

COMPETITIVE ANALYSIS OF THE CANADIAN PETROCHEMICAL SECTOR



Executive Summary

This study examines the availability of petrochemical feedstock in Canada for the C1 through C3 value chains through 2030, and expands on CERI's September 2015 study, "Examining the Expansion Potential of the Petrochemical Industry in Canada" to assess Canada's competitive position in comparison to other petrochemical producing jurisdictions.

Globally, petrochemicals are frequently looked to as a means of economic diversification in economies who rely heavily on oil and gas revenues. As the Canadian economy has been negatively affected by the fall in oil and gas prices, Canada's petrochemical sector is an interesting one to look to for potential future growth.

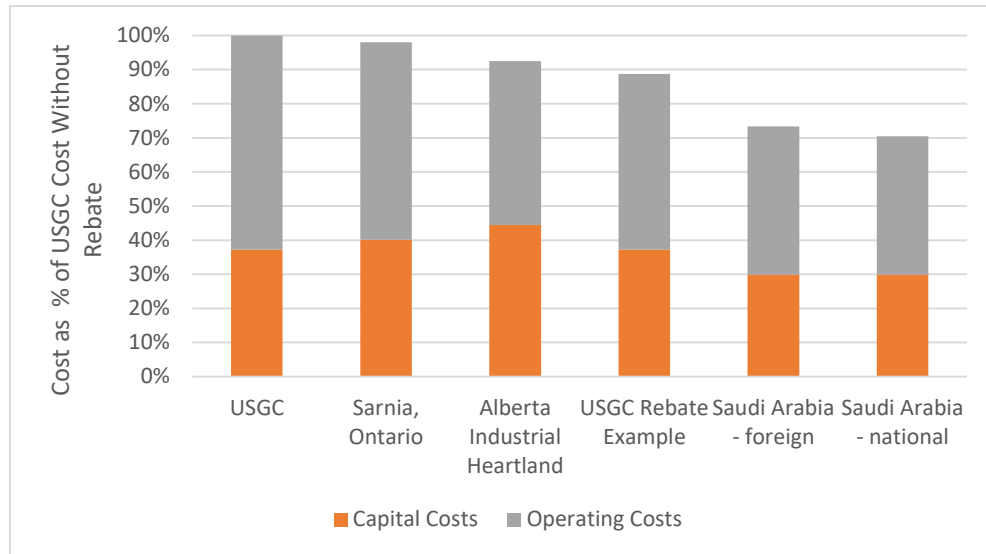
Canada's main source of petrochemical feedstock includes natural gas liquids (NGLs) from processing plants and off-gas plants for facilities in Alberta's Industrial Heartland area and Ontario's Chemical Valley.

There is potential for increased availability of petrochemical feedstock in Canada. Alberta is positioning itself to take advantage of this as it implements its Petrochemicals Diversification Program in order to capitalize on excess propane and methane.

CERI completed plant gate cost calculations for a new liquids and solids petrochemical facility in Alberta, Ontario, the US Gulf Coast (USGC) and Saudi Arabia in order to consider the competitiveness of Canada's petrochemical sector against some of its competitors. CERI also completed sample netback calculations, bringing in the cost of moving the product to market, comparing product sent to China from Alberta versus the US Gulf Coast.

Within the plant gate cost calculations, raw material inputs and facility systems and equipment are shown to represent the majority of the costs to construct and run petrochemical facilities across all jurisdictions for both liquids and solids facilities, with corporate taxes being significant for solids facilities. Raw material inputs and corporate taxes also see the most variability across jurisdictions, making them differentiators. A significant factor in making comparisons across jurisdictions is also the willingness of government, whether federal or regional (state/provincial/municipal), to providing incentives for investment. Taking project-specific incentives into consideration, relative costs of new liquids petrochemical facilities is shown in Figure E.1.

