

THE TAMING OF THE SKEW: FACTS ON CANADA'S ENERGY TRADE

Trevor Tombe[†]

SUMMARY

Public perception of Canada's energy trade is skewed towards Alberta's oilsands and pipeline projects; a look at the facts reveals a more complex picture.

Over the last decade, growth in Canada's energy trade has been nothing short of historic. Energy exports have become so significant that the revenue is now equivalent to nearly \$9,000 for every Canadian household. And it is only projected to grow much, much larger. While Western Canada leads the industry, every region — including Ontario, Quebec and Atlantic Canada — plays a key role. Today, nearly every province is a net energy exporter. The energy sector also adds much to Canada's economy, with value-added and productivity higher than nearly every other sector. When it comes to labour compensation, oil and gas extraction is the highest-paying sector in the country, at more than three times the average hourly earnings in the Canadian economy generally, and nearly 50 per cent higher than manufacturing. It is vital that policy debates rely on accurate information; unfortunately, this is not always the case.

The often heated rhetoric neglects important aspects of Canada's energy trade. For example, the type of energy that Canada trades has undergone a dramatic transformation. Ten years ago, natural gas was the largest energy export but today accounts for less than one-tenth of the total. Meanwhile, crude oil exports have more than quadrupled. Even more surprising to many Canadians, and perhaps even policy-makers, is how much energy Canada imports. Even Alberta, with its vast energy reserves, imports a considerable amount of energy. Alberta's energy imports have grown faster than any other province and will soon exceed Ontario's, a province more than three times larger with very little of its own oil production.

Trade in energy is also intimately tied with Canada's foreign investment policies. The majority of Canada's energy trade is in the form of related-party transactions. For example, Suncor exports oil from its Canadian operations to its American refineries to supply its American gas stations. This fact has important implications for Canadian policy: foreign multinational firms are an important and growing part of the country's rapidly expanding energy trade. Promoting Canada's energy trade requires lowering investment barriers and creating a predictable and stable investment climate for foreign direct investment. Yet, in practice, Canada has recently shown a tendency for the opposite, with governments blocking the takeover of Potash Corporation by Australia's BHP Billiton, and announcing, after the takeover of Nexen Inc. by a Chinese firm, that future takeovers would face even greater scrutiny. Foreign investment in Canada's energy has already begun to fall, feasibly as a result of these increasingly hostile signals.

Canada has a great deal riding on the future of its energy industry — an industry that is as economically beneficial as any other, if not more so. It is absolutely crucial that we ensure our energy-trade policies are based on high-quality and objective information; politicized and emotional rhetoric does not help.

[†] *The author wishes to acknowledge the helpful comments of the anonymous referees.*

AU-DELÀ DES PERCEPTIONS : LE POINT SUR LE COMMERCE DE PRODUITS ÉNERGÉTIQUES AU CANADA

Trevor Tombe[†]

RÉSUMÉ

Il est vrai que la perception du public sur le commerce de produits énergétiques au pays est biaisée en faveur des sables bitumineux et des projets de pipelines de l'Alberta, mais l'examen des faits révèle un portrait plus complexe.

Au cours de la dernière décennie, la croissance du commerce de produits énergétiques a atteint des niveaux inégalés au Canada. Les exportations énergétiques sont si importantes que les recettes s'élèvent maintenant à près de 9000 dollars par ménage canadien. Qui plus est, ces exportations sont en pleine croissance. L'Ouest canadien occupe une place prédominante dans ce secteur, mais chaque région — y compris l'Ontario, le Québec et le Canada atlantique — y joue un rôle déterminant : aujourd'hui, presque toutes les provinces sont exportatrices nettes d'énergie. Le secteur énergétique contribue énormément à l'économie canadienne, sa valeur ajoutée et sa productivité dépassant celles de presque tous les autres secteurs. Sur le plan de la rémunération du travail, l'extraction de pétrole et de gaz est le secteur le mieux rémunéré au pays, avec des salaires plus de trois fois plus supérieurs au salaire horaire moyen et presque 50 pour cent plus élevés que ceux du secteur de la fabrication. Nous croyons que les débats politiques en la matière doivent impérativement se fonder sur des données précises, ce qui n'est malheureusement pas toujours le cas.

Les discours souvent enflammés font fi d'aspects importants du commerce des produits énergétiques au Canada. Ils ne tiennent notamment pas compte du fait que le type de produit énergétique négocié par le Canada a subi une transformation spectaculaire depuis dix ans. Le gaz naturel, principal produit énergétique d'exportation à l'époque, représente aujourd'hui moins du dixième du total de ces produits. Les exportations de pétrole brut ont, quant à elles, plus que quadruplé depuis ce temps. En outre, l'importance de nos importations énergétiques ne manquera pas de surprendre de nombreux Canadiens et, possiblement, certains décideurs. Même l'Alberta importe une quantité considérable de produits énergétiques malgré ses vastes réserves : ces importations ont augmenté plus rapidement que dans n'importe quelle autre province et dépasseront bientôt celles de l'Ontario, une province qui est pourtant plus de trois fois plus grande que l'Alberta et qui produit très peu de pétrole.

Le commerce des produits énergétiques est également intimement lié aux politiques canadiennes sur l'investissement étranger. La majorité de ce commerce se fait dans le cadre d'opérations entre apparentés. Ainsi, Suncor approvisionne les stations d'essence américaines en exportant du pétrole vers ses raffineries américaines à partir de ses opérations canadiennes. Ce fait a une grande incidence sur les politiques canadiennes : les entreprises multinationales étrangères jouent un rôle de plus en plus important dans l'expansion rapide du commerce des produits énergétiques au pays. Au lieu de favoriser cet essor en abaissant les barrières à l'investissement et en créant un climat stable et prévisible pour les investissements étrangers directs, le Canada semble vouloir y mettre un frein. Les gouvernements ont en effet récemment bloqué la prise de contrôle de la Potash Corporation of Saskatchewan par l'entreprise australienne BHP Billiton, en plus d'annoncer, après le rachat de Nexen Inc. par une société chinoise, que les reprises feraient dorénavant l'objet d'une surveillance accrue. Cet envoi de signaux de plus en plus hostiles a vraisemblablement provoqué la récente baisse des investissements étrangers dans ce commerce.

L'avenir du Canada dépend lourdement de celui de son secteur de l'énergie — un secteur tout aussi rentable que les autres, voire plus encore. Il est absolument crucial que nos politiques commerciales en matière de produits énergétiques reposent sur des données objectives de bonne qualité, dénuées de toute rhétorique teintée d'émotivité et de calculs politiques.

[†] L'auteur tient à remercier les lecteurs anonymes de leurs commentaires pertinents.

INTRODUCTION

By any reasonable standard, Canada exports *a lot* of energy. In 2011, Canada exported 10.67 exajoules — which is 10.67 billion billion joules, or roughly 3 trillion kW/h.¹ To put that in perspective, this is equivalent to the energy contained in: over 28 billion cylinders of propane; 4.6 trillion McDonald's Big Macs; more than six times the total annual retail gasoline sold in Canada; or nearly double the entire U.S. nuclear arsenal.² It would take over 250 million years for the average Canadian household to use that much energy.³ In dollars, total 2012 exports were nearly \$116 billion — roughly \$8,700 *per household*. It is not just current levels that are staggering — forecasts for the next two decades consistently suggest that energy exports may double.

As Canada's energy trade grows, so too will the need for intelligent debate over effective policy design. Trade and the environment, for example, are deeply connected. Public debate surrounding the Keystone XL pipeline approval in the United States demonstrates this. The effect of Canada's energy trade on its domestic economy is also an important issue, as evidenced by widespread discussions surrounding the potential for Dutch Disease in Canada. Unfortunately, it is far too easy for these policy discussions to sink into emotional and political rhetoric. For instance, claims that Canada is a “rogue petrostate” and a menace in the world, such as in recent pieces by Andrew Nikiforuk and Thomas Homer-Dixon,⁴ reflect a style of discourse that Canadians would be better served without. This report is compiled with the sincere hope that a thorough, fact-based examination of Canada's energy trade will improve the quality of public policy discussions — and decisions.

The true state of Canada's energy trade is subtle, complex and evolving. It is more than just crude oil exports from Alberta to the United States; there are many opportunities for energy exports from all regions of Canada. This report will review the regional composition of Canada's energy trade, from oil and gas exports from Alberta and Saskatchewan and refined products from Atlantic Canada, to coal from British Columbia and electricity from Ontario and Quebec. Each region of Canada contributes to our energy trade. On the import side, this report also reveals some little-known facts. For instance, Alberta is one of Canada's largest energy importers, oil imports by New Brunswick and Quebec come from all over the world, and every region except Atlantic Canada is a net importer of refined products (such as gasoline).

Knowledge of Canada's current energy trade, and of how it has changed over time, directly affects how one views various policies. While this report will not provide detailed analysis of any particular policy proposal, it will try to link facts with policy. For instance, I will show that oil and gas trade is dominated by trade *inside of firms* — between separate divisions on either side of the Canada-U.S. border. This suggests there is much more to international trade than simply sales and purchases made by unrelated companies. Strong property rights, free and open capital markets, and fair and non-discriminatory rules for foreign investment may do much to promote Canada's energy trade. Given many high-profile cases of government interference with foreign investment in the energy sector, we have a long way to go.

¹ A standard unit of energy is the joule (J), which provides one watt of power for one second. Statistics Canada, “Report on Energy Supply and Demand in Canada” (2013), <http://www.statcan.gc.ca/pub/57-003-x/2010000/t010-eng.htm>.

² Based on 1 g of TNT = 1 kcal = 4,184 J; 1 g of propane = 46,440 J; 8 kg of propane per tank; 550 kcal/Big Mac; 1.7 TJ sold at retail pumps in 2011; 1,400 MT combined yield of U.S. weapons.

³ The average Canadian household uses roughly 1,000 kW/h per month.

⁴ Andrew Nikiforuk, “Oh, Canada,” *Foreign Policy* (June 24, 2013); Thomas Homer-Dixon, “The Tar Sands Disaster,” *The New York Times* (March 31, 2013).

