FCWG Learning Exchange Series – February 6, 2019

Forest Carbon Considerations Linking Land Use and Wood Utilization

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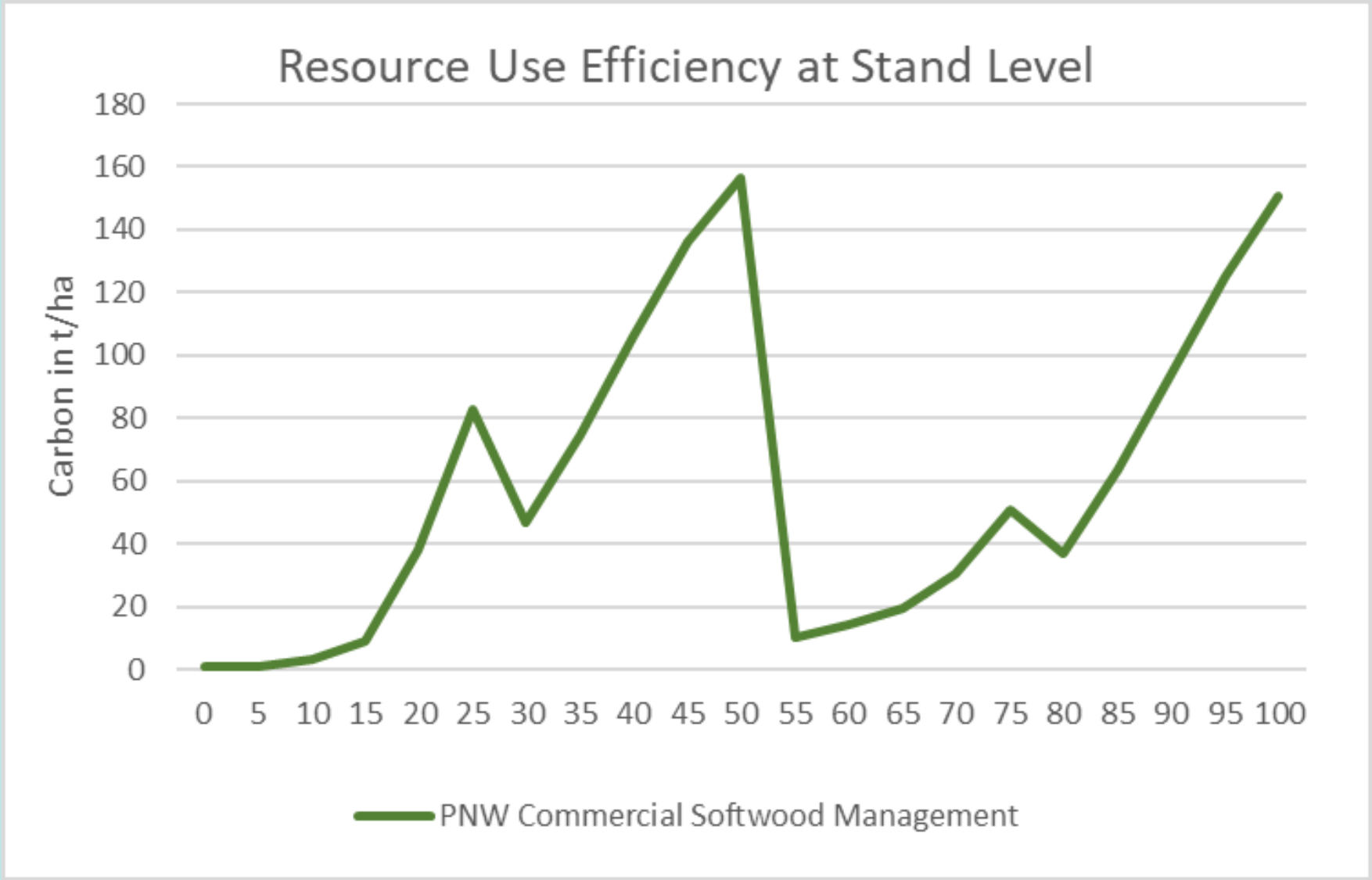
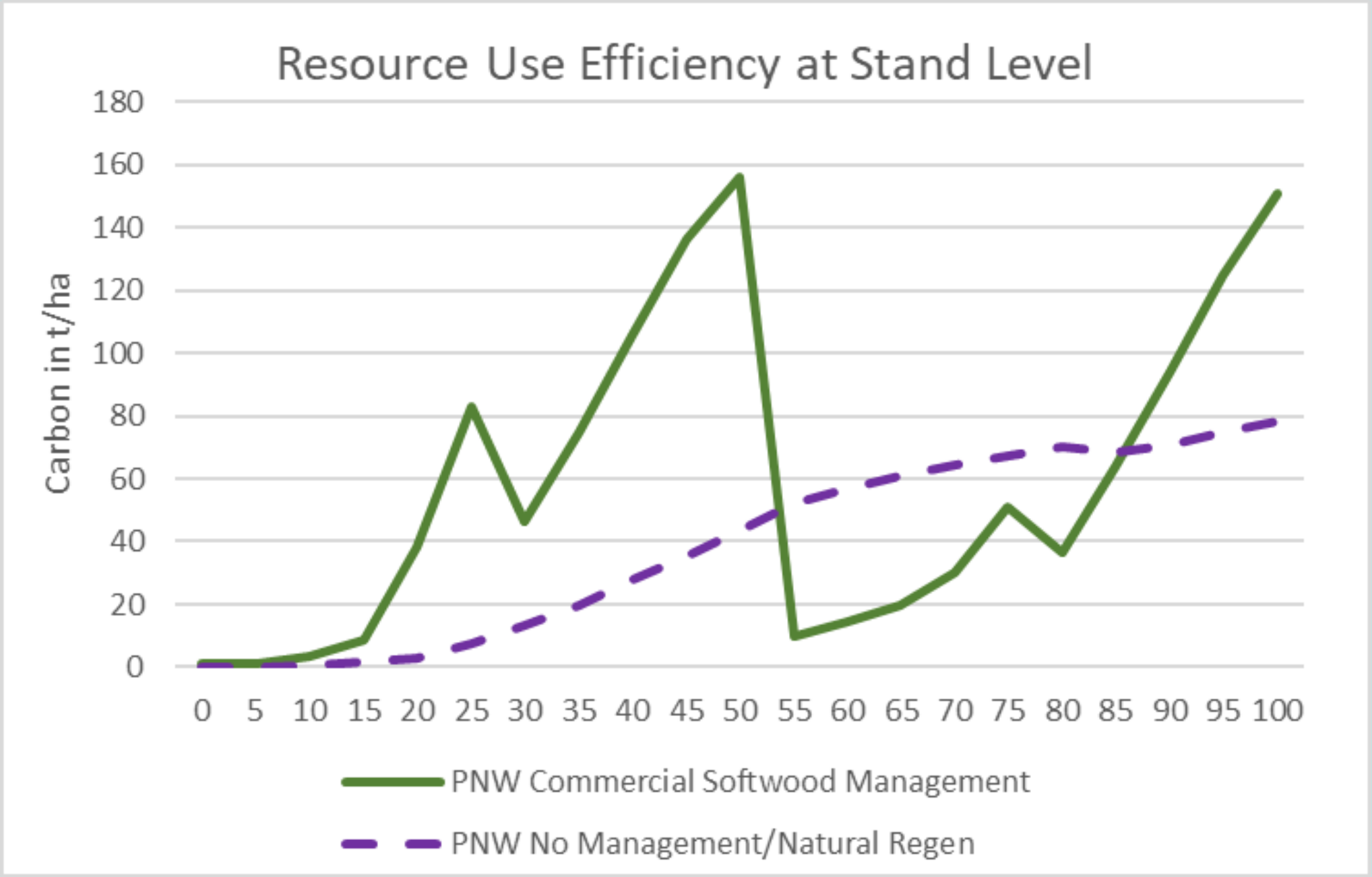
CORRIM

