

THE QAMAR NEWSLETTER

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Gas flares at an Iranian oilfield. 40 years on, the impact of the Iranian Revolution still lingers on Iran's oil sector. Cover story by Robin Mills.

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Qamar Energy, headquartered in Dubai, is the leading regionally-based energy consultancy on the Middle East and North Africa (MENA).

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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Edited by Roa Ibrahim



40 YEARS ON, THE IMPACT OF THE IRANIAN REVOLUTION ON OIL LINGERS ON

Robin Mills • A version of this article appeared in *The National*, Jan. 27, '19 • COVER STORY



This Friday, 40 years ago, an Air France plane touched down in Tehran, and a white-bearded, black-robed figure was met by rapturous crowds of millions. Ayatollah Khomeini had returned, the Shah was gone, and the last remnants of his regime would be swept away ten days later. After four decades, the Middle East's oil landscape is still overshadowed by those tumultuous days.

Oil funded Mohammad Reza Pahlavi's authoritarian modernisation and centralisation. He was a price hawk within OPEC, helping to push prices from \$1.80 per barrel in 1970 to \$11.58 in 1974, the equivalent of \$53 today. And yet, the country did not participate in the 1973-4 Arab oil embargo on the US because of its support of Israel in the 1973 war against Arab states. Instead it became the fourth-largest producer in the world in 1977, after the Soviet Union, the US and Saudi Arabia, reaching 5.7 million barrels per day, a level never approached since.

The Shah lavished money on advanced weaponry for the military, and on grandiose industrial projects, intending to reach German standards of living within a decade. With Iran's reserves seeming limited, there were ambitious plans to inject gas to sustain oil output, to export gas to the Soviet Union and Europe, and to introduce nuclear power. Diagnosed with cancer in 1974, and with his oldest son Reza only 17 when he went to the US in 1977 for air-force training, the Shah was a man in a hurry, seeking to haul his country into the front rank of world powers.

The sudden wealth tempted him to undercut almost all the possible sources of support for his regime: the traditional landowners, the "bazaar" merchants, the religious conservatives, liberals and students. Land reform and the oil boom fuelled the

influx of peasants into the cities, becoming the "mostazafin" underclass, the foot soldiers of the revolution. He was left with a narrow circle of technocrats, crony capitalists, the corruptly enriched royal family, and the security forces.

The volatility of the petroleum markets undermined the Iranian economy. After years of easy money fuelling Iranian industrialisation, inflation and social transformation, the landscape began to change as other OPEC producers hiked production in December 1976. Hopes of ever-rising prices faded, and the Shah had to cut back spending sharply, leading to soaring unemployment.

Large protests broke out in January 1978 against insults to Khomeini, who was then living in exile in Iraq. When oil workers went on strike in October, the country's economic foundation was undermined, the Shah's fate sealed. On 16th January 1979, he left the country forever, and Khomeini returned sixteen days later.

Oil prices had already soared on the disruption caused by the revolution; they rose again when Saddam Hussein's Iraq invaded in September 1980, hoping to seize the province of Khuzestan, Iran's oil heartland. Both sides bombed oil-fields and refineries, and Iran's ally, Syria, closed the Iraqi pipeline through its territory, cutting off most of its exports.

Between 1984 and 1988, Iraqi attacks on ships serving Iranian ports, and Iranian retaliation, led to the "Tanker War", with damage to many vessels but no halt of exports from the Gulf. While protecting reflagged tankers serving neutral ports, the US destroyed several Iranian offshore oil platforms.

Prices soared at the beginning of the war, leading to a deep economic slump in the industrialised economies, which were only staggering back from the stagflation caused by the 1973-4 first oil shock. But the second oil shock gave renewed impetus to the developed countries' countershock. New oil fields were developed in the North Sea, Alaska and Mexico. Fuel-efficient vehicles were introduced, there was a turn to nuclear energy, and the first steps were taken in modern wind and solar power, which are now blossoming. World demand did not recover to its 1979 level until 1994, and in 1986, the oil price collapsed. Ebbing revenues helped force Khomeini to "drink from the poisoned chalice", as he put it, and negotiate a ceasefire with Iraq in 1988.

The Iranian petroleum industry has never fully recovered from the combination of war damage with the chaotic post-Revolution brain drain and the exodus of international staff, nationalisation of foreign oil assets, and repeated waves of US sanctions. What was once the Middle East's technically most advanced oil sector, a pioneer of gas injection, computer reservoir modelling and 3D seismic, still lags well behind Saudi Aramco and its other regional competitors. On Tuesday, oil minister Bijan Zanganeh admitted, "Many of our old units are in fact operating museums."

International oil companies did not return until 1998, and their involvement has been marginal because of US pressure and difficult Iranian negotiating positions. Iran, though, has managed to become the world's third largest gas producer, mostly under its own efforts.

Saddam Hussein, weighed down by war debt and the post-conflict slump in oil prices, made the fateful decision to invade Kuwait in 1990, wrecking Iraq's own oil sector and economy under a decade of harsh sanctions followed by invasion and civil war. Not until 2015, with an influx of international investment, did Iraq surpass its 1979 production high. The global energy industry absorbed the shocks of the revolution, and emerged better and stronger. Regional politics, though, continue to be poisoned by the flawed rule of the Shah, his overthrow, Saddam Hussein's aggression and the temptations of black gold. It is not impossible, but it is difficult, to escape the shackles of history.

RENEWABLE ENERGY MOMENTUM IN MENA IS NOW UNSTOPPABLE

Robin Mills • *A version of this article appeared in The National, Jan. 20, '19*

Within six years, the sunny Middle East will have as much solar power as the US has today, and more than Germany. By 2030, it will be approaching China's current level. After a slow start, this oil and gas-dominated region has woken up to the potential of the sun. Major announcements at the World Future Energy Summit in Abu Dhabi last week, and Vahid Fotuhi's article in The National last week, testify to this new awakening. The Middle East Solar Industry Association identified 12 gigawatts of solar projects in the Mena region that are under construction or awarded. That will be a huge step forward from 2.9 gigawatts operating at the end of last year. The International Renewable Energy Agency's report, released during WFES, foresees that the GCC alone will have 65 gigawatts of solar power by 2030.

Our studies at Qamar Energy show that, making reasonable assumptions on countries' sometimes ambitious targets, solar capacity in the Middle East, including Egypt, could reach 56

gigawatts by 2025 and 113 gigawatts by 2030, along with 31 gigawatts of wind power.

What are the drivers of this explosive growth? Firstly, the initial renewable leaders in the region have continued to forge ahead. Morocco, Egypt and Jordan all have an active portfolio of new projects and a growing ecosystem of indigenous renewable developers and engineering contractors.

The UAE's new Emirates Water and Electricity Company will begin tendering in the first half of this year for 5GW of solar. Dubai Electricity and Water Authority has been accelerating its solar progress, having achieved the world's lowest cost for concentrated solar thermal power, it plans to tender a second plant at the start of this year.

It's not just large-scale projects. Rooftop solar installations on industrial and commercial buildings have become increasingly popular, as policies allow users to feed surplus electricity back into the grid. Dubai has its Shams scheme and Oman the Sahim programme. At the moment, residential electricity tariffs in the UAE are still too low for this to be attractive to most villa dwellers, but this may change as more companies offer installations, and as they become standard for new construction.

