ARABIA MONITOR ENERGY

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HIGHLIGHTS

- **Saudi Aramco's** IPO has fallen to 35.5 riyals per share after taking off on December 12. Share value has fallen by 3.3% from the initial 38 riyals.

- **ADNOC** signed a framework agreement with Indian refining and chemicals conglomerate, Reliance Industries Limited (RIL), to develop an ethylene dichloride (EDC) facility in Ruwais.

- Despite ongoing political turbulence, **Iraq**'s oil and gas sector has witnessed another year of progress in 2019, with crude output above 5mn b/d and refinery and gas production at their highest. The country has also signed key contracts to boost growth.

- Political uncertainty, poor investor appetite, along with limited access to technology for maturing fields have hampered **Algeria**'s prospects for new developments.

- Saudi Arabia and **Kuwait**'s dispute over the 500 kb/d Neutral Zone reached an end on December 24, when the Saudi Ministry of Oil reported an agreement to restart oil production.

- We do not believe that the killing of Iraq's top general by Washington will lead to all-out war. But make no mistake, it is a major game-changer. Iran's response will come, probably regionally against the US or its allies.

- Iraq, where the killing took place, will bear much of the initial brunt. The presence of US troops is already an open wound, complicating any moves towards stable government.

- While newly appointed Lebanese Prime Minister Hassan Diab will be able to find a majority in Parliament that can help him drive a limited reform programme, he will not be able to appease the Lebanese public which sees no hope in the current political system.

OIL PRICE SCORING

OIL PRICE SCORING (Rated Based on Impact on Oil Price)			
OPEC agreement	● Positive	↑	OPEC agreed to deepen its cuts by 500 kb/d through the end of March 2020, putting total supply cuts for the group to 1.7 Mb/d; OPEC production increased by a mere 3 kb/d in November due to more stringent compliance with OPEC cuts, and seasonal demand slowdown. Consequently, OPEC compliance improved by 11%, reaching 158%, the highest since July (159%, excluding September's compliance of 258% due to the attacks on Saudi Arabia's oil infrastructure).
OPEC supply outlook	● Positive	↑	Iraq and the UAE are expected to increase production capacity in 2020, but overall call on OPEC for 2020 will be lower than 2019; Iraq will remain the outlier in the OPEC deal, while the UAE will largely comply with its production quota; Saudi Arabia and Kuwait will be the largest compliers to the cuts, but despite the production cuts, Saudi Arabia is not willing to reduce exports to China. Iran will remain heavily constrained by sanctions.
Non-OPEC supply outlook	● Positive	↑	OPEC made no changes to its non-OPEC supply forecast in the December MOMR; non-OPEC supply is forecast to grow by 2.17 Mb/d, mainly due to slower US growth, revised down to a growth of 1.5 Mb/d for 2020.
Global Demand	● Negative	↔	OPEC forecasts 2020 oil demand growth at 1.08 Mb/d, unchanged from the previous month, averaging 100. Mb/d. China and other developing Asia are assessed the largest contributors to oil demand growth with a combined addition of 0.68 Mb/d.
Progress of non-oil technologies	● Neutral	↔	Saudi's 300 MW Sakaka solar plant has begun operations and is now connected to the national grid; Algeria awards 50 MW solar project to Power Generation consortium for USD¢ 0.069/kWh, making it the lowest bid seen in North Africa so far; Egypt awarded 200 MW solar PV to Acwa Power at USD¢ 2.48/kWh; Dubai's 900 MW solar tender was awarded to Acwa for USD¢ 1.69/kWh.

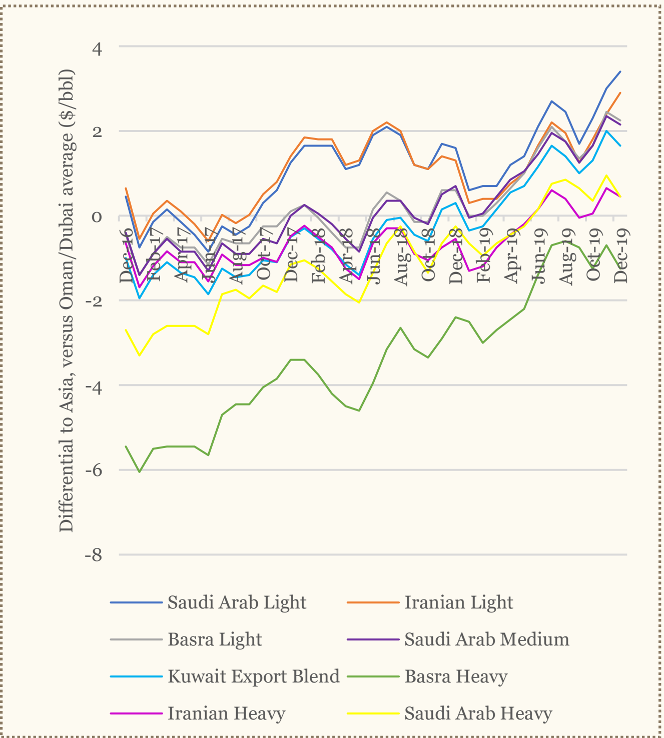
● Very positive ● Positive ● Neutral ● Negative ● Very negative ⬆ Improvement in last month ⬌ No change ⬇ Deterioration in last month

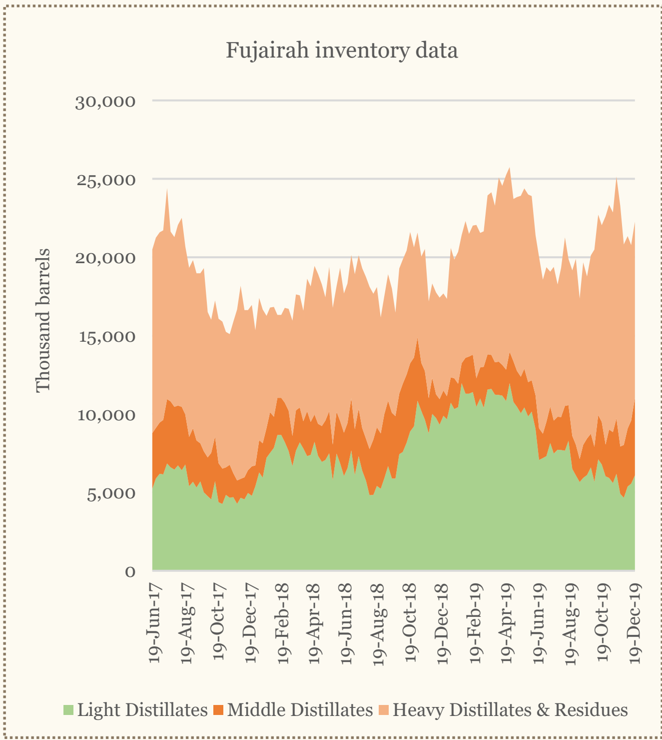
SECTION SNAPSHOT

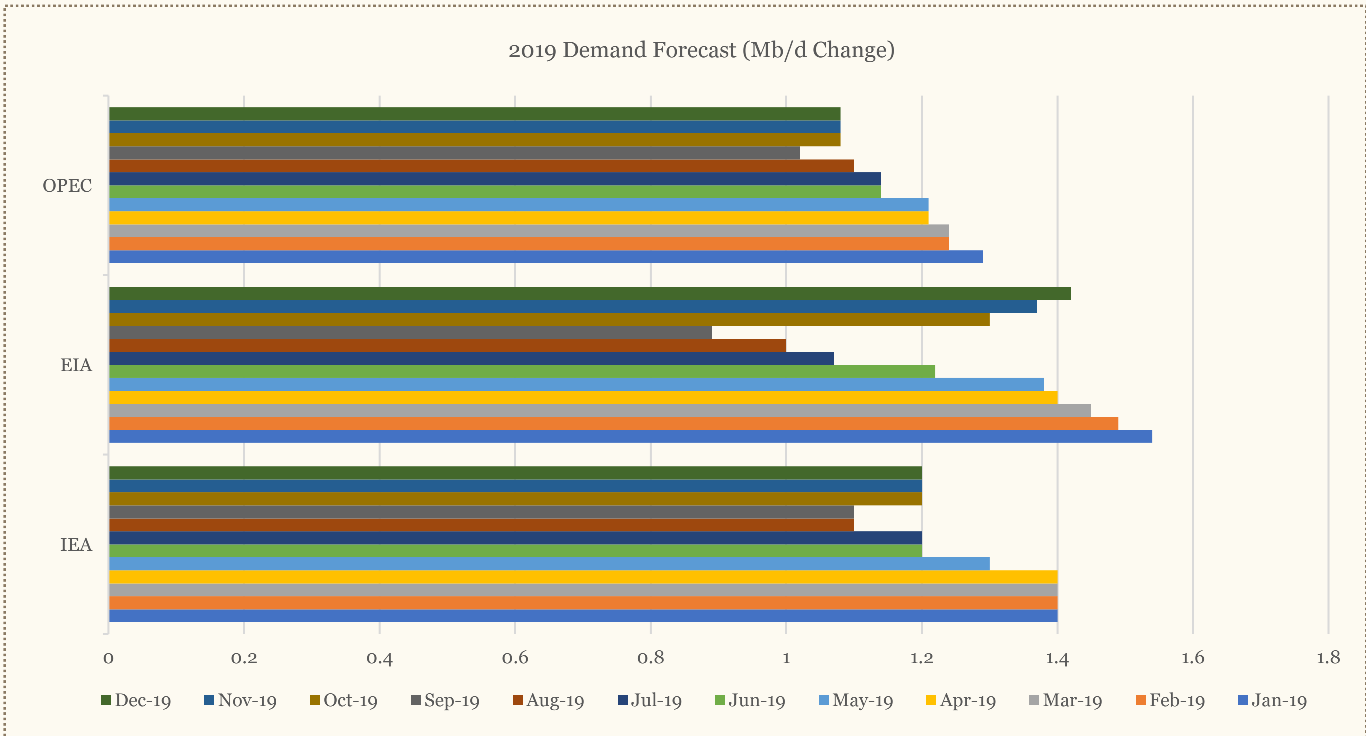
- Saudi Arabia raised its December official selling price (OSP) for its Arab Light grade for Asian customers, the highest since January 2014, to a premium of USD 3.40/bbl to the Oman/Dubai average amid higher Middle East benchmarks. However, a slump in fuel oil margins led to a deep price cut for its heavy grade. Other producers followed.

- Major bunkering hubs are preparing for the IMO 2020 fuel oil sulphur regulations. In Fujairah, total oil stocks rose by 2.8 million barrels (mb) from the previous month with middle distillate and fuel oil stocks rising 0.3 mb and 3.1 mb, respectively, and light distillates declining by 0.6 mb.

- The IEA and OPEC did not change their oil demand projections from the previous month. The IEA sees oil demand growing by 1.2 Mb/d whereas OPEC forecasts demand growth of 1.08 Mb/d by 2020. The EIA is most optimistic, forecasting growth of 1.42 Mb/d in 2020, 0.05 Mb/d higher than the previous month's estimate.







Sources:

1. Figure 1: News sources; MEES; NIOC; SOMO; Qamar Energy Research
2. Figure 2: FEDCom/S&P Global Platts Fujairah Inventory Data
3. Figure 3: IEA, OPEC and EIA monthly oil reports

HEADLINE DEVELOPMENTS

Established Producers Supply

Saudi Aramco's IPO has fallen by 3.3% per share after taking off on December 12, from the initial 38 riyals. Many investors have capitalised on this by selling a few of the shares already bought on the IPO. On 19 December, Aramco closed at 35.50 riyals, underperforming the Tadawul All Share Index, which rose by 0.5%, and has hovered around that level since.

The stock was included in the MSCI Emerging Markets Index and the Tadawul All Share Index, which in turn attracted an influx of passive investors, leading to major profit-taking. Saudi Aramco's weight was estimated at 0.16% in its emerging market index and at 6.03% in the MSCI Saudi Arabia Index. Aramco's inclusion in the MSCI Index can attract about $710 million through passive inflows along with an additional $400 million when Aramco joins the global FTSE benchmark on 19 December.

Due to the firm's close relationship with the Saudi government, it received an "underperformance" rating on its stock at Jefferies, who placed more emphasis on governance and geopolitical issues, and gave it an estimated value of $1.6 trillion. Qamar Energy's valuation is $1.3 trillion. Foreign investors also rejected the current valuation, describing it as expensive. So far, investors have been local, with a reported $2.3bn investment coming from Saudi government institutions and at least $1bn from the Abu Dhabi Investment Authority into the IPO that raised nearly $26 bn.

Output of refined products fell significantly in October, as crude was diverted to customers following the attacks on the Abqaiq processing plant and Khurais field. Refinery output (2.38mn b/d), gross products exports (below 1mn b/d), share of refined products (12%) and petroleum liquids' total exports (8.02mn b/d) have all dropped for the first time since 2015. Exports averaged 8.31mn b/d in the first 10 months of 2019, 1mn b/d lower y-o-y, hitting the lowest annual rate since 2014's 7.97mn b/d. This figure could drop even further in 2020. Saudi Energy Minister Prince Abdelaziz bin Salman stated in the recent Vienna OPEC+ meeting that the country will reduce its production to 9.744mn b/d in Q1 2020 from its average 9.76mn b/d (till November 2019) if other producers improve their compliance. The extension of production cuts will be decided by OPEC+ on March 6.

