

# The Economic Benefits of Pipeline Projects to Eastern Canada

by Jean-François Minardi



Geographically, Canada is situated just north of one of the world's largest markets of energy consumers, and nearly 99% of Canadian crude oil exports find their way to American refineries.<sup>1</sup> However, thanks in part to the remarkable development in recent years of new technologies like horizontal drilling and hydraulic fracturing in shale rock formations, the United States has substantially increased its production of hydrocarbons. This evolution, related to the growth potential of production in Alberta,<sup>2</sup> carries the risks that the supply of Canadian oil will exceed demand in certain regions of North America.

It is therefore becoming essential for Canadian oil producers to equip themselves with a sufficiently diversified pipeline infrastructure in order to bring partially landlocked western crude oil to new clients.

The American energy market is made up of five regional markets. Up until now, Western Canadian oil has had access to the Midwest and Rocky Mountain markets, but very little access to the Gulf of Mexico, West Coast or East Coast markets.

Several projects have been proposed already. The most well-known of these, still awaiting American government approval, is TransCanada's Keystone XL project. Its purpose is to supply refineries in the states bordering the Gulf of Mexico.<sup>3</sup>

Two other large projects, Enbridge's Northern Gateway project and Kinder Morgan's plan to build a new line parallel to its existing Trans Mountain pipeline are under consideration. They aim to export Albertan oil to the Pacific Ocean in order to access emerging markets in Asia as well as the American West Coast market. These projects may not go forward, however, in particular because of the opposition of environmentalist and native groups in the United States and Canada.

## Pipeline projects to eastern Canada

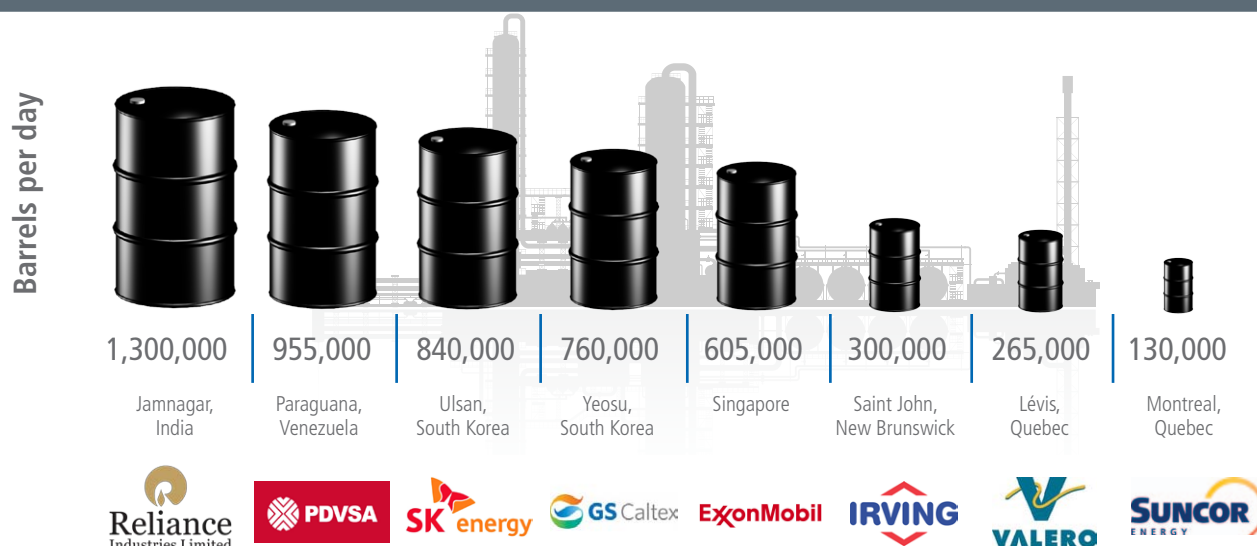
It is against this backdrop that Enbridge and TransCanada are proposing to develop an alternate route to Eastern Canada. The most advanced project is Enbridge's. The company is proposing to reverse the flow of Line 9, which since 1999 has carried imported crude oil from Montreal to Sarnia to supply southern Ontario's refineries.<sup>4</sup> This pipeline would therefore resume its original eastward direction, which was in effect for a decade after its construction in the 1970s.

The second project, which was just proposed by TransCanada, is the Energy East Pipeline Project. The company proposes to convert a gas pipeline into an oil pipeline in order to carry crude oil from Alberta and Saskatchewan to Eastern Canada.<sup>5</sup> The current gas pipeline runs from the Alberta-Saskatchewan border to Ontario. New segments would need to be built between Cornwall and Montreal, between Montreal and Quebec City, and between Quebec City and Saint John, New Brunswick.



