



“Bioeconomy in Eastern Ontario”

An update on the Ontario East Wood Centre

July 17, 2018

Naturalized Knowledge System (NKS) is our Framework



Dr. Henry Lickers

• ©

- 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!

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Fulfilling the Road Map for the Advancement of the Bioeconomy of Eastern Ontario

2017 Queen's TEAM (Technology, Engineering, and Management) have provided a five-year Road Map.

With its internal structure reorganized, OEWC is well established to focus on three key activities:

1. **Advocating,**
2. **Networking and**
3. **Advising.**

These in turn are guided by two main goals:

1. **Ensuring the bioeconomy is a strategic focus for economic development efforts in Eastern Ontario and**
2. **Advising economic development organizations about bioeconomic business opportunities.**

("Ottawa needs to grasp our bioeconomy potential – see Jeff Passmore's article at <https://www.canadianbiomassmagazine.ca/news/ottawa-needs-to-grasp-our-bioeconomy-potential-6572>)

Vital News to July 09, 2018

1. Continued development of Indigenous “Housing” Initiative – a funder in place – we want to do this right – and avoid duplication and confusion; had meeting scheduled with new ADM for CFS - and other key action oriented players such as Dr. Steve Liss at Ryerson; we are fortunate to have a funder to help with this.
2. **the Bioindustrial Innovation Canada – Symposium on August 31, 2017 in Maitland with Sandy Marshall of BIN Canada as Keynote Speaker – success – led to**
 1. Visit to Sarnia of six members of the St. Lawrence Corridor Economic Development Commission
 2. Meeting of S. Lawn with consultants developing action plan for St. Lawrence Corridor, hiring commissioner, developed web site, set up office etc.
3. Attendance at Scaling Up 2017; see www.Scalingup2017.ca ; report under separate cover. Jeff Passmore now “special advisor.”
5. Federal government well tuned into importance of bioeconomy for rural Canada – making some progress there but some bureaucrats are a challenge.
7. Province of Ontario – need for precise commitment from MNRF, OMAFRA, Ministry of Economic Development, Ministry of Environment and Climate Change and other ministries.
8. Our MPP Steve Clark is now the province’s Minister of Municipal Affairs and Housing. He understands the bioeconomy and attends our meetings, writes letters of encouragement.
9. Eastern Ontario Leadership Council – new leadership for 2018

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

- Report at AGM of Eastern Ontario Model Forest June 13, 2018 Fournier; discussions re: maple and other bioproduct processing
- Port of Johnstown – special day on June 16, 2018- area well set up for bioprocessing
- 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.
- Joe Hendricks former manager of the Maitland Invista plant has been engaged by BIC to help advance their approach to expanding the bioeconomy in Eastern Ontario see <https://www.bincanada.ca/single-post/2018/04/10/Bioindustrial-Innovation-Canada-begins-COMM-SCI-project-in-Eastern-Ontario>



And more

- Scaling Up Conference 2018
- Competing in the Global Bioeconomy Market
- November 5 - 7, 2018, Chateau Laurier Hotel, Ottawa, Canada
- Talk about high level business development opportunities!
- Come meet with over 40 confirmed speakers to date
- Registration: www.scalingupconference.ca
- Several of us attended last year – fits well with NKS and “knowledge is powerful but only when it is shared!!”



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. MNRF'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. 20 years ago the Ice Storm in Eastern Ontario still serves as a dramatic wake-up call!

Indigenous Housing

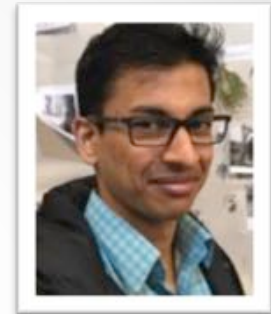
- “Meeting of Minds”: On May 12, 2017 at Carleton University: Homes for the northern and indigenous communities through innovative design, natural materials, advanced technology, waste water treatment, lighting, renewable energy, passive housing, mental health, physical well being and a focus on seven generations
 - Proceedings under separate cover
 - March 22, 2018 meeting with Beth MacNeill, new NRCAN Assistant Deputy Minister for Canadian Forest Service was cancelled – she was “too busy” at the time. We will try again.
 - Have private funder
- [From Ryerson University](#)
- <https://www.youtube.com/watch?v=UpRyv5VzmjA>
 - <https://www.ryerson.ca/research/publications/newsletter/2017-12/ryerson-pilot-project-strives-to-transform-housing-in-northern-ontario-first-nation-communities>
 - Innovation Newsletter: 2017_12_22&utm_medium=email&utm_term=0_6b6f72d48b-add8369d47-62420625
 - From FPInnovations: five minute video <https://vimeo.com/249879392>
(password is: bella)

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
- Now working toward a TEAM 2018/2019



- 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
 - Came to Johnstown and met with OEWC Board; keen on pursuing 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
- Jason Koivisto, Mgr of Forest Innovation and Market Development, MNR and Forestry was provincial connection
- Matthew Schacker of Canadian Forest Service is now special advisor to OEWC



