

IICEC Energy Market Newsletter 30 March 2018

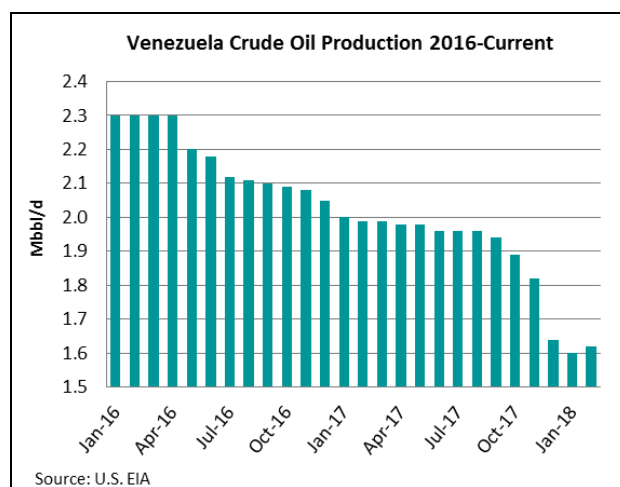
As Caracas Defaults, Venezuelan Oil Supply Collapses:

The steady erosion of Venezuelan crude supply that started in 2014 accelerated dramatically from September through December, falling by as much as 350 Kbb/d over that period.ⁱ In addition to the declining production, there has been a worsening in the quality of crude oil produced, which has prompted complaints from major customers in markets such as China and India, as well as core refiners in the US market halting direct purchases from Venezuela altogether.ⁱⁱ Another factor that threatens to collapse output still further are issues of non-payment and technical default all posing major operational challenges, such as losing access to key regional storage hubs, that should only become more acute, in addition to the vast debt repayments required over the next year.ⁱⁱⁱ

The US and its European allies continue to implement and weigh new sanctions against troubled Venezuela and the regime of Nicholas Maduro. The US is now considering broad sanctions on Venezuela's oil sector itself, including the banning of oil imports to US refineries by military run oil companies, restricting insurance coverage for Venezuela's oil shipments, and banning the export of naphtha, a key ingredient for refining Venezuelan crude.^{iv} The moves spell additional problems for Venezuela, whose oil production was already at its lowest point since 2003.

Such measures will further pressure the Maduro government. In August of 2017, the Trump administration placed sanctions on members of Maduro's cabinet and on the purchasing of Venezuelan bonds by US banks.^v

The European Union followed suit in January, freezing assets for seven Venezuelan officials, and implementing a travel ban.^{vi} In February of 2018, a group of private US investors sought to purchase Rosneft's 50% lien on Citgo, the private, US-based downstream arm of PDVSA.^{vii} Finally, in March, the Trump administration banned the new Venezuelan cryptocurrency "Petro," which could be used to avoid US sanctions. The Petro was also denounced by Venezuela's democratically-elected National Assembly.^{viii}



Such sanctions come as Venezuela continues to experience an unmitigated human rights disaster. Since Maduro came to power, hyperinflation, food shortages, reduced oil production and reduced refining output have dramatically damaged Venezuela's economy. The country still boasts the largest proven oil reserves in the world and was once a major player in global oil production.^{ix}

Power, Renewables & Energy Efficiency

Global Market Trends

Shell, BP and Total Begin Implementing Strategy for Low-Carbon World. The past year has seen a marked divergence in how the European IOCs and their American counterparts see their future roles in global energy markets.^x As a hedge against oil price volatility and disruption in global energy markets, Shell, BP, and Total have increased their investments in natural gas and renewables, far more so than their U.S. counterparts. Dutch oil major Shell has begun planning for a period the company labels as one of “radical uncertainty.” In 2017 Shell sold off \$7.25 billion in Canadian oil sale assets, and the company is now building wind farms in the North Sea and investing in hydrogen stations in Germany.^{xi} By 2020 the company plans to spend between \$1 to \$2 billion annually on clean energy projects, a figure that is set to rise significantly over the coming decade.



In December, BP announced a \$200 million investment in Lightsource, a company that develops European solar farms; it is also weighing the purchase of an Italian solar company called Rete Rinnovabile Srl, valued by its owner at \$1.8 billion. BP’s CEO noted that the company’s strategy in renewable energy will be in project development, rather than

manufacturing components like solar panels and wind turbines.^{xii}

France’s Total agreed to acquire a 23% stake in Eren Renewable Energy, a company founded in 2012 with assets in wind, solar, and hydroelectric energy.^{xiii} Total paid \$284.8 million in a deal that will allow Eren to finance several immediate projects and will allow Total the option of taking control of the company after five years.

