RAC Foundation

Deloitte.

UK fuel market review

Crude oil

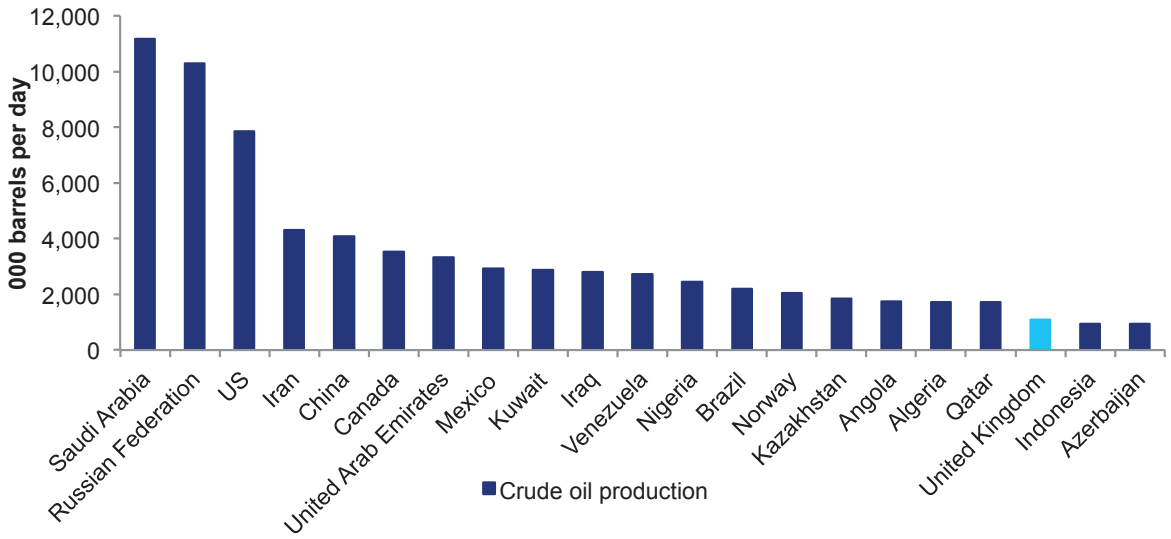
www.racfoundation.org/uk-fuel-market-review

- The price of crude oil is largely set globally and as a consequence crude prices are subject to fluctuations in the global balance of supply and demand.
- Demand for crude oil is driven by a number of factors: global economic activity, the oil intensity of certain sectors, future expectations regarding the availability of oil and its price, weather and technological innovation.
- Supply in the short run is a function of output from existing production capacity and inventories. In the longer term, it is a function of existing reserves and exploration for and development of new reserves.
- The majority of UK crude oil is produced in the UK Continental Shelf (UKCS). This is equivalent to just over half of the UK's crude oil demand.

1. Crude oil prices: set globally

In 2011, crude oil provided a third of global energy consumption; it is the world's most important energy source. Crude oil is extracted in many parts of the world and traded internationally.

Figure 1: Crude oil production by country in 2011 (000 barrels per day)



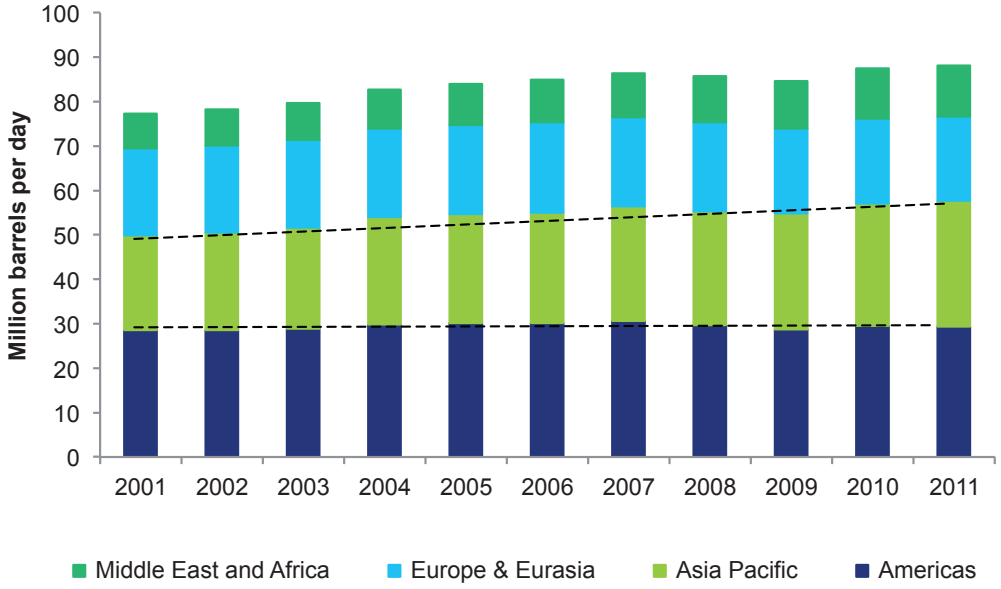
Source: *BP Statistical Review of World Energy* 2012

