Pipeline to Nowhere?
Prospects and Barriers of Chinese Imports of Canadian Oil

Canada Institute
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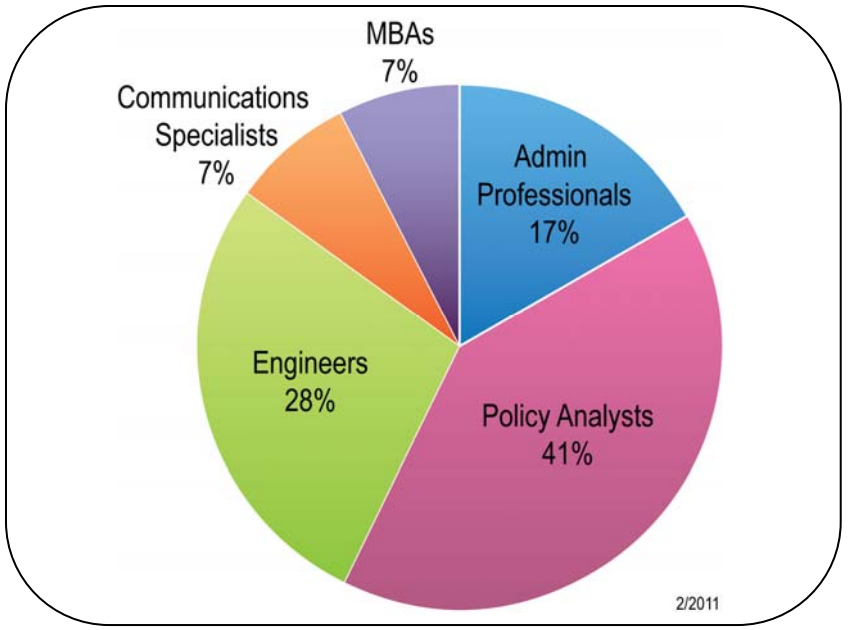
The Pembina Institute is an environmental nonprofit think tank with 60 staff in seven offices across Canada. We work to advance sustainable energy solutions through innovative research, education, consulting and advocacy.



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Background

- Enbridge has applied for federal approval to build the 728 mile Northern Gateway pipelines, which if approved would transport 525,000 barrels of oilsands products per day via a port in Kitimat, B.C.

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Increased tanker traffic

- About 225 tankers a year would travel through the Great Bear Rainforest to reach the port in Kitimat. Some tankers would carry up to two million barrels of oil.

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Upstream Effects

- Increase oilsands production by 30%, resulting in annual increase of:
  - 6.5 million tonnes of CO2e (1.6 million cars)
  - 25 million barrels of tailings
  - 74 billion cubic feet of natural gas for processing
  - 200 million barrels of freshwater

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Broad public opposition

- In December 2010, a motion to legislate a tanker ban on B.C.'s North Coast passed in the House of Commons. 4/5 of federal political parties support a tanker ban.
- 70 B.C. First Nations have declared oil tanker and pipeline bans under their traditional laws.
- The Union of B.C. Municipalities passed resolutions opposing the Enbridge project.
- Polling shows 80% of British Columbians oppose opening the North Coast to oil tankers.

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Regulatory Process

- Announced in 2005
  - PetroChina signed up for 200,000 bpd in capacity
    - Withdrew in 2007 due to “lack of government and producer support”
- Dec 2009 - National Energy Board (NEB) and Canadian Environmental Assessment Agency (CEAA) issued Terms of Reference
- May 2010 – Enbridge files regulatory application
- July 2010 – Joint Review Panel is formed

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Regulatory Process

- July 2010 to Dec 2010 – Public consultation
- Jan 2011 – JRP releases Panel Session Results
  - Additional information still needed before Hearing Order
- Hearing in late fall 2011 (until end of 2012) ?
- If approved and built, operational in 2017-2019 ?

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Prospects for Completion?

- US climate policy
- Chinese demand for oilsands
- Enbridge Application
  - Shipping commitments
  - Funding participants
- Pipeline Capacity
- Regulatory Barriers

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Weakening U.S. climate policy

- Government and industry suggest exporting higher carbon oilsands to Chinese markets to undermine U.S. climate policies.
- Government of Canada actively working to weaken federal and state climate legislation in the U.S.
- Shipping to China avoids having to reduce carbon emissions, pay higher compliance costs

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Weakening U.S. climate policy

"We must export oil to China….a necessary strategy in the face of looming U.S. climate policies, which may restrict oilsands imports, she said. "For sure, the U.S. isn't going to like it," Ms. Cooper said. "But that's good, because it gives us more leverage with the U.S. For example, **it makes it more difficult for the U.S. to threaten us with comments about dirty oil**."

-BMO chief economist Sherry Cooper, Nov 19, 2009

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Weakening U.S. climate policy

"... the existence of the Northern Gateway option would provide important leverage in achieving changes to such limiting policies or regulations to reduce the negative impacts on the Canadian oil and gas sector. Indeed, **this option may also allow the exertion of leverage in obtaining exemptions or changes to protectionist US policies or regulations that might affect Canadian industrial sectors other than crude oil**."

-*Public Interest Benefits of the Northern Gateway Project* Wright Mansell Research Ltd. (March 2010), p.23-24 in Enbridge Northern Gateway, Section 52 Application, Volume 2, Appendix B

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Chinese Energy Demand

- "It is a mistaken view that China's oil demand will keep growing as it has in the past few years."

