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China's appetite for LNG is on the rise, but does not come without its fair share of challenges for producers. Cover story by Robin Mills.

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Qamar Energy is a leading consultancy based in Dubai, which expedites understanding the energy dynamics of the Middle East and North Africa.

The QAMAR NEWSLETTER is a monthly publication that provides critical appraisal and focussed assessments of the month's energy developments across the MENA region.

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# CHINA'S GROWING APPETITE FOR GAS IS GOOD, BUT NOT WITHOUT CHALLENGES

Robin Mills • *A version of this article appeared in The National, Sept. 10, '18* • **COVER STORY**


A Sinopec worker walks past liquified natural gas (LNG) storage tanks at Sinopec's LNG terminal in Tianjin, China © Reuters

"Let China sleep, for when she wakes, she will shake the world," as Napoleon is said to have observed.

In the past two decades, China's prodigious appetite has indeed shaken up the world of commodities, sending demand and prices soaring. But one commodity, natural gas, has escaped China's grasp - until recently.

China is the world's largest importer of oil, takes in two thirds of soya beans and seaborne iron ore; it is the biggest generator of electricity; and it consumes half of all the world's coal, aluminium and copper. It has a third of all the solar power in the world and the third-largest nuclear power industry. In three years, it used more cement to build its new cities, airports and bridges than the US did in the entire 20th century. From 2003 onwards, its soaring energy demand sent oil prices to record heights, and therefore indirectly caused the Arabian Gulf's economic boom as well as underpinning the Putinist system in Russia.

But in gas, China is not a dominant player. It consumes just 6.6 per cent of the world's total, although it is still the world's third-largest market after the US and Russia.

China's endowment of gas is relatively limited compared to its population and economy and it has vast coal resources, which it has always relied on for cheap, secure energy and jobs.

It has become clear this coal addiction is unsustainable – the country releases more than a quarter of the world's carbon dioxide, making it the planet's biggest single greenhouse gas emitter by far. And local pollution, the mercury, acidic sulphur oxides and fine particulates, cuts life expectancy by at least three years and leaves a semi-permanent "brown cloud" hovering over Asia.

But in 2017, China decided to get tough on pollution. It banned coal heating across the 200,000 square kilometre Beijing-Tianjin-Hebei Capital Economic Circle area in the north, aiming to replace it with gas and electricity. Policy issued in June last year called for converting industries to use gas and the development of gas power plants. The resulting surge in demand, up more than 15 per cent in one year, caused shortages, as pipelines, storage and import terminals were unable to keep up.

There had been a fear that the global liquefied natural gas (LNG) market would be over supplied for years, as a wave of recent mega-projects in Australia, the US and elsewhere reached completion. Prices halved from 2015 to 2016, but they rebounded in 2017 as China's LNG imports rose 50 per cent.

Now, the industry is growing confident in strong Chinese demand, to the point of approving new projects to hit the market in the early 2020s. The country overtook South Korea as the world's second-largest LNG buyer last year, and imports are set to more than double by 2025; only Japan is now ahead of it.

Meanwhile, Russia's chose to bet big on its "Power of Siberia" pipeline to eastern China, whose cost, along with the field developments to feed it, is estimated at $55 billion. From receiving almost no gas from Russia today, China next year will suddenly vault to its second-largest customer after Germany.

So China has suddenly become a key driver of global natural gas markets. And this makes the outlook for gas more promising but much more uncertain. The Middle Kingdom's use of gas is determined by a complex interplay of economics and policy, and much of the economic side comes down to decisions by individual Chinese households and industries in the face of constantly shifting government directives.

On the policy side, the gas shortages seen last winter were undesirable, so the government may ease off on coal conversion until infrastructure catches up. And the escalating tariffs by the White House on imports from China have led Beijing to retaliate against US products, including LNG. This in turn casts doubt over the long list of American LNG export projects on the drawing board, or causes them to scramble to find buyers elsewhere.

Unlike Japan, South Korea and Taiwan, the leading LNG importers historically, China has ample access to other sources of energy – its own coal and gas, and gas imports from Central Asia, Russia and Burma. How much it chooses to rely on seaborne LNG versus alternatives depends on relative prices as well as decisions on pollution and security of supply.

If China relaxes the grip of its big state companies on the domestic market, it could establish a key pricing hub in the north-east, where LNG imports, local gas and pipelines from Central Asia and Russia converge.

This is also an important geopolitical shift. The economic fates of Russia's Siberian hinterland and Central Asia, particularly Turkmenistan, will be more closely bound to their giant eastern neighbour. China will have to manage greater dependence on imports, including those brought in through sea lanes through the Indian Ocean, a vulnerability it is already familiar with in oil.

The leading Chinese oil firms will acquire their own LNG technology and take stakes in overseas projects. They have sought to invest in US shale in Alaska and West Virginia but this looks problematic as trade war concerns mount. Instead they will turn to Australia, East Africa and the Middle East.

Gas may still only be an aperitif in China's vast energy complex but the country's enormous appetite means that every move it makes matters.

The turn to gas is good news for choking Chinese citizens and the global climate. It will delight gas exporters but brings a whole new set of strategic conundrums.

## TRADE TENSIONS HAVE CHALLENGES BUT OPPORTUNITIES TOO

Robin Mills • *A version of this article appeared in The National, Sept. 03, '18*

Trade wars may not be as dramatic as real wars, but they are also destructive, and more insidious. Markets seem relatively unconcerned, despite the escalation of US-China rhetoric and imposition of tariffs. The prospect of rising trade barriers contains some opportunities for the Middle East, but also challenges.

Donald Trump has said that the US would leave the World Trade Organisation unless it "shapes up". In March, he imposed a 25 per cent tariff on steel and a 10 per cent tariff on aluminium imports. US trade representative Robert Lighthizer has announced that, from late September, $200 billion worth of Chinese imports, including food, minerals, chemicals and consumer goods, face a 25 per cent tariff. Beijing has announced it would respond proportionately.

For now, China has refrained from imposing a threatened 25 per cent tariff on US crude oil imports, but has imposed the tariff on liquefied natural gas (LNG) imports. China took 17 cargoes of American LNG in January-May this year, one cargo in June and none in July. Chinese buyers have also shunned US oil in August, after buying 300,000 barrels per day in June and July, because of fears that tariffs might be imposed while they are waiting for a tanker-load to arrive.

Since the US exported $188bn of goods and services to China last year, while importing $524bn, if China is to retaliate fully against the threatened US tariffs, it will have to slap duties on a major category such as oil. The EU, Canada and Mexico have also announced retaliatory tariffs, though these do not yet include energy. The GCC does not sell much to the US, apart from oil, but $1.8bn of aluminium was its second-most important export.

The US's agenda of "energy dominance" will suffer if it cannot access a key expanding market such as China, hampering further growth in output. The duties on aluminium and steel already raise costs for American oil producers and pipeline companies. US oil and gas would be dumped in other countries, creating an opening for Middle Eastern exporters to win market share in the Middle Kingdom.

The GCC might also benefit from cheaper food as Chinese and American farmers look for other markets. And if Chinese investment becomes less welcome in key destinations such as the US, Canada, the UK and Australia, Gulf money – which comes with less political baggage - will be needed.

Any moderate gains in the Middle East's energy revenues, though, pale beside the negative impact of tariffs on the world economy. It is unlikely a trade war would cause a recession on its own, but it could be the negative shock that combines with other factors, such as a Chinese slowdown, contagion from Turkey's crisis, rising interest rates, an oil price spike driven by lost output from Iran and Venezuela, and the natural end of a long economic expansion.

Just a 1 per cent drop in world economic growth could cut demand forecasts by 600,000 barrels per day or so, presenting OPEC with the tricky task of reinstating its production cuts and potentially attracting more blame for keeping prices too high.

A general turn to protectionism would also be bad news for the region's diversification efforts. Periodic complaints by competitors over below-market price inputs to petrochemical firms, and unfounded allegations of subsidies to airlines such as Emirates and Etihad, have been dismissed so far, but could return in a more insular world.

To head off the prospect of restrictive trade measures, the Middle East needs to step up its diplomatic efforts. The GCC launched negotiations for a free trade agreement (FTA) with the EU in 1990, but talks were suspended in 2008. Dialogue continues on long-awaited FTAs with China and India.

The Middle East lags behind other parts of the globe when it comes to free trade pacts as a region. The Greater Arab Free

Trade Area has broad coverage but no enforcement mechanism. The World Bank's recent Arab Competitiveness Report, points to a lack of trade integration, particularly from non-tariff barriers such as varying regulations and informal prohibitions, as one of the region's biggest problems.