Consortium for Research on Renewable Industrial Materials

A non-profit corporation formed by 17 research institutions to conduct cradle to grave environmental studies of wood products

Investment


Resource Use Efficiency at Stand Level
Carbon in t/ha
180
160
140
120
100
80
60
40
20
0
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
PNW Commercial Softwood Management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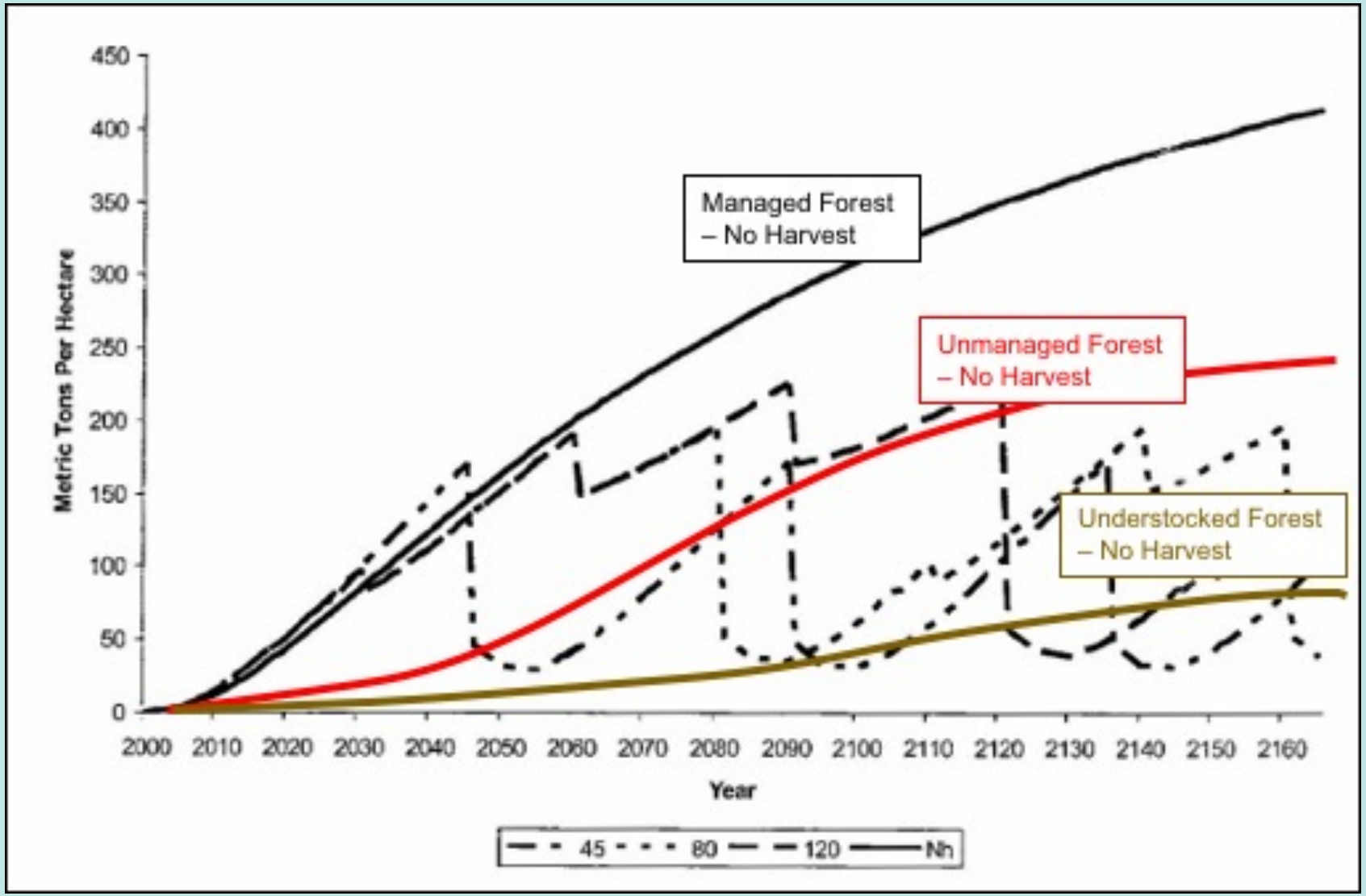
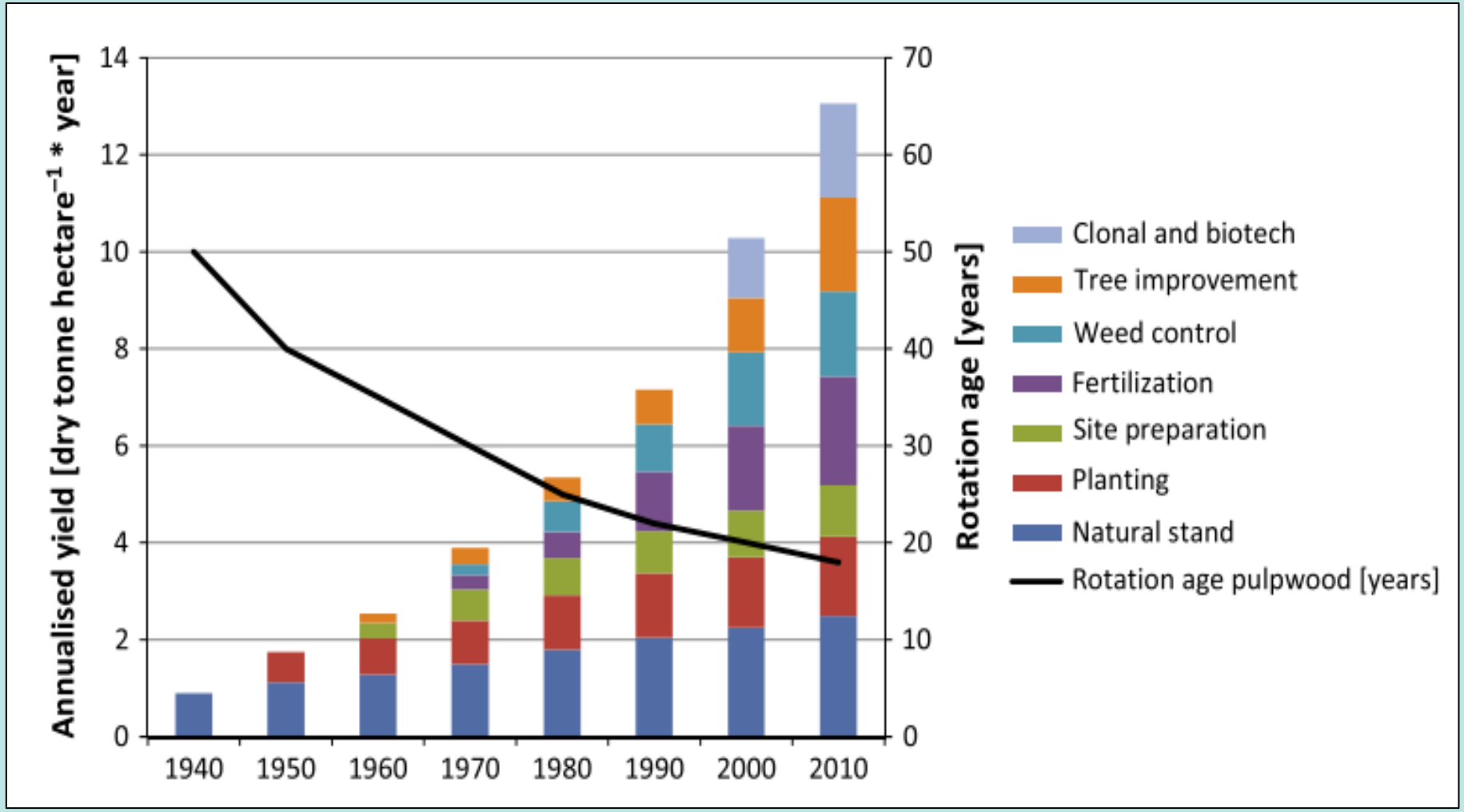
PNW Commercial Softwood Management
PNW No Management/Natural Regen

