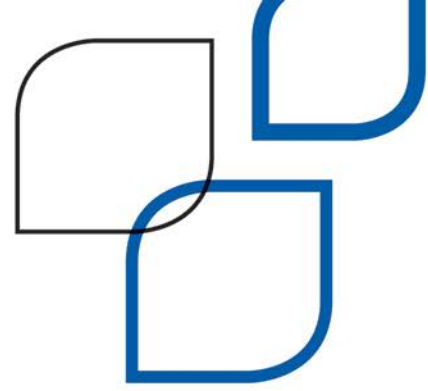




MUNICIPAL
PROPERTY
ASSESSMENT
CORPORATION



Analysis of Economic Obsolescence

Ontario Oil Refineries

2016 BASE YEAR

June 30, 2015

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INTRODUCTION

PURPOSE OF THE REPORT

The purpose of the report is to demonstrate how MPAC intends to account for any loss in value resulting from external obsolescence to the special purpose industrial properties associated with the manufacturing and/or processing activity of petroleum refinement (downstream).

In addition to petroleum refinement there are two other key activities that make up the oil industry: transportation (midstream) and crude oil extraction/exploration (upstream).

SUBJECT PROPERTIES

The subject properties associated with petroleum refinement are:

- Refineries

A refinery is highly specialized and has been designed to perform a sole use. They are useful, and as a result have value, for as long as the intended use is profitable.

The subject properties are only profitable if the associated revenue exceeds the cost of goods sold over the investment horizon linked to the property.

THE MARKET FOR INDUSTRIAL PROPERTIES

There are two markets to be analyzed when studying industrial real property.

- i. “The real estate market, in which industrial properties trade and space in those properties is leased and occupied”¹
- ii. “The market for the goods produced in industrial facilities”²

There is not an active real estate market for the subject properties as when they trade it is part of a vast transaction that includes the entire business enterprise (i.e. inclusive of intangible property, personal property and real property).

In the absence of real estate market data the markets for the goods produced at the subject properties were analyzed when estimating their current values.

The analysis of these markets is the primary subject of this report.

¹ Appraising Industrial Properties, Appraisal Institute, 2005, Page 51

² Ibid, Page 52

EXTERNAL OBSOLESCENCE

External Obsolescence (“EO”) is present when external influences occurring in the market diminish the value of a business and, therefore, its assets. Examples of such types of external influences include (but are not limited to):

- Changing industry economics, such as reduced demand or excess supply;
- Increased cost of raw materials and labour without a corresponding increase in product price;
- Interrupted supply of materials and/or labour;
- Increased competition and price pressures;
- Government legislation and/or changes in regulations;
- Economic factors over which an industry has no control, including changes in inflation, interest rates, foreign current rates and the potential effect of such factors on revenues, expenses and profitability;
- Adverse global economic conditions;
- Technological advances

COMMODITY

The oil products referenced in this report are in many instances a commodity.

A commodity is “a basic good used in commerce that is interchangeable with other commodities of the same type. Commodities are most often used as inputs in the production of other goods or services. The quality of a given commodity may differ slightly, but it is essentially uniform across producers. When they are traded on an exchange, commodities must also meet specified minimum standards, also known as a basis grade”.³

SCOPE OF REVIEW

In preparing our comments and calculations, we have reviewed, considered and relied upon, inter alia, the following:

