

Canadian Crude Supply and Markets

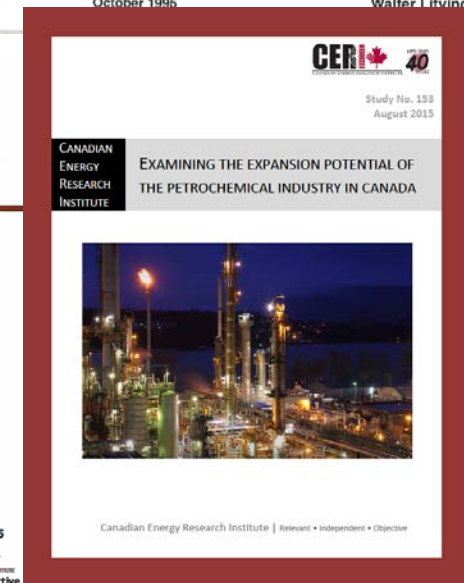
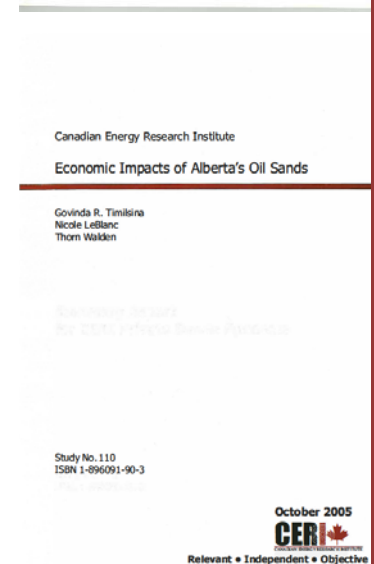
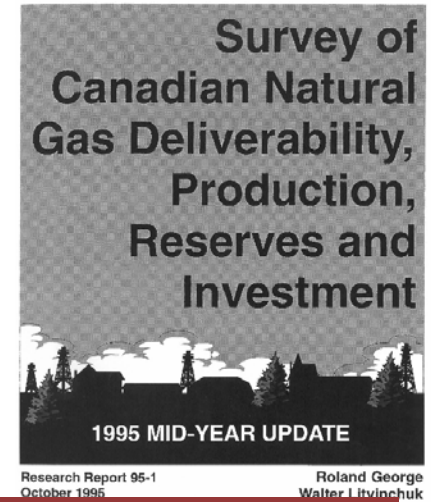
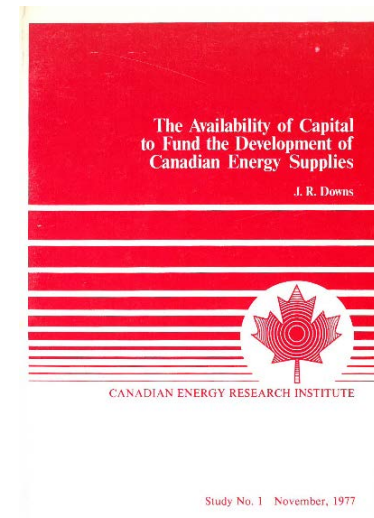
Dinara Millington
VP, Research
Argus Canadian Crude Summit
Calgary, AB
May 1-2, 2017

Canadian Energy Research Institute

Overview

Founded in 1975, the Canadian Energy Research Institute (CERI) is an independent, non-profit research Institute specializing in the analysis of energy economics and related environmental policy issues in the energy production, transportation, and consumption sectors.

Our mission is to provide relevant, independent, and objective economic research of energy and environmental issues to benefit business, government, academia and the public.

