



# Forest Products and the Future of Biodiesel Production

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[fpac.ca](http://fpac.ca)



# Overview

- Forest Industry Transformation
- Bio-Pathways Project
- Renewable Diesel Potential
- Renewable Fuel Regulations

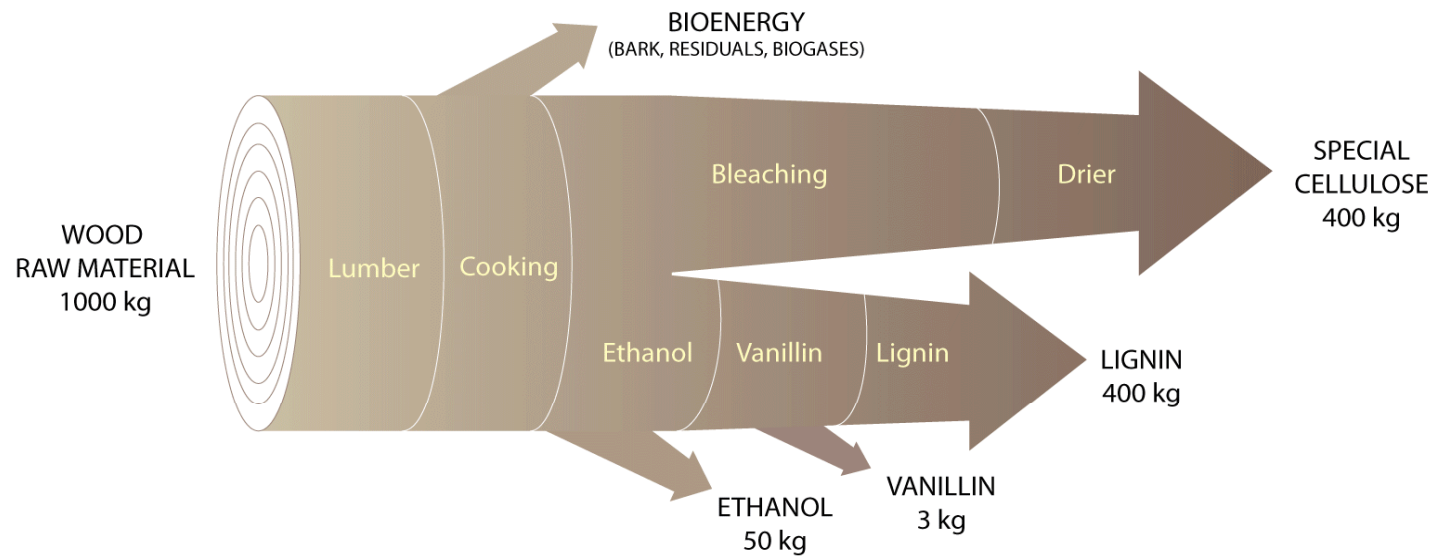


# Core Question

What will Canada's next generation forest industry look like?

# Principle of transformation

## MAXIMIZING THE VALUE OF WOOD RAW MATERIAL



### CONSUMER PRODUCTS

- Cosmetics
- Food
- Medicines
- Textiles
- Filters
- Building materials



### LIGNIN

- Animal food
- Colorants
- Batteries
- Briquettes
- Thickeners
- Compressed products



### VANILLIN

- Food
- Perfumes
- Medicines



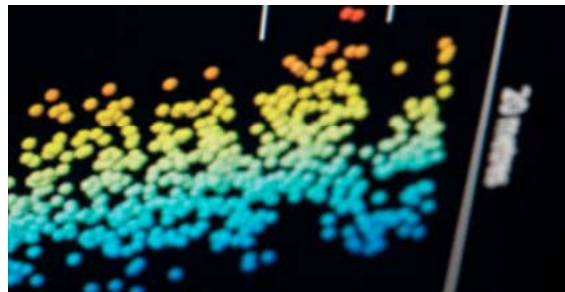
### ETHANOL

- Paint
- Laquer
- Medicines
- Biofuels
- Car service chemicals



# Bio-Pathways Project

- Wide recognition that the current business model is broken
- The project is about:
  - Helping the industry identify the best transformational pathways
  - Informing public policy to help enable this transformation



