

# A Designer's approach to WBLCA and Mass Timber Benefits

Disclaimer: This presentation was developed by a third party and is not funded by WoodWorks or the Softwood Lumber Board



# Getting Familiar







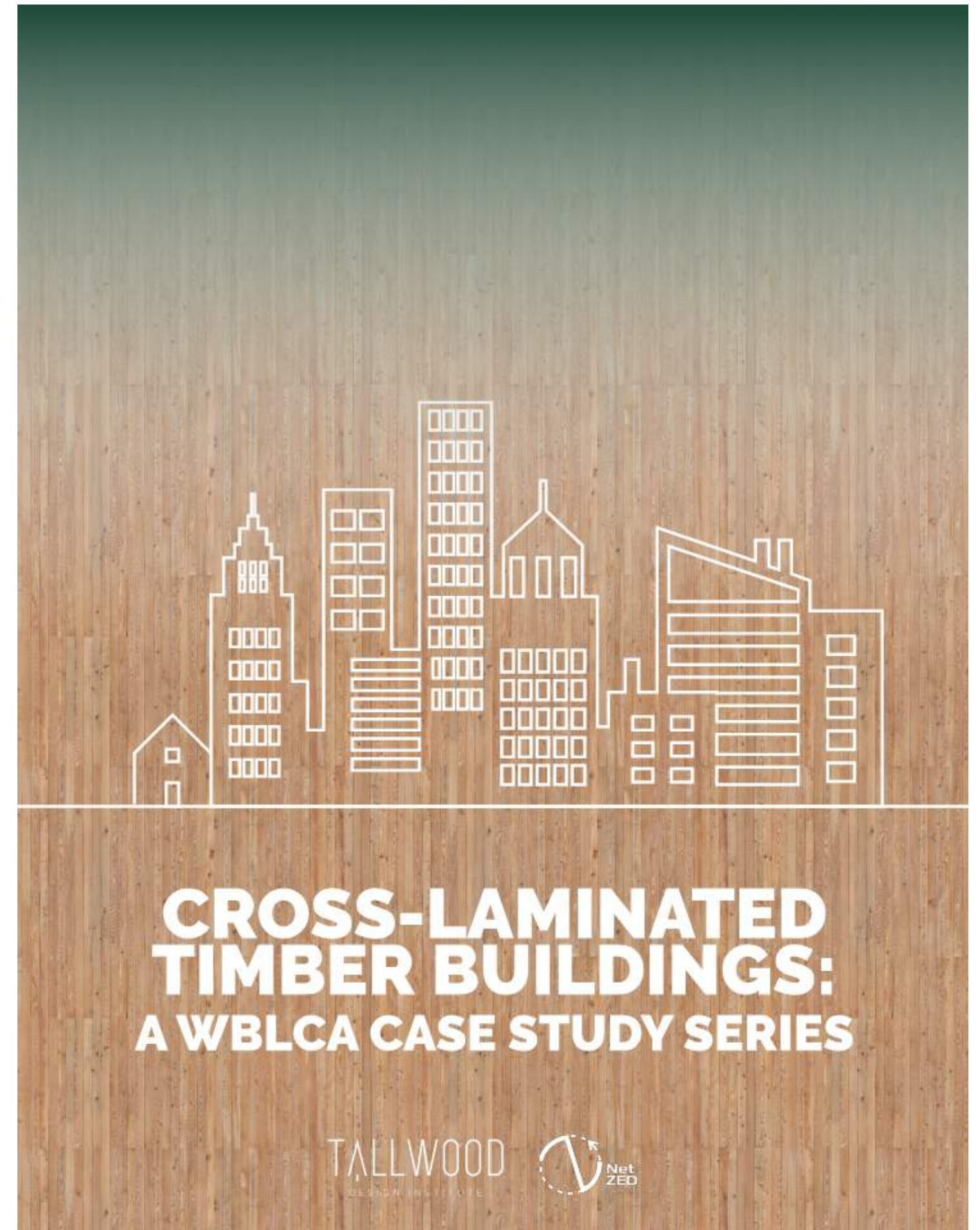
Our LCAs have been done with:

- Local Universities (UO and PSU) students through collaborations where they get credit.
- Sustainability Consultants
- We now have Tally and we will be hiring an in-house LCA specialist.



# WBLCA Case Studies

Conducted By University of Oregon Professor and grad students under a research grant from the TallWood Design Institute, funded by the USDA Agricultural Research Service