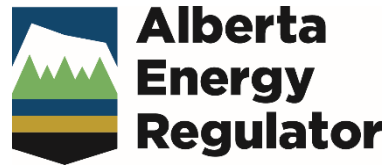


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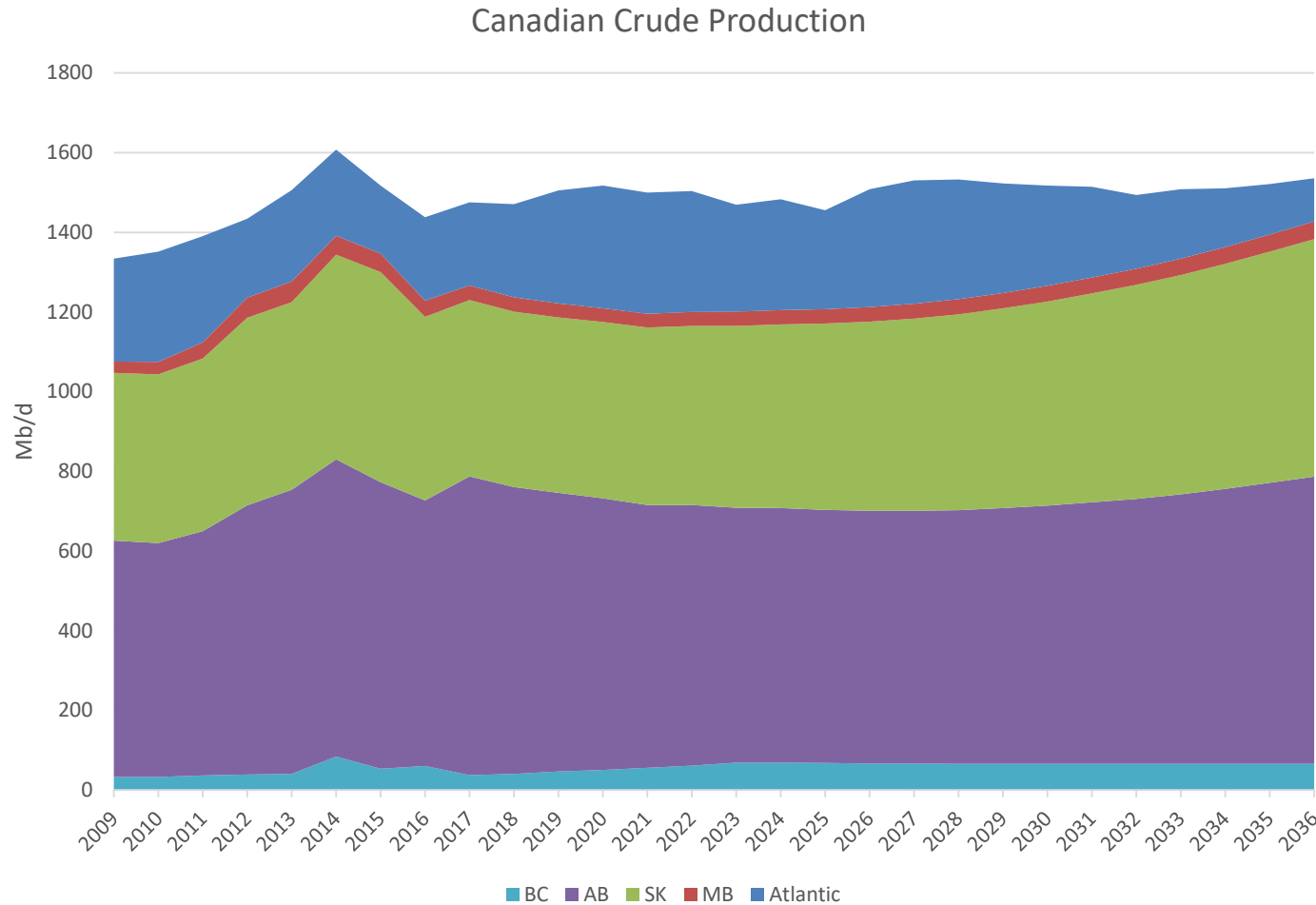
In-kind support is also provided:



Agenda

- **Canadian Crude Oil Production**
- **Canadian Crude Supply**
- **Canadian Crude Oil Markets:**
 - **US**
 - **Other**
- **Factors to Consider**

