



**THE “DIRTY OIL” CARD
AND CANADIAN FOREIGN POLICY**

The “Dirty Oil” Card and Canadian Foreign Policy

By

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October, 2010

Prepared for the Canadian Defence & Foreign Affairs Institute
1600, 530 – 8th Avenue SW, Calgary, AB T2P 3S8

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EXECUTIVE SUMMARY

Recent campaigns from environmental groups have singled out Canada's oil sands as the most egregious example of "dirty oil" and targeted Canadian exports of the oil sands to the United States through consumer boycotts and proposed legislation. While some maintain that the oil sands will simply find another export market to service, like China or India, producer and consumer alike must confront the realities of an integrated continental energy market. A lack of available alternative energy sources, particularly for the vital transportation sector, structural changes to the international oil industry and continued global demand for petroleum, mean that changes are unlikely. The United States is, and will likely remain, the largest importer of Canadian crude and Canada is its friendliest, and most stable, supplier. Nonetheless, policymakers on both sides of the border must endeavour to make sure that the discourse about the oil sands does not devolve into one that pits energy security on the one hand, versus the environment on the other.

SOMMAIRE

Des campagnes récentes menées par des groupes environnementaux ont pointé du doigt les sables bitumineux du Canada comme l'exemple le plus flagrant de « pétrole sale » et se sont attaquées aux exportations canadiennes de sables bitumineux vers les États-Unis au moyen de boycotts de consommateurs et de propositions de législations. Tandis que d'aucuns maintiennent que les sables bitumineux vont simplement trouver un autre marché d'exportation vers la station de service, comme la Chine ou l'Inde, le producteur tout autant que le consommateur doit faire face aux réalités d'un marché énergétique continental intégré. Un manque de disponibilité de sources d'énergies alternatives, particulièrement pour le secteur vital des transports, des changements structuraux dans l'industrie internationale du pétrole et une continuité de la demande mondiale pour le pétrole signifient que des changements sont peu probables. Les États-Unis sont, et vont probablement demeurer, le plus gros importateur de brut du Canada et le Canada, son fournisseur le plus amical et le plus stable. Quoi qu'il en soit, les auteurs de politiques des deux côtés de la frontière doivent s'efforcer de s'assurer que le discours qui entoure les sables bitumineux ne se transforme pas en une altercation qui met en opposition la sécurité énergétique, d'une part, et l'environnement, de l'autre.

OVERVIEW OF THE OIL SANDS INDUSTRY

The oil sands are the future of the Canadian oil industry. With an estimated 173 billion barrels of reserves, the sands are a major strategic asset. Declining reserves in the Western Canadian Sedimentary Basin and production peaking from the East Coast offshore in 2003, the oil sands represent the future of the Canadian oil industry. Between 1998 and 2008, investment in the oil sands topped \$89 billion on capital projects, created 120,000 direct and indirect jobs for Canadians, and generated \$310 million in contracts. Prior to the collapse of world oil prices in the summer of 2008, the Department of Natural Resources predicted the oil sands would require between \$110 and \$125 billion in new investment to meet projected growth.¹ The benefits do not all accrue to Canadians, either. The Canadian Energy Research Institute estimated that expansion of oil sands production would provide 343,000 new jobs in the U.S. and add \$34 billion to that country's GDP in the period 2011-2015.²

Until the last quarter century, the oil sands subsisted on the margins of the global petroleum industry; an unconventional crude source with limited market reach compared to conventional crudes. Classified as a super-heavy crude, oil sands operations produce two basic products: bitumen, which is the raw material and must be mixed with other products in order to be transported, and synthetic crude oil (SCO), which is the finished product that is produced after upgrading and processing. Bituminous deposits occur naturally on every continent and the three largest of Canadian oil sand deposits, the Athabasca, Cold Lake and Peace River, reside predominantly in Alberta.

The modern oil sands industry relies on two basic operations to obtain the product bitumen – mining and *in situ* methods. To date, surface mining is the most prevalent method, accounting for two-thirds of the cumulative production of the oil sands since 1967. Initially, mining operations employed bucket-wheel excavators to remove the muskeg and vegetation covering the bitumen in the shallower deposits. More recently, the bucket-wheel excavators have been replaced by mechanical shovels and large trucks. After collection, the bitumen is then separated from the surrounding material with a combination of hot water and solvents before being upgraded into light sweet crude. Surface mining is commercially viable when developing the “easiest” bitumen of the Athabasca deposit, which lie within 70 meters of the surface – roughly 20 percent of Alberta's deposits, and 2.5 percent (500 square kilometres) of the total oil sands land area, in Alberta.³ The remainder must be developed using *in situ* methods such as Steam Assisted Gravity Drainage (SAGD).⁴ *In situ* production has many advantages over surface mining operations. The environmental footprint of *in situ* operations is significantly smaller than surface mining, consuming less water and disturbing less land.

Today, the environmental lobby is better organized, and financed, than ever before and the oil sands have become the focal point for efforts to begin the shift to the post-carbon economy. San Francisco-based Forest Ethics have encouraged U.S. retailers to boycott gasoline refined

¹ Kevin Stringer, Evidence before the Canadian House of Commons, Standing Committee on Environment and Sustainable Development, 39th Parliament, 2nd Session, No. 038, June 16, 2008 Available at <http://www2.parl.gc.ca/HousePublications/Publication.aspx?DocId=3580312&Language=E&Mode=1&Parl=39&Ses=2> [Accessed 15 July 2010]. Alberta Energy, “Facts and Statistics,” Available at <http://www.energy.alberta.ca/OilSands/791.asp> [Accessed 30 September 2010].