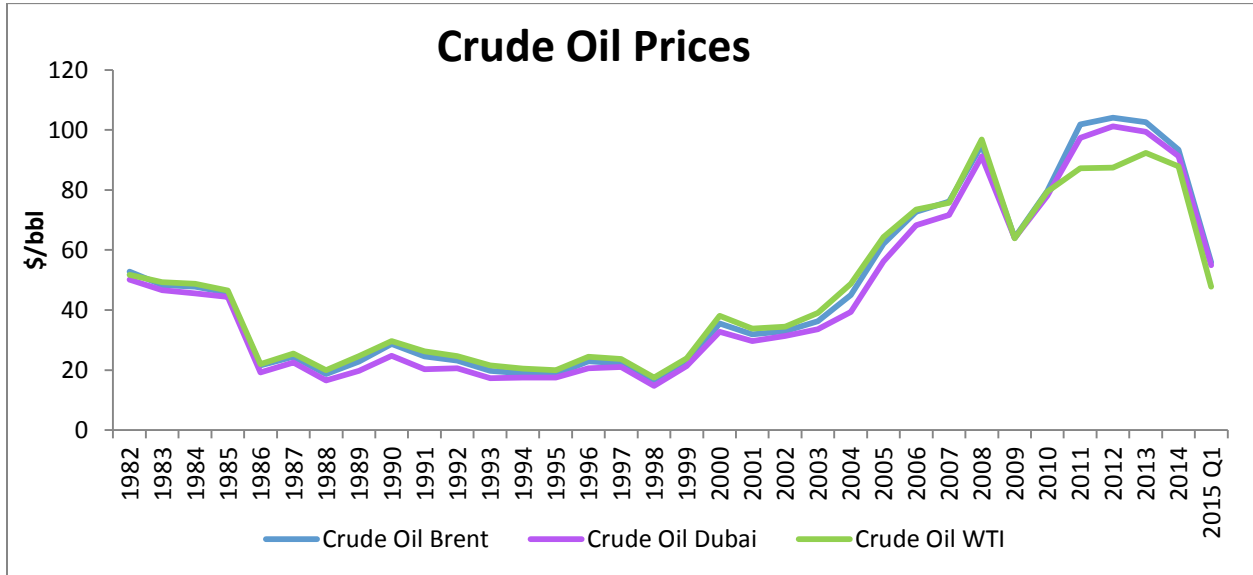
- Various financial and statistical data published by Statistics Canada;
- Various information published on the Industry Canada website;
- Information produced by Bloomberg.
- Information produced by Morningstar
- Information produced by CapitalIQ
- Information produced by Thomas Reuters

³ <http://www.investopedia.com/terms/c/commodity.asp>

COMMODITY PRICES

CapitalIQ publishes the price of Crude Oil Brent, Crude Oil Dubai and Crude Oil WTI.⁴

The following chart illustrates the yearly prices of oil from December 1982 to March 2015 in US dollars per barrel.



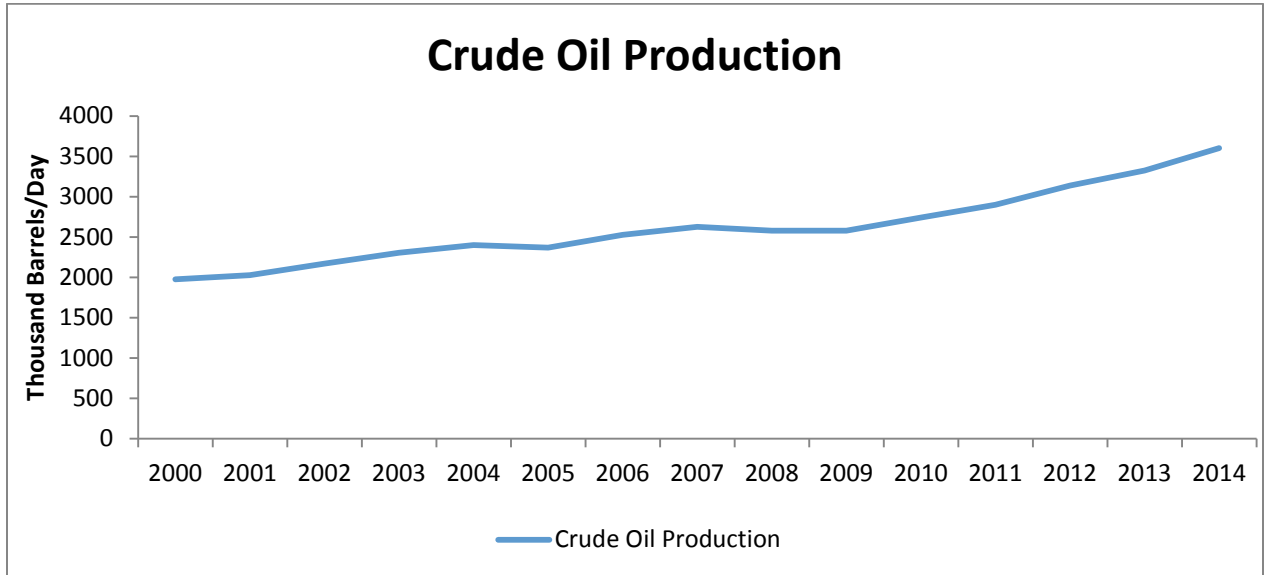
As can be observed, the price of oil has been trending upwards since 1982. A price drop was experienced during the start of the 2009 recession and another during the last quarter of 2014; both price drops were caused as a result of supply being greater than demand.

