CAPP's member magazine

Volume 3 . Issue 4
November 2015

CONTEXT

Energy Examined.

MAKING CANADA'S OIL AND NATURAL GAS INDUSTRY A ***HIGH-TECH ENVIRONMENTAL LEADER***

O&G 101: THE DIVESTMENT CHALLENGE

CARIBOU CONNECTIONS

WHAT'S UP AT CAPP, Q3

CAPP
CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS
Canada's Oil and Natural Gas Producers

Publication Number: 2015-9204

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BY USING 850 KG OF RECYCLED MATERIAL WE SAVED:

- 14 GJ OF ENERGY
- 58,230 LITRES OF WATER
- 2,345 KG OF GREENHOUSE GASES
- 714 KG OF SOLID WASTE
- 16 TREES

CONTEXT
Energy Examined.

The official member magazine for the
Canadian Association of Petroleum Producers (CAPP)

Volume 3 Issue 4
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GOLD QUILL 2015 · IABC · MERIT AWARD WINNER

PROVIDING VALUE TO MEMBERS

CAPP Offers Balanced Solutions and a Unified Voice Amid Uncertain Times

These are busy times at CAPP. Soon, the United Nations climate conference will be held in Paris. At CAPP, we will continue to emphasize industry's strong commitment to innovation and leadership in reducing emissions.

That commitment was highlighted in the submission we recently made to the Alberta government's climate change advisory panel. Similar to our submission to the Alberta government's royalty review panel, we consulted closely with our members and prepared comprehensive and solutions-oriented recommendations.

I'm proud of the fact that in both cases we have offered thoughtful, real-world solutions that achieve a balance: meeting the panel's desired outcomes while maintaining conditions for a robust, competitive provincial oil and natural gas industry.

In the case of climate review, we offered a series of pathways toward meaningful greenhouse gas emissions reductions while maintaining competitiveness through innovation. On royalties, we provided a blueprint for optimal returns for all Albertans while recommending changes that will encourage investment in new markets and new opportunities. I encourage you to learn more about both submissions: royalties: http://bit.ly/1XuBALX and climate change: http://bit.ly/1MoaL4V (or search "royalties" and "climate" using the CAPP.ca search tool).

We also completed a brisk, yet comprehensive 90-day outreach and campaigns program throughout the province of Alberta. We started the program in July with a goal of ensuring ordinary Albertans who support our industry have their voices heard on issues like royalties and climate change. Through this program, we recruited more than 3,500 new members to the Canada's Energy Citizens campaign, and visited 30 communities across the province.

As we head into 2016, the issues and uncertainties we face are not few. We have a new federal government in Ottawa—I congratulate Prime Minister Justin Trudeau and the Liberal Party of Canada for their victory in the October 19 election. I look forward to working with the prime minister towards common goals like market access and creating good jobs for Canadians.

Meanwhile, low oil and natural gas prices continue to put pressure on the entire industry. This pressure, I believe, underlines and emphasizes CAPP's critical role as a unified industry voice, fighting for competitiveness and growth, wherever and whenever it is threatened. We must continue to work with governments and stakeholders to share knowledge and expertise, drawing a clear line against policies that could cause harm to an industry already in difficult straits, while promoting policies, initiatives and approaches that encourage competitiveness on a global setting.

Which is why I'd like to conclude by thanking you, our members, for continuing to support CAPP at this critical juncture. I know these are challenging times with layoffs and belt-tightening across the entire industry. I can promise that CAPP will do its part to be lean yet productive, achieving both crucial immediate value for members on the competitiveness front, while maintaining a clear eye on long-term strategic objectives such as market access, needed to keep us on a long-term growth trajectory.

Finally, thanks to the staff of member companies. With the support of many member sign-ups, we've seen our Canada's Energy Citizens community grow significantly. From my own time in government, I know how grassroots political action can have a powerful influence on public policy and decision-making. We clearly have momentum—let's build on it going into 2016.

Tim McMillan
President and CEO
Canadian Association of Petroleum Producers

Brenda Jones
Manager, Communications
Canadian Association
of Petroleum Producers

WELCOME TO OUR CLIMATE ISSUE

With the United Nations' 21st Conference of the Parties (COP21) taking place in Paris, France November 30 to December 11, in addition to the recent submission CAPP made to the Alberta government's climate change advisory panel, we thought it would be an excellent opportunity to focus this edition of *Context* on climate and the innovative work, leadership and commitment demonstrated by the upstream Canadian oil and gas industry.

Our cover story features how Canada's oil and gas industry is focused on technology leadership and innovative thinking to reduce GHG emissions, lower costs and maintain a competitive industry (p. 12). This includes a Q&A with CAPP's vice president of policy and performance, Alex Ferguson on CAPP's submission to the Alberta climate change advisory review panel.

In addition, I encourage you to learn more from COSIA's chief executive, Dan Wicklum, about COSIA's work to co-fund the latest XPRIZE competition for innovation, in partnership with the XPRIZE Foundation and NRG Energy (p. 10). The US$20-million NRG COSIA Carbon XPRIZE competition will challenge teams from around the world—innovators in universities, government and the private sector—to come up with innovative approaches to convert carbon dioxide emissions from fossil fuels to useful products.

Our second feature article focuses on how CAPP members are working collaboratively to find solutions to restore the national woodland caribou population in Canada (p. 16). Learn more about how industry, provincial and federal governments have a role to play in a broad-based solution.

Also, be sure to read about the fossil fuel divestment movement and why it matters to you and your financial portfolio (p. 19). In this issue of *Context*, we put the profile spotlight on a Canada's Energy Citizen, Alexander Walsh, who is on a mission to change the conversation about Canada's oil and gas sector among today's youth and who helped stop a nascent fossil fuel divestment movement at Trent University (p. 9).

Finally, learn more about What's Up at CAPP where you'll find out about key deliverables in the third quarter (p. 6).

Enjoy this issue of *Context* produced for CAPP members and share this information with employees in your organization and with your family via **www.capp.ca/context**.

SAFETY 101: Which Pipeline Route Would You Choose?

Veronica is considering two route proposals for a new pipeline to be built. Should she choose Route A or Route B?

Visit http://bit.ly/1QR9s3H to view the answer.