Due to reduced exports combined with softer oil prices, Saudi oil export revenues have fallen to a two-year low of $48.4bn in Q3 2019. If these rates remain even, the total annual figure will be down $30bn from last year at $200bn. This is shown in Saudi Arabia's $50bn budget deficit (higher than the Ministry of Finance's expected $35bn), which was confirmed in the 2020 budget publication. The budget is based on an oil price of $55/b, $10/b lower than the average $64.74/b for the Arab light grade for 2019. The Jadwa Investment bank, however, estimates that the budget was calculated on a Brent price of $60/b, considerably lower than its 2019 estimated $78/b.

Because of conservative oil prices and decreased takings from Aramco, revenues are projected to fall $23.7bn in 2020. Yet, with public debt remaining below 30%, and 2020 expenditure estimates down 2.7% to 1.02tn riyals along with government revenues increasing thanks to dividends from Aramco, the Institute of International Finance estimated a lowered 2020 fiscal deficit from 7.5% of GDP to 6.6%, despite low oil prices. It should be noted that achieving economic growth next year is still a challenging task given this year's 0.4% growth, which is lower than the planned 2.1% real terms expansion of 2019.

Aramco's shipping subsidiary Bahri is looking to hire 12 LNG carriers from 2025 as ATC, the state's giant trading arm, engages in LNG trading to extend its plans. Bahri first sold an LNG cargo to India in April, while an MoU was signed by Acwa Power to build a 3.6GW LNG-based power plant in Bangladesh supplied by Aramco. For this, Saudi Arabia could consider importing Qatari gas. Although the tankers will be deployed to assist ATC's LNG trading, Saudi could use the gas domestically, as 2025 is still a while away.

ADNOC signed a framework agreement with Indian refining and chemicals conglomerate, Reliance Industries Limited (RIL), to develop an ethylene dichloride (EDC) facility in Ruwais. The agreement includes a feasibility study of the facility next to the already established integrated refining and petrochemical site in Ruwais. ADNOC agreed to supply ethylene and provide access to its infrastructure at Ruwais, while RIL will provide operational ability as well as entry to the enormous Indian vinyls market. EDC is the major precursor for poly vinyl chloride (PVC) used in the housing and agriculture sectors. PVC's high demand in India stood at nearly 2.9 million tonnes per annum (Mtpa) in FY2018, with 6.8% estimated growth per year until 2030. As part of its 2030 strategy, ADNOC is investing $45 bn in both upstream and downstream, with a target to reach 14.4 Mtpa of petrochemical production and 1.5mn b/d of refining capacity by 2025.

ADNOC and Aramco will build a joint-venture 1.2 Mb/d oil and petrochemical refinery in Raigad, India. The originally estimated cost of $45bn is expected to rise to $70bn after it was reviewed by a joint economic council between the UAE and Saudi Arabia. Exceeding Kashagan's oilfield project of $50bn, this ADNOC-Aramco joint project is considered the world's most expensive oil and gas venture. While Aramco and ADNOC will take 25% each, the other partners at Raigad include the Indian Oil Corporation (IOC), Bharat Petroleum, and Hindustan Petroleum, who will share the remaining 50%. However, with the fragmented ownership structure at Raigad, further delays and cost overruns might occur. Domestic political protests against building at Ratnagiri, the initial site for the project's location, caused the project to be relocated. Land to accommodate the complex has not yet been purchased. This will result in a two-year delay, contributing to a 57% cost overrun. Compared to its proposed $15bn deal to acquire 20% of Reliance, Aramco's 20% share of the Raigad bill comes higher at $18bn, getting a significantly lower net output. Additionally, at Jamnagar with Reliance, Aramco gets 17% greater refining capacity than at Raigad, with net petchems 33% lower at Raigad.

Qatar Petroleum's (QP) crude pricing for cargoes loading will be set on a forward pricing basis starting March to give buyers the chance to compare the value of its oil with that of other Middle Eastern producers. The official selling prices for Qatar Land and Qatar Marine, which represent 280 kb/d of exports, will be announced on February on a future pricing basis, similar to other Middle Eastern producers whose next year March-loading crudes are traded in February. QP has set the Al-Shaheen grade at a premium of $3.74 a barrel to the DME Oman. This represents a comparable change to ADNOC's move to forward pricing for Murban. In another change for benchmarks, Kuwait is emulating Oman, Dubai, Saudi Arabia and Bahrain in using the Dubai Mercantile Exchange's DME Oman Crude Futures to price its crude exports to Asia.

Qatar's seawater desalination and power generation have increased dramatically in 2019, with QEWC generating a record amount of 5.65TWh in August (the equivalent of 7.59 GW running continuously). Although output has reduced since then, it is still above previous rates, with 5.08TWh being recorded for October. Output reached an annual record of 48TWh electricity generation and a solid 60mn m^3 desalination output in the first 10 months of 2019. This shows that Qatar is on track for a new annual desalination record, up 11% from 2016's 560mn m^3 and up 30% from 2018's 469mn m^3 reaching 623mn m^3. As Qatar prepares to host the 2022 football World Cup, enough power should be generated to assist with the construction of stadiums and infrastructure. Electricity demand might witness a modest increase during the September-October Championships in Doha and the Arabian Gulf Cup football tournament as well as the startup of Doha Metro in May.

QEWC also recently announced that the Umm Al-Houl power plant expansion project has been completed with all necessary arrangements finalised with international financiers. The 280,000 m^3/d expansion will raise Umm Al-Houl's capacity by 45% to 900,000 m^3/d. Korea's Samsung with Spain's Acciona will oversee the construction of the plant, which is expected to startup in 2021. However, construction of the planned 2.5GW, 590,000 m^3/d Facility E plant has stopped with no contracts awarded, leading to delays in the start-up of the facility.

Emerging Producers Supply

Eni has completed the production test of the 14th well at its Zohr field in **Egypt**, raising total production capacity of the field to 3.2 Bcf/d. Current production capacity is at 3 Bcf/d, but Egypt has capped production at 2.4-2.5 Bcf/d due to low LNG prices and seasonal demand slowdown (Egypt's power stations typically decline consumption in winter by 1 Bcf/d). The 14th well is also the last well of the field, and has a production rate of 150-250 MMscf/d, higher than the current producing rates of existing wells.

Egypt is aiming to add 3.2 Bcf/d of new gas production by mid-2022 to compensate for the rates of natural gas decline at its older fields, and prolific projects reaching capacity. For instance, BP shall launch production from the 900 MMscf/d Raven field (Phase-3 of its $12 B West Nile Delta Project) and the 400 MMscf/d Atoll field, alongside 13 other natural gas projects developed by EGAS in different concession areas throughout Egypt. On December 19, the Ministry of Petroleum and Mineral Resources announced that the Borg El-Arab Petroleum & Mineral Company's newly drilled oil and gas wells in Abu Senan in the Western Desert had started production, at 10 MMscf/d of gas and 7 kb/d of oil. Four new deals worth $155 M have also been signed with local and international companies for frontier oil and gas exploration in the Western Desert, the Gulf of Suez, and the Nile Valley.

This added boost to domestic output comes on the heels of Israeli gas imports, scheduled to start from January 01. On December 16, Israel approved a 60 BCM export permit from the Leviathan field from Israel to Egypt, and an additional 25.3 BCM from the Tamar field. However, Egypt's current gas surplus puts a question mark over the quantity of Israeli

gas it will manage to take in the short-term while maintaining long-term commitments.
Egypt's oil output meanwhile is on a decline, having fallen to 615 kb/d in October, recording a fall for the sixth time since March 2017. Egypt has set an official target to reach 690 kb/d by June 2020, but with its Western Desert oil heartland recording a mere 328 kb/d in October, the lowest since 2013, it is unlikely this target would be achieved. State firm EGPC hopes the swathe of Western Desert exploration contracts finalised last month will boost output. Key operator Apache has cut capital expenditure whereas Shell is planning to sell out from the Western Desert altogether. BP's deep-water Raven gas field, slated for end-2019 startup, will eventually produce 20-25 kb/d of condensate. Investment by Dubai's ENOC in the Gulf of Suez assets it acquired from BP in October could help output in this highly mature region.

Despite continuing political turbulence, **Iraq**'s oil and gas sector has witnessed another year of progress in 2019, with crude output above 5mn b/d and refinery and gas production at their highest records along with key contracts boosting growth. While the country has been rocked by two months of anti-government protests, production has been unaffected, with exports recorded at 3.5 Mb/d in November, 100 kb/d higher than October. Major oilfields have been the site of largely peaceful sit-ins, with protestors intermittently blocking roads leading to Nassiriya[1], Gharraf, and Subba. IOC-operated oilfields have had no major instances of protestor violence, unlike in 2018, though the Sonangol-operated Najmah and Qayyarah concessions had to halt transport of 30 kb/d crude due to closures at the Khor al-Zubair port. 90% of all Iraqi crude is supplied to export terminals via pipeline, which is a significantly safer mode of transit than trucking.

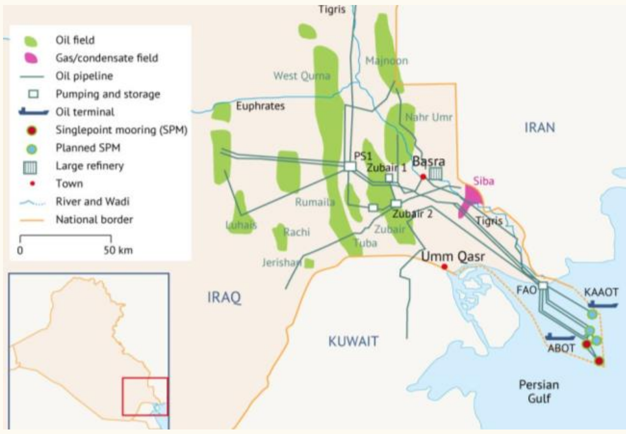


FIGURE 1 Iraq's Southern Oil Infrastructure[2]

Iraqi Kurdistan will likely be able to produce another 40 kb/d in 2020 following 2019's 75 kb/d gain in oil production. This projected figure will drive output above 500 kb/d for the first time after the Kurdish Regional Government's (KRG) loss of territory around Kirkuk to the federal government in 2017. The key driver of the projected gains is IOCs' investment. However, due to dramatic falls in share prices, these IOCs have witnessed thin growth in profits, increasing pressure to reward shareholders to stick around.

Despite delays, Gulf Keystone Petroleum (GKP) confirmed continuous improvement on its "drilling campaign, debottlenecking, and upping processing" at its 42 kb/d Shaikan licence, likely to reassure shareholders. Ongoing progress at Production Facility 2 will increase production capacity to 55 kb/d by Q3 2020, and a spur pipeline to the KRG export line to Ceyhan will reduce the company's per barrel op-ex and get rid of trucking. Chevron meanwhile is planning to build a 20 kb/d central processing plant by mid-2020 at its non-producing Sarta licence to process crude from two existing wells, expected to produce up to 15 kb/d in 2020 (both tested at 7.5 kb/d). The other key performer in the region, HKN, shall increase production from its Sarsang licence to reach 27 kb/d early in 2020. HKN is planning to add a new 25 kb/d processing facility to the block in 2020, but has provided no indication that wellhead capacity shall increase at the same level.

Kuwait's KNPC is moving ahead with a major project to boost production from its two refineries. Based on data from KNPC, the two refineries reached a growth of 692 kb/d for FY2018-19, with jet kerosene amounting to 7.2% increase in output and record annual gains. In the first 5 months of this year, crude production declined by 6% y-o-y, falling below OPEC commitments. The two refineries will have a combined 801 kb/d capacity after completion of the Clean Fuels Project (CFP), which will upgrade the firm's transport fuels production to Euro-5 specifications while virtually eliminating fuel oil output, which is currently at 8.35mn tons (153 kb/d). Due to damage done by the flood in late 2018, the CFP's startup will likely be delayed to 2020-21.

Delays are also seen with the KIPIC subsidiary of KPC, formed to build a new refinery with integrated petrochemicals units and LNG import at Al-Zour. Originally set to start-up in 2019, the 615 kb/d refinery will not be completed until 2020-21, with further delays expected due to KIPIC's plans to redesign the plant. After awarding Honeywell UOP a contract to evaluate the refinery's

[1] On December 28, protestors forced employees at Nassiriya to cut off electricity from the field's control station, temporarily halting production

[2] IEA

gasoline production facilities' configuration and capacity, KIPIC is preparing tenders for three main projects, two of which come at a value of $5-6bn. Amec Foster Wheeler has been awarded the front end engineering design (FEED) for Olefins 3, which comprises a 1.4mn t/y mixed feed cracker and polyolefins units, and a 1.4mn t/y paraxylene plant. KIPIC has also licensed UOP's propane dehydrogenation technology for a 660 t/y propylene plant at Al-Zour.

Due to the uncertain political environment of the sector, KOC's efforts to maximize production capacity have been hampered, leading it to downsize its 2020 target to 3.10mn b/d from the previous target of 3.65mn b/d. Setting a low 2020 target would still increase capacity significantly from the current 2.86mn b/d. Yet, given the company's recent trajectory, its ability to achieve this new target is unclear.

Despite the significant decline in output from 1.68mn b/d to 1.52mn b/d at the giant Burgan field, output from its Minagish reservoir increased to 30 kb/d, its highest level since 1983. This figure is expected to rise even further to 80 kb/d in 2020-21, which is predicated on the successful startup of the gathering centre, GC-30, in mid-2020. The 120 kb/d facility will handle sour volumes from other reservoirs including Arifjan, Marrat (Lower Jurassic, tight reservoir) and Wara. In northern Kuwait, KOC's target to reach 1 Mb/d in conventional capacity is far from feasible, as capacity diminished to 670 kb/d in 2018-19 from the previous year's 760 kb/d.