Figure E.1: Relative Costs of a New Liquids Petrochemical Facility, Including USGC Project-Specific Rebate

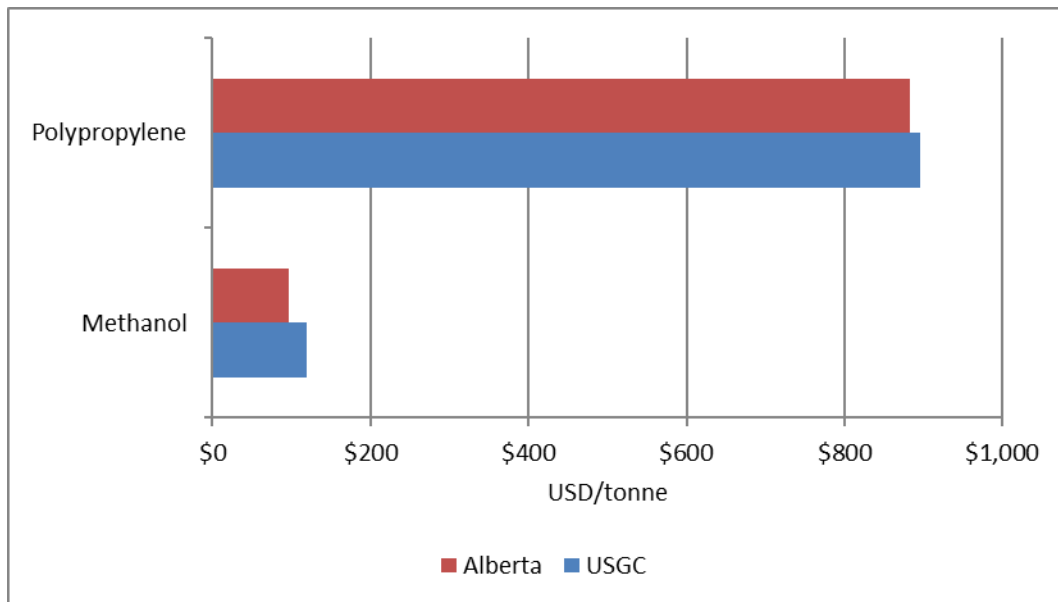


Source: CERI

While the USGC is initially shown to be the most expensive jurisdiction in which to construct and operate a petrochemical facility, it is actually positioned as less expensive than either Canadian jurisdiction once the project-specific rebate is taken into consideration. Saudi Arabia is consistently the least expensive jurisdiction in this comparison, both for a foreign and Saudi-owned company.

The USGC's competitive advantage against Canadian producers is also illustrated when looking at sample netback calculations, assuming polypropylene and methanol production from Alberta or the USGC going to Asia. The results of this calculation are shown in Figure E.2.

Figure E.2: Sample Netback Calculations



Source: CERI

CERI also considered variables that may not be reflected in either plant gate cost or netback calculations, including regulatory climate, integration of a region's petrochemical sector and access to market. Canadian regulation is viewed by industry as being clear and stable, although not as fast to work through as compared to US regulation. The Canadian petrochemical clusters in Alberta and Ontario, while integrated, do not see the same level of integration as other competing jurisdictions, which potentially serves as a deterrent to investment. Finally, the Canadian petrochemical industry does not have issues with access to market. Overall, the Canadian petrochemical industry is well positioned to compete favourably in the absence of government support in other regions.

Figure C.4: CP Rail Network Density Map



Source: CP Investor Fact Book¹

At end-2015, CP's carloads totaled 2,628,000, comprised of International Intermodal (559,000 carloads), Domestic Intermodal (414,000 carloads), Coal (323,000 carloads), Canadian Grain (285,000 carloads), Metals, Mineral, and Consumer Products (217,000 carloads), Chemicals and Plastics (203,000 carloads), US Grain (157,000), Automotive (131,000 carloads), Potash (124,000 carloads), Crude (91,000 carloads), Fertilizers and Sulphur (62,000 carloads) and Forest Products (62,000 carloads).² At end-2015, revenue comprised of Canadian Grain (C\$1.068 billion), Domestic Intermodal (C\$757 million), Chemicals and Plastics (C\$709 million), Metals, Mineral, and Consumer Products (C\$643 million), Coal (C\$639 million), International Intermodal (C\$592 million), US Grain (C\$522 million), Crude (C\$393 million), Potash (C\$359 million), Automotive (C\$349 million), Fertilizers and Sulphur (C\$272 million) and Forest Products (C\$249 million).³

¹ Canadian Pacific Investor Fact Book 2014, <http://www.cpr.ca/en/investors-site/Documents/investor-fact-book-2014.pdf#page=22&zoom=auto,-73,683>, pp. 20-21.

² Canadian Pacific website, CP 2016 Fourth Quarter Earnings Release, <http://www.cpr.ca/en/investors-site/Documents/cp-2016-investor-fact-book-data-supplement.pdf>, pp. 10.

³ *ibid*, pp. 7.