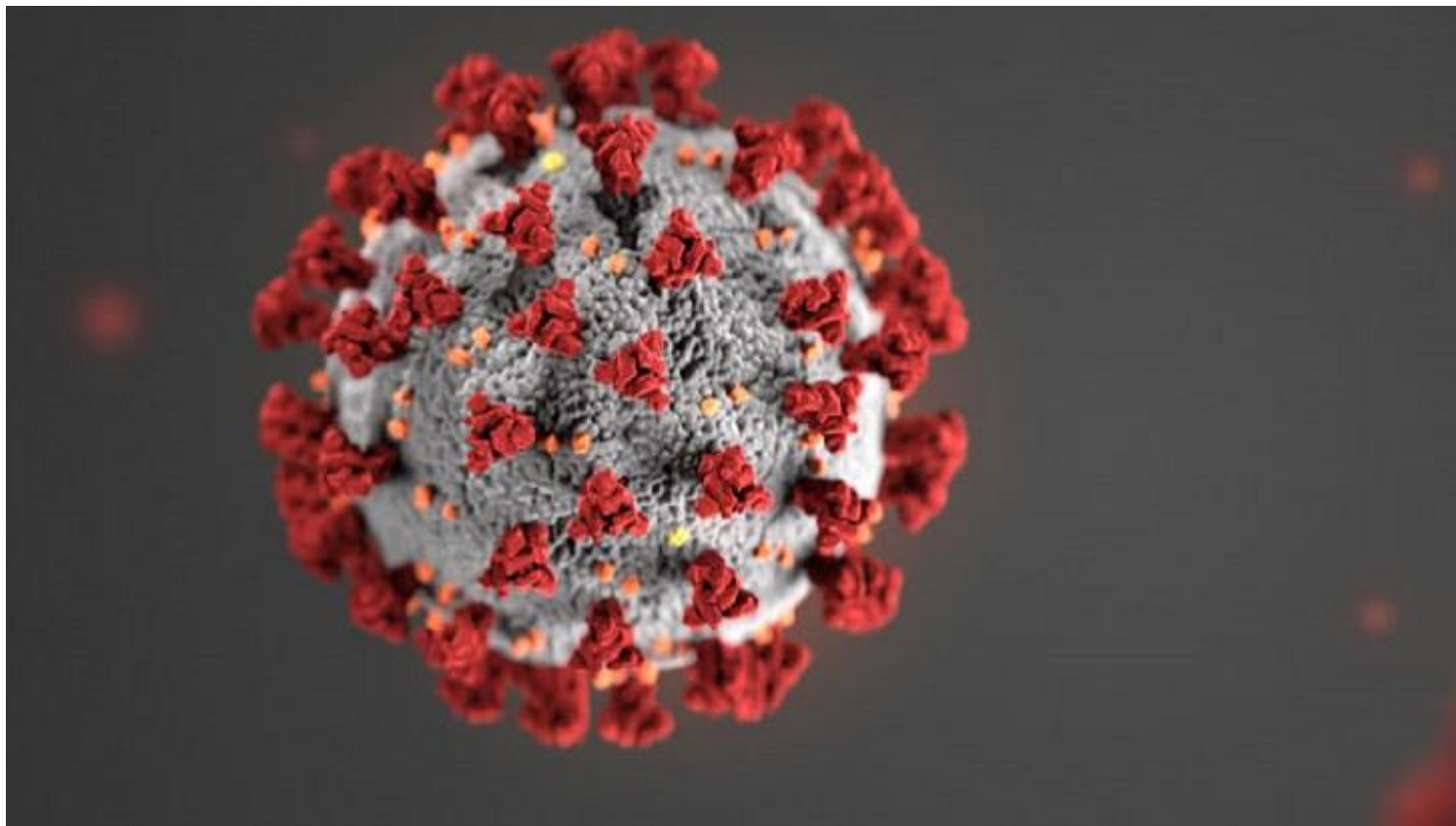


THE QAMAR NEWSLETTER

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The big question facing the oil industry is when will demand come back. 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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WHEN WILL DEMAND COME BACK? THE BIG QUESTION FACING THE OIL SECTOR

Robin Mills • A version of this article appeared in *The National*, Mar. 29, '20 • **COVER STORY**



World wars, depression and flu pandemics have hit oil demand before, but never has the industry faced the sudden disappearance of a fifth of its market. The suddenness and depth of the coronavirus-caused decline has gone beyond a matter of economics to one of physical reality.

As the oil business frantically juggles wells, ships and storage tanks, it has to answer very quickly: how much is demand declining, and when will it come back, if it does? How is supply going to adjust, and how much will be lost forever?

Estimates of demand decline are progressively more pessimistic, as the pandemic spreads, worsens in the US and elsewhere, and more countries impose quarantines. Vitol and Trafigura, large traders, saw global losses at 15-22 million bpd in March and April, out of about 100 million bpd global consumption previously expected for this year.

Goldman Sachs estimates 18.7 million bpd down in April. Eighty per cent of global air travel, normally using about 7.3 million barrels per day (bpd) of fuel, is shut down. Shipping, consuming some 5 million bpd, is less-affected, but demand may be down about 8 per cent currently and could fall further. Road freight has not been hit much yet, because of requirements for home deliveries, but inevitably that will drop too as people are forced to cut back to essentials. The oil industry's use of 5 million bpd of its own products will also fall as production and refining are reduced.

US states representing 57 per cent of national gasoline demand have some kind of lockdown measure, and this will spread as the

epidemic ignites in others. The economy of the Eurozone, which consumes almost 10 million bpd, is 10 per cent closed entirely, 50 per cent disrupted.

The association of British fuel retailers reported that the shutdown had cut sales there by 50-70 per cent. There are extensive curfews and work-from-home orders across the Middle East and India, which use 14 million bpd. Refineries, finding no demand for their products, are cutting back runs.

There is still demand for diesel, used in ships and delivery trucks. But jet fuel and gasoline, which cannot be stored for long, are virtually unwanted: refiners lose on every barrel they produce, even with tumbling oil prices. China is bouncing back, after apparently getting the outbreak under control. Other east Asian countries, such as Japan, South Korea, Taiwan and Singapore, have been able to return to more or less normal life. But they still face sharp recessions as demand for their exports slumps.

Most forecasts still assume a sharp recovery in world demand in the second half of the year and into 2021, even to higher year-on-year levels. This seems inconceivable. Firstly, the virus is far from under control; it will break out in new areas, recur in places that relax lockdowns, and possibly resurge in autumn, if theories on its seasonality are correct.

Secondly, even after massive government spending packages, economic damage and fear will continue, with shuttered businesses, laid-off employees and a burden of debt. Thirdly, some habits – like working from home, ordering deliveries, and teleconferencing – will become permanent. The Opec+ deal with Russia, which would have removed some 1.5 million bpd of

supply, and the boost in output planned by Saudi Arabia and its allies, adding perhaps 4-5 million bpd, have become almost a sideshow to the epic demand collapse. The oversupply has to go into storage.

But global inventories are already 75 per cent full and approaching “tank tops” in some key locations, while an armada of tankers is setting sail. At 20 million bpd oversupply, the remainder will fill within three months. Saudi Arabia is targeting supplying 12.3 million bpd, above Aramco’s 12 million bpd capacity, which implies it would be drawing on storage. Still, futures pricing strongly indicate that oil should be going into storage, and Saudi Arabia’s large available capacity is only about half-full.

Once storage reaches practical limits, producers will have to shut in wells – actually ceasing production. Prices will fall to the level that compels enough highest-cost producers to stop. An oversupply of 10-20 million bpd will mean many companies who did not think they were marginal will suddenly discover they are. A few inland crudes in North America have fallen to negative prices. Other landlocked fields with high production and transport costs – Canadian heavy oil, Russia, Kazakhstan, Chad, South Sudan – are vulnerable.

