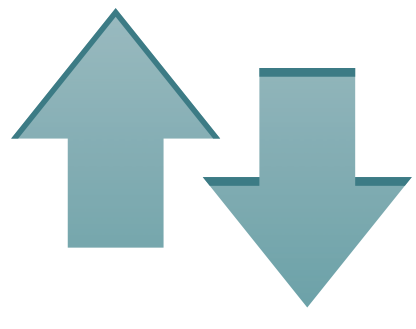
Special

Energy Builders



Foreigners | Environment | Economics

Influential forces shaping development across **Canada's energy sector**

With foreign stakeholders playing increasingly important roles in Canada's energy sector development, opportunities and complexities loom large, especially in light of rising expectations of a low-carbon economy.

Mike Laffin, a partner with the law firm Blake, Cassels & Graydon LLP in Calgary, provides advice to oil and gas companies across the sector. He says the UK and Europe have always been integral to the Canadian energy industry.

"Major British and European companies like BP, Shell, Total and Statoil have significant interests in Canada's energy sector and will play an important role in its future," says Mr. Laffin. "But also important are the European companies that are suppliers to Canada's energy industry, and particularly the oil sands."

He says there are at least 30 UK and European companies that provide everything from engineering services and environmental consultants to equipment and supplies.

"In addition, the flow of investment capital into our energy sector makes it all happen, and this capital is sourced from many areas including Europe. There's no doubt that the European influence is strong and vibrant and will remain so for a long time," says Mr. Laffin.

Jason Langrish, executive director of the Canada Europe Roundtable for Business (CERT), an organization that is dedicated to creating business opportunities between Canada and the European Union (EU), says there are still many new opportunities for EU companies in Canada's energy sector.

"The real question is where to begin. I believe there are opportunities in pretty much everything, from foreign direct investment to subcontracting, professional services, investment banking and so on," says Mr. Langrish.

If there are any cons to foreign investment, it would be that Canada's net positive benefit mechanism for determining which acquisitions may or may not proceed is still quite subjective and subject to political interference.

One CERT initiative, the Energy Roundtable, was launched in 2004 to gather leaders in the energy sector to develop the technical, financial and legislative solutions that are required to establish low-carbon economies and increase energy security.

Part of the Roundtable's focus is on foreign investment in Canada's energy sector, including that by state-owned enterprises, which Mr. Langrish says has been mostly positive so far.

"The trend to date has been investment, mainly from the U.S. and Europe by publicly traded, transparent companies with good corporate governance. In the case of Asia, the investments have been by state-directed companies and sovereign wealth funds, but these have generally been minority stakes in projects, where the investors prefer to be arm's length , recognizing that they do not possess the expertise to develop and run the projects," says Mr. Langrish.

If there are any cons to foreign investment, he continues, it would be that Canada's net positive benefit mechanism for determining which acquisitions may or may not proceed is still quite subjective and subject to political interference.

Mr. Laffin believes foreign investment in the Canadian energy sector is positive because it opens up the country to global thinking, technology transfer and innovation.

"We are very fortunate to attract this level of foreign investment given that the U.S. economy is not as vibrant as it might be," he adds.

ABOUT

Energy Roundtable

The Energy Roundtable was launched in 2004 to gather leaders in the energy sector to develop the technical, financial and legislative solutions that are required to establish low-carbon economies and increase energy security. Founded by the Canada Europe Roundtable for Business, a transatlantic free trade advocacy group, the Roundtable delivers high-level, thematic conferences that:

- Promote Canada as a secure, stable and growing supplier of energy in a resource-constrained world.
- Explore the commercial opportunities that this presents to foreign investors and service providers.
- Spur independent thinking and debate among the key industry players on how to meet Canada's ambition to become a clean energy powerhouse.

The primary goal of the Roundtable conferences is to increase investment in the Canadian energy sector. They provide participants with competitive insight on investment trends, and address the issues that are of principal importance to business decision-makers.

When it comes to environmental protection and addressing climate change issues, Mr. Langrish says Canadian energy companies are doing a much better job than in the past.

"The principal target has been coal and oil sands. In both cases, the industries have improved significantly, but the reality is that there is a sizable environmental footprint for fossil fuels, especially when measured from extraction to end use," he says.

