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Countering the gas glut requires smart investment and innovation. 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).

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TO COUNTER GAS GLUT, PRODUCERS NEED TO INVEST SMARTLY AND INNOVATE

Robin Mills • A version of this article appeared in The National, Sep. 29, '19 • COVER STORY



"The era of cheap gas is coming to an end," said Russian President Vladimir Putin in 2008. Now, natural gas is so abundant in parts of Texas that producers have to pay to have it taken away, while prices of liquefied natural gas (LNG) shipments to Asia have plummeted. We are now decisively in the era of cheap gas. Producers and exporters have to adjust to survive and prosper.

The overstuffed market is groaning for relief. Spot LNG cargoes to Asia dipped below \$4 (Dh14.7) per million British thermal units (MMBtu) this summer, having been as high as \$10 last summer. Futures prices are higher, but are still only \$7.6 per MMBtu this coming winter, the high demand period.

Prices in Europe have dropped to a decade-long low, to barely over \$3 per MMBtu, and storage in some sites is 95 per cent full.

At the Waha Hub in Texas, the price fell as low as negative \$4.28 per MMBtu. Soaring oil production and the gas that comes with it has overburdened pipelines. Even though producers are wastefully burning off much of the excess, some are still paying heavily to dispose of their gas.

This abundance of cheap gas is looking for international markets. A "big four" of LNG producers have emerged. The US only started exporting LNG in February 2016, but is already the world's fourthlargest seller. Australia will soon become the biggest at about 81 million tonnes annually, overtaking Qatar's 77 Mt, yet Doha too will expand its capacity to 110 Mt annually by 2024.

Meanwhile Russia, for long the world's biggest exporter of gas by pipeline, has surfaced as a major LNG player, too. Earlier this month, Kremlin-linked Novatek announced it had approved its Arctic 2 project, following on the surprisingly successful plant on the harsh Yamal peninsula.

This tidal wave of LNG supply has been cheap enough to find ample demand. Gas has pushed coal out of power generation in the US and Europe. New markets, such as Pakistan, Bangladesh, Panama and Bahrain, have emerged, while countries with spare import capacity, such as Turkey, are taking LNG to save on more costly pipeline supplies. Developers propose import terminals of varying reality in almost every European, Asian and African country with a coastline.

China's demand growth was exceptionally strong in 2017-2018 as it sought to convert dirty coal-fired heating and industry in northern China to gas. Still, this extra demand has not been enough to sustain prices. In 2019, Beijing's gas push continued but at a slower rate, while its economy slowed. It is now the world's largest gas importer and the major hope for future gas consumption. Still, China alone cannot prop up prices. The mature markets of Japan, South Korea and Taiwan are showing little expansion.

The longer-term future for gas seems rosy, encouraging oil companies to shift to being gas majors. With half the carbon dioxide emissions of coal, little release of other pollutants, and less than half the price of oil, it is a versatile and relatively clean fuel. Unlike oil and coal, gas should still show strong growth into the 2030s and beyond. Yet there is a continuing flood of potential supply: 1,100 Mt per year of possible LNG projects chasing just 125 Mt of annual demand by 2035. Many are in the US, but Canada, recent big finds in north-west Africa (Mauritania-Senegal) and east Africa also contribute.

The Middle East is boosting domestic gas production from its huge resources. Adnoc has announced plans to make the UAE self-sufficient, and even increase exports. Oman's "tight" unconventional gas from BP's Khazzan field has satisfied its demand and led it to look for new markets. In November, Saudi Aramco said it plans to spend \$150 billion over the next decade to become an exporter of gas. Iran's completion of long-delayed phases of its South Pars field have largely met its needs at home and allowed it to start exporting to Iraq.

Some large discovered resources are at risk of staying stranded – unable to find a viable way to market, for combined reasons of economics, geography, lack of heavyweight backers, and politics. Big new east Mediterranean fields have saturated the relatively small local markets, but the Turkey-Cyprus and Israel-Palestine disputes block the easiest ways out. Turkmenistan has the world's fourth largest gas reserves, more than the whole of Africa. But the landlocked desert country, with fewer than 6 million people, exports significant amounts only to China. Planned routes across Afghanistan to Pakistan and India, or over the Caspian to Azerbaijan, Turkey and Europe, appear firmly barred by nature and politics.

Major gas fields found in Iraq's Kurdistan region have lain idle despite the 2013 signature of an import agreement with Turkey. Europe's intended "fourth corridor" of gas imports from the Middle East and Caspian will be difficult to realise while prices at the destination are so low, insufficient to cover the cost of developing fields and building pipelines. Cheap LNG takes the heat off the continent's quest to diversify from Russian pipes.

New gas needs to drive out coal, complement newly low-cost solar and wind power, and serve new markets. Geographically, south Asia and Africa beckon; in sectors, gas could provide zerocarbon energy by conversion to hydrogen. Just having the resource is not enough anymore: major producers need to invest smartly to create demand, keep their political instincts sharp, and be ruthless and innovative to stay cheap.

IRAQ REQUIRES A NEW VISION TO EVOLVE

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

About a year into its tenure, the Iraqi government of Prime Minister Adel Abdul Mehdi must have thought it was through the most dangerous summer period. Yet this month's protests across the south and Baghdad, repressed with lethal force, show the economic model is failing, that a post-Saddam generation is impatient, and time is running out.

