Energy Insight:

The black gold of America and its impact on the world

Rich in resources, the United States has an economy built on black gold. Until recently the largest oil consumer in the world, the country is becoming less dependent on imports and getting one step closer to energy independence. Forecasts by the International Energy Agency (IEA, 2017) indicate that the U.S. will account for 80% of the increase in global oil supply to 2025, driven by increase in unconventional oil and gas production. As a result, the U.S. – a long standing net energy importer – is on course of becoming the "undisputed global oil and gas leader" (IEA, 2017).

How is this affecting the domestic market? Moreover, how will the rest of the world be impacted, particularly the oil rich regions of the Middle East? The Energy Institute examines the state of the oil and gas industry in the United States and analyses the potential impacts this new surge in production can bring to the rest of the world.

Early history

The Rockefeller era

The history of oil and gas in the United States dates to the late 19th century.

The first well in the U.S. was drilled in 1859 near Oil Creek State Park in Pennsylvania and is commonly referred to as the Drake well. After the discovery, John D. Rockefeller, the "father" of the modern petroleum industry in the United States, laid the foundations of the Rockefeller oil empire by building multiple oil refineries in the early 1860s. The refined oil was then shipped to Europe.

In 1870, Rockefeller formed Standard Oil of Ohio, expanding his operations from downstream to upstream. By the end of the 1880s, Standard Oil owned 90 percent of the U.S. oil refineries and pipelines and the world's largest oil tanker fleet. At that time, the U.S. was responsible for 85% of the world's crude oil production and refining.

By 1900, more than 200 oil by-products begin to enter daily life. Under the Sherman Antitrust Act, the federal government broke Standard Oil into separate entities in 1906, including those that later became Chevron, Mobil and Exxon. Those companies remained independent until the 1990s when a string of mergers took place, merging Texaco with Chevron and Exxon with Mobil.

Boost from the auto industry

Henry Ford's invention of the Model T in 1908—the world's first mass-produced car—helped pave the way for a significant increase in auto ownership. By 1910, U.S. consumption of petrol surpassed kerosene.

At the start of World War II, the United States was the third largest oil producer in the world after Russia and Venezuela, responsible for 60 percent of total world production. Nonetheless, upon entering the war the federal government put in place a nationwide rationing plan in order to accommodate the growing war demand for oil, introducing measures such as gas coupons and limiting driving speed to 35 miles an hour.

In the decades after the war, the U.S. auto industry boomed and the share of the transportation sector in oil consumption rose from about 50 percent to more than 70 percent. The United States continues to lead in auto ownership per capita up to this date.

Dependence on OPEC

Domestic energy consumption increased in the decades to come, and with it the country's dependence on crude oil imports.

The oil crisis in October 1973 destabilised the oil supplies and led to worldwide price hikes and oil shortages. Gasoline prices in the United States increased by 40 percent within a few months with similar events taking place across Europe and Asia. The federal government imposed once again gas rationing

and price controls. Such volatility and over-dependence on oil from the Middle East was met by growing discontent from the public and government alike. As a response, President Nixon announced "Project Independence", an initiative aiming to achieve total US energy independence from foreign imports by 1980.

However, the U.S. remained dependent on oil from the Middle East and in 1983, following several war conflicts in the region, the Reagan administration issued a national security directive to increase the U.S. military presence in the Persian Gulf to help protect the oil facilities and shipments.

Early ban on offshore drilling

The 1969 Santa Barbara oil spill caused heavy public outcry and growing environmental concerns regarding offshore drilling practices, leading to a moratorium on offshore drilling off the California coast imposed by the U.S. Congress in 1981. In the next years, policy makers extended the ban to all new leases in U.S. coastal waters, except for parts of the Gulf of Mexico and some waters off the coast of Alaska.

The environmental movement was further strengthened by what is described as one of the worst environmental disasters in U.S. history – the Exxon Valdez oil spill in 1989. The following year the U.S. Congress passed the Oil Pollution Act for offshore accidents. In 2006, an area in the Gulf of Mexico was opened for drilling.

In 2010, the country was shocked by another disaster – the Deepwater Horizon oil spill, considered as the largest marine oil spill in history. In a response, the then Obama administration decided to bring back the offshore drilling bans. In January 2018, the Trump administration declared the intention to remove all bans on offshore drilling.

Climate change commitments

In 1997, most of the world's leaders signed the Kyoto Protocol, an international mechanism for countries to reduce rising greenhouse gas levels in order to mitigate climate change. The United States, however, did not ratify the treaty which was widely criticised around the world. At that time, the U.S. was the largest emitter in the world with much of the emissions originating from the energy sector. The U.S. policy in that period was focused heavily on energy security rather than environmental concerns.

In recent years, the policy direction has changed. In 2016, the Paris Agreement entered into force. Signed and ratified by the U.S., the aim of the treaty is to keep global temperature rise below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

In 2017, the Trump administration announced an intention to withdraw from the Agreement, shifting the focus once again on energy security. This has been complemented by a string of additional measures, including an approval of the Keystone XL pipeline which was previously rejected by the former administration in 2015. The current administration has also announced plans to harness the oil and gas resources contained in federal lands. The federal government owns about 28 percent of all land nationwide. Four agencies — the National Park Service, the Fish and Wildlife Service, the Bureau of Land Management in the Interior Department and the U.S. Forest Service — are responsible for 95 percent of federal lands.

Production today

The crude oil production in the U.S. can be divided into three cycles – early boost (1949-1970), steady decline (1971-2010) and accelerated growth (2011 – present). Driven by two world wars and a boost from the automotive industry, production picked up in the first half of the 20th century. Later, production sharply declined in the 1970s, a direct result of the end of the oil crisis which made OPEC oil once again abundant.

Currently, we are in the third stage of production which represents the most impressive growth the sector has experienced since the peak in 1970. In November 2017, the production broke a 47-year output record and rose to 10.057 million barrels per day. The U.S. Energy Information Agency (EIA) expects crude oil production to reach the phenomenal 11.17 million barrels per day by the end of 2018, surpassing Saudi Arabia as the top crude oil producer and supplier. The agency predicts the figure to rise to 11.27 million barrels per day in 2019.

Whereas the production in the 20th century was driven by conventional reserves, nowadays it is driven by unconventional ones. Many of the conventional onshore oil basins have either declined in production or ceased to exist, though the Gulf of Mexico and the Permian Basin have sustained a stable rate of production since the 1920s. Nonetheless, multiple shale plays have emerged. The Permian Basin alone has experienced a significant growth of unconventional production with thousands of new wells having emerged in the region in recent years. A detailed map of oil and gas wells in the U.S. demonstrates the complex network they are part of.

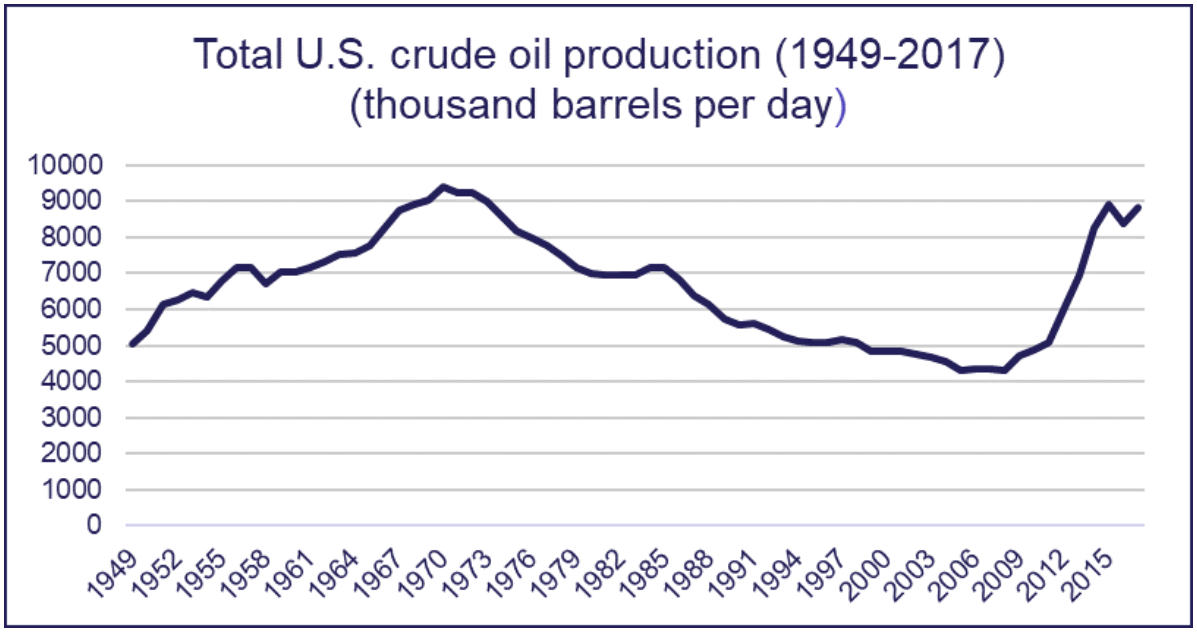

Figure 1. Total U.S. crude oil production (1949-2017)
Source: Energy Information Association (EIA) 2018