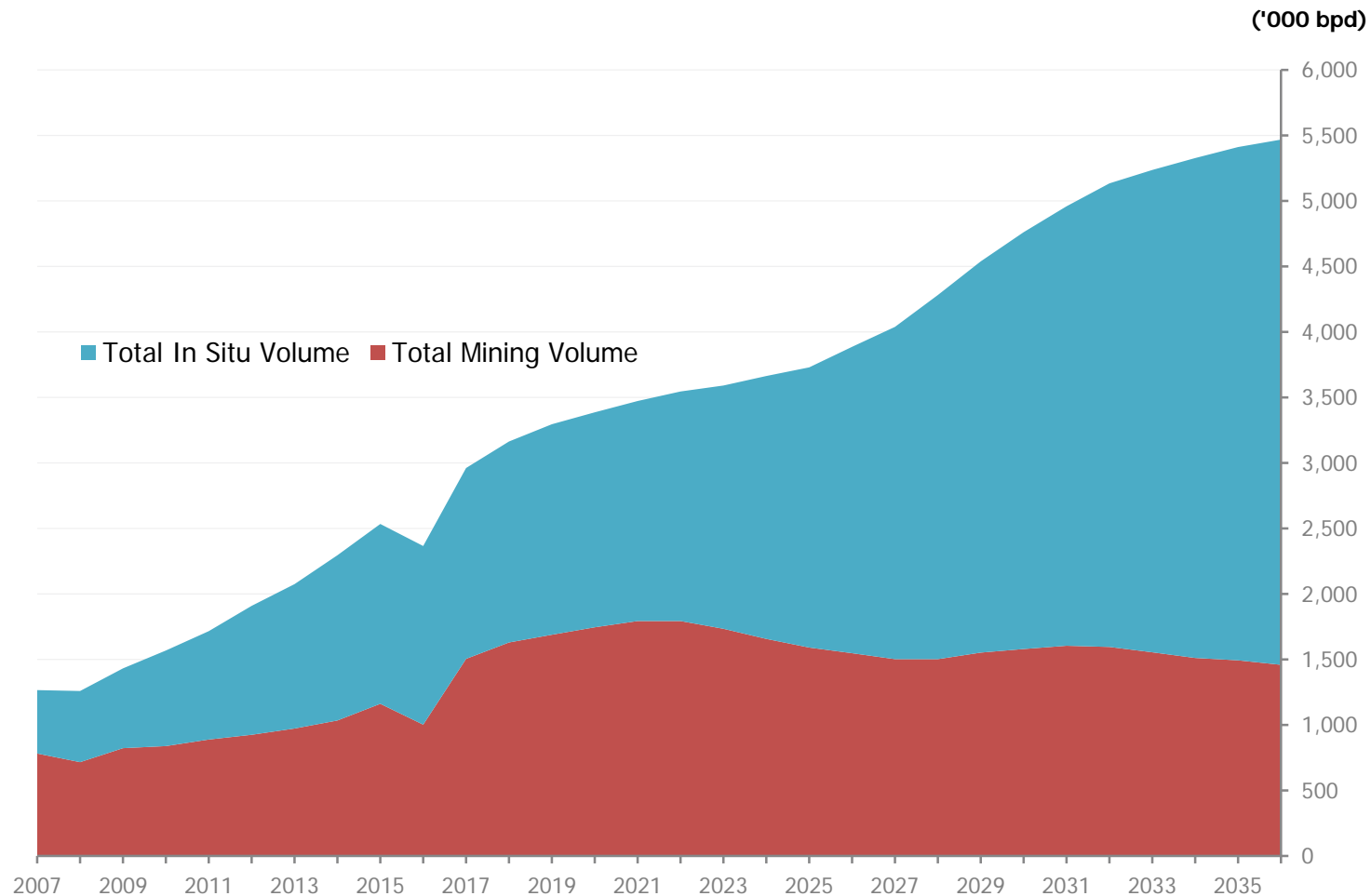
Canadian Crude Oil Production Forecast



- Production will not reach the record high levels of 2014 in the forecast period
- In 2016 production was 1.4 MMb/d, led by AB and SK
- Declines in the short term led by decreased conventional drilling in AB
- Over the long-term production remains flat over the forecast period
- Growth will be dominated by SK drilling in tight oil plays