Peter Tertzakian, Chief Economist, ARC Financial Corp

November 2010

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China's Five Year Plan (2011-15)

- Mandatory reduction in energy consumed per unit of GDP by 16%
- Mandatory reduction in carbon consumed per unit of GDP by 17%
- Increase non-fossil-fuel energy to 11.4% (current 8.3%)
- Set GDP growth at 7% (4.2% less than past five years)

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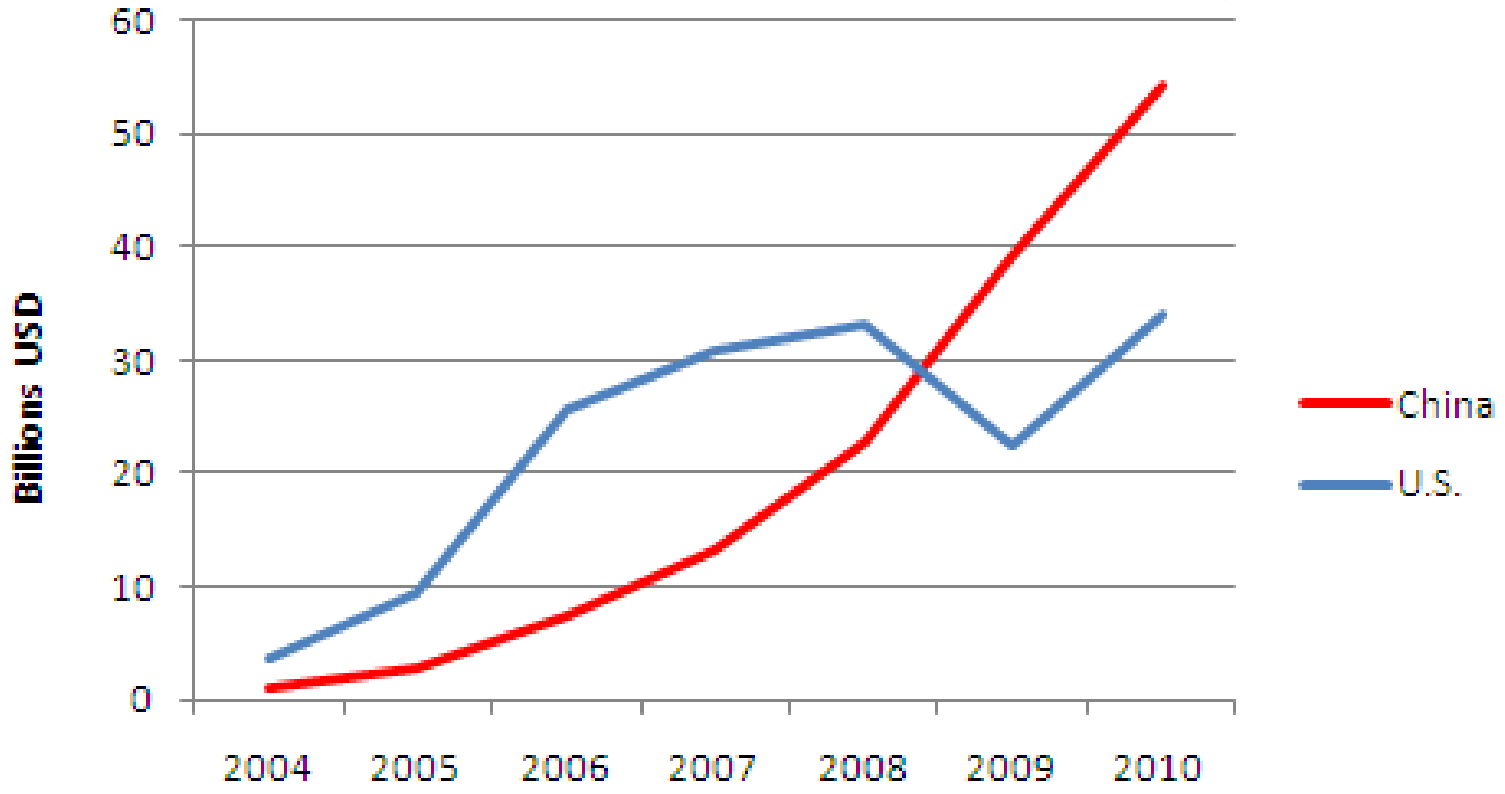
Clean energy investments



Source: NRDC, based upon Bloomberg New Energy Finance data*

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Chinese Energy Demand

- "The oil sands are too costly and too polluting. Gas has a brighter future…Shale gas is much cheaper and cleaner."

Chen Weidong, Chief Energy Researcher, China National Offshore Oil Corp.

Financial Post, 14 Jan 2011

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Chinese Energy Demand

- "Mr. Paget said an adverse decision on Gateway would not affect his assessment of Enbridge's share value since, like most analysts, **he has not built a successful project into his forecasts**."

Steven Paget, analyst, First Energy Capital Corp.

Globe and Mail, 30 March 2011

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No shipper agreements

- Shipping agreements provide clear signal that there is demonstrated market demand for additional pipeline capacity.

- Unprecedented for an export pipeline that intends to use long-term shipper agreements to submit an application without any agreements in place.

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Confidential "funding participants"

- Combination of Canadian producers and Asian market interests who have committed to ten $10 million units ($100 million total).
- A $10 million placeholder for a prospective $5.5 billion pipeline project small price to pay.
- Enbridge refuses to disclose identities of these "funding participants" [Sinopec]

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Refinery analysis lacking

- Lack of detailed refinery analysis contrasts sharply with other recent export pipeline applications.
- No attempt to differentiate potential markets for diluted bitumen vs. synthetic crude oil
- No forecasts of Chinese demand for oil sands

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Pipeline Capacity

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"The pipeline capacity has gotten far ahead of the export demand — that's the major impediment to Gateway."