The Iraqi protests have their own dynamics. There are complaints about the sectarian-based political system's corruption, the stranglehold of the supposedly competing parties, and excessive Iranian influence. Now, the brutality of the crackdown, with more than 110 people killed, adds to the grievances. The Turkish invasion of north-eastern Syria also threatens to push more refugees into Iraq, and possibly revive the danger from ISIS. But the country's economic malaise is repeated across almost the

entire Middle East and North Africa. Like other regional peers, the government budget and balance of payments are excessively dependent on oil: 99 per cent of exports and 90 per cent of state revenues in Iraq. This compares to 95 and 75 per cent respectively in Algeria, 95 and 90 per cent in Kuwait.

Iraq's oil output is at least growing strongly, unlike in most Mena countries. Yet oil prices are unlikely to rise much on a sustained basis, and global oil demand could peak in the 2030s. Unlike its wealthy Gulf neighbours, Iraq does not have a sovereign wealth buffer; indeed, debt is about half of its economic output. Unlike the UAE and Saudi Arabia, it has not introduced a value-added tax. Most of the budget is swallowed up by the current expenditures for defence, salaries and subsidies; less than 20 per cent goes on investment, less than half that is in the non-oil sector, and only 65 per cent of that is actually spent.

Youth unemployment is high. Rapid population growth, adding more than a million Iraqis every year, will make this a challenge for decades to come. Government employment is excessive and unproductive, but still not enough to absorb new job-seekers, so access to secure and better-paid state jobs depends on party patronage and nepotism. Outside the oil sector, most other jobs are informal, uncertain and poorly paid. Even when economic growth is strong, as in Egypt, the benefits do not trickle down to most people, who still bear the brunt of austerity measures. Real privatisation has been minimal, and state-owned firms crowd out genuine entrepreneurship and buy up the success stories.

Arguably the Mena region's private sector, such as it is, is dominated by well-connected businesspeople who benefit from government contracting, real estate and imports rather than the competitive export-oriented businesses that drove east Asia's economic miracle. A recent law requiring 51 per cent Iraqi ownership of companies is a backward step, deterring foreign investment.

In most Mena states, promoting exports outside the energy and mining sectors has been lacklustre. Energy-intensive materials such as aluminium, petrochemicals and steel are only a partial diversification. Various tourism hot-spots, the UAE's re-export trade, and Morocco's car industry, are rare exceptions. Intraregional trade is low and faces bureaucratic and security barriers. Iraq again fares even worse here: it has a small and ramshackle industrial sector and has not emulated its neighbours in turning oil and gas by-products into a competitive petrochemical industry. Only recently has it made progress in capturing the wastefully flared gas from its oil-fields to boost electricity generation. Despite a wealth of history, security fears and unreasonable visa procedures limit tourism outside pilgrimages.

One positive feature across the region is the reduction in wasteful energy subsidies. Yet Iraq lags behind even here: electricity prices for the lowest consumers are less than 1 cent (3.67 fils) per kilowatt hour, yet many bills go unpaid. Electricity service, long a cause of summer protests, has improved significantly this year, but still falls well short of demand.

Water supply has also improved after last year's anger at polluted rivers in Basra, but is a looming longer-term threat as regional droughts worsen and Turkey fills the dams that source the Tigris and Euphrates. Neglected agriculture forces people from the land, providing support for insurgencies and swelling the urban underclass. The government of Mr Abdel Mahdi has trotted out the usual responses: investigations, ministerial reshuffles, a crackdown on corruption, the allocation of more government jobs and hand-outs. But these will only exacerbate the long-term problems. Real solutions would mean cutting state jobs, simplifying laws and bureaucracy, reducing subsidies, restructuring and selling off decrepit state firms, opening up to foreign investment, denying parties their sources of patronage, and raising taxes and fees.

These ideas, and others on reforming politics and society, appeared in the December 2017 manifesto released by Luay Al Khatteeb, now electricity minister, Abbas Kadhim of the Atlantic Council, and former finance and defence minister Ali Allawi. The cabinet actually contains several capable technocratic ministers, but it is almost impossible for them to implement deep reform, because of party pressure and the patronage schemes that extend deep into their ministries.

And such transformation would be painful in the short term, and likely bitterly opposed both by the incumbent political machine, and by the same people now protesting. The benefits, in longterm fiscal stability, reliable water and electricity, better public services, a vibrant private sector and less zero-sum politics, would take time to appear. Iraq has to confront the changing energy world. A new vision is needed. Its advocates have to gain power, persuade an angry population to patience, then walk the tightrope of radical reform.

WHY US UNPREDICTABILITY ADDS TO THE VOLATALITY OF ENERGY MARKETS

Robin Mills • A version of this article appeared in The National, Oct. 06, '19

In a fervid Washington, with October temperatures at records of almost 37 degrees Celsius, a geopolitical consultant confided to me that the US administration's turmoil had made his job easier. In such an unpredictable situation, clients no longer blame him for a mistaken prediction. That applies also to energy markets, where the new risks induced by American policies tug oil prices both up and down.

On the one hand, President Donald Trump's administration has removed large amounts of oil from world markets. Various sanctions on Venezuela have helped to send its production into free-fall (though none so serious as the mismanagement and looting the government of President Maduro has inflicted on its own country). It has also weighed imposing sanctions on European companies working on the Nord Stream II gas pipeline from Russia which bypasses Ukraine, oddly at variance with the Trump circle's usual attitude to Moscow, but in keeping with a mercantile desire to foist more US gas on Europe.

With more impact, the US abandoned the Joint Comprehensive Plan of Action (JCPOA) with Iran and sought to drive its oil exports to zero. This has not been fully achieved, but Tehran's sales have slumped to historically low levels, with only China still buying significant amounts.