Political problems and insecurity have hampered major cross-border projects, leading to wasteful duplication of similar infrastructure, and lack of connectivity such as international railways. In energy trade, very little gas or electricity flows from producers to nearby deficit markets. A few tentative steps, for instance to sell some of Egypt's new gas surplus to Jordan, or electricity from Saudi Arabia and Kuwait to Iraq in return for Iraqi gas to Kuwait, just illustrate how much more could be done with sufficient political will.

The region's giant national energy champions expand overseas into promising markets such as China and south-east Asia, but more needs to be done within the Middle East outside their home country. The joint venture between ADNOC and Saudi Aramco for India's Ratnagiri refinery, Mubadala's stake in Egypt's SUMED oil pipeline, and Kuwait Petroleum Corporation's investment in Oman's Duqm refinery, are quite rare examples of cooperation.

The prospects of a trade war, or just a milder slowdown in international trade, is bad news for oil demand and for the Middle East's economic diversification. The region may do best to stay out of the melee for now as the trade giants of the US, China and the EU fight. But it needs to safeguard its future by opening trade within and beyond the Middle East.

## CASPIAN SEA DEMARCATION COULD SEE MORE OIL & GAS FLOW

Robin Mills • *A version of this article appeared in The National, Aug. 27, '18*

When is a sea not a sea? The Caspian is more than a kilometre deep at its deepest, it has waves and tides and its area is not much less than the Red Sea or Baltic. But, with no link to the oceans, its legal status has long been in dispute. A meeting in Kazakhstan this month aimed to resolve that, which could open up oilfields and pipeline routes.

Soviet-era treaties allowed equal access to the surface waters but since the USSR's collapse, Iran has maintained the Caspian is a lake, which would give all five littoral states an equal share of its resources.

But Russia's position is complicated and the other neighbours, Kazakhstan, Turkmenistan and Azerbaijan, have generally maintained that, like maritime boundaries, the seabed should be demarcated by a median line equidistant from their shore, with some modifications. Under this method, Iran would receive the smallest share. Kazakhstan, Azerbaijan and Russia have already carved up the northern part of the sea on this basis, in 2003, and Kazakhstan and Turkmenistan agreed their border in 2015.

With this legal certainty, Kazakhstan has proceeded with development of the supergiant Kashagan oilfield, one of the largest found in the world over the past two decades, which started production in 2016. Russia has some smaller fields, while Azerbaijan has produced from its shallow offshore since 1950 and BP has operated its large Azeri-Chirag-Guneshli field since 1995. Dragon Oil, now wholly owned by the Dubai Government's ENOC, has enjoyed great success in developing the Cheleken oilfields off Turkmenistan. The billion-barrel Kyapaz/Serdar field, though, remains undeveloped in the absence of an accord between Turkmenistan and Azerbaijan.

Meanwhile, Iran has been left out of the Caspian oil rush, partly because of US and international sanctions, partly because of its failure to offer an attractive commercial model, and partly because of difficulties in drilling in the southern Caspian, the deepest part. Reservoirs are exceptionally far below the seabed and pressures high. With no access to oceans, drilling rigs have to be constructed in the Caspian itself, or disassembled and brought in via canals.

In 2001, Iranian gunboats warned off BP survey vessels working in a disputed area, on what Iran calls the Alborz field, and Azerbaijan refers to as Araz-Sharg-Alov. In 2012, Iran discovered the Sardar-e Jangal field in 700 metres of water south of Alborz, claimed to hold 50 trillion cubic feet of gas and 2 billion barrels of oil, but has not developed it. But in June, Tehran did reach agreement with Baku over joint development of another shared field.

The meeting of all five littoral states, in the Kazakh port of Aktau on August 12, settled some but not all of the outstanding questions. They agreed the Caspian is a sea but with a special legal status. The convention allows freedom of access by the signatories to all the Caspian's waters, prevents non-Caspian countries deploying military forces there and agrees that the seabed should be subdivided but without specifying how. It allows the states to reach bilateral agreements on demarcation and on the construction of pipelines, rather than requiring the consent of all.

The deal was received badly by many in Iran. Mahmoud Sedighi, a Reformist parliamentarian, tweeted that Iran's 50 per cent share of the sea had been reduced to 11 per cent, and compared the convention to the despised 1828 Treaty of Turkmenchay, which gave up much Iranian territory to the Tsar of Russia. Opponents complain that Russian warships will now rule the waves, and fear Iran will emerge with only a small claim over the sea's resources.

But Tehran's weak bargaining position forced it to sign. Better relations with its northern neighbours free its hands to concentrate on other threats. It is reliant on Russian support against sanctions and in Syria and it has to forestall the possibility of American or Israeli use of Azeri or Kazakh bases. And, unlike the others, it has failed to create "facts on the seabed" by developing any hydrocarbons in its undisputed sector.

Conversely, the accord could be good news for Turkmenistan. Holder of the fourth-largest gas reserves in the world, it sends most of its output to China, after Russia cut off its access to other markets. For more than two decades the prospect of a "Trans-Caspian pipeline" through Azerbaijan to access Turkish and European customers has long tantalised oil companies and European strategists keen to diversify away from Russian supplies. German chancellor Angela Merkel visited Baku, Azerbaijan's capital, on Saturday, with gas supplies on her agenda.

Dragon Oil, which has to burn off the unwanted gas from its oil production for lack of a route to market, is one of several companies that could supply the Trans-Caspian line. But opposition from Russia and Iran, tepid interest from Azerbaijan which would not want to facilitate a competitor to its own gas, and Turkmen indecision and inertia, have long stalled progress. There are several competitors, including Russia itself, to supply Europe at lower prices.

As I told a European envoy in 2012, purely political pipelines don't get built. Instead of the grand Trans-Caspian, or the Turkmenistan-Afghanistan-Pakistan-India pipeline persistently promoted by perspiring US diplomats, the Turkmens may sell a smaller amount of gas the short distance to Azerbaijan and perhaps Turkey.

More Caspian oil may also flow in the next few years if border demarcation proceeds. But Moscow can be confident that its minor concessions leave its gas markets secure. The convention has further reinforced Russia's guard on its soft underbelly, and emphasised Tehran's and Brussels' disadvantages.

## MIDDLE EAST FACES DOUBLE RISK AS CLIMATE CHANGES

Robin Mills • *A version of this article appeared in The National, Aug. 13, '18*

As wildfires consume Greece and California, record heat strikes Algeria and Oman, and thirsty protesters march in Iraq, the face of global warming is becoming very visible. The Middle East faces a dual danger: climatic disasters that become political disasters; and a global shift away from fossil fuels.

A paper by Will Steffen and colleagues in the Proceedings of the National Academy of Sciences, published last week, highlights the fears of reaching dangerous tipping points in the Earth's climate. The 2015 Paris international agreement was founded on the comfortable assumption that we can choose a target for warming of 1.5°C or 2°C globally, without further climate consequences beyond that mark.

But Steffen's paper points out the danger of dramatic, irreversible changes. At 1 to 3°C of global warming, Arctic summer ice will disappear and the Greenland and West Antarctic ice-sheets could collapse. At 3 to 5°C, the Atlantic circulation that keeps northern Europe temperate, the Indian summer monsoon and the Amazon rainforest are threatened. Above 5°C, the winter Arctic ice and the huge East Antarctic ice-cap could melt, and the Siberian permafrost may release vast stores of carbon and methane to drive further warming. Already the thawing Arctic is affecting the European climate, bringing cold winters but hot summers. The Mediterranean region is drying out as summer storms shift north. As such shifts multiply and intensify around the world, pressure to act against global warming will intensify. And well before we reach the more dramatic climatic disruptions, we will hit political and economic tipping points.

The Middle East is particularly vulnerable, on two counts. Firstly, it is an already hot and arid region, with an expanding population, where agriculture is running short of water. Iraq spars with Iran and Turkey, Jordan with Israel, and Egypt with Ethiopia and Sudan, over their shared rivers. Several endemic political conflicts have in some cases been intensified and shaped by the effects of climate change such as drought, and make effective regional cooperation and long-term thinking all but impossible.

Secondly, the economy is heavily dependent on oil and gas – to earn export revenues and to drive domestic industry. Even the non-oil exporters such as Egypt, Lebanon and Jordan rely heavily on remittances and aid from their neighbours.

This activity, though, is threatened in the longer term by ever stricter limits on carbon dioxide emissions, and by growing investment in non-carbon technologies that are increasingly commercial in their own right – solar and wind power, electric vehicles. Climate denialism may be most entrenched in the US, but even there a new generation of voters will think differently: 56 per cent of older Americans are worried about global warming, but 70 per cent of those aged 18 to 34. Carbon-heavy economies may face growing international condemnation, including tariffs on their exports, investment freezes, even boycotts and sanctions.