# WBLCA Case Studies

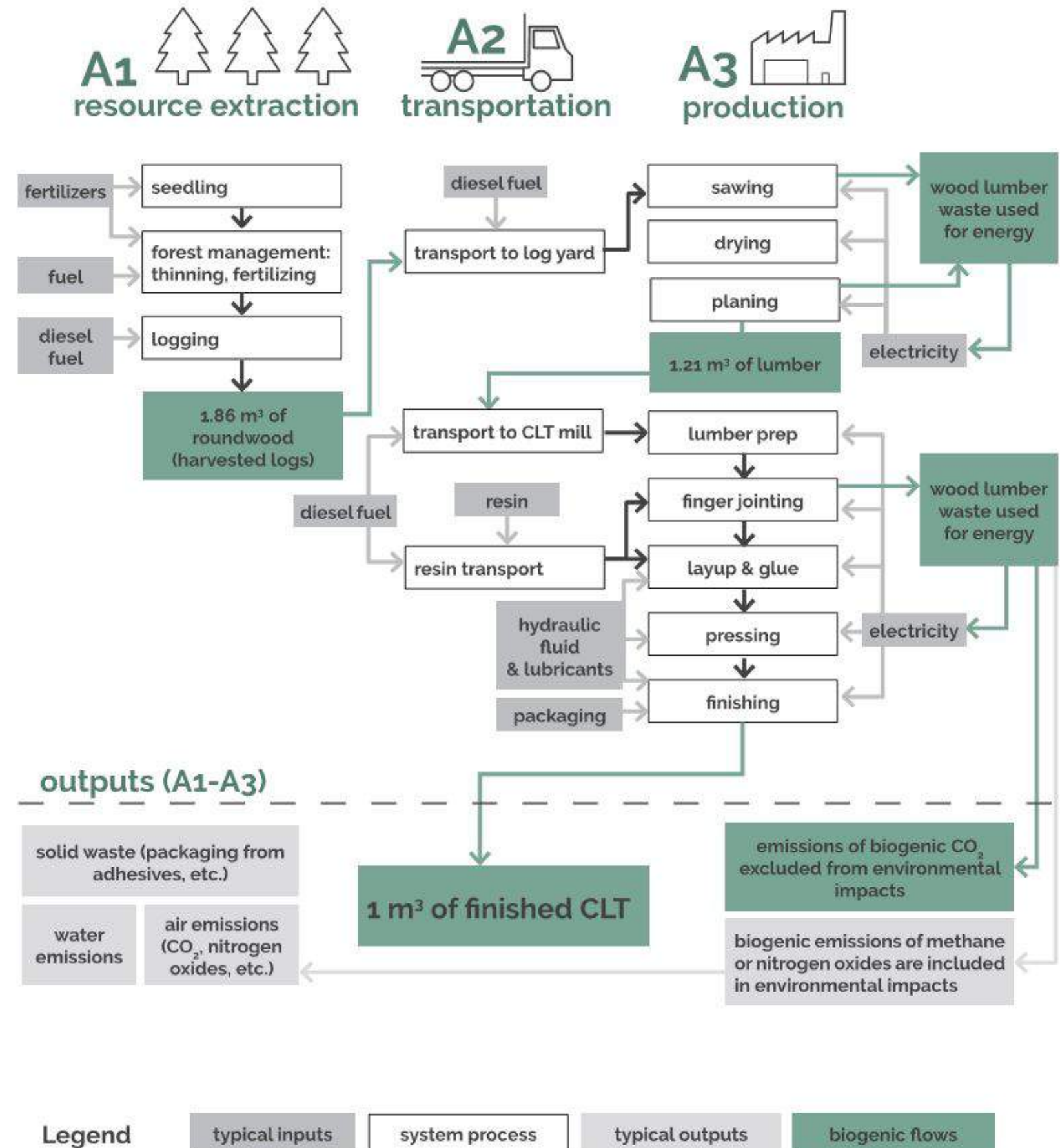
“this series offers insight into the current possibilities and limitations of WBLCA for CLT buildings”

- 5 mass timber buildings of different scales and uses.
- Athena IE and Tally
- Cradle to Grave
- Modules A+C and A+C+D
- Several Impact Categories





