

# DRIVERS OF CHANGE IN THE ENERGY INDUSTRY

*Geopolitics, price, and technology are the three factors that shape the oil and gas industry. The author traces the important junctures of the industry, from the rise of OPEC to the exploitation of US shale gas formations, to the interplay between these three factors. Pointing out that geopolitics has always defined the field of play, he elaborates on topical developments in countries such as Ukraine and Iraq. Distinguishing between the majors and the independents, he argues that the challenge is to keep improving on the technology that the energy companies use today.*

Tony Hayward\*



TURKISH POLICY  
QUARTERLY

Summer 2014

\* Dr. Tony Hayward is the Executive Director and CEO of Genel Energy.

**W**hen looking at recent developments in the oil industry, it is striking that while recent years have seen huge technological changes and improvements to oil companies' capabilities, the basic fundamentals that affect the industry remain steadfastly the same. Companies have always sought to balance geological, technical, commercial, and political risk. While the relative weightings may change, the principle factors involved do not.

The passage of time brings some perspective on these developments. I started work in 1982 as a geologist on a semi-submersible rig in the North Sea. In those days, 300 feet was considered deep water, 3D seismic was a novelty, and seismic work stations had yet to be invented. Yet reflecting on my 30 years in the industry and the 150-odd years our industry has been in existence, there are three recurring themes that have shaped our industry and I suspect always will.

These are geopolitics, oil and gas prices, and technology – and I put them deliberately in that order.



Geopolitics has always defined the field of play. There are countless examples, from the rise of OPEC in the 1960s and 1970s, to the fall of Saddam Hussein and the reopening of Iraq to international oil companies.

To a large extent, oil and gas prices are driven by politics, and they in turn have encouraged and enabled great technological advances.

The rise of OPEC more than tripled oil prices and made the North Sea and Alaska commercial. The industry then created the technology that allowed those areas to be exploited. Recent developments illustrate once again that these three themes remain the key drivers for change.

Political events in the Middle East and North Africa have had the biggest effect on global oil and gas supply, and this remains the case today. The Arab Spring precipitated change across the region and, unfortunately, instability still blights a number

of countries. Libyan oil production remains well short of former levels, and the current civil war in Syria has decimated production from that country. Recent developments in Iraq, expected to be the largest contributor to OPEC's growth in output in the coming years, has only reinforced the influence of politics and security on the industry. Not much further afield, the troubles in the Crimean peninsula and eastern Ukraine reinforce the sense of instability around security of supply.

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In total, political events in the Middle East have reduced gross oil production across the region to around three million barrels a day. It will take some fundamental change to recover this production and, as the rise of the Islamic State of Iraq and Syria (ISIS) threatens to make things worse before they get better, it is difficult to see this happening in the near future.

Iraq was forecasted to provide 60 percent of the growth in OPEC's production capacity up until 2019. With the current instability in the country this is now in doubt, although at present, the southern oil fields remain largely secure. The Kurdistan Region of Iraq also retains a safe and secure operating environment, and is set to become a significant global industry player. Its strong relationship with Turkey is set to be hugely beneficial to both partners, allowing the Kurdistan Regional Government (KRG) to export its oil to international markets and in time provide Turkey with up to 20 percent of its gas needs.

A drop in Middle East production can have huge repercussions, and energy supply remains crucial to the health of the global economy. A rise in oil prices has the potential to destabilize the nascent economic recovery following the global banking crisis. If the only significant oil supply change was the fall in Middle East production, then we could have expected to see oil at 150 dollars a barrel and the global economy plunged into recession.

Thankfully, and perhaps fortuitously in terms of timing, additional oil supplies from the United States have matched the barrels that have been lost to the market, leaving the oil market well-balanced. While prices have remained balanced, however, this rise in production in the United States has changed the global market irrevocably.

America's transformational rise in production is due to the third of the aforementioned drivers in industry change – technology. Technological advances have allowed the exploitation of hydrocarbon resources previously unobtainable in the US shale formations. Fracking and horizontal drilling have been around a long time, but their application in a new way to a new set of rocks has transformed the industry. The result of this has led to a previously unthinkable situation in which North America, if not the US, is projected to be a net exporter of energy by 2025.

