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## **Submission**

# **Interim Emissions Reduction Targets for Victoria (2021-2030) Issues Paper**

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## About the Victorian forest, fibre and wood products industry

The timber and forestry industry is vital for Victoria and a key contributor to the state's economy. The industry is a major driver of economic activity and jobs in Victoria, generating \$7 billion in sales and service income annually.<sup>1</sup> Much of the income generated by the industry remains in local communities, particularly so in rural and regional Victoria.

Throughout the state, the industry directly employs approximately 20,000 people. Around 90% of these directly employed workers are in primary and secondary processing roles; essentially timber manufacturing applications, such as appearance product manufacturers, furniture manufacturers, and timber fabricators. Almost 900 jobs are located at the Maryvale pulp mill, where Australian Paper is the largest private employer in the Latrobe Valley.

Indirectly, the industry also supports a further 40,000 to 50,000 jobs through flow on economic activity. This includes value-adding roles, such as the nearly 10,000 people who work making timber furniture, cabinetry and in joinery manufacturing.<sup>2</sup>

For Victoria's industry to best position itself to meet future market demand, both nationally and internationally, there is an immediate and ongoing need for clear and consistent policy settings, at the local, state and national levels. Timber and forestry are long-term business sectors and need the security of a long-term vision to be strong, viable and sustainable. Security and certainty of resource supply is paramount for a successful industry in the short, medium and long-term.

## About VAFI

VAFI is the peak representative body for the Victorian timber and forestry industry. VAFI represents the entire life-cycle of forestry and wood products, including forest owners and growers, harvest and haul businesses, wood, pulp and paper processors, manufacturers and associated businesses across both the native forest and plantations sectors. We support and encourage best practice in industry and forest management.

The long-term vision for the timber and forestry industry in Victoria is that of growth, stability and sustainability. The forest, fibre and wood products industry is a 21<sup>st</sup> century employer and wealth generator. It is a sunrise, not a sunset industry. What the industry needs from all levels of government – national, state and local - is clarity and consistency in policy positions and decisions that support local jobs, manufacturing, product innovation, market access, and the long-term future of the timber and forestry industry.

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<sup>1</sup> ABS (2016) *8155.0 Australian Industry, 2014-15*

<sup>2</sup> Schirmer, J (2010) *Socio-economic characteristics of Victoria's forestry industries*

## Executive Summary

The Issues Paper acknowledges the crucial role of new forest plantings as a means of reducing net greenhouse gas emissions in Victoria. However, it overlooks the significant emissions reductions that are currently being delivered across the whole supply chain of the timber and forestry industry. This submission provides detail on key abatement pathways provided by the industry, barriers to further development, and steps the government can take to support and promote these pathways.

The major pathways for emissions abatement in the timber and forestry industry are:

- The carbon sequestered by sustainably managed forests and plantations;
- The carbon stored in harvested wood products;
- The substitution of high-emissions materials (e.g. steel, concrete) with harvested wood products that have a substantially lower emissions footprint;
- The use of residual wood for renewable energy, replacing fossil fuels.

Detailed assessments of the timber and forestry processing system have shown that the combined effect of all abatement pathways can deliver better long-term carbon outcomes – in terms of stored carbon and avoided emissions – than unharvested forests. Crucially, these reductions are cost-effective and also deliver substantial social benefits to regional Victorian communities.

However barriers to fully realising emissions reductions include:

- Environmental policies that seek to convert multiple-use production forests to conservation reserves;
- Regulatory and financial barriers to establishing new commercial plantations; and
- The exclusion of residual wood for energy in the Victorian Renewable Energy Targets.

To fully realise the potential benefits that can be achieved by the timber and forestry industry, Victorian climate change policy should:

- Consider the emissions impacts across the entire timber and forestry processing system, including:
  - the carbon dynamics of the forest;
  - the full life cycle of forest products;
  - the substitution benefit of biomass and wood products, and
  - the risk of emissions resulting from deforestation in other countries.
- Promote sustainable management and harvesting of native forests
- Provide incentives for new commercial plantations
- Promote the use of locally grown and processed timber products to minimise transport emissions; and
- Include energy from residual wood fibre in Renewable Energy Target frameworks.

