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The U.S.-Canada Energy Relationship and the Growing Role for Asia

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EXECUTIVE SUMMARY

This paper addresses the current state of the U.S.-Canada energy trade relationship and examines the growth and implications of greater Asian energy investment in North America.

Main Findings

The U.S.-Canada trade relationship is critically important to both countries and will remain so for the foreseeable future. The U.S. and Canada are among the top ten global energy producers and their energy trade relationship has grown because of free trade and geography. Both Canada and the U.S. are increasingly reliant on foreign investment to develop their resource sectors, and Asia has been an important source of capital. Asian investors initially focused on project investments as minority joint-venture partners but are showing increasing interest in owning production companies. Asian investors' objectives for investing in the North American energy sector include both attractive financial returns on investment as well as an interest in North America as an energy supply source for their economies. The expanding energy investment and trade between North America and Asia can be mutually beneficial.

Policy Implications

- The U.S. and Canada must continue to support and nurture their energy trade relationship. Failure to support new trade-enabling infrastructure will have an adverse impact on the bilateral relationship.
- Uncertainty created by the delay on the Keystone XL pipeline permit decision is directly responsible for Canada accelerating efforts to export oil-sands oil to Asia. As the U.S. is the exclusive buyer of Canadian oil, the delay has created a sense of vulnerability and concern in Canada.
- Investment in upstream oil and gas projects by Asian companies is becoming more accepted, including the majority ownership of companies.
- North American governments will continue to closely review major acquisitions involving foreign entities that are state companies or closely connected with a foreign government.
- North American government action approving energy exports or infrastructure required to facilitate exports will be critical to the future of the expansion of North American and Asian energy trade.
- North American producers need to help Asian investors understand the challenges and recent advances in environmental and community engagement to minimize miscommunication on the pace of development of energy-extraction projects.

The strength of the Canada-U.S. relationship is demonstrated by impressive bilateral trade of approximately \$1.9 billion a day, along the world's longest undefended border.¹ Energy trade is the largest component of this cross-border commerce. Canada has the third-largest oil reserves, after Saudi Arabia and Venezuela, because of its oil-sands resources. The United States has historically been Canada's only foreign market for natural gas, oil, and hydro power. In 2010, almost 100% of Canada's exports in these commodity classes were destined for the United States.² Canada is the largest foreign supplier of crude oil (25% of oil imports) and natural gas to the United States.³ In short, this energy relationship has enhanced U.S. energy security and provided Canada with security of demand for its energy exports.

Yet, this highly integrated U.S.-Canada energy relationship may change dramatically in the near future. U.S. oil and natural gas production and reserves are expanding because of growing shale oil and gas developments. Furthermore, the U.S. Energy Information Administration (EIA) forecasts slower growth in U.S. oil and natural gas consumption in the coming decades to 2035.⁴ Consequently, the United States no longer appears to be an unlimited market for Canadian energy, leaving Canada seeking new destinations. In addition, imminent policy decisions in the United States, such as whether to approve Keystone XL, may have profound effects on the U.S.-Canada energy relationship for decades and will have a significant impact on energy markets beyond North America.

Energy abundance in Canada and the United States has attracted interest from investors from around the world. Asia, as an energy consumer, is a leader in seeking opportunities to invest in growing North American production. For example, C\$15 billion in Chinese capital was invested in the Canadian province of Alberta in 2010 alone.⁵ The dynamics of the North

¹ Data is from the Government of Canada, Canadian Embassy in Washington, D.C., available at <http://www.canadainternational.gc.ca/washington>.

² Asia Pacific Foundation of Canada, "Securing Canada's Energy Future," June 2012.

³ "U.S. Imports by Country of Origin," U.S. Energy Information Administration, http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_ep00_im0_mbb1_a.htm; "U.S. Natural Gas Imports by Country," U.S. Energy Information Administration, http://www.eia.gov/dnav/ng/ng_move_imp_c_s1_m.htm

⁴ U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2012* (Washington, D.C., June 2012).

⁵ Ron Liepert, "Keynote Speech" (delivered at the Canada-Asia Energy Cooperation Conference and the 7th Canada-China Energy and Environment Forum, Calgary, September 8, 2011).

American energy market are growing in complexity and Asian interest is adding another dimension to the policy and market dynamics.

The first section of this paper provides background on the U.S.-Canada energy trade relationship. The second section explores the benefits of an integrated North American energy market. The third section reviews the expanding role of Asian investment in the North American sector and identifies challenges to future investment. To provide a long-term view of the future, the fourth section briefly examines arctic resources and methane hydrates.

Expanding North America–Asia energy trade offers benefits to Canada, the United States, and Asian countries. Successful management of policy challenges can ensure that:

- energy trade between Canada and the United States continues as an open market and is supported by mutually beneficial policies
- expanding energy production from North America adds to supply diversity and energy security for Asia

In addition, the successful energy trade relationship between Canada and the United States is an example that may be applied to regional energy market development in Asia, particularly electric power transmission and natural gas pipelines.

