Newsletter Issue #35 December 2013

Commercializing Conventional and Advanced Liquid Biofuels from Biomass

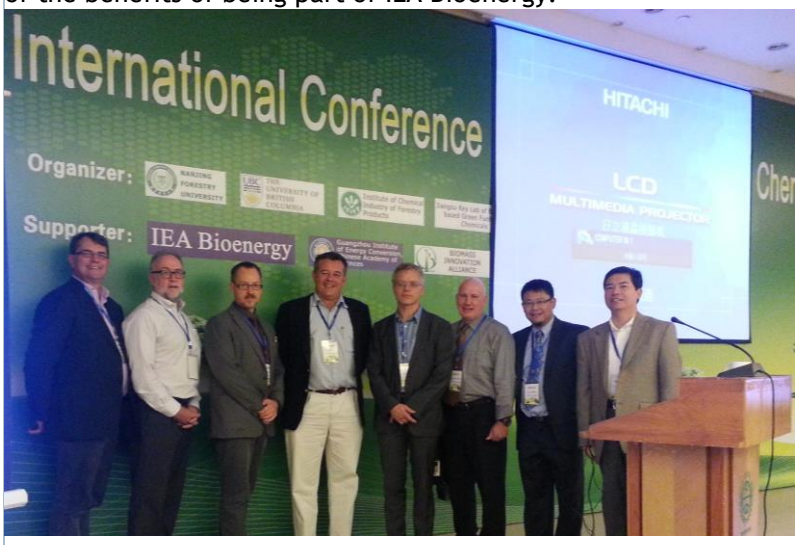
Task 39
IEA Bioenergy

Inside This Issue

From the Task

By Jack Saddler, Jim McMillan and Susan van Dyk

There are a number of areas of progress to highlight since the last issue of the Task 39 newsletter. In response to an invitation from colleagues in China working on biofuels, an informal Task 39 meeting was organized to profile the work of Task 39. This Chinese government sponsored conference, held 14-17 October, 2013 in Nanjing, was entitled, the "International Conference on Biomass Energy and Chemicals" and profiled R&D being carried out on biofuels in China and also provided a forum to show representatives of the Chinese government, industry and academia about some of the benefits of being part of IEA Bioenergy.



Task 39 members at the conference in Nanjing, China

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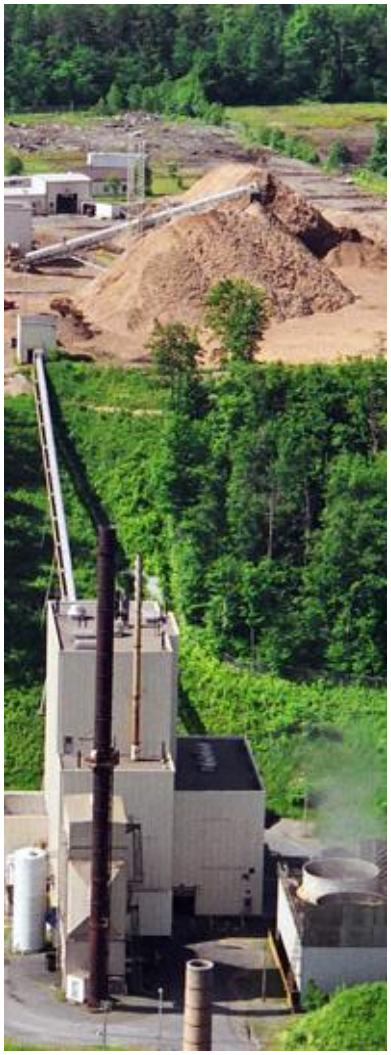

Image Source: esf.edu.com

Several Task 39 members from Australia, Canada, Denmark, Japan, Korea, USA, and Sweden presented at the conference and the officials from China's central government were encouraged to contact the Chair or Secretary of IEA Bioenergy to see if they might be invited as observers to the next IEA Bioenergy Executive Committee meeting. More details on the conference can be found at the following link (http://icbec2013.njfu.edu.cn/index.asp).

Looking to the future, the next formal Task 39 business meeting will be held 22-23 January, 2014 in Berlin, Germany, in conjunction with the "Fuels for the Future" conference being held January 20-21, 2014. The Task 39 meeting will be held on 22 January, while a joint meeting with Task 42(biorefinery) will be held on 23 January to reinforce and facilitate these tasks' on-going close collaboration. Task 39 has also helped to organize two sessions within the Fuels of the Future conference. One session will focus on policy tools to help develop biofuels and the other will focus on technical and commercialization progress for advanced biofuels. These sessions will comprise presentations by Task 39 members. We would like to extend our special thanks to Axel Munach and our other German colleagues for helping organize these sessions and the Task 39 business meeting in Berlin!

We continue to try to improve and refine the Task 39 website, www.task39.org. New features include a Search on the homepage, as well as a Share button which allows you to share the site on social networks. We are also putting in place Share buttons with recent publications to allow you to share or email such publications to interested parties. The ability to more readily share the site and documents with others is intended to increase the Task's profile and the number of visitors to the website. Please visit the updated site and let us know if you have any recommendations or comments.

One of our Task 39 reports, "The potential and challenges of drop-in biofuels" (T39-T4) is currently undergoing internal review. It will first be circulated within the Task 39 member countries before eventual public release later in 2014. Another report in the final stages of being compeleted is the Task's periodically updated "Biofuel Implementation Agendas" report (T39-P1a) examining biofuels policies across Task 39 member countries. This report will summarize international progress on policies aimed at supporting the development of conventional and advanced liquid biofuels.