A Fitch report this month argued that by 2050, the GCC states would have achieved their aim of diversifying their economies away from hydrocarbons. But 2050 is both too far and too near. It seems a long way off, and indeed we are likely to see serious climate disasters and non-carbon energy both multiply much earlier.

Yet it is not long to turn around a whole economy: it is only as distant from today as events that seem quite recent, including the 1988 US congressional hearings that led into the Kyoto protocol, and the Iraqi invasion of Kuwait. Power stations, oil platforms, airports and beach-front property built today will still be around in 2050.

Mena's progress to date has been patchy and far from sufficient: the introduction of renewable power is picking up, and energy subsidies have been cut in most countries to drive efficiency, but efforts remain well behind most of the world. Ambitious diversification plans have been unveiled by the GCC states, but tangible progress is limited outside the UAE.

To cope with coming climate turmoil, the Mena countries need to move ahead on the four fronts of energy, economy, resilience and politics. On energy, they need to use their intense solar endowment fully, and develop the supporting system – battery storage, reverse osmosis desalination, and exports of solar electricity or synthetic fuels. Saudi Arabia has offered Iraq 3000 megawatts of electricity from a new solar plant to assist with its power crisis.

At the same time, they need to adapt their petroleum industries to a low-carbon mode, by developing more gas and solutions such as carbon capture, storage and use for valuable new products. Such policies can support the economic goal of diversification, vital for reasons of employment, equity and stability that go beyond climate justifications.

MENA states need to be resilient to much more dramatic climate shifts and disasters than the mild changes embodied in current planning: severe droughts, cut-offs of food imports, rapid rises in sea-level. Finally, on politics, it is hard to be optimistic about regional cooperation, but there are no unilateral solutions to issues such as rivers or climate refugees. The Middle East faces many common challenges that will be magnified by climate change, but can also be addressed by cross-border investment, conflict de-escalation and strong multilateral institutions. The region's conflagrations will burn even hotter, unless nations can work together to douse them.

# ABU DHABI IS BUILDING UP MOMENTUM FOR ITS DOWNSTREAM AMBITIONS

Robin Mills • *A version of this article appeared in The National, Aug. 06, '18*

ADNOC's downstream investment forum in May highlighted the new importance the company gives to this part of its business.

It attracted industry luminaries: the chief executives of BP; Total; Eni; HSBC; Mubadala Petroleum; Siemens; Occidental; the chairman of China National Petroleum Corporation; and the oil and energy ministers of the UAE, India and Egypt. Now Abu Dhabi needs to press on with the previously under-appreciated job of turning oil into refined fuels and petrochemicals.

In recent years, two key imperatives have made downstream expansion a key theme for national oil companies. The first is the desire to secure a market position in the world's main growth markets. While in BP's energy outlook, US oil use will fall 3 million barrels per day (bpd) and the EU's 4.3 million bpd by 2040, China's will rise 3.5 million bpd and the rest of Asia's by 8.6 million bpd.

The second is the concern that demand for transport fuels may be about to drop in the quite near term because of improving efficiency and the rise of electric vehicles. BP sees world oil use dropping after 2035, well within the investment horizon of a new refinery today, leaving petrochemicals as the only growing sector.

Other countries see the same trends, and regional competition is hotting up. Saudi Aramco is reportedly planning to buy some or all of the Public Investment Fund's 70 per cent stake in Saudi Basic Industries Corporation (Sabic), the other state giant. Integrated operationally, this would reduce competition for feedstock, share overheads and ease Aramco's task of building up its own petrochemical business. The two are already cooperating on an enormous, $20 billion, "crude-to-chemicals" plant at Yanbu' that is intended to simplify petrochemicals by cutting out the intermediate refining step.

Iraq indicated last week that it would go ahead with Nebras, an $11bn petrochemical joint venture with Shell, with Aramco also in discussions to join. Iran has built up a large basic petrochemical industry sourced from its giant natural gas reserves, though many plants remain unfinished because of lack of financing. Private Egyptian company Carbon Holdings secured financing last month for a $10.9bn complex processing naphtha, a light product of oil refining.

But for the other GCC countries, the phase of making basic petrochemicals from cheap methane and ethane, the main constituents of natural gas, is giving way to a second stage focused on intermediate and speciality chemicals, such as synthetic rubber, adhesives and sealants, and plastic automobile and aviation components. More sophisticated technologies will create more related industries and employment. Integrated refineries and petrochemicals will share utilities, control rooms, maintenance and back-office functions; save on waste heat; and exchange feedstocks and intermediate products.

Abu Dhabi's downstream sector has potential to grow – the Gulf Petrochemical Association assessed UAE 2016 petrochemical capacity as 13 million tonnes per year (Mtpa), compared with Saudi Arabia's 106 Mtpa. Its new strategy has to close that gap.

At home, it has reincarnated the decade-old Chemaweyaat plan, with a scheme to make Ruwais the world's largest integrated refining and petrochemicals complex, boosting ADNOC's petchems output from 4.5 Mtpa to 14.4 Mtpa by 2025. The centrepiece mixed-feed cracker will process a blend of ethane and naphtha.

Internationally, its first step is partnering with Aramco and Indian state firms in a giant new 18 Mtpa refining and petchems complex at Ratnagiri on India's west coast. This new strategy carries several challenges. Mixed-feed crackers and speciality chemicals do not have the advantage of low-cost feedstock that drove the GCC's first generation of plants, while the US has enjoyed a long period of low ethane prices because of its shale gas.

The Middle East end-product markets are fairly small and unintegrated, so most output will have to be marketed to Europe and Asia. As well as incurring transport costs, this also exposes sellers to the risk of tariff barriers if the world turns to protectionism.

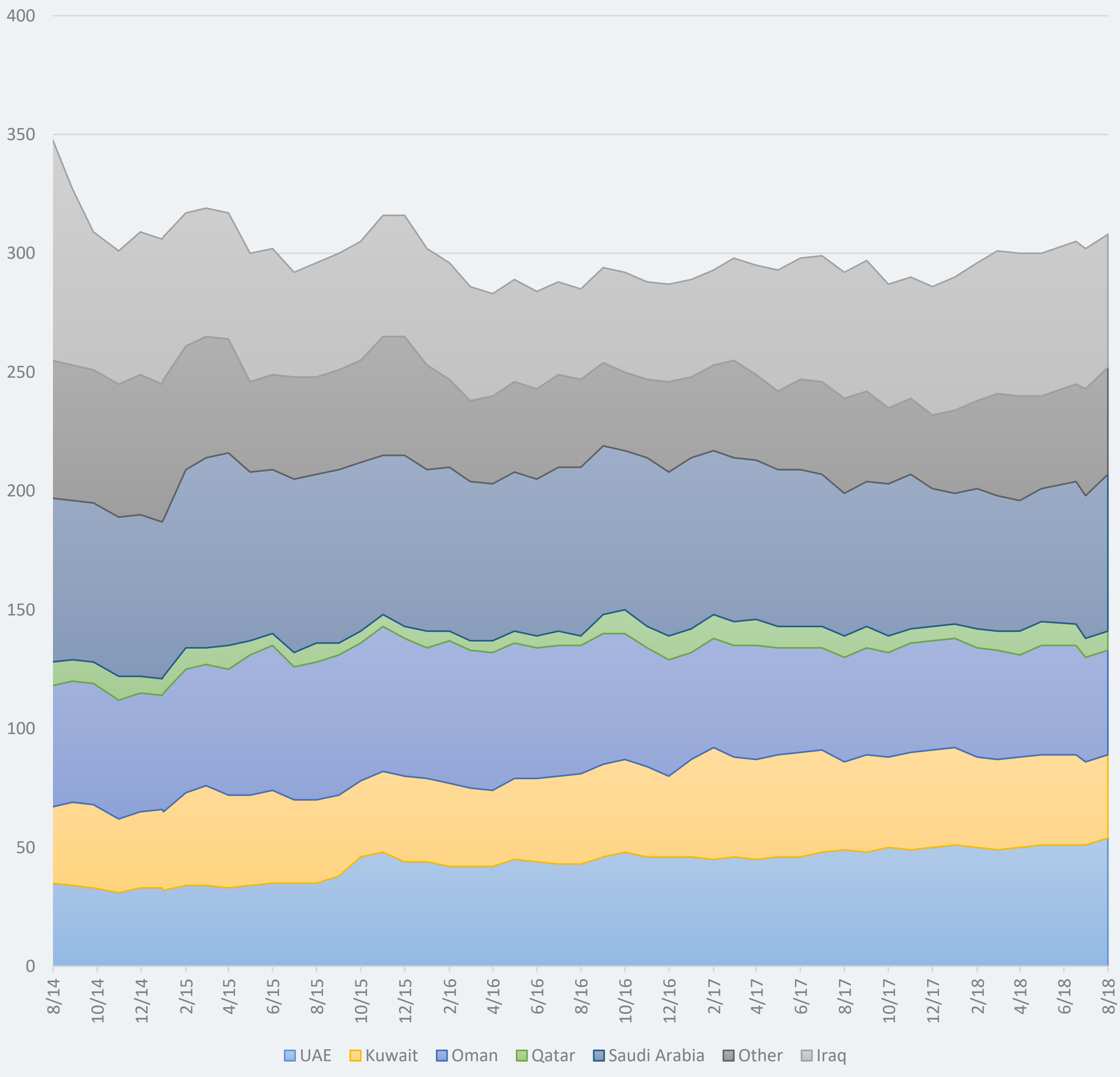
In the longer term, the reliance on petchems is under environmentalist pressure. Single-use plastics, such as shopping bags and drinking straws, face bans as waste accumulates in the oceans. Recycling and bio-materials may shrink the industry's use of hydrocarbons.