For the next few months, single-digit pricing is on the way, and a battle between higher-cost suppliers trying to stay alive, and Opec countries trying to force even more oil on reluctant refiners. Will closed-down fields return to production when prices recover? There will be no spending on wells requiring “workovers” to remove sand or shut off unwanted water production. US “stripper” wells, which produce less than 10 barrels per day each, but collectively over 1 million bpd, are unlikely to be worth restarting, once stopped.

The same applies to offshore platforms on mature fields in the North Sea, south-east Asia, shallow-water Gulf of Mexico and Brazil. So, the course of future prices depends on how much decline turns into permanent destruction: of demand, and of supply. Likely most demand will bounce back, but with some persistent negative effects. Rocks don’t run out of money, but a much smaller and chastened shale industry will not be in a position to go back to frantic drilling. Eventually, it will be time for the flexible members of OPEC to capitalise, but for now they have to make their way through the worst crash in history.

WHAT THE ENERGY INDUSTRY WILL LOOK LIKE AFTER THE CORONAVIRUS

Robin Mills • *A version of this article appeared in The National, Mar. 15, '20*

This pandemic crisis is not at the beginning of the end; at best, it’s at the end of the beginning. As airlines are grounded and oil prices have their worst week for 30 years, the energy world that may emerge after the dust settles will have seven features. They include: a likely slow and extended recovery; a thinner, consolidated oil industry; an earlier peak in oil demand; a global gas market; the historic peak in carbon dioxide emissions; political upheaval; and globalisation not halted but reshaped. Fiscal stimulus for now is arguably like pushing wet spaghetti. Reduced interest rates, extra spending money and lower oil prices are not as effective when people are confined at home

and businesses are not functioning. At best they keep people and companies solvent for a faster recovery afterwards.

That means the oil slump will be lengthy. When the crisis begins to ebb, the aftershock will ripple through the economy, while the accumulated raw materials dissipate. How will the recovery be? Will it be like after a war, when post-bellum reconstruction drives rapid growth? Or, as the virus does not bring material destruction, will it resemble the painfully slow crawl out of the global financial crisis or great depression, with the overhang of debt and bankruptcy? Government stimuli in Europe, Japan and – depending on elections – the US will take the form of Green New Deals favouring low-carbon energy.

The oil industry will be reshaped. Despite some government efforts, such as refilling the strategic petroleum reserve, US shale firms will go bankrupt en masse. The emaciated industry that emerges will be consolidated around a few companies, mostly the super-majors with legacy non-shale and downstream assets that generate cashflow. They can afford to sit on shale resources indefinitely until prices revive.

But even super-majors will struggle through a lengthy downturn, and some will merge as in the late 1990s. The Europeans, such as Shell, BP, Total and Equinor, may wish they had built up their fledgling green energy businesses more. Without surplus oil cashflow, they face the question of how to fund their ongoing transformation. We may not have passed the all-time peak of oil consumption, but these events will bring it forward.

The world will be far more cautious of future pandemics. Travel bans and flight cancellations, even if ineffective, will be employed quickly at the first sign of any new disease. These restrictions will prove hard to remove, as the virus threatens to resurface periodically. Companies have grown used to teleworking and ordinary people to home deliveries. While in its 2019 energy outlook, BP saw essentially flat oil use by road vehicles to 2040, it forecast significant growth in shipping and aviation fuel. The cruiseliner industry alone, now virtually shut down, burns through some 300,000 barrels daily; planes use about 7.2 million bpd. Shorter supply chains and virtualised business may halt one of the few growing sectors of oil consumption, while being environmentally more responsible.

The crisis will hit all vehicle sales, but environmental policies and high European fuel taxes ensure lower oil prices won’t boost petrol and diesel cars much over electrics. The world’s biggest carmaker, Volkswagen, still plans to stop developing new combustion-engine cars in 2026, and to be a purely battery-car maker by 2050. The future for gas is more promising though: growing markets but at low prices.

The fall in crude prices has finally brought long-term, oil-linked contracts more into line with record low spot prices. The Asian Japan-Korea marker for liquefied natural gas is becoming a transparent, trusted and tradable price. That in turn will enable gas exporters to find willing buyers rather than being handcuffed to unattainable oil-based prices. 2019 will probably turn out to be the all-time peak of our carbon dioxide emissions. The silver lining here is that a sharp economic downturn this year will cut greenhouse gas pollution; after that, even as the economy rebounds, improved efficiency and the growing scale of low-carbon technology will take over. Emissions are not falling nearly fast enough to avoid dangerous climate change, and there is

nothing to celebrate about the pandemic, but turning the carbon corner at least gives hope.

This crisis should remind western countries, particularly the US and UK, of the virtues of impartial, competent expertise in democracies. Professionalism has to trump public relations and optics. That applies too to the blustering and vapid promotion of American “energy dominance”, which will evaporate as low oil prices boil away shale oil production. In contrast, China blundered in the early stages of the crisis, amid popular anger, but is now winning plaudits for its draconian response while the Western world appears incapable as a result of its delayed response. This could raise the worldwide reputation of Beijing’s political system, and its belt-and-road initiative.

But its economy will have a lot to prove. Meanwhile, those oil-exporting states with little diversification, fragile finances and political strife face a tough future. Upheaval, even collapses, are not inevitable or necessarily immediate, but are impending. If this shock does not concentrate minds in Algiers, Baghdad or Caracas, nothing will. The 19th Century golden age of globalisation was undone by post-First World War balkanisation.

Today’s globalisation was already threatened by growing US-China rivalry, trade wars, overused sanctions, and the misleading narrative that free trade is the cause of western job losses. China-centric supply chains were being recast in the face of rising costs; the virus outbreak is a reminder of the dangers of overdependence on any one country.

Manufacturing via 3D printing close to the consumer may gain in popularity. Some believe the coronavirus means globalisation will go into retreat. More likely, new technology, connectivity and growing wealth in developing countries will keep driving it forward. However, it will be more contested and networked than Euro- or Sino-centric. The latest great global crisis of the 21st Century has to teach us how to manage the ongoing transformation to a multipolar and hotter world.

IN THE CORONAVIRUS OUTBREAK, OPEC SEES A NEW REALITY

Robin Mills • *A version of this article appeared in The National, Mar. 8, '20*

Hindsight is a wonderful thing, but perhaps OPEC should have kept its powder dry in December. On Friday, confronting an unexpected demand crisis, it was unable to persuade Russia to cut oil production even further. So now, the organisation has to stand its ground. Russia and American shale cannot be assured that Vienna will indefinitely bail them out. In November 2016, OPEC with its new allies Russia, Oman and others agreed to lower production by 1.9 million barrels per day (bpd).

In December, after three years of restraint had modestly revived prices, the market in the first half of this year still looked weak. They agreed to make a further reduction of 1.7 million bpd, and Saudi Arabia would slash another 0.4 million bpd if the others lived up to their commitments. This came after an apparent truce in the US-China trade war revived economic fortunes, but before news broke of the virus epidemic.

In Friday’s gathering, a further reduction of 1 million bpd from OPEC and 0.5 million bpd from non-OPEC, extended to the end of the year, was on the table, but Russian oil minister Alexander

Novak balked. OPEC has historically been more successful in counteracting sharp contractions in demand, as it did in 2009, than to supply surges, the problem it has confronted from 2014 to 2019.

Widening cooperation to several non-OPEC countries reduced competition from “free-riders” that overwhelmed earlier periods of OPEC restraint, yet the organisation – and especially its key members – have still heavily lost market share. Iraq and Nigeria have been the least compliant members, but least the deal stopped Iraq’s output growing much, while Nigeria gained a bit more. Most of the burden of adjustment has fallen involuntarily on Iran, Venezuela and Libya, which have collectively lost almost 3.4 million bpd to sanctions and civil strife.