Washington has also given an ambiguous response, so quiet as to be almost inaudible, to the attack, likely executed or inspired by Iran, on the Abqaiq and Khurais oil facilities in Saudi Arabia last month. There has been no known retaliation, other than the imposition of some more, by now almost redundant, sanctions. After the attacks which took out half of Saudi Arabia's oil production – briefly, as it turned out – the US has not loudly proclaimed its enduring commitment to protecting the free flow of oil from the region. Mr Trump has several times opined that Middle East oil supplies should be guarded either by the countries of the region, or their main customers such as China, not by the US alone.

Oil market analysts in Washington were almost incredulous that such an assault, which would have caused panic even five years ago, did no more than push up long-dated futures prices by forty cents per barrel. The possibility of more strikes or a wider conflict, though hopefully unlikely, surely warrants more of a risk premium. At home, though the effects will be felt only in the longer term, the administration has rolled back rules on vehicle fuel economy, and drawn back support for electric vehicles, sustaining demand for oil.

Yet on the other hand, a scattering of policies has tended to push oil prices down. By far the most consequential of these is the trade war, or more of a trade brawl, with most of the blows landed by China and the US on each other, but where the EU, Canada, Mexico, Japan and South Korea also take punches. The negative economic effects, a sharp slowdown in manufacturing and trade, and fears of recession, have weighed heavily on oil markets this year. Demand worries are a major reason why prices responded so lackadaisically to the Abqaiq attacks.

The administration has rolled back regulations to encourage domestic oil and gas output. It has also pushed for more liquefied natural gas (LNG) exports, even though the groundwork was done under president Obama. Chinese retaliatory tariffs, though, and now sanctions on some leading Chinese tanker companies, have almost dried up American fuel shipments to this key growth market. And US shale producers are worried more about low prices and a drying-up of capital than regulatory tweaks.

The other looming cloud for the oil market is the prospect that Mr Trump might strike a deal with Tehran, a rebadged JCPOA, or at least issue sanctions waivers as a way of encouraging negotiations. President Emmanuel Macron of France has energetically promoted such ideas, and the recent departure of hardliners such as national security adviser John Bolton and sanctions enforcer Sigal Mandelker reduces opposition within the administration.

Mr Trump, too, would welcome a diversion, something that could be presented as a foreign policy win, to distract from the everwidening impeachment inquiry over Ukraine. But bringing 1 million barrels per day or more of Iranian crude back on the market, as demand weakens, would cause a price crash into 2020. The OPEC+ alliance already faces the prospect of reduced demand for its crude next year, with very few members able and willing to cut. Accommodating Iran would bring even greater strain.

These various offsetting factors have, overall, pushed prices down. Of course, increasing or decreasing energy prices is far from the only or main US aim. The Obama administration also both dealt with and sanctioned Iran, took Libyan oil off the market, and boosted US production. But it is the unpredictability and incoherence of current American politics that makes its impact on oil and gas markets so volatile. A second Trump term will be yet more chaotic.

If the next president is not Donald Trump again but another, they will face longer-term fallout. The US-Iran relationship will continue to be problematic, even with a JCPOA stitched together again. There is still time to rescue the multilateral trading system,

and a possible recession would be a painful yet transient factor of the type the oil market has faced many times.

The biggest problems will be threefold. The long-term erosion of US capability, credibility and commitment to agreements undermines everything else, whether collective security, climate, or a united front on free and fair trade. There is little appetite for tackling problems militarily but overdosing on sanctions causes them eventually to lose utility. And the four lost years on climate promise a more radical, necessary but disruptive "green new deal" from a president Bernie Sanders, Elizabeth Warren or another.

ATTACKS ON ABQAIQ BRING TO THE FORE ENERGY SECURITY

Robin Mills • A version of this article appeared in The National, Sep. 22, '19

With the attacks on Saudi oil facilities this month, energy security is back in the news headlines. The Abqaiq processing plant, with capacity to process 7 per cent of the world's crude petroleum, is unique: there will never be such a critical renewable energy facility anywhere. So will the very idea of "energy security" become obsolete in coming decades as oil and gas lose dominance?

The concept of energy security has become inextricably linked with hydrocarbons. Coal mines were an object of war in the industrial age, as Germans occupied mines in north-east France during the First World War. But, perhaps because the major powers all had their own coal resources, it was not seen as a strategic vulnerability.

Great Britain, when converting its fleet to oil power in 1912, was acutely aware of its dependence on the Anglo-Persian Oil Company for supplies. Lack of indigenous oil was a critical vulnerability for Nazi Germany and imperial Japan.

Crises punctuated the post-war period: the Iranian oil nationalisation of 1951, the Suez closure of 1956, the October War and oil embargo of 1973-4, the 1979 Iranian revolution and Saddam Hussein's 1980 attack on Iran, the Tanker War' in 1984-88, Saddam's 1990 invasion of Kuwait and subsequent expulsion, the 2003 US led war on Iraq, the 2011 Libyan revolution.

Gas crises have been less frequent and less severe, but cut-offs of Russian supplies to eastern Europe have occurred several times, usually due to payment and political disputes with Ukraine.

Sharp energy price hikes caused severe recessions, upended geopolitical relationships, swept in novel economic policies, and encouraged technologies to reduce dependence on oil imports. Oil from the North Sea, Alaska and Mexico in the 1980s eased the West's concerns over the power of OPEC. A similar but even more dramatic development has been the explosive growth of US shale oil and gas, and the White House's proclamation of energy dominance. The rise of shale, coupled with the global move towards renewable and non-hydrocarbon technologies, such as electric vehicles, has led various thinkers to speculate about a new world of energy geopolitics and security. Three of the key developments are a shift in psychology; an emphasis of technology over natural resources; and the internal political consequences of energy transformation.

