The Role of Michigan’s Academic Institutions in the Forest Products Sector

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Collaboration in
MICHIGAN FOREST BIOMATERIALS INITIATIVE

LOCAL COMMUNITY WELL-BEING

Forests Products
Chemical Industry
Agriculture
Landowners
Natural Resource Professionals
Analysts
Economic Development Leaders
Policy Makers
State, Regional, & Local Planners
Community Development Leaders
State, Regional, & Local Leaders

INDUSTRY

Rereation and Tourism
Transportation Industry
Small Business Owners
Natural Resource & Environmental Scientists
Chemists & Physicists
Social Scientists
Statisticians
Engineers
Hydrologists
Forest Land area (acres)

NRS-FIA
Harvest removals (cubic feet/year) 2014

Estimate value

- Michigan: 2
- New York: 5
- Maine: 1
- Minnesota: 7
- Wisconsin: 3
- Pennsylvania: 4
- Missouri: 9
- West Virginia: 6
Net growth to total removals (ratio) 2014

- Michigan: 2.1
- New York: 2.6
- Maine: 1.4
- Minnesota: 1.8
- Wisconsin: 1.9
- Pennsylvania: 2.4
- Missouri: 2.0
- West Virginia: 2.2
PERCENT Mortality
(of live tree volume) 2014

Michigan: 1.1
New York: 1.1
Maine: 1.1
Minnesota: 1.9
Wisconsin: 1.2
Pennsylvania: 0.9
Missouri: 1.2
West Virginia: 1.0

NRS-FIA
Open data on industry clusters and regional business environments to promote economic growth and U.S. competitiveness.
The United States economy has 51 clusters in total

**OUR (traditional) Industry clusters:**

- Forestry
- Wood Products
- Furniture (some)
- Paper and Packaging
In 2012 across the United States there were:

• 65,000 jobs in forestry & Logging (Michigan 15th)

• 320,000 jobs in Wood Products (Michigan 19th)
  – 101,000 jobs in wood processing (Michigan 17th)
  – 207,000 jobs in wood components and products (Michigan 16th - Wisconsin 1st)
Industries in FORESTRY Cluster
Timber Tract Operations
Forest Nurseries and Gathering of Forest Products
Logging
Support Activities for Forestry

Michigan 15th
Wood Products Cluster
Employment by State, 2012

Industries in Wood Processing
Industries in Wood Components and Products

Oregon: 19th
Pennsylvania: 1st
California: 2nd
Wisconsin: 3rd
Texas: 4th
North Carolina: 5th
Georgia: 6th
Indiana: 7th
Virginia: 8th
Alabama: 9th
Washington: 10th
Minnesota: 11th
Kentucky: 12th
Ohio: 13th
Tennessee: 14th
Arkansas: 15th
Mississippi: 16th
Michigan: 19th

Other states not listed:
Alaska
Hawaii
District of Columbia

Note: Michigan's employment in wood processing is 8,593, and in wood components and products is 17,347.
Value of Wood Products Industry (no pulp and paper) per acre of Timberland (Data - American Wood Council)
Hourly Wages in the Lake States’ Logging Sector, 2014

Logging Equipment Operators*

<table>
<thead>
<tr>
<th>State</th>
<th>Wage</th>
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<tbody>
<tr>
<td>Michigan</td>
<td>$13.42</td>
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<tr>
<td>Minnesota</td>
<td>$15.67</td>
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<td>Wisconsin</td>
<td>$14.82</td>
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Fellers**

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<tr>
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<td>$12.76</td>
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</tbody>
</table>

Medain hourly wage based on 25th and 75th percentile

Hourly wage range


For more, contact Mark Rickenbach (mark.rickenbach@wisc.edu; 608/263-6710)
Emerging opportunities to add value to the forest industry

1. Mass timber buildings & Engineered wood products

2. Pulp and Paper conversion to Biorefinery

3. Niche products and markets
Minneapolis, office building that recently broke ground.
2015  First CLT panels made in the US - Oregon
Possible products from a kraft pulp mill biorefinery

Energy
- Heat
- Electricity
- Pellets
- Biocoal
- Biooil
- Ethanol
- Methanol
- Biogasoline
- Biodiesel

Chemicals/materials
- Lignin
- Hemicellulose
- Extractives
- Cellulose
- Lignin

- Carbon fibre
- Binder
- Chemical intermediates
- Fiber additive
- Barriers
- Chem intermediates
- Bioactive chemicals
- Tall oil, turpentine
- Ethanol
- Lactic acid
- Acetic acid

Pulp fibers and cellulose

Large biorefinery cluster emerging in Sarnia – opportunity for MI
Green chemicals (particularly alcohols) a 5% growth rate since 2009 and an estimated 2015 market value of 62 billion USD.
Danielsons sugarbush?
MICHIGAN FOREST BIOMATERIALS INITIATIVE

QUALITY OF LIFE

Natural Capital

Post-Consumer Processing & Recycling

Ecosystem Dynamics

Extraction & Procurement

Marketing, Sales, & Distribution

Processing & Manufacturing

Human Capital
MiFBI
Michigan Forest Biomaterials Initiative

Current (interim) Board:
• Edward Becker – Friction and Wear Solutions, LLC
• David DeYoe – Resource Trends Consultant (Sec.)
• Jake Hayrynen – JM Longyear
• Richard Kobe – Michigan State University
• Robert Kreipke – Ford Motor Company
• Lori Phalen – MI Association of Conservation Districts
• Terry Sharik (Chair) - Michigan Technological University
• Warren Suchovsky – Michigan Timberman, MI Farm Bureau
• David Wright – Michigan Forest Association