Management Matters – even if you don't harvest



The field C storage of alternative forest management scenarios as characterized in Figure 5 but with addition of a hypothetical Unmanaged Forest-No Harvest scenario shown in **red** to represent delayed establishment followed by approximately ½ of the growth trend (as suggested by Talbert and Marshall 2005) of a PNW Managed Forest– No Harvest scenario shown in **black** and an Understocked Forest – No Harvest scenario shown in **gold** as the approximate average t C per ha for understocked forestlands (wetlands, ag lands, and shrublands as reported for the western US by Lui et al. 2012). Adapted from Perez-Garcia et al. 2005.

Improved Forest Management aka High Intensity Forestry



Silvicultural developments over 8 decades that have led to increased pine plantation productivity, heightened C uptake and storage, and shortened time to harvest in the US SE. Adapted from Fox et al. 2004.

SE Region Forest Carbon Stocks and Cumulative Harvest

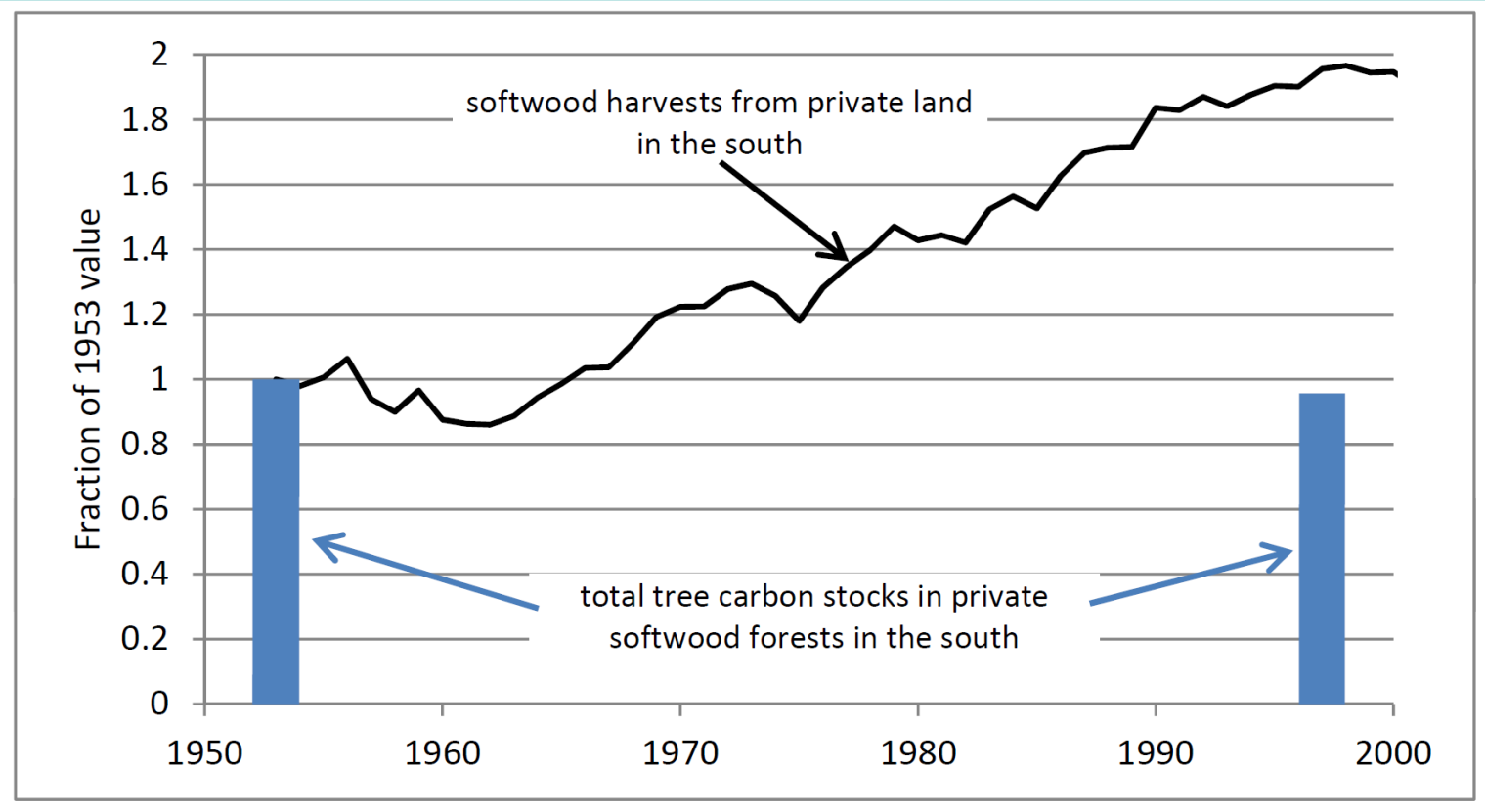
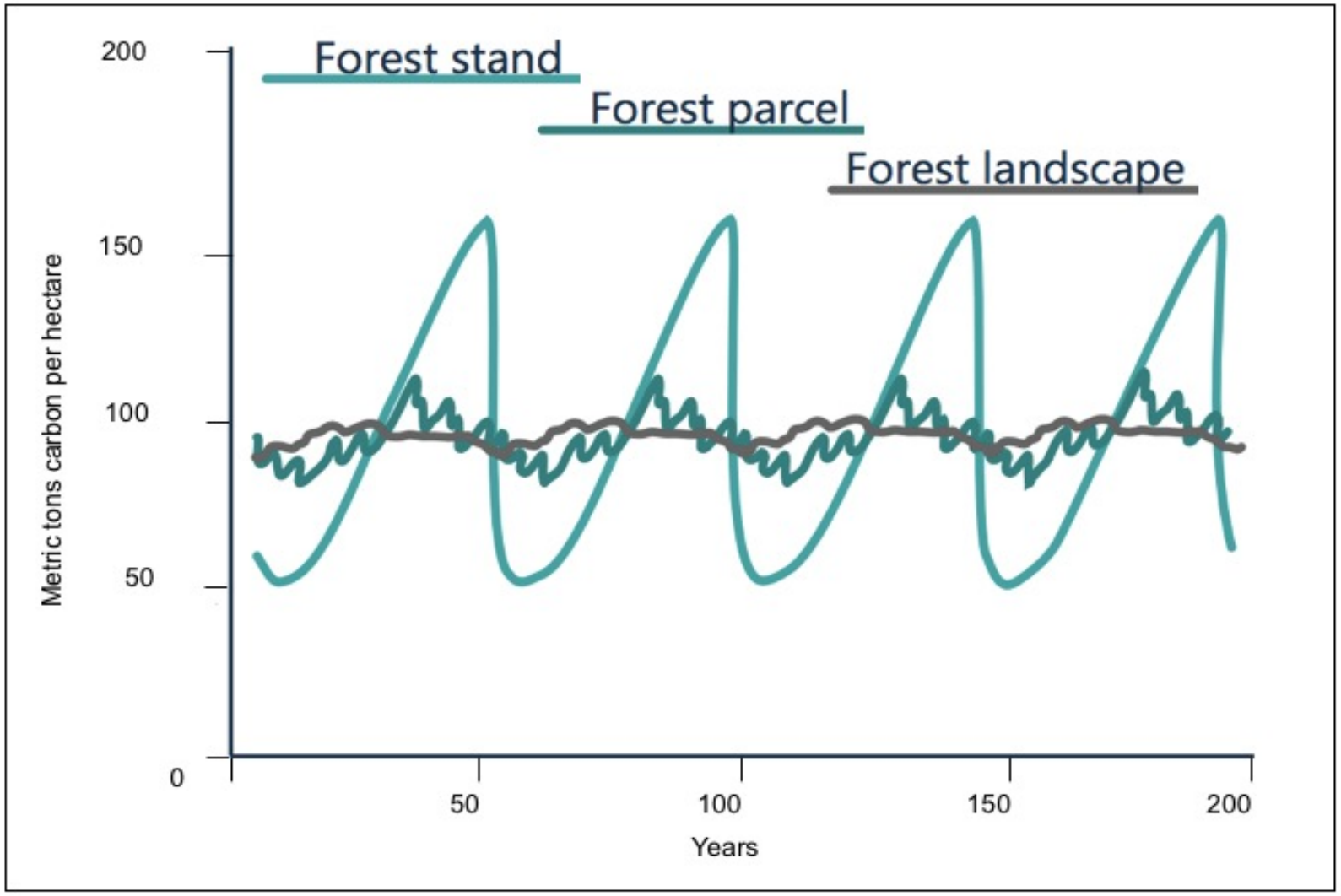


