

THE QAMAR NEWSLETTER

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The state of global climate in 2018 relies heavily on rectifying the mistakes of 2017's policy-making. Cover story by Robin Mills.

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

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

THE STATE OF GLOBAL CLIMATE IN 2018

Robin Mills • *A version of this article appeared in The National, Dec. 31, '17* • **COVER STORY**



For those unable to distinguish weather from climate, the cold weather over the US seems to disprove global warming. Those who want to bury their heads in the sand listen to such flippant asides, while others do the hard work on negotiating climate treaties and deploying low-carbon systems. As the New Year passes, how do we deserve to be graded on our success last year in dealing with this planetary threat?

We have five exam topics to tackle. What is the climate telling us? How are we doing on developing climate policies? What progress is being made on developing and using climate-friendly technologies? Are emissions declining enough? And how about coping with the already-inevitable consequences?

Worldwide, 2017 is set to be the second- or third-hottest year on record, among 2016, 2015 and 2014, which follow in ominous sequence. Sea-level rises are accelerating as Greenland melts.

Rising worldwide temperatures mask more severe local changes. As climate models predict, the Arctic is warming much faster than the world as a whole, heating up more and faster than it has for at least 1500 years. The loss of sea ice may have allowed cold Arctic air to move further south, causing the current US freezing.

The Mediterranean and Levant have been suffering drought, particularly in spring and summer. From 2011 to now, California

has been hit by one of its worst recorded dry spells, contributing to worsening wildfires. And the most recent studies suggest that, as carbon dioxide levels in the atmosphere increase, we will get more warming than previously thought. Overall, with climate change proceeding perhaps a little more dangerously than forecast, I will score this 4/10.

Climate negotiations are proceeding along the framework of the Paris Agreement of 2016, though the impending withdrawal of the US casts a cloud. In any case, the provisions of Paris would cut temperature rises by an insufficient 1 degree Celsius by 2100. These provisions are non-binding, and for most countries, very vague. Paris makes some progress on moving away from the failed Kyoto approach of setting targets for cutting emissions with no specifics on how this will be done. The use of a carbon tax has proved its worth in the UK, but is still not inspiring the worldwide adoption it deserves. So, I rank our policy efforts generously at 4/10.

The brightest spot is on clean energy. Renewable power has become dramatically more competitive, with the UAE and Saudi Arabia leading the way on attracting low-cost solar power, and the countries around the North Sea doing the same for offshore wind. The UK has almost eliminated coal from active power generation plans, while China looks set to have installed 50 gigawatts of solar power in 2017 and has boosted efforts to

converting coal heating to gas. Most major car manufacturers are offering electric models.

On the negative side, electric vehicle take-up remains tiny and the worldwide share of fossil fuel electricity has hardly budged. Nuclear power has suffered setbacks with US plants overrunning their costs, while carbon capture and storage has moved ahead but has to accelerate sharply to scale up by 50 times over the next 20 years. So I score our efforts in this area at 7/10 – mostly based on future potential.

After three years of flat global emissions, 2017 will see a rise of about 2 per cent, led by China, with even the EU's output falling just 0.2 per cent. The atmosphere does not care about clever new technologies and slick green press releases – it cares only about carbon dioxide coming out of chimneys and exhaust pipes. Too many countries have blundered into a “renewables plus coal” energy mix. We need emissions to fall at least 3 per cent per year, not rise. So our efforts on tangibly reducing greenhouse gases are rated 3/10, on the hope 2017 is a blip.

The hardest thing to grade is our ability to adapt to climate change, as disasters such as wildfires, storms, droughts and floods are likely to become either common or more damaging or

WILL THE NILE BRING EGYPT TO THE BRINK OF ANOTHER POLITICAL CRISIS?

Robin Mills • *A version of this article appeared in The National, Jan. 8, '18*

Cruise boats normally travel smoothly up the Nile from Luxor to Aswan, as their pharaonic forebears did 4000 years ago. But last week, low water levels left them stranded like hippos on sandbanks. Now, Egypt, a civilisation built on the fertile river-banks, fears that a new dam in Ethiopia will dramatically reduce its water and leave it at the mercy of geopolitical foes.

The Aswan High Dam, completed in 1970, was a landmark in Egyptian nationalism. It was also a political cause celebre – when the US withdrew its offer to fund the dam, president Gamal Abdul Nasser turned to then USSR for help, and nationalised the Suez Canal to raise finance, triggering the 1956 Suez Crisis.

The Grand Ethiopian Renaissance Dam, which is still under construction, may not have such dramatic consequences, but it has triggered intense controversy throughout the Nile basin. When completed, it will be the biggest hydroelectric plant in Africa with 6,450 megawatts of generating capacity. Despite a booming economy and a population of 102 million, the second-largest in the continent, Ethiopia has just 4,290MW installed today. Egypt's slightly smaller population has 38,000MW.

Under the 1959 Nile Waters Agreement, Egypt and Sudan agreed their shares of the Nile's flow at 55.5 billion cubic metres and 18.5bn m3, respectively. This treaty was reached without reference to the other riparian states, a situation resented by Ethiopia, which supplies 80 per cent of the river's flow.

The dam does not affect the smaller White Nile, which flows directly from South Sudan into Sudan and joins the Blue Nile at Khartoum.

Egypt's concern stems from its entire dependence on the Nile's water. Filling the dam will take 90bn m3, allowing for evaporation

both. Texas's energy complex recovered quite quickly from the 1.5 metres of water that hurricane Harvey dumped on Houston. But neglected Puerto Rico is barely limping back after hurricane Maria: half of customers lack electricity three months later. If this is the case for a US territory, imagine how things would look in Bangladesh.

The response to the refugee crises which engulfed Syria and Libya is not encouraging. Though evidence linking aspects of the Syrian conflict to drought is unclear, it is suggestive and we can expect more vulnerable or misgoverned states to struggle with future climate deterioration. In the face of what should have been a manageable influx, the wealthy EU, US and Australia seek to make themselves into fortresses against migrants. It is not pretty to picture the fallout of a major climatic disaster, the flooding of a fertile delta or drying up of the monsoon. So our climate adaptability gets 2/10.

An overall score of 20/50 is a failing grade on any scale. Good progress in clean energy development needs to combine with better policy to bring down emissions in 2018. In this high-stakes exam, there are no re-takes.

and leakage and if Ethiopia fills it over six years, it would reduce the flow by about 20 per cent.

Egypt is building desalination plants and waste-water treatment plants to supply potable water, but these are relatively costly and energy-intensive. Most of the Nile water is used for irrigation, for which Egypt does not have many large-scale and cheap alternatives. By 2050, Egypt will need another 21bn m3, virtually the entire river's flow.

Before filling the dam, technical studies on the impact on downstream countries should be completed. Egypt feels that Ethiopia is spinning out such studies while it completes the dam, and talks broke down in November 2017. Former president Mohammed Morsi before his removal from power was foolishly caught on camera discussing with his cabinet attacking Ethiopia to stop the dam.

Sudan, formerly an Egyptian ally, has aligned with Addis Ababa for the benefit of its own agriculture.

Egypt has now suggested to Ethiopia that the World Bank could mediate, as it did between India and Pakistan last year for a renegotiation of the 1960 Indus Water Treaty. This agreement between the two subcontinental states has endured remarkably well despite their frequent hostility in other fields.