Although the current industry minister has put enormous efforts to reinvigorate **Tunisia**'s energy sector, the combined effect of natural decline and lack of investment over the years implies an especially challenging turnaround. Even with a rise in overall output expected from the 85 MMscf/d Nawara gas field and the 7-8 kb/d Hald El Menzel oilfield, there will be fundamental continuous decline. Since 2007, crude production has been falling significantly and is set to average only 35 kb/d in 2019, while gas production dropped at a similar pace.

The $1.2 B 85 MMscf/d Nawara gas project has witnessed major delays, which are expected to extend even further. Although January is set for final commissioning, this seems unlikely, due to general instability and poor investor confidence since 2013, when former partner Eni quit the project. The rush to have Nawara up and running indicates a difficult and rocky journey towards full output. Add to that, Nawara, on its own, cannot revitalise Tunisia's gas sector. Indeed, it would add long-awaited and much needed growth in 2020, but the country will still be increasingly reliant on Algerian gas imports. Gas imports from Algeria rose by 4% for the first 10 months of 2019, with Algeria's share of the Tunisian market up to 68%. 96% of electricity generation is based on gas. Oil production is also slacking. According to the Industry Ministry's October report, the country's efforts to boost crude output generated only 5.3 kb/d combined - 1.9 kb/d from 3 development wells at the Perenco-operated Baguel field and Eni's Adam concession, and 3.4 kb/d from UK Panoro Energy's concessions - with January scheduled for the completion of several overdue operations. It also plans to drill a well on its Sfax permit early 2020.

New Supplies/Discoveries

Rosneft is expected to make progress on its Salman oilfield in Block 12 in southwestern **Iraq**, first discovered in March 2018, after issues related to contracts signed between the Russian major and the KRG were resolved with Baghdad. In 2017-2018, Rosneft had signed a flurry of deals with the KRG, including a 30 BCM gas pipeline to Turkey, and PSAs for the Batil, Zawita, Qasrok, Harir-Bejil and Darato blocks in Iraqi Kurdistan, without consulting the federal Iraqi government.

During the same time, Rosneft's subsidiary Bashneft, had discovered oil from the Salman-1 exploratory well drilled to a depth of 4,277 metres in Block 12. Progress since had stagnated, but the mending of relations with the federal government indicates potential for resuming operations at the field. On a similar note, Lukoil is expected to begin operations at its Eridu oilfield in Block 10, having concluded testing of wells as part of its appraisal phase. Wells have recorded a flow rate of about 9500 b/d on average from the Mishrif formation, which contains sweet oil of 25-29 API gravity, between the Basra Heavy and proposed 'Basra Medium' grades. However, we are told that Lukoil has had misgivings about Iraq's bureaucracy which could delay start of production.

After having delegated the development of the Mansuriyah gas field to the Midland Oil Company (MdOC) earlier in July till it could find suitable international partners, there have been reports of progress on talks between the Ministry of Oil and Gazprom Neft, who has shown interest in developing the 300 MMscf/d field. Since 2011 Mansuriyah, in the Diyala province, was under development with the Turkish Petroleum Corp. (TPAO, 50%), KEC (30%) and KOGAS (20%). Operations were suspended in 2014 due to ISIS insecurity issues, but the operator (TPAO) refused to resume work in September 2017 when requested by the then-oil minister, Jabbar al-Luaibi, due to disagreements on contractual terms with the MoO. Similarly, progress is also expected at the 400 MMscf/d Akkas field in the Anbar province, but chances for a return by KOGAS appear slim.

Iraq had recently awarded Russia's Stroytransgaz a 34-year oil and gas exploration, development and production contract in Block 17 in Anbar, which indicates the MoO's growing willingness to partner with Russian firms for the development of crucial non-associated gas to wean off its dependence from Iran for gas supplies.

On December 14, **Iran** awarded NIOC subsidiary Petropars the rights to develop the Farzad-B field, holding 21.7 Tcf reserves, having given up on negotiations with an Indian consortium including ONGC. Petropars signed the contract with NIOC to develop the offshore gas field. This project will help Iran meet its gas demand, which is expected to reach 212 BCM (7.4 tcf) by 2023. Announcing its "resistance budget," Iran aims to diminish its dependence on oil revenues to survive US sanctions which crushed its oil exports output and earnings. For this, it had also announced development of the offshore Belal gas field by 2022, incidentally also under Petropars, earlier in September. We expect development on Belal to begin only by 2023/2024 in the best-case scenario, with first production reaching 500 MMscf/d only by 2025. Farzad-B had been intended to be developed for LNG which could be exported to India, but Petropars would be able to develop it only for domestic use.

Earlier in November, President Hassan Rouhani announced the discovery of a new oilfield in the southwest of Iran with 53bn barrels of crude in place[3], stretching over 24,000 sq km in Khuzestan province. Named Namavaran, the oilfield expands Iran's crude assets by about 3% (at a 10% recovery factor) and represents the country's 2nd biggest oilfield after the 65bn barrels Ahvaz site. Although Namavaran was celebrated by Tehran as a victory against US sanctions, certain analysts suggest that these sanctions are so severe that Iran will not be able to export the field's oil in the near future. Since Iran already has a list of overdue projects (due to lack of financing and difficulty importing equipment), this discovery will just add to the list.[4]

Iran also announced in October the discovery of the Eram gas field, with 19 trillion cubic feet of gas (13 Tcf recoverable) and 385 million bbl of condensate, in the southern Fars province. The field is onshore with the reservoir at a depth of 3900 m. Development of Eram is expected to start in 2-3 years. Iran's gas production has increased sharply in recent years, giving it a moderate surplus for export as well as replacing most oil in power generation. Most new gas production projects are offshore, and Eram may take priority by being onshore and so lower-cost to develop.

Director of Khazar Exploration and Production Company (KEPCO) announced the development of two major projects, the Sardar-e-Jangal oilfield and another focused on continuous exploration operations in structures in the middle section of the Caspian Sea. Long-term tests will be conducted on the Sardar-e-Jangal field, the results of which will be submitted to NIOC's Directorate of Corporate Planning for credit allocation. Sardar-e Jangal is a large offshore discovery, but with high pressure and unconfirmed reserves. For this, storage vessels and vessels for carrying oil onshore will be needed, while KEPCO is conducting feasibility studies for the supply of high-tech equipment used for the appraisal and production processes. While 17 wells have been drilled in the Gorgan Plain in northern Iran to access hydrocarbon reserves and to break dependence on gas imported from Turkmenistan, none made a commercial discovery. However, 46 geophysical structures of major offshore hydrocarbon potential were discovered prior to geophysical, geological and petroleum engineering studies done on reservoir risk analysis. Meanwhile, KEPCO's director also announced the nationalization of deepwater technology and know-how.[5]

Output from the South Pars Gas field increased after production started in the third offshore deck of Phase 14, which comprises of 14B and 14D platforms along with two satellite platforms. The new platform (14B) added 494 mcf/d to the 1.48 bcf/d of Phase 14's total production, raising production in the South Pars field to 22.74 bcf/d. The 1,450-ton platform yields 100 tonnes of sulphur and 20 kb/d of condensate, while it helped process 250,000 tons of ethane per annum and 250,000 of liquified petroleum gas.[6] The construction and design of the deck was carried out by Iranian engineers, while local companies provided 60% of the equipment.

South Pars's fourth and last platform, SPD-14D, completed construction and was loaded in the Marine Industrial Company SADRA to be transferred to the installation site situated at the Iran-Qatar Joint Gas border. The 2,400 tons platform has an extraction capacity of 14.2 mcm/d of gas

[3] Michael Lynch 2019, Some Points About Iran's New Oil Discovery, *Forbes*, 13 November, Viewed 29 December 2019, https://www.forbes.com/sites/michaellynch/2019/11/13/some-points-about-irans-new-oil-discovery/#547214b6b457

[4] Andrew Fawthrop 2019, Iran's Namavaran crude oil discovery increases its vast reserves by a third, but sanctions will continue to bite, *NS Energy*, 11 November, viewed 29 December 2019, https://www.nsenergybusiness.com/news/iran-crude-oil-discovery-namavaran/

[5] 5 Gulf Oil and Gas 2019, Tests Start in Sardar-e-Jangal, weblog post, 24 December, Viewed 29 December 2019, https://www.gulfoilandgas.com/webpro1/main/mainnews.asp?id=71888

[6] Financial Tribune 2019, 1,450-Ton Rig Adds to South Pars Output, weblog post, 27 December, viewed 30 December 2019, https://financialtribune.com/articles/energy/101405/1450-ton-rig-adds-to-south-pars-output

(500 mcf/d). Upon installation, the offshore deck of the field will be complete and output of 56 mcm/d will be achieved.[7]

$2.6bn worth of projects are currently being implemented by the Iranian Offshore Oil Company (IOOC) to increase offshore oil output by 85 kb/d. The firm has awarded a number of projects to local contractors that include "drilling, completion and repair of 40 wells along with the construction and installation of wellhead equipment and five offshore platforms," according to the head of IOOC. A project is being implemented currently at the Siri field under a contract with an unnamed Iranian company.[8]

Demand

Rising domestic demand (at an annual rate of 5.2% between 2007 and 2017, according to BP), paired with declining domestic production could cause **Algeria** to become a net importer of gas by 2030, unless it makes significant changes to its fiscal-heavy PSAs that have all but shutdown investor interest in a country where over 67% of all territory remains unexplored and/or underexplored. However, the new hydrocarbon law approved by the Algerian cabinet earlier in November has sparked a new wave of protests, undoing progress on mending investor confidence, and putting a question mark over crucial technology required to stem ongoing declines at producing fields. Algeria has averaged 8.9 Bcf/d[9] in gas production since 2016, exporting 4.5 Bcf/d on average, but rising competition from US and Russian supplies entering Europe has meant it has to cut back sales of LNG by 25%. While this presents a ready chance for the country to divert non-exported volumes to meet domestic demand, Algeria has struggled to expand it gas generation capacity and industry to utilise surpluses.

For instance, Sonelgaz aimed to increase the country's total generating capacity to 21.4 GW by 2018 mostly in the form of natural gas-fired and combined cycle power plants, but the lack of funding and investor interest due to stringent regulatory processes and complex bureaucratic procedures has resulted in unspecified delays. The most prolific of these projects is the 1.338 GW Biskra combined cycle power plant located in Oumache, which began construction in 2014 under a consortium comprising of Daewoo International, Hyundai Engineering & Construction and Hyundai Engineering, but allegedly didn't reach completion. Similarly the 1.4 GW gas-fired Bellara power plant, which began construction in 2013 to power the Bellara Steel Complex Project has faced repeated delays, the latest being in 2018, when the project was announced to reach completion by year-end. As of end-2019, both plants are yet to be commissioned for operations.

China's State Grid Corporation has offered $1 B to buy 49% of the **Oman** Electricity & Transmission Company (OETC) to "pay the deficit in the general budget or pay part of public debt" and also provide technical input to Oman's Main Interconnected System (MIS) that serves Muscat, most of northern Oman, and Dhofar. Besides providing a much-needed cash boost, the sale is also an important precursor to Muscat's plans of privatising the country's electricity sector to promote energy efficient power generation and transmission to better meet demand, and also offer a "more optimised economic cost per unit of electricity". The privatisation of OETC will be followed by the sale of majority stakes in the Muscat Electricity & Distribution Company (MEDC), the Majan Electricity Company, the Mazoon Electricity Company, and the Dhofar Power Company. Oman has been aiming to privatise its electricity sector since 2017 to attract foreign direct investment (FDI) and promote private sector participation. The OETC deal marks the first-ever investment by the SGCC – wholly owned by the Chinese government – in the GCC.

Exports

Saudi Aramco completed acquiring 17% of South Korean Hyundai Oilbank through its subsidiary Aramco Overseas Company B.V. (AOC) for an approximate $1.2 B. This investment goes in line with its downstream growth strategy aimed to extend its market in profitable businesses specialised in integrated refining. Hyundai Oilbank's facilities are situated within the Deasen Complex, which is home to a refining plant with a 650 kb/d processing capacity, 520 kb/d of crude and 130 kb/d of condensate. According to Hyundai Oilbank's 2018 annual report, Aramco delivered 42.4 kb/d and is the refinery's fifth largest crude oil supplier, with Kuwait as the leading supplier delivering 108.2 kb/d. For the first 11 months of 2019, Saudi Arabia supplied 822 kb/d of crude to Korea, which is the lowest volume since 2010, with a diminished Saudi market share of 28%, the lowest value on record. This is due to Saudi's substantial exports in China, while Korea became the US crude's top importer of the year.

[7] Mehr News 2019, Last South Pars Phase 14 Platform Loaded, weblog post, 30 December, viewed 30 December 2019, https://en.mehrnews.com/news/153858/Last-South-Pars-Phase-14-platform-loaded

[8] Tsvetana Paraskova 2019, Iran Looks To Boost Offshore Oil Production By 85,000 Bpd, Oilprice, weblog post, 30 December, viewed 30 december 2019, https://oilprice.com/Latest-Energy-News/World-News/Iran-Looks-To-Boost-Offshore-Oil-Production-By-85000-Bpd.html

[9] BP

Saudi Arabia's focus on refining runs over exports since September's attacks serves to boost production of high-value products. Also, to maintain the perception of an oil market that has tightened, it is important to decrease crude exports that are closely monitored. This signifies that export and refining runs are likely to reach the pre-attack balance. Despite the crude exports' curbs, Saudi Arabia has exported 1.98 Mb/d to China in October and 2.13 Mb/d in November, according to Kpler.

