CORRIM FACT SHEET 7
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Woody Biofuel Contributions to Carbon Mitigation: Opportunities and Problems - Introduction

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Forests as carbon neutral sources of energy:

- Harvesting trees for production of building products removes carbon from the forest that was first removed from the atmosphere through photosynthesis. Sustainably managed forests grow as much wood and carbon as is removed, which maintains a carbon neutral level of forest carbon. At the same time the carbon embodied in harvested wood products is stored in buildings for the life of the building. As housing stocks increase, carbon storage in buildings increases over time. Even when all management burdens associated with wood uses are charged to production processes and use, each harvest permanently displaces fossil emission intensive building product alternatives like steel and concrete while storing the product carbon for a first useful life and beyond.

Using forest residuals can increase biofuel feedstock supply and reduce emissions:

- Forest residuals, such as limbs, tops, and other non merchantable logs are left to decay in the forest or are pile burned since fuel prices have been lower than biomass forest residual collection costs. Eastern Washington forest residual collection trials produced 50% additional biomass above currently processed logs, a substantial potential energy feedstock supply with higher fossil fuel costs or other incentives.

Manufacturing residuals could increase biofuel feedstock supply but also increase emissions:

- Manufacturing residuals are currently a less expensive feedstock for biofuel than forest residuals. Currently some lower grade manufacturing residuals are used as biofuel for processing energy, offsetting much of the need for processing energy from fossil fuel sources.
- However most are used in panel products that substitute for energy-intensive products like steel, glass, and plastics as well as being used for processing energy. Subsidized biofuel processing for energy will therefore divert some feedstocks away from wood panel products that are currently displacing fossil emission intensive products with the end result being an increase rather than decrease in carbon emissions.

Forest thinnings, wood waste and short rotation crops can increase biofuel feedstock supply:

- Forest thinnings provide another source of underutilized biomass that may be best used as a biofuel with concomitant gains in restoring forest health, and reducing the risk of carbon emitting wildfires and insect disturbances.
- Collection of wood wastes at end of product life like demolition materials, or other bio-product wastes such as packaging materials and waste paper, can increase biofuel feedstock availability.
- Short rotation woody crops can produce high yields quickly and may be more effective as a renewable biofuel feedstock than production of other products, at least from some lands.

Measuring all carbon pools is required, a life cycle inventory and assessment LCI/LCA:

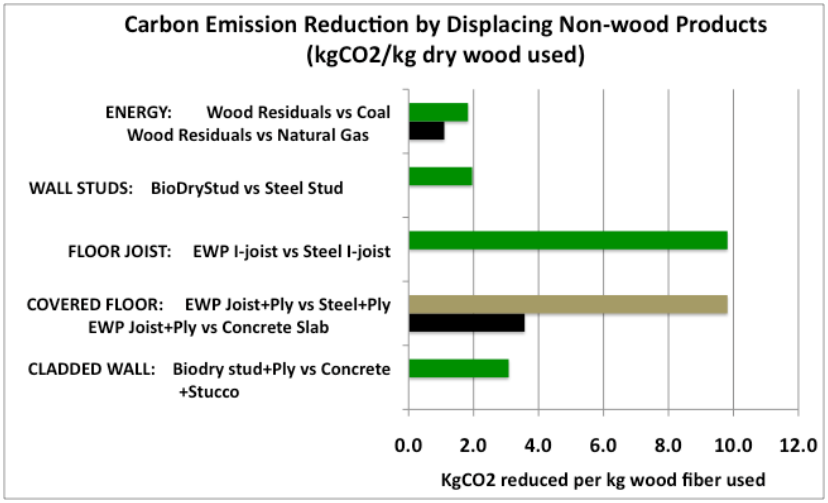
- Life-cycle analysis provides a science-based method to quantify net environmental burdens for every stage of product manufacture such that cumulative net burdens for product alternatives can be compared and inform product choices that will reduce emissions.
- Carbon sink and source pools include all the renewable fibers supported by photosynthesis, and all the emissions from using hydrocarbons, with each being impacted by manufacturing processes. Net carbon accounting must track all inputs and outputs from cradle to grave, not just measuring one carbon pool at a time, in order to identify and avoid counterproductive activities such as burning wood for energy that otherwise could displace more fossil intensive emitting products.
- In order to fully assess all down-stream impacts, life-cycle assessments may need to include alternative uses of the land, tradeoffs that affect land productivity (nutrients) and other uses of the land for crops, wildlife, or commercial infrastructure, not just for carbon mitigation.

Getting the most carbon out of the atmosphere:

- While using wood wastes or short rotation crops can provide a substantial new source of renewable energy, current incentive programs are problematic and frequently counterproductive.
  - Incentives for biomass collections and biofuel production divert some feedstock from higher carbon offsetting uses.
  - Renewable energy incentives can fragment the supply base impeding collection of the very large raw material volumes required for efficient biofuel processing facilities.

The best among management options:

- Unmanaged forests grow and remove atmospheric carbon until mortality offsets growth, producing a storage pool that is no longer actively removing atmospheric carbon. Harvesting forests before growth slows down moves the carbon to other uses including fuels that displace fossil emissions and products that extend the forest carbon to new storage pools while displacing fossil- intensive materials like steel, brick, concrete, aluminum and plastic.



- ***The maximum carbon mitigation benefit results from using the forest's wood to displace the most fossil-intensive products & fuels.***

Incentives: Productive or Counterproductive?

- Current carbon exchanges that pay forest owners to defer or avoid harvesting *are counterproductive*. Reducing wood use results in increased use of fossil intensive products and emissions.
- Incentives to grow the forest faster through more intensive management and harvesting *will maximize the carbon available across all pools*.
- Incentives for thinning overstocked and high fire risk forests will *reduce the cost of and carbon emissions from fires* while also increasing the carbon stored in products and the displacement of fossil intensive product alternatives.
- Incentives for biofuel production can divert feedstock materials away from existing carbon mitigation uses like fiberboards that substitute for fossil intensive products, *a counterproductive impact*.
- Incentives to collect unused forest waste will increase the feedstock for both biofuel and composite solid wood products. However, if limited only to biofuel use, incentives may not support best use.
- Incentives that encourage builders to use life-cycle assessment in design and product selection, will mitigate carbon directly through their choices and bid the savings back to the raw material, expanding the carbon mitigation resource supply chain. ***Builders that can directly substitute for the most fossil intensive products have the greatest opportunity to reduce emissions.***
- ***Fossil emission carbon taxes increase the cost of every product proportional to its carbon emission intensity, motivating the efficient use of every grade of wood fiber where it can have the greatest impact. This should be the ultimate objective of carbon mitigation policies/incentives.***

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