Photo courtesy of Nogtec.

POSSIBLE NEW, BUT SMALL, OPEC JOINERS?

QAMAR ENERGY

Issue 13: May 2017

Saudi Aramco IPO

Robin Mills: Saudi Aramco's $2 Trillion Valuation Has Too Many Assumptions published on Bloomberg Views.

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‘Nopec’ players bring a different kind of challenge

By Robin Mills

A ***version of this article appeared in The National newspaper on April 30, 2017***

The tropical capital of Malabo, with its wooden colonial buildings, near-unbroken rain and cloud, red-eared monkeys and crocodiles, does not have much in common with Riyadh, Baghdad or Tehran. Yet one thing is enough to admit Equatorial Guinea into an exclusive club – petroleum. As OPEC and non-OPEC states pursue unprecedented cooperation, Equatorial Guinea is next to seek to join the producers’ organisation – but will there be more?

Since Indonesia rejoined briefly and then dropped out, OPEC has had 13 members. Angola became the first new member since 1975 when it entered in 2007, Ecuador resumed membership in the same year and Gabon in 2016. Angola extracts about 1.6 million barrels per day (bpd) while Gabon, Ecuador and Equatorial Guinea are relatively small producers.

So more important for OPEC’s clout since last year has been the output cut deal struck with non-OPEC states. OPEC produces about 32 million bpd currently, while the "NOPEC" countries it has aligned with, notably Russia, Kazakhstan, Mexico and Oman, yield about 18 million bpd, of which 11 million bpd alone comes from the big bear, Russia.

OPEC’s strength – and weakness – has come from its diversity. Excepting perhaps diamonds, it has been one of the longest-surviving, and surely the most influential, producers’ groups. Although its Middle East members have inevitably dominated, Venezuela, Nigeria and, in earlier years, Indonesia have all had key roles. This has prevented it becoming sucked into the morass of Middle East politics or being seen purely as an Arab pressure group.

But there has always been tension between producers with large, long-lived reserves and relatively small populations – Saudi Arabia, Kuwait and the UAE – with those seeking to maximise short-term prices, such as Algeria and Nigeria. Saudi Arabia has sought to deter competitors with major undeveloped reserves, such as Venezuela in the 1990s and Iraq today, from making a "dash for growth" at its expense.

The motivation for joining OPEC today is very different from what it was in the 1960s – when the goal was to bargain collectively to extract better tax terms and control over pricing from the western oil firms. Production quotas and cuts came along in the 1980s. Now all are concerned by the threat from US shale, which cannot and will not ever align with OPEC.

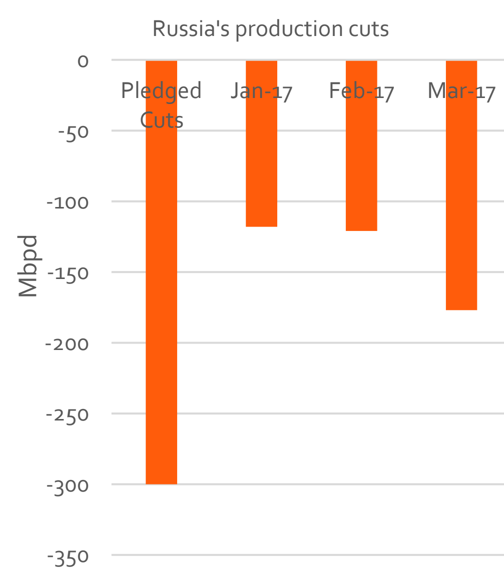
Equatorial Guinea hopes membership will revive interest in its upstream sector, as its main field, Zafiro, is in decline. Higher prices generally will help to revive worldwide exploration, but it is not clear how cutting production will draw investors to Malabo specifically.

Several new oil states are emerging that might also stake a claim: Ghana, Uganda, Kenya and Senegal in Africa and Guyana in South America. Sudan and South Sudan, both part of the "NOPEC" agreement, have previously talked about becoming formal members of OPEC.

From the bigger producers among the "NOPEC" states, Mexico did not join in the 1970s, and probably will not join now, because of its closeness to the US and its desire to turn around its declining output. Malaysia is not a net oil exporter any more, while Oman and Bahrain gain more from retaining freedom of action, and are already closely aligned through the GCC.

