

# THE QAMAR NEWSLETTER

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Energy transition in a time of rising interest rates and high inflation. Cover story by Robin Mills.

## IN THIS ISSUE

Why OPEC Needs to Chart a New Course with the End of American Shale Revolution

Time for Geothermal to Come to the Boil?

Energy Transition in a Time of Rising Interest Rates and High Inflation



Authored By: Robin Mills, Maryam Salman, Maryem El Farsaoui, and Hanin Izzeldin

## INSIDE: MIDDLE EAST ENERGY REVIEW

Rig Count Snapshot • Fuel Prices & Subsidy Reforms • OPEC Watch • Key MENA Energy Scorecard

Qamar Energy, headquartered in Dubai, is the leading regionally based energy consultancy on the Middle East and North Africa (MENA).

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



[The UAE's role in the global hydrogen economy, Robin Mills and Julio Friedmann, along with Maryam Salman and Maryem El Farsaoui](#)



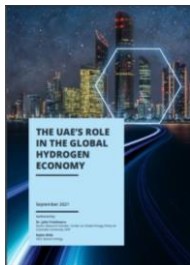
[Eastern Mediterranean Deepwater Gas to Europe, Dr Shangyou Nie and Robin Mills](#)



[Energy this week, The National newsletter, Robin Mills](#)

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# LATEST PAPERS & PUBLICATIONS BY QAMAR ENERGY



## THE UAE'S ROLE IN THE GLOBAL HYDROGEN ECONOMY

Authored By: Robin Mills and Julio Friedmann, along with Maryam Salman and Maryem El Farsaoui

*The UAE is well-placed to take an early-mover advantage in global hydrogen production and is pursuing a balanced strategy covering both 'blue' and 'green' hydrogen. The UAE and its corporate entities have been highly active since late 2020 in developing global partnerships to expand the local hydrogen value chain. This report presents an analysis of the hydrogen industry in the UAE covering strategic opportunity, market development, projects and partnerships, and cost-competitiveness. Read the full report [here](#)*



## EASTERN MEDITERRANEAN DEEPWATER GAS TO EUROPE: NOT TOO LITTLE, BUT PERHAPS TOO LATE

Authored By: Dr Shangyou Nie and Robin Mills

*This paper, part of the work by the Center on Global Energy Policy, Columbia University SIPA, on oil and gas and the energy transition, focuses on Egypt, Israel, and Cyprus' prospects of supplying gas to Europe from a technical, geopolitical, and economic perspective. The report finds that such gas can meaningfully contribute to European energy security, though mainly in the medium term and only given the involvement of external players—likely the US and/or the EU—and with buy-in from Eastern Mediterranean countries, which will need to see an upside in terms of their own energy security and energy transition.. Read the full report [here](#)*



## THE EU BAN ON RUSSIAN OIL: CRUDE IMPLICATIONS FOR THE MIDDLE EAST

Authored By: Robin Mills and Ahmed Mehdi

*This paper examines the EU ban on Russian oil and the friction it triggered in oil markets and petroleum supply chains. With the ban taking place against major uncertainties, key Middle East producers have strategic decisions to make in response, including on the oil policies of the Organization of the Petroleum Exporting Countries (OPEC), the group with 10 additional oil exporters (known as OPEC+). This paper is part of a three-part series and covers crude oil (this commentary), refined oil products (Part 2) and geopolitical implications (Part 3). Read Part 1 [here](#)*



## ENERGY THIS WEEK, THE NATIONAL NEWSLETTER

Authored By: Robin Mills

*Energy this Week is a weekly newsletter authored by Robin Mills, published every Wednesday. Some of the topics covered under the latest newsletter are: the debate continues over energy sector underinvestment, cryptocurrencies face energy challenges, forecasters see a short-term oil surplus – are they correct? 'A new global energy economy is emerging'. Read and subscribe to the Newsletters*

# WHY OPEC NEEDS TO CHART A NEW COURSE WITH THE END OF AMERICAN SHALE REVOLUTION

Robin Mills • *A version of this article appeared in The National, Apr. 23 '23* • COVER STORY

Oil runs in Scott Sheffield's veins — almost literally. In 2021, the chief executive of Pioneer Natural Resources bought out his son Bryan's Parsley Energy for \$4.5 billion. Now ExxonMobil is rumoured to be interested in acquiring Pioneer, whose market capitalisation is around \$49 billion. So, his words carried weight when, at Columbia University's Centre on Global Energy Policy on April 12, he gave his opinion that US shale oil production would never regain its historic peak. It's fair to note that a fellow chief executive on the panel, Occidental's Vicki Hollub, was more optimistic. But US oil company chiefs in general believe output from the Permian of West Texas and New Mexico, the main "tight oil" basin, will peak within five to six years.

Opec itself sees total US petroleum output rising 1 million barrels per day this year. Washington's own Energy Information Administration estimates output this year will hit 12.5 million bpd, just above 2019's record, and 12.75 million bpd next year. This is still reasonable growth, but a far cry from the 1.3-1.6 million bpd the US added annually in its glory years between 2012 and 2019.

Four things have changed. The shale patch has become consolidated into a smaller group of large companies, who face less competitive pressure to grow. If ExxonMobil does buy Pioneer, it would become the Permian's largest producer, ahead of Chevron, ConocoPhillips and Occidental, themselves major acquirers in recent years. Shareholders have grown tired of burning money, and demand dividends and stock buybacks ahead of capital spending, while several major investors now avoid the fossil fuel sector.

The pandemic has exacerbated supply-chain bottlenecks from a lengthy period of low oil prices and cost-cutting, leading to rising costs for new drilling. Restrictions from the more environmentally-minded administration of President Joe Biden, although not very onerous yet, contribute to a more negative long-term mood. But the biggest factor is the relative maturity of the shale oil plays. This shows in the divergent outlooks for oil versus gas.

The main American shale gas formations, the Haynesville, Permian and Marcellus, are forecast to grow robustly until at least 2030. By contrast, of the three big shale oil basins, the Eagle Ford of south Texas and the Bakken of North Dakota reached peak production in 2015 and 2019 respectively; only the Permian is still growing, and more slowly than before. As pressure declines, the shale oil wells produce a larger share of associated gas, requiring more spending on processing facilities and pipelines.

Technology still has a role: refracturing existing wells can boost the amount of oil recovered, but is done so far only on a small scale. Injecting carbon dioxide also increases recovery, and is favoured by generous new tax credits. Applied aggressively, these methods could yield further growth, or at least slow the decline in the legacy well stock, but would not give the breakneck expansion of the past. So, if not in the US, where could new non-Opec growth come from?

Other western countries are constrained by mature fields and environmental policies. Other shale basins might emerge, notably in Argentina and China, but their growth so far has been much slower than the US case. Many of the other most promising "tight oil" formations are in Opec+ countries, with the UAE and Saudi Arabia, for example, prioritising shale gas. Russia faces long-term declines because of sanctions, wartime spending, the expense of developing new frontier areas in East Siberia and the offshore Arctic, and its position in Opec+. Brazil grows but consistently underperforms its potential, while Mexico's turn to resource nationalism has scared off more private investment.

New entrants will play some role: the massive recent deepwater discoveries in Namibia by Shell, TotalEnergies and QatarEnergy are optimistically hoped to begin output by 2026, though 2030 is more likely. South American neighbours Guyana and Suriname could produce 1-1.5 and 0.65 million bpd respectively by 2030, with smaller amounts from Uganda and Kenya. But the emergence of other hotspots is much more difficult because of the lack of exploration spending by the western international oil companies, who are focusing their capital on the US, gas and low-carbon businesses, not on wildcatting. Even then, lengthy development timelines would see substantial oil output only by the 2030s. Opec has faced substantial competition on three occasions: the rise of the North Sea, Alaska and Mexico in the late 1970s, the post-Soviet recovery in the early 2000s, and US shale from 2008 onwards. In the first two cases, Vienna tried unsuccessfully to entice its rivals into co-operation. That was never a prospect in the case of the fragmented, free-market American system.

Instead, US shale gave the impetus to the formation of the Opec+ alliance of 23 producers. The original Opec members realised they could not compete simultaneously with Texas and Siberia, so towards the end of 2016, they brought Russia into a wider grouping, along with some other important non-Opec states. Opec's all-time highest petroleum market share came in 1973 at 50.3 per cent, on the eve of the first oil shock. Now, even with strong production cuts, the proportion from the Opec+ group reached 52.4 per cent in 2021.

Historically, Opec also faced internal tensions, where at various times Iran, Iraq, Venezuela and Nigeria made dashes for higher market share. Now sanctions and political struggles mean that only Iraq remains a serious contender to the core Gulf trio of Saudi Arabia, the UAE and Kuwait.

This lack of competition may tempt the leading Opec countries to tighten the market further and aim for much higher prices. But this may not be the right course of action because unlike in the 1970s, there is an alternative to their oil today — the electric vehicle, whose use is already soaring as prices, performance and choice of models improve, and climate policy tightens. The apparent end of the American shale revolution is a welcome relief for Opec — but also a warning to use newfound market power moderately and wisely.

## TIME FOR GEOTHERMAL TO COME TO THE BOIL?

Robin Mills • *A version of this article appeared in The National, Apr. 16, '23*

This energy source is low-carbon, is reliably available day-round without varying with weather or seasons, is geographically widespread, reasonably cost-effective, does not require scarce materials and makes use of well-known technologies. Yet it ranks only fifth in capacity among the renewables, far behind solar, wind, hydropower and bioenergy. As Masdar and Adnoc now show interest, is it time for geothermal to come to the boil?

