

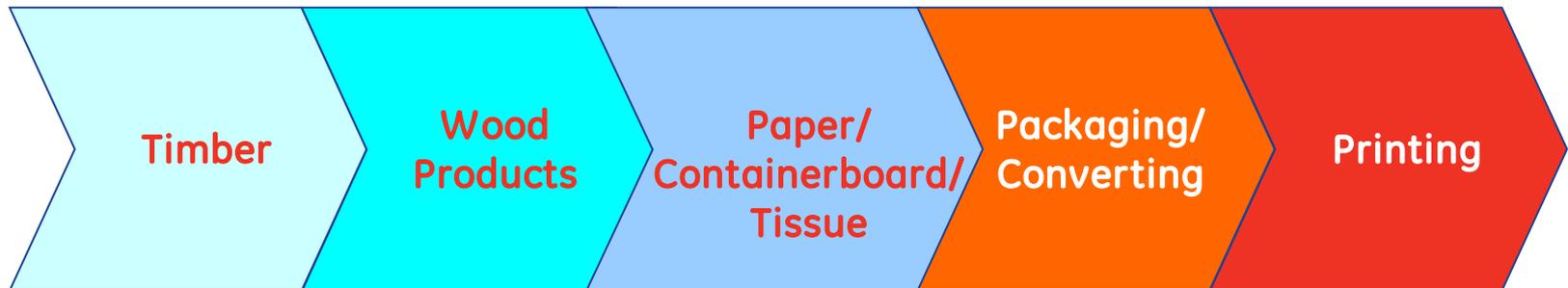


What does Michigan Forest Products Industry need to do to present a compelling business case?



GE Capital Corporate Finance and Forest Products

- All industries related to trees:
 - Timberland
 - Wood Products
 - Pulp, Paper, and Packaging
 - Printing
- Over \$20B of capital committed to the industry since 2003
 - Capital provider to the industry through economic downturn
 - Middle market focus
- Range of financial products
 - Asset backed loans
 - Cash flow loans
 - Equipment leases and loans
 - Tax-advantaged financing
 - Equity



Compelling business cases for expansion in the Forest Products Sector

- South American Eucalyptus Pulp:
 - Eucalyptus pulpwood fiber growth rate in Brazil: 60 – 70 tons per hectare per year
 - Attracts capital for 1MM+ ton pulp mills to supply BEK to world markets
- Chinese Demand and Capacity expansion:
 - Demand for paper, packaging, and tissue is growing at 10%+ per year in China
 - Attracts capital for new paper mills - packaging, paper, tissue
- European Biomass Renewable Energy Demand
 - Drives global projected pellet demand growth from 16MM to 60MM/tons per year
 - US South has excess fiber due to closure of pulp and paper mills
 - US South has infrastructure and relative logistics advantage to deliver to Europe
 - 25 mills announced, several completed, many others underway
- North American wood products “super cycle”
 - US housing recovery underway
 - Emerging Asian lumber demand: China, India
 - Supply constraint: mountain pine beetle in interior British Columbia, reduction in Average Allowable Cuts in Eastern Canada
 - Expansion of capacity through restarts, additional shifts
 - Attracts capital to US wood products business (GP, Interfor, Klausner)



Potentially Compelling Business Cases for Expansion in the Forest Products Industry

- Biomass energy
 - Maximize value of waste streams from logging, wood products, pulp, and paper manufacturing
 - Leverage industrial sites and logistics/wood handling capabilities
 - Utilize fiber left in forest; “Clean up” fire hazard of accumulated biomass fuel
 - May require subsidy due to higher cost compared to natural gas: e.g., Renewable Energy Credits/Renewable Portfolio Standards, economic development grants, production tax credits, etc.

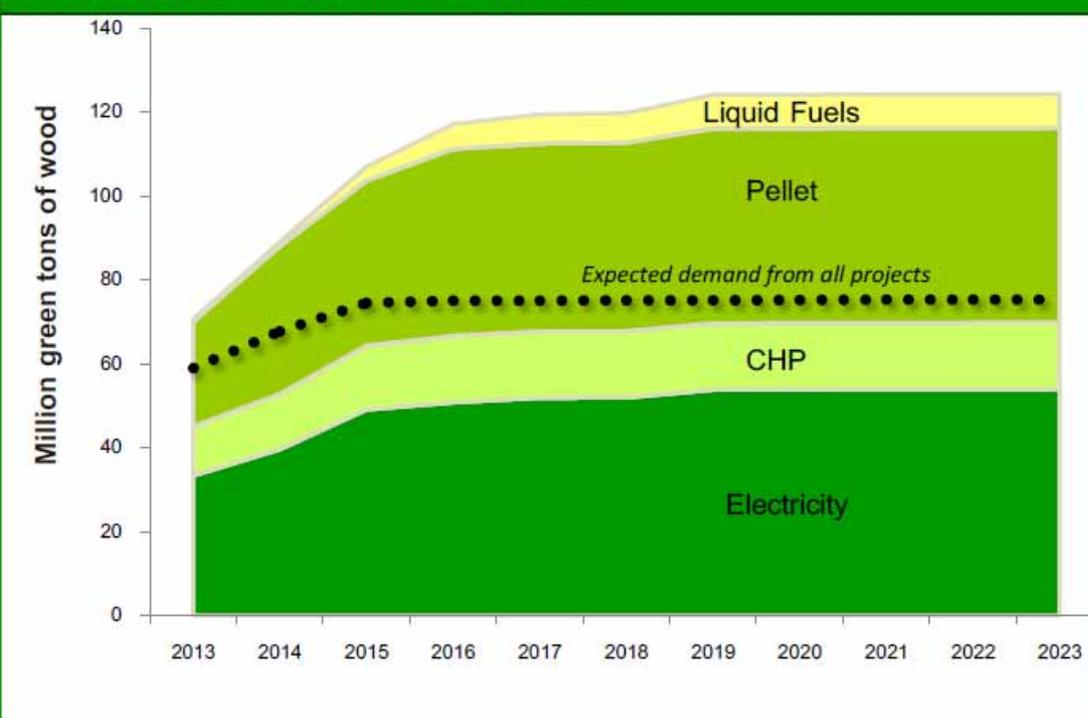


Significant activity in biomass energy sector.