This *Economic Note* was prepared by **Jean-François Minardi**, public policy analyst at the Montreal Economic Institute. Please note that the writing of this paper was completed in June 2013, prior to the tragic events that occurred in Lac-Mégantic on July 6, 2013.

**Figure 1**  
Refining capacity of foreign super-refineries and Eastern Canadian refineries



Sources: U.S. Energy Information Administration; ExxonMobil; *The Current and Future State of Oil and Gas Pipelines and Refining Capacity in Canada*, Report of the Standing Committee on Natural Resources, House of Commons, May 2012, p. 10.

## The impact on Eastern Canadian refineries

The refineries of Eastern Canada are currently in a difficult position. They are faced with growing competition from super-refineries, particularly in Asia, which are increasingly targeting the North American market. Thanks to their considerable economies of scale and lower operating costs, these super-refineries are able to offset the cost of long-distance transport and sell refined products more cheaply.<sup>6</sup> Quebec's total refining capacity represents just 30% of the refining capacity of the world's largest refinery, located in Jamnagar, India<sup>7</sup> (see Figure 1).

Surplus refining capacity in North America and Europe also reduce the profit margins of refineries in industrialized countries.<sup>8</sup> A number of refineries in Europe and North America have closed in recent years.<sup>9</sup> The closing of the Shell refinery in Montreal in 2010 reduced Canadian refining capacity by around 7%.<sup>10</sup> More recently, Imperial Oil announced the closing of its refinery in Dartmouth, Nova Scotia.

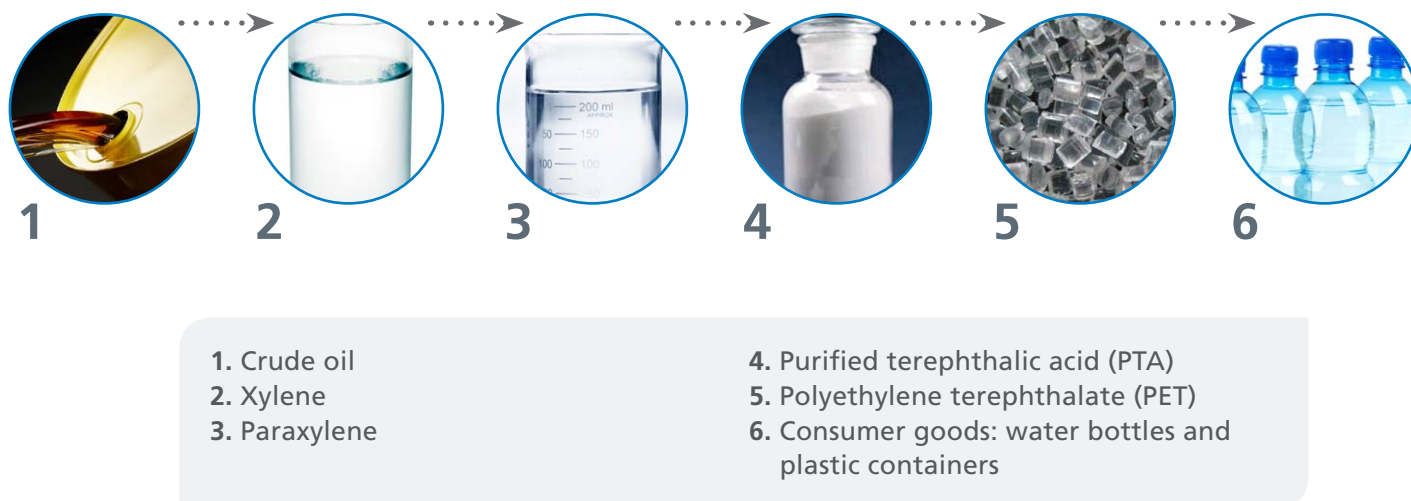
**Being able to supply themselves with crude oil from Western Canada could help ensure the profitability and competitiveness of the East's three refineries.**

However, being able to supply themselves with crude oil from Western Canada could help ensure the profitability and competitiveness of the East's three refineries: Suncor's in Montreal, Énergie Valero's (until recently, Ultramar's) in Lévis and Irving's in Saint John, New Brunswick. The two Quebec refineries represent 20% of Canadian capacity and employ 1,000 workers<sup>11</sup> who enjoy above-average remuneration.<sup>12</sup>

The existence of a pipeline network will allow these refineries to diversify their supply sources, thereby reducing their vulnerability in case of unexpected interruptions in the supply of foreign oil, especially from countries that are politically unstable. It will also allow them, at least over the short and medium term, to pay a lower price than they have to pay for oil imported by tanker from abroad.