Generation/Fuel Sources

Turkey Receives \$85 Million EU Loan for Deployment of Mid-Cap Renewables: The European Bank for Reconstruction and Development (EBRD) has loaned \$85 million to the Industry Development Bank of Turkey (TSKB) to finance mid-cap, private investments in renewables, including solar, hydropower, wind, geothermal, and energy efficiency projects. The loan comes amidst Turkey’s push to diversify its electricity generation away from a reliance on imported fossil fuels.

Sustainable projects have now reached 60% of TSKB’s loan portfolio, and this loan specifically is part of the EBRD’s 1.6 billion euro loan program for Turkey. This program has financed 60 renewables projects through seven different Turkish banks and has successfully installed over 1 GW of electricity generation for private companies. The EBRD is also working with Turkey’s energy regulator, the Turkish Energy

and Natural Resources Ministry, to develop support for renewables projects and to simplify the country's licensing framework for such projects.^{xiv}

This loan should enable Turkey to boost its solar capacity further, which has just reached 3.4 GW of installed capacity. Relative financial support for such projects could become necessary as Turkey adjusted its feed-in-tariff (FIT) rates lower for solar power effective January 1, 2018. In fact, there was a rush to install capacity before the new FIT came into effect, with Turkish solar capacity rising by 1.2 GW in December 2017 alone, much of it deployed by smaller unlicensed solar companies that will be hit hardest by the new FIT rates.^{xv}

Saudi Arabia Financing Large Domestic and International Solar Projects: Saudi Arabia is now in the first phase of construction for the Green Duba solar mega project, a \$1.2 billion installation in the Tabuk region set to add 50 MW to the Kingdom's power grid.^{xvi} This solar installation will be part of a larger \$7 billion investment program in 2018, representing a broader policy to increase energy efficiency, in an effort to shift away from precious hydrocarbon supplies for power generation. The ambitious program will be tailored to Saudi Arabia's geography, which has vast tracts of windy desert terrain, and thus easily possesses the capability to add 3.3 GW of solar photovoltaic (PV) and 800 MW in wind-powered generation capacity.^{xvii}

Moreover, Saudi Arabia's financial footprint in solar markets is growing increasingly global. The Green Duba project will be parallel to ACWA Power's financing of another large solar project in southern Egypt. Here ACWA, a major private Saudi Energy firm, has awarded an EPC contract to China Group to build three new solar plants in Egypt, beginning in the first quarter of 2018. The cumulative investment value for these plants is \$190 million, boasting a total generation capacity of 165.5 MW, powering 80,000 Egyptian homes and saving 156,000 tons of CO₂ emissions.^{xviii}

Distribution/Energy Efficiency

With EV sales growing quickly, attention shifts to battery technologies: As the global market for electric batteries continues to expand, several European firms look to challenge Asian dominance in the field. Siemens and Saft, (a division of France's Total) will leverage EU support in manufacturing a large-scale, fully automated lithium-ion production facility. The consortium hopes that Siemen's automation expertise will help them compete with Panasonic, Samsung, and China's CATL, which currently controls 90% of the global market.^{xix}

These Asian firms, however, seem most concerned with locking in long-term supplies of cobalt for their batteries as EV demand increases. Japan's Panasonic and South Korea's Samsung are looking to Canada and Australian cobalt mines to secure their prized commodity. China's CATL has built deep supply chains with the People's Democratic Republic of Congo, which currently accounts for over 2/3 of global cobalt production.^{xx}

Natural Gas

Eni Begins Production at Zohr Natural Gas Field, Government Plans End to Imports by End-2018: After a relative lull in exploration and upstream activity in the Eastern Mediterranean, several significant developments have transpired over the fourth quarter of 2017 and into 2018. In mid-December, Eni began shipping LNG from the Mediterranean's largest offshore natural gas field to its processing center in Port Said. By June, daily output from the Zohr Gas Field should rise to 1 Bcf/d, and subsequently ramp up to 2.7 Bcf/d by the end- 2018 before growth flattens through 2019 to hit 2.9 Bcf/d by the second half of the year.^{xxi}

In addition to the new capability to export LNG, much of the supply from Zohr will feed domestic consumption, marking a turning point for Egyptian self-sufficiency in energy and the resulting positive implications for the current account. Egypt was formerly a market set to require growing import volumes of natural gas to

meet increasing demand for electricity, yet with the start-up of Zohr, the government sees a total phase-out of imports.^{xxii}

On March 11, Eni sold a 10% stake in its holdings to Mubadala Petroleum of the UAE for \$934 million. The move fits Eni's larger strategy of selling small stakes in its producing assets to fund redevelopment and stock dividends. This deal followed on the heels of a significant signing by Eni of major stakes in concessions with ADNOC offshore Abu Dhabi. Eni still owns 60% of the Zohr block, with Rosneft recently finalizing a 30% stake, and BP owning the remaining 10%.^{xxiii}



