

Building Sustainably: From Forestland Management to Carbon-Positive, Healthy Buildings

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



Course Description

Explore the carbon benefits of timber from our forests to wood buildings. In addition to their renewability, wood products require less embodied energy to manufacture than other structural building materials. Trees also absorb carbon and wood products continue to sequester that carbon for the lifetime of the building, longer if the wood is recycled or reused at the end of the building's life. With taller mass timber buildings, some whole building Life Cycle Assessment (LCA) studies highlight the potential for carbon-positive buildings, meaning that the building actually stores more carbon than was used to construct it, provided the timber was sourced from sustainably managed forests.

This online workshop starts with an in-depth look at sustainable forest management and certification in North America. It will then explore the environmental benefits of wood structures in the context of a whole building LCA and address some of the myths and misconceptions about carbon storage in our forests and buildings. A closing panel will talk about the increasing demand for healthy buildings and how wood contributes to biophilic design principles. The Urban Land Institute (ULI) will also share insights on wood's contribution to growing trends in sustainable development, such as reduced embodied energy, and greater circularity.

Learning Objectives

- 1. Highlight North America's abundant ecological capacity to support a diverse range of forests.
- 2. Discuss how using a variety of forest products can economically support healthy and sustainable forests.
- 3. Describe how to quantify environmental choices in the selection of materials through the use of whole building Life Cycle Assessment and carbon accounting.
- 4. Demonstrate how wood can contribute to sustainable development trends such as biophilic design, circularity, and a lighter carbon footprint.

Global Population Increase



2050 = 11.2 billion people

2019 = 7.7 billion people

Source: https://ourworldindata.org/future-population-growth

Carbon / Greenhouse Gas Emissions

CO₂ in the atmosphere and annual emissions (1750-2019)



Rising Temperatures and Melting Glaciers



Climate Change – From Rising Waters to Increasingly Catastrophic Wildfires



New Buildings & Greenhouse Gasses

Global CO₂ Emissions by Sector



Buildings generate nearly 40% of annual global greenhouse gas emissions (*building operations* + *embodied energy*)

Embodied Energy (11%): Concrete, iron + steel produce approximately 9% of this (Architecture 2030)

Source: © 2018 2030, Inc. / Architecture 2030. All Rights Reserved. Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017

Image: Architecture 2030

Embodied Vs. Operational Energy



% Energy



Carbon Storage Wood ≈ 50% Carbon (dry weight)



Millennials, Gen Z, Mass Timber Appeal 50% of US workforce! Care about the environment, their future Want hip offices w/ exposed timber & craft coffee Live in upcoming neighborhoods being revitalized

Candlewood Suites

Redstone Arsenal



Lendlease Military Hotel:

- 37% faster overall
- 40% fewer construction workers
- Trained unemployed veterans

Carbon benefits: 1,276 metric tons of carbon stored in the wood = 374 cars off the road for a year.

Biophilic Design, Connection to Forests





THANK YOU FOR JOINING US FOR TODAY'S VIRTUAL EVENT!



Keep your **regional staff member** in mind for questions and support:

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