The U.S.-Canada Trade Relationship

The United States and Canada have one of the greatest international relationships in history; they essentially have one economy, with the largest energy trading relationship in the world. Two hundred years after the only war that found Canada and the United States on opposite sides, it is hard to think of two countries that rely more on one another and where the relationship is more strongly cemented with extensively linked economic connections.

Today, the United States is the number-one destination for goods and services from Canada, and Canada is the leading export market for the United States. In 2011, U.S.-Canada trade totaled over \$680 billion, with U.S. exports totaling \$337 billion and U.S. imports totaling \$343 billion. Moreover, a study in 2012 estimated that 4.5% of U.S. jobs are dependent on trade with Canada, illustrating the huge importance to the United States of this trade relationship. This

represents 7.88 million jobs, including jobs in every state. The study further estimated that trade with Canada has a net positive effect on U.S. GDP of 5.8%.⁶

Putting this into the context of the energy partnership, Canada is a net energy exporter, with virtually all of its energy exports marketed to the United States in the form of oil, natural gas, and electricity. Symbiotically, the United States depends on Canada for its energy supply. In 2011, the value of Canada's energy exports to the United States totaled \$120 billion, including:

- 2.7 million barrels per day of crude oil and refined products
- 90% of U.S. natural gas imports (representing 13% of U.S. consumption)
- 20% of uranium used in U.S. nuclear power plants⁷

Yet both the United States and Canada are leading global energy producers.⁸ The United States has the thirteenth-largest oil reserves in the world, but that fact undervalues the impact of growing shale oil and gas production. The United States is the world's largest natural gas producer, third-largest oil producer, and second-largest coal producer. Because of growing unconventional oil production, the International Energy Agency forecasts that the United States will overtake Saudi Arabia in oil production by 2020. This is a remarkable change given that oil production declined every year from 1985 to 2008. Likewise, natural gas production has experienced impressive growth. As recently as 2007, the EIA forecasted that by 2030 the country would import 20% of its natural gas needs through liquefied natural gas (LNG).⁹ Barely five years later, in 2012, the EIA projected that the United States would be a net gas exporter by 2022.¹⁰ Unconventional oil and gas has created a new paradigm of U.S. energy abundance.

Canada is the world's sixth-largest oil producer and controls the third-largest oil reserves, with proven reserves of 175 billion barrels. The country is also expected to be one of the largest

⁶ Peter B. Dixon, Kevin Hanslow, and Maureen T. Rimmer, "The Dependence of U.S. Employment on Canada," Center of Policy Studies, Monash University, July 27, 2012.

⁷ Data is from the Government of Canada, Canadian Embassy in Washington D.C, available at <http://www.canadainternational.gc.ca/washington>.

⁸ It should be noted that the United States exported \$18 billion in energy to Canada in 2011. This included almost 3 billion cubic feet of natural gas per day.

⁹ U.S. Energy Information Administration, *Annual Energy Outlook 2007* (Washington, D.C., February 2007).

¹⁰ U.S. Energy Information Administration, *Annual Energy Outlook 2012* (Washington, D.C., June 2012).

sources of growth in global liquid fuel supply. The EIA projects that Canada's production will grow by an annual average of approximately 200 thousand barrels per day through 2013 and that by 2035 oil production could grow to 6.6 million barrels per day. Canada is also a leading natural gas producer, ranking third in dry gas production and fourth in gas exports. As of 2012, all of Canada's gas exports flowed via pipeline to the U.S. market.¹¹ Canada is also a net exporter of electricity, with the United States being the market for excess capacity.¹²

The Advantages of a North American Trade Relationship

The U.S.-Canada trade relationship has evolved over decades to become the integrated market it is today. The two countries first established a free trade agreement (FTA) in 1989. In 1994, Canada, the United States, and Mexico entered the North American Free Trade Agreement (NAFTA), which eliminated many barriers to the import and export of energy between these countries. Today, the U.S.-Canada energy market is largely connected and functions as an integrated whole, particularly regarding natural gas.

Two key developments stand out in this relationship: the fast-growing natural gas supply to the United States in the 1990s and the full booking of oil-sands reserves in 2003. From 1990 through 2002, Canadian gas exports grew every year, with a total growth of 146% over 12 years.¹³ This supply was essential to meeting U.S. gas demand.

The booking of Canada's oil-sands reserves dramatically impacted the world's view of oil supply.¹⁴ While knowledge of the oil-sands resources existed, the resources could not be officially carried as reserves until criteria were met proving that they could be technically and economically extracted. In 2003, after years of research and small-scale production, oil-sands resources met these criteria. This recognition and order-of-magnitude change vaulted Canada from a small producer to a global leader in oil reserves and ultimately production. Oil-sands

¹¹ As of the writing of this paper, several companies are actively developing Canadian resources and planning to export gas by way of LNG terminals on the coast of British Columbia.

¹² U.S. Energy Information Administration, Canada Summary, September 2012, available at <http://www.eia.gov>.