Climate change policy should account for whole of life cycle impacts and engage with the timber and forestry industry to maximise net emissions reductions. Victorian State forests can support the livelihoods of local communities and our economy while also delivering important emissions reduction outcomes.

## Introduction

The Victorian Association of Forest Industries (VAFI) appreciates the opportunity to provide feedback to the Independent Expert Panel on Interim Emissions Reductions Targets for Victoria. The Issues Paper acknowledges the potential of new forest plantings as a means of reducing net emissions. However, the paper overlooks the significant emissions reductions that are being delivered across the whole supply chain of the timber and forestry industry.

The significant potential for the forest and wood product industry to contribute to climate change mitigation was acknowledged in the 5<sup>th</sup> assessment report of the International Panel on Climate Change (IPCC), which estimated that, by 2030, forestry mitigation options could contribute to global emissions reductions up to 13.8 Gt CO<sub>2</sub>-e per year, depending on carbon price.<sup>3</sup>

This approach was developed further by the Food and Agriculture Organisation of the UN (FAO),<sup>4</sup> which concluded that:

*“Increased use of wood offers important mitigation potential when it displaces fossil-fuel intense products. Production of wood-based materials and products results in lower greenhouse gas emissions than production of other materials such as concrete, metal, bricks and plastic. Responsible management of end-of-life wood products, as well as of other biomass residues generated along the wood product value chain, is critical to ensuring a low carbon footprint.”*

The FAO also acknowledged that emissions reduction and avoidance options based on post-harvest use of wood are most viable in countries where a processing sector is present; industrial forestry operates under sustainability guidelines (e.g. sustainable forest management practices) and chain-of-custody is certified. Victoria meets these criteria comfortably and is therefore well placed to realise the benefits.

The major pathways for emissions abatement in the timber and forestry industry are:

- The carbon sequestered by sustainably managed forests and plantations;
- The carbon stored in harvested wood products;
- The substitution of high-emissions materials (e.g. steel, concrete) with harvested wood products that have a substantially lower emissions footprint; and
- The use of residual wood for renewable energy, replacing fossil fuels.

This submission addresses questions on emissions reduction opportunities to provide further detail on the abatement opportunities listed above (Q6), barriers to further development (Q7), and steps the government can take to support and promote these pathways (Q8).

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<sup>3</sup> Smith, P., *et al* (2014). Agriculture, Forestry and Other Land Use (AFOLU). In O. Edenhofer et al eds. Climate change 2014: Mitigation of climate change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, pp. 811–922. Cambridge University Press.

<sup>4</sup> FAO (2016) *Forestry for a low-carbon future Integrating forests and wood products in climate change strategies*, FAO Forestry Paper 177

It is VAFI's hope that the Independent Expert Panel will engage further with the timber and forestry industry to include assessments of these abatement opportunities in options to achieve emissions reductions targets.

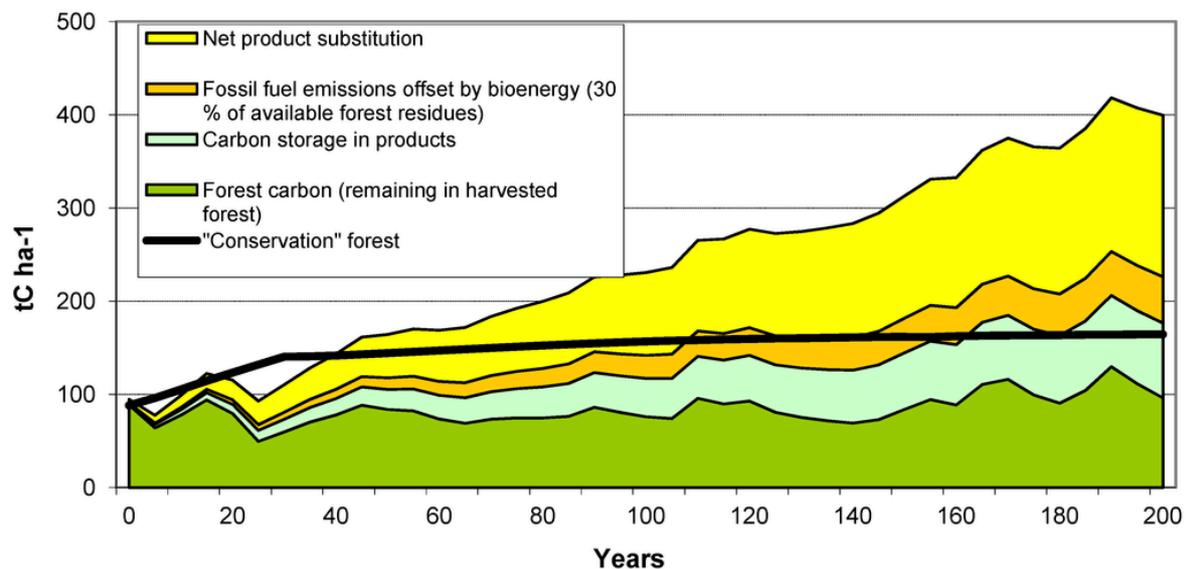
### Opportunities from sustainable forest management