Russia and its former Soviet colleagues are, for now, happy with their informal alliance. Moscow, feeling itself head of a great power, is not likely to acknowledge parity with Riyadh. It gains more as a mediator, deal-maker and, when it suits Russian interests again, free-rider.

So while OPEC may well pick up a few smaller members, it is unlikely to do more than hold the line on its market share as shale expands. To retain its relevance and influence, it will have to continue, deepen and formalise cooperation with a willing "NOPEC" coalition. But herding these very different players in the same direction is a new challenge for the venerable organisation.



Source: IEA; Qamar Energy

Genel Energy another victim of Kurdish geology

By Robin Mills

A *version of this article appeared in The National newspaper on April 16, 2017*

To downgrade oil reserves once may be regarded as unfortunate; to do so twice looks like carelessness.

Genel Energy's stumbles in the Kurdish region of Iraq have sent the value of its shares down to just 7 per cent of their 2014 high. While serious for the company, this latest bad news is more of a blow for the region's economic and political aspirations.

Genel Energy, launched by the former BP boss Tony Hayward in 2011, cut its reserves at the flagship Taq Taq field, up in the Kurdish mountains, from 499 million barrels to 172 million barrels in 2016, then on March 28 again to 59 million barrels. Taq Taq production has tumbled from 116,000 barrels per day to 19,000 bpd.

The reservoir rocks are highly fractured, allowing wells to drain oil rapidly through the cracks. But the small pores in the reservoir rock matrix here, which hold the bulk of the oil in typical fields, are not contributing to production at all. Once the relatively small volume of oil in the fractures is drained, they fill with water.

Genel is not the only company to get into trouble with Kurdish geology. MOL Group's Akri-Bijeel block slashed its reserves by 99 per cent in 2015, Afren went bankrupt after writing down the Bardarash field in 2015 while DNO, Genel's partner in the Tawke field, had to suspend production at the Summail gasfield after it began producing water.

Genel still has hopes for the Kurdish region, via development of the large Miran and Bina Bawi gasfields. But progress on a gas sales agreement with Turkey has been painfully slow and the company needs a partner to contribute the capital for field development. The cash-strapped Kurdish government will also have to finance a processing plant and pipeline. Oddly, given strained relations with their main gas suppliers, Russia and Iran, the Turks have not been in a particular hurry.

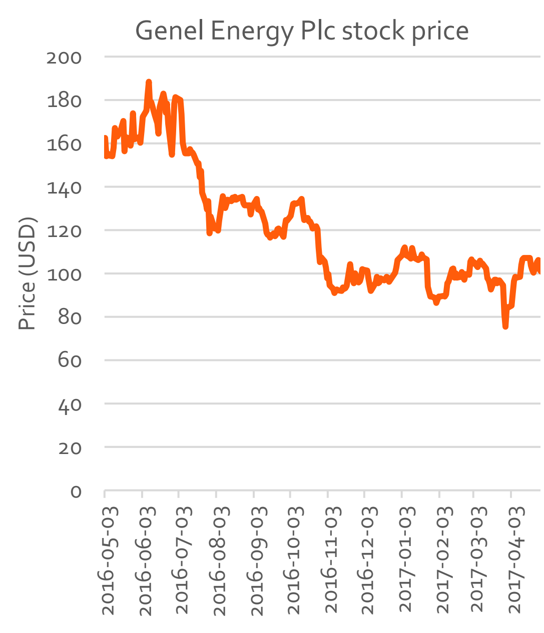
For the Kurds, Genel's decline has brought further problems. Already struggling with about US$20 billion of debt and long arrears to the oil companies, every barrel is vital. Khurmala, the northern part of the giant Kirkuk field, has been operated by the local Kurdish company KAR since 2009. Following ISIL's capture of Mosul, the Kurds took control of most of the other Kirkuk-area fields, which with Khurmala now yield about 350,000 bpd out of the region's 600,000 bpd production.

Some new fields are on the way. The most important is Atrush, operated by Abu Dhabi's Taqa, whose recently completed feeder pipeline allows it to produce 30,000 bpd. Heavy oil output from the giant Shaikan field has also grown, but Gulf Keystone, its operator, cannot do much more without further investment and regular payments in full from the government.

Growing dependence on the disputed front-line territories around Kirkuk for financial solvency casts a cloud over Kurdish national aspirations. Two of the region's three leading parties – the KDP, which largely controls the oil portfolio, and the PUK, which rules Kirkuk – have agreed on a referendum on independence. They have been held before but this time it seems more serious.

