

A painting of a forested landscape. In the foreground, there are several tall, dark evergreen trees. Behind them, a body of water, possibly a lake or a wide river, stretches across the middle ground. The background is dominated by large, rounded mountains covered in dense forest. The colors are muted and somewhat desaturated, with a lot of browns, greys, and soft blues. The overall style is impressionistic and somewhat somber.

“Bioeconomy in Eastern Ontario”

An update on the Ontario East Wood Centre

June 27, 2023

Naturalized Knowledge System (NKS) is our Framework

- The Earth is our Mother
- Cooperation is the way to survive
- Knowledge is powerful but only when it is shared
- The spiritual world is not distant from Earth
- Responsibility is the best practice
- Everything is connected to everything and
- Place is important!

Dr. Henry Lickers, Commissioner
with the
International Joint Commission



Queen's TEAM 2020



SEVEN GENERATIONS

SUSTAINABLE HOUSING
FOR INDIGENOUS
COMMUNITIES



PREPARED BY
JULIA HENDREN
BRIE MIKLAUCIC
RYAN SAMPSON
ABBY SYPES

TEAM

- Housing for Seven Generations: Project Scope: to prepare a plan of action for sustainable housing, waste water and drinking water and cultural and climate considerations
- The pro-bono architect was unable to prepare the required design and drawings but the students were able to prepare an excellent report on all other requirements.
- The pandemic meant a delay - however proved to be a benefit as our research lead us to the decision that the building materials must be mass timber,
- Research and collaboration led to collaboration with University of Toronto and the Daniels Mass Timber Institute.

Is there Potential for Mass Timber in Eastern Ontario?

- “My short answer is a loud yes. I’ve been a fan of the enormous forestry accomplishments of Eastern Ontario through the leadership of people such as Brian Barkley, Wade Knight, Henry Likers, Sheldon Davis, John Pineau, Barb and Eric Boysen, John Iverson, Wayne Young and many more. Eastern Ontario has the human and forest resources to be successful in the mass timber sector.
- In Canada surprisingly we have a very undeveloped mass timber sector, with Ontario lagging far behind Quebec and British Columbia, even though 40 % of the Canadian construction market is in the GTA.
- If there is one reason I can point to for Canadian underperformance, it is the absence of public investment in the mass timber enterprise, most apparently in Ontario. This ignores the compelling reasons for doing so: mass timber is an important future direction for the construction and forest industries; mass timber is at the intersection for solutions to some of Ontario’s most difficult problems- climate change and affordable housing; Eastern Ontario experiences regional economic disparity and it is argued that the benefits of mass timber do not stay in Toronto but flow also to the rural and northern communities through forestry, transportation and mills.
- At the Mass Timber Institute we support education and research for the sector and attempt to connect some of the dots among academics, government, and industry. We would not do so if we thought Ontario’s wood supply could not sustainably support mass timber. I would point you to our Mass Timber Today podcasts on our website and our interview with Lacey Rose, Forester for Renfrew, to give you an idea of the questions we think are important to discuss. <https://academic.daniels.utoronto.ca/masstimberinstitute/the-mass-timber-today-podcast/>
- Good luck with the work of the OEWC and the EOMF and I hope that we can find projects on which to collaborate."

Dr. Anne Koven
Director Mass Timber Institute and
Adjunct Professor at University of Toronto

More News to June 27, 2023

1. Continued work of Housing for Seven Generation Initiative – re-engaging supporters such as Carleton University, First Nation architects and public and private
2. Joe Hendricks and the Bioindustrial Innovation Canada – Symposium on August 31, 2017 in Maitland with Sandy Marshall of BIN Canada as Keynote Speaker – success – led to
3. Have been unable to engage “THE Corridor “ an economic development initiative for Seven Municipalities along the Upper St. Lawrence River. Their original goal was to expand “bio-industry” but it has now expanded and this is no longer the case.
4. Jeff Passmore, Founding Chair has announced that “Scaling Up 2023” will be on November 6-8 in Ottawa; <https://www.scalingupconference.ca>
5. We have been successful in having a panel included in the Ontario East Municipal Conference September 6-8 <https://oemc.ca> as follows:
 - **Title:** Harnessing the Bioeconomy to meet the challenges facing Eastern Ontario and Mother Earth
 - **Speakers:**
 - Dr. Henry Lickers, Commissioner of IJC
 - Jeff Passmore, Scaling Up
 - Doug Cleary of Clearydale
 - Ray Bonenberg - Ontario Maple Association
 - **Description:** Our four panelists will describe how Eastern Ontario communities are strategically placed to address the challenges of a changing climate and the resulting world-wide crises. Their knowledge of industry, agriculture, government and international affairs will be inspirational. They will describe how technical expertise, realism and concern for Seven Generations have the capacity to come together for the bioeconomy of Ontario East’s unique small urban and rural communities. We will learn more about the most advanced approaches to economic, industrial, agricultural and human development. The pandemic has taught us many things about economic development – not the least of which is “co-operation is the way to survive” and “knowledge is powerful but only when it is shared!”

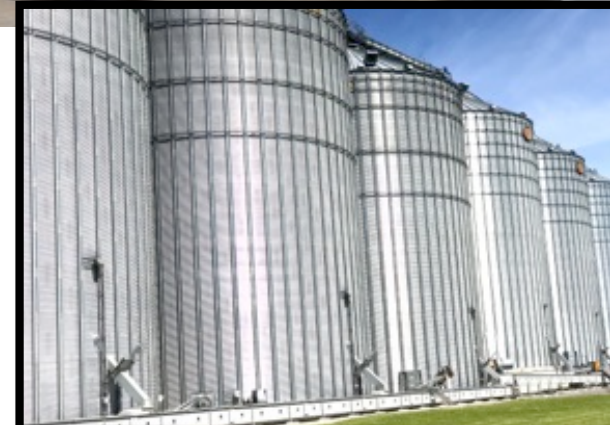
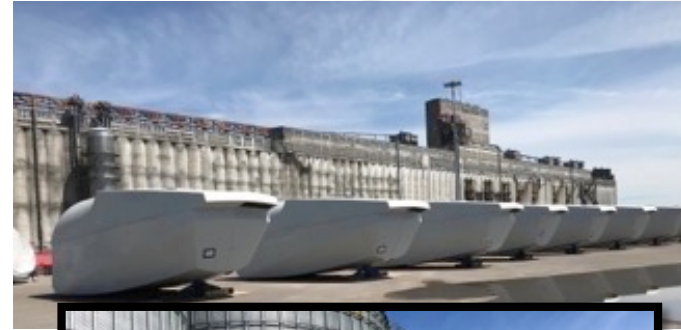
News cont'd