We welcome your feedback. Please direct your comments to Susan van Dyk

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Co-Task Leader (Agency):	**Jack Saddler** (Univ. of British Columbia)
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Since the last newsletter, Sergios Karatzos, who for the past two years was Task 39 coordinator and editor of these newsletters, has left the Task for a managerial position at Steeper Energy in Calgary, Canada. Sergios most recently contributed significantly to the 200 page "The potential and challenges of drop-in biofuels" report currently undergoing internal review. This was in addition to his effective handling of diverse administrative duties such as replying to frequent enquires, pulling together draft newsleters, coordinating logistics and agendas for Task 39 meetings, etc. Sergios' participation in the Task will be greatly missed. We thank him for his many contributions to the Task and wish him all the best in the next stage of his bioenergy career! Beginning with this newsletter, Dr. Susan van Dyk fully takes over the coordinator role for Task 39.

Following our standard newsletter format, the latest developments in what could be called the *biofuels world* are covered in the *news section* of this newsletter.

The advanced biofuels sector continues to grow as implied by the title of a recent ***Time*** magazine article which states, "Next-Generation biofuels are inching towards reality, gallon by gallon". The RIN data published by the US EPA for October showed that cellulosic ethanol and diesel had been produced for the fourth month this year. Since the last newsletter, Beta Renewables, part of the Mossi Ghisolfi group of companies, marked the official opening of its commercial scale advanced biofuel facility in Crescentino, Italy. Biochemtex, part of the same company, is further planning to construct a cellulosic biofuel plant in Sampson County, North Carolina that will produce 20 million gallons of biofuel per year from agricultural residues, energy crops and woody biomass. And still within the same group of companies, M&G Chemicals announced a decision to construct an advanced biorefinery in China to convert 1 million metric tons of biomass into ethanol and bioglycols. This facility will hande four times the volume of biomass as the Crescentino facility. The Brazilian ethanol giant, Raizen also started construction of a commercial biomass-to-ethanol facility using Iogen Energy's advanced cellulosic biofuel technology to produce cellulosic ethanol from sugarcane bagasse straw. In Germany, BASF produced its first commercial volumes of 1,4-butanediol from renewable material, while Green Biologics obtained funding to establish a demonstration plant in the US to produce n-butanol from corn mash. The USDA also announced $181 million in loan guarantees to build several commercial-size refineries making advanced biofuels or to retrofit existing biorefineries to produce biofuels.

Biodiesel also featured in the news with the EU imposing anti-dumping duties on biodiesel imports from Argentina and Indonesia which will apply for five years. In Canada, the Kyoto Fuels Corp began construction of the largest biodiesel plant in Canada at 66 million litres capacity. In New York, Tri-State Biodiesel is planning to purchase and upgrade Bridgeport Biodiesel. In the Bahamas, the Grand Bahama Power Company opened a demonstration project for producing biodiesel from jatropha.

Ongoing debate about the sustainability of biofuels continues. A UK-based report found that biofuels are more cost-effective in reducing GHG emissions compared with electric vehicles, while the E100 Ethanol Group in the US claim that E100 vehicles will cut emissions more effectively compared to electric vehicles or vehicles run on fuel cells (so-called Zero Emission Vehicles). Forty-one leading scientists sent a letter to the EPA pointing out that biomass used in biomass-fired power plants does not have the same carbon neutrality as agricultural residues. While ILUC factors are being debated in the EU, Neste Oil became the first company to be awarded a certificate under the Roundtable on Sustainable Palm Oil's (RSPO) new certification system.

On the policy front, the US EPA published their proposals for the 2014 levels of renewable fuels to be blended in to gasoline and diesel. The proposal reduces the effective mandates for various categories and sparked strong reactions from industry. The official 60-day comment period opened on 29 November. In the EU, after members of parliament voted for a 6% cap on food stuff-based biofuels and the introduction of sustainability factors (ILUC), EU environment ministers are set to vote on modifying this cap to 7%, while also seeking to scrap the introduction of ILUC factors. In Argentina, the mandatory biodiesel blend was raised to 10% from 8% after the EU introduced anti-dumping duties against biodiesel from Argentina and Indonesia. Zimbabwe introduced a mandatory E15 blend from 30 November, hoping to increase this to E20 by the end of January 2014. South Africa further announced that mandatory blending, as E2 and B5 will come into effect from 1 October 2015. Brazil is reported to be considering increasing its biodiesel mandate to 7%. In South Korea, the oil industry is putting pressure on the government to prevent the B2 mandate from being increased to B3 as planned.

Several interesting reports have been published since the last newsletter, including:
a) The US Federal Trade Commission published a Report on the State of US Ethanol Production;
b) IEA World Outlook 2013;
c) The DOE's Inspector General published an audit report on the "Financial Assistance for Integrated Biorefinery Projects";
d) Task 40 published a report on "Large Industrial Users of Energy Biomass"; and

e) The sustainable energy consultancy E4 published a report, "A harmonized Auto-Fuel biofuel roadmap for the EU to 2030".

Any reader of past newsletters will know that Task 39's tradition is to profile biofuels work occurring within one of Task's member countries. This newsletter features a report on the latest biofuels policy, facilities, funding and research developments in Canada.

Jim, Jack and Susan

Canada – recent progress in transportation biofuels

Susan van Dyk, Jack Saddler

Background and policy

Canada has the world's third largest proven oil reserves (after Venezuela and Saudi Arabia) and is one of the top ten oil exporters in the world. Canada is also one of the world's five largest energy producers. Energy security is therefore not a factor in the development of Canada's renewable fuel industry. However, Canada is also one of the top ten consumers of petroleum in the world, with transportation-related energy accounting for about one third of its energy consumption during the period 2006-2011.