Baghdad, though, has not accepted the fait accompli of Kirkuk's change of control. As ISIL is gradually driven out of Mosul, the federal authorities' attention may shift to a resolution of matters with the Kurds. The northern part of the Kurdish region is effectively controlled by the KDP, which is under strong Turkish influence. But the advance of a Syrian Kurd-led alliance on ISIL's capital of Raqqa worries Ankara. Now the Russians, via a deal for their state champion Rosneft to buy Kurdish oil for an advance payment, have strengthened their role in the mix.

Geography and then geology have been the Kurds' friends in advancing their quest for nationhood. But now Genel's fractured rocks and fractured finances have added another obstacle in the way of piecing together a Kurdish state.



Source: Genel Energy Website; Qamar Energy

Air strike on Syria does not affect oil but moves market

By Robin Mills

A ***version of this article appeared in The National newspaper on April 16, 2017***

For a country that produces, transits and consumes little oil, Syrian news can certainly move markets.

Brent crude prices finished 1.3 per cent up on Friday after the US missile strikes against an airbase used by the regime of Bashar Al Assad to launch chemical weapons attacks. In the Syrian cauldron, this knee-jerk reaction may, nevertheless, not be wholly unfounded.

The US action might, as often before, prove to be a limited tactical action for demonstration purposes, helping the US president, Donald Trump, in his domestic troubles. Without any wider military or diplomatic strategy, it will resolve nothing in Syria's civil war.

However, if it does lead to an escalating campaign against Mr Al Assad, this will further implicate three major oil players; Iran, Iraq and Russia.

Events in Syria affect Iran, and vice versa. A heightened confrontation in Syria may convince Iranian hardliners that they cannot afford another term for the moderate president Hassan Rouhani, who is up for re-election on May 19. They are already unhappy over Mr Rouhani's attempts to reduce the influence of Revolutionary Guards-linked companies over the oil sector and cut them out of business deals.

For once, the conservatives appear to be aligning around a single candidate, Ebrahim Raisi, who is also a front-runner to become the supreme leader when Ayatollah Khamenei passes on.

The Rouhani administration has been open to negotiations over Syria that preserve Iran's national interests while possibly sacrificing Mr Al Assad, but the hardliners have tied their policy to the survival of the Syrian dictator.

What that means for the nuclear deal that has restored Iran's oil exports is hard to say. For now, its continuation probably depends more on US actions, including the upcoming renewal of sanctions waivers. It has not delivered the economic bonanza Iran had hoped for, but Mr Rouhani has probably done enough to win re-election – if the contest is fair.

Iraq, as so often, is largely a pawn. A strengthening of Russian air defences over Syria will hamper the US-led campaign against ISIL, also prolonging the recovery of Iraq's north. More seriously, if the embargo on its oil were to resume, Iran has several options to retaliate by disrupting Iraqi oil.

Neither Iran nor Russia will do anything to affect their own oil exports in response to the US action. The dynamics of renewing the OPEC/non-OPEC production cuts are largely independent of Syria. But a wider military campaign may well end up killing Russians on the ground. A less cosy relationship between Moscow and Mr Trump would keep sanctions on the Russian oil industry in place. Its reach in the Middle East has grown longer, in recent deals with the Kurdish region, Libya, Qatar and Egypt.

The market is well placed to cope with a mini-crisis. Global excess oil stocks may have fallen but remain unusually high. The OPEC limits have taken some supply off the counter, but that has the corresponding effect of creating spare capacity, available in an emergency. US shale has already been rebounding for several months in response to the OPEC deal.

A major shock, such as the disruption of the 3.5 million barrels that leave Basra every day, would be harder to accommodate. To eliminate its dependence on shipping through the Strait of Hormuz, Saudi Arabia is expanding its east-west pipeline to 7 million barrels per day from its current 5 million bpd, but this will not be ready until late next year.

A few pinprick air strikes do not change much in oil – yet. Indeed, crude gave up most of its gains on Friday. But when an understaffed, conflicted and incoherent administration, resolved to talk and act tough, steps up its involvement in a multi-sided civil war against two petroleum powers, a 70-cent jump in oil prices is not an overreaction.