Natural gas production has had a more gradual progress compared to crude oil. The trend has been upward since 1949, with a temporary slow down in the 1970s. Production picked up again the late 1980s and, similarly to crude oil, accelerated from 2010 onwards. Currently, the U.S. is producing the largest amounts of natural gas ever recorded in the country.

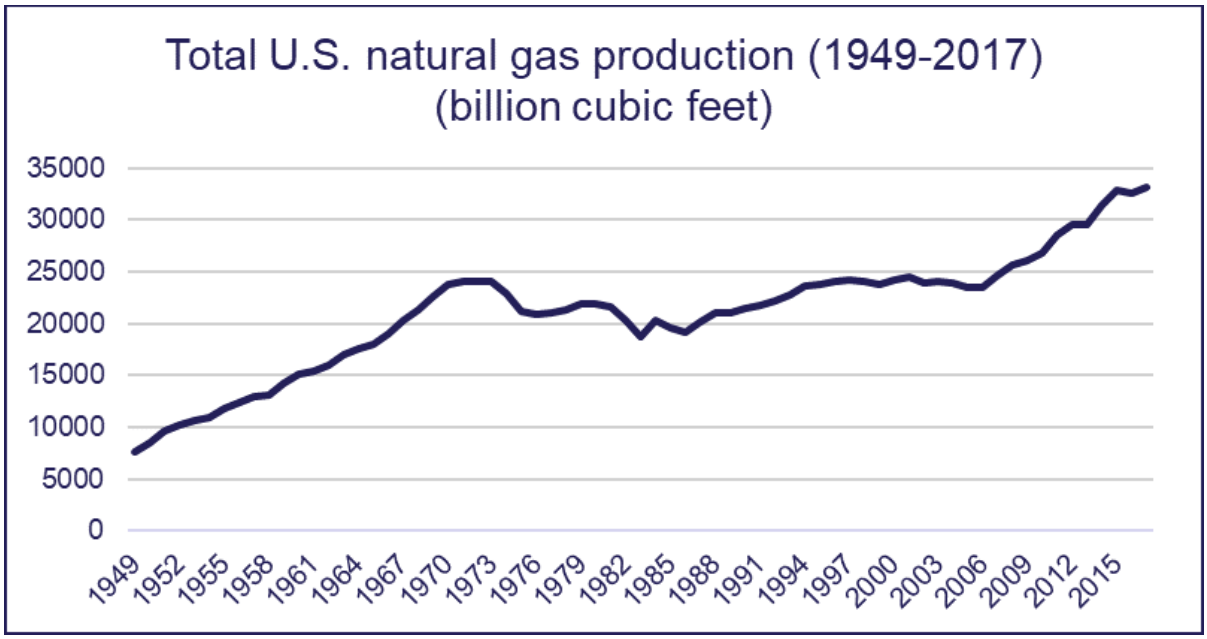

Figure 2. Total U.S. natural gas production (1949-2017)
Source: Energy Information Association (EIA) 2018

The shale revolution

In recent years, the introduction of hydraulic fracturing and horizontal drilling techniques have allowed the U.S. to unlock massive untapped oil and gas resources sitting in layers of shale rock. This is commonly known as fracking. The impact on the U.S. oil and gas sector has been significant, leading to a shale revolution. As a result, both crude oil and natural gas production has boomed, and exports have flourished.

This is especially remarkable for natural gas production which was often flared or burned off in the past. Moreover, natural gas was mainly produced offshore. Nowadays fracking has made drilling for natural gas on land cheaper than offshore. Additionally, many new fields have emerged. In the Permian Basin alone, thousands of new wells were drilled in the last 10 years and as a result, the population of the region has increased massively.

Most of the income from royalties and leases go to mineral rights owners, who represent only a small proportion of the population. This has contributed to rising income inequality in the region. More information on shale gas can be found in our Shale gas collection.

Reduced dependence on imported oil and gas

In 2015, the U.S. recorded its lowest level of crude oil imports for the past three decades. The only other similar drop in imported crude oil occurred in the late 1970s, following the oil crisis and OPEC supply cut which impacted markets worldwide. Since the late 1980s, crude oil imports have been steadily on the rise, reaching an all-time peak in 2006 and 2007, accounting for 60% of the total U.S. consumption. By 2013, imports had dropped to roughly 40% of the total consumption.

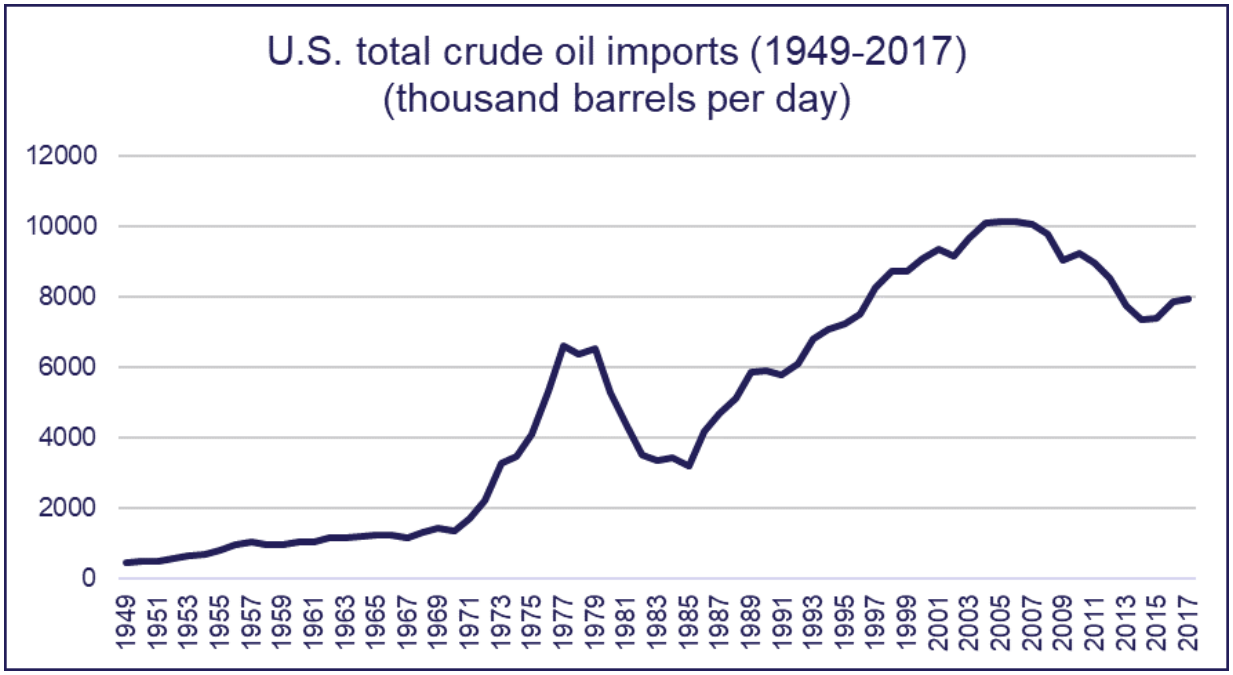

Figure 3. U.S. total crude oil imports (1949-2017)
Source: Energy Information Association (EIA) 2018

Natural gas imports reached an all time high in 2008 and a three decade low in 2015, similar to crude oil imports. Imports have been steadily rising since the late 1980s, indicating the readily available oil and gas supplies from OPEC, and dropped sharply in 2010 at the onset of the shale revolution. The reduced dependence on foreign oil and gas can be explained for the most part by the surge in U.S. production, but also by a decline in domestic consumption of petroleum products.

