Abstract

This paper is part of the ongoing research and development for the Asia Pacific Gateway and Corridor Initiative. To date, the initiative has tended to focus on the containerized freight sector. However, the subject of gateways and corridors as exits for western Canadian commodity exports is of critical importance. As global demand for Canada’s natural resources grows, resource exports will continue to be one of the cornerstones of our economic future. Of particular interest is the strategic development of oil and gas pipelines to the west coast to access Asia Pacific markets with rapid demand growth for energy resources.

The paper provides a profile of exports through the Pacific Gateway as well as emerging trends and requirements of shippers/exporters. It explores issues relative to the efficiency and effectiveness of the corridors and gateways serving the export sector, and what will be needed to ensure our future competitiveness in world markets. The focus is on surface corridors, including pipelines and the need to develop alternative delivery systems to diversify export market opportunities beyond North America.
A Changing Global Order

A decade ago rich countries dominated the world economy, contributing about two-thirds of global output. Since then, that share has fallen to about half and could decline to 40% within the next ten years or so when the majority of output will be produced in the emerging world. By 2020, China is expected to replace the United States as the world’s largest economy and India could move up to third from its fourth place position in 2005.

As shown in Exhibit 1, OECD countries, the Euro Area and the United States are expected to return to modest growth rates ranging from about 1-3% a year by 2012. In contrast, growth in East Asia is forecast at about 9% in 2010, followed by nearly 8% a year in 2011 and 2012. China and India are poised for robust growth. Although China’s economy is four times bigger than India’s, India’s economy may grow faster than China’s by 2013. And that trend may well continue for years because India has a relatively younger and growing workforce and a thriving, innovative private sector that is less dependent on state patronage.

Exhibit 1: Global Economic Growth Outlook
(% change from previous year)

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009est</th>
<th>2010f</th>
<th>2011f</th>
<th>2012f</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Trade Volume</td>
<td>3.2</td>
<td>-11.6</td>
<td>11.2</td>
<td>6.8</td>
<td>7.2</td>
</tr>
<tr>
<td>Real GDP Growth:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OECD Countries</td>
<td>0.3</td>
<td>-3.4</td>
<td>2.2</td>
<td>2.3</td>
<td>2.6</td>
</tr>
<tr>
<td>Euro Area</td>
<td>0.4</td>
<td>-4.1</td>
<td>0.7</td>
<td>1.3</td>
<td>1.8</td>
</tr>
<tr>
<td>United States</td>
<td>0.4</td>
<td>-2.4</td>
<td>3.3</td>
<td>2.9</td>
<td>3.0</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>8.5</td>
<td>7.1</td>
<td>8.7</td>
<td>7.8</td>
<td>7.7</td>
</tr>
<tr>
<td>China</td>
<td>9.6</td>
<td>8.7</td>
<td>9.5</td>
<td>8.5</td>
<td>8.2</td>
</tr>
<tr>
<td>India</td>
<td>5.1</td>
<td>7.7</td>
<td>8.2</td>
<td>8.7</td>
<td>8.2</td>
</tr>
</tbody>
</table>

Source: World Bank, GDP is aggregate growth rate in constant 2005 dollars; shading indicates developing economies.

Pacific Gateway Role: Export Engine

It bodes well for Canada’s Pacific Gateway that nearly half of the contribution to global growth by 2020 is expected to come from the Asia Pacific region because economic growth among nations within the region will drive trade and the need for assured supplies of Canadian resources to support that growth and help feed Asia’s 4 billion people. As a supplier of resources, Canada is a world-class leader in several areas:

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1 Drawn from The Economist (October 2010); GDP adjusted for differences in purchasing power.
2 Based on increases in real GDP at purchasing power parity, China is expected to contribute 26.7% of global growth from 2006-2020, India 12.2%, Indonesia 2.3%, South Korea 2.3% and Japan 1.1%. From “Foresight 2020”, The Economist Intelligence Unit, pg 7.
• Largest supplier of steelmaking coal in the Western and Northern hemispheres and the second largest supplier in the world;
• World’s largest exporter of forest products;
• World’s second largest exporter of wheat with annual exports accounting for 21% of the world market for wheat exports. Canada also has an 80% share of the global canola export market;
• Largest supplier of crude oil to the U.S. and the second largest global exporter of natural gas – also, Alberta’s oil sands are the second largest petroleum reserves in the world;³
• Potash Corporation of Saskatchewan is the world’s largest potash producer and the second and third largest producer of nitrogen and phosphate;⁴
• World’s largest exporter of elemental sulphur, accounting for 40% of global sulphur trade.

