

A Forest Bioeconomy is Taking Root in Michigan



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Forestry &
Logging
Wood products
Furniture
Pulp and paper

Improving since
recession

Commodity
Pulp & paper
still in decline

But why a *forest bioeconomy*!?

Steel, concrete,
plastic, & glass are the
materials and
promise of modernity!



A photograph of a lumber yard. The foreground and middle ground are filled with tall stacks of cut logs, their circular ends facing the viewer. The logs are stacked in neat rows, creating a sense of depth. A narrow path of dark, damp earth runs through the center of the stacks, leading towards a small, shallow stream in the distance. The background shows a line of green trees under a clear blue sky. The lighting is bright, suggesting a sunny day.

Besides, don't we already have one?

Forest-based Bioeconomy has wider scope –
replacing conventional concept of ‘forest sector’

Unique advantages and challenges compared to
agricultural crops

**Forest-based bioeconomy is *also* bioenergy,
biochemicals, textiles, construction, etc.**



Mega-Trends



Climate change
The global population
Urbanization
Digitalization
Increased consumerism
Eco-awareness

Forest Biomaterials are the future.

- They come from a **renewable resource** – trees!
 - (the product of sunlight, soil nutrients and water)
- They **capture carbon**
- They **store carbon**
- They are reusable, **recyclable (up and/or down)**
- Products take **less energy to produce**

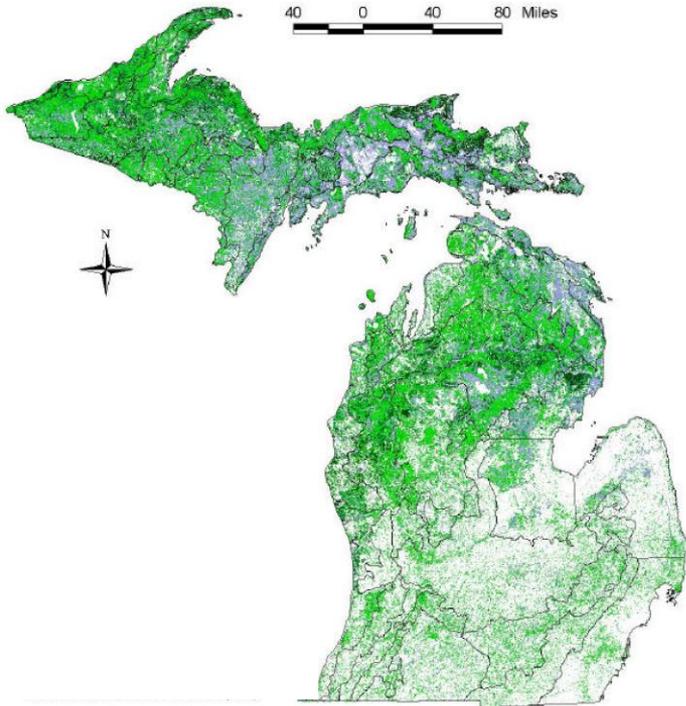


Also, purposefully moving from fossil-based (non-renewable, unsustainable) resources.