² Canadian Energy Research Institute, “The Impacts of Canadian Oil Sands Development on the United States’ Economy.” October 2009. Available at http://www.api.org/Newsroom/upload/CERI_Study.pdf [Accessed 12 September 2010].

³ CAPP, “Environmental Challenges and Progress in Canada’s Oil Sand” April 2008, p. 3.

⁴ Kevin Stringer, Evidence before the Canadian House of Commons, Standing Committee on Environment and Sustainable Development, 39th Parliament, 2nd Session, No. 038, June 16, 2008.

from oil from the oil sands. Others, like the Rethink Alberta campaign, targeted Alberta's tourism industry and compared the oil sands to BP's oil spill in the Gulf of Mexico by juxtaposing images of ducks in tailings ponds and oil-soaked wildlife along the Gulf Coast.⁵ Still others, like Boston based Green Century Funds, or UK based FairPensions, were behind a series of shareholder resolutions at the annual meetings for BP, ExxonMobil, ConocoPhillips and Shell asking the companies to increase the disclosure of information about oil sands projects.⁶ 2010 may stand as the year when "dirty oil" emerged as a genuine source of friction and irritation in the bilateral Canada-U.S. relationship for many Canadians.

Questions about the role the oil sands should play in U.S. oil supplies have intensified in the first decade of the twenty-first century. But the September 11, 2001 attacks on the United States, and the subsequent invasions of Afghanistan and Iraq, raised questions about the reliability, and associated costs, of Middle Eastern oil. Alberta Premier Ralph Klein, capitalized on the opportunity by touting the oil sands as a safe and reliable source of petroleum and the Province of Alberta opened its own office in the Canadian embassy in 2004 to strengthen ties. Until then, most of the questions being asked about oil sands development were raised by domestic organizations, like the Parkland Institute and the David Suzuki Foundation, who questioned why Canadians should sacrifice their environmental standards to continue "fueling fortress America."

THE "DIRTY OIL" CHALLENGE

Shortly after daily production from the oil sands reached 1 million barrels per day at mid-decade, the movement began to cross over into the United States, and internationally, with a variety of well publicized incidents, including a controversial decision by the Province of Alberta to include an earth mover as part of an exhibit in the National Mall in Washington D.C. in 2006.⁷ This was further reinforced when *National Geographic* published a critical article on the oil sands in its March 2009 issue;⁸ however, the most searing images were provided in April 2008, when hundreds of ducks landed in a tailings pond at Syncrude's Aurora site.⁹

Public and media attention has focused on the oil sands as the epitome of "dirty oil": those heavier grades of crude that require significant upgrading and refining before they can produce a barrel of useable oil and raise air, water, and land quality issues in the course of their development. Several exporting nations supply the United States with grades of heavy, or super-heavy, crude oil, including, among others, Iraq, Mexico, Venezuela, Nigeria and portions

⁵ Rethink Alberta Website. Available at <http://www.rethinkalberta.com/>.

⁶ Terry Macalister, "Shell faces shareholder revolt over Canadian tar sands project," *The Guardian* (UK) January 18, 2010. Available at <http://www.guardian.co.uk/business/2010/jan/18/shell-shareholders-fury-tar-sands> [Accessed 10 July 2010]. Carrie Tait, "Exxon rejects oil sands resolution but shareholder support strong," *The Financial Post*, May 26, 2010. Available at <http://www.financialpost.com/Exxon+rejects+sands+resolution+shareholder+support+strong/3073640/story.html> [Accessed 28 August 2010].

⁷ Doug Struck, "Canada pays environmentally for U.S. oil thirst," *The Washington Post*, May 31, 2006. Available at <http://www.washingtonpost.com/wp-dyn/content/article/2006/05/30/AR2006053001429.html> [Accessed 10 July 2010].

⁸ Robert Kunzig, "The Canadian Oil Boom: Scraping Bottom," *National Geographic* March 2009. Available at <http://ngm.nationalgeographic.com/2009/03/canadian-oil-sands/kunzig-text/1> [Accessed 28 July 2010].

⁹ Hanneke Brooymans and Jim Farrell, "Syncrude faces scrutiny after ducks land on toxic pond" in *The National Post*, April 30, 2008. Available at <http://www.nationalpost.com/news/story.html?id=482931> [Accessed June 28, 2010].

Carrie Tait, "Syncrude triples number of dead ducks in tailings pond," in *The Financial Post*, March 31, 2009. Available at <http://www.financialpost.com/story.html?id=1448397> [Accessed 20 June 2010]. Darcy Henton, "Dead ducks in a tailings pond – how it happened," in *The Edmonton Journal*, June 20, 2010. Available at <http://www.edmontonjournal.com/business/Dead+ducks+happened/3177628/story.html> [Accessed 25 June 2010].

Bob Weber, "Syncrude guilty in death of 1,600 ducks in toxic tailings pond" *The Toronto Star*, June 25, 2010.

of the United States, including heavy crude from California.¹⁰ Unlike Canada, neither Mexico City, nor Caracas, nor Abuja find themselves subject to the same recriminations from interest groups, or singled out by U.S. law makers at the state and federal levels as Ottawa does. Is it fair to wonder why the dirty oil campaign focuses on Canada while excluding other exporters of heavy crude from similar campaigns?