These countries have proved that solar and, in the right locations, wind can achieve highly attractive costs. Competitive tenders and low-cost financing have driven intense innovation between developers. This has made renewables cheaper than the fuel consumption of a gas-fired plant, even with relatively cheap gas, and certainly cheaper than oil. Even if gas turbines have to be retained to meet night-time demand, the overall combination is lower-cost. Renewables reduce carbon dioxide and other pollution, save gas and oil for industry and export, and boost energy security.

Secondly, spurred on by the example of the early adopters, the other big power consumers in the region are turning to renewables. Key among them is Saudi Arabia. Its latest ambitious plans today build on the kingdom's pivot towards embracing new forms of energy with the King Abdullah Centre for Atomic and Renewable Energy.

KA Care's plan in 2013 was for 54 gigawatts of renewables by 2030; the National Transformation Plan of 2016 replaced that with 9.5 gigawatts by 2023; in March 2018, the kingdom announced a venture with Softbank for 200 gigawatts of solar by 2030; and now the Ministry of Energy's renewables offices has returned almost to the starting point, intending 59 gigawatts by 2030.

However, the new Saudi push seems much more solidly based. The country has begun work on its first large solar plant, Sakaka, at a record low price. At WFES, it confirmed the award of the Dumat Al Jandal wind project to a joint venture of Masdar and EDF, again at a record-breaking cheap price. It now has a near-term target of 9.5 gigawatts of solar and wind tendered by 2023, which hopefully should keep it on track.

Saudi energy minister Khalid Al Falih maintained at Abu Dhabi Sustainability Week that renewables would be unlikely to displace oil. Yet his country's plans to boost renewables and gas are intended to "virtually eliminate" oil from power generation, knocking out almost 1 million barrels per day of crude, fuel oil and diesel consumption over the next decade, a not insignificant hit to world demand.

Alongside the Saudi push, other regional countries are waking up to the possibilities. New Iraqi electricity minister Luay Al Khateeb wants 0.5 gigawatts installed annually. Oman, after a slow start, has invited bids for large solar projects, with its state power procurement company looking for 2.6 gigawatts of renewables by 2024, and Petroleum Development Oman tendering for 0.1 gigawatts, as well as large solar thermal projects to make steam for extracting heavy oil. Even communities in war-torn Yemen are installing local solar panels.

As the solar generation booms, it will bring new challenges, particularly meeting demand during the early evening. Solar thermal projects can store heat in molten salt to generate through the night. Other options include combining batteries, pumped storage in dams as with Dewa's Hatta project, interconnections of countries in different time zones, and varying customer tariffs to reward them for using electricity at off-peak times.

The laggard countries just have to copy the policies that have already proved successful and be realistic that they will not achieve world record costs immediately. Individual states may go faster, or slower, unsuitable investment conditions may slow progress in places, but overall there is now a robust regional solar industry. Solar momentum is now unstoppable.

THE IMPACT OF A CHINESE CRASH ON FUTURE ENERGY DEMAND

Robin Mills • *A version of this article appeared in The National, Jan. 13, '19*

The dramatic ascent of the Chinese economy, particularly since 2003, energised commodity markets around the world. Even as growth slows, China's hunger is still expected to dominate future demand for energy and minerals. But what if the fire in the dragon's belly were to go out?

The Chinese economy, the world's second largest, dwells in an enormous and complicated labyrinth. Local governments and state-owned enterprises manipulate data to meet central government targets. If a crisis of the magnitude of the 2008 financial credit crunch could surprise policymakers in the much more transparent US and Europe, it is certainly not unthinkable in China.

After more than two decades of almost unbroken annual growth above 8 per cent ended in 2012, 6.6 per cent in 2018 was the lowest since 1990, and the signs are already there that Beijing will set a lower target this year, from 6 to 6.5 per cent. Analysts' expectations have for years factored in a gradual slowdown. The continuing prospect of a trade war with the US is threatening.

Structurally, China faces a tricky transition as the number of working-age people starts to fall, a hangover from the one-child policy. As it tackles rampant air pollution, it has to move from catching up to being a technological leader and shift from heavy industry and exports towards services and domestic consumption. Instead of promoting private business, state-controlled entities have aggrandised.

But could things get worse? An enormous accumulation of debt, 260 per cent of GDP, via various stimulus packages, is likely to swell further in response to American tariffs. This has long seemed unproblematic, as the country has little foreign debt, and

most lending was by state banks which could be restructured if necessary. It weathered both the 1998 Asian crisis and the 2008 global financial crisis far better than its peers. But now a profusion of provincial banks and shadow financial institutions raises the odds and consequences of a miscalculation.

In such an opaque system, official statistics have to be supplemented. There are various warning signs; this month, Apple said it was surprised by a fall in sales in China, and car purchases last year dropped for the first time in two decades. This may not portend a crash this year, but a serious crisis in the next three to five years is plausible. So without dwelling on the likelihood or causes of a possible Chinese crash, it is worth pondering the consequences.

The slump does not have to be on par with the Great Recession – it could be simply a mild recession, even a slowdown to 2 per cent growth during an orderly restructuring. The commodity impact would be very different from 2008's western-centric debacle. Chinese growth is much more dependent on raw materials that are turned into metropolises or exported as machinery, electronics and plastic products.

China is the world's largest importer of oil, gas, coal, uranium, iron ore, copper, nickel, cobalt and alumina, the second-largest buyer of gold and liquefied natural gas, and the third-largest importer of lithium. Minerals, metals, chemicals and energy make up almost 40 per cent of imports.

BP regards China as by far the biggest source of new gas demand globally to 2040, and the second biggest gainer in oil consumption after India. If its appetite falters, oil and gas prices would fall sharply, and new investment decisions for LNG plants would dry up. Russia and Central Asia, particularly reliant on China as a market for their oil, gas and minerals, would see multibillion dollar pipelines lying idle. OPEC would likely work again with Moscow to cut production, but this would only partly soften the impact.

It would be a devastating blow for the more vulnerable petro-states: Libya, Venezuela, Nigeria and Angola. Major mining nations would also be badly hit: Indonesia's coal, Brazil's iron ore, South Africa's gold, platinum and diamonds, Zambia's copper and Australia's gold, iron and coal. A sharp drop in the value of the renminbi, and attempts by manufacturers to offload surplus stock, would lead to a surge of exports of cheap solar panels and wind turbines. That would be good news for countries looking to install large amounts of renewable energy, but Europe and North America would probably erect "anti-dumping" trade barriers.

America's resurgent oil and LNG industry would also suffer severely, bringing recession to states such as Texas and North Dakota. But the diversified and rather self-sufficient American economy would come out of it better than many others. India might also be relatively unscathed. Still, there would be no safe haven in such a slump. Big commodity exporters can only partly insulate themselves, by branching out into new markets with less Chinese exposure, diversifying their economies and accumulating fiscal reserves.

The worldwide economic and political ramifications would take years to unfold. President Xi Jinping's increasingly authoritarian, centralised rule would be discredited; he would be greatly weakened, or be replaced by another leader, likely after a factional power struggle. China would turn inward, and Mr Xi's

signature Belt and Road initiative would likely be dropped, drying up investment in Central Asia and Pakistan. Important Asian trading partners, such as Japan, South Korea, Taiwan and Vietnam, would also be badly hit.

