

Biomass Innovation Centre  
February 13, 2015

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## 2015 Provincial Pre-Budget Consultation

Submitted to The Honourable Charles  
Sousa, Minister of Finance

## CONTEXT

The Biomass Innovation Centre at Nipissing University and the Union of Ontario Indians, political advocate for 39 First Nations in Ontario, has partnered to develop a Northern Ontario Bioeconomy Strategy. This strategy will focus on how best to leverage our northern sustainable forestry resources to trigger economic development and job growth, push innovation and entrepreneurship, and develop new domestic markets and international partnerships.

A bioeconomy is one where most of the energy, materials, and chemicals for industry and consumers come from renewable biological resources. Other jurisdictions, from British Columbia and Quebec in Canada, to Finland, Germany and EU nations, are realizing the economic, social and environmental benefits of focusing on a bioeconomy strategy. Whether it is to build the energy infrastructure and social license to enable the development of the Ring of Fire, to reviving our manufacturing sector and reducing energy poverty, Ontario is uniquely positioned to use the wood waste and unmerchantable species from its sustainably-managed forests to fuel economic growth throughout the province.



Figure 1 - Northern Ontario Bioeconomy Strategy Framework

The Northern Ontario Bioeconomy Strategy is being developed with extensive input from northern Ontario municipalities, First Nations, industry leaders and associations, small-to-medium sized enterprises, entrepreneurs, academia, and community organizations. The strategy includes developing demonstration projects in four pillars, reducing policy and regulatory barriers to sustainable bioenergy projects, and defining skills and training roadmap to get our population working in this growing sector.

The Northern Ontario Bioeconomy Strategy will address challenges to northern development and assist the government in delivery on its key priorities.

FORESTRY:

The forestry sector in Ontario has experienced a structural change since 2004, and traditional markets for tradition wood products have not rebounded. This has had a devastating economic effect on northern communities.

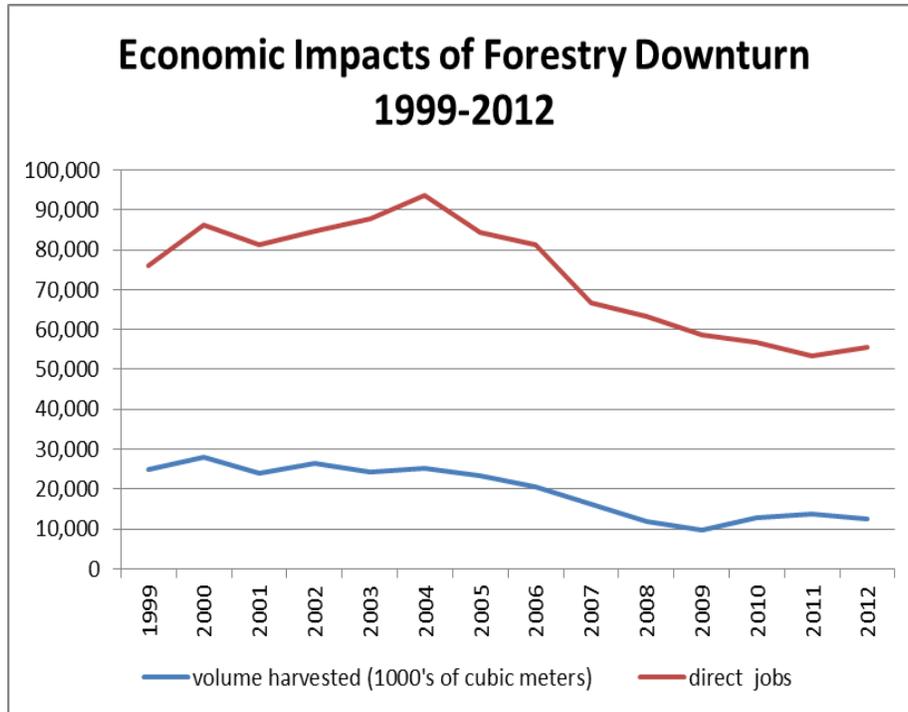


Figure 2 - Economic Impacts of Forestry Downturn 1999-2012

Source: Natural Resources Canada Statistical Data, <https://cfs.nrcan.gc.ca/statsprofile/employment/on>