Victoria has approximately 7.9 million hectares of public forest, of which 3.9 million hectares is designated as conservation reserves and 3.1 million hectares is multiple-use State forest. However, the Issues Paper does not address this substantial resource and focuses solely on the role of new tree plantings (reforestation and afforestation) to sequester carbon.

Sustainably managed, multiple-use production forests have the capacity store carbon *in situ*, and to produce:

- Wood products that continue to store carbon in the long-term;
- Substitutes for more carbon-intensive building products, minimising the need for carbon intensive imports; and
- Residues that can be used to generate renewable energy, displacing fossil fuels.

Recent research analysed native forest sites in New South Wales and accounted for all emissions mitigation opportunities – including emissions substitutions – provided by sustainably harvested wood products. This analysis showed that sustainably managed wood production forests can produce better carbon abatement outcomes than unharvested forests (Figure 1).<sup>5</sup>



**Figure 1.** Greenhouse gas implications of the “conservation” and “production” scenarios (t C ha<sup>-1</sup> sequestered or displaced) for Blackbutt forests (North Coast NSW) modelled over a 200-year period (Source: Ximenes *et al*, 2012).

<sup>5</sup> Ximenes, F, George, B, Cowie, A, Williams, J & Kelly G (2012) Greenhouse gas balance of native forest in New South Wales, Australia. *Forests* 3: 653-683

In appropriate cases, the industry can apply locally appropriate management, including sustainable harvesting and stand thinning, to regenerate degraded forests and stabilise losses of forest area over the long-term, by improving structure and biodiversity while also delivering a financial return on wood resources. An interim assessment of a pilot management project, currently active in Gippsland,<sup>6</sup> concluded that the mixed-age management can deliver 'new wood' into the industry without compromising biodiversity values and maintaining the capacity for on-going and substantial carbon sequestration

Forest management policies that support the conversion of production forests to conservation reserves can act as a disincentive to using native forest products and residues. Converting multiple use production forests to conservation forests will reduce access to wood and may lead to increased harvesting in other countries where forests are managed less sustainably, with resultant deforestation or forest degradation in those countries.

To fully recognise the benefits that can be delivered by the timber and forestry industry, the entire forestry and processing system should be considered, including:

- The carbon dynamics of production forests;
- The life cycle of harvested wood products;
- The substitution benefit of biomass and wood products, and
- Risk of emissions resulting from deforestation or forest degradation in other countries.

Climate change policy should account for whole of life cycle impacts in order to maximise net emissions reductions. Victorian State forests can support the livelihoods of local communities and our economy, while also delivering important emissions reduction outcomes.

## Opportunities from new plantations

VAFI strongly supports the promotion of reforestation and afforestation as cost effective method of reduction carbon emissions. Policies should also seek to maximise the benefits of commercial-scale plantations. Plantations can supply locally sourced and processed timber products, maximising the mitigation opportunities from timber. Increased plantation tree cover, achieved through a balanced mix of production zones, farm forestry, and environmental plantings can increase carbon sequestration and provide environmental co-benefits such as: salinity mitigation; forest landscape restoration and linkage; and improved water quality.