Beijing has managed its way out of problems before. It may use its control of the banking system to deal gradually with imbalances and make a smooth landing. The economy still has a long way to go before catching up with the sophistication of South Korea or Japan. But those who depend on feeding the Middle Kingdom's appetite should plan for the day that it is sated.

SAUDI ARABIA'S INDEPENDENT AUDIT OF ITS RESERVES DISPELS DEBATE

Robin Mills • *A version of this article appeared in The National, Jan. 10, '19*

It seems to be one of the most consequential numbers for the global economy. It has attracted great attention and debate. The long-awaited independent audit of Saudi oil reserves confirms what we already thought we knew, but still leaves the pivotal questions unanswered. The evaluation, performed by DeGolyer and MacNaughton (D&M), a leading specialist reserves auditor, was first initiated as part of Saudi Aramco's preparations for its initial public offering, now delayed – to 2021, Saudi oil minister Khalid Al Falih suggested. It would have needed to report reserves had it listed on the New York or London exchanges.

Saudi Arabia's reserves at the end of 2017 stood officially at 266.3 billion barrels (bbl) of oil and 307.9 trillion cubic feet (Tcf) of gas. The new report assesses this at 268.5 billion bbl and 325.1 Tcf, of which 5.4 billion bbl and 5.6 Tcf is in the kingdom's share of the Neutral Zone (held with Kuwait). D&M assessed about 80 per cent of Saudi Aramco's oil reservoirs and 60 percent of its gas reservoirs, and slightly upgraded the company's internal estimates.

The change may appear tiny – though another 2.2 billion barrels of oil is more than the entire reserves of OPEC members Congo, Equatorial Guinea or Gabon, and the gain of 17.2 Tcf is more gas than all of Brazil. Why would the figures change now, albeit only a little? Aramco has long calculated its oil and gas holdings internally, but with standard industry methodology. Though reserves estimation to international standards follows strict rules, it is still not an exact science.

Based on possibly only a few wells, with some rock samples and measurements, and seismic data derived from sound-waves, geologists calculate the size of structures that may be 4 kilometres or more below the surface. Reservoir engineers estimate how much of the hydrocarbons in the rock can be recovered with a technically feasible development – perhaps a few percent, up to 60 per cent or even more. Of course, the big Saudi fields are geologically well known, have long production histories and are simulated with the world's most sophisticated computer models.

Finally, this is subject to an economic test – is the required development viable at current oil and gas prices and the applicable taxation system? And for reserves to be considered “proved”, the highest standard, they have to be already producing or have a firm development plan within a few years. Mr Al Falih mentioned that Aramco's production cost was \$4 per barrel,

without elaborating on what this includes, and what new fields might be expected to cost. The exact size of Saudi reserves has long been a subject of debate outside, if not inside, the kingdom. Most of the big OPEC producers upgraded their reserves dramatically in the 1980s: Saudi Arabia went from 170 billion bbl in 1987 to 255 billion bbl in 1988, and has maintained almost the same level ever since, despite producing up to 4 billion barrels every year. In 1986, the UAE's reserves tripled, Iran's almost doubled, and Venezuela, Kuwait, Iraq and Qatar recorded similar big gains at various points. Critics saw this as part of attempts to justify higher national OPEC quotas; the countries would maintain they were simply correcting past under-estimates by international companies, and allowing for new exploration and field extensions, plus improvements in technology which allow higher recovery.

Late investment banker Matthew Simmons achieved notoriety with his 2005 book “Sunset in the Desert”, claiming that Saudi reserves were greatly overestimated and that production was about to collapse – a prediction yet to bear fruit. Wikileaks released cables of a conversation in November 2007 where former Aramco head of exploration, Sadad Al Hussein, reportedly disagreed with the company's analysis that it had 700 billion bbl of reserves – but he later clarified that this was a figure for “oil in place”, not all of which can be economically recovered. Norwegian consultancy Rystad put the figure at 212 billion bbl in 2016, of which only 70 billion bbl was considered proved.

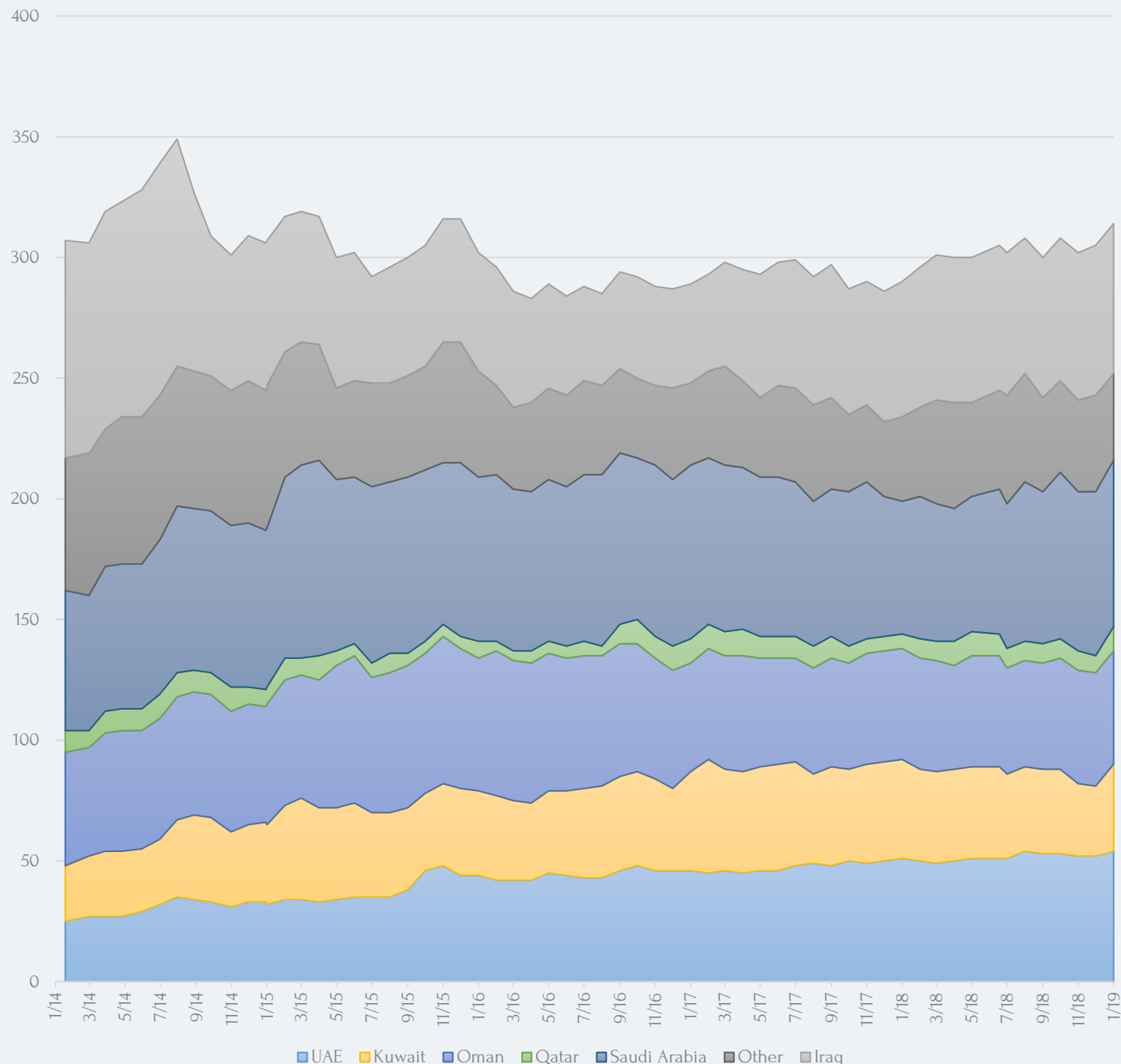
These estimates all fed into the “peak oil supply” narrative, the now-discredited idea that world oil supply would imminently start falling as limited reserves were exhausted. The rise of US shale oil has helped dispel this concern, but so has the ability of Saudi Arabia and several other leading Middle Eastern producers to keep raising output.

