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Energy Outlook

THIRD QUARTER 2018

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ALL EYES ON ASIA

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FAIL TO PLAN, PLAN TO FAIL

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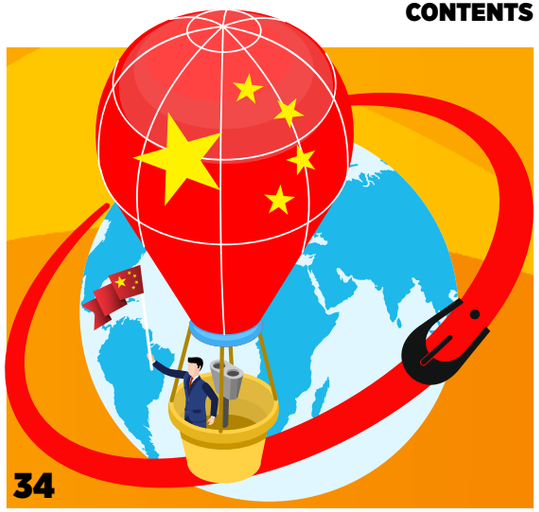

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IMO 2020 – No Ifs, Ands or Buts!

IMO 2020 is the new Sheriff in town (minus the legal powers). But how effective will it really be?

BY SEAN EVERS
Managing Partner, Gulf Intelligence

WHAT CAN YOU DO IN A YEAR AND A HALF? That's not even two football seasons.

Some might say, not much!

Well, that is how long the world's oil and shipping markets have left to adjust to the International Maritime Organization's (IMO) ruling to reduce the sulfur cap from 3.5% to 0.5% at the start of 2020. "The change will be immense for the shipping, refining and trading industry, yet there is no obvious leader among them," said Dave Ernsberger, Global Head of Energy Pricing, S&P Global Platts.

The market's search for a silver bullet to post-2020 bunkering keeps coming up short.

The one thing that can be achieved over this short period is among the most important ingredients repeatedly identified in Gulf Intelligence Industry Surveys – crystal clear clarity by port authorities across the world that they intend to fully implement the 2020 rule. This means following the rulebook 100% to the letter of the law – no ifs, ands or buts.

In the absence of such clarity there appears to be a lot of humming and hawing, with many stakeholders betting against the commitment by governments to police and penalize. The common refrain is that IMO 2020 has no teeth as it has no enforcement authority, and consequently many of the parties are standing on the sidelines before opening their wallets to spend the billions of dollars required to get ready.

Stakeholders along the value chain – from refiners, traders, ports to shipowners – need to accelerate their alignment if they want to make compliance a reality.

There is no doubt that the risk of carriers cheating with sulfur requirements to benefit financially is a real threat to law-abiding shipowners. That is why port authorities and the governments that stand behind them must commence a massive communications campaign to erase any doubt that IMO 2020 is the new Sheriff in town! ■

OIL

Another Face Emerges

A Golden Opportunity for the Middle East

BY DAVE ERNSBERGER
Global Head of Energy Pricing, S&P Global Platts

Eighteen months. That is how long the world's oil and shipping markets have left to adjust to the International Maritime Organization's (IMO) ruling to reduce the sulfur cap from 3.5% to 0.5% at the start of 2020. The change will be immense for the shipping, refining and trading industry but could also present opportunities for Middle East ports who have invested in cutting edge infrastructure.

The new legislation will force ship owners to switch to using cleaner, more expensive alternatives to High Sufhur Fuel Oil (HSFO). They also have the option of installing scrubbers to continue using HSFO, but the high up-front capital cost of fitting the technology has deterred many in the shipping industry.

The echo of surprise that has reverberated around the market in the Middle East and beyond since the ruling was announced in October 2016 – a 2025 start date was on the cards – has finally fallen silent. There is widespread acceptance that there will be no last-minute grace period. Stakeholders along the value chain – from refiners, traders, ports to shipowners – are now united in their efforts to make compliance an affordable reality in less than two years.

Adjusting to the most disruptive event ever to hit the shipping, refining and trading industry will be a tall order and carries a hefty price tag, especially for beleaguered industries, such as shipping. S&P Global Platts Analytics forecasts the impact of these changes will increase the cost of bunker fuels and onshore fuels, including diesel and jet. It will also uplift crude prices by at least $7 a barrel in 2020 in our conservative estimate – approximately a 10% gain on current prices. But the higher costs for consumers will be a boon for refiners and some others in the industry with a total shift of roughly $1 trillion over five years.

> **"As 2020 nears, Middle Eastern refineries will be able to tweak their crude palette to support rising demand for LSFO with relative ease."**

The sweeping change will be evident from mid-2019 and will be disruptive and even chaotic at times in 2020, though most of the price changes will subsequently ease and be largely gone by 2025, according to a S&P Global Platts Analytics research note to clients. The net effect will be to temporarily increase most light product prices and freight costs in a shift of magnitude and breadth that the market has not yet fully grasped.

In May this year, investment bank Goldman Sachs was reportedly planning to help ship owners finance the installation of scrubbers on board their vessels to allow them to continue burning HSFO after sulfur limits are tightened in 2020.

ACE CARD

What many see as a dark cloud of uncertainty could have a silver lining for some, including the UAE's Port of Fujairah and the wider Middle East. The port is the world's second largest bunkering hub – Singapore has the top spot – and sits at the heart of the world's maritime, refining and oil producing crossroads, between east and west.

Speedy steps to comply by 2020 could deepen Fujairah's global reputation as a world-class and world-relevant port. Showcasing an ability to flex to shifting market dynamics is pertinent as competition to capture market share along the coveted east-west trade route intensifies. Oman's Port of Duqm and Pakistan's Gwadar port are both widening their influence, for example. In readiness, Dubai-based Earth Wealth Energy plans to build a 360,000 cubic meters of fuel oil storage and treatment facility at the Port of Fujairah. This includes 12-15 storage tanks and a facility to treat up to 12,000 barrels a day of fuel oil to reduce the sulfur content. The blending and fuel quality checks required for Low Sulfur Fuel Oil (LSFO) means more storage and onshore testing facilities are part of the port to manage the rise in volumes post-2020.

Fujairah has already declared its support for IMO 2020, which is in line with energy stakeholders' expectations. Regional port owners should take the lead when it comes to preparing a post-2020 roadmap, 56% of respondents said in a GIQ Industry Survey in April. A quarter of respondents said ports' enforcement of the ruling will also help accelerate the establishment of a regional oil products benchmark; a long-discussed effort that is gaining considerable traction. Associated changes are already underway, with S&P Global Platts' plans to publish daily assessments for marine fuels reflecting a maximum sulfur limit of 0.5% globally from January 2019.

REFINING REWARDS

The Middle East has another ace card thanks to good timing. Efforts over the last decade to leverage its refining potential have paid off, as its portfolio of modern and sophisticated refineries is growing as Europe's historically firm grip on the industry diminishes. For example, an expansion to the UAE's Ruwais refinery brings capacity up to 900,000 barrels a day and Kuwait's 615,000 barrels a day Al Zour refinery is expected to start up. Both are on the list of the worlds' top ten largest such facilities. As 2020 nears, Middle Eastern refineries will be able to tweak their crude palette to support rising demand for LSFO with relative ease. This not only supports Fujairah's compliance, but sharpens the port's competitive edge against other ports facing supply shortages.

The financial and logistical tension in the market to be ready for the deadline of the IMO's ruling is clear. But there may be more surprises in store, for quick and strategic action by the Port of Fujairah and the wider Middle East could reveal that the strain is a golden goose in disguise. ■

2025
The alternative start date for IMO 2020 added another five years to the timetable - an option that the majority of the market thought was most likely.

2nd
The Port of Fujairah is the world's second biggest bunkering hub. Singapore has the top spot.

615,000 b/d
The capacity of Kuwait's Al Zour refinery - due to start by 2020 - is just one of the Middle East's mega refining projects that sharpens its competitive edge as demand for LSFO rises.

10%
IMO 2020 could uplift crude prices by at least $7 a barrel in 2020 – approximately a 10% gain on current prices.

IMO 2020

New Fuel Options Gain Pace

BY JOHN ROPER
Managing Director, Head of Middle East, Uniper Global Commodities SE

For the first time since engines replaced sails in the early 19th century, the operational status quo of global shipping is being rewritten. The International Maritime Organization's (IMO) ruling to reduce the sulfur cap for bunker fuel from 3.5% to 0.5% by 2020, not 2025, means an overhaul of the industry facilitating 90% of the world's trade, including energy commodities – and quickly.

2020 is a very short eighteen months away for energy stakeholders to adapt to one of the biggest disruptions in the shipping industry in living memory. High sulfur fuel oil (HSFO) was used for approximately 70% of the world's bunker fuel in 2016; volumes that will not be compliant post-2020. The impact of the IMO ruling could result in a demand drop of as much as 2.1 million barrels per day in HSFO accounting for nearly 30% of global residual fuel oil demand. No entity along the value chain – from refineries, trading, logistics, ports to shipowners – in the Middle East and beyond will be untouched.

Front runners

A silver bullet to post-2020 bunkering remains elusive. But among the plethora of options, low sulfur fuel oil (LSFO) and liquified natural gas (LNG) bunkering are emerging as preferred options for energy stakeholders seeking an economic and environmentally sustainable route. Plans to increase the use of both bunkering options are under discussion in the Middle East. The UAE's Port of Fujairah, the world's second largest bunkering hub, is already developing LSFO bunkering solutions and in the GCC, floating storage and regasification units (FSRU) and LNG import projects can be designed to facilitate such bunkering.

LSFO ticks the right environmental boxes and is arguably the Middle East's easiest shortcut to meeting the IMO's ruling, as the region's portfolio of dedicated and sophisticated refineries can adjust their crude palettes to 0.1% - 0.5% sulfur relatively easily. LNG bunkering also contains almost no sulfur, can be priced off oil markers, is a

> **"Among the plethora of options, low sulfur fuel oil (LSFO) and liquified natural gas (LNG) bunkering are emerging as preferred options for energy stakeholders seeking an economic and environmentally sustainable route."**

proven technology and has lower greenhouse gas (GHG) emissions. The green credentials of both fuels also support Middle Eastern governments' commitment to the Paris Agreement; an important consideration when so much of the region's energy assets are state-owned or associated.

As with any major change, some hurdles must be navigated first; this is not a negative, but a sign of progress. The lines of communication between refineries, ports and ship owners need to improve to accurately gauge the need and subsequent supply of LSFO supply from 2020. The same applies to minimizing the variability of the blend quality between suppliers all over the world. Meanwhile, LNG bunkering tends to suit fixed maritime routes that already have supporting infrastructure in place, both at ports and via FSRUs. To broaden the application of LNG bunkering post-2020, improving this level of flexibility to ensure roaming ships are catered for must be a priority. Advocates of LNG bunkering must also address the question of supply. Rising power demand means the region's gas imports are growing; LNG imports grew by more than 380% in the last three years, S&P Global Platts said last year. Energy stakeholders need to work out the logistics and maths of sourcing high volumes of LNG for bunkering amidst domestic and industrial needs.

Other bunkering options include using HSFO, alongside scrubbers or exhaust gas cleaning systems, which are not considered an environmentally-friendly route long term. Additionally, the cost of investing in scrubbers can range between $1 million - $9 million per ship, depending on its size. Ship owners are currently reluctant to make these investments as the industry's balance sheets struggle out of an environment with narrow profit margins. Alternatively, ship operators can fail to act and pay the penalties. While there is no global game plan – solutions depend on individual needs – there is a consensus that conformity for post-2020 bunkering will help trim overall costs and improve energy supply and security.

It is still better to feel the financial squeeze today than risk financial sorrow in the future; compliance to IMO 2020 carries a steep price tag in a cash-strapped energy industry. Consultants Wood Mackenzie estimated last year that a full compliance scenario would incur an increase of up to $60 billion per year in global bunker fuel costs from 2020, while S&P Global Platts said the impact of these changes will reach $1 trillion over five years. The line between winners and losers in the early 2020s could be well-defined between those who can afford to evolve and those who cannot.

Each point should serve as a reminder that the emphasis on making bunkering 'greener' will only intensify; therein lies the value of LSFO and LNG. Leveraging either or both will relieve these intensifying pressure points. They also serve as a good starting point for energy stakeholders to hedge against more shifting sands; more climate-related mitigations in the energy market are inevitably around the corner. ■

> **"The line between winners and losers in the early 2020s could be well-defined between those who can afford to evolve – and those who cannot."**

$60bn
Abiding by the IMO 2020 rulebook could translate into an increase of up to $60 billion per year in global bunker fuel costs.

2.1m b/d
The IMO ruling will trigger a slide in demand for HSFO, potentially up to 2.1 million barrels per day.

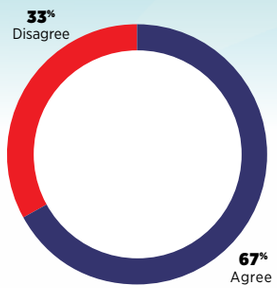
$9m
All bunkering alternatives with lower sulfur levels carry a hefty price tag. Depending on the size of the ship, the bill for investing in scrubbers can be between $1-$9 million, for example.

GIQ SURVEY
Q2 2018

How Should the Middle East Leverage IMO 2020 to Create a Regional Oil Benchmark?