However, there is currently no growth in the plantation sector. The Victorian plantation estate comprises approximately 423,000<sup>7</sup> hectares of hardwood and softwood plantations. This area has remained broadly stable since 2007, as has the total planation area across Australia as a whole. Despite strong demand for sawn timber and a favourable outlook for the main markets in

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<sup>6</sup> Flinn, DW (2012) *Durable Timber Productivity and Ecological Project, East Gippsland. Documentation of results from the first trial coupe*

<sup>7</sup> Downham, R & Gavran, M (2017), *Australian plantation statistics 2017 update* ABARES, Canberra, May.

new housing and building, investment in new plantations is stagnant. Poor profitability is attributed to the high initial costs of acquiring land and establishing the plantation, which has a significant opportunity cost of capital for a period of time until the investment matures.

In 2017, the Commonwealth government approved an accounting method for new plantation projects to bid for carbon credits through the Emissions Reduction Fund. A carbon accounting methodology for farm scale plantations was approved in 2014. The first, and to date only, project using this method is located in Western Australia and was registered in April 2018.

VAFI has welcomed the inclusion of commercial plantations in carbon crediting frameworks and the methodology. However, in its present form there are a number of key uncertainties and barriers to participation. These include:

- Projects in areas receiving over 600mm of annual rainfall are ineligible without water access state entitlements. This is likely to be a substantial barrier in Victoria;
- Lack of clarity around Ministerial power to reject projects;
- National-scale modelling of carbon stocks often does not match regional yield models, potentially under crediting projects;
- There is no long-term market price signal for carbon credits; and
- The high administrative burden of the ERF auction process, and the scheme's long-term monitoring and reporting requirements.

New frameworks for plantations are needed to address the impediments to investment and recognise the broader public good – environmental and social – benefits of plantations. To overcome barriers to new plantation and afforestation projects, VAFI recommends:

- An ongoing plantation funding program for the whole of Victoria with a commitment to a new plantation area target;
- Regulatory reform to promote new plantations and afforestation. Key features include:
  - Clear rules under a Code of Practice for Plantations;
  - A consistent state-wide assessment, approvals, and compliance process;
  - Transfer of regulatory oversight from local planning schemes to a dedicated state-level office; and
  - Protection of existing plantations for future rotations.
- The Victorian Government work with the Commonwealth to address the significant limitations of the ERF methodologies for commercial scale plantations.

### **Carbon Stored in harvested wood products**

A major study by the New South Wales Department of Primary Industries used a Life Cycle Assessment (LCA) approach to assess the net carbon balance of harvested wood products (HWPs),<sup>8</sup> taking into account all relevant carbon emissions to, and removals from the atmosphere.

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<sup>8</sup> Ximenes, F *et al.* (2016) *Carbon stocks and flows in native forests and harvested wood products in SE Australia*. Prepared for Forest & Wood Products Australia

This study included the key above-ground forest carbon stores, the impact of disturbances on those pools (harvest and fire), and the dynamics of carbon stored in HWPs in service and in landfills. In addition to the physical tracking of carbon in forests and HWP, the study also considered the fossil fuel displacement benefits of using biomass for bioenergy, the product substitution impacts and the socioeconomic implications of native forest management in three case study regions (two in NSW and a Mountain Ash site in Victoria).

The HWPs in 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. The differences in emissions between Australian wood products and imported or non-wood alternatives are summarised in Appendix 1.

The study also concluded that greenhouse gas mitigation potential of paper products is greater than typically thought. When the wood fibre used in paper production is sourced from native forests in South-East Asia, the mitigation potential by using Australian native pulpwood is large. This is due to the high emission footprint caused by forest degradation and forest loss in SE Asia, especially when it occurs on peatlands.

The true size of the emissions reductions delivered by harvested wood products depends heavily on how harvested wood products are treated at the end of their life. For example, re-using the timber will maintain stored carbon while other disposal methods may release stored carbon to the atmosphere. Strategies to increase the use of harvested wood products should include planning for maximising avoided emissions such as: re-use and repurposing of harvested wood products; long-term disposal with minimal decomposition; and energy recovery.

## Harvested wood products in construction

Increasing the proportion of harvested wood products used in construction represents a significant opportunity for reducing emissions. These materials both act as large stores of carbon and reduce the use of more emissions intensive materials, such as concrete and steel. Wood products can be used to build almost any new structure up to 20 storeys including offices, apartments, schools, libraries and retail outlets, while sawn timber can be used for buildings up to eight storeys. In the short term the biggest market for timber is likely to be multi-storey apartments.