Our surface transportation networks are well positioned to meet Asia Pacific demand and should be considered strategic assets that serve as exits for these and many other important cargoes. Exhibit 2 indicates the extent of the surface transportation system in western Canada. The “strategic network” shown in the second row is based on analysis by the western provinces to define a core system as a means to prioritize infrastructure funding and investment. The core system is deemed strategic because it handles the majority of trade traffic and supports: exports as the primary engine of growth and prosperity; value-added manufacturing; integrated transportation systems; national transportation principles such as safety/security, economic growth and the goal of improving Canada’s productivity and competitive position.

### Exhibit 2: Surface Transportation Networks in Western Canada

<table>
<thead>
<tr>
<th>Road</th>
<th>Rail</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>780,000 km in four western provinces – 55% of all roads in Canada</td>
<td>26,000 km in four western provinces – 56% of all rail lines in Canada</td>
<td>5 Canada Port Authorities &amp; 6 inland intermodal hubs</td>
</tr>
<tr>
<td>Strategic Network: 14,100 km &amp; 6 major border crossings</td>
<td>Strategic Network: 11,500 km &amp; 6 major border crossings</td>
<td>Strategic Gateways: Vancouver, Prince Rupert (Kitimat - Enbridge pipeline expansion)</td>
</tr>
</tbody>
</table>

Source: Western Canada Transportation Infrastructure Strategy for an Economic Network.

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³ About 175 b barrels of bitumen, or 10% can be recovered economically with existing technology.
⁴ At the end of 2007, PCS controlled 22% of the world’s potash production capacity.
Commodity Exports and Their Significance

In 2009, Port Metro Vancouver (PMV) exported 67.7 million tonnes of bulk commodities and the Prince Rupert Port Authority exported 9.5 million tonnes, representing 66% and 77%, respectively of each port’s total port tonnage. By 2050 PMV expects to handle 150 million tonnes of cargo.

Exhibit 3: Bulk Export Cargo Profile (2009) ('000 metric tonnes)

<table>
<thead>
<tr>
<th></th>
<th>Port Metro Vancouver</th>
<th>Prince Rupert Port Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>24,257</td>
<td>5,081</td>
</tr>
<tr>
<td>Grains</td>
<td>15,115</td>
<td>2,838</td>
</tr>
<tr>
<td>Petroleum products</td>
<td>8,375</td>
<td>648</td>
</tr>
<tr>
<td>Chemicals, metals &amp; minerals</td>
<td>8,118</td>
<td>525</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>6,508</td>
<td>149</td>
</tr>
<tr>
<td>Forest products</td>
<td>3,874</td>
<td>219</td>
</tr>
<tr>
<td>Other</td>
<td>1,425</td>
<td>9,460</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>67,672</strong></td>
<td><strong>% of Total Port Tonnage 77%</strong></td>
</tr>
</tbody>
</table>

Another measure of the significance of bulk export cargoes is some recent work by the Rotman School of Management for the Western Canadian Shippers’ Coalition. This research explored the contributions to the Canadian economy of bulk commodity shippers in four key industries: oilseed and grain farming, coal mining, wood products manufacturing and pulp and paper manufacturing. The total impact of these bulk industries combined is a contribution of some $81 billion to Canadian GDP and nearly 1 million jobs. This compares to $12 billion in GDP and 115,000 jobs generated by the major railways.

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5 University of Toronto, “A Comparison of Contributions to the Canadian Economy of Key Bulk Commodity Shippers and Rail Freight Carriers”, October 2009.
It is also interesting to note that the bulk and break-bulk sectors account for 70% of PMV’s total direct maritime cargo employment and 70% of its economic output (i.e. 28,600 jobs out of 40,900 direct jobs and $6.4 billion in direct economic output versus $9.1 billion total direct output).  

