Carbon Accounting for Forestry and Wood Products

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California Biomass Collaborative
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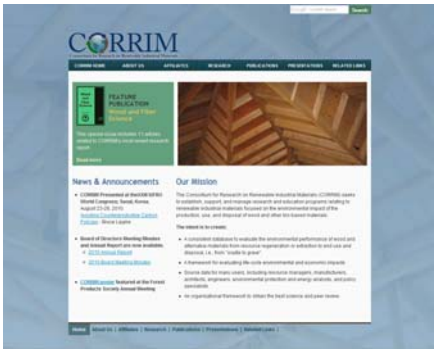
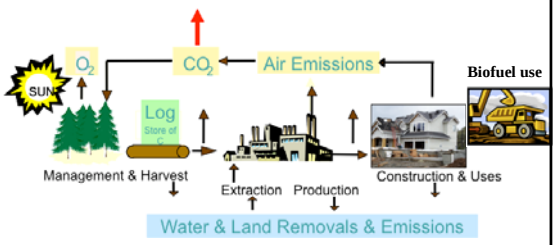
Consortium for Research on Renewable Industrial Materials
A non-profit corporation formed by 15 research institutions to conduct



www.corrim.org

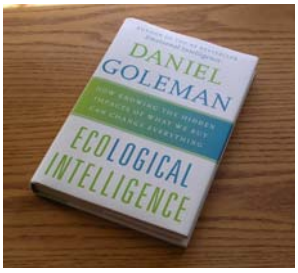
What did we do?

Life Cycle Inventories & Assessment of Products & Buildings & Biofuels
measures of all the inputs and outputs for every stage of processing



LCI/LCA as a sustainability metric

- ISO standards have been established
- Principles accepted by IPCC
- Federal Purchasers now ***require*** LCA for biofuels under EISA 2007 (sec 526)



CORRIM LCI/LCA work on Forest Products

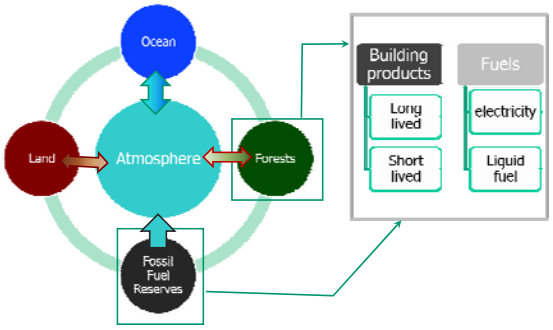
- 14 years of research
- 22 articles in 2 peer reviewed publications
- accepted in NREL's all-materials United States LCI database

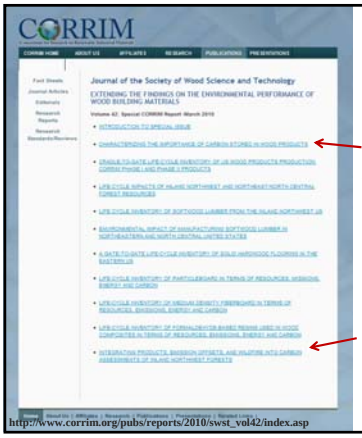
Articles also available on line at http://www.corrim.org

Life cycle Assessment: the so what

- LCA health & ecosystem risk indices based on hundreds of LCI emissions:
  - Embodied and fossil energy
  - Global Warming Potential
  - toxicity (air &water)
  - waste
  - ecosystem health

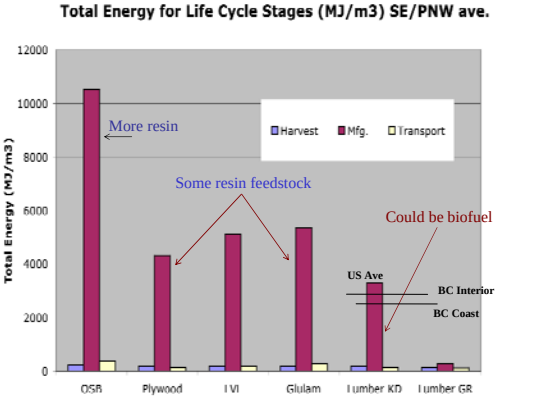
Forests as carbon storage or fossil fuel offset – which provides the largest benefit?

