National champions
State oil companies evolve to face the future

Industry perspective
Insights from Qatar Petroleum, Libya’s National Oil Corporation and SOCAR

Downstream revolution
NOCs ramp up refining, chemicals push as peak oil demand looms

Trading up
Persian Gulf producers muscle in on global crude flows

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Lead Author
Robert Perkins

Copy Editors
Alisdair Bowles, James Leech

Contributors
Dave Ernsberger, Paul Hickin, Herman Wang, Claudia Carpenter, Miriam Malek, Dex Wang, Mustafa Sanalla, Daniel Colover, Jonty Rushforth, Robert Stier, Andy Brogan, Simon Redmond, Stuart Elliott, Dania El Saadi, Aresu Eqbali

Design and Production
Tom Dent

Digital Content Leader
Mark Pengelly

Content Project Manager
Carrie Bharucha

S&P Global Platts
20 Canada Square, 9th Floor
London, E14 5LH, UK

President
Martin Fraenkel

Global Head of Market Insight
Sarah Cottle

Global Head of Commodities Pricing
Dave Ernsberger

Global Head of Analytics
Chris Midgley

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Foreword

A new path

National oil companies live at the epicenter of the global oil market. They control 90% or more of the world’s proven oil reserves, and upwards of 70% of oil production every day.

Even with the revolutionary rise of shale oil technology, which has shifted marginal pricing for crude westwards – towards the hyper-flexible shale producers of West Texas in particular – the actions, beliefs and strategies of NOCs are decisive in shaping how the world of oil will look, particularly in the medium and long term.

NOCs are behemoths that toil away at the commanding heights of the global oil economy, building 20- and 30-year development plans for trillion-dollar resource development opportunities. But what do we really know about them in today’s world? To dig deeper, we’re pleased to welcome you to our special report, where we examine the latest trends among NOCs – some of which might surprise you.

As with every other kind of institution in the global economy the most progressive NOCs have moved beyond conventional wisdom, and ditched cliches. As Dania El Saadi writes, nowadays an NOC is as likely to have the stock market in thrall, waiting impatiently for news of where and how a share listing might be made, as they are to be scouting for rigs to develop the next square mile of resource.

For me, the penny dropped that many NOCs have moved well beyond their conventional roles a couple of years ago when I was attending one of the many major industry events, like the one you might be sitting at now reading this feature.

A panel on stage at the Annual Asia Pacific Petroleum Conference was discussing hedging, and debating the fate of far-forward risk management, through trading and market-making deep down the curves. A popular question came up: With most banks having reduced or completely closed their paper trading in oil after the financial crisis, who was left to take risk along the curve and provide liquidity?

The answer, much to my surprise, was that NOCs had stepped in to provide a lot of that missing liquidity. Sure, some of it was through sheer necessity. Without others to put on the hedges, some NOCs had been obliged by their own treasuries to find their own way to market.

But several had seen the opportunity to fill the space left behind by the banks, and take on positions through their own fully-fledged trading businesses. Often they were doing this in joint ventures with majors or merchant traders; increasingly, though, they were doing it on their own. As
Jonty Rushforth writes in this report, Aramco Trading has risen to become the most active of any Gulf-related entity in the S&P Global Platts Market on Close assessment process – unimaginable just 10 years ago.

What a journey these companies have been on. Often born from the troubled struggle for self-determination over natural resources, NOCs have spent decades as arbiters between short-term financial gain, and long-term strategic planning. Typically, NOCs have functioned as national accountants, balancing the books for their governments.

No longer. In the next decade, many NOCs will be at the forefront of innovations in technology, investment and trading. As Robert Perkins describes in his review, Middle Eastern and Asian NOCs are driving the next wave of downstream development and rapidly growing proprietary trading businesses – in some cases turning from pupil to teacher for the international oil companies that were the source of such expertise for generations.

Even more ambitiously for the host nations, Claudia Carpenter and Aresu Eqbali chronicle the rise of renewable energy right in Middle Eastern NOCs’ backyards, and how savvier NOCs are building this into their own forward planning – KNPC’s 1.5 GW Al Didibah solar power plant could generate 15% of the oil industry’s electricity needs when it opens in 2022.

And as Dex Wang writes, these transformations in approach have not come a moment too soon for the NOCs. The rise of alternative hydrocarbon supply sources, coupled with an increasing appetite for risk among Asia’s biggest buyers, means the ritualized supply and demand patterns that served NOCs so well in the 20th century are eroding quickly the deeper we get into the 21st.

All of this is not to downplay the fact that some NOCs remain mired in profound national crises, societal challenges and sometimes complex and extremely dangerous armed conflicts. Indeed, almost every NOC is really just one national crisis away from having to revert to their core reason for existing.

But that is increasingly the exception, rather than the rule, and this report explores the many ways that NOCs are more and more at the forefront of economic progress in an increasingly multipolar world, just like the nations that birthed them.
Introduction

Peak opportunity for NOCs

Peak oil demand doesn't signal the demise of national oil companies but rather a reawakening. It's often forgotten the world will need more energy in the future not less, and crude is likely to remain an important part of the mix for decades to come. That means NOCs have an opportunity to leverage their vast oil wealth to lead rather than to react to dramatic changes in energy competition, environmental policy, technology, supply and ultimately price.

Middle East oil producers can learn many lessons from the decline of coal. Coal’s market share peaked several decades ago but remains embedded in modern economies, especially in emerging markets where it accounts for more than a third of energy use. S&P Global Platts Analytics' Scenario Planning Service sees oil demand growing at over 1 million b/d a year for much of the next decade at least, with most of the growth coming from Asia, suggesting “a peak opportunity” for NOCs.

The ultimate lessons are diversification and integration across the supply chain. The world’s largest crude exporter, Saudi Aramco, is doing both. It has expanded its investments in Asian refineries in recent years, especially in key demand center India, with a downstream tie-up with Reliance Industries following on from a deal with Indian Oil Corp, Hindustan Petroleum Corp, and Bharat Petroleum Corp to build a mega-refinery and petrochemicals complex. Ambitious plans to develop its gas and renewables business includes a target of 60 GW from clean energy sources over the next decade, with lower-cost technologies like solar and wind set to complement gas projects such as the 1.2 GW, combined-cycle Waad A-Shamal power plant.

The UAE is at the forefront of diversification, targeting an energy mix combining renewable, clean energy sources and nuclear power to meet the federation's economic requirements and environmental goals of 44% clean energy, 38% federation’s natural gas, 12% coal and 6% nuclear by 2050. In terms of integration, it is also targeting a boom in petrochemicals demand, with plans to transform its main Ruwais facility into a sprawling refining and petrochemicals complex.

Across the region, the trend is similar. Kuwait wants renewables to make up 15% of the power mix by 2030, Oman is targeting a 10% share by 2035 and Bahrain is working on policies to incentivize industrial customers to make the most of the Middle East sunshine and switch to photovoltaic power instead of gas. The Duqm refinery – a joint venture between Kuwait Petroleum International and Oman Oil Company – includes a petrochemicals complex and is expected to reach completion by 2023.

The advent of electric vehicles, growing pressures to decarbonize the transport sector and the supply-side revolution of US shale could mean a market awash with crude and a sharpened focus on the cost of extracting the

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Scan the code or visit spglobal.com/national-oil-champions to watch Robert Perkins explain how NOCs are adapting their approaches to changes in the global energy industry.

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marginal barrel. It could also mean one where demand patterns and consumer growth hubs change as gasoline and middle distillates jostle with petrochemicals growth, India and China are joined by other Asian and African demand growth stories and urbanization increases around the world. The market which might emerge could be one where what is mined and what is produced and where it is produced and what is needed are at odds.

Thus, balancing integration and diversification has never been more important for NOCs. Integration means greater control of the products that need to be supplied and adapting and anticipating the products likely to be in demand. This highlights the big petrochemical push, with the International Energy Agency estimating half of all oil demand growth coming from this sector by 2050 despite the backlash against some plastics. Aramco has bet big by buying a majority stake in Sabic – the world’s fourth largest petrochemicals firm – from the kingdom’s wealth fund as it looks to double its refining capacity. Diversification means NOCs spreading the risk to other energy sources, but also maximizing their oil revenue as more domestic power is generated from cleaner local infrastructure and sources.

Any estimate of peak oil demand is highly dependent on the assumptions that underpin it and these inform the choices and plans being made today. In even the most bearish scenario, there is unlikely to be a collapse in oil demand and therefore the world will need significant investment in new oil production for the foreseeable future. However, in a world of abundant oil and one where demand starts to plateau at some point, the pressure for NOCs to generate revenues needed to fund government budgets becomes even more acute.

Even with the Brent oil price around $60/b, the five major Middle-Eastern oil producers – which account for almost a quarter of world oil output – could feel uncomfortable. Only Kuwait has a fiscal break-even well below current prices, while Saudi Arabia would be better suited to prices above $80/b, according to the IMF.

For an NOC, its about changing the operating model that weans the domestic economy off its oil dependency and adapts its corporate structure to engage with dynamic competition, mimicking the strategies of international oil companies. But it’s also about making the most of its natural advantages – NOCs account for more than half of global hydrocarbon reserves and production and the cost of getting oil out of the ground for Saudi Arabia, the UAE, Iran, Iraq and Kuwait is less than $10/b on average.

Global oil prices in the coming decades could hinge as much on an NOC’s ability to lower their fiscal dependence on oil as on any peak in world oil demand. The big producers have already made big strides in deepening and widening their resource base, but the hard part is still to come.
At a time when the oil market is facing looming structural changes, state-owned companies are transforming themselves – not just to survive, but to thrive. The rise of US shale production, fraught geopolitics, concerns about climate change and the battle for customers in oil-thirsty Asia are just some of the challenges that national oil companies are dealing with today. This special report highlights several of the key trends in the evolution of NOCs, as well as views from some of their top leaders.

Expansion and change

In war-weary and fractured Libya, crisis management is the “new business normal” at the country’s National Oil Corporation, its chairman, Mustafa Sanalla, writes. From terrorist attacks and sabotage to power struggles between factions aiming to gain control of Libya’s lifeblood oil industry, NOC has persevered.