The change in the psychological balance between energy producers and consumers, and the blurring of the line between them, has spawned new American foreign policy proposals that would have been heresy in the 1980s or 1990s. For instance, disengaging militarily from the Arabian Gulf, sanctioning major producers out of the market entirely, and losing interest in protecting oil exports from the region. Similarly, Europe should be less intimidated by Russian threats to cut off gas supplies.

The oil producers, for their part, have mostly learnt that price spikes are bad for business. There is a new consciousness that energy users have options; that the future problem for resource owners is finding demand. Some analysis has tried to apply the old hydrocarbon paradigm to a new world of solar, wind and batteries. It asks how insecurity, organisations or transit risks threaten minerals critical to novel energy systems – rare earths, lithium, cobalt, nickel - or transcontinental schemes to move electricity from renewable centres to consumers.

But this analogy does not really work. Low-cost oil was historically found in large quantities in a few places: the Gulf, West Siberia, Venezuela. Unique fields such as Ghawar, Kirkuk and Samotlor have become bywords beyond the petroleum industry, generating enormous rents and political centrality to those who control them. There is no 'Ghawar of solar'. Some areas are windier or sunnier than others, but many countries possess these advantages and they are relatively marginal.

Critical mineral production is concentrated in a few countries – for instance, cobalt in the Democratic Republic of Congo, rare earths and graphite in China, lithium in Chile and Australia. But minerals required for production are quite different from energy sources needed continuously. Minerals can be mined in other places or substituted. And a \$11.5 billion (Dh42bn) annual cobalt market pales in comparison to the \$6bn daily oil market.

Instead, the future energy battle is about command of key technologies and platforms. That underpins China's push for dominance in batteries and electric vehicles. This is not purely a matter of energy, but merges with other struggles over artificial intelligence, biotechnology and such future industries. And the effects are much more subtle: not the blunt force of cutting off a rival's energy, but the ability to stay at the lead, to shape the direction of travel, to attract finance, and to maintain economic dynamism.

'Energy independence' is a myth. Perfect security does not come from walling every country off to run on its own renewables. Instead, mutual dependence, while often uncomfortable, is the best deterrent to conflict. But the nature of energy interconnectivity will transform. Instead of natural resources being the lure for international competition, the ebbing importance of hydrocarbons has important internal political consequences. Oil exporters have for long been aware of the imperative to diversify their economies, but doing so in practice has proved hard. The diminution of oil and gas revenues, along with the growing damage of climate change, will increasingly put stress on weak states.

Future energy security paradigms will be entirely different from today. Of course, protecting critical infrastructure such as Abqaiq will remain paramount for a nation. But globally, physical energy materials will cede importance to intangible institutions and ideas.

RIG COUNT SNAPSHOT: OIL



- The Middle East's overall oil rig count in September gained by +8, 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 September 2019, which is doubtful, due to falling production and deteriorating exports in the face of sanctions.
- Iraq's oil rig count reached a 5-year high of 77 in July, remaining unchanged till September, which has cast doubt over its OPEC compliance. Iraq had promised higher compliance in early September, but after the Abqaiq attacks in Saudi Arabia on September 14, compliance has remained at -50% (an improvement, still, of -94% from August's compliance levels).
- The UAE's rig count reached an all-time high of 63 in September, exceeding August's record of 59, following the start of operations at the 40 kbpd, Al Dhafra Petroleum-operated Haliba oilfield on the southeast border of Abu Dhabi.
- Kuwait's rig count has stayed steady at 35 throughout H1 2019, ~11% lower than its H1 2018 average. Production increased by a meagre 9 kbpd in September, even though it was largely expected for the country to step up to cover Saudi losses.
- Saudi Arabia's rig count fell by -1 in September, a time where the Kingdom scrambled to revive lost capacity after the September 14 attacks at the Abqaiq and Khurais oil processing facilities which wiped out 5.7 Mbpd of Saudi output.

RIG COUNT SNAPSHOT: GAS

120



- The Middle East's overall gas rig count gained by +1 in September, still -5 below its year-high of 100 in July. The region reached an overall-high of 123 gas rigs in January 2014, but has since declined, averaging 99 in the last four years. We could see this trend reverse as major gas expansion plans get underway in the UAE, Saudi Arabia, Oman and Qatar.
- Oman's rig count remained unchanged in Q3 2019, after gaining +3 in Q2 2019, -1 rig below its April 2018 high of 10. Oman signed an EPSA with Eni & BP for gas development in Block 77, adjacent to the Khazzan and Ghazeer gas fields, on July 31.
- Kuwait's rig count increased by 38% in Q2 2019 (from Q1 2019), still -3 less than its 2018 average, as it targets increased nonassociated gas production to meet soaring gas demand. Jurassic gas production is expected to grow from 170 MMscf/d to 520 MMscf/d from 2023-24 onwards, and will contribute to increasing Kuwait's output to 3.5 Bcf/d by 2031-32.
- The UAE's rig count witnessed no change from its Q1 2019 average, remaining steady at 4. We expect rig count to increase as large sour gas projects pick up momentum, exploration begins on Bid Round-1 blocks, and ADNOC awards exploration licenses from Bid Round-2 launched in May. First awards are expected in Q1 2020.
- Saudi Arabia's rig count gained by +1 to return to its 2018 average of 56, as it seeks to expand gas production. September 14's drone attacks have also wiped out 2 Bcf/d of gas, which will require diversion of more oil to power plants¹.