Source: , Statistics Canada, CERl

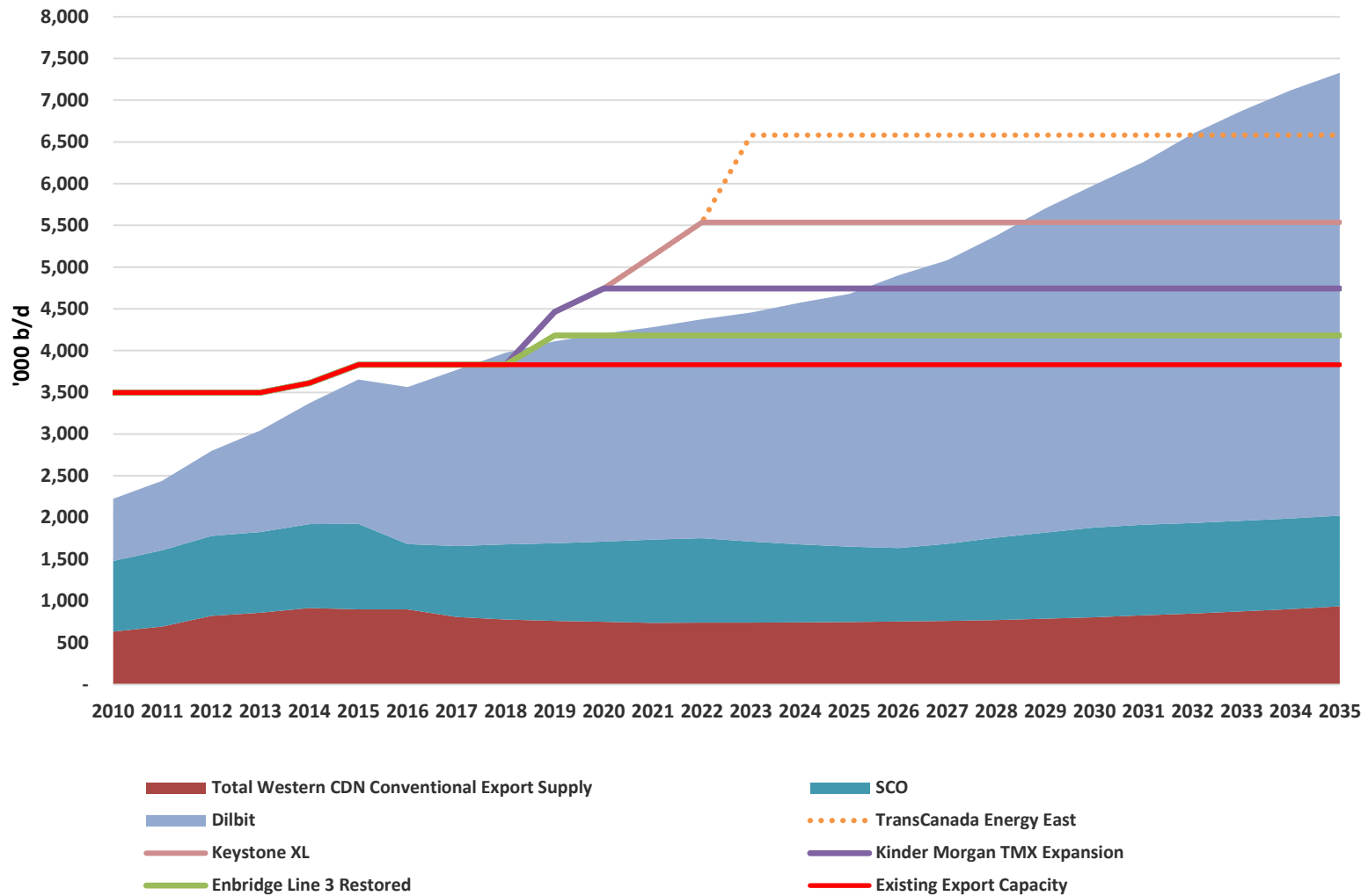
Canadian Oil Sands Production (Reference Case)



- In 2016 production was 2.4 MMb/d, led by in-situ projects
- Oil sands production is forecast to grow to 3.3 MMb/d by 2020 and peak above 5 MMb/d by 2036
- Mined production will peak in near term (2022) and steadily decline
- In-situ production continues to be higher than mined volumes
- In-situ all-time peak of 4 MMb/d is expected in 2036