Mr. Laffin agrees that energy companies have made significant progress in recent years toward improving their environmental performance.

"They are emitting less greenhouse gas and using less water by employing innovative technologies in their operations. As the industry matures, it improves in managing its environmental impact," says Mr. Laffin. "At the end of the day, every energy company wants to be regarded as a good corporate citizen, and they take their obligations very seriously."

ONLINE?

For more information, visit energyroundtable.org.

GREEN TECHNOLOGY

Novel cement strengthens clean energy projects

Reducing greenhouse gas emissions during the manufacturing process is an important goal for Canada's cement producers. That's why the introduction last month of a new category of cement that reduces greenhouse gas emissions by 10 per cent and will eventually reduce up to 900,000 tonnes of CO_2 annually was hailed as a major breakthrough.

The product, called Contempra, produces concrete with a level of strength and durability that is comparable to concrete made with regular Portland cement, but has the added advantage of being more environmentally sustainable than the traditional cement, says Michael McSweeney, president and CEO, Cement Association of Canada (CAC).

"We want to be an even larger contributor to climate change solutions."

Michael McSweeney,
Cement Association of Canada

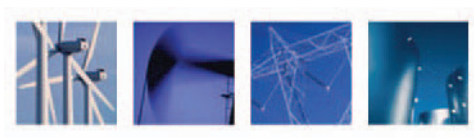
A new cement product called Contempra offers energy project developers the benefits of traditional cement as well as GHG-reducing advantages.
PHOTO: ISTOCKPHOTO.COM

"Contempra marks a pivotal advancement in sustainable construction, and the cement industry is proud to introduce it to the Canadian market," says Mr. McSweeney. "We want to be an even larger contributor to climate change solutions, and Contempra makes concrete an even smarter choice to help build stronger, more sustainable communities."

While regular Portland cement may contain up to five per cent limestone, Contempra is manufactured by inter-grinding regular clinker (the main ingredient in cement) with up to 15 per cent limestone.

By reducing the amount of clinker used in manufacturing cement, this process naturally reduces the amount of energy and greenhouse gas emissions required to manufacture it. The CAC says this is key because while cement typically represents only 11 per cent of a concrete mix, it accounts for more than 80 per cent of all energy required to produce concrete.

CAC adds that Contempra makes concrete – already known for its safety, sustainability, durability, resiliency, versatility, energy-efficient attributes and contribution to LEED certification – an even smarter choice for building stronger communities.



THE 2011 ENERGY ROUNDTABLE

NATURAL GAS: CANADA'S NEW ENERGY FRONTIER

Tuesday, November 22nd at The Ranchmen's Club in Calgary

Unconventional gas discoveries have dramatically altered the North American energy landscape. Leaders will gather at the ninth annual Energy Roundtable conference to assess key developments in the Canadian natural gas industry and share strategic thinking on the corresponding economic opportunities, production strategies and policy outcomes that are required to develop this critical resource.

For further information, consult: www.energyroundtable.org

Speakers include:

- Hon. Ted Morton, Alberta Minister of Energy
- Tim Wall, President, Apache Canada
- Samir Brikho, Chief Executive, AMEC plc
- David Keith, Harvard University

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ENERGY BUILDERS

EXPERT OPINION

It's time for a balanced approach to Ontario's energy policy

By Don MacKinnon,
President, Power Workers' Union

With Ontario's election over, our newly elected MPPs have the opportunity to get down to work on fundamental issues critical to the future of our electricity system and economy. These include: the importance of nuclear- and biomass-generated electricity; sustaining a viable provincially owned transmission company; and making transparent investments that deliver real economic, environmental and social benefits.

The flaws of Ontario's green energy policies are increasingly obvious: huge subsidies to wind and solar developers paid for by Ontario ratepayers; questionable sustainability of forecasted green jobs; single source contracts that threaten all Ontario exporters with retaliatory trade practices; the cancellation of two gas plants whose locations and justification were ill-considered; hidden costs related to the Clean Energy Benefit and the transmission systems necessary to accommodate wind and solar installations; and the ignored concerns of rural Ontarians opposed to industrial wind farms.