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 report

BIOECONOMY
CLUSTER
OPPORTUNITIES

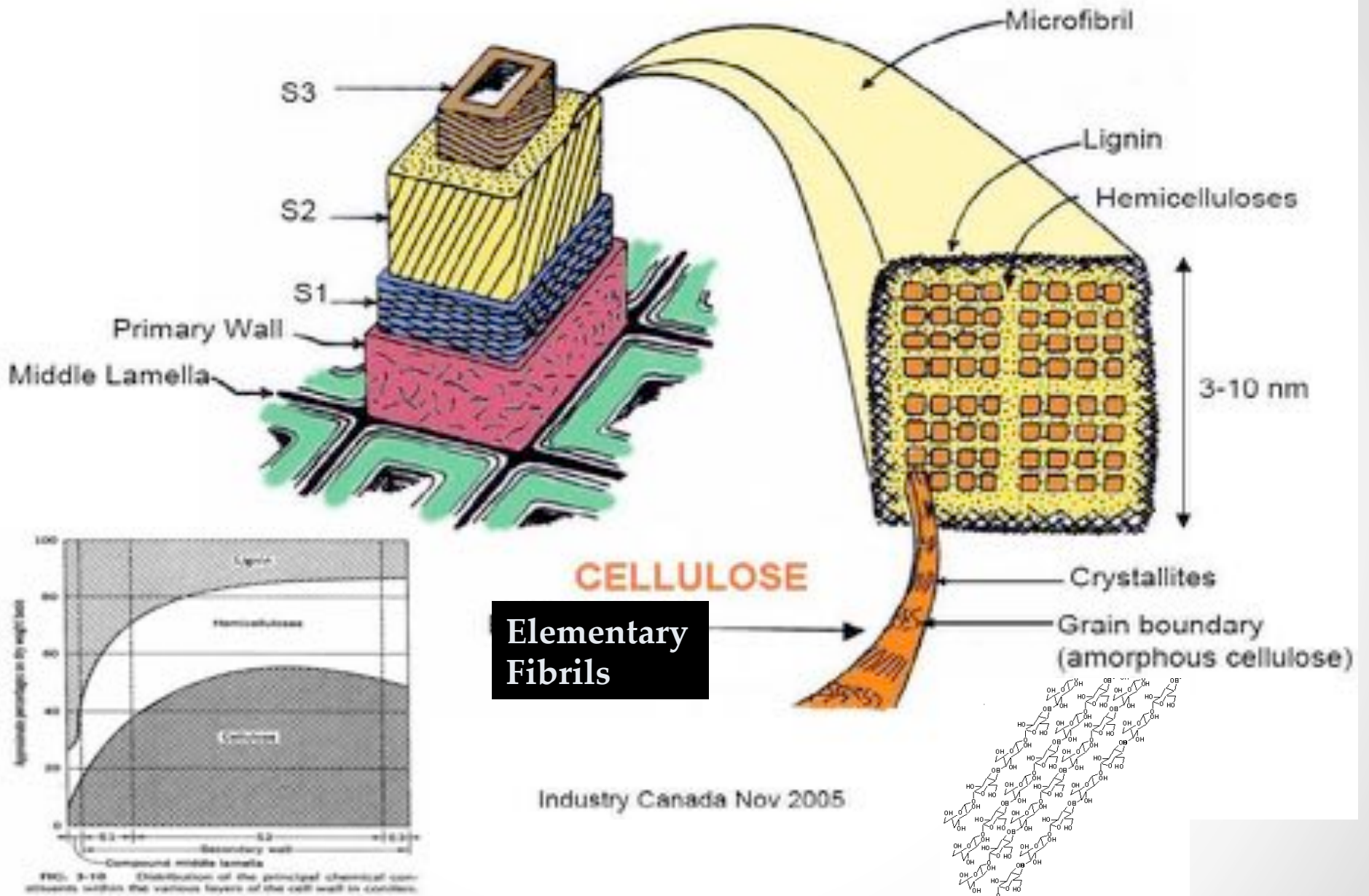


Building The Future Through The Bioeconomy

- \$3million in Provincial funding – will work with other rural communities – e.g. Eastern Ontario?
- Sandy Marshall now Exec. Director; Murray McLaughlin continues in role of Government and Partner Relations.
<http://www.bincanada.ca/index.php/whats-new/news-releases/137-building-the-future-through-the-bioeconomy> - COMSI launch
- \$12 million FedDev funding, to support the sustainable chemistry and bio-based industrial sector.
- <https://www.youtube.com/watch?v=GI0IN9O90nA>