⁴ <https://www.capitaliq.com/CIQDotNet/Login.aspx>

BARRELS/DAY OIL PRODUCTION

U.S Energy Information Administration publishes international crude oil production quantities.⁵

The following chart illustrates the barrels/day oil production in Canada on a yearly basis. The amounts are reflective of all operation across Canada and span the period of December 2000 to December 2014.



As can be observed, the oil production is trending upward over the 14 year period.

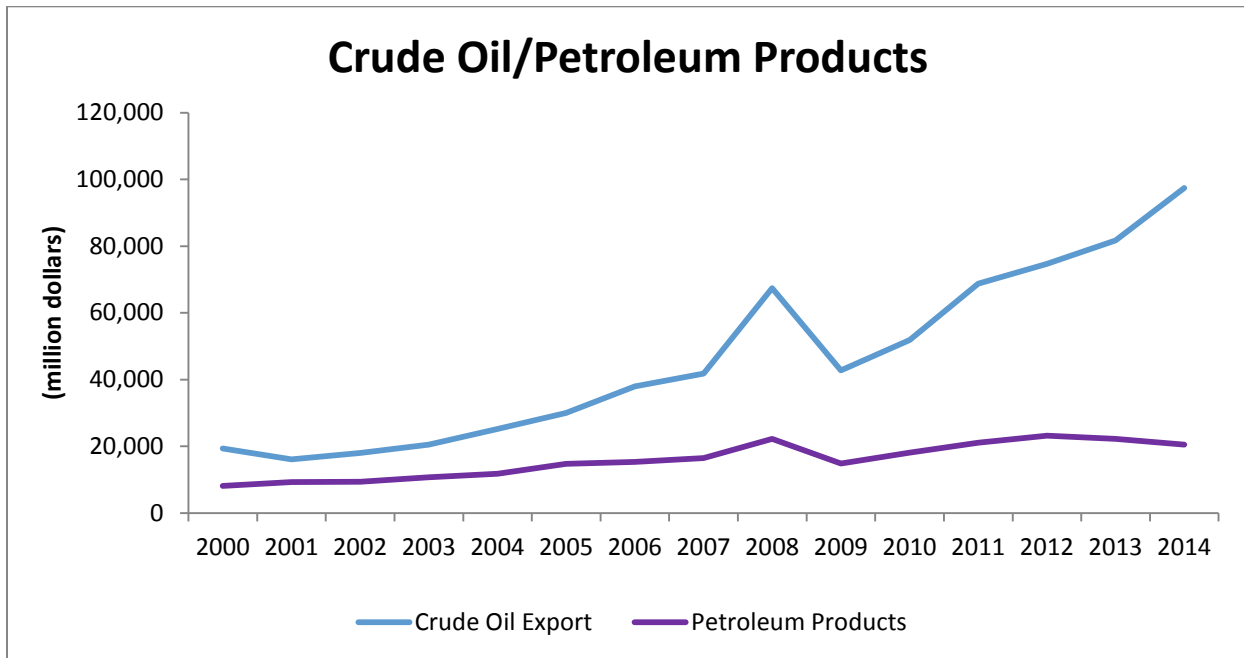
⁵ <http://www.eia.gov/>

TOTAL OIL EXPORTS

Statistics Canada publishes crude oil export data in the Canadian International Merchandise Trade Database (CIMTD). Table 980-0027 shows yearly Canadian crude oil exports by destination. ⁶