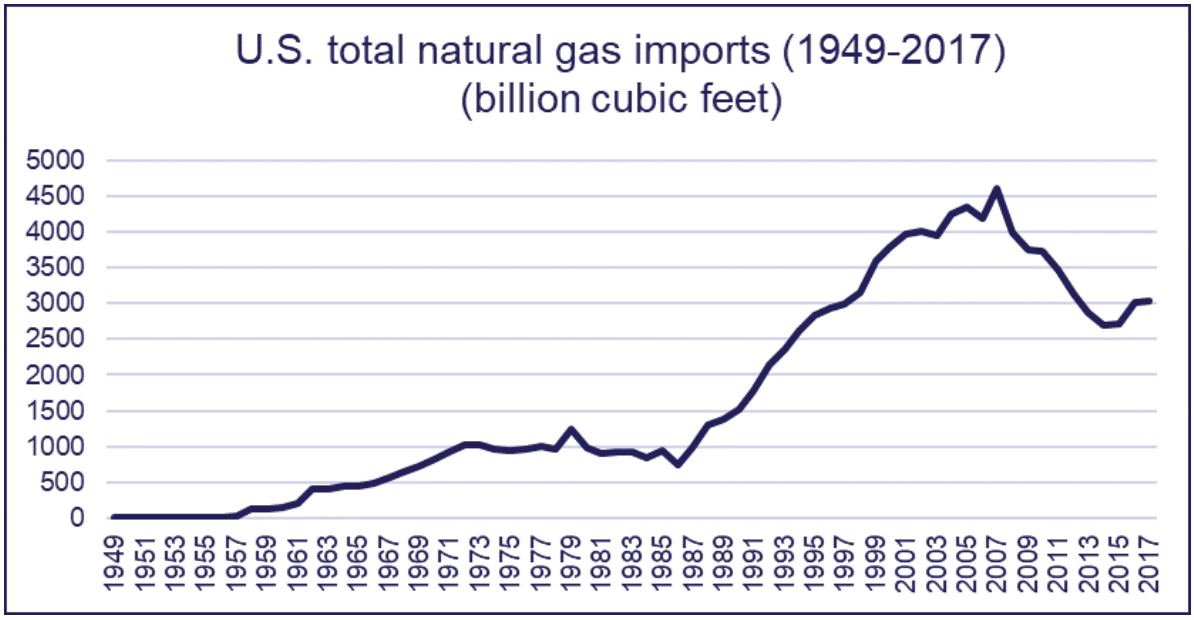

Figure 4. U.S. total natural gas imports (1949-2017)
Source: Energy Information Association (EIA) 2018

Most of the crude oil the U.S. imports originates from countries outside the Organisation of Petroleum Exporting Countries (OPEC). In 2017, non-OPEC oil accounted for the astounding 71% of total crude oil imports, while the amount for OPEC oil stood at 29%. This represents a significant change to the supply network of the mid 1900s when crude oil from the Middle East dominated the U.S. energy market.

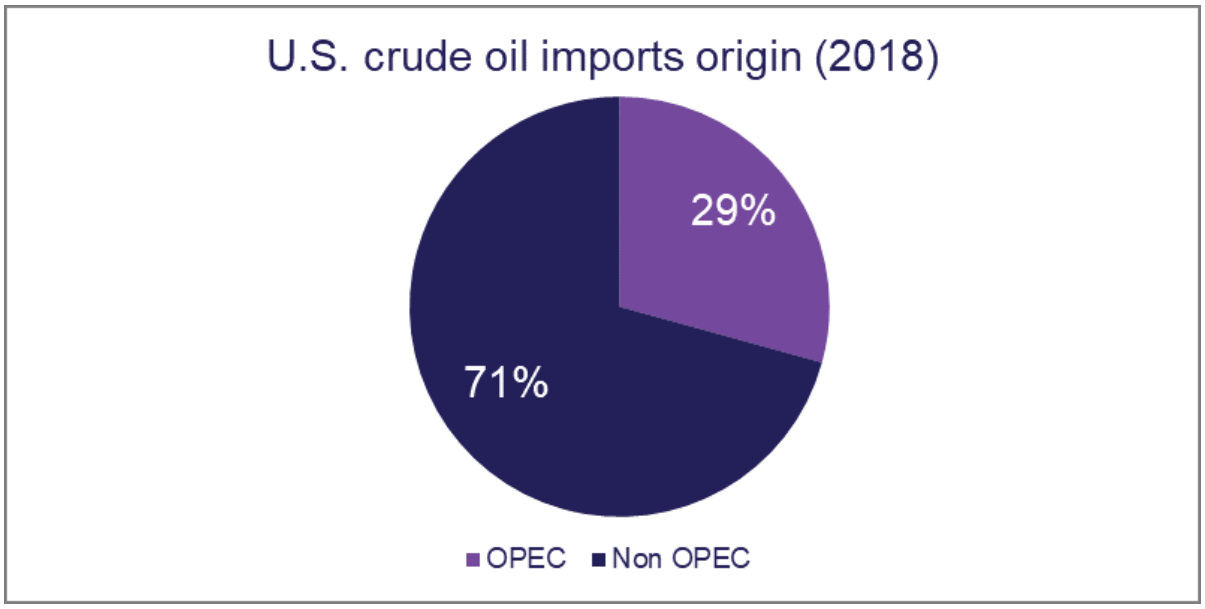

Figure 5. U.S. crude oil imports origin (2018)
Source: Energy Information Association (EIA) 2018

The top ten countries of origin for imported U.S. crude oil consist of a mix of both OPEC and non-OPEC countries, led by Canada, Saudi Arabia and Iraq.

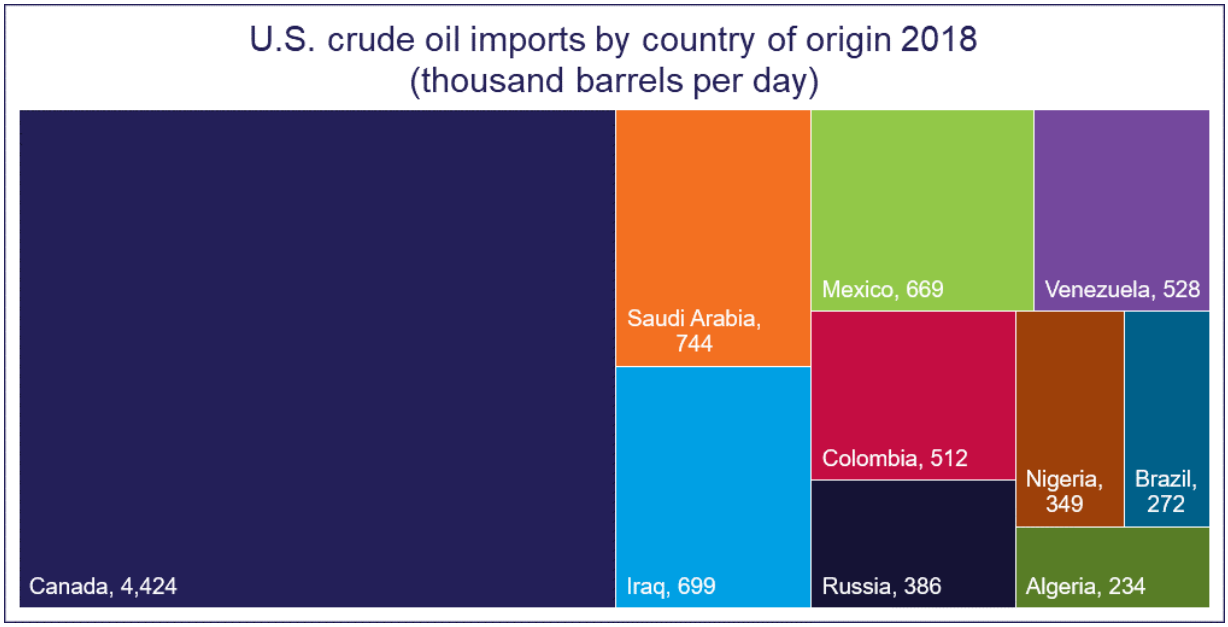

Figure 6. U.S. crude oil imports by country of origin (2018)
Source: Energy Information Association (EIA) 2018

By a clear margin, Canada supplies the highest amount of crude oil to the United States. The country alone accounted for roughly half of all oil imports in 2017, a figure which has been effortlessly and exponentially rising since the early 1990s. Such a phenomenon has not been observed with any other country the U.S. is importing oil from. Within OPEC, Saudi Arabia accounts for the largest percentage of imports, having enjoyed a relatively stable environment. Similar can be said for Iraq, though the fluctuations there have been greater in comparison to Saudi Arabia. The U.S. is also importing significant amounts of crude oil from its immediate neighbour Mexico, as well as Venezuela and Colombia.