But after that, Saudi Arabia, with assistance from its allies the UAE and Kuwait, has voluntarily shed 1.05 million bpd. Russia’s best compliance came in the middle of last year, when contamination in the Druzhba pipeline forced a reduction in exports. The country produced 11.29 million barrels per day in November 2016 before the OPEC+ deal. In January, it was up to 11.49 million bpd. In the same time period, Saudi Arabia dropped 0.9 million bpd. Yes, because of its floating exchange rate, and a budget that balances at \$49 per barrel for its crude, Russia is more flexible in adapting to oil prices than rivals, whose currencies are pegged to the dollar. But a weaker rouble means lower Russian purchasing power, and higher living costs through imported inflation. The economy contracted in 2015 and barely grew in 2016 following the oil price fall. Russia probably would have added some more production over this period were it not for OPEC cooperation.

But its mature workhorse fields in west Siberia, and costly remote greenfields in the Arctic and east Siberia, were further restrained by US sanctions and not about to surge, especially had oil prices been stuck in the \$30s. The US is, of course, not party to production curbs. It lost half a million bpd in 2016 up to the Vienna agreement, as shale came under the pressure of low prices, but it has gained almost 6 million barrels per day of output since then.

Finally, signs of shale struggle were emerging to encourage OPEC to stay the course: field maturity, slowing technical improvements, pioneers such as Chesapeake and Ultra teetering on the edge of bankruptcy, frustration from investors seeking a return on \$400bn of capital spent up to 2018. Predictions of about 0.6 million bpd of growth this year, down sharply from an average of almost 1.9 million bpd over the past three years, are likely to plummet further under the stress of lower prices. Much of shale firms’ output is not hedged, or is vulnerable to price declines below \$45 per barrel (West Texas crude reached \$41.28 on Friday).

Meanwhile, sales of light vehicles powered by internal combustion engines (petrol and diesel) in the main global markets, the US, EU and China, fell by almost four million, while the share of electric vehicles rose to 3.6 per cent from 2 per cent. While OPEC has missed three years of solid demand growth, battery vehicles are starting to chip away at oil’s monopoly. Leading national oil companies have sought to capture a higher share of a market that may decline in the not-so-distant future.

The UAE and Iraq have raised production capacity substantially. Saudi Aramco, ADNOC and Kuwait Petroleum Corporation, in particular, have expanded their refining and petrochemical

activities with multi-billion dollar investments at home, and in joint ventures in Asia. Yet simultaneously, the OPEC core has been playing a low-volume, medium-price game that better suits its high-cost rivals. The Covid-19 onslaught may seem like bad luck, but an economic downturn of some kind was ever likelier as the OPEC+ deal stretched on far beyond its original expiry date. Russia has gained from the OPEC+ alliance beyond simply higher oil revenues: promises of investment from the Gulf, and political leverage, now in danger.

If Moscow thinks again by the next meeting in June, it may agree to extend the December cuts, but likely there is no consensus for deeper reductions. This may be the best way forward. A return to pumping at will would be very painful for all, but so would giving up yet another slice of demand, that may not return even when the virus is past. Holding the line at \$60 to \$80 per barrel has proved untenable – a spell at \$40 may be achievable and enough to see off both the Russians and Texans.

WHY THE GAS INDUSTRY'S GROWTH HINGES ON PRICING & SUSTAINABILITY

Robin Mills • *A version of this article appeared in The National, Feb. 24, '20*

The world gas industry has a problem: it is too good at producing and not good enough at marketing. Prices have collapsed, to the point that some exports are halting for a lack of willing buyers.

Gas companies must get the pricing and sustainability of their product right, if their massive investments are to pay off. Liquefied natural gas (LNG) has expanded enormously recently: demand grew 12 per cent last year, met by new plants in the US, Australia and Russia. Most of the extra volumes went to China and Europe. China was switching coal-fired heating and industry to gas, a programme that has now slowed down, even before the coronavirus badly hit imports this year. Gas has helped push out coal in Europe, but much of the imports have gone into storage, which after a mild winter remains unseasonably almost full.

Now buyers have begun rejecting cargoes they cannot resell. Customers of Spain's Naturgy chose to pay a fixed fee rather than take delivery of two LNG cargoes from Cheniere's Texan facility. PetroChina has sought to invoke force majeure to avoid contractual penalties for not taking delivery. Still it's debatable whether this is because of a shortage of workers to unload cargo as a result of the virus's disruption of the logistics industry or simply because Chinese demand has collapsed. US Henry Hub prices have slumped below \$2 (Dh7.34) per million British thermal units (MMBtu), remarkably low for the usually high-demand winter period. Prices in Texas have gone negative – producers having to pay others to take their unwanted gas – leading to a surge in wasteful and environmentally destructive flaring. The usually pricey JKM market, for spot LNG delivered to East Asia, has dropped below \$3 per MMBtu – the energy equivalent of oil selling for \$18 per barrel.

The result is that, instead of capitalising on more expensive gas in the rest of the world, US producers have exported their low prices. Companies such as Centrica in the UK, and Chevron, Shell and America's largest gas producer, EQT, have massively written-down the value of their gas assets. Chesapeake, one of the shale revolution's standard bearers, has warned it may go bankrupt. Yet

gas companies remain very bullish on the longer-term. Shell's annual LNG outlook, released on Thursday, shows a doubling of world demand by 2040, particularly in Asia. In 2018, the company committed to build the \$40bn LNG Canada plant. Total, BP and Middle Eastern national firms are turning to the fuel, cleaner and with apparently more assured long-term growth than oil.

Apart from a long line of new export projects from the US ranging from firm to speculative, other massive plans include Woodside's \$21bn for Browse LNG and \$11bn for other expansions in Australia. Projects in Mozambique are advancing, and Mauritania and Senegal are new entrants to the race with a large joint gas-field operated by BP.

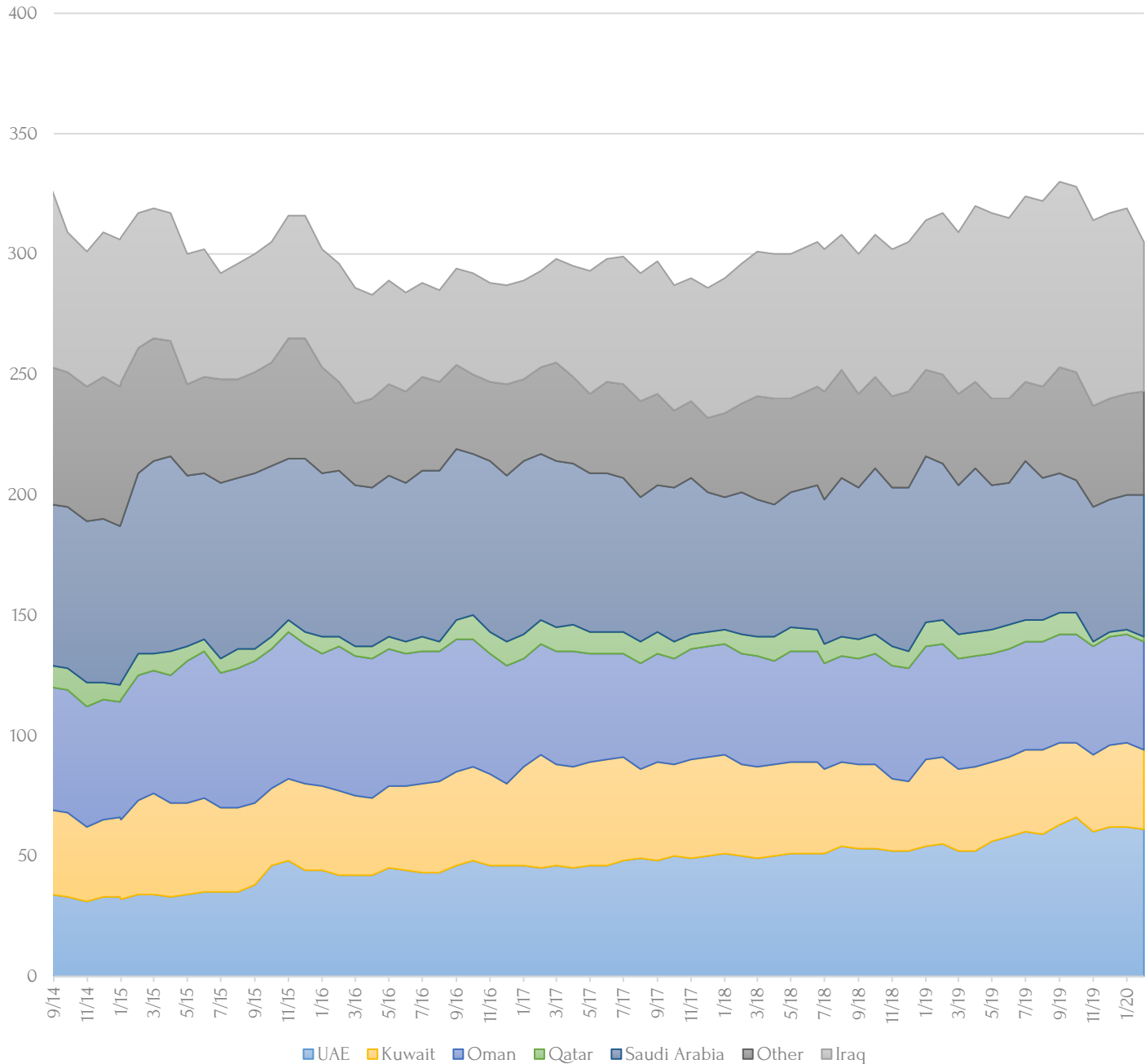
Qatar recently delayed its search for international partners because of the price collapse, but still plans a huge expansion by 2024. Novatek's \$21bn Arctic-2 LNG facility in Russia was approved in September. This huge wave of investment is in the teeth of a gale of oversupply. The companies hope that it will reach a safe haven of stronger demand in the middle of this decade. This faces three big problems.