— Chad Friess,
Oil and Gas Analyst with UBS Securities, April 2010

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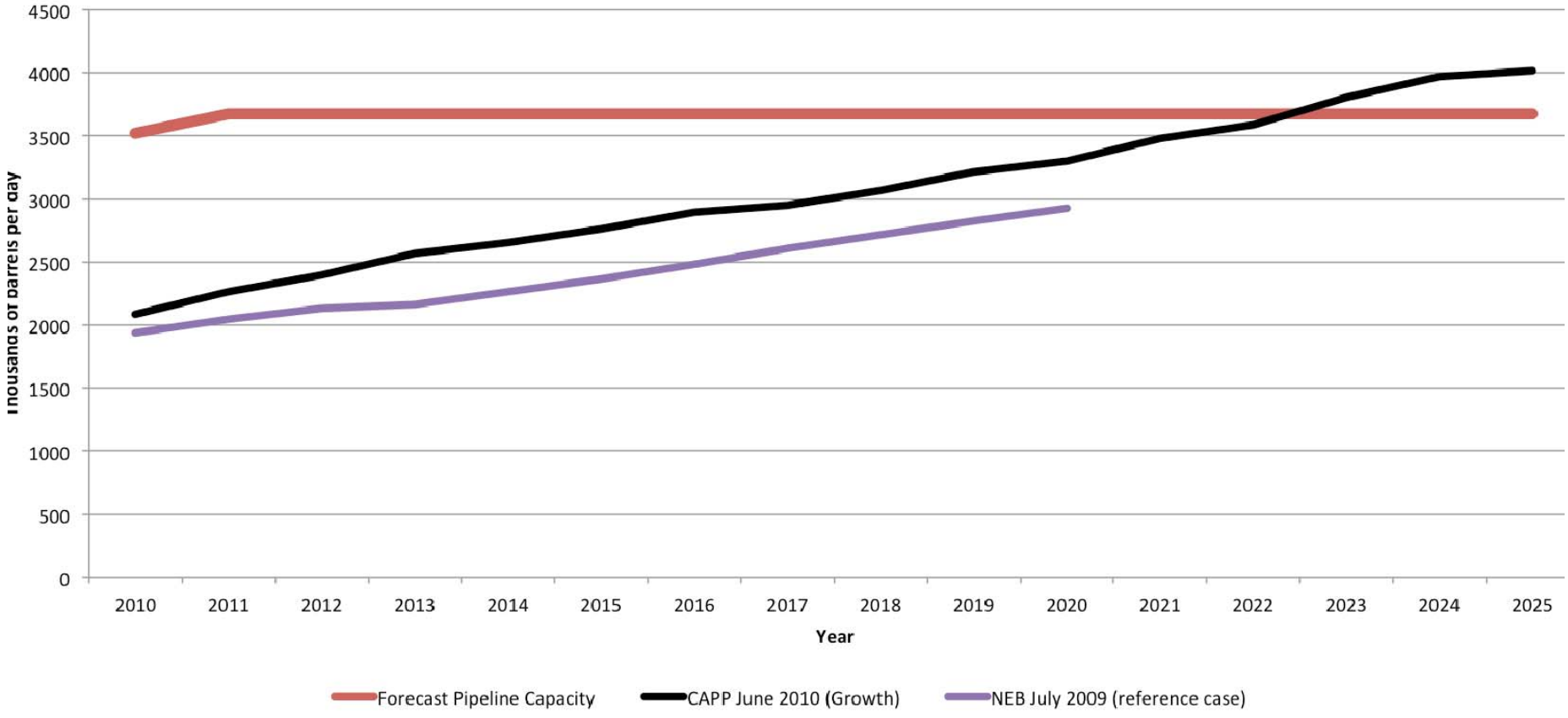
Existing Export Pipeline Capacity and WCSB Crude Oil Export Supply Estimates (no Keystone XL, no Gateway)



Export pipelines awash in capacity

- If both TransCanada Keystone XL and Enbridge Northern Gateway pipelines are approved and in operation in 2016 (a core assumption of Enbridge's application), there will be 41% overcapacity (2 Mbpd).