The official statement calls the figures “full reserve life”. The country produces about 3.6 billion barrels annually, so it has 75 years' worth. The current audit therefore must include fields and reservoirs that are undeveloped today and will not produce for decades to come. These would not generally be classified as proved reserves under the US system.

If reserves had turned out to be well below the official figure, it would have cast doubt on Aramco's ability to sustain production, not immediately but after two or three decades. That would have had some negative impact on its valuation in an eventual IPO. More oil reserves, though, will eventually give Riyadh even more leverage in OPEC, but hardly add to the company's value, since they will be produced many years from now.

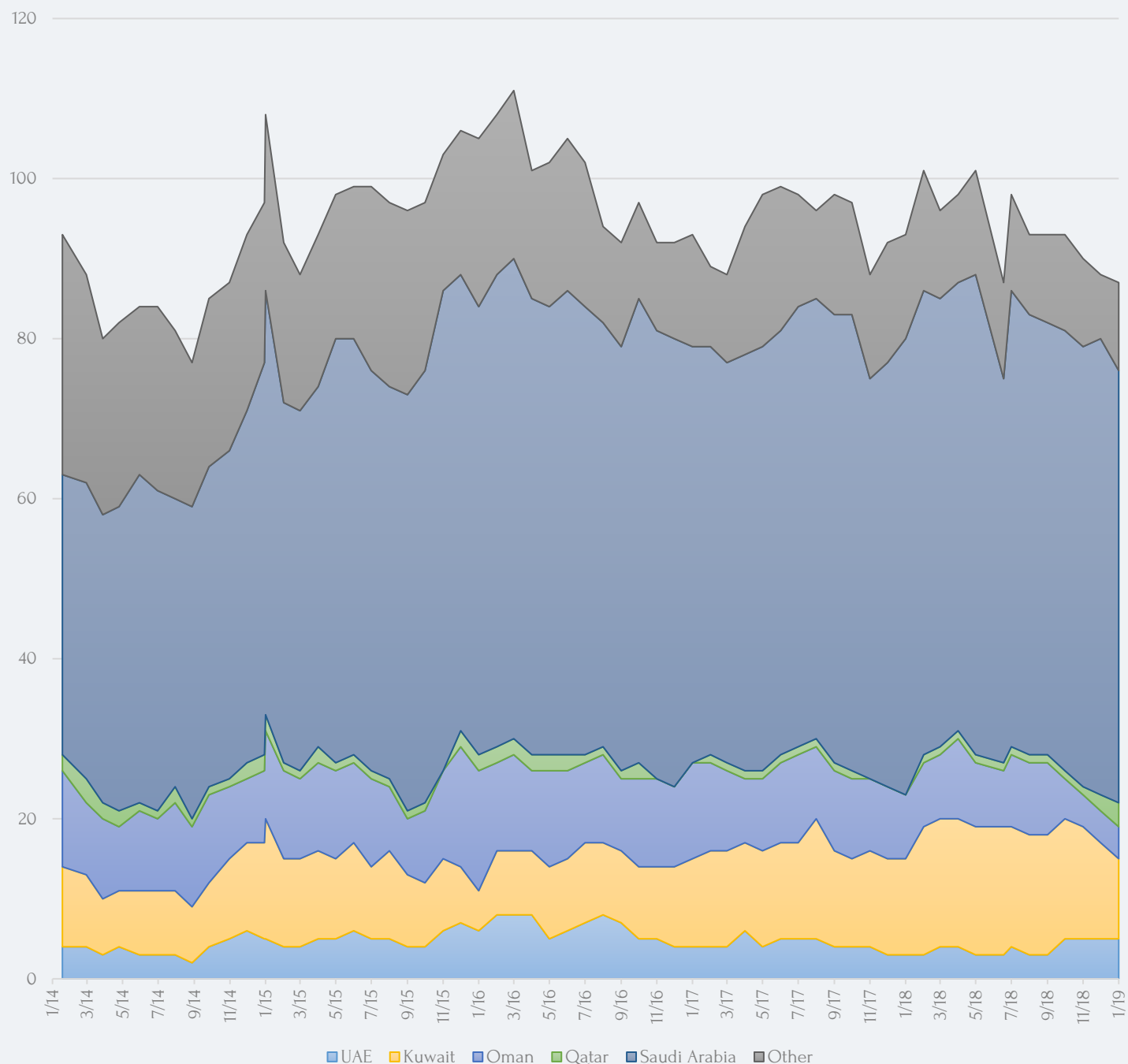
The gas is more useful, since the kingdom has to raise gas output to meet domestic demand for power and petrochemicals. It is unclear, though, how much of this is associated – a by-product of oil output – which can only grow if oil production is expanded, versus “non-associated” gas which can be extracted independently. Both oil and gas reserves can grow much more with enhanced recovery techniques, new exploration, and the exploitation of the kingdom's own shale resources. In themselves, these figures do not change the picture much – that would require more data on production costs and, particularly, plans for future expansion of output. And of course, to value the company accurately, we need to know something that Aramco influences but does not control, and which no audit can reveal: the future oil price.