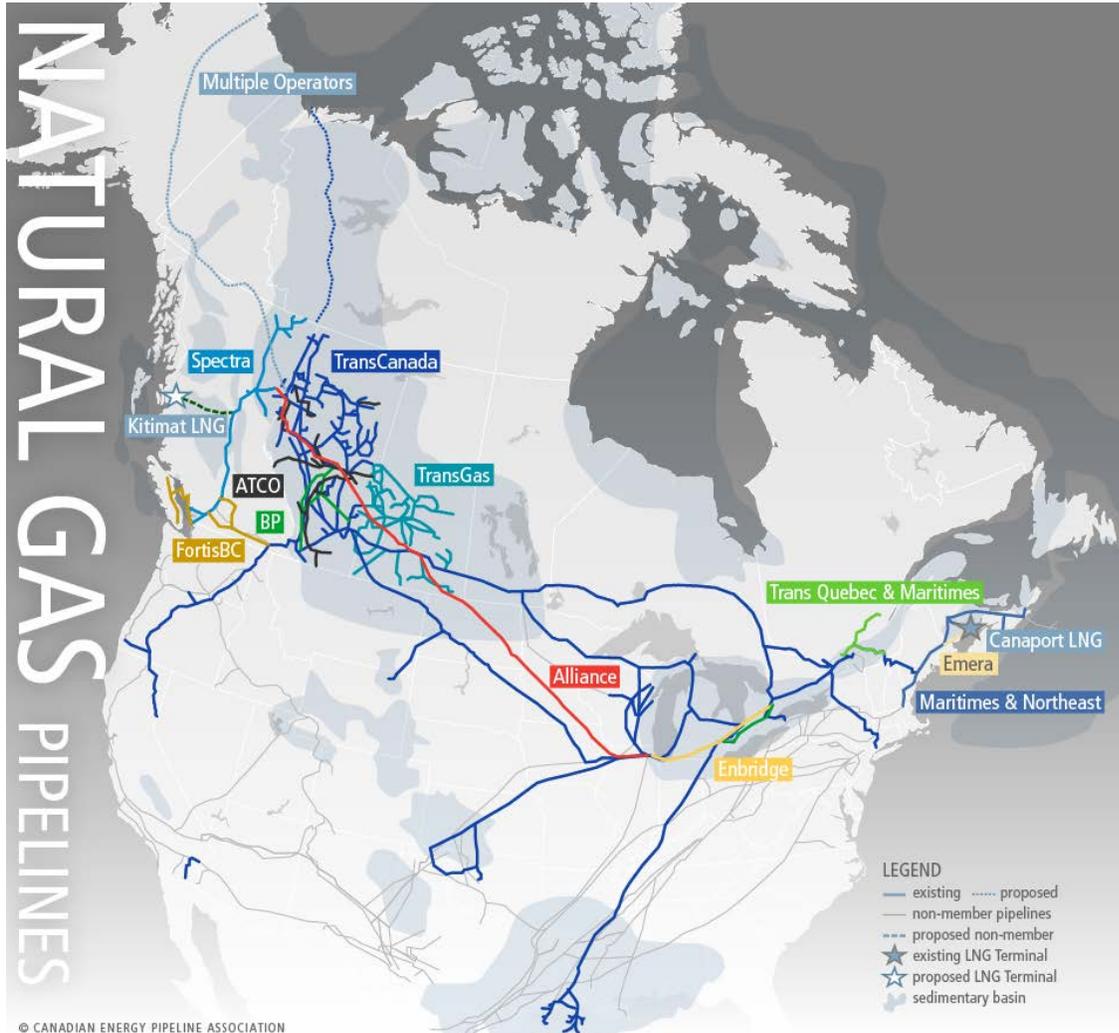
¹³ Data is from the U.S. Energy Information Administration.

¹⁴ "Booking" refers to when a resource can be officially carried as an asset (reserve), meeting specific criteria regarding the technical and economic recovery.

development is attributable to a joint commitment by government and industry over more than a decade. This began with the government's commitment for a long-term research program to develop the technology to economically produce oil-sands oil. Industry and government have further worked jointly to address the many environmental challenges of oil-sands development. This resource can now be produced with an environmental impact similar to the development of other heavy oil resources. Oil-sands development is an excellent example of industry and government collaboration to solve challenging technical challenges.

The effects of the U.S.-Canada relationship have been incredibly beneficial for both countries and key stakeholders that rely on the energy both countries produce. Although Canada is a net gas exporter, the integrated North American market facilitates the efficient transportation of gas to markets in both Canada and the United States. Pipelines in western Canada carry excess production to markets in the United States and pipelines in the eastern United States provide incremental supply to eastern Canadian markets. The two countries are both importers and exporters of natural gas to the benefit of their consumers. This interdependence in the natural gas market is illustrated with a map of the primary natural gas pipeline network between the two countries (see **Figure 1**).