Price differentials exist between types of crude oil. Depending on its density (light, medium and heavy – light crudes having the highest economic value) and sulphur content (sweet indicates low, while sour indicates high sulphur content), the value of crude oil varies which in turn affects the pump price of fuel for the final consumer.

The main factors driving the demand for crude oil

- **Global economic activity** – Demand for crude oil is closely linked to global economic activity. Growth in GDP drives demand for oil and leads to an increase in crude oil prices.

Figure 2: Global crude oil consumption (million barrels per day)



Source: *BP Statistical Review of World Energy 2012*

Crude oil consumption has grown from 77.2 million barrels per day (m b/d) in 2001 to 88m b/d in 2011. Industrialisation of emerging countries has been the main factor behind the growth of crude oil demand globally.

- **Crude is used in many different sectors of the economy** – Crude is one of our most versatile energy resources. As Table 1 below shows, crude oil is mostly used in transport, but it is also an important resource for the energy sector and the petrochemical industry. Demand for specific types of crude varies across geographies.

Figure 3: Breakdown on total oil consumption by sector in the US and UK (2011 data)

Sector/Country	United States	United Kingdom
Transport	70%	76.5%
Industry	24%	17.8 %
Domestic	4%	3.8%
Other	3%	2%

Sources: Energy Information Administration and Department (IEA) of Energy and Climate Change (DECC), *Oil Statistics, Quarterly tables: Energy trends, Supply and use of petroleum products*

Other factors influencing the demand for crude oil include current economic conditions and future expectations for oil prices, weather and innovation in transport and technology.

The main factors impacting crude oil supply

- **Production capacity** – Global supply of crude oil has grown more slowly than demand in the last decade. This is the result of a variety of factors including slowing production capacity of non-OPEC countries (see below) due to depleting oil fields (North Sea Continental Shelf for example) and interruptions to supply as a result of geopolitical tensions, such as the Arab Spring.
- **Organization of the Petroleum Exporting Countries (OPEC)** – Founded in 1960, OPEC is an intergovernmental organisation that has the objective of safeguarding the interests of oil producing countries around the world.[1] Its members own 72% of the world's proven oil reserves and in 2011 produced 42% of the world's total supply of crude oil.[2] The 12 member countries meet at least twice a year to discuss oil market fundamentals and set a crude production ceiling for the following price revision period. OPEC therefore has the potential to influence on international crude oil prices by increasing or decreasing its oil production capacity.
- **Inventories** – Inventories can influence and also reflect the market perception of short-term demand/supply and therefore can have an impact on future oil prices. Crude and petroleum product inventories serve to balance the impact of potential supply disruptions in the short term. Where inventories are low, markets can be more sensitive to actual or perceived supply disruptions or demand fluctuations.
- **Crude oil reserves** – The extent of proven reserves relative to demand can have an impact on the market's perception of the long-term balance of demand and supply and therefore can affect future prices.
- **US dollar exchange rates** – All crude is traded in the US dollar and therefore the strength of the currency has an impact on oil prices. A weaker US dollar leads to lower oil prices in non-dollar denominated countries. This can increase demand, which in turn may push up oil prices.
- **Other factors** – Oil exploration and production costs can have an impact on supply of crude oil as can investment in production capacity and weather conditions. In addition, market sentiment itself can have an impact on prices.

[1] Current OPEC members include Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates and Venezuela.