Unlike crude oil imports, natural gas imports are not as diversified. Pipeline natural gas accounted for 97.4% of all imported natural gas in 2017. The single biggest source – Canada – accounted for 99.5% of all pipeline natural gas imports to the United States. Mexico delivered the remaining 0.5%. This has been the pattern for the past 30 years. A small share of 2.6% represented the LNG imports to the U.S., 90% of which originated in Trinidad and 7% in Nigeria. Trinidad has been the largest importer of LNG to the U.S. since records exist, though the amount supplied in the past 10 years has significantly fallen compared to the peak times in the early 2000s.

U.S. exports on the rise

Whereas the imports of both crude oil and natural gas have been steadily decreasing since 2008 onwards, the exports of U.S. crude oil and natural gas have been firmly increasing for the same period of time. Such a hike in U.S. exports is remarkable and has never been observed on record. This has been especially true for natural gas exports which were virtually non-existent prior to 2000.

Crude oil exports previously escalated in the 1970s but dropped sharply after the end of the oil crisis. They have remained close to null until 2012 when exports suddenly picked up. For the past six years the amount of exported crude oil has been exponentially increasing, impacting energy markets worldwide.

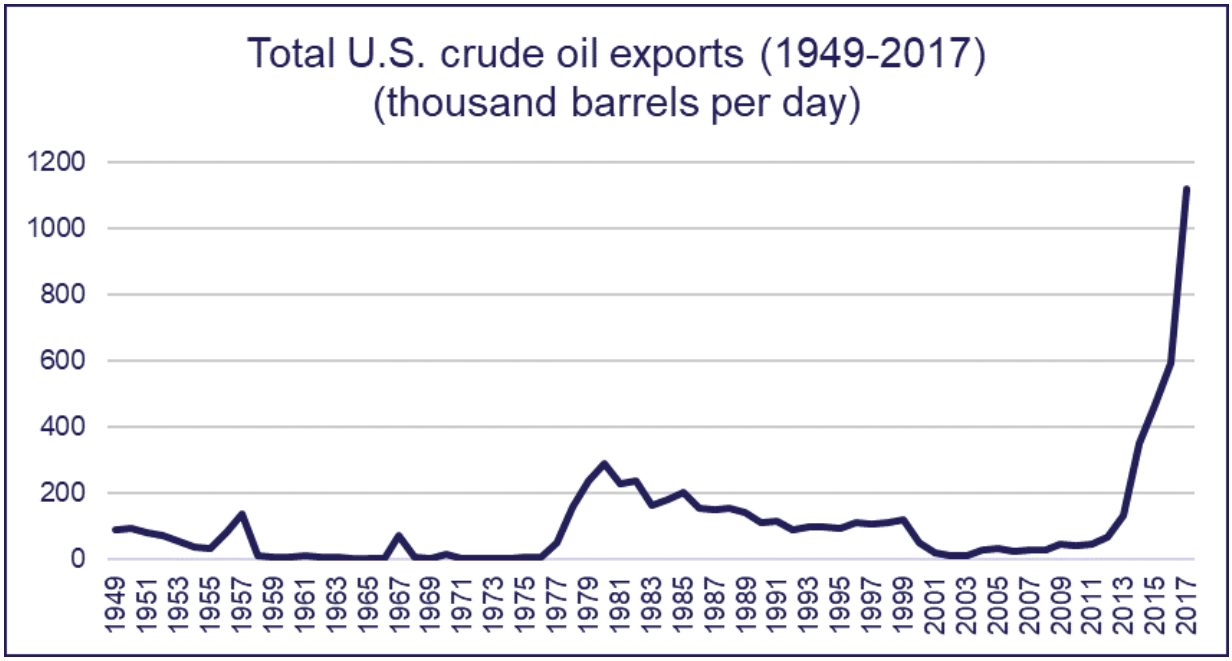

Figure 7. Total U.S. crude oil exports (1949-2017)
Source: Energy Information Association (EIA) 2018

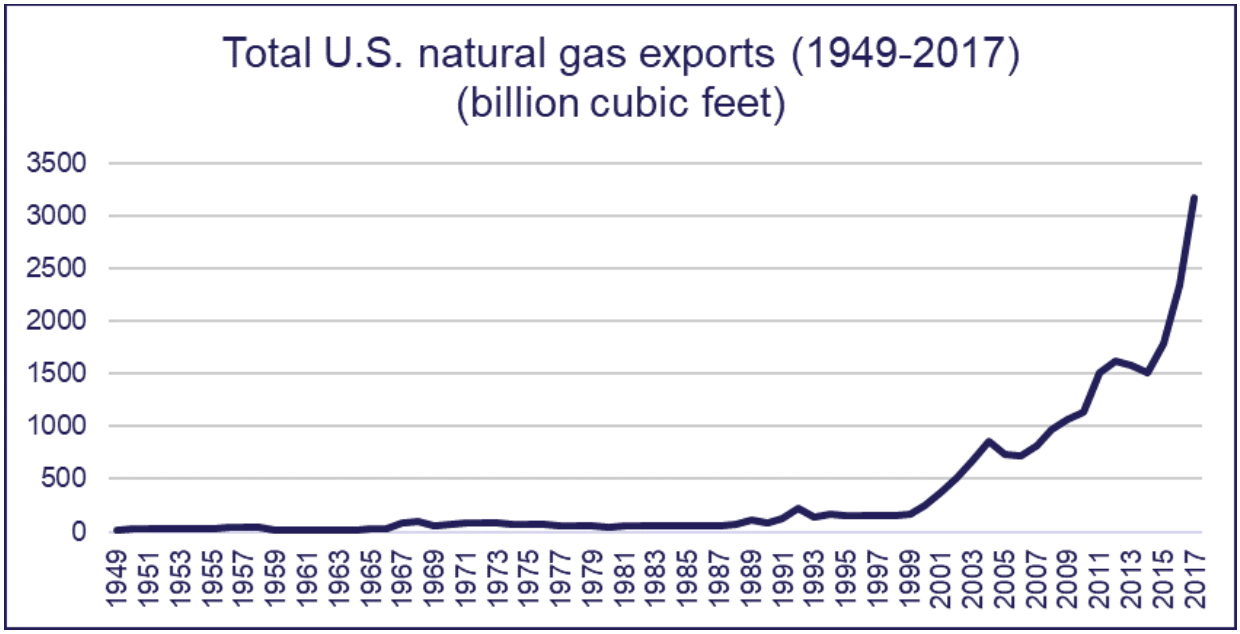

Figure 8. Total U.S. natural gas exports (1949-2017)
Source: Energy Information Association (EIA) 2018

The strong growth in exports can be explained by the dramatic boost of production caused by the shale revolution. As a result, shale oil and gas production are now dominating the oil and gas sector in the U.S., with a significant amount being exported abroad. This has been helped by a U.S. Congress vote in 2015 to lift a four-decade-old restriction on U.S. crude oil exports. Shortly after, shipments towards Europe and Asia began.