Abu Dhabi's new strategy will rely on its competitive strengths: the UAE's business-friendly environment, well-integrated logistics, access to finance, and attractiveness to international partners. Maximising the emirate's existing assets is key: Mubadala already owns a large refining and petrochemical portfolio, including 64 per cent of Borealis which already partners ADNOC in Ruwais, and Europe-focused Spanish refiner Cepsa.

The Saudi plants' operational performance and profitability are not particularly impressive. Learning from this, ADNOC will need to develop its skills in operating complex plants and marketing their products, a more involved task than selling crude oil. An integrated view of the industry's complex product chains will point to products likely to be in under supply. It will need to develop research and innovation, and possibly consider select international acquisitions.

Although downstream is a crowded space with tough and experienced competitors, the imperative is clear. The range and rank of attendees at ADNOC's forum is a testament to Abu Dhabi's appeal. Swift, bold and capable execution will enable the company to stride ahead.

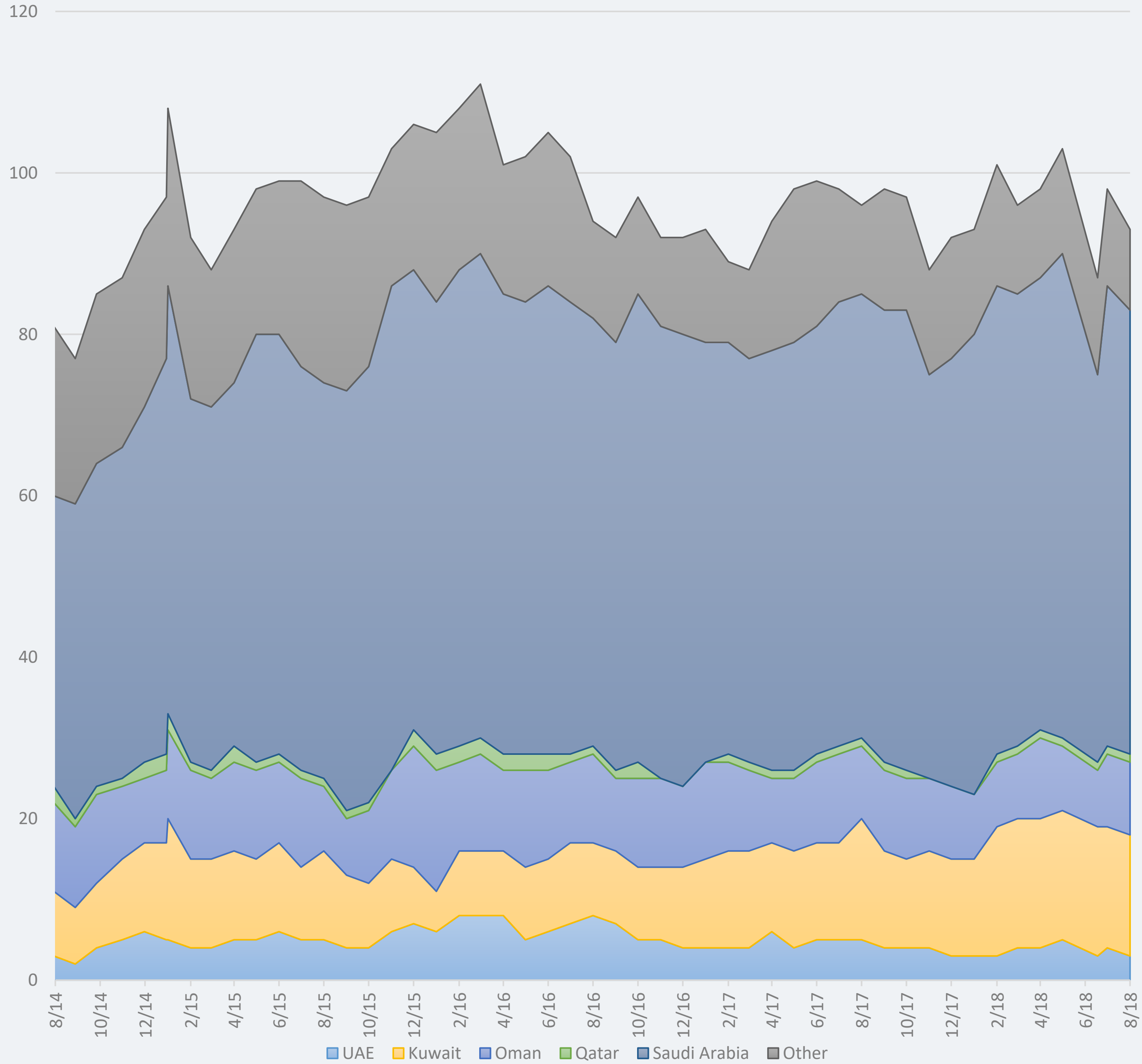
# RIG COUNT SNAPSHOT: **OIL**




- The Middle East's oil rig count in August increased by +6, excluding Iran. Iran's rig count is not included in Baker Hughes; however, OPEC reports total (oil and gas) rig count in Iran has remained steady at 61 throughout 2017, till June 2018.
- The GCC's rig count gained by +9 in August; drilling has stayed steady at near-record levels since January.
- Iraq had stayed steady at 60 rigs since March, falling marginally by -3 in August. West Qurna-1's production has increased by 40 kbpd to reach 499 kbpd, and Zubair's has increased by 45 kbpd to average 475 kbpd.
- In August, Kuwait's rig count fell for the first time (-3) since February, even as a preliminary agreement was reached with Saudi Arabia to resume production from the shared Al-Khafji field.
- Saudi Arabia declined by -2, as overall production fell by ~53 kbpd due to the Kingdom not wanting to oversupply the market. On June 28 Aramco and US-based National Oilwell Varco signed a JV to establish an on-shore rig equipment manufacturing facility in Ras al Khair.
- Non-OPEC member Oman's rig count gained by +3 from April; in August, the country's production reached its highest in 10 months, averaging ~976 kbpd. This has come at a cost to its OPEC compliance, which stood at 80% in July, after averaging 100% all year long.