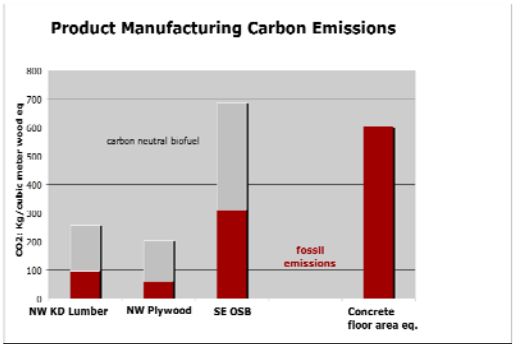


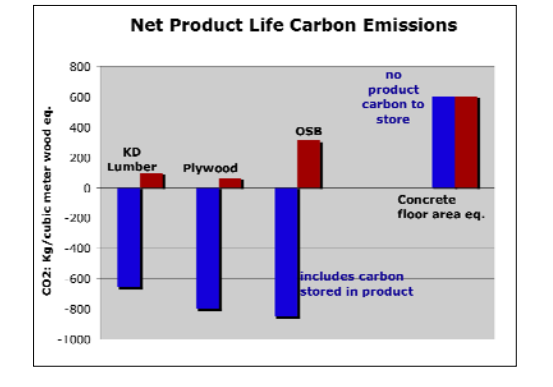


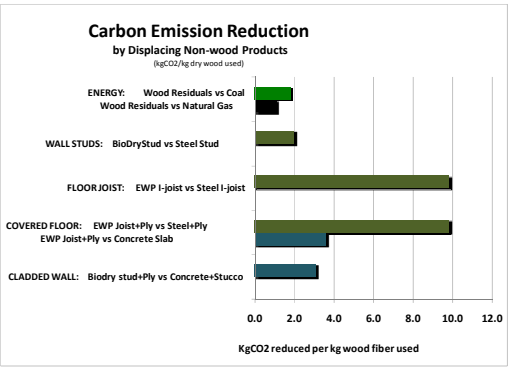
Characterizing the importance of carbon stored in wood products

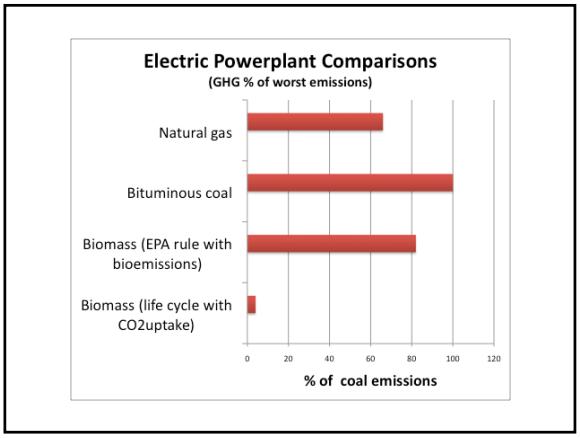
Characterizing wildfire impacts on carbon storage