Azerbaijan, the birthplace of the modern oil industry, has seen its state company SOCAR expand across the energy sector globally to become a major exporter – and trader – of crude, refined products and LNG, SOCAR’s Elshad Nassirov tells Platts’ Stuart Elliott.

Qatar’s energy minister and CEO of Qatar Petroleum Saad Sherida Al-Kaabi also has an eye on expansion. In this report he outlines his vision to keep the world’s largest LNG producer ahead of the pack.

Opportunity and risk

Meanwhile, oil and gas sector growth opportunities for NOCs remain abundant and ample investment capital is available, even with geopolitical risks in the Middle East rising, according to Ernst & Young’s Head of Global Oil and Gas Andy Brogan. The days of a project requiring $85/b to generate an attractive return are over, he says in an interview.

In fact, NOCs, with their advantageous access to reserves, typically boast strong credit ratings, boding well for their ability to attract financing for projects, writes S&P Global Ratings’ Simon Redmond. But government interference can hamstring an NOC’s financial performance and increase its risk profile to potential investors.

Certainly, all eyes in the industry are watching Saudi Aramco, as the Saudi oil giant prepares for its much-hyped public listing that will almost certainly affirm its status as the world’s most valuable company. Aramco has been famously secretive about its operations and assets, but its plans to offer up to 5% of its shares on a yet-to-be-determined exchange will force the company to open its books to market scrutiny, Platts’ Dania El Saadi writes.

Downstream, trading integration

Elsewhere in the Middle East and Asia, national oil companies are rapidly expanding their downstream sectors to meet growing demand for refined products and petrochemicals. Analysts believe downstream integration is key for NOCs to find outlets for their crude and hedge against the prospect of peak demand leaving their barrels in the ground. But the strategy is not without risk, as the race to build refineries leads to concerns of overcapacity.

Certainly, the stakes are high for NOCs in the market share battleground of energy-hungry Asia, where China, India, Japan and South Korea still source more than half of their crude requirements from the Middle East. Platts’ Dex Wang notes that many Asian countries have been diversifying their crude imports – with price arbitrage opportunities leading to greater flows of North Sea and US oil to the region.

As the race for customers heats up, many NOCs are also boosting their refined product commercial and trading operations to leverage their infrastructure networks, notably Saudi Aramco and ADNOC. On the crude side, NOC trading has been slower to take off, with many producers still preferring to sell their own barrels via term contracts. But some NOCs are venturing in, and Platts’ Daniel Colover examines this emerging trend.

Petchems, renewables growth

In petrochemicals, a wave of new projects are springing up, Platts’ Robert Stier writes. Even with conventional refineries, many new builds are targeting at least 25-30% petrochemical yields, compared to 5-15% historically, with global plastics demand set to increase three to four times faster than gasoline demand, according to S&P Global Platts Analytics.

But it is not just about oil for Middle East NOCs. A wave of renewable energy projects is expected, with many countries in the region embracing aggressive clean energy targets to free up more hydrocarbons for export and stay ahead of market shifts in response to climate change concerns. Platts’ Claudia Carpenter and Aresu Eqbali take a closer look at the prospects for the renewables push in the Middle East.
Winner takes all

Qatar’s energy minister and CEO of Qatar Petroleum, Saad Sherida Al-Kaabi, shares his vision for the world’s largest LNG producer.

By Claudia Carpenter and Miriam Malek

Will you continue at the same pace of investment that you have had this year?

We set a new strategy two years ago and have just been methodically working that strategy. So now we look at it like it’s all at once but it’s not been like that. So we will continue, yes. We see ourselves like any international oil company, like Exxon or Shell. We don’t see ourselves like a national oil company. We think we are the number one NOC in the world. That was our goal and we think we are very close to that goal.

So how do you measure success?

In every sense. Safety, efficiency, the KPIs we set for ourselves. We are very good, we just don’t talk about it. We achieve something and we announce it and that is very important for us because we are not a flashy company. We supply Japan and Korea with 30% of their gas. We supply half of China’s LNG imports. We are the biggest supplier to India, we supply Pakistan, and we supply the UAE pipeline along with LNG. We supply Jordan, Egypt, Turkey, France, Belgium, Poland; 20% of UK gas is from us. So this is just the gas, so when you put in LPG, fertilizers, plastics and chemicals we go to 123 countries.

How high could Qatar’s domestic gas production ultimately go?

It could go higher. We haven’t decided yet. Everything is technical and we have a moratorium in place. We proofed up more area. It’s all technical and methodical. You talk about an aggressive approach but it’s a methodical strategy. Nothing we have done is [on a whim]. We have a very ambitious expansion plan.

What is the latest update with the North Field expansion project?

We selected a few companies and have given them a document of what we would like them to bid for and one of the things that we will analyze when using the companies and they are very well-informed of what that is and they will bid. The ones that can give us something beneficial, and if none of them can we will just continue alone. It’s difficult to decide a date but probably by the end of this year, or first quarter [2020], max. We would want to award the onshore, while having a partner, but if that doesn’t happen we’re not going to delay the project.

Will South Korea supply QP with LNG ships?

There was a high-level meeting and they brought out at a communique in which we discussed them possibly buying LNG. There is a bid and they are bidding. They have some of the best shipbuilding in the world and have supplied all of our
ships currently, but it is a competitive process and Japan and China are also bidding. Sixty ships is the minimum, but it could go up to 100.

What is QP’s production cost for oil?

Well it’s a good question, but I can’t answer because we have too many fields and it’s different per project. But at $30/b, QP is still very profitable.

Are there any markets you are particularly interested in?

We are looking at the hotbeds of reserves, some portion of our exploration is in frontier areas, others in the hotbeds of the world, like Brazil. There is a bidding round coming in Brazil. As well as that we will be participating in and we bought 30% of all of Exxon’s assets in Argentina. We have got five exploration blocks in Mexico and we have a discovery in Cyprus, as well as going with Total in South Africa and Guyana. This is all this year. So we had three discoveries this year.

Are there plans to launch an LNG trading desk?

Honestly, we have a lot of things we are planning and I can’t talk about it. What I can tell you is everything you can think of has either been thought of, or we are thinking about, and are either going to go ahead, or have decided against. Some people have said they will set up trading and two or three years later they set it up. If we do trading, we will announce our first trade.

How will Qatar handle LNG price volatility with its expansion?

We are a long-term producer, so when we decide to do a project it’s based on the fundamentals of being a low-cost producer. Demand for gas is going to be there for a long time. The issue is that if the price is so low it will force the higher cost people to shut down. We want to be at the lowest end of that, so no matter what happens in the market, we will always have a market that will give us a margin that we can make money in because of our low costs. So we don’t worry about low gas prices.

A few years ago there was a lot of demand to move away from oil indexation, but it doesn’t seem to have taken off.

This will be a debate that never ends. When oil prices are low people want oil indexation, when it’s high, they want something else. If I’m not producing from Henry Hub or another gas hub, it doesn’t make sense to tie Qatari gas to these hubs. The majority of countries that are sensible and long-term and using diesel for power, linking it to gas is cheaper than diesel and environmentally much friendlier. So if they link it to diesel, gas is always cheaper. So that’s why people would want to link to oil.

We as an oil and gas company can accept the price risk, because all of the oil and gas companies have taken the price up and down in cycles. But if it’s something like Henry Hub, I have no control over it. Linking it to oil is much more reasonable to buyers and sellers. We have some linked to NBP or TTF, of course it depends where you are selling it.

Are you bearish then on development of the spot market?

No, I’m not saying it won’t develop, but it won’t do away totally with LTCs [long-term contracts]. Because LTCs are not crude, where it is transportable. To take LNG it requires massive investment to liquefy, transport, and degasify – so all this chain of investment, you can’t just have it on spot and think “okay maybe I will supply this day to that guy” – no one has the volumes to do this. For Japan, Korea, and China – if it’s your baseload for electricity – would you depend on maybe it’s available today, or tomorrow? The majority of countries will go for maybe 80-70% in long-term sustainable deals because they want security of supply because it is a national security issue. They cannot do the whole thing spot.

Could Qatar cut off gas supplies to the UAE because of the embargo?

We have decided that this is a business and we are not going to bring politics into business. There is a contract between us and we will sell as per the contract and it goes very well with what I spoke about. When I go to the Chinese I can show that even if we have a rift politically we will not cut off supply. We are a steady and stable supplier.
Asian attraction

Relations between the world’s biggest oil producer and consumer regions continue to evolve as the Middle East consolidates its downstream footprint in Asia amid surging US exports.

The transformation of Middle Eastern NOCs from national champions to global competitors as resource development expands internationally into new areas has only raised the stakes for the companies in their key regional export markets.

Asia’s oil-thirsty economies have been tied to Middle Eastern oil exports for decades and the region’s four largest oil consumers, China, India, Japan and South Korea, still secure more than half their crude requirements from the Middle East.

But changing trade dynamics mean Asian dependence on Middle East oil has ebbed in recent years. Robust domestic consumption in the Middle East, OPEC output constraint, and conflict and sanctions in the MENA region have also crimped oil export growth into Asia.

India and South Korea rely on the Middle East for more than 70% and 60% of their crude imports, respectively, although both have been reducing their reliance on the region in recent years.

Importing countries’ strategic diversification and the awakening of US crude production have been the defining challenges to crude exports by the Middle Eastern producers, prompting the latter to take actions including buying into refining assets in Asia to secure outlets for their oil.

Some of them have also shown ambition in trading crude and oil products, especially in Asia, to have a finger in the pie traditionally dominated by international and regional trading houses.

Asia diversifying crude sources

With the majority of crude distillation capacity growth concentrated in Asia in recent and coming years, it makes economic and strategic sense for producers to maintain or even grow market share in these markets.

However, China, the world’s largest crude importer, has also been gradually diversifying its crude sources in the past decade.