Industry Canada publishes petroleum refinery export data in the Trade Data Online section. ⁷

The following table illustrates the total Canadian crude oil exports and petroleum refinery exports to all countries over the past 14 years.



As can be observed, exports for crude oil and petroleum refinery are trending up over the past 14 years. Crude oil data was included in this discussion because all the oil refinery companies in Ontario also compete in the crude oil extraction segment. Thus to fully understand the oil industry in Canada this was deemed appropriate.

⁶ <http://www5.statcan.gc.ca/cimt-cicm>

⁷ <https://www.ic.gc.ca/app/scr/tdst/tdo/crtr.html>

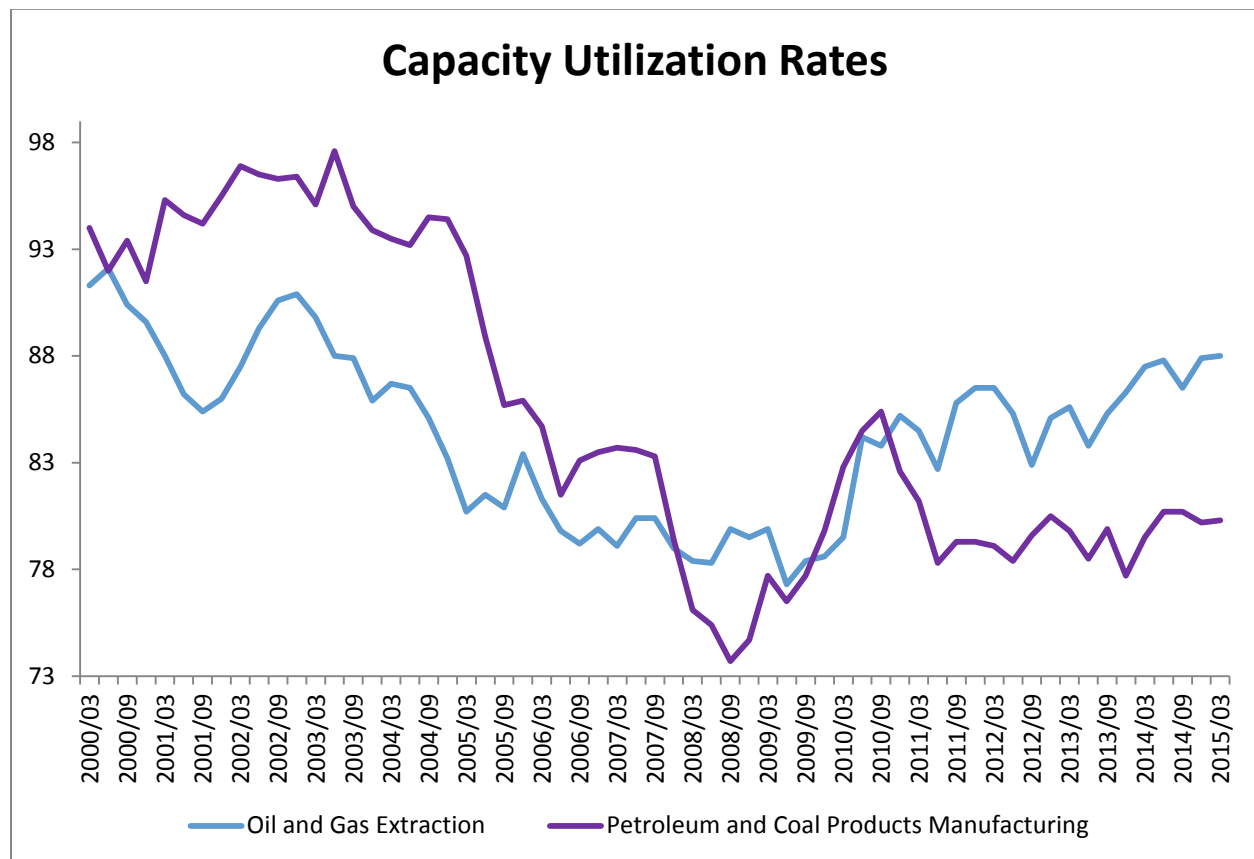
CAPACITY UTILIZATION

Statistics Canada publishes capacity utilization rates in tables.

Table 028-0002 shows the industrial capacity utilization rates, by North American Industry Classification System (NAICS), quarterly as a percentage.

Capacity utilization reflects “the rates of capacity use are measures of the intensity with which industries use their production capacity. Capacity use is the percentage of actual to potential output”.⁸

The following chart illustrates the capacity utilization for all oil/gas extraction and petroleum/coal products manufactured in Canada from Q1 2000 to Q1 2015.