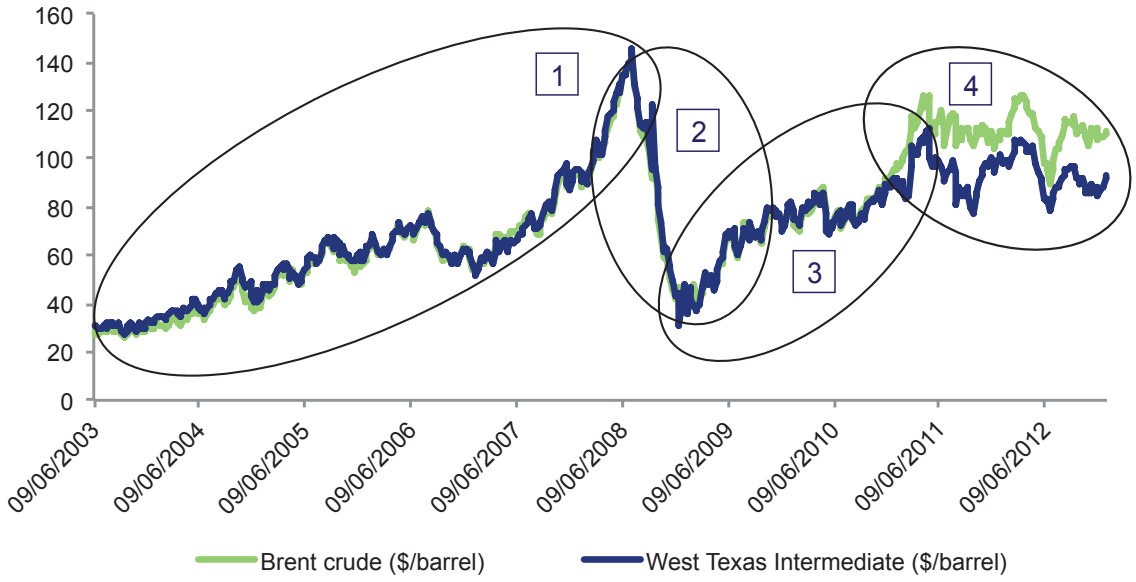
[2] *BP Statistical Review of World Energy 2012*

How are prices set in practice?

Crude oil is traded on a number of international exchanges for immediate and future delivery. The New York Mercantile Exchange (NYMEX) and the Intercontinental Exchange (ICE) in London are the main exchanges for trading crude oil. Given that there are so many different types of crude traded on markets, two – West Texas Intermediate (WTI) on NYMEX and Brent crude on ICE – are widely used as the international benchmarks. These are benchmark prices only and the vast majority of crude oil types are traded at higher or lower prices depending on a number of variables. The Brent crude price is the most important benchmark in Europe and is used in two thirds of oil trades globally.

Figure 4 below identifies the number of discrete periods of crude price evolution.

Figure 4: Historical WTI and Brent prices



Source: DataStream

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Period 1: Crude oil prices continued to increase from mid-2003 through mid-2008 due to geopolitical tensions such as disruptions caused by the Iraq war, a weaker US dollar and growing demand from emerging countries. Supply in Organisation for Economic Co-operation and Development (OECD) countries decreased over the period. While at the same time the supply capacity of non-OECD countries expanded, it did not keep up with the increase in global demand. As a result, crude oil prices rose to $145 per barrel in the summer of 2008.

Period 2: The onset of the global economic crisis in mid-2008 caused the price of crude to collapse. While global average daily demand for oil decreased by only 2% between 2007 and 2009, crude oil prices dropped sharply from $145 per barrel in the summer of 2008 to just below $40 per barrel by early 2009. The collapse in the price of crude reflected not just slowing demand, but also pessimism over future growth prospects for the global economy.

Period 3: Signs of global economic recovery and a subsequent increase in demand caused oil prices to start rising again from the beginning of 2009. On the supply side, OPEC cut its production by 2.2 million barrels per day in late 2008. This was the biggest cut in OPEC's history. Uncertainties about the speed of recovery and the unfolding eurozone crisis also contributed to the relative volatility of oil prices.

Period 4: Fears of a prolonged global recession, and the eurozone debt crisis in particular, have had an impact on the price of crude oil. Both the International Energy Agency and OPEC have revised downwards their forecasts for demand growth for 2012 and 2013. At the same time, political disruptions in a number of Middle Eastern and North African countries heightened concerns over possible supply puptions.