Source: Baker Hughes

¹ See Qamar Energy's Special Saudi Arabia Abqaiq Update Newsletter for September 2019

RIGS VERSUS OIL PRICES: US RIGS & WTI



- US rig count fell by -48 in August, a y-o-y drop of 16.4% from September 2018 (-172 rigs), the biggest drop since April 2017.
- The major fall in rig count is at the Permian Basin, where rigs have fallen by -10 in the last 3 months. Overall rig count has dropped -80 in Q3 2019. This is indicative of producers trimming spending plans due to rising debts and pressure for shareholder returns, even though oil prices have remained stable recently. 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. Onlookers have also blamed the current US-China trade tensions as a deterrent for upstream investment in the US.
- The EIA expects US crude production to average 12.2 Mbpd in 2019, up from an estimated 10.96 Mbpd in 2018.

RIG COUNT: US & MIDDLE EAST



- The US' offshore rig count fell by -2 in early September, gaining +6 y-o-y from September 2018, even though Tropical Storm Jerry has raised concerns (as did Hurricane Florence) of a similar fall in rig count as was observed during Hurricane Harvey and other natural disasters. Onshore drilling declines are expected to continue into Q3 2019, as E&P companies focus on disciplined capital spending and prioritisation of cash flows with less focus on growth. The drone attacks against Saudi Arabia's Abqaiq and Khurais oil processing facilities are not expected to result in a major surge of output from the US. The IEA maintains that markets are "well supplied".
- Total Middle East rig count gained +29 from its 2018 average of 396 rigs to 425 rigs in September, even though major MENA producers reported only slight-to-no gains in production (Saudi Arabia's output was down by 1.3 Mbpd).

FUEL PRICES & SUBSIDY REFORMS

SEPTEMBER 2019

- Gasoline and diesel prices for September in the UAE have been revised downwards by 4.4% and 1.6% respectively, after witnessing a rise of 3.67% and 2.9% respectively in August 2019, the first hike of Q3 2019 after oil prices were eased in July.
- In Qatar, prices for gasoline and diesel, which rose by 8.6% and 2.9% respectively in August from July's levels, witnessed a decline of 5.2% and 2.6% respectively in September. Prices remain below November 2018's levels, the highest recorded in 2018.
- Similarly in Oman, the price of M95 and diesel, which increased by 2.3% and 2% in August, fell by 4% and 3.6% in September.
- 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 September 2019 in the GCC countries.



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

LEBANON'S PROTESTS & THE IMPACT ON THE ITS ENERGY SECTOR

Roa Ibrahim • Consultant

- Large protests in Lebanon, the largest in 14 years, over corruption, a failing electricity system, poor infrastructural and governmental services, the currency crisis, and high unemployment continue to gain momentum.
- Lebanon has amassed a massive national debt of 150% of GDP and central bank reserves have plunged 30% in the past year². The local Lebanese pound is slipping against the dollar and has recently reached 1,507 Lebanese Pound per 1 USD.
- Lebanon faces a large electricity capacity deficit, which is partly met by private diesel generators (costly and noisy) and partly by imports from Syria. However, electricity imports from Syria are declining and fell 32% from 2012 to 2016³ and are likely to fall further and become more interrupted. Syria is facing its own electricity cuts and infrastructure damage from the civil war.
- Other problems include:
 - High electricity subsidies. According to the World Bank, the state utility's, Electricité du Liban (EDL), average tariff, which has not changed since 1996, is approximately US\$ 0.095/kWh, covering only 37% of average operating costs in 2018 such as fuel⁴ (see image). The new electricity plan launched in April 2018 called for increasing tariffs by 57% to USD\$ 0.1438/kWh once production capacity reaches 20 hours a day (which the plan says would be available by 2020 after securing another temporary power ship of 1,450 MW), and the tariff should be oil-indexed, so it reduces the burden on EDL. The study argues that the new tariff should have little impact on citizens since it will significantly reduce the need for expensive diesel generators.
 - EDL faces large financial deficits as nearly all the power is generated from oil. EDL receives an annual budget from the Ministry of Finance and is committed to a deficit ceiling also set by the Finance Ministry. If prices of oil exceed the ceiling, which is around \$60/bbl⁵, the generation company tends to cut production of electricity since the budget is usually short of actual funding requirements.



- This causes serious problems with power cuts (the power gap is estimated at about 1 GW). The country faces extensive load-shedding, with supply cuts up to 3 hour/day in Beirut and 12 hours/day outside of the capital.
- The power gap is covered by expensive and polluting power ships (Lebanon has two power ships, one in Zouk and one in Jieh, each 198 MW) and diesel generators. Locating the power ships has faced local opposition from sectarian interest groups.
- Technical problems continue to persist in power distribution (high technical losses) and non-technical problems such as theft and unpaid bills, with little change over the years to remedy the problem.
- Adding to the above hurdles, the sectarian political system is gridlocked, making it very hard to approve new energy projects or subsidy reforms. Moreover, the 'Generator mafia' benefits from diesel imports and blocks reforms such as upgrading existing and building new thermal plants, and progressing on much needed plans for LNG imports.
- The current protests are already pushing some politicians to step down (including Saad Al Hariri, the Prime Minister of Lebanon since 2016 and ministers of the Christian Lebanese Forces party quit the government after the third day of protests). We expect major reshuffles in governmental and ministerial positions and the new government will need to prioritise energy reform.
- The new government will also need to gain international financial support for new utility-scale renewable energy projects and speed up their approval. The government will also need to simplify the complex and long process for obtaining permits for renewable energy projects. Currently most of the renewable energy projects are small scale (decentralized solar PV systems) seen in the residential and industrial projects, but large-scale projects are vital.
- Lebanon has seen progress in renewable energy tenders recently. The Lebanese Center for Energy Conservation (LCEC) leads on behalf of the Ministry of Energy and Water (MEW), the procurement procedures for renewable energy projects for EDL. Among other projects, the LCEC is currently engaged in three renewable energy tenders: (a) 12 solar PV projects, each between 12 and 15 MW capacity, with a total aggregated capacity between 120 to 180 MW; (b) 4 wind farms, each between 50 and 100 MW capacity, totalling 200 to 400 MW;

