

Developing Global Market Access for Canada's Oil and Gas Industry

SUMMARY

Over the last three decades Canada has achieved a leading position in the global oil and gas industry, becoming the world's fifth largest producer of both commodities. Concurrently, oil and gas have become increasingly important to Canada's economy, national prosperity, and growth trajectory. However, since the mid 2000s, the fortunes of the oil sector have significantly diverged relative to those of the gas sector. While oil exports have steadily increased, gas exports have rapidly diminished, leaving Canada's energy sector increasingly reliant on a single commodity (oil) and a single market (the U.S.). Coupled with the inherent volatility of commodity prices, Canada is now exposed to a much greater degree of economic risk. Options for managing this risk include developing new pipeline infrastructure for natural gas exports outside North America, and for oil exports to Asia and Europe – thereby establishing a more balanced set of markets for Canada's energy resources – and also strengthening Canada's natural competitive advantage in supplying oil to the U.S.

THE CHANGING ROLES OF OIL AND GAS IN CANADA'S ECONOMY

Together, oil and natural gas extraction have become one of Canada's main economic drivers, growing from an estimated 3.8% of GDP in 1997 to 7.2% in 2012 (see Figure 1). To put this rapid growth into perspective, oil and gas extraction added over \$5,800 per capita on a cumulative basis to the Canadian economy between 1997 and 2012, equivalent to an average annual per capita gain of nearly \$450 (real 2007 dollars).¹ By 2010, the contribution of oil and gas extraction to the economy was approximately the same magnitude as provincial governments' spending on primary schools, secondary schools, and universities combined.²

Figure 1: Oil and Gas Sector's Share of GDP



Source: Authors' calculations. Data from Statistics Canada Table 379-0031 (Gross domestic product at basic prices, by North American Industry Classification System) in chained 2007 dollars was adjusted by the authors using Statistics Canada's price index for "Energy and Petroleum Products" (CANSIM Table 329-0075) as a proxy for a sector-specific GDP deflator. Statistics Canada does not make publicly available the actual deflators used in the calculation of real GDP by sector in Table 379-0031.

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The wealth the industry has created is reflected in the emergence of 17 new billion-dollar Canadian companies in the energy and utilities sector this century, while consumer retail and wholesale, the next largest category, has added only 7 such new companies.³ Globally, Canada is now a leading producer of both oil and gas (see Table 1).

While Canada's overall oil and gas sector contributes heavily to GDP, the fortunes of oil and gas commodities have been moving in opposite directions. Exports (primarily to the U.S.) have been critical to the sector's growth, accounting for significantly more than half of total domestic oil production volumes and of natural gas production volumes. In 2005, the value of oil exports was equal to that of natural gas exports, approximately \$35 billion each. Since then, however, the value of oil exports has more than doubled while that of natural gas exports has contracted by more than three quarters. By 2012, oil exports were 8.5 times larger than those of natural gas, signalling a remarkable change over a short period (see Figure 2).⁴

The rapid growth of U.S. shale gas production has substantially displaced Canadian exports of natural gas, and has also driven down regional natural gas prices. Since the U.S. accounts for all of Canada's natural gas exports, Canadian production has been declining since its peak year in 2002. From a global perspective, Canada's share of global natural gas production dropped from 6.8% in 2004 to 4.3% in 2013, while its share of global oil production rose from 3.3% to 4.4% over the same decade.⁵