Life Cycle Assessments of a range of harvested wood products<sup>9</sup> demonstrate that timber construction materials store more carbon than is emitted during harvesting and processing (Table 1), with solid timber storing around 700kg CO<sub>2</sub>-e per m<sup>3</sup> (approximately 1 tonne) over the lifetime of the product.

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<sup>9</sup> Environmental Product Declarations for Australian wood products (2017). Prepared by Stephen Mitchell Associates

**Table 1.** Net carbon stored by timber construction products

<b>Product</b>	<b>Uses</b>	<b>Net carbon emissions*</b>
<b>Sawn Hardwood (kiln-dried)</b>	-Structural timber -Internal decorative (flooring etc.) -External (decking, cladding etc.) -Furniture	-708 kg CO <sub>2</sub> -e/m <sup>3</sup>
<b>Sawn Softwood (kiln-dried)</b>	-Structural timber -Internal decorative (flooring etc.) -External (decking, cladding etc.) -Furniture	-699 kg CO <sub>2</sub> -e/m <sup>3</sup>
<b>Particleboard</b>	-Internal decorative	-13 kg CO <sub>2</sub> -e/m <sup>2</sup>
<b>Medium density fibreboard (MDF)</b>	-Furniture, -Internal decorative	-9 kg CO <sub>2</sub> -e/m <sup>2</sup>
<b>Plywood</b>	-Structural bracing, -Interior and exterior surfacing	-6 kg CO <sub>2</sub> -e/m <sup>2</sup>
<b>Hardwood Glulam</b>	-Structural -Decorative	-408 kg CO <sub>2</sub> -e/m <sup>3</sup>

\* A negative net emission figure signifies the removal of carbon from the atmosphere. Net emissions are the carbon stored in wood products, minus the emissions from harvesting, transport and processing. End-of-life emissions are dependent on final disposal (Re-use, land-fill, combustion for energy etc.) and are not presented here.

An assessment of the potential emissions reductions from increased use of harvested wood products in construction was undertaken recently. The climate change think-tank Beyond Zero Emissions (BZE) has made a detailed analysis of the potential emissions reductions that could be achieved by substituting cement with timber construction materials.

BZE concluded that it is possible to replace 7 per cent of the Australian cement market across Australia over 10 years, achieved by employing timber construction for 20 per cent of new buildings. The report outlines a 10-year strategy for timber-based construction which would use 2.8 million m<sup>3</sup> of timber, available from existing plantations and residual timber, and would sequester 1.4 million tonnes of CO<sub>2</sub>.<sup>10</sup>

If BZE's timber strategy were to be pursued in the long term, it can lead to a significant sequestration of carbon stored in wood products in the order of 3 million tonnes of CO<sub>2</sub>. This would require an increase in available supply from a mix of plantations and native forests, and would therefore require the issues outlined above to be addressed.

<sup>10</sup> Beyond Zero Emissions (2017) *Zero Carbon Industry Plan: Rethinking Cement*

## Use of residual wood for renewable energy

The 2016 assessment by Ximenes *et al.* (detailed above) demonstrated that one of the ways to enhance the greenhouse gas mitigation outcomes of production forestry is the increased use of biomass for bioenergy.

There are large volumes of harvest slash and processing residues available for use in Victoria. Current practices for forest harvest residues result in immediate carbon release (post-harvest burns), or progressive carbon loss due to natural decay. Similarly, many approaches for much of the available wood processing residues currently used for low-value applications – such as mulch and animal bedding – result in release of all the carbon within 1-3 years, with no net mitigation benefit.