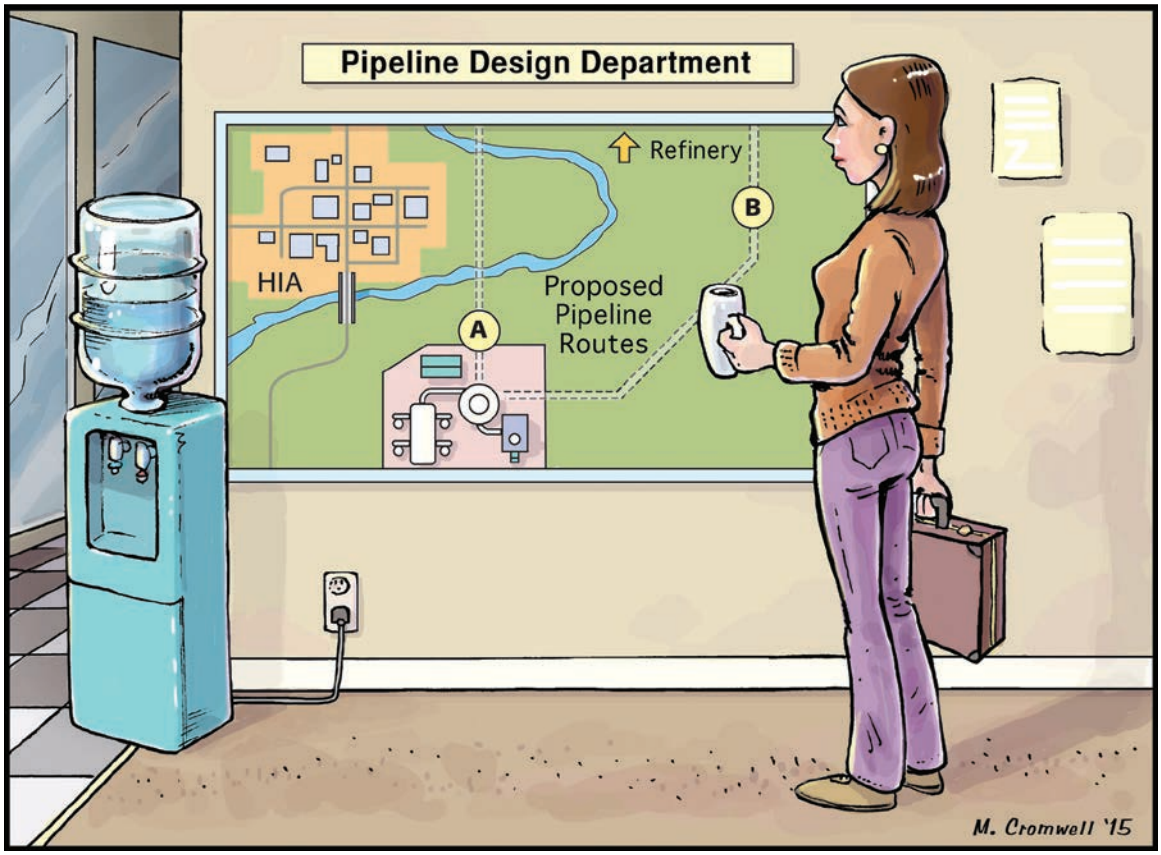


Illustration: Mark Cromwell

Oil and Gas Industry Regional Profile:

ONTARIO

Ontario has strong connections with the Canadian oil and natural gas industry. As Canada's manufacturing heartland, Ontario companies produce equipment, supplies and services used by the industry in all the producing regions of the country. With four refineries that make up 20 per cent of Canada's total refining capacity, Ontario is also a key downstream market, producing Canadian-made petroleum products to Ontarians. The province is also a vital market access corridor: the proposed TransCanada Energy East pipeline would cross through Ontario, allowing crude oil from Western Canada to displace foreign oil in refineries in Quebec and Atlantic Canada, as well as enabling export to destinations such as Europe, Africa and India.

Production and Resources

NATURAL GAS

1,200 Active natural gas wells

10.5 BILLION CUBIC FEET
Annual production

(Ontario Oil, Gas & Salt Resources Library)

CRUDE OIL

1,200
Active oil wells

430,000 BARRELS PER YEAR
Annual production

Refining: Made in Canada

Four refineries in Sarnia and Nanticoke create local jobs while using Canadian-produced oil to supply Canadian-made petroleum products to Ontarians.

395,000 BARRELS PER DAY

Economic Contribution

New Canadian oil and gas projects will require about $396-BILLION worth of goods and services from suppliers in Ontario over the next 20 YEARS. *(CERI)*

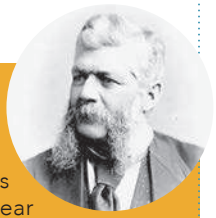
This activity will generate $1.5 BILLION per year in provincial and municipal taxes for the province. This is equivalent to the tuition of almost 200,000 UNIVERSITY STUDENTS. *(CERI)*

For every job created in the oil sands, 3.2 MORE JOBS are created across Canada.

A Key Connection: Capital Markets

As Canada's leading financial centre, Ontario is a key source of investment for the capital intensive oil and natural gas industry. CAPP holds its annual investment symposium in Toronto, connecting investors with oil and gas producers. Last year's event attracted 329 investors, with 700+ one-on-one meetings between investors and oil and gas firms.

SAVE THE DATE:
The 2016 investment symposium runs April 12 and 13.



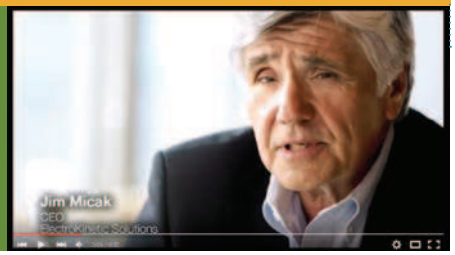
Photograph: Notman & Fraser, courtesy Library and Archives Canada

DID YOU KNOW?
BIRTHPLACE OF OIL INDUSTRY

North America's first commercial oil well was drilled in 1858 by James Miller Williams, near a community in southwestern Ontario called Black Creek (the community soon renamed itself Oil Springs).

Supply Chain Connection

ElectroKinetic Solutions of Toronto is just one of the 1,100 Ontario-based companies that supply the oil sands industry with construction, manufacturing, transportation, warehousing, financial and environmental consulting goods and services. Learn more in this video: **http://bit.ly/1XuakNy** featuring ElectroKinetic's CEO Jim Micak discussing their technology to more effectively manage oil sands tailings.



WHAT'S UP at CAPP

BUILDING INDUSTRY SUPPORT: RAISE YOUR HAND PHASE II

Raise Your Hand Phase I: BY THE NUMBERS

11-WEEK PROGRAM: from May 18 to Aug 2

150,279,275 impressions in key markets

58,000 website visits

0.29% click-through rate on pre-roll video ads (double the industry average of 0.14%)

4,100 engagement actions: sign-ups, videos watched, resources shared

CAPP's Raise Your Hand campaign reaches out to industry supporters

After a successful summer advertising campaign that inspired record engagement among Canadians, CAPP has launched phase II of its Raise Your Hand campaign: a series of TV, print and digital ads running through November and concluding on December 11. These ads target key communities in Ontario, Alberta and B.C. with positive messages on economic benefits, pipeline and marine safety and environmental innovation, while driving supporters to engage by signing up for the Canada's Energy Citizens program at **www.energycitizens.ca**.

View the ads at https://www.youtube.com/user/cappvideos.

Welcome New Members

PRODUCERS

Aspenleaf Energy Ltd.
Blackbird Energy Inc.
Woodside Energy Canada
Yangarra Resources Ltd.

ASSOCIATES

BG International Ltd.
Entero Corporation
G Seven Generations Ltd.
PearTree Securities Inc.

Visit www.capp.ca/about-us/membership to view our full list of members.

Enhancing Pipeline Safety

CAPP has developed and published a Best Management Practice (BMP) guide for designated pipeline sections in high impact areas in Alberta.

"We took a strong risk management approach," says Caroline Carsted, exploration and production technical analyst at CAPP. "The guide provides a standard for the design, construction and operation of pipelines in high impact areas—areas where a pipeline incident could result in serious consequences, such as danger to people or a waterway."

The guide sets out principles and implementation steps that are flexible enough to allow companies to apply their own business principles and risk models.

Download the guide at http://bit.ly/1HYp9nT

Q&A on CAPP's Royalty Review Submission

WITH BEN BRUNNEN, MANAGER OF FISCAL AND ECONOMIC POLICY AT CAPP.

CAPP provided a submission to the Alberta government's royalty review panel on October 26. The submission contains 60 recommendations to enhance Alberta's current royalty system. The royalty review panel is expected to publish its recommendations in December.

Context spoke with CAPP manager of fiscal and economic policy, Ben Brunnen, about the submission.

Ben Brunnen, manager of fiscal and economic policy at CAPP

Q: What should members know about CAPP's submission?

A: We built on the existing royalty system which had many good points. However, with the province opening up discussion on royalties, we saw an opportunity to make the system more transparent, stable, effective and competitive.

We also aligned our submission with the panel's stated four principles, articulating priorities that naturally flow from each principle, and then provided specific recommendations on how to activate on these priorities.