As can be observed, capacity utilization is trending down over the 14 year period.

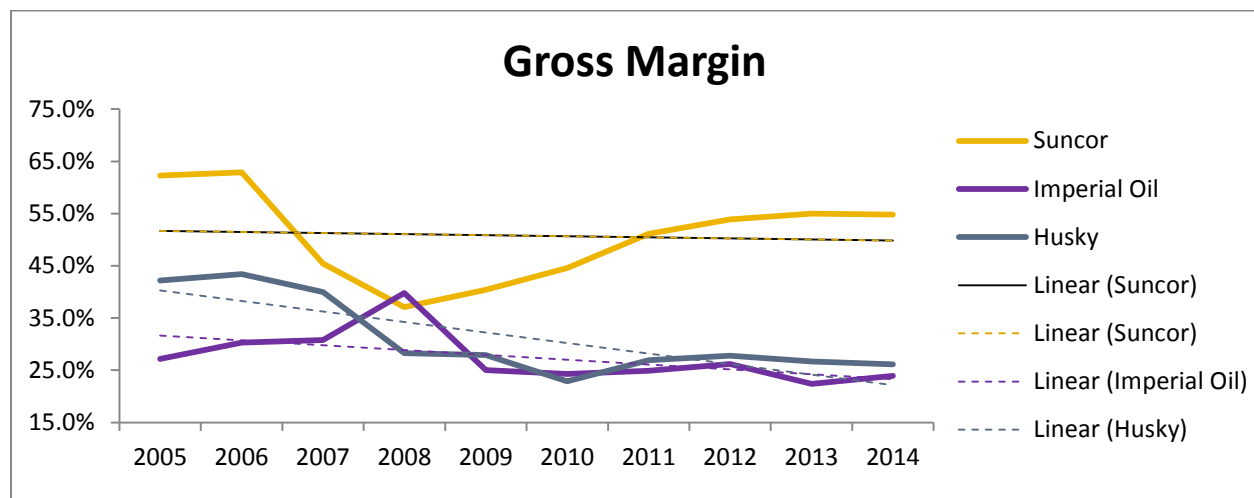
⁸ <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&lang=en&db=imdb&adm=8&dis=2&SDDS=2821>

GROSS MARGINS

Morningstar (amongst many other providers) publishes gross margins for publicly traded companies.

Gross margins reflect “a company's total sales revenue minus its cost of goods sold, divided by the total sales revenue, expressed as a percentage. The gross margin represents the percent of total sales revenue that the company retains after incurring the direct costs associated with producing the goods and services sold by a company. The higher the percentage, the more the company retains on each dollar of sales to service its other costs and obligations”.⁹

The following chart illustrates the gross margins realized by three publicly traded energy companies. Each of the selected companies has operations in Ontario. All three companies have both upstream and downstream operations. Note that Imperial Oil and Husky attain a larger portion of their revenue from upstream operations, while the opposite is true for Suncor.