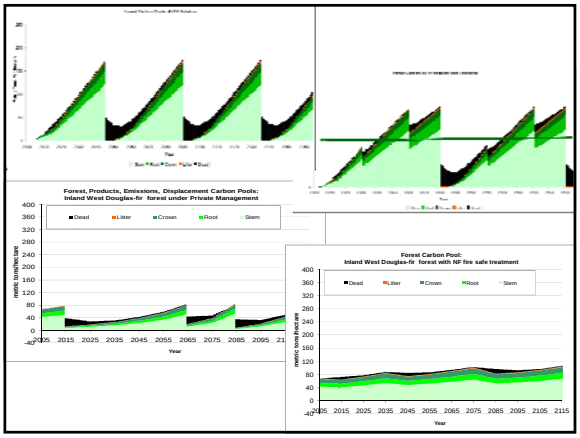


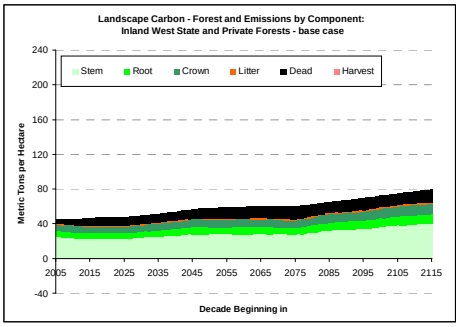




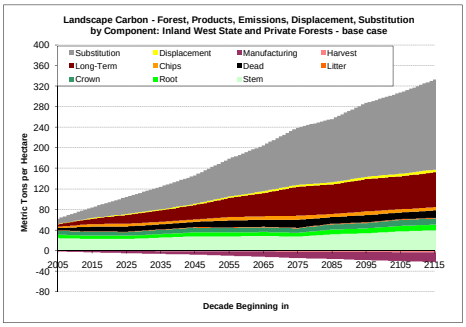


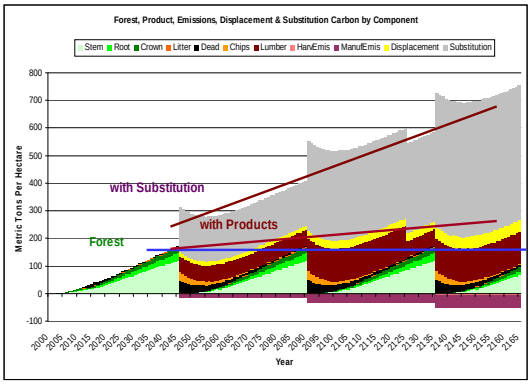


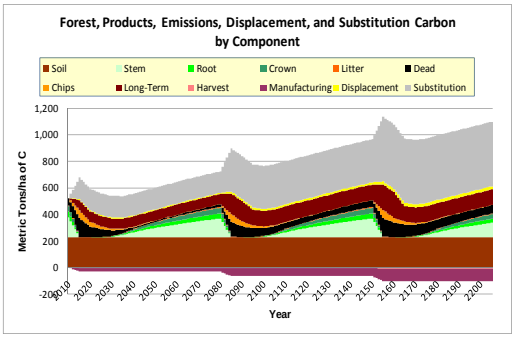




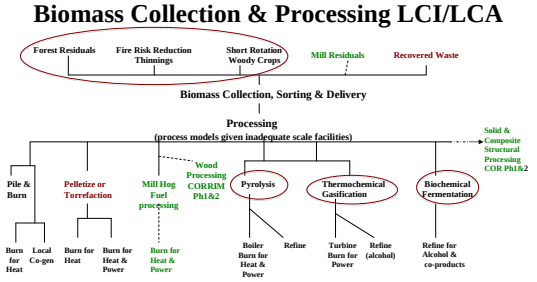
Carbon pools in a Inland West Forests state and private forests managed under the base case (historic harvest levels and continued forest management.)





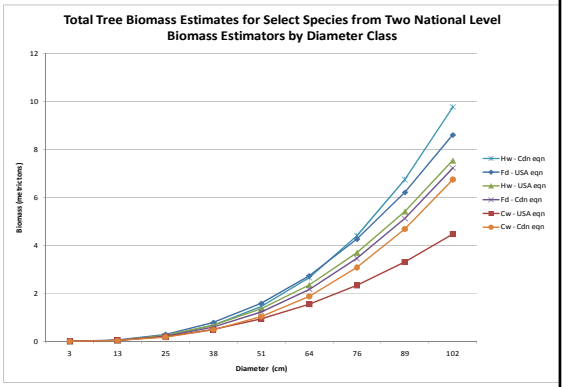


Biomass Collection & Processing LCI/LCA



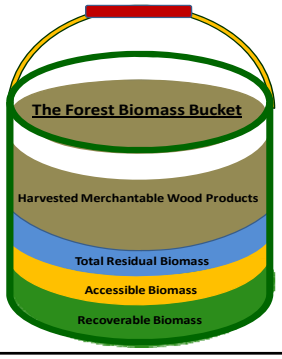
Woody Biomass as a feedstock

- Economics
- Availability
- Sustainability
- Measurability



The Forest Biomass Bucket

- About 50% is already removed from the woods, leaving 50% as residual biomass
- Of the residual biomass, 70% is accessible (meaning available for removal as the rest is left for soil building, wildlife, and habitat purposes) (35% of total harvested)
- Of the residual biomass, 42% is recoverable (21% of the total)



Disincentives and Unintended Consequences

- Arbitrary rules such as requiring permanency in the product (or the forest) to 100 years ignore life cycle assessments
  - Wood uses from the acre are better than permanent, ***growing*** sustainably
- Delaying harvest does not increase carbon storage unless there is a concomitant reduction in product demand
  - transfers the impact to some other region (same or greater carbon emission depending on harvest and management techniques)
  - increases the impact (use more fossil-intensive alternatives)
  - may result in increased mortality from disturbance with consequent greater carbon emissions than a harvest entry

Some Bottom Line Conclusions

- Fossil energy is too cheap and will out-compete wood markets in every downturn until the fossil fuel cost structure is increased.
- We have a long way to go to get the rules consistent with good science so they are not counterproductive.
- Incentives to deliver more wood for products and available waste & residuals for biofuels will increase carbon mitigation across all pools.
- Carbon taxes are market efficient (if they cross the border)
- Any success in carbon mitigation will increase fossil prices & wood values (at least until a major green technology breakthrough)

The Details

CORRIM: www.CORRIM.ORG

Athena: www.athenaSMI.ca

LMS:
http://LMS.cfr.washington.edu

USLCI database:
www.nrel.gov/lci