As Premier Wynne directed in her Mandate Letter to The Honourable Bill Mauro, Minister of Natural Resources and Forestry, supporting forestry by “continuing to work with forestry companies, environmental organizations, First Nations and community representatives to ensure that Crown forest resources are being put to their best use — and in an economically, socially and environmentally sustainable fashion” is a top priority for the MNR&F.

Developing new markets, domestic and foreign, and new bioproducts/applications from our sustainable wood fibre are critical requirements for future growth in this sector. The Northern Ontario Bioeconomy Strategy identify and develop those markets and products.

## FIRST NATIONS:

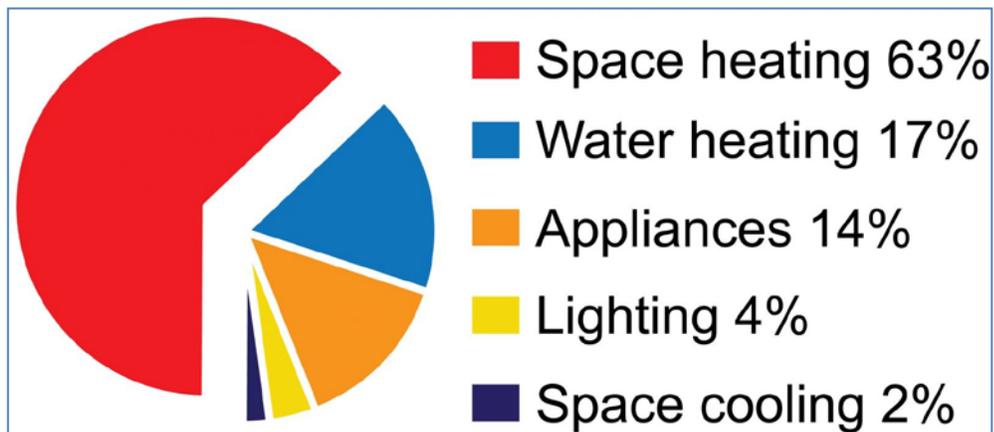
First Nations in Ontario are exercising jurisdiction over their traditional lands and resources, in order to drive economic development and local benefits. [http://www.chiefs-of-ontario.org/sites/default/files/news\\_files/NOTICE-1.pdf](http://www.chiefs-of-ontario.org/sites/default/files/news_files/NOTICE-1.pdf)

As Premier Wynne directed in her Mandate Letter to The Honourable David Zimmer, Minister of Aboriginal Affairs, “Improving opportunities for meaningful employment and business development” and “continuing to work across government to ensure that Aboriginal peoples share in the benefits of natural resources and are engaged in resource-related economic development.....by advancing the province’s local/sectoral approach to resource benefits sharing” are a top priorities for MAA.

The Northern Ontario Bioeconomy Strategy, co-led by the Union of Ontario Indians with full engagement and input from the 39 First Nations they represent, will focus in ensuring resource-sharing and benefit realization for First Nations communities throughout Ontario.

## ENERGY:

In northern Ontario, our residential heat energy needs are greater than our electricity energy needs. In many northern communities, energy poverty IS heat poverty.



**Figure 3 - Residential Energy Use in Canada by activity, 2010** Source: Energy Efficiency Trends in Canada 1990-2010, Natural Resources Canada. <http://www.nrcan.gc.ca/energy/products/categories/heating/13740>

Approximately 1.4 million homes in Ontario do not have access to the natural gas grid. These homes are being heated by electricity, oil, and propane. An average Ontario home uses 10,000 kWh of electricity to power its electronics and appliances; however that same home uses more than 20,000 kWh of energy for heat. Developing combined heat and power as well as heat-only bioenergy solutions would cut heating costs by more than 40% (Source: US Government Energy Information Administration [www.eia.gov/tools/faqs/heatcalc.xls](http://www.eia.gov/tools/faqs/heatcalc.xls)) In several of the communities along the north shore of the Great Lakes, such as Marathon and Wawa, the commercial sector has contracted due to unsustainable space heating costs. Some municipalities in the north can spend up to \$25,000/month to heat arenas and swimming pools. Using low cost local biofuels and bioenergy would reduce the high heating costs that trouble northern residents and businesses.