Number and Wood Use of Announced and Operating Projects, 2023

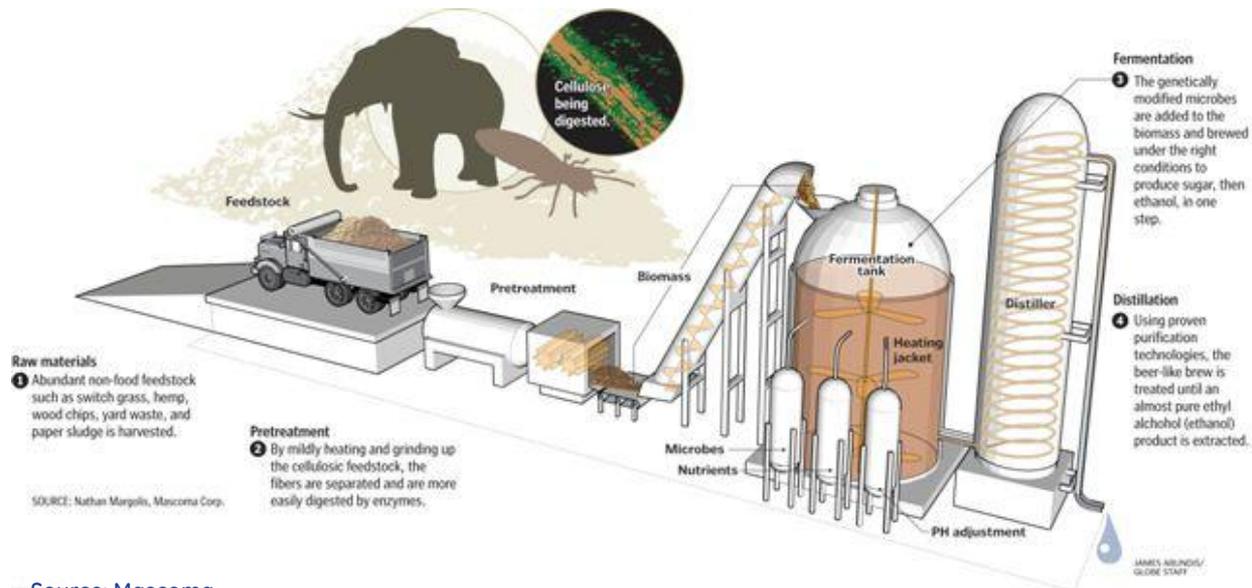
Number of Projects by Type						Total	Total that pass screens	Wood Use of All Projects gtons	Wood Use of Projects that Pass Screens gtons
Region	Electricity	CHP	Thermal	Liquid Fuel	Pellet				
North	69	22	8	9	87	195	137	40,315,073	25,555,098
South	39	22	10	19	66	156	89	64,407,754	36,580,006
West	41	17	2	5	40	105	67	20,301,471	13,262,796
Total	149	61	20	33	193	456	293	125,024,298	75,397,900

Estimated Wood Use by Announced Facilities



• Biofuels/biochemicals:

- Convert biomass to diesel, gasoline, jet fuels, or chemicals at competitive cost
- Demand already exists: Potential green solution for the airline industry
- Requires proven, economic, commercial scale technology to attract capital
- Many efforts underway to develop cost competitive, scalable technologies
- Capital resources provided largely by a) private sector research and development, b) government grants, and c) venture capital. Limited public equity or debt to date.



— Source: Mascoma

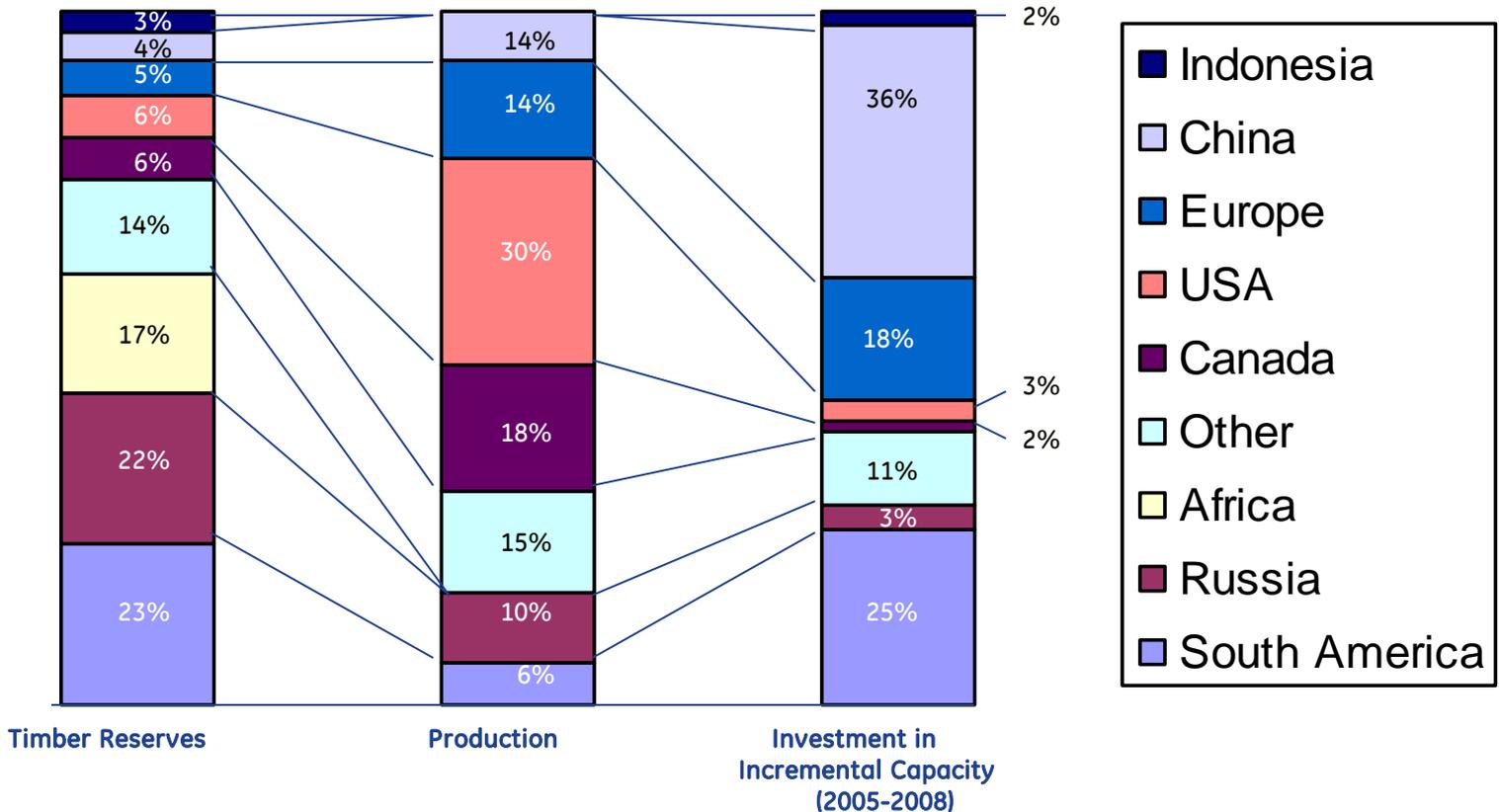
Elements of a Compelling Business Case for Forest Products Investment and Growth

