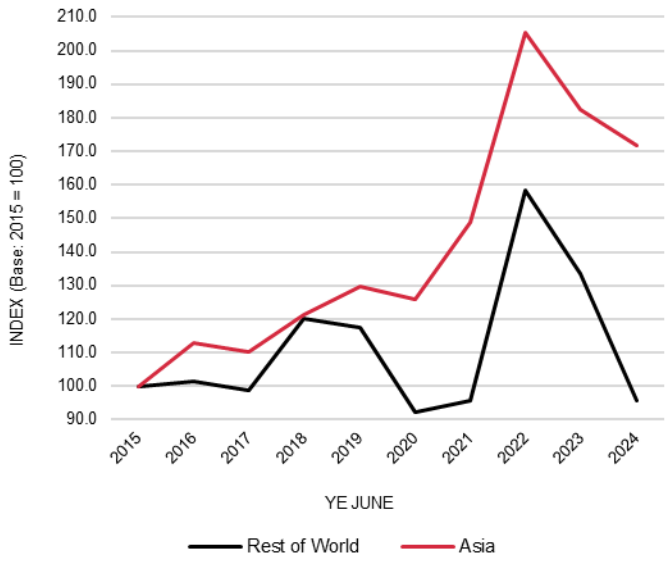



Source: ABS & IndustryEdge

It is relevant to leakage considerations that the value of imports from Asia has grown at 6.2% per annum since 2015, measured on a delivered basis, compared with the combined rest of the world which has seen the value of total imports decline an average 0.5% per annum over the same period.

As total imports have grown, imports from Asia have begun to replace imports from other regions of the world (**Fig. 16**). From 2015 to 2024, the value of imports from Asia increased 71.9%, while those from the rest of the world declined 4.8%.

**Fig. 16: Indexed Imports of Wood Products from Asia v Rest of World: 2015 – 2024 (Base: 2015 = 100)**




Source: ABS & IndustryEdge

### Imports of hardwood products from Asia

Australia's imports of hardwood wood products from Asia were valued at AUD1.613 billion in 2023-24, accounting for 92.8% of total wood products imports from Asia. The decadal proportional peak for hardwood product imports was 97.3% in 2014-15. This is no surprise for a region that is dominated by tropical forests and generally, does not have the cooler conditions required to grow softwood (coniferous) species. [11]

To calculate the hardwood proportion of imports, IndustryEdge undertook a forensic exercise to identify all import codes, for all countries in Asia, removing all imports to Australia where softwood or softwood species were not specifically excluded from the product definition. Our approach was therefore conservative and likely understates the total value of hardwood imports to Australia, from countries in Asia.

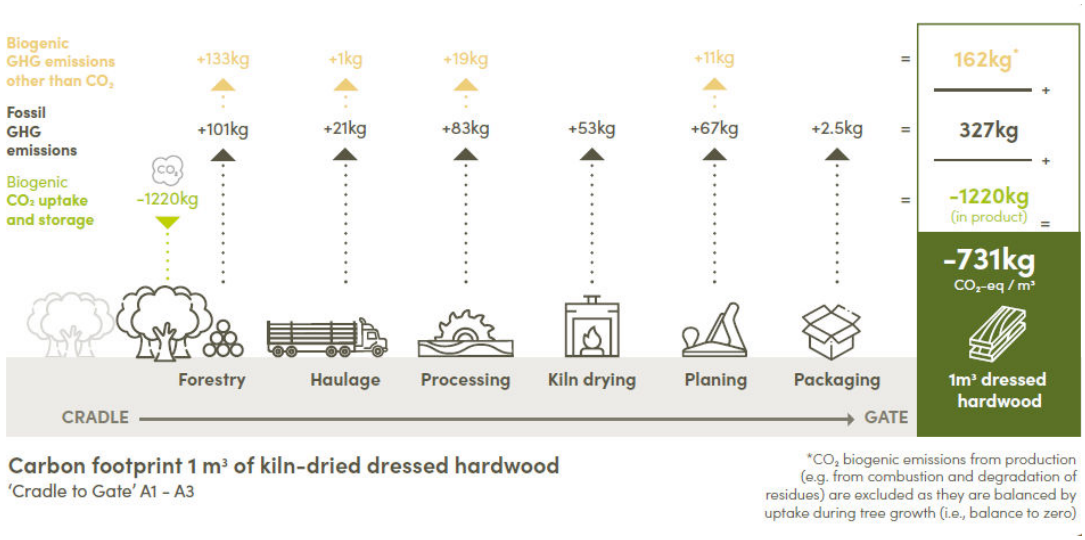
Over the decade to 2023-24, as access to Australia's native forests has decreased, imports of hardwood products from Asia have increased at a rate of 5.6% per annum.