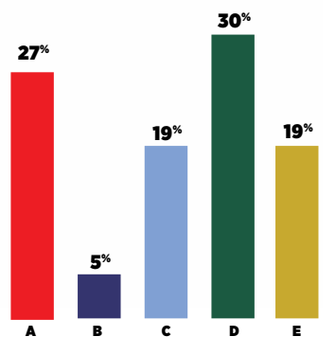
Plans to launch an independent oil products benchmark in the Middle East – the world's biggest oil exporting region – are rapidly gaining pace. IMO 2020 could be a key accelerant.

The Mean of Platts Arab Gulf (MOPAG) netback arrangement – prices derived in Singapore minus freight resulting in the Middle East price – is no longer fit for purpose. It can lead to highly volatile premiums and discounts in the Middle East spot markets, which today trade as a differential to MOPAG.



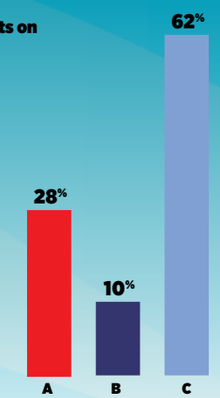
How can the Middle East leverage IMO 2020 to create a Fujairah/ regional oil products benchmark?

A. Build significant capacity to refine low sulfur fuel
B. The Gulf's national shipping fleets should be world leaders in complying with IMO 2020
C. Regional ports should become robust enforcers of IMO 2020
D. Transparency, transparency and more transparency
E. Regional NOCs to make more oil available for spot market



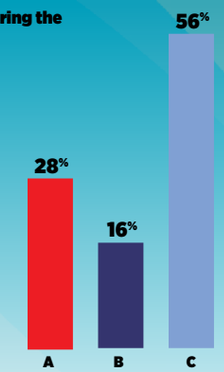
The Middle East should focus its efforts on establishing a benchmark for:

A. Fuel oil
B. Gas oil
C. Both

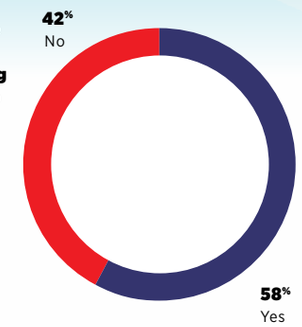


Who should take the lead in preparing the roadmap for IMO 2020?

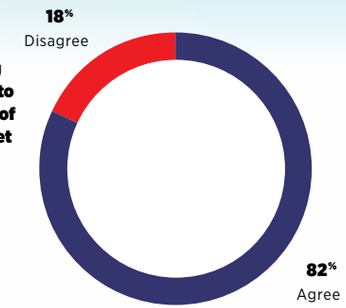
A. Shippers
B. Refiners
C. Port Authorities



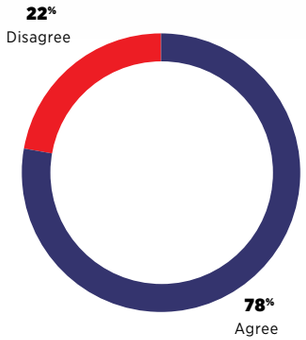
Will there be enough marine gas oil (MGO) and marine distillate oil to meet shipping demand when the sulfur cap comes into force in 2020?



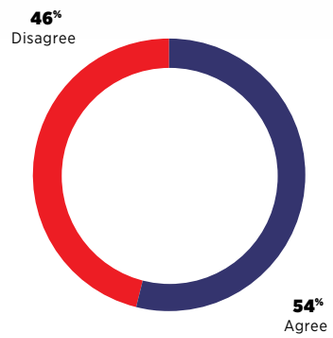
Creating a benchmark for Middle East oil products through a pricing reporting agency (PRA) is necessary to facilitate the development of a healthy derivatives market and mitigate financial risk.



The combination of more expensive bunker fuel and the high cost of retrofitting scrubbers will penalize owners of older shipping fleets over those of younger fleets.



The effect of IMO 2020 will shift the destination ports for crude tankers and loading ports for product tankers as changes within the global refining sector play out.



EOR: Old Challenge, Fresh Eyes

BY ABD MALIK JAFFAR
Regional Director PETRONAS Subsidiaries Middle East, PETRONAS

A quandary lingers in Middle Eastern oil companies' boardrooms. Extracting black gold is becoming more challenging yet energy demand, populations and political momentum for low-carbon policies are all rising. How to master this tightrope to ensure energy security? Take enhanced oil recovery (EOR) up a notch.

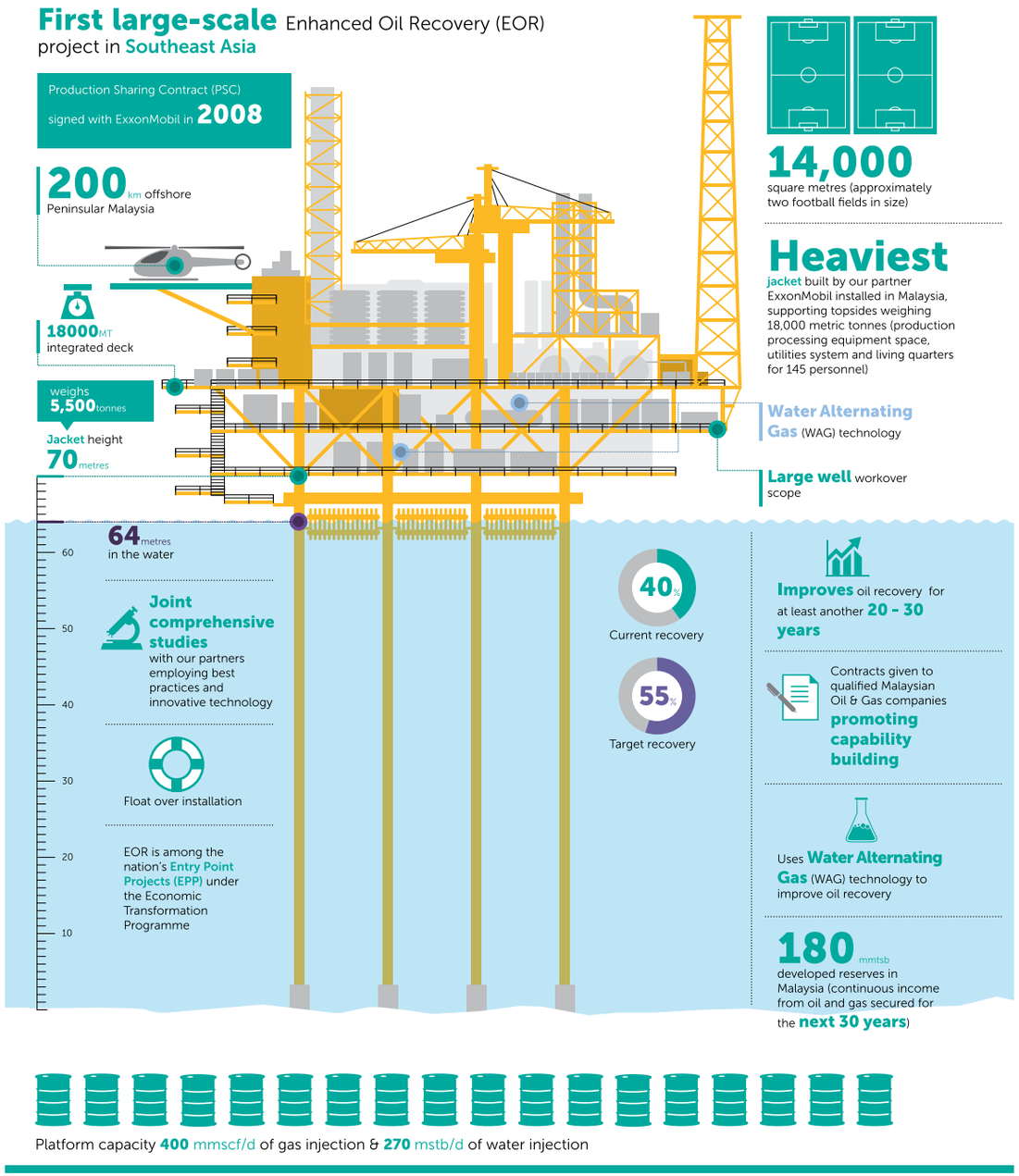
For nearly a century, EOR technologies have been interwoven into upstream operators' strategies. Thermal recovery, solar-powered, steam injection, miscible gas injection, chemical recovery and Co_2 injection are all today on the 'menu' of popular options.

But as the pressure points collide, EOR must enter a new chapter of growth and innovation. Transparency Market Research expects the valuation of the global EOR market to soar from $38.1 billion in 2012 to $516.7 billion by 2023. PETRONAS alone has identified more than 1 billion barrels of oil from 14 fields for EOR projects and spearheaded TAPIS, the first large-scale EOR project in Southeast Asia.

EOR is also integral to the Middle East keeping a firm grip

"For nearly a century, EOR technologies have been interwoven into upstream operators' strategies. Thermal recovery, solar-powered, steam injection, miscible gas injection, chemical recovery and Co_2 injection are all today on the 'menu' of popular options."

About TAPIS Enhanced Oil Recovery (EOR)



> **"The degree of commitment to the EOR market today will determine who plays and secures a leading role in the 2020s and who remains unseen in the wings."**

on its crown as the epicenter of the world's oil market. It is no longer considered an optional aid but an essential tool that marries ambitious production forecasts with barrels above the ground. The handling of the region's fields – some of the world's most mature and challenging – must evolve for BP Outlook's forecast to ring true. The energy major expects the Middle East to be the largest oil producer by 2040, accounting for over 34% of global liquids production. Maintaining a sharp competitive edge is especially paramount as international competition mounts, notably from the US' shale revolution.

EOR takes place after primary and secondary oil recoveries. Oil extracted via primary recovery accounts for 5% to 15% of the total reservoir while secondary recovery can extract about 20% to 35% of the total oil present in the reservoir, according to Future Market Insights. But installing EOR technology means another 25%-35% of oil can be extracted. Consider that each percentage point can translate into millions of US dollars on the trading floor; EOR technologies literally pay their way.

A handful of innovative EOR projects that support the green obligations of the Paris Agreement offer a template for the growing market. EOR 2.0 is gaining traction. One such project is Miraah – meaning 'mirror' in Arabic. A ground-breaking collaboration between state-owned Petroleum Development Oman (PDO) and GlassPoint to create one of the world's largest solar plants. The generation of 1,021 MW of peak thermal energy will mean 6,000 tons of steam a day is directed towards EOR efforts at the sultanate's Amal field. This is not the height of Oman's ambitions; PDO aims for 25% of its oil production to be supported by EOR by 2025.

In the UAE, Abu Dhabi National Oil Company (ADNOC) started the world's first commercial steel carbon capture utilization and storage project in 2016. The captured CO2 is injected into Abu Dhabi's maturing oil fields for EOR. And the company announced plans in January to expand its carbon capture program to cater to a six-fold increase in the use of CO2 in maturing oilfields over the next decade, further supporting EOR. ADNOC also aligned with the Centre of Integrated Petroleum Research (CIPR) in Bergen University, Norway, last October, to conduct applied research into EOR techniques that could extend the life of ADNOC's oil reservoirs. The agreement marks another stepping stone in the company's EOR journey since 1996, with the aim of recovering up to 70% of oil. Between 10-15% of ADNOC's oil is currently recovered with EOR technologies, primarily via miscible gas injection.

Oman and Abu Dhabi's journey illustrate the increasingly dynamic tone of the Middle East's EOR market. But there is a catch; great effort precedes great reward. Up to a decade can pass between laboratory tests and on-site application of new methods; redesigns and pilots especially linger on the calendar. Stakeholders must shorten this timeline – EOR technologies only prove their worth when utilized on site – to gain a first-mover advantage, especially in the largely unexplored field of lower-carbon technologies.

Pooling expertise and funds can hasten progress. Gulf states' cooperation on developing bespoke regional EOR solutions is a good starting point, according to 95% of respondents to a GIQ Industry Survey last October. A united voice could lower some of the hurdles: concerns over data confidentiality and intellectual property and differing crude and reservoir qualities, for example. Identifying solutions would also give a stamp of credibility to many Gulf countries' goal to transform into knowledge-based economies, as per their National Visions. The economic and diplomatic value of being able to 'export' expertise to help others manage the nuances of their fields will only become more valuable as energy demand climbs to meet the 27% rise in the global population to 9.7 billion by 2050.

Staying atop the tightrope requires a holistic approach; EOR is not a silver bullet. But it does play a leading role in ticking the economic and environmental checklist of sustainable oil production. The degree of commitment to the EOR market today will determine who plays and secures a leading role in the 2020s and who remains unseen in the wings. ■

LNG: SPECIAL REPORT

How to Establish a Liquid, Flexible and Transparent Middle East LNG Market by 2025?

By

Establishing a Liquid, Flexible and Transparent Middle East LNG Market by 2025

One need unites all liquified natural gas (LNG) producers' new rulebook: flexibility. As competition intensifies, producers must remain relevant by adapting to different volumes, timings and destinations with minimal fuss and cost. Flexibility of delivery will maximize the value of Middle Eastern LNG exports, the majority (68%) of participants said in a survey by the Middle East LNG Institute last year. One year on and this sentiment has only intensified; momentum for significant change is building.

One illustration of the shifting tides is that customers are now pushing for shorter contract lengths to help manage price and volume preferences. The average length of a LNG supply contract was approximately 21 years in 1994 – it fell to six years in 2017. The infamous destination clause (buyers are restricted from reselling LNG outside a designated market) are also increasingly absent from the Middle Eastern exporters' negotiating table, especially for coveted Asian clients. The same applies to the growth of the floating storage and regasification unit (FSRU) market. The $240 – $300 million price tag of a new FSRU typically represents 50-60% of the cost for an onshore terminal and can be delivered in half the time at 27–36 months, estimates the Oxford Institute for Energy Studies (OIES).