- A superior timberland/wood resource
 - Large sustainably managed private tracts
 - Reliable access to publicly controlled resource
- Competitive mill system: saw log, sawmill residual, and pulpwood demand
- Growing end markets with balanced supply and demand
- Logging and trucking capacity
- Access to product markets: transportation infrastructure
- Experienced, high-quality labor force
- Educational and R&D infrastructure
- Supportive political environment

Globalization led to incremental production capacity being added both near fiber resources and in growth markets

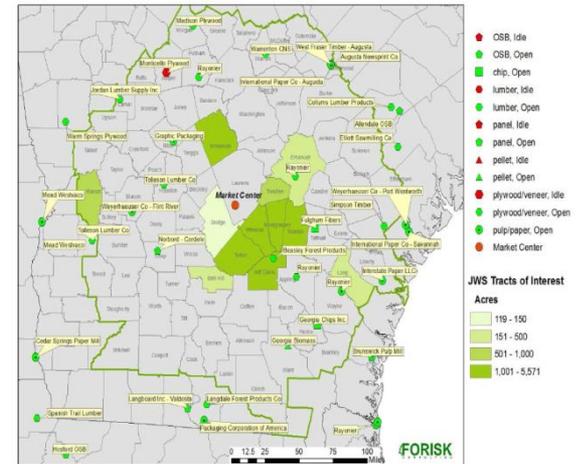
- **South America:** to exploit rapid fiber growth/short rotations and resulting low cost fiber
- **China:** country of strongest demand growth

Timber Reserves, Production and Incremental Expected Capacity Additions



How does an investor or lender think about the Forest Products?

1. Health of end markets: growth or stability
2. Competitive dynamics
 - Global, regional, and local context
 - Supply and demand balance
 - Consolidation and competitor behavior
3. Resource quality, accessibility, cost
4. Mill system: depth of demand for saw logs, sawmill residuals, pulpwood
5. Logging and transportation infrastructure: cost, labor quality, length of haul
6. Business environment
 - Regulatory
 - Constructive engagement among industry, government, and environmental interests



Source: Forisk

Wood products

- Highly cyclical; emerging from economic downturn
 - Appropriate leverage and liquidity to survive cycles
- Strong price increases over past year
 - Positive demand dynamics
 - Steady recovery underway in new home building and R&R
 - Demand from Asia
 - Positive supply dynamics/constraints
 - Interior British Columbia supply decline due to pine beetle
 - Reduced annual allowable cut in Eastern Canada
 - Some reduction of mill capacity from downturn
 - Prudent approach to adding capacity (so far)
 - Some time to rebuild logging and trucking capacity
- Will Industry continue to balance supply and demand?
 - Highly fragmented lumber market; prudent capacity additions to date
 - Healthy consolidation in panel markets
 - Will capacity additions outstrip demand (e.g., OSB restarts versus demand growth) ?

- Wood products sector attracting capital, especially in South
 - GP acquisition of IP/TIN assets: \$750MM
 - GP CAPEX program: \$400MM in capacity expansions and upgrades
 - Interfor acquisition of Rayonier: \$80MM
 - Klausner: three mega sawmills in NC, SC and FL (2.1BBF)
 - Canadian and US PNW interest in building exposure in US South
 - Inquiries to reopen or build new mills – mostly in South



Hardwood Lumber and Value-Added Products

- Market recovery underway – lags dimensional lumber.
- North America and Michigan have a competitive advantage in hardwoods
 - Michigan has huge timberland resource: 19.4MM acres
 - Desirable species: sugar maple, hard maple, beech, aspen, red oak, ash
- Core manufacturing, logging, trucking survived the recession better than other hardwood areas: may need additional investment in equipment and workforce.
- Will industry expand capacity into recovering market?
 - Utilize existing capacity with additional shifts
 - Expand logging and trucking infrastructure
 - Build new capacity: requires confidence in market and resource supply
- Downstream value-added manufacturing: What can Michigan Forest Products industry do to build on its successful value-added downstream production to successfully fully compete against China, SE Asia?



Three OSB mills provide demand for pulpwood: defensible cost positions.