RIG COUNT SNAPSHOT: OIL



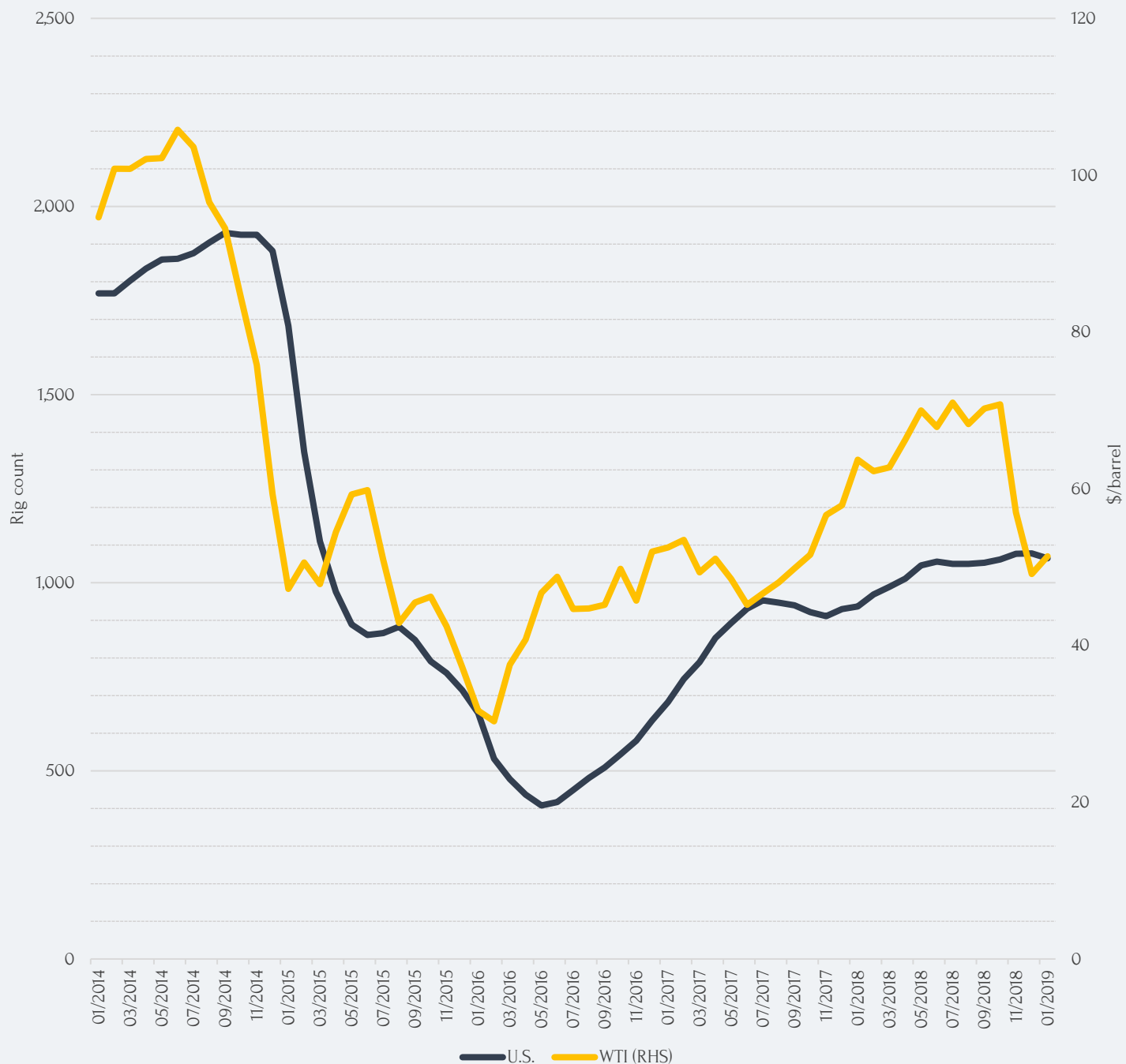
- The Middle East's rig count in January gained by +9, excluding Iran. Iran's rig count is not included in Baker Hughes; however, OPEC reports total (oil and gas) rig count in Iran has remained steady at 61 throughout 2017, till November 2018, which is questionable as oil production has been decreasing with renewed US sanctions.
- The rise in rig counts is mainly due to Qatar's decision to exit OPEC, after which its rig count reached a 9-month high of 10.
- Iraq's rig count witnessed no change in January, even though production from the state-operated fields of Majnoon, Luhais, Tuba, Ratawi, and Nahr bin Omar declined by >200 kbpd, compared to October's levels, due to the OPEC cuts.
- The UAE witnessed the first rise in its rig count in 3 months (+2), even as ADNOC confirmed a 15% and 5% cut in the allocations for the Murban and Upper Zakum and Das grades respectively for January, in line with the recent OPEC decision.
- Kuwait's rig count jumped by +7, even though compliance with the OPEC cuts was at 116% in January 2019. Plans to resume production from the shared Al-Khafji field are now likely to remain on hold, not just due to political and technical disagreements, but also because of Saudi Arabia's insistence to bring global oil inventories down "the 5-year average".
- Saudi Arabia's rig count gained by +1 in January, even though exports were announced to be cut by 500 kbpd, and production by 350 kbpd, as the kingdom pushes for higher oil prices.

RIG COUNT SNAPSHOT: GAS



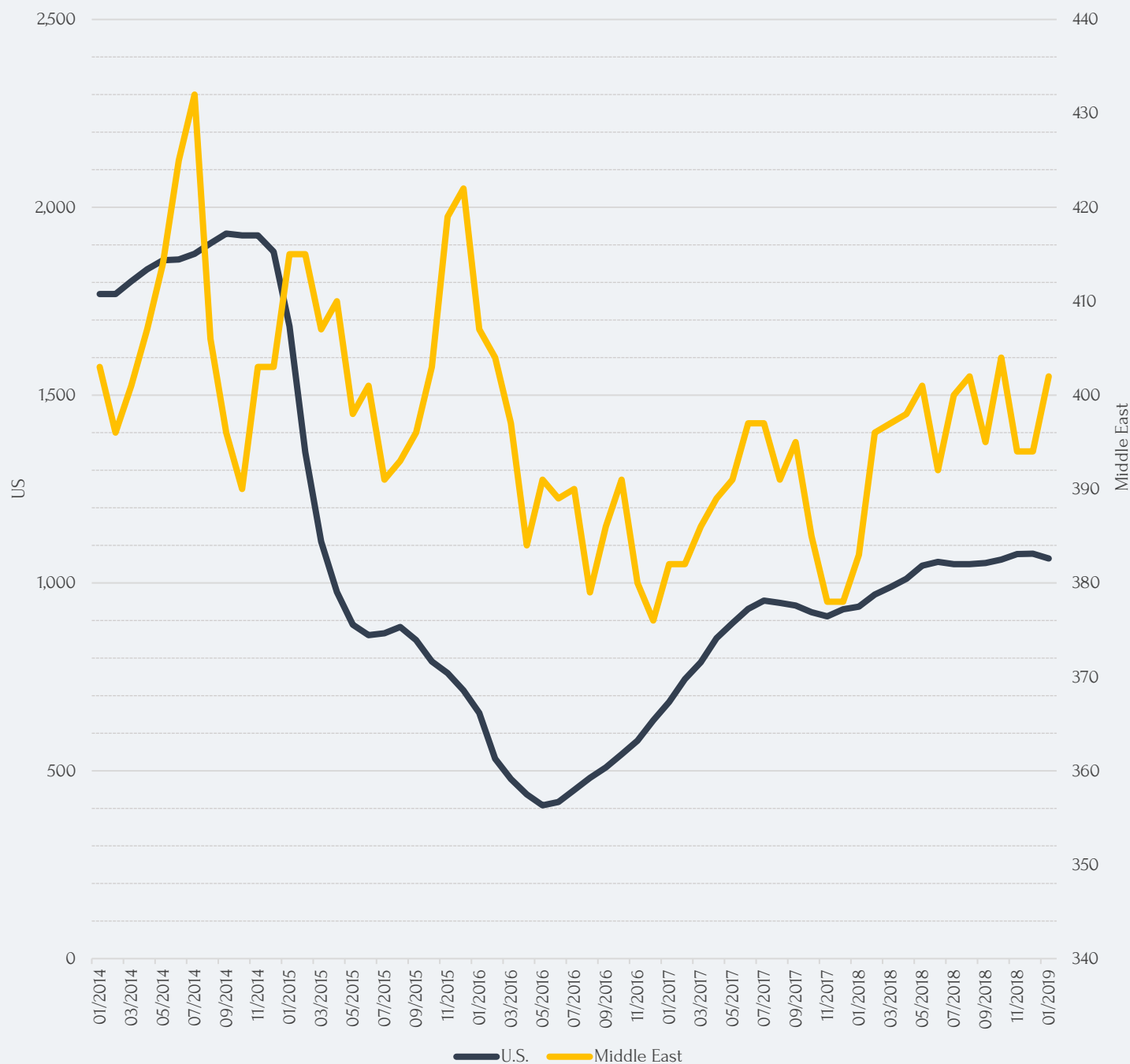
- The Middle East's overall rig count fell by -1 in January, a drop of -14 from its year high count of 101 in May 2018. The region reached a high of 123 gas rigs in January 2014, but has since then declined, averaging 99 in the last four years. We could see this trend reverse as major gas expansion plans get underway in the UAE, Saudi Arabia, Oman and Qatar.
- Oman's rig count remained steady at 4 in January, about -6 rigs below its April 2018 high of 10, even as the Oman Oil Company Exploration and Production (OOCEP) signed an EPSA with Eni for tight gas development onshore Block 47 on January 14.
- Kuwait's rig count fell by -2 to 10 rigs, the lowest since December 2016, even as the country targets increased non-associated gas production to meet soaring gas demand. The Kuwait Oil Company has plans to increase Jurassic gas production from 170 MMscf/d to 520 MMscf/d, but a new timeframe has not been announced; the previous was end-2018.
- The UAE's rig count witnessed no change in January, remaining steady at 5. On January 12, ADNOC awarded Eni a 70% stake in Offshore Block 1 and 2 for a duration of 35 years, which allegedly have sour gas plays similar to Ghasha.
- Saudi Arabia's rig count declined by -2, -2 lower than its 2018 average of 56, even though the country is seeking to expand gas production. On January 09, Saudi Arabia announced an updated oil and gas reserves audit, according to which, total gas reserves, including those shared with Kuwait's Neutral Zone, were revised up 5.6% to 325.1 TCF.