In the absence of any firm rationale some reasons can be surmised. Canada's oil sands represent the "low hanging fruit" of the petroleum industry; an easy and inviting target to attack. Canada has been the largest supplier of crude oil to the United States since 2001, and the United States also serves as the largest outlet for oil sands production. Nearly all Canadian crude exports, 99.5 percent of Canada's 2.476 million daily barrels of exports, go to the United States, including three out of every four barrels of oil produced from the sands.¹¹ This relationship developed, in part, because of the unique combination of geography and amicable relations between the two states. Cross-border trade in oil is further enhanced by the interconnectedness of the Canadian and U.S. oil industries, access to investment capital and existing infrastructure, including transportation links, refining and distribution networks, that promoted continental development and an integrated energy market that also includes Mexico. As a result, the Canadian oil industry generally, and the oil sands in particular, to date have served regional, rather than global, markets making Alberta a particularly inviting target for the dirty oil campaign. Common values, beliefs, institutions and a shared language make it easy for environmental activists to operate between Canada and the United States. Canadians, as well as Americans, enjoy the right of free speech and criticism of governmental or business policies without fear of incarceration, or worse, for critics, unlike in other producing jurisdictions. Indeed, of the top fifteen crude exporting states that supply the United States, only Canada, Mexico and Norway could be considered governed by democratic regimes.¹² Some have also suggested that targeting the oil sands gives the illusion of tackling climate change while avoiding more difficult issues, like altering personal consumption habits, or tackling other entrenched carbon-intensive industries, like coal.

By advocating the transition to the post-hydrocarbon economy, and pursuing clean energy alternatives, dirty oil advocates make a case that most economists and policy analysts find compelling in the abstract: energy security is ensured through diversification of supply through the development of renewable alternatives, conservation and improving efficiency. For the security-minded, climate change is presented as a threat multiplier that contributes to political, environmental and economic tensions.¹³ The development of clean energy alternatives, therefore, serve a definable purpose and would achieve a number of different policy outcomes by addressing climate change and environmental issues, as well as those related to the trade deficit, diversification of the energy supply and reducing reliance on petroleum imported from unstable regimes.

¹⁰ Jacobs Consultancy, "Life Cycle Assessment Comparison of North American and Imported Crudes," July 2009. Available at <http://www.albertainnovates.ca/media/15753/life%20cycle%20analysis%20jacobs%20final%20report.pdf> [Accessed 30 September 2010].

¹¹ BP Statistical Review of World Energy, 2010, p. 20.

¹² According to the Energy Information Agency, the top 15 suppliers of crude oil, in descending order, to the United States in 2010 are: Canada, Mexico, Saudi Arabia, Venezuela, Nigeria, Angola, Iraq, Russia, Algeria, Brazil, Colombia, Kuwait, Ecuador, Congo, and Norway. See http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/company_level_imports/current/import.html.

¹³ See for example, Michael Klare, *Resource Wars: The New Landscape of Global Conflict*. (New York: Picador, 2002). Michael Klare, *Rising Powers, Shrinking Planet: The New Geopolitics of Energy*. (New York: Picador, 2009). Andrew Nikiforuk, *Tar Sands: Dirty Oil and the Fate of a Continent*. (Vancouver: Greystone and the David Suzuki Foundation, 2008).

As the centerpiece of their campaign, the development of alternative energy sources is laudable on a number of levels. New technologies would ease the burden on oil supplies and lower costs for consumers. A number of observers and analysts further argue that developing “green technologies” would also provide an avenue to revive the U.S. economy and sustain America’s global leadership.¹⁴ These were some of the themes addressed by President Barack Obama’s 2010 State of the Union address when he argued, “the nation that leads the clean energy economy will be the nation that leads the global economy.”¹⁵

With 2.1 percent of global proven reserves, declining domestic production, increased petroleum consumption, despite conservation measures, and uncertainty over when alternative fuels could replace conventional crude, the United States faces a particular dilemma in balancing the imperatives of meeting energy security, securing adequate sources of supply and environmental protection.¹⁶ The challenge facing U.S. policymakers will be to find a way to meet increased demand in the context of declining domestic production, increased oil use despite conservation measures and the lead-time required to develop and implement alternative fuel strategies. In the United States’ current energy portfolio oil supplies just over one-third, 38.6 percent, of U.S. energy demand, and swapping out one source for another does not automatically equate to attaining energy security. Industry organizations in the United States, namely the National Petroleum Council and the American Petroleum Institute, point out that meeting future demand hinges on expanding production from all energy sources.¹⁷ Thus, over the next 12 to 15 years the United States will likely have to rely on increased oil imports to meet its petroleum needs.¹⁸

At the federal level, the debate between energy security and the environment has yet to be resolved definitively, although there appears to be some kind of general consensus that something has to be done regarding climate change, it remains too early to tell what that consensus will be. In June 2009, both the House and the Senate each passed clean energy bills. While there were some areas of agreement between the two, the differences were noteworthy, particularly as they related to federal government purchases of synthetic or unconventional crude. House Resolution 2454, better known as the American Clean Energy and Security Act, or the Waxman-Markey Bill, enjoyed broadly based support from the environmental lobby and the oil industry, including companies that have a large stake in developing “green” energy and who have holdings in the oil sands like BP America, Conoco Phillips, and Shell.¹⁹ At the center of H.R. 2454 are provisions for improved fuel efficiency standards on automobiles and a cap-and-trade system for greenhouse gas (GHG) emissions in the United States. Meanwhile, the Senate’s bill, the American Clean Energy Leadership Act (S.R. 1462), also passed in June 2009, contained significant differences. Section 356 of S.R. 1462 would amend the Energy Independence and Security Act (2007) that banned federal purchases of alternative or synthetic energy sources that have higher greenhouse gas emissions than those of conventional fuels. Although Section 526 originally targeted Defense Department plans to buy coal-to-liquid fuels, it was expanded to single out transportation fuels

¹⁴ See for example Thomas Friedman, *Hot, Flat and Crowded* (New York: Farrar, Straus and Giroux, 2008). Jay Hakes, *A Declaration of Energy Independence: How Freedom from Foreign Oil Can Improve National Security, Our Economy, and the Environment*. (New York: Wiley, 2008). David Sandalow, *Freedom from Oil: How the Next President Can End the United States’ Oil Addiction*. (New York: McGraw-Hill, 2007).