This is because the refineries of Eastern Canada currently import crude oil at the Brent rate, which is the global reference price for Atlantic crude oil. The reference price for crude oil from Western Canada, which is almost all exported to the American Midwest, on the other hand, is the West Texas Intermediate (WTI). Since 2011, due mainly to the existence of a surplus in the Midwest market,<sup>13</sup> the Brent rate has been higher than the West Texas Intermediate.<sup>14</sup> Of course, we can imagine that if the other projects are completed and access to oil from Western Canada and the Midwest is opened up, the discrepancy between the two reference prices could be reduced, or even disappear, in the long term.

**Figure 2**  
The polyester production chain



If Enbridge's plan to reverse Line 9 sees the light of day, it would likely entail productive infrastructure investment in Suncor's Montreal refinery and Valero's Lévis refinery. Suncor plans to invest \$55 million to prepare its refinery for the shipment of Western Canadian oil. Valero announced that it might invest \$110 million in its oil terminal in Montreal's east end to increase its storage capacity. The crude oil would then be transported by tanker to Lévis, where the company would invest \$30 million to build adequate handling and storage installations.<sup>15</sup> However, without the completion of the Enbridge project, industry players believe that the two refineries could eventually have to close due to the lack of investment required to ensure their long-term competitiveness.<sup>16</sup>

### The impact on the industrial ecosystem in Montreal's east end

In addition to their importance in ensuring the competitiveness of Quebec's two refineries, the pipeline projects are essential for maintaining the industrial fabric that depends on them. For example, in Montreal's east end, the petrochemical industry, made up of 48 companies employing 3,610 workers,<sup>17</sup> needs affordable hydrocarbons to develop.

One of the elements of this industry is unique in North America: the polyester production chain that connects the Suncor refinery and three petrochemical companies (Chimie ParaChem, CEP SA and Selenis). Together, they employ over 850 people.<sup>18</sup> Polyester is the most widely used synthetic fibre in the world,

used especially in the manufacture of clothing, but also in making various other industrial and consumer goods.

This polyester production chain is particularly interesting from an environmental point of view, as its activities exemplify the principle of industrial ecology.<sup>19</sup> The main goal of industrial ecology is to limit the impacts of industry on the natural environment by setting up a viable, sustainable ecosystem in which one company's processed product becomes the raw material for another company in the chain. As with the polyester production chain, this kind of synergy is reinforced when the companies in the industrial sector are located close to one another, are complementary, share installations and services to reduce their operating costs and develop common interests.

**Refining activities are not limited to the production of gasoline for transportation, but are also required in order to produce a wide array of everyday consumer products.**

The first link in the polyester production chain (see Figure 2) is the Suncor refinery, which produces xylene, a primary by-product of oil, which constitutes the raw material for the second link, Chimie ParaChem. ParaChem in turn transforms xylene into crystals, which are then melted to produce highly purified paraxylene. It is interesting to note that "refinery gases," which are residues for the Suncor refinery, are used as fuel by Chimie ParaChem.

The raw material for the third link, CEPESA Chimie Montréal, is the paraxylene produced by ParaChem. CEPESA transforms it into purified terephthalic acid (PTA), which occurs as a white, crystalline powder and is mainly used as a raw material in the production of polyester. The majority of CEPESA's production of acid is used in turn as a raw material by the final link in the polyester production chain, Selenis.

Selenis produces a saturated polyester plastic, polyethylene terephthalate (PET), which is used in the manufacture of recyclable plastic bottles, textile fibres, food packaging, carpets and transparent films. Among the well-known consumer goods that use Selenis products are ESKA water bottles and Kraft mayonnaise containers. And so, as we can see, refining activities are not limited to the production of gasoline for transportation,<sup>20</sup> but are also required in order to produce a wide array of everyday consumer products (a list of those products is available on MEI's website).

## Conclusion

The debate over oil pipelines must take into account the fact that the alternative to pipelines is not to stop transporting large quantities of oil from west to east, but rather to use other modes of transport that are less safe, less reliable and less cost-effective, like the train. The question is therefore essentially to decide how the oil will be transported. It should also be emphasized that the proposed pipeline projects require the building of only a minimum of additional installations, and would therefore entail a minimum of disruption for the affected communities, since a good part of the infrastructure already exists.