- TEAM Maple from Queen's University - completed in April 2018 – well rec'd in various quarters
- Our team of four fourth-year chemical engineering students and one fourth-year business student conducted a feasibility analysis of the advanced processing, refining, developing, and promotion of a variety of products from the sugar maple tree. The maple industry, widely controlled by Quebec, motivates Eastern Ontario to improve, renew, and expand their techniques used to process, boil, and endorse high-quality maple products. Whilst testing for process feasibility, research to examine the compounds, flavours, and health benefits of the maple sap will be conducted to emphasize its nutritional importance and thus another influence of the indigenous people on Canada's cultural fabric.
- Our study has been provided to Pat Remillard at Kemptville Campus and maple producers and executives: Ray Bonenberg, Brian Barkley and Dave Chapeskie. It will now be more widely circulated.
- **N.B. The cross-border impacts on the syrup sector are interesting to consider. The Canadian tariff will hit their producers, reducing their prices and it will be a lag before US packers up their capacity to fill the void in the US market. That will likely slow US tap installations and lead to some existing producers to cease tapping. Meanwhile we (Canada) continue to sell into the US for the moment and with 85% of the world market share plus the current escalating anti-US sentiments in EU and Asia things are well positioned. A new Ontario based facility would likely have started with a focus on US market since it is nearby and a no-brainer but that may change given the current climate. So the complexity has jumped up for anyone thinking of investing in processing capacity. Having said that, it might be a good time for someone here to jump into it.**



And more news yet

- Unveiling of the Polar Prince mural on June 22, 2018 in Brockville - an opportunity to emphasize the importance of the Indigenous people and the connections with the River, the Canadian Coast Guard and the hard wood forests.
- An application for the designation of the upper St. Lawrence as a Canadian Heritage River is currently under active consideration
- Once again Dr. Henry Lickers was an active inspiration – as “everything is connected to everything else.”



Climate Change and our Forests

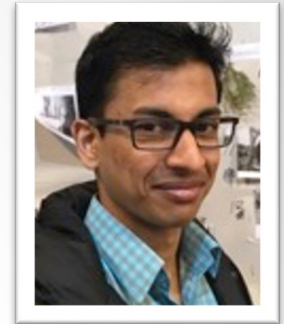
- Canada's forests cover a greater land area and store more carbon than do the forests of almost any other nation. How Canada manages its forests is therefore a global concern. Recognizing this responsibility, Canada is actively engaged in international negotiations on climate. It is also involved in numerous research and monitoring projects aimed at understanding how climate change will affect forests and how forest changes will in turn affect climate.
- In Ontario, harnessing the potential of our forests – both hardwood and boreal could play a key role in achieving Ontario's climate change targets. The mixed wood forests (hardwood and mostly private) of Eastern Ontario are the most significant in North America. MNR's attention should also include a rigorous consideration of the hard wood forests in Eastern Ontario, not just for their economic, environmental and quality of life values but also their role in carbon storage and management. Eastern Ontarians are looking for a more aggressive position from the Ministry in these matters. In 2023 the 1998 Ice Storm in Eastern Ontario still serves as a dramatic wake-up call! The EOMF was very involved in the recovery process. Ron Evers rec'd the Ross Silverside's award in part because of his role in the ICE Storm recovery!!

Queen's support for OEWC - essential

- Queen's projects include:
 - Queen's Business Consulting assisted with Wood Science Innovation Business Plan
 - Business Law Consulting helped establish incorporation
 - We were a Moneison Centre (School of Business) Knowledge in Society project
 - Two (Chemical Engineering) CHEE 470 courses based on OEWC
 - CHEE 310 course based on OEWC

Interdisciplinary TEAM projects include:

- TEAM Maple 2017/2018
- Production of furfural
- Pellet production
- Housing Components to Asia
- GreenHouse at GreenField
- Hosting meetings e.g. with Ecole Polytechnique and SUNY professors
- Queen's Conference on a Low Carbon Future for Eastern Ontario; highlighting OEWC



- Queen's continues to provide support and inspiration;



University of Toronto Faculty of Forestry: consistent support

- U of Toronto Eastern Ontario Biomass Natural Science and Engineering Research Council; project complete
- Dr. Sally Krigstin - involved with OEWC from beginning
- Professor Mohini Sain: “Involve us wherever you will find our expertise fits.”
 - Bio-plastic research and development
 - Cellulose based micro and nano composite technology
 - Industrial biomaterials and Bio composites Manufacturing
 - Biomass Technology – value added utilization of residual biomass
 - Keenly aware of the importance and challenge of commercialization

University of Toronto Forestry Service



Canadian Forest Service and Canada's Bioeconomy

- Canada's Bioeconomy address at Biorenewable Deployment Consortium 2016 Fall Symposium in Washington spelled it out clearly
- Economic Renewable Processes Natural Resources Canada; Inventive by Nature was the title
- Focus on emerging bioeconomy
- White House directive and McKinley Report will keep us on our toes.
- [Executive Order on Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy | The White House](#)
- [The Bio Revolution: Innovations transforming economies, societies, and our lives | McKinsey](#)



The Bioeconomy is economic activity based on the production of next-generation products and includes energy from biomass:

- Bioenergy
- Next generation wood products
- Biochemicals
- Biofuels and biocomposites
- Agricultural innovation