² https://www.theguardian.com/world/2019/oct/20/lebanons-mass-revolt-against-corruption-and-poverty-continues

³ IEA ⁴ <u>http://documents.worldbank.org/curated/en/235831562864951356/text/Concept-Project-Information-Document-PID-Lebanon-Electricity-Transmission-Project-P170769.txt</u>

⁵ https://www.pressreader.com/lebanon/the-daily-star-lebanon/20180525/281479277081624

(c) 3 solar PV projects of 70 to 100 MW each, for a total of 210 to 300 MW, with each project incorporating electricity storage capacity of no less than 70 MW capacity⁶. For projects A, the LCEC qualified bidders in March 2019, and for projects B and C, the LCEC received Expressions of Interest (EoIs) from interested bidders in May and September 2018, respectively. Since then, however, no new significant updates have been made while the target was to have them completed by 2020. Given the current political situation and the government's longwinded pace, we don't expect awards until mid-2020, after any new government reshuffles.

- The country needs to build new thermal power plants (there are plans, but they keep getting delayed) which will eventually phase out the diesel generators. LNG imports need to be prioritized to fuel the new power plants and stop the use of expensive power ships. The 2018 electricity plan envisions adding further temporary power as a quick fix by 2020. However, with Lebanon's economy recording slow growth and big fiscal deficits in recent years, adding another expensive power ship will add to the government's financial strain and will do little to encourage private sector involvement and could even delay electricity reform. The government will need to encourage public private partnerships (PPPs) to obtain the financial and operation skills of private investors in the sector. The government plans two independent power plants (IPP) in Zahrani and Selaata adding around 1,000 MW. The bidding process and award is expected to take 18 months and construction another 30 months; therefore, fast movement is fundamental. If bidding starts in Q1 2020, the projects would be ready for commissioning by Q1 2024 , stipulating no delays.
- Progress on the offshore gas exploration could be delayed with the new expected government reshuffles, and the country still has limited oil and gas laws and policies, which have yet to be passed and approved. However, neglecting the upstream sector would be detrimental. LNG could be a stop-gap if offshore gas finds later can feed new power plants.
- Solving the challenges of the energy sector would improve quality of life and encourage new business and foreign direct investment, as electricity shortages rank second only to political instability in hindering business, according to the World Bank.⁷



THE ENERGY TRANSFORMATION & THE MIDDLE EAST: ROBIN MILLS PRESENTING AT GITEX '19

⁶ https://www.ebrd.com/work-with-us/projects/tcpsd/support-for-the-competitive-procurement-of-renewable-energy-in-lebanon.html

⁷ https://www.reuters.com/article/us-lebanon-economy-electricity/fixing-lebanons-ruinous-electricity-crisis-idUSKCN1RA24Z



ARABIA MONITOR ENERGY

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

WHAT SETS IT APART?

1. INSIDE OPEC

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

2. NOC & IOC ANALYSES

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

3. SPOTLIGHT THIS MONTH

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

4. SCENARIOS TO WATCH

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

5. STRATEGIC IMPLICATIONS

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

6. OUTLOOK FOR THE YEAR

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

WHO BENEFITS?

THE DELIVERABLES

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?

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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ARABIA MONITOR ENERGY SEPTEMER 2019 EXCERPT

WHAT NEXT POLITICALLY WITH SAUDI ARABIA, IRAN AND THE US?



An aerial view of the Abqaiq facility shortly after being attacked on September 14

On September 14, Saudi Aramco's eastern oil processing plants at Abqaiq and Khurais were attacked by drones leading to a temporary production suspension of 5.7 Mb/d of crude oil. The disruption also affected 2 billion cubic feet of natural gas per day (bcf/d) and 700 kb/d of natural gas liquids (NGLs). Of course, refined product exports, most notably diesel, will also dwindle as refinery runs are trimmed by 1 Mb/d.

The Houthi forces in Yemen claimed responsibility for the attacks, though investigations from the US and Saudi Arabia blame Iran. Iranian Foreign Minister Mohammad Javad Zarif denied any involvement in the attack during an interview with CNN and said there would be "an allout war" if the US or Saudi Arabia launched a military strike against Iran. If this was indeed Iran, it marks a bold escalation in its tactics from its usual war of words ploy and the harassment of tankers in the Strait of Hormuz. Iran is trying to apply pressure on the US to seek relief from economic and oil sanctions by showing it is willing to aggressively push back. The Iranians may have also viewed the removal of security adviser John Bolton by President Trump on September 10 as the prime time to launch its biggest attack yet since the US sanctions were enforced in 2018.

We are yet to see if this new, yet risky, method is working with Washington.

