Climate change and carbon storage

Position:

Despite some claims, native timber harvesting does not dramatically impact climate change. Sustainable harvesting and carbon sequestered in wood makes the industry carbon friendly.

Key Points:

- Sustainably harvested wood is the **ultimate renewable**. It is organic, natural, and regrows to support biodiversity.
- It is important to consider the whole picture when assessing the carbon emissions impact of native timber harvesting. This includes what substitute fibre or products would be needed to compensate for native hardwood.
- Harvested Victorian native timber traps carbon in wood and products.
- The net effect of native harvesting produces less carbon than would be released if all native harvesting were stopped and substituted by imports or other materials.
- A "no harvest" model would also sequester carbon in forests, but not as much as sustainable native timber harvesting with imported hardwood or other substitute materials.

Background:

Carbon storage and sustainable native timber harvesting:

- Victoria's native timber industry is sustainable. Harvested areas are replanted with the same type of forest which was there before.
- Put simply, VicForests regrows what it harvests.
- Forests act as a carbon sink – absorbing CO2 from the environment, storing it as carbon and releasing oxygen in return.
- Forests have the potential to store vast amounts of carbon from the environment and contribute to carbon emissions abatement.
- To produce 1 kilogram of timber, a tree consumes 1.47 kilograms of CO2 and returns a kilogram of oxygen to the atmosphere[1].
- University of Tasmania has found that forests in a perpetual state of regeneration creates a higher capacity to absorb carbon[2].
  - This is because trees are harvested and sequester carbon in the wood products created from harvested timber. New trees are then planted as part of the regeneration process which grow and absorb more CO2 from the atmosphere.
- While emissions are generated, and carbon is released during the harvesting process through slash burning and decomposition of wood debris, Victoria's native timber industry has a positive net impact on carbon conserving around 835 tC per hectare in the State's Ash forests.
  - This compares to a "no harvesting" model, which conserves 522 tC per hectare[3].
- This accounts for substituted other materials that have a higher emissions profile, including fibres, which would have to be imported.

QUICK FIGURES:

- Victoria's native timber industry has a positive net impact on emissions, conserving **835 tC per hectare.**
  (Deliotte, VicForests: The economic impact of VicForests on the Victorian community, p40)
- This exceeds carbon conserved under a "no harvest" model, which would conserve **522 tC per hectare.**
  (Deliotte, VicForests: The economic impact of VicForests on the Victorian community, p40)
- Timber stores up to **15 times** the CO2 that is released by converting it into a product.
  (University of Tasmania: Timber as a Sustainable Building Material, p3-13)
- **1 kilogram of timber** has consumed **1.47 kilograms of CO2** and returned **a kilogram of O2** to the atmosphere.
  (University of Tasmania: Timber as a Sustainable Building Material, p3-7)
- It takes **8 times** more energy to produce a tonne of steel as it does to produce equivalent amounts of timber.
  (CRC for Greenhouse Accounting)
- It takes **46 times** the amount of energy to produce a tonne of aluminium compared to equal amounts of timber.
  (CRC for Greenhouse Accounting)

Carbon sequestration in wood products:

- Wood products act as a carbon sink storing CO2 absorbed from the environment and locking it away for many years.
- Around 50 per cent of wood's dry-weight is carbon[4].
- Carbon sequestration and storage does change depending on the end purpose of the harvested wood[5].
- There is a basic international accounting method for calculating the carbon storage of different wood products which is represented in a service life.
- Timber harvested for pulp to make paper is considered to store carbon for a shorter period than timber used to make furniture or building and construction products[6].
  - The service life of paper products is considered 3 years while for furniture and construction materials it is considered to be 30 and 50 years, respectively[7].
- At the end of a product service life, it can be assumed that the carbon in the product has returned to the atmosphere.
- Victorian native hardwood used for furniture, building and construction has the potential to have a positive impact on climate change and carbon abatement.
- In addition, wood and paper products are increasingly being substituted for plastics.
- Australians used around 4 billion plastic bags every year with many ending up in waterways or the ocean.
- Renewable and recyclable paper products are a viable alternative for plastic waste in our economy.