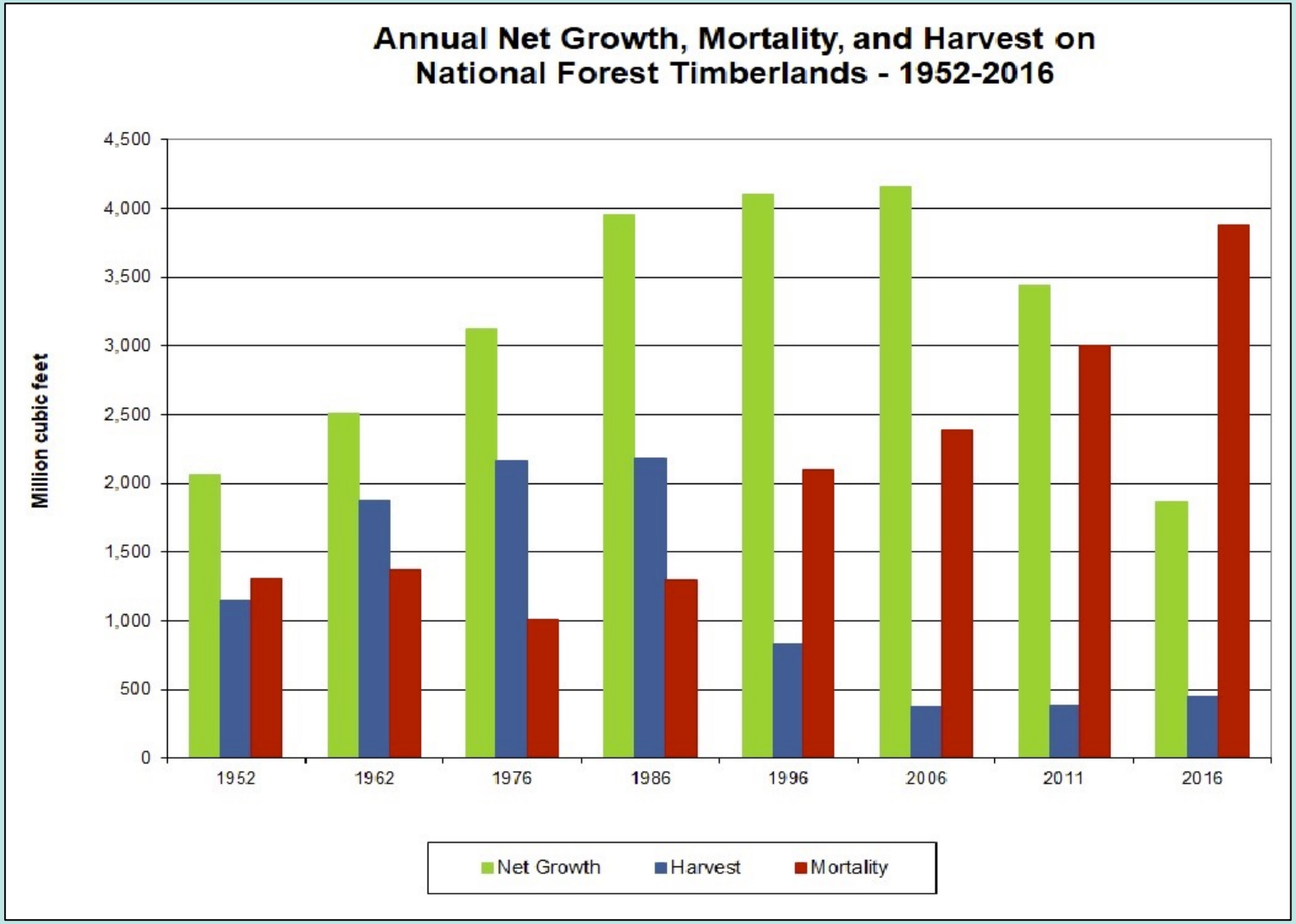
Image courtesy of Reid Miner, NCASI, 2014