Saudi Arabia and **Kuwait**'s dispute over the Neutral Zone has reached an end on December 24, when the Saudi oil ministry reported the agreement between the two countries on Twitter. This deal will put back 500 kb/d on the market by the end of 2020, while the two countries might reduce production at other fields to stay committed to OPEC+ cuts to prop up prices. Kuwait will probably gain slightly as it has been unable to reach its OPEC+ limit from its own fields. This deal does restore some much-needed spare capacity to the market and led Brent crude prices to decline 0.2% (14 cents) at $66/b. The deal might also benefit Chevron, since it has an agreement to operate about half of the Neutral Zone's production. The dispute came at a cost of 100 kb/d for Chevron as the zone was shut-in for five years.

Iraq's export capacity has proved that the country is only just capable of handling recent output volumes. 97% of federal exports are transferred through Basra, while this year's average 3.4mn b/d Basra shipments are pressuring the 3.7mn b/d of usable export capacity, which is already below Iraq's nominal 4.6mn b/d capacity of southern terminals. The volumes should navigate a system of pipelines, onshore and offshore, to "offshore terminals and single point moorings." If the pipelines suffer a technical or security malfunction, it would reduce exports to a huge extent and lead to necessary output shut ins. To fix the problem, Baghdad plans three other 'sealines' that serve to maximize usable capacity, with 'Sealine-3' to start up in Q2 2020. Even though the 2mn b/d pipeline will carry only 700 kb/d due to restrictions on pumping at Fao, it will nevertheless allow exports from SPM-4 which has not been operating for years. FEED has been carried out by Eni and PB for sealines 4 and 5, which is likely to raise capacity in the medium term. However, export capacity might witness setbacks due to the lack of quality midstream infrastructure onshore.

Oman is considering a fourth liquefaction train at its 10.4m t/y Qalhat complex. Thanks to the BP startup of the 1 Bcf/d Khazzan project, and development of Ghazeer (extension of Khazzan) and Shell/Total's Mabrouk field, the previous years' concerns over gas demand have been erased. Oman exported 10mn t/y of LNG by almost fully utilising capacity at Qalhat, with debottlenecked production adding 1.5m t/y. The fourth train would raise the target to 15mn t/y from the current 11.9m t/y. Most of Oman's LNG exports are completely committed to East Asian clients through 2024, with only 0.8mn t/y to Japan expiring in 2020. Oman is now is looking for buyers to take additional volumes for the remaining five years. According to Reuters, Oman aims to put 52 LNG cargoes for exports from 2021-25. However, the relatively high cost of Oman's unconventional gas will challenge LNG export economics.

OPEC

December's OPEC+ agreement aimed at deepening Q1 2020's production cuts led to a diminished projected supply glut. This is predicated on the coalition's compliance, especially with fundamentals stressing the extension of the cuts beyond 31 March.

If the OPEC cohort completely complies, production would be reduced to 29.22 Mb/d, 330 kb/d less than the 29.55 Mb/d of secondary sources' estimates for November. IEA projects a 910 kb/d surplus in Q2 despite the production cuts, signifying that OPEC+ will need to extend its cuts during its meeting in 6 March. In OPEC's latest MOMR, the figures indicate that the market in the first half of the year will be more balanced, with supply overhang at a reduced 90 kb/d in Q1, expected to rise in Q2 to 340 kb/d, if cuts remain at the same pace.

In light of the new cuts, the IEA has trimmed its 2020 non-OPEC oil supply forecast by 200 kb/d to average 2.1 Mb/d in the year, but expects global stockpiles to increase by 700 kb/d (or roughly 63mn barrels) by end-Q1 2020. EIA sees OECD inventories increase by a modest 39mn barrels, or the equivalent of 106 kb/d, over 2020, mainly due to a weaker production growth outlook from the US and Mexico. IEA's latest numbers kept OECD stocks down, ending October at 2.9bn bbl, while OPEC+ places them at 2.93bn bbl, 33mn bbl above average, as far as current inventories are concerned.

Both OPEC and IEA perceive non-OPEC supply growth next year to grow by 2.1Mb/d, with the EIA forecasting a slightly higher increase at 2.3 Mb/d, major contributors to which are non-OECD countries. IEA and OPEC project a stronger growing oil demand in 2020, at 1.2 Mb/d, based on a 3.4% expected economic growth in 2020, while the EIA forecasts world demand to grow by 1.42 Mb/d. A trade deal between the US and China would provide more clarity for OPEC's next meeting on whether to extend cuts, and how long an extension should take. The 'Phase 1' deal still leaves in place

China's 5% tariff on crude oil, which has halved imports of US crude, and its 25% tariff on LNG, methanol and monoethylene glycol; but cancels a rise in propane tariffs from 25% to 30%.

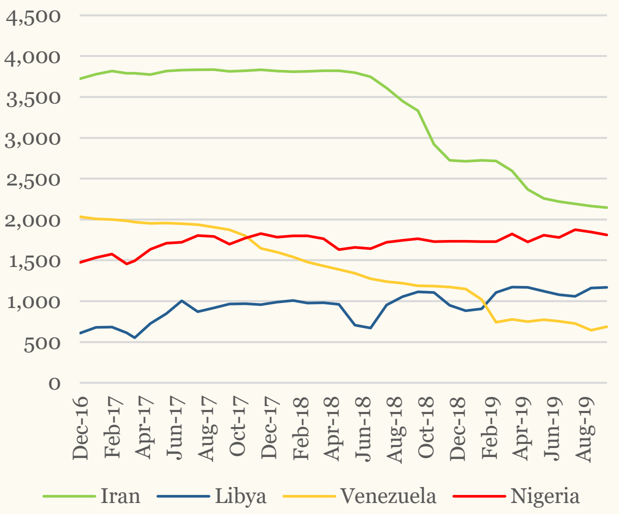


FIGURE 2 Monthly Crude Production for OPEC Wildcards (kb/d)[10]

TABLE 1: OPEC COMPLIANCE (%), PLEDGED & ACTUAL CUTS (KB/D)[11]

Country	Pledged cuts	Oct'19 Compliance	Cuts	Nov'19 Compliance		Cuts
Algeria	-32	119%	-38	94%	↓	-30
Angola	-47	366%	-172	519%	↑	-244
Congo	-10	0%	0	140%	↑	-14
Ecuador	-16	519%	-83	6%	↓	-1
Equatorial Guinea	-4	50%	-2	-175%	↓	7
Gabon	-6	-333%	20	50%	↑	-3
Iraq	-141	-26%	37	10%	↑	-14
Kuwait	-85	159%	-135	122%	↓	-104
Nigeria	-53	30%	-16	55%	↑	-29
Saudi Arabia	-322	231%	-743	243%	↑	-783
UAE	-96	65%	-62	69%	↑	-66
OPEC	-812	147%	-1,194	158%	↑	-1,281

[10] OPEC secondary sources; Qamar Energy
[11] OPEC secondary sources; Qamar Energy. Note: Arrows depict change from previous month

SPOTLIGHT OF THE MONTH

UAE's 3.5 Mb/d upstream capacity target is close to the horizon

Abu Dhabi's oil production capacity is set to rise. With capacity now 0.09 Mb/d short of the intended 3.5 Mb/d target, actual production is constrained by the OPEC agreement. 2019's OPEC agreement had limited UAE's production to 3.072 Mb/d, while the new OPEC+ agreement decided on in the December 6 Vienna meeting has limited the country's production to 3.012 Mb/d to March 2020. That is a 156 kb/d cut from a baseline production of 3.168 Mb/d. ADNOC's production capacity is planned to rise to 4 Mb/d by 2020 and 5 Mb/d by 2030, the biggest gain of any OPEC country other than Iraq. New exploration blocks, likely to contain both oil and gas, are being awarded to international oil companies (IOCs) in competitive bidding rounds in Abu Dhabi.

The Supreme Petroleum Council (SPC) which oversees the implementation of Abu Dhabi's petroleum policy, has recently increased its estimates of crude oil and conventional natural gas reserves which will boost interest in upcoming exploration projects. Reserves are now estimated at 105 billion bbl for oil, up 7 billion bbl, 273 trillion cubic feet (Tcf) for conventional gas, up 58 Tcf[12], and more than 160 Tcf of recoverable unconventional gas.

In ADNOC's 2018 licensing awards for its first competitive bid round, five of the eight successful companies were Asian. This demonstrates new and enhanced cooperation with Asian companies (both NOCs and IOCs), and a relative shrinkage and shift within the European and American firms. This indicates that ADNOC's main oil customers have long-term stakes in its fields, and politically the main Asian countries are balanced. Additionally, the recent introduction of Indian and Russian players is a first in Abu Dhabi's upstream. Most recently, ADNOC and the Russian Energy Agency (REA) signed a comprehensive strategic framework agreement to collaborate on technology and operational support across the oil and gas value chain and signed a framework agreement with Russia's Gazprom Neft for sour gas and enhanced oil recovery (EOR) practices, and

[12] Oil & Gas Journal, Abu Dhabi increases oil, gas reserves, November 2019, https://www.ogj.com/drilling-production/article/14071406/abu-dhabi-increases-oil-gas-reserves?oly_enc_id=0985B6358067F6U

technology. More definitively, ADNOC awarded Lukoil 5% of its stake in the sour gas Ghasha concession for USD 190M. The involvement of Lukoil in Ghasha is more political, as the Russian firm has little experience in sour gas. As Donald Trump's Middle East strategy diminishes the US's clout, Russia is taking this opportunity to exert more influence in the region. The Abu Dhabi government is also likely trying to keep up with the growing relationship between Saudi Arabia and Russia. Awards for ADNOC's second bidding round in early 2020 could see participation from Russian companies.

Under the 2019 OPEC production cuts, the UAE is constrained to produce 3.012 Mb/d of crude oil up until March 2020, but there have been strong market indicators that OPEC+ may need to extend its cuts to the mid-2020. So far this year, from January to October 2019, UAE's actual crude production averaged 3.076 Mb/d (including a small contribution from Dubai) and produced a record 3.238 Mb/d in December 2018 (this was when markets inflated predictions of Iranian crude and condensate disruptions following US oil sanctions, and before unexpected waivers were extended to some importers).

Current oil production capacity stands at 3.41 Mb/d which is up from 3.35 Mb/d by end-2018, and 3.22 Mb/d by end-2017. With November production at 3.102 Mb/d, the UAE has a spare capacity of around 308 kb/d.

FIGURE 3 Abu Dhabi's Oil Rig Count (Onshore & Offshore)[13]

ADNOC's current oil capacity is still below its 2018 target of 3.5 Mb/d. The target has not been reached yet due to slower than expected start-up of new fields and brownfield expansions, but this has not been problematic as the OPEC cuts have constrained output anyway. The target will probably be achieved next year. ADNOC aims to reach its 4 Mb/d by 2020 and 5 Mb/d by 2030. ADNOC Drilling, the in-house drilling company (Baker Hughes 5%) is acquiring additional rigs to support these production increases. ADNOC's number of oil-directed drilling rigs has reached record highs in end 2019 (see **Error! Reference source not found.**).

ADNOC Onshore's capacity is intended to gain 200 kb/d. In November 2019, a contract was awarded to Archirodon to maintain long-term output at the Bab field, which produces the flagship light Murban crude grade, at 485 kb/d by about 2022. Bab is currently being expanded from 420 kb/d to 450 kb/d, and Bu Hasa from 550 kb/d to 650 kb/d by 2020. The Bab field expansion is a priority for ADNOC as it plans to establish Murban as a global benchmark end-2020 to complement Dubai-Oman, Brent and WTI. To support its Murban grade, ADNOC is working on revitalizing its downstream plans at Ruwais, the downstream hub in western Abu Dhabi. The upgrade includes a 600 kb/d refinery (bringing ADNOC's total capacity to 1,522 kb/d by end-2025) and increased flexibility at Ruwais to refine heavier Upper Zakum crude instead of the lighter Murban. The offshore Upper Zakum field (ADNOC 60%, Exxon Mobil 28%, and JODCO 12%) is also a crucial expansion. The stakeholders are looking to spend up to USD 22B to raise production capacity to 1 Mb/d by 2024. The field is currently undergoing the first phase to 750 kb/d to be completed this year, from the current 670 kb/d, but the project timeline has slipped from 2018 to 2019 due to apparent delays by Engineering, Procurement and Construction (EPC) firm Petrofac[14]. This was a significant contributor to the delay in reaching the 3.5 Mb/d level. The second phase of Upper Zakum expansion accounts for 250 kb/d, half the remaining increment to ADNOC's overall target of 4 Mb/d.

ADNOC is boosting oil output from its offshore SARB and Umm Lulu fields (ADNOC 60%, CEPSA 20%, OMV 20%). Production from the fields achieved around 125 kb/d by the end of 2018 (Umm Lulu was producing since 2016 and SARB started production in late 2018). Umm Lulu is expected to produce up to 105 kb/d when fully developed and in the longer term, ADNOC has said it wants to reach a combined 215 kb/d from both fields by 2023. If Umm Lulu meets its target of 105 kb/d likely by 2021, that means another 105 kb/d from SARB by 2023 from the current 50

[13] Baker Hughes
[14] Middle East Economy Survey, Volume 61, Number 35

kb/d. Meanwhile Nasr, which began production in 2015, is being expanded from 22 kb/d to 65 kb/d during 2019.
Another vital field for ADNOC is Ghasha, awarded in December 2018 (ADNOC 55%, ENI 25%, Wintershall 10%, OMV 5% and Lukoil 5%). Ghasha is vital for ADNOC's gas strategy (and Mubadala's since it owns 24.9% of OMV), but it will also yield sizable amounts of gas condensate as well. Once fully developed, the field will produce 120 kb/d in crude and condensate, expected to start in 2024-25 (with final investment decisions taken in 2019-20).