Ontario's long-term energy plan commits billions of dollars for intermittent wind and solar power and carbon-emitting, price-volatile natural gas generation. While it's good news for the big multinational players already benefiting from Ontario's lucrative green energy incentives, it's an ineffective way to reduce greenhouse gas (GHG) emissions, needlessly pushes electricity prices higher, and transfers wealth out of province. As well, Ontario's growing dependence on environmentally questionable U.S. shale gas negatively impacts energy security and exposes Ontarians to higher heating and electricity costs when supplies are short.

There are positive aspects to the plan related to nuclear- and biomass-fuelled electricity. The plan calls for refurbishing Ontario's existing nuclear fleet and building new CANDU reactors for base-load supply, as well as examining the conversion of existing coal-fuelled stations to biomass and natural gas for peak demand.

"Reinvesting in Ontario's electricity assets and existing industries is a better way to keep electricity prices affordable, reduce GHGs, and create more sustainable jobs and innovation while keeping the economic benefits here."

Three thousand megawatts of supply is scheduled to come offline by 2020 when the Pickering Nuclear Station closes. Any further delays to the decision to invest in new CANDU reactors will undermine the province's long-term energy security and the competitiveness of Ontario's successful nuclear industry.

For over 47 years, GHG emission-free CANDU reactors have safely and reliably met Ontario's electricity needs 24/7, supplying over 50 per cent of our power today. Ontario, the primary beneficiary of Canada's successful $6.7-billion-a-year nuclear industry, hosts most of the 160 supply chain companies, 70,000-plus high-value jobs and R&D activity.

Ontario's forestry and agricultural stakeholders, utilities, academics and private investors support the plan's biomass initiatives. Unlike intermittent wind and solar, biomass-generated electricity is available when needed and unlike carbon-emitting natural gas does not contribute to the GHG problem. Biomass is an Ontario energy resource that creates jobs in our agriculture, forestry and transportation sectors. It's also an opportunity to kick-start a high-value bioenergy industry producing new transportation fuels, chemicals and materials.

Linking investments in nuclear and biomass makes even more sense when tied to a plan that encourages the use of zero-emission electric vehicles. British Columbia and Quebec are moving forward with a strategy to provide the necessary infrastructure for electric vehicles. Ontario needs to do the same.

Supporting Ontario's world-class transmission company is also vital. Since 1906, Hydro One's vast transmission and distribution network has reliably, safely and affordably delivered electricity to Ontario homes and businesses. Dedicated work crews provide quick provincewide response to system outages and large-scale emergencies like the 1998 ice storm. Unfortunately, Ontario's successful transmission model is being subverted under the guise of renewable energy projects, turning the transmission grid into a patchwork of privately owned transmission systems.

Ontarians deserve reliable, secure and environmentally responsible electricity at a price they can afford. Reinvesting in Ontario's electricity assets and existing industries is a better way to keep electricity prices affordable, reduce GHGs, and create more sustainable jobs and innovation while keeping the economic benefits here. It's time for a more strategic, balanced approach to energy policy-making.

IT'S ABOUT BETTER USE OF ONTARIO'S ENERGY ALTERNATIVES

Intermittent wind and solar generation backed up by carbon emitting, price volatile natural gas generation will not reduce greenhouse gases (GHG) — but this strategy will needlessly increase electricity prices and push benefits to out of province interests.

LEVERAGING OUR SUCCESSFUL INDUSTRIES AND THE ASSETS ONTARIANS ALREADY OWN IS A BETTER PLAN

Refurbishing existing greenhouse gas emission-free CANDU reactors and replacing those at the end of their operational life with new ones; converting existing coal stations to use our vast supplies of carbon neutral biomass; powering Ontario built zero-emission electric vehicles with this low-carbon electricity; and supporting Ontario's world class transmission company will:

- Secure abundant, reliable, clean and affordable electricity supply
- Achieve greater GHG reductions
- Sustain and create more good jobs
- Keep more economic benefits here in Ontario

Ontarians deserve reliable, secure, and environmentally responsible electricity at a price they can afford.

Now more than ever, Ontario's leadership needs to work together to deliver these results for the people of Ontario.

For more information, please go to www.abetterenergyplan.ca

FROM THE PEOPLE WHO HELP KEEP THE LIGHTS ON

POWER WORKERS' UNION

DEVELOPMENT

Labour, technology weigh heavily on Canadian natural gas

The good news: Western Canada is sitting on a massive resource of natural gas. The bad news: Canada's traditional (and only) export market for natural gas, the U.S., has ramped up its own production and cut back on Canadian imports. The solution: develop the export gateway to Asia as quickly as possible.