The best way to resolve the Nile issues is via co-operative development through the whole basin, the vision of the Nile Basin Agreement between Egypt, Sudan, Ethiopia and six other riverine states.

Ethiopia wants to export surplus electricity to Sudan, Kenya, Djibouti, and possibly even Egypt. Saudi Arabia, currently building an electricity interconnection with Egypt, has talked of exporting power also to Ethiopia. Hydroelectric dams along the river's length can be used to share power, which varies seasonally, and to support the region's abundant other renewable energy resources – solar throughout, wind in Egypt and geothermal in Ethiopia and Kenya.

The dam should help with flood control and irrigation in Sudan. Ethiopia argues that because of lower evaporation in the Grand Renaissance Dam as compared to the Aswan High Dam, it could even cut water losses overall. The suspicion between Egypt and the Sudan-Ethiopia axis is not helping: working with Sudan on reducing evaporation in the Sud marshes could save 20 bn m3 annually, more than is being used to fill the dam. And Egypt needs to agree to a filling schedule with Ethiopia soon so that it can plan ahead for the Aswan High Dam to maintain electricity output.

No matter how much Nile water it gets, Egypt's fast-rising population and growing food imports mean it badly needs to tackle wasteful and polluting water-use, and learn from other water-frugal areas. Fixing its neglected agricultural sector can improve food security and improve the lives of the rural population.

The Nile is just one area picked out by gloomy forecasters as a site for future "water wars". The Indus, the Greater Mekong area in south-east Asia, and the Jordan River and Dead Sea between Israel and Jordan, are also affected by climate change, fast-growing populations and industry, and political tensions.

But open conflict will certainly make water problems insoluble. Cairo and its neighbours have the opportunity to set an example of co-operation, and carry this ancient river's history into the 21st century.

US OIL EXPLORATION RETURNS IN PURSUIT OF 'ENERGY DOMINANCE'

Robin Mills • *A version of this article appeared in The National, Jan. 14, '18*

For a government pursuing "energy dominance", being able to drill for oil and gas at home is essential.

On January 4, the Trump administration moved to open nearly all the US' offshore areas to exploration. But a policy designed to overawe China, Russia and Saudi Arabia is apparently not enough to dominate Florida.

The United States is almost unique in the world in banning petroleum exploration in most of its waters. Only the western and central Gulf of Mexico - one of the world's most important deep-water producing areas - and a sliver offshore southern Alaska, are open. There is some limited production off southern California from old leases but no new exploration, and the last licensing off the Atlantic and Pacific coasts was in 1983-84.

The US' oil and gas boom of the past few years has been driven entirely by onshore drilling in shale formations, plus some developments in the Gulf of Mexico. Now, the US interior secretary, Ryan Zinke, has launched a policy to open nearly all the closed offshore areas. This would bring the US into line with other countries, which permit exploration under stringent safety standards, except in very scenic or environmentally sensitive areas such as Norway's Lofoten Islands, Australia's Great Barrier Reef or Abu Dhabi's Bu Tinah Island.

The industry has not really been clamouring to explore new parts of the US offshore but, with oil prices rising and spending returning, no doubt many companies will take a look. The most

interesting area is the eastern Gulf of Mexico, off Florida, where the Destin Dome gas fields were discovered between 1987 and 1995 but have never been developed.

Other attractions come on the east coast. Until the supercontinent Pangaea began to break up 175 million years ago, the US Atlantic seaboard was attached to Mauritania and Senegal in north-west Africa, where American explorer Kosmos has recently made large gas finds. Analogous geology in Georgia or the Carolinas would find a ready market, attractive tax system, infrastructure, skilled workers and (relative) political stability. Meanwhile, Alaska has the greatest potential, particularly for oil, but is remote and costly.

Environmentalists have predictably objected to the interior department's plan. But in terms of climate change, the location where oil and gas are produced is pretty much irrelevant, and more US gas would continue pushing down use of coal, the dirtiest fossil fuel. Expanding production would largely displace oil and gas from somewhere else, possibly higher-carbon such as Canada's oil sands.

The big problem with the Trump administration's approach to climate is not expanded hydrocarbon production, but the lack of any attempt to curb carbon dioxide emissions or encourage cleaner technologies.

The coastal states are more worried by the dangers of an accident sully tourism and fisheries. In principle, with sensible precautions, the risk of disasters would be very small. Gas developments in particular do not pose the threat of oil spills. But Mr Zinke has been pushing to recombine the government agencies responsible for offshore safety and for awarding licences to explore, whose separation in 2010 was a direct response to their conflict of interest and failure of oversight in the case of the deadly 2010 Deepwater Horizon spill, known as Macondo.

The administration's cavalier attitude to regulation is problematic. US oil companies have been short-sighted in pushing for deregulation at any cost, and permitting cowboy operators to sully their reputation. The shock of BP's 2010 Macondo oil spill has faded remarkably quickly. It was an earlier oil slick off California, the 1969 Santa Barbara accident that triggered the offshore ban in the first place.

Americans' return to buying gas-guzzling 4x4s again highlights the hypocrisy of expecting their appetite to be sated by other countries or inland states, with natural beauties of their own. Massachusetts, opposed to drilling, is also noted for its 16-year block on what would have been the US' first offshore wind farm.

Mr Zinke announced last Tuesday that he was removing Florida from the leasing plan because of its "unique" tourism. This came in response to a conversation with Governor Rick Scott, a Republican, who supported offshore exploration in 2010 but now faces an anti-drilling Democratic challenger in this year's elections.

Now the governors of all the west coast states, including California, and nearly all the east coast states, several with Republican governors, have spoken out against offshore exploration. That leads just three states with sizeable coastlines outside the Gulf of Mexico to support the plan, Alaska, Maine and possibly Georgia. Attempts at offshore leasing will face lengthy

legal challenges, encouraged by the capricious decision to leave out Florida. Even excluding legal snarl-ups, it would take at least four years to make any discoveries and another four to bring them into production, well beyond the life-span of even a second Trump administration. Oil finds could in principle be developed with self-sufficient offshore facilities but gas would require pipeline landing points in an adjacent state.

Policies that could reach out across America's partisan divide are in short supply today and energy is one place they might be found. It is a pity that a sensible measure, part of a somewhat coherent strategy, risks being undermined by the administration's disdain for regulation and climate action, and its short-sighted political expediency.

VENEZUELA'S WOES MAY GIVE WAY TO FUTURE OPEC HEADACHE

Robin Mills • *A version of this article appeared in The National, Jan. 21, '18*

It's rare for governments to claim that things are going worse than outside observers think. But in the latest OPEC report, released on Thursday, Venezuela does just that. And the Andean nation's struggles present a conundrum for the oil market this year. OPEC reports each country's official figures for its oil production, together with an average of independent parties' assessment of that production, the so-called "secondary sources". This is done to get around the problem of cheating on quotas, where historically some states would under-report their output. Conversely, other states have often tended to over-report production, typically when they were suffering political or financial crises whose impact they wanted to downplay.

Venezuela has for a long time played the same game: it usually claims its output is 150-200,000 barrels per day (bpd) above third-party assessments. But in the latest OPEC report, while the secondary sources put production at 1.745 million bpd in December (down 4.5 per cent on November), Venezuela's own report has it falling from 1.837 to 1.621 million bpd. This compares with the 2.154 million bpd the country averaged as recently as 2016.