Despite large increase in yearly crude import volume, China sourced only 43% of its crude from the Middle East in the first half of the year, down from 52% five years ago. During the same period, Russia increased its market share in China from 11% to 15%, while Latin American countries combined also grew their share from 11% to 15%.

Fluctuating relative economics have played a key role in Asia’s selection of crudes from the Atlantic basin and the Middle East. With the narrowing of the Exchange of Futures for Swaps – a gauge of ICE Brent crude futures’ relative strength to Dubai swaps – in
2015, 2017 and the first quarter 2019, crudes priced off Brent have become more attractive to Asian buyers. That, in turn, has incentivized them to procure more crudes on the spot market, keeping their Middle Eastern crude intake close to term contractual levels.

Forties, one of the main North Sea export crude grades, has seen more than half of its total output exported to Asia over the last two years, as Asian buyers take advantage of a narrow EFS.

**US shale making inroads**

Coinciding with OPEC-led production cuts, the US has increased crude production and exports significantly in the past three years, with a big portion of that supply now landing in Asia, despite the US-China trade tensions keeping inflow to China at modest levels since mid-2018.

South Korea has been one of the world’s largest importers of US crude. For the first half of 2019, South Korea imported 315,000 b/d of US crude, according to the country’s customs service, representing 11% of its total crude imports and double the average for 2018. Over the same period, flows from the Middle East have fallen, albeit marginally, from 2.21 million b/d to 2.15 million b/d.

This creates other problems. Asia’s newer, bigger and more advanced refineries compared with their European and Mediterranean counterparts have a key flexibility for processing the relatively heavy and sour crudes from Middle Eastern producers, giving them a theoretical edge in meeting the International Maritime Organization’s more stringent marine fuel requirements from 2020. This flexibility should see them benefit from the expected weakening in value of heavy, sour crude as IMO’s tougher sulfur rules kick in.

In contrast, many older plants outside Asia will need to source lighter and sweeter crude feedstock to produce IMO spec marine fuel, potentially reducing the outlet for Middle Eastern suppliers and making Asian buyers even more important.

Bucking the trend of lower Asian dependence on Middle Eastern oil is
Growth markets

Japan. The Middle East combined supplied 88% of total crude imports to Japan in the first half of 2019, the highest proportion for Asia’s third-largest crude importer in recent years.

Saudi Arabia is by far the largest crude oil supplier to Japan, which imported an average of 1.17 million b/d of Saudi Arabian crude in January-May, or 37.4% of its total imports of 3.13 million b/d in the five-month period, according to official Japanese data.

**Downstream investment push**

Saudi Aramco has led the way among Middle Eastern suppliers in securing outlets for its crude.

In August, the company announced the acquisition of a 20% stake in the refining unit of India’s Reliance. As part of the agreement, Aramco will supply Reliance with 500,000 b/d of crude, or more than a third of its total consumption at current rates.

In April 2019, Aramco reached a deal to buy a 17% stake in South Korea’s Hyundai Oilbank, with an option for Aramco to increase its stake by another 2.9%. This makes it the second major investment in a Korean refiner, with Aramco already holding a 63.4% share of South Korea’s third-largest refinery, S-Oil.

In one of the biggest one-time investments in an Asian refining project, Aramco undertook a 50% investment in Malaysia’s 300,000 b/d RAPID refining and petrochemical complex as announced in Q1 2017. This ensures another major outlet in Asia’s latest downstream expansion.

Perhaps the Saudi NOC’s most ambitious potential investment of all is its mulled 50% stake in India’s upcoming West Coast Refinery with UAE’s ADNOC. It’s unclear how the two will split the 50% stake as well as the proportion of crude they will each supply. What is certain is that at least half of the crude for the 1.2 million b/d refinery will likely be sourced from these two stakeholders.

Aramco is also the second-biggest shareholder in Japan’s Idemitsu Kosan, with a 7.56% holding, after the latter’s absorption of Showa Shell, in which Aramco had 14.96% stake.

Aramco’s other significant investment in Asian downstream projects include a 35% stake in an upcoming 300,000 b/d refinery with Chinese defense corporation Norinco and a 9% stake in China’s 400,000 b/d Zhejiang Petrochemical project, which is expected to start up in the coming months.

Aramco’s approach shows that NOCs will likely have to work a lot harder to ensure market share in China, as buyers have become increasingly willing to make the effort to secure crudes with greatest value, pitting the NOCs in a long-term battle with suppliers elsewhere.

“Aramco’s most ambitious investment to date is a potential 50% stake in India’s mega, West Coast Refinery with UAE’s ADNOC.”
Confronting crisis

Libya is adopting a “crisis as usual” attitude as a series of challenges continue to threaten the unity and growth of its oil and gas sector, says the head of the country’s national oil company.

Libya and the National Oil Corporation (NOC) have faced many challenges in recent years. In April of this year, I was forced to convene an emergency meeting at NOC’s Tripoli headquarters in response to our country once again being propelled into a state of active conflict. The corporation and its subsidiaries have been forced to adapt their standard operating procedures and to implement contingency plans to maintain supply chains and the unity of the oil sector.

Since I became chairman in May 2014, our operations have been defined by multiple concurrent issues ranging from blockades, intimidation of staff, kidnappings, foreign-backed disinformation campaigns, attempts to partition the oil sector, militarization of national energy infrastructure, direct security threats and, on September 10 last year, a deadly terrorist attack on our headquarters in which two NOC staff were killed.

In post-revolution Libya, regrettably, our 65,000 oil and gas sector staff operate against the backdrop of near-permanent crisis. For NOC’s board of directors, crisis issue management is the new business normal.

Strategists describe this state of affairs as “VUCA” – volatile, uncertain, complex and ambiguous. This thinking defines our operational environment and management playbook. We have adopted a four-pronged approach to these four variables: flexibility to handle volatility; strategic planning in the face of uncertainty; prioritization to deal with complexity; and good governance to manage ambiguity.

Constant volatility in the geopolitical environment has forced us to embrace flexibility and update our business proposition. We have offset risk by diversifying our production outlook beyond onshore oil towards gas, offshore and downstream.
opportunities. We have also deployed innovative solutions such as mobile fuel stations to alleviate the national fuel crisis. In the future, we hope to be able to enter into new low-risk contracting models and partnership agreements with international partners to drive inward investment.

NOC aims to produce 2.1 million barrels per day by 2023, around 850,000 b/d more than at present. This year alone, NOC could have easily added around 320,000 b/d if insulated from conflict and with adequate financing. However, oil sector operations are constantly underfunded, with NOC having been granted only 58% of its requested budget for 2019. Accordingly, NOC has to manage resources carefully and attempt to capitalize on every savings opportunity. A feasibility study for solar energy has recently been commissioned to focus on local electricity production and save on fuel imports, but key investment decisions like this are often delayed while awaiting approval from separate state-level actors. If NOC was able to quickly deploy capital and expedite project approvals, we would be able to significantly increase returns to the Treasury.

The challenges facing our sector require a pragmatic approach balancing our global presence and local commitments. On any given day our sustainable development department works to support oil-hosting communities with critical healthcare, sanitation and education projects across the country, while our international team liaises with the UN to prevent illegal exports by a parallel entity and potential partition of the country.

NOC also relies on good governance. Recent foreign-coordinated disinformation campaigns have implied NOC corruption and my supposed affiliation to the Muslim Brotherhood – designed only to defame and distort the public perception of both me and the corporation. We respond with transparency. Since June 2018, for example, NOC has published oil and gas revenues monthly. By spearheading a campaign to cultivate public trust in the institution, as well as a culture of accountability, we will in turn hopefully incentivize other state-level actors to follow suit and drive responsible behavior towards the state’s resources.

It is worth noting that embracing a “crisis as usual” approach has contributed to one of NOC’s best ever performances. Last year, the corporation’s revenue grew 78% on the year to reach a five-year record of $24 billion. We are resilient in the face of instability – but this upward trajectory cannot be taken for granted.

From its early days as an oil producer, Libya has been a “petrostate”; the country’s wealth, derived from its bountiful natural resources, has been concentrated in the hands of a small elite. Libya has the opportunity to progress towards becoming a fully-fledged “rule-of-law” state, but that transition risks being derailed by the ongoing debilitating conflict.

Our mitigation measures have ensured that the international community retains confidence in NOC as an institution and Libya as a country with a promising future. At the end of August, the US multinational Halliburton announced plans to resume its activities in Libya. Earlier in August, the 1,100 MMcf/d Bahr Essalam Phase 2 gas mega-project was completed in conjunction with our partner Eni.

The challenges of modern-day Libya are numerous – but our guiding principles have the power to help steer Libya towards a stable future. There are elements within the country and abroad that would like to divide us and see us fail. By remaining united, as one NOC and as one country, we can achieve a better future for all Libyans.
Evolving to thrive

Downstream revolution

National oil companies are at the center of a refining and petrochemical boom in the Middle East and Asia that is already reshaping traditional global competition.

Middle Eastern and Asian NOCs are laying the ground for a downstream transformation set to propel the region’s key players to new competitive heights.

Two-thirds of new global refining capacity is being built in Asia over the next five years alone, according to the IEA, adding a wave of more than 9 million b/d to global downstream capacity. Cash-rich NOCs are also responding to the challenges of a carbon-constrained future by growing their petrochemical and trading footprints, shaking up the competitive landscape with IOCs, refiners and independent traders alike.

Historically, resource-rich NOCs have channeled their crude into their own refineries to meet domestic demand growth and benefit from a low-risk investment. With relatively modest levels of domestic oil demand, NOCs’ refining cover was limited and the plants themselves lacked complex, clean fuels technology.

But the model has long since evolved and many NOCs have been building cutting edge, export-oriented refineries close to their sources of crude production.

Saudi Aramco joint venture projects have been launched in both the eastern and western regions of the country: YASREF, with Sinopec at Yanbu, and SATORP, with Total at Jubail. New export-oriented refineries are set to start up in Kuwait, Oman, Saudi Arabia and Nigeria in the coming years.