The real message in the above scenario is that Canada's natural gas risks being stranded with no foreign buyers unless producers can get their product into the Asian market. While domestic sales have been increasing, they are nowhere near high enough to take all the natural gas that could be produced for decades to come.

And although abundance of product is currently depressing prices, the longer-term prospects as Asian demand increases are promising.

John Dielwart, CEO of Calgary-based ARC Resources, one of Canada's largest conventional oil and gas companies, believes it's only a matter of time before the Asian market is opened up.

In the meantime, there is room for growth in domestic demand. For example, he says as coal-fired power plants in Alberta are reaching the end of their useful life, utilities are increasingly switching from coal to natural gas, which is far more environmentally friendly.

A more immediate challenge, he says, is the skills shortage that could also curtail the expansion of the natural gas sector.

"Right now, we can't realize the full potential of the resource because of the skills shortage in all areas of our operations, from crews and technicians to office staff," says Mr. Dielwart.

He adds that the situation will be exacerbated by the demand for skills when work begins on the infrastructure for exporting to Asia.

"We are all aware of it and forward-looking companies are trying to hire people now, but to a large extent, what we do is simply hire skilled people from another company," he says.

"Right now, we can't realize the full potential of the resource because of the skills shortage in all areas of our operations."

John Dielwart,
ARC Resources

Among the natural gas industry developments seen in Northeastern B.C. this year, phase two of ARC Resources' Dawson gas plant came online. PHOTO: SUPPLIED

Tim Wall is president of Apache Canada's operations based in Calgary. Apache is an independent energy company that explores for, develops and produces natural gas, crude oil and natural gas liquids. Mr. Wall says it's important for companies developing natural gas fields to be aware of stakeholder concerns, particularly when it comes to the environment.

That's why Apache partnered with Encana to develop infrastructure designed to minimize the impact of development in British Columbia's Horn River Basin.

"With increasing stakeholder discussions about water use in shale gas development, our two companies examined alternatives to freshwater use in hydraulic fracturing operations," says Mr. Wall. "What followed was the identification of the Debolt formation, a deep, sub-surface, non-potable aquifer holding saline water."

The partners went on to design and build the Debolt water treatment plant and developed the Debolt formation as a water storage reservoir. Operational since June 2010 and in line with the companies' good neighbour and sustainable development practices, the Debolt water treatment plant is the first of its kind.

"Apache has decreased surface water use, securing access to an integrated water treatment and distribution system, which allows for the full recovery and reuse of fracture stimulation fluids. That in turn allows for development and growth with minimal environmental costs," explains Mr. Wall.

Currently, more than 90 per cent of the water needed for Apache's completion operations comes from the Debolt.

ABOUT

What LNG means to Canada

According to the International Energy Agency, the world has enough natural gas to meet current demand for 250 years. For most countries, using more natural gas for power generation can make the largest contribution to meeting their emission reduction targets because natural gas emits 50 to 70 per cent less CO_2 than coal when burned to generate electricity.

Canada is estimated to have natural gas resources of close to 4,000 trillion cubic feet (TCF) of which approximately 80 per cent is "unconventional" – the term typically used for coalbed methane and natural gas trapped in deep rock formations (known as "tight gas" and shale gas).

The Canadian Society for Unconventional Gas says natural gas is a strategic resource for Canada. It is abundant, safe, reliable and affordable. It is also the lowest emitting hydrocarbon and an ideal energy partner for transportation and power generation. It has a key role to play in meeting Canada's long-term objectives for energy, the environment and the economy.

We see the possibilities.

For Suncor Energy, growth brings opportunity and a set of new challenges. The biggest one of all: balancing increased development with the need to live up to our social and environmental responsibilities, both as an individual company and collectively as part of Canada's oil sands industry. We believe the key is collaboration. A great example is the Oil Sands Leadership Initiative where Suncor works closely with four companies to improve environmental, social and economic performance in the oil sands industry. With a shared commitment to excellence and innovation, we can work together to build a more sustainable energy future.