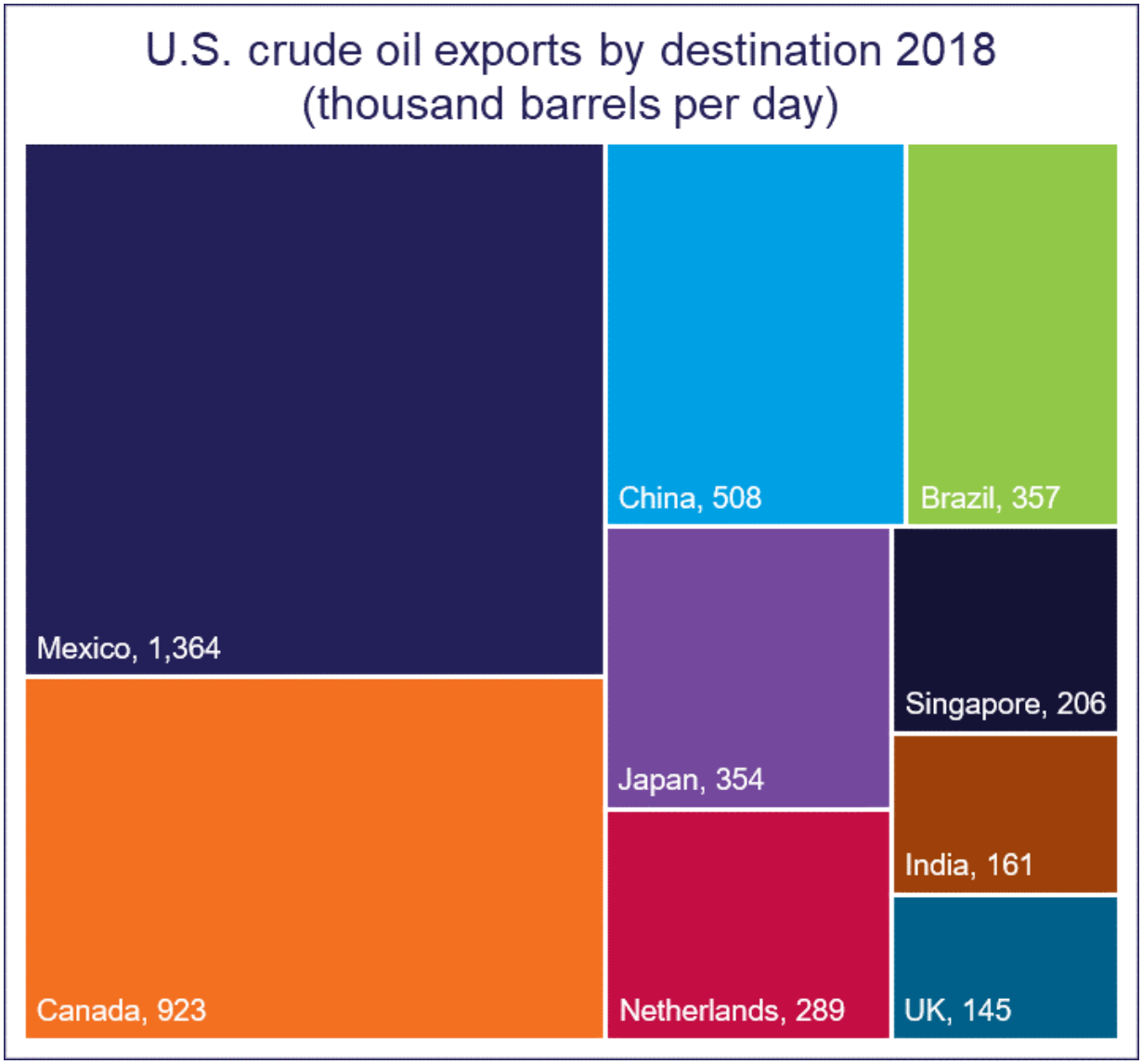

Figure 9. U.S. crude oil exports by destination (2018)
Source: Energy Information Association (EIA) 2018

Despite renewed shipments to Europe, the immediate neighbours of the U.S. – Mexico and Canada – remain the top destinations for its oil.

Mexico leads by a clear margin, accounting for 32% of the crude oil exported to the top ten destinations in 2018. Mexico is also a top import destination for crude oil to the U.S., however at a closer look it becomes clear that the crude oil exports to Mexico double the imported amount.

At this stage it is important to note the different types of oil the U.S. imports and exports. Most of the imported oil is heavy crude oil, with an API gravity of 20.1º to 25.0º. On the contrary, most of the domestically produced oil, later exported, is very light crude oil, with an average API gravity of 40.1º to 50.0º. The reason for this lies in the capacity of U.S. refineries. The majority of those refineries were built in order to process medium to heavy crude oils. In order for them to process the very light crude oil produced domestically, significant alterations and investments would need to be made.

Mexico and Canada are the top export destinations not only for crude oil, but also for natural gas. With an amount nearly double that of Canada, Mexico accounts for 58% of all U.S. natural gas exports to the top five destinations in 2017. While Mexico and Canada receive their gas mainly via a pipeline (140 321 mmcft of LNG was delivered to Mexico in 2017 via a vessel).

South Korea, China and Japan receive their deliveries from a vessel in the form of LNG. It is those three countries that have experienced the strongest growth in U.S. natural gas exports, signalling that the U.S.

has become one of the key gas suppliers to Asia. Among those three, China has recorded the most impressive increase – up 500% in 2017 compared to 2016. 2017 is also the year China became the biggest oil consumer in the world (IEA, 2017).

A great advantage for U.S. exporters has been the extension of the Panama Canal which has drastically reduced shipping times to Asia. The next five export countries for U.S. natural gas are Jordan, Spain, Chile, Turkey and India respectively. All receive natural gas in the form of LNG.

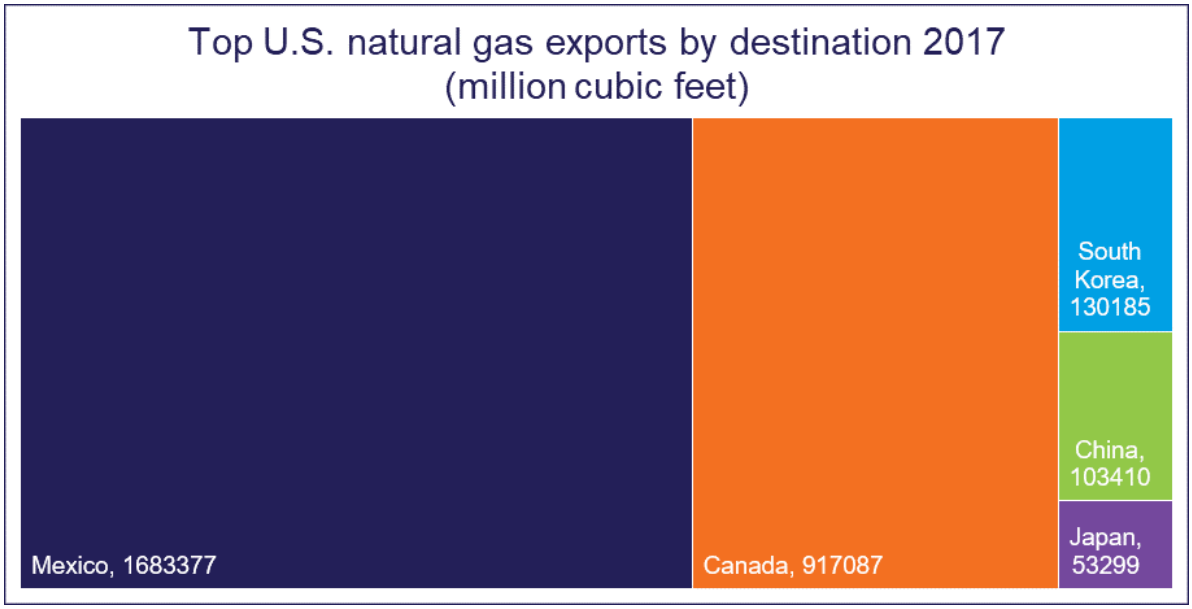

Figure 10. Top U.S. natural gas exports by destination (2017)
Data source: Energy Information Association (EIA) 2017

Impact on OPEC

The boom in exports has been beneficial both for the U.S. economy, and the consumer. In less than a decade, the U.S. shale revolution has brought consumers around the world billions of dollars in savings, driving down the price of gasoline, fuel oil, air travel, plastics and many other household budget items. With recent technological advancements that have enabled accelerated production of hydrocarbons, U.S. tight oil producers have contributed to a global supply glut that has put a downward pressure on international oil prices and allowed consumers to make significant savings.