The Earth's heat comes from the continuous cooling of its interior following the planet's fiery birth, and from the decay of natural radioactive elements. With temperatures typically gaining 30 degrees Celsius for every kilometre down, the exploitation of geothermal energy has historically been limited to a few countries, mostly around the Pacific "ring of fire", the mid-Atlantic Ridge and the East African Rift Valley, where magma brings high temperatures close to the surface. These include California in the US, Indonesia, Philippines and Japan.

The role of geothermal today is tiny: in the US, which has the world's largest geothermal capacity, it is still only 0.3 per cent of total installed electricity generation. It has a much higher share in countries such as El Salvador, Kenya and Iceland, but they have only small electricity grids. Traditional geothermal power requires permeable hot rocks with water circulating through them, that could be brought to the surface to make steam and run a turbine.

Investment bank Lazard presents geothermal electricity as having a cost between 6.1 to 10.2 US cents per kilowatt-hour. This is more expensive than wind and solar, but cheaper than moderately-priced gas, particularly when including costs for carbon dioxide emissions for projects in Europe. Given Europe's desperate need to replace Russian gas, heating with geothermal seems an obvious solution. Geothermal has the advantage of being dispatchable — it can be turned on or off as required to balance demand and variable renewable generation. As well as producing electricity, it can yield low-temperature heat to warm homes and greenhouses in cold climates, or medium temperatures for industries such as food processing, paper and chemicals. This heat can also drive air-conditioning chillers and desalination in hot, arid areas such as the Gulf.

There is also growing interest in extracting minerals from geothermal brines — particularly lithium, a key ingredient of batteries. And carbon dioxide can be sequestered in geothermal systems, removing it from the atmosphere. Promising areas in the Middle East include volcanic districts in Iran and eastern Turkey, the hot springs of Aegean Turkey, and the Red Sea rift between Africa and Arabia, dotted with volcanic islands such as Jebel Al Tair off Yemen, which erupted in 2007. Western Saudi Arabia is strewn with recent lava flows, the last eruption happening as late as 1256. Other than in Turkey and some very minor efforts in Iran, though, geothermal power has not been adopted in the region.

Given its synergies with oilfield technologies, it is surprising petroleum companies have not been involved more, as they have sought to expand their green businesses. Chevron used to have a sizeable geothermal unit

in Indonesia and the Philippines, but sold it in 2017, while Shell and others are dabbling.

Maybe that is about to change.

In February, Abu Dhabi's green energy company Masdar made a strategic investment in Pertamina Geothermal, a unit of the Indonesian state oil corporation, which raised \$595 million in an initial public offering for a quarter of its shares. Pertamina Geothermal intends to invest \$4 billion to double its capacity by 2027-2028. And in March, Masdar agreed with Adnoc Drilling to explore geothermal opportunities, with the Adnoc unit potentially providing drilling services. In 2021, Dubai-based district cooling company Tabreed also agreed to work on two deep geothermal wells at Masdar City. Masdar targets 100 gigawatts of capacity by 2030, up from 20 gigawatts today, which would make it one of the world's biggest international renewable players. The majority of this will be wind and solar, but there is room for other technologies.

The breakthrough could come from engineered geothermal systems. These use the past decade's advances in oil- and gas-well technologies, including horizontal drilling, hydraulic fracturing, advanced reservoir simulation and corrosion-resistant materials. Wells can be placed into "hot dry rock", which is then fractured, and water circulated to heat up. This greatly expands the scope of geothermal, eliminating the need to find natural hot-water systems.

In 2021, the venture capital arms of BP and Chevron invested in Eavor, a Canadian start-up using a closed-loop system. The concept is that cold water is injected into one side, heats up and rises on the other, avoiding the need for pumping, so that even relatively cool rocks are viable.

Systems circulating high-pressure supercritical carbon dioxide, which flows like a gas but has the density and heat capacity of a liquid, could be more efficient than those based on water. Innovative drilling approaches using high-frequency radio waves or lasers are being trialled, going deeper with tools able to withstand the high temperatures of 400 degrees Celsius or more, compared to the 150-200 degrees encountered in typical oilfield operations. These could tap supercritical water and increase a well's power output ten times.

Oil service majors Baker Hughes and Halliburton are researching such technologies, which could bring costs down to 4.6 cents per kilowatt-hour.

The US Department of Energy has issued a "moon shot" to cut the cost of enhanced geothermal 90 per cent by 2035. The recently-passed Inflation Reduction Act offers generous tax credits to geothermal, as to other renewable technologies. Maybe it's time for the Middle East too to delve deep into the Earth, not for oil but for heat.

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## ENERGY TRANSITION IN A TIME OF RISING INTEREST RATES AND HIGH INFLATION

Robin Mills • *A version of this article appeared in The National, Apr. 09, '23*

The modern energy transition grew up in an era of easy money, near-zero interest rates and low inflation. Venture capitalists, project developers and governments contend today with a very different



situation. Can they keep up the momentum on decarbonisation when investors expect something for their cash?

Between January 2009 and November 2015, the US federal funds effective rate did not exceed 0.2 per cent — quite a change from the early 1980s, when it reached about one hundred times that level. That climbed to a still moderate 2.4 per cent in 2019, then fell back to near-zero in response to the Covid-19 pandemic. The European Central Bank's (ECB) fixed rate was even lower, and actually zero between March 2016 and July 2022. Now, in a quick march of rates rises, the US Fed rate has reached 4.65 per cent and the ECB 3 per cent. Short-term rates are seen peaking at about 5.1 per cent while falling back longer-term to about 3.6 per cent.

This is in response to the need to choke off inflation before it becomes embedded. US prices began accelerating in early 2021 with the Covid-related stimulus, hit a peak of 9.1 per cent in June and have since fallen back to 6 per cent. European inflation has been even higher, because of the surge in gas and electricity costs after Russia's invasion of Ukraine, and reached an all-time eurozone record of 10.6 per cent in October. Energy itself drives some of the problem. High oil and gas prices contributed to the jump in inflation in 2021 and 2022. In the longer term, decarbonisation will require heavy investment, often fuelled by government deficit spending, and throwing away much still-productive capital locked up in fossil-fuel assets.

The 2050 net-zero carbon target will require doubling the current annual energy investment to \$173 trillion, according to strategic research provider BloombergNEF. That is something like a quarter of what we currently invest worldwide across the entire economy.

Economic protectionism is particularly in evidence in energy, as the US with its perhaps misleadingly named "Inflation Reduction Act", the EU and the UK aim to outcompete China in areas such as batteries and electric vehicles. They are concerned about over-dependence on China and Russia for critical minerals such as lithium, cobalt, nickel and rare earths.

China has been the key driver of falling manufacturing costs for renewable energy systems over the past decade. A complex welter of tariffs and "buy local" preferences will end such frictionless trade.

Carbon prices are an essential and more efficient economic tool, yet still add to the end-user cost of energy. Producing "green" steel, aluminium, cement and plastics using renewable electricity and hydrogen filters through to the costs of building things. This applies not least to new energy systems, which require large quantities of materials. Low-carbon shipping fuels will lead to higher costs for delivered goods.

Eventually, these alternatives will improve to the extent they are superior to and cheaper than fossil fuels, but the transition period can be painful. But a higher cost of capital and tighter money make it harder to deliver that transition. Most of the key low-carbon technologies have higher upfront capital costs than the fossil alternative, but lower operating costs. A wind or solar farm, once constructed, requires only minimal maintenance and no fuel input to churn out electricity for two or three decades. An electric car is cheap to charge and, with fewer moving parts,

less prone to breakdowns. This means that higher interest rates put them at a relative disadvantage.

The very low costs of delivered solar power in recent years, particularly in the Middle East, were facilitated by cheap capital. Supply chain issues mean that panels have become at least temporarily more expensive. Our calculations at Qamar Energy suggest that a solar farm delivered for 1.5 cents per kilowatt-hour in 2021 would see its cost rise to 2 cents because of higher equipment bills, then to almost 3 cents due to the greater cost of capital. This is still very cheap by historic standards, and better than fossil alternatives, but higher than the industry had become accustomed to and on which net-zero carbon plans had been based. The move up from near-zero interest rates also affects venture capital. Money in recent years poured into energy start-ups and growth companies: in electric vehicles, not just Tesla, but also Rivian, Lucid Motors and fraud-hit lorry maker Nikola Motor. Even without profits, revenues or a working model, they were valued in the tens or hundreds of billions, more than Ford or GM.

This was an attempt, of course, to emulate the success of early investors in stocks such as Alphabet and Meta. The energy tech space is much less forgiving: capital-intensive, long development and deployment cycles, heavy government regulation, and safety and environment imperatives. "Move fast and break things" is not an appealing motto for an electric plane.