In our point of view, despite talk of possible strikes, neither Saudi Arabia nor the US have a real appetite for war. Hours after the attack, President Trump stated that they were "locked and loaded" and waiting for verification of Iranian involvement and Saudi Arabia's input before deciding how to respond. The Iranians know that such an attack on a well-acclaimed US partner, and one that impacted the most significant globally traded good, could provoke a military response, but they are willing to accept that risk. They are confident that Trump does not want to risk entering a war before the 2020 presidential elections, especially given the global and US economic slowdown. Meanwhile, Saudi Arabia is already dealing with large macroeconomic and social domestic changes, a wide budget deficit and falling foreign reserves. Moreover, the kingdom is already criticised greatly on the very expensive war in Yemen and cannot afford further negative publicity or expensive wars. Any war with Iran would also put back the Crown Prince's Aramco IPO vision, and when it does eventually go ahead, investors will apply a weighty risk premium to the investment.

Ultimately, Iranians do want to see an alternative path toward de-escalation that could be accepted by Washington. Iran is downplaying its economic conundrum which could spark domestic criticism from the high unemployment rate, souring inflation and unpaid wages. Agencies are largely pessimistic on Iran's immediate future. The World Bank, for example, forecasts Iran's ...

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MAXIMISING REVENUE			INCREASING SUPPLY NETWORK AGILITY
	DEBOTTLENECK	ung si	HORTCOMINGS

OPEC WATCH

AVERAGE CRUDE PRODUCTION FOR SEPTEMBER 2019

28.49 Mbpd - 1.32 Mbpd

From August 2019

Non-OPEC Oil Supply* 68.83 Mbpd

- 450 kbpd from Aug. '19 *including OPEC NGLs **Global Crude Output** 97.31 Mbpd - 1.77 Mbpd

OPEC+ COMPLIANCE

- Overall OPEC compliance was at 274% for September, with the largest cuts coming from Saudi Arabia (643%, involuntarily) and Kuwait (175%) among key producing countries.
- Russian compliance improved to 87% in September, having fallen to 53% the last month. Several countries, including OPEC kingpin Saudi Arabia, have complained about Russia's failure to comply with the deal in full. Production declined by 40 kbpd from August's levels, reaching 11.25 Mbpd.
- Nigeria's undercompliance continued in September, with production 175 kbpd higher than its pledged 1.68 Mbpd. On and off protests in Abuja, and rising output from the 200 kbpd Egina offshore oilfield resulted in a -228% compliance for September.
- Oman's compliance reached 121% in September, the third highest after Saudi Arabia and Kuwait amongst the GCC. The country produced 973 kbpd, 5 kbpd lower than its allotted OPEC quota based on October 2018's production.
- The UAE had the lowest compliance among the big Gulf-3 producers at 90%. The country has not reached perfect compliance since May (113%).

NEXT OPEC MEETING: December 2019

177th (Ordinary) OPEC Meeting in Vienna, Austria

LATEST ORGANISATIONAL CHANGES

- At the 176th Ordinary OPEC meeting in July, OPEC+ members pledged to extend December 2018's production cut of 1.2 Mbpd for another 9 months.
- The agreement is slated to stay in force till March 2020, and a decision on its extension will be discussed at the 177th Ordinary OPEC meeting in December.
- On September 12, the OPEC+ monitoring committee convened in Abu Dhabi to ask over producing members to show better commitment to the OPEC+ pact. Iraq and Nigeria, notorious for undercompliance, have agreed to trim oil output in line with their targets in the coming months.

OPEC PRODUCTION

- Libyan production increased by 104 kbpd in September, following the transfer of \$1 B to the National Oil Company's (NOC) budget. While significantly lower than what the company requires, overall output for 2019 has remained above 1 Mbpd, signalling a return to stability, even though political tensions continue to threaten oil output.
- Iraq's output declined by 60 kbpd from the previous month as the country battles to reach its 2019 targets while maintaining compliance with the OPEC cuts from its national-operated fields.
- Saudi production fell by a drastic 1.3 Mbpd in September, even though the Kingdom has assured markets that its capacity has reached 11.3 Mbpd in the aftermath of the Abqaiq attacks, and should reach 12 Mbpd by November.
- Iran's output has stabilised somewhat at an average of 2.2 Mbpd in Q3 2019. Overall, the country has lost 1.55 Mbpd in production from its 2018 high of 3.818 Mbpd.
- Political instability, power cuts, US sanctions and the threat of civil disturbances have all but eliminated chances of a revival in Venezuela's production which fell to 644 kbpd in September, a new historic low.

OATAR DEVELOPMENTS

On October 10, Qatar Petroleum won the exploration rights for blocks C-M-541 (in consortium with Total and Petronas), 659 and 713 (in association with Shell and Chevron) in Brazil's Campos Basin. This is the fourth time QP has won E&P rights at a bidding round in Brazil; QP has taken over full operatorship of the Idd el-Shargi North Dome and South Dome offshore oilfields as Occidental's PSA expired on October 06; On September 18, QP signed an agreement with Shell to establish a global LNG bunkering company to meet LNG bunkering demand, which QP expects to reach 35 Mtpa by 2035; On September 15, QP issued an EPC tender for additional liquid products storage and loading facilities and Mono-Ethylene Glycol (MEG) storage and distribution facilities as part of its North Field Expansion (NFE) project.