Smaller fields are also making progress. The ADNOC and CNPC JV, Al Yasat Corporation for Petroleum Operations, started producing 8 kb/d in 2018. It awarded an engineering, procurement, construction and commissioning (EPCC) contract to local National Petroleum Construction Company to increase production from the offshore Bu Haseer field to 16 kb/d by 2020. In addition to Bu Haseer, the concession includes Belbazem, Umm Al Dholou, and Umm Al Salsal fields under appraisal. In July 2019, the Al Dhafra Petroleum JV with Korea National Oil Corporation, KNOC (30%) and GS Energy (10%), started producing from the Haliba field and plans to reach 20 kb/d in 2020 and 40 kb/d in 2022. The exploration rights also include the discovered Al Humrah, Bu Tasah, and Bu Nikhelah fields.

ADNOC will likely reach its 2020 target by 2023-24, with capacity just above 4 Mb/d based on current expansion plans:

- Increase from 1.6 to 1.8 Mb/d from ADNOC Onshore
- 0.67 to 1 Mb/d from Upper Zakum
- 0.65 to 1.13 Mb/d from other fields of ADNOC Offshore
- and 91 kb/d from smaller new onshore and offshore fields.

BP maintains that ADNOC Onshore's 1.8 Mb/d has already been achieved (up from 1.7 Mb/d in 2018) while work on the Total-operated Bu Hasa field should add another 0.1 Mb/d by early 2021. Otherwise, there are no firm plans for the extra 1 Mb/d required to reach 5 Mb/d capacity, which would have to rely on further expansions of the main fields, success in the six exploration blocks awarded and the blocks currently being offered, and perhaps unconventional (tight) oil production from the recently awarded Ruwais-Diyab block with Total (though this is intended to yield gas), or other tight oil. ADNOC awarded a USD 1.6B contract to the Chinese Petroleum National Company (CNPC) in July 2018 to conduct a 3D onshore and offshore seismic survey to find new oil and gas reserves. The survey is planned to be completed by 2024 and will help boost its exploration activity to meet its longer-term, 2030 target.

Other UAE emirates have much smaller petroleum sectors but have also made significant moves. Most notably, Sharjah National Oil Company (SNOC) awarded all three blocks in its debut exploration round to Italy's ENI in January 2019. An exploration well is currently being drilled, with a likely target of gas-condensate. Ras Al Khaimah offered all its onshore and offshore territory, divided into 7 blocks, and has so far awarded Block 5 to PGNIG of Poland and offshore Block A to ENI. Both emirates have been struggling with declining local gas production and high costs for imported gas. Dubai does not disclose its production, but this is likely below 50 kb/d and in slow decline.

To fund the expansion plans, the SPC approved ADNOC's new five-year business plan and capital investment growth of USD 132.33B, between 2019-2023[15], around USD 26.5B/year. For comparison, the financing plan is higher than US oil major Chevron's capital and exploratory expenditures of between USD 19-22B/year in the period of 2021 to 2023. This level of capital spending is therefore commensurate with the planned growth, although it is significant compared to crude oil sales of about USD 66B annually. ADNOC has raised outside capital over the past two years in various places, including initial public offering (IPO)s and sales of strategic stakes in subsidiaries, and bond issues.

Although ADNOC has now obtained an AA+ credit rating, it has not borrowed at the top company level nor sought an IPO similar to Aramco's. Instead, it has brought outside capital into its businesses with an USD 850M IPO of 10% of its fuel distribution arm, sales of 5% of its drilling unit to Baker Hughes and 35% of its refining subsidiary to ENI (20%) and OMV (15%) for USD 5.8B, a USD 4B partnership with KKR and BlackRock for 40% of a special-purpose vehicle holding its oil pipelines, and a USD 3B bond for its oil export pipeline to the port of Fujairah. Since ADNOC Distribution's IPO in December 2017, it has opened its first two retail stations in Saudi Arabia in December 2018, a long-planned event.

ADNOC already started becoming more commercially astute. In August 2019 it awarded contracts to three companies for the procurement of casing and tubing for drilling activities valued at USD 3.6B following a

[15] World Oil: SPC approves ADNOC's 2019-2023 business plan, $132.33 billion CAPEX, May 2018, https://www.worldoil.com/news/2018/11/5/spc-approves-adnoc-s-2019-2023-business-plan-13233-billion-capex

competitive bid process (USD 15B of the SPC approved capex target will go to ADNOC Drilling). Additionally, ADNOC Drilling completed its first integrated drilling services (IDS) well offshore at the Umm Lulu field in addition to four onshore IDS wells drilled over the course of this year.

The national oil company is becoming more technologically invested too and has launched a 2030 smart growth strategy. To modernise and reduce the costs of the seismic application process for example, ADNOC Onshore, in collaboration with Total, are studying the potential of adopting drones and unmanned vehicles to collect 3D seismic data using Total's Multiphysics Exploration Technologies Integrated System. The drones would deploy the seismic sensors and the unmanned vehicles will retrieve them. It is also leveraging Artificial Intelligence (AI) technologies like machine learning and digital twins to reduce costs, predict equipment stoppages, reduce unplanned equipment maintenance and downtime, and enhance safety.

ADNOC's proposed production expansion would probably consolidate the UAE as OPEC's third-largest producer after Saudi Arabia and Iraq, overtaking Iran, and moving further ahead of everyone else except Kuwait. It is justified by projections of an increased call on OPEC later in the 2020s, though there is of course the issue of rising UAE spare capacity in the intervening years while production caps remain. The planned growth in oil production by 2024 would additionally increase associated gas output, though possibly also requiring more gas injection for improved oil recovery. The oil capacity increase by 2024 is quite solid, even if experiencing some delays. The growth to 5 Mb/d beyond that requires new, as yet unclear, projects.

SCENARIOS TO WATCH

THE SHALE SLOWDOWN: PEAK IN 2025

Timing: 2025

Event: US tight oil production peaks at 10 Mb/d in 2025 due to weak WTI prices limiting growth and strict capital controls by investors. Growth in US shale started to slow in 2020, growing only 400 kb/d that year compared to 1 Mb/d the year before. The peak surprises analysts and agencies which predicted US shale will continue to grow to 2030. OPEC, for example, projected that US shale oil will rise more than 40% from 2019 levels to reach 17 Mb/d by 2025.

Opportunity: Since agencies, including OPEC, planned for much higher US tight oil supply, short-term oil markets tighten in 2025. Even as oil prices rise slightly under the noticeably tightening market, US shale output does not increase due to depletion in the best drilling locations. Moreover, the previous strategy of drilling multiple wells close together to increase production is deemed unsuccessful and resulted in output decline in the 'parent' well. OPEC increases production of light-medium grades to offset the decline from the US. Other countries outside the US with tight oil resources, like Australia and Argentina, did not exploit the resource extensively due to local opposition to fracking and unfavourable geological settings.

Probability: 35%

Alternate Futures:

35%: Rising oil prices over the 2020 to 2024 period leads to an increase in the number of tight oil well completions, especially in the Permian basin. Tight oil peaks at 11.5 Mb/d in 2026.

30%: Tight oil production continues to grow to 2030, peaking that year at 15 Mb/d due to technological advancements that help lower break-even prices and increase the flow of output per well.

AVIATION BIOFUELS TAKE OFF IN 2027

Timing: 2027

Event: In December 2020, when Phase-1[16] of the International Civil Aviation Organisation (ICAO)'s Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) concludes, the UN decides to mandate low-carbon sustainable aviation fuels (SAFs) by 2027 for airline operators worldwide to reduce the impact of their GHG emissions on the environment. Leading biofuel producers such as the US, Brazil, and Germany, already well-placed to modify their existing carbon intensity (CI) reduction schemes to meet the ICAO's CORSIA standards, export their aviation fuel technologies to biofuel producers in developing nations, especially in South Asia and Africa, as demand for SAFs rises. This supports aviation biofuels taking off in major world markets by 2027.

[16] Phase-1 of CORSIA is currently underway, and will continue through to December 2020. It requires international airline operators to voluntarily report their emissions for international flights, to establish a 2020 baseline.

Opportunity: The ICAO-approved CI reduction credit scheme requires refiners of jet fuels to produce their own lower-carbon aviation fuels, or purchase credits from others who develop lower CI transportation technologies and fuels, to support carbon-neutrality in the aviation sector. Biofuel is easily accessible to developing nations, due to large volumes of biomass, and combined with innovative operational strategies offered by established producers, becomes increasingly popular as a low-cost replacement for jet fuel on domestic flights, and on some commercial flights on a small-scale[17]. Global aviation emissions are reduced by ~43%, en route to an 80% reduction from current levels by 2035.

Probability: 25%

Alternate Futures:

45%: Progress towards the adoption of SAFs picks up pace in developed world markets post-2020, but lack of specific sustainability standards yet to be published by the ICAO delays the scale and speed of deployment. Moreover, its non-binding nature as well as lack of accountability for non-compliance means that most emerging markets will transition to SAFs slowly, even if they have large biofuel capabilities.

20%: Non-biofuel low carbon SAFs such as non-fossil fuel generated hydrogen and CO_2 pick up pace faster than biofuels. Smaller aircrafts turn towards batteries.

10%: The pace of SAF development and deployment fails to meet CORSIA standards in 2020, and is subsequently suspended.

TOP ENERGY DEALS IN THE NEWS

Project	Summary	Client	Contractor	Implications
Oil exploration deal, Bahrain	Bahrain's National Oil and Gas Authority (NOGA) signed a memorandum of understanding (MoU) with Italian Eni to pursue petroleum exploration of Block 1, an offshore area that covers more than 2,800 square kilometres located in the northern territorial waters.	National Oil and Gas Authority (NOGA)	Eni	The deal represents a first for Eni in Bahrain, and one of several recent regional announcements by Eni, which include an exploration and production sharing agreement for Oman's onshore Block 47, three of Sharjah's onshore exploration concessions and a 70% stake in two offshore Abu Dhabi concessions.
Gas sales deal extension, Algeria	The deals cover exploration and production (E&P) activities in three blocks, including an oilfield in northeast Syria and a natural gas field north of Damascus.	Sonatrach	Edison	The deal is the latest in a string of gas supply contract renewals by Sonatrach with its European buyers in the past 18 months as the Algerian state-owned company looks to lock in term supplies to the end of the next decade against the backdrop of an increasingly competitive European gas market.
Oil exploration deals, Syria	Syria's parliament approved contracts for oil exploration with Russia's Mercury LLC and Velada LLC. The deals cover exploration and production in three blocks, including an oilfield in north-eastern Syria, scene of Turkey's recent offensive and also desired by Ankara, and a gas field north of the capital Damascus.	Ministry of Oil	Mercury LLC & Velada LLC	After over eight years of war and imposed sanctions, the hope is that that these new deals would help boost production. The deals with the Russian companies also align with the government's strategy towards those that stood by it, with Russia and Iran at the forefront.

[17] Current biofuel production comprises mostly of bioethanol, which is not suitable for larger airplanes

Power purchase agreement, Egypt	AMEA Power, a subsidiary of Al Nowais Investments (ANI), signed a power purchase agreement (PPA) with The Egyptian Electricity Transmission Company (EETC) for a 200MW solar PV project and a 500MW wind power project in Egypt.	Egyptian Electricity Transmission Company (EETC)	AMEA Power	The power plants, expected to be commissioned in Q4 2021 for solar and Q3 2023 for wind, will be able to supply power to approximately 830,000 homes, with planned production of nearly 2.9 GWh per year to support the country's firm goal of increasing the renewables contribution by 42% to its energy mix by 2035.