40%

The Middle East holds 40% of the world's natural gas reserves; the majority lies under Qatari and Iranian soil.

Tick Tock

Global energy pricing agency S&P Global Platts expects global demand for LNG bunkering to rise to 28-29 million metric tons by 2030. A supportive political undertone is also encouraging the market's growth. LNG is considered the 'greenest' hydrocarbon and is emerging as an agent of positive change in meeting the low-carbon commitments laid out by the Paris Agreement. The number of LNG consuming countries has more than doubled from 15 in 2005 to 39 in 2017, according to the International Energy Agency (IEA). As the pace of growth accelerates, it is a race against the clock to update the market architecture to leverage the Middle East's competitive edge. More than a third (39%) of survey respondents said the Middle East can develop a gas hub with freely traded and transparent prices by 2025, while others (37%) said 2030 onwards was more viable. Without proactive steps now, neither timeframe will be accurate.

Competitive Future

The Middle East will remain the largest LNG exporter up to 2040, representing 25% of global LNG exports, according to the BP Outlook 2018 report. While this represents significant market share, it is 10% less than the 35% that BP detailed in its 2016 report. Why? In short; the US and Australia. Both are fast emerging as robust competitors to the Middle East's LNG ace: Qatar. The country's crown as the world's biggest LNG exporter is under threat within the decade. By 2022, the IEA estimates that the US will be on course to challenge Qatar and Australia – a large, established and ambitious producer – for global leadership. This is astonishing considering that this year marked the first time the US became a net exporter of natural gas on an annual basis since 1957. As domestic gas demand swells and foreign competition escalates, the Middle East must sharpen its act – both upstream and downstream – to cement its role as a LNG hub by 2025. So, what's next? ■

17%

The Middle East accounts for 17% of global production. Potential abounds for this percentage to rise.

14%

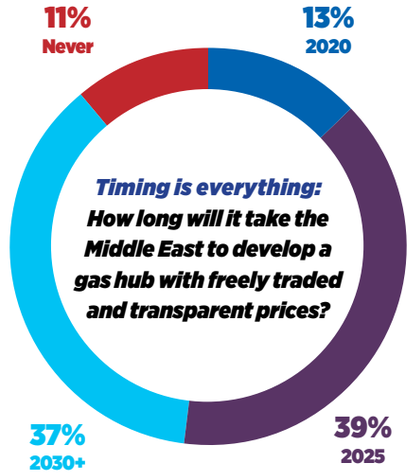
The energy-hungry Middle East represents 14% of global consumption.

15

Shorter term contracts are in vogue; the average length of a LNG supply contract has fallen by 15 years in approximately 23 years.

1.44bn

The UN expects China and India to each be home to 1.44 billion people by 2024, which makes the countries and wider Asia a highly attractive customer base for Middle East LNG producers.



The Middle East LNG Institute

Established in 2017, the Middle East LNG Institute examines the evolution of LNG in the Middle East and North Africa (MENA) as the region transitions from a net-exporter to a net-importer. The Institute's mission is to facilitate the region's community of LNG stakeholders and share knowledge and best practices. The Institute also provides the insights needed to successfully navigate through what are still uncharted waters for many Middle Eastern energy stakeholders.The Institute provides a single, independent and trusted platform for knowledge exchange, data gathering and intelligence sharing. These are crucial tools as the region explores comprehensive solutions to rebalancing one of the starkest juxtapositions in the global energy market. The region is home to more than 40% of global gas reserves, yet the volume of its LNG imports is climbing as domestic demand outpaces pipeline supply. The status quo is being rewritten – new demand, new supply, new hubs – and an ability to flex to these dynamic conditions will create the winners of a market that is nearing the top of the global energy hierarchy.

Workshop: Source of Special Report Findings

The Chatham House Rule was invoked at the meeting to encourage openness and the sharing of information: *"When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed."*

OPEN MIC: Following the Welcome Note and introduction of the Critical Question by the moderator and featured speakers, the Stream Discussions follow an open floor format whereby all participants were encouraged to proactively engage in the free flowing conversation.

COME PREPARED WITH RECOMMENDATIONS: All participants were encouraged to come to the table with "Recommended Strategies" in answer to the Critical Question.

In SESSION A:
Shortlist 5 recommendations

SHORTLIST 5 RECOMMENDATIONS
The 1 hour sessions were broken into 3 parts:
- Commentary from featured speakers
- Open conversation with recommendations put forward
- Voting to identify top 5 recommendations per stream

In SESSION B:
Reduce shortlist from 5 to 3 recommendations

SHORTLIST 3 RECOMMENDATIONS
The 1 hour sessions were broken into 3 parts:
- Commentary from featured speakers
- Author of each of the 5 shortlisted recommendations had 5 minutes to promote and defend their recommendation
- Voting reduced shortlist to 3 recommendations per stream

WORKING LUNCH:
Votes on the shortlist of 3 recommendations in each stream secured ranking in order of importance.

Structure:

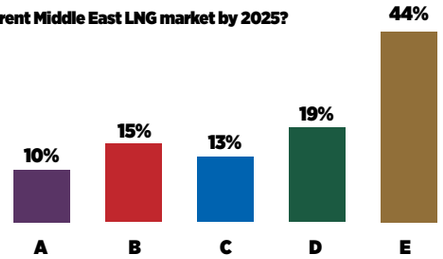
APRIL 16th, 2018	
PLENARY SESSION	
STREAM 1 TOP 5 RECOMMENDATIONS TO CREATE A FLEXIBLE LNG ECOSYSTEM IN THE MIDDLE EAST BY 2025?	STREAM 2 TOP 5 RECOMMENDATIONS TO OPTIMIZE LNG AND GAS INFRASTRUCTURE IN THE MIDDLE EAST BY 2025?
SESSION A SHORTLIST TOP 5 RECOMMENDATIONS	SESSION A SHORTLIST TOP 5 RECOMMENDATIONS
SESSION B TOP 5 RECOMMENDATIONS SHORTLISTED TO 3	SESSION B TOP 5 RECOMMENDATIONS SHORTLISTED TO 3
POLL SURVEY ON TOP 3 RECOMMENDATIONS IN EACH STREAM	
FINAL DECLARATION OF RECOMMENDATIONS AND CLOSING COMMENTS	

The Middle East LNG Institute
SURVEY

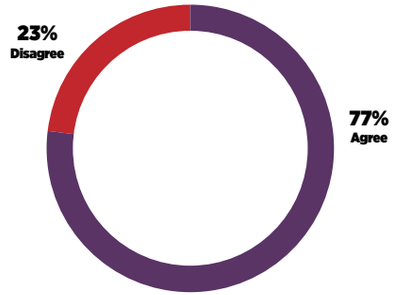
How to Establish a Liquid, Flexible and Transparent Middle East LNG Market by 2025?

What is the most important 'next step' to establish a liquid, flexible and transparent Middle East LNG market by 2025?

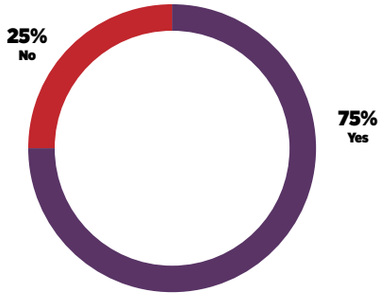
A. Build a LNG storage hub in the region
B. Establish a Middle East LNG benchmark price contract
C. Regional domestic demand to outpace pipeline supply
D. Remove all subsidies that fix natural gas prices at low levels
E. All of the above in no particular order



Destination restriction clauses prohibit the buyer in a LNG sale and purchase agreement from redirecting or reselling the LNG in any cargo. Middle East LNG sellers will have to drop destination restriction clauses in future contracts in order to retain market share in Asia.

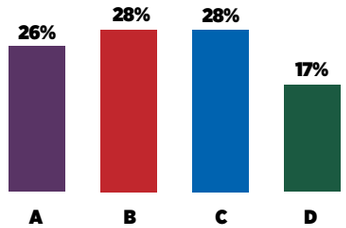


Between 2016 and 2020, the US is expected to account for half of the 20 billion cubic feet per day of new LNG export capacity worldwide. Should this market revolution compel the Middle East to accelerate its transformation into a more liquid, flexible and transparent LNG market?



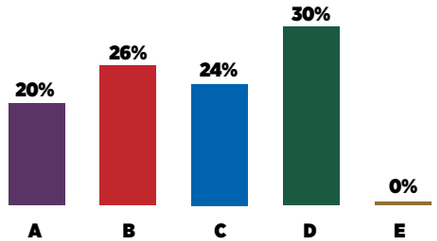
Global LNG demand is predicted to grow from 250 million tons per annum (mtpa) in 2015 to 400 mtpa in 2025 – a 60% increase. How much of this 400 mtpa will be 'homeless' and available to the spot market in 2025?

A. 50 mtpa
B. 75 mtpa
C. 100 mtpa
D. 100 mtpa+



The Middle East, traditionally associated with large-scale LNG exports, has become one of the fastest growing demand centers for the commodity. This has mostly been facilitated by a significant increase in the number of FSRUs operating across the region from Egypt to Pakistan. How many more FSRUs will arrive in the region by 2025?

A. 2
B. 4
C. 6
D. 6+
E. None



Source: ME LNG Institute Research; Q2 2018

EXECUTIVE SUMMARY – STREAM 1

Recommendations to Create a Flexible LNG Ecosystem in the Middle East by 2025?

Global LNG trade volumes have doubled since 2005 and Royal Dutch Shell said the market witnessed 293 million metric tons in 2017 – 30% higher than anticipated. As best described by the Financial Times newspaper: 'This once-sleepy corner of the energy industry is rapidly transforming into the next major commodity for swashbuckling trading houses.' So, how can the Middle East ensure it is the preferred region for this golden goose to 'roost' by 2025?

The region has a good head start. It benefits from fortunate geography, lying at the crossroads of Europe, Africa and Asia. This places it – and its port infrastructure – at the heart of the increasingly lucrative energy corridor opening up East of the Suez Canal. Plus, the region has a strong foothold in the market already; it will account for 25% of global LNG exports up to 2040 and is home to the world's biggest LNG exporter, Qatar. National and international companies are also expanding their investment footprint to ramp up domestic production and enhance LNG infrastructure. Abu Dhabi National Oil Company (ADNOC) has earmarked more than $109 billion over the next five years to, in part, boost gas output and Saudi Arabia signed agreements last November worth $4.5 billion; the biggest deal focused on gas production. In Oman, BP and the country's Ministry of Oil and Gas announced first production from the giant Khazzan gas field in September 2017, with future expansion to 1.5 billion cubic feet a day of gas on track. Bahrain is undertaking pre-development work on its tight gas reserves this year and to the west, Eni produced first gas from Egypt's supergiant Zohr field in December 2017. Potential abounds as Zohr is the largest gas discovery ever made in Egypt and in the Mediterranean Sea.

While commendable, such efforts still only tick part of the criteria to create a flexible, liquid and transparent LNG ecosystem. There is a lot more work to do. Ecosystems must encompass independent buyers and sellers, accessible infrastructure, transparent access to prices and liquidity and services, such as banking and legal. Creating a trading architecture also requires participants to master increasingly nuanced market conditions. One is a growing preference for smaller and shorter-term contracts. This marks a step away from the sizeable long-term contracts that have long been the market's bread and butter. Rethinking how the market prices LNG is also on the table.

Carving out a clear and robust framework now will help plug the region's growing gas deficit. To meet rising demand, Saudi Arabia-based Apicorp estimates that power capacity in MENA must expand by an average of 6.4% each year between 2018 and 2022. S&P Global Platts said in 2014 that the region imported 5.9 billion cubic meters (4.3 million tons) of gas as LNG, just under 2% of total global LNG imports. By the end of 2016, this figure had risen to 28.6 billion cubic meters (20.9 million tons) – 7.9% of the global total.

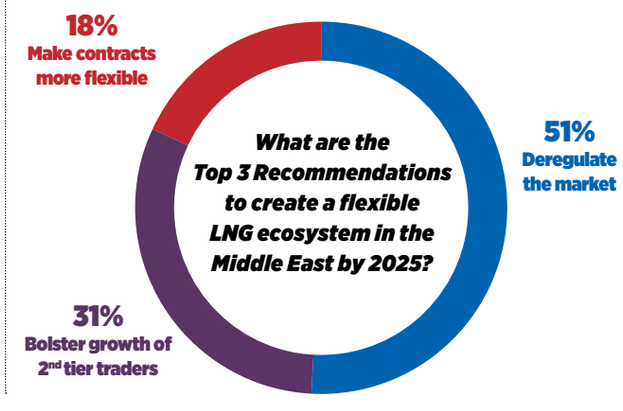
A structured ecosystem will also help the region meet a new source of demand from 2020: LNG bunkering. It is is considered an environmentally safer option to scrubbers to meet the International Maritime Organization's (IMO) ruling to implement a 0.5% sulfur cap on marine fuel, down from today's 3.5%, from 1 January, 2020. Amid the many unknowns left to clarify, one point is appreciated by all: the Middle East must act quickly before competitors tempt the golden goose away. ■

1st
Qatar is the world's biggest LNG exporter. In the 1980s, Doha chose to focus on developing its natural gas reserves – the world's third largest – while its Gulf neighbours honed in on black gold (oil) exploration.