- Efficiently and responsibly
- Innovating new and improved utilization



Michigan Industries



Automotive

Employment: 152,890

Rank in US: 1



Furniture

Employment: 17,881

Rank in US: 6



Plastics

Employment: 49,155

Rank in US: 4

Connecting to the auto industry

Byproduct of paper making – black liquor



Waste to \$\$\$

CARBON FIBER



KTH ROYAL INSTITUTE OF
TECHNOLOGY



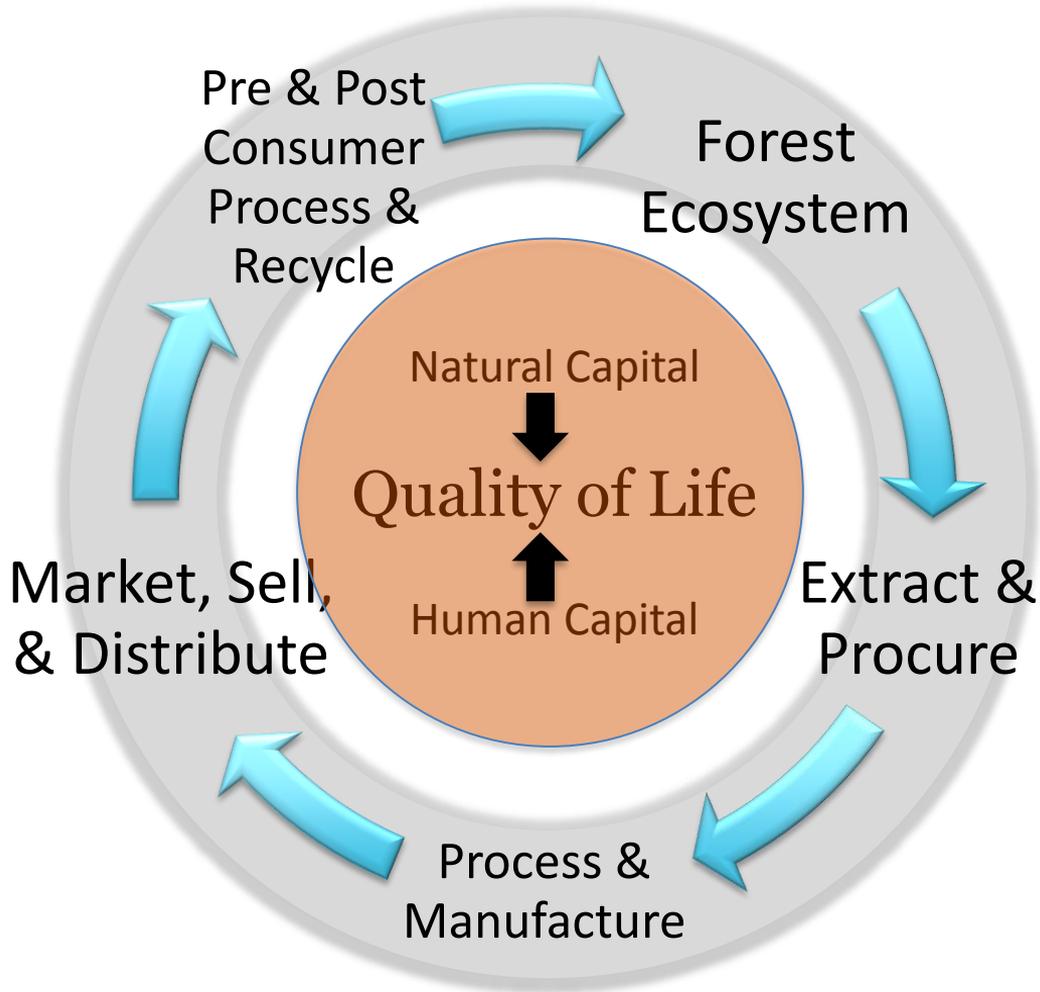
Average car weighs 4,000lbs



Black liquor from 2 pulp mills could make:

200,000 cars 1,200 pounds lighter! (30%)

Better gas mileage!



mifbi
The Michigan Forest Biomaterials Institute



The Michigan Forest
Biomaterials Institute

(Nonprofit 501c3)

Current Board:

- David DeYoe Resource Trends Consultant (Chair)
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- Mark Rudnicki (Exec Dir) – Michigan Technological University