MACRO DASHBOARD

MENA OIL EXPORTERS	REAL GDP GROWTH (%)		FISCAL BALANCE (% OF GDP)	
	2019	2020f	2019	2020f
Algeria	2.6	2.4	-13.2	-9.9
Bahrain	2.0	2.1	-8.4	-7.7
Iran	-9.5	0.0	-4.5	-5.1
Iraq	3.4	4.7	-4.1	-3.5
KSA	0.2	2.2	-6.1	-6.6
Kuwait	0.6	3.1	-10.4	-11.6
Libya	4.3	1.4	-10.9	-14.9
Oman	0.0	3.7	-6.7	-8.4
Qatar	2.0	2.8	7.0	6.9
UAE	1.6	3.0	-0.8	-1.7
Yemen*	2.1	2.0	-6.9	-7.2
Average**	0.8	2.5	-5.9	-6.3

MENA OIL IMPORTERS	REAL GDP GROWTH (%)		FISCAL BALANCE (% OF GDP)	
	2019	2020f	2019	2020f
Djibouti	6.0	6.0	-1.5	-1.7
Egypt	5.5	5.9	-8.3	-6.7
Jordan	2.2	2.4	-3.4	-3.2
Lebanon	0.2	0.9	-9.8	-11.5
Mauritania	6.9	6.3	2.1	0.3
Morocco	2.7	3.7	-3.7	-3.3
Palestine	-1.6	0.5	…	…
Somalia	2.9	3.2	0.1	0.2
Sudan	-2.6	-1.5	-5.4	-11.1
Syria	…	…	…	…
Tunisia	1.5	2.4	-3.7	-2.8

* Yemen 2019 growth estimate subject to downward revision
** Excluding Libya and Yemen

	Economic updates	Comments
Inflation	• Egypt's annual core inflation was 2.1% in November 2019, down from 2.7% in October 2019. It was a 14-year low and well below the 10.5% target for fiscal year 2019/2020.	• In November, the Central Bank of Egypt (CBE) cut its key interest rates by 100 bps, putting the overnight deposit and lending rates at 12.25% and 13.25%, respectively. This followed a decline in inflation in October driven by a sharp drop in food costs and the statistical effect of a high base last year. That effect is set to fade in coming months but is likely to remain within the CBE's target range of 9% (plus or minus 3 percentage points) by Q4 2020. ○ We see monetary policy easing and lower inflation as supportive of business confidence and local consumption demand, which will in

		turn boost private sector activity and encourage much-needed FDI. ○ On 25 November, Egypt's Parliament confirmed Governor of the Central Bank Tarek Amer to hold his role until 2023, a move that will be welcomed by investors as a sign that the government remains committed to orthodox policymaking.
	• Prices in Saudi Arabia marginally declined in November, by 0.2% YoY, and by 0.1% MoM.	• The overall YoY decline was largely due to the decline in housing and utilities prices. ○ Prices fell by 1.1% in the kingdom in 2019, from a positive 2.6% in 2018, and -0.8% in 2017. ○ The government forecasts inflation at 2.2% in 2020 with YoY pressures waning.
PMI	• The Saudi Arabia PMI continued its upward trend in November, reaching the highest level in three years. The PMI reached 58.6 in November from 57.8 in October thanks to output growth and new businesses.	• Other key economic indicators also posted YoY rises in November, including point-of-sale transactions (+30%), and cement sales (+25%). ○ These numbers show that the kingdom has successfully rebounded from the severe slowdown triggered by the collapse of oil prices in 2014. ○ We expect additional uplift in the non-oil private sector as a result of Saudi Arabia hosting the G20 summit this year.
	• In the UAE, the PMI fell to a 10-year low of 50.3 in November 2019 from 51.1 in October, with new orders at the lowest since the survey began more than a decade ago.	• Following a relatively challenging period, UAE'S economic activity is likely to pick up more momentum this year, helped by Expo 2020 and existing fiscal stimulus. ○ The latter will facilitate non-oil growth recovery, though putting pressure on public finances. ○ Expo 2020 should provide the much-needed boost to domestic demand for goods and services in the UAE.
	• Egypt's PMI slipped to 47.9 in November from 49.2 in October, the fourth consecutive month in contraction territory below 50. New orders fell at the fastest rate since May alongside lower sales and problems with liquidity.	• The private sector still remains under pressure, but recent initiatives by the Egyptian government should help boost sentiment, along with the monetary policy easing. New government initiatives were launched to support industry and housing, and to boost investments. They include:

		○ A 6.2B USD funding programme for businesses in the industrial sector at an interest rate of 10%; ○ Financing for 5,000 closed factories with an interest relief of USD 1.9B in order to re-open them; ○ A USD 6.2B loan programme for SMEs at a 10% interest rate; ○ USD 3.1B in financing for housing for middle-income families.
Policy and Geopolitics	• Tensions between the US and Iran will probably spike as the proxy battle between the two countries continues. The most recent exchange between the two countries occurred after US air strikes on the Iraqi bases of the Iranian-backed Kaitaib Hezbollah militia group, followed by the US drone killing of Iranian Revolutionary Guards major-general Qassim Soleimani and Kaitaib Hezbollah leader Abu Mahdi Al Muhandis. • The political gridlock in Iraq is expected to continue as the Iraqi government fails to meet protesters demands to overhaul the existing political structure. The protests, which began on 1 October 2019, continue with the death count reaching 500. The selection of an interim prime minister has been unsuccessful after incumbent Abdul Mahdi resigned in December 2019 and Iraqi President Barham Salih is refusing to appoint the Iranian-backed candidate from the largest parliamentary bloc. • Political instability and violence in Libya will persist as foreign intervention continues to feed into the country. Turkey's Parliament authorised the deployment of troops in Libya in support of Prime Minister Fayez al-Sarraj's UN-backed	• The US strikes, which killed 25 people, prompted protests at the US embassy in Baghdad where protesters stormed the security post and threw stones. ○ The US has since sent troops to protect embassy personnel, while the Iraqi parliament voted for US military to leave the country (the decision resting, however, with the prime minister). ○ While the US is preparing for a reprisal, we see direct action against the US as unlikely. ○ A much more likely scenario sees an Iranian response against a US ally in the region. • In an attempt to meet the protesters' demand for greater representation, Parliament passed a new election law that would divide the country into electoral districts. Details of the reform and its execution remain unclear. ○ We expect the political gridlock to continue for the foreseeable future with further complications if the president resigns before a new PM is elected. ○ The best-case scenario sees early elections, but this is unlikely as the recent electoral reform has not yet explained how electoral districts will be formed and by whom. • Turkey's entrance deepens a conflict already complicated with foreign intervention, including by the UAE and Egypt. They are supporting Haftar who has a stronghold in the east and has his sights set on Tripoli. We project that the violence in Tripoli will rise as Haftar retaliates against Turkey's decision and the civil war will continue for the foreseeable future.

	Government of National Accord (GNA) against the forces of General Khalifa Haftar.	
	• On 19 December, Hasan Diab, a professor and former education minister, secured a majority of votes from MPs and has been tasked with forming the next Lebanese government. All votes for Diab came from Hezbollah and its allies. Echoing protester demands, Diab promised to form a government of independent experts within six weeks -- in a country where appointing a cabinet can take months.	• Protesters have demanded that Diab resigns, with the government under more pressure than ever with people refusing to pay their loans, taxes and bills. ○ While Diab will be able to find a majority in Parliament that can help him drive a limited reform programme, he will not be able to appease the Lebanese public which sees no hope in the current political system. ○ Simultaneously, his association with Hezbollah is unlikely to raise the regional and international communities' interest in helping his government undertake the radical economic programme the country needs. ○ His tenure, however long it will be, may consequently be yet another episode of the kind of ineffective governance which the Lebanese people have been protesting against since October.
	• Kuwait's new government appointed new defence, interior, foreign affairs and finance ministers while retaining the oil minister.	• This means a continuation of Kuwait's current energy policies such as the resumption of oil production in the neutral zone with Saudi Arabia and the implementation of strategic development projects such as the Al Zour refinery south of Kuwait City.
	• Protests continue in Algeria for the 45th consecutive week against newly elected President Abdelmadjid Tebboune. He has been painted as a loyalist of former strongman Abdelaziz Bouteflika, handpicked by army chief Ahmed Gaid Salah. Gaid Salah, however, died of a heart attack on 23 December 2019 and was replaced by General Said Chengriha, a fellow member of the old guard. On 28 December, Tebboune appointed Abdelaziz Djerad as the country's new prime minister.	• While a new government has been formed, the main questions include: ○ Will the military's sway over politics continue after Salah's death, forcing Algerians to stay mobilised until their demands are met? ○ Will Tebboune exert control over the military, especially since many in the army may wish to withdraw from the limelight after they, and not just Gaid Salah, became the target of the protests over time? ○ Will Chengriha, as new Algerian army chief of staff, address the country's popular uprising in the same combative tone as his predecessor, or will he try to make concessions with the protesters?

OUTLOOK FOR 2020

	Oil	Gas	Alternative energy	Politics / Geopolitics
Algeria	Oil production to remain around 1.03 Mb/d as the country struggles to increase oil capacity from maturing fields. The long-awaited new fiscal regime has been drafted and is awaiting approval from the upper house of Parliament. The 51/49 foreign ownership rule remains, but new contracts are introduced in an effort to attract IOCs back to the country. Sonatrach contracted four rigs from KCA Deutag, the largest of which is a three-year deal for two rigs and the other two are for short drilling programme. Sonatrach has planned for its first offshore drilling programme to start in the H2 of 2019 by ENI and Total.	To boost its downstream diversification strategy, Sonatrach and Turkish Ronesans Holdings signed a contract to build a petrochemical complex at Ceyhan. Turkey is Algeria's biggest importer of LNG exports, but its exports to Europe are dwindling due to high competition. To find a market for its gas, Sonatrach wants to hold discussions with ExxonMobil and Chevron to develop its domestic petrochemical industry. Eni renewed its gas import agreement with Sonatrach and extended it to 2027. However, LNG contracts with Total for 10 BCM/y and Edison for 2 BCM/y expiring by 2020 have not yet been renewed. Total's purchase of Anadarko's assets from Oxy which included the Mozambique LNG plant may impact its demand of Algerian gas.	Algeria opens its 150 MW solar tender to be developed on a build-own-operate basis and will award 20-year power purchase agreements and is also planning tenders to produce 2,000 MW before the end of 2020. *The Algerian Electricity and Gas Regulation Commission (CREG) has selected only one 50 MW solar project from the tender at a final price of $0.069/kWh submitted by the Power Generation consortium, of which Algerian module manufacturer Condor is the largest shareholder.*	So far, the political unrest has not impacted oil and gas production and exports, but hydrocarbon sector reforms, such as the Renewable Energy and Energy Efficiency Development Plan, could be at risk if political turmoil continues. In April 2019, interim president Abdelkader Bensalah replaced the CEO of Sonatrach, Hachichi Rachid, with Chikhi Kamel Eddine. This marks the 8th CEO since 2010, indicating to IOCs already operating in the country, and those contemplating entrance, the capriciousness of the sector. *On December 19, Algeria swore in former prime minister Abdelmadjid Tebboune as president, who on December 28, appointed former diplomat Abdelaziz Djerad as the country's new prime minister. Whether both together can inject some momentum into the country's declining energy sector (Algeria's energy exports fell 12..5% in 2019) remains to be seen.*
Egypt	Eni will link its third well on the Baltim field to production by the end of 2019 increasing total production of the field by 100 MMscf/d and 650 b/d of gas condensates. Despite this small increase by Eni, Egypt's oil production is on a downward trend, unlikely to meet its 690 kb/d target in 2020, currently producing 71 kb/d below the target. Accordingly,	Egas resumed natural gas exports to Jordan at 290 MMscf/d at the beginning of October 2019. BP has started the implementation of the third phase of the Raven gas project to bring its total production output to 1.5 bcf/day by early 2020. A gas processing plant, which will receive Raven's supply, is under construction, with a capacity of 900 MMscf/d.	Lekela (Amsterdam based) announced the start of construction work on its 250 MW West Bakr wind project. Scatec Solar competed its 390 MW solar capacity for the Benban solar complex. EDF Renewables and Elsewedy Electric have also commissioned 65 MW from two solar plants. By the end of December 2019, capacity will reach 1.47 GW	*Egyptian Members of Parliament (MPs) have demanded a boycott of Turkish imports and annul all free trade agreements between Cairo and Ankara in response to the "flagrant violations" of Turkish President Recep Tayyip Erdogan, who has approved the deployment of troops to Libya in support of the GNA's advances against Khalifa Haftar. This brings Egypt-Turkey relations to their*

	Egyptian refineries continue operating below capacity and the country will rely on imports until substantial investments in refinery projects are completed. Major winners of the Egas concession awards were Shell for three areas in the Western Desert (the new acreage is not included in the upcoming sale of assets in Egypt), Neptune Energy in the Gulf of Suez, Merlon El Fayum in West Fayum, and Pacific Oil and Ganope for Ras El Ush, also in the Gulf of Suez. Eni's JV IEOC, was awarded a gas license to explore in the South East Siwa and West Razek concessions.	*Egypt awarded US oil major Chevron, Anglo-Dutch Shell and Abu Dhabi's Mubadala rights to explore for oil and gas in the Red Sea. Chevron and Shell won one block each, and the third went jointly to the Anglo-Dutch firm and Mubadala. The concessions cover a total acreage of 10,000 km², with a minimum investment of $326 M. The little-explored area may be prospective for gas, based on results in neighbouring waters of Sudan and Saudi Arabia.*	from the planned 1.8 GW at the Benban complex. The consultancy and supervision services for the Zaafarana 50 MW solar PV project was awarded to German company INTEC Engineering. The German Development Bank (KfW) is funding the project through a USD 55M loan and the plant is expected to come online in the last quarter of 2020.	*lowest since 2013, when Erdogan voiced his support for president Mohammed Morsi, of the Muslim Brotherhood, and described him as a "martyr". Egypt, along with the UAE, have long supported Haftar and his stronghold in the east of Libya.*
Kuwait	Kuwait Petroleum Corporation (KPC) will reduce its 2020 goal to 3.125 Mb/d due to political bottlenecks resulting in slow progress. Its long-term goal of 4.75 Mb/d by 2040 will also be reduced to 4 Mb/d. Therefore, in 2020, Kuwait's compliance to the cuts will remain high. Petrofac was awarded a contract to install a new 120 kb/d capacity gathering centre at Burgan in 2017 which is scheduled for mid-2020 start up, though no palpable updates have been announced on the project. Since production at the field has fallen by between 100-200 kb/d from natural declines, it requires investment in enhanced oil recovery technology. Thus, the project with Petrofac could have been delayed. Start-up of the Lower Fars heavy oil project by end-2019, will add 75 kb/d once full capacity is reached. If	In July KOC awarded Halliburton a three-year contract that will start in mid-2020 to look for offshore oil and gas in the Arabian Gulf. Kuwait's 15 BCM/y LNG terminal will be completed by 2021. Kuwait currently imports 5.2 BCM/y.	Operations of the Clean Fuels Project are moving to start up in late 2020. Bids submission for the 1.5 GW KNPC construction tender for PV Dabdaba project delayed. Some contenders include SNC-Lavalin, Acwa Power, Metallurgical Corporation of China, and Masdar. The solar plant will be constructed on a design-build-operate-maintain basis within the Al-Shagaya Renewable Energy Park.	Anti-corruption protests and corruption spats between ministers has resulted in the replacement of the prime minister (PM) Jaber Al-Mubarak by the Emir, Sabah al-Sabah. The new PM Sheikh Sabah al-Khaled al-Sabah (previously foreign minister from October 2011 to 19 November 2019), is a senior member of the ruling family. Other ministers have resigned over corruption rumours. Next parliamentary elections are due in November 2020. Reshuffles at the top of the oil ministry are not a far-off concept, as seen in the past. The current oil minister, Khaled al-Fadhel, could either be seen as a strong collaborator for the success of the OPEC deal, as it has strongly complied with Saudi Arabia, or as the minister under which the oil production and refinery targets were again not met, and even reduced.