The first wave of new export plants created a major competition headache for European refiners, turning the screw on their margins as regional oil demand peaked and surplus capacity soared, forcing some players out of business. Over the last decade, Europe has lost more than 2.2 million b/d of refining capacity.

With oil demand growth in both Europe and the US peaking around 2005, the focus has shifted to refining assets in emerging economies, particularly in Asia, where demand is growing fast.

Integrated refining and petrochemical plants in Asia are therefore a key plank in Middle Eastern NOCs’ strategies to secure long-term offtake opportunities for their crude. For Asian NOC partners, a refining deal with a cash-rich Middle Eastern NOC helps fund new capacity and guarantees access to crude.

The theory remains simpler than the reality, however, and NOCs risk competing with their own oil product exports if they pick the wrong growth markets in which to build new capacity.

China, for example, is a key oil growth market but is structurally long on refining capacity, meaning that new downstream investments risk expanding the local fuel surplus. But while India’s
refining capacity currently exceeds domestic needs, much more capacity will be needed in the coming years. As such, attention has shifted to Indonesia of late, with Russia’s Rosneft and Saudi Aramco showing interest in joint venture opportunities there.

**Downstream integration**

Wood Mackenzie believes further downstream integration is key for NOCs to sidestep the risk of stranded resources as the window of global oil demand growth starts to close.

“In a future environment of declining global oil demand, ownership of highly competitive refining assets could be critical to sustaining upstream supplies for NOCs,” Alan Gelder, Wood Mac’s vice president of refining, chemicals and oil markets, said.

“The ‘winners’ in this environment will be those resource-rich NOCs with integrated business models that will sustain them in a competitive overall supply chain as global demand falls.”

ADNOC, which pumps most of the UAE’s 3 million b/d output, has been signing agreements with international oil companies, offering up concessions and striking other deals to monetize its assets. It is spending $45 billion with partners to boost refining and petrochemical capacity in the industrial hub of Ruwais, where its refining operations are located. ADNOC has a total refining capacity of 922,000 b/d from the Ruwais and Abu Dhabi refineries.

Outside of the Middle East, Colombia’s Ecopetrol, Malaysia’s Petronas and Mexico’s Pemex are NOCs that have become more IOC-like in their downstream operations.

“**Aramco are looking at the [IMO] fuel oil spec change and linking it to their crude and saying to customers ‘If you take our crude oil, we'll take your high sulfur fuel oil back.’ I think it's a very different approach and it’s a very smart one.**”

— Glencore’s Alex Beard

**Trading innovation**

NOCs have started to work around the limitations of their regional product markets by expanding their own commercial and trading operations.

Aramco’s trading arm, Aramco Trading Company (ATC), has been expanding fast, assuming the role of integrating all of Aramco’s global trade volumes, while expanding into new markets including the US. ATC has said it expects an increase in oil trading volumes to 6 million b/d by 2020 from around 4 million b/d currently. If achieved, that would make ATC the world’s second-biggest oil trader by volume behind Vitol, based on 2018 figures.

As part of the downstream transformation, NOCs are forging new supply links by tying crude supplies to refining assets, leveraging their large infrastructure networks and taking advantage of changing global oil product flows.

Saudi Arabia, for example, is using its dominant supply assets to leverage “smart” long-term trading dynamics, setting up contra deals for crude supplies tied to high sulfur fuel oil imports. The move is designed to capture an expected glut of cheap HSFO displaced by the International Maritime Organization’s lower sulfur cap on shipping emissions starting next year.

“When 2020, they are doing something clever,” Glencore’s head of oil Alex Beard told the FT’s Global Commodities Summit in March. “[Aramco] are looking at the fuel oil spec change and linking it to their crude and saying to customers ‘If you take our crude oil, we'll take your high sulfur fuel oil back.’ I think it’s a very different approach and it’s a very smart one.” Just a month later, Saudi Aramco’s trading arm agreed a crude-product swap deal with Polish refiner PKN Orlen to exchange crude for high sulfur fuel oil.

It remains to be seen if the successful transition from national champions to new global integrated oil and gas companies will play out for all NOCs. But the wave of planned refineries, petrochemical plants and trading desks by deep-pocketed state-actors shows many are willing to try.

**GO DEEPER**

Platts Global Alert (PGA) is the complete real-time information service that provides you with reports of deals done, latest news and market analysis, price indicators for crude oil and refined products and more than 200 end-of-day price assessments.

Fuel trade shake-up

Middle Eastern producers are on the front lines of a new spot trading push in oil products as local markets expand and a growing wave of refining assets pump out more quality fuels.

Historically, crude and product pricing exposure for the NOCs has been a mix of international prices and the associated downstream products markets of their customers in Asia and elsewhere.

The price of fuel oil in Singapore was a more direct concern in Saudi Arabia than the value of gasoline in Fujairah, for example. Gulf products prices were therefore typically benchmarked as netbacks from those downstream markets elsewhere. Platts’ Middle East products assessments, FOB Arab Gulf, or MOPAG, are structured in this way and have been widely used by Gulf refiners for pricing their output since the 1980s.

Few NOCs during this time ventured directly into the spot physical markets in either crude or oil products, though for widely differing reasons.

The largest producers were, and remain, leery of acting in the spot crude markets that were at the core of their revenue calculations. Meanwhile, Gulf products prices were heavily subsidized – at least in part due to popular expectations that high crude exports should mean cheap domestic gasoline – and presented little incentive for NOCs to take an active role in trading.

At the start of the new millennium most Gulf countries were balanced, with the regional refineries’ output sufficient to meet domestic demand, and in some cases focused on exporting excess supplies. One of the few to be more active internationally at this early stage was Kuwait Petroleum International, set up as the international arm of the NOC and largely focused on retail operations in Europe and latterly Asia.

KPI itself was not an active trader in those markets though in the last few years it has become a vehicle for trading in the European products markets,
albeit largely as a lone Middle East presence there.

**New trading model**

But as the 21st century marched on, demographics and economics tore twin holes in this picture. Rapid population growth, combined with income growth, inevitably fed demand for energy at an accelerated rate. Refinery investments could not keep pace, and several countries found themselves short of key fuels, particularly gasoline and jet.

By 2009, for example, Saudi Arabia and Iran were each importing in excess of 100,000 b/d of gasoline, while Saudi Arabia was also starting to import gasoil, and began regularly reaching imports of 200,000 b/d by 2013.

The first wave of NOCs actively trading in the products markets was not the largest, and sought to meet the growing regional imbalance through direct procurement. Dubai’s Emirates National Oil Company (ENOC) became a frequent feature of Singapore oil markets from the late 2000s, mainly focused on gasoline and gasoil. Dubai’s coming-of-age went hand-in-hand with ENOC’s embrace of spot trading. ENOC is not itself a producer of crude, unlike the other regional NOCs, and its activity in the market has been in many ways more akin to a regional trader.

ENOC has been particularly active in the Singapore products markets in the last five years. It traded close to 20 million barrels through the Platts Market on Close process for oil products in 2017, though it has reduced activity slightly since, trading 7 million barrels in the first seven months of 2019.

Following on from ENOC’s public embrace of trading, Oman Trading International (OTI) was set up as a joint venture between Oman’s government and Swiss trader Vitol in 2006. A decade later it bought out Vitol and OTI is now fully owned by Oman Oil. OTI is not itself a large producer of crude, instead receiving oil from the government to trade. But its JV structure at the time enabled it to take a more active approach to spot markets than other regional entities. It was initially focused purely on crude trade, and only in the last few years has been seen in other markets, notably petrochemicals.

"Aramco and ADNOC are both big oil producers and have significant refinery capacity. From a products perspective, they look more like IOCs than regional traders."

In recent years, OTI has reported spot trades in the petrochemicals market through the Platts’ Market On Close price assessment process.

Other NOCs faced similar challenges, but have taken a less direct approach, preferring to procure their imports through international partners in the markets. This helped to drive more local market activity and with it a growing awareness of the different local values of these products as compared to the netback prices from Singapore.

**Aramco, ADNOC moves**

Now a second wave of NOC product traders have appeared, and they sit within a structure that looks more like that of international majors.

Aramco Trading was from the start structured less as an optimization tool and more as a full-scale trading desk across the barrel. Indeed, by 2018 it had become the most active of any Gulf-related entity in Platts Asia MOC process, reporting 33 million barrels of spot products trades in 2018 and 24 million barrels in the first seven months of 2019.

Those trades were all oil products derivative contracts, though outside of the MOC process, Aramco has been very visible in the physical markets too. It is now reportedly the largest gasoline blender in Fujairah, combining not just a strong presence in the export markets but an equally muscular approach to regional products trade.

Last year also saw the start of ADNOC’s foray into the trading sphere, with the creation of ADNOC Trading. The Abu Dhabi NOC announced plans to rapidly increase its presence in spot oil products markets, and has started to hire a broad international trading team. So far ADNOC has not been visible in the spot markets, though it can only be a matter of time before they follow the other NOCs.

Aramco and ADNOC both have large crude production profiles as well as significant new refinery capacity. From a products perspective, they look more like IOCs than regional traders.

**Vertical integration**

The new model of vertical integration seems to be rubbing off on other NOCs in the region. Oman this year announced plans to restructure, not just by integrating OTI with Oman Oil Company,
but across the nine separate Omani hydrocarbon entities. That follows the exit of Vitol from the OTI JV structure. In effect, Oman has moved away from a fragmented, regional approach, and embraced the concept of an NOC powerhouse.

So what lies ahead? There are notable absences from a direct presence in the products markets. Iraq dipped a toe in the water through a joint venture with Russian company Lukoil’s trading arm Litasco, since disbanded and itself crude-focused. Meanwhile, Iran has yet to be welcomed into the fold of international trade. And Qatar pulled back from its own trading structure, Tasweeq.

We may yet see further entrants into the new wave trading club. And at the very least it is clear that the Fujairah gasoline price is now a direct concern in Saudi Arabia, so much so that earlier this year Aramco announced it would be opening an office in Fujairah to trade fuel oil and gasoline.