# WBLCA Case Studies

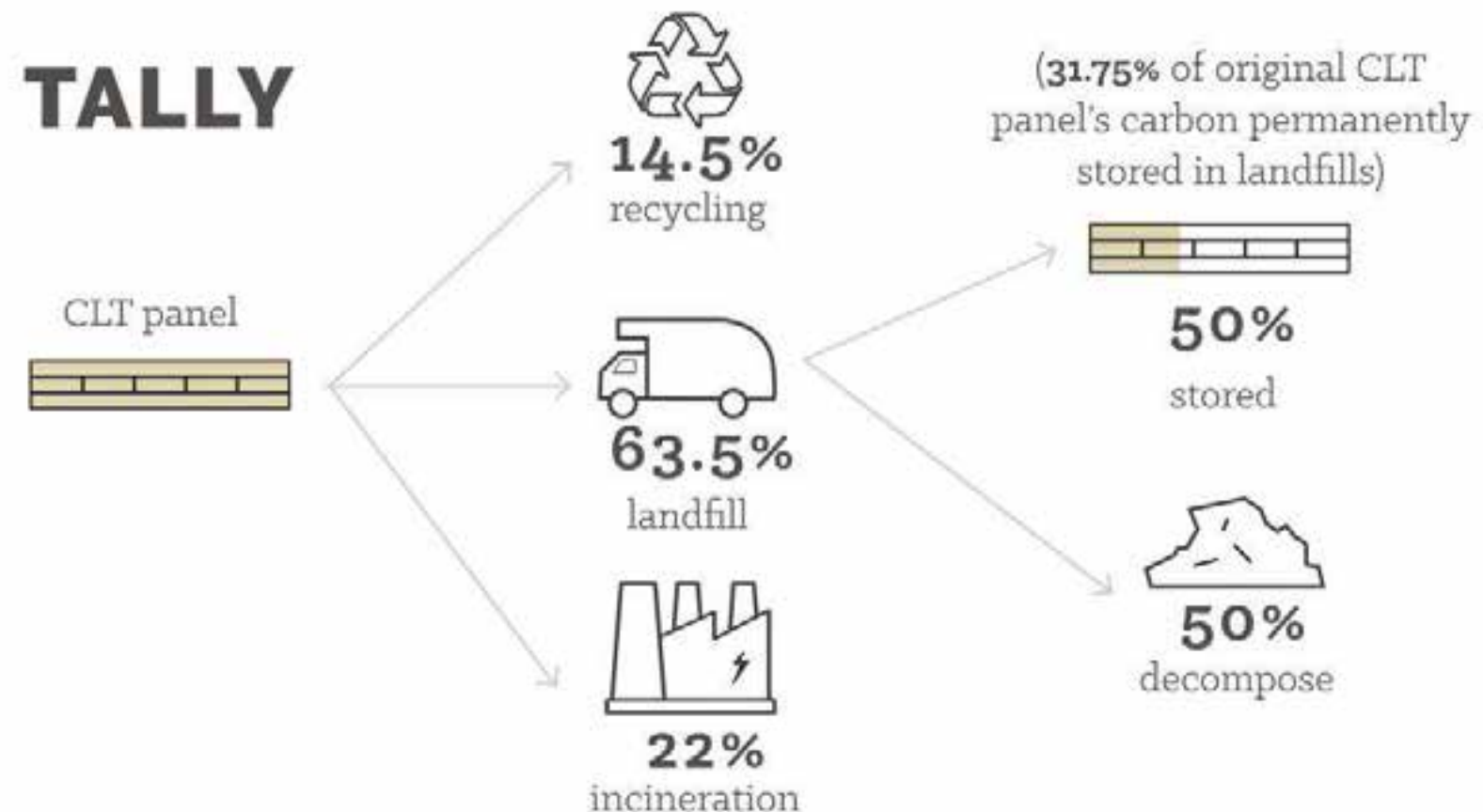


Really good background data especially for CLT and WBLCA

# WBLCA Case Studies

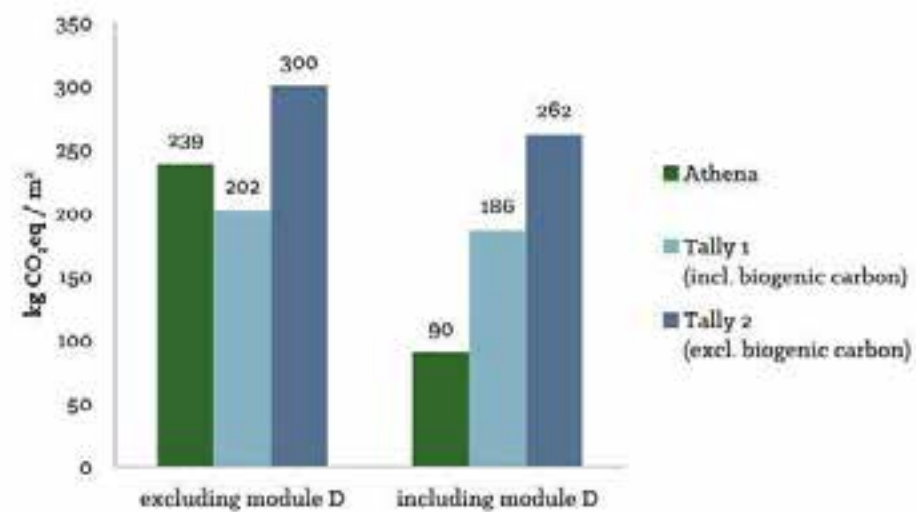
Explanation of CLT end of life (EOL) assumptions between software

Note: EOL info is based on stick frame buildings, need more data on EOL for mass timber.

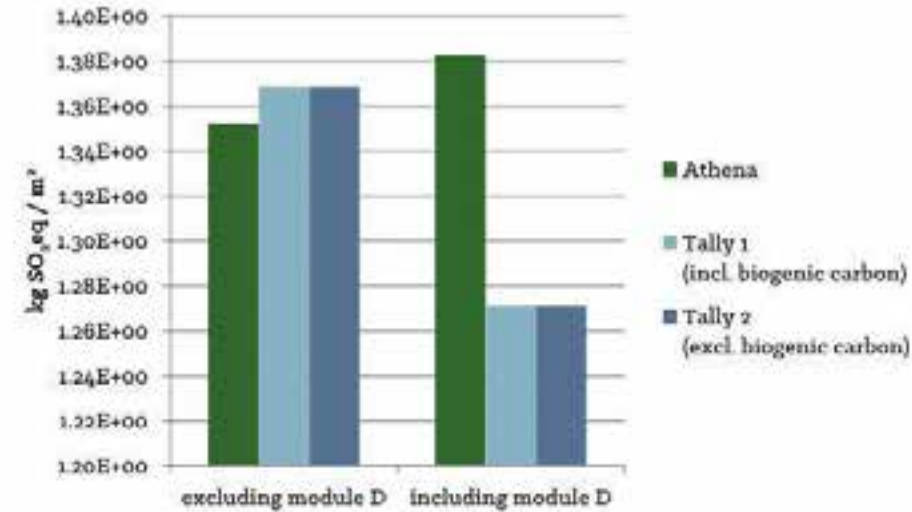


# WBLCA Case Studies

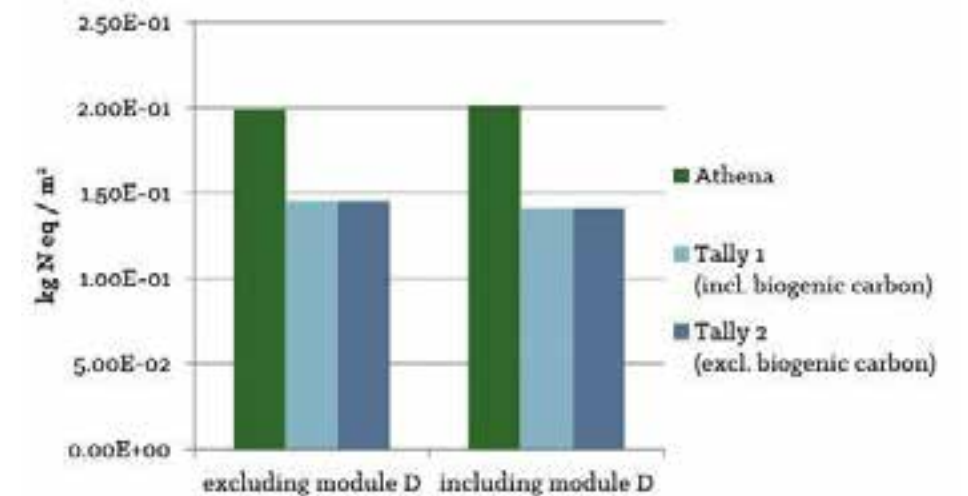
Ultimately interesting but difficult to draw conclusions to help you make decisions about buildings