As can be observed, the gross margins for two of the three of the companies are trending down over the 10 year period.

⁹ <http://www.investopedia.com/terms/g/grossmargin.asp>

SUMMARY OF FINDINGS

The analysis involved the review of five economic indices. The following table illustrates how each of the indices is trending as of the date of the report.

Economic Indicator	Trend
Commodity Price	Upward
Total Crude Oil Production	Upward
Total Oil Exports	Upward
Capacity Utilization	Downward
Gross Margin	Downward

As can be observed, three of the five indices are trending upward.

The most weight is given to gross margins as the data reflects both the revenue realized and the cost of goods sold.

There is weight placed upon capacity utilization as the expected corollary of a downward trend is a contraction in the financial performance – this is consistent with the trend observed from the gross margins.

Less weight is placed upon commodity prices as it only tells a portion of the story as there is no reference to the expenses associated with extracting and/or processing the commodity before getting it to market.

Less weight is placed on total crude oil production and total oil exports as these indicators do not take into account costs, expenses or overall margins.

CONCLUSION

Based upon the information reviewed there is evidence to suggest that the oil sector in Ontario is facing adverse external influences that are occurring in the market that diminish the value of their businesses and, therefore, their assets.

Company	Mean Gross Margin (2005 to 2013)	Most Current Gross Margin (2014)	Variance	Variance (Percentage)
Suncor	50.3	54.8	4.50	8.95%
Imperial Oil	27.9	23.9	-3.98	-14.3%
Husky	31.8	26.1	-5.84	-17.9%

Note: Suncor enjoys a higher gross margin than its competitors. After analyzing the revenue breakdown of Suncor, Imperial Oil and Husky it was determined that Suncor derives a larger portion of their revenue from downstream operations while the opposite is true for Imperial Oil and Husky.

Given the petroleum refinery focus of this report a greater emphasis was placed on Suncor's gross margin in determining a preliminary allotment for external obsolescence.

Mean Capacity Utilization (2000 to 2014)	Most Current Capacity Utilization (Q1 – 2015)	Variance	Variance (Percentage)
Oil/Gas Extraction - 84.3	88.0	3.68	4.37%
Petroleum/Coal - 85.5	80.3	-5.19	-6.07%

This conclusion is a broad generalization and there may be circumstances specific to a particular property that could cause it to not be facing adverse external influences.

It is anticipated that stakeholders will share more fulsome information that may cause MPAC's view to evolve; however, prior to any iterative discussions with stakeholders **it is MPAC's view that the loss in value resulting from external obsolescence ranges from nominal to 5 percent.**

SUMMARY OF ADDITIONAL RESEARCH

OIL

Industry Outlook

- “While crude oil prices appear to have stabilized – and even gained some ground – over the last few months, more weakness is likely in store. The market is amply supplied, and storage in the U.S. is expected to bump up against full capacity within the next few months, which should lead to another leg down in oil prices. As production growth slows and demand picks up in the second half of this year, the market imbalance will begin to diminish, allowing prices to move back up toward the US\$60 per barrel mark. Next year, we forecast WTI to average US\$70 per barrel.” – TD Economics – April 30, 2015

Key Price Drivers:

- Supply
 - Changes in inventory levels
 - OPEC production decisions
 - OPEC spare capacity levels
- Demand
 - Seasonal/Severe Weather
 - Technological changes
- Marginal Cost of Production
- Aging Refinery Infrastructure