For example, the panel's first principle was to "continue to encourage industry investment." What does that really mean? Well, we believe this means maintaining a competitive regime that is predictable, clear and evidence-based. It also means making a priority of comprehensive cost competitiveness, where government recognizes the spectrum of costs faced by industry, and manages the cumulative compliance burden across different policies and regulations. Finally, it means recognizing the need for a regime that allows our industry to stay competitive with other jurisdictions around the world.

Q: The panel's second goal was to provide optimal returns to Albertans. Can that be achieved without raising royalty rates?

A: Optimal returns for Albertans can be achieved a couple of ways. One is to gain the optimal price for the resource. We know that we've been losing value on the resources because of the challenges getting product to tidewater—so if you want optimal returns, a key way to do that is for government to throw its full weight behind market access.

Another way is to encourage production growth in areas that the previous royalty regime, in a sense, overlooked. For example, we recommended adding a depth factor adjustment for oil wells, which would encourage drilling of deeper and longer oil wells to enable investment in emerging plays in the basin.

Q: What about the panel's third priority of supporting responsible development? What recommendations did you have there?

A: There are some elegant actions the government can undertake which support multiple goals of responsible development and economic diversification. For example, we've recommended the use of cogeneration and natural gas electricity fuel switching to provide baseload electrical generation in the near-term. These actions would both help diversify the economy through things like infrastructure investments, while reducing greenhouse gas emissions.

Q: When the royalty review was announced, there was some negative reaction within industry. This submission, however, takes a positive approach, with recommendations that should provide value to industry. What encouraged you to take this direction?

A: In working with Dave Mowat and the royalty review panel, there certainly seemed to be recognition that this is a very challenging time for industry. Also, their emphasis on "optimal returns" suggested a good understanding that it's better to grow the pie than to try and take a larger slice of a shrinking pie. So we took this as an opportunity to make some improvements on an already good royalty system.

Q: What are the next steps for CAPP on this issue? Is there anything members can do to help?

A: We continue to have interactions with the panel, answering questions and so on, and I'm sure there will be questions from the government once the panel's recommendations are released. There will be an ongoing need for education, advocacy and consultation. I would encourage members to continue to provide feedback to the royalty review panel at letstalkroyalties.ca. I would also encourage them to read our submission—which of course many member volunteers helped create—and if there's something in there they especially like, that's perhaps something they can personally champion with the panel and the government.

Principles of the Alberta royalty review panel

1) Continue to encourage industry investment;
2) Provide optimal returns to Albertans;
3) Support responsible development; and
4) Assess diversification opportunities.

Download CAPP's Royalty Submission: http://bit.ly/1XuBALX or search "royalty submission" using the CAPP.ca search tool.

Visit **LetsTalkRoyalties.ca** to provide your feedback to the review panel.

Engagement in Industry's 'Backyard': The Alberta Program

In July, CAPP launched a program to get Albertans informed, engaged and activated on oil and gas issues, in relation to the royalties and climate change reviews. Albertans were also recruited into the Canada's Energy Citizens (CEC) program to be an ongoing voice of industry support and engagement.

THE ALBERTA 90-DAY PROGRAM

CAPP BOARD AND EXECUTIVE

- 10 CEO Transition Task Group meetings
- 18 meetings with various ministers and the Premier

MEDIA

- 105 media interviews
- 21 desk-side briefings
- 6 media releases
- 5 editorial board meetings
- 3 opinion editorials
- 1 media tour

CAMPAIGNS AND OUTREACH

- 2.2 million people reached via social media
- 3,570 new Canada's Energy Citizen signups—a 67% increase
- 57 stakeholder meetings reaching 840 Albertans
- 30 targeted communities visited
- 7 corporate infographics developed and distributed
- 2 toolkits developed and distributed to member companies
- 2 Tim Talks video updates
- 1 stump speech created
- 1 Speaker Series luncheon featuring Dave Mowat

Photograph: Brian Buchsdruecker

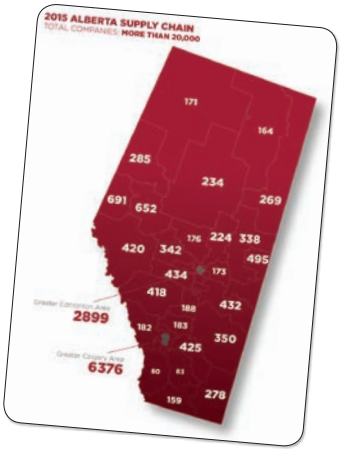
Katie Kachur, oils sands policy advisor at CAPP

Alberta Supply Chain: 20,000 plus companies

To illustrate the impact of Canada's oil and gas industry on the Alberta economy, CAPP worked with members to identify the industry supply chain—i.e., companies that produce goods and services for the oil and gas industry—within the province. Based on the previous two years' data (2013-2014), more than 20,000 small, medium and large-sized businesses rely on the energy industry—everything from drilling contractors to safety apparel manufacturers to caterers and janitorial services.

"In light of things like the Alberta royalty review, climate change review and other policy proposals potentially impacting our industry, we felt it important to highlight how vital it is we keep the energy industry competitive and growing," says Katie Kachur, oil sands policy advisor at CAPP. "These companies employ Albertans, pay taxes and contribute to the growth and prosperity of our province."

To learn more, or get a copy of this 2015 Alberta Supply Chain infographic, contact Katie.Kachur@capp.ca.



Newfoundland Royalty Review

The Newfoundland and Labrador government released details of its new generic offshore oil royalty regime on November 2. CAPP had participated in a consultation with the government, emphasizing the importance of maintaining a fiscal structure that would allow the industry to remain competitive with other provinces and countries.

"Unfortunately, based on our initial assessment, we believe the regime, as currently presented, has the potential to negatively impact our industry's ability to compete for investment," says Paul Barnes, manager for Atlantic Canada and Arctic at CAPP. "We look forward to further opportunities to consult as the related regulations are developed. We need a royalty regime that is competitive on a global scale and encourages new developments if we want to continue seeing benefits from this industry for Newfoundland and Labrador."

Alexander's ENERGY STORY:

» **Alexander Walsh** is on a mission to change the conversation about Canada's oil and gas sector among today's youth. He's already helped stop a nascent fossil fuel divestment movement at Trent University in Peterborough, Ontario. Along the way, he has enlisted a new generation of industry supporters.

Walsh, 21, will graduate from Trent in early 2016 with a degree in Environmental Studies, which he plans to follow with a Master's program. He spent this past summer as the Energy Advocacy Intern at the Manning Centre. His ultimate goal is a career in international energy security and foreign affairs.

Walsh grew up in London, Ontario, and spent his early days traversing the gas fields of southern Ontario with his geologist father. "I was out on the rigs with my dad looking at core samples. It was my early introduction to the energy sector," he says.

The memory stuck with Walsh when he chose his own field of study. "Energy is a big issue in the environmental field. Early on I felt the sector was being treated unfairly in discourse by the student base," he says. "Some of the academic debates had no one arguing on behalf of the industry."

This reached a critical point when anti-fossil-fuel activists on campus began calling on the university to join the fossil fuel divestment movement. In response, he formed an on-campus advocacy group called the Trent University Energy and Natural Resources Association (TENRA), building a team of like-minded individuals to fight against misinformation and point out the flaws in the divestment movement.

"We began with a poster campaign across faculties that reminded students why energy issues are important and how the industry hires people with skills and talents such as ours," he says. "However, writing articles and putting up posters is not enough—it's discussion without engagement."

The key turning point was a public debate about divestment held at the university on January 27, 2015. Walsh and his team undertook extensive research. "We wanted to understand the opposition's views better than they did."