> **Case Study – Leakage and 'over the horizon' procurement**
>
> The trend of increased wood product imports from Asia has further implications from an emissions perspective.
>
> As Ximenes et al observed in 2023:
>
> > "Around one-third of the wood products used in Australia are imported. The net emissions or storage from those products will depend on whether they are sourced from sustainable forest operations. Wood from unsustainable operations, for example where land is converted to other forms of land cover, trees are not re-established or forest carbon stocks are not maintained, may negate any benefit associated with carbon storage in the product."
> >
> > *(Ximenes, 2023)*
>
> The latter sentence is critical, with leakage of at least equivalent emissions to those abated under the INFM proposal being almost certain for nearly all imports, and likely to be higher from nearly all hardwood imports, especially those coming from countries where conversion may occur after harvesting and/or, there is inadequate or no replanting.

Comprehensive recent analysis demonstrates that on average, the carbon sequestered in one cubic metre of kiln-dried dressed hardwood timber manufactured in Australia stores 731 kg $CO_2e$ (**Fig. 17**). As the researchers demonstrated, even if able to be substituted by Australian produced kiln-dried dressed sawn softwood on a one-to-one ratio, thirteen less kilograms of $CO_2e$ would be stored per cubic metre. (Ximenes, 2023)

[11] Racz, I. & Debreczy, Z. (2022), Conifers around the world, International Dendrological Foundation, https://conifersaroundtheworld.com/, Massachusetts, USA

**Fig. 17: Carbon Footprint of 1m3 of Kiln-Dried Dressed Hardwood**




Source: Forest & Wood Products Australia

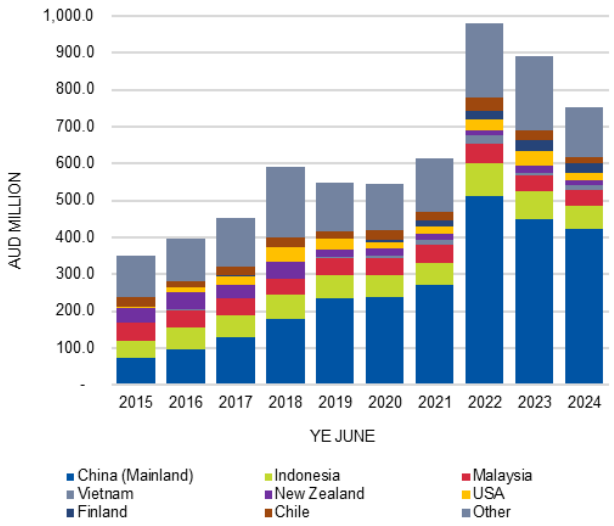
In addition to some imports of hardwood wood products from Asia being uncertain as to specific provenance, forest management, harvesting processes and the prospect of conversion to other land uses instead of replanting, all imported supplies face additional transport-related emissions on at-least a port-to-port basis.

### Case Study – Imports of Plywood

An imported product example – for which wood provenance is routinely subject to scrutiny – is plywood. As access to Australia's native forests for commercial harvesting has declined, Australia's imports of plywood have increased significantly, especially over the last decade. By delivered value, imports have increased 141.7% since 2015 and an average 10.3% per annum over that period. (**Fig. 18**)

Imports from Asia, much of which is hardwood plywood, increased much faster than the total. Imports from Vietnam increased 710.5% or an average 26.2% per annum and those from China rose 478.7% or 21.5% per annum.

**Fig. 18: Australian Imports of Plywood by Value: 2014-15 – 2023-24 (AUDM Cif)**




Source: ABS and IndustryEdge

# Broader impacts of reductions or restrictions of supply

Considerations of leakage causes and risks and points of leakage, need to address the broader economic impacts that can be anticipated, especially where the leakage would arise from a specific decision to impose an economic impact.

It has previously been established that any reduction in established supply of timber and wood products through application of the INFM will result in leakage to wood products sourced from elsewhere and/or substitution to high carbon products.

There are broader economic implications arising from such decisions.

## Restricting supply undermines efforts to decarbonise Australia's built environment

The task to supply sufficient wood products to sustainably meet Australia's housing demand into the future is becoming larger, not smaller.

Any reduction in wood product supply from a source will make that task more difficult and makes it more likely there will be substitution to high carbon replacement products.

As Australia's harvest of native forests has progressively declined, the use of high carbon substitutes has increased significantly, both from local supply, and from imports.