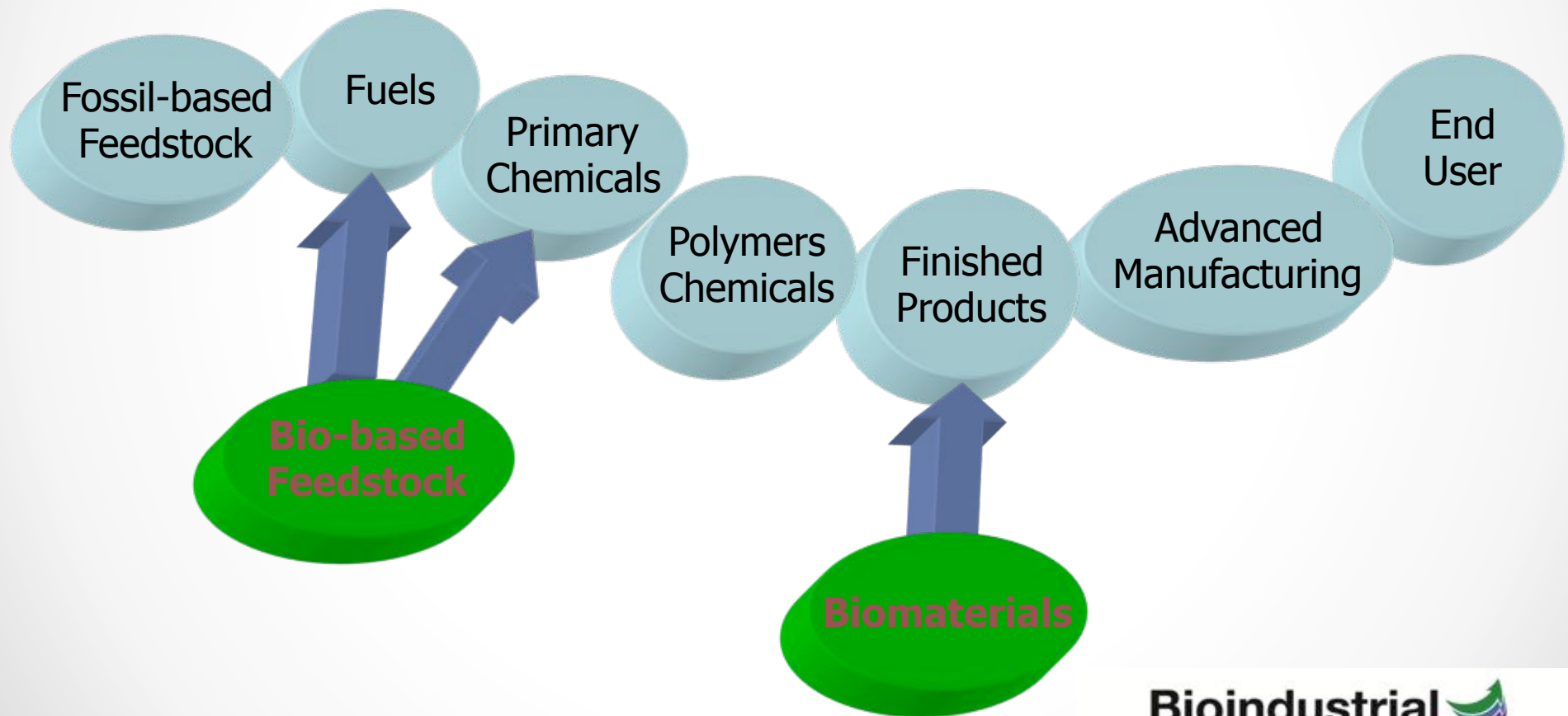


“The Sarnia cluster is a key factor in reaching Canada’s biotech horizon... Leadership for the bioeconomy”
Murray McLaughlin



Integrating into the Hybrid Chemistry Value Chain

Creating jobs and economic prosperity



Bioindustrial Innovation Canada Mission: Create jobs and economic value sustainably for Ontario

How we do it

Commercialize bio-based and sustainable chemistry technologies through networking and investment

Catalyze the establishment of networked hybrid clusters in Ontario

VALUE DRIVEN (high quality jobs, economic wealth and environmental sustainability)