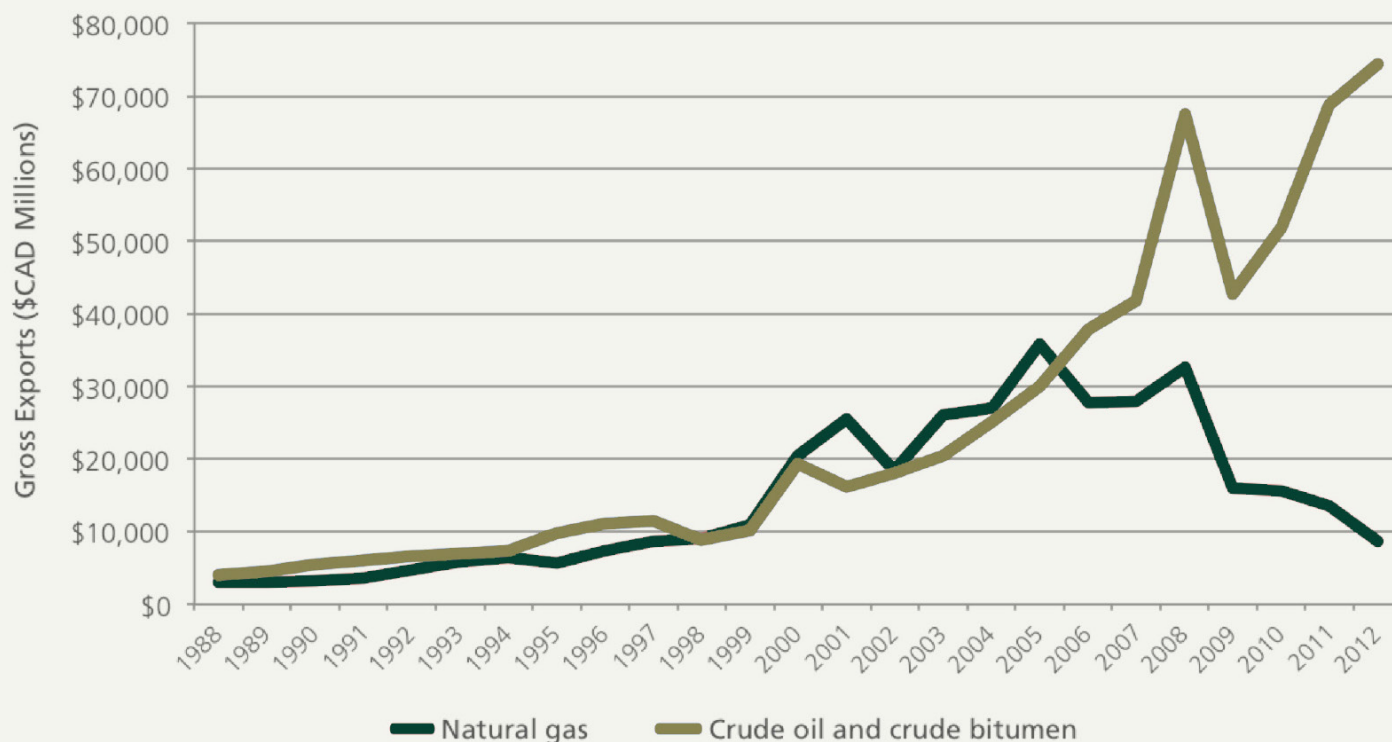
The increasing reliance of the Canadian energy sector on oil as compared to natural gas places the broader economy in a precarious position. Commodity markets are volatile, often exhibiting rapid swings in price in response to demand or supply shocks. For example, the price of natural gas at the Dawn hub fell by 66% during 2006 as more U.S. shale gas came on stream and has remained low compared to historic levels since then. The price of Western Canada Select oil also fell by 83% during 2008 at the onset of the global recession.⁶ Given the centrality of the oil and gas industry to Canada's

Table 1: Ranking of Major Oil and Gas Producers

	Dry Natural Gas Producers		Crude Oil Producers	
	1980	2012	1980	2012
1 st	USA	USA	Russia	Saudi Arabia
2 nd	Russia	Russia	Saudi Arabia	Russia
3 rd	Netherlands	Iran	USA	USA
4 th	Canada	Qatar	Iraq	China
5 th	United Kingdom	Canada	Venezuela	Canada
6 th	Romania	Norway	Mexico	Iran
7 th	Germany	China	China	United Arab Emirates
8 th	Norway	Saudi Arabia	Nigeria	Iraq
9 th	Mexico	Algeria	Libya	Mexico
10 th	Indonesia	Netherlands	Canada	Kuwait

Sources: U.S. Energy Information Administration. June 2014. *International Energy Statistics - Dry Natural Gas Production (Billion Cubic Feet) and Production of Crude Oil, NGPL, and Other Liquids (Thousand Barrels Per Day)*. Accessed June 24, 2014.

Figure 2: Gross Exports of Oil and Gas



Source: Statistics Canada. Table 228-0059 - Merchandise imports and exports, customs and balance of payments basis for all countries, by seasonal adjustment and North American Product Classification System, monthly (dollars). Accessed September 28, 2013.

economy, GDP is particularly exposed to commodity price fluctuations. During the 2008 recession, oil and gas contracted by 2% of GDP in a single year, highlighting the sensitivity of the economy to external commodity market forces that are beyond Canada's control. The continual disappearance of gas exports to the U.S. further reinforces the risks to the economy of a one-commodity, one-export market energy sector.