Beyond policy analysis, knowledge of Canada's energy trade will also provide context for what will almost certainly be the defining feature of Canada's economic future. There is significant scope for increased energy exports, as Canada has potential remaining reserves estimated at 343 billion barrels of crude oil,⁵ of which 173 billion barrels are economically extractable with current technology and prices. Total production is forecast to roughly double to six million barrels per day by 2035; the oilsands accounts for 85 per cent of this growth. Domestic demand for crude will likely be only a million barrels per day, leaving five million available for export. On the other hand, natural gas exports may either decline, as production increases at a slower rate than domestic demand, or experience a rebound if liquefied natural gas (LNG) export facilities are constructed and shale-gas plays are fully exploited. Which scenario materializes is heavily dependent on policy action. Recent moves to develop infrastructure to facilitate exports beyond North America will have global implications.

Coal and electricity are also likely to see large increases in exports. The National Energy Board projects electricity exports of 44 TWh by 2035, compared to 25 TWh in 2010. Coal exports will also likely rise in the coming decades. As Ontario eliminates coal-fired power plants, domestic coal demand will decline significantly. Total coal production, however, will grow 40 per cent by 2035. Contributing to this growth are new coal projects coming online in Western Canada, and one in Nova Scotia. Currently, domestic coal use is over 80 per cent of production. By 2035, domestic use will be half this level.

I will rely on many public data sources on Canada's energy trade. Perhaps the best source is Industry Canada's Trade Data Online web portal.⁶ This database has detailed trade data and a user-friendly interface. Additional sources include the U.S. Energy Information Administration, the UN COMTRADE Database, and various corporate sources. Finally, data on production, value-added, compensation, and a number of other industry-level measures are available for a large number of countries through the OECD Database for Structural Analysis. This report focuses on broad patterns; interested readers can access greater detail through these sources. All data are publicly available and free.

This report should not be read as suggesting that oil and gas production and consumption is unambiguously good. There are, for example, important environmental costs. I neglect environmental consequences of energy use deliberately, as the policy solution is absolutely clear: put a price on carbon. The consensus among economists over this conclusion is as high as the consensus among climate scientists that global warming is real and due to human activity. Any other policy prescription — especially the sector-by-sector regulatory approach taken by the Canadian federal government — will achieve environmental objectives at needlessly high costs to the Canadian economy.⁷ If carbon were appropriately priced, then all external environmental costs would be incorporated into individual production and consumption decisions. It is for this reason that analysis of Canada's energy trade can be separated from its environmental consequences for the purposes of this report. I also abstract from issues related to First Nation lands, which are often near energy production or transport activities. A full analysis of the important environmental and First Nation issues is beyond the scope of this report.

⁵ National Energy Board, "Canada's Energy Future: Energy Supply and Demand Projections to 2035," <http://www.neb-one.gc.ca/clf-nsi/rnrgynfntn/nrgyrprt/nrgyftr/2011/nrgsppldmdndprjctn2035-eng.html>.

⁶ Industry Canada website, "Trade Data Online," <http://www.ic.gc.ca/eic/site/tdo-dcd.nsf/eng/Home>.

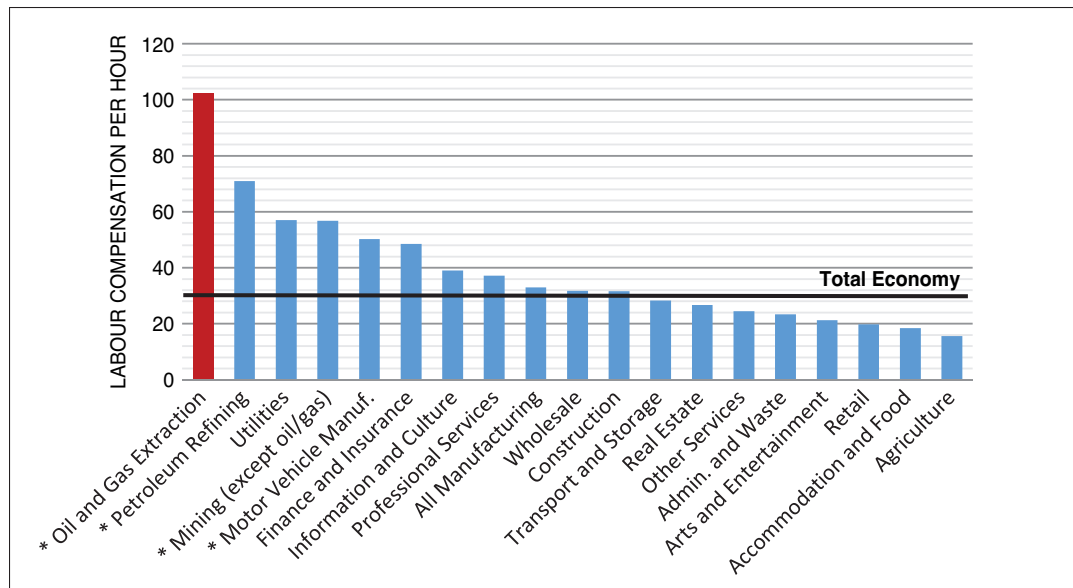
⁷ See, for example: Trevor Tombe and Jennifer Winter, "The Importance of Policy Neutrality for Lowering Greenhouse Gas Emissions," *The School of Public Policy Research Papers* 6, 14 (March 2013).

How will this report proceed? The importance of Canada’s energy trade for its economy, its productivity and its average income is a natural place to start. In the next section, I present evidence that energy exports contribute significantly to Canadian value-added and labour compensation — in contrast to the widespread public view of natural resources as low value. Following this, I dive into details of Canada’s energy exports and imports by product and province. I then look abroad to Canada’s trading partners and how our relationships have changed. In particular, cross-border trade *within* individual firms is becoming the dominant channel for trade. I end the report by highlighting what I find surprising and insightful, and how these facts can inform current policy debates.

THE VALUE-ADDED OF ENERGY EXPORTS

It is widely believed that commodity exports in general, and energy exports in particular, have little domestic value-added. Federal NDP leader, Thomas Mulcair, repeatedly claims this to be fact. He views “the creation of high-paying, value-added jobs” to be a priority — of course — but links these to “refining and upgrading our own natural resources right here in Canada.”⁸ Value-added is the difference between total revenue and the cost of intermediate inputs (or, in accounting jargon, the cost of goods sold). Value-added is an important consideration, to be sure, as it represents what is available for Canadians’ income in the form of wages, rent, or capital returns such as interest and dividend payments. It is completely false, however, to claim raw energy exports do not represent “high-paying, value-added jobs.” The opposite is true.

FIGURE 1: LABOUR COMPENSATION PER HOUR (2012)



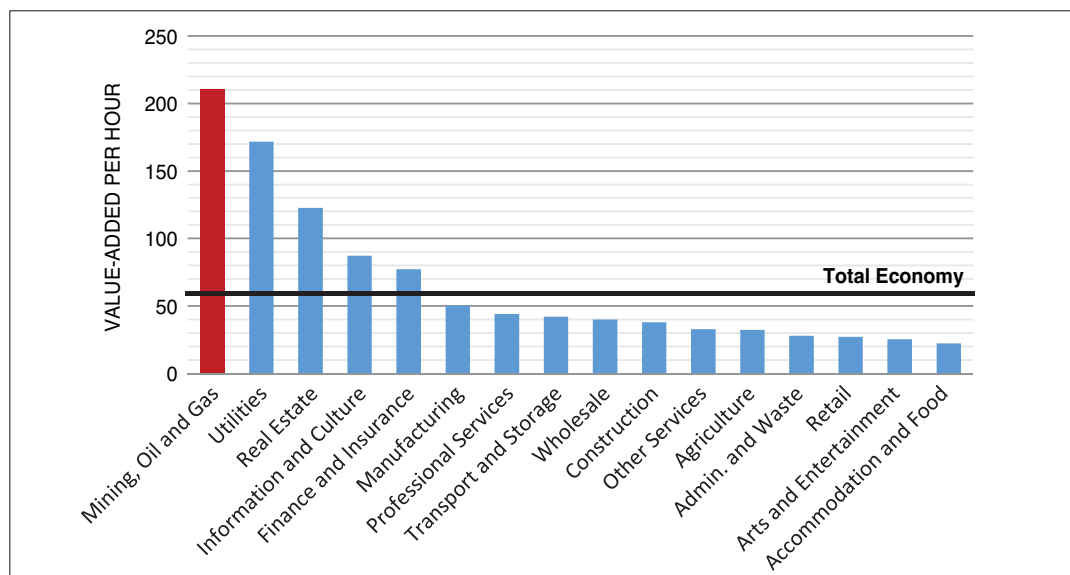
Source: Statistics Canada, CANSIM Table 383-0029, by two-digit NAICS industry classification. Stars indicate three-digit industry data from CANSIM Table 383-0031.

⁸ Thomas Mulcair, “Building a Balanced and Sustainable Energy Future,” *Policy Options* 34, 4 (2013): 4-7.

Consider two direct measures of this that matter for Canadians: average compensation and average value-added per hour worked. Compensation data by industry is readily available from Statistics Canada and is displayed in Table 1. This is available for a very large number of industries, so I report the average for broad industry categories in the figure. Average earnings per hour worked in oil and gas extraction is more than \$100 per hour, compared with only \$32 for the overall economy. Manufacturing, the concern of so many policy-makers and politicians, is only marginally above average. Auto manufacturing, though higher than average, is just over half of the earnings for oil and gas workers. Refinery jobs, which get significant attention by politicians, do pay more than manufacturing jobs generally — at approximately \$70 per hour — but are still lower than the extraction jobs.

The second measure — value-added per hour worked — is even more revealing. This measure is more relevant for the broader economy and is a standard measure of a sector’s productivity. Unfortunately, the data is available for fewer industries, and refining and extraction are not available individually. For the finest level of disaggregation available, Figure 2 plots this measure of labour productivity. The mining, oil and gas sector is far and away the most productive sector in the Canadian economy. Given the attention that policy-makers and public commentators have placed on lagging Canadian productivity (relative to the U.S. economy), this is an important metric. Indeed, labour productivity in manufacturing is below average. Reallocating workers from manufacturing to other sectors need not be considered a bad thing, as it often is. Indeed, recent research by Stephen Gordon of Laval University suggests moving workers from manufacturing to natural resources increases wages and productivity.⁹ Of course, these measures do not rule out the possibility of profitable upgrading and refining activities in Canada. Such decisions, however, should be left to companies to decide. Claiming the natural resource sector broadly lacks “value-added,” while the manufacturing sector self-evidently embodies it, is not supported by the evidence.

