

# OIL AND GAS INDUSTRY: PANORAMA

By Girish Ananth, Rakshit U Agarwal, Saumya Kapoor

AUGUST 7, 2014  
ISSUE 1



## ABSTRACT:

The oil industry is the world's largest in terms of dollar value and is significantly affected by the economic and political conditions in the countries that are importers or exporters of crude oil. This report highlights the recent trends and key drivers for the industry growth. It also covers the value chain of upstream, midstream and downstream operations, which gives the reader a clear idea of revenue and cost drivers of the industry.

*“Love em or hate em, oil and natural gas companies keep the world running, and will for many years to come.”*  
~Christopher Helman, Forbes

## INTRODUCTION

The oil and gas industry powers the world – literally. From exploration to consumption, this is the world’s largest industry in terms of dollar value. On the whole, 30 billion barrels, or 4.8 billion m<sup>3</sup> of oil is consumed every year, with the largest consumers being the developed nations.

**| 30bn barrels of oil consumed annually**

OPEC, or the Organization of the Petroleum Exporting Countries, is an international organization formed with the aim of coordinating policies and prices to protect the interests of its members. There are presently **twelve** member countries in OPEC: Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela.

Price of crude oil is determined by supply and demand forces in the global market. OPEC members collectively hold nearly **81%** of world’s crude oil reserves, currently standing at 1200 billion barrels, and can considerably influence crude oil prices in the global market by controlling supplies from the member nations.

**| 4 of 5 barrels owned by OPEC**

The industry is also **influenced by economic and political conditions**. If the economy is in recession, there is less manufacturing output, and fewer people drive to work, ultimately leading to falling of demand. On the other hand, when the economy is firing on all cylinders, demand (and, hence, prices) for oil and gas is the highest.

## CRUDE OIL AND ITS CLASSIFICATION

Crude oil is the source material from which petroleum products are majorly obtained. There are different grades of crude oil, classified based on the region in which it is found:

1. **West Texas Intermediate:** Used as a benchmark for North American crude.
2. **Brent Crude:** Global price benchmark for European and African crude oil. It is used to price two-thirds of the world’s internationally traded crude oil supplies.
3. **Dubai Oman:** Used for benchmarking Middle Eastern crude oil flowing into Asia-Pacific region.
4. **OPEC:** Weighted average of prices for petroleum blends produced by the 12 OPEC countries.

Some of the world’s biggest oil companies are given in Exhibit 1.

## INSIDE THIS ISSUE

- |                                     |                         |
|-------------------------------------|-------------------------|
| 2. Crude Oil and its Classification | 5. Growth Drivers       |
| 3. Industry Structure               | 6. Environmental Impact |
| 4. Revenue and Cost Drivers         | 7. Recent Trends        |



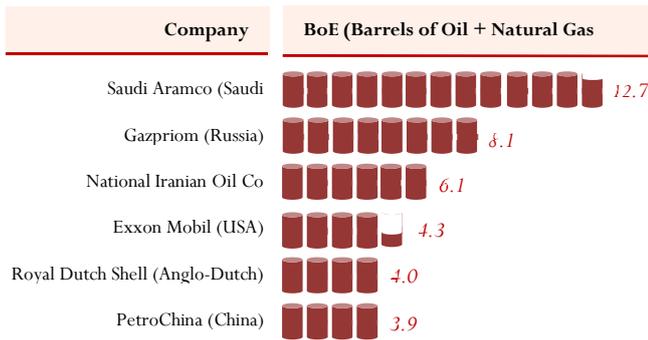


Exhibit 1: Some big oil companies in the world (Forbes 2013)

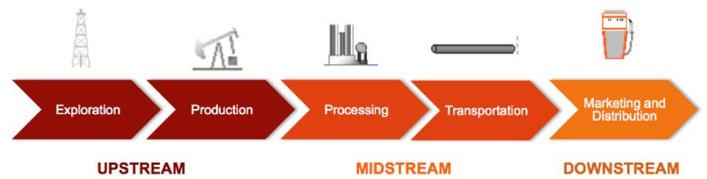


Fig 1: Schematic flow of processes

### INDUSTRY STRUCTURE

The oil industry is engaged in the exploration, drilling, production, refining, and supply of oil and gas products. It is classified into **upstream, midstream and downstream** on the basis of these activities.