Source: , Statistics Canada, CERI

Canadian Crude Supply and Transportation

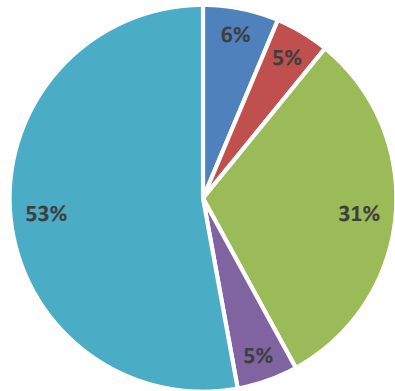


- Available supply net of domestic demand is currently in balance with available pipeline capacity
- Recent approvals of Line 3 restoration and TMX expansion will add 960 Mb/d by 2020
- KXL, if built, provide direct access to the Gulf
- Energy East, if built, will carry 1.1 MMb/d and provide Western Canadian producers access to Eastern Canada and the Atlantic coast

Source: , Statistics Canada, CERI

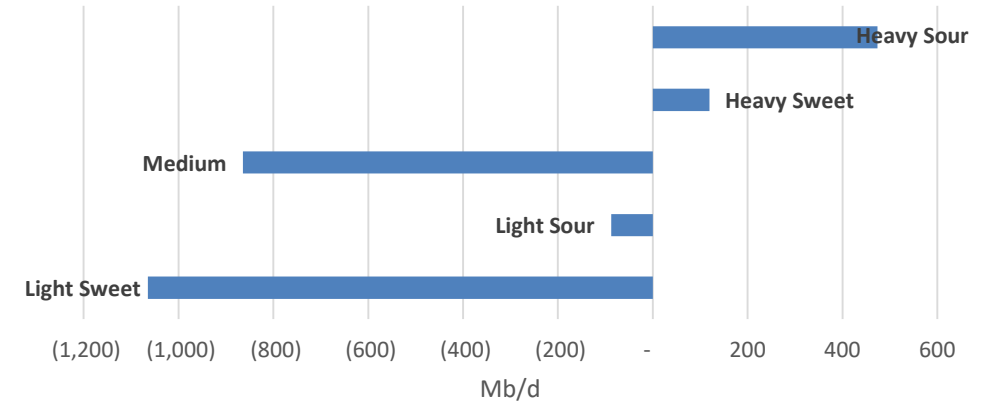
US Market

Total US Crude Imports by Crude Quality (2016)