The development and production of biofuels in Canada has been promoted through various measures such as the implementation of a federal mandate of 5% renewable content for gasoline fuel in December 2010 when the Renewable Fuel Regulations came into force. Many provinces have equivalent or higher mandates, including 5% in Ontario, 7.5% in Saskatchewan and 8.5% in Manitoba. A Federal biodiesel mandate of 2% has been in place since December 2011, although some provinces, such as British Columbia, have a higher, 4% mandate. Although the overall structure of the regulation is similar to the Renewable Fuel Standard in the US, the primary objective of the Canadian regulations is to reduce greenhouse gas (GHG) emissions and fight climate change. Canada has a target of 17% GHG emission reduction by 2020 (based on 2005 levels).

Bioethanol and biodiesel production

According to the Canadian Renewable Fuels Association (CFRA), there are 16 plants (15 commercial and 1 demonstration) for conventional bioethanol production in operation at present. Advanced biofuel production is currently limited to 2 demonstration facilities, with 3 more plants under construction or proposed (See Table 1). Biodiesel is produced at 10 operational plants, 1 demonstration facility and 2 more facilities under currently under construction (Table 2). Plant locations are illustrated in Figure 1.

Canada's total ethanol production capacity is 1.80 billion litres, while the federal mandate (at 5%) requires about 2 billion litres. The estimated volumes of additional ethanol required to meet the federal mandate are 2,269 million litres for both 2013 and 2014. These shortfall amounts will be obtained through imports. Almost all of Canada's ethanol production comes from either corn (78%, east) or wheat (21%, west); the majority is produced in Ontario (58%), followed by Saskatchewan (19%) and Quebec (10%).

Although biodiesel production for 2013 is estimated to be 471 ML, production is expected to reach 646 ML in 2014 due to the imminent completion of additional facilities. Biodiesel is based on soybean, canola, animal fat and recycled oils, with canola expected to account for nearly 40% by 2014. Based on the current federal mandate (2%), about 600 million litres of biodiesel will be required.

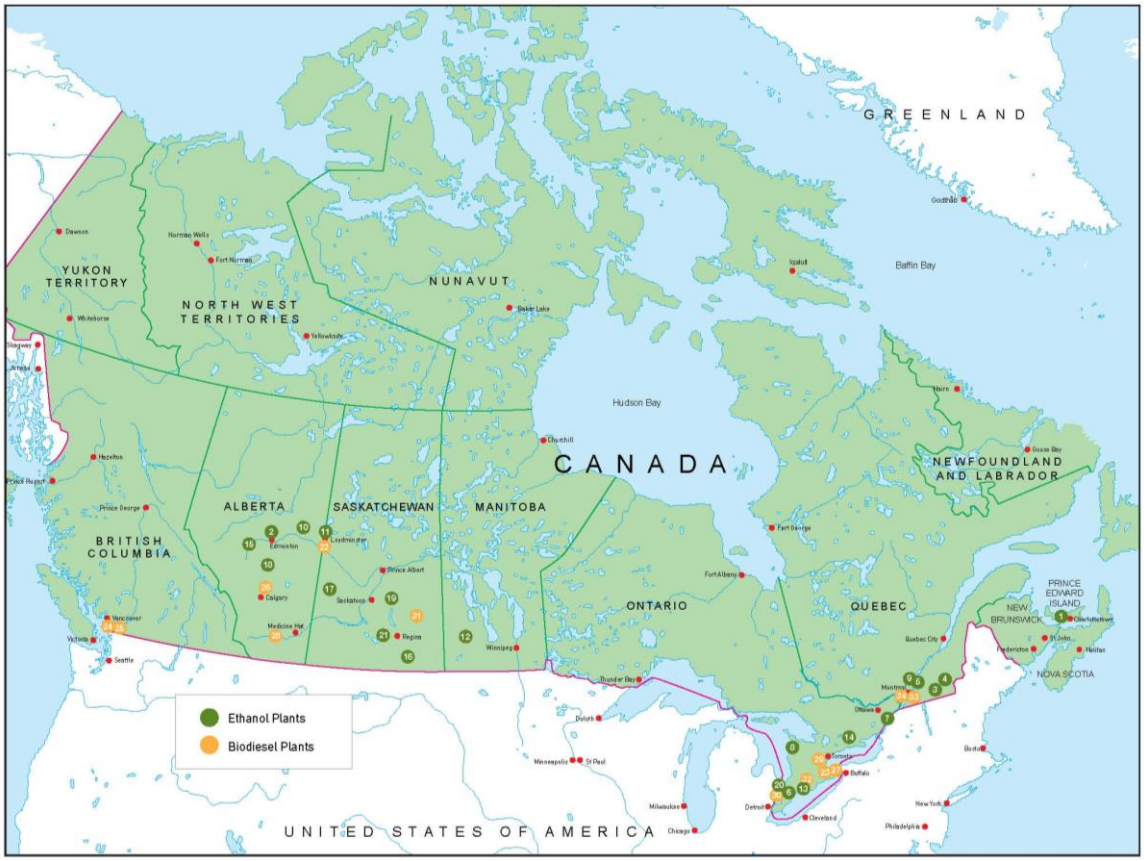

Figure 1. Locations of biofuel plants in Canada
Source: Canadian Renewable Fuels Association (www.Greenfuels.org)

Table 1: Bioethanol – Canadian Production capacity as of September 25, 2013.
Source: Canadian Renewable Fuels Association (www.Greenfuels.org)