FOCUSED ON DELIVERING COMMERCIALIZATION

Identifying Opportunities

Obtaining Results

Creating More Opportunities

Repeating the Success

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

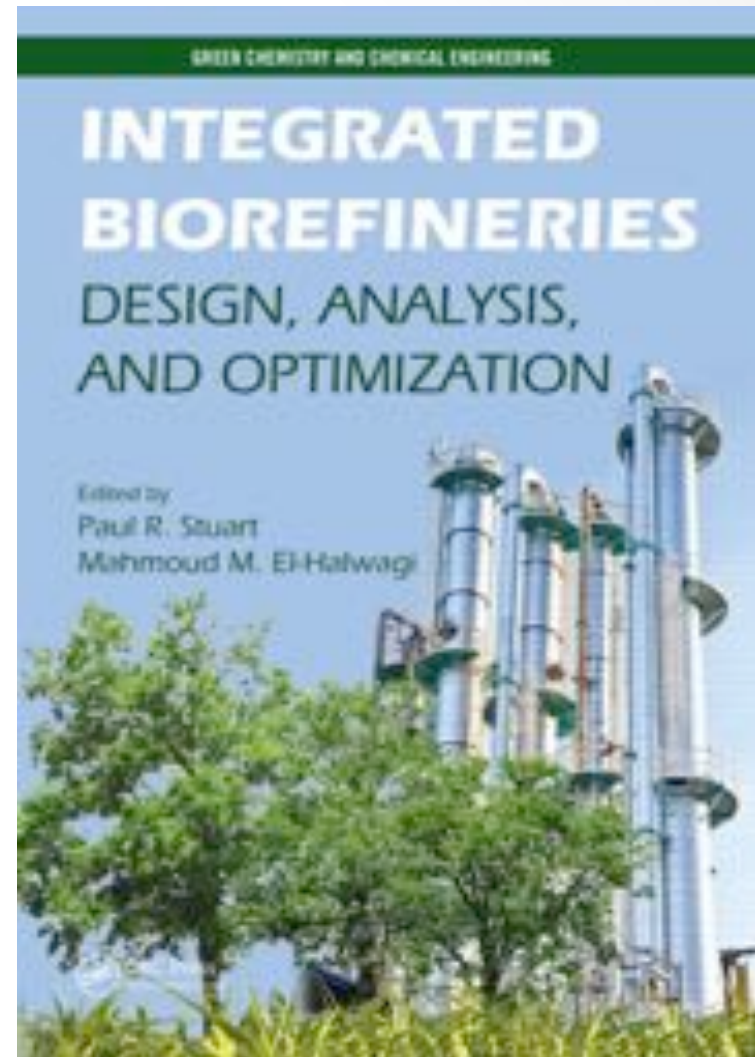


Polytechnique Montréal leading

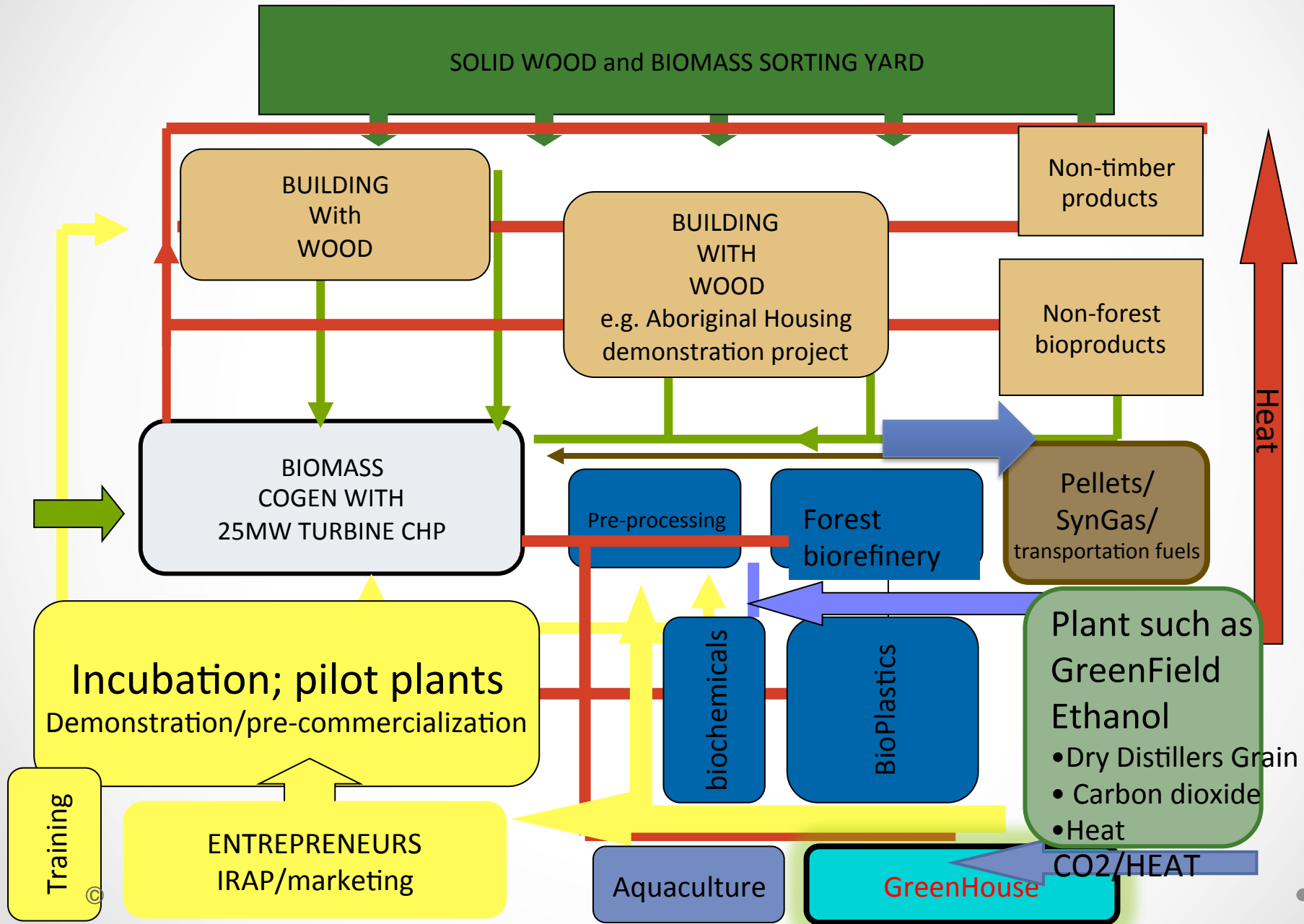
Integrated Biorefineries: Design, Analysis, and Optimization

