

## **Trains on track to play key role in bioeconomy**

**Emerging biofibre industries should help revitalize Ontario's northern communities.**

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During a trip this past spring to the small town of Hearst in northern Ontario, I realized too late that I didn't have to drive 13 exhausting hours, the last few through heavy snow.

I could have, should have, taken the train. And I would have, had I known there was an affordable service that could get me to Hearst.

There is.

To my surprise, there are 13 short line and regional railways connecting small towns in Ontario to the larger North American rail network. In fact, one of the standout features of most towns I drove through on the way to Hearst was the railway track that cut a path through each community.

Recognizing Ontario's existing rail networks, particularly in the north, is important if the government is serious about developing a new industry around what's often referred to as "forest biofibre."

In Ontario, it appears the government is getting serious about what to do with the province's abundant supply of forest biofibre, which is often just burned at the side of logging roads. In March it submitted its draft "Forest Biofibre Policy" for comment on the environmental registry. The Ministry of Natural Resources is now in the process of reviewing all comments and making necessary changes before coming out with an official policy.

"As the province's largest power user it is anticipated that the forest industry will use forest biofibre to replace fossil fuels to reduce the costs of heat and electricity for their manufacturing processes and at the same time offset significant electrical demand on Ontario's power system," says the draft.

But the envisioned biofibre industry would accomplish much more, including the creation of new business opportunities. "Resources such as forest biofibre will be used to replace non-renewable inputs for the production of biomaterials, bioenergy, biopharmaceuticals and other bioproducts."

Indeed, the draft continues, "the demand for forest biofibre is anticipated to increase and become more diversified."

Emerging technologies will make forest biofibre increasingly useful. New enzymes and bacteria can be used to help turn the material into ethanol fuel, and some companies considering this approach are already looking at towns like Hearst as possible sites for cellulosic ethanol plants.

Pyrolysis machines will be able to convert the biofibre into bio-oil and synthetic gas used for heating and power generation, or char for agriculture enhancement and carbon storage.

The oils extracted from forest biofibres can even be broken down or mixed into various chemicals used to produce everything from plastics to foods. On a more basic level, the material can just be burned directly for heat or electricity.

It's a renewable feedstock, and it's carbon-neutral – that is, any carbon dioxide emitted into the air through these various processes will theoretically be reabsorbed into new plant life that grows in its place. If left to rot on the ground, it release methane, which as a greenhouse gas is 20 times more potent than CO<sub>2</sub>.

Mind you, not all the biofibre can be taken from the forest. A certain percentage has to be left behind to assure that much-needed nutrients flow back into the soil and enable new growth.

It's part of the reason the province is coming out with a policy that will involve licensing the right, for a fee, to harvest biofibre in a sustainable way that doesn't damage forest regeneration. The details are sketchy, but the intent is there.

The reason having a railway network is so important is that for a biofibre industry to emerge in the north there needs to be a way of transporting raw material and resulting products in an economic and, just as important, more environmentally friendly way.

Ethanol at a plant will need to be transported to major market centres. The raw biofibre will have to be sent to central processing facilities, or to individual industrial customers that want to burn it directly as fuel. Using trucks is not only uneconomical, but it's more damaging to the environment and makes the roads less safe for the people living in these communities.

According to the Railway Association of Canada, one train can remove the equivalent of 280 trucks or 1,000 cars from the road. "A train that moves 1,000 kilometres will save 4,000 tonnes of greenhouse gas emissions compared to moving those goods by truck."

On top of this, there's an opportunity to use cleaner and more efficient train technologies, such a hybrid trains from Railpower or General Electric, or trains that run on the same biofuels they transport.

Already we're seeing how trains can play a role in Ontario's emerging bioeconomy. A new 150-million litre ethanol plant in Aylmer, operated by the Integrated Grain Processors Co-operative, is depending on rail service to receive corn feedstock and to ship out ethanol to customers once the plant becomes operational in the second half of 2008.

Queen's University professor David Layzell, research director with the biomass research think-tank BIOCAP Canada, conceives of a day when there will be a network of pipelines in northern Ontario that could support the transport of ethanol and other biofuels to major markets, similar to what we have for conventional oil and natural gas.

That day could come, but before we get there we'll have to depend on the trusty train, which in many respects will be crucial to jumpstarting the economies of Ontario's northern communities.