¹⁵ Barack Obama, “Remarks by the President in State of the Union Address,” January 27, 2010. Available at <http://www.whitehouse.gov/the-press-office/remarks-president-state-union-address> [Accessed June 16, 2010].

¹⁶ BP Statistical Review of World Energy 2010, pp. 6, 11.

¹⁷ National Petroleum Council, “Hard Truths About Energy.” Available at <http://www.npchartruthsreport.org/> [Accessed 12 July 2010].

¹⁸ M Pasqualetti, “The Alberta Oil Sands From Both Sides of the Border,” *Geographical Review* 99(2), p. 251.

¹⁹ Don Barry, “Resolving the Fight Over the Oil Sands,” *Embassy*, July 1, 2009. Available at <http://embassymag.ca/page/printpage/barry-7-1-2009> [Accessed 7 July 2009].

derived from the oil sands.²⁰ S.R. 1462 would allow any federal agency to purchase fuels from unconventional sources.

* * * *

As Canadians and policymakers alike consider the challenge posed by the dirty oil movement, careful consideration should be given to the considerable advantages enjoyed by the Canadian oil sands and to assess how this can strengthen the hand of policymakers at the provincial, and federal levels, in bilateral negotiations. As the discussion below reveals, upon consideration of global demand, the transportation bottleneck, calculations of energy security and systemic changes to the global petroleum industry, the issue is not one of a simple tradeoff between the environment on the one hand and development on the other. The challenge is complex and multifaceted but the strengths of the Canadian oil industry, and the oil sands in particular, should not be forgotten.

Increasing Global Demand:

Current daily production of 1.5 million barrels from the oil sands represents approximately 1 percent of daily global consumption of 85 million barrels per day and effectively serves as the marginal barrel – that is, the oil that is the most expensive to find and produce globally. Current projections forecast world demand for oil remaining constant for the foreseeable future.²¹ In fact, in May 2010, the Energy Information Agency's International Energy Outlook 2010 projected that world energy use would increase 49 percent by 2035 to approximately 128 million barrels per day with most of the demand, 75 percent, being met by fossil fuels.²² Other analysts, most notably Cambridge Energy Research Associates, forecast global oil demand to reach between 97 and 113 million barrels per day in 2035.²³ Global energy demand generally, and demand for oil in particular, is expected to increase by 1.8 percent per annum until 2030, meaning that even the most optimistic scenarios of oil sands expansion to 3 million barrels per day by 2020, and perhaps as high as 5 million barrels per day in 2030, mean that the sands will likely continue to serve as an important, but nonetheless marginal, supplier.

The Transportation Bottleneck:

The significance of the sands, therefore, lies not in its market share, but rather in the products it provides, namely as a feedstock for transportation fuels, and its proximity to the United States. In terms of demand, transportation serves as the strategic choke point for North America as oil provides more than 96 percent of the fuel for transportation fleets; roughly 69 percent of the total oil consumed in the United States and approximately half the demand in Canada.²⁴ Globally, according to the International Energy Agency, the transportation sector accounts for 61.2 percent of the world's oil consumption.²⁵ Conservation and improved fuel efficiency standards,

²⁰ Interstate Oil and Gas Compact Commission Resolution on Repeal of Section 526, May 26, 2009. Available at http://www.api.org/aboutoilgas/oilsands/upload/IOGCC_526_RESOLUTION_09.pdf [Accessed 28 June 2010]. Anne C. Mulkern, "Gulf disaster sparks battle over Canadian oil sands," *Greenwire*, July 1, 2010. Available at <http://www.greenwire.com/> [Accessed 1 July 2010]. American Petroleum Institute-APOL letter to Secretary of State Hillary Clinton, Geoff Dembicki, "Oil sands opponents will lose, economist suggests," *The Tyee*, July 22, 2010. Available at <http://thetyee.ca/News/2010/07/22/OilSandsPrevail/> [Accessed 20 August 2010].

²¹ BP Statistical Review of World Energy, 2010, p. 41.

²² Tom Lobianco, Jeff Barber, "EIA sees 49% increase in world energy use; Expected by 2035, with demand driven 75% by fossil fuels," *Platts Oilgram News*, May 26, 2010.

²³ HIS CERA Special Report, "Growth in the Canadian Oil Sands: Finding the New Balance," 2009, p. 12.

²⁴ Canadian Energy Research Institute, "World Energy: The Past and Possible Futures, 2007" p. 93, David Sandalow, *Freedom From Oil*, pp. 14, 18., U.S. Energy Agency, "Oil market basics". Available at http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/oil_market_basics/demand_text.htm#Global_Oil_Consumption [Accessed 7 July 2010]. National Energy Board "Canadian Energy Demand: Passenger Transportation," January 2009. Available at <http://www.neb-one.gc.ca/clf-nsi/nrgynfmrtn/nrgyrprt/nrgdmnd/pssnqrtrnsprttn2009/pssnqrtrnsprttnnrgbrf-eng.pdf> [Accessed 7 July 2010].