Confusion about Carbon Debt arises because of scale



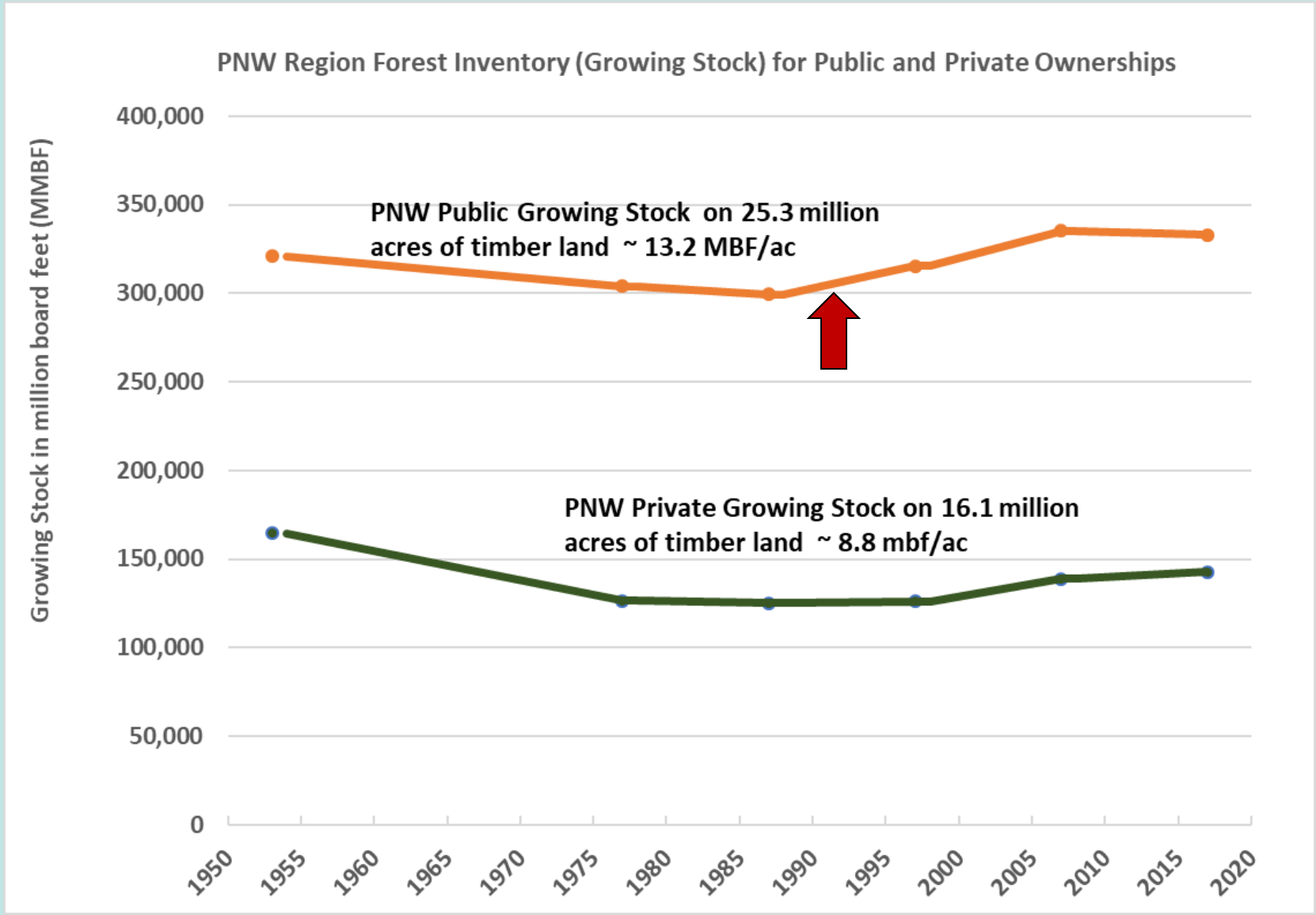
Graphic representation of the spatial and temporal dynamics of C storage for a typical PNW forest managed on 45-year rotations presented as: the growth and harvest cycles of **one forest stand** (in **turquoise**), an average per ha for **10 forest stands** harvested in sequential intervals (in **teal**), and an average for **100 stands** harvested sustainably as part of a "normal" forest (in **brown)**. Adapted from McKinley et al. 2011 and Janowiak et al. 2017.

Depending on Forest Condition you may be losing more than you are growing

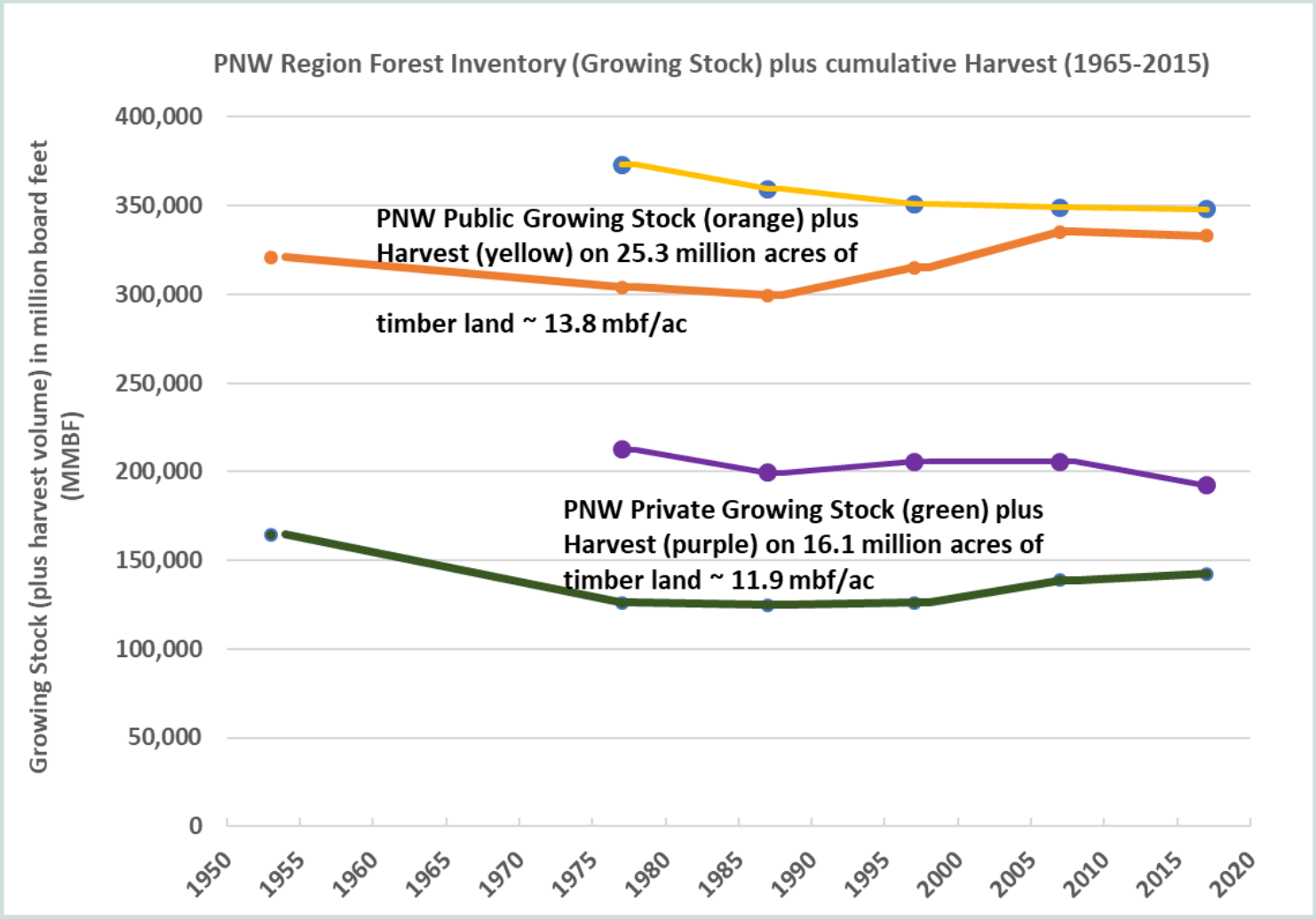


Growth, Mortality, and Harvest on National Forest Timberlands 1952-2016. Data provided by Oswalt et al. 2018.