An important question for Canada's economic future is whether oil and gas will continue to drive GDP growth, and especially whether exports of oil to the U.S. will retain their upward trend. Canada's geographic contiguity with the U.S. and the presence of extensive cross-border pipeline, transportation and refinery infrastructure lend a natural competitive advantage compared to other oil producing nations. This is evident

in Canada's position as the single largest exporter of oil to the U.S., accounting for more than 30% of U.S. oil imports in 2013 (see Figure 3), an increase from a share of 14% in 1993. Canada has in fact consistently increased its volumes of oil exports to the U.S. over the last two decades (see Figure 4), unlike any other country.

Several headwinds, however, threaten Canada's 'favoured nation' status and may erode the oil sector's historic outperformance in supplying the U.S. market. First, U.S. domestic sources of oil are now expanding with the development of innovative new recovery technologies and the extraction of shale oil. Although shale oil volumes are currently relatively small, growth is expected to be exponential, and they may ultimately substitute for a portion of foreign oil imports.

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Second, U.S. consumption of oil has declined since 2005, due to long term structural changes in the industrial composition of the economy, and greater public policy emphasis on switching to lower carbon energy sources. U.S. demand for oil imports has consequently decreased by 22% since 2006. However, unlike most other oil exporters, Canada has not witnessed any reductions in its export volumes so far. A third constraint on exports is the availability of pipeline infrastructure capacity, which was not a significant factor prior to 2010. The Canadian Association of Petroleum Producers has forecast

that current pipeline capacity will reach maximum capacity by 2018 under moderate industry growth scenarios.⁷ Rail transport is an alternative to pipeline, though existing rail infrastructure also has capacity limitations and is two to three times more costly on a per barrel basis.⁸ Fourth, the proposed liberalization of the Mexican energy sector may eventually create a geographically proximate competitor to Canada following investment in and upgrading of its infrastructure.

Figure 3: U.S. Crude Oil Import Sources (2013)