- **Upstream:** The upstream sector industry deals with exploration of wells and subsequent drilling to extract crude oil or natural gas.
- **Midstream:** The midstream industry is involved with storing, transporting and preliminary processing of crude oil. Midstream operations are integrated into the downstream operations for many companies.
- **Downstream:** This deals with the processing and refining of crude oil, and selling and distribution of products like diesel, petrol, natural gas derived from it. It includes natural gas distribution companies and retail outlets for petroleum product distribution.

### GROWTH DRIVERS

Three key drivers for the industry are as follows:

#### Increasing Exploration Activity

As the existing wells mature and the demand for hydrocarbons goes up (especially from developing economies), companies will need to invest huge resources to drill unexplored reservoirs. The days of easy oil are gone and most of these exploration activities will take place in harsh conditions (deep offshore locations, etc.).

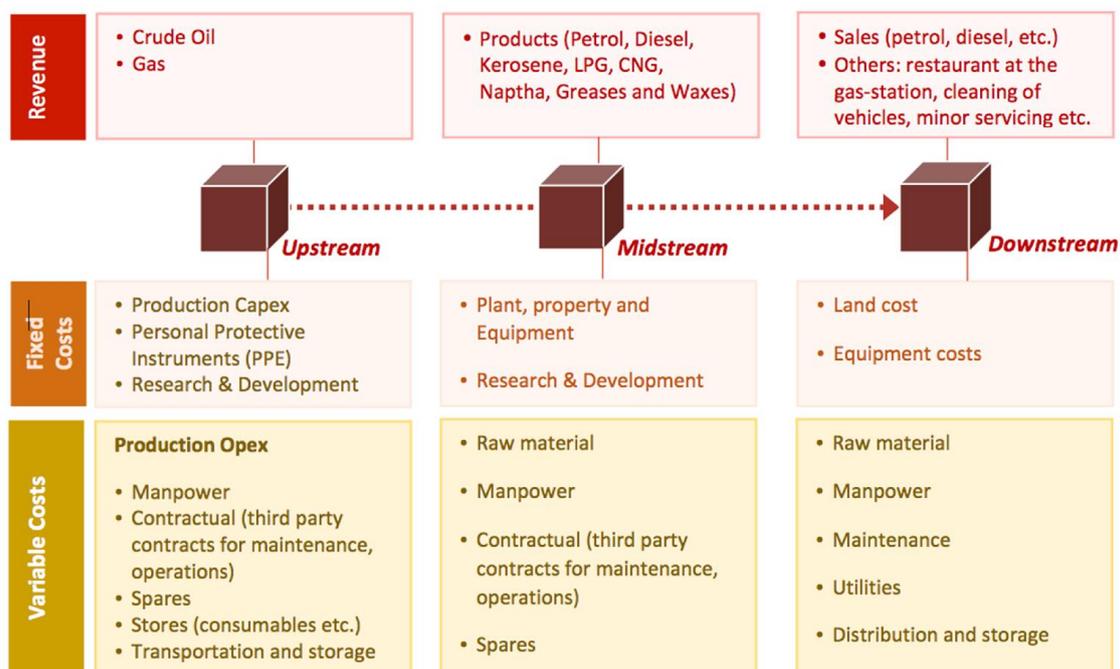
#### Unconventional Gas Resources

The existence of unconventional sources such as *shale gas* has reduced the dependence on conventional gas resources. As the technology for extracting shale gas advances, unconventional gas resources can prove to be a major game changer, impacting the prices of both crude oil and conventional sources.

#### Technological advancements

Rapid advancements in technology such as horizontal drilling have made the extraction of unconventional sources possible. Further, companies are investing huge sums in R&D to improve the volume of production at minimal environmental impact.

### REVENUE AND COST DRIVERS



## ENVIRONMENTAL IMPACT

### *Greenhouse Gases*

Petroleum-based fuels have long since been said to be responsible for **emission of greenhouse gases**, which are responsible for global warming.