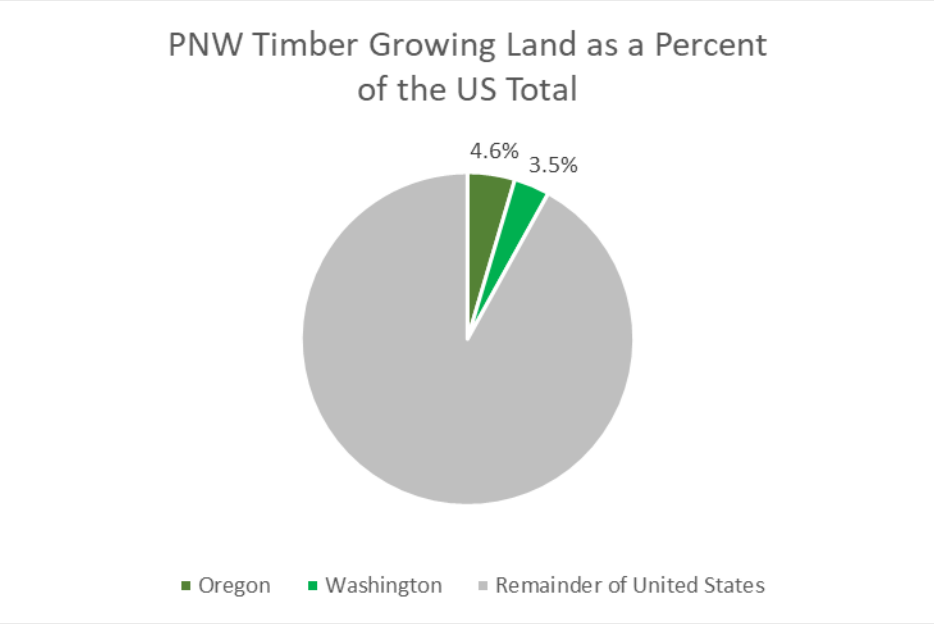
Growing Stock by Owner Type - PNW Region

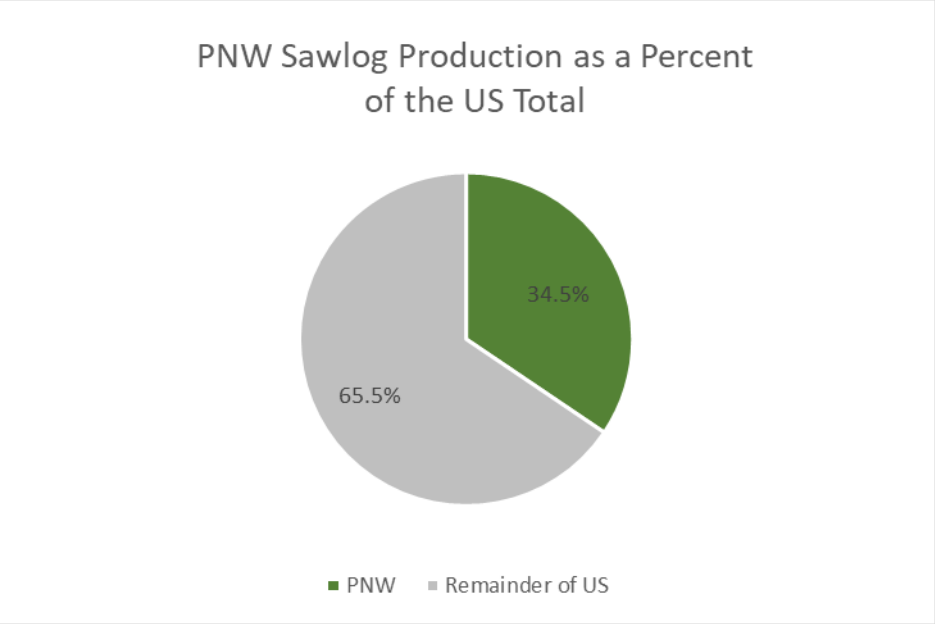


Regional Resource Use Efficiency
PNW Region



Relevant Forest Land Statistics

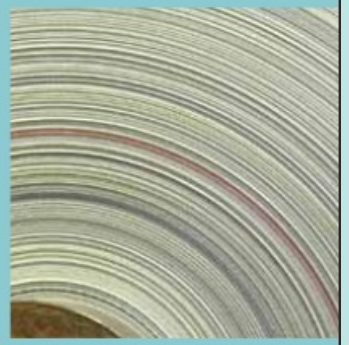


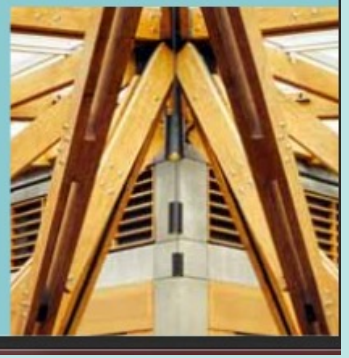


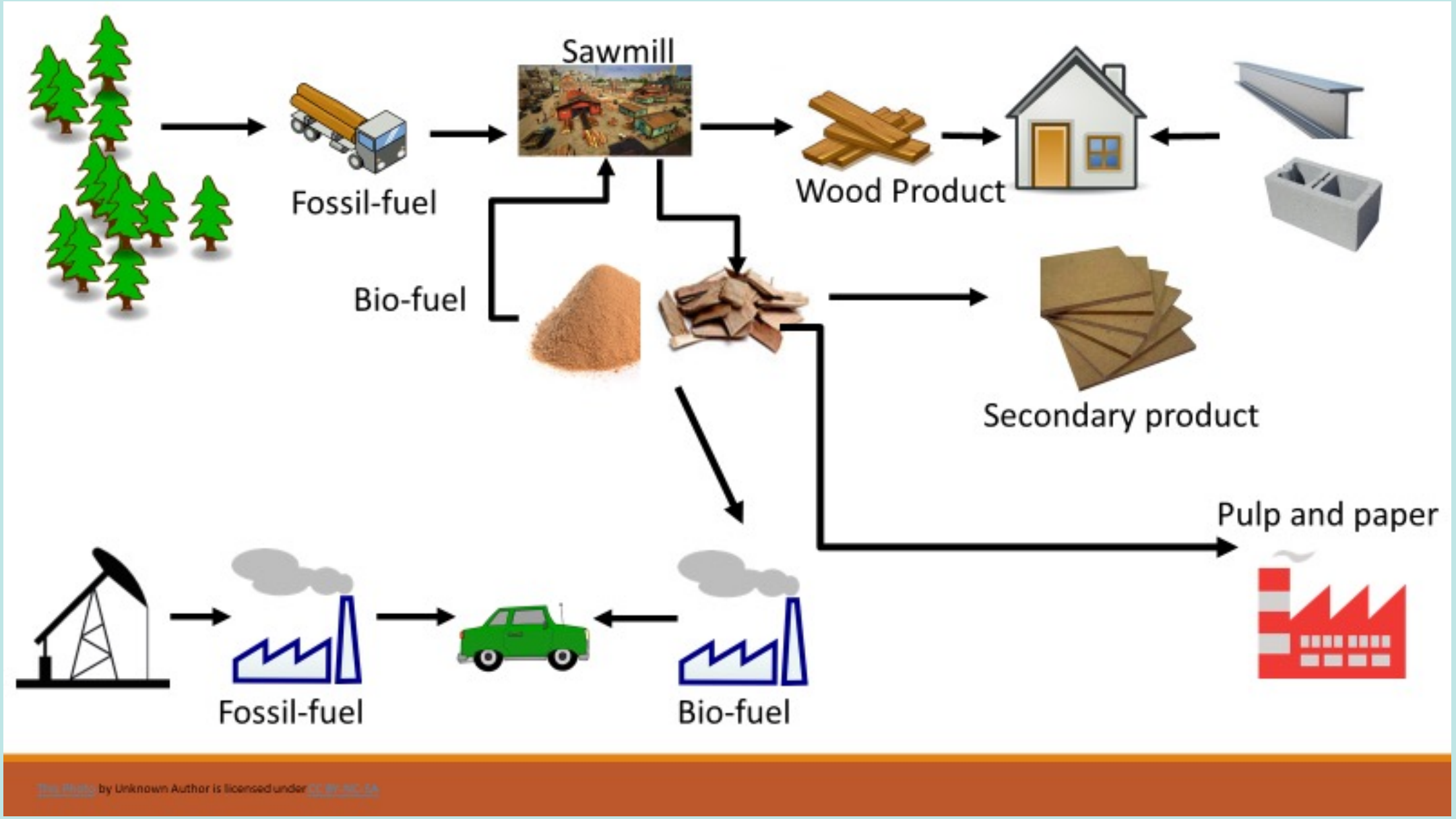
Strong markets as an anti-dote

Research shows that places with strong markets have more sustainable forestry and more forests