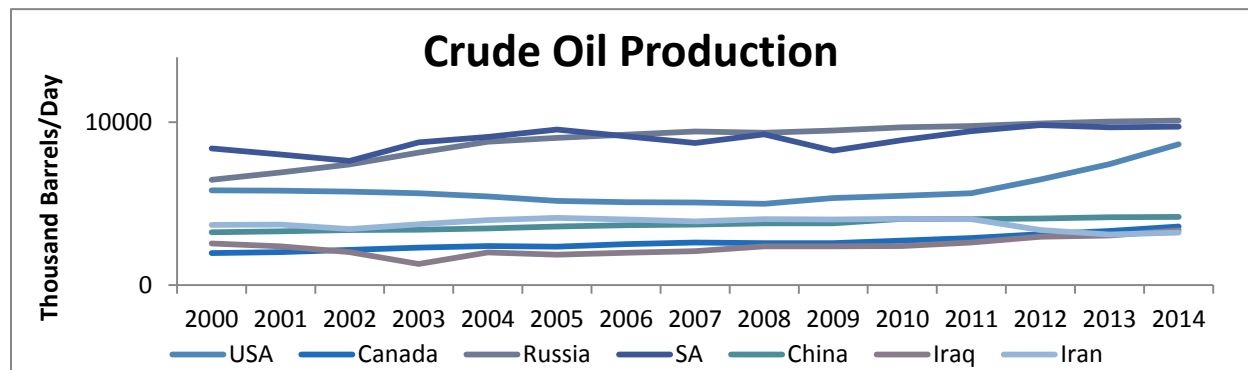
Main Oil Benchmarks/References:

- *Brent Blend*: refers to oil from four different fields in the North Sea. Oil from this region is light and sweet making it ideal for refining gasoline, diesel and other high demand products. (Most widely use marker of all)
- *West Texas Intermediate*: refers to oil extracted from wells in the U.S. The oil is very light and sweet making it ideal for gasoline refinement.
- *Dubai/Oman*: This oil is heavier and slightly sour, making it a lower grade than Brent and WTI.

Recent Events:

Between 2014 and early 2015 the price of crude oil dropped by 44.3% as a result of oversupply and depressed demand. Oversupply: US domestic production has almost doubled over the past six years, Canadian, Iraqi and Russian production are increasing YOY. Demand: economies of Europe/developing countries are weakening and vehicles are becoming more fuel efficient.

Analysis of the price of crude oil:



Year	USA	Canada	Russia	SA	China	Iraq	Iran
2000	5821.6	1976.9	6479.2	8403.8	3248.8	2570.7	3696.3
2001	5801.4	2029.2	6917.0	8031.1	3300.0	2390.0	3723.7
2002	5744.1	2170.6	7408.2	7634.4	3389.7	2023.0	3444.3
2003	5649.2	2305.7	8132.2	8775.0	3408.9	1308.3	3742.8
2004	5440.9	2398.4	8804.7	9100.8	3485.3	2011.5	4001.4
2005	5181.5	2368.9	9043.1	9550.1	3608.6	1877.7	4138.6
2006	5087.9	2525.4	9247.2	9152.3	3672.7	1995.6	4027.8
2007	5077.0	2628.1	9437.1	8721.5	3728.8	2086.3	3911.9
2008	5000.1	2579.3	9356.8	9261.3	3790.2	2375.3	4050.3
2009	5349.8	2579.5	9495.4	8250.1	3796.0	2390.6	4037.0
2010	5481.9	2740.8	9694.1	8900.0	4078.4	2399.3	4080.4
2011	5644.8	2900.7	9773.5	9458.4	4058.7	2625.7	4054.0
2012	6496.7	3137.8	9921.6	9832.3	4085.2	2983.3	3386.9
2013	7441.5	3325.1	10053.8	9693.2	4164.1	3054.4	3113.3
2014	8652.8	3602.9	10107.1	9735.3	4189.1	3368.0	3235.7
Average 2000-2014	5858.1	2618.0	8924.7	8966.6	3733.6	2364.0	3776.3
Average 2005-2014	5941.4	2838.8	9613.0	9255.5	3917.2	2515.6	3803.6
Average 2008-2014	6295.4	2980.9	9771.8	9304.4	4023.1	2742.4	3708.2
Average 2012-2014	7530.3	3355.3	10027.5	9753.6	4146.1	3135.3	3245.3