**Oil and Gas Exports—Underpinning Economic Prosperity**

While not typically considered in the Gateway and Corridor Initiative, the oil and gas sector and supporting pipeline network—100,000 kms of transmission lines across the country—are a foundation of Canada’s prosperity. Yet, demand and supply conditions are shifting the dynamics of global oil markets. With respect to supply, conventional oil reserves are unlikely to meet growing world demand that will continue to depend on fossil fuels (see Exhibit 4).

With respect to demand, a major shift is occurring between developed countries in North America and Western Europe and the developing countries in East Asia. Some in the industry believe that the demand for oil in the developed world has peaked due to relatively slower growth, some de-industrialization and measures related to climate change policies. Developing countries, on the other hand, are driving global demand growth in oil due to rising living standards of their large and growing populations. Many countries are concerned about the security of energy to support their growth and economic well-being.

Between 2002 and 2008, global crude oil prices increased significantly due to higher world demand and tight energy supplies. These favourable market conditions led to a growing interest in the Alberta oil sands and several new pipeline expansion proposals. Although the global financial crisis and the significant drop in oil prices since 2008 has slowed the rate of oil sands expansion, the production of bitumen is expected to grow and has attracted interest because of the known reserves. The interest is evidenced by continued investment, including foreign investors such as Sinopec, a Chinese multinational that paid $4.6 billion for a nine percent stake in Syncrude in early 2010.

Canada transports about 2.8 million barrels/day of crude oil and condensate in pipelines, of which 1.0 million barrels/day is shipped to Canadian markets and 1.8 million barrels/day is exported to international markets, mainly the United States. The value of exported crude oil is about $42 billion a year. Conventional heavy oil represents the majority of crude oil exports. In 2009, Canada was the largest supplier of crude oil to the U.S., accounting for about 21% of total U.S. oil imports (up from 15% in 2000). Other major oil suppliers to the U.S. in order of market share are Mexico, Saudi Arabia, Venezuela and Nigeria.

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6 2008 Port Metro Vancouver Economic Impact Study.
Canada’s natural gas production is concentrated in two regions: 1) the west, in Alberta, British Columbia, Saskatchewan and the southern Territories; and 2) Atlantic Canada in Nova Scotia and New Brunswick. Together, these regions account for 97% of all natural gas production in Canada and supply greatly exceeds domestic demand. Therefore the transportation infrastructure has developed to serve domestic and export markets. Pipeline infrastructure for end-use markets is much more developed in western and central Canada where natural gas has been available for decades.

Natural gas production in Canada is broadly categorized as conventional, coalbed methane (CBM) and shale gas. Overall production increased significantly during the 1990s and stabilized until mid-2007 when it began to decline. North American natural gas markets are changing in response to gas prices and significant increases in tight gas and shale gas production as technological advances improve gas recovery productivity. Although conventional gas output is declining, it is possible that shale and tight gas production in Canada and the U.S. could represent more than one third of North American production by 2020 depending on the price of natural gas, industry cost trends technological developments and pipeline infrastructure. The Horne River Basin in northeast British Columbia for example, is the largest shale gas field in Canada and considered one of the top natural gas reserves in North America.

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7 Discussion in this section is drawn from “Canada’s Energy Future, Infrastructure Changes and Challenges to 2020” by the National Energy Board, October 2009.
The largest natural gas pipeline under consideration in Canada is the 1,200 km pipeline proposal along the Mackenzie Valley. This new line would link wells in the Mackenzie Delta (NWT) to deliver natural gas and liquids to markets in Canada and the U.S. and connect with the existing pipeline system in northwestern Alberta. If this project proceeds, it would restore Canadian natural gas production to the peak levels experienced at the beginning of the decade. The project would also serve future oil sands developments and is one of the two most notable factors impacting domestic demand for natural gas in Canada (the other being natural gas-fired electricity generation in Ontario).