	Plant	City	Province	Feedstock	Capacity	Status
1	Atlantec Bioenergy Corporation	Cornwall	Prince Edward Island	Energy beets	n/a	Demonstration Facility
2	Enerkem Alberta Biofuels - Edmonton Waste-to-Biofuels Facility	Edmonton	Alberta	Post-sorted Municipal Solid Waste	36 Mmly	Under Construction
3	Enerkem Inc.	Sherbrooke	Quebec	Various feestocks	475,000 Litre/y	Demonstration Facility
4	Enerkem Inc.	Westbury	Quebec	Wood waste	5 Mmly	Demonstration Facility
5	Enerkem Inc.	Varennes	Quebec	Sorted industrial, commercial and institutional waste	38 Mmly	Proposed Demonstration Facility
6	GreenField Ethanol Inc.	Chatham	Ontario	Corn	195 Mmly	Operational
7	GreenField Ethanol Inc.	Johnstown	Ontario	Corn	200 Mmly	Operational
8	GreenField Ethanol Inc.	Tiverton	Ontario	Corn	27 Mmly	Operational
9	GreenField Ethanol Inc.	Varennes	Quebec	Corn	120 Mmly	Operational
10	Growing Power Hairy Hill	Hairy Hill	Alberta	Wheat	40 Mmly	Operational
11	Husky Energy Inc.	Lloydminster	Saskatchewan	Wheat	130 Mmly	Operational
12	Husky Energy Inc.	Minnedosa	Manitoba	Wheat and corn	130 Mmly	Operational
13	IGPC Ethanol Inc.	Aylmer	Ontario	Corn	162 Mmly	Operational
14	Kawartha Ethanol	Havelock	Ontario	Corn	120 Mmly	Operational
15	Mascoma Corporation	Drayton Valley	Alberta	Wood	80 Mmly	Proposed Plant
16	NorAmera BioEnergy Corporation	Weyburn	Saskatchewan	Wheat	25 Mmly	Operational
17	North West Terminal Ltd.	Unity	Saskatchewan	Wheat	25 Mmly	Operational
18	Permolex International, L.P.	Red Deer	Alberta	Wheat, wheat starch, corn, barley, rye and triticale	42 Mmly	Operational
19	Pound-Maker Agventures Ltd.	Lanigan	Saskatchewan	Wheat	15 Mmly	Operational
20	Suncor St. Clair Ethanol Plant	Sarnia	Ontario	Corn	400 Mmly	Operational
21	Terra Grain Fuels Inc.	Belle Plaine	Saskatchewan	Wheat	150 Mmly	Operational

Table 2: Canadian Biodiesel Production capacity as of September 25, 2013.
Source: Canadian Renewable Fuels Association (www.Greenfuels.org)

	Plant	City	Province	Feedstock	Capacity	Status
22	Archer Daniels Midland	Lloydminster	Alberta	Canola	265 Mmly	Under Construction
23	BIOX Corporation	Hamilton	Ontario	Multi-feedstock	66 Mmly	Operational
24	City-Farm Biofuel Ltd.	Delta	British Columbia	Recycled oil/tallow	10 Mmly	Operational
25	Consolidated Biofuels Ltd.	Delta	British Columbia	Yellow grease	11 Mmly	Operational
26	FAME Biorefinery	Airdire	Alberta	Canola, camelina, mustard	1 Mmly	Demonstration Facility
27	Great Lakes Biodiesel	Welland	Ontario	Multi-feedstock	170 Mmly	Operational
28	Kyoto Fuels Corp	Lethbridge	Alberta	Multi-feedstock	66 Mmly	Under Construction
29	Methes Energies Canada Inc.	Mississauga	Ontario	Yellow grease	5 Mmly	Operational
30	Methes Energies Canada Inc.	Sombra	Ontario	Multi-feedstock	50 Mmly	Operational
31	Milligan Bio-Tech Inc.	Foam Lake	Saskatchewan	Canola	20 Mmly	Operational
32	Noroxel Energy Ltd.	Springfield	Ontario	Yellow grease	5 Mmly	Operational
33	QFI Biodiesel Inc.	St-Jean-d'Iberville	Quebec	Multi-feedstock	5 Mmly	Operational
34	Rothsay Biodiesel	Montreal	Quebec	Multi-feedstock	55 Mmly	Operational

Funding programs and incentives for promoting biofuels

Until recently, Canadian Federal incentive Programs generally placed a greater emphasis on biomass for heat and power generation built around an integrated biorefinery concept. The following programs have been used to drive this strategy:

- Green Transformation Program ($1 billion). Focused on pulp and paper companies who could earn credits of 16 cents per litre of "black liquor" produced. Ended March 31, 2012.
- Investments in Forest Industry Transformation (IFIT) program ($100 million). Discussed below.
- Transformative Technology Program ($40 million). Focused on "revolutionizing" the forest sector.
- EcoEnergy for Biofuels ($1.5 billion) (Final round of funding has closed) Total was cut to $1 billion.
- Sustainable Development Technology Canada (SDTC) ($500 million). Discussed below.

Sustainable Development Technology Canada (SDTC) is a not-for-profit foundation that finances and supports the development and demonstration of clean technologies which provide solutions to issues of climate change, clean air, water quality and soil health (http://www.sdtc.ca/). SDTC operates two funds: the SD Tech Fund supports projects that address climate change, air quality, clean water and clean soil; the NextGen Biofuels Fund supports the establishment of large demonstration facilities for the production of advanced ("next-generation") renewable fuels. SDTC receives funding from the Canadian Government and has funded 246 projects at a total funding level of $598 million. However, very few biofuel projects have been funded through the NextGen Biofuels Fund. The most prominent is the joint venture between Enerkem and GreenFields (VVANERO) to build and operate a cellulosic ethanol plant in Varennes, Quebec. Funding is currently $734,500 and could reach $39.8M, repayable once the project demonstrates commercial success. SDTC had previously awarded a total of $6.26 million to Lignol to assist with development of a biofuel from forestry waste. Another round of funding under the NextGen Biofuels Fund was announced at the end of 2012. To be eligible, a project must:

- be a First-of-Kind facility that primarily produces an advanced ("next-generation") renewable fuel at large demonstration-scale;
- be located in Canada;
- use feedstocks that are or could be representative of Canadian biomass; and
- have demonstrated its technology at pre-commercial scale.