A new trend has been the pronounced divergence of the WTI and Brent prices from early 2011. This is because US and Canadian oil producers have increased their WTI inventories. The US relies on its dense pipeline network to transport crude oil. However, this network was insufficient to transport the crude oil away from the hub, where the inventories are located, thus causing a supply glut that depressed the price of crude at the WTI trading hub. In the UK, the opposite was happening. Supplies from ageing North Sea crude fields that determine the price of the Brent index started to decline rapidly. This, combined with concerns that the US embargo on Iranian oil would reduce the crude supply to Europe, has caused the index to increase.

2. UK oil sector in an international setting

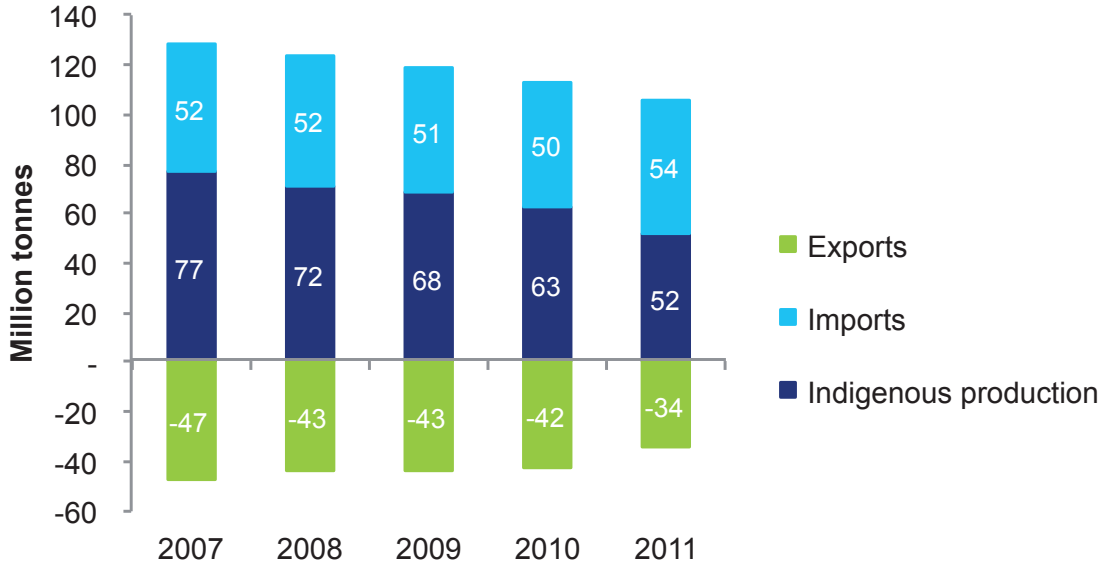
The North Sea Continental Shelf (UKCS) contains large oil and gas reserves. According to international agreements, five countries (Denmark, Germany, Netherlands, Norway and the UK) own these hydrocarbon reserves and can award licences for oil and gas production in the area under their control.

The majority of crude oil consumed in the UK is extracted from the UKCS and transported by pipelines to refineries or otherwise crude is imported and delivered by oil tankers.

The oil and gas industry is a major contributor to the UK economy. The sector paid £11.2 billion in corporate taxes in 2011/12, almost a quarter of all corporate taxes, and invested £9.9 billion, the most of any UK industry. It supports at least 440,000 jobs across the UK.[3]

Fall in domestic crude oil production requires the UK to import a greater proportion of its crude oil

Figure 5: UK crude oil production, imports and exports (in million tonnes)



Sources: DECC, *Oil Statistics, Primary oil: commodity balances and Energy Sector Statistics, Foreign trade statistics, Imports and exports of crude oil by country*

[3] http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/source/oil/oil.aspx
http://www.oilandgasuk.co.uk/economics.cfm