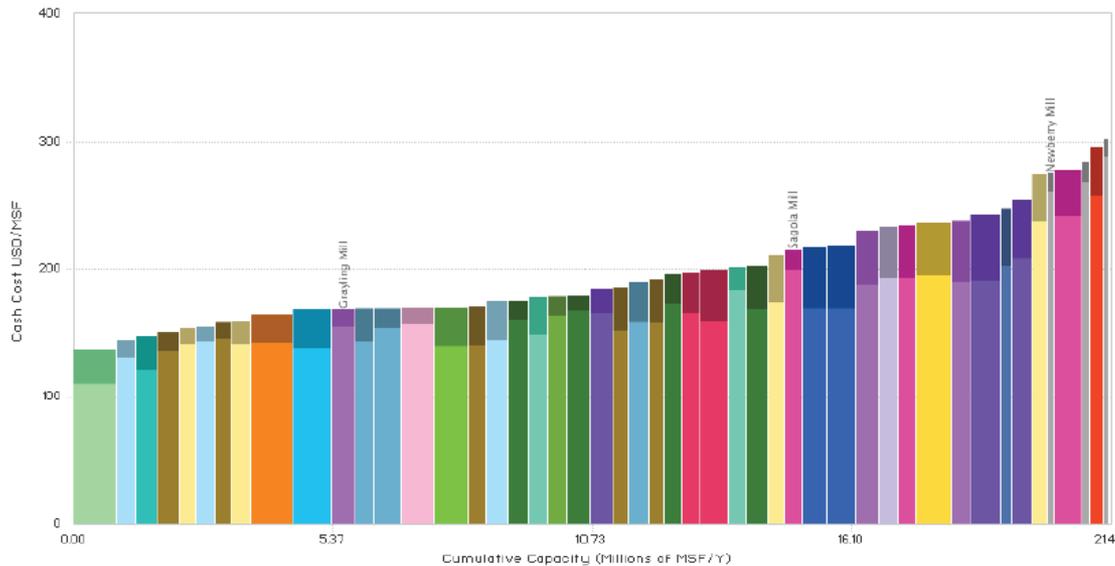
- Strong price increases over past 12 months
- Planned capacity additions/restarts: will they outstrip growth in demand?