## Embedding emissions by permanent substitution to high carbon options

Initially, shortages created by supply disruptions such as cessation of harvesting under the INFM method are likely to be met by alternative sources of the same or similar products, largely because of established supply chains, business systems and processes that are familiar with the relevant product and are difficult to transform to the use of other materials.

Where the established product is simply unavailable (from any source) and where the business systems or the end-use activities can accommodate different products, procurement of substitute products with broadly the same application also occurs, sometimes permanently.

Thus, the greatest likelihood is that unmet demand arising from the application of the proposed INFM method would be met by:

a. **Other sources of timber and wood products**, at higher prices and with delays that would impact economic growth. That supply may come from within the same jurisdiction, from other Australian states or by imports of wood and wood products, and
b. **Increased procurement of substitute products**, specifically steel, aluminium and concrete, with higher prices associated with opportunity and the 'economic friction' of being forced to adjust business and operating systems to handle different materials.

## Inflationary impacts of volatility and supply shifts

However, even when the shortage is met or addressed, an important effect of supply shortages that needs close consideration is evidence that shortages have a negative impact

on future economic growth and moreover, place upwards pressure on prices and therefore facilitate inflation. [12]

**Case Study – Timber Supply Shortages Increase Imports, Prices & Volatility**

During the COVID19 pandemic, Australian supplies of sawn structural timber were fully committed, and global import supplies were constrained and delayed.

With Australian supply essentially at capacity, the additional demand was largely met by increased imports and dramatically higher prices (**Fig. 19**). This was followed by Australian domestic supply responding to the global price signal and increasing prices (**Fig. 20**) to levels they have subsequently sustained.

Rather than evaporate, demand responded by paying a higher price, and moreover, embedded higher prices into the Australian construction industry, with particular impact on building costs for housing.

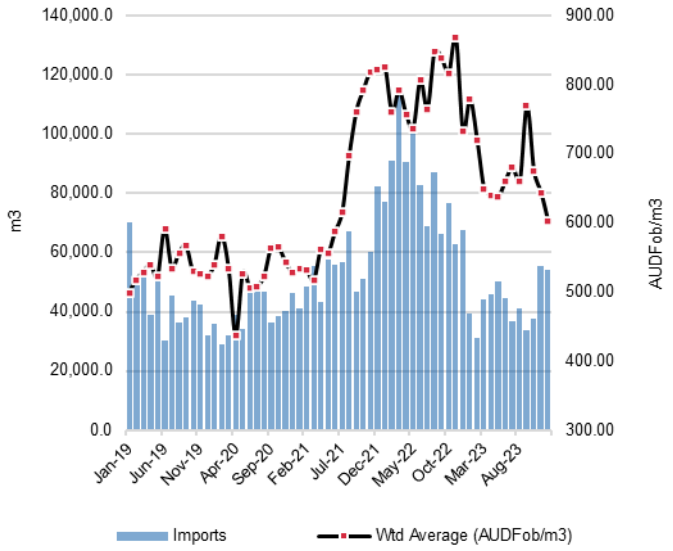
It follows that withdrawing supply by application of the INFM method will result in increased supply from elsewhere, with the net effect being higher prices for building materials.

Specific analysis of the supply shortage caused by the global pandemic found that in addition to higher prices, there would be increased price volatility arising from imports increasing:

> "…when import supply reaches certain levels, it supplies strong and compelling market pricing signals. In the recent cycle, that situation saw prices rise significantly, including for domestic supply. … Imports increasing as a proportion of total supply is likely to lead to increased price volatility in the total Australian market." [13]

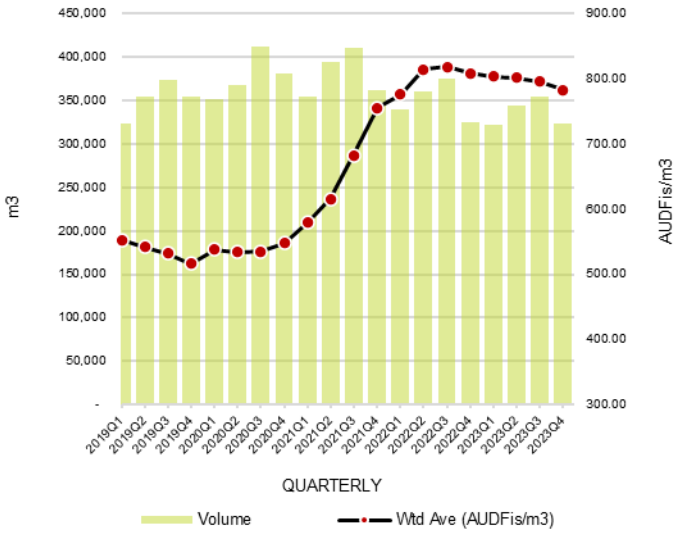
[12] Caldara, Dario, Matteo Iacoviello, and David Yu (2025). Measuring Shortages since 1900, International Finance Discussion Papers 1407. Washington: Board of Governors of the Federal Reserve System, https://doi.org/10.17016/IFDP.2025.1407.
[13] Woods, T. & Houghton, J. (2022) Future market dynamics and potential impacts on Australian timber imports, Final Report, August 2022, Forest & Wood Products Australia, https://fwpa.com.au/report/future-market-dynamics-and-potential-impacts-on-australian-timber-imports-final-report/