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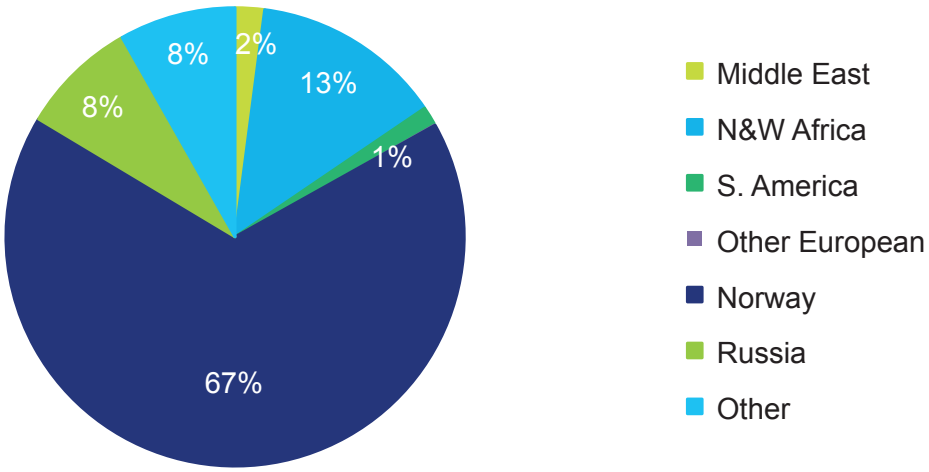
UKCS oil and gas production has been declining at an annual average rate of 6% over the past half decade.[4] This trend is expected to continue.

The UK both imports and exports crude oil. This is because international oil companies that invest in production in the UKCS export some of the oil to supply to other countries.

Figure 6: Sources of imports in 2011 (Total imports: 53.6 million tonnes)



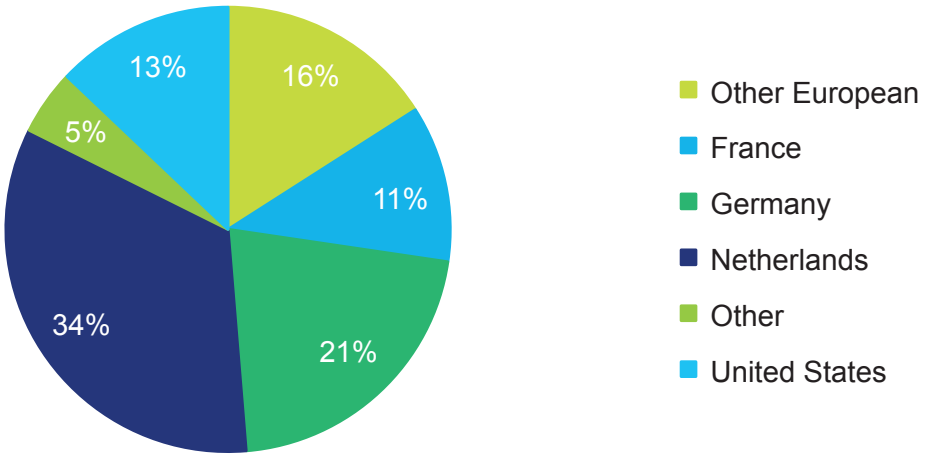
Source: DECC, *Energy Sector Statistics, Foreign trade statistics, Imports and exports of crude oil by country*

Norway is the largest supplier, providing two thirds of all imported crude. This is because the UK and Norway share oil production infrastructure in the North Sea and crude oil produced is of the quality that is suitable for UK refineries. Russia and North and West African countries are also significant oil suppliers to the UK.

Crude oil imports have dropped slightly since 2007, due to the decrease in demand for petroleum products during the economic recession. However with North Sea oil production continuing to decline it is likely that imports will increase in the future.

[4] http://www.oilandgasuk.co.uk/cmsfiles/modules/publications/pdfs/EC028.pdf

Figure 7: UK crude export destination in 2011 (Total exports: 34.3 million tonnes)



Source: DECC, *Energy Sector Statistics, Foreign trade statistics, Imports and exports of crude oil by country*

The UK's crude oil exports have been slowly declining since 2007. The UK's main market for crude oil is the European Union, accounting for over 80% of exports. The Netherlands, Germany and France are the UK's largest customers i n terms of crude oil. The United States takes 21% and is also a significant importer.

This factsheet was last updated January 2013.

The Royal Automobile Club Foundation for Motoring is a transport policy and research organisation which explores the economic, mobility, safety and environmental issues relating to roads and their users. The Foundation publishes independent and authoritative research with which it promotes informed debate and advocates policy in the interest of the responsible motorist.

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