RIGS VERSUS OIL PRICES: US RIGS & WTI



- US rig count jumped by ~13.67% in January (y-o-y), an increase of +128 rigs.
- Total US rig count fell to 1065 in January, its first drop in over 7 months (-13), and the highest ever since February 2016. This is indicative of producers trimming spending plans due to the softer oil prices. However, the country has maintained rapid recovery ever since it reached a low of 408 in 2016, averaging about 875 in 2017 and 1027 in 2018. The higher rig count is indicative of future output which EIA expects to average 12.1 Mbpd in 2019, up from an estimated 10.9 Mbpd in 2018.

RIG COUNT: US & MIDDLE EAST



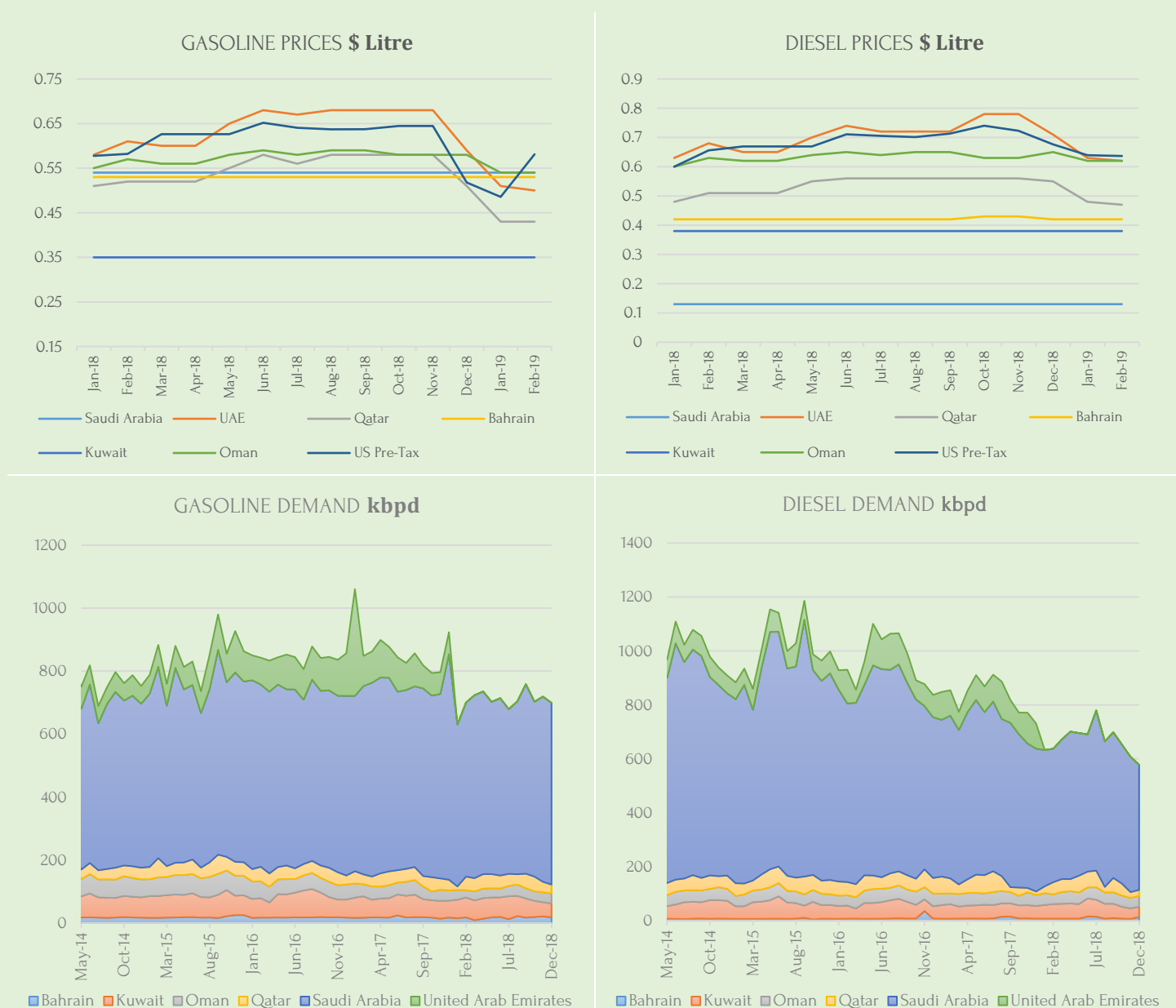
- The US' offshore rig count gained by +8 y-o-y from January 2018 even though Hurricane Florence had raised concerns of a similar fall in rig count as was observed during Hurricane Harvey and other natural disasters.
- Total Middle East rig count rose above its 2018 average of 396 rigs to 402 rigs in January, even though major producers, such as Saudi Arabia and Kuwait, curtailed production. Saudi Arabia's plans to bring online 300 kbpd of output from Khurais will remain subdued as long as the OPEC cuts continue, while Iraq will further curb production from its state-operated fields.