**Fig. 19: Australian Sawn Softwood Imports & Prices: Jan '17 – Dec '23 (m3 &AUDFob/m3)**




Source: ABS & IndustryEdge

**Fig. 20: Australian Domestic Sawn Structural Softwood Sales & Prices: MQ17 – DQ24 (m3 & AUDFis/m3)**



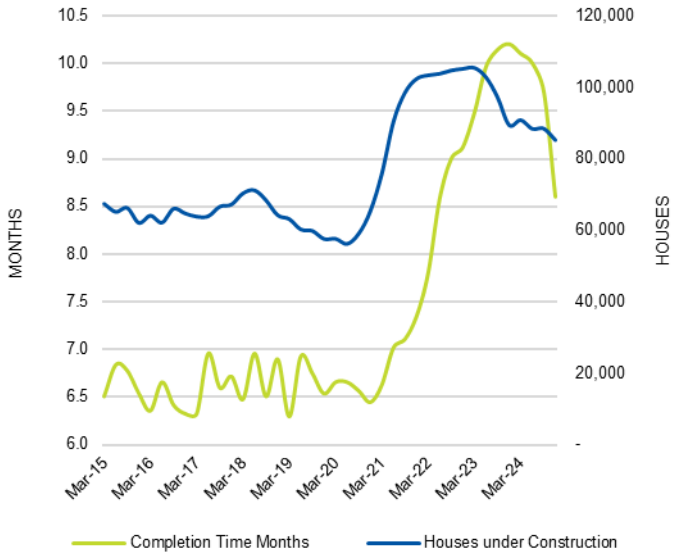

Source: FWPA & IndustryEdge

## Supply disruptions and volatility delay critical economic activity

Any disruption in supply of a material will create volatility in and for the supply chains to which it is related. For wood products, disruptions in supply have a direct impact on the dwelling construction supply chain.

In the recent pandemic-induced timber supply shortage, the consequences included serious delays in the 'time to build' for houses, which added to cost pressures and exacerbated the already serious housing supply crisis, with a sharp increase in dwellings under construction that remains a challenge for Australia several years later (**Fig. 21**).

**Fig. 21: Australian House Completion Times and Pipeline of Work: MQ-15 – DQ24**




Source: ABS & IndustryEdge

Note: chart addresses free-standing houses only

Disrupting supply of wood products by application of the INFM method will contribute to delays in building dwellings and consequently, to costs, even if only marginally.

## The special case of printing papers

Recent evidence of the broad economic impacts of leakage from decisions to cease harvesting of native forests is available from Victoria.

In 2022, the Victorian Government announced the early cessation of commercial access to the state's native forests.

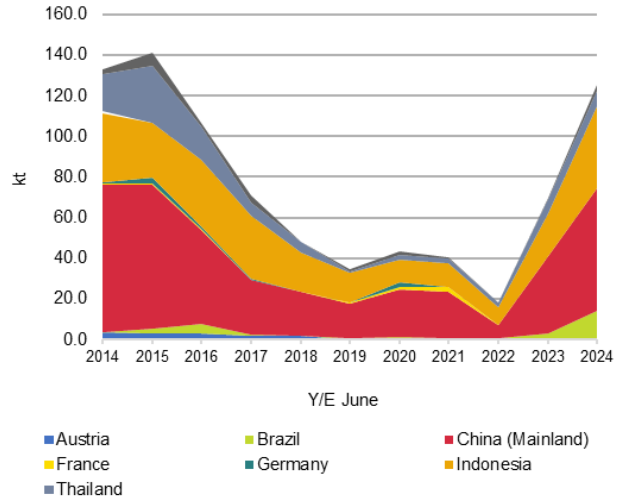
A prominent impact, the timing of which was directly attributed by the manufacturer, to the cessation of access to native forests, was the (February 2023) closure by Opal Australian Paper of the paper machine manufacturing copy, office and related white paper at its Maryvale mill (Latrobe Valley). [14]