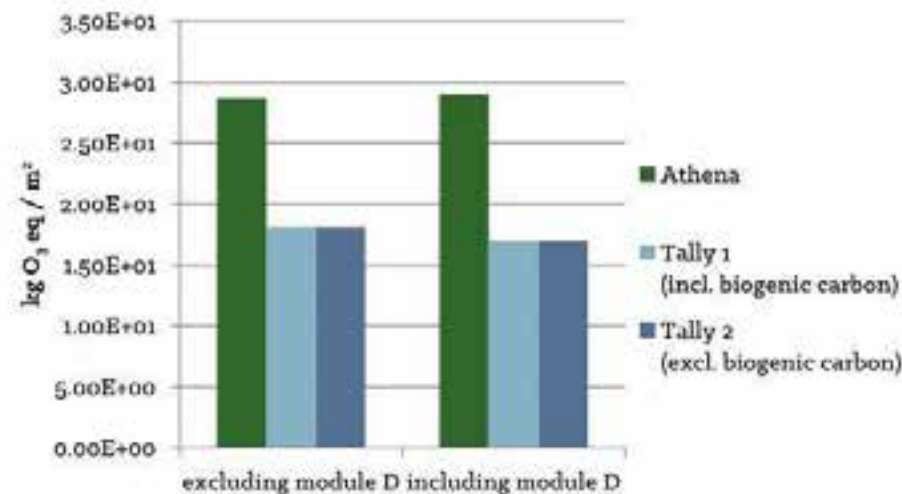
Global Warming Potential



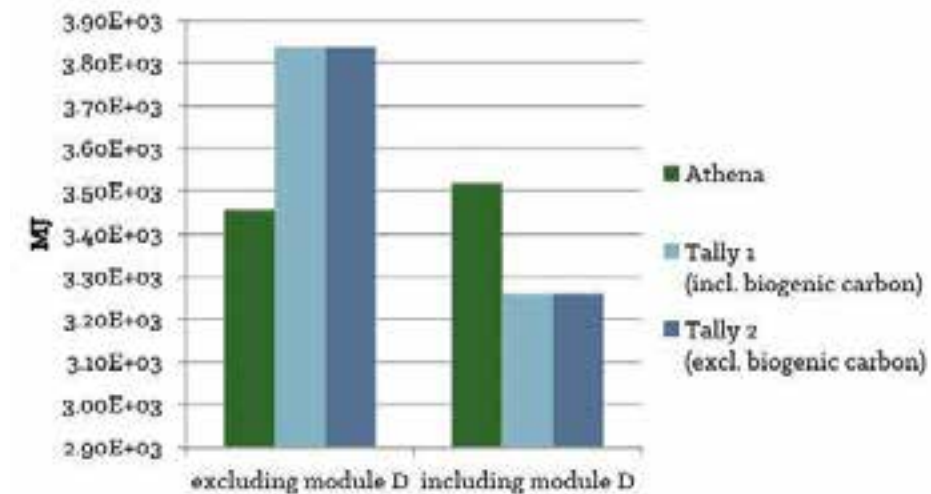
Acidification



Eutrophication



Photochemical Smog



Primary Energy Demand



The background of the slide features a low-angle shot of a clear blue sky with wispy white clouds. On the left side, a large, dense evergreen tree reaches towards the top of the frame. In the bottom right corner, the top of another smaller evergreen tree is visible.