	full capacity is reached in 2020, it will increase production capacity from the current 2.88 Mb/d to 2.955 Mb/d. Mechanical completion for the upgrade of the 270 kb/d Mina Abdullah and 466 kb/d Mina al Ahmadi refineries by 100 kb/d is expected at the end of this year, but start-up by 2020. *Sinopec has completed the central unit of the 615 kb/d Al Zour Refinery, which will enable Kuwait to become the biggest clean oil-producing country in the region.*			*Fitch Ratings has labelled Kuwait the slowest reformer among the GCC countries, and has said that the recent resignation of the government and subsequent cabinet reshuffle could delay new debt issuance and weigh on broader fiscal and economic reforms. Kuwait's central government gross financing need is estimated at about $23 bn (17% of GDP) for FY19/20.*
Iran	*On November 11, Iran announced the discovery of an additional 22 Bbbl at the Namavaran reservoir near the Iraqi border, which had previously recorded 31.3 Bbbl of oil-in-place. This makes the field the second-largest in all of Iran, second to the Ahvaz oilfield (which has 65 Bbl of initial oil-in-place and a production capacity of 945 kb/d), and also places it above Gachsaran, which holds 52.9 Bbbl of initial oil-in-place in the Asmari oil layer.* *Assuming a 10% recovery rate for the new discovery at Namavaran, the field could add 2.2 Bbbl to Iran's oil reserves. Exploration is yet to be concluded, and the NIOC has expressed optimism for further finds south and south-west of the field, towards Sinopec-operated Yadavaran.*	*CNPC has exited the South Pars Phase-11 gas project, which has now been awarded to local company Petropars, who is also managing development of other phases of the South Pars fields. Iran has also awarded the development of the Farzad-B offshore gas field to Petropars, after talks with India's ONGC reached a stalemate. While Iran has shown optimism for rapid development at both fields, we don't think this likely in the near-term. Petropars shall also be unable to develop the LNG phase planned for later at the South Pars Phase-11.* *Earlier in October, Iran had announced the discovery the Eram gas field in the Fars province. Estimated to hold 19 Tcf (538 BCM) of gas and 385 Mbbl of condensates, the field can allegedly supply Tehran's current gas demand (22 BCM) for 16 years, provided that reserves are developed in a timely manner. However, Iran's gas demand is forecast to remain flat over the next*	Non-hydro renewable energy capacity of 650 MW (253 MW in solar). The government plans for it to go above 1 GW by end-2019 (445 MW under construction - mostly wind and solar). Iran is planning to build a 1 GW solar park in the central province of Markaz by 2022 but delays are likely due to access to finance. *Iran's Renewable Energy and Energy Efficiency Organisation (known as SABTA) has reported that renewable sources prevented the emission of GHGs in Iran by 3,048 tonnes during the first nine months of the current Iranian calendar year (March 22-December 21). It also reported that that electricity generation from renewables during the same period prevented the consumption of 1.3 BCM of natural gas in thermal power plants.*	The government will keep recent protests over fuel hikes under control with violent crackdowns if necessary, allowing it to stay in strong control until US elections. Holding tight control will also allow the current government to avoid having to make any compromises to the US. The civil unrest, however, will not impact Iran's regional affairs. It will continue ramping up its nuclear program as well as targeting oil exports on the Strait of Hormuz to pressure US into negotiations, especially in light of recent events. *On January 03, US drone strikes on a Baghdad airport killed an Iranian top general, Qassim Soleimani, who according to Trump, was plotting "imminent and sinister attacks" on Americans. The move has sent regional tensions soaring to new heights, with some speculating an imminent military stand-off between the US and Iran, who has vowed revenge. Apart from Wednesday's missile attacks on the Al*

		5-6 years, rising only minimally from the current 220 BCM (to 223 BCM by 2025), and a continuing economic recession will affect new industry and power capacity. Eram's onshore, apparently sweet gas, with a depth of 3900 metres should be relatively easy to extract, but financial constraints and the limited capacity of Iran's gas market raises questions about its development timeline. We are told that the field shall begin development in "2-3 years".		*Asad airbase in Iraq, which caused no casualties, we do not expect Iran to retaliate immediately (as Trump hopes), but orchestrate a carefully planned attack on a US base or US ally in the region, and/or tankers traversing the Strait of Hormuz. It has already sent repeated assurances to the American people that its enemy is "Trump", and not US civilians. Iran's oil production, which has all but stagnated since the US imposed unilateral sanctions will remain unaffected for the time-being.*
Iraq	Fuel oil exports will now be directed by SOMO instead of the Iraqi Oil Tankers Company (IOTC). Fuel oil exports were impacted in October and November by demonstration blockades to export berths in Khor al-Zubair. The Ministry of Oil (MoO) has accepted bids for the long-delayed export pipeline to Jordan. The project will ultimately include a spur connecting Basra to Turkey. The route will be based on old plans – from Rumaila to Haditha (2.25 Mb/d – part of the capacity to go north to Turkey) and then to Aqaba, Jordan (1 Mb/d). *Iraq set an all-time record for annual oil sales in 2019, as the federal government and KRG combined for an average 3.968 Mb/d of exports. More than 11% of nationwide crude exports came from fields developed by the KRG, whose exports increased from 355 kb/d in 2018 to 441 kb/d in 2019.*	The US extended Iraq's waiver for gas and electricity imports for another 90 days. The MoO is seeking international partners for its Mansuriyah gas field which will plateau at 300 MMscf/d according to official data. The ministry has already prepared the tender packages and reported that many companies are interested (Gazprom and Chinese entities mostly). Gas supply from the field will be diverted to the 750 MW Mansuriyah power station, and potentially the new Bismaya plant in Baghdad (4,500 MW).	The Ministry of Electricity kicks off a 755 MW solar tender mapped across the provinces of Wasit, Karbala, Al-Muthanna, Babel and Diwaniyah. They are expected to be completed by the end of 2020 but delays likely.	Current protests in Federal Iraq, mostly around Baghdad, and now expanding in the south, will slow progress on next year's budget as the protests show little signs of dying out. Regularly, annual budgets are delayed due parliamentary disagreements and political paralysis, and now with the current situation, it will undoubtfully be delayed this year too. Thamir Ghadhban replaced the Basra Oil Company's director general with a more technocratic leader, Bassim Abdulkarim, who aims to increase collaborations with international oil companies. More replacements within the MoO and its subsidiaries are to be expected. *Iraq's parliament has called for the removal of all US troops from the country following the drone strikes on its Baghdad airport that killed Iranian top general Qassim Soleimani and*

				Abu Mahdi al-Muhandis, the deputy head of the Iran-backed Iraqi Popular Mobilisation Forces (PMF). The move could imperil Iraq's fight against ISIS and consolidate further Iranian influence in the country, which has been one of the main sticking points of the ongoing protests. Trump has allegedly threatened to impose stringent sanctions on Iraq if US troops are forced to leave. However protestors have clarified that an end to heavy-handed Iranian influence in the country does not equate to support of US actions.
Iraqi Kurdistan	DNO and ExxonMobil made a light oil and sour gas discovery on the Baeshiqa license, although the size appears disappointing relative to pre-drill expectations. Further testing is required to determine the next steps towards appraisal and assessment of commerciality, such as reserves declaration. The licenses surrounding the block all have heavy oil discoveries, so the discovery, once proved commercial, will be appreciated by the government. First production at the Sarta block (Genel Energy and Chevron) expected in mid-2020. Current civil construction work for the 20 kb/d central processing facility under Phase 1A is underway. The phase is designed to recover 2P gross reserves of 34 MMbbls through two existing wells both of which flowed at c.7.5 kb/d on test.	The Pearl Petroleum consortium produces 400 MMscf/d and expects to reach 900 MMscf/d by 2022 (possibility of exports to Federal Iraq or Turkey if Rosneft's pipeline is ready by then).	Limited investment in renewables (priority would be given to thermal power stations), but some interest in small-scale solar. Slow progress in construction and rehabilitation of new dams.	The possible delay in the 2020 budget due to protests in Iraq and the resignation of Adel Abdul Mahdi will put further strain on the KRG's finances, raising the risk that Baghdad could stop making monthly financial transfers. The KRG has reached a tentative deal with Federal Iraq to deliver 250 kb/d of oil to SOMO in exchange for 12.67% of Iraq's budget revenue. The KRG is pushing for the deal while the administration of Adel Abdul Mehdi is still in place as he has been pushing for an amicable solution for the deal.

Lebanon	Preliminary results show that offshore Lebanon could be oil-prospective. Offshore oil and gas drilling by Total, Eni and Novatek delayed to 2020. Second oil and gas bid round open for blocks 1, 2, 5, 8, and 10; bids to be submitted before Jan. 31, 2020. Progress on the second round could be delayed with the new expected government reshuffles, and the country still has limited oil and gas laws and policies, which have yet to be passed and approved. However, neglecting the upstream sector would be detrimental.	To continue to use power ships for electricity supplies to at least 2021/2022 until the three planned FSRUs are ready. The electricity ministry wants to add a third temporary power ship of 1,450 MW capacity by 2020 to ease the power supply-demand gap estimated at 1 GW. This strategy could delay the LNG imports even further. *French major Total will drill the 'Byblos' prospect in 1,515 metres of water depth some 25km northwest of Beirut on Block 4 (Total 40%op, Eni 40%, Russia's Novatek 20%) next month. The Energy Ministry issued Total its drilling permit on December 12, which is a positive indicator that the country's ongoing political and economic woes are unlikely to delay exploration efforts.*	The Lebanese Center for Energy Conservation (LCEC) is currently engaged in three renewable energy tenders, two solar projects, and one wind project. The most progressed project did not get passed the Expressions of Interest (EoIs) phase despite objectives to have them completed by 2020. Given the current political situation and the government's longwinded pace, we do not expect awards until mid-2020, if even then.	*On 19 December, Hasan Diab, a professor and former education minister, secured a majority from MPs and has been tasked with forming the next Lebanese government. All votes for Diab came from Hezbollah and its allies. Echoing protester demands, Diab promised to form a government of independent experts within six weeks -- in a country where appointing a cabinet can take months.*
Libya	The National Oil Company (NOC) announced that CNPC is looking at cooperation in Libyan exploration and development, oilfield services, and trading of Libyan crude as the African country plans over-ambitiously to hit 1.5 Mb/d in 2020 and 2.1 Mb/d by 2024. *Wintershall has signed two EPSAs with the NOC on Areas 91 and 107 (formerly 96 and 97, and will transfer operatorship of the onshore Sirte Basin fields to a joint operating company, Sarir Oil Operations, by mid-2020. The new operator will be 51% owned by NOC and 49% by Wintershall. The EPSAs will be retroactive, dated to January 2008. The EPSA for Area 91 will expire in 2036 and on Area 107 in 2037. The*	Waha Oil Company (WOC) announced the start of Phase 2 of the Faregh field development project to boost daily production capacity to 250 MMscf/d (from 75 MMscf/d) and 15 kb/d of gas condensates. Initially the gas will be injected into the Intisar 103 oilfield to enhance production and secondarily be used for supplying power plants in the eastern region and the Libyan Norwegian Fertilizer Company (LifeCo) in Marsa El Brega. Eni's completion of the 400 MMscf/d Phase 2 of Bahr Essalam offshore gas project will raise gas exports to Italy in 2019 close to 2013 levels of 600 MMscf/d. The NOC aims to increase gas production to 3.5 bcf/d	Libya's Misurata Free Zone (MFZ) has signed a MoU with consultancy iQ Power in March 2018 to develop integrated CSP and PV projects with up to 300 MW total capacity, but no new progress since then. In September 2019, GE signed an MoU with the Libyan government to implement new power production capacity of 6,000 MW by raising the efficiency of existing power plants, and the establishment of new renewable power projects. Progress on both projects will be slow due to highly subsidised energy prices and insecurity.	The country's factions are unlikely to resolve its divisions and foster unity this year. If the Haftar led LNA takes Tripoli, the GNA will collapse completely. Militant factions will continue using oil infrastructure to gain leverage and power; Oil production around Mellitah and Zawiya could be cut off. *Protestors in Tripoli continue demanding the UAE, Egypt, and France to "take their hands off Libya" after field marshal Khalifa Haftar announced a decisive battle to capture the capital. On January 06 Haftar's LNA forces seized control of the coastal city of Sirte (370 kilometres ease of Tripoli), which had been ruled by forces allied*

