



The sixth annual Canadian Renewable Fuels Summit: Growing beyond oil

Tammy Klein, Executive Director of the Global Biofuels Centre, discusses the global biofuels outlook at the Summit.



Dave Roels photo

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The role of renewable fuels in lowering greenhouse gas (GHG) emissions and in contributing to Canada's environmental agenda, energy security, and economic development by creating green jobs and growth, was the focus of discussion at the sixth annual Canadian Renewable Fuels Summit.

Held from November 30 to December 2, 2009 in Vancouver, BC, the summit is the annual meeting of the Canadian Renewable Fuels Association (CFRA). The CFRA (www.greenfuels.org) is a non-profit organization whose mission is to promote using renewable fuels, such as ethanol and biodiesel, for transportation and energy. According to **Gordon Quaiattini**, the outgoing president of the CFRA, the organization's work is becoming increasingly relevant, especially since the Canadian government legislated a Renewable Fuel Standard (RFS) last year.

This standard mandates a five percent renewable fuels requirement in gasoline by 2010, and a two percent renewable fuels requirement in diesel by 2012. British Columbia, in its 2007 Energy Plan, has mandated a RFS for BC with a five percent renewable fuels requirement in both gasoline and diesel by 2010. The International Energy Association projects that by 2030, 23 percent of global transport fuel demand will need to be met by renewable fuels to keep pace with global energy use. Presenters at the summit see these emerging policies and

market demands as huge opportunities for Canada's renewable fuels industry.

The approximately 300 participants at the summit, mainly from the ethanol and biodiesel industries, included representatives from the forest, agriculture, and petroleum industries, and from government. Most were from Canada, but many also came from the USA. The focus of the summit was growing beyond fossil fuels in a way that offers sustainable growth for Canada.

In his opening remarks, **Blair Lekstrom**, BC's Minister of Energy, Mines and Petroleum Resources emphasized his government's commitment to growing the renewable fuel industry to create green jobs and make BC a clean energy powerhouse. In his presidential remarks, Gordon Quaiattini, mentioned that in a new national poll of 1250 people conducted by Praxicus Public Strategies and commissioned by the CFRA, 84% of Canadians support promoting the use of renewable fuels. Canadians want our energy supply to grow beyond oil. The poll also found that 74% support the national RFS mandate, an increase of 8% since support was last measured in April 2008. Quaiattini said that this poll indicates that the more Canadians learn about renewable fuels such as ethanol and biodiesel, the more likely they are to embrace switching to these fuels.

...continued on page 16



...continued from page 15

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Participants also discussed next-generation biofuels (from non-food feedstock such as wood, forest residue, municipal waste, and grasses) becoming the cornerstone for the future growth of the renewable fuel sector. First-generation biofuel processes, which use agricultural crops and waste such as corn, sugar cane and canola are useful, but have become controversial in the eyes of environmental and poverty activists and government policy makers who claim that feedstock and production processes cannot produce enough biofuel without threatening food supplies and biodiversity. **Tim Haig**, CEO of BIOX Corporation, which uses a wide variety of next-generation feedstocks in their largest-in-Canada biodiesel facility in Ontario, said that next-generation biofuels can only grow if the sector has a strong first-generation biofuel industry. However, it is increasingly understood that first-generation biofuels are limited in their ability to achieve targets for oil-product substitution, climate change mitigation, and economic growth.

On the other hand, many believe that next-generation biofuels can solve some of these problems by using non-food feedstock and biofuel production technologies that can supply higher-quality fuel sustainably, affordably, and with greater environmental benefits. The summit discussed some very exciting next-generation renewable fuel technologies being developed in Canada. Next-generation biofuels are being made with increasing success out of wood waste, grasses, and municipal waste. Lignol, a company based in Burnaby, BC, has started production in a new pilot plant using a wide range of cellulose feedstock including mountain pine beetle (MPB)-killed pine, and other hardwood and softwood species to produce cellulosic ethanol and a variety of bio-chemical co-products. Ethanol from cellulose is the same as corn-based ethanol, except that it is produced from abundant cellulosic feedstocks such as woody biomass, straw, and agricultural residues. Just two-tenths of one percent of the projected one billion m³ of MPB-killed pine would produce enough ethanol to meet the five percent ethanol-blended gasoline RFS mandate for BC (Lignol 2009). According to a life-cycle analysis done by Natural Resources Canada (NRCan), transportation fuel blended by cellulosic ethanol will be approximately four times more effective than conventional grain ethanol in reducing GHGs (Lignol 2009).

Ken Field, founder and chairman of Greenfield, Canada's largest producer of fuel ethanol from plants based in Ontario and Quebec, said that ethanol reduces GHG emissions by 60% compared to

gasoline. Ethanol is already a component of the gas used in Ontario, Manitoba, and Saskatchewan, and by 2010 all gas in Canada will contain at least five percent ethanol as mandated by the federal RFS. Most gas-powered vehicles can run on an ethanol-blended gasoline having up to 10% ethanol, and this blend is available at several gas stations across Canada. According to Field, ethanol not only cuts GHGs, but reduces all tailgate emissions, thus leaving behind less-polluted air.

Ross MacLachlan, president of Lignol, said that there is a need to accelerate the rate of commercialization of cellulosic ethanol as production has not grown at a reasonable pace because of conversion costs. He said that there is a need to drive capital and feedstock costs down so that the biofuel sector can compete with the oil industry. Similarly, tax policy should support the production of biofuels. Public policy on biofuels tends to play out in silos that separate the energy, forestry, and environment sectors. MacLachlan said that the industry needs a political champion—someone who can bring together these silos and deliver a coherent policy for the biofuel sector.