# Applying to Projects



# Applying to a Project - Assembly Impact Assessment - Structure

## Mass Timber

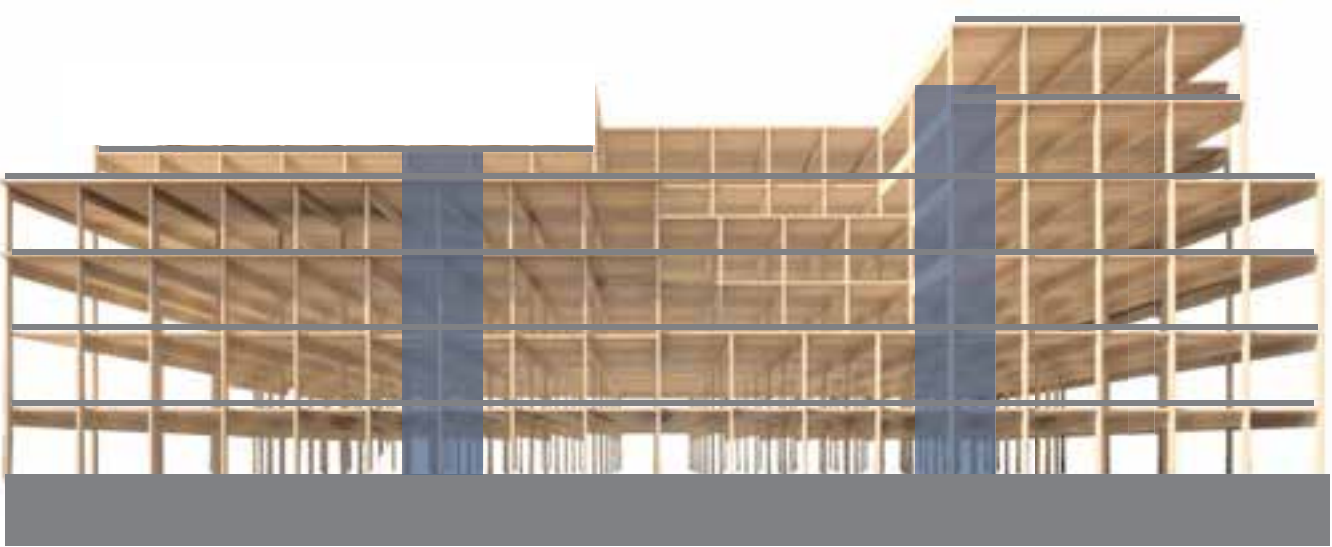
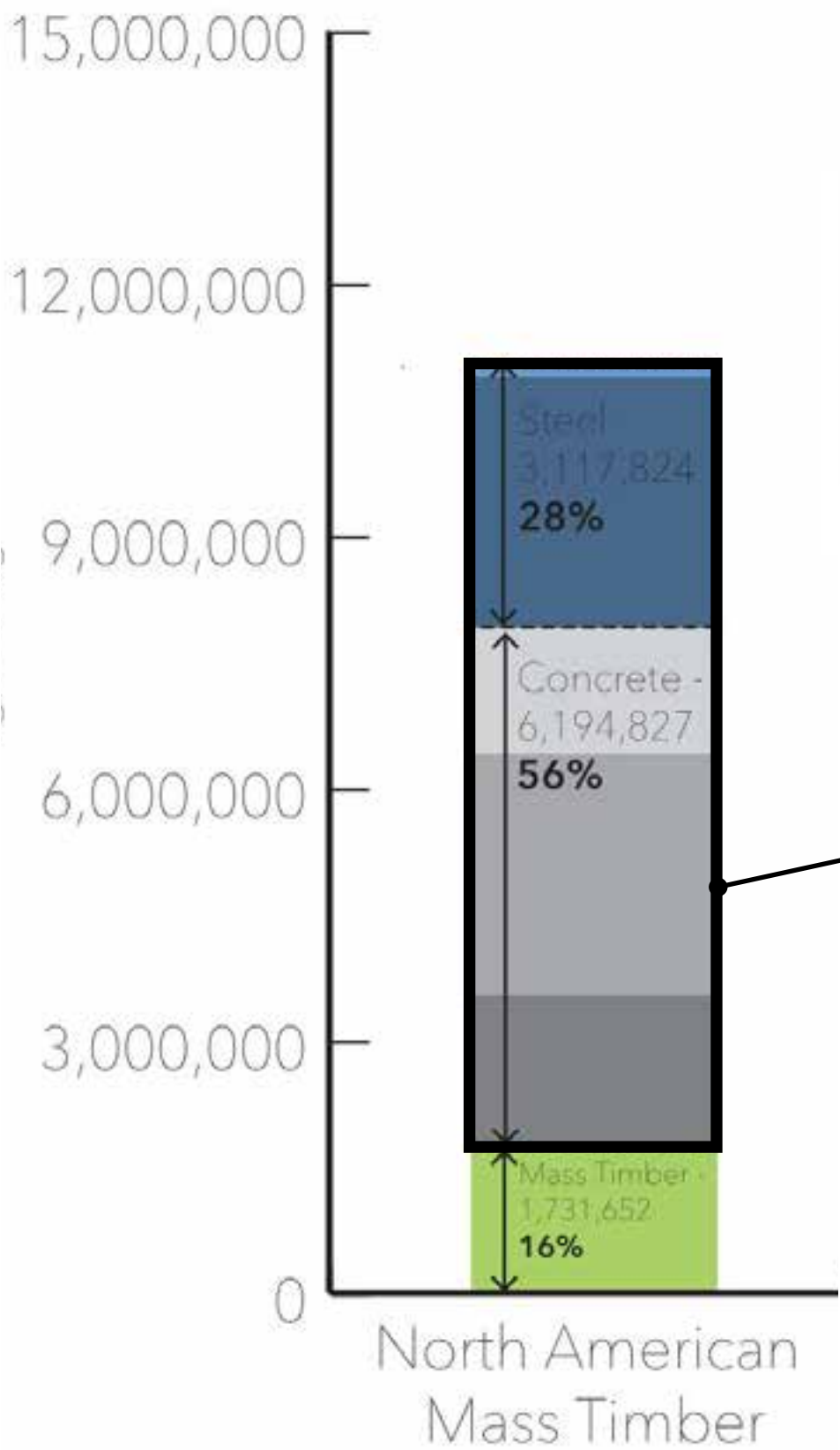
- Beams
- Columns
- Decks