**Source:** Baker Hughes

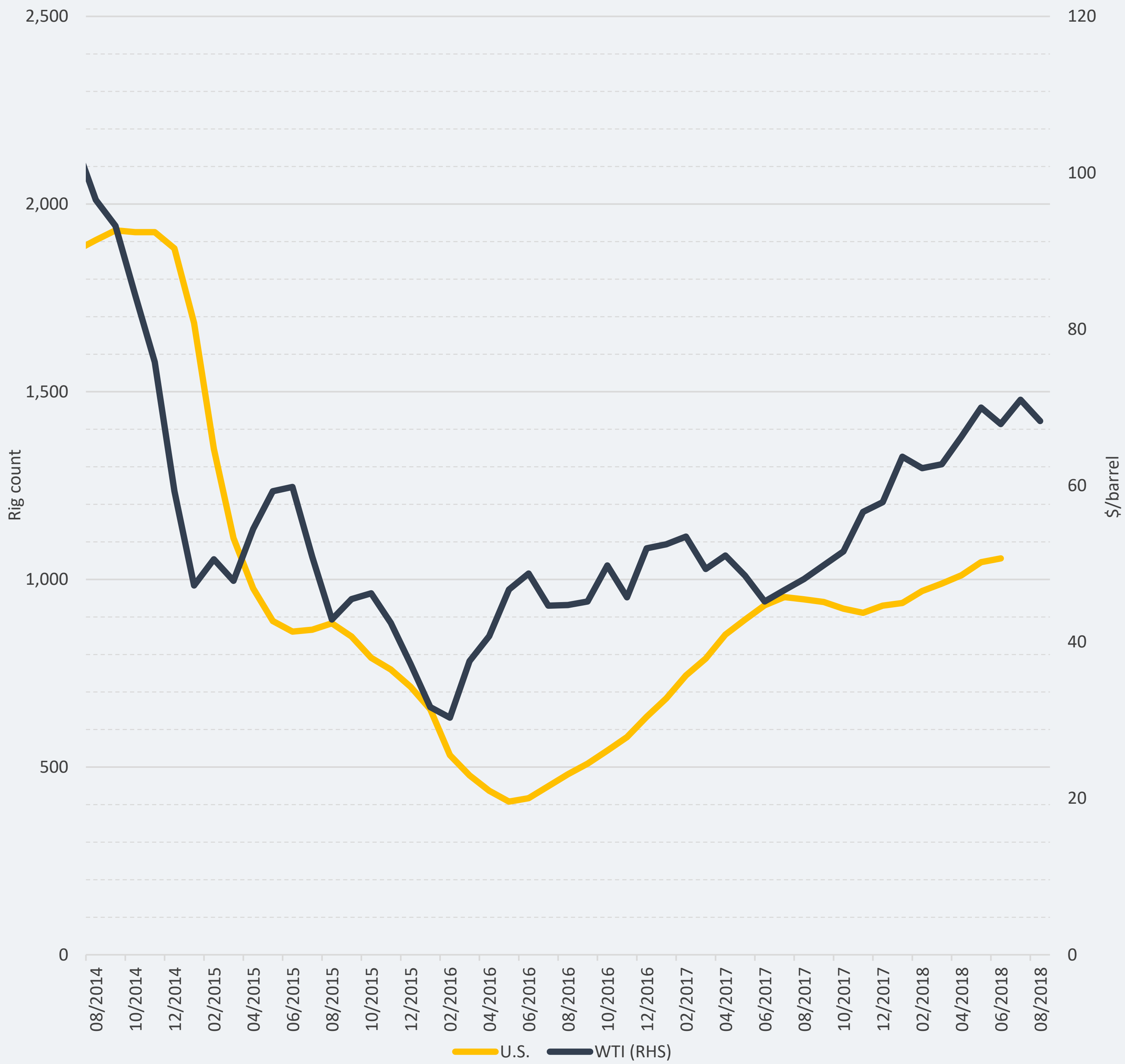
# RIG COUNT SNAPSHOT: **GAS**




- The Middle East's gas rig count fell marginally by -4 in August, still an improvement from June, which recorded the lowest rig count since 2012. Its highest level reached was in January 2014 at 123 gas rigs.
- The improvement came mainly due to a rebound in Saudi Arabia's rig count which reached its yearly average of 56 after falling to a low of 48 in June; Weatherford announced in June the sale of its rigs in Saudi Arabia to ADES International Holding. Combined with Kuwaiti and Algerian rigs, the total number of rigs sold is 31.
- Oman's rig count witnessed no change, even after Petroleum Development Oman announced a significant gas find with estimated recoverable reserves of more than 4 Tcf and 112 MMbbl condensate in March in the north of its concession area.
- The UAE's rig count stayed steady in August; the country has earmarked $109 B for downstream assets and sour gas development, indicating a future increase in rig counts.
- Kuwait fell by -1 from June, still a rise of +3 from January, after having stayed steady since November 2017 with 12 gas rigs, reaching its previous year-high count of 15 in August 2017. The Kuwait Oil Company plans to increase Jurassic gas production from 170 MMcf/d to 520 MMcf/d in 2018.

**Source:** Baker Hughes

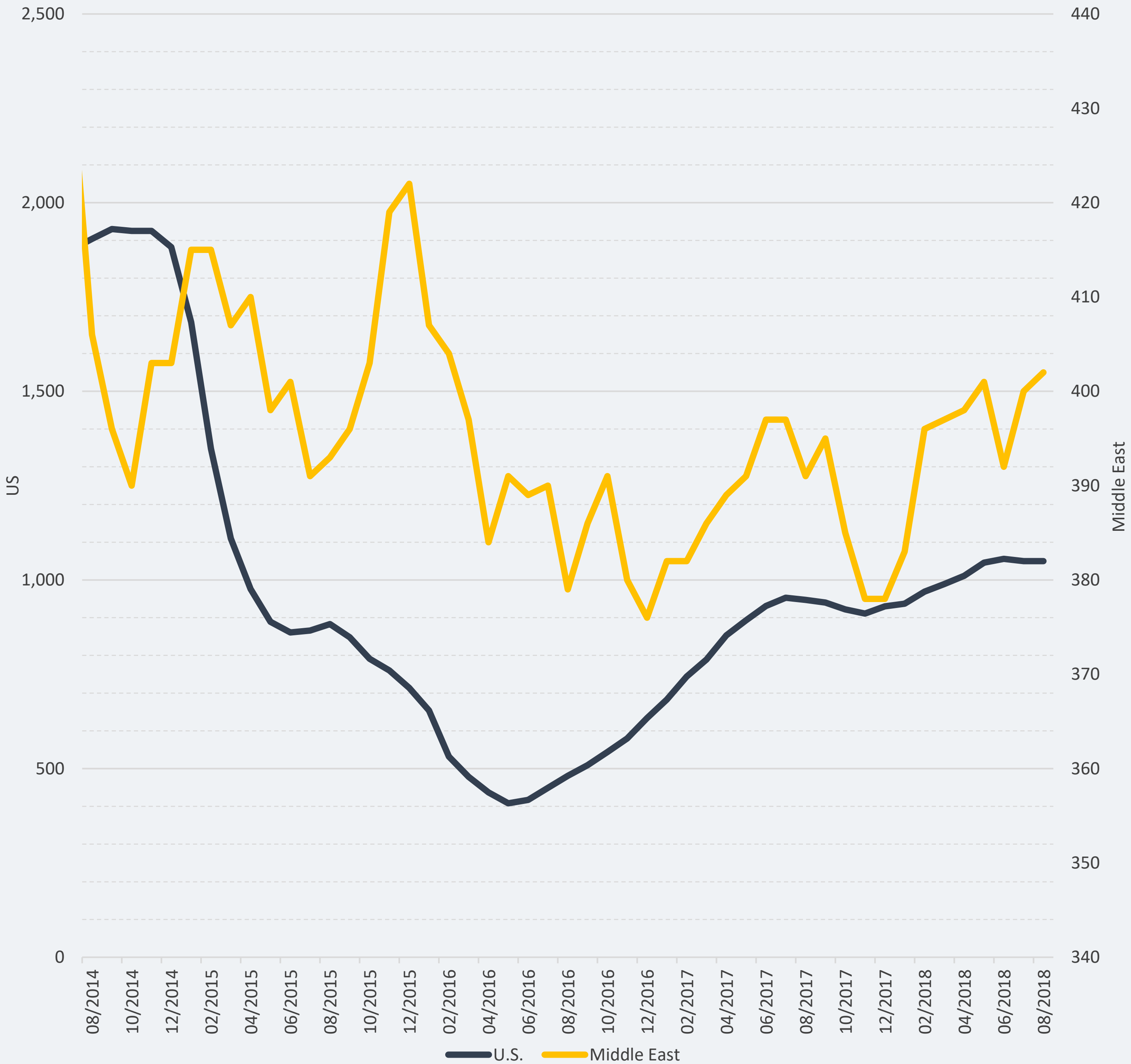
# RIGS VERSUS OIL PRICES: US RIGS & WTI




- US rig count jumped by ~11% in August y-o-y, a rise of 103 rigs. The US has overtaken Saudi Arabia in crude production, averaging ~10.94 Mbpd in August, about ~553 kbpd higher than the kingdom's output for the same month.
- Total US rig count has been in decline since August of last year due to producers trimming spending plans citing softer oil prices; however, at 1050 for August 2018, the country has made a rapid recovery, passing 2017's high of 953 rigs and nearing 2015's >1000 levels.

**Source:** Baker Hughes, EIA

# RIG COUNT: US & MIDDLE EAST




- The US' offshore rig count gained by +3 y-o-y from September 2017 even as Hurricane Florence raises concerns of a similar fall in rig count as was observed during Hurricane Harvey and other natural disasters. The country has made a steady recovery since last August, with a fall in its count occurring only in May this year.
- Total Middle East rig count stayed steady in August from increased oil activity, especially from the UAE and Iraq. The UAE is tapping into increasing production from its Umm Lulu concession to 75 kbpd from current levels of 30 kbpd, and Iraq is planning to increase production from Zubair and West Qurna-2. Other OPEC members have struggled to increase production with compliance rates at 100% or above, for example in Angola, Equatorial Guinea, and Gabon.
- The region's rig count has averaged 392 for the last two years.

