



# Biomass residue conversion could energize northern economy

Business, government and Saskatchewan's research community are working together to transform a stubborn environmental problem into an economic opportunity for Northern Saskatchewan. The partners are using innovative technologies to convert biomass such as forestry wastes and flax straw into environmentally friendly ethanol and electricity.

Already, SaskPower is working with the Zelensky Brothers Sawmill in La Ronge on a wood gasification demonstration project. Synthetic gas produced from a mountain of wood residue at the sawmill site will fuel two internal combustion engines to produce 600 kW of electricity. Approximately 10 tonnes of wood residue per day will be converted to gas. Waste heat from the engines will be used in a kiln to dry green lumber.

Significant wood residue is produced at a number of mills around Saskatchewan's North and biomass energy projects are in the planning stage in several communities. One study puts the annual volume of wood residues produced in Saskatchewan at 1.7 million cubic metres. In addition, more than 6 million cubic metres of residue are already stockpiled at mills throughout the north. SaskPower has projected up to 65 MW of electrical capacity from forestry wastes.

Wood wastes were once used as "hog fuel" in "beehive" burners that produced the strong smell familiar to anyone who has ever been in a mill town. Along with the smell, the old-style burners produced significant amounts of air pollutants. Eliminating the burners has not been a satisfactory solution, however, since the wastes were simply stockpiled or put in landfills and burned. The growing mass of wood residues has also become a fire hazard.

Environmental studies show that converting wastes into energy results in cleaner air.

It also reduces emissions of the greenhouse gases (GHGs) thought to cause climate change. Electricity from biomass could help meet the electrical needs of residents and businesses in northern Saskatchewan. Producing power on site in northern communities is also more efficient, resulting in additional energy savings by reducing the power lost moving elec-

tricity across hundreds of kilometres of line from southern power plants. Because of 15% line-losses, approximately 1.2 kW of energy must be produced for every 1 kW delivered to a northern community.

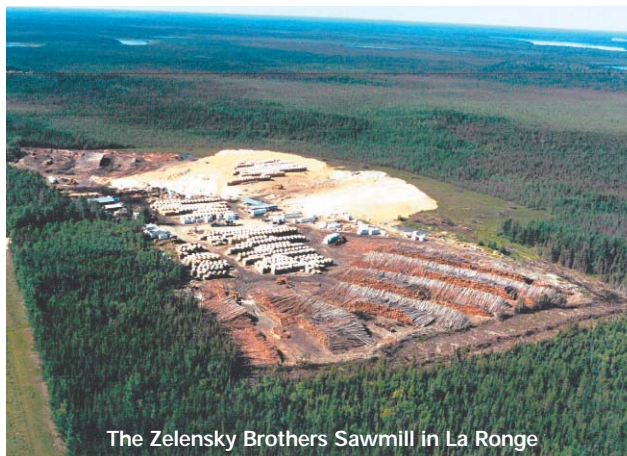
Forestry and agricultural residues can also be converted into ethanol, which can then be blended with gasoline. A "New Generation Co-op" formed at Nipawin has plans to produce 75 million litres of "biomass ethanol" annually. Once successfully demonstrated, this technology package can result in the development of several ethanol plants in the North.

One potential market for electricity or ethanol produced in the North may be Fort McMurray, in Northern Alberta, which is only 150 kilometers from La Loche in Northwestern Saskatchewan. Fort McMurray could use biomass-based energy to "green" its synthetic fuel production process. Its existing pipelines could also be used to transport fuel to southern markets.

Production of electricity and fuel in the North, using existing, renewable resources, may also help spur a broad range of economic initiatives in areas such as La Ronge, where development has been held back by a lack of locally available energy resources.

Proponents of the Nipawin project anticipate annual revenues of \$35-40 million and the creation of 60-70 new jobs. GHG reductions from biomass conversion – including the 275,000 tonne reduction resulting from the Nipawin ethanol plant – will help meet Canada's targets for reduced emissions under the Kyoto Protocol and may also result in the sale of carbon credits on national and international markets.

Projects that utilize biomass to produce energy and reduce GHG emissions also attract federal funds and capitalize on investments from outside investors and companies. What is more, the knowledge and experience gained from biomass to energy conversion will result in technologies and processes that can be exported to other provinces and countries.



The Zelensky Brothers Sawmill in La Ronge