## ECONOMIC DEVELOPMENT

Bioenergy projects do more than yield substantial savings for residents and commercial enterprises: they stimulate local economic development through heat entrepreneurship, a business model widely used in Finland and Sweden. In [IRENA's 2014](#) report, biomass-based biofuels are credited with significant job creation, primarily in the harvesting stage of the supply chain. When one adds the economic benefit of energy dollars cycling through a local economy several times before leaking out to other jurisdictions, in contrast with heavy fuel oil and propane, developing local bioenergy projects offer a win-win for economic development. Harvesting and marketing wood waste and slash residues as fuel for clean energy yields more jobs than burning those slash piles in the winter to reduce forest fire hazards.

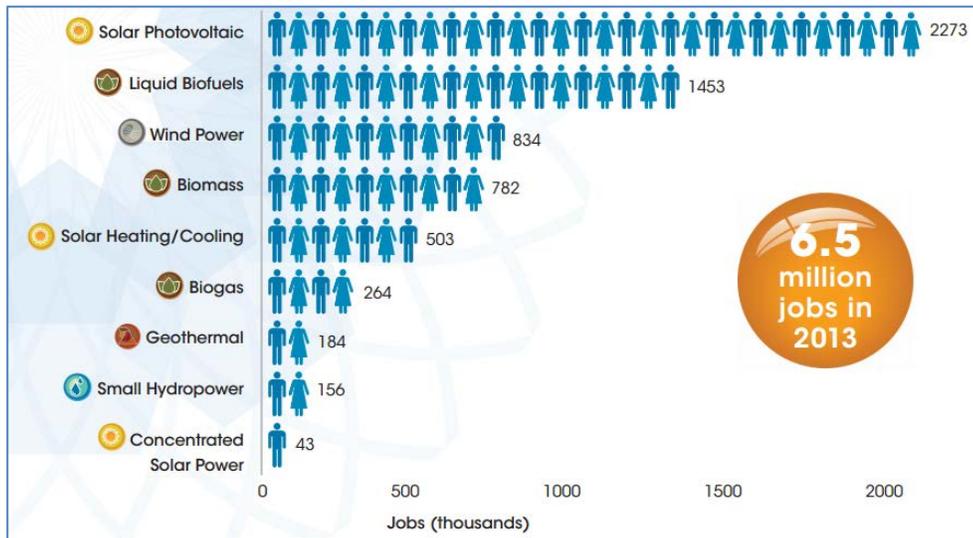


Figure 4 - Renewable Energy Employment by Technology Source: IRENA Renewable Energy and Jobs Report, 2014 <http://www.irena.org/publications/rejobs-annual-review-2014.pdf>

Innovative bioproducts such as biocomposites and biochemicals are seeing exponentially growing global demand. From [Magna Interiors and Exteriors](#) R&D work to develop biocomposites panels to the work the [Functional Fibre and Biochemical Network](#) is doing to develop industrial biochemical, Ontario is striving to lead the global sector in developing new products and new markets.

| CHEMICAL SECTOR     | 2010          | 2025          |
|---------------------|---------------|---------------|
| Commodity Chemicals | 1-2 percent   | 6-10 percent  |
| Specialty Chemicals | 20-25 percent | 45-50 percent |
| Fine Chemicals      | 20-25 percent | 45-50 percent |
| Polymers            | 5-10 percent  | 10-20 percent |