IN A NUTSHELL

- Petroleum-based product Alexander can't live without: **His laptop** because it puts the world's information in his hands.
- How he'd describe a **world without oil and gas**: "Cold—especially at this time of year."
- What **shaped his ideology**: Carl Sagan's objective approach to science and understanding the universe.

Walsh calls the debate one of his proudest moments. Over 100 people attended and listened to the two opposing views for more than two hours. "At the end, half of the audience rushed to seek more information from us. They commented that our arguments about ethical, moral and economic choices were ones they had not heard before—and it changed our level of support," he says. "That's the moment we realized our hard work was paying off."

Walsh believes one of the biggest contributors to the team's success in defeating the divestment movement was the ability to mobilize an academically diverse group of students. TENRA members include students from business and economics, media and journalism, physics, and environmental studies.

Changing the conversation is not about making people as passionate about the oil and gas sector as he is, notes Walsh. "It's about mobilizing the silent majority, which is a lot harder than one might think. They need to realize that oil and gas are a part of most everything we see every day, including things like the equipment used by firefighters to save lives. Once people acknowledge and understand that, they support it."—KB

Photograph: Jason Dziver

Dr. Dan Wicklum, Ph.D.
COSIA Chief Executive

REIMAGINING CARBON:

COSIA'S DAN WICKLUM TALKS ABOUT THE NEW CARBON XPRIZE

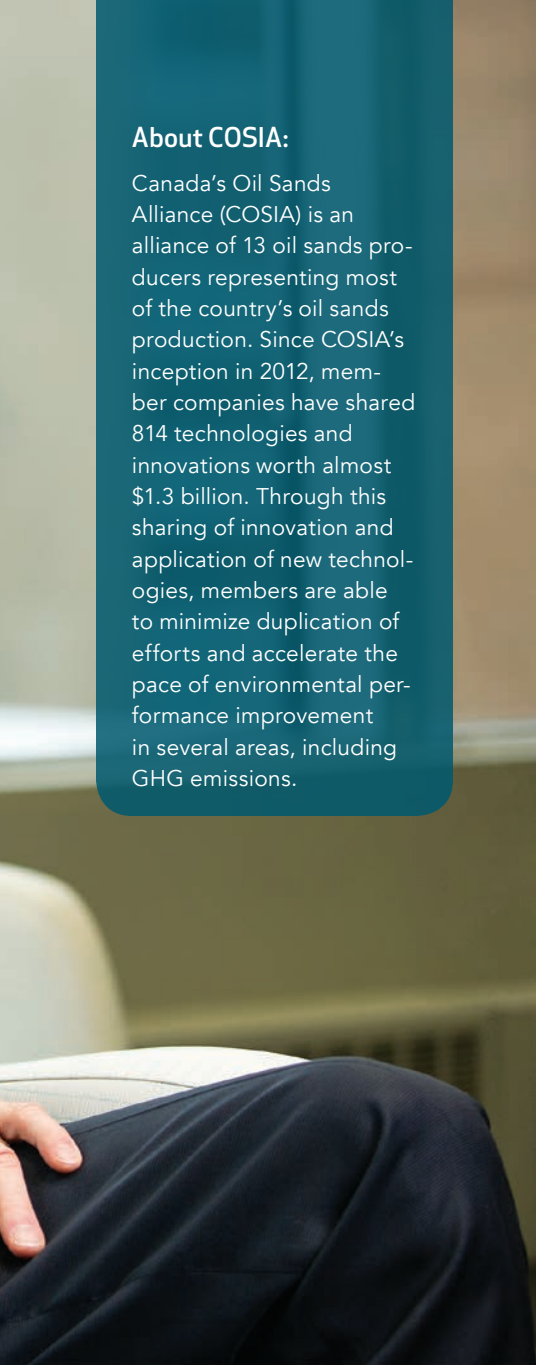
This September, COSIA helped launch the latest XPRIZE contest for innovation, in collaboration with the XPRIZE Foundation and NRG Energy, a U.S. energy utility company. The US$20-million NRG COSIA Carbon XPRIZE competition challenges teams from around the world—innovators in universities, government and the private sector— to come up with innovative approaches to convert carbon dioxide (CO_2) emissions from fossil fuels into useful products. *Context* spoke to COSIA chief executive Dr. Dan Wicklum to learn more about COSIA's XPRIZE collaboration.

Q: Why did COSIA partner with XPRIZE?

A: The XPRIZE Foundation has a track record of success in competition-based prizes. Also, both COSIA and XPRIZE are organizations focused on collaboration and innovation. So it was a natural step for the two organizations to work together.

Q: How did the partnership come about?

A: The idea started about three years ago during a workshop in Alberta on climate change. From there, a coalition of companies from COSIA approached XPRIZE and started to work directly with the foundation. This effort culminated in our recent announcement to launch the competition.



About COSIA:

Canada's Oil Sands Alliance (COSIA) is an alliance of 13 oil sands producers representing most of the country's oil sands production. Since COSIA's inception in 2012, member companies have shared 814 technologies and innovations worth almost $1.3 billion. Through this sharing of innovation and application of new technologies, members are able to minimize duplication of efforts and accelerate the pace of environmental performance improvement in several areas, including GHG emissions.

"As a scientist, I know from experience that when you issue a challenge and encourage smart, motivated, creative people to work on that challenge, great things will happen."

Q: How does this competition build on the work of COSIA?

A: As an alliance of oil sands producers, COSIA's work is focused on accelerating the pace of improvement in environmental performance in Canada's oil sands. Our members capture, develop and share the most innovative approaches and best thinking to improve their environmental performance. Right now we have an active portfolio of 219 projects at a cost of about $450 million, with many of these specifically targeted on reducing GHG emissions. Some projects are focused on increasing energy efficiency, others on redesigning bitumen extraction, others on applying emerging technologies like fuel cells, while others are advancing longer term breakthroughs like carbon capture and storage.

Q: So, why set a challenge for "reimagining carbon," rather than reducing emissions?

A: About 30 per cent of GHG emissions inherent in each barrel of oil come from production. COSIA members understand that, and they're constantly working hard to reduce GHG emissions from production.

By sponsoring the Carbon XPRIZE, they're building on this effort and expanding the solutions base. It's designed to take a different but complementary tack— to not just decrease emissions but to completely reimagine carbon. With the Carbon XPRIZE, we're hoping to encourage the development of breakthrough technologies that can convert CO_2 into valuable products — for example, building materials, industrial and consumer chemicals, low-carbon transportation fuels, or possibly new products altogether.

Q: Can COSIA members participate in the new XPRIZE?

A: With the type of money involved, $20 million for the competition, strong governance and adjudication are important. So COSIA member companies cannot participate in the Carbon XPRIZE. The XPRIZE Foundation is the adjudicating organization and will appoint a judging panel to evaluate the various technologies and approaches developed by teams during the competition.

Q: In addition to XPRIZE, is COSIA looking for other partnerships?

A: We're already doing that through our Associate Member program. In addition to our 13 COSIA members, we've signed agreements with 38 other organizations, including governments, universities and corporations, and we are working on projects with these partners. Within COSIA, we realize we don't have a monopoly on innovation, so we're continually reaching out to innovators, using specific projects like the XPRIZE or through our Associate Member program.

Q: Finally, now that the new XPRIZE competition has been launched, are you excited to see what results?

A: Absolutely. As a scientist, I know from experience that when you issue a challenge and you encourage smart, motivated, creative people from a diversity of backgrounds and competencies to work on the challenge, great things will happen.

With our commitment to the Carbon XPRIZE, COSIA's member companies have taken the next step in finding a solution. We know, as does the XPRIZE Foundation and our co-sponsor NRG Energy, that the next great innovation can come from anyone, anywhere.

nrg | cosia CARBON XPRIZE

- $20 million prize pool;
- Collaboration among COSIA, NRG and XPRIZE Foundation;
- Competitors asked to "reimagine carbon"—turning CO_2 into useful products;
- Two tracks with new technologies tested at either a coal power plant or a natural gas power plant;
- Registration deadline: March 2016.