There is, however, an elephant in the room. Oil and gas producers from OPEC have faced serious challenges in the past few years, all caused by the increased rates of production in the U.S. Several attempts to retain the organisation's market share and keep the oil prices high enough have been made, though they have proved to be moderately successful at best.

Global supply gut sends international oil prices in a downward spiral

The increase in U.S. hydrocarbon production sparked a global 'price war' looming to this day. Prior to 2014, crude oil often traded above $100 per barrel generating large sums of income for major oil producing countries. When the U.S. ramped up its production in early 2014, it sent a shock wave across oil markets worldwide, plunging the prices of crude oil as low as $26 in 2015. This represents a decrease of 75% compared to the values in 2012.

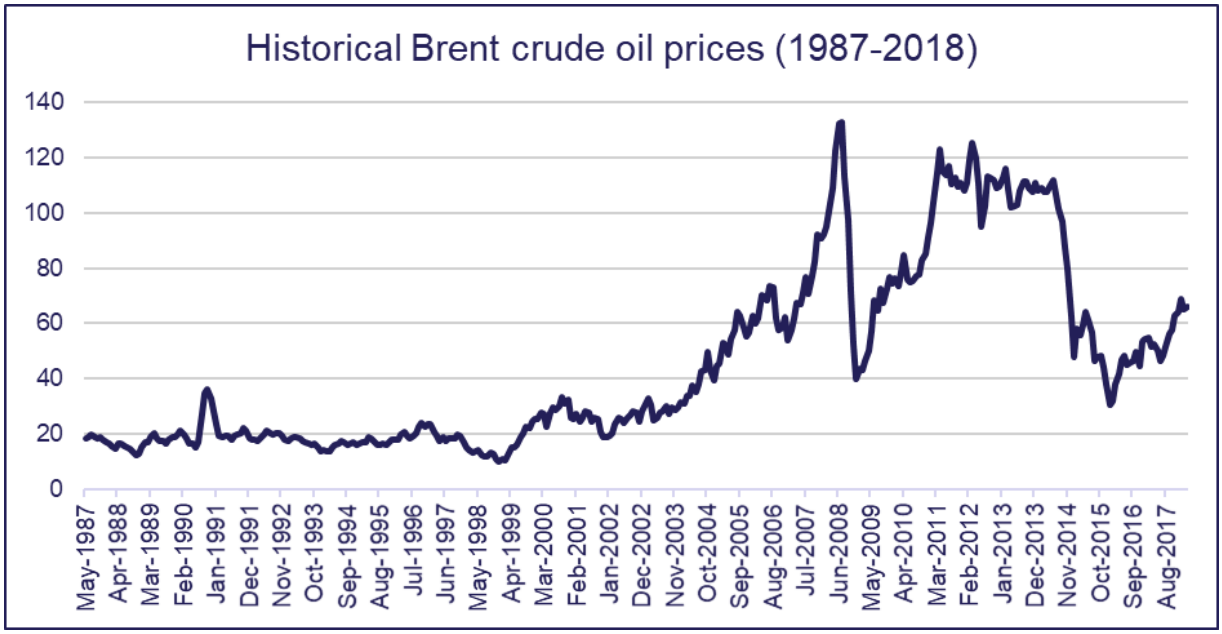

Figure 11. Historical Brent crude oil prices (1987-2018)
Source: Energy Information Association (EIA) 2018

Not surprisingly, the sharp drop in prices has had a significant impact on the oil-dependent OPEC economies. Urgent meetings among members prompted a quick and swift reaction in order to mitigate the potential damages. Ali al-Naimi, the then oil minister of Saudi Arabia, took a firm stance on the issue and argued that if OPEC would cut its production rates, the gap in supply would be compensated by accelerated production rates in the United States. The argument proved to be persuasive and OPEC decided not to reduce production. As a result, oil prices plummeted to a record low.

The move was perceived as a direct attack on U.S. shale producers. The breakeven price of U.S. shale at that time was roughly $70 a barrel on average (Rystad Energy), hence any price below that amount would bring losses rather than profits and potentially lead to the bankruptcy of some producers. Yet, despite the price volatility, production in the U.S. did not decrease.

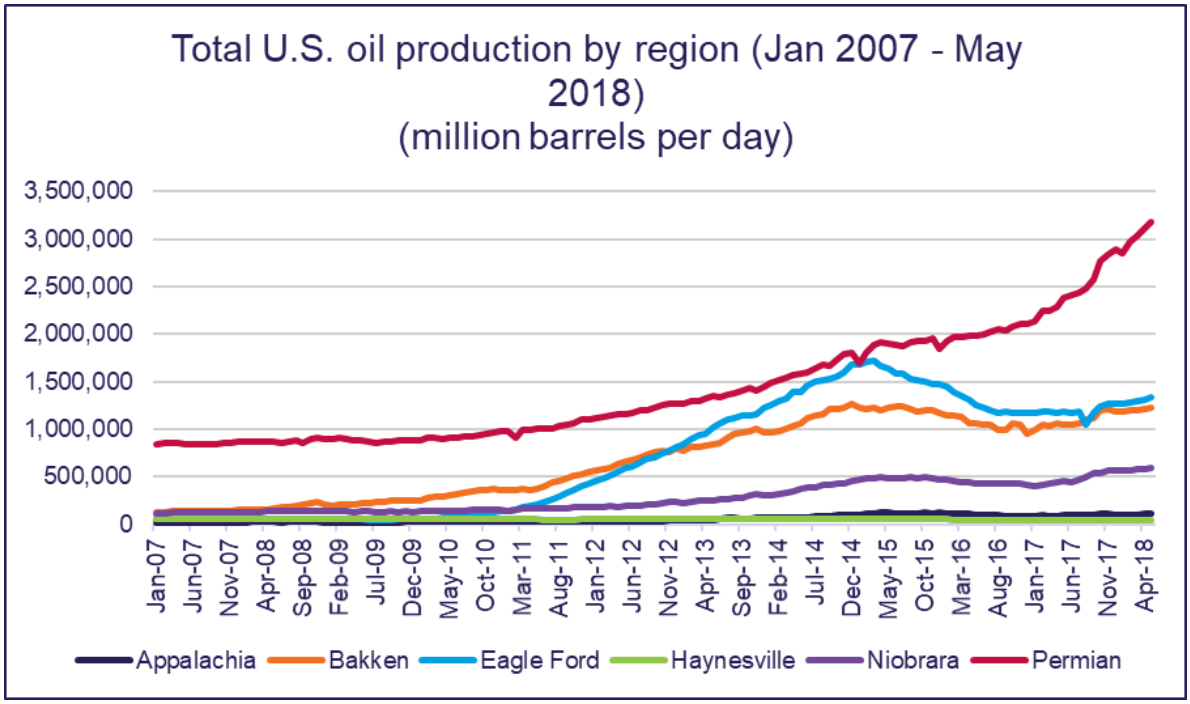

Figure 12. Total U.S. oil production by region (Jan 2007 – May 2018)
Source: Energy Information Association (EIA) 2018