A Forest Bioeconomy HAS Taken Root in Michigan



The Michigan Forest
Biomaterials Institute

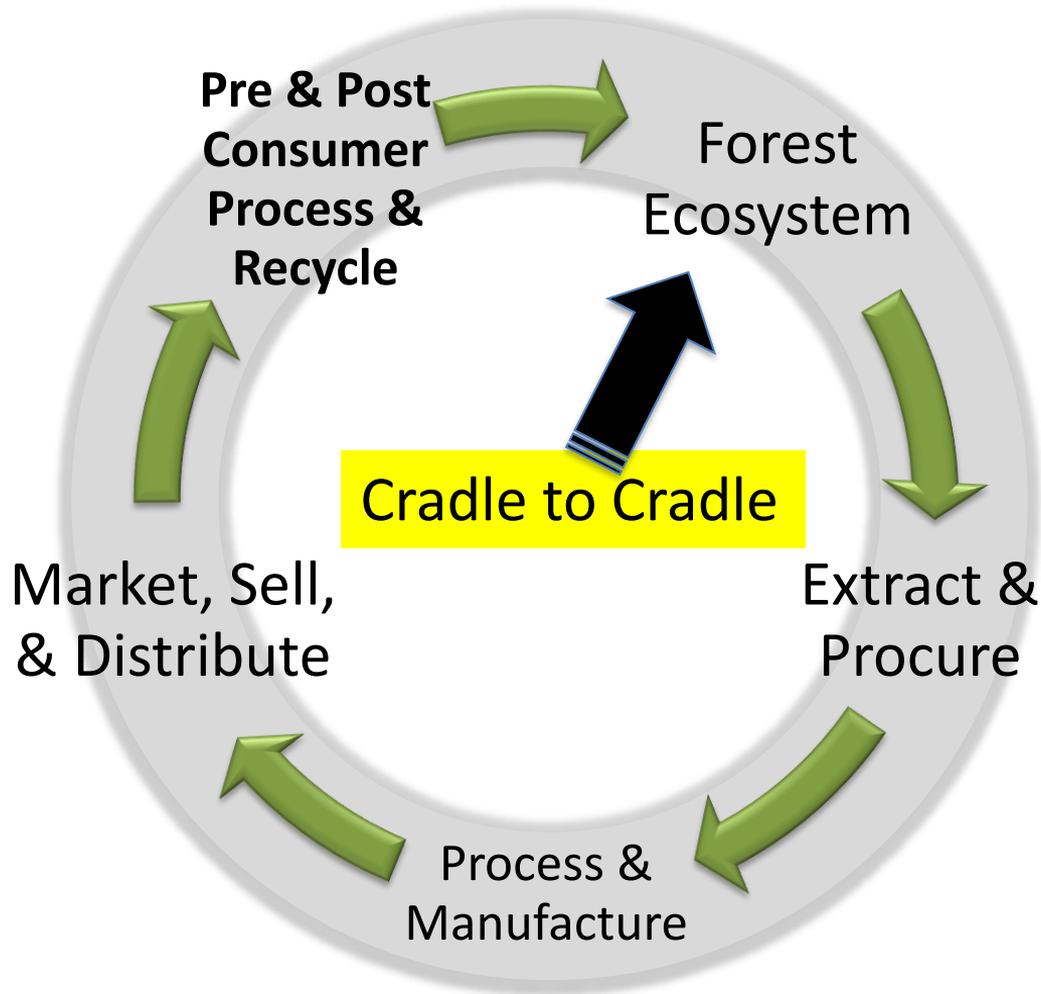


Michigan Tech
School of Forest Resources
and Environmental Science



Department of Forestry
MICHIGAN STATE UNIVERSITY





The Forest Bioeconomy **works** across rural, urban and agricultural landscapes



Urban landscapes



Urbanwood.org

Southeast Michigan's
Reclaimed Wood Marketplace



MICHIGAN STATE UNIVERSITY™
Shadows



JOHN'S URBAN TIMBER

Reclaimed and Recycled Urban Timber



Urban Ashes





Mass Timber/Solid Wood Panel CLT'S are expected to ***transform*** tall building construction in the next few years (already happening elsewhere)