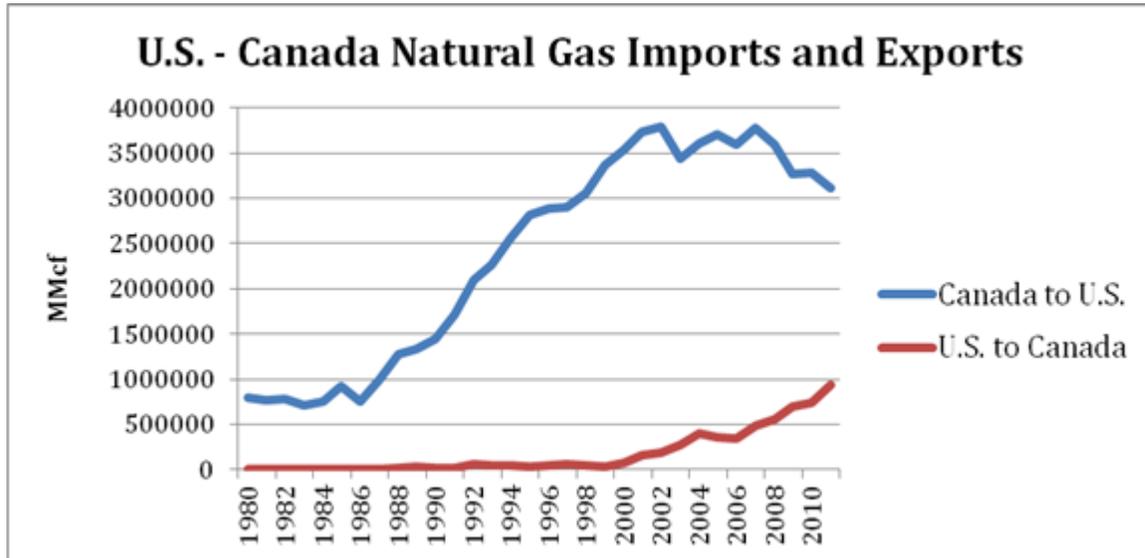
Figure 1 The primary natural gas pipeline network between the United States and Canada



Source: Canadian Energy Pipeline Association.

For the United States, Canada has been a secure, dependable gas supply source. Growing imports of natural gas have been essential to meeting U.S. natural gas demand. During the 1990s, U.S. gas supply was not able to keep up with demand. Canadian gas exports to the United States were essential for meeting supply needs and preventing U.S. gas prices from increasing significantly. **Figure 2** illustrates the importance to the United States of growing imports of natural gas during the 1990s.

Figure 2 *U.S.-Canada natural gas imports and exports*



Source: U.S. Energy Information Administration.

Electricity markets are another example of effective market integration. Not only does Canada supply the United States with hydroelectric power, but electric grids in some areas are also fully linked through Region Transmission Organizations (RTO). RTOs are multi-state/province transmission organizations to ensure the integrity and operation of the power grid. The purpose of an RTO is to manage the flow of electricity and ensure generation is adequate to meet demand as well as regulate the voltage to ensure the system has integrity. In North America, there are ten RTOs. The integration of the RTO system between the United States and Canada demonstrates the interconnectedness of the North American electricity market.

Yet while the overall relationship has been of great benefit, the integrated market can also result in short-term impacts. In 2003, a major U.S. electrical outage centered in Northern Ohio resulted in a power outage in a large portion of eastern North America, including Canada. In 2005, natural gas production disruptions in the Gulf of Mexico, as a result of Hurricanes Katrina and Rita, resulted in higher gas prices during the following winter for North America. These short-term impacts are minor when compared to long-term trade and economic benefits, but it is important to note both the positive and the negative consequences of integration.

Challenges to U.S.-Canada Energy Integration

Despite the positive history of cross-border trade, Canada-U.S. energy integration is facing some powerful challenges, due to infrastructure, political, and market factors.

Oil Pipeline Infrastructure

As mentioned above, the United States and Canada are connected by a network of pipeline infrastructure. Currently, the capacity of pipelines carrying oil out of western Canada stands at about 3.5 million barrels per day.¹⁵ Yet this existing system is increasingly overwhelmed by booming oil and gas production in both Canada and the United States. This backlog has affected oil prices for Western Canadian Select, which in early 2013 has been trading at as much as \$40 or more below West Texas Intermediate.¹⁶ In Canada, concern about the discount has heightened resolve among industry and some politicians to expand pipeline capacity, not just to the United States but also to Asia. Enbridge Inc. is currently seeking regulatory approval for its Northern Gateway pipeline, which would carry 525,000 barrels per day to the coast of British Columbia for export to Asia.¹⁷ In addition, Kinder Morgan is seeking to expand its Trans Mountain pipeline system, which would ultimately carry 890,000 barrels per day.¹⁸ While generally stating that relations with the United States will remain a priority, both federal and provincial governments have also been expanding trade promotion mechanisms in Asia, especially around energy. For example, Alberta's Ministry of International and Intergovernmental Relations will announce a new international strategy next month, which will include plans to open trade offices in India and Singapore.¹⁹ While the United States will always remain a substantial market for Canada, the "market diversification mindset" has become increasingly strong in Canada.

¹⁵ Dinara Millington and Jon Rozhon, *Pacific Access: Part 1—Linking Oil Sands Supply to New and Existing Markets* (Calgary: Canadian Energy Research Institute, 2012).

¹⁶ "Canada Crude-Heavy Spread Shrinks to Smallest in 5 Months," Reuters, March 21, 2013, <http://www.reuters.com/article/2013/03/21/markets-cancrude-idUSL1N0CDFTF20130321>.

¹⁷ "Project at a Glance," Enbridge Northern Gateway Pipeline, <http://www.northerngateway.ca/project-details/project-at-a-glance>.