²⁵ International Energy Agency, "Key World Energy Statistics, 2009," p. 33.

have reduced the amount of oil consumed, but these have been offset by increased travel by consumers. As four Harvard Center scholars noted, “the upward trend of ‘vehicle-miles traveled’ (VMT) in the United States has been difficult to reverse” growing, on average, 1.6 percent per annum for cars and 3.0 percent for SUVs, vans, and light trucks. The U.S. Department of Energy projected that if these trends persist, U.S. drivers will travel twice as far in 2045 as they did in 2007.²⁶

While renewable energies, like solar and wind generation, are alternative sources of supply for electricity generation, they cannot replace oil as a feedstock in transportation. Stated simply, the transportation sector suffers from a distinct lack of alternatives capable of replacing gasoline in the short to medium term. Battery technology and hydrogen fuel cells may represent alternatives to gasoline for some parts of the transportation fleet, but there currently remains no foreseeable alternative for jet kerosene and diesel, which account for half of global transportation demand.²⁷ Natural gas to liquids technology, originally developed by Mobil Oil in the 1970s, presents a promising alternative that produces fewer GHG emissions when burned compared to conventional oil, but still lacks widespread market share.²⁸ Biofuels, such as ethanol, require water and land resources to be devoted to their production, not to mention the challenges that are raised by diverting a portion of global food supplies for use as an energy source.²⁹ Moreover, ethanol’s portion of the North American energy market is circumscribed by its limited reach. Currently ethanol is sold at less than 1 percent of U.S. and Canadian gas stations and Canadian annual consumption of 1.5 million barrels of ethanol equivalent per annum pales in comparison to Canada’s daily consumption of approximately 2.28 million barrels of crude oil.³⁰ Assuming that ethanol, hydrogen fuel cells, natural gas to liquids, or electric vehicles could replace gasoline derived from crude oil in vehicles, the existing transportation network and infrastructure would have to be significantly modified to accommodate these new technologies.

Energy Security:

Defining “energy security”, is a difficult task at the best of times; most analysts would readily agree with Carlos Pascual and Jonathan Elkind’s observation that “the notion of energy security hinges on perspective.”³¹ For energy consumers, security can be assured by diversifying their energy supply; relying on coal, oil, natural gas, nuclear and hydro, for instance, from a number of different suppliers. For energy producers, securing markets is an essential component. Most

²⁶ Kelly Sims Gallagher, Gustavo Collantes, John P. Holdren, Henry Lee & Robert Frosch, “Policy Options for Reducing Oil and Greenhouse-Gas Emissions from the U.S. Transportation Sector,” Harvard University John F. Kennedy School of Government, July 27, 2007, p. 6.

²⁷ Elsie Ross, “CERA/HIS Sees Strong U.S. Demand for Canadian Oilsands Production,” *The Daily Oil Bulletin*, June 11, 2010.

²⁸ International Gas Union, “Natural Gas as a Transportation Fuel: An Alternative Choice for Cleaner Energy”2009. Available at <http://www.igu.org/igu-publications-2010/NGVs.pdf> [Accessed 30 September 2010].

²⁹ On average, ethanol requires between 3 to 4 gallons of water to produce a single gallon of gasoline equivalent. Projections of market share for ethanol may ultimately be constrained by water and land use policies. Increased use of corn as a feedstock for ethanol production also exerts inflationary pressure on corn prices, causing them to double between January 2004 and June 2007 and provoked riots in Mexico City in January 2007. For a comparison of water inputs required to produce a gallon of gasoline between biofuels, conventional Saudi oil and oil from the oil sands, see M. Wu, M. Mintz, M. Wang, & S. Arora, “Consumptive Water Use in the production of Ethanol and Petroleum Gasoline,” January 2009. Available at <http://www.transportation.anl.gov/pdfs/AF/557.pdf> [Accessed 16 July 2010]. Gallagher, et al, “Policy Options” p. 8.

³⁰ Sandalow, *Freedom from Oil*, p. 14. Natural Resources Canada, “Ehtanol: The Road to a Greener Future,” Available at http://oee.nrcan.gc.ca/publications/infosource/pub/vehiclefuels/ethanol/M92_257_2003.cfm [Accessed 28 July 2010].

³¹ Carlos Pascual & Jonathan Elkind, (eds.) *Energy Security: Economics, Politics, Strategies, and Implications*. (Washington: Brookings, 2010), p. 2.

serious energy analysts dismiss the notion of attaining “energy independence” – becoming completely energy self-sufficient – as a dangerous chimera. Instead, most suggest that governments focus on managing energy interdependence within the context of an increasingly globalized world with integrated markets and economies marked by the free flows of capital, technology, and people.³² As global oil consumption increases over the next two and a half decades, the importance of the oil sands will grow for a number of reasons. Since 2000, five countries have supplied 40 percent of daily U.S. demand: Canada, Mexico, Saudi Arabia, Venezuela and Nigeria. Of that group, only Canada and Saudi Arabia currently appear capable of expanding production in the years ahead to meet growing global demand.³³

Assessing the debate as one between environmentalism on the one hand and ensuring energy security on the other, the Council on Foreign Relations’ Michael Levi, concluded that the issue confronting oil sands producers was not one that would affect the overall development of the resource, but whether or not the United States would continue to serve as its primary market. Levi argued that barriers to future oil sands production were more likely to occur because of declining commodity prices or alterations to the regulatory and fiscal regime. Levi concluded that the choice confronting U.S. policymakers was a trade-off between energy security on the one hand and addressing climate change on the other. “Unfettered production in the oil sands,” wrote Levi, “would increase greenhouse gas emissions but strengthen U.S. energy security with a supply of oil from a friendly and stable neighbor. Sharply curtailed oil sands operations would harm U.S. energy security but cut emissions.”³⁴ According to the Council on Foreign Relations’ study, restricting, or outright excluding, oil sands from the U.S. market could also result in higher oil prices for American consumers, increase U.S. vulnerability to supply disruptions, stimulate the need for deeper conservation measures and increase production from other parts of the globe to replace lost Canadian production. Ironically, the move to shift away from “dirty oil” could result in greater GHG emissions to fuel U.S. demand by increasing the lengths crude oil is transported to U.S. markets via ocean-going tanker. Moreover, artificially constraining the U.S. market to Canadian crude would also seem to undermine the United States’ commitment to the pursuit of global free trade.³⁵