First is the competition. The cost of solar and wind power in good locations, such as north-western Europe, the US Midwest and southwest, the Middle East and India, has fallen dramatically. At first, this will favour gas, as a flexible balancing fuel for variable renewable energy. But as coal power disappears entirely from markets such as the UK, and batteries improve, renewables will begin eating into the share of gas too. Contrastingly, in countries such as China, India, Indonesia and Australia, coal is dirty and inflexible, but is strongly backed by influential incumbents, mining communities, and dependent businesses such as railways. Second is the price. Most LNG is still sold on formulae linked to oil. This leads to a wide divergence of long-term LNG at \$6 per MMBtu from spot LNG at \$3 per MMBtu. Buyers cannot fully capitalise on low prices, and therefore cannot create demand by pushing out coal. Third is the environment. Before it has had a chance to replace coal, gas is already under attack from environmentalists who decry its climate-warming methane leaks and deny that it can be a bridge to a sustainable energy system.

To meet these challenges, gas exporters need a combination of flexible pricing, demand creation and a cleaner vision. Gas will have to be sold on its merits, rather than linked to oil. That means making JKM and other LNG price markers more liquid and flexible, with tradable relations to continental benchmarks such as Henry Hub. LNG will have to be cheap. That means new technologies and better project management to bring down the cost of the massive facilities that cool gas to a liquid so it can be shipped worldwide.

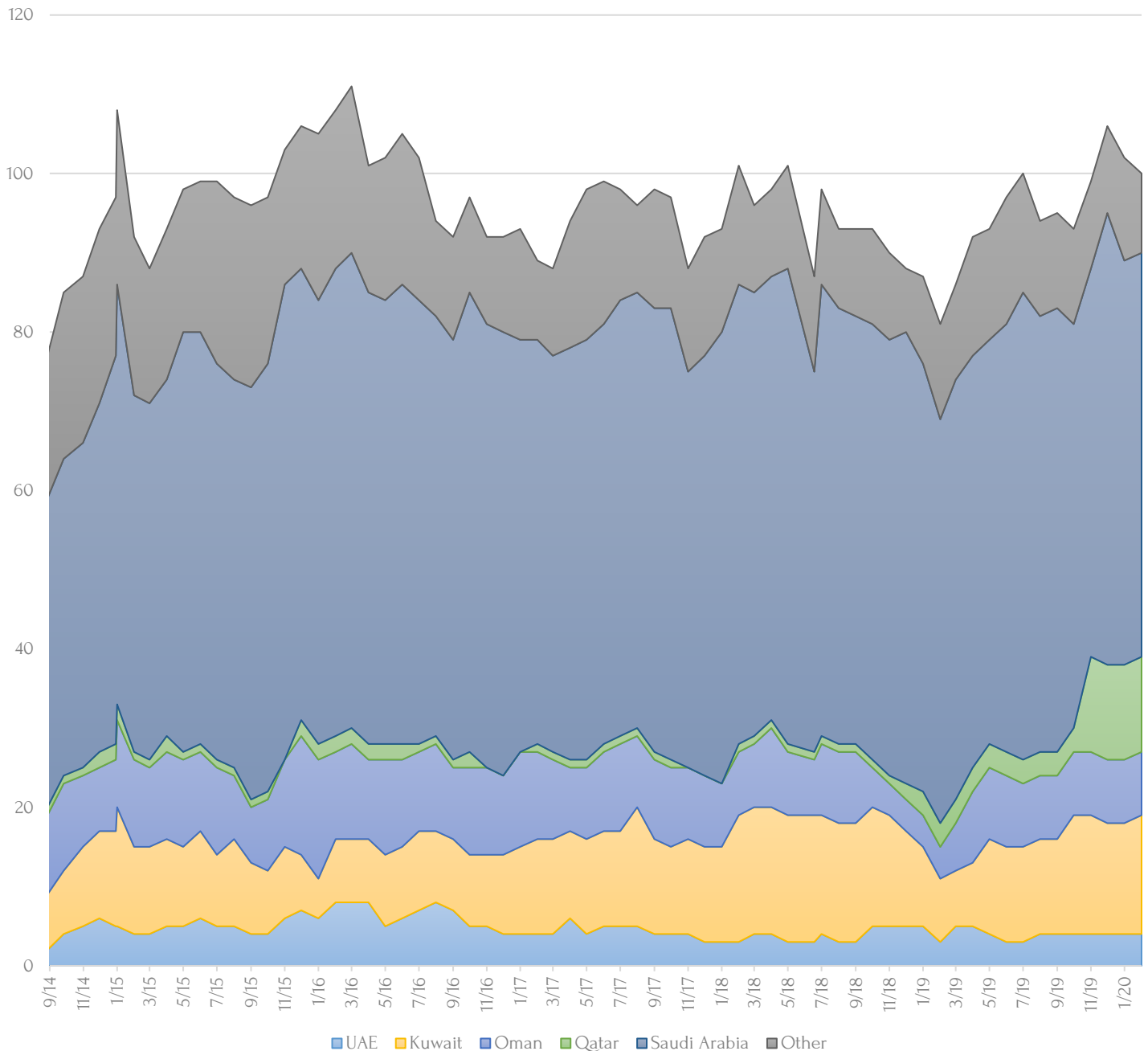
Gas companies need joint ventures for industries and power plants to buy their gas, in the emerging Asian giants as well as in new markets such as Africa. They have to build or commission pipelines to reach inland markets, and lobby for supportive regulation, including carbon prices and air pollution caps. Finally, gas will have to be sustainable. Beyond just cutting methane leaks and flaring, companies need to embrace large-scale carbon capture and storage, as ADNOC is moving towards, and pioneer hydrogen or other decarbonised fuels. Reaching the promised bright future for gas is not about surfing a wave of demand but navigating through a narrow and perilous strait.