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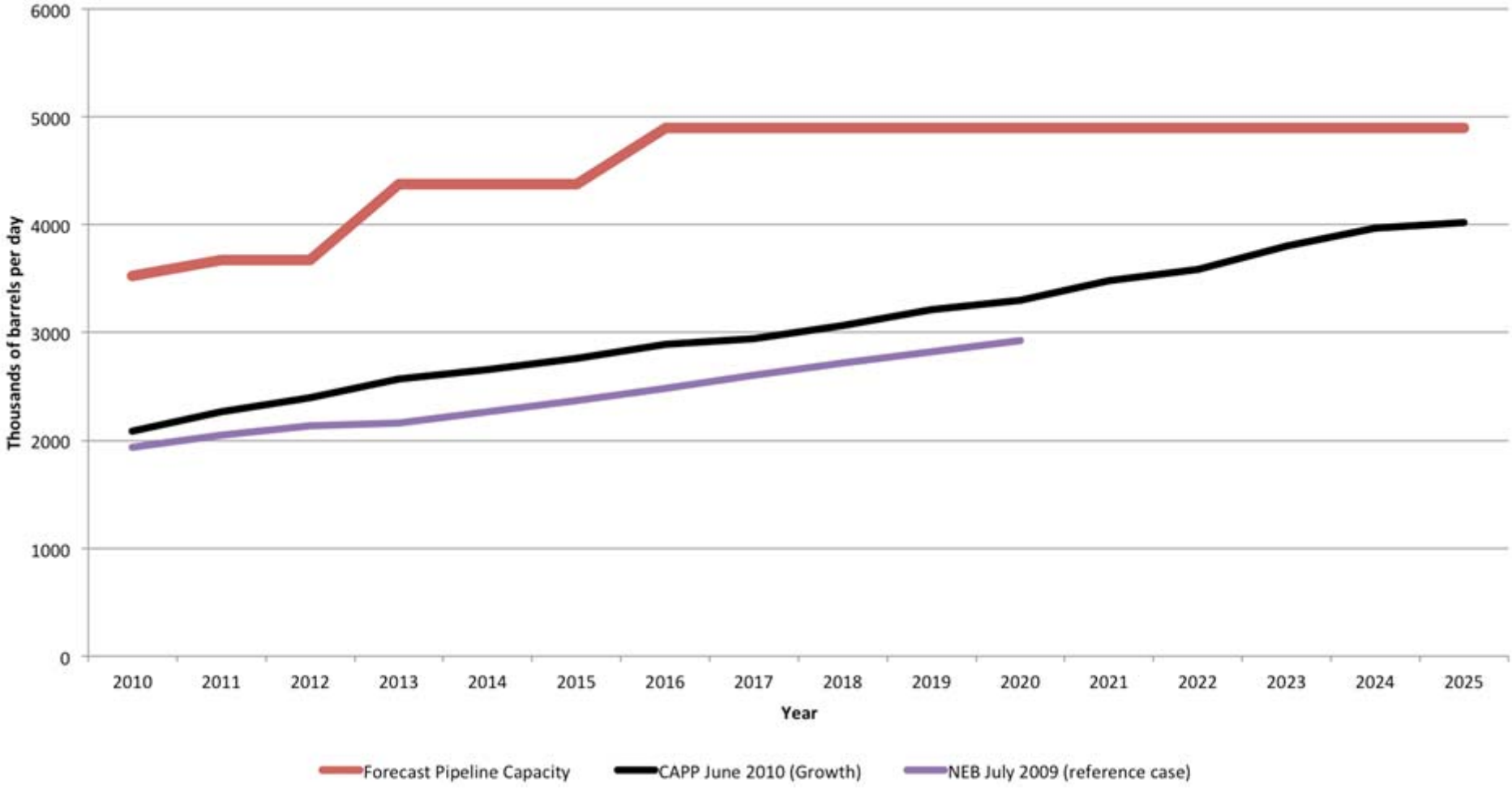
Export pipeline capacity (w/NG +KXL)



Excess export pipeline capacity

- "If you add Keystone XL to the existing spare takeaway capacity you've got now, there's no limitations to the growth of the oil sands we would see well past 2020, 2025."

Bruce March, CEO, Imperial Oil

Financial Post, 29 Apr 2011

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Regulatory Barriers

- Length of time for regulatory approval
- Demonstrate project is needed and in public interest
- Legal challenges by environmental NGOs and First Nations to delay approval
- Lack of national energy policy or climate policy

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Conclusions

- Significant barriers exist to shipping Canadian oil to China
  - Local and aboriginal opposition
  - Environmental risks
  - Uncertain Chinese demand for Canadian oil
  - Lack of commercial support from producers
  - Excess export pipeline capacity
  - Regulatory barriers
- Shipments to China unlikely in the next 5-10 years from Canada's west coast

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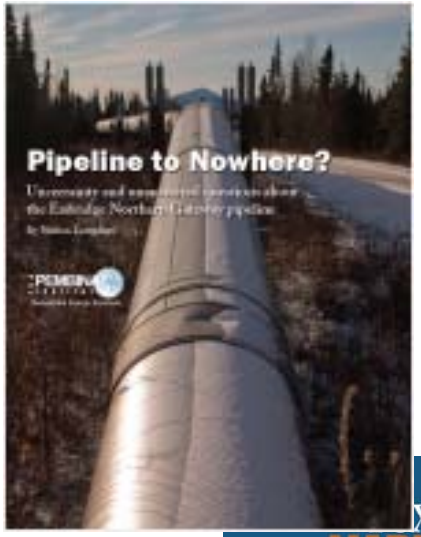

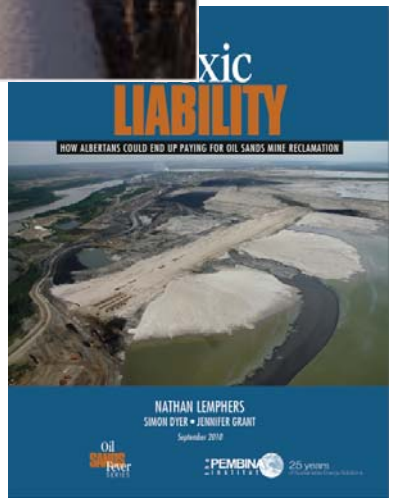

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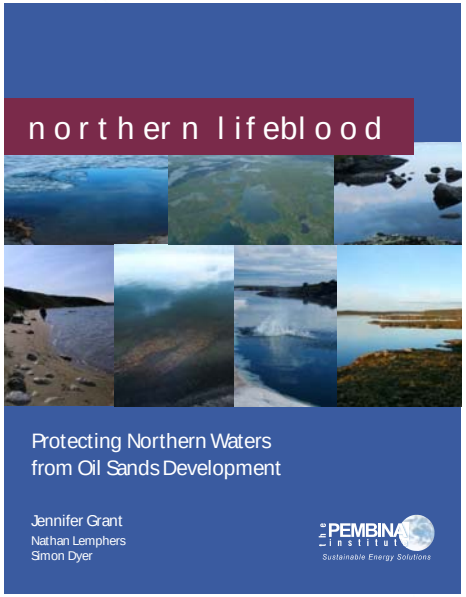

