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Bay Side

BIOREFINERY

Group 1

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CORNERBROOK, NL

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Population: 19, 333

Agriculture

Forestry

Fishery

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THE NEED FOR SUSTAINABLE ENERGY

02

- Reliance on Hydropower
- Current problems
- Environmental Disruption
- Climate Change Mitigation

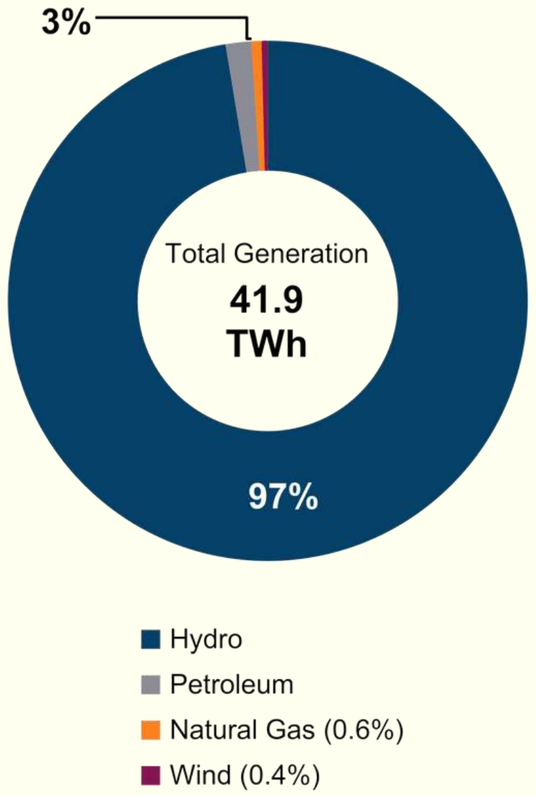

Figure 1: Electricity Generation Mix in NL (2023)

Canada Energy Regulator. Provincial and Territorial Energy Profiles: Newfoundland and Labrador. https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-newfoundland-labrador.html

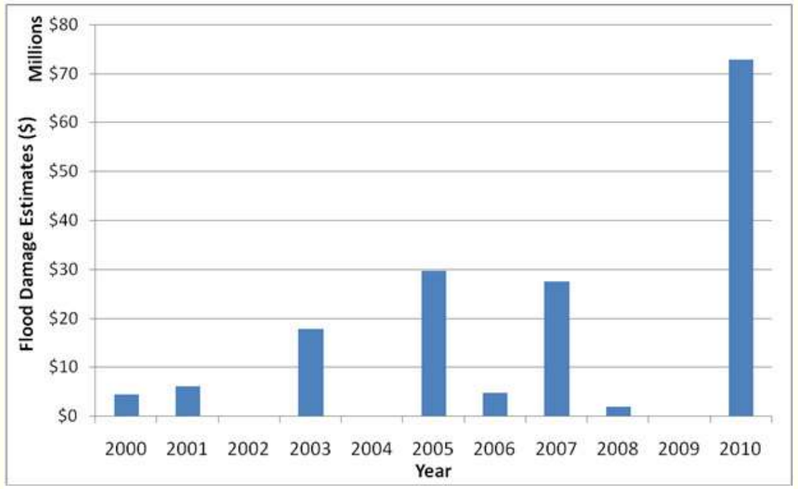

Figure 2: Total DFAA Flood Damage Estimates in Newfoundland (2000–2010)

Government of Newfoundland and Labrador. Flooding in Newfoundland and Labrador. https://www.gov.nl.ca/ecc/waterres/flooding/flooding/

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03

ENVIRONMENTAL FACTORS

Google Earth Pro version 7.3.6 (10/6/2023). Map of Corner Brook, Newfoundland and Labrador. 48°57'18.47"N 57°57'02.31"W, 1.21km. (February 13, 2025)"

Land Factors

Proposed area includes/needs:

- Specific Climate Conditions
- Geological composition
- Elevation and Slope

Emissions and Resources

Considerations:

- Carbon dioxide emissions
- Water consumption and requirements

IMPACT ON ECOLOGY & SOCIETY

04

Use of existing forestry residues and CBPP waste to reduce growing landfills

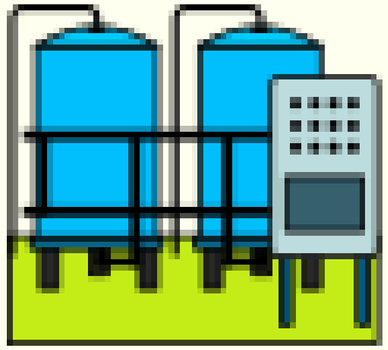
Job opportunities across multiple sectors

Reduce CO_2 emissions to expand species' realized niches and reduce disruption

TECHNOLOGY OVERVIEW

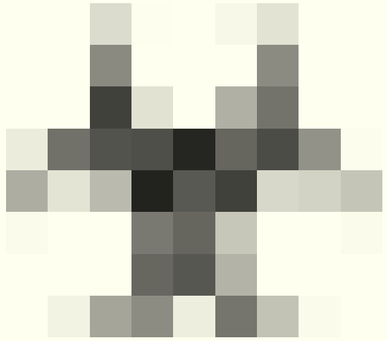
Sourcing

- CBPP
- Sawmills
- Agricultural Waste



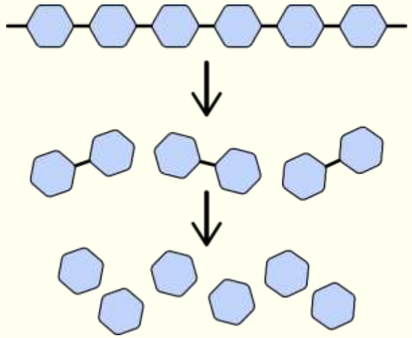
Pre-treatment

- Steam Explosion
- Disrupt Struture



Detox.

- pH Modulation
- intermediate step



E.H.

- Breakdown
- Sugar Yields

Fermentation

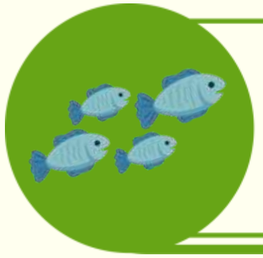
- Bacteria + Yeast
- Glycolysis
- Ethanol production

BIOMASS AVAILABILITY

41, 211 tonnes of forestry waste / year

47 500 tonnes of paper sludge / year

150 000 tonnes of organic waste / year



149 960 tonnes of fishery waste / year

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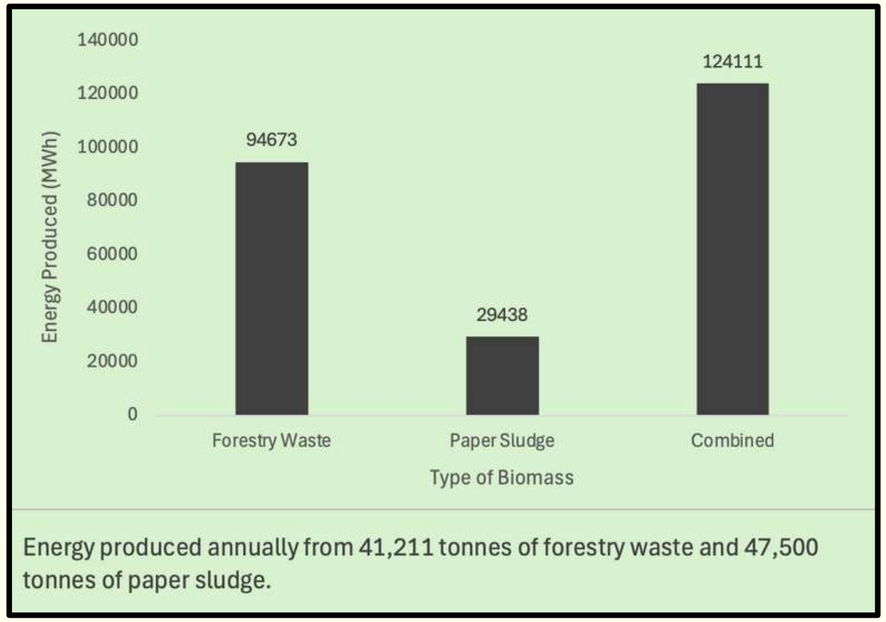
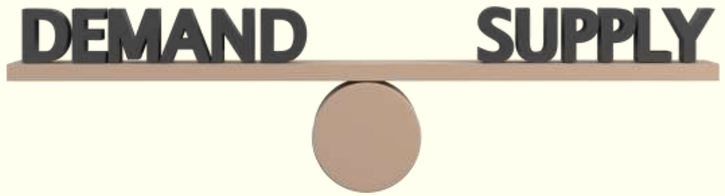
ENERGY SUPPLY & DEMAND