The Investments in Forest Industry Transformation (IFIT) program was created in 2010 to support Canada's forest sector in becoming more economically competitive and environmentally sustainable,

using targeted investments in innovative technologies. IFIT is currently supporting 12 world-first and Canadian-first technologies in a range of subsectors and businesses, as well as a large number of other projects. More recently, the Forest Products Association of Canada (FPAC) has requested the federal government to provide an additional $500 million over the next 6 years to help the sector to continue to develop innovative breakthrough technologies.

Specific programs and funding that support research and development

The NSERC (National Sciences and Engineering Research Council of Canada) Bioconversion network strives to be the leading R&D network in the conversion of lignocellulosic biomass to fuel and valuable industrial chemicals. The network is led jointly by Dr. Hung Lee (University of Guelph) and Dr. Jack Saddler (University of British Columbia) and has its headquarters at the University of Guelph. The research carried out by the NSERC Bioconversion Network helps to develop energy efficient, commercially viable and environmentally sustainable biomass conversion processes that generate biofuels, biochemicals and biomaterials from wood biomass. The Network brings together university researchers, industry partners and centres around 4 research Themes, namely pretreatment, enzymatic hydrolysis, fermentation and implementation (Biofuel Policy and Co-product development/deployment). The funding for the Network supports the research of 14 university professors whose research is strategically focused in each of the Themes. The NSERC Bioconversion Network is also one of the member Networks that comprises the Canadian FIBRE network, which is a conglomerate of eight forest products related research networks. (http://www.nsercbioconversion.net/)

The Forest Innovation by Research and Education (FIBRE) network was launched in 2011 and is a network of networks that helps build synergies among eight forest R&D networks in support of Canada's forest sector innovation system. The eight networks range from the design and implementation of engineered wood building systems, to policies to support government decision-making strategies for adding value to Canada's boreal forests, to fuels and products from lignocellulosic biomass which encompasses the work in the NSERC Bioconversion Network. Partners of FIBRE include NSERC, Natural Resources Canada (NRCAN), Forest Products Association of Canada (FPAC) and FPInnovations. The main focus of FIBRE is the development of innovative products, applications and processes, as well as policy for the forest sector. Although the NSERC Bioconversion Network is a member of FIBRE, most of the other research efforts in FIBRE are not focused on biofuels development.

BiofuelNet is a Federally funded Network of Centres of Excellence (NCE) which commenced in 2012 with a budget of about $5 million/yr, bringing together the Canadian biofuels research community. The objective of BioFuelNet is to address the challenges impeding the growth of an advanced biofuels industry. BioFuelNet facilitates the coordination and optimization of research by addressing gaps that prevent commercialization. It currently funds 64 collaborative research projects across Canada, uniting academia, industry and government in order to find unique solutions for advanced biofuels in Canada.

Brief summary of provincial policies, initiatives and programs to support the development of biofuels at a regional level

Alberta – Bioenergy producer credit program (PCP); implemented carbon emission trading in 2007, but with limited success.
British Columbia – E85 exempt from Motor Fuel Tax, Funding of the BC Bioenergy Network, Liquid Biofuels Program and Innovative Clean Energy Fund; Carbon tax on fossil fuels ($20/t CO2 in 2010); target of 33% emission reductions by 2020 (base 2007).
Manitoba – Direct Payment Bioethanol Production Incentive.
Ontario – Ontario Bioethanol Growth Fund (OEGF) provides funding for capital assistance, operating assistance, independent retailers and research and development; Committed to obtain 13% of power supply from renewables by 2018; Cap-and-Trade system to reduce GHG emissions.
Quebec – Temporary refundable tax credit granted to corporations that produce bioethanol from renewable material and sell it for use in Quebec (max 10 years, expires 2018); Carbon tax on energy

companies (0.8 cents/litre gasoline & 0.9 cents/litre diesel); 20% reduction on GHG by 2020 (1990 base); incentives to convert use of heavy and light oil for heating to biomass.
Saskatchewan – Bioethanol Fuel Grants Program to fuel distributors.
Atlantic Canada – Atlantic Council for Bioenergy Cooperative (ACBC) founded in 2010, exploring options for cellulosic ethanol and renewable diesel via wood waste. A report was published in August 2013 titled, "Fueling the Future: Atlantic Canada's Bioenergy Opportunities Project".
(http://www.atlanticbioenergy.com/index.html)

Prominent Companies in the Canadian biofuels industry with a focus on advanced biofuels

Greenfield is the largest ethanol producer in Canada, producing a combined 650 million litres per year, of which 125 million litres are industrial and beverage grade alcohol, with the balance being fuel grade ethanol. The company has four plants that produce conventional bioethanol from corn in Chatham, Johnstown and Tiverton, Ontario, as well as Varennes in Quebec. The company is moving into production of cellulosic ethanol via its joint venture with Enerkem. (http://www.gfsa.com/home)

Suncor operates the largest ethanol facility in Canada at St. Clair in Ontario, which has produced conventional bioethanol from corn since 2006. Current production capacity is 400 million litres per year. Suncor also has a broader renewable energy involvement, with 6 operating wind power projects across Canada and a further two projects expected to commence operation in 2015, with a total capacity of 395 megawatts. (www.suncor.com)

Lignol's proprietary biorefining process consists of a pretreatment step which utilizes a modified solvent based extraction to fractionate biomass into its principle components: cellulose, lignin and hemicellulose. The pretreatment system has advanced significantly to produce very pure streams of cellulose, lignin and hemicellulose which can be processed downstream into value added products such as biofuels, after enzymatic processing. (www.lignol.ca)