In turn, the approach of pricing products relative to the NOCs’ crude customers – the netback approach to products pricing – has come into question.

There has been a growing call in the Gulf for products pricing that more closely follows the local markets. Platts launched FOB Fujairah prices for fuel oil, diesel, jet fuel and gasoline in late 2016. These are prices representing not a netback from Singapore, but instead the outright spot value of a cargo loading in Fujairah.

As the NOCs have taken a more direct approach to physical products markets, so has their appetite for a much more active role in the pricing of their oil and products.
NOC titans leverage oil flows in global expansion

National oil companies rule the roost when it comes to control over the majority of the world’s crude production and ownership of large-scale infrastructure, storage and downstream assets. But despite their dominance in global oil flows, NOCs have traditionally left billions of dollars of spot oil sales and trade arbitrage deals each year to independent commodity traders and integrated oil companies. This could be set to change fast. Saudi Aramco, the world’s biggest exporter, and the UAE’s ADNOC are among a growing number of NOCs keen to develop in-house commodity trading operations to capture more value from their own assets. If successful, the move could mark a major shake-up of control over global oil and commodity trade flows, with independents such as Vitol and Trafigura facing tough new competition.

**World’s top NOCs by refining capacity**

<table>
<thead>
<tr>
<th>NOC</th>
<th>Refining Capacity (million b/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi Aramco</td>
<td>4.70</td>
</tr>
<tr>
<td>NNPC</td>
<td>3.70</td>
</tr>
<tr>
<td>Equinor</td>
<td>2.90</td>
</tr>
<tr>
<td>Sonatrach</td>
<td>2.80</td>
</tr>
<tr>
<td>Shell</td>
<td>2.70</td>
</tr>
<tr>
<td>Total</td>
<td>2.60</td>
</tr>
<tr>
<td>ENI</td>
<td>2.50</td>
</tr>
<tr>
<td>CNPC</td>
<td>2.40</td>
</tr>
<tr>
<td>Pemex</td>
<td>2.30</td>
</tr>
<tr>
<td>Pemex Aracruz</td>
<td>2.20</td>
</tr>
<tr>
<td>Pertamina</td>
<td>2.10</td>
</tr>
<tr>
<td>Petrobras</td>
<td>1.90</td>
</tr>
<tr>
<td>CNPC</td>
<td>1.80</td>
</tr>
<tr>
<td>PDVSA</td>
<td>1.70</td>
</tr>
<tr>
<td>Indian Oil Corp.</td>
<td>1.60</td>
</tr>
<tr>
<td>Pertamina</td>
<td>1.50</td>
</tr>
<tr>
<td>Rosneft</td>
<td>1.40</td>
</tr>
<tr>
<td>Sinopec</td>
<td>1.30</td>
</tr>
<tr>
<td>Pemex Aracruz</td>
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</tr>
<tr>
<td>CNOOC</td>
<td>1.10</td>
</tr>
<tr>
<td>Surgutneftegaz</td>
<td>1.00</td>
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<tr>
<td>Gazprom Neftegaz</td>
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<tr>
<td>NOC</td>
<td>0.80</td>
</tr>
<tr>
<td>ENI</td>
<td>0.70</td>
</tr>
<tr>
<td>Conoco</td>
<td>0.60</td>
</tr>
</tbody>
</table>

**Global crude trade (million b/d)**

- Saudi Arabia: 4.70 million b/d
- Russia: 3.0 million b/d
- Middle East: 2.2 million b/d
- Asia: 1.8 million b/d
- North America: 1.6 million b/d
- South America: 0.9 million b/d
- Europe: 0.5 million b/d
- Africa: 0.7 million b/d
- Middle East: 0.3 million b/d
- Asia: 0.2 million b/d
- North America: 0.1 million b/d

**Independent oil traders struggling to grow volumes**

<table>
<thead>
<tr>
<th>Year</th>
<th>Vitol</th>
<th>Glencore</th>
<th>Gunvor</th>
<th>Mercuria</th>
<th>Mercuria</th>
<th>Trafigura</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td>2014</td>
<td>25</td>
<td>10</td>
<td>15</td>
<td>5</td>
<td>3</td>
<td>9</td>
<td>53</td>
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<td>2015</td>
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<td>16</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>51</td>
</tr>
<tr>
<td>2016</td>
<td>21</td>
<td>8</td>
<td>15</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td>49</td>
</tr>
<tr>
<td>2017</td>
<td>20</td>
<td>7</td>
<td>14</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>45</td>
</tr>
<tr>
<td>2018</td>
<td>19</td>
<td>6</td>
<td>13</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>42</td>
</tr>
</tbody>
</table>

**6 million b/d Aramco target for oil trading volumes in 2020**

- Saudi Arabia: 6 million b/d target for oil trading volumes in 2020

**Countries with NOCs with plans to begin or expand trading major storage/trading terminal**

- Singapore
- Fujairah
- Rotterdam
- Cushing
- Houston
- Chiba
- Dalian
- Saldanha Bay

**Note:** Shows crude and oil products.

Source: S&P Global Platts, IEA, company filings.
Trading up

Persian Gulf producers are set to muscle in on global crude flows, upending traditional trading models as they build a new breed of NOC-backed trading houses.

Crude oil trading, an area once dominated by Western oil majors and opaque independent traders, is poised for a sea change as Middle Eastern oil producers look to capture more value through crude sales.

Trading by NOCs in the Middle East has traditionally been muted, with producers selling their crude on a term basis under contracts linked to an official selling price (OSP).

Typically these term contracts include restrictions on re-sale or final destination of the crude cargoes in order to thwart any secondary market for the world’s biggest oil flows.

Oman largely led the region in being one of the first to actively trade its equity crude barrels in the spot market, when it set up Oman Trading International (OTI) in 2006 as a joint venture between Oman Oil Company and Vitol. Since 2016 OTI has been wholly owned by the Government of Oman. Oman’s crude barrels have a few characteristics that make it an exception to other Middle Eastern crude barrels.

The Sultanate is not a member of OPEC, and its crude cargoes have no destination restrictions or re-sale prohibitions. These factors allow Omani crude to be freely traded in the spot market. OTI’s activity has grown steadily in recent years with the company trading over 120,000 b/d of crude in 2016, a ten-fold increase since it started trading in 2006.

SOMO going solo?

Other Middle Eastern oil producers are now moving away from a strict term contracts model by marketing crude and products directly.

Abu Dhabi’s national oil company ADNOC was an early adopter of the new sales model, removing destination restrictions on some of its crude cargoes in exchange for a premium to the OSP. In 2016, Saudi Aramco began spot crude sales of barrels held in storage in Japan to end-users in Asia, marking a new phase in the tussle with regional rivals for dominance over Asia’s oil market.

Other NOCs have also explored ways of increasing the value of their crude sales. Iraq’s state oil marketer SOMO entered
joint ventures with Russia’s Litasco and China’s Zhenhua for crude sales in 2017 and 2018 respectively. But both those JVs have now ended and Iraq appears keen to take a more direct approach.

SOMO has subsequently reportedly been looking at setting up an office in Singapore and has curtailed the re-sale of its crudes by term lifters. In addition, in recent years it has offered crude cargoes for sale through auctions and tender processes.

**Saudi trading boom**

Saudi Arabia’s Aramco Trading (ATC), set up in 2010, started life handling oil product sales for the kingdom. In 2017 it expanded its portfolio to include crude trading. Significantly, however, the crude trading does not include any of the five main export grades from Saudi Arabia: Arab Super Light, Arab Extra Light, Arab Light, Arab Medium and Arab Heavy. Other crude and condensates produced in Saudi Arabia, including Khuff condensate and third-party barrels, are traded by the company.

Last year, ATC’s total oil trading volumes reached 4 million b/d, up from 1.6 million b/d in 2017, and it expects trading volume to jump a further 50% to reach 6 million b/d by 2020.

With ATC still unable to trade the main Arabian crude export grades, however, the development of its trading strategy is seen as more of an evolution rather than a revolution.

ADNOC has also recently set up trading teams to handle crude and product trading. The product trading is a JV with Austria’s OMV and Italy’s Eni. In addition, the company is currently reviewing its retroactive OSP formula. A change to this formula could dramatically alter how ADNOC’s crudes are traded in the market, whether by an ADNOC trading venture and/or third parties.

With details of any potential switch yet to appear, however, the role of ADNOC’s trading team and future strategy around the UAE’s crude trading are unclear. ADNOC is developing infrastructure that could allow more liquid trading of its crude should it so wish. Earlier this year it announced plans for an underground crude storage facility in Fujairah for 42 million barrels of crude. The facility will be ready in 2022 and is set to be the largest single-site underground storage facility in the world. Abu Dhabi has crude oil production of over 3 million b/d with around 60% of this held as ADNOC equity.

**Waiting for Kuwait**

Among the major oil-producing nations in the Gulf, this leaves Kuwait as the last to formally announce any formation of a trading unit.

Some market watchers believe it is a matter of time before Kuwait sets up a trading division, most likely initially to trade oil products. Such a unit could be formed when the joint venture Duqm refinery in Oman comes online in the coming years, according to market sources.

The NOCs in the Middle East have seen the progress that independent trading houses have made in recent decades, acquiring assets and becoming more integrated in a world of thin margins. It’s now a case of the NOCs developing their trading capabilities as they take advantage of their size and stability in ever changing markets.
As the trajectory of global demand growth for transport fuels ebbs in favor of petrochemicals, the incentives for refiners and NOCs to reconfigure their downstream assets towards the new growth market continues to build.

S&P Global Platts Analytics forecasts global plastics demand to increase 3-4 times faster than global gasoline demand. Global petrochemical demand, which is driven by plastics, is forecast to continue to grow above global GDP and multiples above transportation fuels.

Petrochemicals and plastics also lead the ranks of value-added products and NOCs are investing to capture a higher percentage of the petrochemical value chain margins from the wellhead to plastics. Over the past three years, petrochemical and plastics on average enjoyed a $665/mt price premium over refined products and refiners are looking to capture as much of the additional value as possible.