US on Syria:

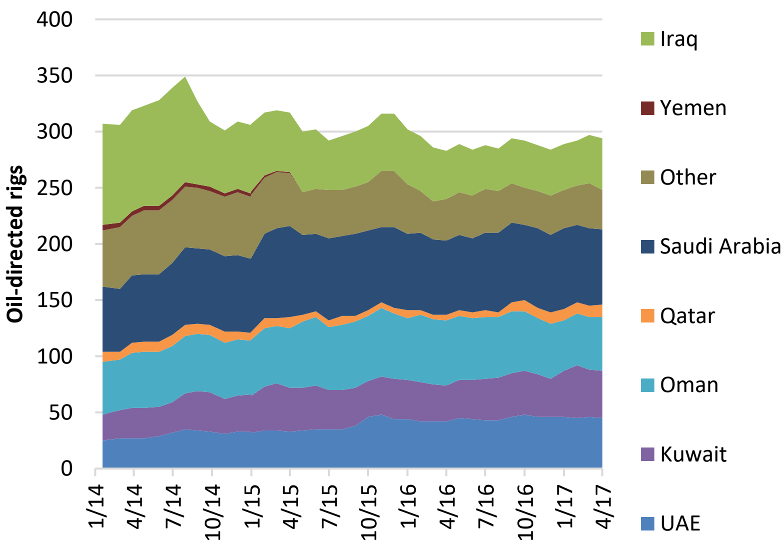
"Syria is no longer Syria. Syria is Russia and it's Iran."

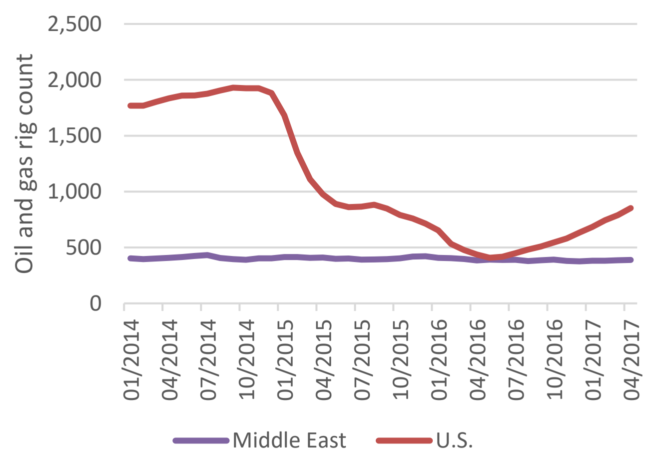
Syria on cooperation with the US:

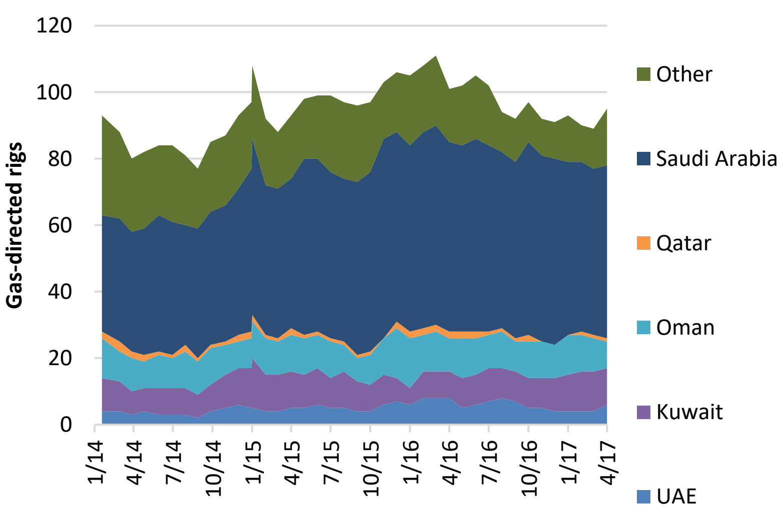
"In theory, yes, but practically, not yet, because there's no link between Syria and the United States on the formal level."