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—in Eastern Ontario: Invista, Evonic, Dyno-Nobel and E.I. DuPont



An existing industrial cluster and available lands



New - St. Lawrence Corridor Economic Development Commission

- Newly formed with, Township of Edwardsburgh/Cardinal, the Town of Prescott, Township of Augusta, Elizabethtown/Kitley, City of Brockville, Township of the Front of Yonge and Township of Leeds & the Thousand Islands
- Incorporated June 30, 2017
- Chair: David Beatty and Vice Chair Bob Anderson
- Action plan being developed by Michael Adamcryk & Associates
- Offices at St. Lawrence College, Brockville
- Six members have already visited Sarnia and the bio – industrial facilities there
- February 2nd announced new commissioner- Charlie Mignault: “a proven leader in both private and public industry who excels in sales and economic development. His diverse background includes his current role as director and adjunct professor with the Smith School of Business at Queen’s University in Kingston, ON” He is beginning his work immediately.

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



- still shipping over 1.5 million bareroot seedlings each year going to concentrate on that
- Container stock production for crown land reforestation is increasing beyond current capabilities, Centre has just built two more greenhouses and there may be potential for more in the future
- 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

- Chief Executive Officer, Ferguson Tree Nursery
- Federal biomass work is disappearing

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

Current Suite of Policies can be mind boggling!

- Federal
 - Canadian Forest Service of Natural Resources Canada: strong on Bioeconomy and collaborating with
 - Environment and Climate Change Canada and others
 - Agriculture and Agri-food Canada
 - Fisheries and Oceans etc.
- Provincial:
 - Ministry of Natural Resources and Forestry needs to take a leading role
 - Ministry of Economic Development & Growth/ Research, Innovation & Science
 - Ministry of Environment and Climate Change
 - <http://www.applications.ene.gov.on.ca/ccap>
 - Northern Ontario Bioeconomy strongly supported by Ontario for several years
 - OMAFRA supportive of rural Eastern Ontario - encouraging
 - OMNRF is planning to close the Ontario Tree Seed Plant in September 2018. Sign the petition at <https://www.change.org/p/kathleen-wynne-save-the-ontario-tree-seed-facility>
- Regional and community
 - Eastern Ontario Leadership Council Eastern Ontario's Economic Development Strategy, Appendix A Regional Profile MillierDickinsonBlais Report, 2015
 - Mapping the Innovation Ecosystem in Eastern Ontario; toward an Inclusive Canadian Innovation Strategy, March 31, 2016: Wendy Cukier et al; released only to Leadership Council members; action still to be determined
 - Ontario East Economic Development Council: OEWC became member, sought pillar related to bioeconomy – new members could lead to progress
 - St. Lawrence Corridor Economic Development Corridor: attended OEWC symposium on Bioeconomy – tour to Sarnia etc. Encouraging connection to BIC; consultants have met with OEWC Project Leader
 - Recognition of bioeconomy and OEWC in Local Labour Market Planning Report 2017

Ontario East Leadership Council

- OEWC presented recommendations to CAO's Peterborough Meeting in March 2014
- Working groups have been established established; effort to activate
- Grant from province over \$100,000
- <http://www.eowc.org/en/economic-development-sustainability/resources/eolc/EOLC-Presentation-OEMC-Sept-14-2017.pdf>
- Slight changes in leadership
- Information from Justin Bromberg at info@eowc.org
- <https://www.eorn.ca/en/resources/EORN-Consulting-Services-Final-2017-11-17.pdf>
- <https://www.eorn.ca/en/Modules/search/index.aspx?strSearch=David%20Fell>
- Eastern Ontario's Economic Development strategy; Appendix A Regional Profile, Millier Dickinson Blais Report February 2014 – to be renewed in 2018.
- *Mapping the Innovation Ecosystem in Eastern Ontario* by Ted Rodgers School of Management, Ryerson University; March 2016 – “well in play” K. Woods

Recommendations OEWC made to Eastern Ontario Leadership Council in 2014

- **The OEWC attended the meeting of the CAO's Group in Peterborough on March 20, 2014.** This was encouraging as we had been providing input and knowledge into the process at every opportunity and had a firm belief that our approach to sustainable forestry, value added wood products and rural communities was sound and forward looking. (Note – the Statistics Canada report “Manufacturing at a Glance: The Year 2013 in review” released Feb. 25, 2014, notes that **wood product manufacturing was up by an impressive 18.7% to \$24.2 billion**)