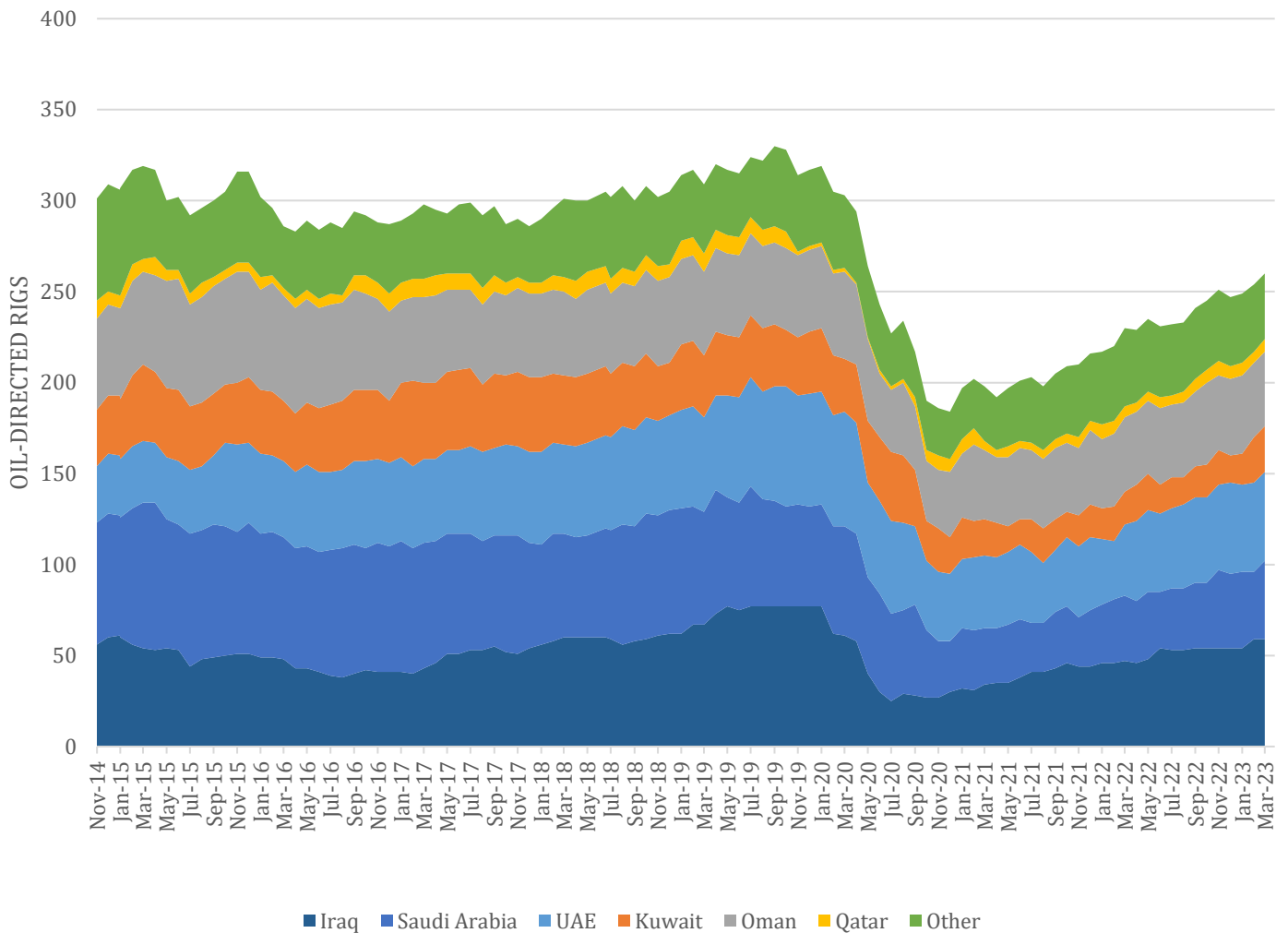
The world still needs these breakthrough technologies, in areas such as atmospheric carbon dioxide removal, space solar, nuclear fusion and advanced fission, alternative batteries to lithium-ion, engineered geothermal, novel electrolyzers and many others.

The question is how to keep venture capitalists interested when interest rates are well above zero and payoff comes — if it comes — after a decade or two. The outlook for inflation and interest rates is critical: will demographics, maturing economies and cheaper low-carbon energy push rates down again, or will activist governments, deficit spending, a decarbonisation splurge and the end of the deflationary "China shock" keep them elevated?

Geopolitical imperatives aside, de-globalisation or "slowbalisation" indicates economic stagnation with higher inflation, hampering the energy transition. Bureaucratic procedures and excessive deference to special interests reduce the deployment of major new infrastructure to a crawl, magnifying the impact of more costly capital. Governments need to imaginatively bring money into long-term breakthroughs, but also accelerate their journey to reality.

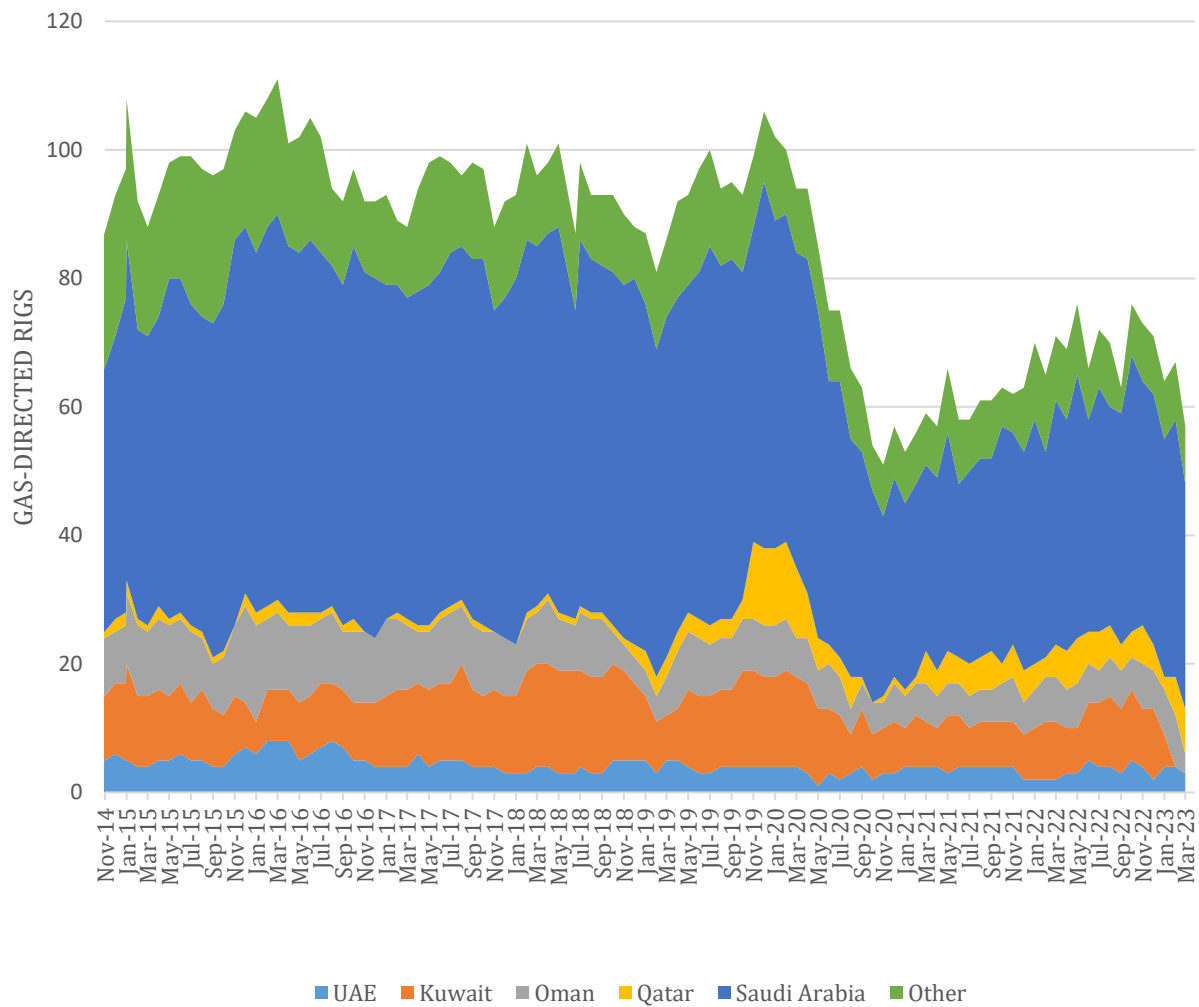
After economic shocks, pandemic and war, we need to reconcile the end of near-zero with the start of net-zero.