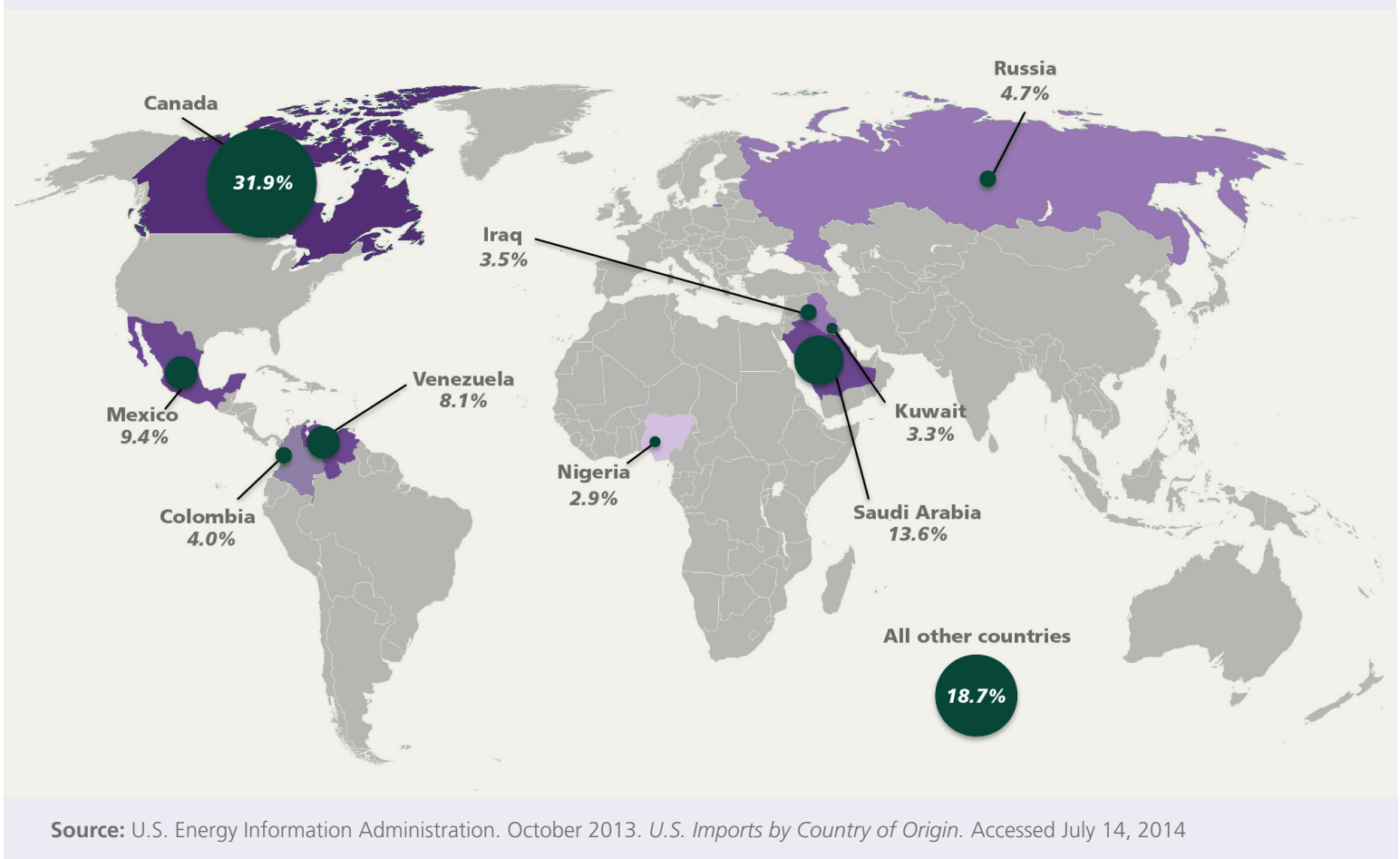
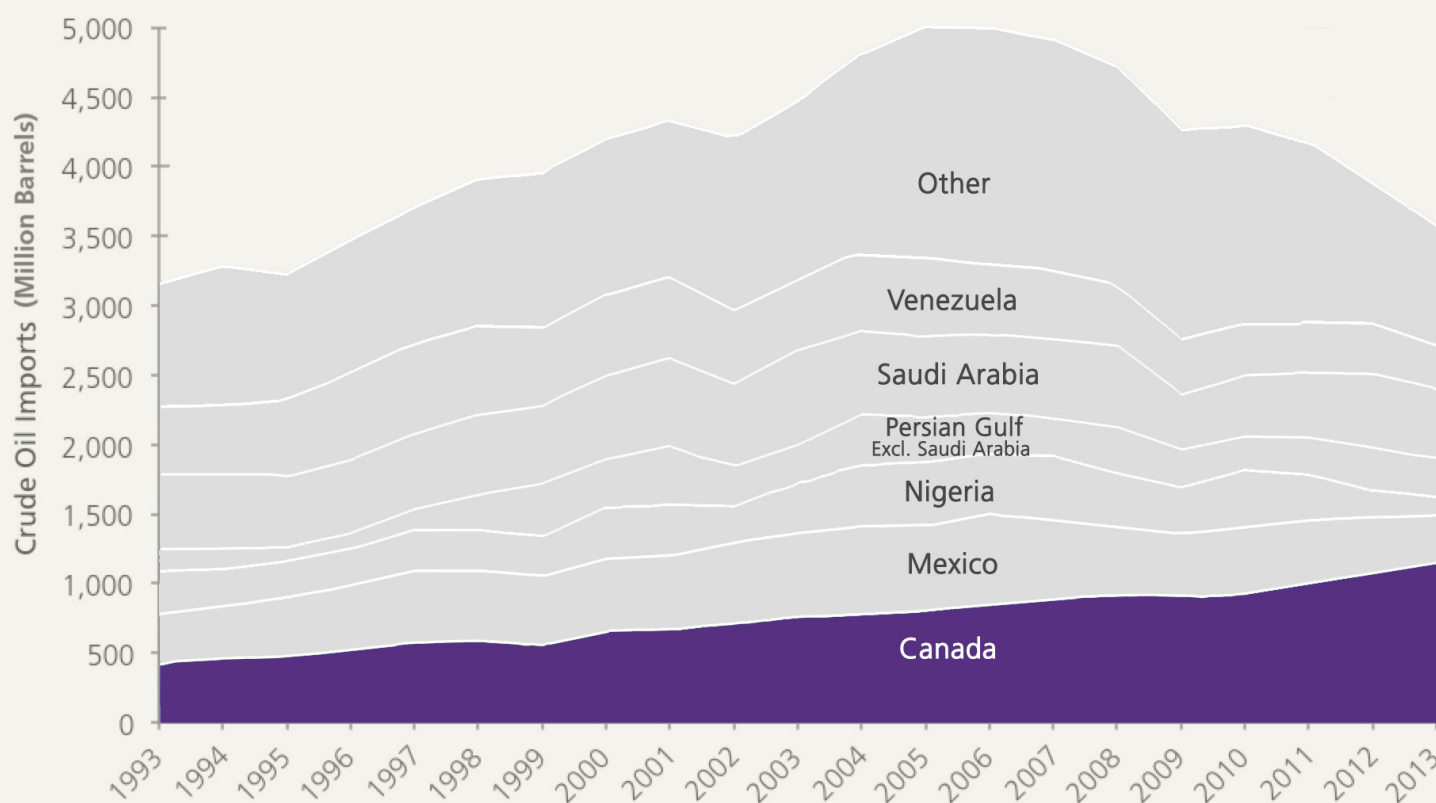