2014 Recommendations

- That Ontario East Warden's Caucus incorporate the principles of sustainable forests and sustainable rural communities into their Regional Economic Development strategy through facilitation of:
 1. The promotion of innovation in the forest, agriculture, agriforestry, manufacturing and processing and forest related tourism
 2. The establishment of a CRIBE – like instrument for rural Eastern Ontario
 3. The completion of eFRI mapping in partnership with federal, provincial and municipal governments (e.g. 2017 floods created stark demonstration of importance of updated mapping and policies re climate change events)
 4. Embrace the concepts of industrial clusters, champions at high levels
 5. Collaboration with the movement to save the Kemptville Campus of Guelph University through reinstatement of agri-forestry programmes in areas such as The Eastern Ontario, support of commercial greenhouse industry in Eastern Ontario
 6. Partnerships and collaboration are fundamental and must be nourished
 7. And what about a Wooden MaRS?

on June 12 2018 - Kathy Wood, Eastern Ontario Leadership Council Coordinator reports

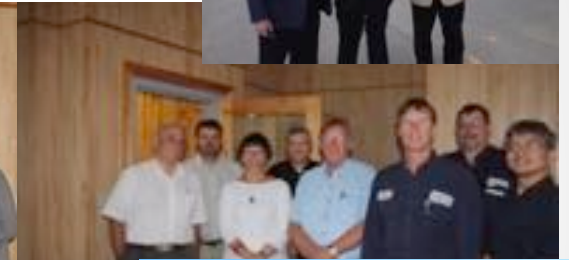
- The EOLC's focus continues to be on implementation of the 2014 regional economic development strategy, especially through the work of the three theme-based working groups
- The thinking of the Working Groups (workforce development and deployment, technology integration and innovation, and integrated, intelligent transportation systems) has focused on those cross-cutting actions we can take to connect the wide range of economic activity across the region rather than focus on any specific sector. (For the most part, the sector-based work is being pursued through Ontario East). For instance, the EOLC is working on projects that will:
 - Move people and goods more efficiently and safely within the region and beyond (thus supporting a wide range of industries, sectors and employees/places of employment)
 - Getting a better fix on the shifts in employment, areas of growth and diminution, the ways in which training and education may need to change to match these shifts, and the ways in which workforce attraction and retention strategies need to change to address the known gaps and shortfalls in having the workforce we need across the region
 - Developing new ways to support innovators and start-ups achieve their commercialization and business growth aspirations.
- We can expect to see these initiatives begin to roll out over the next 60-90 days. It is fair to say that the emphasis in the EOLC's work is shifting away from 'more research' to helping to implement real on-the-ground initiatives. Stakeholders are being encouraged to understand the EOLC's role not as a funder, but as a forum in which collaborative relationships can develop that address challenges or opportunities that are shared across the region.
- The EOLC has recently received some modest funding (\$135,000) from the Ministry of Economic Development and Growth for some additional regional economic development work, that is being used to refresh the existing strategy, and accelerate working group activity as described above. Part of the work being undertaken involves consultation with the post-secondary education sector (through the regional PSE Task Force, chaired by Carleton) and a similar group consultation meeting with incubators and innovation service organizations. Significant consultation with the business community is also getting under way. All of these efforts are focused on sharpening our focus on accelerating near-term (the next 3-5 years) economic activity across the region, with a strong emphasis on businesses of all sizes with significant growth opportunities and aspirations. The release of the refreshed strategy plus an update on ongoing work is expected to take place at the Ontario East Municipal Conference in September (in Cornwall).
- Information on the EOLC's work, including quarterly reports, is currently found at <http://www.eowc.org/en/economic-development-sustainability/eastern-ontario-leadership-council.aspx>. Over the next few months, the EOLC will be developing a much more extensive web information portal. That should be live in September as well.

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
- (Looking for signs of leadership from the Eastern Ontario Leadership Council)



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



OEWC Directors and Special Advisors

- Brian Barkley, Founding Director; Chair
- Dr. Michel Caron (La Cité)
- Robin Crawford – mechanical technician - independent
- Larry Dishaw, Founding Director – former Mayor
- 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 Ryerson)
- Kerry Milford, independent – formerly Algonquin College, Perth Campus
- 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
- Susan Wood-Bohm: Alberta Innovates and many others