¹⁸ "Trans Mountain Pipeline Expansion Project," Kinder Morgan Canada, http://www.kindermorgan.com/business/canada/tmx_expansion.cfm.

¹⁹ Karen Kleiss, "Alberta to Open New Offices in India, Singapore," *Edmonton Journal*, March 13, 2013, <http://www.edmontonjournal.com/Alberta+open+offices+India+Singapore/8092715/story.html>.

Solutions to the U.S.-Canada pipeline backlog will not come easily. Canadian oil producers are increasingly exporting oil to the United States by rail. Enbridge Inc. will spend \$400 million to increase its mainline by approximately 230,000 barrels per day when the extension is completed in 2015.²⁰ However, the most ambitious project to expand capacity—TransCanada’s Keystone XL, which would transport 800,000 barrels of crude a day to the United States—has faced opposition from politicians and environmental groups on both sides of the border. The challenges of pipeline permitting will be discussed in greater detail below.

U.S. Demand for Oil and Gas

Perhaps the strongest factor affecting the future of Canada-U.S. energy relations is the United States’ increased domestic oil and gas production and limited growth in consumption over current levels. This does not mean that the United States will not import energy in the coming decades. The U.S. EIA predicts that U.S. net imports of natural gas from Canada will decline between now and 2035 but not fall below one trillion cubic feet per year.²¹ Some of the refineries on the Gulf Coast that are equipped for heavy oil will also continue to seek oil sands crude. However, these facts do raise the possibility that the United States will not be as reliable a buyer of Canadian energy products as in the past. This shift in energy projections has contributed to the Canadian drive to diversify markets.

Asian Investment in North America

North America offers an appealing new source of energy supply for Asia, particularly with respect to natural gas. The North American resource base is very large, and the supply source adds geographic diversity to Asian and Middle Eastern supplies. In addition, gas from the continental United States is priced at Henry Hub, an independent gas-market pricing mechanism that is not linked to the price of oil. Over the past several years, the Henry Hub gas price has been significantly below the price of oil when compared on a BTU (energy content) basis,

²⁰ “Calgary-based Enbridge to Spend \$400 Million on Expanding Pipeline Capacity to U.S.,” *Vancouver Sun*, January 4, 2013, <http://www.vancouversun.com/business/resources/Enbridge+spend+400M+expanding+capacity+Alberta/7775901/story.html>.

²¹ U.S. EIA, *Annual Energy Outlook 2012*.

resulting in a potential advantage for purchasers of Henry Hub supplies provided that the price differential is greater than the cost of shipping to alternative markets. Future natural gas exports from the east, west, or gulf coasts of North America would see pricing linked to Henry Hub, though natural gas exports from the west coast of Canada and Alaska would not necessarily be linked to this system.²²

Beyond an interest in purchasing these supplies, there are other reasons that Asian companies and investors see value in investing in oil and gas production in North America. Direct investment functions as a physical hedge on future price increases. If natural gas prices increase so does the value of the investment. This is, of course, in addition to investments in oil and gas development being attractive because of financial returns. Asian investors and companies also seek corporate knowledge, expertise, and capacity for future investments in unconventional development either in North America or elsewhere, since shale oil and gas resources have been identified on most continents. It is estimated that China contains some of the largest potential shale gas resources in the world.

Over the past few years, Asia has made significant investments in oil and natural gas assets in North America. Since 2007, there have been 131 investments greater than \$1 billion—100 in the United States and 31 in Canada—including acquisitions and joint ventures from buyers domestically and around the world.²³ **Table 1** shows the fifteen primary investment transactions involving an Asian investor or buyer (note that all of the activity in unconventional oil and gas occurred in 2010 or after). This review of large transactions shows that every investment is either a joint venture, where the Asian investor purchases a minority interest in a specific project, or an outright acquisition of assets or a company. In the United States, Asian investments have primarily been through joint ventures, whereas in Canada there have been several acquisitions. Anecdotally, this would indicate it is easier, or there is a perception that it is easier, to acquire companies in Canada. This divergence, as well as the impact of changes to Canada's foreign investment review procedures in December 2012 on oil sands development, merits further exploration.

²² In fact, the cost of additional infrastructure, such as long pipelines to bring the gas to tidewater in the west, may require oil-linked price contracts to manage the higher risk of the additional infrastructure cost.

²³ In addition, it is important to understand that there are a very large number of transactions below the level reviewed for this paper.