Figure 4: Sources of U.S. Crude Oil Imports (1993-2013)



Source: U.S. Energy Information Administration. October 2013. *U.S. Imports by Country of Origin*. Accessed July 14, 2014.

POLICY OPTIONS FOR STRENGTHENING CANADA'S OIL AND GAS SECTOR

Despite Canada's current position of fundamental strength in oil and gas production, there are inherent risks from reliance on a single commodity (oil) and a single market (the U.S.). Several policy options have the potential to improve the balance of Canada's energy sector and to reduce the risks confronting the economy.

1. Develop natural gas exports outside North America

Canada is the 5th largest producer globally of natural gas and has 66.7 trillion cubic feet in proven reserves (ranked 18th), providing the potential to become a major exporter to countries outside North America.⁹

Leveraging Canada's natural gas resources would require multi-billion dollar capital investments in new pipelines, liquefied natural gas (LNG) facilities and export terminals in new areas of the country where such infrastructure does not currently exist. The viability of such projects is sensitive to timing since other nations, including Australia, Brazil, China, Iran, Mexico, Qatar, and Russia, are expected also to increase production and LNG exports.¹⁰ Should all announced LNG projects come to fruition, global markets for LNG would become highly competitive, driving down LNG prices and financial returns for latecomers. Siting environmentally sensitive infrastructure has become increasingly difficult in Canada, yet delays may leave Canadian producers