Delivered Cost: Kansas City, KS

Region: North America

Grade/Product: OSB

Cash Cost Graph

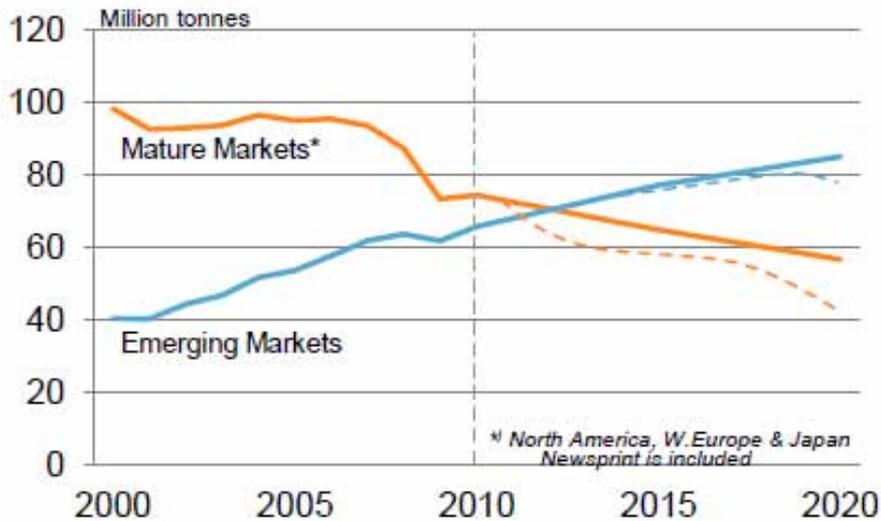


Source: RISI Cornerstone

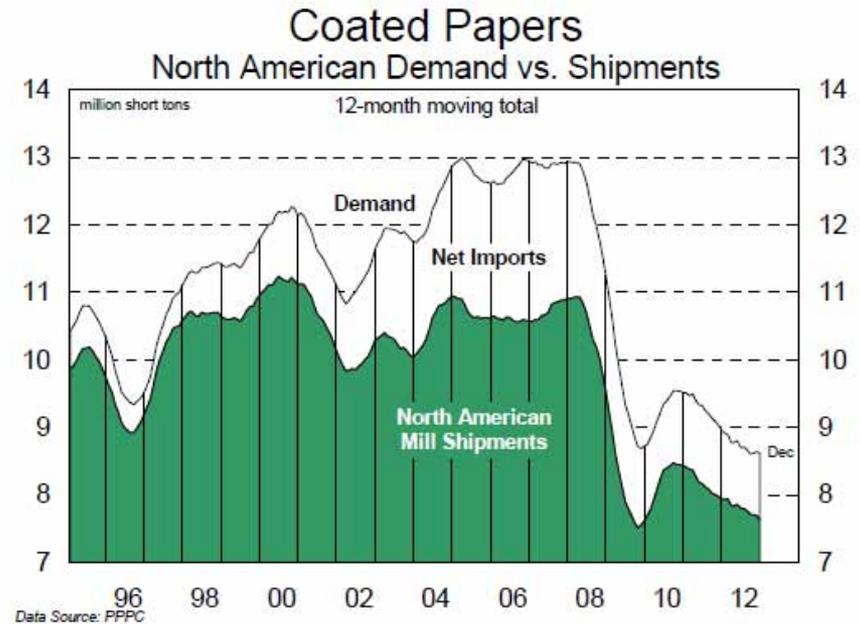
Printing and writing paper

Declining demand due to digitization

Global newsprint, printing and writing paper demand



Source: Poyry

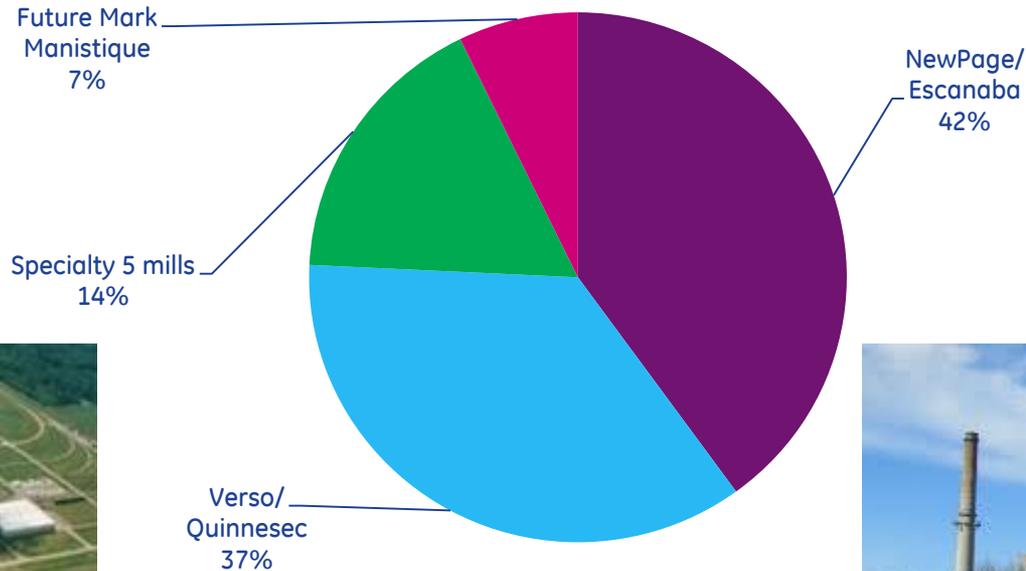


Source: Poyry

Michigan is home to eight paper mills:

- NewPage/EsCANaba and Verso/Quinnesec the two major sources of demand of pulpwood.

Michigan Paper Mills
100% = 1.9MM tons/year capacity

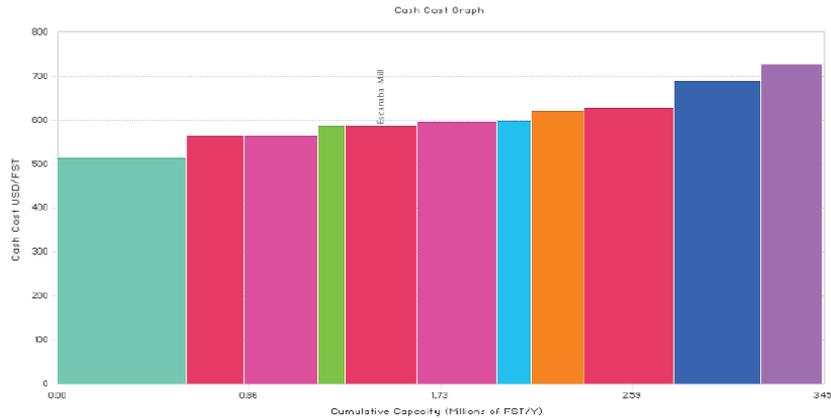


Source: RISI Cornerstone

In declining commodity market, cost position is key to survival.

- Incremental investments to achieve low cost position to survive (e.g. Verso biomass cogen investment at Quinnesec)
- Threat of global competition from Europe or Asia.

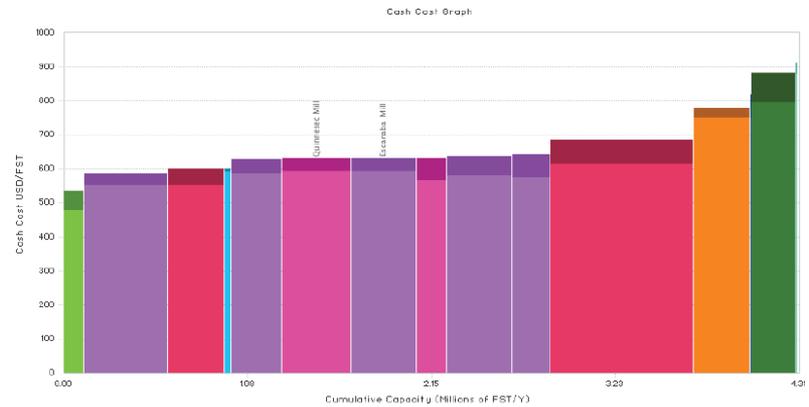
Region:North America
Grade/Product:Coated Mechanical



Source: RISI Cornerstone

Delivered Cost:Chicago, IL

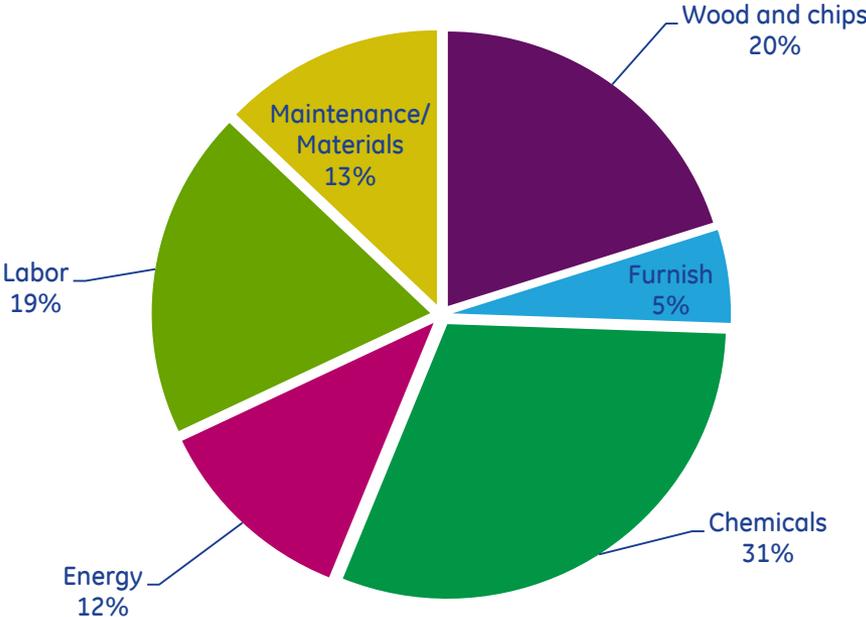
Region:North America
Grade/Product:Coated Woodfree