## Steel

- Connections
- Braces
- Reinforcing

## Concrete

- Foundations
- Diaphragms
- Parking



**In a mass timber building, concrete and steel account for most of the carbon footprint. In this case 84%**

**Tally**

**Includes Biogenic Carbon** ✓

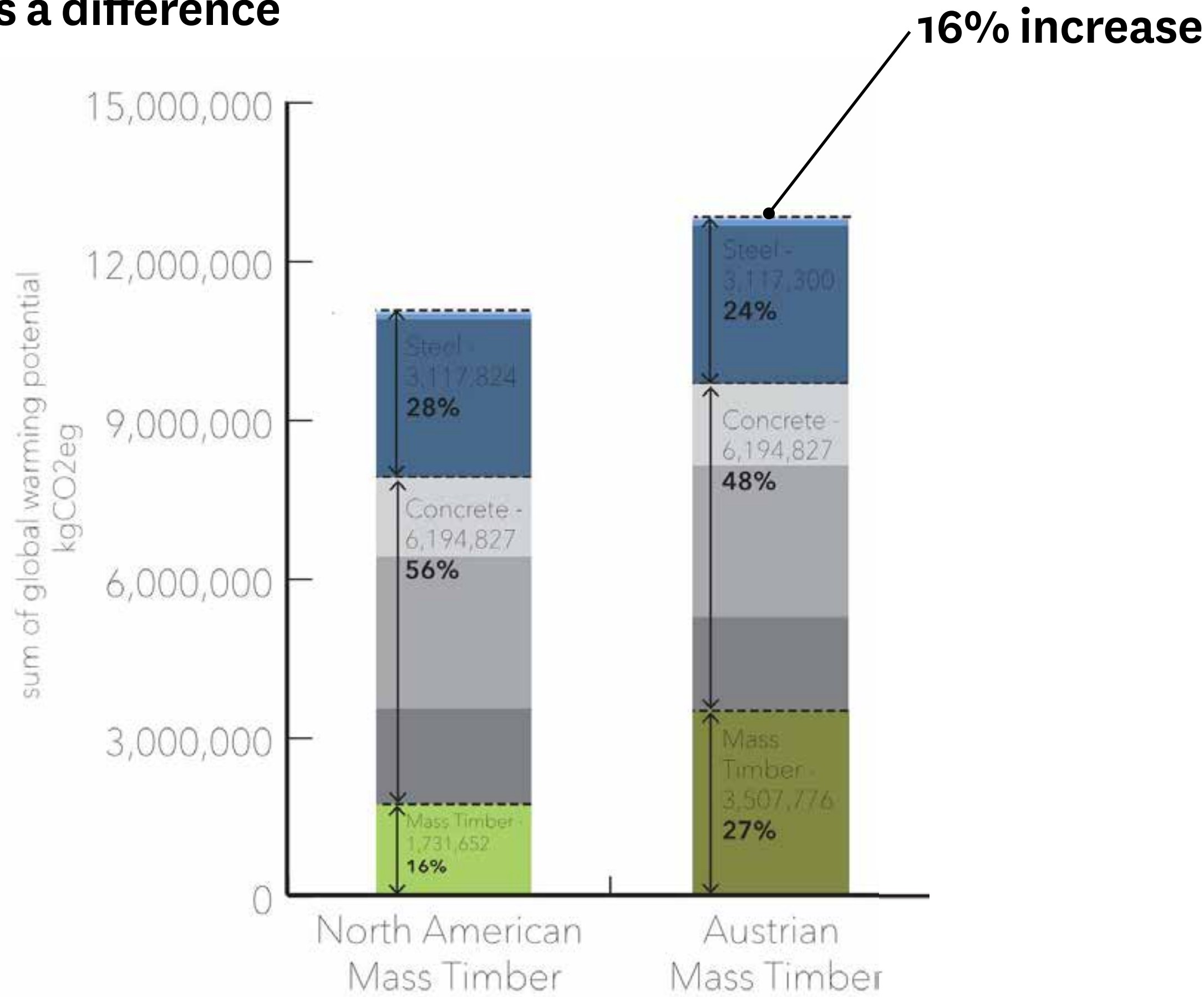


# Distance makes a difference





# Distance makes a difference



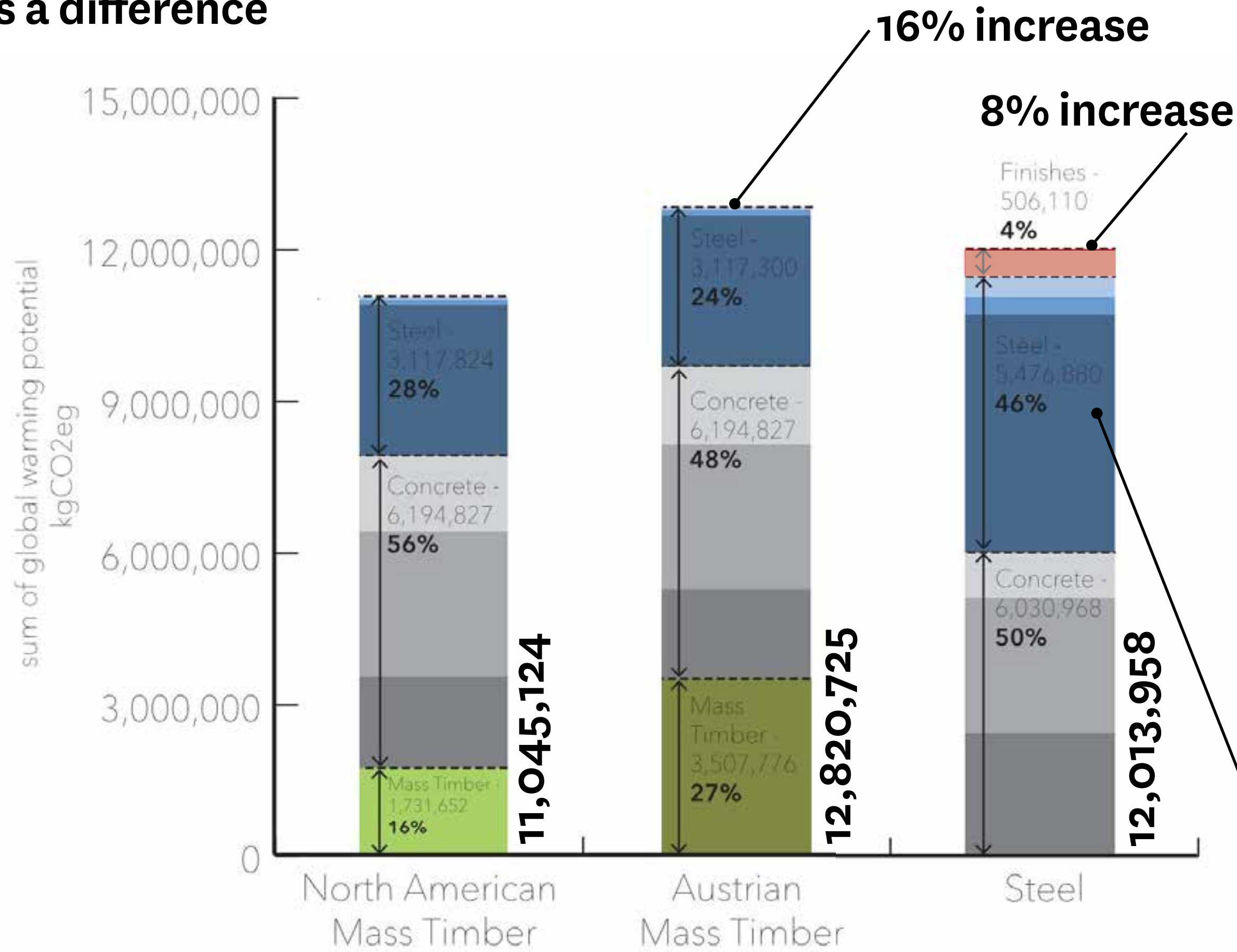
Tally

Includes Biogenic Carbon ✓



Distance makes a difference

WOW!



