



Tool for tracking GHGs in buildings has “built in” errors: study

Carbon accounting practices need improvements, may misdirect efforts to reduce emissions

Winnipeg, April 3, 2019 – A new report says that construction practices, policies, building and energy codes need to change to reduce greenhouse gas emissions from the building sector.

A new peer-reviewed study - [*Emission Omissions: Carbon accounting in the built environment*](#) - conducted by the International Institute for Sustainable Development (IISD), examines Life-cycle Assessments (LCA) – the primary analysis tool used by industry and researchers to account for GHGs and other impacts of building products at each phase of their “cradle-to-grave” lifespan (i.e., production, use, and end of life).

The report finds while they are the best-available tool for evaluating GHG performance of alternative building products and designs, current LCAs have limits that may misdirect efforts to reduce GHGs from the built environment – one of the largest sources of carbon emissions.

Many LCA studies focus on the embodied life-cycle GHG emissions associated with different structural elements (typically concrete, steel or wood), they tend to discount or ignore the operational stage emissions as well as the emissions impacts of other building systems (e.g., site preparation, heating and ventilation, supplementary structures, furnishing).

This can inflate the relative contribution of the embodied emissions of the structural building elements. Used in isolation, these results can lead to decisions that are too narrow in scope and shift focus away from a more comprehensive picture of emission reduction opportunities in buildings, notes the report.

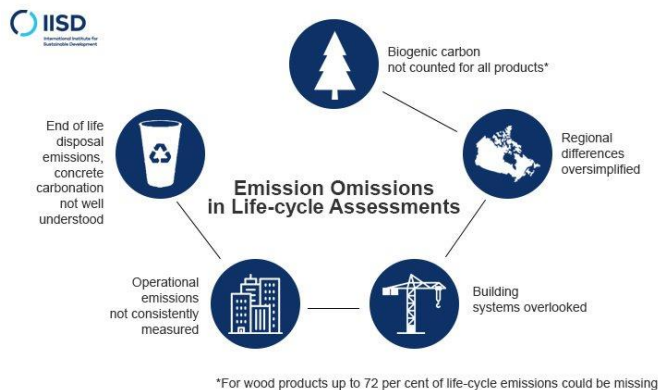
When factors such as realistic forest regeneration rates, soil carbon loss and primary-to -new-growth forest-conversion are accounted for, the cradle-to-grave embodied emissions for a wood building could be 6 percent greater than for a concrete building.

As a consequence, LCAs comparing building materials can exaggerate the importance of embodied impacts when they discount or ignore the contribution of other significant life-cycle emissions.

Major findings:

1. LCAs may produce very different accounting of carbon for similar projects because data can be missing, while built-in assumptions and uncertainties are not disclosed.
2. LCAs do not track or account for “biogenic carbon” from the extraction and end-of-life stages of wood building products. For example, carbon losses related to soil disturbance in logging operations, variable regeneration rates of forests, and conversion of primary to secondary forests are not counted. This may represent up to 70 per cent of total lifecycle emissions.
3. Existing LCA models may misrepresent embodied emissions from materials, exaggerating their importance while ignoring embodied emissions from other building systems or the contribution of other significant lifecycle emissions, such as from a building’s energy use.
4. Important regional factors are often overlooked. For example, while production intensities and related emissions can vary significantly from site to site, LCAs typically use average national, continental or global data.

These impacts challenge the prevailing assumption wood construction materials are less carbon intensive than steel or concrete and should be favoured.



According to the researchers, LCAs need to become more robust and transparent.

They should include more data and full disclosure of research assumptions if they are to guide GHG reduction strategies and reduce other environmental harms from buildings and infrastructure.