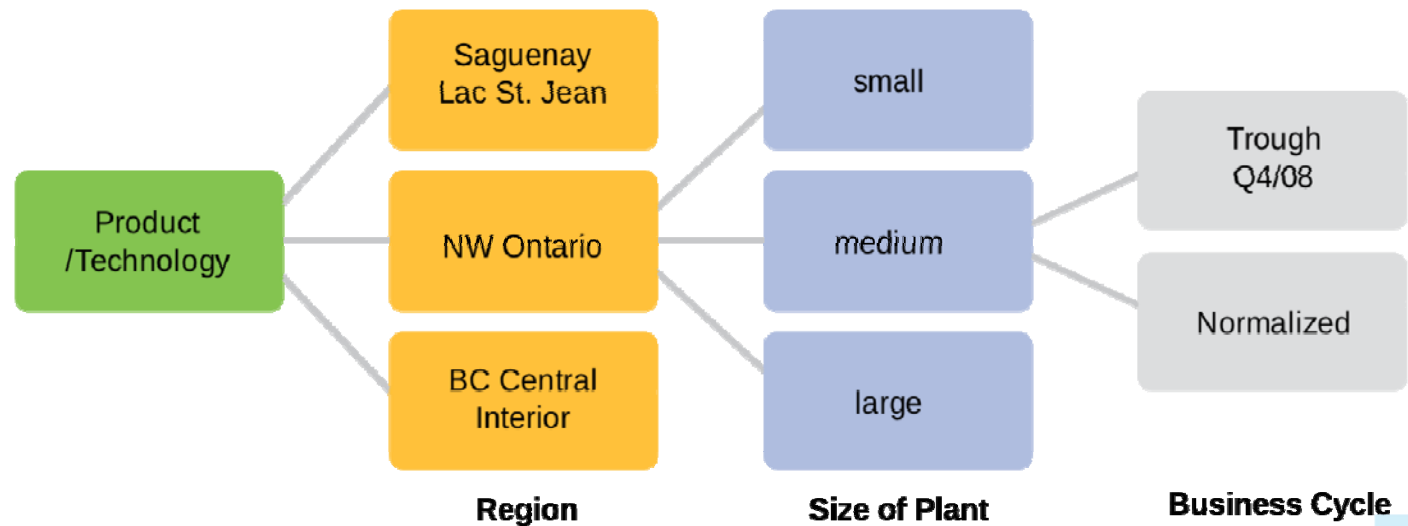
# Overview

- Collaboration between federal and 3 provincial governments, academics, technology suppliers, FPInnovations & FPAC
- First phase conducted in 2009 and covered 3 key activities:
  - Assessing the market readiness of emerging bio-energy and bio-product technologies
  - Quantifying key financial, social and environmental metrics of emerging and existing technologies
  - Analyzing economic fibre supply



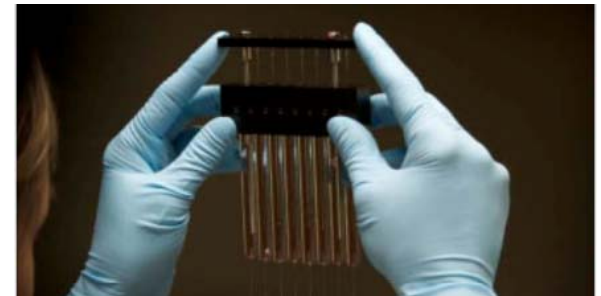
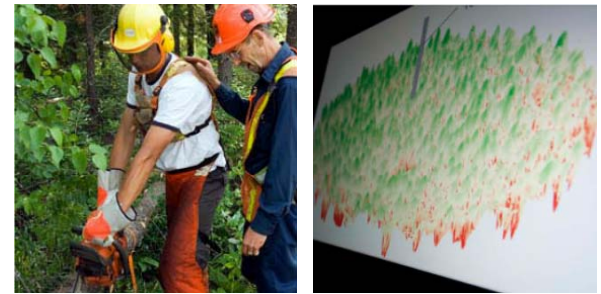
# Sensitivity Analysis

- Analyzed 36 traditional/emerging technologies under different scenarios



# Project Findings (continued)

- We need to change.
- Some traditional products are not expected to earn an acceptable ROCE in a normalized environment
- The outlook for the lumber segment is strong, and it provides the cornerstone for a competitive forest *and* bio-energy industry.





# Project Findings (continued)

- The pulp & paper segment has the potential to be transformed under a bio-refinery scenario to generate acceptable financial results.
- Almost all bio-energy and bio-chemical options are more economically attractive when integrated with forest industry operations.





# Project Findings (continued)

- The forest industry has employment multipliers that are dramatically higher than those offered by the bulk production of bio-energy.
- Establishing partnerships will be critical to accelerating the industry's transformation
- Innovation being led by others; traditional forest industry responding

# Response

- Overwhelming support across Canada for project and vision it outlines
- Companies are responding
- Providing needed info to federal and provincial governments for program and policy design
  - e.g. IFIT program
- Capturing attention of others
  - Chemical, technology, energy companies

# Phase II

- Launched April 30th
- Exploring market potential for emerging technologies
- Exploring business models for delivering these new products
- Establishing Biopathways Partnership Network
- Identifying 'roadmaps' for transformation for various production methods
- Results to be delivered in new year



# Synthetic Diesel

- Sufficient forest residues in Canada to supply B5 to the entire country
  - 20% of all residues required but how much is economic or feasible?
- Biomass gasification/Fischer-Tropsch (FT) conversion creates syn-diesel
- Syn-diesel has better attributes than bio-diesel derived from organic oils
  - Chemically indistinguishable from diesel → drop-in fuel
  - No gelling in cold weather
- Economic issues
  - Plant scale vs feedstock costs
  - Co-products (heat/electricity and naphtha) critical to returns

# Usability of biodiesel

- FPInnovations has conducted a number of field tests. Results from latest study are:
  - Tests performed in cold weather, down to  $-31.4^{\circ}\text{C}$
  - +370,000 L consumed and +13,000 hours logged
  - Use of B2-B10 blends requires little to no preparation by user
  - Machine productivity not affected, feedback from operator was positive, no downtime encountered
  - In-line blending is preferred
  - Recommendations as guidance of best practices



# Renewable Fuel Regulations

- Technology and feedstock neutrality important to let market determine the supply mix
  - Not entirely sure that was achieved but time will tell
- Too narrow restriction on thermal applications (i.e. exclusion of industrial heating)

# FPAC Members



Canfor Pulp Limited Partnership



AV Group  
Fibres from nature



M E R C E R



Cariboo  
Cariboo Pulp & Paper Company