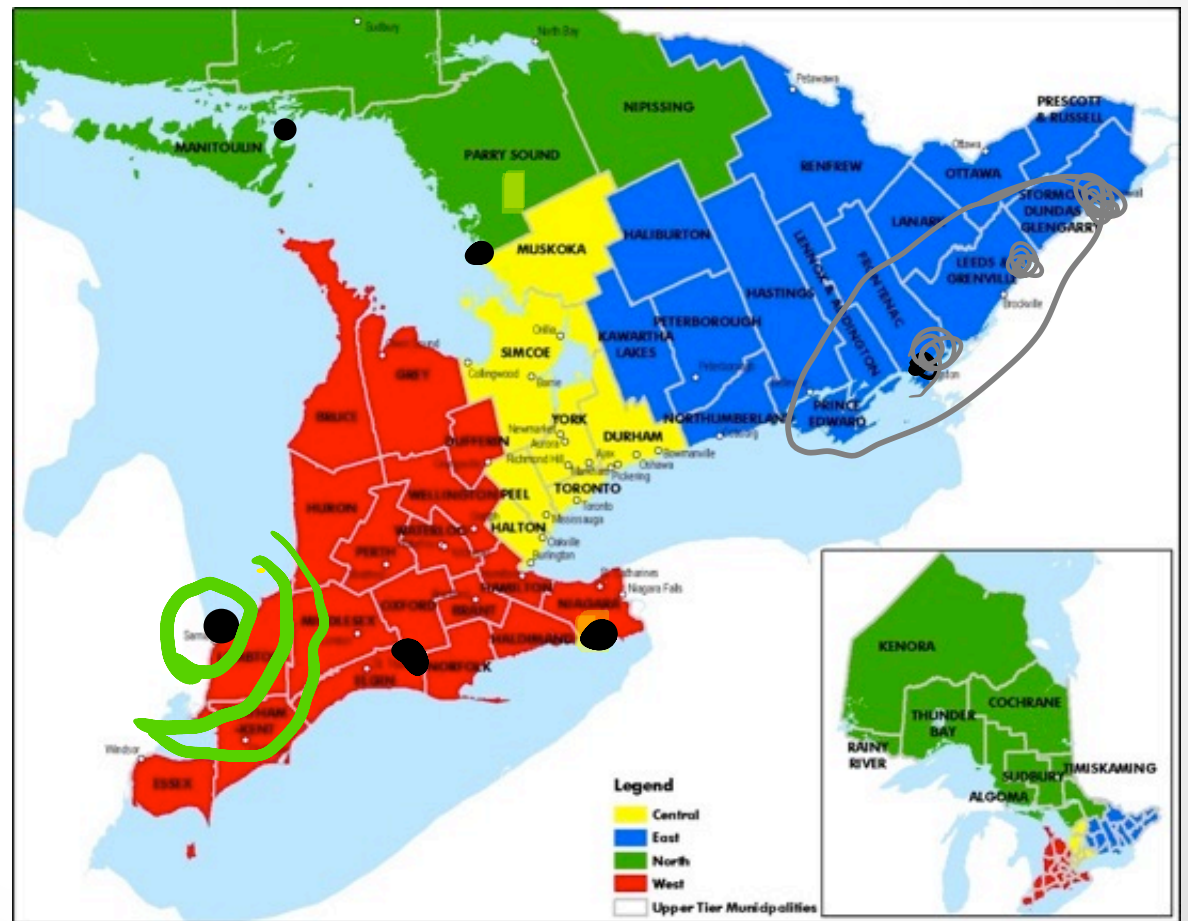
Synergies between the bioeconomy and the federal government agenda include:

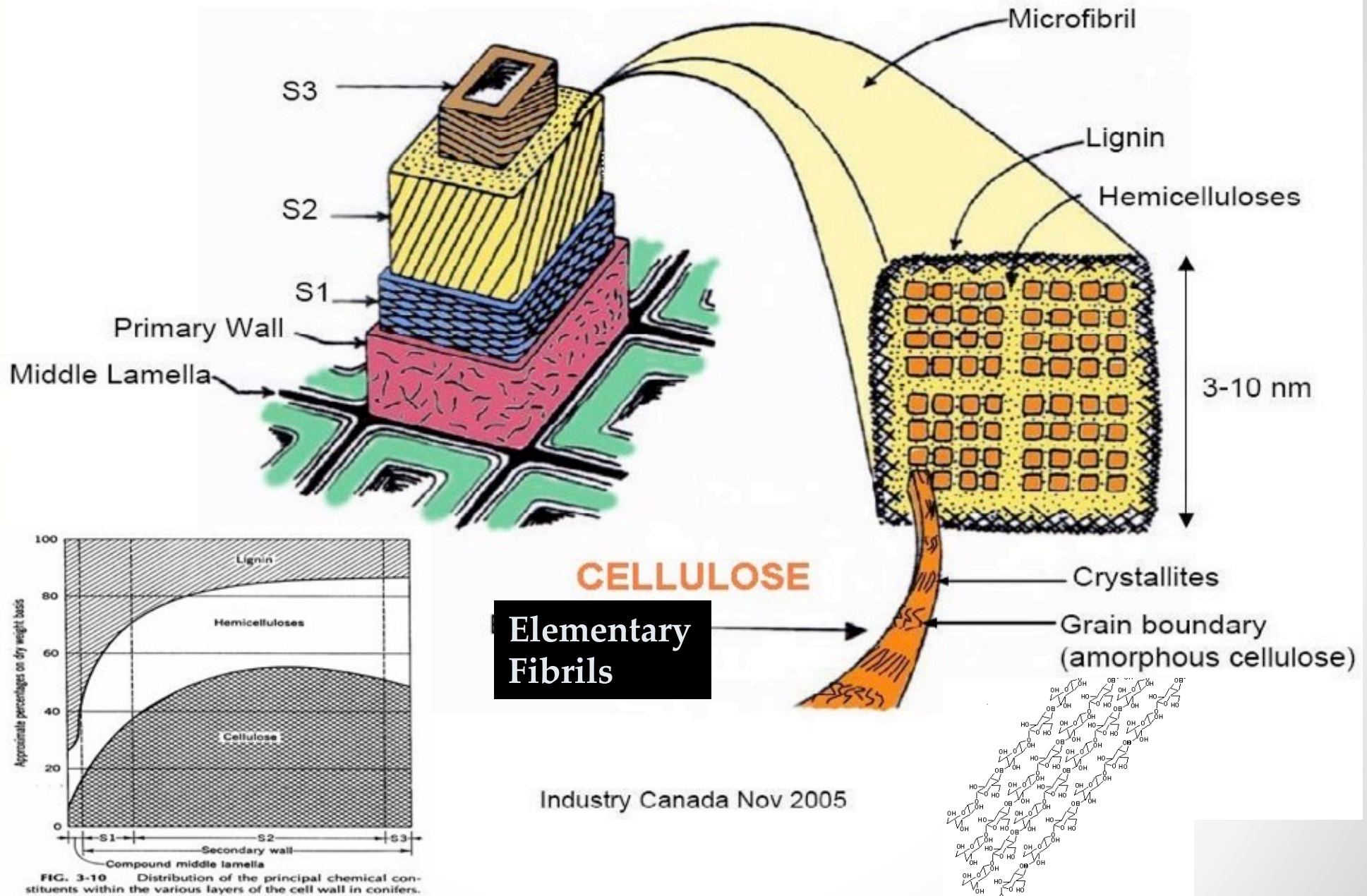
- Protecting the environment and growing the economy,
- Reducing carbon pollution and
- Making strategic investments in clean technology, providing more support for companies seeking to export those technologies and leading by example in their use.

from "Canada's Bioeconomy; BDC 2016 fall symposium, Economic Renewable Processes,"
Natural Resources Canada, Inventive by Nature"