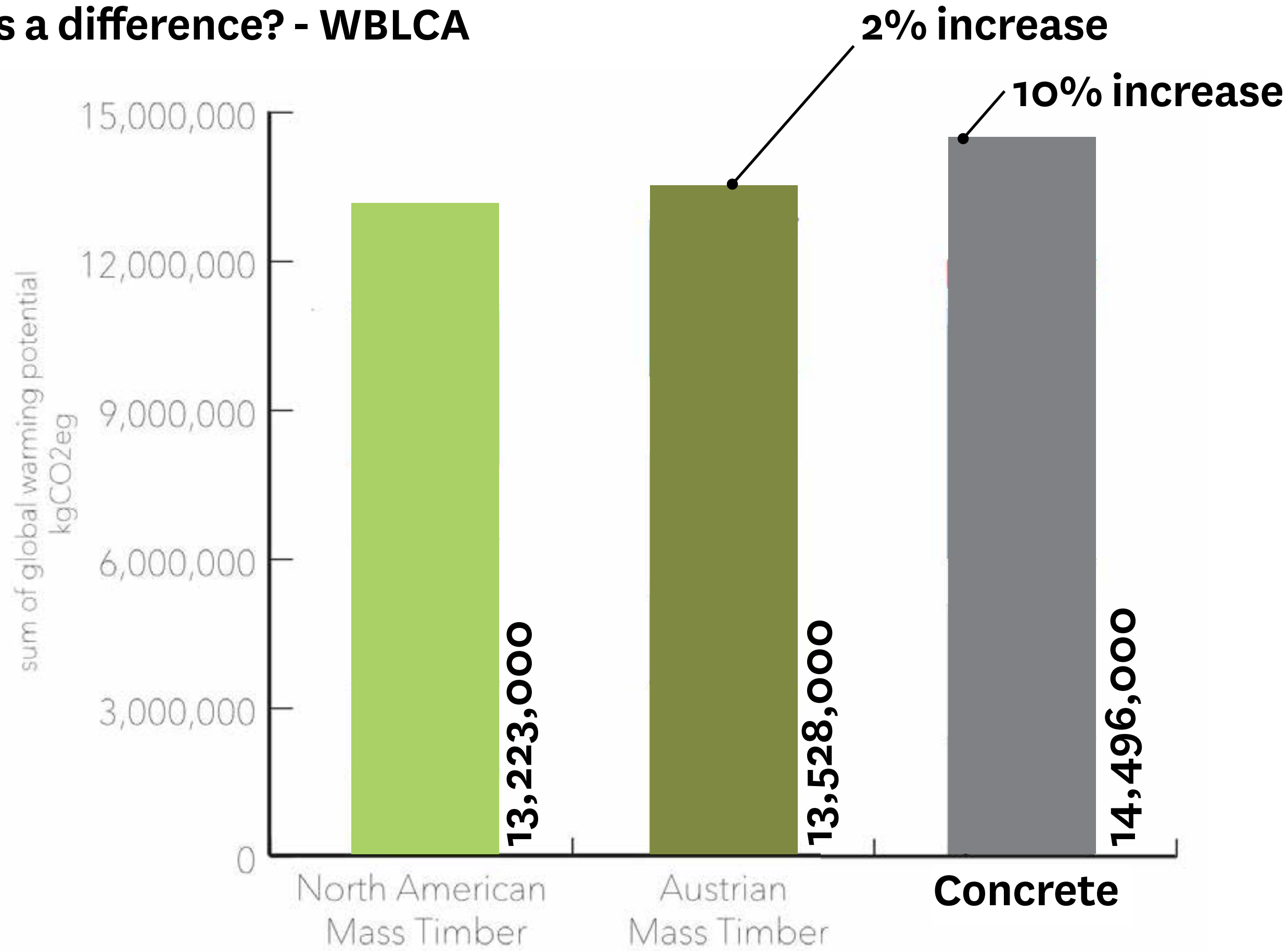
Tally

Steel uses north American profile except for distance.