Table 1 Selected recent transactions greater than \$1 billion**Asian Investments in Canada**

Buyer	Seller	Value (\$m)	Type*	Date
PetroChina	EnCana Corp	\$2,180	JV 49.9% project, Duvernay shale	Dec 2012
CNOOC Ltd	Nexen Inc	\$15,100	Acquisition	Jul 2012
Mitsubishi Corp.	EnCana Corp	\$2,900	JV 40% project, Montney	Feb 2012
Sinopec	Daylight Energy	\$2,200	Acquisition, oil and gas production	Oct 2011
CNOOC Ltd.	Opti Canada Inc.	\$2,100	Acquisition, oil-sands production	Jul 2011
Sinopec	Conoco Phillips	\$4,650	Syncrude interest	May 2010
Korea Nat Oil Corp	Harvest Energy	\$4,100	Acquisition	Jan 2010

Asian Investments in the United States

Buyer	Seller	Value	Type	Date
Sinochem	Pioneer Natural Resources	\$1,700	JV 40% project, Wolfcamp	Jan 2013
Sumitomo Corp	Devon Energy	\$1,400	JV 30% project, Wolfcamp	Oct 2012
Sinopec	Devon Energy	\$2,200	JV 33% project, multiple shales	Jan 2012
Korea Nat Oil Corp	Anadarko Petrol	\$1,550	JV 33% project, Eagle Ford	Mar 2011
CNOOC Ltd	Chesapeake Energy	\$2,160	JV 33% project, Eagle Ford	Oct 2010
Mitsui & Co	Anadarko	\$1,400	JV 32.5% project, Marcellus	Feb 2010
Korea Nat Oil Corp	Taylor Energy	\$1,100	Acquisition, Gulf of Mexico properties	Feb 2008
Mitsubishi Corp	Anadarko Petrol	\$1,200	11.6% interest, Gulf of Mexico K2 properties	Aug 2008

Source: Hart Energy, available at <http://www.hartenergy.com>.

Note: JV means Joint Venture, typically a minority interest in a specific project.

Challenges to Expanding Trade

Both Canada and the United States are committed to expanding trade with Asia. After a review involving significant stakeholder feedback, Canada requested to join the Trans-Pacific Partnership (TPP) trade talks. In July 2012, the U.S. Trade Representative notified Congress that the United States intended to include Canada in negotiations toward a TPP agreement. In late 2012, Canada and Mexico officially were accepted into the partnership and began participating in negotiations. The TPP is hoped to be a next-generation trade agreement for expanding Asia-Pacific commerce.²⁴

North America has resources, technical capability, financial capital, local markets, and potential for excess long-term energy supply. Asian economies have financial capital, energy demand, and an interest in diversifying supply. Finding opportunities to collaborate on investment projects is mutually beneficial. However, there are several challenges that have the potential to moderate the pace of resource development and trade. These challenges are primarily public policy debates on the path forward in both Canada and the United States, focusing on issues such as infrastructure permitting and construction, export policy, acceptance of foreign direct investment and asset ownership, and environmental concerns.

First, the process of obtaining a permit for infrastructure, such as pipelines, is relatively long in both the United States and Canada. In the United States, a new interstate pipeline takes years of planning and environmental analysis to meet permit requirements. Pipelines crossing the U.S. border require an additional permit, referred to as a presidential permit, which is granted by the U.S. State Department. In the past, this additional step was seen as a ministerial process and easily obtained, particularly after the passage of the NAFTA in 1994. Recently, however, pipeline permits have received greater scrutiny and have been subject to aggressive opposition by groups seeking to slow fossil energy production. The most often-cited example is the Keystone XL pipeline, which would expand the capacity to bring oil from the Alberta oil sands to the U.S. market. While Keystone XL has received significant media attention, other pipeline projects across the United States have also faced local opposition.

²⁴ On March 15, Japanese prime minister Shinzo Abe announced Japan's bid to join the TPP talks. Pending approval by TPP countries, Japan's participation would greatly increase the potential trade benefits of the pact, which is now under negotiation by Australia, Brunei, Canada, Chile, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam, and the United States.

In Canada, significant pipeline capacity is required to ship both oil and natural gas from production areas to tidewater for transport to Asia. While overall timelines for National Energy Board reviews of cross-border pipelines have been restricted to fifteen months,²⁵ proposed oil pipeline projects, such as the Enbridge Northern Gateway pipeline and Kinder Morgan's expansion of the Trans Mountain system, have received careful scrutiny from the public. Environmental risks, First Nations consultation, and inter-provincial politics will have an impact on whether these projects move forward. There is also substantial opposition to the increased tanker traffic around Kitimat and the Port of Vancouver that will be necessary to export oil to Asia. Still, pipelines are an essential component of the energy value chain and are necessary for the expansion of the energy trade, whether within North America or with Asia.

Second, in the United States, there is an active public policy debate on energy exports. Many countries around the world debate whether to export resources or use them in the local economy. Historically, the United States has implemented a free market policy. Following several decades of importing crude oil and internal concerns over energy security, however, some in the U.S. government are voicing concerns about exporting energy. Additionally, some industrial energy-consuming companies are aggravating these concerns and advocating restrictions on energy exports. The chemical and industrial gas users who wish to limit exports fear that exports will raise the cost of North American gas and reduce the competitive advantage that inexpensive gas provides. However, limiting export approvals means that the government will be choosing winners or losers, rather than allowing the market to determine which projects have merit.

The current U.S. debate is focused on natural gas exports. There are currently sixteen applications to export LNG pending with the U.S. Department of Energy.²⁶ The department has already approved exports to FTA countries; the current debate involves exports to non-FTA countries. Based on U.S. law, natural gas exports to countries that have an FTA with the United States are considered in the public interest. For countries without an FTA, the application

²⁵ For recent changes to the Canadian Environmental Assessment Act, see "FAQ on the Jobs, Growth and Long-term Prosperity Act," National Energy Board, <http://www.neb-one.gc.ca/clf-nsi/rpblctn/ctsndrgltn/ct/jbsgrwthprspty/jbgrwthprsptyfq-eng.html>.