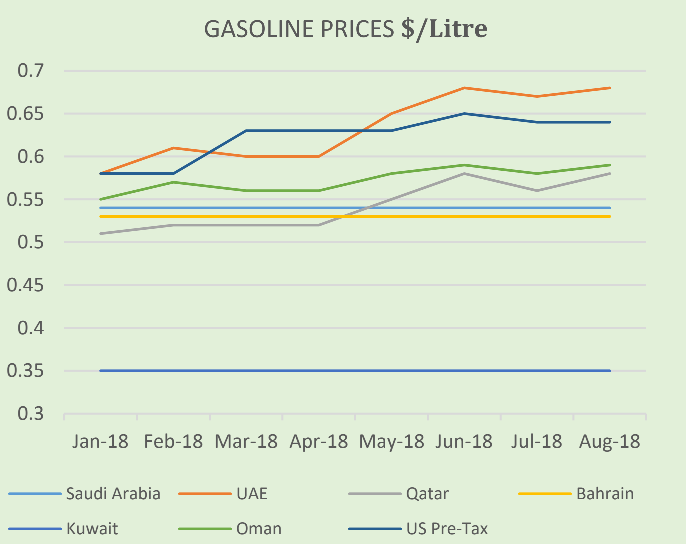
**Source:** Baker Hughes, EIA

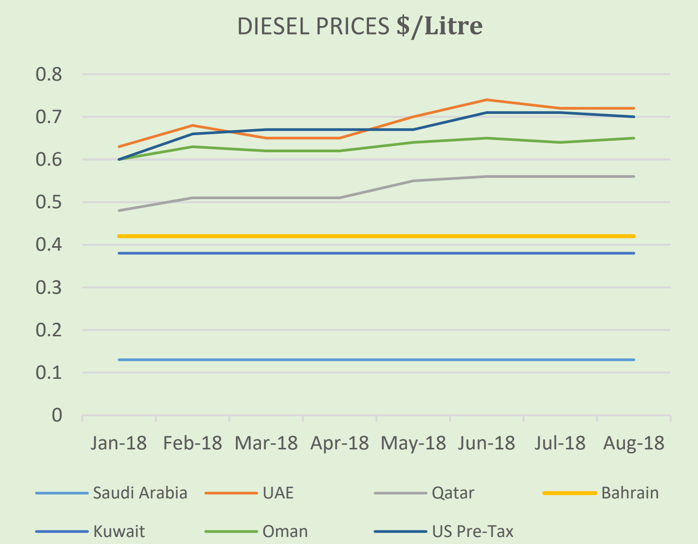
# FUEL PRICES & SUBSIDY REFORMS

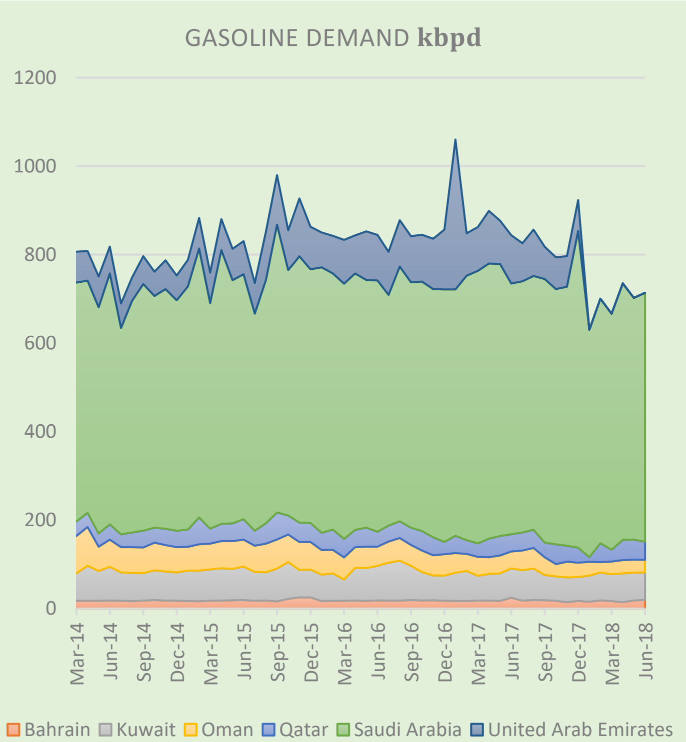
AUGUST 2018

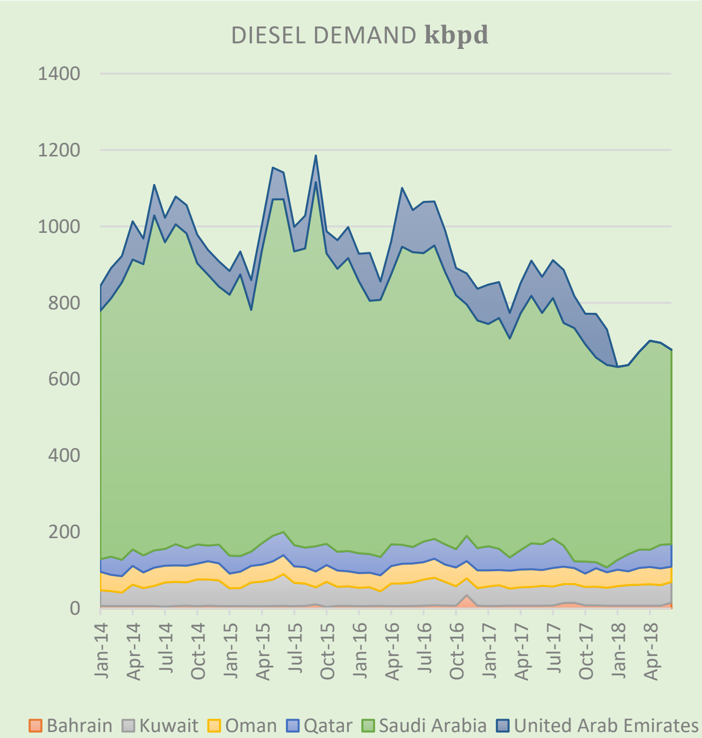
- The UAE was the first GCC country to remove fuel subsidies in August 2015; gasoline prices rose marginally by ~0.5% in August 2018 from July. Fuel prices were announced to be revised upwards on 30th April 2018 in line with increasing world prices.
- In Qatar, diesel prices for August witnessed no change from July, but gasoline rose by 1.5%. In May, Qatar's gasoline prices increased by ~9.9% to the highest level since Qatar started pegging its fuel prices to the international market in April 2016.
- Meanwhile in Kuwait, the Parliament's Financial and Economic committee has approved the cancellation of the decision enforced in September 2016 to raise fuel prices to 'reduce financial burdens on citizens'. Similarly in Bahrain the Council of Representatives urged the government to rethink its fuel price hike just a day after it was approved, finding the change 'too sudden'. On May 27, the High Administrative Appeals Court dismissed the complaint, allowing the Ministry of Oil & Gas to raise fuel prices from September 2018 but this decision hasn't come into force yet.
- In Oman, the prices of Gasoline 91, 95, and diesel did not witness a change in August from July, but have reached their highest level for 2018 in September, rising by 1.87%, 1.8%, and 2.86% respectively.

The following table represents the prices of gasoline 95 and diesel ($/litre) till August 2018 in the GCC countries.




**Source:** EIA, JODI, Qamar Energy

# ARABIA MONITOR ENERGY:

## A Collaboration Between Arabia Monitor & Qamar Energy

## ARABIA MONITOR ENERGY

Oil and gas tensions in the Middle East continue to influence the volatility of the world's energy markets. The Arabia Monitor Energy, a novel collaborative effort by Qamar Energy and Arabia Monitor, combines macroeconomics, geopolitics and energy intelligence to explain what the region's energy geo-economics mean for business.

## WHAT SETS IT APART?

### 1. INSIDE OPEC

Focussed assessment of the month's OPEC developments, policy advancements and strategies.

### 2. NOC & IOC ANALYSES

Examination of factors affecting NOC and IOC policies, and their impact on regional diversification schemes.

### 3. SPOTLIGHT THIS MONTH

Targeted reading of the geopolitical, macroeconomic and energy landscape of a MENA country utilising our specialised energy intel.

### 4. SCENARIOS TO WATCH

Detailed forecast of global oil developments and their impact on the risks and opportunities for MENA's oil production.

### 5. STRATEGIC IMPLICATIONS

Concise summary of major oil trends and their effect on investment strategies under bearish, bullish, and wobble scenarios.

### 6. OUTLOOK FOR THE YEAR

Cohesive outlook of the oil production, gas production, renewable energy projects, and geopolitics of key MENA countries.