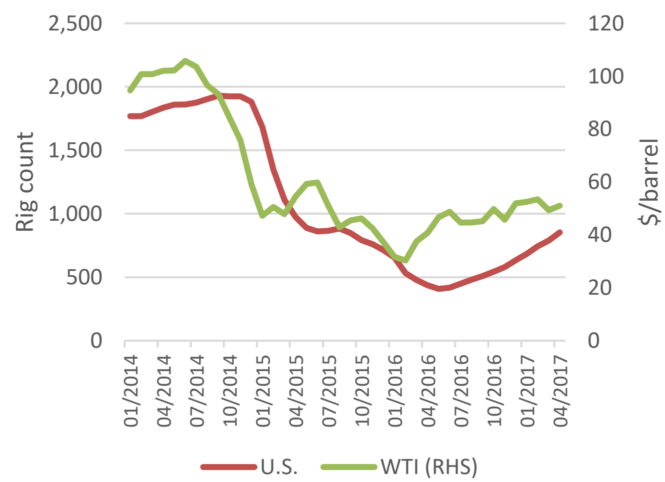
Rig count snapshot

- In April, the number of global gas rigs increased significantly by 13 to 203 whereas global oil rigs made up 710 (+1 rig from March).
- Egypt, Saudi Arabia and Abu-Dhabi each added 2 new rigs.
- The total ME gas rigs count rose by 6 units to 94. In the Asia Pacific region, the number of gas rigs increased by 5 to 55 units.
- From the beginning of the year the number of rigs in US increased by 170 units.
- In April, the US oil rig count reached its highest level since August 2015 at 853 rigs (+64 rigs from March).
- 389 total rigs for the Middle East (+3 units).









Rig count data: Baker Hughes; Oil price data: EIA

Fuel prices and subsidy reform

The UAE was the first GCC country to remove fuel subsidies in August 2015. The other GCC countries, Saudi Arabia, Oman, Bahrain, Qatar and Kuwait have reduced subsidies.

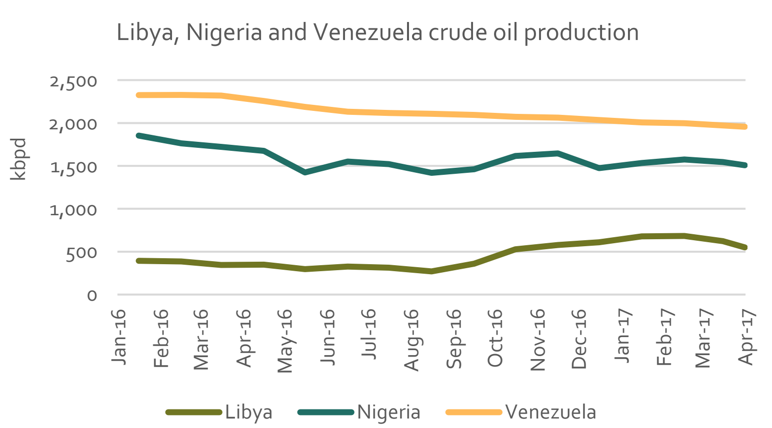
The following table represents May 2017 gasoline and diesel pump prices ($/litre) in the GCC countries.

	Old ($/litre)		New ($/litre)	
	Gasoline 95	**Diesel**	**Gasoline 95**	**Diesel**
Saudi Arabia	0.16	0.07	0.24	0.12
UAE	0.45*	0.47*	0.52	0.54
Qatar	0.37*	0.37*	0.47	0.44
Bahrain	0.27	0.42	0.42	0.37
Kuwait	0.21	0.36	0.34	0.36
Oman	0.46	0.39	0.51	0.53
US	0.62	0.57	0.64	0.53

**Previous month prices; Source: EIA; News Sources*

OPEC Watch

Strategy	Comments
Organization changes	• Created the Joint Technical Committee (JTC) to monitor adherence to the OPEC and NOPEC deal. • Saudi Arabia elected as OPEC president for 2017. • Equatorial Guinea expressing interest in joining, with the support of Saudi Arabia. The country produces on average 250 kbpd and has pledged to cut 12 kbpd with NOPEC.
Production limit (Libya and Nigeria exempt from deal)	• Saudi Arabia, UAE and Kuwait bear main burden of the 1.2 Mb/d cuts. • Saudi Arabia is the only countries meeting full cuts for the whole 4 months so far. • In April, Iraq cut production by 188 kbpd to 4.373 Mbpd. Iraq met 90% of pledged cuts in April. • Iran's production still did not reach the agreed OPEC limit of 3975 kbpd. Iran's reference is based on 2005 production. • OPEC is considering extending deal for 9 months if OECD inventories remain high. With Iran, Iraq and GCC countries supporting extension.
Support from non-OPEC (NOPEC)	• NOPEC agreed to reduce output by 558 kbpd, but has remained a compliance rate of less than 50% from Jan-Mar. • Russia announced it will cut full pledged 300 kbpd by the end of April and that it is gradually increasing its cuts. • Mexico was phasing in its cuts in Jan and Feb and has reached its target of full pledged cuts (-100 kbpd) in Mar.
Next OPEC meeting	• 25th of May 2017 - 172nd (Ordinary) OPEC Meeting Vienna, Austria. • Invitations extended to Norway, Egypt and Turkmenistan, but results on their cooperation not too optimistic