²⁶ The U.S. natural gas export system has two tiers of export countries: free trade-approved and non-FTA (see **Appendix A** on U.S. oil and gas exports).

includes a more detailed process in which the government must determine that the application is in the public interest. While a consensus appears to be emerging that some level of natural gas exports are positive for the U.S. economy, the key issue is whether the market or the government is most effective at determining the level of exports. How the natural gas export issue is resolved will be critical to determining the level of investment not just in export terminals but also in the long-term development of natural gas resources. Historically, markets have been the most effective method of developing new energy supplies and meeting demand. When the U.S. government has constrained demand through limiting natural gas uses, such as through the Fuel Use Act of 1978, the result has been shortages, not surplus and lower prices. Government action to limit trade will have the same result.

Third, public and government acceptance of foreign capital and investment in U.S. and Canadian markets remains a noteworthy challenge for expanding North America–Asia trade. Investment by international partners has become a critical component of unconventional oil and gas development in North America. Initially, international companies invested as minority owners in key North American projects and companies. As developments have progressed, foreign owners have increased their interest and, in some cases, have become majority owners and operators. Both the United States and Canada have processes for government review of foreign ownership of companies. In the United States, the Committee for Foreign Investment in the United States (CFIUS) governs the process; in Canada, it is the Investment Canada Act. Yet foreign ownership has been particularly contentious when Asian investors have been involved. The most notable case in the United States was the proposed acquisition of Unocal by China National Offshore Oil Corporation (CNOOC) in 2005. While technically not reviewed under the CFIUS process, the uncertainty created by congressional and public concerns over the Chinese company’s investment caused Unocal to accept a lower-priced competing offer from Chevron.

More recently, Asian companies have focused on investments conveying a minority interest in the company or project. In Canada, CNOOC’s recent acquisition of Nexen Corp, a significant oil-sands producer, received national scrutiny when proposed but was ultimately approved in December 2012.²⁷ However, future Canadian oil sands company acquisitions will receive increased scrutiny, if the acquiring company is considered a state-owned enterprise

²⁷ Because Nexen held assets in the United States, U.S. approval was also required and the CFIUS process was successfully completed in February 2013.

(SOE). On the day Canada approved the Nexen-CNOOC deal, a new policy statement was released announcing that a non-Canadian SOE would only be able to acquire a majority interest in an oil sands company on an “exceptional basis,” demonstrating that the acquisition is in the Canadian interest.²⁸

A final and lesser challenge to investment is the perception that environmental or regulatory impediments will reduce or slow unconventional oil and gas developments in North America. Indeed, some NGOs are actively attempting to slow unconventional resource development for a variety of reasons and the U.S. federal government moves very slowly in opening land for development. However, at present these issues are not a key factor in the pace of unconventional development, with the exception of federal lands and the state of New York. Market forces generally govern the pace of development, and it is the currently low natural gas prices that are moderating development. Access to federal lands could be a long-term supply issue because of the amount of resources held by the U.S. government.

In North America, all NGO, government, and industry discussions and differences are played out publicly; for those not used to the active public discourse, it may appear that there is a greater impediment to production than there is in reality. Some Asian investors have indicated concern that environmental issues and opposition to new projects will slow development of shale oil and gas resources. With this in mind, it may be important for North American producers to help Asian investors understand the advances and progress in environmental and community engagement to minimize any miscommunication on the pace of development. In addition, producers must maintain their effective record of achievement in environmental stewardship to ensure that a loss of public confidence does not restrict or slow operations.

Future Resources: The Resource Base Will Grow

As we consider the current energy picture, envisioning possible future energy supplies is useful. Innovation that could completely alter the energy picture will come; we just do not know when or how. The next disruptive technology may be beyond fossil energy, but if the past is an indication, it will not be because of a shortage of fossil fuels. When we consider policy decisions

²⁸ Industry Canada, “Statement Regarding Investment by Foreign State-Owned Enterprises,” December 7, 2012, <http://www.ic.gc.ca/eic/site/ica-lic.nsf/eng/lk81147.html>.

such as energy exports, realizing the world's abundance is important. Technology and markets will evolve and resources that fifteen years ago could not be economically produced, like oil sands or shale gas, become reserves. Instead of fearing resource constraints, as some do, these future resources provide optimism for our energy future. Long-term, sustained research is far more important than constrained energy use in ensuring energy supplies. Arctic energy and methane hydrates are two examples of future energy wealth.

Arctic Energy

The Arctic region is one of the world's least-explored areas for oil and natural gas. In the mid-2000s, when North American gas prices were increasing and concerns were growing over sufficient supply for the United States, there was interest by industry and government in supporting a pipeline from Alaska's north slope to the continental U.S. market. While the pipeline project was being considered, industry invested in LNG import capacity, which—among other issues such as escalating cost—slowed consideration of the pipeline project. The advent of shale gas production growth subsequently displaced the need for LNG imports. This has left discovered Arctic natural gas resources without a market.