A BIOECONOMY FUTURE for Eastern Ontario – see separate reports

BIOECONOMY
CLUSTER
OPPORTUNITIES

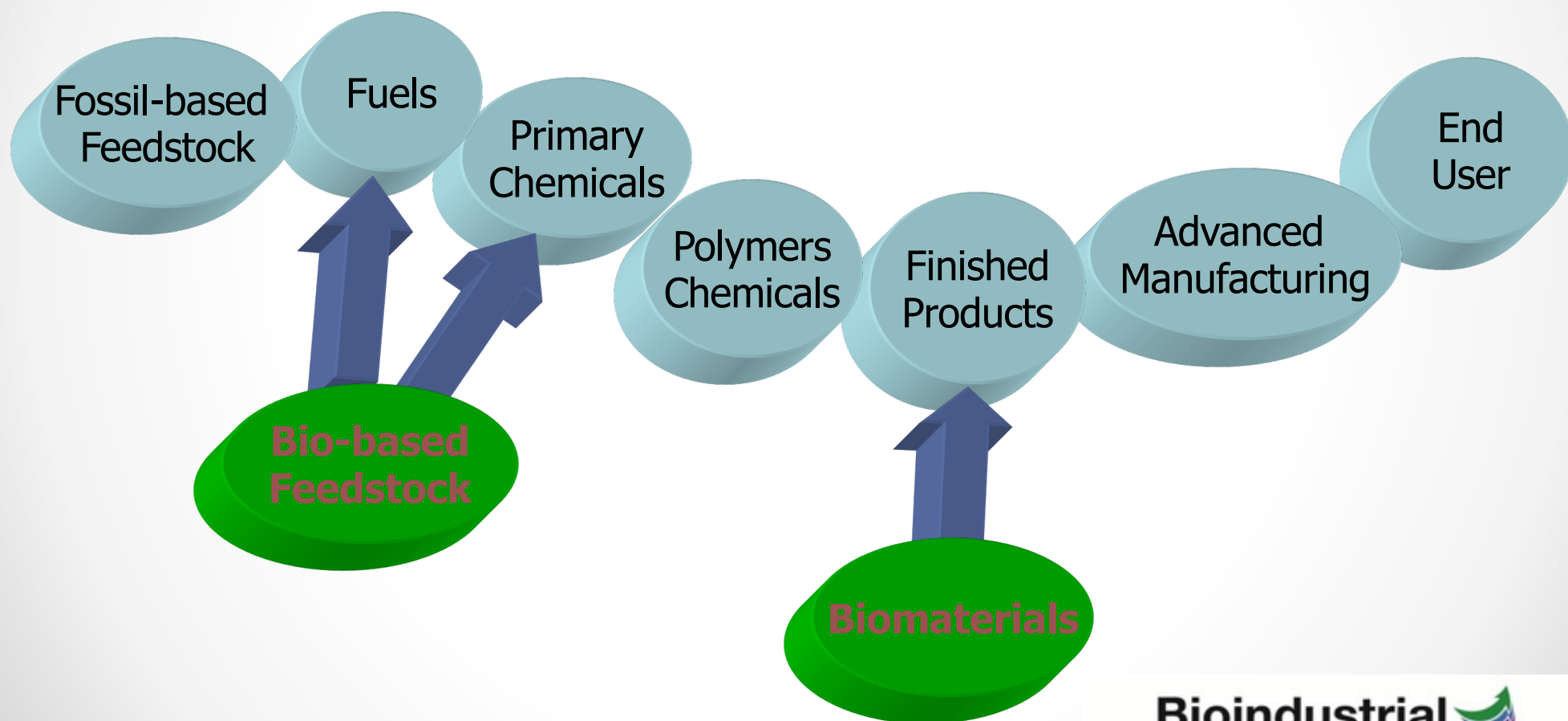




Industry Canada Nov 2005

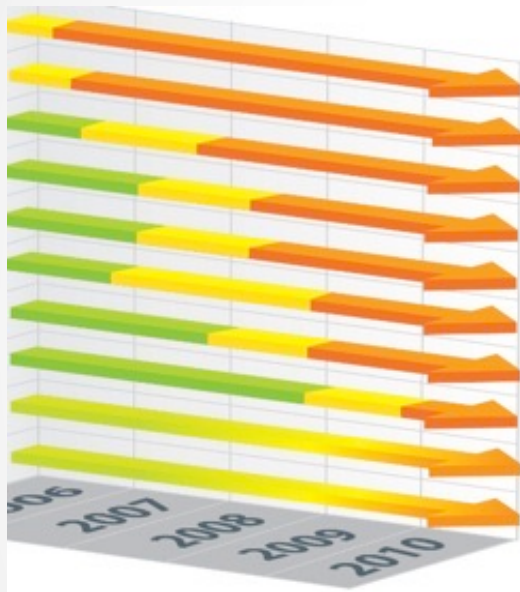
Integrating into the Hybrid Chemistry Value Chain

Creating jobs and economic prosperity



Finding the path to jobs and growth (cont'd.)

This co-evolution shifts the relative **importance** and **composition** of the three components of *value creation*.



- Supply Chain
- Technology Platform
- Value Proposition

1. Value Proposition

- Functionality; Price; Compatibility; and, Ease-of-Use

2. Technology

- The know-how to transform '**nuts & bolts**' into products & services

3. Industrial Supply Chain

- The **structures & practices** to *create, produce, operate* and *support* product and service applications.

- Success is **systemic**, demanding the **full realignment** of all three as market penetration increases.

Priorities to advance the Ontario Bio-economy

Where to put our focus

1. Ontario needs to develop a well-articulated vision and integrated approach for the bio-economy
2. Commercialization of first generation technologies remains challenging, access to capital and fostering risk-sharing with government must be a priority to bridge the valley of death
3. A top priority is demonstrating success in commercialization of technology in Ontario... **BIC** has a proven track record supporting the emerging bio-economy
4. GHG – Green House gases
 -