Source: RISI Cornerstone

Cost levers to maintain low cost position: Fiber, Chemicals, Energy, Labor

Coated Paper Mill Costs



Source: RISI Cornerstone

Packaging: Corrugated and Folding Carton

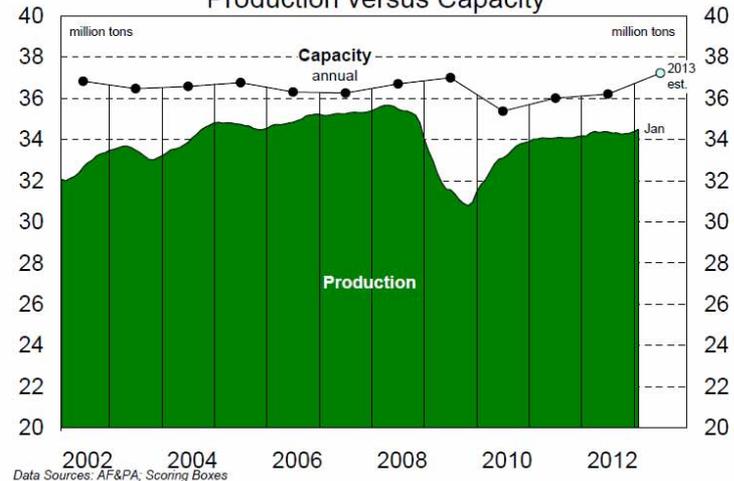
- Large, healthy, consolidated markets that grow at close to GDP
- Recovered from economic downturn as GDP and manufacturing recovered

Containerboard Demand



Source: Poyry

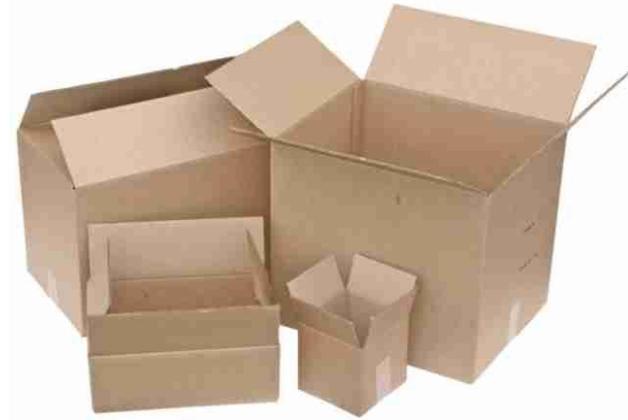
U.S. Containerboard Production versus Capacity



Data Sources: AF&PA, Scoring Boxes

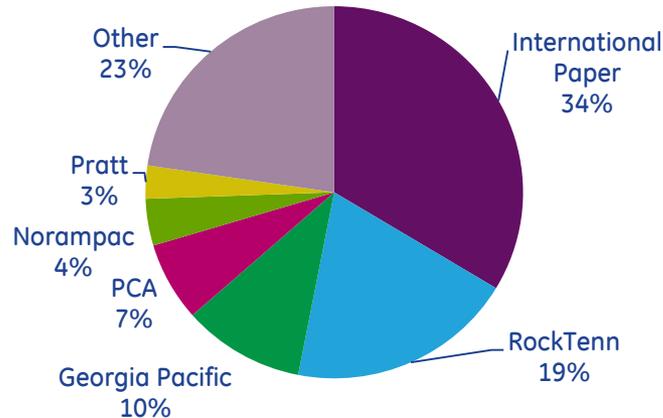


Containerboard market consolidated, and prices remain strong



- Virgin fiber about 55% of US furnish
- Recycled fiber about 45% of US furnish
- Demand exceeds supply in NE and Midwest
- FutureMark Manistique mill: recycled kraft paper and medium