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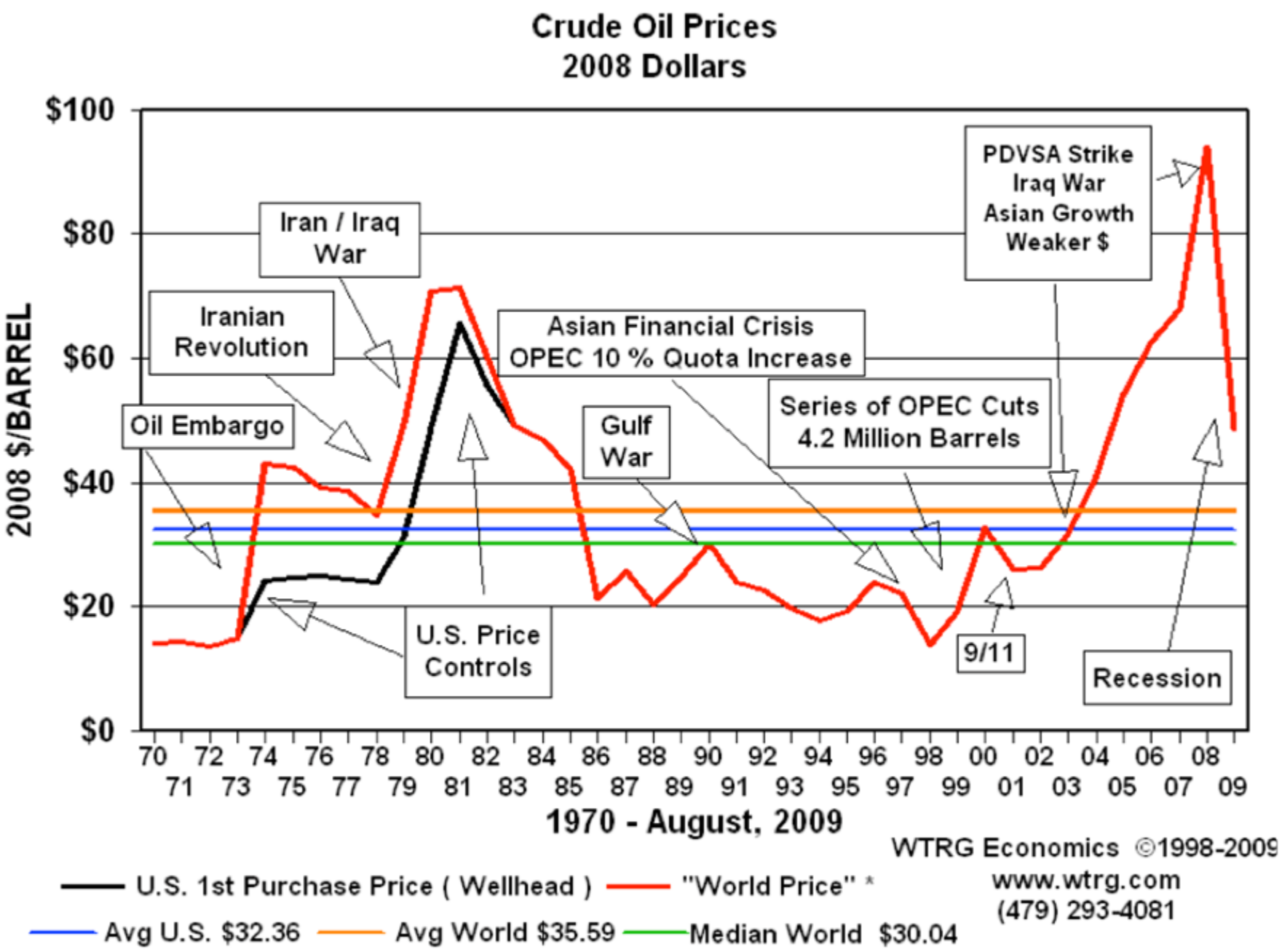
Crude Oil Prices
2008 Dollars
$100
$80
$60
$40
$20
$0
2008 $/BARREL
Iran / Iraq War
Iranian Revolution
Oil Embargo
Asian Financial Crisis
OPEC 10 % Quota Increase
Gulf War
Series of OPEC Cuts
4.2 Million Barrels
PDVSA Strike
Iraq War
Asian Growth
Weaker $
U.S. Price Controls
9/11
Recession
70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08
71 73 75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05 07 09
1970 - August, 2009
WTRG Economics ©1998-2009
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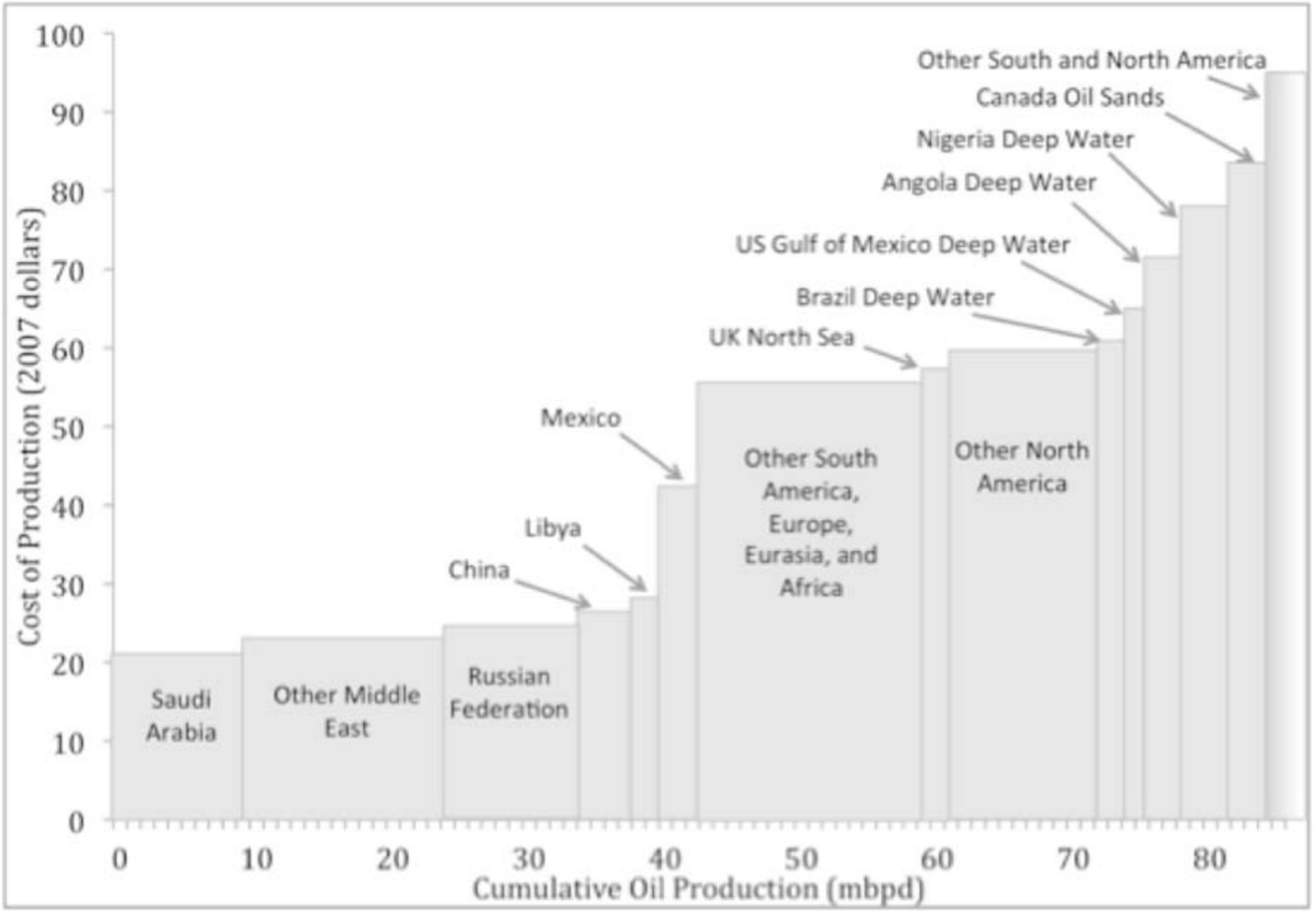
U.S. 1st Purchase Price (Wellhead)
"World Price" *
Avg U.S. $32.36
Avg World $35.59
Median World $30.04