RIG COUNT SNAPSHOT: OIL



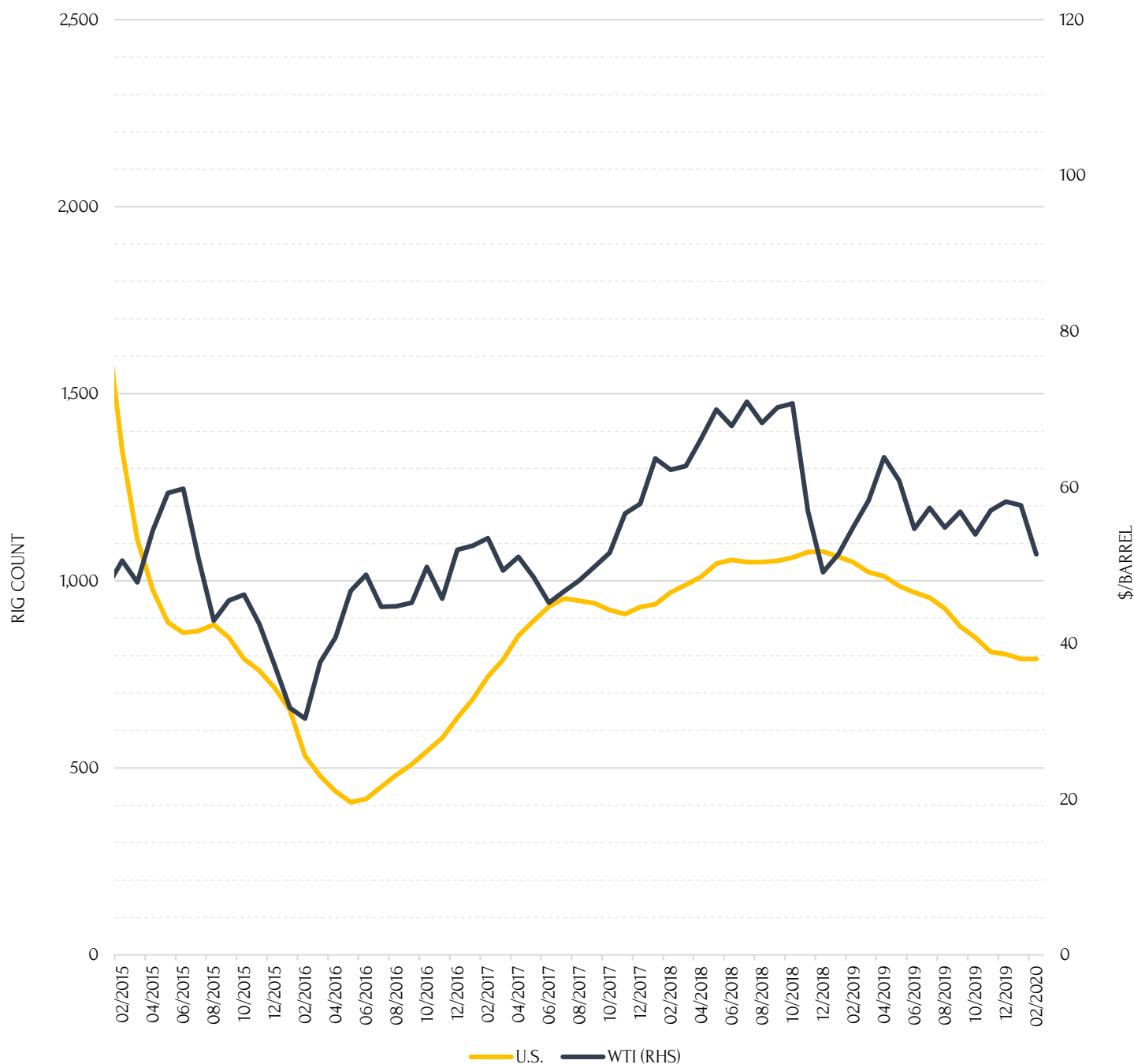
- The Middle East's overall oil rig count in February decreased by -14 excluding Iran.
- Iran's rig count is not included by Baker Hughes; OPEC estimates total (oil and gas) rig count in Iran at 157 in 2018, remaining the same till December 2019, which is doubtful, due to falling production and exports in the face of sanctions and CoVid-19.
- Iraq's rig count decreased by -15 in February reaching the lowest since January 2019, even though production increased by 86 kbpd, lowering the country's compliance rate to 42% (from 108% in January). Production is expected to increase now as the OPEC+ deal concluded on March 31. Iraq can unleash up to 350 kbpd of spare capacity from its state-run fields.
- The UAE's rig count decreased by -1 to average 61, still exceeding July's record of 60, when the 40 kbpd, Al Dhafra Petroleum-operated Haliba oilfield on the southeast border of Abu Dhabi began operations. To maintain its market share amid an oil price war between Saudi Arabia and Russia, ADNOC plans to boost its production by 1 Mbpd to reach 4 Mbpd in April.
- Kuwait's February rig count fell by -2 from 35 in January, 8.3% lower year-on year from February 2019, while production increased by a meagre 5 kbpd from January's 2.66 Mbpd. Production is expected to rise as Khafji oil is offered for export in April, and Chevron restarts production at Wafra, expected to reach 145 kbpd after a year.
- Saudi Arabia's February rig count increased by +3, while March output increased by 470 kbpd to reach 10.1 Mbpd in response to the oil price war with Russia, even though CoVid-19 has caused oil demand to fall by as much as 30 Mbpd in Q1 2020. Saudi Arabia plans to boost output to 12.3 Mbpd in April, up 300 kbpd from its current capacity, which indicates storage withdrawals.

