

The Role of Engineered Wood Products in California's Building Sector

Benefits, Progress, and Future of Sustainable Timber Construction



Construction of a mass timber building. (Source: BusinessInsider.com)

Introduction

Why use wood? Renewable. Fast construction. Energy efficient. Reusable. Stores carbon.

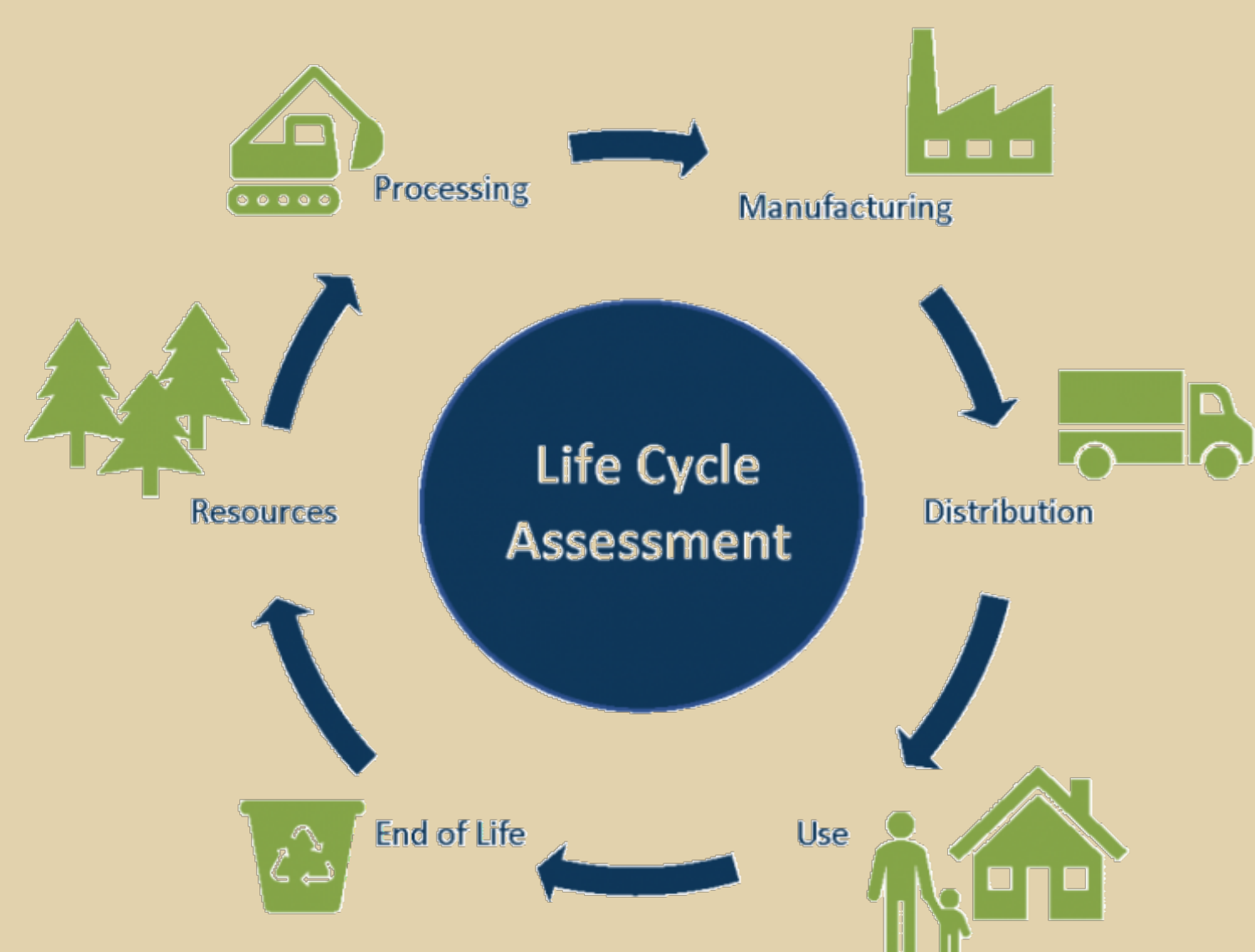
Wood-framed construction has been around for hundreds of years in North America. Over the past few decades, wood construction materials and techniques have evolved to meet changing market demand, as well as be a part of climate change mitigation.

Engineered wood products (EWPs) are being used on an increasingly wider scale.

Advantages of EWPs include uniformity, strength, fire-retardancy, lower lumber grade requirement, etc. Mass timber, a large scale EWP, can be used as structural building components and substitute concrete and steel.