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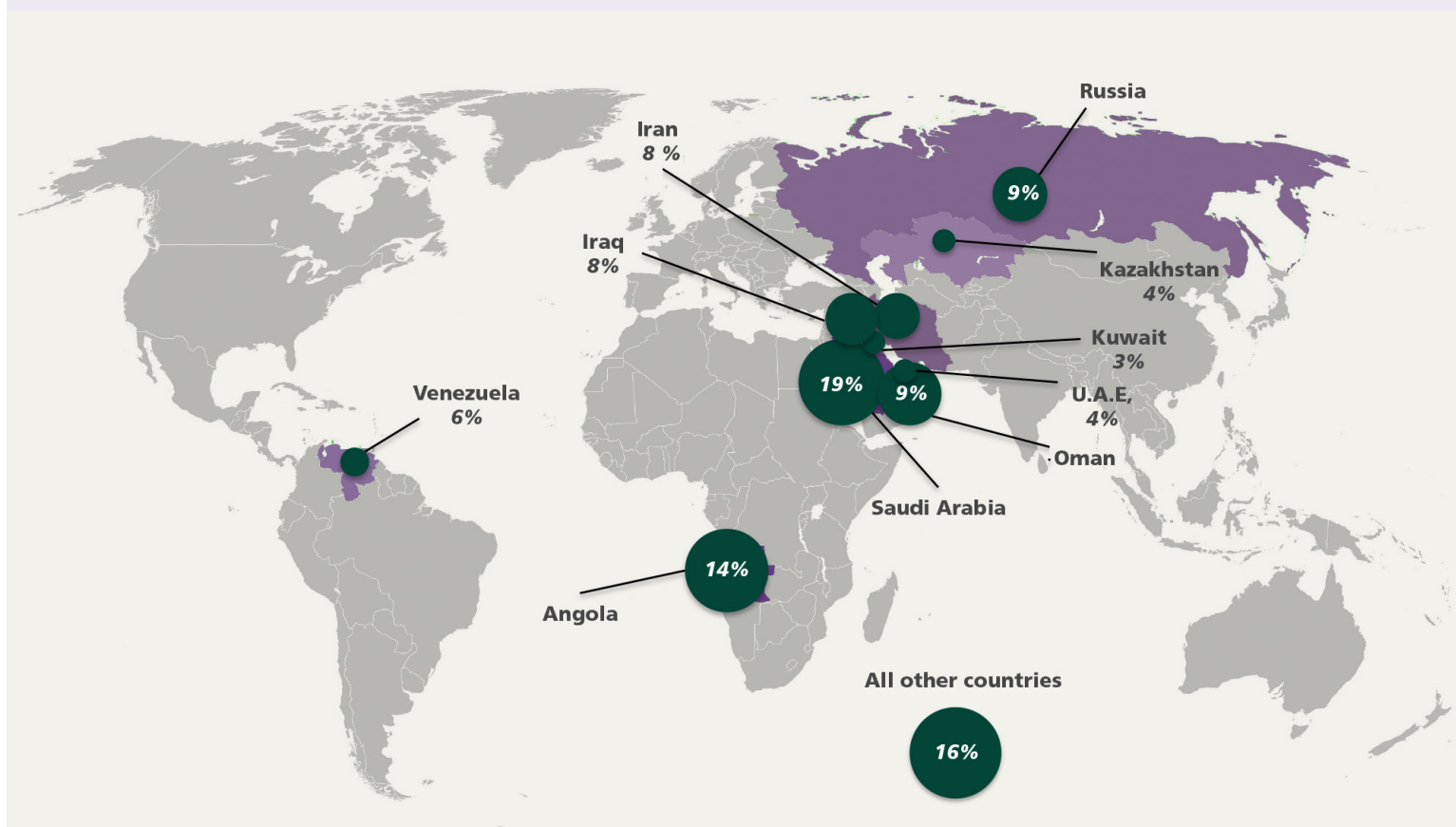
behind in the competition for long-term LNG supply contracts to countries in Asia, Europe and elsewhere.¹¹

2. Develop oil exports outside North America

Continued economic growth in China has fuelled increasing demand for oil imports, most of which currently originate from OPEC countries and others that are geographically proximate (see Fig 5). Canada's Pacific coast is relatively close to China, potentially lending an advantage in exports, yet significant new inter-provincial pipeline infrastructure is required first to connect Canada's oil sands in Alberta to Pacific terminals. Aboriginal groups, local communities, and the provincial government in British Columbia have resisted new oil pipeline proposals more vigorously than proposals related to natural gas development.