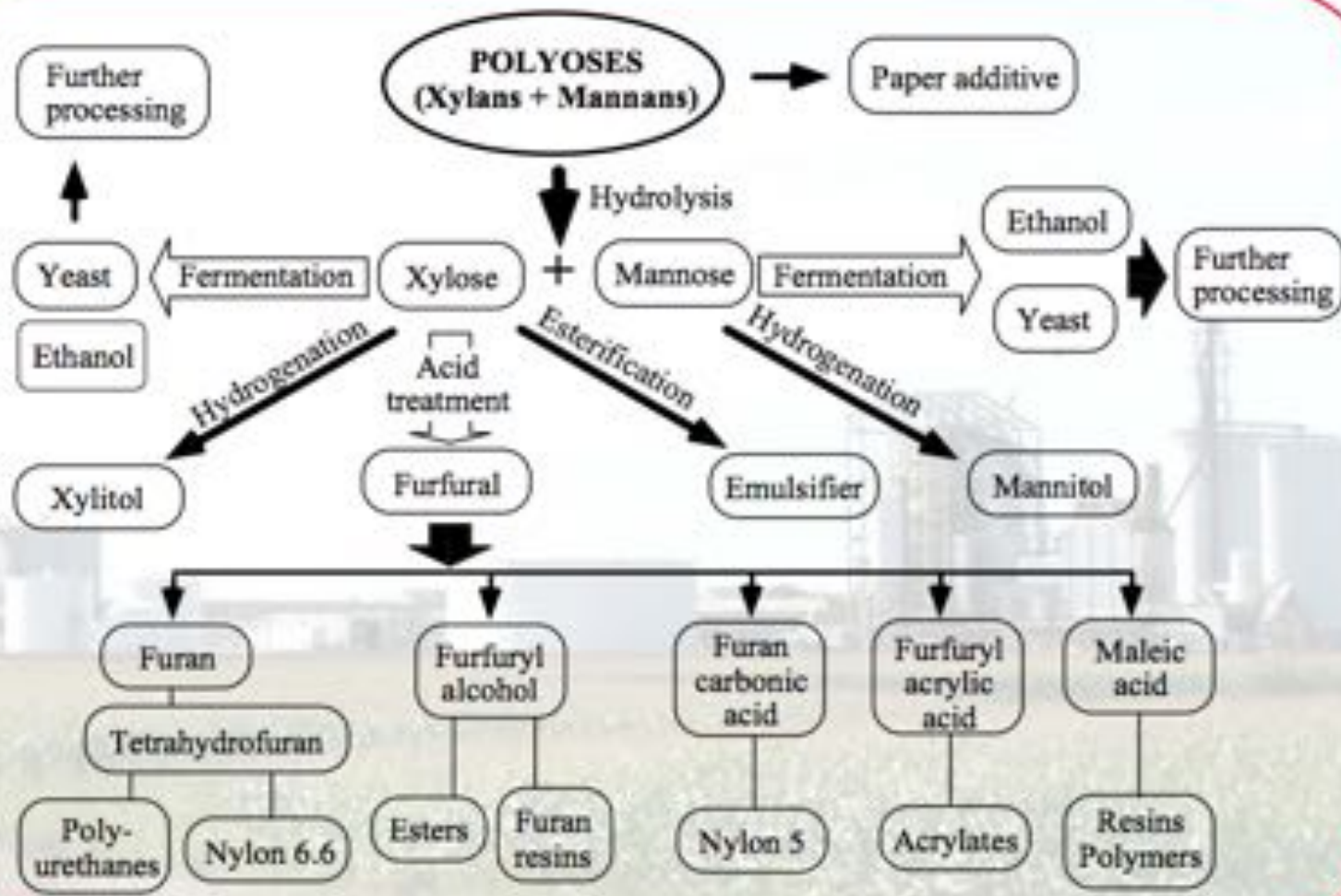


Building adaptive capacity and networks

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

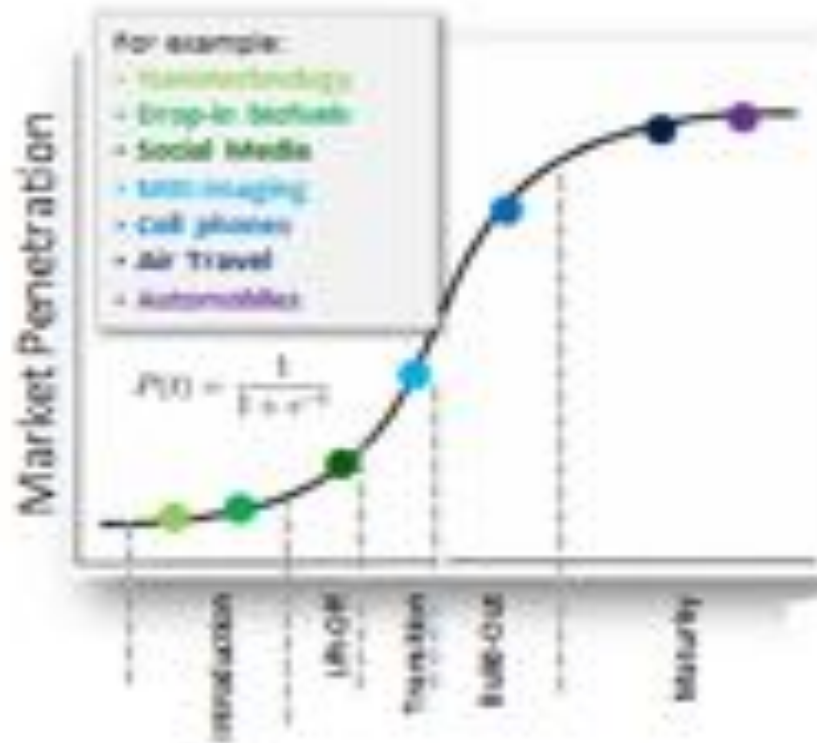


Finding the path to jobs and growth (cont'd.)