X2
Global LNG trade volumes have doubled since 2005.

0.5%
The rise in LNG demand to meet the IMO's 2020 sulfur limit on bunker fuel of 0.5% - just an unnerving two years' away for many – must be factored into an ecosystem.

6.4%
The Middle East's domestic gas supply cannot plug its looming power deficit alone, so this source of demand for LNG must be priced into the design of a regional ecosystem. Power capacity in MENA will need to expand by an average of 6.4% each year between 2018 and 2022.



STREAM 1
Top Three Recommendations

1. Deregulate the Market

The first step to creating a more liquid, flexible and transparent LNG market? Deregulation. A liberalized market would increase the number of market players, spur competition and accelerate the adoption of pricing benchmarks – all key features of an evolving and world-class gas and LNG ecosystem. It would also whet investors' appetite and grease the wheels of financial decision-making. In the early 1980s, European gas markets comprised of negotiations with a complex formula of oil-based products that were quoted on the Rotterdam Exchange. It was a relatively opaque environment. Fast forward to 2018 and there are several hub prices quoted in Europe, with flexibility for point of landing and point of delivery, for example. This fungible marketplace provides competitive pricing for end users and offers a working example of how Middle Eastern policy makers can create a transparent pricing hub with a variety of contractual arrangements via liberalization. While deregulation is not historically in the Gulf's DNA, there are clear signs that policy makers' ears are open and ready to listen. Unprecedented policy changes in recent years – notably reduced subsidies – and National Visions that promote greater competition are major signs that a shift is underway. The UAE is a good starting point for market deregulation. The country's different sources of gas supply – the Dolphin pipeline, LNG imports and FSRUs – have fostered a multi-choice and competitive environment for consumers. As momentum for liberalization mounts, stakeholders must remember that steady rather than speedy change equals greater sustainability. The market may not be fully deregulated by 2025, but resetting the compass today will inevitably put the Middle East on the right path.

2. Bolster Growth of 2nd Tier Traders

Several boxes will be ticked by lowering the 'entry to market' barrier for 2nd tier traders. Firstly, more market players breed liquidity, thus increasing the adoption of new regulations and pricing benchmarks. In addition, 2nd tier traders are well suited to shifting market dynamics; they can cater to buyers' growing preference for small-scale contracts, for example. All these factors are vital to nurture a LNG ecosystem. But a few hurdles must be scaled first. Human capital – primarily trading expertise – must be enhanced to enable 2nd tier trading companies to accurately analyze the dynamics in what many workshop participants warn can be a risky commodity market. Historical wounds also need to heal. Some cargo deliveries defaulted when Japan's Fukushima Daiichi nuclear disaster in 2011 triggered a surge in LNG demand. Sour sentiment lingered for years. But the large size of the LNG market today means the stress on the marketplace in the event of a spike in demand would be less acute. Stakeholders must have faith that 2nd tier traders now have a stronger footing and make it easier for such companies to enter the market.

3. Make Contracts More Flexible

A power shift at the negotiating table is gaining traction. Lower LNG prices and intensifying competition among exporters for market share – especially for coveted Asian contracts – has given importers more clout since 2016. And what do they want? A bigger 'menu' of options. This includes diversifying the traditional contracts that stretch up to three decades with more spot and shorter-term contracts, which are increasingly popular. Removing destination clauses is also at the top of importers' wish list. The clauses restrict the resale of LNG cargoes and critics argue they inhibit competition. Having more contractual choices will buoy liquidity and make the adoption of pricing benchmarks more viable, therefore supporting the evolution of a LNG ecosystem.

STREAM 1
Other Recommendations
- ✓ Create a Middle East LNG marker
- ✓ Leverage midstream capabilities, including storage
- ✓ GCC to remain an importer and exporter of LNG
- ✓ Foster cross-border cooperation
- ✓ Lift subsidies

While responding to importers' new criteria, Middle Eastern LNG exporters stress that keeping some long-term commitments is paramount to hedge against the big-ticket infrastructure projects that help exporters guarantee supply. Exporters' ability to flex is undoubtedly improving, but one size does not fit all. For example, exporters investing in downstream assets have a greater need for long-term commitments than those that have existing infrastructure and are more focused on optimizing the short-term commodity price. But they all share the challenge of schedule management, which will inevitably become more complex with more contractual options on the table. Producers' management skills must run parallel to rising demand for shorter-term contracts and the reselling of LNG cargoes to ensure uninterrupted supply. ■

EXECUTIVE SUMMARY – STREAM 2

Recommendations to Optimize LNG and Gas Infrastructure in the Middle East by 2025?

There is an elephant in Middle Eastern energy boardrooms – a looming gas deficit that needs plugging. One consequence is power shortages; public showers on steaming Iraqi streets and blackouts in other Middle Eastern countries are commonplace, for example. It is perhaps unsurprising then that the growth rate of LNG imports into the Middle East over the last three years reached a staggering 380%, according to S&P Global Platts' data.

The upward demand trajectory – from both domestic production and LNG imports – will only continue. Demand for power capacity is expected to climb by an average of 6.4% each year between 2018 and 2022 in MENA; the region's population and industrial growth show little sign of slowing down. The UN estimates that the UAE's population alone will swell by 17% to 11.05 million people (versus 70,000 in 1950) by 2030. More than half of electricity generation in the Middle East is gas-fueled, while industry in the region is also slanted toward gas utilization. The IEA estimates that the power sector will lead the region's growth in gas consumption into 2040. Plus, abiding by the IMO's 2020 ruling adds another batch of demand (volume yet to be determined), as do aspirations to widen the region's influence in the LNG export market.

380%
The growth rate of LNG imports into the Middle East over the last three years was a staggering 380%.

Consider the Middle East's current challenge against the fact that it sits atop 40% of the world's natural gas reserves; Iran and Qatar alone are home to the world's second and third largest reserves, respectively. So, why is a region so rich in natural reserves short of gas? A myriad of reasons: challenging fields, high development costs, a preference for oil production and a lack of cross-border collaboration, to name the primary drivers. The Dolphin Pipeline from Qatar to the UAE and Oman was the Gulf's first significant cross-border gas pipeline project and its last – so far. The pipeline opened in 2007 and now carries 2 billion cubic feet a day of gas. It illustrates how collaboration breeds success, but it is also a niggling reminder that so much potential remains untapped.

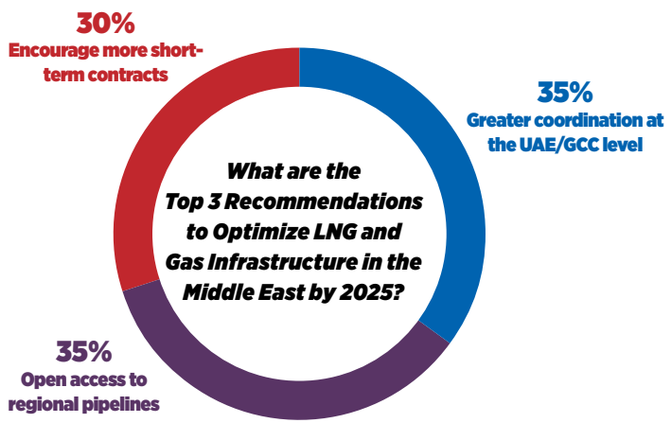
With demand profiles so starkly out of tune with domestic supply – and a desire to minimize reliance on LNG imports – the Middle East is examining its puzzled gas management strategy with rejuvenated eyes. Flexibility and forethought will be key as fortunes can change quickly, as highlighted by Egypt's experience. The country moved from exporting 16.2 billion cubic meters of the 61.3 billion cubic meters it produced in 2010, to consuming almost all of the 48.8 billion cubic meters it produced domestically in 2014. Egypt's gas narrative is likely to shift again as the development of the Zohr field gives the country's ambitions to bolster production another stamp of credibility.

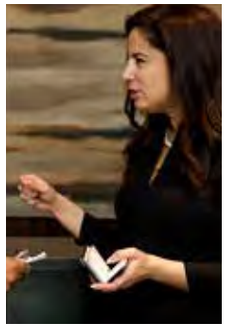
As the Middle East rethinks its gas strategies, plans to strengthen security of supply via infrastructure is at the top of the agenda. Energy stakeholders agree that a united physical infrastructure network that encompasses all, rather than a few, is crucial to mature import-export hubs and distribution systems. The consensus extends to FSRUs and data transparency playing a key role. But with 2025 less than a decade away, what are the next steps required to ensure security of supply before the elephant starts to trumpet? ■

1st
The Dolphin pipeline was the first cross-border gas pipeline in the Gulf. Starting in Qatar, the pipeline supplies the UAE and Oman with 2 billion cubic feet a day of gas.

17%
Population growth across the Middle East is a significant driver of gas and LNG demand. The UAE's population alone is expected to rise by 17% to 11.05 million by 2030.

2025
MENA and the Asia Pacific will drive gas demand over the medium term, growing 40% by 2025 compared with 2015 levels, according to Apicorp. The region will account for 60% of global demand growth over the same period.





STREAM 2
Top Three Recommendations

1. Greater Co-ordination at the UAE/GCC Level

Today, buyers and sellers cannot freely trade and move gas and LNG around the Arabian Peninsula; the land mass may as well constitute islands for the level of connectivity in play. This narrative must be reversed. A united gas infrastructure is essential to meet rising demand and deepen the region's position as an energy superpower. Disjointed policies mean Middle Eastern countries – and the region as a whole – must play catch up to meet shifting demand profiles. For example, the region's LNG imports rose by 380% in the last three years: this is indicative of a knee-jerk reaction, rather than collaborative and strategic forethought. Open lines of communication at home and abroad will help the Middle East keep ahead of the curve and avoid inefficiencies in supply management. Working together means domestic demand can be affordably satisfied, influence in export markets can grow and a local trading ecosystem can be nurtured. The same collaborative ethos can be applied to bolstering the transparency of data and knowledge across the region's entire value chain, especially as multiple hubs are anticipated. Such a significant undertaking would be valuable as the competitive edge of other gas and LNG players – notably the US and Australia – sharpens. Improving transparency within and across borders would also noticeably enhance the accuracy of forecasting; another crucial move to creating a liquid LNG market. Learning how to collectively adapt to changing market dynamics now will pay dividends later, as there will inevitably be more regulatory changes on the way. As illustrated by IMO 2020, the world's increasingly strict environmental rulebook will be a primary driver of change.

2. Open Access to Regional Pipelines

It is paradoxical that the Middle East's pipeline infrastructure is often underutilized when gas infrastructure is urgently needed to meet demand, ramp up domestic production and increase exports. For example, a 48-inch pipeline with capacity for 1 billion cubic feet of gas in Al Hamriyah in the UAE's emirate of Sharjah typically utilizes less than one tenth of said capacity. Such underuse is echoed across the region. Instances where the availability of infrastructure is strangled by poor management, manipulation, monopolization or political snags must be eradicated. Operators' hands must not be tied by red tape and unfair commercial alliances. Demand for gas and LNG is too high and infrastructure is currently too scarce for such barriers to limit the effectiveness of existing networks or allow blueprints for new projects to gather dust. Physical infrastructure is just one part of the story. Regulation is also paramount as it helps define the shared rulebook for cross-border and international projects and forms a much-needed step in liberalizing the market. A dichotomy of political agendas means some investors tread tentatively around big-ticket investments in pipeline infrastructure. Attacks on pipelines in several Middle Eastern countries has not buoyed sentiment: Bahrain, Yemen and Saudi Arabia are among the countries affected in recent years. Successfully opening access to regional pipelines through collaborative and transparent efforts would reverse some of the negative PR and galvanize investors' interest.

3. Shape Infrastructure to Support Short-Term Contracts

The market's offering must match the pace of change in demand profiles. The main triggers include swelling populations, changing policies, such as subsidy cuts and compliance to the Paris Agreement, and less predictable weather patterns. Amid such change, optimizing infrastructure is integral to enabling the market to offer a more flexible 'menu' of options i.e. spot and short-term contracts.

While still valuable, long-term contracts do not account for more immediate variations to the demand profile; a nuclear power plant coming online, an increase in domestic production or more FSRUs, for example. Gas and LNG producers must evolve the flexibility and transparency of their infrastructure frameworks to meet clients' desires for different specifications and schedules. With the right infrastructure in place, producers have a better chance of affordably leveraging spot and short-term contracts as a buffer against the unexpected. Investing more in infrastructure today also minimizes the amount of operational hiccups tomorrow, which is integral to bolstering liquidity and nurturing the growth of a LNG ecosystem. It also facilities the growth of 'homeless' LNG, which is current supply without fixed customers. Homeless LNG offers much-needed flexibility in a market with a growing preference for the 'here and now.' ■

STREAM 2

Other Recommendations

- ✓ Build LNG and gas storage facilities
- ✓ Establish an independent regulatory body
- ✓ Liberalize the market and improve transparency
- ✓ Create integrated approaches within Industry to eliminate unnecessary buffering
- ✓ Increase pipeline access with Iran, home to the world's second largest natural gas reserves
- ✓ Single entity to manage LNG Imports (similar to JERA, the world's largest buyer of LNG)

ASIA:
The Spotlight Intensifies

CHINA'S DREAM: ONE BELT, ONE ROAD

BY PAUL GRUENWALD
Managing Director, Chief Economist, S&P Global Ratings

Conceived in 2013, China's Belt and Road Initiative (BRI) aims at nothing less than connecting – or under some interpretations, reconnecting – the Eurasian supercontinent. This is to be done by land and sea "Silk Roads", using infrastructure and industry, led at least initially by Chinese official financing.