NOCs and large refiners are on the frontlines of investing to boost petrochemical production at the expense of gasoline blending components and transportation fuels production in general. The majority of new refinery builds are targeting at least 25-30% petrochemical yields compared to 5-15% historically.

A wave of new major oil-to-petrochemical projects are also springing up.

Saudi Aramco’s planned Yanbu plant with SABIC, Reliance’s Jamnagar refinery and Rongsheng’s new Zhejiang facility in China all have final expected petchem yields of at least 70%. India’s planned 1.2 million b/d Ratnagiri plant led by IOC, Aramco and ADNOC near Mumbai targets petrochemical yields above 50%, as does China’s privately-owned Hengli refinery near Dalian.

**Plant-level step change**

Traditionally, refineries have been integrated with mixed feedstock ethylene cracker and aromatics units to increase the yield of petrochemicals.

Integrated refineries and mixed feedstock ethylene crackers around the world today include the Shell Norco complex. The Louisiana plant is a good example of a refinery which supplies feedstocks to two mixed feedstock ethylene crackers on the site. These crackers, in turn, upgrade the lower value refined products into higher value olefins and aromatics.

Additional investments to increase the degree of integration would include production units for the major plastics like polyethylene (PE), polypropylene (PP) and polyester resins (PET). Platts Analytics forecasts global demand growth for these plastics to remain above global GDP growth levels for the next decade, even after

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Robert Stier  
Senior Lead,  
Global Petrochemicals Analytics
accounting for government regulations, bans and recycling.

With the need to boost petrochemical yields on the rise, traditional refining unit configurations are changing. The simplest way to describe the refined products to petrochemicals transition is that fluid catalytic cracker and reformer units are being repurposed and optimized to maximize plastics feedstocks and minimize gasoline blending components.

FCCs will be repurposed from producing gasoline blending components to maximizing olefins including ethylene, propylene, and other petrochemical feedstocks similar to naphtha. The reformer will also be repurposed from producing high octane gasoline blending components (reformate) to maximize aromatics production including benzene, toluene and paraxylene.

Coking capacity and new petroleum coke gasifier projects can also be deployed to transition the refining business from producing transportation fuels to petrochemicals and plastics.

The new wave of highly integrated oil-to-plastics plants will buy crude oil and sell distillates like diesel and jet fuel in addition to petrochemical feedstocks and plastics.
Spending to thrive

Ernst & Young’s head of global oil and gas shares his investment outlook for the industry, particularly in the Middle East, where NOCs are implementing ambitious expansion plans.

By Herman Wang

Andy Brogan
Global Oil and Gas Sector Leader
Ernst Young

Oil prices have been struggling to break out, and a lot of the forecasts for 2020 are pretty bearish. How is that impacting the investment climate in the industry?

There’s no shortage of money available. If you’ve got a high cost, long lead time asset in a challenging environment, then you’re going to struggle to find capital. But in this region, there are a lot of decent assets that can generate a high return. As long as the asset itself is competitive, it’s perfectly feasible for a project to be viewed as attractive at $65/b.

How is competition with US shale impacting investment in conventional projects?

It’s a different bucket. Shale is very flexible, it’s relatively high cost, it’s in a market that’s known and regulated. I don’t think most Middle East projects are competing in that space. Where they’re competing is the more conventional investment that would go into Gulf of Mexico or Australia or wherever.

The Middle East projects by and large stack up very well to those conventional ones. There are some that can be more marginal, like the smaller projects, the gassier projects that don’t have a line of sight to monetization. But in terms of the capital available for conventional projects, if it breaks even and it has the right operating cost profile and the right capex profile, then it’s going to attract money. There’s still not a surplus of large-scale conventional projects.

Where do you see the most promising investment locations in the Middle East?

The Eastern Mediterranean gas province is not struggling to attract capital. [Qatar] is not having trouble attracting capital for projects.

Other countries could attract capital if they wanted to but they choose not to. A more challenging one is maybe Northern Iraq. But they have ramped up production so high already.

Around the Persian Gulf, there have been a few security incidents this year, with tankers and pipelines being attacked. Geopolitical risks are not new in the region, but is the recent ratcheting of tensions between the US and Iran impacting investor sentiment?

I don’t think so. It’s not been a material issue in terms of volumes. It’s material for anybody involved, obviously. But I
think it’s still considered a low probability risk.

Probably the most important thing is, it’s perceived as a short-term issue. If you’re an investor in projects, I think a lot of people are expecting that the underlying issue will, if not resolve themselves, they’ll transform themselves by the time you’re actually worrying about production. We don’t see people changing their attitudes because of this. If it became more epidemic, continuous, then that might start to change people’s minds.

In your consultations with NOCs, how are you advising them to make their terms favorable to investment, while still providing an adequate return to their own economies?

It’s mainly you have to be self-aware. If you look at a combination of how attractive the assets on offer are and the fiscal regime and the above ground issues about moving stuff around, we say be self-aware of how those issues would impact the type of return that people would expect to take those kinds of risks. And then do your research to see what other regimes do.

There’s competition for capital. There isn’t a right answer that leads to a certain number for every project. There’s a right answer in that you’re competing for capital for this asset in this location versus that asset in that location, and if you’re going to be successful, you need to look at the projects around you and check if it’s competitive. This is a very rational and analytical industry. They will run the numbers and come to a quantitative answer.

Moving away from oil and gas, renewables are often viewed as a challenging proposition for the Middle East, but there is a need for NOCs to diversify. How do you see the investment landscape for renewables?

Particularly here, there’s a very compelling business case for combined renewables and oil/gas projects. Every megawatt that you can generate from renewables is a megawatt that you free from oil and gas that you can export and earn hard currency for.

In other places, returns on renewables are much lower than you can get on oil and gas. We say you can get a mid-single digit return. But here because you can use renewables to release oil and gas for export, it’s actually something you can get respectable returns on. It’s something we would expect to see progressively more of, the NOCs use renewables more in their operations to replace hydrocarbon generated power. If there’s one place in the planet you can do solar, it’s here.

“This transcript has been edited for clarity and length.”
Credit where it’s due

NOCs have some of the world’s strongest credit ratings, but politics and strategy mean they also appear across the credit spectrum.

National oil companies typically have a privileged position in terms of access to reserves. The lifting costs for many are also among the lowest globally. Nevertheless, this doesn’t necessarily translate into a strong financial or credit profile for every NOC. The travails and default of PDVSA – in spite of Venezuela reporting the world’s largest oil reserves – show this all too clearly. It signals that NOCs’ strategies and social mandates – as well as geopolitics – can be very important. For several NOCs, the 2014-2016 oil price crash actually improved profits, as cheaper imports reduced losses in domestic fuel retail operations.

S&P Global Ratings analyzes both the NOC’s businesses as well as its role and links with its sovereign government. Unsurprisingly given their importance to national finances, NOCs in the Middle East have close links with government and critical, or very important roles, meaning their credit ratings are often closely related to the sovereign rating.

As an NOC’s headline credit rating, or ICR, is influenced by its host country’s sovereign rating, there can be a sizable discrepancy between the rating and an NOC’s underlying, standalone credit profile (SACP). In the case of Pemex, for example, our view on almost certain government support means the rating is much higher than the underlying operational and financial challenges would suggest.

This reliance on – or exposure to – one national government is a key difference between NOCs and the geographically diversified international oil companies, the IOCs. Another is the upstream focus of some of the largest NOCs, in terms of production and cash generation, with often a greater dependence on oil and oil prices rather than gas (with notable exceptions such as Qatar Petroleum and

Source: Company filings
Gazprom). The devastating aerial attacks on key Saudi oil assets in September highlighted this operational concentration risk. Importantly, however, these differences have been eroding for decades. Saudi Aramco’s stake in US refiner Motiva showed both downstream and geographical diversification. More recently, the rate of change and interest in NOCs’ investments beyond their borders and in other activities has been increasing as peak oil and the energy transition have a more direct impact on strategies.

These strategic shifts recognize that just adopting a “last-man standing” approach supported by multi-decade reserves lives and low production costs, may not be optimal. In tandem with national strategies to diversify economies, NOCs are seeking earnings from new sources and markets. A typical route is by moving along the oil value chain, to capture more value from each barrel. This can include trading activities or seeking direct sales to crude oil users. A more capital-intensive option is to build or buy refining assets and petrochemical plants at home or near product markets. Even if this is often affordable and can make strategic sense, as for any venture outside a company’s core activities, the certainty and level of returns is typically lower and the risks can be difficult to manage. Oil producers are essentially price takers whereas the skill-sets required for successful trading or downstream businesses in competitive environments are different. Such expansion can be organic or through acquisitions. One example of mixed success in this sort of strategy is SOCAR, which has been backing off its established trading and retail businesses outside Azerbaijan even as it invests heavily in refining and petrochemical assets in neighboring Turkey.

However, a high capacity, modern global refinery or integrated chemical plant doesn’t come cheap. Even where a government or NOC could fund such an investment itself, an established approach is to raise external debt in the form of bank loans or bonds. This often has less to do with running an efficient balance sheet than allowing the NOC’s cash generation to continue flowing to the government. It could also allow the investment to go ahead sooner. The form and structure that the external capital takes can be informative about a government’s approach, just as the institutional framework is. For example, are investments made by the parent or holding company, or are special entities created? Will other investors participate and inject capital or provide guarantees for the debt? It’s also a function of the amount of funding required and the usual trade-off between terms, disclosures and pricing. Banks will often lend based on confidential information, but international equity and debt markets require comparable disclosures to evaluate any investment. NOCs may cede control not so much of information but rather construction and operations if they use project finance debt. A benefit can be a very structured project delivery that is separate from the parent and less open to non-commercial considerations, as well as longer-term debt than loans or bonds typically provide. Middle Eastern NOCs are typically lightly leveraged, but debt burdens vary considerably elsewhere.