... more environmentally sustainable



- Renewable resource base
- Lower net GHG emissions
- Biodegradable

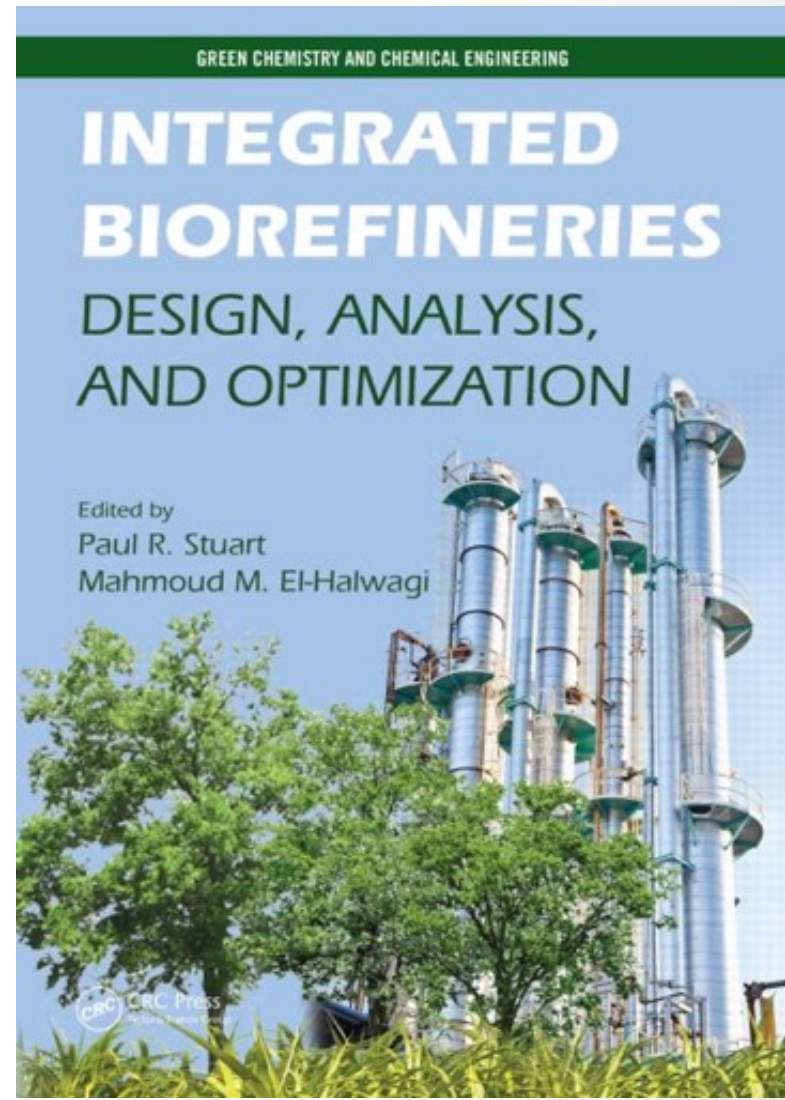


Polytechnique Montréal leading

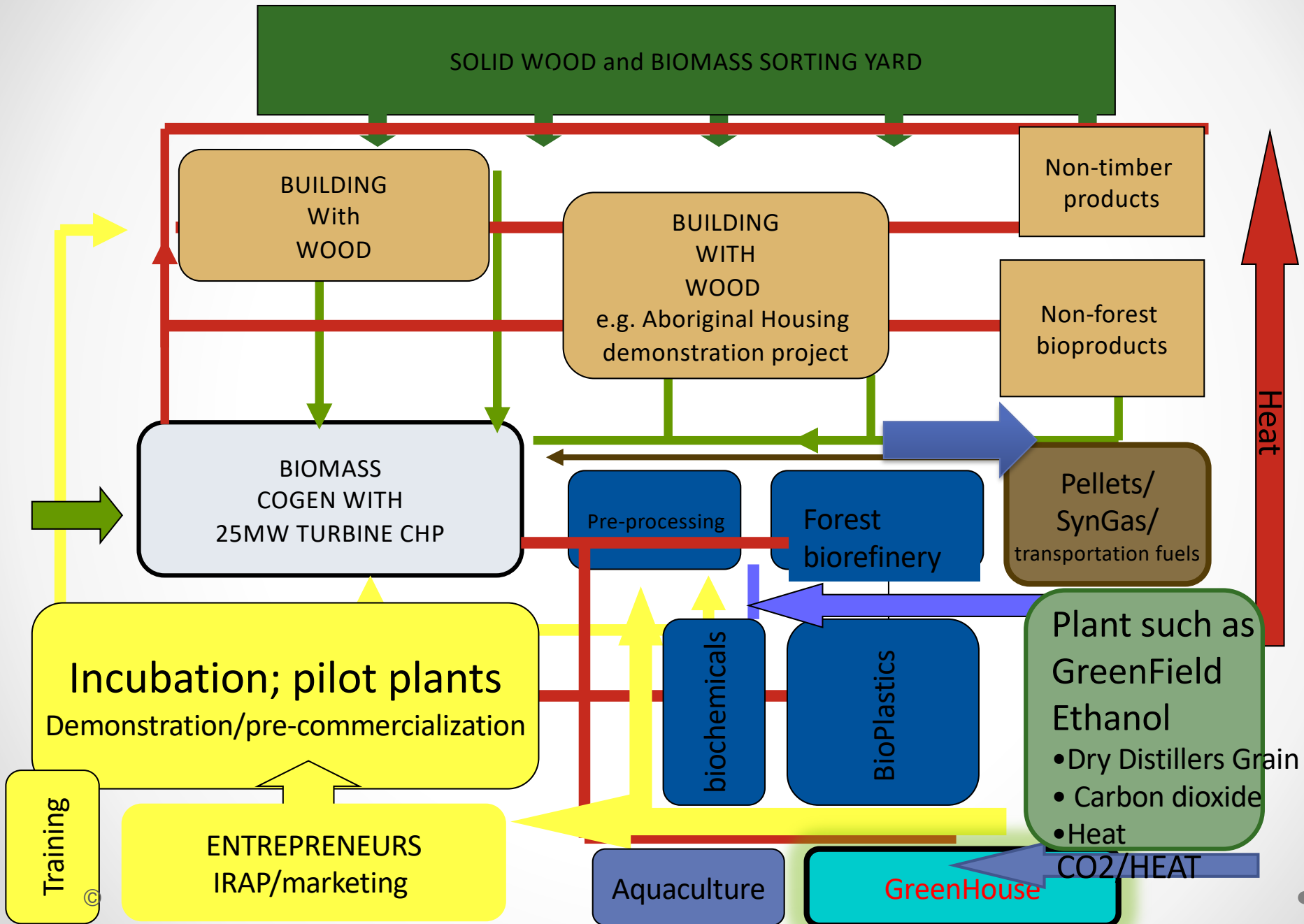
Integrated Biorefineries: Design, Analysis, and Optimization

Biorefineries are likely to play increasingly significant roles and have greater economic, environmental, and societal impact. Leading experts from around the world working in design, synthesis, and optimization of integrated biorefineries present the various aspects of this complex process, capturing the state of the art in the advancing bioeconomy. The chapters cover biorefinery product and process design, supply chains, process analysis, feedstocks, technologies, and policy and environmental analysis.

<http://www.crcpress.com/product/isbn/9781439803462>



A model of a bio-based cluster



Port of Johnstown



Port of Johnstown:
\$34 millions of federal and provincial money has gone into
making this an important Eastern Ontario Asset:
see: <http://www.portofjohnstown.com>



A 50 year old cluster—now successfully welcoming the bioeconomy



An existing industrial cluster and available lands



Bioenergy from wood

- Opportunities for advanced approaches to Combined Heat and Power in northern and remote communities
- FPInnovations useful Info Notes on “Small-Scale Biomass Combined Heat and Power”
 - A Primer
 - Design and economics
 - Technical and Economic Aspects
- For example: Heideman Forest Services in Eagonville and Pembroke heats their various facilities using energy from wood pellets
- Their long term plan is to have a pellet mill at their Eagonville facility



Ferguson Tree Nursery going strong but Province threatening closure of Ontario Tree Seed Plant

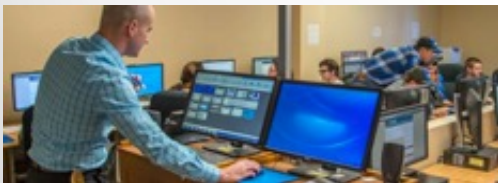


- EOMF approached Minister of Natural Resources – persuaded Government not to turn the Ferguson Forest Station into a golf course!!
- still shipping over 1.5 million bareroot seedlings each year
- Container stock production for crown land reforestation is increasing beyond current capabilities,
- Cutting production has almost disappeared, there is currently little demand for Hybrid Poplar or Willow cuttings except for occasional landfill remuneration plantings. But they plan to maintain some stoolbeds – “I think we might see more options in the future.”