Many of the specifics of the BRI remain fluid, but it will be a decades-long effort involving dozens of countries, with a cost running into trillions of dollars. An undertaking of this magnitude has potentially large payoffs, as well as potentially large risks. Success will ultimately rest on whether BRI projects can win local hearts and minds in the recipient countries, and whether China's initial "seed money" in the BRI will create credit-worthy projects that attract private sector investment. Seen in this way, the BRI is arguably the world's largest venture capital project.

Concept fluidity

Chinese President Xi Jinping introduced the Silk Road Economic Belt concept in a speech in Kazakhstan in September 2013. This initial strategic vision was developed further in the ensuing years, converging around regional connectivity and economic integration through the movement of goods, services and information. This culminated with a report by the National Development and Reform Commission entitled "Vision and Actions on Jointly Building the Silk Road Economic Belt and 21st century Maritime Silk Road." Given its somewhat fluid definition there is some debate as to whether the BRI is a new initiative as opposed to a platform on which to group a collection of existing initiatives. Whatever the correct interpretation, the ambition and scale are massive.

China is bordered by no fewer than 17 countries. Of particular interest to Beijing are the western borders, which abut Central Asian countries once part of the former Soviet Union. These nations tend to be Islamic and less politically and economically stable than China. They are seen as potential sources of risk, particularly in the Xinjiang province in China's northwest. Engaging these countries economically and connecting them to western China through the BRI serves several purposes. It improves economic outcomes in these countries and lowers the risk of tensions spilling over national borders, in effect creating a buffer zone. It increases China's sphere of influence. This means achieving better political alignment with neighboring countries, in tandem or as a result of infrastructure and investment projects under the BRI. And it potentially creates a network of countries that use the Chinese currency, Chinese engineering standards, and where China plays a dominant role among competing regional and global powers.

Energy security

A second driver of the BRI calculus is energy security. China's image as a structural trade surplus economy does not apply to energy, where it runs persistent trade deficits. Although China had an overall 2017 current account surplus of 2% of GDP, the energy trade balance showed a modest deficit. Over time, the energy trade balance deteriorates or improves as global energy prices rise or fall, respectively. But the fact remains that China is an "energy short" country, since the energy trade deficit has averaged 3% of GDP over the past decade. Moreover, China's continued projected fast growth means energy demand is expected to continue outstripping supply. The vulnerabilities of this recurring deficit factor prominently in the BRI.

In physical security terms, there is potential choke point at the Straits of Malacca, roughly where Singapore sits. Around 85% of China's oil imports pass through the Straits of Malacca, as well as about 50% of its gas imports. Several of the early BRI projects directly address the vulnerability

represented by the Strait of Malacca chokepoint.

The China-Pakistan Economic Corridor is one of the more advanced, and reportedly the biggest, BRI project to date. The corridor involves extensive energy and transport infrastructure projects that will link western China to the port city of Gwadar on the Arabian Sea. Chinese firms are converting Gwadar into a multi-purpose, deep water port.

Plus, recently built oil and gas pipelines from the Bay of Bengal traverse Myanmar and terminate in the western Chinese city of Kunming in Yunnan province, where considerable refining capacity is reportedly being built. Kunming is also the terminus of an extensive rail network for Southeast Asia, parts of which are currently in various states of construction.

And in Central Asia, the BRI envisages upgrading and extending an earlier gas pipeline system built by the Soviet Union. The goal is to tap further Turkmenistan's sizeable gas reserves, as well as Kazakhstan's large oil reserves. The newest pipeline will pass through Khorgos, along the Kazakh border, where China is currently constructing the world's largest dry port.

In addition to supply diversification, another strategy would be to lessen China's reliance on imported fossil fuels. China is moving aggressively in the areas of improving energy efficiency and adopting renewables – in some cases spearheading the technology to do so – but demand for fossil fuels is still expected to rise strongly out to 2050.

Venture capital scheme

The BRI can be viewed as a venture capital fund with a twist. Getting infrastructure financed and built has been a chronic problem for

Asia Pacific. This is particularly true in Southeast and South Asia. The Asian Development Bank (ADB) now estimates that the infrastructure needs of Asia will exceed $22.6 trillion through 2030, in order to maintain sufficient growth momentum. Over half of this will be for power generation and about one-third will be for transport.

More importantly, the ADB sees an infrastructure funding gap – the difference between investment needs and investment levels – of 5% of GDP in the group of countries excluding China. China's gap is 1.2% of GDP. The funding gap is not an issue of supply and demand. There is no shortage of infrastructure demand in the region, and the potential supply of longer term investors, both regional and global, is also ample. Pension funds, insurance funds and sovereign wealth funds all seek long-term assets to match their long-term liabilities. Multilateral development banks including the ADB and World Bank have deep pockets and broad mandates to fund spending on public goods such as infrastructure. The sticking point has been the risk-return trade off. Construction risks, political risks (both policies and expropriation), exchange rate risks, commodity price risks and environmental risks have made creditors hesitant to commit longer-term funds. As a result, infrastructure demand threatens to remain unmet, and investment and growth will correspondingly suffer. However, there are a number of factors which suggest a better risk-return trade-off for China than for other creditors.

This includes trade benefits. BRI projects will likely make the recipient countries more likely to trade with China (and use the renminbi), bringing economic benefits beyond the project itself. The size of markets for Chinese exports would also increase. The same applies to energy security. BRI projects will result in improved energy security for China as sources are diversified, bringing benefits beyond the narrowly defined output of the project. The energy build out will also help develop and raise incomes in China's poorer, western provinces. And thirdly, there will be network benefits.

RESHAPING EURASIA

The BRI is a hugely ambitious plan that will take decades to realize. If successful, it will fundamentally alter the geopolitical map of Eurasia.

- ✓ Risk/reward trade-off greater for China than other investors
- ✓ Energy and political security central to BRI concept
- ✓ Success depends on winning hearts, minds and private capital

China's sphere of influence across the region will increase as a result of BRI projects as both economic and non-economic ties increase. This will provide in-network benefits as well as a buffer zone against outside influences.

Investment returns

The Chinese government develops infrastructure under a build-operate transfer (BOT) model. Once an agreement (concession) is granted by the host government, the projects are built and financed mainly with Chinese materials and labor. A Chinese firm then operates the facility, usually for a period of 20 to 30 years, splitting the proceeds with the local counterpart or government. Finally, at the end of the operating lease period, the project is transferred to the host government or entity. The idea is that the costs of the project, including a target rate of return, can be amortized by payments during the lease period. This is the intent, but it is not assured.

There are a number of risks being taken by the Chinese project companies, including political risk (change of view, of the government), technical or construction risk, market risk (inputs prices, interest and exchange rates) and income risk. Ideally, the outcome is that the cost of the project is amortized, and the Chinese project company is able to exit. In a bad outcome, the project company may be holding an illiquid asset in a foreign country. The Chinese government is investing seed money to fund infrastructure and industry projects in the target countries. These target countries are the equivalent of early-stage or emerging firms in venture capital parlance. The objective is to reap returns from these investments, cash out and exit. However, in a pure venture capital model the financer would simply cash out and move on to the next emerging firm. In the BRI model, the Chinese project company would also cash out, but there is a clear expectation of an ongoing relationship between the Chinese government and the recipient country.

2013
The year that Chinese President Xi Jinping introduced the Silk Road Economic Belt concept in a speech in Kazakhstan.

3%
China is an "energy short" country, since the energy trade deficit has averaged 3% of GDP over the past decade.

85%
Around 85% of China's oil imports pass through the Straits of Malacca, as well as about 50% of its gas imports.

2030
The infrastructure needs of Asia will exceed $22.6 trillion through 2030 in order to maintain sufficient growth momentum. Over half of this will be for power generation and about one third will be for transport.

Success measures

Success can be measured in terms of soft power and financial sustainability. Soft power boils down to winning the hearts and minds of the recipient countries. The objective here is to build a network of commercial and political alliances that will serve China's broader geopolitical aims — regional influence and security. Measuring this part of the success equation will be difficult since much of it will be behavioral. Building ports, road, bridges and pipelines will be necessary but not sufficient. Local populations will need at least to feel that they have some say in the Eurasian integration project and that their national identity is being both respected and preserved. In short, via the BRI, they will need to buy into the notion of a Chinese-led, but not Chinese-dominated, Eurasian block. Financial success can again be defined along the lines of a venture fund. As projects get up and running, Chinese firms will attempt to amortize their investment under the BOT model. Ultimately, the locals will take control. The key here is whether the project (and its spinoffs) will have long-lasting value to the recipient country or will be seen as an extractive exercise. The composition of funding in the latter stages of projects will be important as well. Private sector participation will signal that the BRI has created value in the initial stages, and that the risk-return trade-off has improved to the point of being able to attract private capital. Success will also be determined by how the BRI accommodates or challenges the existing regional powers on the Eurasian supercontinent, as well as the current global superpower, the U.S. Managing these relationships will be a challenge, and this dimension of the BRI challenge should not be underestimated. The cost of tensions is this area could overwhelm gains generated elsewhere. Yet, if successful, the BRI will alter the geopolitical map of Eurasia, as well as China's economic and political relations with its neighbors near and far, for decades to come. ■

**Written in conjunction with S&P Global's China Senior Analyst Group*

Oil Competition Intensifies

BY DR CAROLE NAKHLE
Founder and CEO, Crystol Energy

When the first super tanker laden with crude oil left the Gulf Coast of the U.S. for Asia on February 18, 2018, it caused a media frenzy. Hailed as the beginning of a new oil trading era, the 2-million-barrel cargo set reporters speculating that it would ignite a war for Asian market share between shale producers and conventional exporters, especially from the Middle East.

Since the lifting of a 40-year export ban in December 2015 and thanks to the shale boom, U.S. oil has been sold to 33 countries. Asia is taking an increasing share of those sales. This trend is likely to continue, but it does not mean game over for Middle Eastern producers. In fact, of all the oil exporters to Asia, they should probably be the least concerned.

Before plunging into analysis, it is important to highlight one essential fact that seems to get overlooked in such discussions: oil is a fungible commodity traded in a global market. Looking at regional market shares is not enough. Saudi Arabia, for instance, may send more oil to the U.S., allowing U.S. producers to divert some of their output to Asia. In our case, looking at the Asian market alone gives an incomplete picture of global oil market dynamics.

Growing market

Asia is expected to be the world's main growth center for oil demand, at least in the coming two decades, given its population and economic growth. In this respect, Asian economies are going to need all the oil they can get and should have no difficulty absorbing output from both the Middle East and the U.S., and more from other regions as well.

Some have questioned the ability of Middle Eastern producers to meet growing Asian demand. The International Energy Agency (IEA) forecasts these countries will have only around 1 million barrels a day of extra export capacity as more of their production is diverted for domestic consumption.

Middle Eastern demand for oil is not restricted to keeping buildings air-conditioned and cars on the road. A significant share of consumption comes from local refineries, which have expanded considerably in recent years as producers seek to cut their exposure to crude oil price volatility. When oil prices are low, exploration and production suffers, but refining margins typically benefit because crude oil is their feedstock. In this respect, the composition of exports from the Middle East to

Asia may change but their volume will remain the same, especially in the longer term.

More importantly, the giant Middle Eastern oil exporters are expanding their refining capacity – both domestically and abroad – to capture export markets for refined products, not just crude. Saudi Aramco, for instance, has entered joint ventures and acquired stakes in refineries around the world, especially in Asia. Since these refineries are configured to use Middle Eastern oil, they provide further protection for the Saudi national producer's share in the Asian market.

Light competition

Differences in quality should also be taken into consideration. Not all crude oils are the same; they vary by gravity, density and sulfur content. U.S. tight oil is light (low density) and sweet (low sulfur content), while Arabian oil is typically medium/heavy and sourer. Refinery configurations are usually geared toward a specific type of crude.

With tight oil production expected to maintain its current growth momentum until the mid-2020s, one can expect U.S. oil exports to keep growing as well. But three additional factors need consideration here.

First, if U.S. exports crowd other producers out of the regional markets, one would expect the first barrels to be replaced to be those in direct competition – namely, light sweet varieties, such as those produced in West Africa and Libya. In fact, at the onset of the shale revolution, West African producers saw their exports to the U.S. plunge by 80% between 2010 and 2016. Second, international forecasting agencies have cast doubt on the ability of U.S. tight oil output to expand at its current rate beyond 2025, which could limit its subsequent export growth potential.

Finally, there are more attractive export destinations for U.S. oil, especially Latin America and Western Europe, given their geographical proximity. In contrast, when it comes to Asia, Middle Eastern producers have the logistical advantage. For instance, it takes less than 20 days to ship oil from Saudi Arabia to Asia compared to up to 35 days for U.S. exporters; the greater the distance, the higher the transportation costs. No wonder the IEA said that "the long shipping distances make Asia the last destination for U.S. cargoes."

18/02
The first super tanker, laden with a 2 million-barrel cargo of crude oil, left the Gulf Coast of the U.S. for Asia on February 18, 2018.

2015
The year a 40-year export ban on crude oil was lifted in the U.S.

33
The number of countries that the U.S. has sold oil to in the last three years.

> "It will be a battle of the fittest. In this struggle, the low-cost producer will always have the edge."