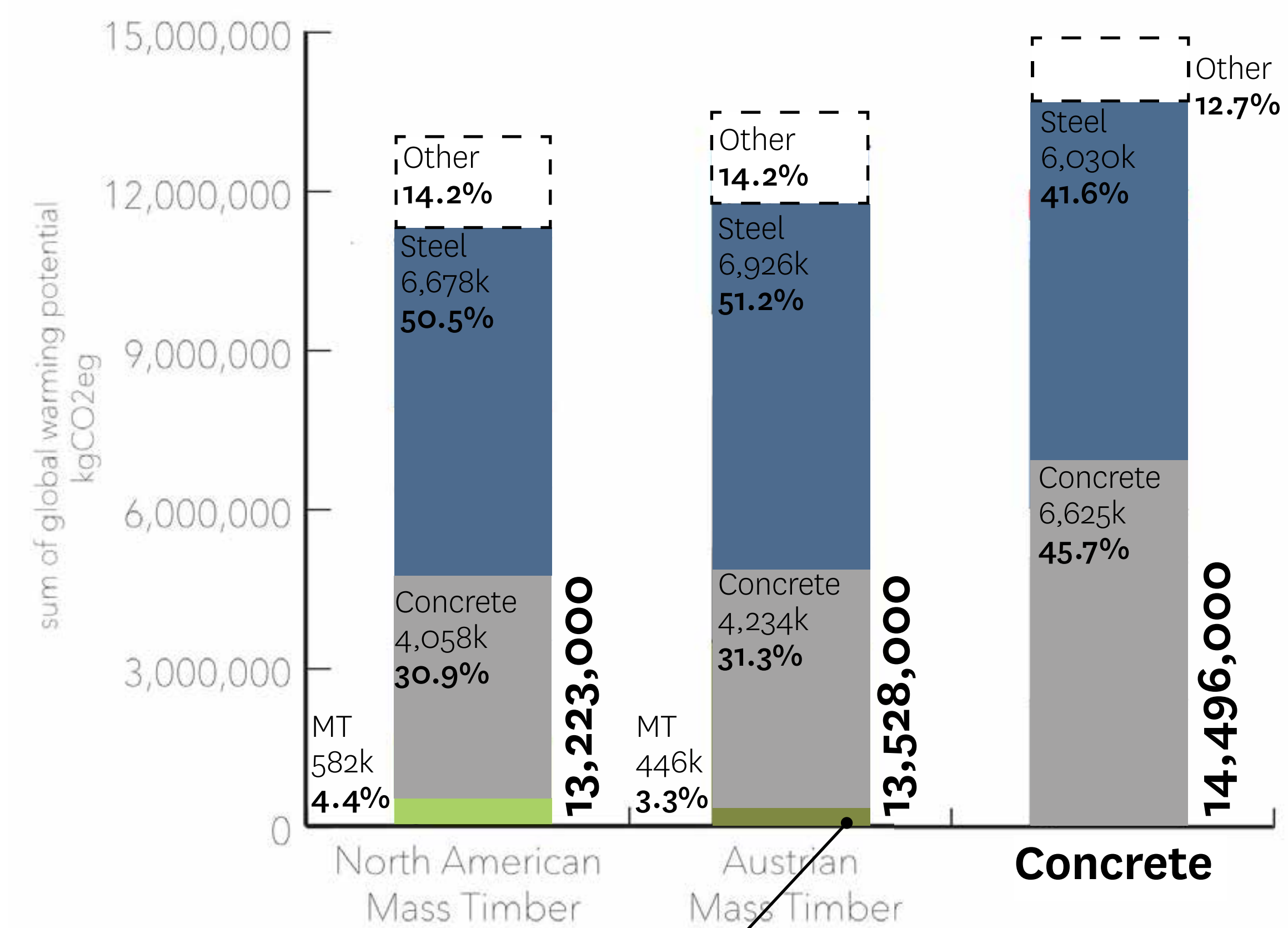
# Distance makes a difference? - WBLCA

Design evolved  
adding  
significant  
steel and  
concrete for  
seismic





# Distance makes a difference? - WBLCA



One Click

Account for transport?

Includes Biogenic Carbon ✗



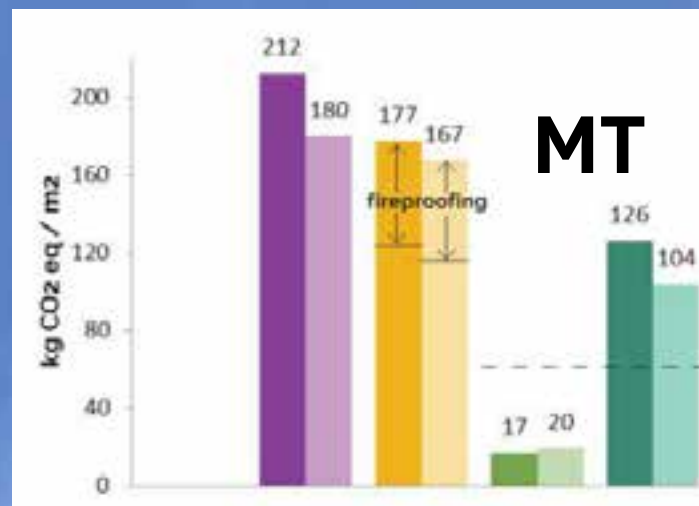
# Take-Aways

- Great comparative tool
- Every project is different, hard to generalize
- If you haven't done a lot of this, hire an expert
- Be careful with using results from different LCA software
- Best to compare to a conventional construction baseline -  
Appreciate LEED V4.1 encouragement for Baseline Building
- Make sure client knows these aren't absolute numbers
- Know that details and assumptions will be different
- Ask software developers questions, ask for more regional information

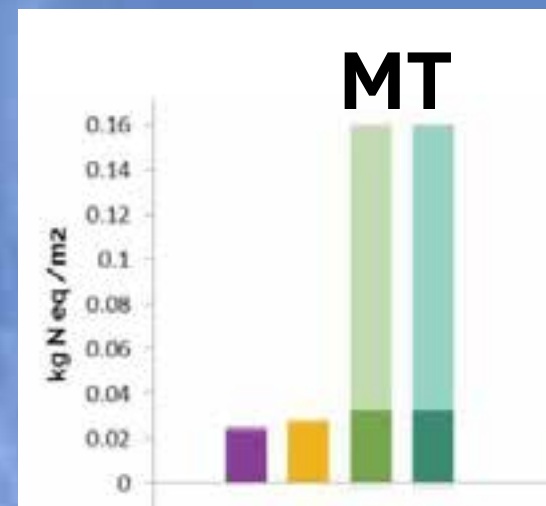


# Big Uncertainties

- End of life accuracy for mass timber
- Accounting of forest practices impact, FSC and SFI?
- Relativity of impact categories? GWP vs Eutrophication?



GWP



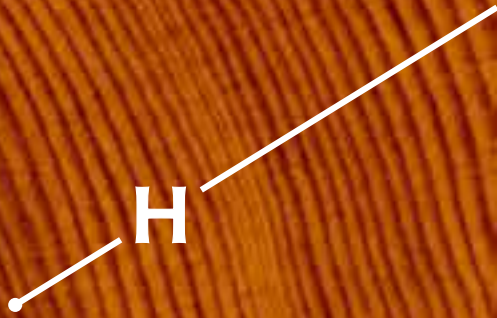
Eutrophication



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Thank you