Systemic Changes to the Global Oil Industry:

Broader structural changes to the global oil industry, particularly the dominant roll assumed by national or state owned oil companies (NOCs) affiliated with their respective producing state, have also made the oil sands more attractive to international investors. Here, the oil sands are the beneficiary of a series of important structural changes in the international oil industry that have witnessed the relative decline in importance of western-based multinational oil companies (MNOCs). In 1970, the MNOCs dominated the industry, controlling approximately 90 percent of global reserves with the remainder being controlled by national or state owned oil companies; however, since 1970, the position of the two groups has radically changed: national, or state-owned oil companies, now control an estimated 83 percent of proven reserves and exercise significant control over where petrodollar profits are allocated and access to production. “Because the oil-producing countries retain up to 90 percent of the profits,” noted journalist and historian Tom Bower, “the Western oil companies have the delicate task of persuading rightly

³² Pietro S. Nivola with Erin E.R. Carter, “Making Sense of ‘Energy Independence’” in Pascual & Elkind (eds.) *Energy Security*. “A Crude Awakening: What’s Wrong With Energy Independence” in *Stanford Alumni Magazine*. Available at <http://www.stanfordalumni.org/news/magazine/2006/novdec/features/energy.html> [Accessed 27 July 2010].

³³ “Canada’s share grows as U.S. suppliers change,” *The Oil and Gas Journal*, June 14, 2010.

³⁴ Michael A. Levy, Council on Foreign Relations, “The Canadian Oil Sands: Energy Security vs. Climate Change,” p. viii.

³⁵ Levy, “The Canadian Oil Sands” p. 18.

self-interested governments to share their wealth and sell access to their reserves.”³⁶ These structural changes have prompted several analysts to wonder where the investment in exploration for the next big plays, or spending on R & D to develop new technologies, like carbon capture, to help reduce the industry’s environmental footprint will come from in the coming decades. Other suppliers of crude to the U.S., like Venezuela, redirect the bulk of oil industry derived profits to sustain political and social structures, instead of reinvesting in the industry, or use petroleum to wield access to oil as a policy instrument against other nations.³⁷ Meanwhile, various levels of government in Canada have invested C\$15.2 million for carbon capture technology to reduce the footprint of oil sands development.³⁸ Compared to the political instability of other suppliers, most notably Nigeria’s ongoing civil war, Canada’s oil sands remain one of the few jurisdictions with a favourable investment climate, and the capability of expanding production, that is willing to provide oil to the United States.³⁹

Furthermore, production costs across the oil industry have increased, doubling between 2004 and 2008. There are many reasons for this change, running the gamut from a shortage of skilled workers and materials, to the gradual increase of heavier grades of crude as a feedstock for refineries. Declining world prices in the mid-to-late 1980s and early 1990s, brought about an industry wide contraction with particularly important implications for exploration and production of new reservoirs. Industry analysts now speak of a “lost generation” of skilled and technical workers, including geologists, geophysicists and petroleum engineers, who chose other professions because the oil industry did not seem like a viable way to make a living. Increased material costs for new equipment and steel are also driving production costs higher.⁴⁰

The final trend to consider in the global industry is that as the shallower, and comparatively cheaper to produce, fields of light crude mature and are depleted the global industry will replace these productive fields with new ones that will likely require deeper drilling to reach the pay zone, or in increasingly hostile environments on the frontiers, such as off-shore and the Arctic. Indeed, over the past decade, the average depth required to drill a well has steadily increased and as the “easy” oil runs out, the oil industry will replace their inventory with oil that is harder to produce, such as deep-water offshore development, or in heavier grades of crude. As production costs for the conventional industry increase, and access to proven reserves becomes more uncertain, this too will enhance the attractiveness of the oil sands to international investors as profitability improves given changing market circumstances.

* * * *

Given its ample proven reserves, a favourable, and stable, investment and regulatory climate, Cambridge Energy Research Associates concluded in late 2009 that “the oil sands today have moved from the fringe of energy supply to the center.”⁴¹ The challenge for analysts and policymakers is translating the strengths detailed above into actionable policies. Here it is clear that there are few palatable options in the short to medium term should the United States decide to block access to its market, indicating the vulnerability of Canada, and Alberta in particular, to

³⁶ Tom Bower, *Oil: Money Politics, and Power in the 21st Century*, (New York: Grand Central Publishing, 2009) p. xvi.

³⁷ Francisco Rodriguez, “An Empty Revolution,” in *Foreign Affairs*, Vol. 82, 2 (Mar/Apr 2008). Edward Morse, “Low and Behold: Making the Most of Cheap Oil,” in *Foreign Affairs*, Vol. 88, 4 (Sept/Oct 2009).

³⁸ Natural Resources Canada, “Canada and U.S. Invest in Leading Carbon Capture and Storage Project,” July 20, 2010. Available at <http://news.gc.ca/web/article-eng.do?m=/index&nid=548479> [Accessed 30 September 2010].

³⁹ Pasqualetti, “The Oil Sands From Both Sides of the Border,” p. 251.

⁴⁰ Daniel Yergin, “Oil at the ‘Break Point:’ Testimony by Daniel Yergin before the U.S. Congress Joint Economic Committee in Washington, D.C.” June 25, 2008. P. 4-5.

⁴¹ CERA, “Growth in the Canadian Oil Sands,” p. ES-9.

the dirty oil movement. In such a scenario, policymakers would have to contemplate the complete restructuring of the Canadian oil and gas sector to service other markets.