Low-cost producer

There is plenty of oil around and demand will determine where it goes. Asian consumers will simply buy from the cheapest source. In this respect, Middle Eastern producers have the fundamental advantage of being the low-cost producer who can always squeeze out the competition, if and when they choose to undercut their prices. It is unclear whether U.S. oil producers can withstand this price competition. The past few years have shown that the first oil to leave the market when prices fall has been U.S. tight oil. Middle Eastern oil only left the market by design because of the OPEC+ deal.

Some may argue that Middle Eastern countries have massive social obligations and therefore require much higher oil prices, at the so-called fiscal breakeven level, to balance their budgets. The plain fact, however, is that prices drive costs, not the other way around. When oil prices are high, the temptation for oil-rich countries is to embark on spending sprees. When prices are low, spending is cut back.

Political dimension

Besides the economic dimension, an important role in the oil trade is played by politics.

First, for Asian consumers, there is the all-important issue of security of supply. Some would argue that Asia will naturally look across the Pacific to reduce its exposure to the "volatile" Middle East. There is of course a legitimate point to be made here about diversification strategy. However, two caveats should be applied to such reasoning. Middle Eastern exporters sell their oil through long-term contracts, which is a practice Asia prefers due to the security and reliability such contracts offer. U.S. exports, by contrast, are typically spot cargoes, which can only address short-term demand fluctuations. Furthermore, the rather aggressive trade policy toward China recently adopted by the Trump administration is likely to make Asia's largest oil consumer think twice about where to put its trust.

Second, a hugely overlooked political element is that China wants to use the oil trade to establish its currency, the renminbi, as a truly global medium of exchange. This would cement China's position as a world economic power. State-dominated oil exporters in the Middle East would be more willing to strike deals in yuan than private exporters from the U.S.

80%
Amid the U.S.' shale revolution, West African producers saw their exports to the U.S. plunge by 80% between 2010 and 2016.

15
It can take up to two weeks longer for U.S. cargoes to reach Asia, compared to Middle Eastern producers. For instance, it takes less than 20 days to ship oil from Saudi Arabia to Asia compared to up to 35 days for U.S. exporters.

Meaningful perspective

The key to understanding the competition between U.S. and Middle Eastern oil producers is distinguishing whether one is talking about the next year or two or about the longer term. Short-term analysts usually go overboard with their projections of change, ignoring that the oil markets are so big and their underlying forces so strong that one needs to take a longer view. Since U.S. crude exports started from zero, and not only in Asia, they will naturally show a little growth in the beginning.

The U.S.-Gulf rivalry in Asia, however, loses its relevance in the global oil market. Besides, it is not a zero-sum, win-lose situation. In the short term, the OPEC cuts have removed some Middle Eastern oil from the global market. In the longer term, however, there is still a worldwide glut. It will be a battle of the fittest. In this struggle, the low-cost producer will always have the edge. ■




PETRONAS: Deepening Middle Eastern Partnerships

Fifteen people and two phone lines. This is how a company that now ranks among the largest corporations on FORTUNE Global 500 started in 1974. Nearly half a century later and PETRONAS' humble beginning in the premises of the Prime Minister's Department in Kuala Lumpur has evolved into 50,000 employees and relationships with 86 countries around the globe. By 2023, the company aims to be one of the top players in the Middle East and North Africa (MENA).

As Malaysia's fully integrated oil and gas multinational, PETRONAS is the custodian of national resources and explores, produces and delivers energy. Covering upstream, downstream, project delivery and technology, PETRONAS was recently named the National Oil Company (NOC) of the Year for the second time running at the Energy Council's APAC Energy Assembly and Awards Dinner. The importance of the company's ability to deliver an uninterrupted supply of energy via innovative and efficient operations will only intensify as Malaysia's population swells. The country's population is set to grow by 32% to 41.7 million people by 2050, according to the United Nations.

2023
The year PETRONAS aims to be one of the top energy players in MENA.

32%
As well as deepening its presence in the Middle East, PETRONAS must meet the rising needs of the Malaysian population – expected to rise by 32% to 41.7 million people by 2050.

EAST-WEST: STRENGTHENING TIES

Over the last decade, PETRONAS has increasingly deepened its ties with Middle Eastern countries – bonds that are only growing in value. The company's strategic intent in the Middle East is driven by its Upstream Major Resource Holder (MRH) growth strategy, which centers around access to big reserves to improve its Reserve Life Index (RLI). Ventures in the Middle East will also add to PETRONAS' upstream portfolio, with the development of marginal fields and unconventional plays, for example. Leveraging such potential means collaborations with local partners with a similar vision are key. PETRONAS' office in Dubai manages operations in the MENA region. Key markets are the UAE, Saudi Arabia, Iraq, Iran, Pakistan and Egypt, as well as continued exploration into new opportunities.

Examples of PETRONAS' activities, along the value chain, in the Middle East abound. Business in Iraq incorporates technology delivery and production, while upstream efforts include operations in Garraf, as well as Halfaya, Majnoon and Badra. The Development and Production Service Contract (DPSC) for the Garraf Contract Area was signed in February 2010 and first oil was achieved in August 2013. The field's current production rate of 100,000 barrels a day (b/d) is expected to more than double to a peak production target of 230,000 barrels a day by the fourth quarter of 2020. Production is expected to remain stable at this level beyond 2030.

Downstream, PETRONAS has lubricant operations in Jordan, Iraq, Iran, the UAE, Saudi Arabia and Egypt. The company is also part of Egyptian LNG (ELNG), a joint venture with partners Egyptian General Petroleum Corporation, Egyptian Natural Gas Holding Company, BG Group and Gaz de France. PETRONAS' capabilities in the project management and development of a fully-integrated LNG operation was lauded when ELNG set a record of being the world's fastest developed LNG project – six years from the first exploration well to the lifting of the first cargo in 2005. The ELNG project comprises the development and operation of an LNG liquefaction plant and related infrastructure at Idku, approximately 50 kilometres east of Egypt's second largest city, Alexandria. Two trains are currently running, each with capacity of 3.6 million tons per annum. The 10% utilization rate of the two trains since 2016 is expected to continue until 2019.




2030
The current production rate of 100,000 b/d of oil at the Garraf Contract Area is expected to more than double to a peak production target of 230,000 b/d by the fourth quarter of 2020. Production is expected to remain stable at this level beyond 2030.

5
In 2016, PETRONAS LNG UK signed a five-year sales and purchase agreement with Qatargas, the world's largest LNG exporter.

The plant receives its feedstock from PETRONAS' upstream operations in the offshore West Delta Deep Marine concession, in which it is a 50:50 equity partner.

In May this year, PETRONAS and state-owned Saudi Aramco launched the corporate identity of their refinery and petrochemical joint ventures in Pengerang Integrated Complex (PIC) located in Pengerang, Johor, Malaysia. The agreement is namely for the Pengerang Refining Company Sdn Bhd (PRefChem Refining) and Pengerang Petrochemical Company Sdn Bhd (PRefChem Petrochemical), collectively known as PRefChem. The two companies concluded the Share Purchase Agreement for equal ownership and participation in the operations of the refinery, cracker and selected petrochemical facilities in the PIC in March this year.

Alliances with Qatar are also deepening. In 2016, PETRONAS LNG UK signed a five-year sales and purchase agreement with Qatargas, the world's largest LNG producer. Qatargas will deliver 1.1 million tons of LNG per year to the UK-based venture until December 31, 2023, which extends the current contract that was due to expire at the end of this year.

For PETRONAS' trading arm company, Dubai-based PETCO Trading DMCC (PTD) supports the company's upstream and downstream activities. PTD's goal is to grow and strengthen its position as the integrated midstream solution provider of PETRONAS in the Middle East, including Eastern and Southern Africa, to achieve economies of scale and operational excellence in the next ten years. PTD aspires to increase its market presence within the midstream space by acquiring storage capacities to support PETRONAS' downstream assets. This would support the overall function of systems and allow for seamless system optimization activities along the value chain.

VITAL PIECES IN THE PUZZLE

PETRONAS' expansion and positive impact in the oil and gas industry is based on a holistic approach that encompasses R&D, excellent talent and environmental awareness. Solidified within the company's heritage, R&D has been instrumental in driving the company's renown for pushing the boundaries to reshape the status quo. With a continued belief in collaborative partnerships, PETRONAS' technological commitment has helped pioneer dynamic solutions that deliver heightened performance and respond to the changing needs of consumers in Malaysia and beyond.

10
PETRONAS' trading arm company, Dubai-based PETCO Trading DMCC (PTD), aims to grow and strengthen its position as the integrated midstream solution provider of PETRONAS in the Middle East, Eastern and Southern Africa to achieve operational excellence in the next ten years.

1st
PETRONAS initiated TAPIS EOR in Malaysia – Southeast Asia's first and largest EOR project – to help augment oil and gas reserves and improve recovery for at least 20-30 years.

PETRONAS' brand is based on fluid technology solutions, which span the entire oil and gas value chain: enhanced oil recovery (EOR), CO_2 management, geo imaging, contaminant removals, advance materials, flow assurance and sustainability, to name some. In the Middle East, PETRONAS is a strategic partner of the Research and Development Petroleum Conference and Exhibition (RDPETRO). RDPETRO, formerly ADRAC, expanded earlier this year to attract global innovators from within and outside the oil and gas industry, technology companies, start-ups and academia. PETRONAS' role includes reviewing technology proposals from around the globe and helping fund projects that are most in-line to solve challenges in oil and gas markets. Some of the technologies that the company is particularly keen on includes machine learning for seismic interpretation, hydraulic fraction evaluation and fluid contact detection using Deep Neural Networks (DNN).

Another such area of technological innovation is EOR. PETRONAS initiated TAPIS EOR in Malaysia – Southeast Asia's first and largest EOR project – to help augment oil and gas reserves and improve recovery for at least 20-30 years, for example. The company has identified more than 1 billion barrels of oil from 14 fields for EOR projects worldwide and has 24 such production enhancements underway. Environmental awareness and mitigation of the negative impact of industry is a key focus for PETRONAS and Malaysia, with the country ratifying the Paris Agreement on the 16 November, 2016. The company's focus is not solely on the environmental impact of oil and gas products, but also the impact of the manufacturing process. Accordingly, PETRONAS has pledged to spend 75% of its R&D from 2018 onwards towards CO_2 reduction.

PETRONAS' astonishing rate of growth and ambition would have been impossible without a key ingredient: talent. At the forefront of the company's success is a diverse team of dedicated professionals who form the backbone of all innovative change. The company's 200-plus scientists, technical professionals and engineers are a recognized group of specialists within the global energy industry.

A stimulating and progressive work environment creates a platform to influence trends in industry and adopt a proactive approach to development worldwide, which is why 18% of the company's workforce are based outside of Malaysia. PETRONAS' forward-looking ethos is recognized nationwide, as it won in the Most Attractive Employer in Malaysia 2018 category in the Randstad Employer Brands Awards.

75%
PETRONAS has pledged to spend 75% of its R&D from 2018 onwards towards CO_2 reduction.

Today, tens of thousands of phone lines connect the company with its clients, including those in the Middle East. Backed by a cutting-edge team of R&D specialists and renowned expertise across the value chain, PETRONAS' ties with the global epicenter of hydrocarbon production will only flourish. ■

PETRONAS' ETHOS:

✓**COLLABORATION** – ***"The time has come for all of us to think of ways through which we can foster collaborations and partnerships both internally and externally within the industry ecosystem to achieve stronger results in favour of shared success. This means improving efficiency through cooperation, performance alignment and encouraging transparency through open information sharing."*** President & Group CEO

✓**PACE** – ***"Now that the necessary fundamentals are already in place for most parts of the organization, I truly believe that PETRONAS has the potential to achieve even better performance at a pace significantly faster than we have seen before through focused execution, continuous simplification and by leveraging on technology."*** President & Group CEO

✓**GOING DIGITAL** – ***"Gaining an edge in this area will help us to further strike down cost and continue to drive technology as a differentiator."*** President & Group CEO

✓**COMPETENCY** – ***"Competency is not just about having the right qualifications and experience; it's also about the right mindset and attitude. It is about being self-driven or owning it, taking accountability, staying above the line...."*** Iraq Country Chairman of PETRONAS

The Future of Work: Tips to Thrive

Smarter Contracts, Greater Savings

BY OLGA LABAI
Director, Oil and Gas Consultants

The oil and gas industry is in something of a quandary. On one hand, the industry requires the highest level of technical and intellectual skill. But on the other, it demonstrates a surprisingly "forgiving" attitude to poorly drafted contracts.

The industry is driven by contracts, from procurement, to purchase agreements, to turnkey arrangements across all sectors. Contract negotiations frequently require the input of a number of functions. Most notably, this includes commercial, technical, operational, financial, credit and legal teams, each bringing a specific set of skills and knowledge. However, these teams are often disjointed – a disconnect that is reflected in the final contracts.

Consequently, contracts are drafted with undesirable practical implications, especially where "one size fits all" approaches are adopted. For example, a Master Service Agreement is drafted for a particular type of product supply that is then subsequently used for the supply of services. Failing to update the contract gives rise to significant legal and commercial risks that could have been avoided had a proactive approach been adopted.