In consequence, rather than be self-sufficient for its supplies of copy and office papers, with additional production being exported, Australia now imports all its copy and office papers. In 2023-24, this amounted to imports of 160,900 tonnes, around 96,000 tonnes higher than when Australia was still a manufacturer. [15]

Additionally, imports of the main product – copy paper – have been dominated by shipments from China and Indonesia since Australian production ceased. (**Fig. 22**) Manufacturers in both countries had been subject to formal anti-dumping findings and the levying of anti-dumping duties immediately prior to the end of domestic manufacturing. There were annual cases from 2016 to 2022 inclusive. [16]

[14] https://opalanz.com/news/opal-maryvale-mill-update/#:~:text=Due%20to%20the%20unplanned%20end%20of%20VicForests%20wood,previously%20made%20copy%20paper%20including%20market%20leading%20Reflex.
[15] IndustryEdge (2024), Pulp & Paper Strategic Reviews – Printing & Communication Paper Markets, Geelong Australia
[16] https://www.industry.gov.au/anti-dumping-commission

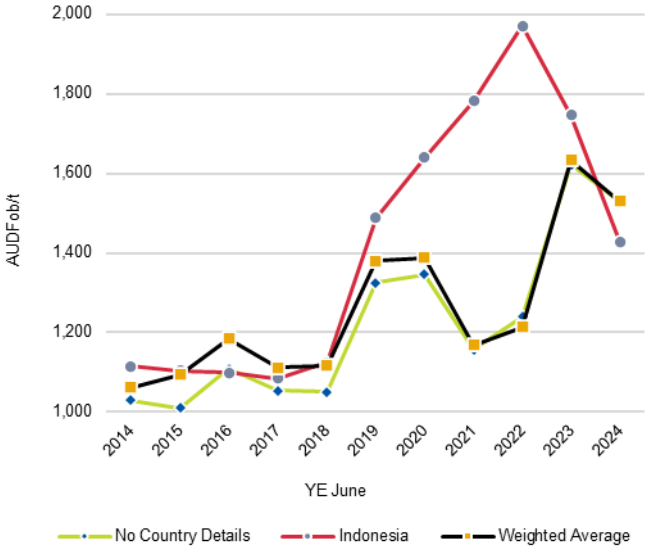
**Fig. 22: Australian Imports of Copy Paper by Country of Origin: 2014 – 2024 (ktpa)**




Source: ABS, IndustryEdge and company reports and intelligence

The consequences of a decision to apply the INFM method can have economic implications all through a supply chain and far beyond the specific point of reference. Once supplied wholly by imports, the price of copy paper rose a dramatic 26% after the cessation of local production, having a meaningful impact on Australia's Balance of Trade and contributing to inflation (**Fig. 23**).

**Fig. 23: Australian Imports of Copy Paper: Main Countries: 2014 – 2024 (AUDFob/t)**




Source: ABS & IndustryEdge

Note: the 'No Country Details' applied for manufacturers who were granted 'confidentiality restriction' by the ABS

In the case of copy and office paper, the implications included additional transport-related emissions associated with the imports, procurement of replacement products from countries where manufacturing emissions are uncertain and forest regrowth and plantation re-establishment are unclear.

# Conclusions

The INFM method has a high risk of leakage, with the likelihood that the leakage would be greater than any abatement achieved under the method.

There is a much larger, wider and deeper set of points of potential leakage under the method than the proponents identify. This may be due to an incomplete description of the supply chain that is supported by wood products arising from mixed use public native forests.

The method is unable to address leakage to mixed use public native forests in other Australian jurisdictions and provides no means by which it can restrict leakage to private native forests. It can be expected to apply added pressure to already stressed plantation resources and can offer no solution to avoid increased imports of the same or similar wood products, or increased use of engineered wood products.

Perhaps of most concern is the potential for substitution to high carbon options to replace hardwood products. Any abatement under the INFM method would be undermined and perhaps obliterated if even a portion of the wood products were substituted for steel, concrete or aluminium.

As this analysis identifies, it is however the cause of the leakage that is most important to understand.

The wood products derived from mixed use public native forests all have a purpose, mostly related to supplying building products, in particular to construct houses. The mere restriction of supply will not diminish demand for wood products to sustainably meet housing needs. Australian housing is in the midst of a crisis, in which wood products as substitutes for high carbon alternatives represent one of the few pathways to decarbonisation.

By proposing to cease activities that ultimately create wood products, the INFM method does not reduce demand for wood products.

It is important that there is no single point of leakage to address. This colander of potential leakage points means there are no mitigants available under the INFM method to avoid leakage and accordingly, leakage can reasonably be anticipated to be at least as great as any abatement under the proposed method.

*IndustryEdge*

*July 2025*