THE CHINA CARD?

The common assumption is that if the U.S. does not want to buy Canadian oil sands exports then Canadians could simply sell it on the world market. Growing global energy demand, particularly in non-OECD countries with growing populations and increased automobile purchases, could provide alternative markets.⁴² In such scenarios, China and India now loom as two of the largest potential markets for oil sands exports because of their growing economies and increasing demand.

There is ample reason for caution. Since the 1950s, the Province of Alberta has attempted to attract international capital and sought alternative markets for oil sands production. Efforts intensified in the early part of the new millennium when the province of Alberta recognized the vulnerability of its economy to relying on a single customer. To this point, the strategy has been a bit of a mixed bag. On the one hand, a number of international firms have invested in the oil sands, on the other, the export market remains dominated by the United States. While the free flow of capital, and the transparency of the Canadian regulatory regime, have attracted outside investors, finding alternative markets has proven less successful because of the limitations of geography and its influence over transportation nodes, namely pipelines, which transport bitumen and SCO abroad.

After becoming a net oil importer in 1993, and with limited opportunities to expand its upstream production, Chinese oil companies embraced overseas expansion early in the new millennium. In 2004, China announced its intention to secure approximately 1 million barrels per day of production from the oil sands.⁴³ Chinese interest was one small part of the aggressive expansion and investment in the oil sands by multinational oil companies driven, in part, by the need to acquire upstream production. As world oil prices stabilized between \$70-80 per barrel, and the global economic recovery began to gain traction, interest in the oil sands revived, principally among Chinese investors.⁴⁴ Petro-China paid C\$1.9 billion for a 60 percent stake in two projects run by Athabasca Oil Sands, while Sinopec bought out ConocoPhillips' 9.3 percent stake in Syncrude for US\$4.7 billion.⁴⁵ To be sure, China has a long way to go before it would replace the United States as the principle market for Alberta's oil sands, including building the necessary infrastructure, particularly pipelines or transportation links to bring the bitumen or SCO to market, like Enbridge's proposed Northern Gateway pipeline to Kitimat, to accomplish this change.⁴⁶

⁴²CERA, "Growth in the Canadian Oil Sands". p. 3.

⁴³ Daniel H. Rosen, Trevor Houser, "China Energy: A Guide for the Perplexed," The Center for Strategic and International Studies and the Peterson Institute for International Economics, May 2007, p. 28. Gary Park, "PetroDollars," in *Platts Oilgram News*, May 17, 2010.

⁴⁴ CERA, "Growth in the Canadian Oil Sands," p. ES-6.

⁴⁵ Elsie Ross, "China likely to increase Canadian oilsands investment," *The Daily Oil Bulletin*, February 3, 2010. "Sinopec to pay \$4.7bn for oil sands stake," in *Oil and Gas News*, May 29, 2010. "China's \$4.65 billion oil sands stake just the beginning," *Oil and Gas News*, May 29, 2010. "Western provinces say Canada should welcome Chinese investment," *The Oil Daily*, June 16, 2010.

⁴⁶ Enbridge, "Northern Gateway Pipeline." Available at <http://www.northerngateway.ca/> [Accessed 12 September 2010].

A DELICATE AND NERVOUS CREATURE: THE OIL SANDS INDUSTRY

Although oil sands producers could seek alternative markets for oil sands output, this is far from an ideal solution economically or politically and would necessitate significant investment. Such a fundamental restructuring of the oil sands industry could unduly harm the sector's bottom line. Without an NOC to serve as an arm of policy since the privatization of Petro-Canada in the early 1990's, Canada has relied on MNOC's to develop its petroleum resources. As an international price taker, dependent on economies of scale for profitability, oil sands producers are more sensitive to price fluctuations than other sectors of the oil industry and diversifying the export basket would ease some concerns. On average, depending on the size of the oil sands plant, its daily output and overall world crude prices, oil sands projects require anywhere between seven to ten years before investors recoup their initial investment. With billions of dollars tied up in skilled labor, investment capital and technology, oil sands producers require stability and reliability; changing even a single aspect of the regulatory, royalty, or taxation regimes can radically alter a project's bottom line. Given this precarious balance, increasing transportation costs could also affect the feasibility of oil sands expansion. Consider that between 2005 and 2008, rising labor, construction and capital costs, caused a number of operators to reassess their commitments to the oil sands. Construction of operations ran into cost overruns two to three times greater than initial estimates, while scarcities of skilled labor and materiel pushed others months behind schedule. Combined with 2007 alterations to the Province's royalty regime, the drop in world crude prices in 2008 resulted in the postponement of 70 percent of proposed oil sands projects.

Recommendations:

On the one hand, Canadians recognize the challenge presented by the dirty oil movement for what it is: a clear threat to the continued standard of living and prosperity of Canadians given that the oil and gas sector accounts for 20-25 percent of the value of Canadian exports and approximately 5 percent of the GDP. Nevertheless, Canadian policymakers at the provincial and federal level must continue to recognize our responsibility to address genuine environmental concerns about continued oil sands development. Certainly, education plays a very important role in countering some misperceptions of the oil industry as a whole and the oil sands in particular. One of the primary tactics employed by the dirty oil lobby is to selectively include information from government documents without providing the proper context for an informed discussion. Several websites unabashedly claim that continued development of the oil sands would destroy an area equivalent to the state of Florida by suggesting that excavation methods used in open-pit mining, which are only employed for 2.5 percent or 500 square kilometers of the Athabasca deposit, would apply to all three major deposits in Alberta and Saskatchewan. Furthermore, the industry and government should also emphasize the political, social, economic, and environmental ramifications of displacing Canadian oil sands. Removing Canadian oil sands would not reduce U.S. consumption of heavy crude, it would simply ensure that it is received from different suppliers, like Venezuela or Nigeria, whose greater distance from the United States would increase transportation costs as well as consume more energy to transport it to market. Furthermore, despite facile attempts to paint Canada as an emerging "petrodictatorship" along the lines of Vladimir Putin's Russia, Hugo Chavez's Venezuela, or Mahmoud Ahmadinejad's Iran, no wars have been fought, nor have any military coups been attempted, let alone suppressed, to ensure the flow of Canadian oil to the United States.⁴⁷

