

FCWG 2018-19 Learning Exchange Series: Forest Carbon Considerations Linking Land Use and Wood Utilization Q+A

How have mass timber products (CLT, etc.) been assessed for climate resilience – e.g. wind-resistance, mold-resistance? Is this an opportunity for both climate mitigation and adaptation benefits?

Elaine: CLT and other mass timber products have been assessed for stability after earthquakes with some great results.

Asking about CDR = carbon dioxide removal – what percentage of forest harvest might be available for production of biochar. And how best to utilize the resulting pyrolysis gases? (electricity, thermal, biofuels?)

Elaine: This is a completely different topic than was presented and worthy of a whole other presentation. It's probably outside the scope of this presentation to address here as there is no supporting content in the presentation.

For CLT, is there information on the insulating properties? Could this structure help increase the energy efficiency of the finished structure?

George: Yes, studies have demonstrated that the thermal mass in CLT systems may contribute to enhanced thermal performance in buildings. Additionally, energy modeling by MSU of a proposed project has revealed that energy savings of up to 40% are possible in a CLT and glulam structure as compared to the same building constructed using steel and reinforced concrete.

Another question related to mortality – are insect infestations and disease more likely in older forests?

Elaine: It depends on the insects and diseases. The RPA data would reflect the large mortality events from mountain pine beetle, spruce beetle, and Douglas-fire beetle outbreaks in the west, all of which primarily attack older forests or those with significant windthrow. More details on those mortality events can be found [here](#).

Are there any studies underway to understand the impact of increased wood use (e.g. CLT) use on the landscape? Is there a threshold where we would ultimately have carbon losses?

Elaine: There is an effort underway by The Nature Conservancy in conjunction with a number of forest carbon and life cycle assessment scientists in different organizations to examine this very question.

Can you briefly explain the value of old growth forests in relation to working forests in terms of carbon?

Elaine: Standing old growth can potentially store more carbon than working forests. That is not always the case as it depends on its stocking, species, and historic and current mortality events. Average data from coastal BC where there is a large amount of old growth found that stocking levels were much lower than working forests and therefore the carbon storage was also lower. That data is consistent with what we know about the stand dynamics in old growth forests. They get their character from the break-up of the canopy layer which lets more light into the understory to create that biological diversity in multi-layered shrubs and understory which comes at the price of increasing carbon storage in the forest canopy. Generally, there are fewer trees per hectare in old growth than in working forests where the goal is to maintain full stocking. Those fewer trees are sometimes larger in diameter but often have blown out tops so they aren't taller - all of which makes the contributions to a living carbon pool in an old forest harder to measure, and not necessarily larger than in a fully stocked working forest near its rotation age.

Unless old growth is harvested (exceedingly rare in the US and becoming rare in Canada as they move to a second growth economy) it cannot be used to produce wood products which moves the stored carbon from the landscape to the buildings for another lifetime of storage in the built environment. The benefits of old-growth are many, but they aren't necessarily the best vehicle to maximize carbon storage.

California has a forest carbon offset program for compliance with cap and trade regulations which generally undervalue climate benefits of wood in-use. Are panelists aware of any legislative efforts to develop a framework for valuing climate impacts of wood in use?

Elaine: Some state legislatures are looking at carbon bills, but nothing has emerged to my knowledge.

Is the construction chamber or other groups pushing policies that rewards using salvage wood under a climate perspective for carbon emissions reduction?

George: I am not aware of such policies, although a small number of municipalities, to include Milwaukee, WI and Portland, OR have passed ordinances requiring deconstruction and material salvage/reuse when older buildings reach the end of their useful lives. Perhaps an incentive policy that recognizes climate/carbon benefits is a logical next step.

Additional Comments:

The logging decline was due to a “deliberate and systematic” violation of the National Forest Management Act, not the ESA listing of the Northern Spotted Owl.

Elaine: That appears to be an opinion. The NW Forest Plan was in response to the listing of the spotted owl in 1993. And it was the NW Forest Plan that essentially eliminated harvest on a significant portion of federal lands.

The mortality data in RPA shows net growth - not that mortality exceeds growth. Please correct this error to the group.

Elaine: Please review the recording again as it was instead stated that mortality (red) plus net growth (green) was total growth and 2/3 of total growth was lost to mortality.

Other studies show Pacific Northwest forests, particularly old growth, are a major carbon sink. Bev Law, Krankina, etc.

Elaine: Law et al do not use RPA data which measures what is going on in our forests. Instead, they use a few example stands and models of what could be on the land base under certain assumption of future growth that include a) a significant increase in growth rate due to carbon dioxide fertilization from climate change - an assumption which has been shown to be over-estimated due to other factors such as increasing aridity and b) the assumption that increasing fire is not going to happen under climate change scenarios. Neither of these assumptions are representative of what is currently occurring in the National Forests based on RPA data. In fact the opposite is the case.