Current (interim) Staff:
• Mark Rudnicki (Exec Dir) – Michigan Technological University
Mission: To enhance quality of life in Michigan by fostering sustainable forests, communities, and economies through innovative and responsible production, use, and recycling of forest biomaterials.
Michigan Forest Biomaterials Initiative (MiFBI)

2015 Strategic Plan:

• Developing Forest Biomaterials in Michigan’s Green Economy
• Increasing Competitiveness of Michigan Biomaterials
• Ensuring Sustainable Supply From Public & Private Lands
• Generating A Fully Functional Supply Chain
• Enabling Supportive Policy Coordination
Generating Research & Extension to meet Economic & Environmental Needs

Renewable Forest Biomaterials For a Green Economy

Project GREENEN

Generating Research & Extension to meet Economic & Environmental Needs
A cooperative effort to advance Michigan’s economy through plant-based agriculture.

Cooperators: plant commodities & industry, MSU AgBioResearch, MSUE, MDARD

Mission
- Research & educational programs for industry needs
- Food safety
- Quality of the environment
Project GREEEN

Total economic impact of Agriculture:

↑ 52%, 2004-2010

↑ $20 Billion, 2009-2012

> $100 Billion contribution (current)
Project GREEEN

ROI (proposals): > 4x’s

$ (Million)

Year

GREEEN
Leveraged funds
Project GREEEN's world-changing, people-feeding impact is possible because of its research and Extension partnerships. Actively engaged with Michigan's plant-agricultural commodity groups, Project GREEEN researchers couple scientific expertise with practical solutions to address real-world problems. Housed on the Michigan State University (MSU) campus, Project GREEEN is led by MSU AgBioResearch. MSU Extension and the Michigan Department of Agriculture and Rural Development.

Project GREEEN researchers are MSU AgBioResearch- and MSU Extension-funded, enabling GREEEN to supply the materials, labor, travel and collateral funds needed to conduct
Project GREEEN

Proposal process

Plant industry

Priorities
- Research
- Extension

Proposals

Results & Impact

Funding match

Funded Proposals

Review panels (academic, industry, Gov’t)

External funding

External funding

External funding
Simple Governance
(Council= DNR, MTU, MSU)
Simple Governance \rightarrow Rapid Response
Clear roles that balance power
Clear roles to balance power

- Industry
- Proposal Reviews
- Priorities
- Governance & Admin
- DNR & Universities
Skin in the game

State govt. (DNR) = investment

Industry = financial match

Universities = faculty, infrastructure
Collaboration
Collaboration ->
Innovation ->
Prosperity
Industry’s leading role
A proposal to support, diversify, and expand Michigan’s forest products industry.
MI Forest products industry currently worth 17.5 billion. Strategic investment needed for 20+ billion

Other states are investing:
Oregon – $63 million (50%public/50%private) for Wood Products Innovation Center

Wisconsin, Maine, Mississippi, Virginia, North Carolina

Canada – Federal and provincial governments investing hundreds of millions in Forest Product Innovations
Request for Five million $ annual allocation directed at two major goals:

- Competitive funding: 50.0%
- Capacity Building (personnel and programs): 47%
- Administration: 3%
- MTU: 23.5%
- MSU: 23.5%
Competitive Funding

– MTU & MSU lead but open to all MI higher ed
– 50K-75K/year for 2 years

Scoring Criteria
– Technical and or scientific merit. Impact of outreach
– Alignment with industry priorities
– Must have industry match
– Likelihood for leveraging additional funding
• Industry priorities
  – gathered from trade groups, associations and professional societies
  – Annual update of priorities
  – 8 industry categories
• Initial joint meeting to set expectations, build relationships, and discuss mutual needs
Industry categories

Forestry and Supply Chain  Wood Processing
Wood Components & Products  Wood Furniture
Paper and Packaging  Advanced Biomaterials
Energy  Non-Timber Forest Products
President’s 2016 Budget Proposal on USDA-led Manufacturing Innovation Institutes

- $80 million to support public-private partnerships to establish two Innovation Institutes engaging industry, leveraging funding, and facilitating technology transfer.
  - **Biomanufacturing**
    Building the scientific foundation, processes, and workforce capacity to move bioenergy and biobased research from development to deployment and commercialization.
  - **Nanocellulosics**
    Focused on utilization of cellulose to be turned into a renewable supply of industrial materials. ensuring that the United States is the leading global source of commercial cellulosic nanomaterials research, innovation, production, and commercialization.

- In line with the December 2012 report by the President’s Council of Advisors on Science and Technology.
1) Support existing industries by making them more competitive and profitable;

2) Creating more higher value opportunities;

3) Linking rural communities to manufacturing.
Forests are the Future

• We have underutilized forest resources
• We are shipping raw resources and jobs to other states
• Other states are investing in adding value to wood products - surging demand for renewable and sustainable products. Huge potential to link with other Michigan industries.
• REFORGE is a unique and ambitious proposal to drive public private partnership Michigan
Questions?