Canada ships about 16.4 billion cubic feet/day of natural gas of which 6.4 billion cubic feet/day goes to Canadian markets and 10 billion cubic feet/day is destined for U.S. markets. The oil and gas service sector represents $65 billion of Canada’s GDP while oil and gas producers account for $87 billion in GDP. This compares to other major sectors such as agriculture ($26 billion GDP), automobiles ($25 billion), mining ($18 billion) and forestry ($29 billion).^8

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Cubic Mile of Oil – Putting Energy Use into Perspective

Three California scientists came up with the term Cubic Mile of Oil (CMO) as a way of simplifying how we think about energy use. A CMO is a “pool” of oil one mile wide, one mile long and one mile deep. Cited in CMO’s, energy consumption can be expressed without reference to barrels of oil, cubic feet of natural gas, or tonnes of coal, etc. The world consumes one cubic mile of oil and three cubic miles of energy every year.

Global Energy Demand (CMOs)

<table>
<thead>
<tr>
<th>In 2006</th>
<th>In 2050</th>
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<tr>
<td><img src="image1" alt="Image" /></td>
<td><img src="image2" alt="Image" /></td>
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</tbody>
</table>

Global demand for energy is expected to rise from three CMOs to six CMOs by 2050, or possibly even nine CMOs. Fossil fuels will supply much of the necessary energy. Meeting this demand is a massive task. For example, it would require approximately 1,300 new surface coal mines and 2,600 underground mines to increase coal-sourced energy by one CMO a year. Producing one CMO of energy from hydro power would require the construction of 153 of China’s Three Gorges dams, or one every six months for the next 50 years. If that energy were supplied from wind power, it would require 3 million two-megawatt wind turbines that would occupy 580,000 acres.

Source: Globe and Mail, October 6, 2010

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^8 Source: “The Contributions of the Canadian Oil and Gas Service Sector to the Canadian National Economy”, Canadian Energy Research Institute, October 2010; in 2006 dollars. By way of comparison, this report indicates a total Canadian GDP of $1.35 trillion.
Western Gateways & Corridors: Building on Success

Canada is poised for even greater international success as a trading nation. Our abundant natural resources are in demand globally. The battle for control of Potash Corporation of Saskatchewan and America’s quest for long-term energy security in the aftermath of the Gulf oil disaster are just two recent examples. Rapid growth in a vast region such as the Asia Pacific with billions of people is exciting.

Are we satisfied that our corridors and gateways as strategic portals to this region are robust? Do operational inefficiencies, infrastructure or other constraints hinder the transportation component of export movements into the markets of the Asia Pacific?

The energy sector exemplifies a key issue—the need to preserve and develop strategic transportation corridors in a timely manner. Case in point: Enbridge’s Northern Gateway Project for a new pipeline to the west coast of British Columbia. Under this $5.5 billion proposal a 1,172 km pipeline would be constructed from Bruderheim near Edmonton, to Kitimat where a tank terminal and marine terminal would be built. The pipeline would carry an average of 525,000 barrels/day of export oil and import an average of 193,000 barrels/day of condensate into Alberta for

Exhibit 5: Canadian & U.S. Crude Oil Pipeline Proposals

Source: Canadian Association of Petroleum Producers, Canadian Crude Oil Conference, September 2010
blending with heavy crude oil. By comparison, the existing Kinder Morgan pipeline to Vancouver has a capacity of 300,000 barrels/day. The Gateway pipeline is one of several crude oil pipeline proposals that would increase the capacity and reach of the network (see Exhibit 5). New markets and transportation capacity are important factors in the oil sands development. Industry estimates suggest that the value of pipeline assets needs to double in the next 10-15 years to keep pace with demand. Canadian Energy Pipeline Association (CEPA) member companies plan to invest more than $40 billion in new oil pipeline infrastructure. If the Mackenzie and Alaska northern gas projects are included, the value increases to $80 billion.

Enbridge’s Gateway pipeline is strategically important for several reasons. First, it provides an opportunity to improve market security by diversifying from the U.S. market. Although the U.S. will continue to be the principal destination for Canadian oil, U.S. demand is declining and there is a major opportunity to link proven western Canadian oil reserves with regions of rapid demand growth in Asia. The International Energy Agency forecasts that oil demand in China and India will more than double by 2030. Demand from China is anticipated to contribute more than 60% of global oil growth over this period. Other major new markets accessible by tanker from the west coast are Japan, South Korea and Taiwan. Tanker could also serve U.S. west coast markets in Puget Sound and California, the third largest consumer of transportation fuels in the world, as other traditional sources of supply decline in those markets.