Learn more or register at: www.cosia.ca/carbon-xprize/

According to Statistics Canada, Canadian oil and natural gas companies spent

$5.8 BILLION

on research and development between 2009 and 2013.

CANADA'S OIL AND GAS INDUSTRY IS FOCUSED ON TECHNOLOGY LEADERSHIP AND INNOVATIVE THINKING TO REDUCE GHG EMISSIONS, LOWER COSTS AND MAINTAIN A COMPETITIVE INDUSTRY.

By David Coglon

FOCUS ON INNOVATION

Climate change is a global issue, requiring action across borders and across industries. The spotlight is clearly directed on this issue in 2015, perhaps shining more brightly than ever before as world leaders prepare to gather in Paris for the Conference of the Parties, also known as COP21.

In Canada, government and the oil and natural gas industry share the view that we have the opportunity to be a leader in the space of greenhouse gas (GHG) emission reductions. For industry, the key to demonstrating this leadership will be through commitment to innovation and technology.

The concept of innovation is nothing new in Alberta, where the province was the first in North America to legislate GHG emissions reductions for large industrial facilities. And the oil sands themselves are a testament to the power of technology and innovative thinking. The idea of being able to extract oil from sand, at an industrial scale, in a manner that is both feasible and profitable, might have seemed far-fetched 60 years ago. Ultimately, the creation of a Canadian oil sands industry required some pioneering technological innovations and monumental feats of engineering.

"Technology is key—it builds on our strengths," says Tim McMillan, CAPP's president and CEO. "We developed the technology to get the oil out of the sand, and we're just as committed to taking carbon out of the barrel."

This commitment comes as energy companies contend with low commodity prices and tightening budgets. However, as CAPP vice-president of oil sands and markets Greg Stringham points out, positive environmental outcomes and lower costs can be aligned goals.

> "Companies are finding that if they can reduce their input costs, like energy, and improve their environmental performance, they benefit, especially in these challenging economic times," says Stringham.

For more than a decade, there's been a surge of industry activity, especially in the oil sands sector, to drive energy efficiencies. Companies, for example, have installed advanced boilers and heat exchangers to conserve more energy. Mine developers have worked with vehicle suppliers to optimize

fuel consumption. And in situ producers have refined steam assisted gravity drainage (SAGD) technology, adding gasoline-like solvents to steam to enable bitumen to flow more easily to the surface.

It's the kind of collective effort that over time has gained momentum, so much so that Environment Canada reports that, since 1990, emissions per barrel of oil sands oil have declined by 30 per cent.

The industry is constantly improving and is applying new, innovative technologies that lower emissions and cost at the same time," Stringham says.

"We developed the technology to get the oil out of the sand, and we're just as committed to taking carbon out of the barrel."

In the quest to build leaner, more efficient operations, there are breakthroughs. Witness what's occurred at Imperial Oil's Kearl facility, an oil sands mining project northeast of Fort McMurray that began production over two years ago and is currently producing over 200,000 barrels of bitumen a day.

What's notable about Kearl is a new technology that's delivering bitumen with the wells-to-wheels greenhouse gas (GHG) emissions that are lower compared to most other heavy crudes, and nearly on par with emissions associated with the average barrel of oil refined in the United States. To achieve this level of performance, Imperial introduced a proprietary paraffinic froth treatment (PFT) technology developed by its scientists and engineers.

The technology processes bitumen on site to remove water and solids and improve bitumen quality. Bitumen is then blended with natural gas condensate to create a diluted product. The PFT process removes a portion of the heavy end of the barrel (asphaltenes), using less energy than would be required to remove the same heavy ends in a coker at an on-site upgrader.

"With PFT, we create a product that's clean enough to go directly into a pipeline. Plus, we've eliminated the need for an on-site upgrader, significantly reducing costs and GHG emissions," says Rick

A Potential Breakthrough: WATERLESS EXTRACTION

In situ producers use SAGD or cyclic steam stimulation (CSS) to recover bitumen. Both forms of production involve injecting high pressure steam into deep boreholes to liquefy bitumen so it can be pumped out. Generating steam, though, is very energy intensive and leads to emissions. This has prompted the industry to research waterless extraction methods.

Nsolv Corporation, for example, is testing a solvent process that uses heated solvent. The project is funded in part by the Climate Change and Emissions Management Corporation (CCEMC).

"It's a made-in-Canada patented warm solvent technology that produces oil sands in a much more economically and environmentally sustainable way than current industry technologies," says Joseph Kuhach, Nsolv's CEO.

Nsolv's process uses proven horizontal well technology developed for SAGD, but instead of water, injects warm propane or butane which condenses underground and dissolves the bitumen. Contaminants such as heavy metals and asphaltenes precipitate out and are left in the ground. As a result, a partially upgraded oil is produced. Because of its low pressure, low temperature operation, it requires very little energy to produce the oil. GHG emissions are reduced by up to 80 per cent, compared to SAGD methods.

"Nsolv allows us to move well beyond incremental changes and help transition the industry into a much a cleaner energy source, with significant reductions in GHG emissions," Kuhach says.

After a decade of progress in the lab, in 2014, Nsolv began operating a pilot project at Suncor Energy's Dover oil sands lease northeast of Fort McMurray. In September this year, the pilot surpassed a key milestone, producing 60,000 barrels of oil.

Another project, also at the Dover site, is testing enhanced solvent extraction incorporating electromagnetic heating (ESEIEH, pronounced "easy") technology. Backed by a consortium of Suncor, Devon Energy, Nexen, Harris Corporation and the CCEMC, the project involves inserting a radio-frequency antenna into a horizontal borehole which transmits electromagnetic energy to heat the bitumen. Once the bitumen is mobile, a solvent is injected and mixed with the bitumen to facilitate recovery.

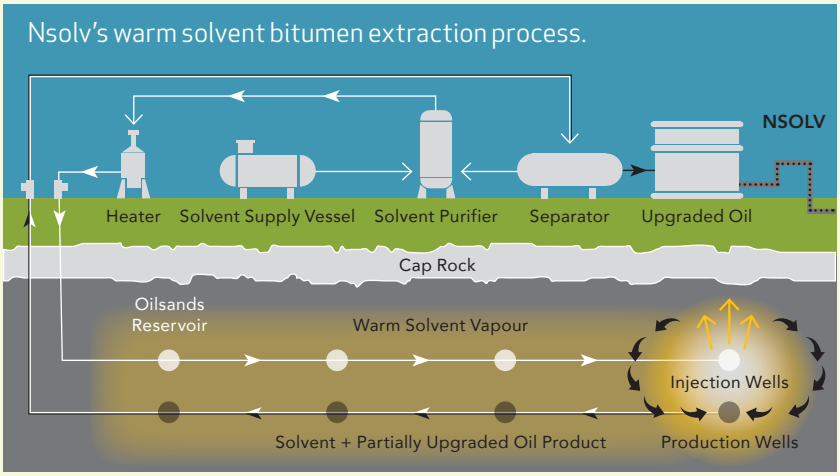


Illustration: Courtesy Nsolv Corporation

The consortium has been collaborating on this technology since 2011. In July, 2015, the group announced the start of a pilot project to test the technology at an in situ reservoir.

"Both technologies, if successful and commercially viable, have the potential to improve economic and environmental performance in the oil sands by eliminating the need for water at in situ operations, reducing GHG emissions and decreasing our environmental footprint," says Gary Bunio, general manager of oil sands strategic technology for Suncor.

Gallant, Imperial's vice-president of oil sands development and research.