Assuming the secondary sources are closer to the truth, why would Caracas be under-reporting its output? It does not need to show compliance with its OPEC target of 1.972 million bpd, since it is already well below that figure. General Manuel Quevedo, appointed in November as both oil minister and head of state oil company PdVSA, said last week that production had recovered to 1.9 million bpd, suggesting December's lowball figure was intended to allow the country to exceed expectations in 2018.

In reality though, no such rosy outlook is on the horizon. Rather, Venezuela faces a year of further oil production decline, economic collapse and default.

Higher oil prices are unlikely to bail out President Maduro's faltering rule. After using about 500,000 bpd in domestic refineries, and sending some 400,000 bpd to Russia and China to pay back loans, only a minority of the country's production actually earns money. Despite rhetoric of independence and control by the workers, Caracas has kept the lights on largely by handing over assets to the Russians.

US sanctions make it hard to refinance Venezuelan borrowing, and limit the involvement of American citizens in energy projects in the country. PdVSA has not paid the interest on its bonds for a month, and the number of rigs drilling in November fell to its lowest level since 2003. A lack of money for maintenance, for light oil imports to blend with its heavy crude, and for cleaning and inspecting tankers, further crimps exports. What production remains is increasingly of heavier, less valuable grades. Unless the country deals with its debts and returns much of the industry to private hands, it will not be able to fund investment to sustain even its current lower output levels.

Yet Venezuela has every potential for a rapid recovery, under different, more pragmatic leadership. A post-Chavismo government would attract international goodwill and debt restructuring. Russia benefits from keeping Venezuela's oil off the market, but also wants to get its money back. Plus, both Moscow and Beijing would like to preserve their influence in the US's backyard, particularly when a less ideological government in Caracas might not view their support for presidents Chavez and Maduro very favourably.

Despite its poor current state, the country's oil industry, with the right oversight, could see a relatively rapid return to its former glories, even in the midst of lower prices. Incompetence, corruption, lack of spare parts and the distortions caused by the exchange rate system have been far more damaging to the sector than the oil price slump. What's more, the country's talented petroleum workforce, mostly now relocated to countries such as Colombia, the US and Canada, could be lured back.

Venezuela's Orinoco Belt contains some of the world's largest reserves of extra-heavy crude oil, which would be commercially viable to extract if a better tax system and greater investor guarantees were in place. Output in the belt actually rose in 2015 alongside a decline in production from country's conventional oil-fields. The country's offshore resources, where the giant Perla gas field started up in 2015, is another future bright spot. In March, Shell agreed a deal to pipe gas from the Gulf of Paria to Trinidad, to be exported from under-utilised liquefaction plants. Guyana, with whom Venezuela has a disputed maritime border, has been a recent hotspot for deep-water exploration.

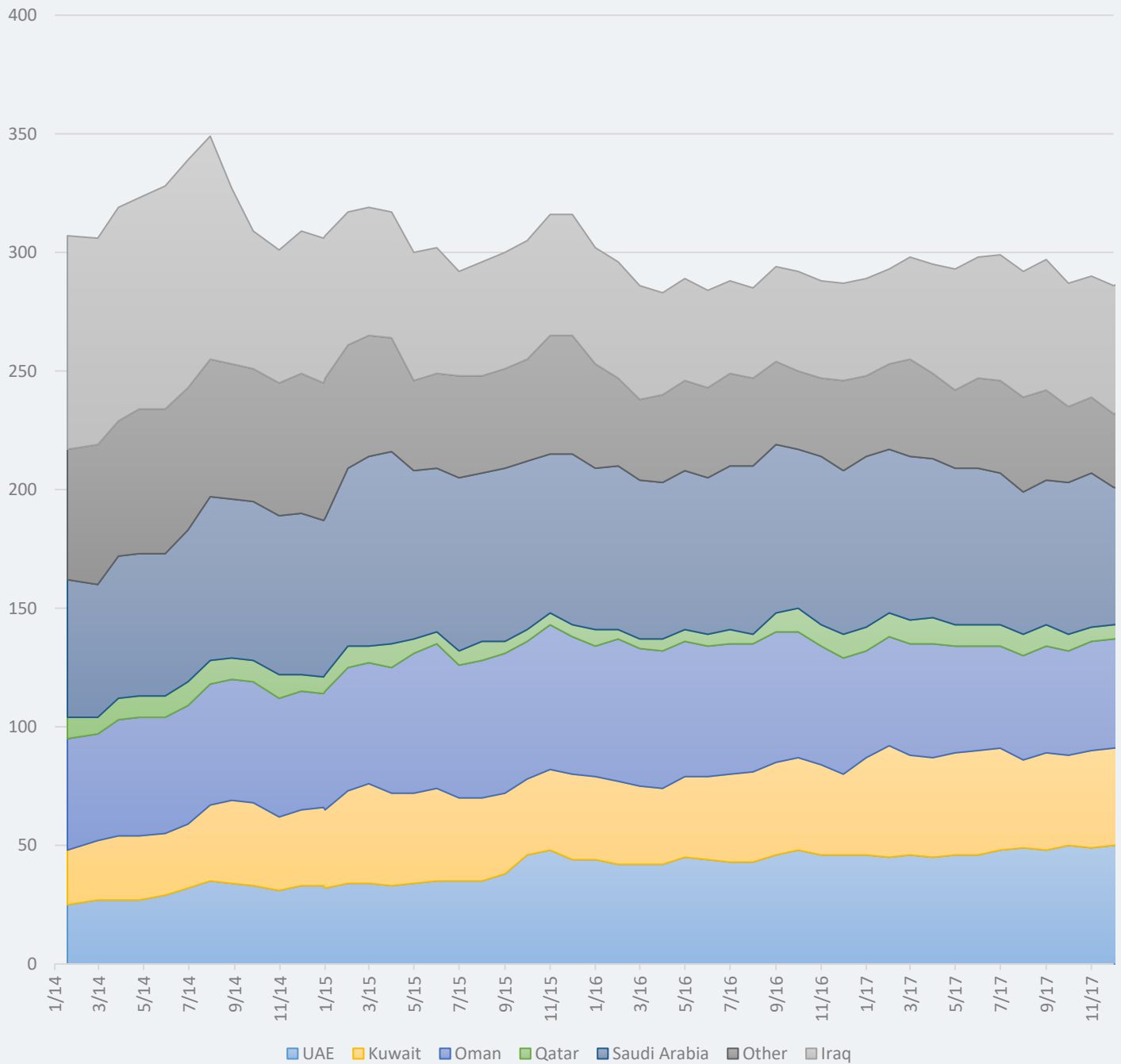
Venezuelan volatility complicates matters for OPEC. For now, the bloc's other members will be quietly glad that Caracas is taking the pressure off them and boosting overall compliance with the deal on production cuts. But if the bottom really falls out of PdVSA, the producers group would have to decide whether to suspend their output reduction deal in order to hold on to market share and avoid a damaging, unsustainable price spike.

A new Venezuelan government however might be able to re-float the country's petroleum sector rather quickly, and, within a year or two, take output well above where it is today. Caracas would make a claim for special treatment, as Iran, Libya and Nigeria have done after their own particular problems. OPEC would then have to corral the possibly reluctant non-OPEC adherents back into its pact to avoid renewed oversupply.

In 2018, Venezuela's peers will be relieved to be bailed out by its dodgy numbers. After that, if and when Caracas get its books in order, it may once again be a serious force in OPEC.