FIGURE 2: VALUE-ADDED (GDP) PER HOUR (2012)

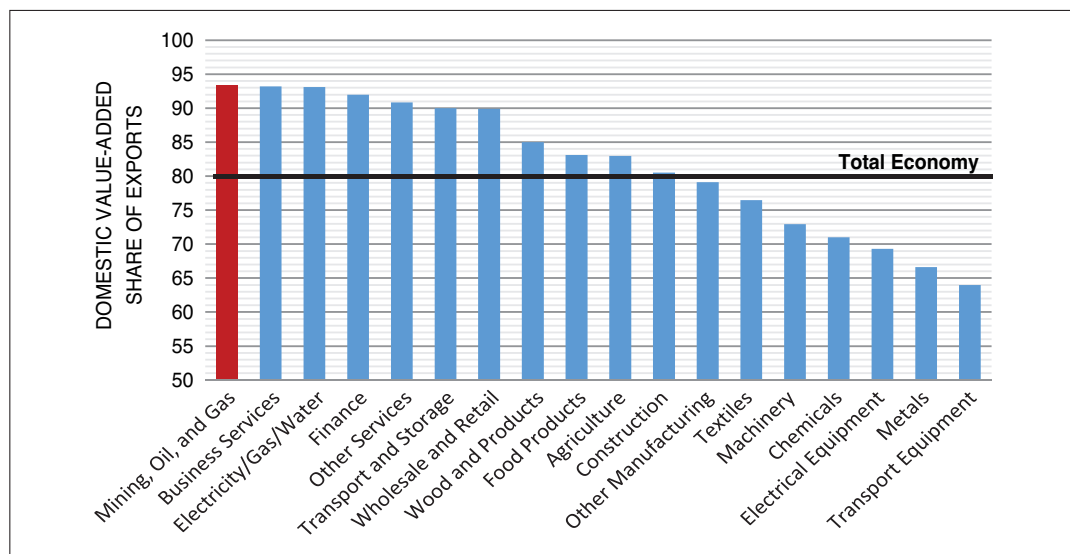


Source: Statistics Canada, CANSIM Table 383-0029.

⁹ Stephen Gordon, “The Canadian Manufacturing Sector 2002-2008: Why Is It Called Dutch Disease?” *The School of Public Policy Research Papers* 6, 2 (September 2013).

These measures also help us gauge the value of trade in energy-related products. The important question for many people is whether increased energy exports will contribute to Canada’s income and productivity. Indeed, it is common to hear complaints that energy exports are not “value-added exports” in the sense that manufactured-goods exports are. This view is also false. It is possible to measure the fraction of each dollar of exports from a variety of industries that is value-added. Data from the Organisation for Economic Cooperation and Development (OECD) and the World Trade Organization (WTO) — displayed in Figure 3 — reveal mining, oil, and gas exports contains more value-added than any other type of Canadian export. In 2009, the most recent year for which data are available, slightly over 80 per cent of Canada’s total exports were composed of domestic value-added. The remaining 20 per cent is foreign value-added imported as inputs (for example, imported auto parts). Manufacturing exports, however, had a domestic value-added content of only 71 per cent. Mining and quarrying (which includes petroleum and natural gas) has a much higher value-added content, at nearly 93.5 per cent. No other industry group has a higher value-added content of exports. The bang-for-the-buck of raw-material exports for Canada’s GDP, and therefore everyone’s income, is large.

FIGURE 3: VALUE-ADDED CONTENT OF EXPORTS, BY INDUSTRY (2012)



Source: OECD Trade in Value-Added Database.

Natural resources, in general, and energy, in particular, are critical for Canadian prosperity. The size of Canada’s domestic consumption of energy, however, is far below its production. In 2011, nearly 60 per cent of Canadian primary energy production (which includes crude oil, natural gases, and electricity) was exported to customers abroad.¹⁰ Future trends point strongly to increases in foreign demand for Canadian resources and energy products. To better understand the market for Canadian energy, we turn now to a detailed examination of key features of Canada’s energy trade.

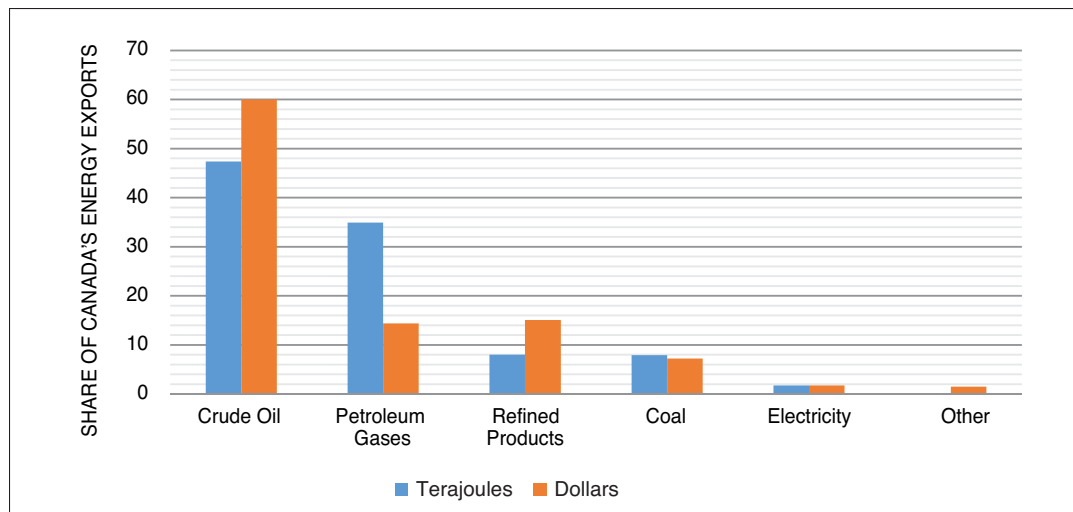
¹⁰ Statistics Canada, “Report on Energy Supply and Demand in Canada” (2013). Total primary energy production was 16.8 exajoules and total exports were 9.81 exajoules.

CANADIAN ENERGY EXPORTS

Before we can proceed, we must understand how trade is classified. Products are classified by an internationally consistent six-digit code called the Harmonized Commodity Description and Coding System. Energy products all begin with the digits 27 and become progressively more disaggregated as more digits are added. Petroleum gases are within the 2711 series, and include many types of gases, including propane (271112) and natural gas (271111). For this report, I focus on crude oil (2709), refined products (2710), petroleum gases (2711), coal (2701), electricity (2716), and petroleum coke and residues (2713).¹¹ These six categories accounted for over 99 per cent of Canada’s energy exports in 2012 and over 98 per cent of energy imports. The remaining energy products are insignificant.

The overall composition of Canada’s energy exports depends on whether one looks at quantity or value — joules or dollars. Statistics Canada breaks down energy exports in terajoules (trillion joules) by product type. For the same broad product categories, Industry Canada reports energy exports in dollars. Figure 4 displays shares of total exports in 2011 by dollars and by terajoules. Crude oil accounts for 47 per cent of exports, natural gas for an additional 35 per cent, refined products and coal are in third place at eight per cent each, and finally electricity with just below two per cent. Measuring exports in dollars reveals a different pattern. Crude oil accounts for 60 per cent of export revenue, with refined products in second place at 15 per cent. Natural gas accounts for only 14 per cent of export revenue, despite being more than one-third of quantity. The two measures can differ since prices for each type of energy differ.

FIGURE 4: THE COMPOSITION OF CANADA'S ENERGY EXPORTS (2011)



Note: Author's calculation using 2011 data. Quantity from Statistics Canada's "Report on Energy Supply and Demand in Canada" (57-003-XWE). Values from Industry Canada Trade Data Online.

¹¹ Coke is a solid fuel, normally made from coal, especially useful for smelting iron ore.

Recently, natural gas prices in North America have declined significantly, from a high of over \$10 per gigajoule only a few years ago to the current price of roughly \$3 per gigajoule.¹² This rapid reduction, due largely to technological advancements in shale-gas production that led to large supply increases, lowered export revenue from gas. So, producers receive less revenue for each joule of gas exported.

Overall, however, energy prices have increased and positively contributed to growth in Canada's total exports. To see this is straightforward. Total exports in 2002 were 8,462,000 trillion joules. By 2011, exports were 10,667,000 joules. This represents a 26 per cent growth in the quantity of energy exports. In dollars, the growth in exports was significantly greater. In 2011, energy exports totalled \$114.7 billion; in 2002, only \$50 billion. Since total revenue is the product of price and quantity, the percentage change in revenue is (roughly) the sum of price and quantity growth rates. Since exports in joules increased only 26 per cent, quantity increases account for one-fifth of growth. Price increases therefore account for the remaining four-fifths of total growth. If prices remained at their 2002 level, total exports in 2011 would have been worth \$63 billion, instead of nearly \$115 billion. As data on trade values are more easily accessible and comparable across different energy product types, the remainder of this report focuses on values rather than quantities.