Benefits of wood products for use in the building and construction industry:

- Wood is the a renewable building resource.
- A "no-harvest" strategy would have significant impacts on carbon emissions in the broader economy as other products fill the void left by sustainably-harvested Victorian native timber[8].
- The Intergovernmental Panel on Climate Change (IPCC) has noted that "stopping all forest harvesting would increase forest carbon stocks but would reduce the amount of timber and fibre available to meet societal needs."
- The University of Tasmania found the substitution of other products in the building and construction industry would lead to higher greenhouse gas emissions.
  - Not only do wood products store carbon, they are far less emissions intensive to produce the substitutes.
- In Australia, embodied carbon emissions in the construction industry – the overall emissions required to make a product – account for 23 per cent of all carbon emissions[9].
- Wood as a building product uses vastly less fossil fuel energy per unit when compared to other common substitutions[10].
- Wood products also acts as a carbon sink – storing carbon for up to 50 years.
- The University of Tasmania has found that timber stores up to 15 times the amount of CO2 compared to that which is released during its manufacturing[11].
- The University found rough sawn timber requires only a fraction of the fossil fuel energy to produce when compared to aluminium[12].
- According to Greenhouse accounting rules, it takes 8 times less energy to produce a tonne of timber than a it does a tonne of steel[13].
  - And 46 times less energy to produce a tonne of timber than it does a tonne of aluminium[14].
- Steel and aluminium store negligible amounts of carbon over their service life.

Carbon storage in forests:

- Some groups and organisations highlight the fact that older forests have a larger carbon storage amount than young forests.
- While this is true, it fails to consider that the loss of Victorian native hardwood from the market would require substitute fibre to be imported from other places.
- This substituted fibre would likely have a higher emissions profile and, therefore, be counterproductive to the arguments being made.
- Under a no harvest or full conservation model of Victoria's Ash forests, they would conserve 522 tC per hectare[15].
- This is exceeded by the current model of sustainable harvesting taking into account the impact substitute fibre would also have which is 835 tC per hectare[16].

[1] University of Tasmania, Unknown date, Timber as a sustainable building material, available: https://makeitwood.org/benefits/climate-change (p3-7)

[2] University of Tasmania, Unknown date, Timber as a sustainable building material, available: https://makeitwood.org/benefits/climate-change (p3-8)

[3] Deloitte-VicForests, 2017, The economic impact of VicForests on the Victorian community (p40)

[4] Planetark, 2018, Make it wood, available: https://makeitwood.org/benefits/

[5] University of Tasmania, Unknown date, Timber as a sustainable building material, available: https://makeitwood.org/benefits/climate-change (p3-9)

[6] University of Tasmania, Unknown date, Timber as a sustainable building material, available: https://makeitwood.org/benefits/climate-change (p3-9)

[7] University of Tasmania, Unknown date, Timber as a sustainable building material, available: https://makeitwood.org/benefits/climate-change (p3-9)

[8] Deloitte-VicForests, 2017, The economic impact of VicForests on the Victorian community (p40)

[9] Planetark, 2018, Make it wood, available: https://makeitwood.org/benefits/

[10] University of Tasmania, Unknown date, Timber as a sustainable building material, available: https://makeitwood.org/benefits/climate-change (p3-12)

[11] University of Tasmania, Unknown date, Timber as a sustainable building material, available: https://makeitwood.org/benefits/climate-change (p3-13)

[12] University of Tasmania, Unknown date, Timber as a sustainable building material, available: https://makeitwood.org/benefits/climate-change (p3-13)

[13] CRC for Greenhouse Accounting, available at www.greenhouse.crc.rog.au/counting_carbon/wood/cfm

[14] CRC for Greenhouse Accounting, available at www.greenhouse.crc.rog.au/counting_carbon/wood/cfm

[15] Deloitte-VicForests, 2017, The economic impact of VicForests on the Victorian community (p40)

[16] Deloitte-VicForests, 2017, The economic impact of VicForests on the Victorian community (p40)

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