This focus on transformative technology has spread to others in the industry. Developers, for example, are testing waterless in situ extraction technologies that use less energy and produce fewer emissions.

Helping to spur more advancement is Canada's Oil Sands Innovation Alliance (COSIA), an alliance of 13 oil sands producers who collaboratively share technological innovations related to environmental progress.

Projects underway encompass everything from enhancing cogeneration engines to improving waste heat recovery, to mixing CO_2 emissions with algae to produce biofuel and biomass products.

"COSIA is a highly functioning collaborative effort, and it's picking up momentum. We are going to see a lot of positive results from COSIA in the future," says Alex Ferguson, CAPP's vice-president of policy and performance.

"With PFT, we've eliminated the need for an on-site upgrader, significantly reducing costs and GHG emissions."

Photograph: Brian Buchsdruecker

Rick Gallant, vice-president of oil sands development and research, Imperial Oil.

CAPP is looking to support further industry innovation through policy development that addresses emission reductions and enables a strong oil and gas sector. The Alberta government's climate change advisory panel provided an opportunity for industry to recommend concrete ways to reduce GHG emissions, while promoting industry's vision of technology leadership.

In October, CAPP submitted a set of recommendations to the panel calling for the Alberta government to set a target for technology investment over the next decade as part of its climate change goals. Funds from Alberta's emissions levy doubled to $30 a tonne by 2017, would, for example, be invested to develop and deploy new emission-reducing technologies that could have broader economic and environmental consequences.

For McMillan, adopting this kind of investment is fundamental to accelerating technological leadership on climate change without sacrificing economic goals.

"It shouldn't be a choice between jobs and climate. Through technology we can unlock the value of Canada's oil and gas resources while continuing to reduce emissions," McMillan says.

Alex Ferguson, vice-president of policy and performance at CAPP

CAPP CLIMATE SUBMISSION Q&A

WITH ALEX FERGUSON

Alberta can become a stronger leader in the fight against climate change and a more competitive place to invest in oil and gas if the province strikes the right balance in its future climate policy. That's the message CAPP stressed in its submission to Alberta's climate change advisory panel. *Context* spoke with CAPP vice-president of policy and performance Alex Ferguson to learn more about CAPP's submission.

Q: What's the overall theme in CAPP's submission?

A: We emphasized that, in addition to setting emissions reduction targets, Alberta needs to set an optimal pathway to get there, starting with technology leadership. We're asking the Alberta government to set a target for accelerated technology investment over the next decade and to invest funds from the province's emissions charge to develop and deploy new emission-reducing technologies in our sector.

Q: Why have you emphasized this message?

A: GHG reduction is a global issue, so we need to find the right balance to meet our climate change ambitions and continue producing energy for the world. Supporting and enabling the development of cost-effective technologies is an important way we can achieve climate change goals while continuing to promote investment and jobs in Alberta.

Q: What are some opportunities to support technology innovation in the province?

A: One is to build on existing programs like the Climate Change and Emissions Management Corporation (CCEMC). This is a crown agency that levies dollars from our sector and other large emitters and applies this funding to support the development of advanced technology to address climate change. We've recommended improving the way the fund is structured so it becomes more effective in funding technologies that can deliver significant emissions reductions over the long term.

We're also recommending the development of an incremental clean infrastructure royalty credit program. Such a program would encourage adoption of technologies that reduce the emissions impact of oil and gas development while protecting our industry's competitiveness.

Q: What are some opportunities CAPP has identified where industry can take leadership to reduce GHG emissions?

A: We're proposing some near-term opportunities for action. One is to reduce emissions of methane, a very intensive GHG, from oil and natural gas operations across the province. We also believe there are opportunities for greater use of natural gas and cogeneration in power generation to achieve significant GHG reductions in the province.

Q: Finally, how would you sum up the challenge for the province?

A: It's a complex challenge. There are no easy solutions for Alberta, where oil and gas is such an integral part of everyday life, and such an important driver for the economic prosperity of Albertans. The Alberta government wants to do more to address climate change — but it wants to grow the oil and gas industry, too. I believe we can find a balanced approach that achieves both. Climate change is not a challenge just for our industry but for all Albertans.

*Read CAPP's submission to the climate change advisory panel: Visit **http://bit.ly/1MoaL4V**, or search "climate submission" using the CAPP.ca search tool.*

Photograph: Brian Buchsdruecker

Colleen Houston, corporate communications and marketing advisor at CAPP

HAVE A BALANCED DISCUSSION:
Fact Books Updated

The Facts On: Oil Sands and *The Facts On: Natural Gas* are CAPP's two most popular publications. These pocket-sized resources come packed with straightforward, accessibly presented information including how oil sands and natural gas resources are produced, their economic benefits, and their environmental impacts and mitigation. They have everything you need to have a rousing debate with friends, or be confidently knowledgeable in your industry.

"We've updated both resources to reflect the latest economic, environmental and production data from CAPP and from objective and credible third-party sources," says Colleen Houston, corporate communications and marketing advisor with CAPP. "Now's a great time to pick them up if your old copies are getting dog-eared, or if these resources are new to you."

Download at http://bit.ly/1OSTmHw (natural gas) and http://bit.ly/1NefhbQ (oil sands); contact publications@capp.ca to order hardcopies.

CANADA'S ENERGY CITIZENS:
You Really Like Us!

Since the beginning of the year, the Canada's Energy Citizens Facebook page has grown from 5,000 to more than 18,000 likes.

Student ambassadors at the University of Ottawa recruit industry supporters to the CEC community.

CEC CAMPUS TOUR:
Reaching Out to Youth

Many young Canadians support a strong energy industry that develops resources in a responsible manner and are looking for opportunities to speak out.

This fall, Canada's Energy Citizens is heading to campuses across the nation to recruit college and university students. There will be on-campus presentations and displays, social media blitzes, and distribution of information on how industry benefits Canadians. The first wave of the tour will focus on these institutions:

PROVINCE OR REGION	POST-SECONDARY INSTITUTION
Alberta	Mount Royal University, University of Calgary
British Columbia	University of British Columbia, British Columbia Institute of Technology, Kwantlen Polytechnic University
Ontario	University of Toronto, University of Ottawa, Trent University
Quebec	McGill University, Concordia Univeristy, ETS at Université du Québec
Atlantic Canada	Dalhousie University, St. Francis Xavier University

ROYALTY INFOGRAPHICS:
Please Share

This infographic is part of a series illustrating key issues related to oil and gas royalties. This one stresses the connection between production growth and investment, and the underlying fact that there is a global competition for capital. For Alberta's oil and natural gas industry to stay strong, it must remain competitive with other jurisdictions like the United States.