TABLE 1: VALUE OF CANADA'S ENERGY EXPORTS, BY PRODUCT TYPE (IN MILLIONS)

Energy Product	HS Code	2012	2002	% Change
Crude Oils	2709	\$74,362	\$18,015	313%
Refined Products	2710	\$19,672	\$7,247	171%
Petroleum Gases	2711	\$11,236	\$20,391	-45%
Coal	2701	\$6,326	\$1,675	278%
Electricity	2716	\$1,927	\$1,812	6%
Coke	2713	\$1,370	\$255	438%
Other		\$908	\$639	42%
Total	27	\$115,801	\$50,035	131%

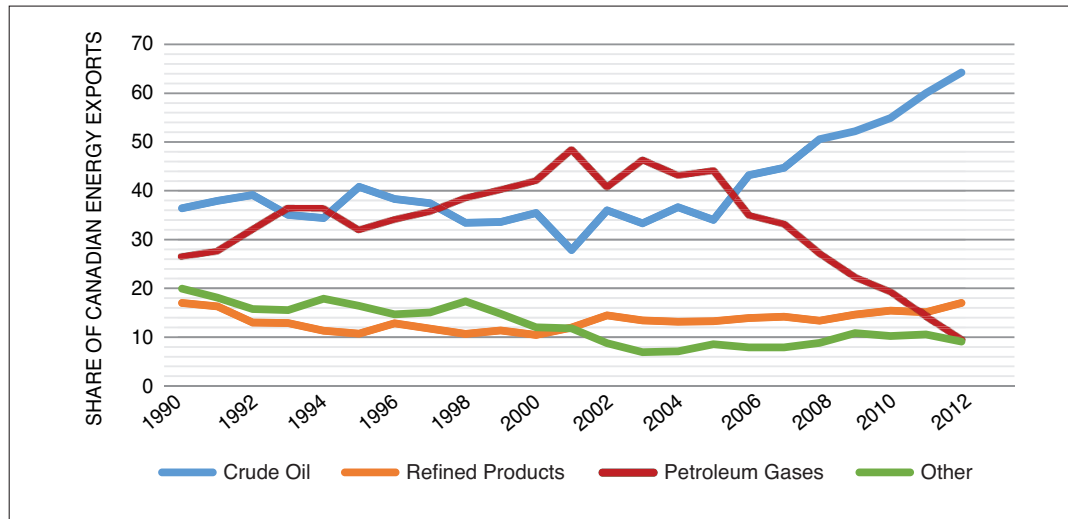
Source: Industry Canada.

Note: Energy trade comprises all goods with HS2 classification code 27.

As one might expect from declining natural gas prices, the composition of Canada's energy export earnings has changed dramatically from a decade ago. Table 1 provides the precise values for 2012 and 2002 exports, by product type, and the percentage growth over this period. Ten years ago, natural gas (and other petroleum gases) were Canada's top energy export, with over \$20 billion in foreign sales and accounting for over 40 per cent of total exports. Since then, gas exports actually *declined* to just over \$11 billion and only 10 per cent of total exports. Graphically, Figure 5 plots the share of export revenue, by product type, and reveals this shift occurs clearly after 2005.

¹² Alberta Natural Gas Reference Price, as determined by the Alberta Department of Energy. Data available at: <http://www.energy.alberta.ca/naturalgas>.

FIGURE 5: COMPOSITION OF ENERGY EXPORTS



Source: Author's calculations using Industry Canada data.

Clearly, petroleum gas exports declined while crude oil exports increased. Total energy exports since 2002 grew at nearly nine per cent *per year*. How much of this growth is accounted for by each type of energy product? To measure how much a particular energy commodity contributes to overall growth, take the difference between its 2012 and 2002 exports relative to the total change in energy exports. Measured in this way, crude oil accounts for nearly 86 per cent of Canada's total energy export growth in the past decade. Refined products, such as gasoline, account for an additional 19 per cent of growth. Coal, in a distant third place, accounts for just over seven per cent of the growth. The large reduction in petroleum gases exports means this product category accounts for -14 per cent of Canada's energy export growth. That is, it subtracted from growth. All other products contribute to the final two per cent of export growth.

Despite recent low prices, the future of natural gas exports may be bright. Gas prices are significantly higher in Asia, at approximately four times the North American price. If coastal liquefaction facilities — which convert natural gas to a liquefied state suitable for shipping — can be constructed, then gas producers can access Asian markets. Many such projects are in the works, backed by major players such as Chevron, Shell, PetroChina and others. The National Energy Board has already approved a number of export licenses, including licenses for Kitimat LNG, LNG Canada, the Douglas Channel Energy Project and Prince Rupert LNG. The B.C. government seems committed to these facilities, hoping to have multiple terminals in place by 2020.¹³

The markets for gas exports are large and growing. China's gas imports are expected to grow significantly. The U.S. Energy Information Administration projects that 40 per cent of China's gas consumption will come from imports, requiring 8.1 million TJ of gas imports per year by 2040.¹⁴ Beyond China, there are many international destinations for gas exports. Earlier this

¹³ For more, see: B.C.'s Natural Gas Strategy, http://www.gov.bc.ca/ener/natural_gas_strategy.html.

¹⁴ EIA International Energy Outlook 2013, http://www.eia.gov/forecasts/ieo/nat_gas.cfm. The report provides data in terms of cubic feet of gas, reporting 7.7 million cubic feet of imports. Convert to EJ using 1 Tcf = 1.05 EJ.

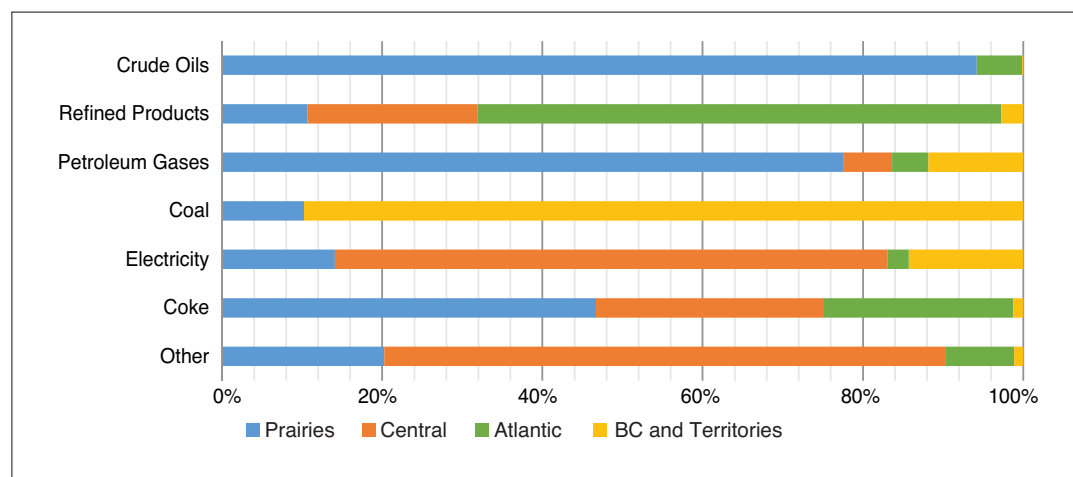
year, for example, Japan and Canada agreed to advance ministerial-level talks to ensure Canadian shale-gas exports reach Japan in large quantities. The talks will also likely lead to greater involvement of Japanese firms in Canadian shale-gas projects.¹⁵ If these forecasts prove true, and infrastructure is successfully put in place, natural gas may again account for a large share of Canada’s overall energy exports.

PROVINCIAL ENERGY EXPORTS

While Alberta is responsible for the bulk of energy exports, all regions of Canada are involved. Before proceeding to specific examination of the provinces, consider Figure 6, which displays the product breakdown of regional energy exports. The Prairie provinces (Alberta, Saskatchewan and Manitoba) export most of Canada’s crude oil and natural gases. Central Canada (Ontario and Quebec) exports most of Canada’s electricity. Atlantic Canada (Newfoundland and Labrador, Nova Scotia, New Brunswick and P.E.I.) accounts for the majority of Canadian refined-product exports. Finally, British Columbia is almost exclusively responsible for Canada’s coal exports. Behind these numbers, each province has a unique story to tell.

Table 2 lists each province’s total energy exports in 2012 and 2002, along with the percentage change over this period. Overall, Alberta accounts for nearly 60 per cent of total 2012 exports, followed by Saskatchewan at over 11 per cent. Outside the Prairies, New Brunswick drives nine per cent of exports; British Columbia, seven per cent; Newfoundland and Labrador, six per cent; followed by Ontario and Quebec at roughly three per cent each.

FIGURE 6: REGIONAL COMPOSITION OF ENERGY EXPORTS (2012)



Source: Author’s calculations using Industry Canada data. Each region is the source of production.

¹⁵ Gary Park, “Canada and Japan sign energy cooperation pact,” Platts, McGraw Hill Financial, October 11, 2013.

Since 2002, nearly all regions saw increases in the total value of energy exports. Growth in crude oil exports drove the increases for Alberta, Saskatchewan, and Newfoundland and Labrador. For British Columbia, massive increases in coal exports are responsible. In fact, B.C.'s coal exports totaled over 300 per cent more in 2012, at approximately \$5.7 billion, than in 2002, at only \$1.4 billion. Alberta's coal exports are also significantly higher. B.C. also saw increased export revenue from refined products, which approached over \$500 million in 2012, a 285 per cent increase since 2002. Total energy export growth in Quebec and New Brunswick is largely due to refined products. Finally, Ontario's electricity exports increased over 330 per cent since 2002 and now generate well over \$400 million per year. The value of Quebec's electricity exports, which are significantly more than any other province (at \$900 million in 2012) is largely unchanged from 2002 levels.

TABLE 2: VALUE OF TOTAL ENERGY EXPORTS, BY PROVINCE (IN MILLIONS)

Province	2012	2002	% Change
Alberta	\$68,693	\$30,450	126%
Saskatchewan	\$12,919	\$2,763	368%
New Brunswick	\$10,607	\$3,474	205%
British Columbia	\$7,909	\$3,714	113%
Newfoundland and Labrador	\$7,338	\$3,226	127%
Quebec	\$3,984	\$1,565	154%
Ontario	\$3,242	\$2,676	21%
Manitoba	\$1,010	\$1,298	-22%
Nova Scotia	\$97	\$865	-89%
Prince Edward Island	\$2	\$3.6	-43%
Northern Territories	\$0.3	\$0.1	129%
Total	\$115,801	\$50,035	131%

Source: Industry Canada.

Note: Energy trade comprises all goods with HS2 classification code 27.