Ed Patchell



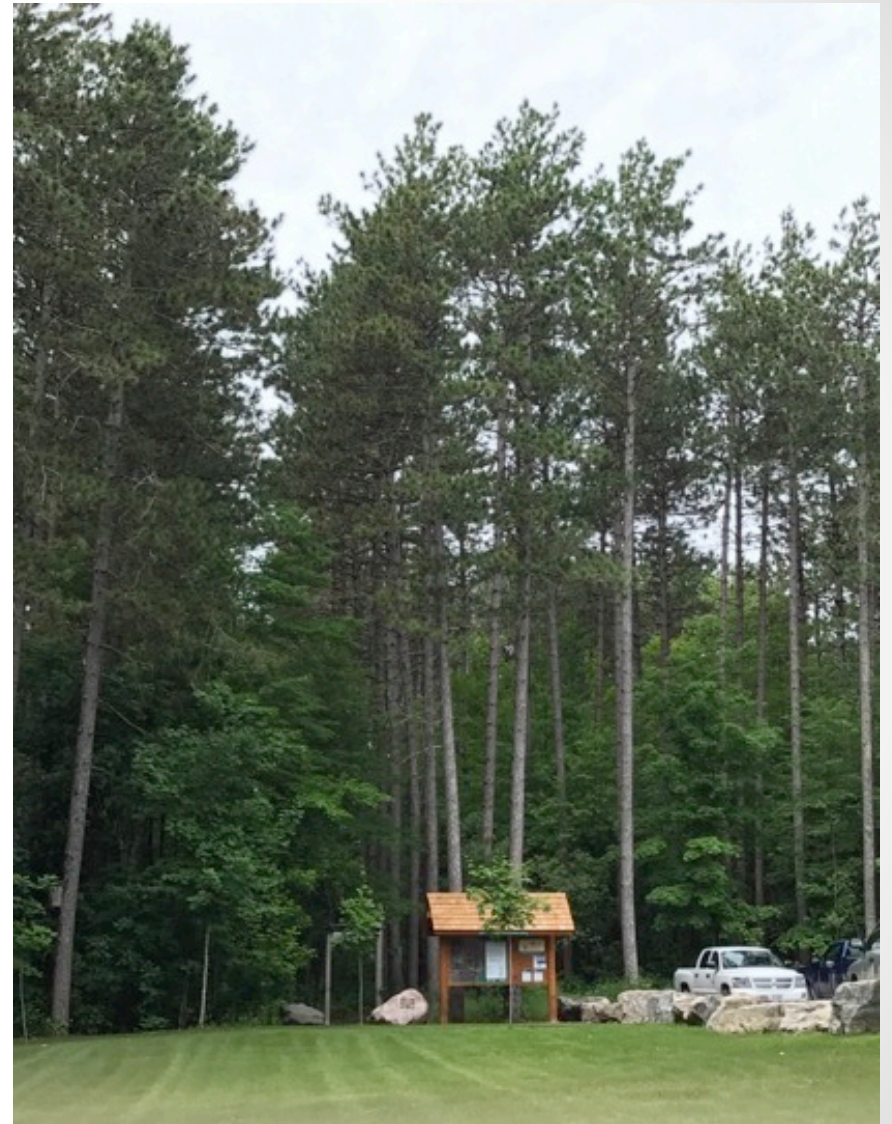
Former Kemptville College



The Township of North Grenville has announced agreement in principle with the Province for the sale of a large portion of the main campus. Plans are for North Grenville to transform the majority of the Kemptville campus into a multi-tenant, education and community hub focusing on 3 pillars: education and training, health and wellness and economic development. The renewal of the former Kemptville Campus will see the property and building infrastructure repurposed for bilingual education and related community service activities, under the mandate of climate change adaptation and agricultural resiliency. December 7, 2017

EOMF AGM: June 23, 2017

- OEWC reported to AGM at Limerick Forest
- OEWC Directors and special advisors: Brian Barkley, Tom Richardson, Sandra Lawn, Dr. Henry Lickers and Dr. Ed White were pleased to be in attendance



Over the years: special projects



2017 update from Ed Heideman:

- www.heidemann.com
 - 100 employees and 100 contractors
 - US dollar a positive
 - Power supply improvements moving along
 - Much of low grade fibre going to Pembroke MDF plant: (see www.pembrokemdf.com)
 - MDF is an economical substitute for plywood and solid wood
 - Various distributors utilized for sale of high quality lumber to broadly based markets
- Still supportive in 2023!!



OEWC Directors and Special Advisors

- Brian Barkley, Founding Director; Chair
- Doug Cleary – Agriculture (Conor Cleary – alternate)
- Craig Kelley – Ontario East Economic Development Commission - past chair
- Sandra S. Lawn, Founding Director, Project Leader
- Jason Linkewich - independent
- Dr. Steven Liss (Vice-principal – Research and Innovation Toronto Metropolitan University)
- Tom Richardson, independent (Board member of EOMF)
- Dennis Senik, P.Eng., independent, Doyletech
- Dr. Mohini Sain, Faculty of Forestry, University of Toronto (alternate: Dr. Sally Krigstin)
- Al Sprague, P.Eng. inventor, independent
- Dr. Ed White, ex officio director, State University of New York
- Dr. Henry Lickers, Special Advisor, founding director of EOMF, Akwesasne
- Jeff Passmore, Special Advisor, Passmore Group
- Matthew Schacker, BSc, Special Advisor, Canadian Forest Service
- Dr. Paul Stuart, Special Advisor, Ecole Polytechnique
- Dr. Susan Wood-Bohm – Special Advisor

OEWC “network” includes:

- Academia: at University of Toronto Faculty of Forestry, Queen’s University, Carleton University, State University of New York, La Cité Collegiale and Ryerson University
- Canadian Forest Service
- Eastern Ontario Model Forest
- Research bodies such as FPInnovations
- Agriculture connections such as GrowingForward 2
- Agriforestry such as maple producers
- Bio based initiatives such as Bioindustrial Innovation Canada <https://www.bincanada.ca>
- Vertical Farming businesses such as IGES
- Municipal, federal and municipal governments and emerging alliances
- Community leaders and others