RIG COUNT SNAPSHOT: GAS



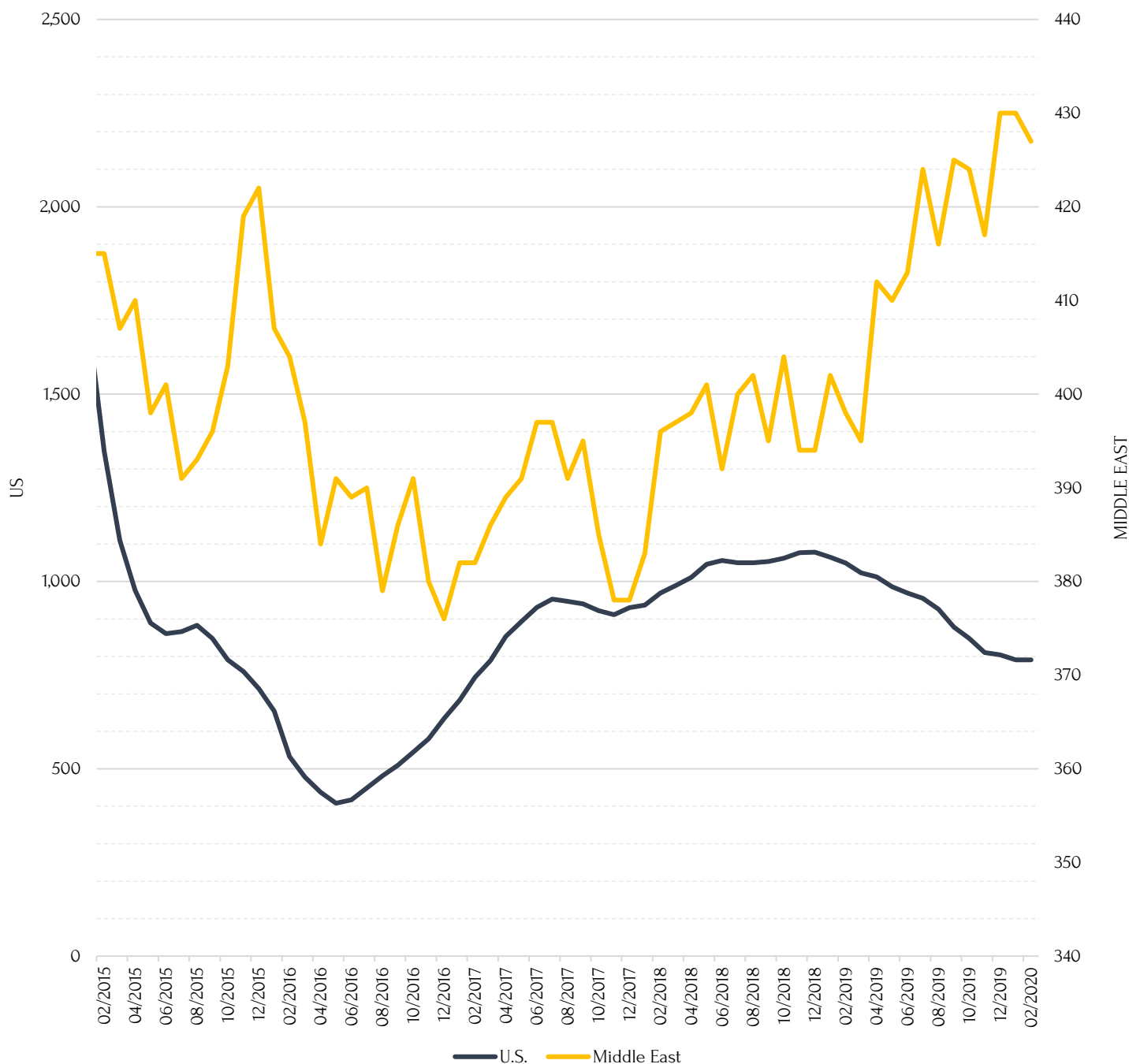
- The Middle East's overall gas rig count decreased by -2 in February at 100, 5.6% down from December's levels of 106.
- Oman's February rig count remained unchanged at 8 since July 2019, after gaining +3 in Q2 2019. This might increase with (i) the expansion of the country's 932 km gas pipeline system from 64 mcm/d to 80 mcm/d (connecting Nimr with Salalah and the central gas network from Rawl to Sur), (ii) the deal with Total and Thailand's PTTEP, awarded 80% and 20% respectively, to explore and develop the non-associated gas in Block 12 and (iii) Oman LNG and Baker Hughes' EPC agreement to rejuvenate a debottlenecking project for three trains, which will increase production by 10% to 11.3 Mtpa.
- Kuwait's rig count increased by +1 to reach 15 in February, as it targets increased non-associated gas production to meet soaring gas demand. Kuwait can finally develop its share of the 500 MMscf/d Dorra gas field (part of which Iran too has laid a claim over) now that its long-standing dispute with Saudi Arabia over the Neutral Zone has ended.
- The UAE's February rig count witnessed no change from its Q4 2019, remaining steady at 4. We expect rig count to increase as exploration begins on Bid Round-1 blocks, and construction begins on the Dalma Gas Development Project after ADNOC awarded two EPC contracts to Petrofac and a JV between Petrofac and Sapura Energy Berhad at a total of \$1.65bn.
- Qatar's rig count remained steady at 12 in February, even as the country sets a target of 110 Mtpa of LNG by 2024, and 126 Mtpa by 2027. However, selections for expansion partnerships have been delayed due to a potential global supply glut.
- Saudi Arabia's rig count remained stable in February at 51, though expected to increase as the Kingdom invests \$110 B to develop the 200 Tcf Jafurah gas field, with production planned to start in 2024 and gradually reach 2.2 Bcf/d by 2036.

RIGS VERSUS OIL PRICES: US RIGS & WTI



- US rig count for February reached 791, a y-o-y drop of 24.6% from February 2019 (-285 rigs), the biggest drop since March 2017.
- The major fall in rig count is at the Permian Basin, where rigs have fallen by -13 in March following the slump in oil demand and prices. Overall rig count has dropped -46 (y-o-y) in Q4 2019. This is indicative of producers trimming spending plans due to rising debts and pressure for shareholder returns, especially as prices fell dramatically amid an oil price war between Russia and Saudi Arabia. Operating costs in the Permian Basin have not reduced, even though it has better economics than other basins. The fall in number of rigs reveals higher productivity per rig and fracking crew, but also the need for higher prices to encourage more capital investment.
- The EIA expects US crude production to average 13 Mbpd in 2020, up 0.8 Mbpd from 2019's production at 12.2 Mbpd.

RIG COUNT: US & MIDDLE EAST



- The US' offshore rig count decreased by -3 to 19 in March from February's 22, mainly as producers started significantly cutting their capital budget due to falling crude prices, driving oil rigs to reach their lowest recorded weekly cut since April 2019. The decline in onshore drilling is set to accelerate in Q1 2020 as continued low prices limit companies' capital budgets, forcing them to reduce drilling activity. In response to falling demand due to Covid-19, and the oil price crash following the Russian-Saudi OPEC+ breakup, the Texas Railroad Commission has been invited to OPEC's June meeting to negotiate a production cut to "stabilise" markets, with Russia and Saudi Arabia.
- Total Middle East rig count fell by -3 at 427 in February, up +29 rigs from 2019's February 398 rigs, even though major MENA producers reported only slight-to-no gains in production (Saudi Arabia's output was down by 56 kbpd).

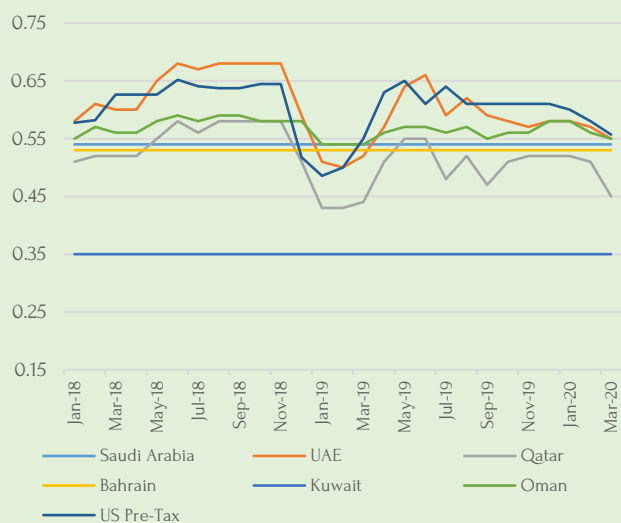
FUEL PRICES & SUBSIDY REFORMS

March 2020

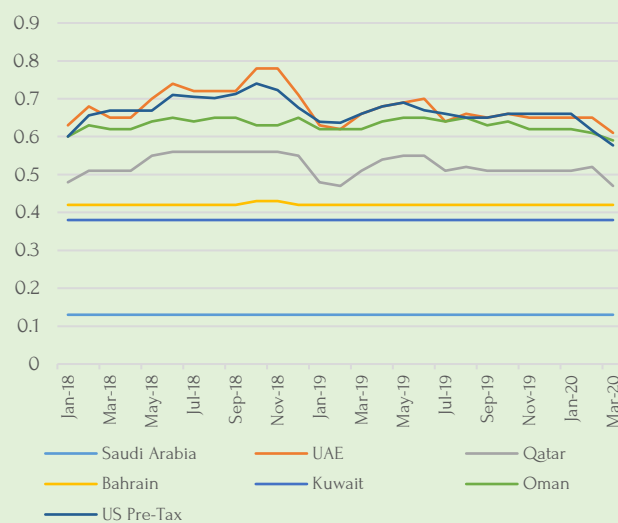
- In the UAE, gasoline and diesel March prices fell to \$0.55 and \$0.61 per litre respectively, the second lowest recorded since March 2019, while diesel recorded its lowest price, 12.85% down from June 2019's record of \$0.70.
- In Qatar, March prices for gasoline and diesel fell to \$0.45 and \$0.47 per litre respectively, with gasoline prices the lowest since March 2019's \$0.44 and diesel prices at their lowest record since February 2019.
- In Oman, the price of M95 and diesel decreased in March at \$0.55 and \$0.59 respectively, while M95 still exceeds 2019's March price.
- 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.' Its gasoline prices remain the lowest in the GCC.
- 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'. In May 2018, 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 2020 in the GCC countries.