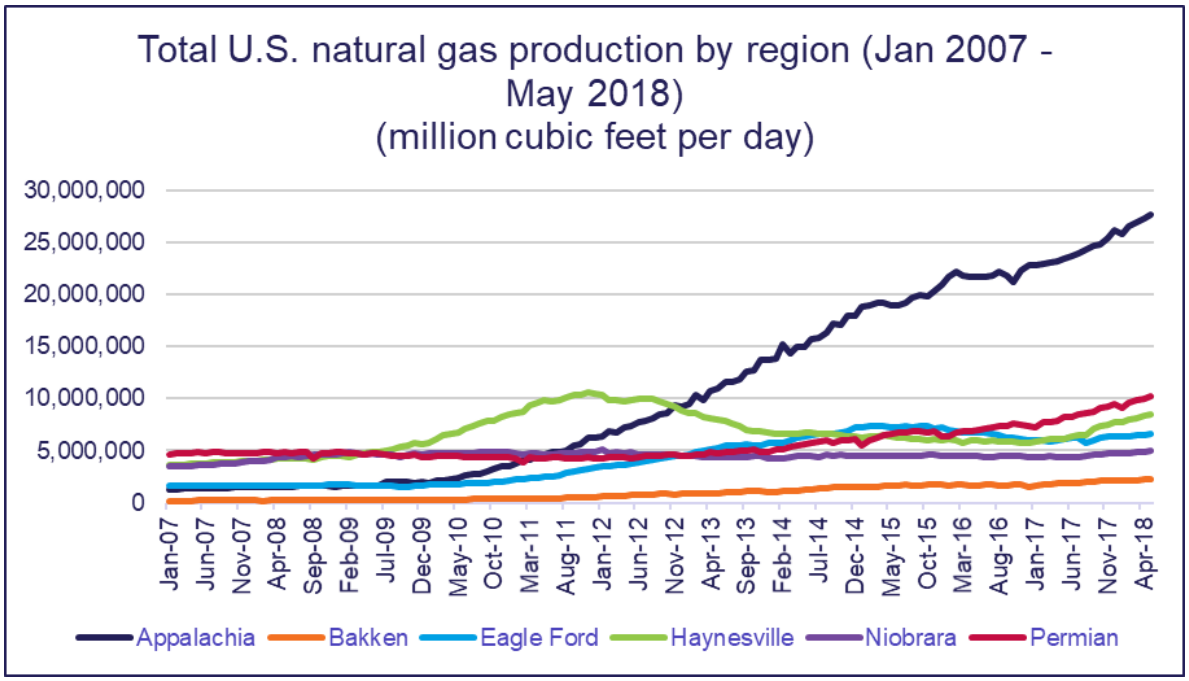

Figure 13. Total U.S. natural gas production by region (Jan 2007 – May 2018)
Source: Energy Information Association (EIA) 2018

Oil production did suffer a minor slow down in 2017, though this has not been consistent among all regions. Notably, the Permian basin has had a steady increase in production since 2010, accelerating further at the end of 2015. A similar trend can be observed with natural gas production. Production rates have generally remained unaffected, with a slight disruption in the Eagle Ford and Haynesville regions. Remarkably, natural gas production rates in the Appalachia area have been exponentially rising since 2010. A map by the EIA illustrates the drilling activity taking place in each of the above regions.

Naturally, many actors on the world stage were astonished how the United States can sustain such high rates of production and remain largely unaffected by the slump in oil prices when the breakeven price of U.S. shale is substantially higher than the cost of production in the Middle East. U.S. tight oil is located deeper in the ground which requires a more complex set of techniques, equipment and chemicals, ultimately leading to higher extraction costs. In addition, shale producers in the U.S. have to pay US$6.42 in gross taxes per barrel compared to Saudi Aramco who pay none.

Besides a tax-free environment, Saudi Arabia enjoys further benefits – the oil is located near the surface and is relatively easy to extract, the weather is not as volatile as some of its rivals in Siberia and Saudi Aramco operates all value chains from production to delivery, thus minimising costs while capitalising on the gains. Based on those facts, Saudi Arabia should have been able to persevere with prices as low as $10 per barrel. Yet, the IMF projects that the Kingdom requires oil prices of $83 per barrel in order to balance its budget.

There are several factors why the U.S. fracking industry managed to stay afloat against all odds. The most important of them has been the success in technological advancement which has allowed U.S. shale producers to cut their costs while increasing their efficiency and utilisation rates. According to the 2017 Commodity Markets Outlook produced by the World Bank, the breakeven price for U.S. shale has dropped more than 42% since early 2013 to roughly $40 per barrel due to improvements in the technology. Furthermore, economically less developed states like North Dakota and Montana where the cost of labour and land is lower, have registered even lower production costs at $29 per barrel.

Innovation trumps everything

When oil prices fell, shale producers in the U.S. shifted an even greater amount of attention and resources to innovation in the quest for greater cost reduction and production optimisation. The most crucial element of this endeavour has been to find the right ingredients, techniques and proportions for the “cocktail” injected in the shale rock. Examples include the creation of different combinations of water, chemicals and

proppant; injecting the mixture with varying amounts of pressure and the greater use of drones and sensors to better analyse data and detect anomalies in the equipment. While there are also other factors which have inevitably contributed toward the lowering of break-even costs, the recent technological advancements have undoubtedly played the most important role.

A study done by Harvard University in 2005 found that among newly tapped wells, on average only 21% of the profits are being captured due to non-optimal means of extraction. Fast forward ten years, that figure has risen to just over 60%.

While the move by OPEC to increase production to record levels and consequently plummet oil prices might have caused financial damage to American producers to a certain extent, in the long term it can prove to be the ploy which accelerated innovation in the U.S. oil and gas sector.

A race to the bottom or a temporary achievement?

The question remains whether the breakeven price of U.S. shale will continue to plummet or will inevitably soar again. Critics argue that the latter is the most anticipated outcome.

According to industry analysts, a consequence of the oil price collapse in 2014 was the concentration of U.S. shale producers on fields with the highest prospect, such as those located in the Permian basin in Texas. But now that U.S. production rates are steadily rising, new fields will need to be developed. On top of that, to maintain the flow of oil from existing wells, a large amount of investment will be needed.

The nature of shale oil fields means that there is an initial surge in production, but consequently extraction becomes harder. This will put upward pressure on breakeven prices. Even the fields with the best prospect are set to face challenges in the near future. Furthermore, many shale producers in the U.S. depend on bank loans in order to finance their cost intensive operations. Whereas producers in the Middle East are mainly state actors with significant financial resources, U.S. producers are highly decentralised and often small - to medium sized. This makes them highly vulnerable to changes in interest rates. With interest rates expected to rise, the cost of production might increase even more.

Low oil prices boomerang back on OPEC

Still, the low oil prices had an impact not only on shale producers in the United States, but also on the economies of OPEC members, some of which derive more than 90% of their export value from petroleum products. In order to balance their national budgets and maintain the high public spending, the price of crude oil had to increase.

Consequently, OPEC changed its strategy. Saudi Arabia's initial recommendation was abandoned, and production rates were cut in a bid to boost the prices. Compliance among member states has been high, yet, to achieve an even stronger impact OPEC signed an agreement for joint cooperation with ten non-OPEC allies led by Russia in late 2016. The agreement has led to a drop in OECD inventories from 264 million barrels in 2017 to 52 million barrels in early 2018. Consequently, oil prices have been averaging $70 per barrel in recent weeks, the highest amount in recent years. Though, it is important to note that Ali al-Naimi's warning of an increased U.S. production in case of a supply cut by OPEC has materialised to a certain extent.

Onshore crude oil production in the U.S. increased by 1.38 million barrels a day between 2016 and 2017, from 6.52 million b/d in 2016 to 7.9 million b/d in 2017.

Back in the days OPEC had all the power

Prior to the U.S. shale revolution, OPEC was dominating international oil markets. Little competition existed, with Russia emerging as the biggest rival. The organisation's largest producer and supplier of crude oil – Saudi Arabia – has enjoyed a virtual monopoly over the market for the past several decades. This has been further strengthened by low break-even costs, a simplified legislative and regulatory framework and an integrated supply chain network.

The oil crisis of the 1970s – an event called by many as the greatest showdown of power OPEC has ever demonstrated – is one of the most evident milestones of the region's dominance at that time. In a short period of time, the world was thrown at the brink of a disaster when OPEC imposed an oil embargo,

effectively cutting the supply of crude oil to the rest of the world. Many countries, including the United States, had to make hard choices and introduce drastic measures such as rationing the petrol usage according to the license number of the car owner in order to limit the demand for oil. The losses oil importing countries sustained were estimated to be in the billions of U.S. dollars.

Yet, when OPEC cut the supply of crude oil in 2016 and 2017, prices did not increase nearly as much as they did in the 1970s. That has been the case, because the loss of OPEC oil has been compensated by a steady supply of U.S. oil. Back in the 70s, there wasn't any other viable alternative to oil from the Middle East – today there is. In such a way, the U.S. has not only reduced its dependence on imported oil but has also gained the power to balance the market when major oil producing nations attempt to manipulate price and supply.