RIG COUNT SNAPSHOT: OIL

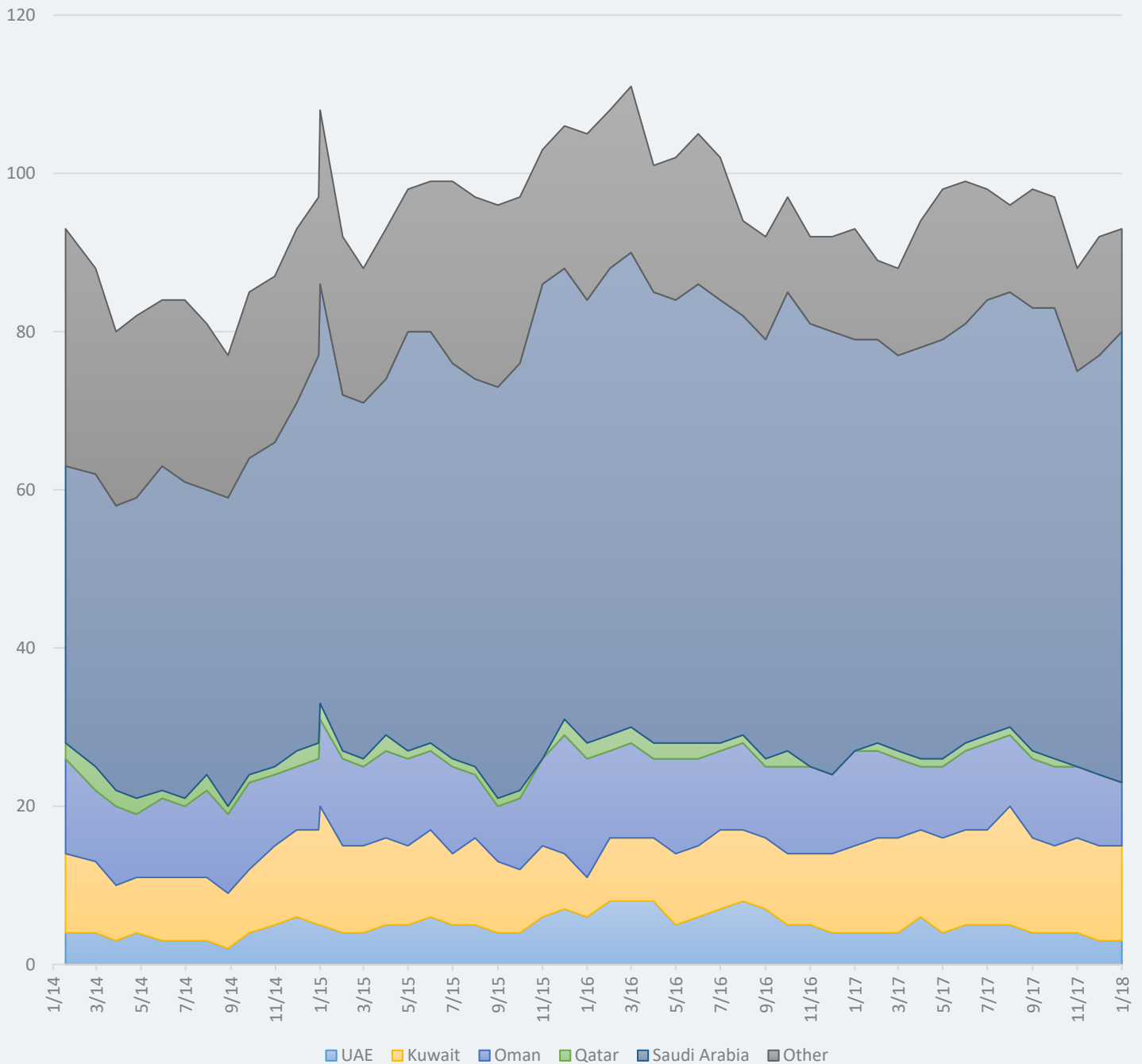
JANUARY 2018



- The Middle East's oil rig count for January increased by +4, excluding Iran.
- Iran's rig count is not included in Baker Hughes; however, OPEC reports total (oil & gas) rig count in Iran increased by 2 in 2017 from the previous year.
- The GCC's rig count remained the same as December and drilling remained steady at near-record levels; Iraq witnessed an increase of +3 in January as Chevron announced the resumption of drilling operations in Kurdistan and Halfaya is undergoing expansion to double its output capacity in 2018 to 400 kbpd.
- Kuwait stayed steady throughout Q4 2017 and in January, while Saudi Arabia's count further fell by -3 in January, as it cuts production to meet OPEC quotas, furthering speculations that the US will overtake the Kingdom in crude output early this year.
- The Middle East's oil rig count averaged 293 in 2017, and has averaged 316 the last four years. The region's count increased by +4 in January.