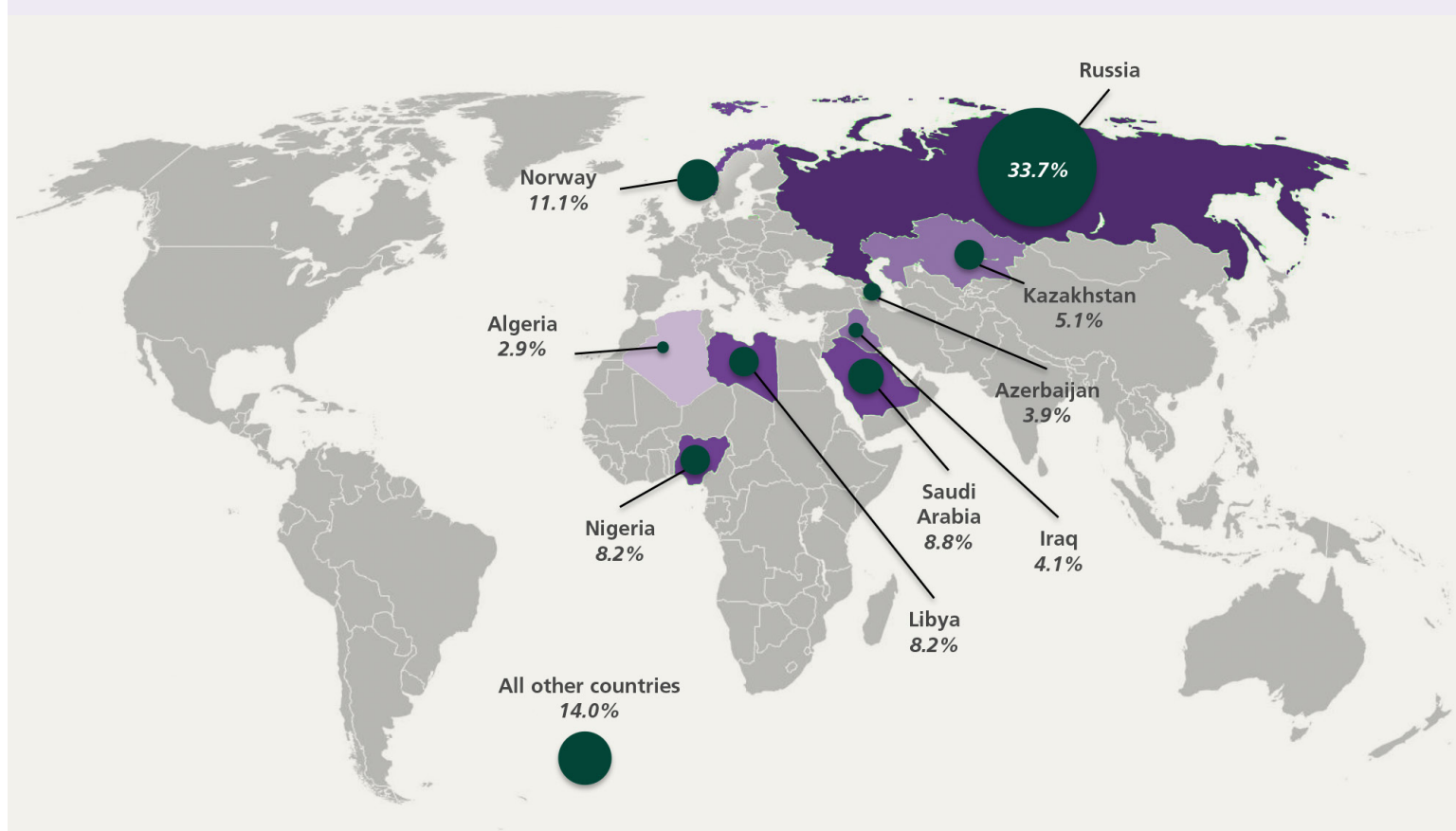
An alternative opportunity for the Canadian oil industry is to access European markets, which are heavily dependent on oil imports from Russia (see Fig 6). Dwindling oil reserves in the North Sea and shifting geo-political relations between European countries and Russia have created an opportunity for other countries to increase their exports to the region. Canada's Atlantic coast is geographically well positioned to export to Europe, and major elements of pipeline networks connecting to Alberta already exist, though substantial modifications and capacity expansion are still needed. The potential to build upon the historical relationship between Canada and Europe and to leverage the Comprehensive Economic and Trade Agreement may lend an advantage for Canadian suppliers.

Figure 5: China's Crude Oil Import Sources (2013)



Source: U.S. Energy Information Administration. February 2014. *China Analysis Brief*

Figure 6: European Union Crude Oil Import Sources (2013)



Source: European Commission - Eurostat. May 2014. *Main origin of primary energy imports, EU-28 2002-12(% of extra EU-28 imports)*. Accessed September 12, 2014.

3. Reinforce oil export position with the United States

The risks to Canada's exports arising from declining U.S. oil imports and consumption may be partially mitigated by seeking ways to reinforce its competitive advantage relative to other exporting nations. Expanding existing, and developing new, pipeline networks that link Canadian and U.S. oil-producing regions with Gulf coast refineries is one approach that creates mutual benefits. Efforts could be made to continue regulatory harmonization through the Canada-U.S. Regulatory Cooperation Council, which is seeking collaboration on climate policy, permitting processes for cross-border infrastructure, and non-discriminatory market access.¹² Canada's stable political

and economic environment, which contrasts sharply with Venezuela and Mexico who are also large oil exporters to the U.S., lends an advantage too that can be built upon: governments and industry are able to adopt longer time horizons when contemplating energy trade policies and investments in energy infrastructure, a critical issue in long-lived, asset-intensive sectors where financial returns often accrue over decades. However, while these approaches can strengthen Canada's position as a preferred source of foreign oil and reduce the probability of being displaced, they also limit Canada's bargaining power with purchasers in the absence of alternative export markets.