The value components develop in a highly consistent pattern, *driven* by growing market penetration, e.g. **Value Proposition:**

The Well-Worn Path

- *Introduction:* new functionality carries the day
- Lift-Off:* demands lower price & basic functionality
- Transition:* wants begin to overtake needs.
- Build-Out:* segmentation emphasizes the role of marketing and distribution; technology becomes a supporting actor
- Maturity:* for jaded users, value proposition becomes just the ticket of admission



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
- Little 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



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)



Canada's response in 1992



Eastern Ontario Model Forest

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 now threatening to close seed plant**
- Manages 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

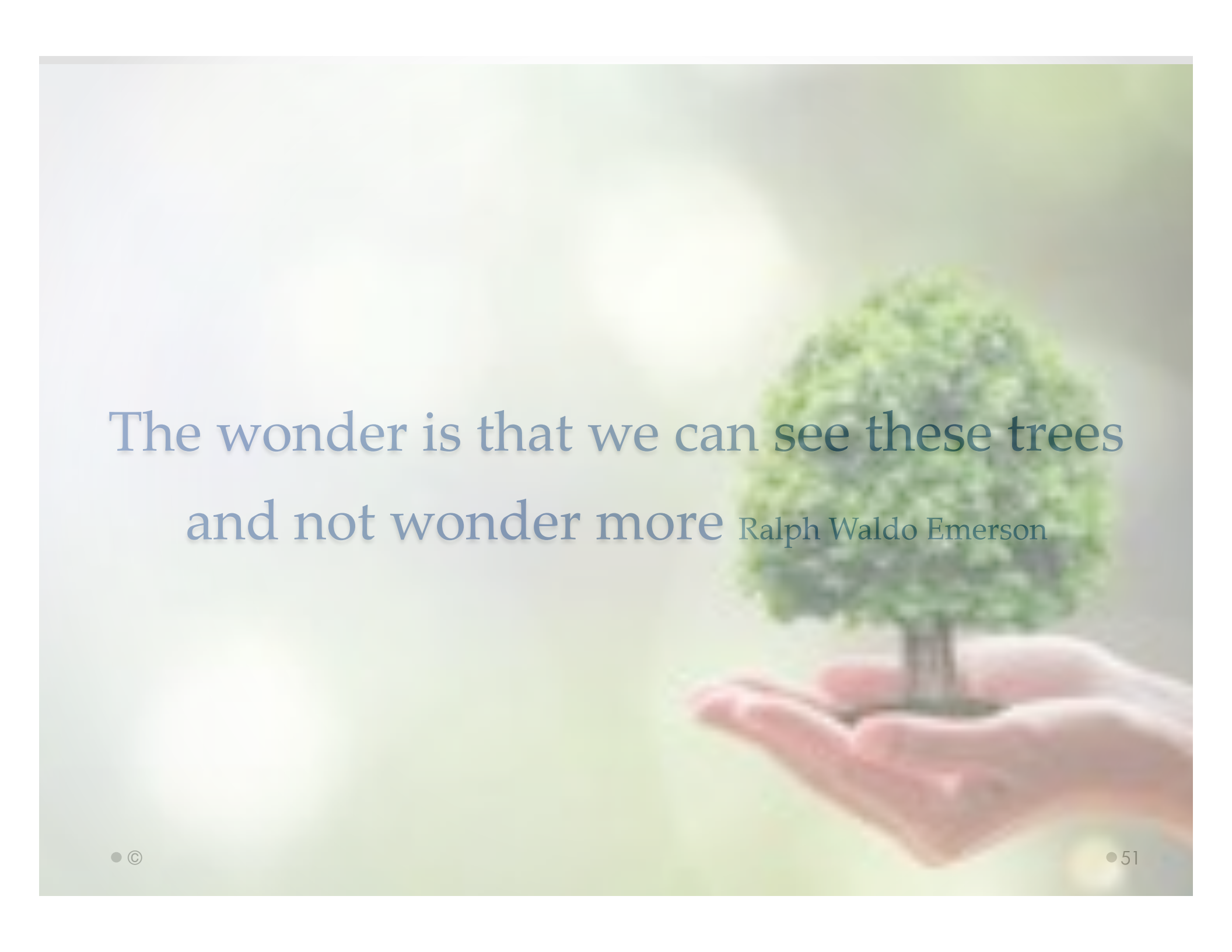


Brian Barkley, Henry Lickers, Sandra Lawn and Ray Fortune receive honour on December 12, 2012

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.



A pair of hands is shown from the bottom right, cupping a small, vibrant green tree. The background is a soft, out-of-focus landscape with a bright, glowing light source, possibly the sun, creating a hazy, ethereal atmosphere. The text is overlaid on the left side of the image.

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