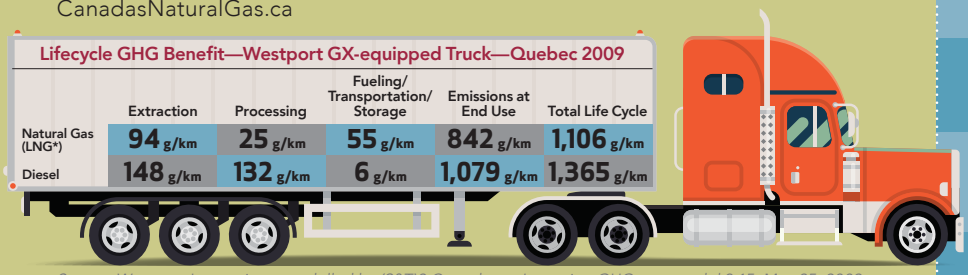
Learn more about royalties and download and share infographics at: http://bit.ly/1QyDpFD

Did You Know? NATURAL GAS VEHICLES

Heavy-duty trucks and buses running on natural gas reduce GHG emissions by an estimated 15 to 30 per cent compared to diesel trucks and buses. Learn more at CanadasNaturalGas.ca

Lifecycle GHG Benefit—Westport GX-equipped Truck—Quebec 2009

	Extraction	Processing	Fueling/ Transportation/ Storage	Emissions at End Use	Total Life Cycle
Natural Gas (LNG*)	94 g/km	25 g/km	55 g/km	842 g/km	1,106 g/km
Diesel	148 g/km	132 g/km	6 g/km	1,079 g/km	1,365 g/km



Source: Westport Innovations; modelled by (S&T)2 Consultants Inc. using GHGenus model 3.15, May 25, 2009.
** includes 3% diesel pilot fuel.*

CARIBOU CONNECTIONS

INDUSTRY COLLABORATES ON SOLUTIONS TO CARIBOU DEPREDATION

Along a snowy tract of boreal forest—habitat to the woodland caribou of northern Alberta—a track hoe digs into the hard soil. It works slowly along an old seismic line, a six-metre-wide corridor of cleared trees that extends like a roadway through otherwise dense forest. The track hoe has created a half-metre-high circular mound of freshly broken soil whose diameter spans the width of the corridor.

"We call this process 'mounding,'" explains Michael Cody, senior advisor for land and biodiversity at Cenovus. "We've found that planting seedling trees on these mounds more than triples tree survival and growth."

Mounding is a technique adapted from forestry science to heal legacy disturbances from oil and gas exploration in the boreal forest. It's also one of an array of tools and techniques industry is using to aid the recovery of woodland caribou in this region.

CARIBOU AT RISK

Woodland caribou populations are listed as threatened under the federal Species at Risk Act (SARA). One of the reasons for their decline has been attributed to seismic lines from 20 or more years ago, cut through the forest to explore the underlying geology of the Western Canadian Sedimentary Basin.

Low-Impact Seismic

Wide, linear seismic lines are a legacy to an earlier time. Nowadays, companies use low-impact seismic exploration where cut lines are much narrower and intentionally meander (i.e., they're non-linear). Forest regrowth is faster and studies have shown that large mammals don't use these lines very much.

"Large ungulates like moose, deer and caribou have been using these old seismic lines as transportation corridors," says Amit Saxena. Saxena is supervisor of biodiversity and land stewardship at Devon. He's also chair of the COSIA Caribou Working Group, which brings together members of the oil sands companies to collectively develop industry-led strategies addressing caribou issues.

In addition to being easier to move through, the old seismic lines have shrubs and young vegetation along the edges that deer and moose thrive on.

Saxena describes the problem: "These seismic corridors, combined with warmer winters, have provided the habitat for moose and deer to move northward, into areas they haven't historically occupied, such as the boreal forest. Unfortunately, the moose and deer bring with them natural predators like wolves and bears."

The corridors serve to concentrate predator-prey interactions as wolves and bears learn to use them to hunt more efficiently, thereby supporting increases to predator populations.

Woodland caribou are poorly equipped to handle this changing dynamic. Their primary survival mechanism is to space themselves away from predators. Without this spacing, caribou, and in particular, caribou calves are susceptible to high levels of predation.

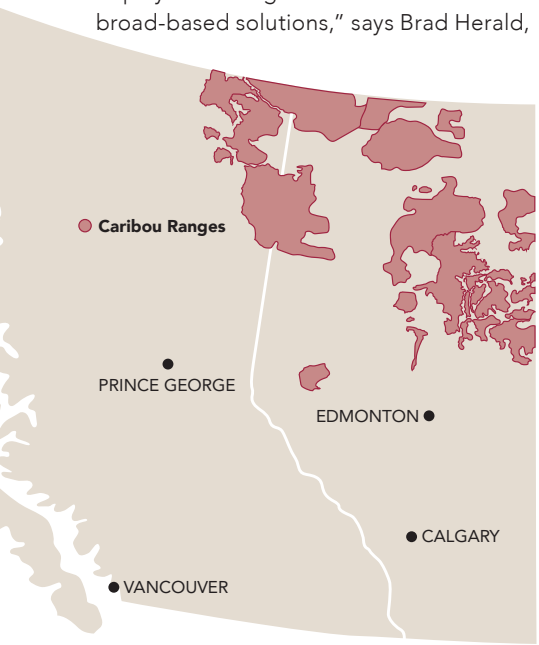
Worse, caribou have low reproduction rates. Females don't produce young until three years of age, and then have only one calf per year.

Estimates suggest caribou populations across Canada have fallen by 30 per cent in the last 20 years, and in Alberta, by as much as 70 per cent in the last 10 years. At least twenty-six of 51 caribou ranges across Canada are considered to have dropped below self-sustaining numbers.

HABITAT RESTORATION

The reason for declining caribou herds is not solely the fault of old seismic lines. It's a complex issue involving multiple factors and many players. These include fragmentation and alteration of forest cover due to the forest industry, power transmission, agriculture, and oil and gas activities. Climate change and forest fires are also factors.

"All stakeholders, as well as the provincial and federal governments, have a role to play in working towards collective and broad-based solutions," says Brad Herald, vice-president of Western Canada operations at CAPP.



"We also know it's important for industry to demonstrate leadership on this," adds Herald. "CAPP members spend $100 million annually on caribou mitigation strategies."

Cenovus is one of the CAPP member companies spearheading efforts at caribou habitat restoration.

"We decided as a company that one of our first approaches to the caribou issue should be one of habitat restoration" says Cody. "We had discovered that many of the old seismic lines were experiencing successional stagnation—wherein forest cover regrowth simply wasn't happening. Without active intervention, they weren't going to restore themselves."

Cenovus began with small-scale trials in 2008 testing theories about restoring forest cover, such as planting seedlings on mounds to protect the young trees from invasive grasses and wet soil conditions.

Photograph: Jason Dziver

Amit Saxena, supervisor of biodiversity and land stewardship at Devon and chair of the COSIA Caribou Working Group.

> *"There's an opportunity for some immense partnerships—between industry, Aboriginal groups, stakeholders and government to do some fruitful things."*

Cenovus also experimented with forest stand modification—which involves bending tree stems from the adjacent forest across the seismic line. This is done to create physical barriers and reduce sightlines along the corridor. The trees remain alive, and provide physical structure while dropping seed into the corridor, further promoting regrowth along the line.

When early trials provided positive results, Cenovus moved forward with the Linear Deactivation project (LiDea) in 2012. LiDea applied these techniques within 38,000 hectares of habitat in the Cold Lake caribou range.

"We recently completed 100 per cent restoration of all 237 kilometres of linear features within the LiDea area, and we're now monitoring the plant and animal response," says Cody. "It's early, but so far, we've had positive results."

The results from LiDea and earlier trials suggest that once restored, fewer large mammals use the lines as travel corridors. As well, growth and survival of planted trees are enhanced.

Another innovative approach to caribou habitat restoration is the Algar Historic Restoration Project (Algar). In Algar, six oil sands companies (Nexen, Statoil, ConocoPhillips, Shell, Suncor and Total) worked together on a five-year program to replant trees and shrubs along the linear footprint within the Algar Region. The region consists of about 56,000 hectares southwest of Fort McMurray, within the East Side Athabasca River (ESAR) caribou range.

Since the Algar region consists largely of bogs and wetlands, gaining access during the summer is problematic. So a key restoration requirement was the use of winter planting techniques for seedlings. These techniques applied research done in 2011 in collaboration with the Government of Alberta and Grande Prairie Regional College, allowing for

Photograph: Jason Dziver

Michael Cody, senior advisor for land and biodiversity at Cenovus.

winter planting survival rates of between 90 and 95 per cent.