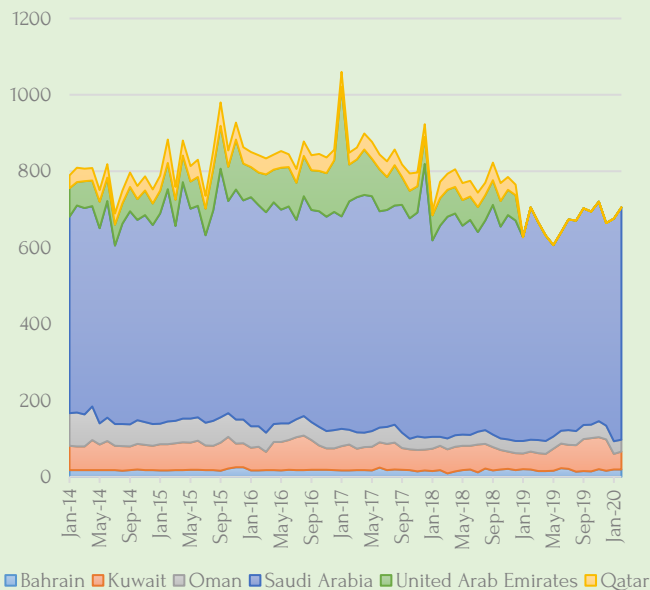
GASOLINE PRICES \$ Litre



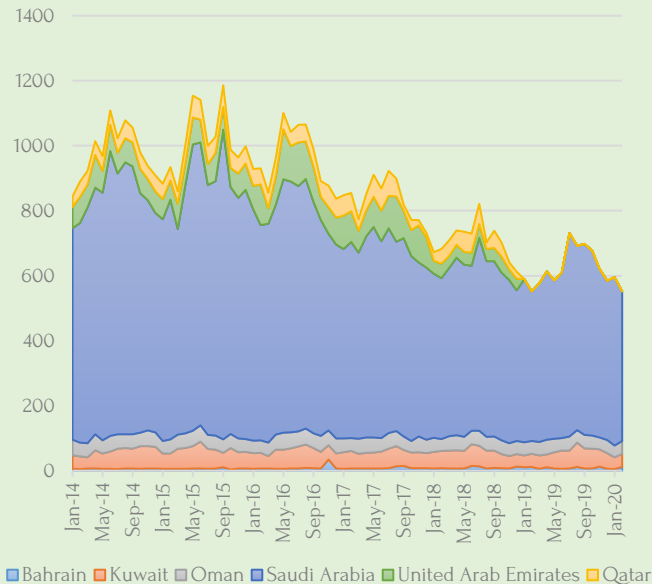
DIESEL PRICES \$ Litre



GASOLINE DEMAND kbpd



DIESEL DEMAND kbpd



Note: JODI UAE and Qatar gasoline and diesel figures are unavailable for 2019.

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?

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2. NOC & IOC ANALYSES

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

3. SPOTLIGHT THIS MONTH

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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)

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

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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.

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OPERATIONAL COST REDUCTION

IMPROVING
OPERATIONS/PRODUCTIVITY

MAXIMISING REVENUE

INCREASING SUPPLY NETWORK AGILITY

DEBOTTLENECKING SHORTCOMINGS

OPEC WATCH

AVERAGE CRUDE PRODUCTION FOR FEBRUARY 2020

27.77 Mbpd

- 1.09 Mbpd



Non-OPEC Oil Supply*

71.98 Mbpd

+ 1.39 Mbpd

from Jan. '20

*including OPEC NGLs

From January 2020

Global Crude Output

99.75 Mbpd

- 0.95 Mbpd



OPEC+ COMPLIANCE

- Overall OPEC compliance was at 128% for February, with the largest cuts coming from Saudi Arabia (295%) and Kuwait (173%) among key producing countries, with Saudi Arabia decreasing its output by 56 kbpd from January's 9.73 Mbpd.
- Russian compliance increased to 199% as it decreased output by 190 kbpd in February in response to the depressed oil demand amid the nCoV outbreak.
- Iraq decreased its compliance to 42% in February as production increased by 86 kbpd, and operations restarted at the Nasiriya oilfield, currently producing 82 kbpd and 21 Mscf/d of gas. Gharraf meanwhile has halted operations, as operator Petronas withdrew its staff due to CoVid-19 concerns.
- Nigeria increased its output by 29 kbpd in February, but this could decline, following the closure of a pipeline that feeds the Brass terminal as well as an explosion on the Lagos pipeline on March 15. Rising output from the 200 kbpd Egina offshore oilfield could balance declines elsewhere.
- The UAE's compliance stands at %133 in February, while its production increased by 13 kbpd.

NEXT OPEC MEETING: June 2020

179th (Ordinary) Meeting of the OPEC Conference in Vienna, Austria

LATEST ORGANISATIONAL CHANGES

- At the 178th Extraordinary OPEC meeting in March, Russia disagreed on additional cuts of 1.5 Mbpd proposed by Saudi Arabia due to Covid-19's impact on global oil demand, marking the collapse of the OPEC+ alliance, which instigated an oil price war between the two countries.
- This disagreement has driven Saudi Arabia and the UAE to plan production increases of 3.6 Mbpd in April, leading oil prices to reach a 17-year low of \$25/bbl.
- OPEC has invited the Texas Railroad Commission to its meeting in June to negotiate joint efforts to stabilise the oil market.

OPEC PRODUCTION

- The Libyan National Army blockade of the 120 kbpd Zawiya refinery, following the shutting-in of all major terminals in January, has diminished output to ~97 kbpd as of March 25 which renders plans to boost production to 1.5 Mbpd in 2020 nearly impossible.
- Saudi production fell by 56 kbpd to 9.68 Mbpd in February, as global demand reduced due to the massive CoVid-19 outbreak; output however is expected to increase to 12.3 Mbpd in April as the Kingdom faces off with Russia in an oil price war.
- Despite political instability, power cuts, US sanctions, the threat of civil disturbances, and plunging oil demand and prices, Venezuela's output in February increased by 4 kbpd from January's levels to reach 760 kbpd.
- Kuwait raised its compliance in January to 173% by cutting 5 kbpd. Production will further increase as the Wafra oilfield begins operations.
- UAE's production stood at 3.04 Mbpd in February, set to increase as it plans to reach 4 Mbpd by April to keep its market share amid a slump in prices.

KEY MENA ENERGY SCORECARD

MARCH 2020

QATAR DEVELOPMENTS

The North Field Expansion project aimed to boost Qatar's liquefaction capacity from 77 Mtpa to 126 Mtpa is likely to require an investment of more than \$50 B, but approvals could be delayed until 2021; QP signed a deal to deliver almost 3 Mtpa to France's LNG terminal Montoir-De-Bretagne up to 2035; Qatargas and Shell signed a long-term agreement to deliver 1 Mtpa of LNG to Kuwait starting 2020; A commissioning LNG cargo was delivered by Qatargas to India's newest LNG terminal Mundra, carrying 216,000 cubic meters; Qatar also entered a 15-year long-term agreement to supply Kuwait with 3 Mtpa of LNG delivered to Kuwait's Al Zour Port's receiving terminal starting 2022.



MENA ENERGY PRICE REFORM

Saudi Arabia, the UAE, Qatar, Bahrain, Kuwait and Oman rolled out economic stimulus packages of \$13.3bn, \$26bn, \$20.5bn, \$11.8bn, \$1.6bn and \$20.8bn respectively to support their countries' private sector and financial institutions amid nCoV breakout; Abu Dhabi will offer industrial companies a reduction of 40% on electricity tariffs under its Ghadan-21 Programme to support the private sector in exchange for significant contributions to the economy; the scheme is dependent on companies improving energy efficient practices; the reduction follows the Federal Electricity & Water Authority's decision to slash tariffs by 40% for residents in Northern Emirates in January 2019; Meanwhile, Egypt's domestic fuel prices remained at a steady level (92-octane fuel at \$0.55 in February) under the IMF-backed pricing mechanism.