Second, market diversification could create greater competition among buyers. This increases the potential for higher netbacks for all Canadian production destined for existing and new markets. Interviews with industry representatives indicated that auctioning pipeline capacity during times of increased demand offers significant potential to increase toll revenues. Enbridge estimates that sweet synthetic crude prices could rise by about $2/barrel and diluted bitumen by about $3/barrel with the Gateway project in place. Such price increases would result in annual producer revenue gains of $2.4 billion in the first full year of operation and potentially growing to $4.5 billion by 2025. The net benefit to the Canadian oil industry would be some $28 billion over the first ten years of the project. Similar benefits are possible under Kinder Morgan’s pipeline TMX2 and TMX3 expansion proposals and may be achieved by constructing the lines along the existing right-of-way.

Finally, market diversification has the potential to strengthen Canada’s trade relationship with the U.S. because “in a negotiation you get trapped if your only

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9 For example, Kinder Morgan is examining options to increase its capacity to the west coast: TMX2 (80,000 bpd), TMX3 (320,000 bpd) and a northern leg from Mt. Robson to Kitimat (300,000 bpd).
10 CEPA members transport 97 percent of the oil and natural gas produced in Canada.
11 Source: Enbridge Northern Gateway Project, “Volume 2: Economics, Commercial and Financing”, May 2010. Other projected benefits of the project include 558,000 additional jobs and increased federal and provincial government revenues of $81 billion over its first 30 years.
single customer is one country.” Shipping oil to new offshore markets has the potential to increase Canada’s market power. If we are to become an energy superpower market diversification has the potential to improve not only the price but also the terms of sale. The extent of increased returns, however, will depend in part on whether the potential price increases from market alternatives offset the incremental shipping costs to supply more distant markets.

Another issue regarding oil exports currently moving through Port Metro Vancouver’s gateway is the restriction on the vessels that can access port terminals. Due to the channel depth restriction east of the second narrows bridge, the largest vessels that can be accommodated are Aframax tankers that range from 80,000 to 100,000 DWT. The industry is examining options to deepen the channel that would allow larger vessels to access the marine terminals. In contrast, Prince Rupert and Kitimat are the only deepsea ports in British Columbia capable of handling VLCC tankers, typically 200,000 to 315,000 DWT that can carry 1-2 million barrels.

**Balancing Economic, Socio-Community and Environmental Values**

While energy is vital to nearly all aspects of modern life, its secure supply is increasingly associated with some of society’s most pressing environmental and social concerns. However, there appears to be a disconnect between the overall need for major energy projects and the public interest and accountable government processes that respond decisively to such projects.

One example of this issue is the Mackenzie Gas Project (MGP) that would involve the construction of a 1,196 km natural gas pipeline system along the Mackenzie River Valley in the Northwest Territories and connect northern onshore gas fields with North American markets. The proponents began the regulatory approval process in 2004, intending to begin operations in 2010 at a cost of about $7 billion. The MGP passed through the highest level of environmental assessment in Canada under a Joint Review Panel (JRP) that began public hearings in February 2006. The JRP final report in December 2009 concluded, “the MGP could provide the foundation for a sustainable northern future.” To date, the project has yet to proceed despite being declared to be in the public interest. More than $500 million has been invested with no certainty. The delays—in part due to unsettled aboriginal land claims, regulatory and other issues—have driven up the cost of the project to around $16 billion.

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12 Source: Calgary Herald, October 13, 2010. Quote by Jack Mintz, director of the University of Calgary’s School of Public Policy.
13 The project is led by Imperial Oil Resources Ventures Limited and the consortium includes Shell Canada, ConocoPhillips, ExxonMobil Canada and the Aboriginal Pipeline Group.
14 The JRP’s mandate focuses on the environmental, socio-economic and cultural issues associated with a project. The National Energy Board hearings consider all other issues including engineering, safety and economic matters.
A comprehensive and rigorous review process for major transport projects is essential. Yet PR seems to have overtaken the debate. As Alberta Venture magazine notes, “new technologies have made inexpensive media campaigns powerful and the public is receptive to green messages” (November 2010). Furthermore, environmental non-governmental organizations (NGOs) are often well funded by charitable groups outside Canada. For example, the U.S. Tides Foundation of California and its Canadian counterpart that have paid $6 million to at least 36 campaign organizations to fight oil sands development. While there is nothing wrong with foreign funding for charitable purposes, the funding should be used for charitable purposes. If U.S. tax loopholes obscure the source of funding of Canadian NGOs, there should be more transparency of cash flows. For its part, industry needs to provide objective information about the business and a commitment to develop and agree on best practices that lead to solutions for some difficult challenges.