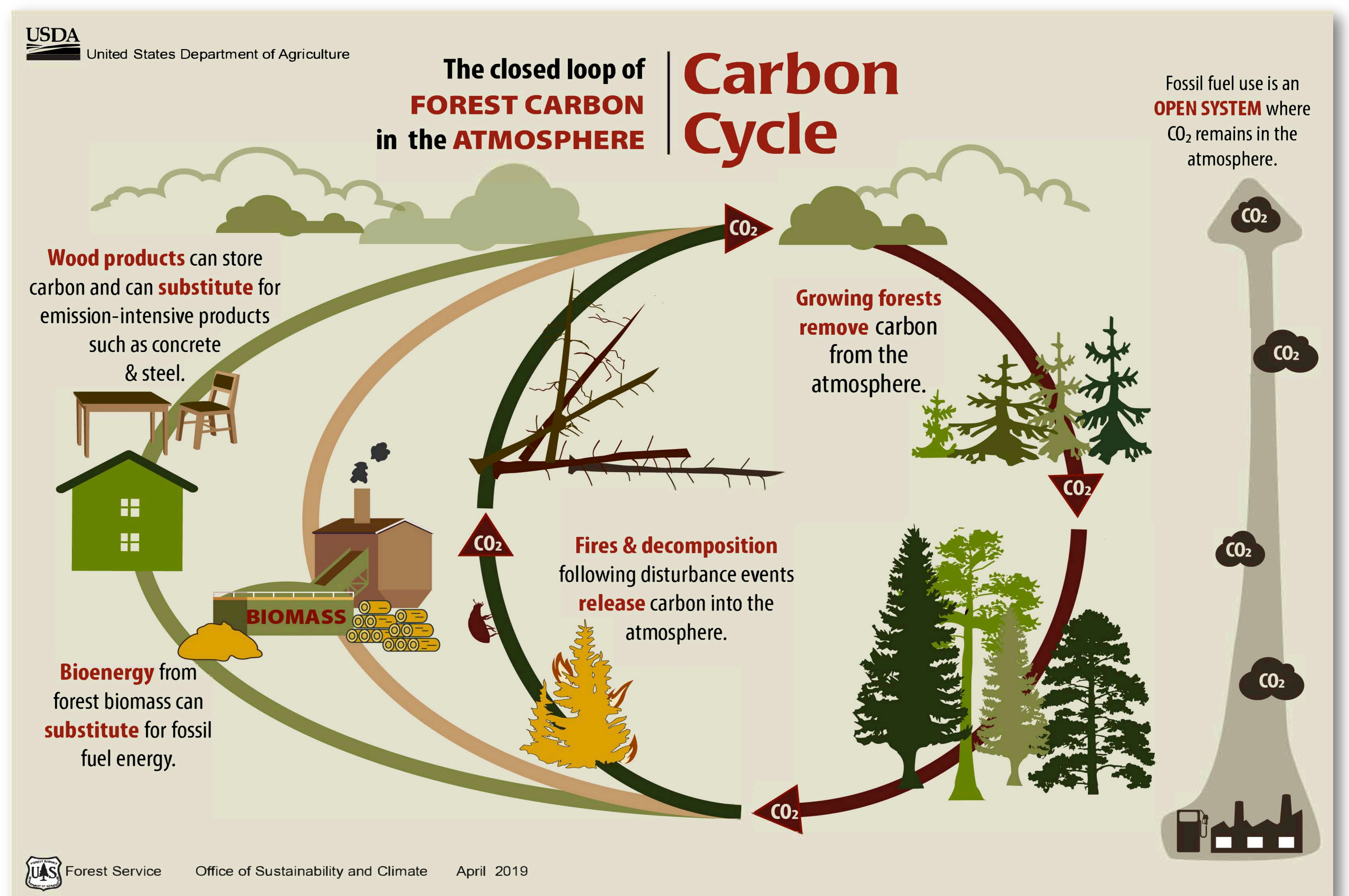
Biomass-based wood products have also gained momentum, either as by-products from lumber and other primary wood products or as a stand-alone products that utilize in-forest woody biomass.

Wood-based building materials can be reused or recycled, extending their carbon storage capacity after the buildings' service life.



Life cycle phases of wood products. Engineered wood construction materials such as mass timber can be recycled or reused after building demolition. (Graphic Source: NCASI.org)

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The role of forest and forest products in global carbon cycle. Wood products help delay carbon emission to the atmosphere and the regeneration of trees continues to sequester CO₂ to offset the emissions associated with the production of wood products, which creates a carbon balance. Woody residuals from harvesting and manufacturing can be used to generate energy to replace fossil fuels or produce lower grade wood products.

Progress and Status

California is the largest consumer of engineered wood products west of Mississippi River, however, even with its high demand, most of these products are imported from outside of California.