While the industry in Canada and the United States and government at different levels have responded to these campaigns on an *ad hoc* basis it is clear that programs and organizations

⁴⁷ Nikiforuk, *Tar Sands*.

designed to counter misinformation must continue and should become permanent. But, the group must also counter some self-inflicted wounds as well. In 1995, the Final Report of the National Oil Sands Task Force concluded that the oil sands industry was a high tech, knowledge-based industry whose future lay with *in situ* technologies.⁴⁸ Fifteen years later, it is fair to wonder why the industry and Canadian governments allow its image to remain mired in the technologies of the past. A Google Image search for the term “oil sands” produces 2.23 million hits, the vast majority of which are of excavators or open pits; even stories about *in situ* production typically use stock footage or images of excavators and trucks. Images of *in situ* projects are few and far between and are mostly limited to a handful of diagrams illustrating horizontal drilling techniques. Despite the fact that mining methods can access 20 percent of the deposit, and that its share of production is declining, mining operations continue to provide the iconic images of the oil sands industry. So long as the oil sands industry and the Canadian government allows these developments to be defined by images of bucket wheel excavators, drag lines, oversized dump trucks and tailings ponds, the stigma of “dirty oil” is likely to remain. As such, this paper recommends the following:

- Encourage the industry to continue increasing transparency regarding oil sands development;
- highlight the environmental implications of the shift from mining to *in situ* production; and
- the industry and government at the federal and provincial levels should consider establishing permanent entities to reflect the technological changes taking place in the industry.

It is equally clear that current policies have left one of Canada’s most important industrial sectors dangerously dependent on the goodwill of a single trading partner. There is common ground between the Obama administration’s emphasis on clean energy alternatives and the continued expansion of oil sands production. As heavier grades of crude come to dominate the global industry in the decades ahead, those nations that develop technologies to reduce GHG emissions, and the carbon intensity of their energy sources, will dominate the 21st century energy economy. The challenges of improving the efficiency of the oil sands industry is not a problem that should be minimized, but given the importance of the transportation sector, and the fact that the bulk of lifecycle GHG (between 70 and 80 percent) are emitted in the burning of the end product, it is clear that improvements in fuel economy and efficiency are one area that could require equal, if not greater, attention. While pursuing green technologies is important, it is unlikely to prompt real changes to the U.S. energy mix in the next decade or so and policy should acknowledge the limitations of R & D to deliver “on demand” technologies. Indeed, the history of the oil sands industry in Canada should serve as a cautionary tale that most technological innovation is evolutionary rather than revolutionary: a series of incremental improvements rather than one large one.⁴⁹ To address the challenge of limited market share, this paper also recommends the following actions:

- Continue expanding the market for oil sands exports.
- Pursue the expansion of the necessary infrastructure, transportation, pipeline and upgrading, in Canada to deliver bitumen to market:
 - Enbridge’s Northern Gateway Pipeline and TransCanada’s Keystone XL Pipeline would service both of the largest potential markets in Asia and actual oil sands markets in the United States.

⁴⁸ National Oil Sands Task Force, “Securing a Sustainable Future For Canada’s Oil Sands Industry.”

⁴⁹ Paul Chastko, *Developing Alberta’s Oil Sands: From Karl Clark to Kyoto* (Calgary: University of Calgary Press, 2004).

- Remind U.S. politicians and consumers that displacing Canadian oil from their market does not reduce demand, it simply ensures that demand will be met from other sources, like Saudi Arabia, Venezuela, and Nigeria:
 - Increasing global demand for energy generally and oil in particular is likely to continue well into the 21st century;
 - large sums of investment capital and long lead times required to develop alternative technologies will not replace crude oil in the next 10-15 years;
 - decreasing output of light sweet crude globally from conventional producers that result in greater output from heavier grades of crude being consumed in the United States regardless of if it is from Canada or not; and
 - the meaning of “dirty oil” can change in relation to human rights abuses, autocratic governments, or when revenues help sustain civil wars.
- Continue to emphasize to the public and U.S. politicians the vulnerability of the transportation sector and the necessity of Canadian oil imports:
 - Increased U.S. VMT of 1.6 percent for cars and 3.0 percent for SUVs and trucks have more than offset savings from improved efficiencies and *increased* fuel consumption;
 - lack of viable alternatives in the short-to-medium term; and
 - most of the lifecycle GHG emissions, 70 to 80 percent, are produced by the burning of fossil fuels and not their production methods.

Clearly, there are no easy alternatives when it comes to formulating energy policy, or in dealing with the challenges posed by the dirty oil campaign. Given the cross-border integration of the oil and gas industries, and the free flow of investment, labour and technology, both Canada and the United States have a vested interest in finding mutually satisfactory solutions to the challenge of balancing energy and the environment. On a number of levels it is imperative that the cross-border trade in energy, including oil, not be sacrificed. Nevertheless, as the discussion above has illustrated, Canada’s oil sands have both strengths and weaknesses in their favor. Industry, consumers and environmentalists on both sides of the border are watching how we deal with both.

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