FUEL PRICES & SUBSIDY REFORMS

FEBRUARY 2019

- In the UAE, gasoline and diesel prices fell for fourth month running, by 2.65% and 0.9% respectively, in line with continuing low global oil prices.
- In Qatar, prices for gasoline and diesel fell by 16% and 13% respectively in January, the second month that fuel prices in the country saw a drop after having remained relatively unchanged throughout H2 2018. In February, diesel prices fell by 2%.
- In Oman too, the price of M95 and diesel, which decreased by 6.9% and 5% respectively (in line with low oil prices) in January, had no change in February.
- 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.

The following charts represent the prices of gasoline 95 and diesel (\$/litre) till February 2019 in the GCC countries.



Note: UAE figures for 2018-19 are not available.

OXFORD ANALYTICA: IRAQ TO BOOST OIL AND GAS, BUT NOT END IRAN RELIANCE

Robin Mills • *Oxford Analytica Daily Brief, February 28, 2019*



Baghdad is expanding hydrocarbons output as it comes under US pressure to reduce Iranian energy imports... Iraq will likely continue to receive US waivers, but will need to show diversification efforts.

This daily brief includes analysis on Iraq's:

- Electricity generating capacity
- Import dependence

- Oil production
- OPEC targets
- Export capacity
- Future developments
- Political balance

This is an excerpt from Qamar Energy's contribution to Oxford Analytica's Daily Brief, published on February 28, 2019. To request the full version, click [here](#).

IRAQ OIL IN THE NUMBERS:

- Average production of 4.55 Mbpd in 2018.
- Compliance of -11% in January 2019 (produced 4.67 Mbpd but output target is 4.512 Mbpd).
- Current export capacity is 3.7 Mbpd. ExxonMobil and CNPC are interested in the South Integrated Project that will increase export capacity to 6.5 Mbpd.
- Kurdistan produced 422-425 kbpd in 2018; production already increased in the new year with higher output from Peshkabir (having now reached 53 kbpd).
- Production development ongoing to increase overall production capacity to over 5 Mbpd, mainly from Halfaya, Zubair, Majnoon, Nahr bin Umr, Ratawi, and Kirkuk.

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
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- Investor Implication Scenarios (Under 3 Oil Price Dynamics)

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

www.qamarenergy.com

Arabia Monitor
Economic Research and Strategy



QAMAR SUPPLY CHAIN CONSULTANCY



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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 JANUARY 2019

30.81 Mbpd
- 797 kbpd
From December 2018



Non-OPEC Oil Supply*


68.52 Mbpd

- 230 kbpd
from December '18
*including OPEC NGLs



Non-OPEC Crude Output

United States
Brazil
Kazakhstan



OPEC & Non-OPEC COMPLIANCE

- Overall OPEC compliance was at 86% for January, with the largest cuts coming from Saudi Arabia (130%) and Kuwait (116%) among the key producing countries.
- Russian production declined by 70 kbpd from December's levels of 11.45 Mbpd, a record high as it starts phasing in production cuts. In January, Russian compliance was at 18%.
- Nigeria has now joined the OPEC cuts, but production rose by 52 kbpd in January. Nigeria is soon to hold national elections which makes complying with the cuts a danger to political stability. Its compliance in January was -102%.
- Oman had perfect compliance at 100% for January, producing 978 kbpd, 25 kbpd less than its reference production for October.
- The UAE had the lowest compliance among the big Gulf-3 producers (Saudi Arabia and Kuwait being the other two) at 94%, cutting production by 146 kbpd.

NEXT OPEC MEETING: April 2019

176th (Ordinary) OPEC Meeting in Vienna, Austria

LATEST ORGANISATIONAL CHANGES

- At the 175th Ordinary OPEC meeting in December, OPEC members pledged to cut overall production by 0.8 Mbpd, while Non-OPEC members volunteered a cut of 0.4 Mbpd. These were based on October 2018 levels, and came into effect on January 1, 2019. Exempt OPEC members include Iran, Libya, and Venezuela.
- The agreement is slated to stay in force till June, and a decision on its extension will be discussed at the 176th Ordinary OPEC meeting in April 2019.
- Venezuela has assumed the rotating OPEC Presidency for one year, effective as of January 01, even though uncertainty shrouds the PDVSA and oil production.

OPEC PRODUCTION

- Libyan production has fallen by another 50 kbpd in January as the National Oil Company (NOC) struggles to bring online the key 340 kbpd El Sharara field online. Libya's output in 2018 averaged 951 kbpd.
- Iraq's output witnessed a slight decline from the previous month (43 kbpd) as the country battles to reach its 2019 targets while maintaining compliance with the OPEC cuts.
- Saudi production decreased the most of all OPEC members (by 350 kbpd) to reach 10.23 Mbpd, an over-compliance of 100 kbpd. Saudi has been making up for lower compliance from other major producers like Russia.
- Iran's output has reached stagnation, with January's output only 4 kbpd lesser than December's. Overall, the country has lost 1.065 Mbpd in production from its 2018 high of 3.818 Mbpd.
- Political instability and threat of civil disturbances have all but eliminated chances of a revival in Venezuela's production, which is struggling to remain above the 1 Mbpd mark.

KEY MENA ENERGY SCORECARD

FEBRUARY 2019

QATAR DEVELOPMENTS

Qatar plans to order 60 new LNG carriers to increase its LNG shipping abilities and reach its 2024 goal of expanding LNG send out capacity by 30% from the current 77 Mtpa to 100 Mtpa; Qatar formally exited OPEC in a move that is largely regarded as a pro-US, anti-Saudi strategy 3 days before Sheikh Tamim al-Thani turned down an invitation to attend the 39th GCC Summit in Riyadh; Following the exit, Qatar Petroleum (QP) announced it will invest \$20 B in energy projects in the US (both LNG and oil) which should strengthen political alliances; QP has signed a deal with Eni to acquire 35% in three fields in Area 1 of the Campeche Bay complex offshore Mexico, increasing its overall share in Area 1 to 50%; QP will take over the Idd el-Shargi North Dome oilfield from Occidental once the PSA expires in October 2019.



MENA ENERGY PRICE REFORM

UAE will gradually scrap subsidies on electricity and gas sold to power generators to reflect 'real' prices by 2030; In May 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, but this has yet to take effect; On June 16 Egypt announced increases in fuel prices 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

Iraq's production in January was 4.9 Mbpd, marginally below December's record high level of 4.94 Mbpd, even though production has been cut from the state-owned oilfields of Majnoon, Luhais, Tuba, Ratawi, and Nahr bin Omar; Baghdad is nearing a deal with Exxon and CNPC for a multi-billion dollar deal to expand southern export capacity to 6.5 Mbpd, as well as build infrastructure under the Common Seawater Supply Project that has repeatedly been put on hold; The Federal Supreme Court has ruled the Iraq National Oil Company (INOC) law unconstitutional, which will necessitate it being re-drafted again; Federal Iraq has allocated \$9 B to the KRG as part of its national budget for 2019, contingent on the KRG sending it 250 kbpd of exports, but the KRG is unlikely to send this, which will bring its share of budget down to \$ 3.89 B.