## RIG COUNT SNAPSHOT: OIL



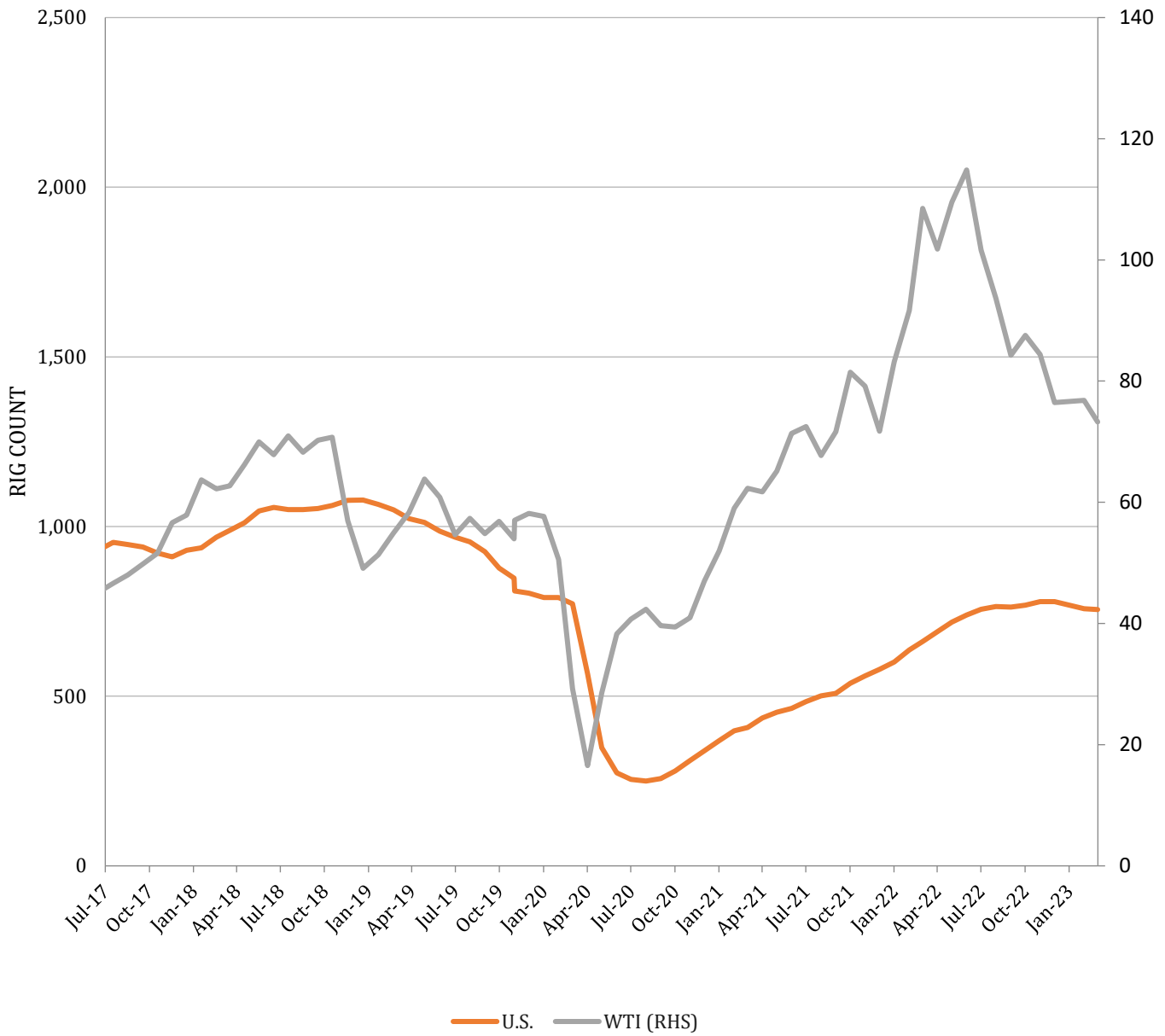
- Total Middle East rig count hit 323. Total oil rig count increased by 6 to 261 in March despite OPEC countries agreeing to cut production.
- After a slight production drop from 2.559 Mb/d in December 2022 to 2.577 Mb/d in January 2023, exports continued to surge and Iran reported that sales from the 21<sup>st</sup> of January to 19<sup>th</sup> of February exceeded revenue in the same time last year by \$2.5b. In March however, production dropped by 8 kb/d to an average of 2.567 Mb/d.
- Iraq's rig count was maintained at 59 in March after a slight increase in February. Once again their OPEC quota was missed.
- UAE's oil rig count remained at a steady 49 in March as it braced to cut production.
- Kuwait saw no further increase in oil rigs in March after adding 8 oil rigs to its count in February as multiple contracts were secured for funding and infrastructure projects.
- Despite intending to slash its production to align with the agreed OPEC cuts, Saudi Arabia added 6 oil rigs in March after previously shutting down 5 rigs in February.
- Oman's oil rig count remained at last month's 41 as it shifted its focus to gas and renewables. Overall production dipped due to lagging production from Blocks 3 and 4.

## RIG COUNT SNAPSHOT: GAS



- March unwound February's minor rig count increase by a -10 drop in overall count, still higher than 51 in November 2020 but much lower than the pre-Covid average of 99.6 in 2019.
- Oman's rig count dropped by -5 despite previously announced exploration projects and intended increase in gas production to 500mn cfd with Block 10's Mabrouk North-East field brought online.
- Kuwait's February shutdown continued as rig count settles at 0.
- The UAE dropped its rig count by -1 to 3. ADNOC's new LNG plant in Fujairah aims to bump total LNG production up to 15.6 Mtpa by 2028 and will require additional upstream gas.
- Qatar's rig count stopped the monthly decrease by -2 since November after reaching its lowest since March 2021 and tripled its count to 6 in February. Another rig was added in March and the total count is likely to rise as new upstream developments of North Field are required to meet its 2026-7 LNG export expansion.
- Saudi Arabia's rig count dropped by -5 to 35. Saudi Arabia plans to develop its Jafurah shale gas to 2 Bcf/d of gas, 418 MMcf/d of ethane and 630 kboe/d of gas liquids as part of its 2030 plan to cut the use of oil in power generation.

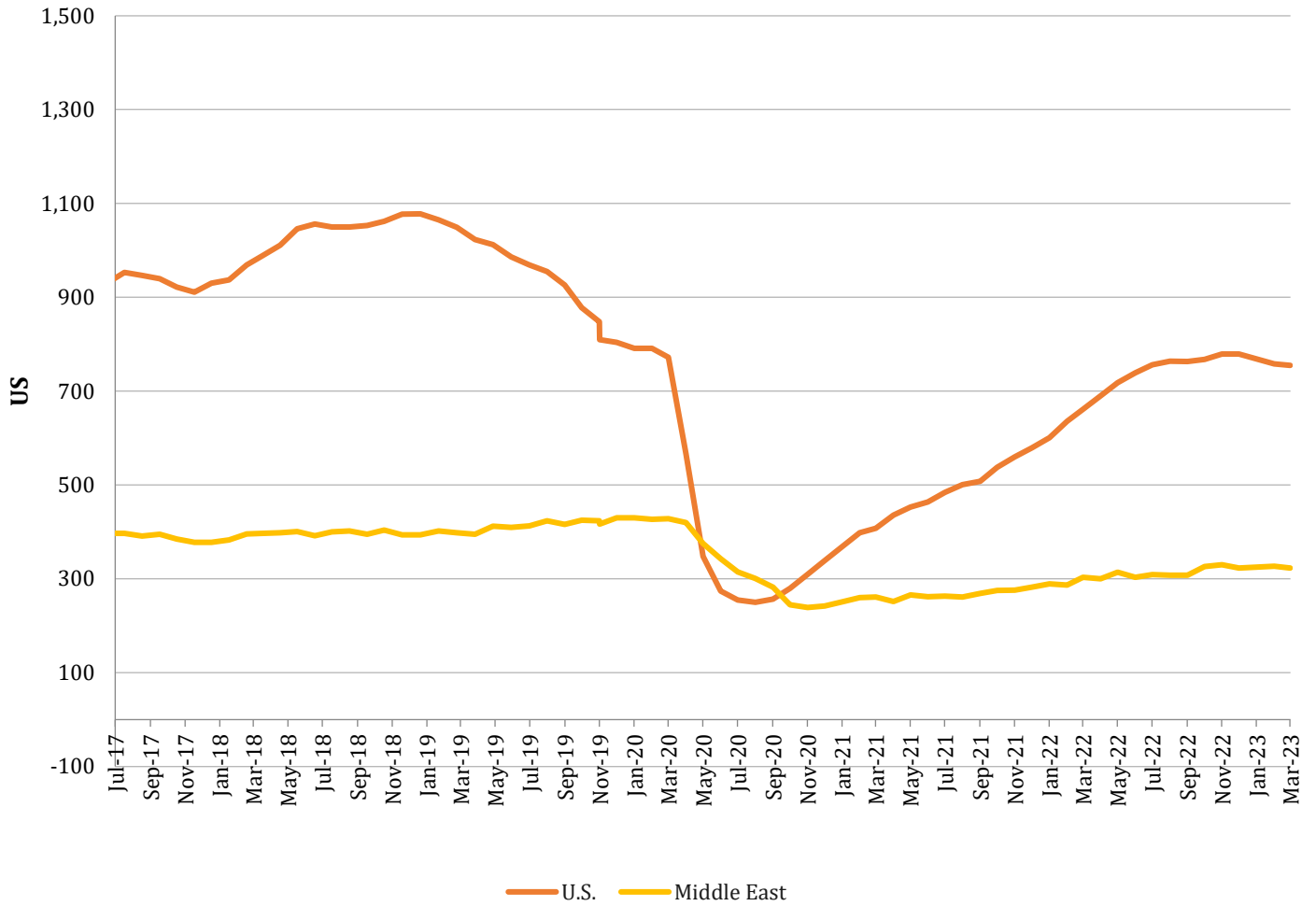
## RIGS VERSUS OIL PRICES: US RIGS & WTI



- US rig count remained at 755 in April with one oil rig shut down and one gas rig opened.
- Oil Rig count changes are as follows: a +1 m-o-m increase in the Barnett and +9 in the Permian basin; meanwhile DJ-Niobrara rig count dropped by -1, Williston (Bakken, Three Forks) by -2, Eagle Ford and Haynesville by -3, and Cana Woodford by -6. There were no changes in the Utica basin.
- Gas production from the US will increase as a result of associated gas from increased oil drilling, especially from the Permian basin and is estimated to hit 100.67 bcfd this year.