## WHO BENEFITS?

### ENERGY TRADERS

- What factors will contribute to oil and gas price fluctuations?
- What is the outlook for oil and gas pricing?
- What is the outlook for OPEC's production and export strategy?
- How are NOCs adapting their oil marketing strategies?

### INVESTMENT AND RISK ANALYSIS

- What are the operational risks and investment opportunities in MENA?
- How do economics, politics, government policy changes, production and export bottlenecks contribute to risk mitigation?

### UPSTREAM FIRMS

- What are the chief economic, political and fiscal regime factors driving/limiting upstream investment decisions and progress?
- What are the oil supply outlooks for the countries by project?

### DOWNSTREAM FIRMS

- What are the demand challenges, patterns, and trends for oil and oil products?

### NATIONAL OIL COMPANIES

- What are future oil and gas pricing trends?
- What developments will intensify or weaken demand?
- What are IOCs' incentives and drawbacks in operating in the country?

### ALTERNATIVE / RENEWABLE ENERGY ORGANISATIONS

- What are the challenges to renewable energy targets?
- What is the progress of major renewable energy projects?
- Are there opportunities for more entrants?

## THE DELIVERABLES

### 8 MONTHLIES

- Oil Price Scorecard
- Headline Developments
- Spotlight this Month
- Scenarios to Watch
- Projects in the News
- Macro Dashboard for Oil Exporters/Importers
- Outlook for the year

### 4 QUARTERLIES

- MENA Map as per Political Grouping
- Map of New Licensing Rounds
- Political & Regional Security Issues
- Oil & Gas Prices Outlook
- Global Barriers to Oil & Gas Production
- Deep Dive into OPEC & NOPEC
- MENA Energy Investments
- MENA Energy Fiscal System
- MENA Energy Upstream Bidding map
- MENA Economic Outlook
- Probability Scorecard for Bearish & Bullish Oil Supply/Demand
- Investor Implication Scenarios (Under 3 Oil Price Dynamics)

### For Further Information, Contact Us On:

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Qamar Energy provides leading-edge energy strategy, commercial and economic consulting across the energy spectrum.

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Arabia Monitor
Economic Research and Strategy

قمر
QAMAR ENERGY

# QAMAR SUPPLY CHAIN CONSULTANCY

ConProc LEAPING FORWARD | QAMAR ENERGY قمر



## 40 YEARS EXPERIENCE | 15 COUNTRIES | CIPS CERTIFIED

With a new period of dynamism across the energy sector, cost control, insight into expenditure, and added value from procurement beyond lowest-cost are essential to allow regional companies to stay competitive.

Qamar Supply Chain Consultancy brings more than 40 years of procurement experience and leading-edge solutions across top multinationals to drive efficiencies and added value.

- OPERATIONAL COST REDUCTION
- IMPROVING OPERATIONS/PRODUCTIVITY
- MAXIMISING REVENUE
- INCREASING SUPPLY NETWORK AGILITY
- DEBOTTLENECKING SHORTCOMINGS

## WE TARGET

ENERGY MAJORS
OIL & ENERGY TRADERS
INTERNATIONAL OIL COMPANIES
NATIONAL OIL COMPANIES
UPSTREAM FIRMS
DOWNSTREAM FIRMS

## WHY US?

ECONOMICAL OVERHEADS
NO HIDDEN COSTS
INHOUSE PROCUREMENT
PAYMENTS LINKED TO RESULTS
SPECIALISED MODELS
EXECUTION ACROSS FULL STREAM

## OUR SERVICES


Qamar Supply Chain Consultancy streamlines the management of procurement and sourcing in the Middle East's energy sector to drive efficiencies and added value. Our extensive regional and global network spans every sector of the energy spectrum: upstream, midstream, and downstream.

We complete our diagnostic and recovery services in one full week, followed by a detailed value and costs assessment to strategise procurement and categorise spend. The final execution and implementation of our changes is always personalised to different needs, and can span a period of 4 to 12 months.

# OPEC WATCH

AVERAGE CRUDE PRODUCTION FOR JULY 2018

**32.32 Mbpd**

**+ 41.0 kbpd**

From June 2018

***Non-OPEC Oil Supply****

**66.20 Mbpd**

+ 64 kbpd

from June '18

*including OPEC NGLs

**Non-OPEC Crude Output**

United States
Brazil
Canada

## LATEST ORGANISATIONAL CHANGES

- At the 174th Ordinary OPEC meeting on June 22 in Vienna, OPEC members decided to maintain 100% compliance, down from 162% for May, which equals a 750 kbpd increase in production. Non-OPEC members can increase production by 250 kbpd.
- The agreement is slated to stay in force till the 175th Ordinary OPEC meeting in December.
- Congo joined OPEC on June 22 in line with its ambition of becoming sub-Saharan Africa's 3rd largest producer with a 350 kbpd target for this year. Potential of other African states like Chad to join.

## OPEC & Non-OPEC COMPLIANCE

- OPEC compliance stayed above 100% for July at 125%, despite Iraq, UAE and Kuwait's increases in production, supported by fast declines in Angola and Venezuela, and Saudi Arabia cutting production to not put the market into oversupply.
- Angola (378%) is struggling with mature and declining production with a lack of investments, even as Total began production at the offshore Kaombo Norte which is expected to peak at 230 kbpd.
- Non-OPEC compliance has fallen to its lowest in 18 months at 37%, mostly due to a production ramp-up from Russia, whose compliance was at its lowest since the OPEC agreement at 5%. Russia's production increased by 150 kbpd in July.
- After Russia, among the FSU countries, Kazakhstan is expected to lead output growth in 2018. OPEC and IEA forecast the country's production to increase by 11 kbpd in 2018. Oman's compliance in July fell by 4% to 80% as it tries to maintain its 1 Mbpd production target (~974 kbpd in June).

## OPEC PRODUCTION

- Libya's production made a small recovery in July reaching 664 kbpd, after militia clashes between the PFG and LNA caused a drop of ~450 kbpd. Nigeria's production gained by 70 kbpd in July, but remained below its 1.8 Mbpd cap (~1.67 Mbpd).
- Iraq's production witnessed a rise of 24 kbpd in July, and reached 4.56 Mbpd mainly due to increased output at West Qurna-1 and Zubair in the south.
- Saudi Arabia's production fell by ~53 kbpd in July due to a seasonal lack of demand and to not risk putting the market in oversupply.
- Algeria's production grew by 13.8 kbpd in July after oil field maintenance work was completed, bringing its compliance down to 54% from a yearly average of 150%. The country's production is in overall decline since 2007 due to geological complexities at its maturing fields.
- UAE's production gained the second highest after Nigeria in July, increasing by 69.2 kbpd as Abu Dhabi tapped the offshore Umm Lulu field to output 75 kbpd this year.

**NEXT OPEC MEETING: 03.12.2018**

175th (Ordinary) OPEC Meeting in Vienna, Austria

*OPEC World Outlook*: 23.09.2018, Algiers

# KEY MENA ENERGY SCORECARD

AUGUST 2018

## QATAR DEVELOPMENTS

Riyadh is moving ahead with its plans to construct the 60 km Salwa Marine Canal through its land border with Qatar to turn Qatar into an island and has invited 5 international companies to bid, signalling continuing discord between both countries; QatarGas will supply PetroChina with 3.4 Mtpa of LNG under a 20-year deal from the QatarGas-2 Project which is a JV between Qatar Petroleum, ExxonMobil and Total; Qatar may also invest in Exxon's Mozambique venture to jointly market LNG and signed an agreement with the US major to acquire a 30% stake in two of Exxon's affiliates in Argentina, marking its entry in Latin America; Qatar is seeking proposals for the development of a 1.6 Mtpa Petrochemicals Complex at Ras Laffan Industrial City, which will include the region's largest ethane cracker.

## MENA ENERGY PRICE REFORM

UAE will gradually scrap subsidies on electricity and gas sold to power generators to reflect 'real' prices by 2030; On May 27 the Bahrain High Administrative Appeals Court dismissed the Council of Ministers' complaint to rethink a fuel prices hike, allowing the Ministry of Oil & Gas to raise fuel prices from September 2018; On June 16 Egypt announced increases in fuel as a part of its $12 B IMF loan; M92 and M95 gasoline saw a hike of ~36% and 16.2% and electricity and water prices rose by 26% and 5% respectively. Saudi Arabia introduced the Citizen's Account Program, a cash handout scheme for low-income Saudi citizens impacted by rising fuel prices, electricity tariffs, and VAT.