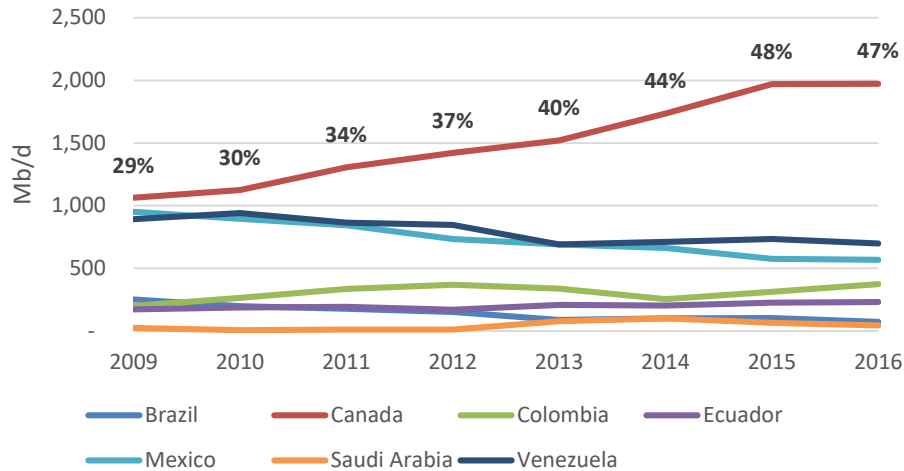


2016 Total US Imports = 7,899 Mb/d

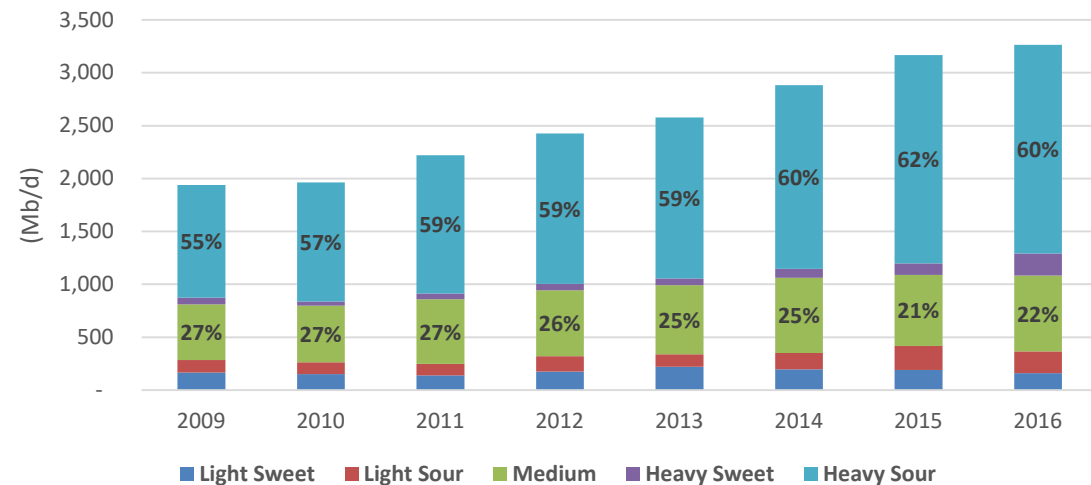
2009-2016 Change in the US Imports by Crude Type



US Heavy Sour Imports by Country

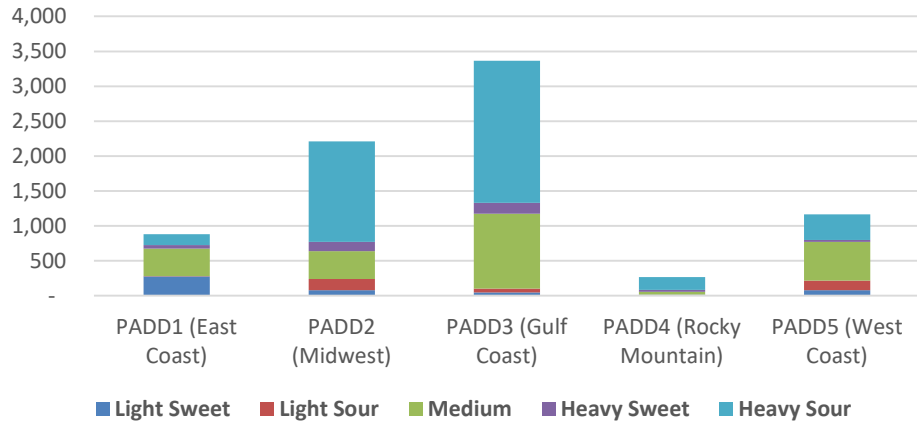


US Imports from Canada by Crude Type



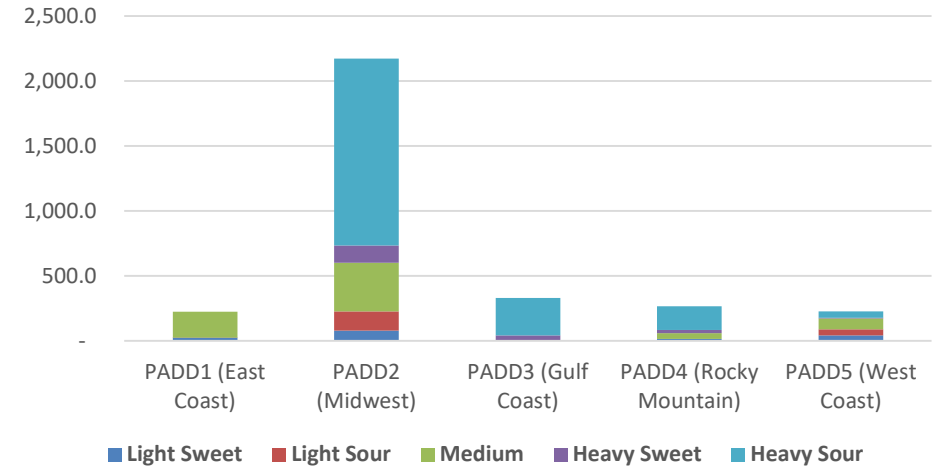
US Market (cont'd)