CONCLUSION

Canada's energy sector plays a major role in the domestic economy and is a leading producer of oil and gas globally. However, the sector now has an increased risk profile given the reliance on oil exports to the U.S. market, and exposure to global commodity price movements. Future development would benefit from diversification of both product and geographic markets, which could be achieved by leveraging Canada's natural gas resources for export, developing new Asian and European oil markets, and also reinforcing Canada's position as a favoured supplier of oil in the U.S.

NOTES

¹ These estimates are based on real GDP in 2007 chained dollars for 1997 to 2010 in Statistics Canada CANSIM Table 379-0031. Real GDP was multiplied by the percentage of GDP estimated from oil and gas (see note to Figure 1) to obtain the real GDP attributable to oil and gas. This figure was subtracted from a base case scenario which assumed a constant percentage of GDP attributable to oil and gas at 1997 levels (3.78% of GDP). The results of this subtraction for each year divided by Canada's population for each year (CANSIM Table 00051-0001) were summed to obtain the total per capita GDP increase attributable to oil and gas growth.

² Based on the combined value of conventional and non-conventional oil and gas extraction. Statistics Canada. No date. *Table 381-0030 - Provincial gross domestic product (GDP) at basic prices, by sector and industry, annual (dollars)*. CANSIM (database). Accessed July 14, 2014.

³ Murad Hemmadi, "Canada is great at creating billion-dollar companies—as long as they sell oil and gas," *Canadian Business*, July 15, 2014, <http://www.canadianbusiness.com/economy/billion-dollar-companies-mostly-energy/>. Accessed July 15, 2014.

⁴ Statistics Canada. *Table 228-0059 - Merchandise imports and exports, customs and balance of payments basis for all countries, by seasonal adjustment and North American Product Classification System (NAPCS), monthly (dollars)*. CANSIM (database). Accessed September 28, 2013.

⁵ Energy Information Administration. "International Energy Statistics." <http://www.eia.gov/cfapps/ipdbproject/iedindex3.cfm?tid=5&pid=57&aid=1&cid=regions&syid=1980&eyid=2013&unit=TBD>. Accessed September 28, 2013.

⁶ Bloomberg, *Western Canada Select Oil Price Index (USCRWCAS)* May 1, 2008 – December 31, 2011. Accessed July 14, 2014. West Texas Intermediate Crude followed a similar pattern, falling 78% from a July 2008 peak of \$145.29 per barrel to a January 2009 low of \$31.41 per barrel.

⁷ Canadian Association of Petroleum Producers, June 2014, *Crude Oil Forecast, Markets & Transportation*.

⁸ National Energy Board, "Canadian Pipeline Transportation System – Energy Market Assessment," April 2014, <http://www.neb-one.gc.ca/clf-nsi/rnrgynfmrtn/nrgyrprt/trnsprttn/2014trnsprttnsssmnt/2014trnsprttnsssmnt-eng.pdf>, 5-7. Accessed July 14, 2014.

⁹ Energy Information Administration, July 2013, "Natural Gas," *International Energy Outlook 2013*. Accessed July 10, 2014.

¹⁰ Energy Information Administration, July 2013, "World natural gas production by region," *International Energy Outlook 2013*. Accessed July 10, 2014.

While McKinsey& Company highlights that Qatar currently has a moratorium on additional exports ("Capturing value in global gas: Prepare now for an uncertain future," McKinsey&Company, July 2014), such a situation could rapidly change.

¹¹ Giorgio Bresciani, Dieuwert Inia, and Peter Lambert, "Capturing value in global gas: Prepare now for an uncertain future," McKinsey&Company, July 2014, http://www.mckinsey.com/insights/Energy_Resources_Materials/Capturing_value_in_global_gas?cid=other-eml-alt-mip-mck-oth-1407. Accessed July 15, 2014.

¹² Canada-United States Regulatory Cooperation Council. August 2014. "Joint Forward Plan" <http://actionplan.gc.ca/en/page/rcc-ccr/summary-report-consultations-canadians-regulatory-cooperation-between-canada-and-united>. Accessed September 1, 2014.

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