# RIG COUNT: US & MIDDLE EAST



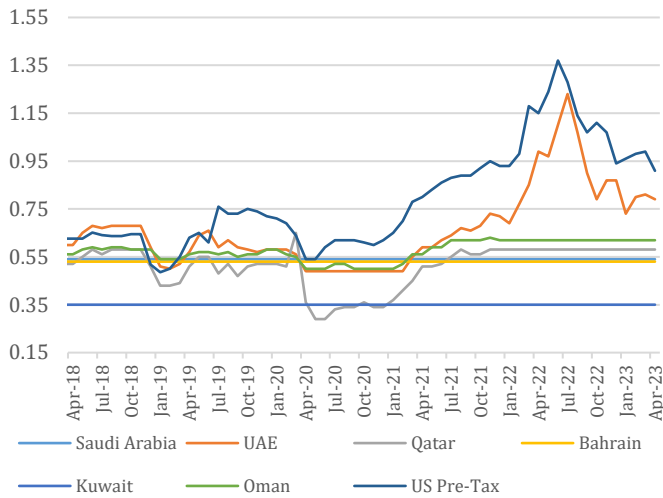
- US Offshore rig count rose from 18 to 20 and overall rig count as maintained since March at 755. Operating gas rig count increased by +1 and may rise further due to intended gas production increase for 2023 to 100.27bn cfd.
- March saw little to no changes in most Middle Eastern countries except for Saudi Arabia (+6 oil, -5 gas) and Oman (-5 gas). Overall rig counts dropped by -5 to 323 and with the surprise voluntary cuts announced by Middle East OPEC countries before the JMCC meeting, on top of the maintained production cut, production will fall further as more rigs will be shutdown.

# FUEL PRICES & SUBSIDY REFORMS

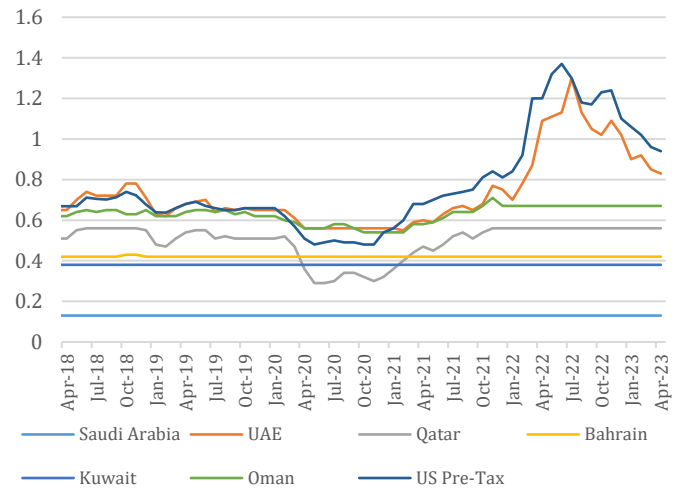
- UAE gasoline had a very slight dip in price from \$0.81 in March to \$0.79 per litre this April. Compared to last month's sudden 7-cent dip, the price of diesel decreased slightly from \$0.85 to \$0.83 per litre.
- Qatar prices for gasoline and diesel have been set at \$0.58 and \$0.56 per litre for the 18<sup>th</sup> straight month since November 2021.
- In Oman, gasoline and diesel prices have not changed since last month, set at \$0.62 and \$0.67 per litre respectively. This marks 16 months of unchanged prices.
- In Saudi Arabia, gasoline and diesel prices have not changed again and are set at \$0.62 and \$0.20 per litre respectively.

The following charts represent the prices of gasoline 95 and diesel (\$/litre) till April 2023 in the GCC countries.

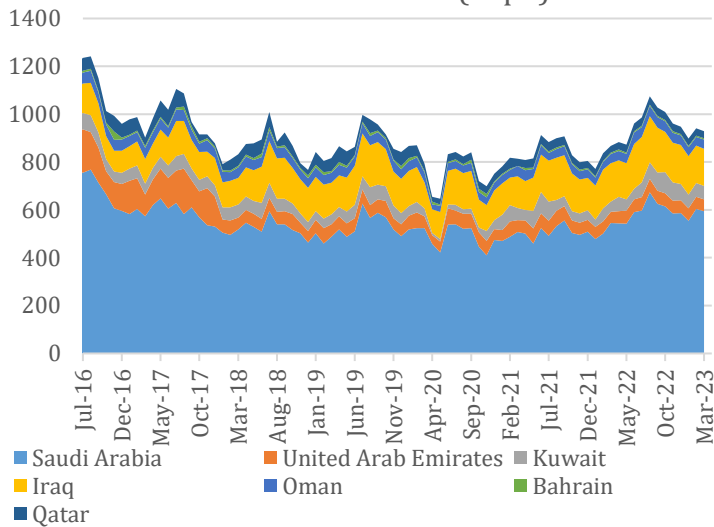
### GASOLINE PRICES \$ Litre



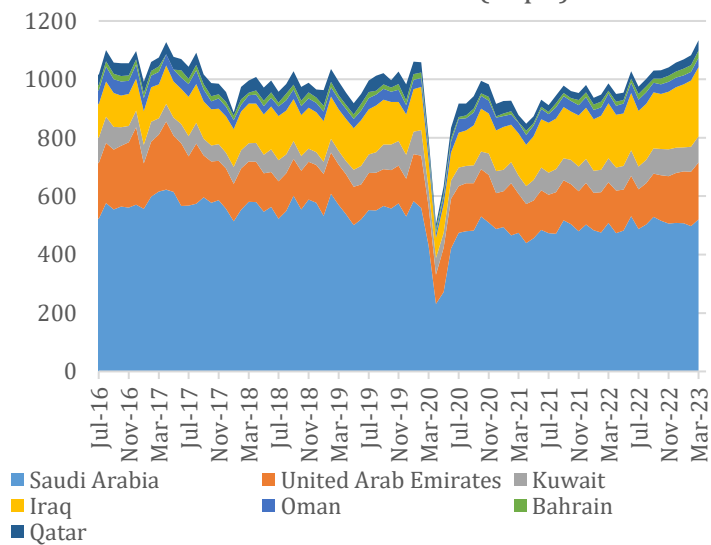
### DIESEL PRICES \$ Litre



### DIESEL DEMAND (kbpd)



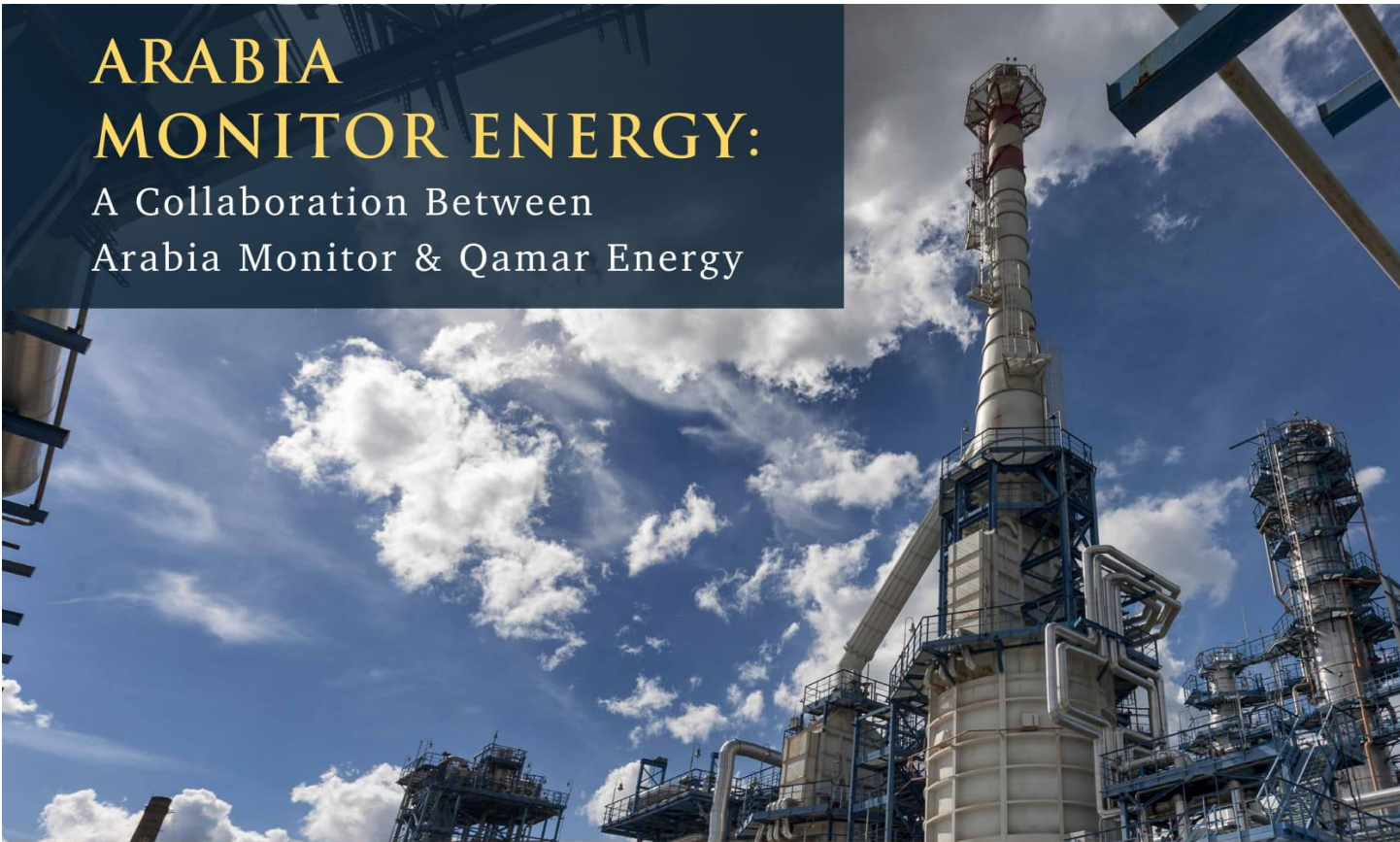
### GASOLINE DEMAND (kbpd)