Tackle Climate Change – Use Wood







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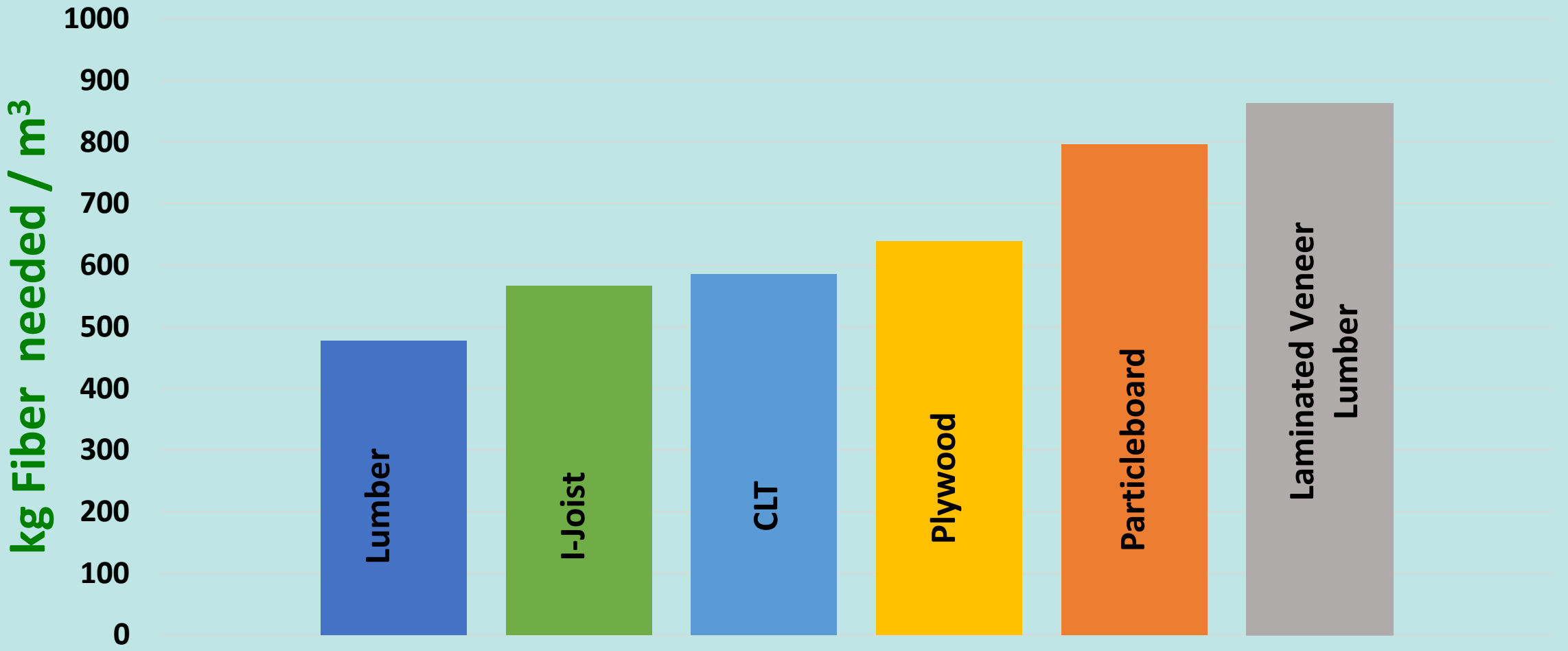
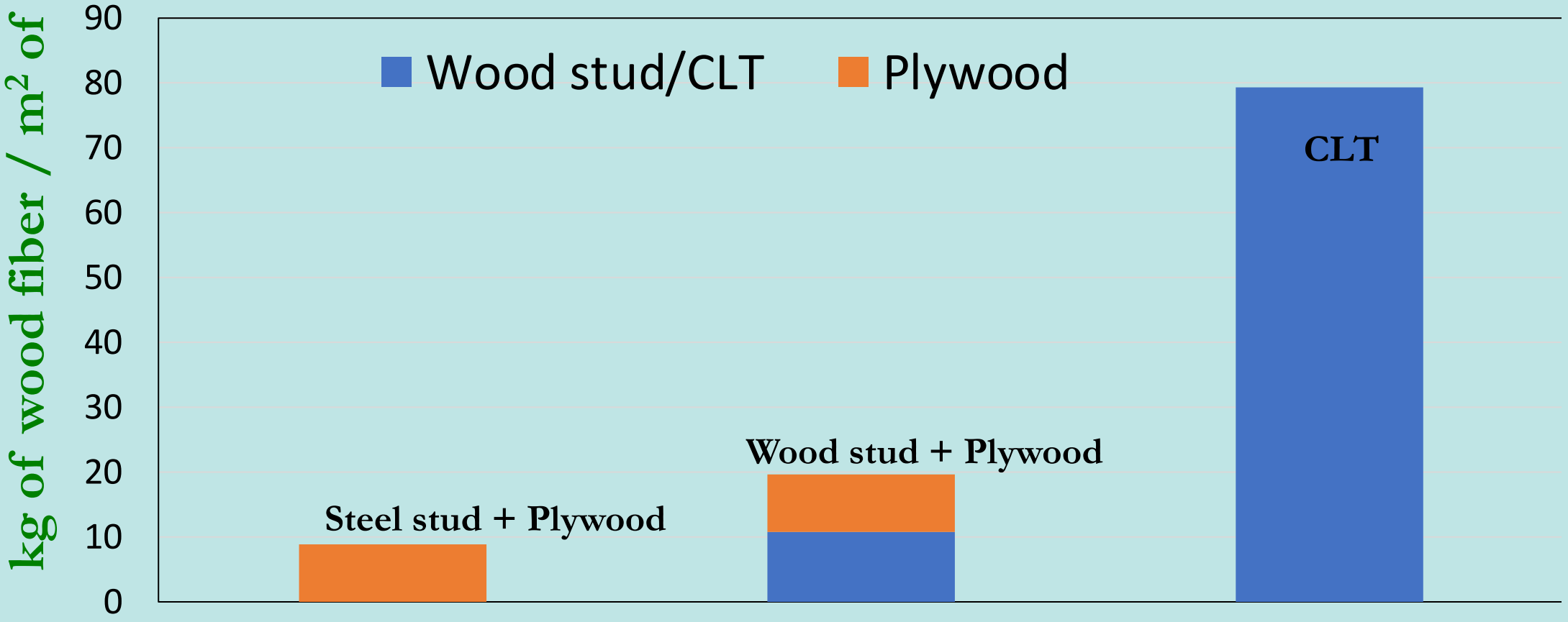
Resource Use