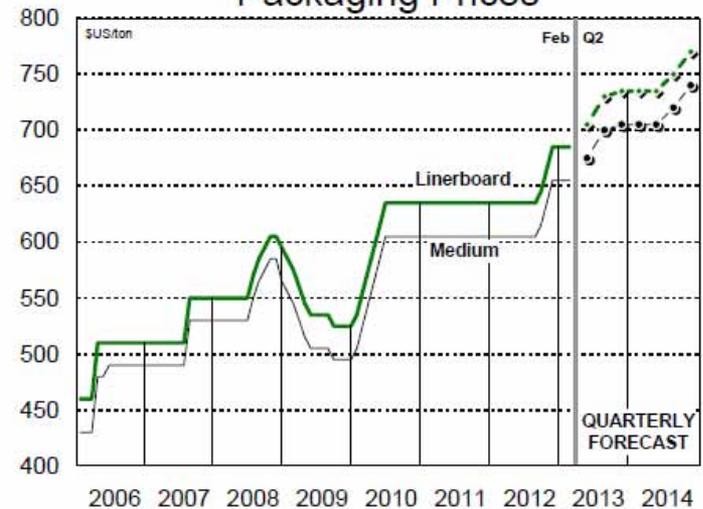
Containerboard Capacity Shares



Source: RISI Cornerstone



Packaging Prices

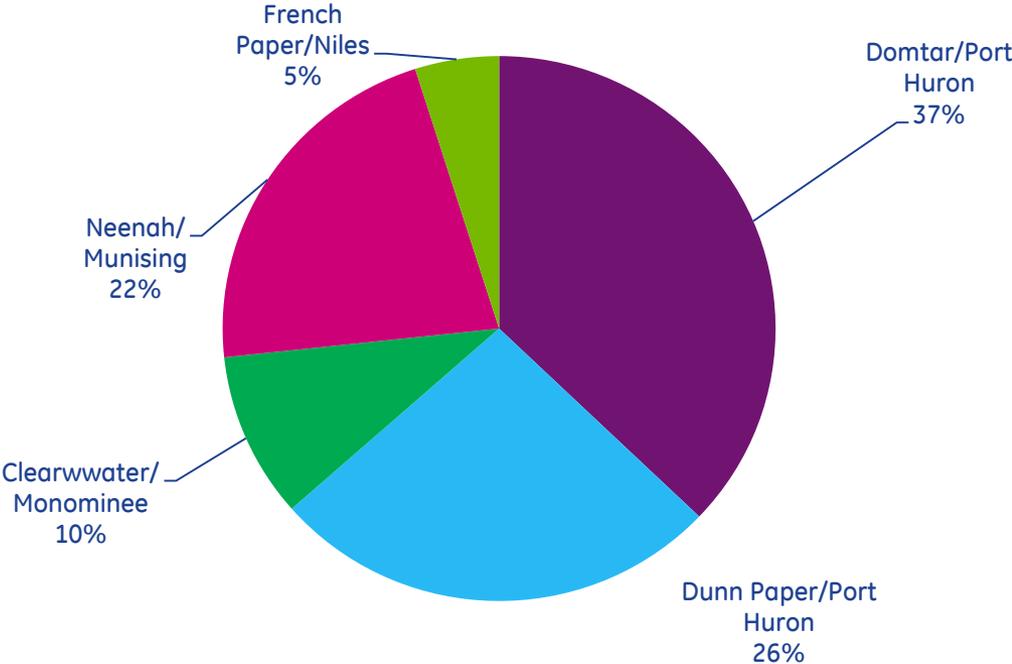


Source: Equity Research Associates

Michigan has entrepreneurial specialty paper mills.

Michigan Specialty Paper Mills

100% = 326 tons/year

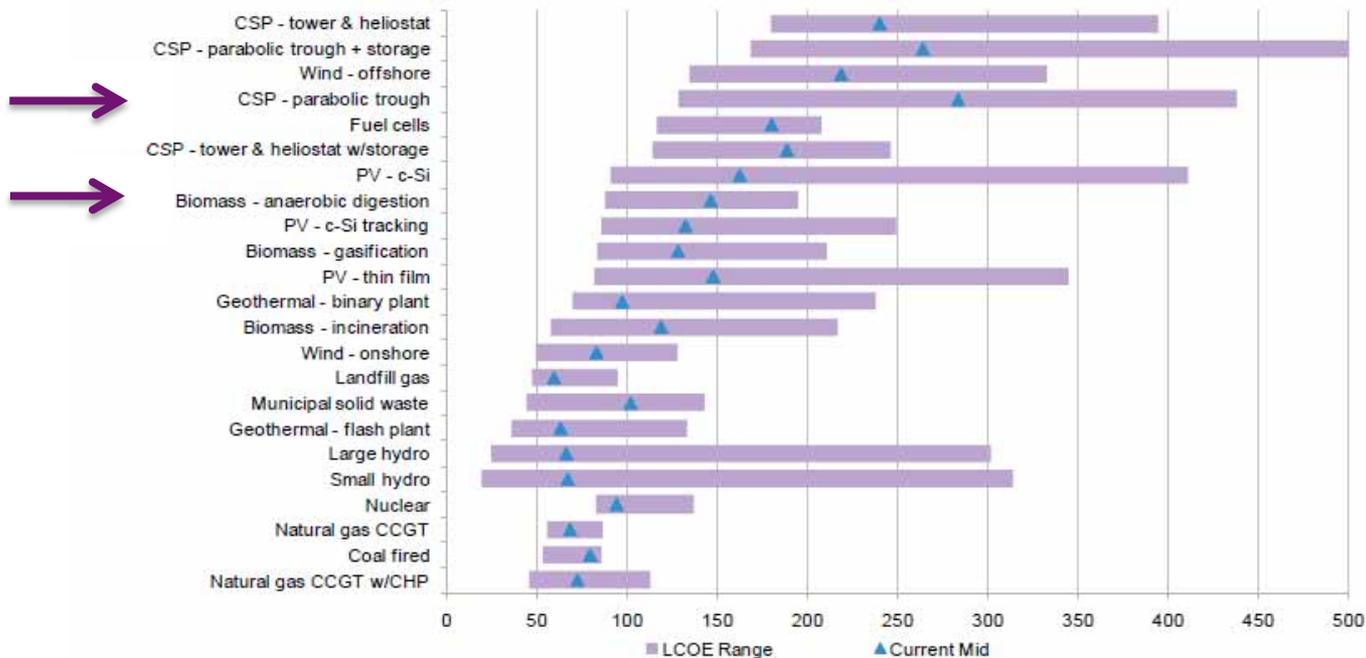


Source: RISI Cornerstone

Biomass Energy

Biomass energy is generally higher cost than fossil fuel alternatives.

Figure 18: Levelized costs of energy across power generation technologies, Q4 2012 (\$/MWh)



Source: Bloomberg New Energy Finance, EIA. Note: LCOE is the per-MWh inflation-adjusted lifecycle cost of producing electricity from a technology assuming a target equity internal rate of return (IRR) of 10%. All figures are derived from Bloomberg New Energy Finance analysis. Analysis is based on numbers derived from actual deals (for inputs pertaining to capital costs per MW) and from interviews with industry participants (for inputs such as debt/equity mix, cost of debt, operating costs, and typical project performance). Capital costs are based on evidence from actual deals, which may or may not have yielded a margin to the sellers of the equipment; the only 'margin' that is assumed for this analysis is 10% equity IRR for project sponsor.