Given these problems, it is vitally important that contracts are subject to review (legal, commercial and technical) at the time at which they are entered to ensure that the same are fit for the purpose for which they are entered. It is particularly important that any player in the industry develops and adopts contractual risk allocation process, based on best practice and the nature of the oil and gas industry. It is equally important to ensure that all stakeholders (not just top management and the legal team) are acutely aware of the issues surrounding contracts and that there is a holistic approach between them all. It is useless having a well drafted legal contract and process if the surrounding implementation is poor. This unified way of thinking and knowledge sharing among all stakeholders will ultimately lead to smarter contracting and financial benefits. ■

FIRST STEP? BANISH AMBIGUITY

Aside from the "one size fits all" approach, there are a number of other poor contracting practices across the industry:

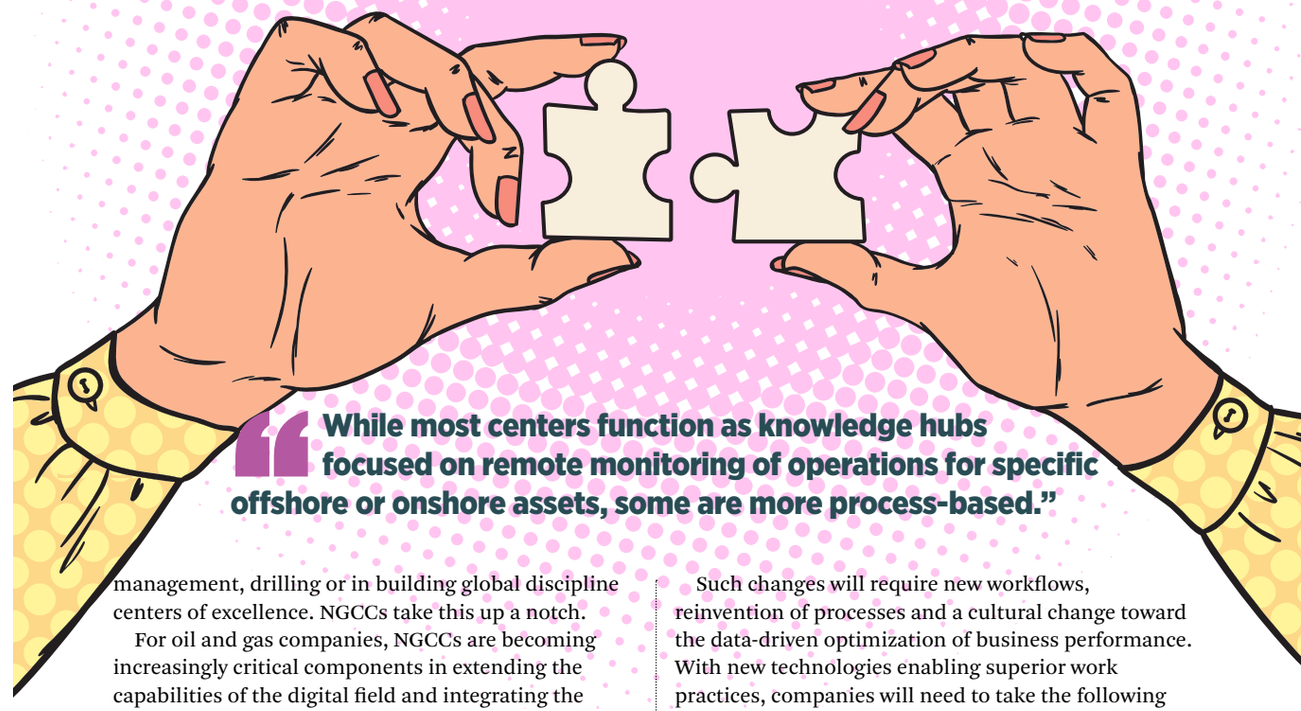
- **Disconnects between quotes, orders and terms and conditions leads to discrepancies in the contract, such as poorly defined terms (very often demonstrated by inconsistent use of defined terms) and legal uncertainty.**
- **Issues surrounding a "Battle of the Forms" scenario. This is where each party (particularly in the purchase of goods or services) attempts to impose their terms and conditions on the other with the last "shot" typically being successfully incorporated, without the same being explicitly rejected. This can cause far reaching consequences for the party whose terms are not incorporated.**
- **Adopting "standard" terms without consideration of context. A common example here will be the choice of law and jurisdiction. Does it make sense to have a contract where all parties (and their assets) are in the UAE to adopt the jurisdiction of the English courts? And does it make sense to use the same contractual templates for equipment spare parts and individually designed and engineered packages?**

> **"It is useless having a well drafted legal contract and process if the surrounding implementation is poor."**

Collaboration 2.0

BY MORGAN ELDRED
CEO, Digital Energy

Rapid advances in data collection and integration technologies, as well as digital business practices, are leading the introduction of Next Generation Collaboration Centers (NGCCs). Collaboration centers are widely used in the oil and gas industry to improve day-to-day operations by enabling the timely and effective human interaction that is necessary for fast and efficient decision making. While most centers function as knowledge hubs focused on remote monitoring of operations for specific offshore or onshore assets, some are more process-based. This means they are more concerned with reservoir management, drilling or in building global discipline centers of excellence. NGCCs take this up a notch.



> "While most centers function as knowledge hubs focused on remote monitoring of operations for specific offshore or onshore assets, some are more process-based."

For oil and gas companies, NGCCs are becoming increasingly critical components in extending the capabilities of the digital field and integrating the business and technologies in four key ways. Firstly, it provides greater accessibility of disparate data types through wider connection to physical operational assets or "things", such as computers, sensors, meters, motors, switches and so on. Secondly, it develops pathways to integrate work among silos, widening access to data and enabling the use of that data much more quickly, sometimes in near-real-time. Thirdly, it extends the collaborative ecosystem whereby organizational silos — especially at the asset level — can have enhanced interaction with partners and vendors. And finally, it enables more advanced analytical models that provide longer-range and more precise predictive capabilities via technologies, such as artificial intelligence that can support deeper levels of collaboration. This is a major step toward remote autonomous operations.

In the longer term, NGCCs will enable more timely human interactions and provide an effective platform to advance machine learning. Properly implemented, NGCCs will help break down organizational boundaries in a controlled way to optimize collaboration and decision-making. This will not just apply to day-to-day activities, but eventually into longer term decision making cycles. Therein lies the value of creating a proactive rather than a reactive culture.

Organizational change will be an essential element to moving the organization toward more effective work planning and execution – either with internal or external organizational siloes. This will be leveraged via the digital business where things will connect with things, people and the overall organization.

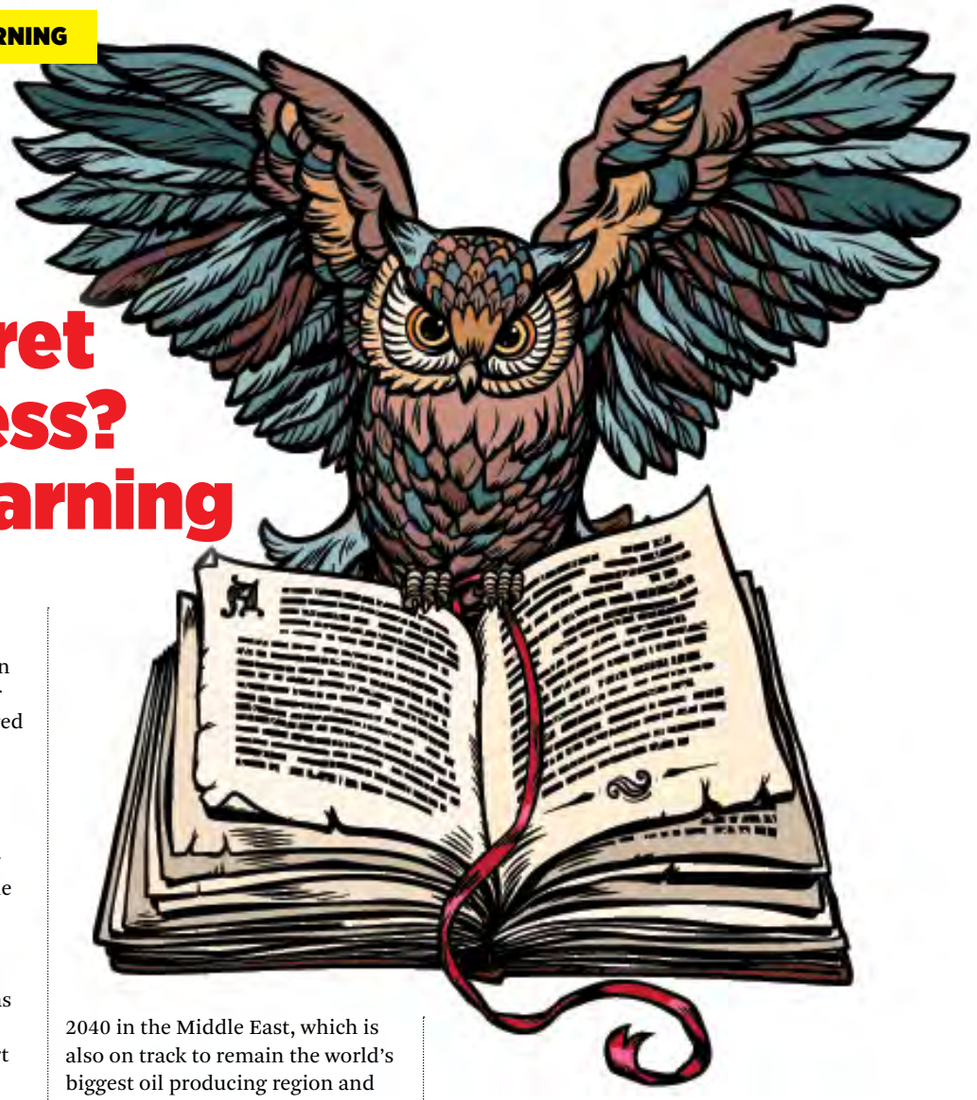
Such changes will require new workflows, reinvention of processes and a cultural change toward the data-driven optimization of business performance. With new technologies enabling superior work practices, companies will need to take the following into consideration when designing new organizational models and augmenting the operating philosophy.

Digital business models demand that the organization operates at a much faster pace, requiring changes to business processes, talent and technology. Each factor is vital for organizations to be competitive in today's connected world. This in turn will require organizations to build the appropriate organization model and find the right talent to operate efficiently, thus requiring a significant overhaul of their existing recruitment strategies to leverage the new competencies required to ensure that the workforce is ready for the future.

Nurturing change

Given the enormous potential, it is critical that digitally inclined organizations ensure that technology meant to optimize output or enhance operations does not become a burden for the end user. User adoption must be streamlined as NGCCs will not only have a big impact on headquarter staff, but also the connectivity of the workers in the field. Companies could face resistance if they do not properly roll out digital programs. This means not only training the workforce in the field to become comfortable with cutting edge technology, but also making sure they are armed with the necessary tools to think critically. Training users on digital dexterity and how a digital ecosystem works has become increasingly more important. Moreover, it is critical for leaders to understand the importance of efficiently obtaining reliable data. ■

The Secret to Success? Keep Learning



The importance of education can never be overstated. Nelson Mandela, the former President of South Africa, captured it accurately when he stated in 2003: "Education is the most powerful weapon which you can use to change the world." There is no finish line when deepening our knowledge, we must continue challenging our intellectual comfort zones to climb the professional ladder. Education – both formal and self-taught – has created the civilization we now appreciate, and it lies at the heart of any progress we hope to make during the 21st century. Make no mistake; if we stop learning, we stop improving.

Amid the current era of transition in the energy market – fossil fuels and renewables becoming equal partners – intellectual vigor has never been more important. The Middle East and the rest of the world face a major challenge: affordably meet the rising energy demand from increased populations, while supporting the Paris Agreement's mandate for a low-carbon future.

The BP Outlook expects a 54% growth in energy consumption by 2040 in the Middle East, which is also on track to remain the world's biggest oil producing region and second largest gas producing region. Feeding this demand while maintaining a sharp competitive edge amid well-equipped rivals will largely rely on leveraging the brain power of local talent. This includes making the regional job market attractive enough for such human capital to aspire to carve out local careers. Creative and critical thinking is fundamental to ensure long-term energy security, along with skills in science, technology, engineering and mathematics (STEM). Academia, industry and government must be deeply invested – both in funds and effort – to continue enhancing the education of its citizens and employees. National security and prosperity relies on those who are hungry and eager to learn.

The United Nations estimates that 1.1 billion people are still without access to energy worldwide, which will likely rise as the global population increases by nearly a third by 2050, to 9.7 billion people. Every individual and business will want more access to energy, more mobility and prosperity. Such demands will rely on greater connectivity and interdependency, yet there are still many conflicts within and around energy producing countries that limit collaboration. An ability to export lessons learned on how to tackle these trouble spots will support many Gulf countries' bids to become knowledge-based economies of global influence.

> **"Little is certain: the only thing we know for sure is that there is more to know."**

Examples on how to broaden our thinking processes to ensure success are plentiful. On a national level, the unprecedented cooperation between OPEC and non-OPEC countries since late-2016 to reduce oil production output illustrates the value of reshaping the status quo. This show of unity, regardless of borders and alliances, is a rare example of global collaboration in any field, not just energy. The global energy market learned together that unity trumped discord – and the effort is paying off with stable oil prices. The same applies to many Middle Eastern countries' bold step towards removing subsidies and the proactive roll-out of renewable technologies in a region that is the epicenter of the world's oil market.

Green champions

Creating a sustainable energy mix is the next major step in the energy market's journey. Conversations on climate change are not new; concerns have been raised on the need for sustainable scientific applications for decades. But the sense of urgency has increased significantly as governments, industry, academia and the public start to fully grasp the far-reaching impact of climate change. This realization lead to 195 countries signing the monumental Paris Agreement as of June 2018, making a global statement to keep the political momentum set by the Kyoto Protocol in 1997. However, the time-sensitive need for global collaboration is still required to ensure an effective solution.