Source: CERA. 2008. Ratcheting Down: Oil and the Global Credit Crisis. Cambridge Energy Research Associates.

East Asian Energy Demand

- "Still, many producers in Alberta see the Asian market as a long-term option at best, with competition from the Persian Gulf and increasing volumes of oil from Russia due to the opening of the East Siberia Pacific Ocean pipeline. In private meetings, one producer said that the Asian market would only make sense when the US market is saturated."

Robert Johnston, Director, Energy and Natural Resources, Eurasia Group

May 2010

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S. Korea Proposed Refinery Expansions

South Korea Proposed Refinery Expansion by 1/1/2012 (In MBD)

Site	Company	Completion	CDU	VDU	Coking	HDC	R/FCC	Cat. Reform	Alky/Poly	BTX	Naph. HDT	Dist. HDT	GO Desulf	Resid Desulf.	L
Daesan	Hyundai	1Q-2011	-	-	-	-	83	-	-	-	-	-	-	-	
Inchon (1)	SK	4Q-2010	-	-	-	55	-	-	-	-	-	-	-	-	
Inchon Cond.	Ssangyong	3Q-2010	25	-	-	-	-	-	-	-	-	-	-	-	
Sosan (2)	Ssangyong	1Q-2011	474	128	-	74	74	-	-	-	-	-	-	88	
	Total Expansions		**499**	**128**	**-**	**129**	**157**	**-**	**-**	**-**	**-**	**-**	**-**	**88**	

Note: (1) Planning is tentative including unit size.

(2) Ssangyong will build a grassroots refinery with 30% Aramco shareholding. Severe secondary and base capacity now confirmed, but other units may well be added.