Figure 5 - World Biobased Market Penetration 2010-2025 Source: USDA, U.S. Biobased Product Market Potential and Projections [https://www.bio.org/sites/default/files/20100310\\_biobased\\_chemicals.pdf](https://www.bio.org/sites/default/files/20100310_biobased_chemicals.pdf)

The Biomass Innovation Centre has developed strategic partnerships with Ontario innovation clusters, as well as Finnish and Swedish research and trade organizations to ease technology and knowledge transfer and identify gaps in support. A BIC-led Northern Ontario Opportunity Discovery Tour brought 25 industry and sector leaders from Finland and Sweden through northern Ontario towns, to identify opportunities for manufacture and development of bioenergy solutions. This has led to the Finnish government expressing a desire to develop joint research opportunities with key Ontario ministries and joint ventures with industry leaders.

It is clear that the Northern Ontario Bioeconomy Strategy can be a critical success factor in The Honourable Brad Duguid's mandate for the Ministry of Economic Development, Employment and Infrastructure, particularly "developing strategies for key-growth sectors... advanced manufacturing and automotive, agri-food, cleantech, ... natural resources" and "support ... communities that are still recovering from the global recession, with particular focus on Southwestern and Northern Ontario....to develop strategies to attract new investment and jobs".

#### ENVIRONMENT

The province has committed to reducing its carbon emissions and is exploring the best carbon price structure to employ. It has added the words "Climate Change" to the name of the Ministry of the Environment to highlight the importance of the issue, and mandated that The Honourable Glen Murray lead the Ministry of the Environment and Climate Change to "lead the development of a new long term climate change strategy for Ontario" to "to help our government achieve its greenhouse gas reduction targets for 2020". Bioenergy created from sustainable forest resources is carbon neutral, and can offer a quick win in reducing emissions, especially when compared with the current emissions profile from northern heavy fuel oil and propane heating systems.

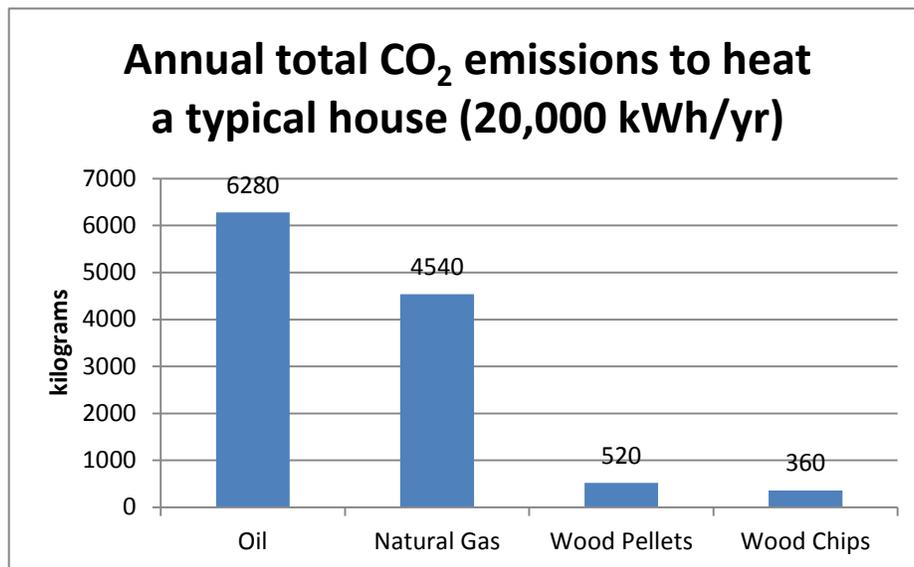


Figure 6 - GHG Emissions from different heating fuel types Source: Biomass Energy Centre  
[http://www.biomassenergycentre.org.uk/portal/page?\\_pageid=75,163182&\\_ad=portal&\\_schema=PORTAL](http://www.biomassenergycentre.org.uk/portal/page?_pageid=75,163182&_ad=portal&_schema=PORTAL)

## RECOMMENDATION

The Biomass Innovation Centre (BIC), hosted by Nipissing University in North Bay, was initiated by representatives from industry, NGOs, academia, municipalities, and First Nations to develop a robust bioeconomy in northern Ontario. By leveraging underutilized forest resources, waste, and other sustainable biomass sources, northern Ontario can provide local energy and fuels, develop new and innovative biocomposites and biochemicals, and ensure food security in northern communities.