Enerkem uses a proprietary thermochemical process to convert waste into biofuels and chemicals. The feedstock used is municipal solid waste and a wide range of residues which are converted to synthesis gas through the use of catalysts. This is used to produce methanol as a chemical building block for the production of ethanol, or other renewable chemicals. Enerkem has validated its technology over 10 years. (www.enerkem.com/en/home.html)

Enerkem currently operates a demonstration plant in Westbury, Quebec (Canada) which has been in operation since 2009 and converts used electricity poles to produce biomethanol (which can be converted into cellulosic ethanol). The plant has a capacity of 5 million litres per year. A full-scale commercial plant is under construction in Edmonton, Alberta (Canada) that will have a capacity of 38 million litres per year. This plant will utilise post-sorted municipal solid waste and wood residues to produce bioethanol. A 25-year agreement between the company and the City of Edmonton will ensure a feedstock supply of 100,000 dry metric tons of sorted MSW per year. Enerkem's project partners, namely the City of Edmonton and Alberta Innovates – Energy and Environment Solutions, contributed $20 million to the project. The project has been selected by Alberta Energy to receive $3.35 million in funding, as part of the Biorefining Commercialization and Market Development Program. In addition, Waste Management and EB Investments have invested $15 million for a minority equity interest in the project. Production of ethanol is due to commence in 2014.

Two further commercial plants are planned and under development by Enerkem. One plant will be located in Varennes, Quebec as a joint venture between Enerkem Inc. and GreenField Ethanol Inc. (VVANERO) and is situated next to GreenField's current first generation biofuels facility (Figure 2). The expected capacity of the plant is 38 Million litres of cellulosic ethanol, using sorted industrial, commercial and institutional waste. The Government of Quebec plans to inject $27 million in this project through the Ministry of Natural Resources and Wildlife and Investissement Quebec. A further plant with a capacity of 38 million litres is also under development for Pontotoc, Mississippi (USA).

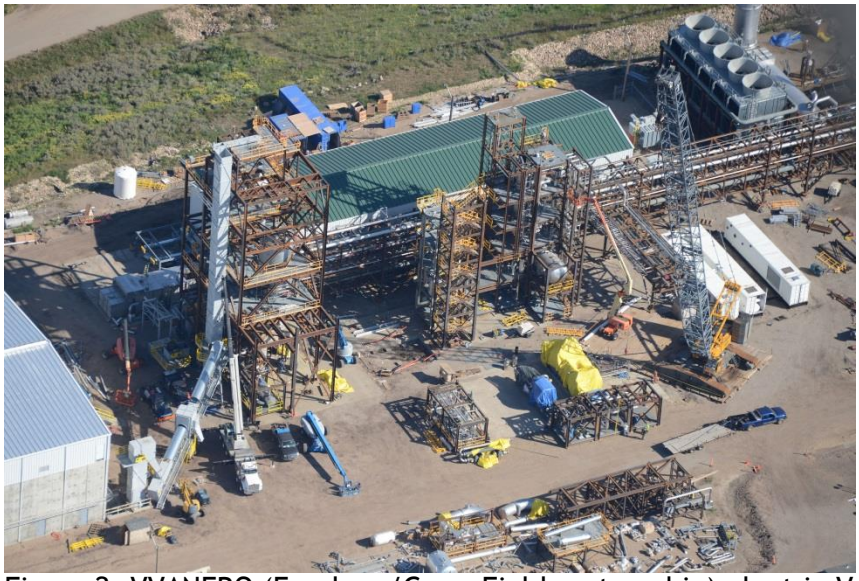

Figure 2. VVANERO (Enerkem/GreenField partnership) plant in Varennes under construction

Iogen Corporation is a leading Canadian biotechnology firm based in Ottowa, Canada. Iogen has operated the world's first cellulosic ethanol demonstration plant since 2004, using agricultural residues (wheat straw) as a feedstock. The plant is located in Ottowa and at full capacity produces 5,000-6,000 litres of cellulosic ethanol per day. The ethanol production process uses a modified steam explosion process and separate hydrolysis and fermentation. Enzyme systems are tailored to the specific pretreated feedstock and fermentation of both C6 and C5 sugars is carried out using advanced microorganisms. In April 2012, Iogen announced that they will not proceed with a commercial-scale plant planned for southern Manitoba. In January 2013, Iogen sold their industrial enzyme division to Novozymes. Iogen is currently in a joint venture with the Raizen Group in Brazil to develop a commercial cellulosic ethanol project, using sugarcane bagasse as a feedstock, in Piracicaba, Sao Paulo. (www.iogen.ca)

Sources

Canadian Renewable Fuels Association (http://www.greenfuels.org)
Company websites
Canada Biofuels Annual 2013, Published by the USDA Foreign Agricultural Service, Global Agricultural Information Network.

In the News

Reports and Research

(Sept 26) UK-based Element Energy published a report finding that compared to electric vehicles biofuels offer a more cost-effective way to reduce GHG emissions over the next 17 years. Read more. Full report.

The US DOE's Inspector General published a 24-page follow-up audit of the DOE's "Financial Assistance for Integrated Biorefinery Projects" which found that "despite over 7 years of effort and the expenditure of about $603 million, the Department [has] not yet achieved its biorefinery development and production goals." Read the full report or the Biofuels Digest's 3-minute guide.

IEA World Outlook 2013. This report is available for purchase from the IEA website. This article highlights six key trends from this report that are shaping the Energy future.

(Oct 5) The International Council on Clean Transportation published a report, "GCB Bioenergy paper: European biofuel policy will fail to deliver unless 'iLUC factors' are added". Read more. Report.
See also the related report, "Availability of cellulosic residues and wastes in the EU".