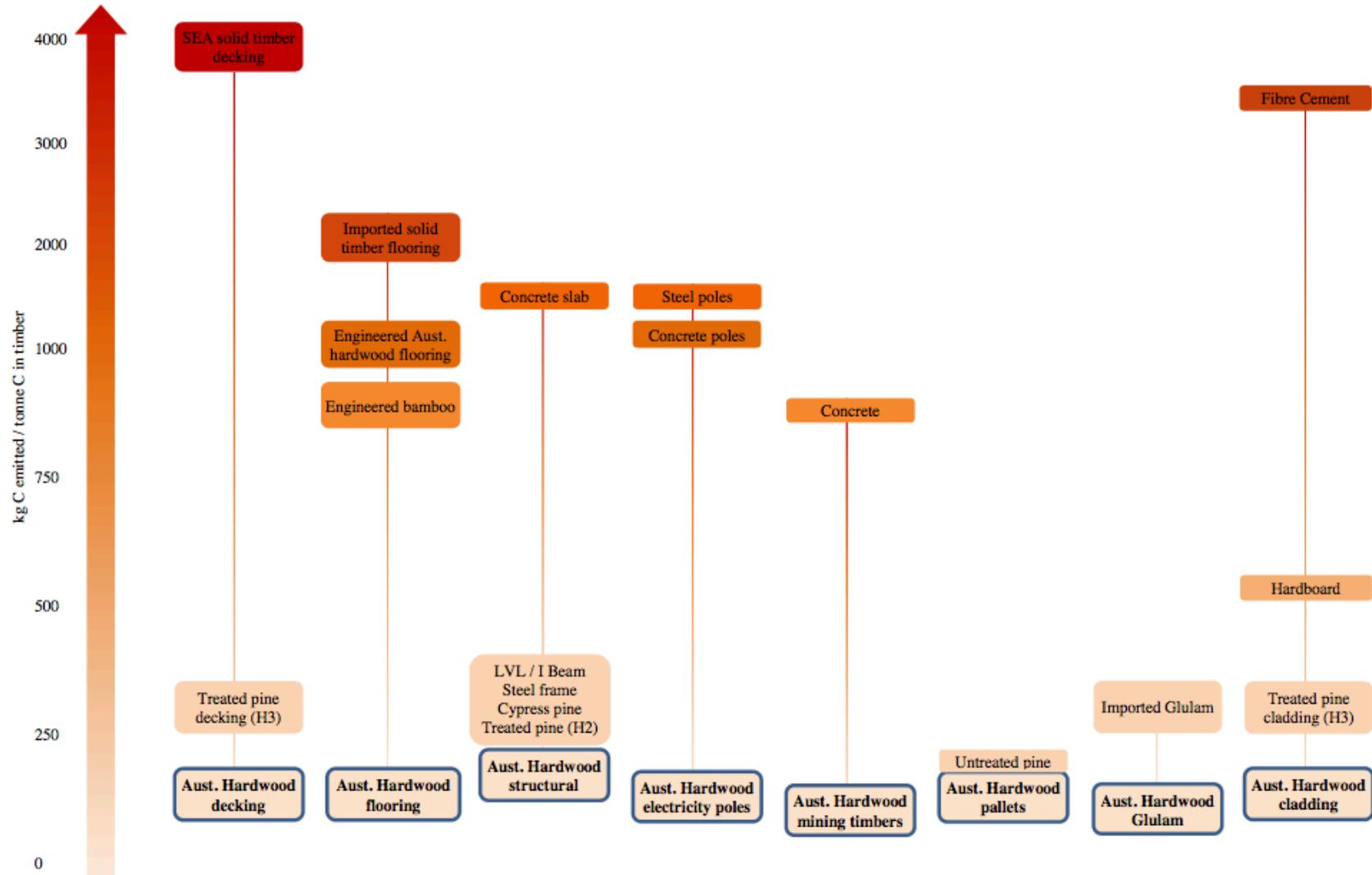
Some processing residues are already used in Victoria for heat generation at the small scale. Beaufort hospital in western Victoria uses woodchips supplied by a local sawmill to fire its boiler. Wood processing facilities in the state will also typically use a proportion of residual fibre to offset energy costs.

Thus, there are significant opportunities for native forest biomass to play a much larger role in the generation of renewable energy, especially with the recent reinstatement of native forest biomass as an eligible renewable energy source under the Renewable Energy Target (RET).

There may also be opportunities in the future for new projects to be supported by a method under the Emissions Reduction Fund (ERF) that credits the fossil-fuel displacement benefits of using biomass for energy displacing the use of fossil fuels, against the baseline of loss of carbon in the forest via burning or natural decay. This would allow project proponents to choose which scheme (RET or ERF) would be most suitable for a given project

VAFI recommends that any renewable energy developments and legislation in Victoria complement the Federal Government's RET, including native forest wood waste as an eligible source of biomass for renewable energy generation.

Appendix 1.



The emission footprint for Australian hardwood harvested wood products and their likely replacement products (Source Ximenes, F. *et al.* (2016) *Carbon stocks and flows in native forests and harvested wood products in SE Australia*).