Note: JODI Bahrain, Kuwait, and Saudi Arabia gasoline and diesel figures are unavailable for March and April 2023

# ARABIA MONITOR ENERGY:

A Collaboration Between  
Arabia Monitor & Qamar Energy



## ARABIA MONITOR ENERGY

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

## WHAT SETS IT APART?

### 1. INSIDE OPEC

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

### 2. NOC & IOC ANALYSES

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

### 3. SPOTLIGHT THIS MONTH

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

### 4. SCENARIOS TO WATCH

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

### 5. STRATEGIC IMPLICATIONS

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

### 6. OUTLOOK FOR THE YEAR

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



## WHO BENEFITS?

### ENERGY TRADERS

- What factors will contribute to oil and gas price fluctuations?
- What is the outlook for oil and gas pricing?
- What is the outlook for OPEC's production and export strategy?
- How are NOCs adapting their oil marketing strategies?

### INVESTMENT AND RISK ANALYSIS

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

### UPSTREAM FIRMS

- What are the chief economic, political and fiscal regime factors driving/limiting upstream investment decisions and progress?
- What are the oil supply outlooks for the countries by project?

### DOWNSTREAM FIRMS

- What are the demand challenges, patterns, and trends for oil and oil products?

### NATIONAL OIL COMPANIES

- What are future oil and gas pricing trends?
- What developments will intensify or weaken demand?
- What are IOCs' incentives and drawbacks in operating in the country?

### ALTERNATIVE / RENEWABLE ENERGY ORGANISATIONS

- What are the challenges to renewable energy targets?
- What is the progress of major renewable energy projects?
- Are there opportunities for more entrants?

## THE DELIVERABLES

### 8 MONTHLIES

- Oil Price Scorecard
- Headline Developments
- Spotlight this Month
- Scenarios to Watch
- Projects in the News
- Macro Dashboard for Oil Exporters/Importers
- Outlook for the year

### 4 QUARTERLIES

- MENA Map as per Political Grouping
- Map of New Licensing Rounds
- Political & Regional Security Issues
- Oil & Gas Prices Outlook
- Global Barriers to Oil & Gas Production
- Deep Dive into OPEC & NOPEC
- MENA Energy Investments
- MENA Energy Fiscal System
- MENA Energy Upstream Bidding map
- MENA Economic Outlook
- Probability Scorecard for Bearish & Bullish Oil Supply/Demand
- Investor Implication Scenarios (Under 3 Oil Price Dynamics)

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Arabia Monitor  
Economic Research and Strategy



# OPEC WATCH

| OPEC Production  | OPEC+ Compliance  |
|--|---|
| <ul style="list-style-type: none"> <li>Global oil demand estimate revised from 101.7 Mb/d to 101.9 Mb/d with the bulk of the demand growth stemming from Asia-Pacific. OPEC crude demand revised to 29.3 Mb/d (a 0.2 Mb/d drop).</li> <li>Expected oil demand from China is maintained at a predicted growth of 710,000 b/d in 2023.</li> <li>Russian crude output is estimated to have dropped to an average of 9.72 Mb/d in March at a 250 kb/d m-o-m drop which is only half the announced a 500 kb/d cut previously announced. This production cut has been extended until the end of 2023, joining the other voluntary cuts implemented. Despite the production drop Russian exports shot up by 0.6 Mb/d to 8.1 Mb/d.</li> <li>In preparation for the voluntary cuts to be implemented production dropped in March to 28.9 Mb/d, an 86 kb/d m-o-m drop.</li> <li>Bulk of production cuts were from Iraq (-18 kb/d) and Angola (-64 kb/d), and Nigeria (-17 kb/d), reversing its production boost last month. Saudi Arabia (+44 kb/d) showed the only significant increase.</li> </ul> | <ul style="list-style-type: none"> <li>OPEC+ overall compliance hit 173% in March against February's 169% after a 70 kb/d m-o-m production drop. Total production missed the quota level by 886 kb/d as a result of decreased output in Nigeria, Iraq, and Kazakhstan. Libya, Iran, and Venezuela remain exempt from OPEC cuts.</li> <li>Nigeria's efforts to increase security and support ageing infrastructure were not enough to maintain February's production boost and saw a 190 kb/d drop in March to 1.15 Mb/d, 400 kb/d under its quota.</li> <li>Angola's output dropped by 40 kb/d due to its continued Dalia stream maintenance, its output at 1.91 Mb/d and again missing its quota.</li> <li>Successful maintenance in the West Qurna 2 field and the repairs of the terminal for the pipeline damaged during the Turkey/Syria earthquake saw Iraq's output increase by 60 kb/d to 4.39 Mb/d in March. Its output quota however was still missed.</li> </ul> |

| OPEC Production, Mb/d |       |            | Non-OPEC Production <sup>1</sup> , Mb/d |       |            |
|-----------------------|-------|------------|---|-------|------------|
| February              | March | Change (%) | February                                | March | Change (%) |
| 28.92                 | 28.80 | --0.412    | 57.7                                    | 58.0  | --0.516    |

## Latest Organisational Changes

- A day before the 48<sup>th</sup> JMCC Meeting saw a collection of voluntary cuts to be added on top of the 2 Mb/d production cut made back in October 2022 to last until the end of 2023. The announced cuts are to begin in May and are as follows: 500 kb/d by Saudi Arabia, 211 kb/d by Iraq, 144 kb/d by UAE, 128 kb/d by Kuwait, 78 kb/d by Kazakhstan, 48 kb/d by Algeria, 40 kb/d by Oman, and 8 kb/d by Gabon. Along with the 500 kb/d cut from Russia this brings total production cuts to 1.66 Mb/d.
- The announced cuts were stated to be a "precautionary measure aimed at supporting the stability of the oil market". After a low \$73/barrel Brent price the announcement resulted in a sharp increase to \$84.13/barrel and is expected to rise further.
- The 35<sup>th</sup> OPEC and non-OPEC Ministerial Meeting will be held on June 4<sup>th</sup>, 2023. The 49<sup>th</sup> JMCC Meeting is set on the 4<sup>th</sup> of June 2023.

<sup>1</sup> Excluding OPEC NGL and non-conventionals



# KEY MENA ENERGY SCORECARD

## Abu Dhabi Developments

### Oil & Gas

- A \$412mn 5-year drilling services deal for the Upper Zakum oil field awarded to ADNOC Drilling and will commence in 2Q23.
- 172,191 T of petroleum was received by Gachagua, Kenya from ANDOC as a G2G deal.
- ADNOC L&S deploy 5 Jiangnan Shipyard-built VLGCs, each with a capacity of 86,000 cubic metres, and to be operated by joint Wanhua Chemical Group and ADNOC L&S partnership AW Shipping.
- Tadweer and OMV sign a MoU to explore solutions and opportunities in sustainable feedstock for fuel and chemicals production.
- ADNOC offshore signs \$2.6bn 5-year logistic services deal with ADNOC Logistics and Services (L&S) for its Mussafah base.
- UAE joins the league of OPEC countries introducing a voluntary production cut from May onwards, intending to slash their oil output by 144 kb/d.

### Alternative Energy

- Monarch Holding and EHang Holdings partner up to build the first sustainable electric-powered aircraft manufacturing facility in the MENA region.
- Emirates Steel Arkan is considering a minority stake in Thyssenkrupp's steel business, intending to manufacture renewable-powered products in the UAE before export to Germany. JSW Steel Ltd and CVC Capital Partners have also been considering investments.
- Barakah Nuclear Energy Plant's Unit 2 maintenance was completed successfully and is now operational again.
- Masdar celebrates its 17<sup>th</sup> anniversary.
- ADNOC, Mitsui, INPEX, and JOGMEC sign a strategic collaboration agreement for a joint study on the GHG emissions from clean ammonia projects.
- ADNOC signs agreement with Kawasaki to explore clean hydrogen value chain, focussing on production and transport of liquefied hydrogen.
- Mubadala invests \$2.5bn over the next 10 years in Brazil's clean fuel industry through the Acelen unit, aiming to build a sustainable aviation kerosene and green diesel factory in Bahia. Production is estimated to be in 1Q26.
- Masdar acquires 50% of California, US 128MW solar PV project Big Beau. The project also contains a 40/160MW BESS.
- Energy China Hunan Thermal Power's first PV project in Abu Dhabi, a 2100MW solar PV plant, is complete at full capacity and is grid-connected.