(Nov 27) The sustainable energy consultancy E4tech published a report, "A harmonized Auto-Fuel biofuel roadmap for the EU to 2030". This proposed Roadmap examines in detail what the fuels industry could achieve in terms of sustainable biofuels supply (including advanced biofuels) and how this could be integrated into the EU's vehicle fleet by 2030. Read more. Full report.

(Nov 27) The US Federal Trade Commission published its annual report on the status of ethanol production in the US. The report, "2013 Report on the State of US Ethanol Production", estimates that 158 firms are either producing ethanol or are likely to begin producing ethanol in the next 12 to 18 months. However, the report notes that there is a lack of market concentration. Read more. Read the full report here.

(Oct) The UK's Greater London Authority commissioned a report from LRS Consultancy to look at opportunities to reduce the emissions and carbon footprint of the bus fleet in London by using B30 biodiesel made from used cooking oil, fats, oils and greases. See report.

IEA Bioenergy Task 40 released a new report, "Large Industrial Users of Energy Biomass", which identifies leading countries and the top 15 production companies in the industrial and transport sectors. Read more. Full report here.

(Dec) A recent report from Australia presents a supply chain analysis of sustainable aviation fuels. The Biofuels Digest states that it is "arguably the most in-depth analysis of an aviation biofuels supply chain ever conducted". Although limited to Australia and just two jetfuel pathways, anyone interested in aviation fuels will find this a valuable report. Read more. Full report.

Policy and Regulatory Developments

(Nov 19) The US EPA has proposed levels of renewable fuels to be blended into gasoline and diesel in 2014. The proposal would reduce effective US mandates in 2014 for various biofuels categories: advanced biofuels by -41.33%; corn ethanol by -9.7%. A summary of the proposal, industry reaction and economic analysis can be found here. The 60-day comment period officially opened on Nov 29. The Renewable Fuels Association is examining the EPA's authority to reduce RFS volume requirements. Read more.

South Africa's biofuel mandates of E2 and B5 will come into effect from 1 October 2015. Sorghum output will have to increase fivefold in order to ensure that grain for ethanol production is sourced locally. Read more.

EU – In the last newsletter, we reported that the EU parliament voted for a 6% cap on conventional ("1st generation") biofuels, as well as for the introduction of ILUC factors. However, the EU's 28 environment ministers are now set to approve an amended position for a cap of 7% on conventional biofuels on 13 December. They are also expected to scrap the earlier plan to introduce ILUC factors. Read more.

Brazil may raise its biodiesel mandate to 7%. Read more.

(Dec 2) In South Korea, the oil industry is pushing the government to keep the biodiesel blend at 2% rather than raising it to 3% as planned. The biodiesel industry says that the delay is damaging to local producers. Read more.

(Dec 2) Argentina raised its mandatory biodiesel blend to 10% from the current 8%. This will help to offset the slump in exports resulting from the EU's anti-dumping duties recently imposed on Argentinian biodiesel. Read more.

(Dec) Zimbabwe introduced a mandatory E15 blend for gasoline as of 30 November 2013. The aim is to increase the mandate to E20 by the end of January 2014 in order to reduce Zimbabwe's oil import bill. Read more.

Sustainability

(Nov 27) Forty-one leading scientists sent a letter to the EPA warning the agency that not all biomass is created equal and that utilisation of forest-sourced woody biomass in biomass-fired power plants does not have the same carbon "neutrality" as using residues or crops such as switchgrass. Read more.

(Nov 27) Neste Oil is the world's first company to be awarded an RSPO-RED Supply Chain certificated under the Roundtable on Sustainable Palm Oil's (RSPO) new certification system. The certificate covers the production of NExBTL renewable diesel at Neste Oil's refineries in Porvoo, Rotterdam and Singapore. The new certification system calculates GHG emissions over the entire life cycle of a product. Read more.

(Nov 28) The E100 Ethanol group claim that E100 powered vehicles will cut emissions far more effectively than zero emission vehicles as they will have a net negative CO2 emission, compared with electric vehicles or fuel cell vehicles where production of hydrogen or electricity results in a positive emission balance. Read more.

The IEA's Chief Economist, Fatih Birol, downplayed oil sands' contribution to global warming. See this article.

Industry News

(Oct 9) Beta Renewables, a global leader in cellulosic biofuels and part of the Mossi Ghisolfi Group, and Novozymes, the world's largest producer of industrial enzymes, today marked the official opening in Northern Italy of the world's largest advanced biofuels facility. Situated outside the city of Crescentino, it is the first commercial scale plant in the world to be designed and built to produce bioethanol from agricultural residues and energy crops using enzymatic conversion. Read more.

(Nov 28) In Germany, BASF has produced its first commercial volumes of 1,4-butanediol from renewable raw material and is offering this product to customers for testing and commercial use. Read more.

(Dec 2) In the UK, Green Biologics closed a $25 million funding round led by Soffinova Partners with strategic participation by Swire Pacific Limited. This funding will allow it to establish a demonstration plant in the US for producing n-butanol from corn mash, which is projected to be completed in the second half of 2014, with a commercial plant planned for 2016. Read more.

(Nov 25) In the EU, the European Commission has begun imposing anti-dumping duties on biodiesel imports from Argentina and Indonesia; duties are about 25% for Argentina and 19% for Indonesia and will apply for five years. Read more.

(Dec 2) Biochemtex, as Carolina Cellulosic Biofuels, plans to construct a cellulosic biofuel plant in North Carolina in Sampson County that will produce 20 million gallons of biofuel from locally grown energy crops, agricultural residues and woody biomass. Read more.