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The United States is now sitting on more than 100 years' worth of cheap gas, which provides a huge industrial advantage. In addition, any exports from the US will become one of the key price-setting mechanisms for global markets. Exports can be landed almost anywhere in the world for around 10-11 dollars, in essence creating a price cap for global gas prices.

As is almost always the case, the technological advance that made this possible was the result of fluctuating prices. In this instance, the very high gas prices at the start of the century stimulated the market to respond. The market response has been so spectacular that gas prices in the US have collapsed, with the full consequences for the global energy market still to play out.

Some things are clear – with the US sitting on an almost infinite supply of relatively clean, low-cost energy, gas and coal prices in the US will never again reach the levels they did only a few years ago.

The rock bottom natural gas prices seen in America will depress the global price as the shale revolution moves from the US to China, North Africa, South America, and Eastern Europe, adding to recent large discoveries of gas in the eastern Mediterranean and East Africa.

The rise in shale production has gone as far as changing the flow of the global oil trade. Historically, oil travelled from east to west. Today, due also to the continually growing Chinese demand, oil is moving from west to east. The rise helps to show another interesting recent trend – the rise of independent oil companies. It was the independents that opened up shale gas in the US, not the majors. It was the independents that opened up the stratigraphic oil plays on the West African margin, and it is

increasingly those companies that are at the forefront of the industry.

The majors were created following a prolonged period of low oil prices and due to a belief, which I think is true, that they could drive greater efficiency. The reality is that as prices increased, more and more opportunities that were not commercial at 10 dollars a barrel have become commercial. This has allowed many other players to participate.

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The majors are having to evolve their business models to deal with a 100 dollars-world when they were created in a 10 dollars-world. They are also being forced to change as investors have become frustrated by a long period with little in the way of returns. At present, majors have been responding to pressure from shareholders to curb spending and deliver more cash to investors. While the oil price is high and relatively stable, there is little appetite for costly frontier exploration and expensive projects when investors can smell higher dividends and share buybacks. They are



also having to consider their structure, such as whether they have simply become too big. As a result, some majors are now pursuing “shrink to grow” strategies where the search for value overtakes the hunt for volume.

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There have always been independents in the industry – they rise with the price and new basins. Independents have had a good ten years, as they were the first to believe in rising oil prices. They were able to attract capital, take risk, and they had a great deal of success. Whether such success can be continued for another decade only time will tell. However, while oil remains stranded in areas with a technical or political risk that majors find too high, there will be independents keen to exploit it.

Despite these significant developments, there is no reason to think that the fundamental structure of the industry – which has been in place since the rise of OPEC – will change. OPEC has been the most successful cartel in any industry at any time in history, and can be expected to continue to dominate the exploration development and production of the worlds “easy” oil.

China’s dependence on the Middle East for its energy needs will continue to rise and cause it to forge new relationships in both this region and in Africa. Hence, hydrocarbons will continue to drive the political agenda.

Oil prices can be expected to remain high, and there is no propensity for the price to fall. In many places the cost of extraction requires a high oil price – technologically complex areas such as deepwater regions and shale belts require a price of above 85 dollars a barrel to make them economic. Demand in China and the United States also continues to grow, and interestingly, consumers seem to have gotten comfortable with a 100 dollars-a-barrel oil price.

While there is plenty of oil in the world, in many places politics will prevent it from being exploited as rapidly and efficiently as it could. In other places, the high cost of technology and the increasing cost-cutting of the majors are leaving potential hydrocarbon provinces under-explored.

The challenge for the industry is continuing to improve on the technology we use today, or at least finding a way of applying it better and more commercially than has been achieved to date.

The industry invests an enormous amount into the application of technology. The industry can operate in deeper and deeper water due to the drilling capacity and also the seismic imaging made possible by supercomputers. Seismic imaging has developed almost unimaginably in the last decade, and constant improvements in both this and drilling technology can allow the industry to continue finding resources that in turn will power the global economy.

The industry has been around a very long time and remains the engine behind economic growth, lifting billions of people into prosperity. It has allowed people access to light, heat, and mobility. The challenge is to continue to do this in an increasingly sustainable way. History demonstrates that the industry is peopled with those who have the ingenuity and ability to continue to do that.