## FEDERAL IRAQ DEVELOPMENTS

Protests have not impacted the energy sector in Iraq and the Ministry of Oil will conduct another bid round after a new government is formed to auction the 5 blocks left unawarded in Bid Round-5; Eni lifted production at Zubair by 40 kbpd to reach 475 kbpd and plans to increase production by ~48% to 700 kbpd by 2022, the biggest planned gain among all Iraqi oil fields; Exxon increased production at West Qurna-1 by 40 kbpd and crossed its 500 kbpd target for 2018; production at Iraq's first commercial gas field Siba reach 100 Mscf/d by end-2018; Chevron will study reservoirs of Luhais, Tuba, and Subba under an agreement with Basrah Oil Company; the deal is similar to the one BP signed with NOC to conduct a reservoir management recommendations study of NOC fields around Kirkuk.

## MENA NUCLEAR POWER

Saudi Arabia is assessing two potential sites – Umm Huwayd and Khor Duweihin – for its first nuclear power plant project near UAE and Qatari borders and has shortlisted Rosatom and KEPCO: tendering will face delays likely due to technical plans, and commercially due to negotiating nuclear agreement with the US; Egypt and Rosatom signed contract to develop $21B Dabba nuclear plant, which is expected to come online by 2020-2021; The UAE's Barakah plant will begin loading fuel in 2019 (delayed from May 2018), and the plant will now generate electricity only by 2020 due to delayed operational readiness; overall completion is at 89% (Unit 1: 100%, Unit 2: 93%, Unit 3: 83%, Unit 4: 72%); Jordan has called off its plans of constructing a 2000 MW nuclear power plant due to lack of funding and will instead focus on smaller reactors.

| | |
|---|---|
| No Change ⇔ | Very Positive |
| Deterioration in the last month ⇩ | Positive |
| Improvement in the last month ⇧ | Negative |
| | Very Negative |

# KEY MENA ENERGY SCORECARD

AUGUST 2018

## ENERGY INFRASTRUCTURE SECURITY

Libya's production has rebounded to ~1 Mbpd after falling to 315 kbpd in June after the Petroleum Facilities Guard took over Es-Sider and Ras Lanuf ports; On June 21, the LNA declared the Holy Invasion Operation and retook the terminals, handing them to the illegitimate Eastern NOC to assert power; but LNA leader Khalifa Haftar handed control of the terminals back to the Tripoli-NOC on July 10 after increasing pressure from the EU and US as national elections approach in December; On September 10 IS militants attacked the NOC headquarters in Tripoli killing 2 people but production was unaffected; the situation stays precarious.

## ABU DHABI DEVELOPMENTS

ADNOC awarded BGC, a subsidiary of CNPC, a \$1.6 B contract for conducting a continuous 3D seismic onshore and offshore survey covering an area up to 53,000 km²; ADNOC and CNPC awarded an EPCC contract to the National Petroleum Construction Company (NPCC) for the development of Al Yasat offshore concession, expected to come online this year; ADNOC is setting up a new crude oil and refined products trading unit to deviate from its FOB-selling model and expand its downstream sector; ADNOC is in advanced talks with international players Eni and OMV to sell a minority stake in its \$20 B refining business; JERA signed an LNG purchase deal with ADNOC for 8 cargoes of LNG per annum for a period of 3 years starting in April 2019, to replace a pre-existing 25-year long-term LNG contract with Abu Dhabi expiring in March 2019, under which it buys 4.3 Mtpa.

## IRAN DEVELOPMENTS

US sanctions will come into effect on November 04; EU refiners have begun cutting credit lines to avoid exclusion from the US financial system and have cut purchases by 36%; India has said that it will continue to import crude from Iran since it "only follows sanctions by the United Nations and not by any specific country"; On July 11 Total exited the South Pars Phase-11 project saying it was "impossible" to operate in the country without access to the US financial system; Production from West Karoun fields has increased marginally in June, after Phase-1 of the North Azadegan, Yadavaran and North Yaran oilfields project was inaugurated by PEDEC; UK's Quercus has halted the construction of a 600 MW solar power plant valued at \$570 M following the reimposition of US sanctions.

## KUWAIT DEVELOPMENTS

Kuwait is in talks with Saudi Arabia to restart up to 500 kbpd of locked-in production from the Neutral Zone fields of Khafji and Wafra by end-2018; the fields have been offline since 2014; Kuwait is exporting 1000 tonnes of diesel and 17 mobile power generators to Iraq "free of charge" as Baghdad struggles to meet protestors' demands; KOC is planning to launch an Integrated Drilling Services tender for 29 Jurassic wells; Kuwait is also expanding refinery capacity with a 615 kbpd facility under construction at al-Zour, with two new refinery ventures underway in Vietnam (which was said to have begun operations end-February) and Duqm (to be launched mid-2018).

No Change ⇔ | Very Positive
Deterioration in the last month ⇩ | Positive
Improvement in the last month ⇧ | Negative
Very Negative

# KEY MENA ENERGY SCORECARD

AUGUST 2018

## MENA RENEWABLE ENERGY

Masdar has submitted the lowest bid for Saudi Arabia's Dumat al-Jandal wind plant ($ 0.0213/kWh), with the second lowest bid placed by Engie ($0.02365/kWh); the winning bid will be announced in December; ACWA Power has signed a contract with Shanghai Electric for the 700MW Phase-4 of the Mohammed bin Rashid Al Maktoum Solar Park in Dubai which entered Phase-3 on May 1 and began generating 200MW of clean energy; Oman has received 28 bids for its 500 MW Ibri solar PV plant including Lightsource BP, ACWA Power, NTPC, and Marubeni Corporation; Shell Development Oman has deployed the first-of-its-kind, bifacial solar PV panels at two schools in Northern Batinah connected to the electricity grid as part of its 'Solar into Schools' initiative; ACWA Power launched the 120MW Khalladi wind farm in Tangier on July 02 which will help Morocco achieve its 2020 target of increasing the renewables energy component of its energy mix to 42%; ACWA Power is also in the process of putting finishing touches on the $2^{nd}$ and $4^{th}$ stations of the giant Noor Ouarzazate Solar Power Complex, which will become fully operational "in the coming days";

No Change — Very Positive
Deterioration in the last month — Positive
Improvement in the last month — Negative
Very Negative

## MEDITERRANEAN GAS COMMERCIALISATION

ENI has come up dry at its Rabat Deep 1 (RD-1) well offshore Morocco, having encountered tight, fractured carbonates at a depth of 3180m; the company agreed to develop a gas pipeline in southern Algeria, to link Eni's two producing oilfields in the Berkine basin, Lajmat Bir Roud and Menzel Lejmat, and enable a surplus of 7 Mcm/d of production; London-based SDX Energy announced a new gas deposit in Egypt's South Disouq region, which holds 89 feet of net conventional natural gas pay in the Abu Madi horizon; production is expected to start by end-2018; EGAS signed an agreement with Eni for the drilling of two wells in the Noor gas prospect, off the coast of North Sinai in the Mediterranean Sea, with a total investment of $105 M; ExxonMobil will send a survey vessel to its Block-12 concession on September 28 in offshore Cyprus; Turkey has been urged by US authorities to keep away from Exxon's area and are waiting on a Turkish commitment to not send its warships; Eni has increased production at its supergiant Zohr field offshore Egypt to 2 Bcf/d following the start-up of a $5^{th}$ production unit; Tarek el-Molla has said that production will reach 2.7 Bcf/d by end-2019, enabling Egypt to halt all LNG imports.

# ABOUT US

Qamar Energy provides leading-edge strategy, commercial and economic consulting across the energy spectrum to governments, international oil companies (IOCs), national oil companies (NOCs), investors, and oil traders.

## ROBIN MILLS • CEO

Robin is an expert on Middle East energy strategy and economics, described by Foreign Policy as "one of the energy world's great minds". He is the author of two books, *The Myth of the Oil Crisis* and *Capturing Carbon*, columnist on energy and environmental issues for Bloomberg and The National, and comments widely on energy issues in the media, including the Financial Times, Foreign Policy, Atlantic, CNN, BBC, Sky News and others. He is a Senior Fellow with the Iraq Energy Institute, and a non-resident fellow at the Columbia Center for Global Energy Policy. He holds a first-class degree in Geology from the University of Cambridge, and speaks five languages including Farsi and Arabic.

## RECENT APPEARANCES & TALKS

**Iraq Capital Club, Dubai, September 2018** • *Speech on* ***Iraq's Revenue Growth and Political Realignment*** **(Upcoming)**

**Columbia University SIPA Centre for Global Energy Policy, Paris** • *Conference on Peak Oil Demand, September 2018*

**ADNOC Downstream Investment Forum 2018, Abu Dhabi** • *Site visit to Ruwais Petrochemical Complex*

## QAMAR NEWSLETTER ARCHIVES

December 2017 • January 2018 • February 2018 • March 2018 • April 2018 • May 2018 • June 2018 • July 2018

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