RIG COUNT SNAPSHOT: GAS

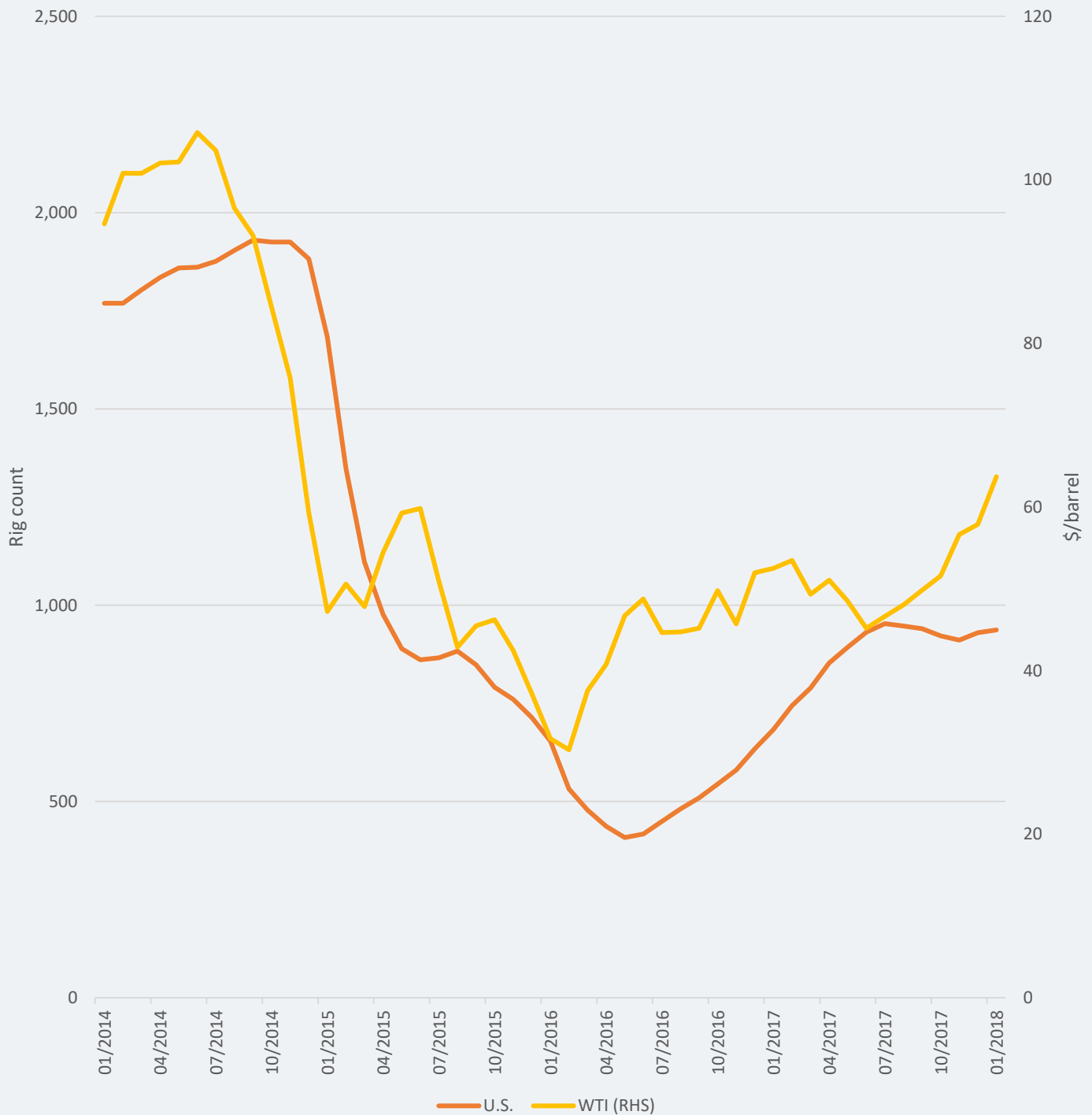
JANUARY 2018



- The Middle East's gas rig count averaged 94 in 2017. Its highest level reached was in January 2014 at 123 gas rigs. Q4 2017 saw the Middle East's rig count fall by -6 from Q3 2017; January witnessed a rise of +1.
- Qatar's gas rig count has been at zero since November 2017
- The UAE witnessed no change in its rig count from December; earlier this month ADNOC awarded FEED contracts for its offshore ultra-sour gas fields to ramp up domestic production, indicating a future increase in rig counts.
- Kuwait once again stayed steady through Q4 2017, and has not seen an increase in rig count since its year-high count of 15 in August 2017.
- Saudi Arabia continues to stay steady at an average of 54 rigs in 2017, and has started the New Year with a rise of +4, due to higher production from Wasit, and plans to increase production from Midyan, Fadhil, and Turaif.

RIGS VERSUS OIL PRICES: US RIGS & WTI

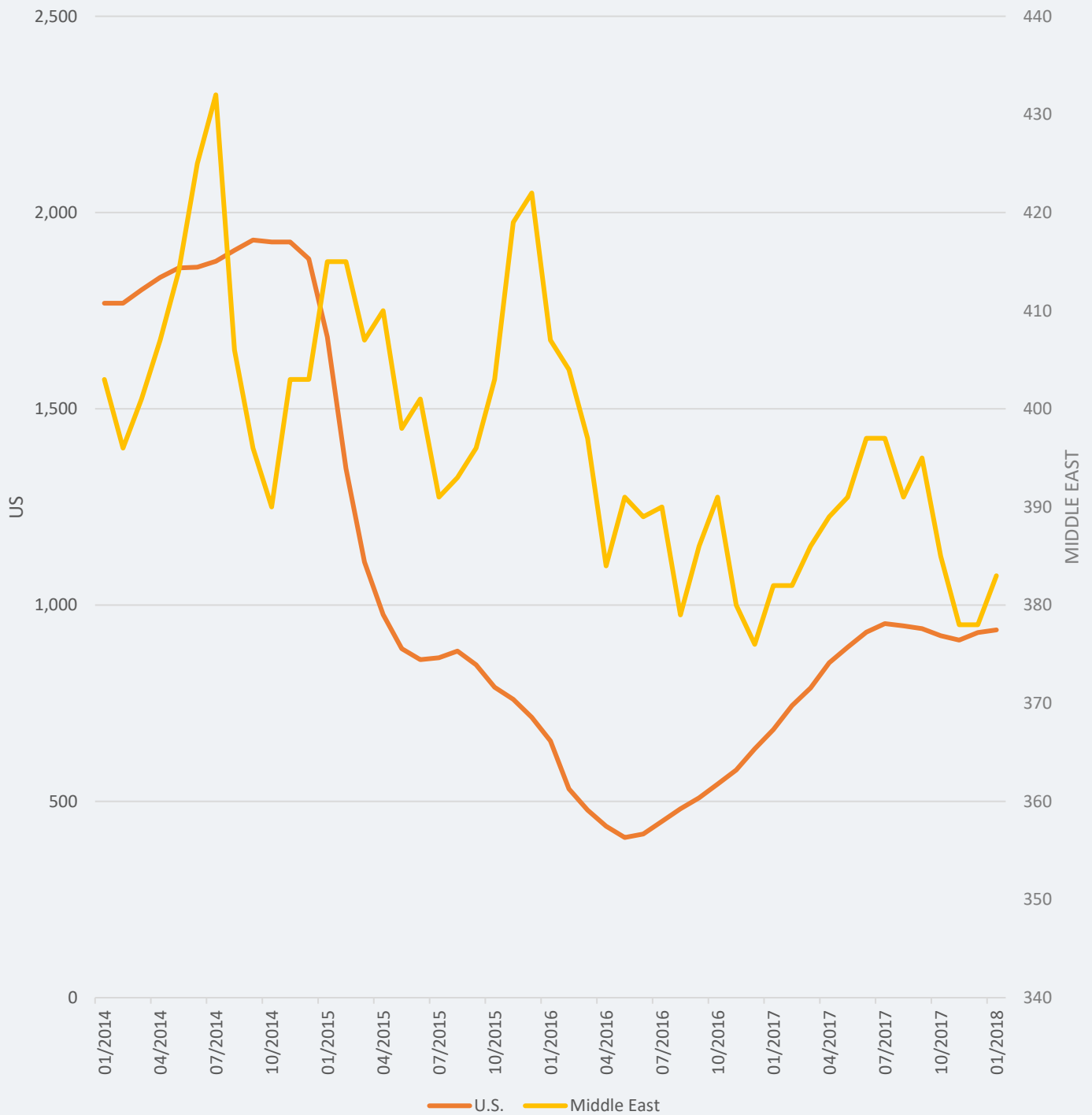
JANUARY 2018



- US oil rig count jumped by 34% in February y-o-y, a rise of 200 rigs. The US is looking to take over Saudi Arabia in crude output this year.
- Total US rig count has been in decline since August due to producers trimming spending plans citing softer oil prices; however at 937 for January, it appears that the country has made a quick recovery and may pass 2017's high of 953 rigs within H1 2018.

RIG COUNT: US & MIDDLE EAST

JANUARY 2018



- While the US' onshore rig count has surged over the course of 2017, the country witnessed a fall of -6 in its offshore count, owing mainly to Hurricane Harvey and other natural disasters earlier in the year. The US fell by an additional -1 in its offshore rig count last week.
- Total Middle East's rig count witnessed a rise of +5 in January, even as OPEC members continue to maintain relatively positive compliance rates, for example, Saudi Arabia has averaged 121% compliance in 2017.
- The region's rig count has averaged 392 for the last two years.