- Brooge Energy and Thyssenkrupp Uhde's technical concept study for a proposed green ammonia plant in Abu Dhabi which uses Thyssenkrupp's nucera's alkaline water electrolyzers and ammonia synthesis technology was completed. The proposed plant is to produce 1950 Mtpd of green ammonia for export.
- Emirates Global Aluminium (EGA) joins HILT CRC decarbonisation of alumina refining research.
- An Al Fattan-LTechUVC Green Energy partnership is to construct a \$400mn 200MW green hydrogen and ammonia plant in Abu Dhabi's KEZAD area.
- Masdar's three solar PV projects in Uzbekistan (457MW Sherabad plant, 220MW Samarkand plant, and 220MW Jizzakh plant) have achieved financial close with ERBD financing a \$205mn package.
- TAQA and Octopus Energy set to invest in Xlinks UK-Morocco power line.
- Construction of Masdar's Al Dhafra 2GWp solar PV plant has been completed with announcement of the installation of the final solar module.
- Hayat BioTech invited to invest in Pakistan's renewable energy sector and a discussion on a 1200MW hybrid solar-wind plant was discussed during a meeting between Hayat Bio-Tech's Chairman Sheikh Ahmed Dalmook al Maktoum and Prime Minister Shebaz Sharif.

## Kuwait Developments

### Oil & Gas

- Engineering services specialist Sparrows Group to work on maintenance and servicing of onshore rigs for two clients, becoming the first non-OEM to obtain NOC approvals for operation in Kuwait.
- Al Zour refinery shuts down two CDUs due to undisclosed technical issues. Oil tenders issued now on hold after the final 120 kT VLSFO tender on 21<sup>st</sup> of March.
- KOC awards 5-year contract worth \$76.5mn to the Combined Group Contracting for the flow lines and works in Umm Niqa and South Ratqa.
- World's tallest tower Burj Mubarak in planning in Kuwait to diversify income and reduce oil reliance.
- Kuwait Oil Company (KOC)'s Jurassic well tenders in northern Kuwait awarded to the Heavy Engineering Industries and Shipbuilding Company.
- Kuwait Energy and United Oil & Gas plc spud the ASD-3 well in the Abu Sennan license in west Egypt.
- Kuwait joins the league of OPEC countries introducing a voluntary production cut from May onwards, intending to slash their oil output by 129 kb/d.
- SPETCO and Jereh managed gas plants in North Kuwait to be supplied with two HySWEET acid gas removal units, two TEG drying units, and two Smartsulf sulphur recovery units by Axens.
- \$74.6mn contract issued by KOC to Bader Almulla and Brothers Co. for maintenance in the eastern and southern facilities.
- New gas-powered desalination plant in west Kuwait has tenders issued by KOC worth \$300mn and intends to begin operations in 2024.
- Abu Sennan well in the Western Desert in Egypt has its ASH-8 brought online by Kuwait Energy Egypt.

|                    |   |
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|                    | <ul style="list-style-type: none"> <li>• Focussing on full-scale operation of the Al-Zour refinery, Kuwait asked refineries in Asia to import less oil with the new April contracts.</li> <li>• Shuaiba North Power Plant privatisation contract won by Deloitte for \$4mn. Phase 1 involves a feasibility study over the next 3 years and Phase 2 is the bidding phase.</li> </ul>   |
| Alternative Energy | <ul style="list-style-type: none"> <li>• Kuwait's Ministry of Electricity and Water and Renewable Energy aims to speed up national renewable energy plans and pushes to produce 15% of electricity consumption through renewables.</li> <li>• Electrical Industries Company (EIC) subsidiary Saudi Transformers Company awarded \$21mn deal with the Ministry of Electricity and Water and Renewable Energy in Kuwait to provide distribution transformers.</li> <li>• Kuwait delegation takes part in 9<sup>th</sup> Berlin Energy Transition Dialogue Conference for fossil fuel to renewable energy transition.</li> <li>• Cooperation discussed for renewable energy between Oman and Kuwait by the Omani-Kuwaiti Joint Committee.</li> </ul> |

## Qatar Developments

|                    |   |
|--------------------|---|
| Oil & Gas          | <ul style="list-style-type: none"> <li>• QatarEnergy and Namibian Ministry of Mines sign a MoU for cooperation and investment opportunities in Namibia's energy sector.</li> <li>• Anticipating a higher crude demand in June, QatarEnergy raises price of al-Shaheen premium cargoes at \$2.37/barrel above Dubai quotes, an entire \$2.01 higher than the price set for May.</li> <li>• Sinopec signs an agreement with QatarEnergy to acquire a 5% stake in Qatar's North Field East expansion LNG project.</li> <li>• QatarEnergy acquires stakes in two offshore Canadian projects owned by ExxonMobil: 28% in License EL 1167 and 40% in License EL 1162.</li> <li>• Negotiations on TotalEnergies' \$27bn project have concluded. QatarEnergy to hold 25% stake.</li> <li>• QatarEnergy obtains 40% working interest in Shell-operated offshore C-10 Block in Mauritania.</li> <li>• Baker Hughes to supply QatarEnergy's North Field South project with two main refrigerant compressors, boosting QatarEnergy's LNG production by 16 Mtpa to a total of 126 Mtpa.</li> <li>• QatarEnergy purchases two offshore Canadian block stakes from ExxonMobil.</li> <li>• Qatar Electricity &amp; Water Company (QEWC) sign a 9-year contract with GE Gas Power to maintenance and services to the Ras Abu Fontas B2 Cogeneration Plant units.</li> <li>• QatarEnergy discovers oil 270 km offshore Namibia in the Jonker-1X deep-water-water-well.</li> </ul> |
| Alternative Energy | <ul style="list-style-type: none"> <li>• Qatar's main aluminium plant, Qatalum, may utilise solar power in pursuit of carbon emission reductions as Norsk Hydro, which partly owns the plant, explores the possibilities of incorporating solar.</li> <li>• Qatar's Ministry of Transport aims to speed up electrification of its transport sector and have 35% of total vehicles, with 100% of public buses, be electric.</li> </ul>   |

- The National Programme for Conservation and Energy Efficiency, known as Tarsheed, signed a MoU on behalf of the General Electricity and Water Corporation, known as Kahramaa, with the Qatar Foundation's Earthna Centre to support the development of sustainability policies, focussing on 10 items including reduction of consumption and emissions.
- Two solar PV plants are to be built in Qatar by 2025. The capacities of the plants are 410 MW in Mesaieed and 470 MW in Ras Laffan. Upon completion the total solar power capacity in Qatar in 2024 will hit 1700 MW.
- National Nuclear Security Administration (NNSA) met with Qatar's Minister of Environment and Climate Change, Sheikh Dr. Faleh Al Thani, and held a discussion concerning security of nuclear material and illicit smuggling.
- Siemens Energy and Standard Chartered bank issue first green guarantee for a solar project in Qatar.
- Qatar becomes the biggest shareholder of RWE AG with 9.1% of all shares.
- Nebras Power and Uzbekistan Ministry of Investment, Industry and Trade review 3.1 GW thermal power plant project in Syrdarya and Surkhandarya regions.
- Qatar Investment Authority (QIA) CEO Mansoor Ebrahim Al-Mahmoud discuss investment proposals with Pakistan's Prime Minister Shehbaz Sharif with solar power parks among the investment topics.

## Federal Iraq Developments

### Oil & Gas

- Gas imports from Iran had nearly quadrupled in April, reaching an average of 30-40mn cubic meters/day as demand for cooling increases with heat encroachment.
- Basrah Gas Company consortium intends to bring 200mn of the 500mn cfd capacity of its new natural gas liquids (NGL) unit online in June 2023.
- Tenders for the following refineries have been offered by the National Investment Commission (NIC): Nasiriyah Refinery (150 kb/d) in Dhi Qar, Al-Kut Refinery (100 kb/d) in Wasit, and the Samawah Refinery (70 kb/d) in Al-Muthanna.
- Settlement between Basrah Oil Company's (BOC) and Shell and Petronas partnership after their exit from the Majnoon field project in 2018.
- ExxonMobil to begin construction of processing trains in West Qurna 1 oil field.
- TotalEnergies negotiations with Iraq have been finalised for the \$27bn Gas Growth Integrated Project in southern Iraq project. The Iraq National Oil Co. (INOC) is to have a 30% stake in the project.
- Iraq's government and the Kurdistan Regional Government (KRG) agree to resume northern oil exports until the approval of the new oil and gas law. The pipelines from Türkiye's side at port of Ceyhan however remain closed.
- The General Company for Electric Power Production is to build a 362MW CCGT power plant for the Mansouriya gas station along with Shanghai Electric on a turn-key basis.

|                    |  |
|--------------------|--|
|                    | <ul style="list-style-type: none"> <li>• Iraq joins the league of OPEC countries introducing a voluntary production cut from May onwards, intending to slash their oil output by 211 kb/d.</li> </ul>  |
| Alternative Energy | <ul style="list-style-type: none"> <li>• ACWA Power to construct a 1GW solar PV plant in Najaf, Iraq.</li> <li>• Lagging procedures and delays cause Scatec to rescind their awarded solar projects; the 225MW Iskandariya and the 300MW Karbala projects.</li> <li>• Progress on the previously signed electrical grid interconnection project between Iraq and Saudi Arabia, a 400kV transmission between Arar and Yusufiya, to speed up and expanded along Arar.</li> <li>• An extension to the Gas Growth Integrated Project, TotalEnergies along with ACWA power to construct a 1 GW solar plant in Iraq connected to the Basrah regional grid.</li> <li>• Iraq soon to sign deal for 1000MW solar power project with ACWA Power in Najaf. Iraq is aiming for 5000MW of solar power projects launched by 2023.</li> <li>• Minister of Electricity discusses funding infrastructure projects with China Export and Credit Insurance Corporation (SINOSURE) within the existing agreement, considering combined cycle power plants and solar power stations.</li> <li>• Mass Group Holding to invest over EUR 1bn to turn decommissioned Mintia coal plant in Romania to a 1.29GW capacity power plant of which 800MW is gas and hydrogen powered.</li> </ul> |

