

The Bioenergy Rush

by **Melissa Felder**



ell the average Canadian that the 16 million tonnes of excess tree bark in this country has an energy content in the same order of magnitude as Alberta's tar sands, and they'd look a tad suspicious. Add another 11 million tonnes of harvest waste burned or left to rot, and the suspicion grows. And then mention the massive pine beetle devastation in BC, with infestation rates of 90 million m³ of wood in 2006 and one billion m³ expected by 2016. Then mention the dry nature of this wood, and the increase in forest fires out west. If the eyebrows haven't risen enough yet, mention that the pine beetle is taking up residence across Canada's boreal forests, starting in northern Alberta.

Even excluding agricultural and municipal solid waste, someone should be getting the point. We have a lot of biomass, and the resource, environmental, and revenue opportunities are starting to compile ad *infinitum*. So, what are we doing about it?

First off, bioenergy is *complicated*. Its greatest attribute – namely versatility – is also its main challenge. Unlike wind power, biomass comes from a multitude of sources, can be processed in myriad ways, and provide products from fuels (biodiesel and ethanol) to traditional heat and power, and bio oil. The latter, like petrochemical-derived oil, can be further fractionated and refined to yield more valuable products. Taxol for example, a cancer-fighting agent extracted from yew bark, sells for over \$1,000,000 per kilogram! It's more than heat and power.

Besides low-impact hydro, bioenergy is also one of the only renewable fuels that can be stored and

transported, making it invaluable in any country's renewable energy portfolio. The US has been on the ethanol bandwagon as a result, and Canada has been quick to follow, with its own renewable fuels target of 1.4 billion litres of ethanol and 500 million litres of renewable diesel by 2010.

Bioenergy has been aptly compared to "a thousand flowers blooming." Understanding and capitalizing responsibly and effectively on such varied opportunities is challenging.

Still, BC and Alberta have announced programs to develop bioenergy. Similarly, Ontario has one of the more innovative programs in North America to compensate renewable electricity generators via the Renewable Energy Standard Offer Program (RESOP). It offers a base rate of 11 cents per kWh, and projects delivering electricity during peak hours get an extra 3.52 cents.

In the eight months since RESOP was launched, contracts for wind energy have reached nearly 300 MW, solar has jumped from zero to almost 60 MW, and bioenergy to almost 28 MW. Although contracted bioenergy projects have focused on landfill gas, RESOP has great potential to support bioenergy growth in Ontario.

Developments are not limited to electricity. The pulp and paper sector has embraced biomass energy, and is now the largest industrial source of cogeneration. More than 58% percent of the pulp and paper sector's energy consumption comes from biomass, and over 45 plants in Canada now use cogeneration for process steam and power. Several more mills are in the final planning stages of new installations. As biomass investment and technology advance, 100% industry energy

Finnish Tech in T.O.

The Canadian Bioenergy Association (CanBio) is hosting an international bioenergy harvesting and processing conference and tour in Toronto in mid September, and Finnish experience and technology will be front and centre. *Realizing the Bioenergy Opportunity* is a two-day conference followed by a one-day tour, held September 12-14. It includes a trade show of Finnish biomass residue harvesting and bioenergy technology, and tours of local bio-oil plants. More info: www.canbio.ca, (613) 321-2303.

self-sufficiency is conceivable.

Recently, Abitibi-Consolidated and the Ontario MNR announced an \$83-million biomass boiler in Abitibi's fledgling Fort Frances operation. It will use the mill's bark, sludge and slash, and purchase wood waste from sawmills to produce all of the mill's steam and to power its 50-MW steam turbine. This will secure over 600 jobs, and create about 50 new jobs in biomass harvesting and transport. It will also buffer the mill from soaring gas and electricity costs, and cut greenhouse gas emissions by nearly 90%.

The use of mill waste is also growing rapidly in western Canada, where substantial increases in the price of natural gas have pushed companies like Canfor and Interfor into major investments in biomass-fired combined heat and power (CHP) plants. Some are financed and operated by third party investors in the energy field.

Biomass energy from forest products can also boost the energy self-sufficiency of remote communities. BC's Williams Lake Power Plant – the largest biomass power plant in North America – has reduced landfill and air quality problems for the community. It burns 550,000 green tonnes annually of wood waste, including bark, chips and sawdust from area sawmills to produce 60 MW, with BC Hydro buying 55.

This is but the tip of the iceberg. Canada has a significant opportunity to link bioenergy solutions with endemic resource management problems, whether livestock waste, beetle-killed timber, or municipal solid waste. It is not an easy challenge, but the rewards are multiple, and renewable.

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