- Libya oil output slowly recovering, but attacks on energy infrastructure is still likely
- Venezuela oil production declining with OPEC cuts and a deteriorating political situation
- Nigeria is aiming to fight attacks on its pipelines by allowing the illegal refiners to stay in Delta region.

What's bad for Venezuela could be good for the oil market

By Robin Mills

A *version of this article appeared in The National newspaper on April 9, 2017*

In Venezuela, baking pastries can be a crime: wheat is meant to be reserved for cheap bread.

In a slightly different recipe, the country's oil exports are imperilled by its inability to pay for light oil to blend with its cheap heavy crude. Disaster has been cooking in Caracas for some time, in what might be the oil market's next upset.

The country's economy has been in slow collapse for several years, accelerated by the fall in oil prices. The IMF estimates inflation this year at 1,660 per cent and Venezuelans are suffering shortages of food and basic medicines. Oil service companies such as Schlumberger are cutting back activities because they are not being paid.

Along with the economic crisis goes a political one. The legislature has been threatening to withhold the approval of oil joint ventures that the president, Nicolas Maduro, has offered in attempts to raise hard cash. The politicised supreme court overruled it, in a move the opposition considered to be approaching dictatorship, but has now been forced to back down.

This dish also suffers from too many cooks. The country's troubles draw in three world powers, as investors, financiers and customers of Venezuelan oil: China, Russia and the United States. Their interests are at odds.

Under the former president Hugo Chavez, China was seen as the key partner. By early last year, Caracas owed the Chinese about US$30 billion in oil-backed loans, but now it is about 9 million barrels behind in shipments, with reasons including its inability to pay for ship cleaning and port fees.

More recently, it is Russia that has become the leading foreign oil investor. It entered in a major way in 2008 and since then the state champion Rosneft has consolidated its influence. Its biggest venture, PetroMonagas, exploits the Orinoco Belt's thick, extra-heavy crude. Last year, Rosneft paid $500 million to increase its stake to 40 per cent, the legal maximum. It was this, and an offer of 10 per cent in the nearby Petropiar, that brought the legislature's challenge.

Moscow's advocacy of production cuts has probably been more welcome to Venezuela than any other OPEC member. Venezuela agreed to a target of 1.972 million bpd production, a 95,000 bpd cut, not onerous given that output has been steadily sliding anyway. It was slightly over producing in February but projections see natural decline taking it to 1.7 million bpd to 1.8 million bpd by the end of this year, taking some strain off other OPEC members.

Russia is also the regime's key financier now. Rosneft alone has lent $4bn to $5bn. Mr Maduro, who in January awarded Russia's president, Vladimir Putin, the inaugural Hugo Chavez Prize for Peace and Sovereignty, said at the signing of the loan agreement: "We must thank life that Russia and the world have a Vladimir Putin."

Venezuela owns an important US refining and fuel-retail subsidiary, Citgo, and has pledged half its shares as collateral for the loans from Rosneft. Were it to default, the prospect of the Russian state firm owning American refineries would be political dynamite in Washington.

A further twist comes with next-door Guyana, where ExxonMobil, which the US secretary of state, Rex Tillerson, headed until recently, has found several billion barrels of oil offshore. But Venezuela claims much of western Guyana as its territory, including the adjoining waters, a potential flashpoint and rallying cry for the embattled Maduro government.

China wants stable oil supplies, its loans repaid and a steady market for its exports. Russia welcomes the chance to gain political influence in the US's hemisphere, and oil investments that one day may pay off or be a source of leverage. The administration of Donald Trump, which has not yet appointed an ambassador, has not defined its policy towards Venezuela.