Whatever the capital structure, NOCs are making strategy shifts to prepare for an uncertain, but likely more challenging, future. Many are doing this sooner rather than later while options remain and while still underpinned by cash flows from upstream production. In any case, NOCs’ earnings and credit profiles will likely remain underpinned by their core operations for many years.
Going global

Azerbaijan’s national champion has turned itself from a local oil producer into a fully integrated global player, and more expansion is coming, says SOCAR’s Elshad Nassirov.

By Stuart Elliott

SOCAR, historically, is known as the national oil company of Azerbaijan. However, the company has evolved significantly in recent years and is now far more active across the energy sector globally. What drove this change?

Both SOCAR and Azerbaijan view being an active player in global energy as a natural progression, given that we have achieved many firsts in the oil industry: the first oil well was drilled in 1848 in Baku, the first commercial pipeline was established in 1897 and ran from Baku to Batumi, and the first offshore production took place in the Caspian Sea at Azerbaijan’s Oily Rocks in 1949. At the beginning of the 20th century, Azerbaijan was producing half of the world’s oil.

Our desire to return to global energy activity after the restoration of our national independence in 1991 was thus a natural development. As our country strengthened in its post-independence period, we gained the professional capacity to expand SOCAR’s activities globally. We have also identified new commercial opportunities: Europe’s declining indigenous gas production that leads to demand for higher gas imports; rising GNP in Asia and Africa that creates the need for gas for power production and increased intra-regional oil and gas trade; and economic growth in the Caspian region itself that has led to demand for new oil and gas supplies.

In September, Azerbaijan celebrated the 25th anniversary of the 1994 “Contract of the Century” between Azerbaijan and eleven partner companies, originally representing six countries: the UK, the US, Russia, Norway, Turkey and Saudi Arabia. Now this group consists of Azerbaijan, the UK, the US, Japan, Norway, Turkey and India. International companies gave a vote of confidence to the Azerbaijani economy following its independence, and this was crucial to Azerbaijan’s development.

It was not easy: that year the price of oil averaged $12/b, and since Azerbaijan is landlocked, it added transportation costs and risk to reaching international oil markets. At the time of the signing of the contract, Azerbaijan was just meeting its domestic oil needs and was importing gas. Fast forward to today, in the two decades since its independence, Azerbaijan has become a major oil and gas exporter, and now SOCAR looks not only to attract investments but to make investments around the globe.

What is SOCAR’s business strategy?

A cornerstone of SOCAR’s business strategy is sanctity of contracts. Our comparative advantage is Azerbaijan’s “above ground” conditions. There is oil and gas in many locations around the
globe, but the energy producing regions that are successful over long periods of time are those with conducive regulatory frameworks. Azerbaijan has never attempted to revise the conditions of any of the PSAs it has signed. We continually see that not only is this the right thing to do, but that this strategy pays off. During the last period of relatively low global oil prices, when few investments were made in new oil and gas production, Azerbaijan was one of the only countries to receive major new foreign investment in the oil and gas sector.

An additional element of our business strategy is to remove transit risks. Many gas supply projects experience supply disruptions due to transit states. SOCAR has overcome this potential challenge through a business model that directly involves transit states, as both partners and their national companies as investors.

Another foundation of SOCAR’s business strategy and Azerbaijan’s foreign policy strategy is good relations with countries from a variety of regions and political blocs. We don’t discriminate among partners for cooperation and providing supplies.

The Southern Gas Corridor has played a major part in SOCAR’s evolution into a bigger international player. How important is this project to SOCAR and Azerbaijan as a whole?

Azerbaijan’s goals with the Southern Gas Corridor are both commercial and political. We see supplying gas to Europe as an excellent commercial decision. But we also hope that our role as a major gas supplier to Europe will foster great European interest in stability and peace in the Caucasus region. We hope that the increased trade ties with Europe will also lead to deeper political cooperation.

In a world awash in LNG, pipeline supply projects need to fulfill needs not met by LNG in order to be commercially and politically attractive. Thus, the Southern Gas Corridor fulfills several important niches. The first is security of price: basing a market on LNG brings with it extreme price volatility and potentially very high prices that may be prohibitive to many countries, even if LNG is available. Pipeline gas allows security of price and allows for markets and utilities to plan.

Next, many countries have geographic limitations on access to LNG, such as landlocked countries and countries beyond the Bosphorus and the Dardanelles (which LNG vessels cannot transit). Our projects target supplies to Europe’s “energy islands” that cannot easily access multiple gas supplies. The Southern Gas Corridor brings gas to countries that have not had access before (Albania) and countries that are reliant on imports from a single supplier (Bulgaria).

What other areas would SOCAR like to move into in the coming years, in terms of expansion both in terms of energy sector and geography?

First and foremost, we want to demonstrate that national oil companies can employ the highest level of environmental standards in their projects. Gas’s comparative advantage to other energy sources is its low environmental and climate altering impact.

In addition, through the Southern Gas Corridor, both SOCAR and Azerbaijan have been able to transition from objects of direct foreign investment in the energy sector to investors. SOCAR is present as an investor along the entire value chain of the Southern Gas Corridor, including in Europe itself, in the TAP pipeline. It is a historic choice for Azerbaijan and the Caspian because it will for the first time connect the resources of the landlocked region directly to the heart of Europe. SOCAR seeks new regions to serve both as an investor and as an operator of projects.

Recently, SOCAR has made several investments in the petrochemical industry, and we believe there will be more. First there was the Star Refinery and the Petkim Petrochemical Complex near Izmir, Turkey. Next we have established the SOCAR Polymer plant in Azerbaijan, and have also established a Carbamide Plant with the capacity of 650,000 mt/year.

What else is next for SOCAR?

One of our top priorities is further developing Azerbaijan’s untapped oil and gas fields. Azerbaijan has an estimated 2.6 trillion cubic meters of gas volumes, and we are engaging in their development and continue to discover new volumes of oil and gas. Among the fields we are bringing on...
stream with our partners in the near future are: Umid and Babek, Karabakh, Absheron, Shafag, Asiman and others.

We have also extended our PSAs with BP and other partners on our major oil field, Azeri–Chirag–Gunashli, until 2050, and our major gas field, Shah Deniz, until 2048. This will bring many new projects to the Caspian and also increased production volumes in both oil and gas from these producing reservoirs.

SOCAR and its partners are planning for the next phase of development of the Southern Gas Corridor. We hope the next phase will reach additional markets in Europe, such as in the Balkans, and will transit gas to Europe from additional sources, such as Central Asia and/or the Eastern Mediterranean.

We are also focusing a lot of our attention on increasing cooperation with our neighbors in the Caspian region, especially across the Caspian in Central Asia. This region is developing economically and going from a resource export region to one of consumption. In Uzbekistan, we are working together with our veteran partner BP, and we hope to do more in the region with BP and other partners.

Trading is increasingly important to NOCs, and SOCAR has had a functional trading operation for years. How does trading supplement what SOCAR does upstream?

Trading is important for SOCAR. The company produces significant volumes of hydrocarbons and faces challenges in optimizing export sales. Thus, trading is the final link of the whole chain from production to refining, transportation and more, and its effectiveness directly affects the effectiveness of upstream.

The development of SOCAR’s trading activity has also brought added value from the trading of crude and oil products of non-Azeri origin. For instance, in 2018 SOCAR exported 28 million mt of Azeri origin crude oil and oil products as opposed to 65 million mt of third-party crude oil and products trading. Hence, the company is strengthening its position as a significant supplier on the world energy market.

SOCAR has been involved in LNG supply and trading for years too. How does SOCAR see its role developing in this area?

Initially SOCAR centered its LNG activities around its investment in the LNG-to-Power project on the island of Malta through its SOCAR Trading subsidiary. On that basis, we have grown the business to five full-time traders today who, in addition to supplying Malta with gas, operate in the global LNG markets buying and selling volumes everywhere across the world. We have seen particular success with our supply strategy to Pakistan where we plan to grow our presence.

In addition to growing our trading operations, we continue to monitor opportunities for projects such as the one in Malta in many places around the world where gas should be replacing the use of less efficient and less clean liquid fuels and coal. We also envisage expansion across all fields related to gas, with our acquisitions of distribution networks in Turkey, our gas arriving to the Italian market and the LNG market growing to encompass bunkering.

This interview has been lightly edited and condensed for brevity and clarity.
Saudi Aramco, the world's most profitable company and biggest oil producer, is set to go public sometime in 2020 or 2021 in what is billed as the world's largest initial public offering. Despite delays and devastating attacks on two of its key oil sites on September 14, the IPO remains the centerpiece of Saudi Arabia's economic transformation and could raise some $100 billion to help usher in a new economy less dependent on oil.

With an oil production capacity of about 12 million b/d and posting a profit of $46.9 billion in the first half of 2019, Aramco is betting institutional investors will rush to buy the 5% stake set to be sold by the Saudi government.

Postponed last year for Aramco to absorb petrochemical group SABIC, the timing of the giant IPO remains unclear and hinges on market conditions, the oil price, and return to full production after the attacks, analysts believe. Aramco has vowed to restore its 12 million b/d of production capacity by the end of November but, at the time of writing, market watchers were mixed on whether the IPO will be pushed back again to let the dust settle on the Abqaiq and Khurais plant attacks.

"2020 is possible, but because of the projected size of this IPO the banks would need advance notice that it is coming down the pipeline so they can set aside resources," said Ellen Wald, president of Transversal Consulting and author of "Saudi, Inc." a history of the Saudi oil industry. "Of course, the price of oil and the general strength of the equities market also play into timing," she said.

More recently, signs are that Riyadh is moving more aggressively to bring the IPO to fruition.

Aramco’s chairman and energy minister, Khalid al-Falih, was removed from his two posts in September. Yasir al-Rumayyan, the head of Saudi Arabia’s $320 billion sovereign wealth fund, was appointed Aramco chairman, while Prince Abdulaziz bin Salman, the king’s son and an oil veteran with over 30 years’ experience in the industry, was named energy minister. With Rumayyan dropped into Aramco’s board in 2016 when the IPO was announced and the wealth fund tasked with investing the expected bounty from the listing, most observers see the separation of duties...
as designed to accelerate progress on the Aramco IPO.