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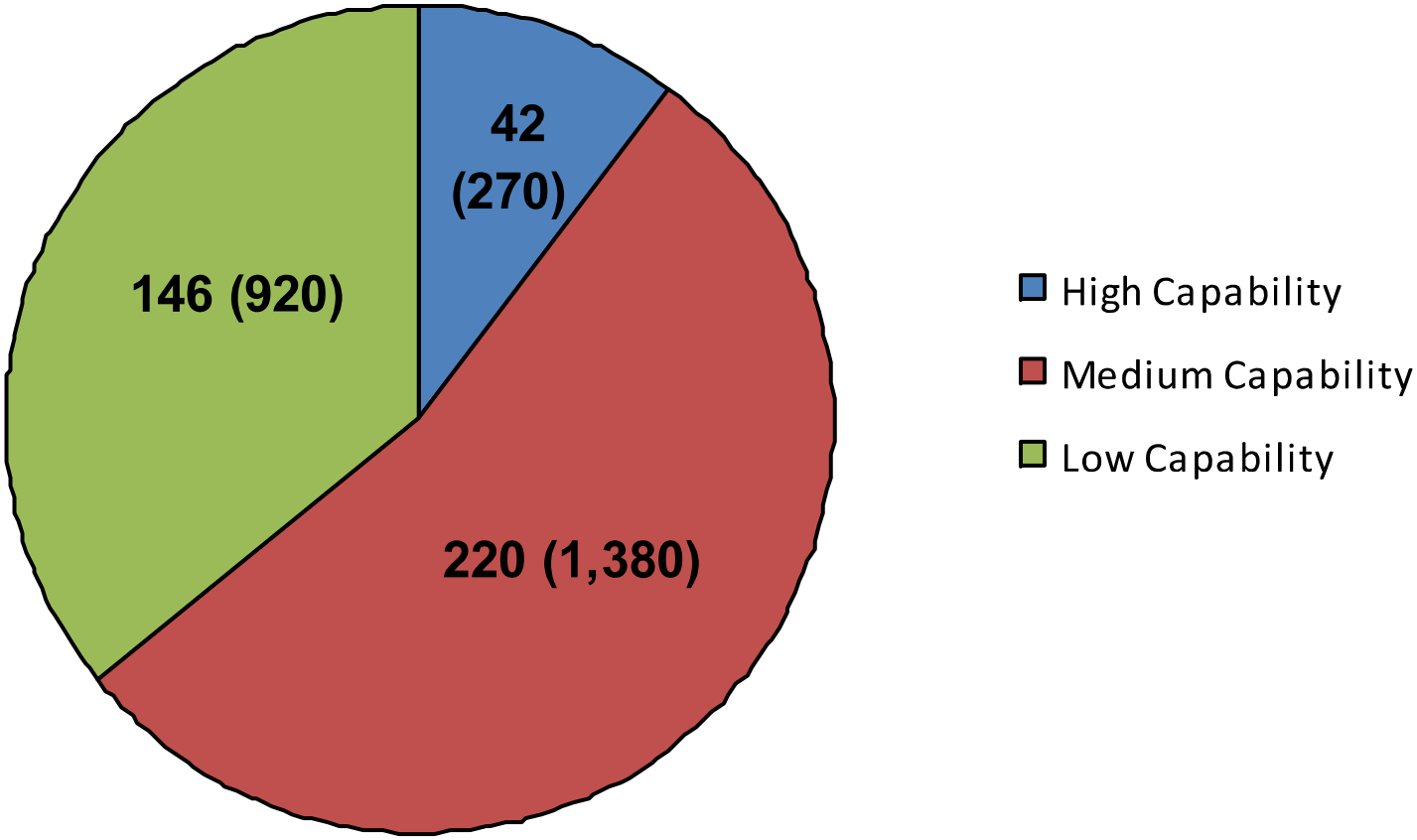
Distribution of Northern Chinese Refining Capacity

km^3/d (kb/d)



SOURCE: *Oil & Gas Journal and Muse*

Japanese crude imports characteristics

East Asian Energy Demand

Source: Petroleum Intelligence Weekly

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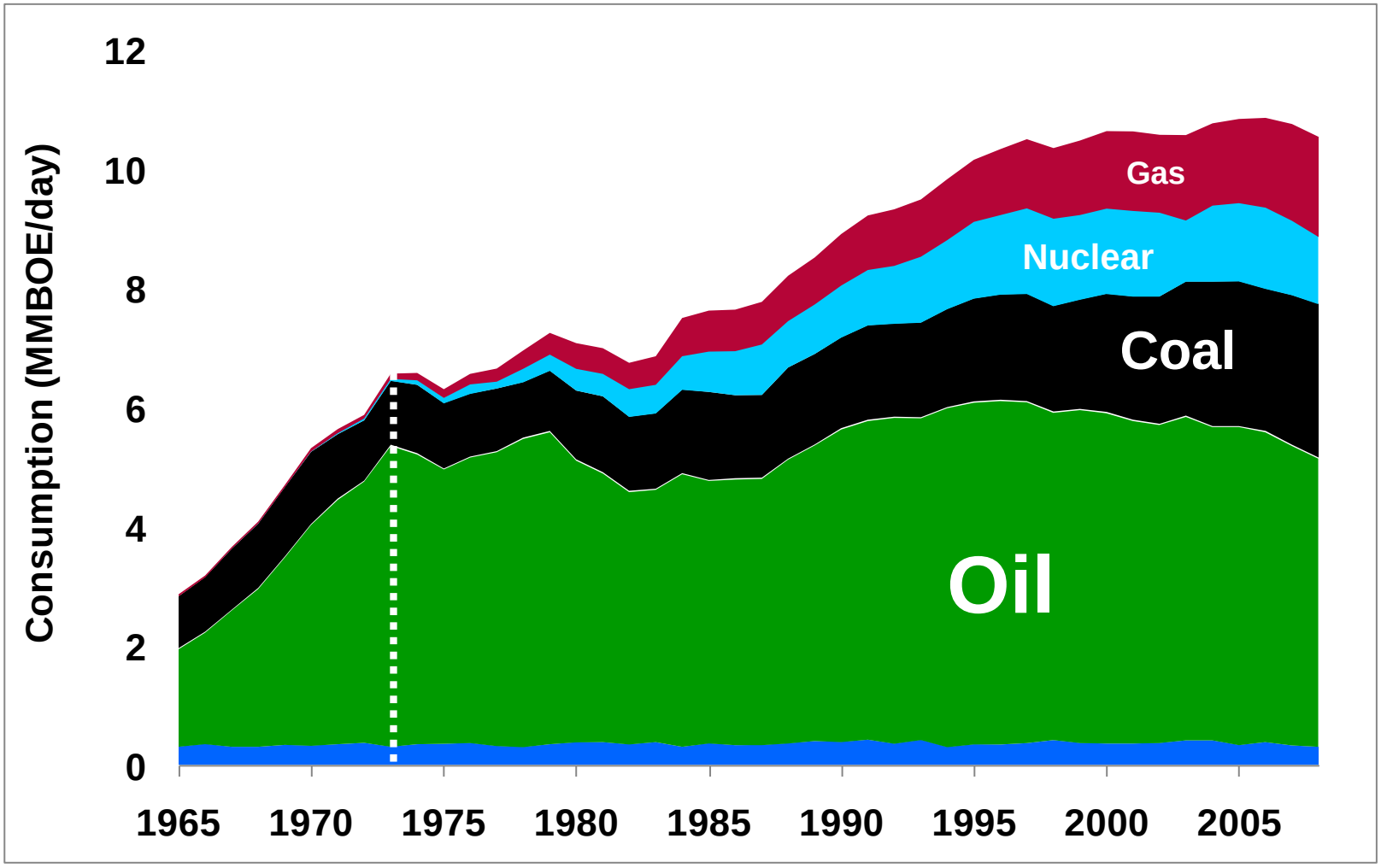
Japan's Energy Appetite and Diet