Total wood fiber used (kg) / cubic meter of product (m^3)

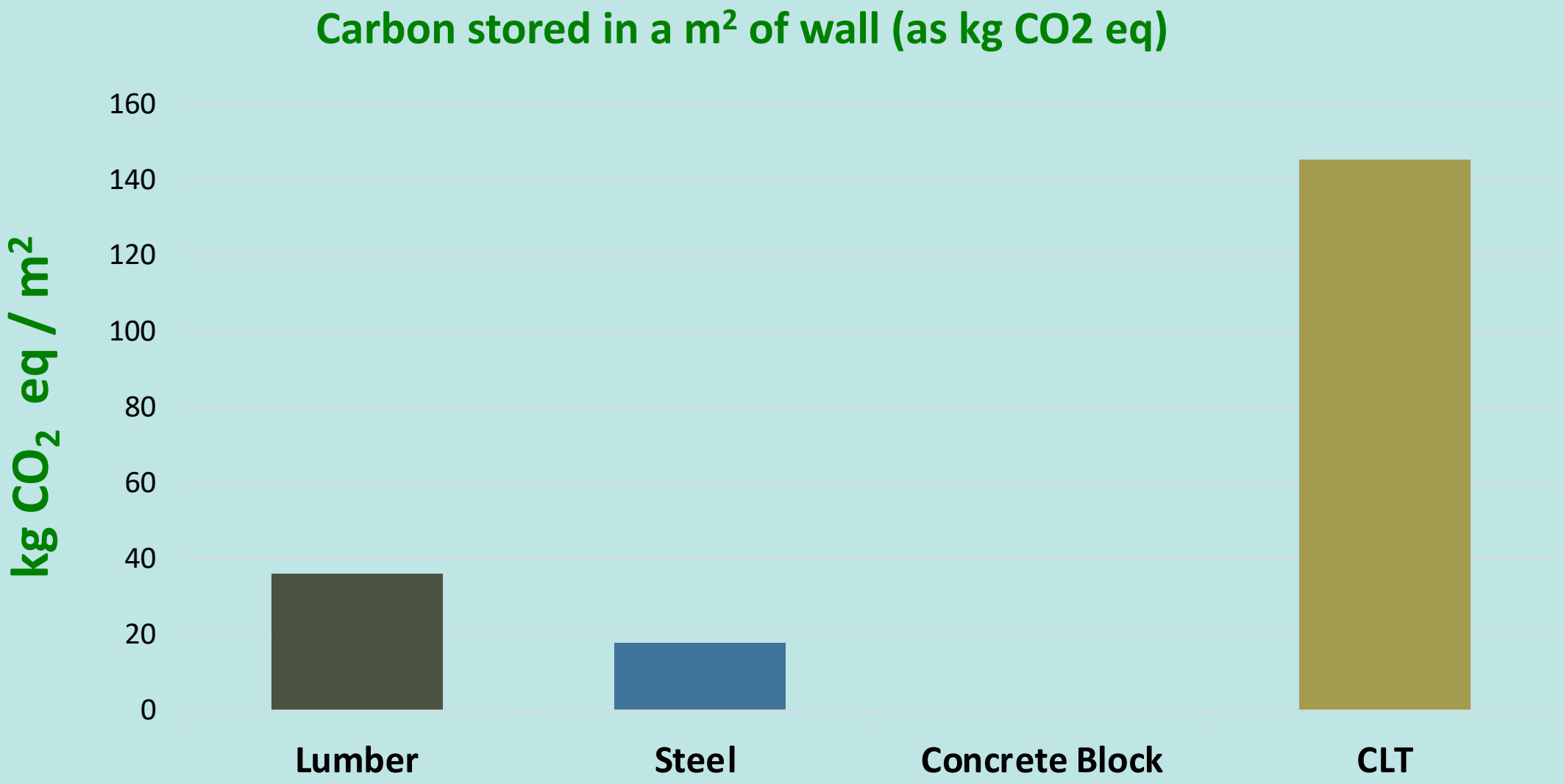


Resource Use Efficiency

Wood Fiber Used in 1 m^2 Wall Assembly

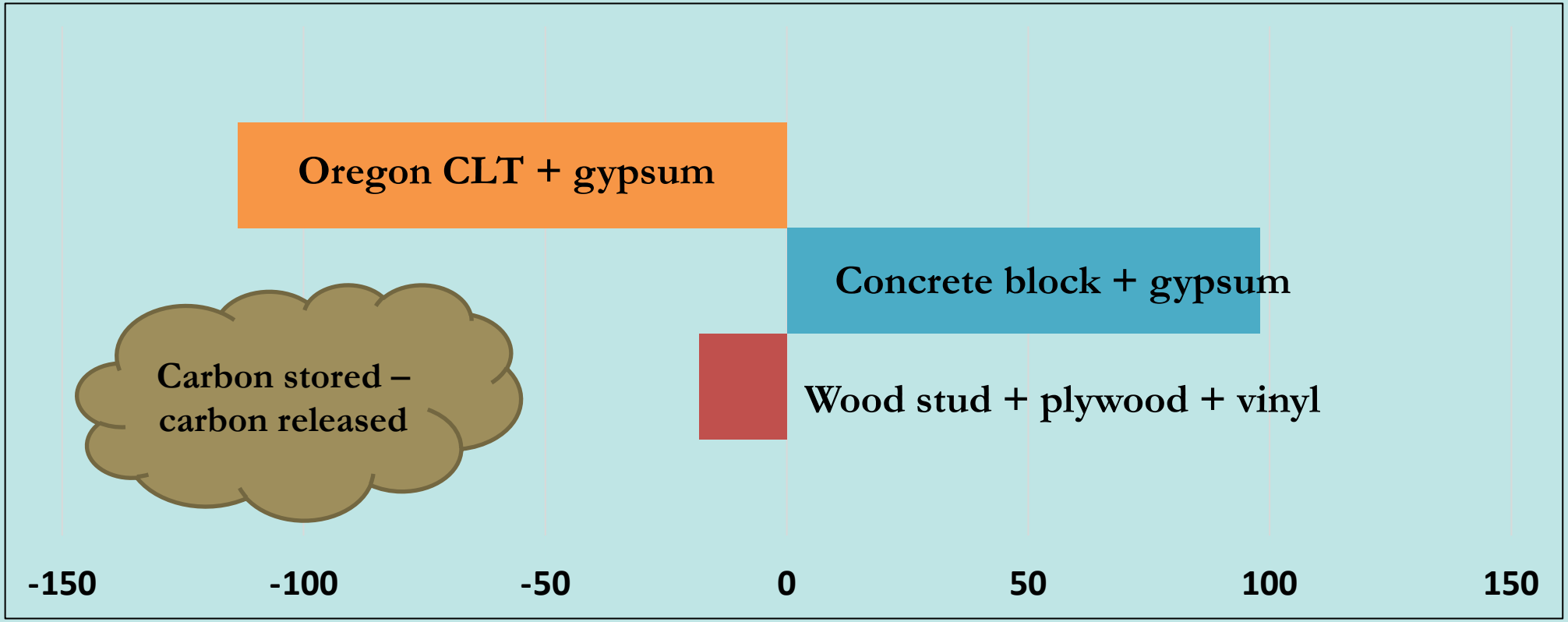


Carbon Storage



Substitution Benefits
Cradle to gate emissions

1 m^2 of Wall Assembly



Net CO2 emissions/m^2 of Wall