A default and complete collapse would not benefit any of them. But if Venezuela's oil exports were halted by bankruptcy, strikes or civil unrest, it would do more than the OPEC deal to rebalance the market

Key MENA Energy Scorecard

MENA energy price reform	🟢	⇔	Oman fixes fuel prices amid protests of high prices in front of the Ministry of Oil and Gas; Kuwait increased prices of electricity and water for May 2017 - upward pressure in inflation expected.
MENA unconventional oil & gas	🟠	⇔	Algeria will not exploit shale gas in the short term according to its Energy Minister mainly due to lack of finances and the anti-shale drilling protests; Saudi Arabia's Jalamid field will be the first shale gas project, with 197 MMcf/d sent to the Wa'ad Al-Shamal mining complex by 2018, only a fraction of Aramco's targeted 3990 MMcf/d unconventional gas output by 2026.
MENA alternative energy	🟡	↑	25-year power purchase agreement signed by Egypt's Electricity Ministry and Norway's Scatec for six solar projects in southern Egypt totalling 400MW; Saudi Arabia prequalifies 34 companies for first round of its National Renewable Energy Programme to develop a 300MW solar PV plant in Sakaka; ENOC has opened UAE's first solar-powered petrol station that can generate up to 120 kW with excess power diverted back into the grid.
MENA nuclear power	🟡	⇔	Iranian and Chinese companies planning to sign first commercial contracts to redesign Iran's Arak nuclear plant (40 MW) so it cannot yield fissile plutonium usable in a nuclear bomb; Abu Dhabi's $24.4bn Baraka nuclear power plant reaches financial close; four units (total 5.6GW by 2020) are now under construction. First is largely complete and is expected online in 2017; Egypt plans to sign agreement with Russia to establish 4800 MW nuclear power plant in Dabaa for $30bn.
Energy infrastructure security	🟠	⇔	Kirkuk-Ceyhan Pipeline explosion further disrupts Kurdish production in April; Some oil companies operating in Venezuela pull expats as unrest escalates; Tunisia to deploy military in southern region to protect oil/gas infrastructure against attacks from militants in neighbouring Libya; El Sharara oil field in Libya resumes production after attacks and ENI operated El Feel oilfield will restart production. By the end of April, oil output reached 760 kbpd. Gas pipelines from Libya's Wafa oilfield to local power plant and Mellitah gas export terminal blocked by armed group.
OPEC production	🟡	↓	In March, OPEC oil production decreased by 153 kbpd from the previous month to average 31.93 Mb/d; In Libya, significant decrease by 60.8 kbpd to 622 kbpd; In Iran, Nigeria, UAE and Venezuela oil production declined by around 30 kbpd each; Venezuela production likely to decline further with increased political tensions.
East Mediterranean gas commercialisation	🟡	↑	EU countries (Cyprus, Greece, and Italy) and Israel agreed to pursue gas pipeline from offshore Israel to the EU to help diversify supplies away from Russia; Qatar Petroleum and ExxonMobil signed exploration contract with the Government of Cyprus for offshore Block 10.
Egypt energy reform	🟠	⇔	Price of natural gas to the industrial sector increased by about 50% as a result of floating Egyptian pound against US dollar; US dollar currently stands at EGP 14, while at the time of signing the agreement the price was EGP 8.88[1].
Kuwait developments	🟡	↑	Kuwait National Petroleum Co (KNPC) plans to invest $40 billion by 2022 on several key projects, including the new Al Zour refinery and a clean fuels project; Kuwait Petroleum Company (KPC) backing away from the purchase of 50% of Indian petrochemical company ONGC Petro Additions Ltd- the talks are shifting to Aramco.
Abu Dhabi developments	🟡	↑	Mubadala Investment Company (total assets of $125 billion) began operations on May 1 after merger with IPIC; ADNOC signs agreement for 5.86 million bbl strategic crude oil reserve in India.
Iraqi Kurdistan (KRG) developments	🟠	↓	KRG exports dropped in March, to ~515 kbpd down from an estimated ~599 kbpd in February from pipeline disruptions and maintenance; Since last year to April, KRG closed 61 illegal refineries, but there are still 129 more to go; Rosneft is estimated to pay $1 billion for commitment to buy Kurdish oil from now until 2019.
Federal Iraq developments	🟠	⇔	Iraq's March crude oil production fell slightly 8.5 kbpd to 4.402 Mb/d according to secondary sources and Oil Ministry is claiming full compliance to cuts (since its reference production is higher than OPEC's figure at 4.422 Mb/d); Egypt has agreed to import 1 million bbl of Iraqi oil per month. First oil shipment from Iraq to arrive in May; South Oil Company renamed Basra Oil Company; Dhi Qar Oil Company now split from the South Oil Company.
Iran developments	🟡	↑	In March Iran's crude oil production dropped by 27.7 kbpd to 3.79 Mb/d; Five new phases of the South Pars field (Phases 17-21) were inaugurated. Oil Minister Zanganeh expects output from South Pars to reach 22.3 bf/d by the end of March 2018; Iranian deputy oil minister announced that it requires $185bn worth of energy investments for its plans in which $85bn are planned to be invested in the upstream oil sector by 2021.