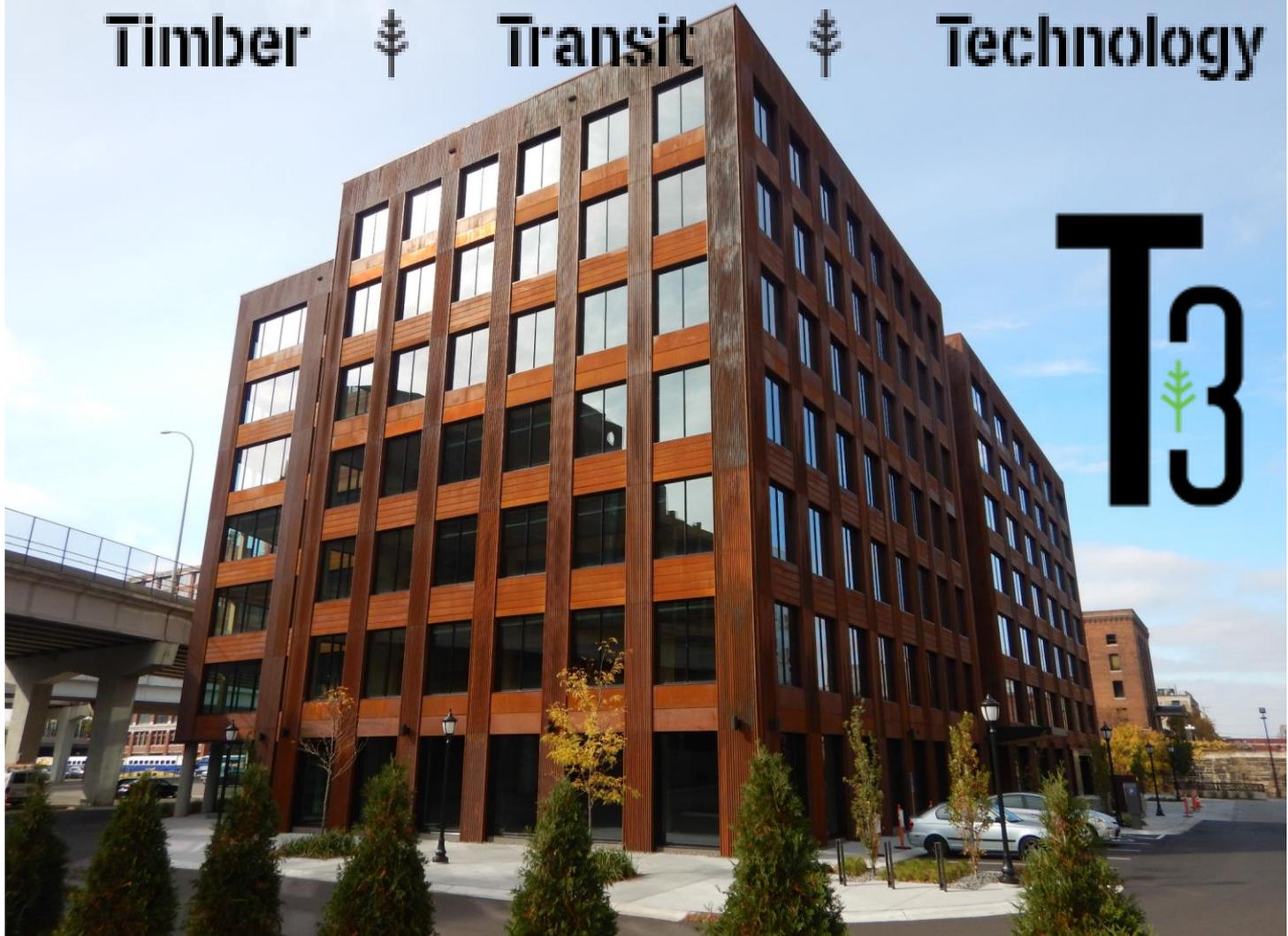
Timber



Transit

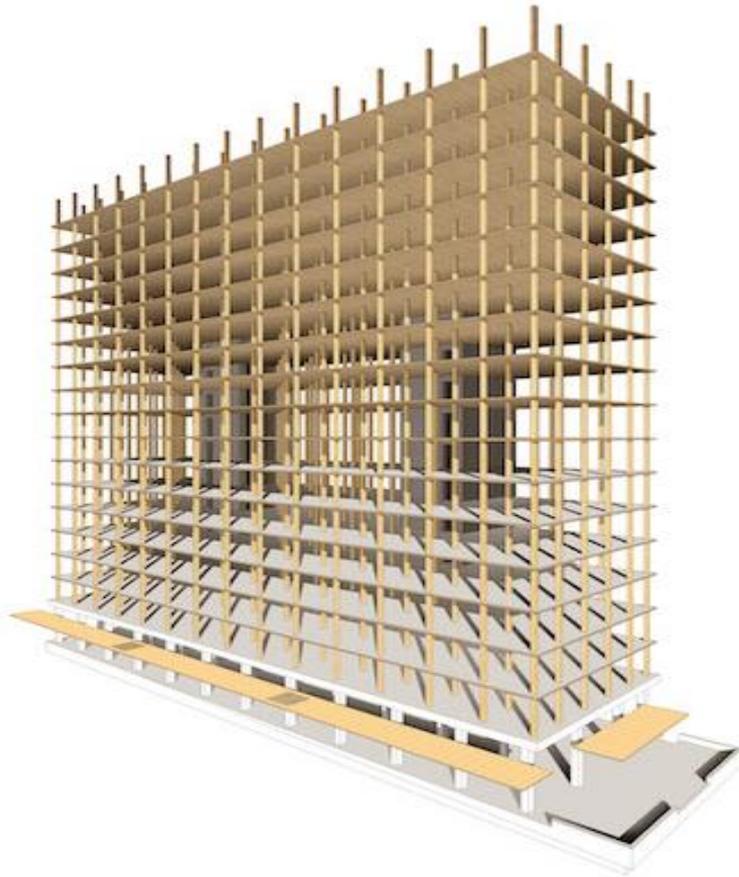


Technology

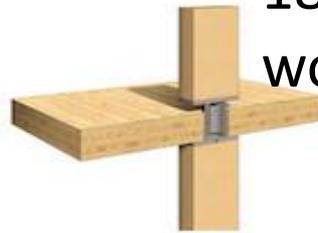




18-story UBC residence to be world's tallest wooden building



hybrid mass timber and concrete core structure



CLT floor slabs with glulam columns and steel connectors



partial encapsulation during construction



completed construction



encapsulated structure





Thank you for your attention