(Sept 16) The US Department of Agriculture (USDA) announced $15.5 million more in payouts to 188 advanced biofuels producers across the country. The payments are made to eligible producers using feedstocks other than corn kernel starch. Read more.

(Nov 20) NASCAR passes the 3 million mile mark with E15. Read more.

(Nov 18) M&G Chemicals announced its decision to construct an advanced cellulosic biorefinery in China to convert 1 million metric tons of biomass into ethanol and bioglycols. This facility will handle four times the volume of biomass

for processing as Beta Renewables facility in Crescentino, Italy. Novozymes will provide financial support of $35 million and will be supplying the enzyme technology. Read more.

(Nov 20) In New York state, USA, New York City-based Tri-State Biodiesel and its parent company, The Sustainable Biodiesel Company, have partnered with New Jersey-based Lard-NABF LLC (LARD) to purchase and upgrade the Connecticut-based biodiesel production business, Bridgeport Biodiesel. This partnership unites one of the region's largest cooking oil-to-biodiesel recyclers with one of the few biodiesel production facilities in the area. Read more.

(Oct 11) "Next-Generation biofuels are inching towards reality, gallon by gallon." Article published in Time magazine. Read more.

(Oct 21) The USDA announced $181 million in loan guarantees to build commercial-size refineries making advanced biofuels or to retrofit existing biorefineries to produce biofuels. Applications are due by Jan 30, 2014. Read more.

(Nov) Kyoto Fuels Corp began production in Lethbridge, Western Canada during October. At 66 million litres per annum capacity, this will be the largest biodiesel plant in Canada. Read more.

(Nov 29) Brazilian ethanol giant Raizen Energia Participacoes S/A started construction of a commercial biomass-to-ethanol facility using Iogen Energy's advanced cellulosic biofuel technology in a joint venture between these companies. The plant is set to produce 40 million liters (10 MMgy) of cellulosic ethanol per year from sugarcane bagasse straw. Anticipated start-up is in the fourth quarter of 2014. Read more.

(Nov 28) In the Bahamas, the Grand Bahama Power Company opened their biofuel demonstration project which focuses on the feasibility of cultivating jatropha to make biodiesel that will be burned to make electricity. Read more.

(Oct 15) Chempolis Ltd., a Finland-based biorefining technology corporation, has signed a memorandum of understanding (MOU) with ONGC, India's leading oil and gas exploration company. The MOU acts as a roadmap for this biorefinery project in India. Chempolis' "third generation" biorefining technology is based on selective fractionation of biomass and co-production of multiple products in a sustainable manner. Besides producing biofuels (e.g., ethanol), the fractionated sugars and lignin can be used as platform feedstocks for a myriad of different products. Read more.

(Nov 22) The US EPA published RIN data for October, reporting generation of both cellulosic biofuel RINs (44,372 D3 RINs for 29,580 gallons) and cellulosic diesel RINs (60,007 D7 RINs for 36,298 gallons) during the month. October is the fourth month in 2013 during which cellulosic RINs were generated. Read more.

Upcoming Meetings & Conferences

11th International conference "Fuels of the future 2014"

January 21-22, 2014. Berlin, Germany.
More than 500 participants including over 60 speakers from around the world are expected to attend this conference, which will bring together representatives from biomass cultivation, trade and production as well as the petroleum and the automotive industries. Besides this, the organizers will also welcome political decision-makers, auditors and environmental verifiers as well as members of environmental protection and nature conservation groups, the press and the general public. Task 39 is participating in this meeting.

National Biodiesel Conference and expo 2014

January 20-23, 2014. San Diego, California, USA.

5th Annual Next Generation Bio-Based and Sustainable Chemicals Summit

4 – 7 February 2014. San Diego, California, USA.

Renewable Fuels Association's 18th Annual National Ethanol Conference
17 – 19 February 2014. Orlando, Florida, USA.

World Biofuels Markets 2014
4 – 6 March 2014. Amsterdam, The Netherlands

Bioenergy, Fuels and Products Conference and Expo
18 – 19 March 2014. Atlanta, Georgia.

247th ACS National Meeting & Exposition. Program Theme: Chemistry and Materials for Energy
16 - 20 March 2014. Dallas, Texas, USA.

36th Symposium on Biotechnology for Fuels and Chemicals
28 April – 1 May 2014. Clearwater Beach, Florida, USA.

BIO World Congress on Industrial Biotechnology
12 - 15 May 2014. Philadelphia, Pennsylvania, USA.

International Fuel Ethanol Workshop & Expo.
9 – 12 June 2014. Indianapolis, Indiana, USA.

The 4th International Conference on Algal Biomass, Biofuels and Bioproducts
15 – 18 June 2014. Santa Fe, New Mexico, USA.
The conference will cover all areas of emerging technologies in algal biology, biomass production, cultivation, harvesting, extraction, bioproducts, and econometrics.

7th Biofuels International conference 2014
24 – 25 September 2014. Ghent, Belgium.
Focusing on the latest developments in biofuels policy, international biofuels trading, sustainability, solutions for current producers, progress in advanced biofuels and information on feedstock pricing and trends. This conference aims to update delegates on the latest changes to biofuels legislation and policy as well as recent research into sustainability, ILUC and multiple counting strategies.

National Advanced Biofuels Conference & Expo.
13 – 15 October 2014. Minneapolis, Minnesota, USA.

For more events visit www.task39.org

IEA Bioenergy Task 39 Meetings

The following is an abbreviated tentative schedule of Task 39 events and meetings planned over the next 9 months. Please contact us for more detailed information:

- 2014 January 22-23, Germany (Berlin): business meeting in conjunction with the 20-21 January 2004 11th BBE/UFOP International Congress on Biofuels; also joint workshop with Task 42.
- 2014 May, Lund, Sweden: business meeting and joint workshop with Task 43.