🟢	Very positive	↑	Improvement in last month
🟡	Positive	⇔	No change
🟠	Negative	↓	Deterioration in last month
🔴	Very negative		

b/d = barrels per day
Bcf/d = billion cubic feet per day
Tcf = trillion cubic feet
MMcf/d = million cubic feet per day
Mb/d = million barrels per day
kbpd = thousand barrels per day

[1] Daily News Egypt

About Qamar Energy – what we do

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

Leading-edge energy consulting and advisory

Our professionals have more than 20 years of energy experience

Experience across the energy value chain

Energy market intelligence

Our clients

Private investors

Investment banks

Majors and International Oil Companies

Oil traders

Oil service companies

National Oil Companies and governments

About Qamar Energy- who we are

Robin Mills spoke at the Platts Global Oil Summit in London, 11th May on Asian oil demand.

He also attended the EU-GCC Clean Energy Network in Bahrain on 21st May on renewable energy integration.

Robin Mills

CEO

Robin established Qamar Energy to meet the need for regionally-based Middle East energy insight and project delivery. He is an expert on energy strategy and economics, described by Foreign Policy magazine as **"one of the energy world's great minds".** Robin is the recipient of the 2016 'Energy of Words' Global prize at the St. Petersburg International Economic Forum.

Prior to this, he led major consulting assignments for the EU in Iraq, and for a variety of international oil companies on Middle East business development, integrated gas and power generation and renewable energy.

Robin worked for a decade for Shell, concentrating on new business development in the UAE, Qatar, Iraq, Iran and other Middle Eastern countries, when he was described as the "Shell expert on Iran".

He subsequently worked for six years with Dubai Holding and the Emirates National Oil Company (ENOC), where he advanced business development efforts in the Middle East energy sector, including major gas import schemes for Dubai and upstream developments in Iraq, Qatar, Yemen, Pakistan, Turkmenistan, Algeria and elsewhere.

He is the author of two books, *The Myth of the Oil Crisis*, which evaluates global long-term oil supply, and *Capturing Carbon*, the first comprehensive overview of carbon capture and storage for the non-specialist. He is the columnist on energy and environmental issues at The National newspaper (Abu Dhabi), and comments widely on energy issues in the media, including Foreign Policy, the Financial Times, The Atlantic, CNN, CNBC Arabiya, BBC, Al Jazeera, Bloomberg, Sky News and others.

Robin authored the ground-breaking study, *Sunrise in the Desert: Solar becomes commercially viable in MENA*, on solar power competitiveness in the Gulf (with PWC/Emirates Solar Industry Association) as well U*nder the Mountains: Kurdish Oil and Regional Politics* for the Oxford Institute for Energy Studies and *Risky Routes: Energy Transit in the Middle East* for the Brookings Doha Center.

He has been Non-Resident Fellow for Energy at the Brookings Doha Center. He holds a first-class degree in Geology from the University of Cambridge, and speaks Arabic, Farsi, Dutch and Norwegian.

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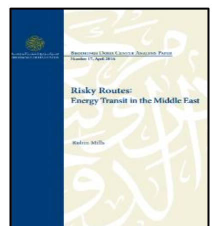

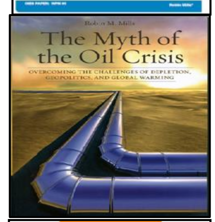

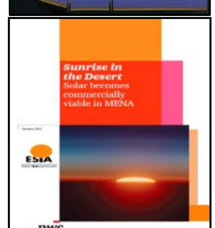

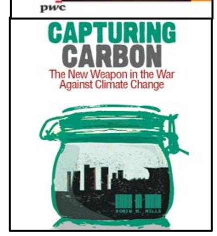

Robin Mills receives the 2016 'Energy of Words' at the Global Energy Prize in St. Petersburg, Russia.

For prize announcement click here