The environmental assessment process is an early planning tool to identify issues and recommend strategies to mitigate adverse impacts in order to reduce risks and enhance opportunities. However, arbitration through the public hearing process is not an appropriate forum for developing creative long-term solutions and energy policies that must balance economic, socio-community and environmental values. While the current market-based approach is effective to determine how much capacity, when, and where it is needed, greater clarity is needed in our energy policy regarding public interest issues and innovative options to resolve the issues while giving more certainty for investors. This should be based on objective, fact-based analysis and debate that fully recognizes the potential impacts of a project and the safety, environment and innovation record of industry.

**Other Factors Affecting Export Supply Chains**

Many bulk commodity shippers in western Canada are dependent on rail service as their only cost effective means of shipping products to market. The economic well-being of industries, shippers and many communities depends on predictable and reliable service. This includes line haul (corridor) service and first and last mile service to connect mines, mills, grain elevators and other inland points of production with exit (gateway) points. Adequate rail capacity must be in place to meet customer shipping requirements that depend on delivering the required trains in a predictable and reliable manner. Shippers/receivers and terminals also require good rail performance regarding cycle times in order to ensure the productivity and competitiveness of resource-based supply chains, as well as maximizing their own asset utilization.

When demand is strong across multiple sectors—intermodal, potash, coal, sulphur and grain, for example—rail capacity tightens and timely service can become an issue. There are also concerns that the resumption of oil sands developments will put additional pressures on rail capacity (there are those who see Canada as the most

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viable alternative to deepwater oil). Another big part of the capacity equation is having the ability to recover from rail service disruptions (e.g. winter weather) in a timely fashion.

CP and CN initiated directional running through the Fraser Canyon in 2000. However, one major shipper believes that such operating practices have only facilitated about 35-40% of the traffic growth and constraints such as the New Westminster railway bridge remain as obstacles to the future growth of exports. While there have been other successful bi-lateral co-production initiatives in the Vancouver gateway that have improved productivity, more is needed to optimize the system.

A clear definition of contingent capacity and who should pay for it is also needed. One of the defining characteristics of successful bulk exporters is their ability to increase control of the supply chain, for example by making investments in transportation assets such as railcar equipment, or managing the ocean leg of the export journey (e.g. Canpotex). Other large volume shippers have negotiated more favourable arrangements with the railways, such as Teck Resources Limited’s recent 10-year deal with CP to transport Teck’s steelmaking coal from five mines in B.C. to Vancouver port terminals. Under this agreement, CP will provide for investments in capacity that support Teck’s volume growth.

**Conclusions**

The focus on containerized freight in the gateway initiative—particularly with respect to import container traffic that has grabbed the headlines at west coast ports—is disproportionate with the economic significance of the bulk commodity export sector. The transcendence of Asia in the global economic order and importance of western Canada as a supplier of natural resources means that greater attention must be focused on improving the productivity and competitiveness of our gateways and corridors for business to seize the significant export opportunities ahead.

It is critically important—as an enabler of our prosperity—to invest in transportation infrastructure to create different economic futures, just as we did in developing the transcontinental rail system and St. Lawrence Seaway years ago. New pipeline capacity to the west coast is strategically important to diversify our dependence upon the U.S. market and would underpin the continued growth and diversification of Canada’s energy resources. It is imperative we develop a clear energy policy that balances and optimizes social, economic and environmental values associated with new projects. We also need transport policies that allow for the preservation and sustainable development of strategically important corridors (e.g. pipeline, rail, road and access to port terminals) in a timely manner to meet market demand. Other countries in the Asia Pacific are doing this in a major way. Failure to respond will leave us behind and the trade traffic opportunities will be lost forever.