	agreements conform to the EPSA IV standard, representing a major concession from Wintershall, which had previously resisted these terms. Wintershall shall cover exploration costs on both areas and half of the development cost, and will also contribute $150 M for social responsibility projects. *Total has also resolved its dispute with the NOC over the Waha concession, and will contribute $650 M to its development. Total will assist NOC on Waha through providing its technology and expertise, and develop the North Gialo and NC 98 fields. NOC will oversee the social responsibility work, with Total financing $70 M at the beginning, with another $30 M when North Gialo starts up and another $30 M with NC 98. The development of the Wintershall and Total concessions should add about 340 kb/d to Libya's output.*	by 2020 from an estimated 1.5 bcf/d by end-2019 (considering the two expansions above). This means in 2020, production will need to rise by ~2 bcf/d, which seems quite optimistic given budget constraints, particularly with an outlook of lower oil and gas prices. The NOC said that an agreement was struck with Egyptian Minister of Petroleum Tarek El Mulla for Egyptian companies to resume work in Libya. Projects to be resumed include a Petrojet contract to build a gas transmission pipeline from Intisar oil field to Sarir power plant.		*with the UN-recognised GNA since 2016. Production from the Sirte Basin should remain unaffected, but as is routine in Libya, might face temporary outages in the event of a stand-off between militant factions allied with Haftar and the GNA.*
Oman	Rex International Holding aims to start oil production at 5 kb/d from block 50 offshore Oman by the end of 2019. The Singapore based company holds a 92.65% indirect stake in Masirah Oil Ltd, which holds 100% in the Block 50 concession. The Rabab Harweel integrated project for PDO in the southern Omani desert is expected to be completed in 2019, adding 6 MMscf/d of sweet gas, and another 60 kb/d of oil.	Mabrouk gas field (4.5 TCF) development advancing with PDO award of pipeline construction to Petrofac. PDO carrying out exploration & appraisal. ENI and BP signed a gas deal for the acquisition of the onshore exploration Block 77 onshore, east of the BP-operated Khazzan Field, which could offer synergies.	Oman's first wind farm, 50 MW in Dhofar, developed by Masdar and financed by the Abu Dhabi Fund for Development, started partial operations in August and will be fully operational by the end of 2019. Oman's state-owned Rural Areas Electricity Company (Tanweer) is inviting bids for the development and construction of hybrid projects combining solar power (48 MWp), diesel generators (70 MW) and storage capacity (28 MW/14 MWh). Petroleum Development Oman (PDO) awarded 105	Yusuf bin Alawi bin Abdullah, foreign affairs minister said that Oman will support President Rouhani, as facilitators and not mediators, on its Persian Gulf security plan, the "Hormuz Peace Endeavour" (HOPE), if it is based on stability.

			MW solar PV project (Amin Solar PV IPP) to a consortium led by Japan's Marubeni Corp. The project will start early generation in December and operate at full capacity in May 2020. It will produce power for PDO. Qatar-based energy company Nebras Power QPSC has bought a 9.9% stake in Amin Renewable Energy Company SAOC (AREC)[18] which is responsible for the project under construction in Oman.	
Qatar	Oil production decline continues, encouraging more investments by QP in international oil upstream. QP took stakes in three deepwater blocks in Kenya from ENI/Total and made a significant oil discovery with its first well in Guyana (operated by Tullow) although this has later proved to be heavy oil of lower value. NGL capacity is expected to rise from Qatar's Barzan project adding some 80 kb/d of condensate and NGLs by 2019. QP's Mexico Area 1 asset (35%) with Eni is expected to start initial production this year before reaching plateau of 91 kb/d in 2021. *Qatar Petroleum's (QP) crude pricing for cargoes loading will be set on a forward pricing basis starting March to give buyers the chance to compare the value of its oil with that of other Middle Eastern producers. The official selling prices for*	QP and Qatargas are not sure if they would need IOC experience for the North Expansion Project; To cement relations, majors are transferring international assets to QP mostly in Africa and South America. However, QP will require IOCs' trading portfolios to access new geographies. Qatargas increasing energy links with Turkey, delivering the largest single cargo of LNG to the Marmara LNG terminal.	Siraj Power started the construction of 200 MW solar plant expected to be ready by 2020. Pre-qualification of 16 bidders for the 500 MW solar power was completed in October 2018. No new progress since then.	Qatar has reportedly restricted trade with Iran to only include food and medicine to comply with US sanctions. Qatar's foreign minister has made a trip to Riyadh to discuss the GCC rift, offering to cut links with the Muslim Brotherhood. Saudi Arabia will try to get Qatar to agree on other terms, but the start of negotiations, mostly mediated by Kuwait, are positive signs, especially that it started off with a key issue: cutting ties with an organisation labelled as a terrorist group by the US and Saudi Arabia.

[18] Amin Renewable Energy Company SAOC is a Japanese-Omani consortium consisting of Marubeni Corporation, Oman Gas Company SAOC and Bahwan Renewable Energy Company LLC.

	Qatar Land and Qatar Marine, will be announced on February on a future pricing basis, similar to other Middle Eastern producers whose next year March-loading crudes are traded in February.			
Saudi Arabia	To strengthen its rank as China's top crude supplier (Saudi oil exports to China rose to 2 Mb/d in October 2019), Aramco signed crude oil contracts for 2020 with five customers, raising total volume by 151 kb/d versus 2019. *Saudi Arabia and Kuwait's dispute over the Neutral Zone has reached an end on December 24, when the Saudi oil ministry reported the agreement between the two countries on Twitter. This deal will put back 500 kb/d on the market by the end of 2020.* The 400 kb/d Jazan refinery to be ready by the end of 2019 *and will be ready for full operations by the second half of 2020.* Consequently, refinery runs will increase by 260 kb/d[19]. The PrefChem refinery, a JV with Malaysian Petronas, will commission in H2 2020, after a technical setback during testing. Aramco will supply 210 kb/d of crude to the refinery (70% of required crude).	The attacks on Abqaiq facilities cut off 2 bcf/d of natural gas and 700 kb/d of natural gas liquids. This impacted petrochemical activity with some plants raising concerns of 40% cut in output due to lack of feedstock. Progress on smaller gas projects after Wasit, and Fadhili, insufficient to prevent rising oil burn for power. The Northwest region is the most advanced in shale developments, currently producing around 55 MMscf/d of gas, supplying a local industrial user for onsite power. Aramco inked an LNG deal with US Sempra. There is still no confirmation if the LNG will be used for Saudi's domestic needs or will be sold to international buyers which underscores the uncertainty of its gas outlook.	ACWA Power announced it has connected to the grid the 300 MW Sakaka solar PV plant. The facility will achieve full commercial operation by end-2019. This is the first utility scale renewables project in the kingdom. The National Agricultural Development Company of Saudi Arabia awarded ENGIE the development of 30 MW of captive solar PV. Faisal Abdullah Al-Yemni was appointed as the new head of the Renewable Energy Project Development Office (REPDO). He is tasked with overseeing the National Renewable Energy Program (NREP), including completing the tendering of Round-2 projects (1.58 GW remain to be tendered) by December this year – a very tight deadline. REPDO already awarded six projects totalling 1.47 GW. The 400 MW Dumat Al Jandal wind project, which will supply electricity for USD¢ 2.3/kWh, will be completed by 2021. Saudi Arabia changed plans repeatedly on nuclear power but has now short-listed two sites and begun design of a 2800 MW, 2-reactor plant.	The Aramco IPO kicks off domestically, and to be launched in December 2019. The idea of an international IPO is not completely off the table, but definitely shelved to after 2021. Increased tensions between Saudi Arabia and Iran means Aramco's oil assets will continue to be vulnerable by strikes from Iranian-backed Houthi rebels in Yemen, or Iranian backed PMU militia in Iraq. It is also at risk of cyber-attacks by Iran which were attempted in the past, targeting energy infrastructure. *Riyadh has shown approval for the US drone strikes that killed Iranian top general Soleimani on January 03, with media outlets announcing "Khamene'i is shedding tears because of Trump!", and defence minister Prince Khalid bin Salman meeting with Trump on January 06 in a meeting undisclosed to the US public to discuss "trade, military, oil prices, security, and stability in the Middle East." For Saudi Arabia, the attack reaffirms US credibility that had waned after its lack of action following the Abqaiq attacks, and can further boost US-Saudi military cooperation that has been under constant pressure from Congress.*

[19] IEA

Syria	To continue to receive clandestine oil imports from Iran. The country is suffering a fuel shortage with the government introducing rationing for gasoline and cooking gas. Though the UN and the US are applying stringent actions on fuel tanker ships heading to Syria. *Syria's parliament approved contracts for oil exploration with Russia's Mercury LLC and Velada LLC. The deals cover exploration and production in three blocks, including an oilfield in north-eastern Syria, scene of Turkey's recent offensive and also desired by Ankara, and a gas field north of the capital Damascus.*	Palmyra gas fields under government control.	Homs Solar Power Plant (CSP) and wind power project cancelled and unlikely to be revived. Concerns over damage to Tabqa Dam near Raqqa.	The Syrian Democratic Forces (SDF) have initiated withdrawal of troops from the Turkish border as part of a Russian-Turkish cease-fire deal, after which Syrian government troops will take control of the border.
UAE	Umm Lulu to increase production to 60 kb/d by end-2019 and plans to upgrade Bu Hasa field from 550 kb/d to 650 kb/d in 2020. However, despite these increases, ADNOC will still fall short of the 3.5 Mb/d production capacity target this year and the 4 Mb/d target by 2020. ADNOC's second licensing round closed in November 2019. Awards for the second bidding round will be in early 2020, and could see participation from Russian companies. ADNOC will buy a 10% stake in global storage terminal owner VTTI as the NOC intends to increase oil trade and access to Asian markets. To further strengthen downstream capacity ADNOC, along with IOCs, will establish Murban as a global benchmark end-	ADNOC awarded Lukoil 5% of its stake in the sour gas Ghasha concession for USD 190M and signed a framework agreement with Russia's Gazprom Neft for sour gas and enhanced oil recovery practices, and technology. The involvement of Lukoil in Ghasha is more political, as the Russian firm has little experience in sour gas. ADNOC awards 40% stake to Total in Diyab Formation and shale gas could start production in late 2019. Sharjah LNG imports delayed to end-2019. Sharjah National Oil Company, in partnership with Eni, continues drilling the first exploration well of their partnership, encountering difficult geological conditions.	Abu Dhabi's Sweihan expanded to 1177 MW to be completed in 2019. The start of the first unit of the Barakah nuclear plant to be delayed to the end of 2021 at least. DEWA awarded a contract for 250 MW Hatta pumped hydro storage plant to Strabag Dubai, Strabag, Andritz Hydro and Ozkar. The project is expected to start up in 2024. The fourth phase of Mohammed bin Rashid Al Maktoum (MBR) Solar Park (900 MW, developed by ACWA Power)– Noor Energy 1 – is the first project in the GCC region to receive Climate Bonds Initiative (CBI) certification for Renewable Energy Project Financing. This will drive down the capex for renewable energy further in the region. The	Real GDP growth will pick-up in 2020 from the World Expo 2020, growing 3% next year from a modest 1.6% growth in 2019. Economic diversification efforts will be the major governmental fiscal priorities. One way the Abu Dhabi government is trying to diversify away from hydrocarbon revenue is through the establishment of Edge. Edge is Abu Dhabi Crown Prince Mohammed bin Zayed Al Nahyan's ambition to streamline the domestic defence industry trusting it will lead to in better military equipment and spur exports to regional partners. The UAE completed a full withdrawal from the Yemeni port city of Aden and from southern Yemen and handed over control to Yemeni and Saudi forces.

	2020 to complement Dubai-Oman, Brent and WTI. This focus led to the important project award to Archirodon to maintain long-term output at the Bab field, which produces Murban crude, at 485 kb/d by about 2022. *ADNOC signed a framework agreement with Indian refining and chemicals conglomerate, Reliance Industries Limited (RIL), to develop an ethylene dichloride (EDC) facility in Ruwais.*		fourth phase already achieved 20% progress. DEWA awarded the 900 MW tender for the fifth phase of the MBR Solar Park to ACWA Power. DEWA will pay ACWA Power USD¢ 1.6953/kWh for power generated and the plant will become operational in stages, starting with Q2 of 2021.	
Yemen	OMV is resuming production at 13 kb/d and could increase to 20 kb/d (the level it was producing before the unrest). Calvalley was the operator of Malik Block 9 (but the company is now defunct). Hood Oil, its local partner, to restart production around 1.2-1.5 kb/d. Oil pipeline, used by OMV among others, blown up in Shabwa province by unknown attackers.	Possible restart of LNG exports from Yemen LNG at low levels (operated by Total), under Saudi's control/influence. State firm Safer restarted operations at Block 18 which is crucial to providing gas feedstock for Yemen LNG.	Yemen Ministry of Electricity 60 MW solar power plant on hold. Unlikely to be revived in the short-term. However, local installation of distributed solar, estimated 400 MW, has been a success to mitigate wartime power shortages.	The Yemeni government and the separatist forces of the Southern Transitional Council (STC) signed a reconciliation agreement in Riyadh as tensions soared between the northern and southern regions. The deal also calls for increased Saudi presence after the UAE's withdrawal from Yemen. Despite the Houthis' recent hijacking of South Korean vessels near Yemen, one of which was carrying a drilling rig, they are unlikely to drastically disrupt most major commercial traffic through the Red Sea.

ABOUT US

Arabia Monitor is an independent research firm specialised in economic and market analysis, and strategy advisory on the Middle East and North African region, which it views as the new emerging market. Arabia Monitor's in-depth, locally informed analysis by Arab, Persian and Chinese speakers has placed it consistently ahead of the curve in identifying new trends within and around the region, and understanding its geopolitics.

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