Opportunities for biomass energy

- Free standing biomass energy: difficult to be cost competitive vs. gas fired power plants
- Biomass cogen projects make sense at paper and wood products mill sites
 - Verso Quinnesec mill: \$45MM, 28MW cogen project
 - Sawmill projects
 - Important role of regulation: Renewable Portfolio Standards, Renewable Energy Credit market, other forms of policy support
 - Requirement for power purchase agreement with creditworthy entity
 - Interchange agreement
- Wood gasification technologies
 - Commercialized in Asia, where distributed power is often the economic alternative
 - Developing solutions for North America
 - Somewhat higher cost than biomass incineration; substantially reduced emissions
 - May be optimal solution for some mills



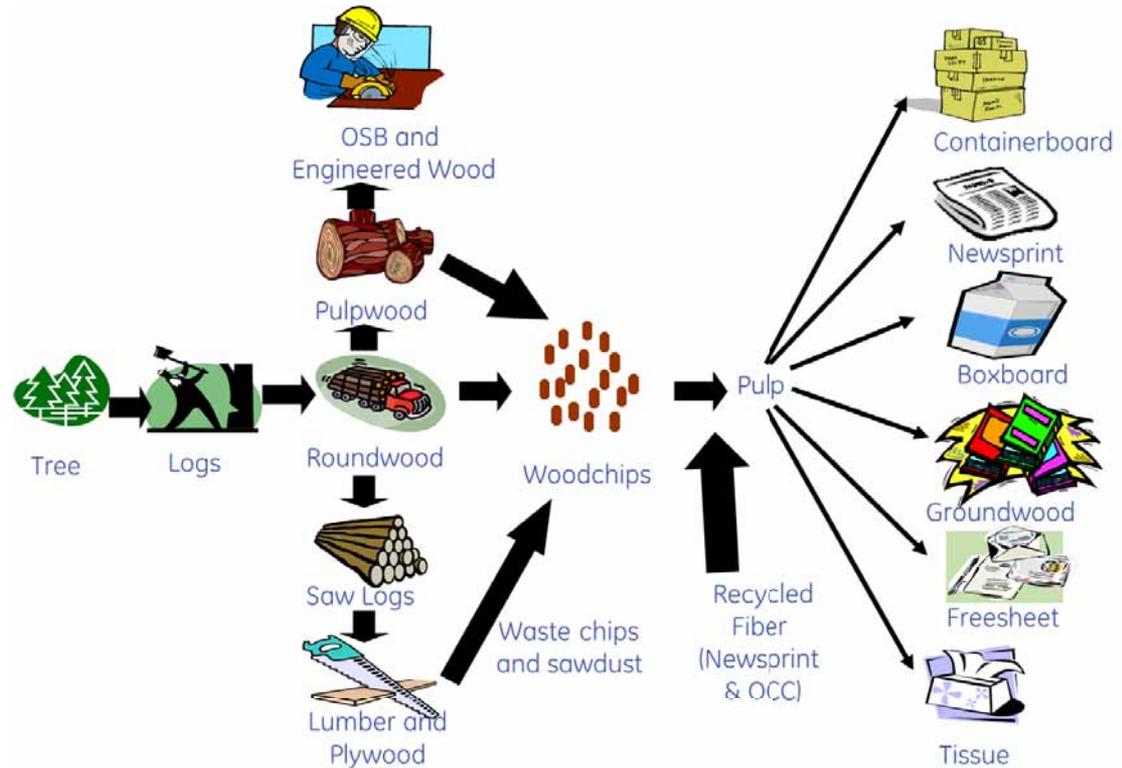
Biofuels and Biochemicals

- Objective: fuels and chemicals that are undifferentiated from current supply- e.g., diesel, gasoline, jet fuel
- Efforts to use wood fiber, e.g., Kior, Zeachem, Mascoma
- Funding sources: Government/DOE grants, venture capital, private equity, corporate R&D, limited public equity
 - Lenders require proven technologies, strategic sponsors, and proven product market and creditworthy offtake
 - Equity difficult to raise
- Risk of unintended consequences of subsidies, renewable standards, other incentive policies



Regional forest products competitiveness requires balanced resource supply and markets

- Markets to fully utilize sustainable timber resource: saw logs, chip and saw, pulpwood
- Mill density to optimize raw material supply; balance of sustainable supply and demand
 - A competitive problem when the average pulpwood haul is >120 miles
- Saw mills need markets for both wood product and residual fiber
 - Chip and sawdust sales: 20% - 30% of sawmill sales
- Can Michigan expand markets for pulpwood and sawmill residuals?
 - New pulp mill unlikely
 - Biomass cogen opportunities at mill sites
 - Impact on cost of fiber for incumbent pulp mills



How can Michiganders support Michigan Forest Products Industry growth?

1. Build awareness of consensus in support of forest products

- Importance to Michigan economy, especially for rural Michigan
- Competitive advantage, especially in hardwoods
- History of cooperation among industry, labor, conservation, recreation interests; balancing of legitimate interests

2. Use timber resource for sustainable business growth

- Economic salvage: Beech Bark Disease, Emerald Ash Borer
- Fiber and log supply to support new mill and bioenergy investment
 - Long term
 - Creative structures
 - Working forest parameters (similar to managed working forest easements) to balance other public policy goals – sustainability, habitat, recreation, aesthetics, water, etc.
- Leverage private sector capital and entrepreneurship within state policy parameters
 - Stumpage sales
 - Longer term concessions?
- Reduce investment risk to attract new investment
 - Long term supply agreements
 - E.g.: Index stumpage prices to final wood product prices

3. Continue to leverage educational and research institutions

- Community Colleges
 - Professional training and certification
 - Rebuild logging labor force
- Leading R&D at academic institutions
 - Michigan Tech, Michigan State, University of Michigan
 - DOE and other research grants



4. Prudently invest in transportation infrastructure

5. Promote export markets for Michigan hardwood lumber

- Within North America
- Globally