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, even though MBS launched a programme for the Kingdom's first nuclear research reactor on November 05; The UAE's Barakah plant now looks delayed to 2021 due to lack of operational readiness. The start-up of the first reactor has already been held up by inadequate training of operating staff. Overall completion is just under 90% (Unit 1: 100%, Unit 2: 94%, Unit 3: 86%, Unit 4: 77%); Egypt and Rosatom will begin construction on the \$21B Dabaa nuclear plant in 2021 with financial support from the Russian National Wealth Fund.



No Change ↔ Very Positive
Deterioration in the last month ↘ Positive
Improvement in the last month ↗ Negative
Very Negative

KEY MENA ENERGY SCORECARD

FEBRUARY 2019

ENERGY INFRASTRUCTURE SECURITY

El Sharara, Libya's largest producing field, has faced further militant issues after the Libyan National Army (LNA) took over from the Petroleum Facilities Guard (PFG) on February 12; On December 09 Libya had declared force majeure at the oilfield after a local militia group took control of the field; the field's production capacity is estimated to fall by 8.5-11 kbpd once it resumes operations due onsite damage; continuing attacks "necessitated" the LNA to take control of the field from the PFG to guarantee worker safety and bring the field back into production, but this is yet to happen, even though the NOC is making headway with the Government of National Accord (GNA) to reopen the field.



ABU DHABI DEVELOPMENTS

ADNOC and its project partner Cepsa have progressed with plans to develop a world-scale chemical plant in Ruwais with the award of the front-end engineering design to Tecnicas Reunidas; ADNOC awarded Eni a 70% stake in Offshore Blocks 1 and 2 which allegedly share "virtuous synergies" with the Ghasha ultra-sour concession which was also awarded to Eni alongside OMV; Ghasha is expected to produce over 1.5 Bcf/d by 2025 in line with UAE's goal of boosting natural gas production ADNOC has also announced increasing output from its Shah sour gas field to 1.5 Bcf/d and developing sour gas fields at Bab and Bu Hasa; ADNOC will announce the winning bids of its first exploration licensing round in March, and is looking to hold a second bid round to discover new opportunities in conventional and unconventional plays in oil and gas; ADNOC is intending to boost capacity to 4 Mbpd by 2020 and 5 Mbpd by 2030.



IRAN DEVELOPMENTS

Iran's January exports made a small recovery (up by 100 kbpd from December) as Japan and South Korea placed orders for crude cargoes before the sanctions' waivers expire on May 04; logistics, shipping insurance, and payment channels still remain the most significant deterrent for customers however; on December 20, the U.S granted Iraq a 90-day extension to the initial 45-day waiver; Iraq remains heavily reliant on Iranian gas for energy feedstock; on January 31 the EU formally established the Instrument for Supporting Trade Exchanges (INSTEX), formerly known as the Special Purpose Vehicle, and said it will become operational in the "coming weeks"; Iran's renewables capacity has increased to 670 MW, with a further 445 MW planned, the highest share coming from solar power.



KUWAIT DEVELOPMENTS

Indian firm Larsen & Toubro has submitted the lowest bid for the Mina Ahmadi gas pipeline which will link gas fields in the north to the Mina Ahmadi refinery for an estimated \$479 M; Vietnam's 200 kbpd Nghi Son refinery, partly owned by Kuwait Petroleum (35.1%) has begun operations and sent its first gasoline export cargo in September; State-owned Kuwait Petroleum Company (KPC) is set to announce \$5.2 B worth of oil and gas related projects over the next five years, though details of the plans have not yet been released; 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 have once again been delayed due to political disagreements.



No Change ⇄ ● Very Positive
Deterioration in the last month ⇓ ● Positive
Improvement in the last month ⇓ ● Negative
Improvement in the last month ⇓ ● Very Negative

KEY MENA ENERGY SCORECARD

FEBRUARY 2019

MENA RENEWABLE ENERGY

REPDO is planning to tender 12 solar PV projects in Saudi Arabia with a combined capacity of 3.1 GW in 2019 (of which 7 solar PV projects, with a capacity of 1.515 GW, had EOLs due on February 14) after revising the country's solar targets from 5.9 GW to 20 GW for 2023, and RE target from 9.5 GW to 27.3 GW; it has also set a new 2030 target with 40 GW of solar and 58.7 GW of RE; ACWA Power has won Bahrain's 100 MW PV tender for a solar park at the Askar landfill site. ACWA submitted the lowest bid of \$0.039/kWh; Emirates Water & Electricity Company, formerly ADWEC, has launched a tender for a 2 GW solar project at Adhafa; Dubai Electricity and Water Authority (DEWA) has issued a request for qualification for a further 900 MW of PV at the Mohammed bin Rashid Al Maktoum Solar Park. The park is planned to reach a final capacity of 5 GW; Delays with the Barakah Nuclear Plant have pushed back the UAE's 27% clean energy target for 2021, but targets for 2050 are still on track; Masdar has begun installing the first of 13 turbines in Dhofar, Oman which is the GCC's first and largest wind farm generating 50 MW to power 16,000 homes in Oman. It is set to be completed in September 2019; Jordan's third bid round saw 150 MW of solar projects and 50 MW of wind projects being offered; US-based; Saudi Arabia has completed the first phase of the Layla solar power plant project. The 10 MW plant in Al Aflaj is capable of covering 10% of the province's electricity needs.

MEDITERRANEAN GAS COMMERCIALISATION

ExxonMobil has made the world's third largest gas discovery in 2 years offshore Cyprus at the Glaucus-1 well, estimated to hold between 5-8 TCF; more drilling is to take place offshore Cyprus in 2019 as majors Eni, Exxon and Total continue to hunt for big discoveries; In Lebanon Total and Eni are planning their first exploration well in Block 4 by the end of 2019. A second bid round was scheduled to be offered, but the country's inability to form a government has postponed it indefinitely; Results of Egypt's Nour field are said to be released in early 2019 as Eni hopes for another significant in-country find; Egypt has begun increasing its gas exports as the export terminals of Idku and Damietta in the north restart; BP is set to boost production from the West Nile Delta to 700 Mcf/d by March 2019 under its second phase (Giza and Fayoum fields) of development; Italy's Edison is preparing two wells for 2019 in its Thekah and Hapy blocks which lie between Nour and Zohr; Dana Gas is also set to drill a deep-water well at Egypt's North El Arish block to the east; Mubadala has acquired a 20% share in ENI's 45% stake in the Nour offshore concession in Egypt, marking its second acquisition in the country. BP has acquired the remaining 25%; ENI has agreed to develop a gas pipeline in southern Algeria, to link its two producing oilfields in the Berkine basin, Lajmat Bir Roud and Menzel Lejmat, and enable a surplus of 7 Mcm/d of production.



No Change ⇄ ● Very Positive
Deterioration in the last month ↓ ● Positive
Improvement in the last month ↑ ● Negative
● Very Negative



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

 **Seminar for International Power Company, Jan 2019 • Presentation on Changing Energy Dynamics in Emerging Markets**

 **Platts' Middle East Executive Petroleum Conference • Panel discussion on *Evolving Middle East Trade Flows Now & in the Future***

 **EU Delegation Trade Counsellor Seminar • Presentation on *MENA Energy Landscape***

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