Total US Crude Imports by Region and Type (2016)

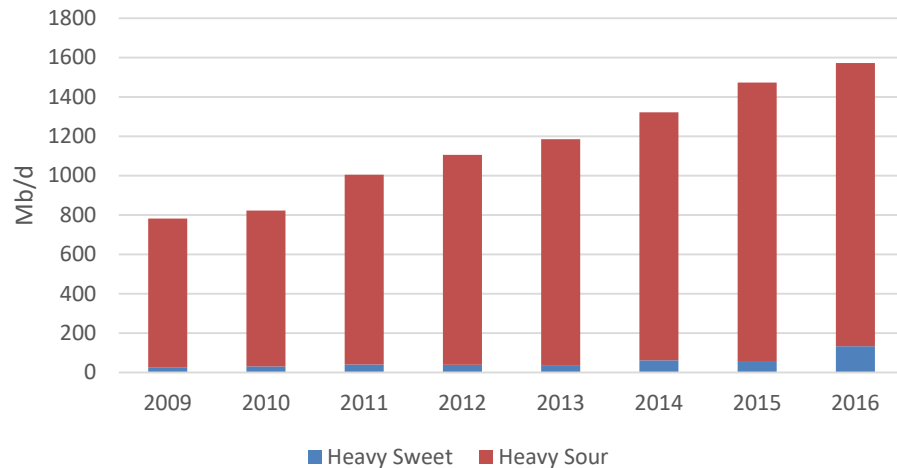


2016 US Imports from Canada = 3,264 Mb/d

US Imports from Canada by Region (2016)