- 124 GWh energy output, meeting the meetingdemands
- Accounts for biomass, sugar yield, fermentation, ethanol content
- Enzymes improve sugar conversion, reduce processing time
- Gompertz Model for ethanol monitoring and optimization
- Expanded feedstock enhances sustainability, energy security



Energy produced annually from 41,211 tonnes of forestry waste and 47,500 tonnes of paper sludge.



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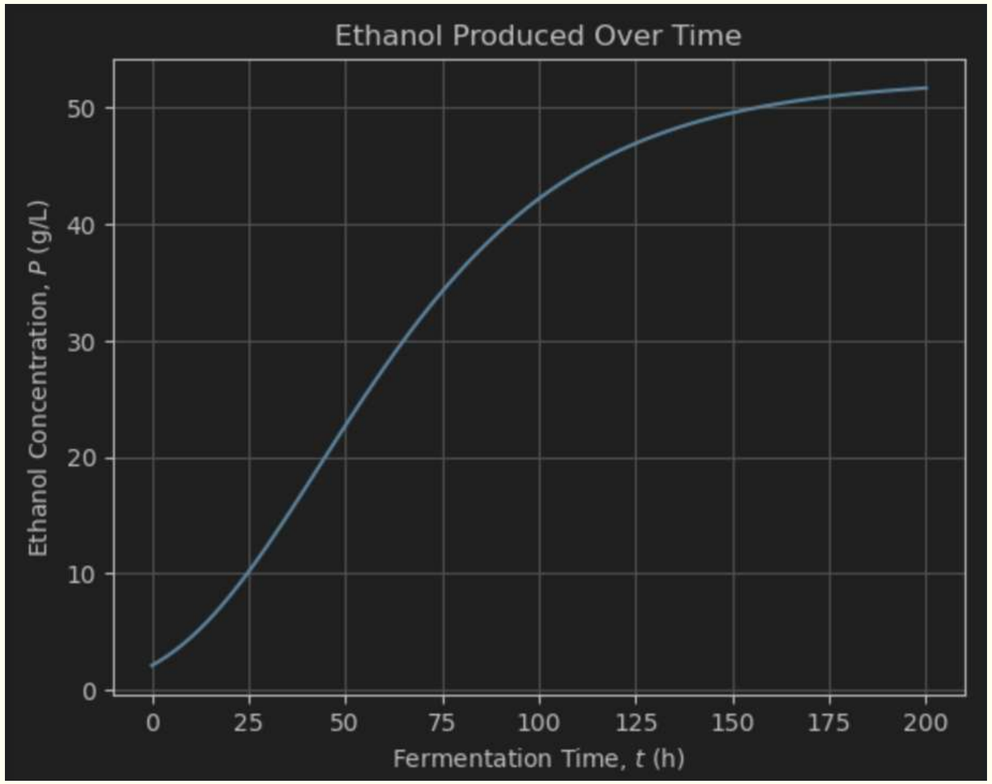
ENERGY SUPPLY & DEMAND

Modified Gompertz Model

$$P = 52.47 \exp\left\{-\exp\left[\frac{0.52e}{52.47} \cdot (6.31 - t) + 1\right]\right\}$$



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ECONOMIC FEASIBILITY

- Job Creation
- Market Demand
- Centralized Infrastructure
- Boosted Local Forestry & Agriculture
- Enhanced Export Potential

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09

NEXT STEPS

Further research
Chemical Kinetics
Genetically modified enzymes

Securing funding & investment opportunities

Public awareness & community involvement

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QUESTION AND ANSWERS

We value your insights and queries. Now, it's time to open the floor for questions and discussions

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THANK YOU I-DRAGONS

For further inquiries or collaborations, feel free to reach out.
Your ideas and enthusiasm drive positive change.

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