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Carrying out these projects would provide economic benefits to the producing provinces insofar as it would open up the West's oil and provide access to new markets. It is also in Quebec's interest, since a regular and relatively inexpensive supply of crude oil from Western Canada would not only help develop refining activities in Quebec, but also help ensure the vitality of a rich industrial ecosystem in Montreal's east end.

## References

1. U.S. Energy Information Administration, *Countries: Canada*, 2012.
2. According to a Canadian Association of Petroleum Producers forecast, oil production will grow from 3.2 million barrels a day in 2012 to 6.7 million by 2030. The oil sands' share of that total will predominate, with 5.2 million barrels in 2030, compared to 1.8 million in 2012. Canadian Association of Petroleum Producers, *Crude Oil: Forecast, Markets & Transportation*, 2013, p. i.
3. The refineries of the states bordering the Gulf of Mexico represent a significant market for Western Canadian oil insofar as they are home to 43% of the refining capacity of the United States and are able to process Alberta's heavy crude. Gregory Meyer, "Energy: Refined out of existence," *Financial Times*, April 9, 2012.

4. The first stage of the project (Line 9A) between Sarnia and North Westover in Ontario was already approved by the National Energy Board in 2012. The remaining stretch, 639 km long, is Line 9B joining North Westover and Montreal. Enbridge plans to increase the current transport capacity of 240,000 barrels a day up to 300,000 b/d. If the project is approved, it is scheduled to open in 2014.
5. TransCanada's project is 4,400 km long with a capacity of 1.1 million b/d.
6. Testimony of Peter Boag, president of the Canadian Petroleum Products Institute (now the Canadian Fuels Association), before the Standing Committee on Natural Resources. *The Current and Future State of Oil and Gas Pipelines and Refining Capacity in Canada*, Report of the Standing Committee on Natural Resources, House of Commons, May 2012, p. 21.
7. Gregory Meyer, *op. cit.*, note 3; Conference Board of Canada, *Canada's Petroleum Refining Sector*, 2011, p. 11.
8. John Kemp, "Global refining poised for massive shake-out," *Reuters*, February 9, 2012.
9. Gregory Meyer, *op. cit.*, note 3; Sarah Kent and Cassie Werber, "Refinery Closures Threaten Europe," *The Wall Street Journal Europe*, June 27, 2013.
10. Conference Board of Canada, *op. cit.*, note 7, p. 37.
11. Hélène Baril, "Le renversement du pipeline d'Enbridge en 5 questions," *La Presse*, November 30, 2012; Youri Chassin, *Quebec's Energy Reality*, Montreal Economic Institute, 2013, p. 2.
12. Conference Board of Canada, *op. cit.*, note 7, p. 28.
13. TD Economics, *Pipeline Expansion is a National Priority*, 2012, p. 2.
14. In addition to the price differential based on market conditions, there is also a price differential based on the quality of the oil sold. The price of Western Canadian Select (WCS), which is the price of heavy oil from the oil sands that has not been transformed into synthetic crude oil in an upgrader facility, has always been lower than the Brent and WTI prices. This difference is due to the fact that heavy crude oil from the West is more expensive to refine than lighter mixtures. TD Economic, *Drilling Down on Crude Oil Price Differentials*, 2013, p. 2; William Marsden, "Claims that Canada loses billions in oil revenue are bogus, economists say," *The Gazette*, May 31, 2013.
15. Pierre Saint-Arnaud, "Valero pourrait investir 200 millions à Lévis," *La Presse*, May 23, 2013; François Desjardins, "Le syndicat de Suncor plaide à son tour pour l'inversion," *Le Devoir*, December 6, 2012.
16. François Desjardins, "Pipeline – Le discours inversé," *Le Devoir*, May 29, 2013; François Desjardins, *op. cit.*, note 15.
17. Société de développement économique Rivière-des-Prairies • Pointe-aux-Trembles • Montréal-Est, *Statistiques sur les secteurs d'activité industrielle*, 2012.
18. Société de développement économique Rivière-des-Prairies • Pointe-aux-Trembles • Montréal-Est, *Est industriel info*, 2011.
19. Robert Frosch and Nicholas E. Gallopoulos, "Strategies for Manufacturing," *Scientific American*, Vol. 3 (1989), No. 261, pp. 144–152.
20. Indeed, gasoline consumption represents just 47% of total petroleum products in the United States. The proportion is similar in Canada. U.S. Energy Information Administration, *Frequently Asked Questions. What are the products and uses of petroleum?*; Natural Resources Canada, *Canadian Crude Oil, Natural Gas and Petroleum Products*, 2011, p. 21.

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