FUEL PRICES & SUBSIDY REFORMS

JANUARY 2018

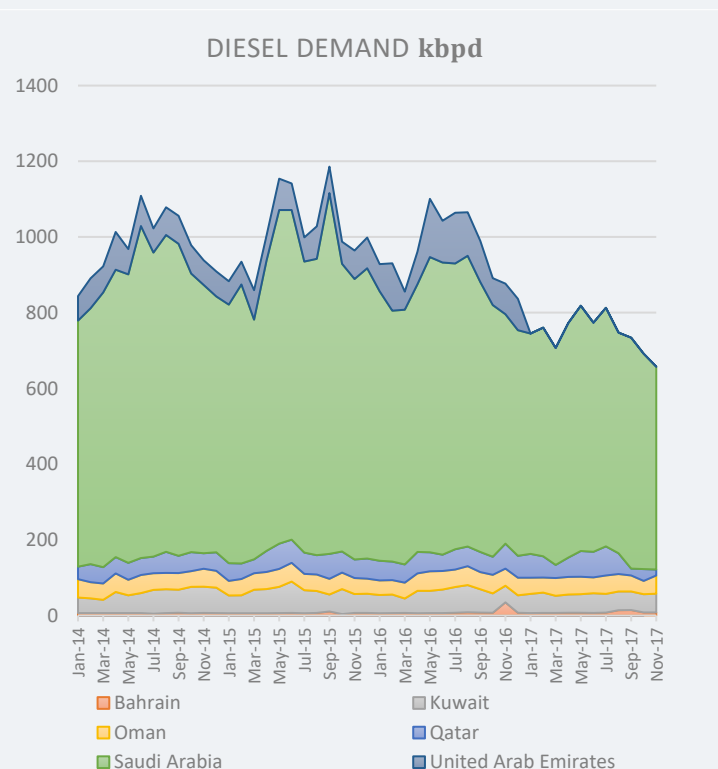
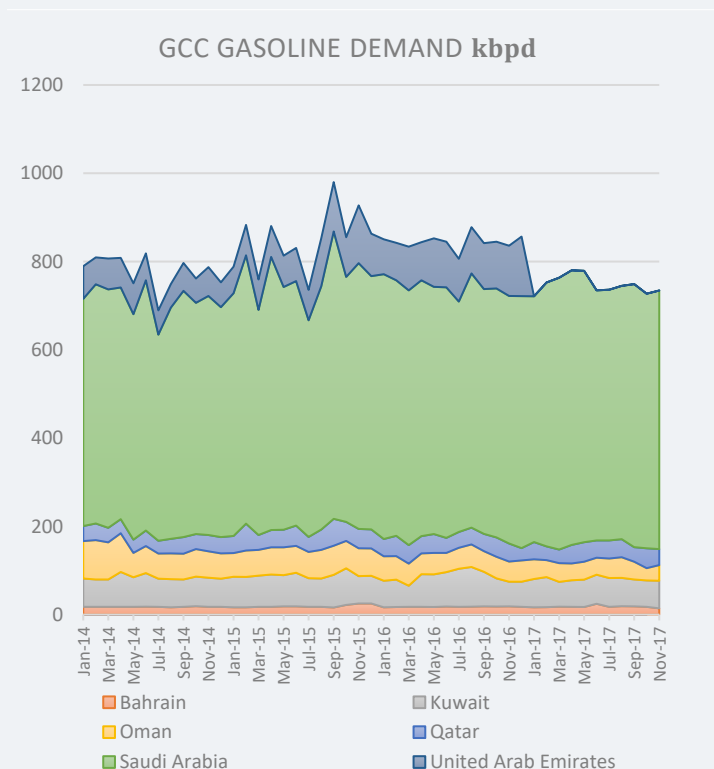
- The UAE was the first GCC country to remove fuel subsidies in August 2015, and has witnessed a continuous rise in fuel prices; in January, gasoline prices increased by 3.6% and are expected to rise by 6.1% in February.
- In Qatar, diesel prices are to further increase by \$2.75 per litre in February, the highest ever since Qatar started pegging its fuel prices to the international market. In Saudi Arabia, gasoline prices have increased by 126% in the New Year, and diesel by 14%.
- Meanwhile in Kuwait, the Parliament's Financial and Economic committee has approved the cancellation of the decision enforced in September 2016 to raise fuel prices to 'reduce financial burdens on citizens'. Similarly in Bahrain the Council of Representatives urged the government to rethink its fuel price hike merely a day after it was approved, finding the change 'too sudden', especially for citizens with a limited income.
- In Oman, fuel prices are being readjusted once again to increase from January, after the Ministry of Oil & Gas already removed the cap of \$0.48 per litre at the start of the New Year.

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

GCC Country	PAST US \$ PER LITRE		CURRENT US \$ PER LITRE	
	Gasoline 95	Diesel	Gasoline 95	Diesel
Saudi Arabia	0.16	0.07	0.54	0.13
UAE	0.46	0.63	0.58	0.63
Qatar	0.27	0.27	0.51	0.48
Bahrain	0.27	0.42	0.53	0.42
Kuwait	0.21	0.36	0.35	0.38
Oman	0.46	0.39	0.55	0.60
US - PRE TAX	0.52	0.57	0.58*	0.60

*US Gasoline 95 values are calculated for Premium Grade.

Source: EIA, Qamar Energy



Note: UAE figures for 2017 are not available. Prior to 2017, UAE figures cover ADNOC sales only.

CAN KUWAIT'S ENERGY SECTOR SURVIVE ANOTHER POLITICAL UPHEAVAL?

Maryam Salman • Editorial and Research Analyst



Kuwait's parliament has been more upset about a hike in fuel prices than most of its GCC neighbours. When the Financial and Economic Committee in January 2017 approved draft legislation to block government plans of raising petrol prices, most had given up hope that to meet its budget deficit, the country would begin enacting game-changing reforms quickly. Kuwait remains the slowest GCC country to implement major reforms to diversify its economy away from hydrocarbons. It has continually faced opposition from its parliament on raising fuel prices, and has also delayed the implementation of 5% VAT until 2019, (alongside Oman). Clearly, another political upheaval was on the horizon, and when in October 2017 (four weeks before OPEC was to convene in Vienna) the cabinet resigned, the country seemed flummoxed about managing its global and domestic energy issues. Oil Minister Essam al-Marzouq was in the opposition's firing line over alleged mismanagement of the Kuwait Oil Company since his appointment in December 2016, and was replaced by Bakheet Al Rashidi, CEO of Kuwait Petroleum International, in December 2017. Another change in the oil ministry's leadership could well spell further disruption and delays to Kuwait's energy sector.

The country however has been making advances in its upstream ventures. The second phase of the Jurassic gas fields in northern Kuwait are now approved, a key component of KOC's 2030 Upstream Strategic Objective to increase non-associated gas production. Over 90 per cent of the country's domestic gas is associated with oil. Kuwait has been at the forefront of boosting non-associated gas from its reserves in attempts to lessen its LNG imports which reached around 4.2 Mtpa in 2017 and are expected to reach 5 Mtpa this year. Along with the East and West al-Raudhatain fields (the former is expected to come online in 'the coming months') and the Umm

Niqa and al-Sabriya fields (operated by KOC and Schlumberger) that opened earlier this month, the Jurassic gas development is Kuwait's first major attempt at exploiting technically challenging deep and sour non-associated gas resources.