Not all regions saw increases in energy exports. The dramatic 89 per cent decline for Nova Scotia is the consequence of low natural gas prices. Nearly all of the province's natural gas exports, which approached \$900 million in 2002 and in peak years exceeded \$1 billion, were accounted for by a single project: the Sable Offshore Energy Project. Low North American gas prices led Exxon to close the facility in 2010.¹⁶ Encana's 2013 opening of the Deep Panuke offshore gas development project will increase Nova Scotia's natural gas activity. This experience highlights the potential importance of single projects for shaping the course of energy exports for smaller provinces.

¹⁶ CBC News, "Exxon ends N.S. natural gas project," July 8, 2010, <http://www.cbc.ca/news/canada/nova-scotia/exxon-ends-n-s-natural-gas-project-1.931563>.

CANADIAN AND PROVINCIAL ENERGY IMPORTS

Let us now consider the other direction of energy trade: imports. Some Canadians may find it surprising that Canada is a large importer of energy, but it is true. Canada is a large country, with vast expanses of rugged and largely unpopulated lands separating its central and eastern areas from its western areas. The many refineries located in Quebec and New Brunswick must import their crude oil, as there are few options to transport crude eastward from Alberta and Saskatchewan. Purchases of each major product from abroad are reported in Table 3. Overall, Canada imported nearly \$30 billion in crude oil and over \$15 billion in refined petroleum products in 2012.

TABLE 3: VALUE OF CANADA'S ENERGY IMPORTS, BY PRODUCT TYPE (IN MILLIONS)

Energy Product	HS Code	2012	2002	% Change
Crude Oils	2709	\$29,762	\$12,007	148%
Refined Products	2710	\$15,372	\$2,078	640%
Petroleum Gases	2711	\$3,665	\$934	293%
Coal	2701	\$1,006	\$1,093	-8%
Electricity	2716	\$233	\$494	-53%
Coke	2713	\$806	\$267	202%
Other		\$556	\$284	95%
Total	27	\$51,400	\$17,156	200%

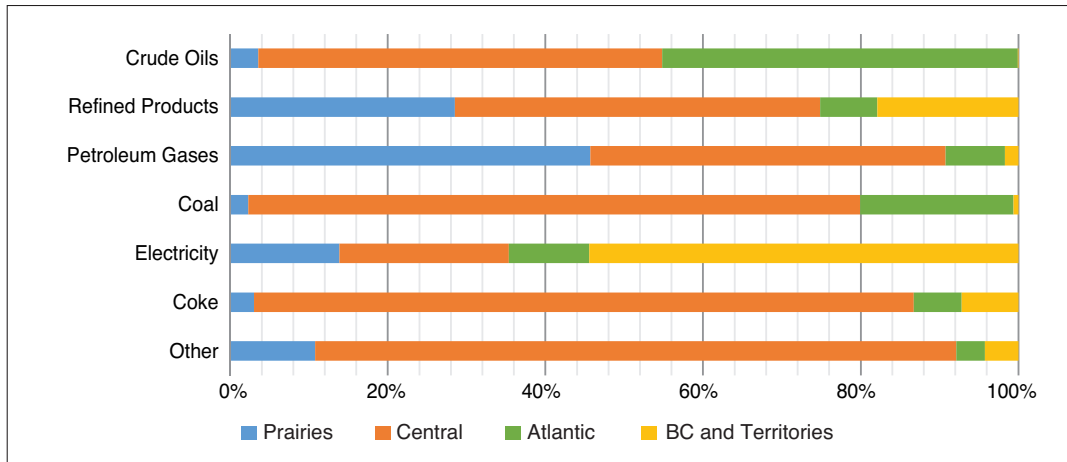
Source: Industry Canada.

Note: Energy trade comprises all goods with HS2 classification code 27.

At the regional level, Figure 7 illustrates the product-level breakdown of Canada's energy imports. Clearly, the Central provinces of Ontario and Quebec account for most energy imports for all categories. There are some important exceptions, however. British Columbia — perhaps to the surprise of many of its residents — is the largest electricity importer in Canada, accounting for over 50 per cent of the national total. That being said, the total is still small: only \$126.5 million of electricity was imported by B.C. in 2012.¹⁷ The Prairie provinces are large importers of refined products and gases, and — as already mentioned — Atlantic Canada and Quebec are large crude oil importers.

¹⁷ Some imported electricity may be re-exported to other provinces. However, the magnitude of B.C. imports from abroad is substantially larger than B.C.'s interprovincial electricity exports. At most, one-third of B.C.'s imported power is sent to other provinces. For more on B.C.'s electricity trade, see: BC Stats website, "B.C.'s Trade in Electricity," <http://www.bcstats.gov.bc.ca/statisticsbysubject/ExportsImports/Data/ElectricityTrade.aspx>.

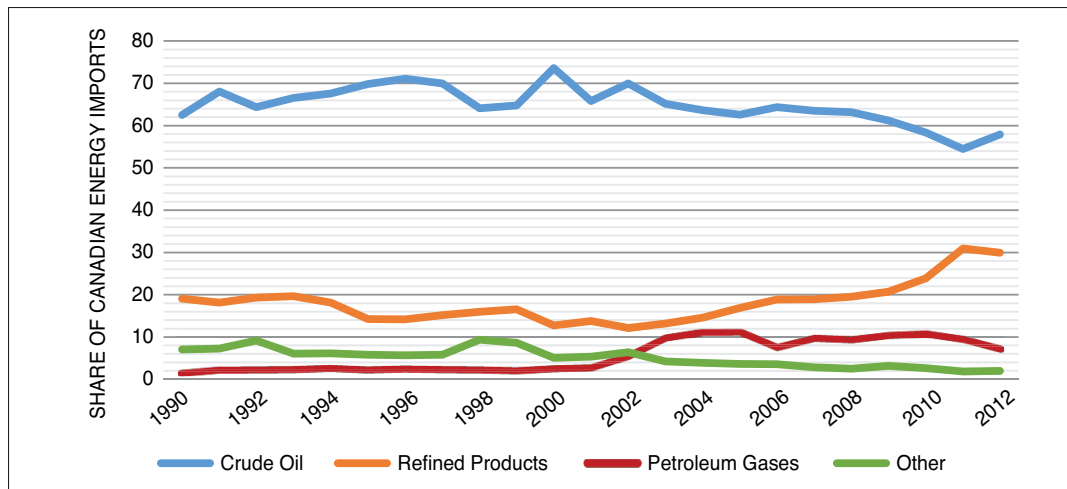
FIGURE 7: REGIONAL COMPOSITION OF ENERGY IMPORTS (2012)



Source: Author's calculations using Industry Canada data.

These import patterns have seen major changes over the past decade. Imports of refined products and natural gases increased at a much faster rate than did crude oil. These two product categories totalled only \$3 billion in 2002, but by 2012 totalled over \$19 billion. Figure 8 displays the shares by product type over time. While the decline of crude import shares and the increase in refined products and gas imports has been gradual and steady since 2002, there is a marked increase in the rate of change around 2009–2010. What drove this large increase in fuel imports? The answer may surprise many people.

FIGURE 8: COMPOSITION OF ENERGY IMPORTS



Source: Author's calculations using Industry Canada data.

Data on each province's total imports in 2002 and 2012 are found in Table 4. Alberta is one of Canada's largest energy importers. In 2012, Alberta imported nearly \$5.6 billion worth of energy products — 11 per cent of Canada's total energy imports — comprising approximately one-fifth of all Alberta's imports. This may strike many people as odd, given that Alberta is by far Canada's largest energy producer. The source of Alberta's rapid increase is not well known but demonstrates a unique interrelationship between import flows and the expansion of

domestic oil production and exports. To solve this puzzle, consider a few clues: Alberta's energy imports (well over 90 per cent) are refined products and petroleum gases; in 2009 Alberta imported only \$382 million worth of these products (10 per cent of the 2012 value); the source of these imports is highly concentrated — two-thirds come from Illinois and Michigan.

The oil products used to dilute heavy crude oil for pipeline transport explain Alberta's import patterns. Bitumen at room temperature will not flow, so transporting it through a pipeline requires increasing its viscosity. Mixing the bitumen with a light-oil product (a condensate or natural gas liquid, for example) will do the trick. Domestic condensate production is far below current needs — satisfying barely half of the current requirement of 400,000 barrels per day. The shortfall is imported, with most coming through Enbridge's Southern Lights pipeline that ships condensate from the Midwest to Alberta with an 180,000-barrel per day capacity. The remainder currently comes in through rail or truck.

TABLE 4: VALUE OF TOTAL ENERGY IMPORTS, BY PROVINCE (IN MILLIONS)

Province	2012	2002	% Change
Quebec	\$20,291	\$8,302	144%
New Brunswick	\$9,285	\$2,974	212%
Ontario	\$5,707	\$2,112	170%
Alberta	\$5,580	\$488	1044%
Newfoundland and Labrador	\$4,686	\$1,313	257%
British Columbia	\$3,028	\$706	329%
Nova Scotia	\$1,132	\$1,050	8%
Saskatchewan	\$862	\$88	880%
Manitoba	\$807	\$116	594%
Northern Territories	\$24	\$6	293%
Prince Edward Island	\$0.025	\$0.007	253%
Total	\$51,400	\$17,156	200%

Source: Industry Canada.

Note: Energy trade comprises all goods with HS2 classification code 27.

Forecasts are clear: diluent demand will likely grow to one million barrels per day by 2025, with little increase in domestic production. Imports will satisfy almost all of this increase. To help satisfy this increase, other pipelines to bring diluent to Alberta are coming soon. The reversal of Kinder Morgan's Cochin pipeline, for example, is slated to come online within a year. Enbridge's Northern Gateway pipeline (though not yet approved) is also slated to bring diluent from abroad into Alberta, and the company is also planning to expand the capacity of Southern Lights.

Whether oil-producing provinces continue to increase their energy imports crucially depends on how their exports are delivered to market. If pipeline capacity expands, then more diluent will be necessary. On the other hand, rail transportation is a rapidly growing alternative to pipelines. As oil need not flow within a rail car, low-viscosity heavy oil is less of a problem, though special terminals are required for loading and unloading. Diluent is only added to facilitate loading and unloading of the car. In the case of coiled tube cars, which heat the oil

slightly, little to no diluent is necessary at all. When an entire train hauling nothing but oil is used, the costs fall dramatically. Known as a unit train, this mode of transporting crude costs barely more than a pipeline to move oil from Alberta to the U.S. Gulf Coast.¹⁸ It also avoids the large up-front capital costs involved in pipeline construction. If rail transport dominates in the years to come, then condensate and other diluent imports will not likely continue their rapid growth.