Crown Prince Mohammed bin Salman has valued Aramco at up to $2 trillion, making the IPO value around $100 billion. But most analysts see a valuation of up to $1.5 trillion as more realistic and are keen for more information to assess its market value. “Greater disclosure will always help,” Bernstein Research senior analyst Neil Beveridge said. “A clear and stable dividend policy will be important to attract investors.”

Key buyers are expected to be sovereign wealth funds and institutional investors, both of which need to meet public or internal disclosure demands.

Regional model

Proceeds of Aramco’s IPO will be injected back into the economy, particularly the country’s sovereign wealth fund, to help spur non-oil growth as part of the Vision 2030, which seeks to wean the kingdom off oil income. The kingdom is seeking both a domestic and international listing but the jury is still out on whether it will secure a coveted listing in London or New York.

For that reason, Aramco’s IPO is being closely watched by other NOCs as the region’s first national oil company to open itself to greater market scrutiny. While the UAE’s Abu Dhabi National Oil Company was the first NOC to list a unit in 2017, the company’s CEO Sultan al-Jaber has ruled out an IPO for the parent company. ADNOC Distribution was listed on the Abu Dhabi Securities Exchange and ADNOC has indicated it may list more units in the future.

“There is going to be huge interest in an Aramco IPO even if it is only because of the size and the novelty,” said Wald. Indeed, in addition to the integration of SABIC’s major petrochemical reach, Aramco is looking to grow its downstream and trading operations at a breakneck pace (see related story on p20).

Market grooming

Aramco has already taken a series of steps to groom itself for the IPO. In March, it published earnings figures for the first time. The figures showed it to be the world’s most profitable company, with a net income of $111 billion in 2018, eclipsing giants such as Google, ExxonMobil, and Amazon. It issued a bond prospectus in April this year for its debut $12 billion international bond sale, including nuggets of data about its various operations from refineries to pipelines.

This year, Aramco also published the first independent audit of its huge oil and gas reserves. The audit showed Aramco’s proved oil reserves at the end of 2017 were 263.1 billion barrels, or 2.2 billion barrels higher than previous estimates. Gas reserves stood at 319.5 trillion standard cubic feet, up from 302.3 trillion standard cubic feet in previous estimates.

But the biggest revelation was in August, when the company held its first ever earnings call with analysts and published its first-half earnings, which showed an 11.5% drop in net profit from the year-ago period to $46.9 billion. Despite the fall, Aramco held on to its rank as the world’s most profitable company.

Aramco may still need to do more in terms of disclosure to justify a $2 trillion valuation, but its giant near-term earnings potential, deep asset base and the integration of SABIC could be enough to win over most skeptics.
The Middle East is forecast to see a major expansion in renewable energy projects over the next few years, opening up the potential for some of the world’s biggest producers to earmark more of their oil and gas for export.

A total of 6.7 GW in renewable power generation capacity is set to come online in the six Gulf Cooperation Council nations by the early 2020s, led by the UAE, Oman and Kuwait, according to the Abu Dhabi-based International Renewable Energy Agency. If achieved, the surge would mark an almost eightfold jump from 2018 and the growth could be much higher if Saudi Arabia makes inroads into its revamped renewables targets.

The Gulf region is the world’s most important oil and gas producing region, with about 48% of global proved crude oil reserves and 38% of natural gas reserves, according to BP’s Statistical Review of World Energy. Saudi Arabia is the world’s largest oil exporter and Qatar is the biggest supplier of liquefied natural gas. Nations in the region are reducing subsidies on fuel sold in the local market, further opening their potential for more export sales at higher prices.

“It behooves them to sell as little oil and gas as possible domestically, so they can maximize exports,” said Jim Krane, Middle East energy analyst at Rice University’s Baker Institute in Houston. “In that way, renewable power makes sense because it allows Gulf power plants to burn less oil and gas. Coal and nuclear power offer the same advantages.”

Saudi goals

The IRENA projection was made before Saudi Arabia this year raised its five-year clean energy target to 27.3 GW from 9.5 GW, and said 58.7 GW could be added by 2030. The kingdom also plans to invest in manufacturing solar panels, wind turbines and geothermal energy from deep underground. Along with the new targets, Saudi Arabia has created the Renewable Energy Project Development Office to lead the expansion.

State-owned Saudi Aramco, the world’s largest oil company, acknowledged in its bond prospectus in April that climate change concerns may reduce global demand for hydrocarbons and propel a shift to lower carbon intensity fossil fuels such as gas or alternative energy sources. Saudi Arabia aims to double its gas output to 23 Bcf/day over the next decade.

“The Gulf monarchies are increasingly exposed to global anger over climate change because they are major producers, exporters, subsidizers and consumers of fossil fuel,” said Krane, who is also author of Energy Kingdoms, a 2019 book on Persian Gulf energy consumption. “Gulf governments deflect some of this anger by loudly...
proclaiming big renewables investments, even though most of these plans are later rolled back.”

Saudi Arabia is taking steps in its diversification strategy into renewables, by strengthening its ties and cooperation with China, currently the leader in wind and solar PV manufacturing. In June, Saudi Arabia’s ACWA Power announced that it sold a 49% stake to China’s Silk Road Fund, the Chinese state-owned infrastructure investment fund responsible for investments under the Belt and Road initiative. The partnership is looking to develop new renewables projects across the Middle East and North Africa.

“Saudi Arabia continues to make strides in its hedging and diversification strategy in energy, from renewables to growing investments in gas exploration, production and LNG,” said Bruno Brunetti, S&P Global Platts Analytics’ head of global power planning.

The kingdom plans to use renewables such as solar to reduce the almost 500,000 b/d of crude used for power generation and industry.

Despite the big renewable push in the Middle East, Krane cautions against taking all the project announcements at face value as many are likely to be dialed back in scale or delayed.

“I've been watching the Gulf clean energy space for years,” he said. “Every single one of the major renewables proclamations made by the six Gulf governments since 2007 has fallen short, either in terms of plant size, percent of the country’s power production from zero-carbon sources, or emissions targets.”

The world’s largest single-site solar project, Noor Abu Dhabi, began commercial operations in June. Built at a cost of $870 million, the site can generate 1.18 GW of power, enough power for 90,000 people, and will cut Abu Dhabi’s reliance on gas for power generation.

Solar giants

Nevertheless, progress on expanding the region’s clean energy credentials is being made.

The world’s largest single-site solar project, Noor Abu Dhabi, began commercial operations in June. Built at a cost of $870 million, the site can generate 1.18 GW of power, enough power for 90,000 people, and will cut Abu Dhabi’s reliance on gas for power generation. A joint venture between the Abu Dhabi Government and a consortium of Japan’s Marubeni Corp and China’s Jinko Solar Holding, the project is part of UAE plans to increase the contribution of clean energy in its energy mix to 50% by 2050. To this end, the UAE is also targeting a bigger, 2 GW solar project in the near future.

In Kuwait, the largest solar project planned is the 1.5 GW Al Didibibah solar PV plant, owned by the Kuwait National Petroleum Company, with construction costs at $1.2 billion, according to IRENA. It is expected to open by 2022 and generate 15% of the oil industry’s electricity needs, IRENA said.

Qatar is home to the largest waste-to-energy plant in the Gulf region, the 30 MW Mesaieed plant, which also generates 8 MW of biogas-based power, according to IRENA.

The first wind project to start in the Gulf is the 50 MW Dhofar wind farm in Oman that was connected to the electricity grid in early August, according to Masdar, which is implementing the project. Once fully commissioned, the project is expected to generate enough electricity to supply 16,000 homes, equivalent to 7% of Dhofar’s total power demand, Masdar said. It is expected to offset 110,000 mt of carbon emissions annually and reduce reliance on natural gas for power generation.

In Iran, the growth of renewables projects has seen 3.13 TWh of electricity
generated from mostly solar projects in the year to June 2019, cutting carbon emissions by 2.161 million mt.

Last year, Iran opened its largest wind farm. The 18-turbine wind farm in Tarom county in northern Iran has a nominal capacity of 61 MW, according to the official IRNA news agency.

In the wake of the 2015 nuclear agreement between Iran and world powers, a number of European renewable energy companies including Norway’s Saga Energy and UK’s Quercus inked MOUs for renewable energy projects. But many of the projects have hit headwinds after the US reimposed sanctions on Tehran last year.

Quercus dropped plans for a 600 MW solar project while Italian contractor plans for a 1 GW solar plant in Iran’s northwestern Qazvin province are also in doubt.

The oil ministry has also been managing a program to reduce gasoline usage in cars and replace it with compressed natural gas as a way to cut down on carbon emissions. Almost 80% of cars used gasoline in 2017 and the rest ran on natural gas, out of a total of about 20 million cars in the country, local media reported.

Hydroelectric first

In August, Dubai Electricity & Water Authority awarded a $391 million construction contract for the Gulf region’s first hydroelectric power station, in Hatta in UAE on the border with Oman. The project is expected to generate 250 MW, with startup by February 2024. The hydroelectric power station will use water in the Hatta Dam, stored in an upper reservoir that will be built in nearby mountains. Hydroelectricity is part of Dubai’s goal to increase its share of clean energy to 75% of all power generated by 2050.

The main clean energy success in the Gulf, according to Krane, is Abu Dhabi’s 5.6 GW nuclear plant project, which is behind schedule “but will constitute a major positive contribution” when it opens in the coming years.

The UAE has an interest in developing its gas resources because it currently imports the fuel from Qatar despite a trade embargo. In 2017, the UAE along with Saudi Arabia cut ties with Qatar over Doha’s alleged support for terrorist groups, which Qatar has denied. The UAE’s supply of Qatari gas and the price “is bound to be renegotiated when current export contracts expire,” Krane said.

The jury is out on whether the Middle East’s embrace of renewable energy will continue to see new projects to grow at scale, displacing oil and gas use. Despite the escalation of climate change concerns and plunging costs of renewables, the region needs to meet robust domestic power demand growth. Continuing to rely on plentiful, low-cost hydrocarbon resources may prove too tempting for some.