## Saudi Arabia Developments

|                    |  |
|--------------------|--|
| Oil & Gas          | <ul style="list-style-type: none"> <li>• 4% stake of Aramco (\$80bn) transferred from the Public Investment Fund (PIF) to subsidiary Sanabil Investments by order of Crown Prince Mohammed bin Salman to diversify the national economy.</li> <li>• EPC Contractor L&amp;T awarded multiple offshore deals from Saudi Aramco worth \$600mn. Among the projects is development and upgrading of the Zuluf oilfield.</li> <li>• Saudi Arabia imports of Russian diesel hit 261 kT in March and early April. Cargoes were delivered to Ras Tanura, Jeddah, Refinitiv, and Vortexa.</li> <li>• Saudi Aramco partners up with North Huajin Chemical and Panjin Xincheng to build a refinery in the Liaoning province, China. The refinery is to process 400 kb/d of crude oil and produce 1.5 Mtpa of petrochemicals.</li> <li>• Saudi Arabia joins the league of OPEC countries introducing a voluntary production cut from May onwards, intending to slash their oil output by 500 kb/d.</li> </ul> |
| Alternative Energy | <ul style="list-style-type: none"> <li>• Joint Marubeni and Al Jomaih project, the 300MW Rabigh solar PV plant, is operational and grid connected as announced by EPC contractor China Energy Engineering Group. The plant is estimated to produce 894 GWh this year.</li> <li>• ACWA Power signed a \$123mn financing package for the construction of the 200MW Kom Ombo solar PV plant in Aswan. The financing breakdown is as follows: \$36mn from the European Bank for Reconstruction and Development (ERBD), \$14.6mn from the OPEC Fund, \$14.4mn from the African</li> </ul>   |



Development Bank (AfDB), \$34mn from the Green Climate Fund (GCF), \$14.8mn from the Arab Bank, and \$10mn from the AfDB's Sustainable Energy Fund for Africa (SEFA).

- Thailand's PTT and ACWA Power to conduct a feasibility study and build a 1.2MTpa green hydrogen plant in Thailand in a \$7bn deal.
- Aramco feedstock fed Saudi Arabia's Basic Industries Corporation (SABIC) produced low-carbon ammonia was shipped to Fuji Oil Company (FOC) and delivered by Mitsui to be used in co-fired power generation in FOC's Sodegaura refinery. This was the first Saudi shipment of low-carbon ammonia to Japan.
- Saudi Arabia's Energy Minister Prince Abdulaziz Bin Salman discussed with the Netherlands' Minister for Foreign Affairs and Prime Minister Hoekstra the export of clean hydrogen from Saudi Arabia to the Netherlands and make Rotterdam Port a hydrogen export hub to Europe.
- Progress on the previously signed electrical grid interconnection project between Iraq and Saudi Arabia, a 400kV transmission between Arar and Yusufiya, to speed up and expanded along Arar.
- A hydrogen fuel cell product assembly facility will be constructed in Saudi Arabia by Renewable Innovations and MENA Holdings.
- Saudi Arabia signs MoU with China for international cooperation in clean hydrogen.
- Arctech signs deal to supply Saudi Arabia's ASB project in Al Shubakh with 1.5GW SkyLine II solar tracking.
- Completion of SEC's 605MW Green Duba Integrated Solar Combined Cycle power plant is estimated at 3Q23. The project is currently at the operation and maintenance assessment phase.
- The Saudi Fund for Development signed a \$240mn loan to Pakistan's 800MW Mohmand Multipurpose Hydropower Dam.
- ACWA Power led consortium is to develop a \$1.5bn major carbon-neutral utility project in Saudi Arabia by Red Sea Global and with ILF Consulting Engineers. The project will consist of a 340MW solar PV plant and 1200MW BESS.
- ACWA Power is to construct two wind power plants in Uzbekistan through two \$20mn loans from the OPEC Fund: the 500MW Dzhankeldy farm and the 500MW plant Bash, both in Bukahara.

## Oman Developments

### Oil & Gas

- Masirah Oil Limited aims to increase production from Block 50's Yumna field after averaging a gross 5515 stb/d in February.
- Oman's 230 kb/d capacity Duqm refinery begins CDU operations, indicating operational readiness for all units.
- A MoU was signed between Mitsui and Kobe Steel for the production and sale of DRI in Oman's Special Economic Zone, aiming to combine Kobe Steel's special MIDREX Process for producing low-carbon DRI and Oman's natural gas as a reducing agent to produce 5MT of DRI.

|                    |  |
|--------------------|--|
|                    | <ul style="list-style-type: none"> <li>• 5-year extensions to \$100mn Well Intervention contracts in Oman awarded to National Energy Services Reunited Corp. subsidiary Gulf Energy.</li> <li>• Iranian gas pipelines between Minab and Koh Mubarak in southern Iran to be extended to export gas to Oman this year.</li> <li>• OQ instructed to assist in decarbonisation efforts of oil and gas industry by the Ministry of Energy and Minerals as part of the Sultanates's net-zero pathway.</li> <li>• Oman joins the league of OPEC countries introducing a voluntary production cut from May onwards, intending to slash their oil output by 40 kb/d.</li> </ul>   |
| Alternative Energy | <ul style="list-style-type: none"> <li>• OPWP issues RFPs for project management consultancy for the two IPP solar PV projects Manah I and II.</li> <li>• Oman Water and Wastewater Services Company has issued tenders for development of a 10-15 MWp solar PV plant in Muscat. EOIs are invited until the 4<sup>th</sup> of May.</li> <li>• ACME's green ammonia plant in the Duqm SEZ is slated for operation by June 2025. The project consists of a solar PV plant and 320MW electrolysers, a 7Ml/d desalination plant, a 60T hydrogen storage plant, and a 30kT green ammonia storage plant and will commence in two phases: 100 kTpa of green ammonia then expansion to 1.2Mtpa. Scatec has withdrawn from the project.</li> <li>• Hydrom's 6 term agreements signed in March for 15GW of green hydrogen projects will have their official contracts for the multibillion dollar projects signed between May and June.</li> <li>• Following the completion of OPWP's and the Oman Environmental Services Holding's, known as Be'ah, feasibility study the Barka waste-to-energy plant is underway.</li> <li>• Aiming to diversify its renewables portfolio, OPWP considers a 600MW CSP project in Duqm, Al Wusta following the completion, and evaluation, of the feasibility study.</li> <li>• Ministries of Environment and Energy and Minerals to sign MoU for construction of \$5.67bn green hydrogen plant which was awarded to POSCO Holdings and Samsung Engineering consortium.</li> <li>• Phase 1 of the North-South Interconnect between Oman and Saudi Arabia to be completed in June 2023. OPWP anticipates the power import to quadruple to 1600MW upon completion.</li> </ul> |

## MENA Energy Pricing Reform

- Bahrain to offer 'Golden License' to both local and foreign investors and firms supporting projects worth at least \$50mn.
- Oman's annual inflation rate was recorded at 1.58% in March. Housing, water, electricity, and fuel increased by 0.03%.
- Saudi Arabia establishes four new Special Economic Zones offering incentives including a 5% Corporate Tax Income for 20 years and reduced utility rates.
- Saudi Arabia's annual inflation reduced to 2.7% in March from 3% in February, the lowest since July 2022. Housing, water, electricity, and fuel increased by 0.4%.
- Annual inflation in Qatar rose by 4.01% in March. Housing, water, electricity, and fuel increased by 8.65%.
- Qatar amends Income Tax Law once more and increases scope of taxable incomes including foreign-sourced incomes.

- UAE amends Corporate Tax Law to exclude small businesses with an annual revenue of less than AED 3mn until 2026. Rules for domestic tax residency clarified.

## ABOUT US

Qamar Energy provides leading-edge strategy, commercial and economic consulting across the energy spectrum to governments, international oil companies (IOCs), national oil companies (NOCs), investors, and oil traders.



### Robin Mills, CEO

Robin is an expert on Middle East energy strategy and economics, described by Foreign Policy as "one of the energy world's great minds". He is the author of two books, *The Myth of the Oil Crisis* and *Capturing Carbon*, columnist on energy and environmental issues for Bloomberg and *The National*, and comments widely on energy issues in the media, including the *Financial Times*, *Foreign Policy*, *Atlantic*, *CNN*, *BBC*, *Sky News* and others. He is a Senior Fellow with the Iraq Energy Institute, and a non-resident fellow at the Columbia Centre for Global Energy Policy. He holds a first-class degree in Geology from the University of Cambridge and speaks five languages including Farsi and Arabic.

### UPCOMING TALKS & APPEARANCES

*Erbil Forum 2023 organised by the Rudaw Research Center*  
1<sup>st</sup> – 2<sup>nd</sup> March 2023

*Atlantic Council Global Energy Forum, Abu Dhabi*  
14<sup>th</sup> – 15<sup>th</sup> January 2023

*World Utilities Summit, Abu Dhabi*  
9<sup>th</sup> May, 2023

*Gulf Intelligence Daily Energy Markets Podcast*  
22<sup>nd</sup> March, 19<sup>th</sup> April, and 19<sup>th</sup> May, 2023

*Gulf Intelligence 11th Energy Markets Forum, Fujairah*  
10<sup>th</sup>-11<sup>th</sup> October, 2023