Alberta is not alone in importing substantial amounts of refined products. Quebec, which relies more on imports than most provinces to fuel its vehicle fleet, also increased the value of this type of import. Beginning from a much larger base of \$758 million in 2012, Quebec increased refined-product imports to over \$5.8 billion in 2012. Alberta and Quebec together account for two-thirds of Canada's growth in refined-product imports since 2002.

CANADIAN AND PROVINCIAL NET ENERGY EXPORTS

The difference between exports and imports is called *net* exports. Commentators typically refer to a situation where exports exceed imports as a trade surplus. As a country with a flexible currency, there is no fundamental economic reason that policy-makers should care about whether Canada has a trade surplus or a trade deficit in aggregate. Indeed, when one considers the flow of capital (asset purchases across the border, for example) the overall balance of payments *must* be zero. That being said, there is often interest in whether exports exceed imports for a particular industry or region. So, let us examine the pattern of net exports in Canada by province and by product type.

Overall, Canada's trade surplus in energy products is well over \$65 billion — nearly double the surplus of a decade ago. Table 5 reports the surplus by province and Table 6 reports the surplus by product type. Alberta, not surprisingly, accounts for much of the overall national increase. Alberta's net energy exports were \$63 billion in 2012 and \$30 billion in 2002. Most other provinces, though, also experienced large increases. New Brunswick's net energy exports, for example, nearly tripled. Saskatchewan, also saw large increases to a very large \$12 billion energy trade surplus in 2012. This large turnaround is notable, especially in comparison with its neighbour to the east. Manitoba's net energy exports in 2012 were substantially lower than its 2002 level.

¹⁸ Canexus AGM Presentation, as cited in Sandy Fielden, "Go Your Own Way — The Canadian Rail Versus Pipeline Bitumen Challenge," *RBN Energy Network* (July 30, 2013).

TABLE 5: VALUE OF NET ENERGY EXPORTS, BY PROVINCE (IN MILLIONS)

Province	2012	2002
Alberta	\$63,113	\$29,963
Saskatchewan	\$12,057	\$2,675
British Columbia	\$4,881	\$3,008
Newfoundland and Labrador	\$2,652	\$1,913
New Brunswick	\$1,322	\$499
Manitoba	\$203	\$1,182
Prince Edward Island	\$2	\$4
Northern Territories	-\$23	-\$6
Nova Scotia	-\$1,035	-\$185
Ontario	-\$2,465	\$564
Quebec	-\$16,307	-\$6,737
Total	\$64,400	\$32,879

Source: Industry Canada.

Note: Energy trade comprises all goods with HS2 classification code 27.

Turning to Canada's total net exports by product, Table 6 reports a pattern consistent with earlier data. Net exports of crude oil grew from \$6 billion in 2002 to nearly \$45 billion in 2012. Net exports of coal also rose dramatically from less than \$600 million in 2002 to \$5.3 billion in 2012. As we saw earlier, declining natural gas prices imply falling net exports. The decline is dramatic: net exports of petroleum gases fell by nearly \$12 billion over the past 10 years, which offsets some of the net export increases in crude oil and coal.

TABLE 6: VALUE OF NET ENERGY EXPORTS, BY PRODUCT TYPE (IN MILLIONS)

Energy Product	HS Code	2012	2002
Crude Oils	2709	\$44,599	\$6,009
Petroleum Gases	2711	\$7,571	\$19,458
Coal	2701	\$5,320	\$583
Fuels and Oils	2710	\$4,300	\$5,169
Electricity	2716	\$1,694	\$1,319
Petroleum Coke and Residues	2713	\$564	-\$13
Other		\$352	\$354
Total	27	\$64,400	\$32,879

Source: Industry Canada.

Note: Energy trade comprises all goods with HS2 classification code 27.

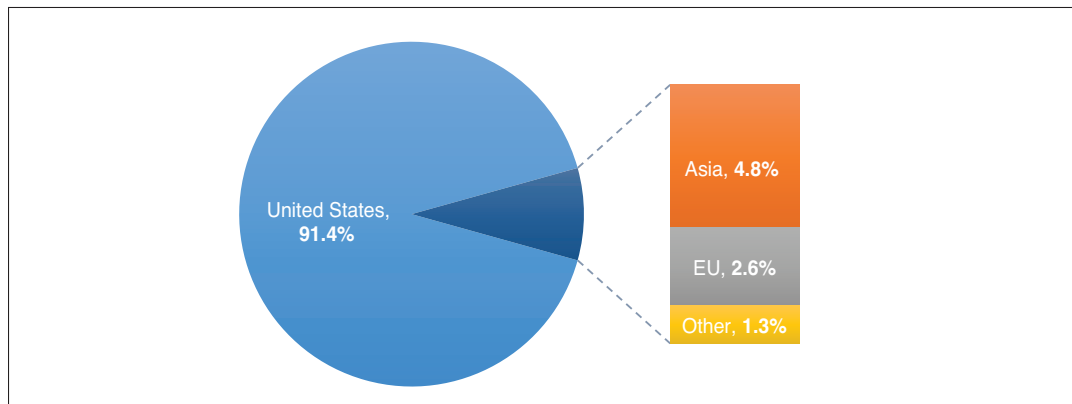
Any comparison of imported and exported energy in general, and crude oil in particular, is incomplete without noting that the price paid for imported oil may differ from the price received for exported oil. This is especially true recently. As will be clear in the following sections, imported oil is typically destined for refineries on Canada's East Coast. This oil is shipped from overseas and is priced according to an oil-price benchmark known as Brent. Exported oil, on the other hand, is almost entirely destined for the United States and is priced according to a benchmark known as West Texas Intermediate (WTI). These are typically very close to one another. Since late 2010 however, WTI has fallen relative to Brent as North

American production increases have outpaced overseas export capacity. The magnitudes are also large, with WTI varying between \$10 and \$20 per barrel less than Brent. This results in lower export values relative to import values, and therefore lower net exports of crude oil than if there were no differential. It matters where Canada imports its energy from, and to where Canada exports its energy. The next section provides a detailed investigation of Canada’s energy trade partners.

CANADA’S ENERGY TRADE PARTNERS

Policy-makers are increasingly concerned with diversifying Canada’s energy trade. Joe Oliver, Canada’s minister of natural resources, characterizes export diversification as “a strategic imperative since Canada currently exports virtually all of its oil and gas to the United States.”¹⁹ This view is by no means an exaggeration. Figure 9 below displays the share of various destinations for Canada’s energy exports. Over 91 per cent of energy exports go to the United States, with less than five per cent going to Asia and barely 2.6 per cent to Europe. While this is an improvement from 10 years ago, when over 96 per cent of energy exports were destined for the United States, there is still large scope for further diversification. The global destination of exports is in Figure 10, with destinations accounting for more than one per cent of exports highlighted in red. The darker the colour, the greater the trade share.

FIGURE 9: CANADIAN ENERGY EXPORT DESTINATIONS (2012)

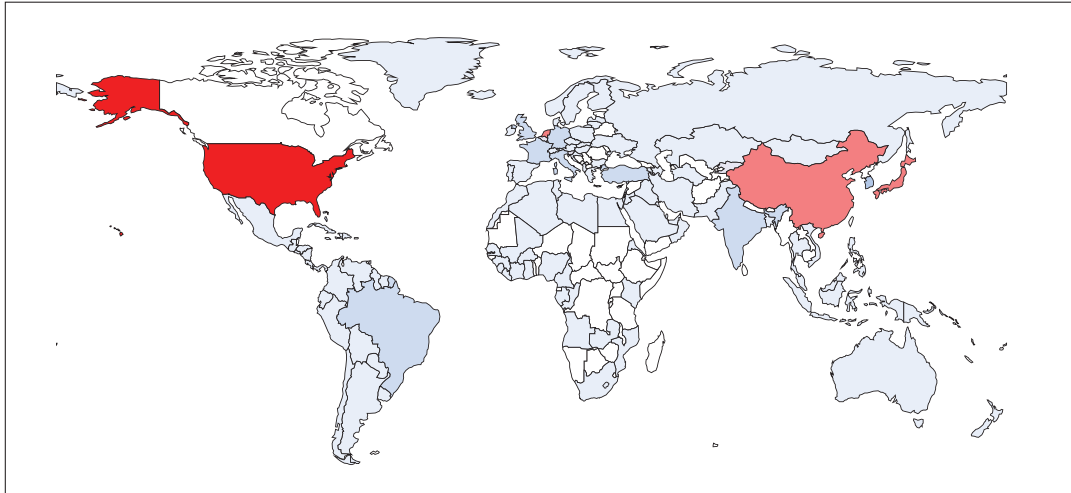


Source: Author's calculations from Industry Canada data. Energy trade comprises all goods with HS2 code 27.

When broken down by product type, the geographic patterns become clearer. Figure 11A displays the destination of crude oil exports in 2012. Constrained by pipeline infrastructure and limited export facilities, Canada’s crude oil almost exclusively goes to the United States — over 99 per cent of it. The remaining one per cent went largely to Asia, with some to Europe. These facts hold broadly for all of Canada’s petroleum exports. Energy is more general than this, though, and a large fraction includes coal. Figure 11B displays the destinations of Canadian coal, and reveals a starkly different pattern. In 2012, over three-quarters of coal exports went to Asia (China, predominantly). Europe received 10 per cent and South America seven per cent. The United States, in this case, was the destination of barely over three per cent of Canada’s coal exports.

¹⁹ Carrie Tait, “Minister casts eye towards Asia,” *The Globe and Mail*, August 28, 2013.