Special Advisors over time

- Strong Support from the Lanark and Grenville County Community Futures
- Dr. Henry Lickers
- Mark Angelini, Ontario Wood Export expert
- Dr. Tom Amidon, New York SUNY, Environmental Science and Forestry
- Doug Cleary, progressive farmer
- Conor Cleary, technology, agriculture
- Frank Mulhern, Economic Development and Innovation, U.S.
- Denny Doyle, Glenn McDougall and Rick Clayton of Doyletech, Ottawa
- Bill Goodfellow RFP, Ottawa
- Dr. Peter Hall, retired Natural Resources Canada
- Ed Heideman and Kris Heideman MBA, forestry business
- Patrick Huot, P.Eng., Industry Canada
- Craig Kelley, President of the Ontario East Economic Development Commission
- Dr. Sally Krigstin (U of T)
- Dr. Dave Layzell, University of Calgary
- Dr. Warren Mabee, Queen's
- Ian Manson, Economist, MNR&F in Peterborough
- Michelle Maybee P. Eng., former Ontario Wood Works
- Shelley McPhail and Katie Nolan, OMAFRA
- Jim McCready, forester, President EOMF
- Dr. Murray McLaughlin, Sustainable Chemistry Alliance
- Kerry Milford, Algonquin College
- David Mody, P. Eng., Queen's; Dr. Jim McLellan head of Queen's Chemical Engineering Department
- Tom Richardson, forest industry – former Mazinaw Lanark
- Dr. Paul Stuart, École Polytechnique
- Al Sprague, P.Eng., retired from Ingredion, Cardinal Ontario
- Dr. Geoff Whitfield: retired chief scientist DuPont Canada
- Dr. Susan Wood-Bohm: Alberta Innovates and many others

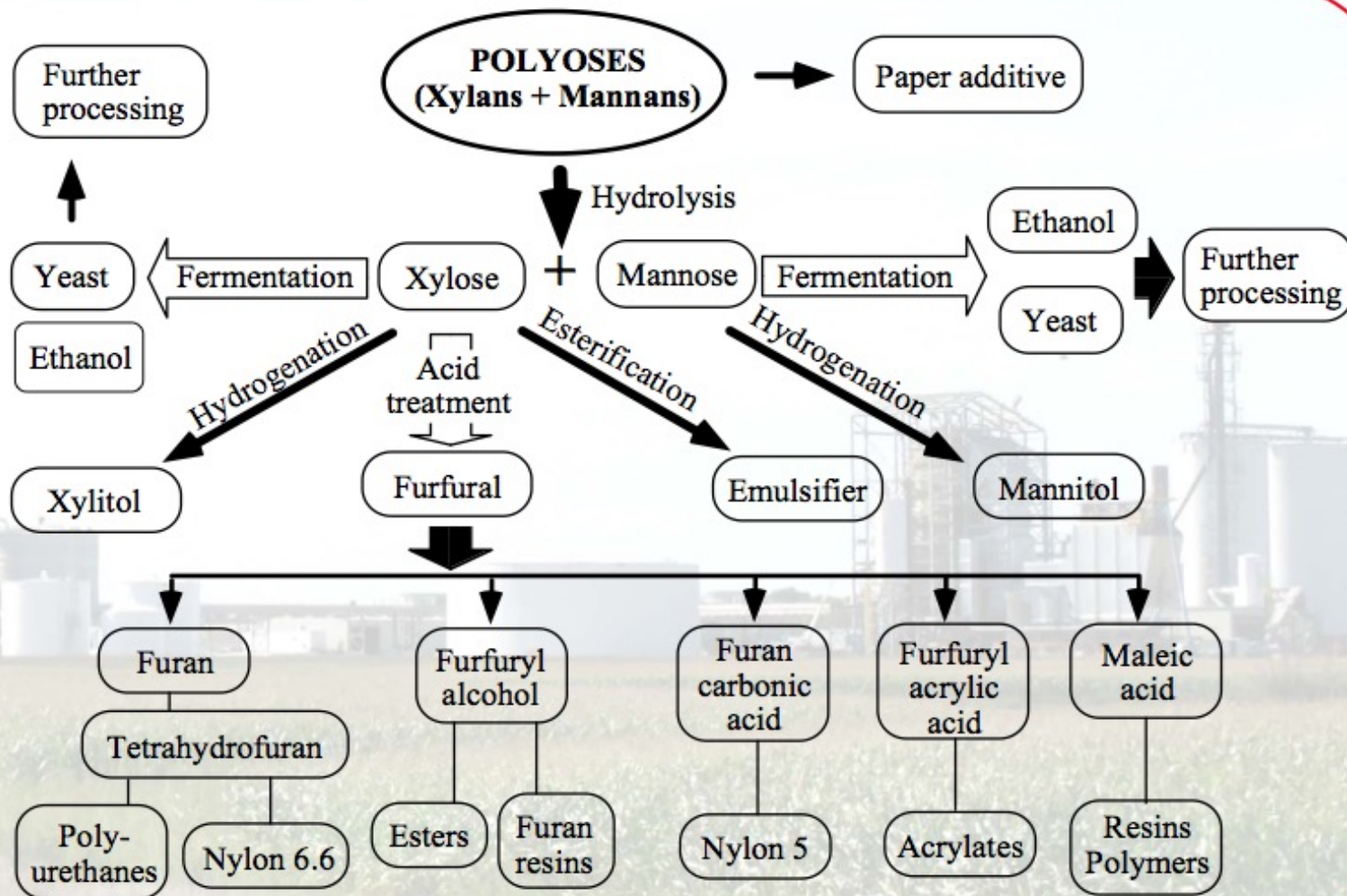


Building adaptive capacity and networks

Dr. Murray McLaughlin, Dr. Mohini Sain U of T, Gérald Beaulieu of Forest Products Innovation (<https://fpinnovations.ca>), Deputy Minister O'Toole from MNR), engineers from GreenField Ethanol, Hon. Donna Cansfield, former Minister of Natural Resources at the Port, friendly Asian chap at Organization for Economic Co-operation and Development, (we were chosen as representatives of Ontario), Gord Brown MP, Steve Clark, MPP, Michelle Maybee P. Eng. formerly of Ontario Wood Works, Councillor Morrell, Queen's students, even a chap from North Bay interested in shipping pellets to Europe dropped in via his helicopter! and Susan Wood-Bohm formerly of Alberta Innovates



Hemicellulose-Based Products



Barriers to Investment

- Lack of understanding of big picture by decision makers
- Issue of navigating the maze - need a knowledgeable navigator
- Issue of capital pool access in Canada
- Unrecongized focus on the potential of rural Eastern Ontario
- Experienced investors needed
- Pool of entrepreneurial mentors to guide and advise new potential players
- Apparent lack of understanding of the potential of the bioeconomy in certain key circles
- MNRF needs to up their interest in potential of Great Lakes St. Lawrence Forests: complete Enhanced FRI, Hire foresters in Eastern Ontario offices etc.