The U.S. Geological Survey estimates that the Arctic may contain 90 billion barrels of yet-undiscovered oil and 1,670 trillion cubic feet of gas.²⁹ Significant gas and oil resources have already been discovered in Alaska and Canada, but the infrastructure is not in place to bring these supplies to market. The cost of transporting natural gas from Arctic locations to tidewater is significant and may not be cost-effective. However, the resource has been discovered and is available. For the foreseeable future, natural gas from shale will be far more cost-effective for U.S. domestic supply. Therefore, this gas is more likely to be a source of supply for Asia than for North America. This would still require considerable infrastructure, including an 800-mile pipeline and liquefaction facilities.

²⁹ Donald L. Gautier et al., "Assessment of Undiscovered Oil and Gas in the Arctic," *Science* 324, no. 5931 (2009): 1175–79, <http://www.sciencemag.org/content/324/5931/1175.abstract>.

Methane Hydrates

Methane hydrates—natural gas and water combined to form a solid substance under very specific temperature and pressure conditions—exist in the Arctic and in subsea environments. What makes methane hydrates of interest from an energy perspective is that there are more hydrocarbons contained in hydrates than in all other sources (coal, oil, and gas) combined. Methane hydrates exist in the Arctic and offshore along almost every coast. Effective technology to produce hydrates would transform the energy world as we know it. Countries with no current natural gas resources might find that they can meet a significant portion of their energy demand. Expanding the use of gas derived from methane hydrates might further reduce carbon dioxide emissions. Depending on technology, the huge new volumes of gas could provide energy for generations.

The United States and Canada have collaborated on methane hydrate research over the past decade, primarily by sharing information. In addition, Japan and South Korea have both conducted their own methane hydrate research programs. Japan has actively participated in U.S. research as a funding partner and is now conducting tests off the shore of Japan.³⁰ While successful methane hydrate production is not likely for many years (it is perhaps decades away), it is important to appreciate that the earth contains wealth that we have yet to understand. Just as shale gas was not economically or technically producible ten or fifteen years ago, methane hydrates are technically and economically infeasible to produce today. Technology will change that at some point in time.

Conclusion

The energy trade relationship between the United States and Canada will remain critical to both countries regardless of growing North American shale oil and gas production. Both countries must make policy decisions and actively manage the relationship to benefit long-term interests in energy security and economic growth. Past successes must not lead to taking the energy trade relationship for granted. Short-term political gains or posturing must not substitute for thoughtful science- and law-based decision-making. The two countries should facilitate trade

³⁰Japan Oil, Gas and Metals National Corporation (JOGMEC) announced on March 12, 2013, that it had successfully extracted gas from offshore deposits of methane hydrate.

through effective permitting of infrastructure projects, such as pipelines and electric transmission systems. The U.S.-Canada energy market will become more complex, and the government policy relationship must remain active to understand the evolving market.

The lesson for Asia as it considers expanded energy trade with North America is that free trade is mutually beneficial. The U.S.-Canada relationship can be used as an example for regional Asian markets where natural gas pipelines and power grids would benefit both producers and consumers. Relying on markets to facilitate infrastructure investment, rather than government planning, is the critical component. The benefit is expanded private investment. Effective markets communicate with price signals; rising prices result in investment and new technology development. North America provides a clear example that markets lead to technology development, which results in abundant energy supplies and effective delivery systems.

Expanding energy trade will benefit North America and Asia. Resource development in North America will continue to require capital and expertise. Unconventional resources exist not only in North America but also around the world, including in Asia. These resources will take decades to develop and will progress incrementally as infrastructure and capacity grow. Allowing markets to function is the best way to efficiently produce energy and deliver it to consumer markets. This applies both to governing investments in energy and to how energy is used, including exports of oil and natural gas. Governments should be cautious in making decisions that disrupt a functioning market.

Appendix A: Note on U.S. Natural Gas and Oil Exports

In order to export natural gas, U.S. exporters must obtain authorization from the U.S. Department of Energy (DOE). For exports to countries with which the United States has an FTA, the authorization is by statute considered to be in the “public interest” and is granted once all the steps in the regulatory process have been completed. For exports to countries with which the United States does not have an FTA, a more detailed process is required that includes a review of whether the export is in the public interest. The DOE has studied the impact of natural gas exports on U.S. natural gas markets and released a study showing that gas exports are beneficial to the U.S. economy. The current administration has not announced plans for approving applications for natural gas exports, and the Congress is currently conducting its own review of natural gas exports.

Crude oil exports are under the oversight of the U.S. Department of Commerce. With the exception of trade with Canada, the United States does not export crude oil. It does, however, export refined product and is a significant global supplier. The U.S. refinery capacity is currently designed to process heavy crudes. Growing production from shale oil reservoirs such as the Bakken shale in North Dakota is lighter and sweeter. Given the current refinery base in the United States, it is likely to be technically and economically advantageous for the United States to continue to import and process heavy, sour crude and export lighter, high-value crudes from new production. This will require revising the crude oil export authorization system, which was developed from the standpoint of oil scarcity and declining production.