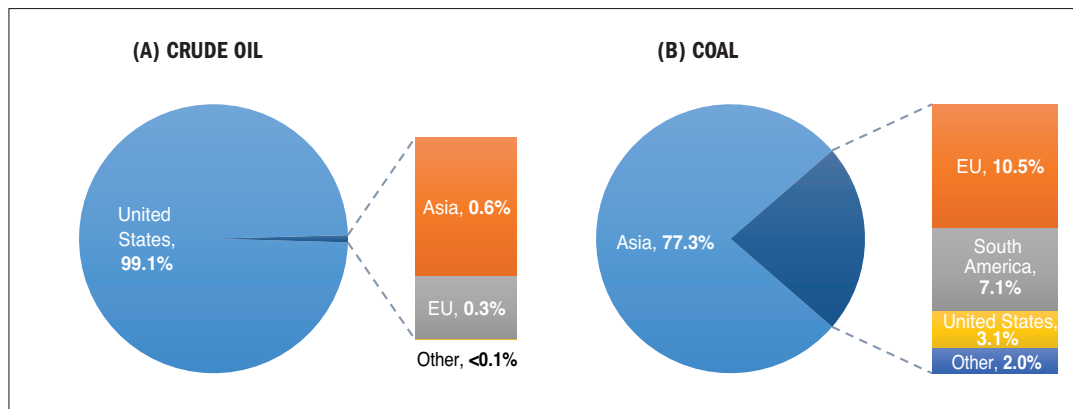
FIGURE 10: CANADA'S ENERGY EXPORT PARTNERS (2012)



Source: WITS-UN Trade Database.

Note: Red indicates a country accounting for at least one per cent of Canada's exports or imports. Similarly, blue indicates countries that account for less than one per cent. White reflects no trade or missing data. The darker the colour, the greater the share.

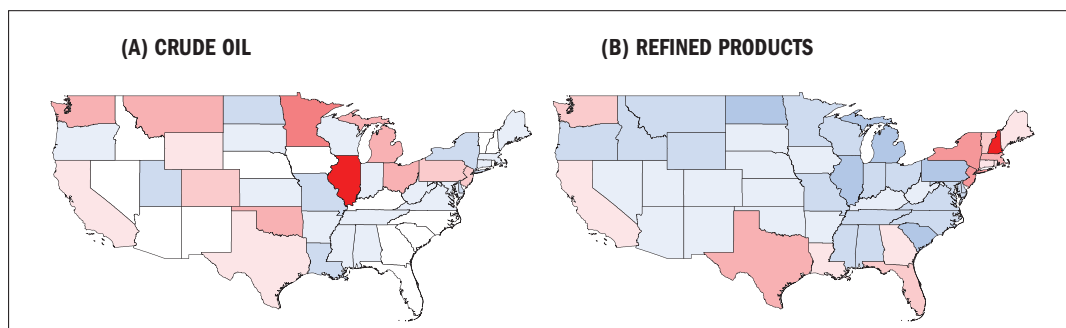
FIGURE 11: DESTINATION OF ENERGY EXPORTS, COAL AND CRUDE OIL (2012)



Source: Author's calculations from Industry Canada data.

Given the importance of the United States as a market for energy exports, consider the distribution of exports across U.S. states for crude oil and refined products. The U.S. accounts for 99 per cent of Canada's crude oil exports and 84 per cent of its refined-product exports. Figure 12 provides a visual representation of these exports by state (excluding Hawaii and Alaska). This graphic can be interpreted in the same way as the global trade figure presented earlier: red indicates states that account for more than one per cent of trade, blue indicates states accounting for less than one per cent. The darker the colour, the greater the trade share.

FIGURE 12: DESTINATION OF MAJOR CANADIAN ENERGY EXPORTS TO THE U.S. (2012)



Source: Author's calculations from Industry Canada data.

Note: Red indicates a state accounting for at least one per cent of exports. Blue indicates states that account for less than one per cent. White reflects insignificant or zero trade. The darker the colour, the greater the share.

Crude oil is shipped to a large number of states but is very concentrated. Only 13 states account for more than one per cent of exports in 2012 and two account for more than 10 per cent. Illinois alone purchased over 37 per cent of Canadian crude oil exports. This is due in large part to the configuration of Enbridge's pipeline network. This single firm ships nearly two-thirds of Western Canadian oil, mainly to facilities around Chicago.²⁰ Depending on whether the Keystone XL pipeline is approved (at the time of writing, no decision had been made), Gulf Coast states may account for an increasing share of future Canadian oil exports. That being said, Midwestern refineries may increase their capacity to process heavy crude oil from the oilsands. Earlier this year, BP completed a \$4 billion upgrade of its Whiting, Indiana refinery to process heavy oil.²¹

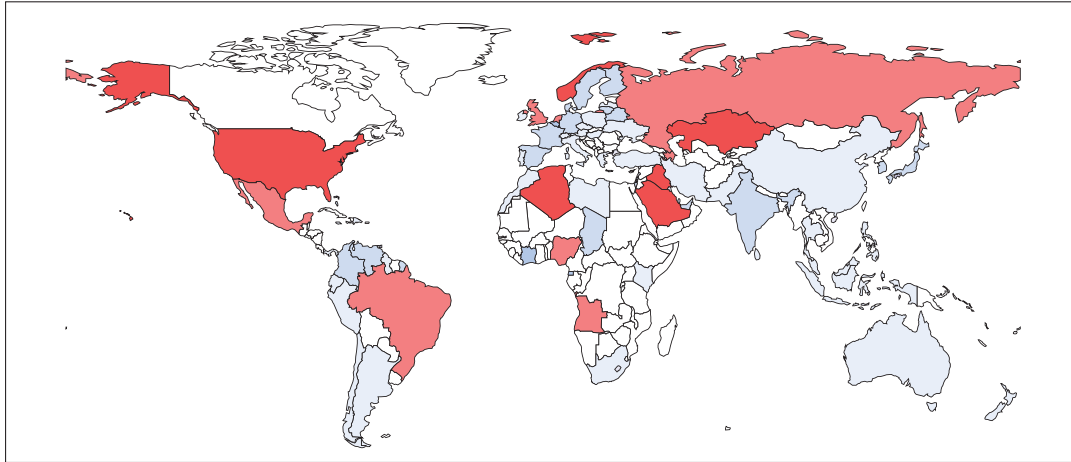
For refined products, the primary destination of exports (mainly from New Brunswick) is New Hampshire. This single state purchases 41 per cent of Canada's total refined-product exports. New Jersey and New York are a distant second and third, at nine per cent and eight per cent respectively. A further 12 states account for more than one per cent each.

On the import side, our energy sources are far more diverse. Figure 13 displays the main sources of Canadian energy imports, with red-coloured countries accounting for at least one per cent of Canada's imports. The buyers of these imports in Canada are mainly refineries in Quebec and New Brunswick. In 2012, Canada imported nearly \$30 billion of crude, with over three-quarters going to these two provinces. Quebec alone accounts for nearly half of Canada's crude oil imports. Historically, the United Kingdom was Quebec's primary supplier. Today, Algeria supplies over 40 per cent of the total, followed by Kazakhstan at over 20 per cent. New Brunswick, on the other hand, sources from different countries. Of the \$8.75 billion of crude imported by New Brunswick in 2012, 28 per cent comes from Saudi Arabia, 17 per cent from Norway and 15 per cent from Nigeria. Brazil and Azerbaijan follow with seven to eight per cent each. The source regions are different because the sulphur content of the oils differs. New Brunswick refineries are capable of handling higher-sulphur-content oils, called sour crudes, such as oil from Saudi Arabia, while Quebec is set up to process sweet crudes. Overall, OPEC countries account for 55 per cent of Canada's oil imports.

²⁰ Enbridge liquid pipeline website, <http://www.enbridge.com/DeliveringEnergy/OurPipelines.aspx>.

²¹ BP Press Release, "BP Starts up New Crude Unit at Whiting Refinery," July 1, 2013, <http://www.bp.com/en/global/corporate/press/press-releases/bp-starts-up-new-crude-unit-at-whiting-refinery.html>.

FIGURE 13: CANADA'S ENERGY IMPORT PARTNERS (2012)



Source: WITS-UN Trade Database.

Note: Red indicates a country supplying at least one per cent of Canada's exports or imports. Similarly, blue indicates countries that account for less than one per cent. White reflects no trade or missing data. The darker the colour, the greater the share.

Crude imports from abroad are necessary for Eastern refineries, as there is currently no effective way to transport large volumes of crude from the Prairie provinces. TransCanada's Energy East pipeline would, if built, move 1.1 million barrels a day from west to east. While many details remain unsettled, and regulatory approval (at the time of writing) has not yet been granted, this project could reduce Eastern refiners' crude oil imports.

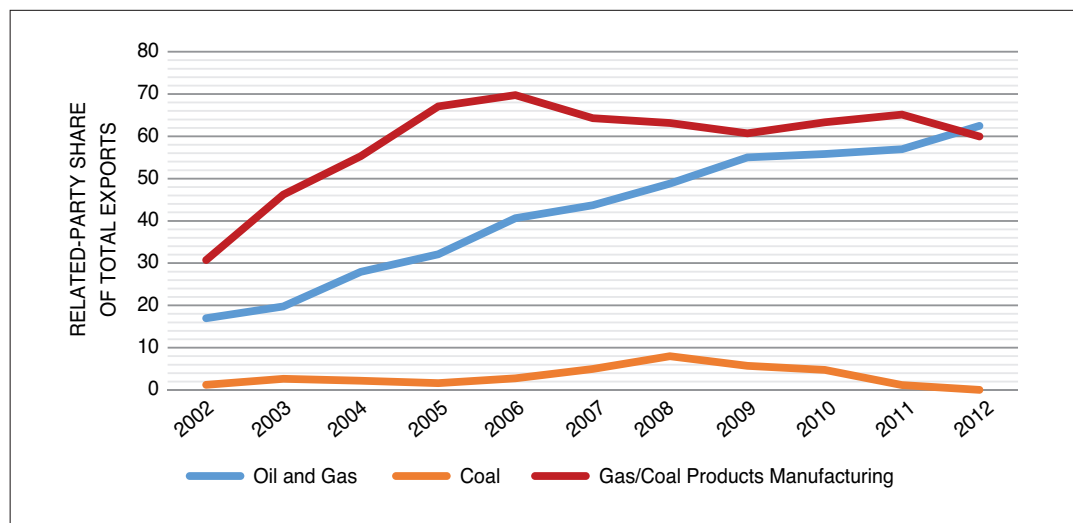
In contrast to crude, refined-product imports are sourced from highly developed economies. Quebec is Canada's largest importer of refined products by far, purchasing \$5.8 billion from abroad in 2012. The major sources for these imports are the Netherlands (34 per cent), the United States (24 per cent), and the United Kingdom (10 per cent). British Columbia is also a large importer of these products, with \$2.7 billion in imports in 2012. The source of B.C. imports is almost exclusively the United States (94 per cent); more specifically, Washington (54 per cent), California (24 per cent) and Texas (nine per cent).