Building from the Statement of Forest Principles of the United Nations 1992

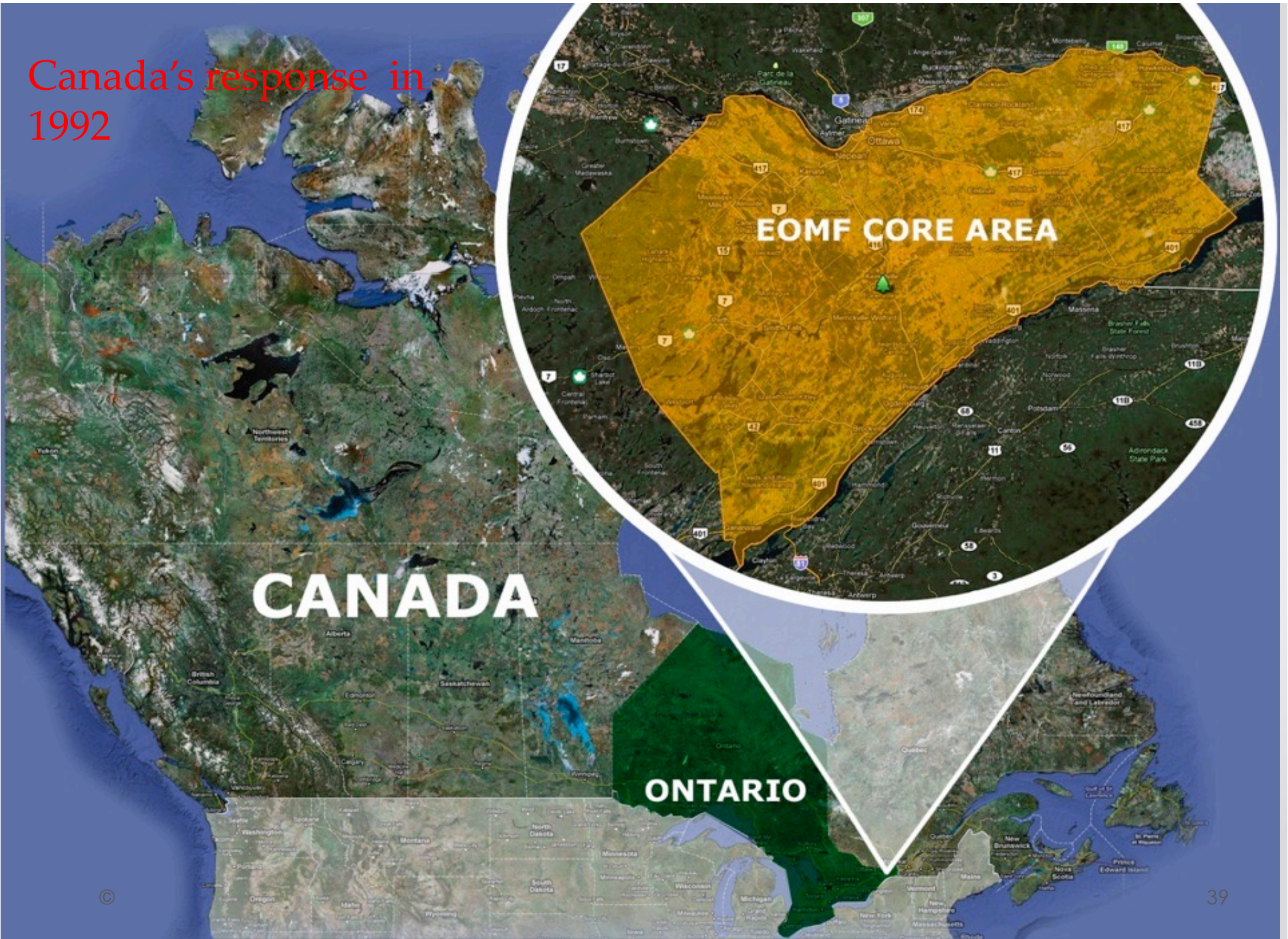
- Canadian, Ontario and local governments, private and public sector members recognize (even in 2016) that:

- “forests are essential to economic development and the maintenance of all forms of life”
- “A holistic and balanced approach to environment and development is essential”
- Recognition of Canada’s forests as a vital and renewable natural resource along with water
- “hardwood forests of Eastern Ontario are well positioned to respond to the technological and environmental challenges of the 21st century” – B. Barkley (Registered Professional Forester) Special Advisor to the Canadian Model Forest Network, formerly funded by the Canadian Forest Service)

- “responsibility for forest management, conservation and sustainable development should be pursued at the appropriate level of government”
- “Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. These needs are for forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks and reservoirs, and for other forest products.”



Canada's response in 1992



2022

EOMF – a founding partner of OEWC

- Key member of Canadian Model Forest Network
 - **No longer funded by Canadian Forest Service under Forest Communities Program**
 - Includes Eastern Ontario where most of Canada's best hardwoods grow
 - Key link to sustainable forest resources, First Nations and regional heritage
 - Over 600 well established partnerships
 - Sharing great knowledge of the forestry industries of Eastern Ontario and beyond
 - Leadership over past 20 years – recognition of leadership – December 12th at Forestry Seminar
 - Knowledge base/research along the entire value chain
 - Experts in short rotation woody crops (willow and poplar); trials at Ferguson Forest Centre
 - **Ontario was threatening to close seed plant**
 - Managed a highly successful Forest Stewardship Council (FSC) Certificate program
 - Based on Chapter 11 of Agenda 21 and Statement of Forest Principles 1992
 - Pioneers in effort to build enhanced Forest Resource Inventory necessary for efficient, effective and environmentally sound sustainable forestry and sustainable rural communities in Eastern Ontario
- ● www.eomf.on.ca



Brian Barkley, Henry Lickers, Sandra Lawn and Ray Fortune receive honour on December 12, 2012

Incorporation of the OEWC & EIP for the benefit of all of Eastern Ontario; objects include:

1. The development of forest, agriculture and biomass based and innovation-inspired cluster[s] of industrial, business and demonstration projects in an ecologically sound environment
2. A platform for scientific collaboration, business development, demonstration, piloting, commercialization, exporting and marketing of a wide array of innovative value-added wood, agricultural and biomass products, including but not limited to: solid wood building components, biochemicals and bioenergy
3. Participation in the restructuring of the forest industry of the Great Lakes/St. Lawrence forest for the benefit of rural communities and in partnership with a variety of other organizations, academic institutions, individuals and agencies with compatible goals.



The wonder is that we can see these
trees and not wonder more

Ralph Waldo Emerson