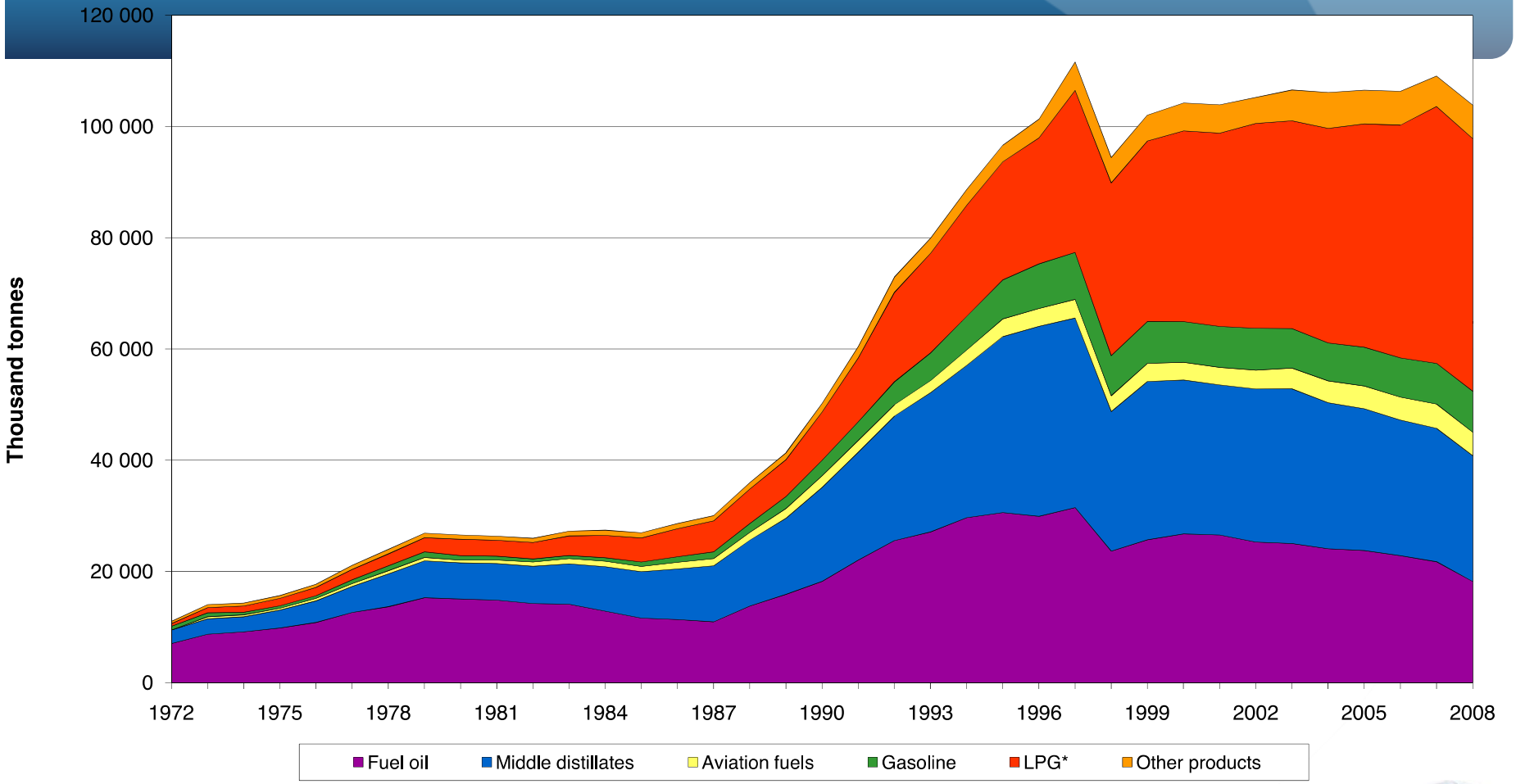
Evolution of Energy Use with Illustrated "Break Point"



Source: BP Statistical Data, ARC Financial Research

Consumption of oil products

Korea



* Includes LPG, NGL, ethane and naphtha.

For more detailed data, please consult our on-line data service at http://data.iea.org.