In mid-2017, after a fresh round of supply cuts by OPEC and Russia, crude oil prices started to rebound, reaching $70 per barrel at the end of April 2018.

Unusual allies

The U.S. shale revolution has had an impact not only on international oil prices, but also on the geopolitical stage. A long time "enemy" of Saudi Arabia – Russia – has become a close partner of OPEC in the last two years.

In December 2016, OPEC and Russia signed a landmark deal to jointly cut production in an attempt to boost crude oil prices. It was agreed that Saudi Arabia and Russia will cut 486,000 and 300,000 barrels per day respectively. By December 2017 prices had increased to roughly $65 per barrel, following months of gradual growth. At the end of 2017, both parties extended their agreement to continue to coordinate oil production through 2018. In a statement from April 2018, the Russian Energy Minister Alexander Novak has even expressed plans to create a joint organisation for cooperation between OPEC and non-OPEC countries once the current agreement expires at the end of 2018. Driven by the desire of Saudi Arabia and Russia to create a long-term pack, it is not known whether the U.S. will play any role in this organisation.

The ripple effects

The U.S. shale revolution has caused a chain reaction across the world, leading not only to lower international oil prices, but also rearranging the geopolitical and fiscal structure of nations.

In South America, the low oil prices have led to domestic disturbances and food shortages in Venezuela. The collapse in Venezuela's industry has led to declining rates of oil production, effectively diminishing the global supply of heavy crude oil.

Nigeria, the country with the largest remaining deepwater oil reserves, has experienced a recession since the onset of the oil price crash.

Even Saudi Arabia has endured its fair share of challenges, mainly in the attempt to balance its budget. In order to do so, the Kingdom has taken austerity measures and reduced its public spending. Public spending in Saudi Arabia has enjoyed a generally upward trend since the early 2000s, suffering a major blow in 2015 when public spending was cut in half. This has had a significant impact on government subsidies for utilities such as water and electricity.

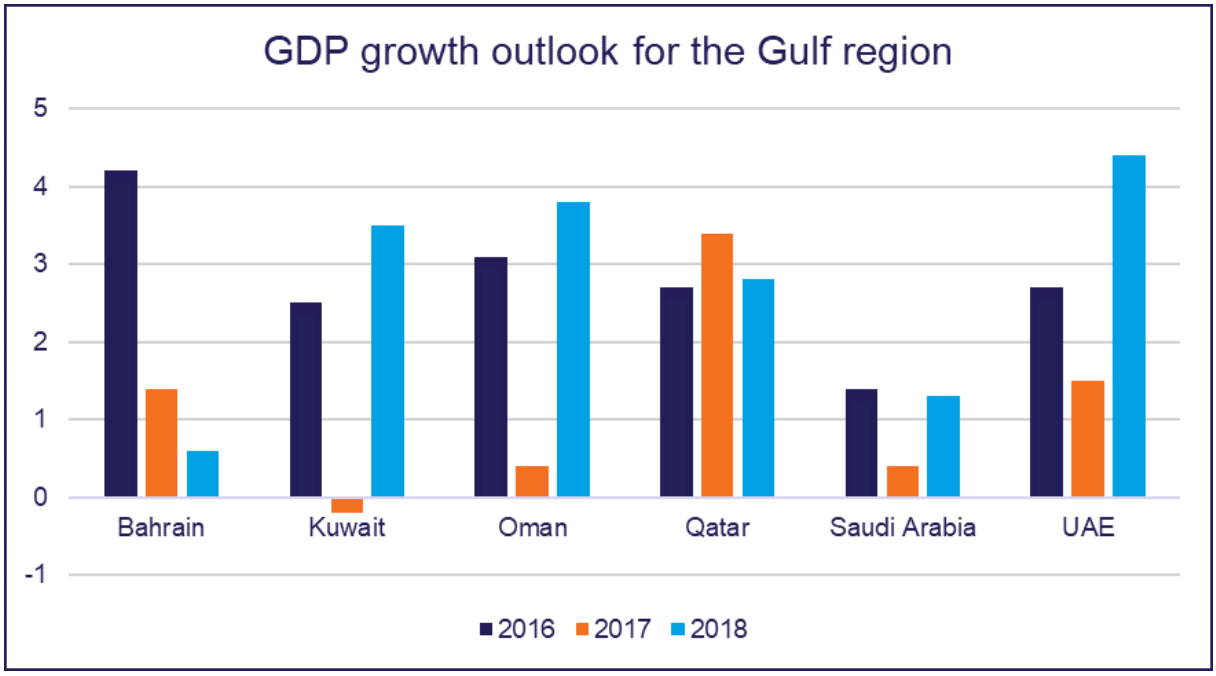

Figure 14. GDP growth outlook for the Gulf region
Source: International Monetary Fund (IMF) 2017

Public spending started increasing again at the end of 2017 and beginning of 2018 after Crown Prince Mohammad bin Salman announced the ambitious Saudi Vision 2030 which aims at reducing the country's economic dependence on petroleum products through a reprioritisation and diversification of investments. In addition, a new set of taxes was introduced, including a 5% value added tax (VAT) and an 'expat levy'. Until now, the Kingdom had the status of a tax-free country with heavily subsidised public goods.

In a similar manner, the United Arab Emirates have also introduced a 5% VAT. In addition, the Abu Dhabi National Oil Company (ADNOC) has launched their own Strategy 2030. It focuses on continued growth through cost optimisation and increased oil production capacity and has the ambition to increase the production capacity to 3.5 million b/d in 2018. This contrasts with the Saudi Vision 2030 which focuses on diversification of investments and the exploration of new income avenues. The International Monetary Fund (IMF) forecasts a general decrease of the economic growth of the region, with some countries affected more than others. Nonetheless, growth is projected to increase once again in 2018 due to rising oil prices and fiscal reforms.

One of the region's main competitors – Iran, has also experienced the consequences of the new U.S. oil and gas strategy. Most recently, President Trump announced plans to reinstate a set of sanctions on Iran which were previously lifted in 2015 after a nuclear deal was signed between the world's major powers. The sanctions are set to have a significant impact on Iranian oil and gas production and world supply, with exports predicted to be virtually halted. During the previous round of sanctions, some 1.4 million b/d of Iranian production were taken off the market. Once the restrictions were lifted, production surged again, leading to a drop in the crude oil prices below $30 per barrel. The cut in production is expected to be met by two of Iran's rivals – the United States and Saudi Arabia. The former is already breaking production records while the latter has expressed commitment to act in coordination with other oil producers, rather than pursuing a unilateral strategy. If the upcoming reduction in supply is not compensated, international oil prices are anticipated to increase even more. In the long term, this can be a big benefit for both the United States and Saudi Arabia.

OPEC projects peak of tight oil in 2025

Despite the looming hype surrounding the American shale revolution, OPEC forecasts peak of tight oil in 2025. This is justified by the nature of shale wells, having an initial 'boost' in output, yet rapidly declining thereafter. OPEC members are rather positive of their future role in the oil markets, anticipating their global market share to increase to 46% by 2040. That said, U.S. shale production is seen as a temporary hurdle rather than a long-term challenge. The EIA, on the other hand, increased its U.S. tight oil reserves projections in 2016. One thing is certain, oil will continue to play a role in the future energy mix, with OPEC

projecting more than half of the world's total power generation to be met by oil and natural gas by 2040. The IEA also forecasts a growth in demand for petroleum products by 2040, albeit at a steadily decreasing rate.

The verdict: Boom or bust?

The oil industry is a boom or bust industry. Is the current boom in U.S. shale production a short-lived one? Critics argue that U.S. shale producers have focused on growth at all cost at the expense of profitability. Yet, evidence shows that due to falling breakeven costs, profitability is on the rise. The road to success is paved with challenges and the oil and gas industry in the U.S. might face them sooner than later. Future production will require more investment in addition to the debt already accumulated by shale players. Depending on OPEC's strategy and international oil prices, the accelerated rates of production in the U.S. might lead to a bubble set to burst.

Further reading:

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