Continually updating our educational toolbox through lifelong learning will enable the energy industry to achieve innovations much faster, therefore creating a more sustainable future. Literally, we must learn to survive. Future goals should include the establishment of more smart cities and electrification. The same applies to creating more efficient cars, the increased use of synthetic diesel and biodiesel, electric and hydrogen powered vehicles and upping our expertise in technology amid the 4th Industrial Revolution. Those with digital fluency will be able to speak a 21st century language that is rapidly growing in importance.

Little is certain – the only thing we know for sure is that there is more to know. As the face of the global energy markets mature, those committed to a lifetime of learning will stand the tallest in professional circles.

This content highlights the key themes harvested from a Knowledge Session at Qatar University on May 18, 2018. The event included the following guests:

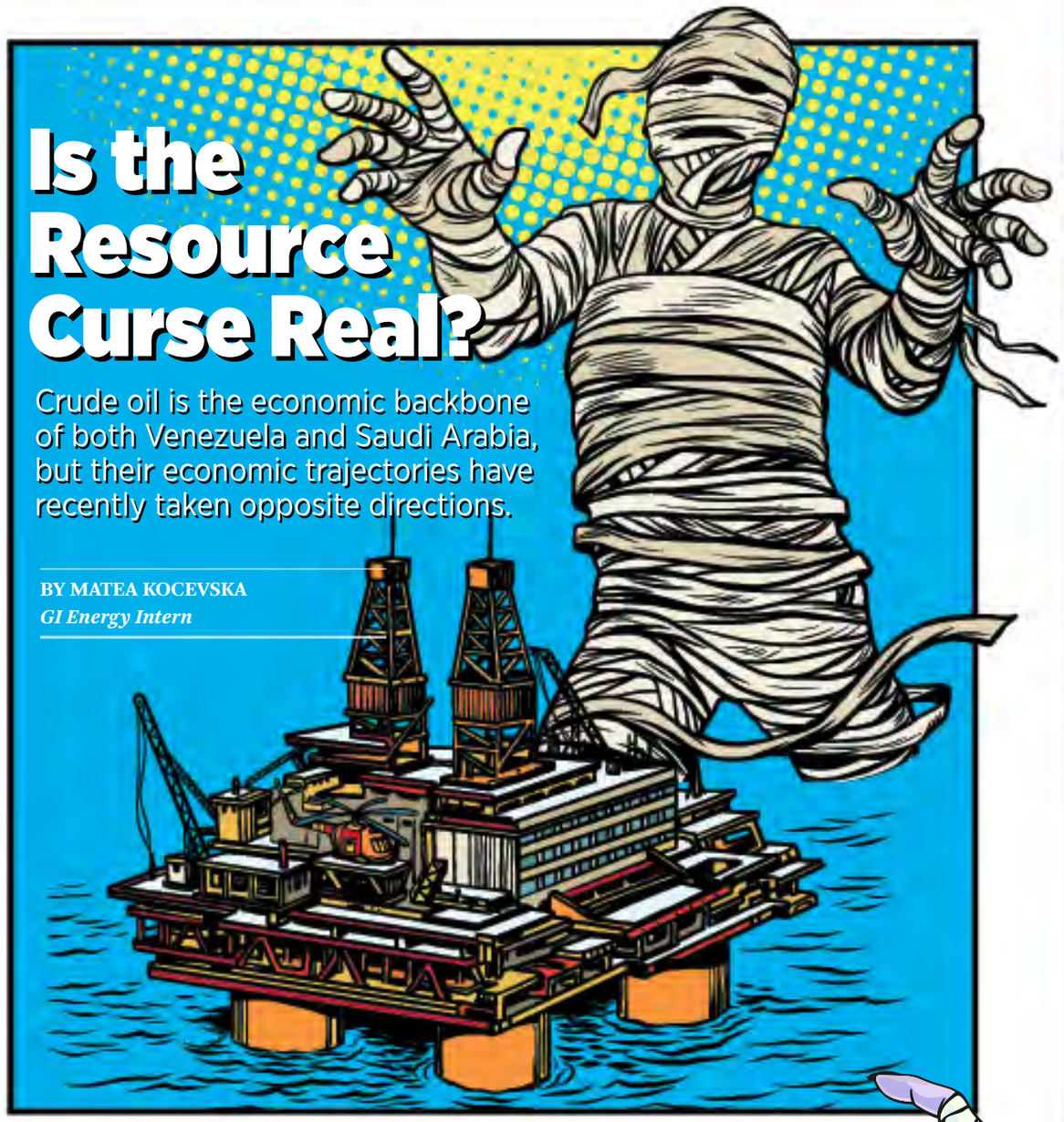
Maria van der Hoeven
Vice Chairman of the High-Level Panel of the European Decarbonization Pathways Initiative (European Commission); Former Minister of Education & Minister of Economic Affairs of the Netherlands, and former Executive Director of the International Energy Agency (IEA)

Ibrahim Al Ajlani
Materials Manager, ORYX GTL

Sean Evers
Managing Partner, Gulf Intelligence

ORYX GTL

ORYX GTL aligns its goals and Corporate Social Responsibility (CSR) strategic objectives with the Qatar National Vision 2030 and continually adjusts its path to support this vision. The company continues to offer substantial support for the educational sector in Qatar, which is in keeping with its own mission, vision, values and sense of social responsibility to support the knowledge economy. ORYX GTL has long championed links with prestigious academic institutions in Qatar, helping stimulate research activities, promoting scientific thought leadership and expanding the horizons of aspiring students in higher education institutions to enable them to reach their full potential. Such efforts include the ORYX GTL Student Awards ceremony, which has run for five consecutive years.



Is the Resource Curse Real?

Crude oil is the economic backbone of both Venezuela and Saudi Arabia, but their economic trajectories have recently taken opposite directions.

BY MATEA KOCEVSKA
GI Energy Intern

Venezuela is estimated to have the world's largest proven oil reserves, with 300,878 million barrels. The Kingdom of Saudi Arabia is ranked second with oil reserves of 266,455 million barrels, according to the World Atlas. In Venezuela, revenue from petroleum exports accounts for more than 50% of the country's GDP and roughly 95% of total exports. Similarly, the petroleum sector accounts for roughly 87% of the Kingdom's budget revenues, 90% of export earnings and 42% of GDP.

A state that derives a substantial proportion of its revenues from one natural resource, typically called a Rentier State in political economic theory, becomes subject to the resource curse. The curse centers around insufficient economic development and a lack of alternative revenue generating sectors.

While Venezuela and Saudi Arabia fit the definition of a Rentier State, their fortunes are very different – as illustrated by several macroeconomic factors. Venezuela has been experiencing a rapid decline in GDP growth with a last recorded value of -16.5%. Comparatively, the Kingdom has reported steady growth of 1.7%. Plus, Venezuela has reached a remarkably high inflation rate of 254% with an unemployment rate of 20%. Yet, the Kingdom has much lower rates of 5.6% and 3.5%, respectively, as reported by Forbes. Why does Venezuela seems to be struck by the resource curse while the Kingdom appears immune?

A major downward trend in Venezuela's economy commenced when the price of crude oil fell from $112 a barrel in June 2014 to $48 a barrel in January 2015 – a price drop of more than 50%. In such circumstances, the simplistic framework of the resource curse is inadequate to capture the overall picture. Venezuela has been drastically decreasing its oil supplies from 2.154 million barrels a day in 2016, to 1.916 million barrels a day in 2017 and to 1.548 million barrels a day in 2018, according to OPEC's latest data. Additionally, the number of rigs has also been in freefall reaching marginally above 40 rigs compared to approximately 80 in mid-2013. Furthermore, the U.S. Energy Information Administration (EIA) predicts Venezuela's production to continuously fall at least until the end of 2018 and there are expectations for Petróleos de Venezuela, S.A. (PDVSA) to declare force majeure.

One resource, two tales

The cost of the countries' domestic production plays a key role. On average, it costs Venezuela $28 per barrel to produce oil in comparison to $9 per barrel for the Kingdom, as reported by the Wall Street Journal. Furthermore, the oil quality differs among both suppliers. Venezuela's production is dependent on heavy oil – higher in sulfur content – which makes it harder to refine, with greater environmental harm. Therefore, it is often priced at a discount compared to light oil. The greater demand for the light oil produced in Saudi Arabia drives up its price. The comparative advantage of a much lower break-even point grants power to Saudi Arabia to maintain its position as a key player in the oil market. However, Venezuela's oil production cut also unquestionably disrupts the market and pushes up oil prices, especially when it occurs in a time of a greater geopolitical turmoil, such as recent tensions between the U.S. and Iran.

> **"Economic diversification seems both favourable and plausible for what the International Monetary Fund classifies as high-income, resource-rich countries like Saudi Arabia."**

1st
Venezuela has the largest proven oil reserves in the world with 300,878 million barrels.

90%
Oil contributes more than 90% of total export earnings for both Venezuela and Saudi Arabia.

$48
The price of crude oil fell from $112 a barrel in June 2014 to $48 a barrel in January 2015 - a price drop of more than 50%.

$75bn
Saudi Aramco's planned IPO for 5% of its shares is expected to generate up to $75 billion.

$9
It costs $9 per barrel for Saudi Arabia to produce oil.

The truth is that the cause of Venezuela's current hardship is far more complex, as it is also a product of a broader political mismanagement. How to manage such factors if the aim is to keep the oil market stable, as highlighted in the OPEC statute? The energy market should focus on the problem of oil dependency and how to prevent the next Venezuela from happening. Perhaps the unprecedented energy transition in the Gulf serves as a good template?

Even the Kingdom is making active efforts towards economic diversification and breaking away from the Rentier State with the Saudi Vision 2030. One of the key signs of change is the planned Initial Public Offering (IPO) of 5% of state-owned Saudi Aramco. Economic diversification seems both favourable and plausible for what the International Monetary Fund (IMF) classifies as high-income, resource-rich countries like Saudi Arabia. The GCC is building an intra-transferable growth model and template for boosting inbound investments. Nonetheless, the threat of the resource curse remains pertinent for the low-income and middle-income countries that are rich in natural resources and any upcoming price shock may cause the next Venezuela scenario. ■

TWO ENERGY WORLDS

The energy landscape has shifted. Changing customer behavior, new technology, and increasingly global markets are creating two distinct energy worlds.

The classic energy world has the indispensable task of ensuring supply security. Alongside it is emerging the new world of distributed energy solutions. Uniper's portfolio will combine large-scale power generation and the effective management of global and regional energy supply chains. E.ON will focus on the new energy world with renewables, distribution networks, and customer solutions. Both worlds require distinctive business models and capabilities. Both worlds present challenges and opportunities. Both worlds are needed to meet the world's energy needs in the decades ahead.

A strong energy company

Uniper has the right assets, knowledge, and skills to succeed in the classic energy world. We have a deep understanding of global and regional energy markets, regulatory regimes, and market designs. We have a wide range of capabilities in the construction, management, and operation of large-scale energy assets as well as the optimization and risk management of assets and contracts. And we have long-standing relationships with industrial customers, municipal utilities, system operators, and our suppliers. These strengths and networks reinforce one another.

Why Uniper?

We're well positioned to play a key role in ensuring supply security. We have:

- a broad geographic footprint with positions in Europe's main generation markets and in Russia
- comprehensive capabilities in the operation and management of individual generation assets and optimization of generation fleets
- profound technical knowledge gained in the development and use of energy technologies
- the market access of a proven trading and optimization platform at Europe's key trading points and on global markets along with a significant position in the midstream gas business
- a detailed picture of the interrelationships between market participants, technologies, and energy systems
- deep expertise in regulatory regimes and market designs

There are three main areas in which we deploy our strengths:

• We help ensure security of supply in Europe as it transitions to a low-carbon future

The growth of intermittent renewable generation increases the need for flexible power plants that can meet fluctuating demand at short notice; our generation portfolio is well suited to this task. In addition, our midstream gas business helps ensure supply security through a diverse portfolio of long-term gas contracts along with gas storage, transport, and regasification capacity.

• Our trading activities connect global commodity markets

Global trading in commodities like natural gas and coal is bringing energy markets from America to Asia closer together. As markets become more interconnected and dynamic, they create more opportunities for companies that can build bridges between regional markets, respond swiftly to changes in supply and demand, and use their knowledge of supply chains to better manage commodity risk. Uniper has a flexible portfolio of long-term gas import contracts, coal, and LNG. This portfolio not only enables us to meet our own fuel needs but also to provide our customers with bespoke products and services.

• We support the development of power markets outside Europe with our own generation activities and our services for third parties

Uniper has a significant platform of technologically advanced generation assets across Europe and in Russia. As the demand for dispatchable generation capacities is growing in a number of markets, we're well positioned to market our capabilities in building and operating assets and in supplying fuel to third parties.

From gas fields and power stations to customers: Uniper helps keep energy reliable

We offer a broad range of energy products, services, and solutions. Our business portfolio encompasses most of the stages of the energy value chain. We have a stake in a gas production business in Russia and procure climate-friendly natural gas under long-term supply contracts and at trading venues. With LNG becoming a more prevalent source of gas, we're active in sourcing, transport, and regasification. In addition, our hydro, coal and gas power stations play an important role on the upstream end of the electricity value chain.

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