36% **decline** in amount of fresh water Suncor has withdrawn from the Athabasca River since 2004*

50% **decrease** in GHG emission intensity at Suncor's oil sands operation from 1990 levels*

$1.2 **billion** actual and planned investments in Suncor's new tailings technology

Vincent Saubestre, executive director, Oil Sands Leadership Initiative

performance
partnerships
possibilities

SUNCOR ENERGY™

Find out more about Suncor's track record and how we are planning to responsibly develop North America's energy supply.
www.suncor.com/sustainability

*As at December 31, 2010.
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ENERGY BUILDERS

INNOVATION

Efforts to clean up oil sands production underway

In the face of growing international criticism, producers and their partners are investing heavily in systems designed to address the environmental impacts of oil sands production. PHOTO: ISTOCKPHOTO.COM

No one underestimates the environmental challenges facing companies operating in Alberta's oil sands, but there is growing evidence that the development and implementation of new technologies and practices are significantly reducing the impact on the environment.

Eddy Isaacs, CEO of Alberta Innovates - Energy and Environment Solutions (AI-EES), says while all forms of energy production require balancing economic with environmental and social impacts, the development and rapid growth of the oil sands has unique environmental and social challenges including high water use, tailings ponds and higher greenhouse gas intensity than conventional crude oils.

However, he believes the industry is making significant progress toward addressing the challenges.

"For example, while steam-based thermal recovery processes require large amounts of water, the industry has achieved high water recycle rates of 90 per cent plus and is increasingly using brackish sub-surface non-potable water sources," says Dr. Isaacs.

Another important innovation, he says, is a new process that reduces the time it takes to reclaim the tailings ponds and release the water for recycling.

AI-EES was established to champion strategic approaches for acquiring, advancing and integrating the knowledge required to make Alberta a global energy leader while contributing to the development of cleaner energy and greener communities.

Haneef Mian, the Ledcor Group Applied Research Chair in Oil Sands Environmental Sustainability at the Northern Alberta Institute of Technology (NAIT), says a sustainable and cost-effective solution to tailings management and water usage in the oil sands is not only possible, it's only a matter of time given the industry's strong commitment and collaborative approach to dealing with it.

As head of NAIT's Green Chemistry and Engineering (GCE) initiative, Dr. Mian and his team are collaborating with the oil sands industry on solution-driven research that can be applied quickly and effectively in the oil sands.

"In partnership with the industry, we are working towards developing cost-effective solutions to address the complex problem of oil sands tailings management," says Dr. Mian. "We strongly believe that we can come up with breakthrough solutions that demonstrate environmental responsibility, cheaper oil sands development and cleaner energy production."

Dr. Mian and his team are also collaborating with the Oil Sands Tailings Consortium (OSTC), which represents seven of the leading oil sands companies. Each of the seven companies committed to share its existing tailings research and technology and to remove barriers to collaborating on future tailings research and development.

Dr. Isaacs says the importance of finding environmentally acceptable ways to develop the oil sands and other extra heavy oil resources is underscored by the fact that the easy to produce conventional sources are, by all accounts, declining and being replaced by the more difficult to produce resources such as deep offshore, highly water-flooded reservoirs and heavy crudes.

> ***"As the advanced technologies ... mature, the energy intensity of heavy oil and bitumen will decrease."***
>
> **Eddy Isaacs,**
> *Alberta Innovates*

"The implication is that the greenhouse gas emissions of the average global oil barrel will continue to increase. Against this backdrop, as the advanced technologies such as those being used in the oil sands, mature, the energy intensity of heavy oil and bitumen will decrease," he says.

About

Canada's oil sands

Canada has the world's third largest oil reserves, of which 97 per cent are in the oil sands. Put another way, Canada has 175 billion barrels of oil that can be recovered economically with today's technology. Of that number, 170 billion barrels are located in the oil sands.

Oil sands are recovered using two main methods: mining and drilling (in situ). The method used depends on how deep the reserves are deposited. Eighty per cent of the oil sands resource is too deep to be mined using shovels and trucks. It is recovered in place by drilling wells using methods that create minimal land disturbance and do not require tailings ponds. Advanced technology is used to inject steam, combustion or other sources of heat into the reservoir to warm the bitumen so it can be pumped to the surface through recovery wells.

Source: Canadian Association of Petroleum Producers

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