FEDERAL IRAQ DEVELOPMENTS

Iraq's exports declined by 2.3% in September in line with the OPEC cuts, even though infrastructure has been upgraded at the Basrah Terminal to support higher exports; On October 16 the US granted Iraq another sanctions waiver to continue importing gas and power from Iran; Iraq signed a framework agreement with the GCC for the supply of 500 MW of power via Kuwait by the summer of 2020 to meet soaring peak demand, which could increase to 2 GW; Iraq's Ministry of Oil has signed an MoU with US-sanctioned Russian company Stroytransgaz for oil and gas exploration in Anbar; Baghdad signed an MoU with Honeywell for processing 300 Mscf/d of associated gas from Ratawi, Majnoon, Luhais, Subba, and West Qurna-2 as part of the Ratawi Gas Hub Project that is expected to reduce Iraq's flaring by 20%.

MENA ENERGY PRICE REFORM

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; On July 05, Egypt announced increases in fuel prices as a part of its \$12 B IMF Ioan: M92 and M95 gasoline saw a hike of ~18.5% and 16.1% and diesel and kerosene prices rose by 22.7%; Saudi Arabia has continued the Citizen's Account Program, a cash handout scheme for lowincome Saudi citizens impacted by rising fuel prices, electricity tariffs, and VAT.

1

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 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; The UAE's Barakah plant is now closer to completion, with Unit 3 connected to the country's electricity grid on August 05; Overall completion of the plant's 4 units is now over 93% (Unit 1: 100%, Unit 2: 95%, Unit 3: 91%, Unit 4: 82%); Egypt and Rosatom will begin construction on the \$21B Dabaa nuclear plant in 2021 with financial support from the Russian National Wealth Fund.

MENA ENERGY INFRASTRUCTURE SECURITY

On September 14, Aramco's Abqaiq and Khurais oil processing facilities were attacked by drones at 17 target points, immediately suspending 5.7 Mbpd of Saudi crude output (5-6% of global supply), as well as affecting 2 Bcf/d of natural gas output; the US and Saudi have squarely placed blame on Iran, while Iran has denied any involvement; Houthis in Yemen have claimed responsibility but this is yet to be corroborated; On October 11, vandals sparked a fire at oil lease 20 in the southeastern state of Imo in Nigeria as protests continue in Abuja; it is not immediately clear how much oil has been lost, with the Nigerian National Petroleum Corporation yet to release a statement.

ABU DHABI DEVELOPMENTS

ADNOC signed a strategic framework with Gazprom Neft for collaborating on E&P and sour gas, and also awarded Lukoil a 5% stake in the Ghasha ultra-sour gas concession. This is the first time that ADNOC is partnering with a Russian firm across its full value chain; ADNOC has also awarded a managed maintenance services contract to Petrofac for its KNOC-JV Haliba oilfield; the field is expected to reach 40 kbpd by end-2019; Canada-based SNC Lavalin was also awarded a project management contract for Yasat Petroleum's (ADNOC-CNPC JV) onshore and offshore concessions; Eni's Ghasha gas field is expected to produce over 1.5 Bcf/d by 2025 in line with UAE's goal of boosting natural gas production; ADNOC has also announced increasing output from its Shah sour gas fields at Bab and Bu Hasa; ADNOC is considering a regional oil price benchmark to increase competitiveness over global benchmarks.

IRAN DEVELOPMENTS

Iran's September exports averaged just under 500 kbpd, all classified as unidentified by most tanker tracking services. Apart from Syria, most of these volumes are likely making their way to Chinese shores; On October 11, two missiles allegedly struck an Iranian tanker travelling through the Red Sea off the coast of Saudi Arabia; Iran has placed blame on Saudi Arabia; Iran has placed blame on Saudi Arabia; Israel, and the US, who have failed to acknowledge the incident; CNPC has been "dismissed" from the South Pars Phase-11 project by the NIOC for continued inaction in the face of US sanctions and US-China trade tensions; local Petropars will now develop the field; Petropars will also develop 500 Mscf/d of gas from the Balal gas field in the Persian Gulf by 2022, but this is unlikely to transpire any time soon; Iran has offered increased nuclear inspections if the US lifts sanctions under a UNSC dispute resolution process.



KUWAIT DEVELOPMENTS

Indian firm Larsen & Toubro has submitted the lowest bid for the Mina Ahmadi gas pipeline, which will link northern gas fields to the Mina Ahmadi refinery, for an estimated \$479 M; Kuwait Petroleum will soon commission the refinery's first diesel production unit as part of the refinery's overall 454 kbpd capacity; KP is also set to announce \$5.2 B worth of oil and gas related projects over the next five years, though details of the plans have not yet been released; Talks with Saudi Arabia to restart up to 500 kbpd of locked-in production from the Neutral Zone fields of Khafji and Wafra are still unclear, and Chevron has indicated that it would take several months to bring the fields fully back online to make up for supply losses from Saudi Arabia. SEPTEMBER 2019

MENA RENEWABLE ENERGY

bin Rashid Al Maktoum Solar Park, but is Bakr Wind project will receive 96 SG 2.6the KEPCO-financed 89 MW Fujeij wind Iraq launched a 755 MW solar tender; Eni also working on the construction of the 5 Phase-2 of the National Renewable GW for 2023; The 1.18 GW Noor Solar Plant expanded its 2030 renewables target at the Shagaya Renewable Energy Complex (OPWP) has invited proposals for

MEDITERRANEAN GAS COMMERCIALISATION

Total and ENI will now explore for gas in new finds; Total has also gained shares in well in Block 4 by end-2019, and first well in Block 9 by 2020; Lebanon's first LNG encountered gas under evaluation in the contract to develop Algeria's Ain Tsila gas field and will produce 364 Mscf/d by 2023; Israel will now send 85.3 BCM of gas to



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.



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