### *Petroleum Disasters*

One of the real and present dangers of the oil and gas industry is that of petroleum disasters, in specific, **oil spills**. Oil spills cause major damage to the ecosystem, and are also difficult to contain and clean up.

Since the Gulf of Mexico (Deepwater Horizon) spill by BP in 2009, most governments are taking no chances, and have tightened the safety norms. No company can afford such damage to its asset and reputation either.

## RECENT TRENDS

### *Change in Demand-Supply Dynamics*

While demand for hydrocarbons is fixed in the short run, **supply shock can occur** due to a number of reasons. The current crisis in Middle-East and Africa has disrupted the global supply chains. In the long-run, demand is expected to increase from China and India while demand from developed nations saturates.

Over the next 5 years, crude oil demand is expected to be capped led by **increase in efficiencies and shift towards natural gas** in OECD countries. Moreover, demand growth from Asia (excluding Japan) is expected to slow down led by lower GDP growth rates and declining subsidies. However, demand is expected to remain strong in developing regions like Middle East, Latin America and Africa led by favourable demographics, subsidised prices and increase in industrial activity.

### *Changing Political Landscape*

Political upheavals in oil-rich countries, specifically in the Middle East, have a significant impact on oil prices. For example, the **recent crisis in Iraq**, with the extreme Islamist movement ISIS penetrating north-western Iraq and gaining control of some oil fields and refineries caused a jump in oil prices (Brent index), and had several implications for OPEC.

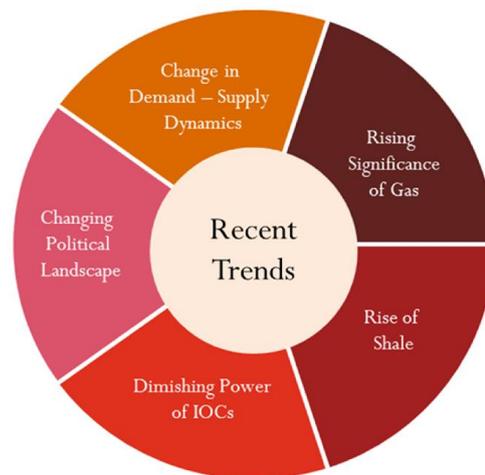
### *Diminishing power of IOCs*

In recent years, **National Oil Companies (NOC)**, as opposed to **International Oil Companies (IOC)**, have come to control the rights over the largest oil reserves. Most of the "easy oil" in the world has been restricted by governments to their respective NOCs and the conventional oil companies (IOCs) have been left with projects and assets which involve

significant risks, technical or otherwise (economic, political, etc.). This is also the reason why unconventional sources, and the Arctic are becoming important for these companies.

## | *90% reserves controlled by NOCs*

Also, service companies (which provide specialised services and equipment to assist the extraction of hydrocarbons) such as Halliburton and Schlumberger are slowly replacing the role of the IOCs by providing integrated project management services to governments and NOCs.



### *Rising Significance of Gas*

It will be interesting to follow the share of gas in the whole industry in the medium term. Most of the new discoveries have been gas fields. The Arctic is said to contain a huge amount of gas.

An interesting development with respect to India in this field is the **national gas grid**, certain phases of which have already been completed. This would allow the construction of new terminals along India's coasts to improve gas distribution in India.

### *The Rise of Shale*

Unconventional gas sources like shale gas are shifting the dependence from conventional gas sources. **Fracking**, or induced hydraulic fracturing of the reservoir, is essential in unconventional shale (shale gas) to produce economically. This is what allowed the large amount of unconventional gas in the US to be tapped, and consequently, the US is tipped to become a net exporter of natural gas by 2020, according to the US Energy Information Administration.

However, fracking is a major concern in certain countries. France has banned it outright. They claim that the industry doesn't really understand its impact on the seismic stability of the region.

## References:

1. <http://in.reuters.com/article/2013/06/11/us-eia-stea-nonoecd-idUSBRE95A16120130611>
2. <https://www.crisilresearch.com/industryasnc.jsp?serviceld=18&State=null>
3. <http://www.technavio.com/blog/3-key-factors-driving-growth-in-the-oil-and-gas-industry>