The BIC has conducted extensive domestic and international research and held community workshops and seminars throughout northern Ontario to identify best practices, opportunities, and barriers to developing the northern bioeconomy.

Investing in a northern forest-based bioeconomy will benefit more than just northern Ontario. By helping Ontario reach its greenhouse emissions reduction goals, developing modern energy infrastructure to support remote mining operations, and identify new opportunities for our manufacturing sector, the northern bioeconomy seeds benefits in all regions of the province. Northern communities can reap large energy cost savings, reducing the need for provincial monies.

The province has already made considerable investment to develop key components of a thriving northern bioeconomy, such as establishing the Centre for Research and Innovation in the Bio-Economy (CRIBE), supporting demonstration projects such as the Bioenergy Learning and Research Centre at Confederation College, and investing in Whitesand First Nation's biomass-fueled combined heat and power plant.

However, the lack of an over-arching strategy has resulted in policy and regulatory barriers preventing the development of key projects in Ontario communities and First Nations jurisdictions, the responsibility and permitting of these projects to be fragmented across several ministries, and a dearth of skilled workers to support their



operation if implemented. A telling example of this fragmentation was revealed during the Ontario Green Schools Pilot Initiative, a joint effort of the Ministries of Research & Innovation and Education. Four projects under this initiative saw elementary schools without access to the natural gas grid converted to cleantech wood pellet boilers with fuel sourced from local providers. While the physical conversions took less than 6 months, it was another 5 years before the Ministry of the Environment provided Environmental Compliance Approvals to the schools to allow them to run their new systems.

To address these gaps and realize the potential economic and environmental benefits of a bioeconomy, The Union of Ontario Indians and Nipissing University have partnered to develop a Northern Ontario Bioeconomy Strategy.

The Biomass Innovation Centre recommends that the Government of Ontario:

**Recommendation 1:**

Support the development of the Northern Ontario Bioeconomy Strategy through both direct funding and a coordinated effort to reduce policy and regulatory barriers for businesses looking to develop bioenergy projects and new bioproducts.

**Recommendation 2:**

Prioritize the allocation of forest resources to support the development of community bioenergy and biofuel projects in First Nations communities and northern municipalities.

**Recommendation 3:**

Fast-track the review and modernization of regulatory and policy barriers to align with global best practice.

**Recommendation 4:**

Support the growing partnerships with Finland and Sweden, world leaders in bioeconomy development, to develop a joint plan for knowledge and technology transfer and to explore trade and investment opportunities.

**Recommendation 5:**

Support the development and implementation of 10 demonstration projects throughout the north to spur knowledge and technology transfer to other communities, as well as derive the economic benefits of the projects themselves.

**Recommendation 6:**

Develop a skills and training plan to identify and address gaps in the necessary skill-sets required by the emerging bioeconomy, with a particular focus on First Nations youth and young entrepreneurs.

## NEXT STEPS

The Biomass Innovation Centre and the Union of Ontario Indians will be conducting community engagement sessions throughout northern Ontario in the months of February and March, 2015. These sessions will identify demonstration project types and locations with the greatest economic impact, highlight the existing regulatory and policy barriers to the bioeconomy and global best practices for modernizing them, build public/private funding partnerships to develop those projects, and map out a high level skills/training plan to meet the expected demand for bioeconomy skills and knowledge.

The strategy will be shared with the larger public at an international event hosted in northern Ontario.

Both organizations will be submitting funding proposals through various ministries and agencies to fund the implementation of the strategy. We anticipate the opportunity to work closely with the various ministries affected by the strategy to ensure projected benefits are realized.

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