Moreover, Kuwait has promised to boost the Jurassic field's current gas output of 170 Mcf/d to 0.5 Bcf/d within the first half of 2018, and 1.1 Bcf/d by 2023; KOC put out a tender for a \$3.6 B EPC contract in September 2017, bids for which are due by mid-February. Condensate production is also expected to increase by 200 kbpd, and the country is beginning to showcase a political commitment that might just get things moving ahead. The Kuwait Integrated Petroleum Industries Co. (KIPIC), KPC's newly formed subsidiary, has announced that it is on schedule to complete its grassroots 615 kbpd Al-Zour integrated refining complex by end-2019. The refinery is the cornerstone of the Kuwait Clean Fuels project, which involves the upgrading of all refineries (including the 270 kbpd capacity Mina Abdullah and 466 kbpd capacity Mina al-Ahmadi refineries) to produce clean-burning fuels conforming to Euro 4 standards by 2020.

Clearly not lacking in ambition, it remains to be seen whether Kuwait's internal politics – the suspension of the National Assembly and the eventual formation of a new cabinet (a decree for which Prime Minister Sheikh Jaber Al Sabah issued in December 2017) – do not override the momentum of its energy plans. Given the current dynamic of the oil market, Kuwait will have to continue finding ways to shelter its energy sector from politicisation.

ARABIA MONITOR ENERGY, WITH 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.

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

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 Analysts:

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

Upstream Firms:

- What are the chief economic, political and energy policy 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?

Alternate/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?

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
Deep Dive into NOPEC
MENA Energy Investments
MENA Energy Fiscal Systems
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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Example 1 – Scenarios to Watch

Renewed Oil Crisis

Timing: 2021

Event: Rising demand and global production hampered by years of underinvestment, collide with a sudden crisis in a major oil-exporting country. Oil prices soar to over \$120 per barrel, threatening Asian economies. China calls on its GCC partners to support it preferentially, while India, Japan and South Korea also claim their special relationships.

Impact: Higher oil prices would mean higher revenues enjoyed by the MENA exporting countries at the expense of its importers. In the event of a supply cut occurring from a major exporting country, especially one that exported significantly to Asia, Asian countries would look to replace their lost imports by convening with other major exporters in the region with a promise of increased investment. Simultaneously, exporting countries would feel it only advantageous to reduce Asian crude grade prices and gain market share. Asia would also try to lessen its dependence on the Middle East by sourcing higher imports from most possibly Russia or the US.

Mitigation: Realising that this is a time of a restive Middle East, Asian countries, particularly China, are already keeping their guards up at a time of low prices. Chinese state companies are boosting strategic reserves and discussing with Aramco the potential of becoming a large investor in the IPO if they would be the number one priority for the Kingdom in case of an emergency. The GCC countries are investing in new and existing storage tank capacity in Asia for use in emergency. New pipeline export routes bypass the Gulf if required.

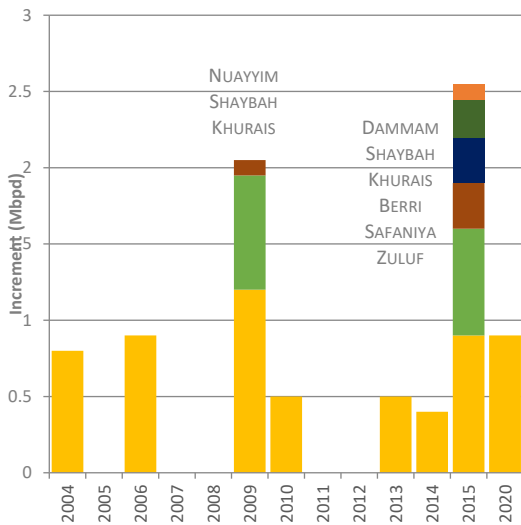
Scenario Probability: 30%

Alternative Futures

- 1) 40%: No sudden crisis in a major oil-exporting country occurs
- 2) 20%: The loss of supply from one major oil exporting country is made up with new supplies from other countries (revival of Libya, Nigeria, Venezuela, and higher exports from Iran and Iraq).
- 3) 10%: The Asian countries would not be significantly affected as they would have already lessened dependence on Middle East with higher imports from US shale or Russia.

Example 2 – Headline Developments

WHEN DOES SAUDI ARABIA EXPAND ITS PRODUCTION CAPACITY AGAIN?



Summary of the key Issues in Oil Operations in Kuwait

Technical:

- New challenging resources (deep sour Jurassic gas, heavy oil)
- Maturing oil fields (Raudhatain, Sabriya fields, Greater Burgan) and KOC's lack of experience in Enhanced Oil Recovery
- Pollution from heavy oil burning
- Relying on technology from IOCs
- Water demand soon to outpace supply - need for expansion of water supply capacity

Economic:

Commercial:

Organisational:

Political:

Sample

OPEC WATCH

AVERAGE CRUDE PRODUCTION FOR DECEMBER 2017

32.42 Mbpd

+ 50 kbpd

From November 2017



Non-OPEC Oil Supply

57.79 Mbpd



- 0.04 Mbpd
from Nov. '17

Non-OPEC Crude Output

United States

Canada

Brazil



Non-OPEC (NOPEC) SUPPORT

- OPEC compliance (among the 12 members with quotas) was at **135%** at the beginning of the year, up from 129% at the start of December 2017 due to higher compliance in the UAE and large cuts in production from Venezuela due to the political crisis.
- Non-OPEC compliance for 2017 averaged 82%, owing mainly due to Kazakhstan's increased output from Kashagan – the country's compliance averaged -176% in 2017. Among the FSU countries, Kazakhstan is expected to lead output growth in 2018, moving ahead of Russia.
- Oman's compliance stood at 100% for December 2017, and has averaged at a healthy 95% for the whole year; the country earned an additional \$9M while pumping less.
- OPEC expects Russia's production to decline by 0.19 Mbpd to average 10.98 Mbpd in 2018; the country's compliance for 2017 averages 80%, crossing 100% in August and September.

NEXT OPEC MEETING: 22.06.2018

174th (Ordinary) OPEC Meeting in Vienna, Austria

LATEST ORGANISATIONAL CHANGES

- UAE Minister of Energy Suhail Al Mazrouei has been elected as president of the OPEC Conference for one year, with effect from January 1 2018.
- Major General Manuel Quevedo, the Minister of Petroleum and Energy of Venezuela, has been elected as alternate president for the same period.

PRODUCTION LIMITS

- While exempt from the original OPEC deal, Nigeria and Libya received production quotas to cap output from their 2017 high of 2.8 Mbpd combined: Libya at 1 Mbpd, and Nigeria at 1.8 Mbpd.
- While Libya's output fell by 7 kbpd in December, Nigeria's jumped by 76 kbpd to reach 1.87 Mbpd.
- Crude output from OPEC countries rose to 32.42 Mbpd in December, up by 42.4 kbpd from November, mainly due to higher production from Algeria and Angola.
- Algeria's production had a rise of 30.3 kbpd in December to touch 1.04 Mbpd as maintenance on El Merk ended.
- Angola had a rise of 44.8 kbpd, making production cross 1.60 Mbpd.
- Saudi Arabia's production levels fell by 10.9 kbpd in December, maintaining its +100% compliance through Q4 2017.
- While Iraq's production levels had remained steady since October, the country witnessed a rise of 7.9 kbpd in production in December. The country's compliance for 2017 averaged at 79%.