- 40% GHG emission reduction by 2030
- 25 operational sawmills and several idled sawmills
- 178 mass timber projects completed, started, or in design as of June 2021 (Source: WoodWorks.org)
- Building code change to allow mass timber buildings of up to 18 stories
- Recent legislation support (e.g., two mass timber state-funded buildings, mass timber construction competition, forest management task force)

Challenges

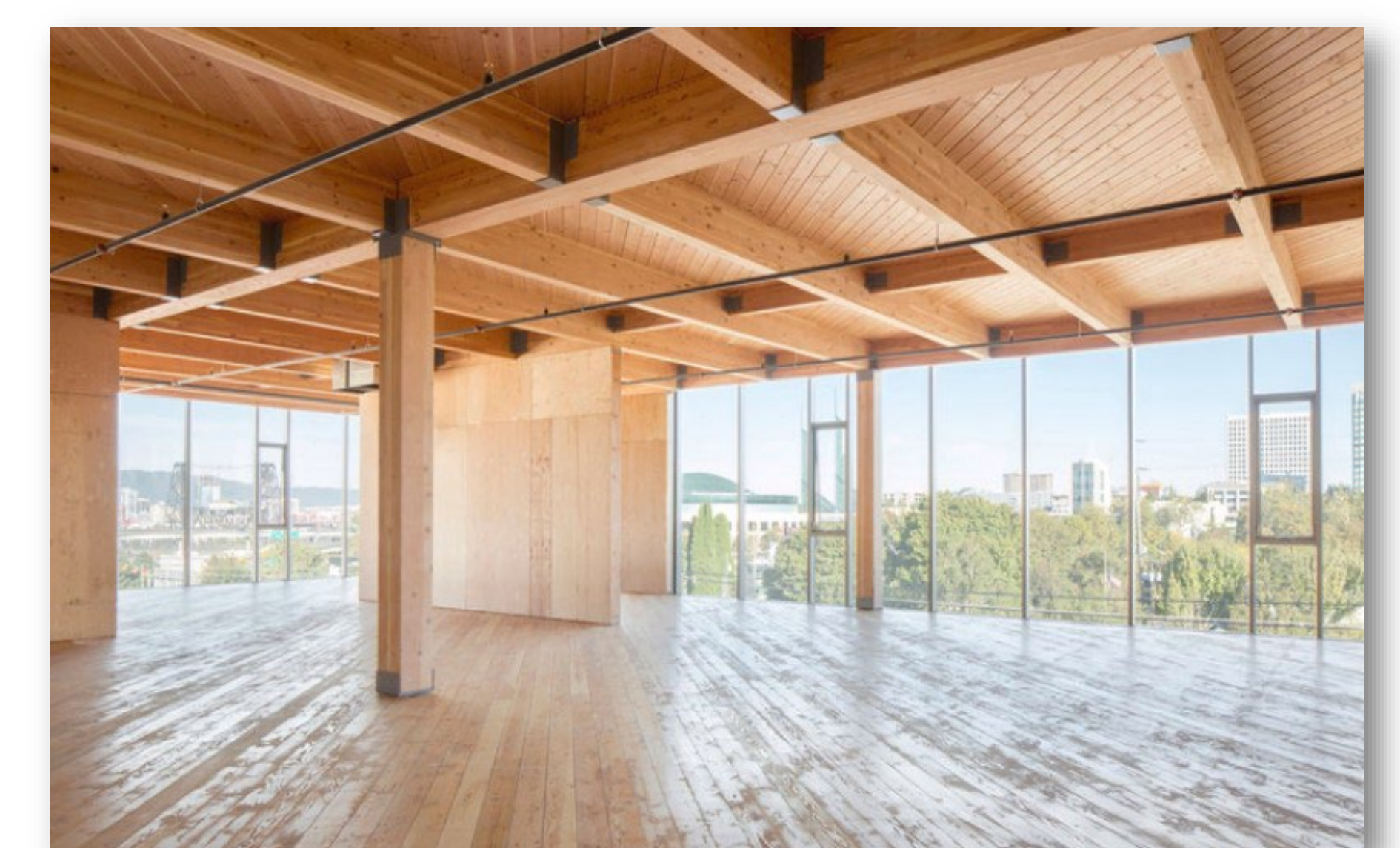
Although engineered wood products are receiving a lot of interests from the building sector, there are challenges ahead:

- Strict regulations and costs associated with forest activities
- Potential high costs of transportation to facilities
- Technical challenges associated with manufacturing
- Lack of labor force and training
- Public acceptance and market potential
- Cost of timber construction vs. conventional construction

Future

To support innovative wood products and forest health, UC ANR works with our community partners, research institutions, the local and state government, non profits, as well as industry leaders, in the following aspects:

- Policy support and changes in forest activities regulations
- Financial incentives for businesses (e.g., carbon credits, tax breaks)
- Local and regional-scale applied research
- Community outreach and engagement. Increase public awareness and acceptance
- Applied research for existing timber materials, as well as exploring new innovative wood products
- Workforce training and development.
- What can we learn from the successful adoption of timber materials in other countries?



A mass timber project in the California Mass Timber Competition. (Photo: Joshua Jay Elliott)