EXPLORING OTHER OPTIONS

Saxena notes that the COSIA Caribou Working Group is currently developing a priority list for the next phase of habitat restoration. At the same time, the group is exploring other options.

One option under consideration is predator exclusion fencing. This involves fencing off an area of wilderness to protect caribou mothers and their newborn calves from predators during and post calving season when they are most vulnerable.

"We're currently looking to initiate a pilot program that would fence off a hundred square kilometres," says Saxena.

The caribou working group also plans to sponsor in January 2016 an international workshop in collaboration with the Calgary Zoo and the International Union for Conservation of Nature (IUCN). The IUCN is a European-based organization that finds pragmatic solutions to help species at risk around the world—it has instigated species-saving measures for the sage grouse, whooping crane and Arabian oryx.

Saxena notes that industry will use the workshop to examine population augmentation techniques like captive breeding and maternal penning, both from an effectiveness perspective, as well as their acceptance among key stakeholders including local communities and First Nations groups.

COLLABORATION IS KEY

Both LiDea and Algar are examples of large-scale habitat restoration projects where companies have shown a willingness to go beyond the confines of their immediate lease areas. The hope is that these projects can provide a foundation for more initiatives and partnerships involving multiple stakeholder groups across the region.

"We look forward to other opportunities to collaborate on restoration projects," notes Cody, who adds that work has begun on a 2016 proposal for a second project called the South LiDea restoration area, involving Canadian Natural and Imperial as partners.

Underlying the various efforts to restore caribou populations are conditions laid out by the federal government and SARA. In 2012, the federal government published a document called "Recovery Strategy for the Woodland Caribou, Boreal Population, in Canada." The strategy requires that provincial jurisdictions have range plans in place by fall of 2017 designed to restore caribou habitat to 65 per cent undisturbed, along with action plans describing efforts to increase caribou herd sizes to self-sustaining levels.

CAPP and industry hope to support the B.C. and Alberta provincial governments to find solutions to meet these objectives.

"We're committed to the recovery of the national population of woodland caribou over the long-term," says Herald. "Industry can apply its skills as an innovative problem solver to help in this."

A risk is that government, in an attempt to preserve remaining caribou habitat will simply close off new development inside caribou ranges. According to Cody and Saxena, this would be a mistake, as problems of predator overlap and forest regrowth stagnation won't go away simply by shutting industry out.

"Industry has to be involved in a viable, working landscape approach to solve the problem."

Saxena is excited by this kind of collaborative engagement. "There's an opportunity for some immense partnerships—between industry, Aboriginal groups, stakeholders and government to do some fruitful things."

An example of a partnership that cuts across industry and geographic boundaries is the Regional Industry Caribou Collaboration, (RICC). RICC was initiated in 2013 as a partnership to work on caribou issues across two caribou ranges: Cold Lake and East Side Athabasca Range (ESAR). RICC partners include oil sands companies Devon, Cenovus, Canadian Natural, Imperial and MEG Energy; as well as TransCanada Pipelines and Alberta-Pacific Forestry Industries. The group works closely with academia, the Government of Alberta and the Alberta Biodiversity Monitoring Institute Caribou Monitoring Unit.

"Government could turn the entire oil sands region into a national park and the caribou would still be gone within the next 50 years from that area," says Saxena. "Instead, we're looking to government to help facilitate collaboration—so that we can push forward initiatives that will make a difference in caribou herd sustainability. They've got willing participants in the oil and gas industry."

"Removing industry from the landscape is one of the biggest threats to caribou," echoes Cody. "I know that might sound perverse to some on the other side of the issue, but I think that's the reality: industry has to be involved in a viable, working landscape approach to solve the problem."

Caribou By the Numbers

51 ranges across Canada

34,000: national population

There are 5 caribou ranges in B.C. and 12 in Alberta.

Source: Government of Canada

Oil and Gas 101: THE DIVESTMENT CHALLENGE

What is the Fossil Fuel Divestment Movement?

The **fossil fuel divestment movement** is an attempt to convince groups such as wealthy individuals, universities and major pension funds to divest themselves of financial assets in companies involved in fossil fuel extraction. It is being promoted by some environmental NGOs as a means to combat climate change.

In Canada, 19 universities currently have a student-led divestment campaign. To date, only Concordia University has begun divestment of about $5 million from their portfolio.

Some universities will be voting on divestment motions in upcoming months, and others have already rejected the idea, citing the benefit to students and all Canadians created by the energy industry.

Illustration: Mark Cromwell

THE ECONOMIC IMPACT OF DIVESTMENT: UNIVERSITY OF CHICAGO STUDY

A study performed by Daniel Fischel (2015) of the University of Chicago Law School compared two hypothetical investment portfolios over a 50-year period: one that included energy-related stocks and one that did not.

The University of Chicago study found divested portfolios performed more poorly. Meanwhile, there was no evidence of financial impact on companies targeted by divestment.

NON-DIVESTED PORTFOLIO vs DIVESTED PORTFOLIO

Performed 0.7% worse per year over 50 years

Given that there are about $456 billion in total university endowment assets, this translates into a **$3.2 billion loss per year**.

Another **$220 million** would be lost in additional management fees resulting from the extra complexity of managing funds to comply with divestment policies.

RESPONDING TO DIVESTMENT PROPONENTS

When engaging divestment proponents, Suncor senior sustainability specialist, Peter MacConnachie, says it's important to discuss both the economic and the motivational sides of the issue. "I often ask students, what are you trying to achieve? When they say 'Stop climate change,'—which, at the end of the day, means changing atmospheric CO_2 levels—I point out that this approach, divestment, simply isn't going to do it."

Peter MacConnachie, senior sustainability specialist at Suncor

Beyond the sheer size and fluidity of capital markets, making it unlikely for divestment proponents to achieve tangible bottom-line success, MacConnachie points out a number of factors divestment proponents typically overlook (see Four Reasons sidebar). These include the fact that 80 per cent of the world's oil and gas reserves are controlled by state-owned enterprises with no publicly traded shares.

"Even if divestment proponents were somehow wildly successful, all that would happen is that all the OPEC nations would say, 'Thanks,' and take up more market share," says MacConnachie. Oil production, consumption and the resultant GHG emissions would be unaffected.

MacConnachie, who works closely with Suncor's Investor Relations team suggests divestment proponents would be better served directly engaging with oil companies to continually improve GHG performance, rather than effectively removing themselves from the conversation through divestment.

FOUR REASONS DIVESTMENT DOESN'T WORK:

1. **COUNTER-PRODUCTIVE:**

   Many companies in the oil and gas industry are driving innovation in the very areas highlighted by some divestment groups as the reason not to invest in them.

2. **STATE OWNERSHIP:**

   Eighty per cent of the world's oil supply is controlled by government-owned oil companies who don't rely on publicly traded shares, and often don't face the same requirements for transparency and environmental performance that public corporations do.

3. **GROWING DEMAND:**

   The International Energy Agency estimates that global energy demand will grow 32 per cent by 2040. Fossil fuels are expected to continue supplying the majority of the world's energy needs.

4. **COMBUSTION AND CONSUMPTION:**

   Production accounts for only 20 to 30 per cent of the GHG emissions associated with fossil fuels. It's the combustion of fossil fuels (through vehicles or production of goods and services) that creates 70 to 80 per cent of those emissions—and those emissions are created through consumer demand. Divestment ignores this reality.

Photograph: Courtesy Suncor

Proud Capital Markets Supporters of CAPP

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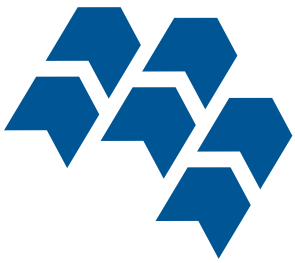
Canada's Upstream Oil and Natural Gas Industry



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