KEY MENA ENERGY SCORECARD

JANUARY 2018

QATAR CRISIS

Qatar's economy performed better in 2017 than in 2016 despite the ongoing crisis as foreign deposits rose in Qatari banks for the first time since June 2017 by \$606M; Qatar's crude output has been in decline due to strict adherence to OPEC cuts; the country averaged 137% in compliance in 2017; Oman and Qatar have reaffirmed their 'strategic ties' and have signed a MoU for bilateral trade; Qatar is set to continue supplying the UAE with 1.8 Bcfd of natural gas through the Dolphin gas pipeline; the country's LNG exports remained steady at 77 million tonnes end-2017, despite the embargo.



MENA ENERGY PRICE REFORM

UAE considering gradually scrapping subsidies on electricity and gas sold to power generators to reflect 'real' prices; 5% UAE VAT on petrol prices from January; Kuwait Parliament's Financial and Economic Committee has approved the proposal of MP Waleed Al-Tabtabaie to cancel the decision to increase fuel prices (enforced in September 2016); gasoline prices saw a 126% hike and diesel prices 14% in Saudi Arabia in January; Egypt's fuel subsidy costs jumped 34% in H1 2017-2018 fiscal year to \$2.9B.



FEDERAL IRAQ DEVELOPMENTS

CNPC has awarded Petrofac a \$30M project management consultancy to oversee the development of Halfaya's output expansion to 400 Kbpd by end-2018; Ministry of Oil handed over the Nassiriya Integrated Project to Dhi Qar Oil Company after China expressed reservations about the \$9B price tag; BOC to ramp up Majnoon's production from 235 kbpd to 400 kbpd and cut production cost by 30% per bbl; Iraq will also build a new 300 kbpd refinery at the Fao Peninsula with two Chinese companies and is inviting bids for the development of three others: Anbar Refinery, Dhi Qar Refinery, and Qayara Refinery.



MENA NUCLEAR POWER

Saudi Arabia assessing two potential sites – Umm Huwayd and Khor Duweihin – for its first nuclear power plant project near UAE and Qatari borders, tendering to start by end-2018 - delays likely due to technical plans, and commercially due to negotiating an agreement with the US; Egypt and Rosatom signed contract to develop \$21B Dabba nuclear plant raising tensions in Israel that Sisi is resorting to former President Gamal Nasser's Pan-Arab policy to overtake Israel's nuclear superiority.



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

KEY MENA ENERGY SCORECARD

JANUARY 2018

ENERGY INFRASTRUCTURE SECURITY

On December 26, 2017, there was an explosion at a major oil pipeline, operated by Waha Oil Company, from Marada to Es Sider oil port in Libya, disrupting supply by 70-100 kbpd; Israel's IDF has warned Hezbollah that it risks starting another Lebanon War if it fires rockets at its offshore natural gas platforms in the Mediterranean which Lebanon claims fall within its own economic zone; Israel is planning to acquire four Sa'ar-6 missile boats in 2019 to deal with more advanced threats from Hezbollah



ABU DHABI DEVELOPMENTS

ADNOC received bids from international energy companies for stakes in Abu Dhabi's offshore fields that pump 25% of the city's crude – Lower Zakum Field, Umm Shaif and Nasr deposits, and Satah Al Razboot and Umm Lulu fields; ADNOC will utilise 40% of funds to expand refining capacity by 60% and triple petrochemicals production by 2025; Al Reyadah to expand CO₂ capture beyond the Emirates Global Aluminium facilities to the Taweelah power facilities from 2030.



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

IRAN DEVELOPMENTS

President Rouhani has called for Iran's armed forces to divest from downstream petroleum projects to aid the country's economy; on January 12 Trump waived nuclear sanctions but issued an ultimatum demanding changes to the JCPOA; Quercus to invest \$594M for a 600 MW solar plant in central Iran - Iran's government targeting installation of more than 5GW renewable capacity by 2022; ONGC Videsh has backed out of Iran after receiving exploratory rights in Israel's Block 32 amid Indian fears of being side-lined by Iran in deference to Russian companies; Schlumberger is the only American company in the 29 companies that have qualified for bidding in the NIOC's oil and gas tender.



KUWAIT DEVELOPMENTS

Kuwait will invest \$112B in the next five years to increase the country's output from 3.2 Mbpd to 4 Mbpd by 2020; Jurassic gas planned to reach 500 Mcf/d by mid-2018 and 1 Bcf/d by 2020; KOC has announced launch of operations at Al-Sabriya and the West Al Raudhatain early production facility (EPF) to produce Jurassic oil and gas to help meet domestic demand and limit import; also expanding refinery capacity: a 615 kbpd facility is under construction at al-Zour, with two new refinery ventures underway in Vietnam and Duqm.



KEY MENA ENERGY SCORECARD

JANUARY 2018

MENA RENEWABLE ENERGY

ACWA Power won Saudi Arabia's Sakaka IPP PV solar project in line with the kingdom's aim of producing 9.5 GW of renewable energy by 2023; IFC (World Bank Group) has provided \$653M for the development of Egypt's 752MW Nubian Suns solar project; Oman is mulling solar panel scheme with subsidised installations of 3kW panels to achieve 10% of total power consumption through renewables by 2025; Masdar completed the Morocco Solar Home Systems project to power 19,438 solar home systems, each consisting of two solar panels with a total capacity of 290W; Vestas, Siemens, Enercon and Ray Power prequalified for 250MW Gulf of Suez Wind Farm; Morocco closes bidding RFPs for MASEN's Noor Midelt Solar Hybrid Complex; Bahrain planning to tender a 100 MW solar power plant in Q1 2018 on IPP model to be assessed by Italy's CESI.

MEDITERRANEAN GAS COMMERCIALISATION

Algeria's Sonatrach and Total sign joint cooperation deal to produce 5 Mcm/d by April 2018 at Algeria's Timimoun gas field; Algeria has also tendered a \$500M liquid petroleum project to be developed near Hassi Messaoud; Cepsa and Sonatrach to invest \$1B in redevelopment of Rhourde El Krouf oilfield which will feature 30 new wells, a processing plant, and an LPG recovery unit to process 10 kbpd of LPG; ENI and Total in the process of beginning drilling on Block 6 offshore Cyprus; ExxonMobil planning at least two wells in H2 2018 on Block 10 offshore southwest Cyprus with Qatar Petroleum; ENI, Total and Novatek awarded E&P licenses to develop Blocks 4 & 9 offshore Lebanon, raising tensions with Israel; Egypt's EGAS will hold an international bid round for gas exploration in 11 concession areas by mid-2018, including 8 sea areas and 3 land areas; Siemens signed contract with Libya to build 650 MW and 690 MW open cycle power plant in Misrata and Tripoli – both will expand the country's power generation capacity by 1.3 GW.



No Change ↔
Deterioration in the last month ↘
Improvement in the last month ↗

Very Positive
Positive
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. He holds a first-class degree in Geology from the University of Cambridge, and speaks five languages including Farsi and Arabic.

RECENT APPEARANCES & TALKS



Euro Money MENA Asset Management & Trading Summit, Dubai •
Presentation on MENA Energy Landscape



Platts 5th Annual Middle East Crude Oil Summit, Dubai •
Presentation on Special Session: Iraq – Production, Compliance, & Political Status



Petroleum Economist Energy Strategy Forum, Kuwait • *Presentation on Long-Term Investment Scenarios for Energy Majors in MENA*

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