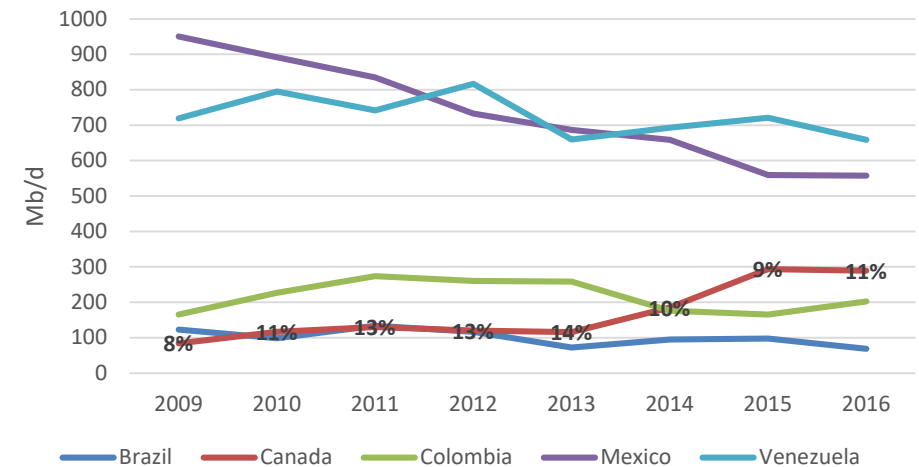


PADD II Heavy Imports



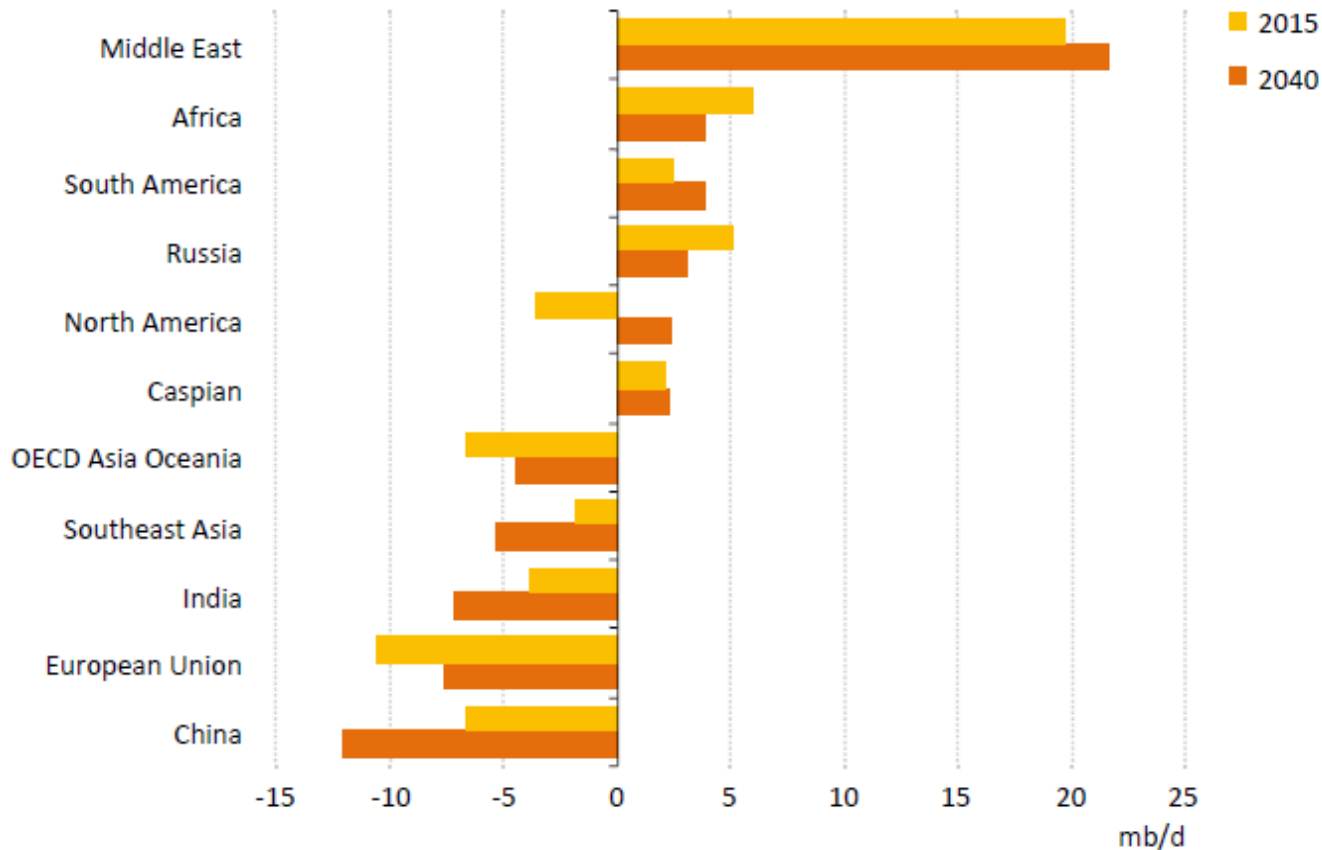
Additional Canadian heavy crude supplies could replace volumes from Mexico and Venezuela = 1-1.2 MMB/d

PADD III Heavy Sour Imports by Country



Other Markets

Crude Oil Trade by Region



By 2040, China and India import nearly half of all internationally traded crude oil, Middle East firms its market share, while North America becomes a net exporter

Source: IEA, World Energy Outlook

Refining Capacity by Region

	Capacity	Net capacity change to
	2015	2040
North America	21.3	-0.3
Europe	16.5	-1.2
Asia	31.7	10.3
OECD Asia Oceania	7.6	-0.9
China	12.8	4.9
India	4.4	3.4
Southeast Asia	5.0	2.6
Russia	6.2	0.1
Middle East	8.8	4.3
Africa	3.3	1.7
Brazil	2.1	0.8
Other	4.9	0.5
World	94.8	16.1
Atlantic Basin	53.8	1.5
East of Suez	41.0	14.6

Factors to Consider

Crude Demand:

- **Climate Change Policies**
- **Transportation Demand**
- **IMO Regulations on Sulphur Reduction**
- **Refining Capacity**
- **Geopolitics**
- **US Trade Policies**

Crude Supply:

- **Suppressed Upstream Investment**
- **Crude Inventories**
- **Production Costs**
- **OPEC Production**
- **Market Access**
- **Technological Innovation**

Thank you for your time

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