FEDERAL IRAQ DEVELOPMENTS

Iraq awarded China's CPECC a \$203.5 M contract to build a sour gas treatment facility at Al Majnoon oilfield, expected to be completed in 29 months, and treat 4.39 MCM of sour gas per day; Federal Iraq posted its worst month for oil revenues in March since September 2017 due to the decline in oil prices, even though overall exports from both Federal Iraq and the KRG increased month-on-month from January. Total exports averaged 3.89 Mbpd, up from the 3.7 Mbpd recorded in January, and barely higher than the 3.88 Mbpd in December. However, even though Federal Iraq earned ~US\$ 6.7 B in December, revenues were down by US\$ 1.7 B in February, averaging US\$ 5 B.; Iraq might decide to curtail output in April even though it could unleash 350 kbpd of spare capacity from state-run fields, due to the growing global supply glut amidst rapidly deteriorating world demand.



MENA NUCLEAR POWER

Saudi Arabia is assessing Umm Huwayd and Khor Duweihin for its first nuclear power plant near the UAE and Qatari borders and has shortlisted Rosatom and KEPCO, among others; Tendering is set for 2020, but will face significant delays due to technical plans, and ongoing negotiations with the US, who insists that it shall provide Saudi Arabia with nuclear technology only if the latter agrees to "intrusive snap inspections" by the IAEA; On March 3, the UAE became the first peaceful nuclear energy operator in the Arab World following fuel assembly loading into unit 1; 3 more units are now closer to completion, with Unit 3 connected to the country's electricity grid on August 05 2019; Overall completion of the plant's 4 units is now over 93% (Unit 1: 100%, Unit 2: 95%, Unit 3: 91%, Unit 4: 82%); Australian Worley will advise Egypt's Nuclear Power Plants Authority on the construction of its 1st Nuclear plant at El Dabaa (contract's value not disclosed), while Rosatom will build 4 VVER-1200 reactors and supply nuclear fuel for the entire lifetime of the plant.



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

KEY MENA ENERGY SCORECARD

MARCH 2020

MENA ENERGY INFRASTRUCTURE SECURITY

Since mid-January, blockades on significant oil and gas infrastructure have sent Libyan oil production plunging to 97 kbpd; the country's largest producing fields, El Sharara and El Feel (with a combined production capacity of ~415 kbpd), remain shut-in, as well as at the 120 kbpd Al Zawiya refinery, putting the country's economy on edge, which is now exacerbated due to Covid-19; Pipeline vandalism, sabotages and theft are on the rise in Nigeria, with the recent pipeline explosion and leakage, leading the Nigerian National Petroleum Corporation to shut down supply, along with an explosion on a pipeline connecting to the Brass Terminal; sabotage at the Trans Forcados pipeline and Nembe Creek trunk line caused frequent shutdowns, and with the ageing dilapidated infrastructure, production disruptions are expected to increase by 400 kbpd.



ABU DHABI DEVELOPMENTS

ADNOC scheduled the submission of a commercial bid for the development of its \$20bn Hail and Ghasha sour gas field on March 29 (all four EPC packages); Blackrock along with KKR stepped down from their race to become investors in ADNOC's natural gas pipeline assets; ADNOC signed a framework agreement with Indian refining and chemicals conglomerate, Reliance Industries Limited (RIL), to develop an ethylene dichloride (EDC) facility in Ruwais; The agreement includes a feasibility study of the facility next to the already established integrated refining and petrochemical site in Ruwais.



IRAN DEVELOPMENTS

Iran's February exports stood at 248 kbpd, identified by Kpler, 6 kbpd down from January's figures; Apart from Syria, most of these volumes are likely making their way to Chinese shores; The country plans to expand its oil infrastructure capacity through the construction of a \$1.8bn pipeline connected to the Jask Port; The National Iranian South Oil Company awarded Mapna Group a \$1.3bn 10-year contract for 2 onshore fields' improved oil recovery, with production expected to increase from 85 kbpd to 121 kbpd over the next 10 years; Iran awarded Petropars the rights to develop the 21.7 Tcf Farzad-B field, having given up on negotiations with an Indian consortium including ONGC; President Rouhani announced the discovery of a new oilfield in the southwest of Iran, Namavaran, with 53bn barrels of crude in place.



KUWAIT DEVELOPMENTS

As Kuwait and Saudi Arabia resolved their dispute over the Neutral Zone, Kuwait is offering its first crude oil cargo from Khafji oilfield for exports in April; Chevron meanwhile has restarted production at Wafra, and is expected to reach 145 kbpd after a year. Due to the uncertain political environment of the sector, KOC's efforts to maximise production capacity have been hampered, leading it to downsize its 2020 target to 3.1 Mbpd from the previous target of 3.65 Mbpd. Despite the significant decline in output from 1.68 Mbpd to 1.52 Mbpd at the giant Burgan field, output from its Minagish reservoir increased to 30 kbpd, its highest level since 1983.



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

KEY MENA ENERGY SCORECARD

MARCH 2020

MENA RENEWABLE ENERGY

Saudi Arabia shortlisted 49 companies to bid in a tender targeting 1.2 GW of solar PV capacity; the National Renewable Energy Programme (NREP) identified two categories for bidding: the 80 MW Layla and the 120 MW Wadi Al-Dawaser will be covered by small-medium companies (Round A) and the 300 MW Saad and the 700 MW Ar Rass will be covered under Round B (larger schemes); in the UAE, the R&D centre of DEWA has officially opened at the Mohammed bin Rashid Al Maktoum solar plant in Dubai; In Oman, DEMA Concessions plan to develop HYPOT, a green hydrogen plant in Duqm port with a 500 MW electrolyser capacity in the first phase (FID for the other stages expected in 2021); In Morocco, Swedish Azelio finalised the construction of an energy storage facility at the 850 MW Noor Ouarzazate hybrid solar power complex; The consortium created by TBEA Xinjiang New Energy Co Ltd and Dubai's AMEA Power will build a 100 MW solar plant in Tunisia, which will be sold under a 20-year power purchase agreement (PPA) with the Societe Tunisienne de l'electricite et du Gaz; UAE AMEA signed a PPA with the Egyptian Electricity Transmission Company to build, own and operate a 700 MW project (200 MW solar park and 500 MW wind farm). In a tender intended to secure 150 MW, the Algerian Electricity and Gas Regulation Commission selected only a 50 MW project at a final price of \$0.069/KWh, the largest share of which is owned by Condor.

MEDITERRANEAN GAS COMMERCIALISATION

Sharjah's SNOC awarded Petrofac a \$40 million contract to develop the Moveyeid Gas Storage Surface Facility project, expected to be commissioned by end-2020 and wells drilled by 2023; In Egypt, Maersk Drilling was awarded a \$3.8 M one-well contract for the semi-submersible rig, Maersk Discoverer; The competition over the Mediterranean's Leviathan Basin gas resources, estimated at 122 TCF of recoverable gas reserves, has increased ever since Egypt announced an agreement with Chevron, ExxonMobil, Total, BP and Royal Dutch to explore for gas in its northwest coast near Libya; exploratory drilling is expected by 2021; this agreement intensified tensions between Egypt and Turkey, who signed a maritime and military MoU with Libya's GNA, which could also be aimed at gas explorations in the Mediterranean waters; In Algeria, Sonatrach and ENI completed the Berkin Nord gas pipeline construction connecting Bir Rebaa Nord and Menzel Ledjmet Est fields, likely to bring production up to 6.5 MCM and 10 kbbl of associated liquids; ExxonMobil acquired 1.7 million acres for offshore exploration in Egypt, which includes acreage in the 1.2 million acres North Marakia Offshore block in the Mediterranean; With the agreement of Libya's government, Total and NOC signed an agreement to implement the participation of Total in the Waha concessions as long as Total provides the necessary technology and expertise required and develops the 180 kbpd North Gialo and NC 98 fields; Wintershall and Libyan NOC signed 2 exploration and production sharing agreements (EPSA) in the Sirte Basin, for area 91 and 107. The Libyan government ratified both EPSAs for immediate effect.



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 Centre 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



World Energy Policy Summit in New Delhi; 6-7th February 2020



ME-TECH in Abu Dhabi; 18-20th February:

Iraq Club at the Capital Club in DIFC, Dubai; 23rd February

QAMAR NEWSLETTER ARCHIVES

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