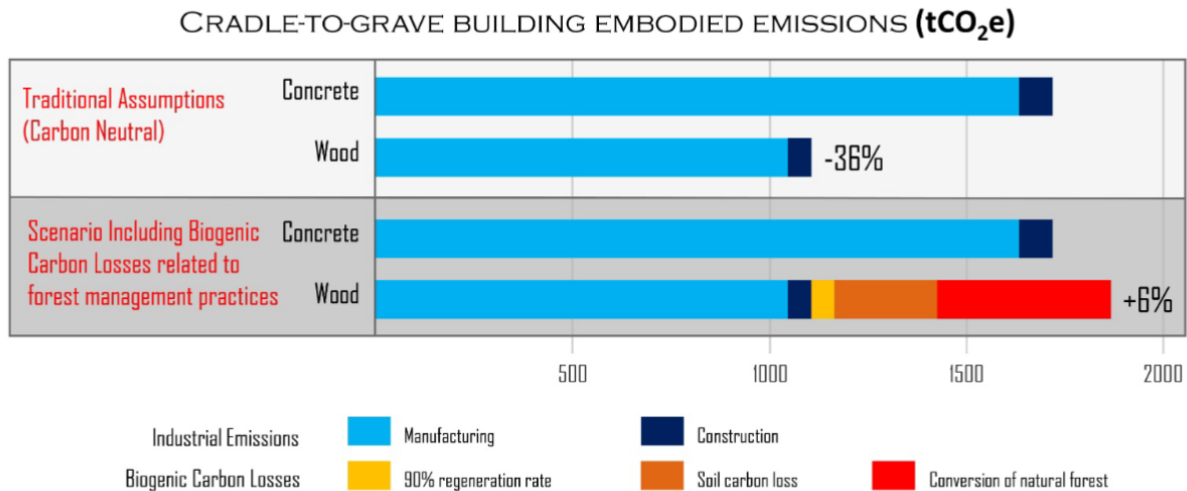
Building efficiency and longevity as well as optimizing material use should also be priorities for decarbonizing the built environment.

The study was commissioned by the Cement Association of Canada and conducted under the guidance of an advisory group comprised of university affiliated academics, notable environmental organizations and architects/designers from the green building community.

"It is a clear warning that efforts to reduce carbon emissions from the built environment will fall short of potential if we continue to rely on incomplete data and incorrect assumptions that wood-based construction materials are inherently less carbon-intensive than steel or concrete," said Michael McSweeney, President and CEO, Cement Association of Canada.

"Lifecycle Assessment is the best approach we have for analyzing the carbon cycle in the built environment and reducing emissions," he added.

His observations were echoed by Philip Gass, Senior Policy Advisor, IISD, who noted "LCA approaches are integral to understand how buildings and the materials they are made of will impact GHG emissions." "However, there are still several uncertainties in the LCA process that building designers and policymakers need to be aware of and should be taking into consideration, especially with respect to the embodied biogenic carbon and biodiversity impacts of wood products," he added.



Study Recommendations

Lifecycle assessments must look at the whole picture, supported by robust standards and data

More data, transparency and robust carbon accounting standards are needed, especially with respect to biogenic carbon from wood products. The federal government should invest in up-to-date regionalized, national life-cycle inventories, including a fulsome carbon accounting in LCAs for all building materials, with LCAs for wood products needing to consider regional biogenic carbon impacts against net carbon sequestered.

Energy efficiency, long service life and material efficiency should be the priorities for decarbonizing the built environment.

While embodied GHG emissions are important, improvements in energy efficiency and developing new low- or net-zero-energy buildings still offer the highest potential for decarbonizing the built environment. Policymakers should focus on promoting building durability, resiliency and energy efficiency improvements. To address embodied GHG emissions in buildings, policy-makers and building professionals should prioritize material efficiency and accelerating the adoption of emerging low carbon material production technologies.

The point is not to single out one material over others, but that more data, greater transparency and robust methods and standards for carbon accounting are needed to mobilize the building industry in the fight against climate change. - Michael McSweeney, President and CEO, Cement Association of Canada.

The findings of the IISD Report are consistent with those of an earlier study carried out by Vancouver-based [Globe Advisors](#) on behalf of the [Pacific Northwest Building Resilience Coalition](#). See more information [here](#).

The **IISD Report** is available [here](#). A **Backgrounder** is available [here](#).

See Also

- [Think Again! B.C. Government Urged to Rethink Tall Wood Policy](#)
- [Ending The Loophole In Carbon Accounting](#)
- [Insurance Costs Six Times Greater For Wood Frame Buildings – Study](#)
- [New Study Confirms Building Resilience Coalition Findings on Carbon Sequestration](#)

About The [Pacific Northwest Building Resilience Coalition](#).

The Pacific Northwest Building Resilience Coalition is a gathering of organizations, primarily in the cement, concrete and masonry industries, committed to furthering the planning, development, and construction of buildings and associated infrastructure better able to recover from and to adapt to the growing impacts of an ever-changing urban and physical environment.

Our Mission is to focus the combined resources of the allied cement, concrete and masonry industries to position concrete, through education and advocacy, as the material of choice in the low, mid and high-rise building markets in the Pacific Northwest.

Learn more about the Coalition at our website - <https://buildingresiliencoalition.org/>

Share your views about 'Building Better Buildings' on our LinkedIn Page:
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