This discussion of trade partners has abstracted from an increasingly important aspect of international trade: A substantial fraction (recently, most) of trade is done by individual firms shipping products between its own operations in one country and its operations in another. For oil in particular, the primary trade partner for a producer exporting from Canada is often a refinery owned by the same firm but operated in the United States.

There are many examples of this type of within-firm trade. Large, vertically integrated oil producers in Canada operate refineries and retail gas stations in the United States. Oilsands crude extracted by Suncor is, in part, shipped to a refinery it owns in Commerce City, Colorado. From there, refined products are sold through Suncor's own network of gasoline stations, marketed under the Phillips 66 brand. The Sunrise Energy project — a joint venture between Husky Energy and BP, soon to be operational — will ship oilsands oil extracted near Fort McMurray, Alberta to a refinery in Toledo, Ohio. Imperial Oil — majority-owned by Exxon Mobil — ships oil from the Kearl oilsands project to Exxon refineries in the U.S. Some companies even own the pipelines connecting their Canadian operations to U.S. refineries. Koch Industries, for example, has large stakes in oilsands operations and ships oil through pipelines it operates (such as the Minnesota Pipe Line Company system) to its Pipe Bend refinery (the largest refinery in Minnesota).

Data from the U.S. Census Bureau on industry-level related-party trade (displayed in Figure 14) illustrates a dramatic change from 2002 to the present. Related-party trade is broader than the examples suggested above, as it includes trade transactions between any two entities where one owns more than 10 per cent of the other.²² Oil and gas exports from Canada to the United States are now mainly between related parties and accounts for just over 60 per cent of exports. In 2002, this share was substantially lower, at less than 20 per cent. Overall, approximately 58 per cent of the total increase in oil and gas exports to the United States was accounted for by increased related-party trade. This fact is important, and not well recognized, as it suggests that multinational firms and foreign investment in Canada are an important source of export growth. Barriers to investment and preventing the entry of foreign firms will inhibit future export growth.

FIGURE 14: WITHIN-FIRM TRADE AS A FRACTION OF THE TOTAL



Source: U.S. Census Bureau, NAICS Related-Party Trade Database, <http://sasweb.ssd.census.gov/relatedparty>. Trade transactions classified according to NAICS industries rather than HS product codes. Oil and gas refers to the oil and gas extraction industry, NAICS 2111. Coal refers to NAICS 2121. Gas/Coal Products Manufacturing refers to NAICS 324.

Cross-border operations such as these suggest there is much more to international trade than simply sales and purchases made by companies on each side of a border. Of course, it is not always optimal for companies to operate an integrated system of extraction, transport and refining. Consider ConocoPhillips, which decided to split its refining and marketing business from its exploration and production business. In 2012, it created two separate and independent companies: Phillips 66 and ConocoPhillips. Even so, foreign direct investment and multinational production are increasingly important; indeed, by the above measure, within-firm trade accounts for the majority of Canada's oil and gas exports. Strong property rights, free and open capital markets, and non-discriminatory rules for foreign investment can promote Canada's energy trade.

²² For the full list of the U.S. Census Bureau trade definitions, see: <http://www.census.gov/foreign-trade/reference/definitions>.

SUMMARY AND POLICY RECOMMENDATIONS

Energy policy matters, and it has global implications. Policy should be carefully crafted, rational, and evidence-based. Policy-makers, however, face a difficult challenge and I do not wish to suggest that enacting energy policy is easy or straightforward. There are many environmental challenges fundamentally linked with energy-sector development. First Nations issues are also intimately tied to Canada's energy sector, as many transport corridors pass through or close to First Nations' lands. Gaining social acceptance for increased energy extraction and trade will require that these issues be effectively addressed. A full analysis of environmental or First Nations issues is beyond the scope of this report. Instead, I will take a few of the lesser-known facts that were covered in this report to suggest where policy-makers should consider directing their attention.

Let me begin with market diversification, which is a priority area for many Canadian policy-makers. Accessing foreign markets can be difficult for Canada's energy exporters. Market diversification requires significant infrastructure investments, many of which are already underway. Unit-rail terminals, LNG export terminals, and pipelines should all be part of the mix. Consider the earlier discussion of the potential for LNG exports to Asia. To increase the number of markets for Canadian energy exports, the B.C. and federal governments are currently committed to completing the necessary export infrastructure. A recent \$36 billion deal with Petronas to construct an LNG terminal in British Columbia, and its associated pipeline infrastructure to feed the facility, is an example of this commitment.²³ If market diversification is a priority, then this should continue.

On the import side, tariffs on energy are low (thankfully), but policy-makers must continually resist protectionist calls. Thomas Friedman, for example, calls for a price floor on all energy imported into the United States to support domestic producers.²⁴ Mr. Friedman obviously is not concerned with American energy consumers (including industry) and does not realize that this would be a complete violation of America's obligations under Chapter 6 of NAFTA. In Canada, consider the recent case of Ontario's protectionist energy policy that provided a large subsidy to wind-electricity producers only if the turbine equipment was locally made. Understandably, other countries were not impressed. Japan, joined by the U.S., EU, Australia, Brazil, China, Mexico, Korea, and others, challenged these wrongheaded and counterproductive policies before the WTO. The WTO panels quickly struck down these provisions and all appeals were dismissed.²⁵ Supporting Canadian energy production — renewable or otherwise — does not require protectionism. The lessons of this example go beyond wind turbines; policy-makers should learn from this and resist any calls to subsidize or protect local energy producers.

As so much of Canada's energy trade is conducted within the boundaries of firms, investment (often foreign investment) policies are potentially the more important aspect of Canada's energy trade. To facilitate trade, we require strong property rights, free and open capital markets, and fair and non-discriminatory rules for foreign investment. Canada has a long way

²³ CBC News, "Harper arrives for APEC summit with Malaysian promise to invest \$36B," October 6, 2013, <http://www.cbc.ca/news/politics/harper-arrives-for-apec-summit-with-malaysian-promise-to-invest-36b-1.1927464>.

²⁴ Thomas Friedman, "A Good Question," *The New York Times*, February 25, 2012.

²⁵ See: WTO Dispute DS412. Documents available online at: http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds412_e.htm.

to go. Canadians' emotional aversion to foreign investment and asset acquisition goes beyond Chinese investment. The blocked takeover of Potash Corporation by BHP Billiton (a large Australian firm) is evidence enough of that. We should not be afraid of foreign firms opening up shop in Canada. The taxes and royalties paid in exchange for the resources extracted, in addition to the direct employment effects, are potentially enormous.

The Investment Canada Act must be reformed to prevent governments from arbitrarily blocking foreign investment. Currently, this act allows the federal government to review and block any investment valued at more than \$344 million. To date, nearly 20,000 investments have been reviewed, with the China National Offshore Oil Corporation takeover of Nexen being a recent (and massive) example.²⁶ This takeover was nearly stopped, and the government has made it clear that state-owned foreign investment will face many hurdles in Canada. The mere threat of government interference alone is sufficient to lower investment and stall resource development. A recent CIBC report notes that foreign investment in Canada's energy sector is down over 90 per cent in 2013 compared to 2012.²⁷ Restrictions on foreign investment are often justified as ensuring that foreign entities play by "Canada's rules." On the face of it, this is fine. But rules for corporate governance, employment practices, environmental stewardship, or whatever else should have nothing to do with the nationality of the owners. These rules can be enacted and enforced on all firms, without the need for an investment review on foreigners.

How can arbitrary rules by Canada's governments be prevented? Fifty-two countries — including Europe and Australia — have signed onto an Energy Charter Treaty. This treaty ensures fair and equitable treatment of investment, regardless of its nationality. There are formal dispute-resolution processes within the treaty as well.²⁸ Given the success of the WTO in promoting trade flows, we should consider joining the ECT. Currently, Canada is an observer nation within the treaty; we should join fully. Clear, enforceable, non-discriminatory rules will become increasingly important as Canada's energy sector grows. Trade depends on investment.

If one should conclude anything from this report, it is the value of detailed information. Energy production and trade is a complex area of Canada's economy. It is often difficult to gather and digest the information necessary to form a rational, evidence-based opinion. Currently, data on trade, production, consumption and other aspects of the energy sector are found within different agencies at different levels of government. Public-policy debate would be improved if important information were consolidated under a single roof. Michal Moore, of the University of Calgary's School of Public Policy, called for the creation of the Canadian Energy Information Organization — along the same lines as the Energy Information Administration in the United States and the International Energy Agency of the OECD — to improve access to relevant energy facts by Canadians.²⁹ Evidenced-based policy evaluation requires high-quality and objective information. Getting energy policy right is important; politicized and emotional rhetoric does not help.

²⁶ For further details, see: Industry Canada website, "Investment Canada Act: 2013, Quarter 2, Table A – Comparative Data Between Last Twelve-month Period and Cumulative Period," <http://www.ic.gc.ca/eic/site/ica-lic.nsf/eng/ik-51320.html>.

²⁷ Carolynne Wheeler, "Prentice warns of shrinking foreign investment in Canadian oil patch," *The Globe and Mail*, October 1, 2013.

²⁸ For further details, see: Energy Charter website, <http://www.encharter.org>.

²⁹ Michal Moore, "A Proposal to Create a Pan-Canadian Energy Information Organization (CEIO)," *The School of Public Policy Research Papers* 5, 11 (March 2012), <http://policyschool.ucalgary.ca/sites/default/files/research/m-moore-pancanadian.pdf>.

About the Author

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