The emphasis on next-generation biofuels was of particular interest to the forest industry. **Arvim Lazar**, the president and CEO of the Forest Products Association of Canada (FPAC), one of the keynote speakers at the summit, said that the Canadian forest industry is on the leading edge of developing next-generation biofuels. He stated that 60% of the forest industry's energy use is from wood waste-based biofuels and, because of this, the industry has reduced GHGs by 60%. The FPAC target is for its members to be 100% bioenergy dependent, and eventually produce extra bioenergy to export outside the forest-product sector. According to Lazar, the goal for the forest industry is to adopt a zero-waste approach whereby a tree is used for wood, the chips for pulp, and the bark, dust, and chips for bioenergy.

Dan Roberts, Managing Director, CIBC World Markets in his presentation, "Bioenergy—A Forestry Sector Perspective," stated that there is a convergence of markets for fuel, food, and fibre. The economics of biofuels is driven by the price of fossil fuels and carbon, and by conversion technologies. He said that there are nine pathways to convert biomass to energy, and that the forestry sector has chosen to focus on the thermo-chemical pathway. Forest-based biomass prices will be influenced by the volatility of the prices of pulpwood and transportation costs. Roberts also said that bioenergy can only grow if there is government support, and that it has to be environmentally sustainable. He mentioned that government support for bioenergy



production from forests can grow if policy makers are convinced that the industry is addressing three factors: indirect land-use change (ILUC), sustainability of forests, and sustainability of soils.

ILUC was raised by several presenters as a major challenge to the growth of the biofuel sector, especially in the USA. The debate around ILUC is whether the market price of biofuels should include a penalty for theoretical, indirect economic effects. Land-use change is just one of many indirect effects. **Bob Dineen**, president and CEO of the Renewable Fuels Association (USA), mentioned that ILUC theory uses speculative models and incorrect assumptions in an attempt to blame US farmers for deforestation in Brazil. According to the theory, corn used for ethanol displaces other crops such as soybeans. This in turn, causes farmers in other countries, such as Brazil, to cut down rainforests to grow soybeans to meet the depressed demand. **Brooke Coleman**, executive director of the New Fuels Alliance compared ILUC with a speculative theory about the growth in popularity of Toyota's Prius hybrid car. If, for example, 50% of the population buys the Prius, this would depress the price of gasoline and thus perpetuate the use of SUVs because of low gas prices.

According to Dineen, the data and facts contradict the theory of ILUC. Many scientists challenge the credibility of the economic models used to approximate the theoretical values of GHG emissions projected from ILUC. Dineen called upon the CFRA members to counter this theory whenever possible, as the US Environmental Protection Agency and the European Union are considering penalties for ILUC. Despite the widespread frustration of most presenters about the ILUC, one participant commented that until the science is clear about ILUC, precaution should prevail.

Dineen urged CFRA members to actively engage in debates about food versus fuel, and the environmental benefits of renewable fuel. He said the December 2009 meeting in Copenhagen on climate change does not have renewable fuels and its role in reducing GHGs on the agenda because of the environmental community's position on the food-versus-fuel debate. He emphasized that food security can only be achieved if we have energy security.

Jeff Passmore, chair, CFRA and executive vice-president, Iogen Corporation said that feedstock production for energy purposes only uses 2.3% of land that is currently under agricultural production globally. Iogen Corporation has a world-leading demonstration plant in Ottawa that produces cellulosic ethanol from a variety of non-food

stock, mainly wheat straw. Enerkem Inc., based in Montreal, is another next-generation renewable fuels leader using solid municipal waste and forest residues to produce advanced biofuels.

Tammy Klein, the executive director of the Global Biofuels Centre said in her presentation "The Whole World is Going Towards Biofuels" that the growth driver for biofuels is not coming from North America, but from countries in Asia and the Pacific, which import most of their fossil fuels. Biofuels demand and supply are projected to grow, with demand for ethanol growing faster than biodiesel. Ethanol production will double by 2015, with most of it coming from North America. Currently, Brazil and the USA are the largest producers of ethanol while Canada has been a slow starter in ethanol production and consumption. Canada's production of ethanol is roughly 2% of that produced in the USA. Around one-third of all vehicles in Brazil currently run on 100% ethanol, while Canada last year mandated an RFS of 5% ethanol-blended gasoline by 2010. **Klaus Ruhmer** from BDI Biodiesel International, a biofuel company based in Austria, said that while the technology to grow the biofuel industry is available, policy and political support similar to current levels in Europe are also needed. Greater political support should result in a greater availability of capital—for example, greater allocation in the federal stimulus package for biofuels, similar to what has been done in the US.

The future of the renewable fuel industry in Canada is exciting. With Canada's forest and agricultural resources, and its commitment to reducing GHGs, the renewable fuels industry is ready for take-off. I could feel the sense of urgency and positive outlook of the summit participants, and was very impressed by the innovative technologies and ideas presented. Renewable fuels are here to stay and play a larger role in Canada's economic and environmental agenda. 🌲



Dave Roels photo

Todd Moser of Rothsay Biodiesel describes his company at one of the breakfast sessions at the Summit

Reference

Lignol Energy Corporation. 2009. Cellulosic Ethanol—The Sustainable Fuel. Company Brochure. November 2009.