Prices/Fundamentals

Mild weather, softer demand and renewed nuclear capacity dampens spot Asian LNG prices: For the third straight week, Asian spot LNG prices fell, as buyers took a cautious approach following the convergence of warmer temperatures across Europe after winter weather caused gas demand to spike, and as top LNG consumer Japan resumed operations at previously shuttered nuclear reactor. Spot prices for May delivery slipped to about \$7.10/MMBtu, 60 cents below last week's levels.^{xxiv}

In late February though early March, an earthquake tightened Asian markets: Exxon's Papua New Guinea LNG facility has remained shuttered since February 26, when a powerful 7.5 magnitude earthquake struck the country. The loss of LNG supply in Asia-Pacific region occurred simultaneously with a cold snap in Europe that further tightened global

fundamentals, pushing Asian spot prices even higher. PNG LNG has not resumed exports from its \$19 Billion facility, which had been operating at 20% above its capacity of 5.1 bcm/y. Directly before the disruption, Exxon announced plans to double the capacity of PNG LNG to 21.8 bcm/y, which could now be delayed pending investigation of potential damage to the project. Known as one of the most well-operated LNG projects globally, a return to production does not seem imminent, a significant challenge for Papua New Guinea as PNG LNG is the biggest source of export revenues in the country. Top buyers for the facility's LNG are in Japan, Taiwan, and China.^{xxv}

New production from Cove Point LNG in the US could pressure prices. Although coming on-line slightly behind schedule – original plans envisioned exports to begin in the fourth quarter of 2017 – the \$4 billion project will slowly ramp up to its nameplate capacity of 5.25 mt/y. The primary term customers for Cove Point volumes include an Indian gas-focused utility, Gail, and the Japanese firm Sumitomo, both of which have 20-year supply contracts.^{xxvi}

GECF sees global LNG trade achieving 2.6% average annual growth through 2040, hitting 678 bcm/y. The Gas Exporting Countries Forum (GECF) forecasted global LNG trade volume will rise by about 326 bcm/y, eventually hitting 678 bcm/y by 2040. Longer-term LNG export growth is likely to be led by Australia and the US, with both countries having expanded liquefaction and production facilities. This will supplement a predicted uptick in LNG production from Qatar, Yemen, and Iran's entrance into the LNG export market. The GECF also predicted that natural gas production from unconventional sources will continue to play a larger role in the global supply market. In 2018, unconventional natural gas production will account for 16% of the total gas market, a figure that will rise to 30% in 2040.^{xxvii}

Upstream/Supply

Russian Natural Gas Production at Record Levels as the Yamal LNG Project Reaches

First Production: Government statistics noted that Russian output jumped 7.9% in 2017, besting the country's previous record set in 2011. Production hit 690.5 bcm last year, a 2.9% increase over the 2011 record. These gains in incremental supply stem from rising domestic demand and increased flows to Europe, as well as the recent streaming of the Yamal LNG project aimed primarily at Asian markets. With new upstream capacity slated to grow supply as Gazprom pursues several pipeline projects to Europe and China in addition to new LNG facilities, the government seeks to surpass the US in natural gas production for the first time this decade.^{xxviii}

Gazprom announced on January 30 that they expected to maintain supply to Europe and Turkey stable at 190 bcm/y for 2018. There is an increasing focus on growing underground natural gas storage near European end-markets as a way to entrench its role further as a primary supplier of gas to the region.^{xxix}

Midstream/LNG Transit

Gazprom Announces \$3.2 Billion Investment in TurkStream Pipeline Project: Russian gas giant Gazprom has also announced it will invest \$3.2 billion in the TurkStream natural gas pipeline for 2018. The investments will continue construction in three primary geographic areas, including onshore Russia, onshore Turkey, and offshore in the Black Sea. The pipeline's primary financial objectives are to supply incremental Russian gas volumes to southern Europe, and to strengthen its share of the Turkish domestic market. Russia currently exports to Turkey via the BlueStream and Trans-Balkan Gas Pipelines.^{xxx} TurkStream is significant for Gazprom as it features centrally in a drive to expand alternative delivery routes to Europe outside the traditional pipeline system through Ukraine, which has seen sporadic disruptions due to political disagreements between Moscow and Kiev. Gazprom recently floated the idea of a potential pipeline spur off of TurkStream that would terminate in Baumgarten, a gas hub in Austria.



Source: <http://turkstream.info/photos/>

OMV seeks out medium-term LNG supply contracts to grow its operations in the European gas markets.

In a bid to grow its share of the European natural gas market, Austria's OMV has struck a supply deal with Qatargas and the US' Cheniere Energy. The deal begins in 2019, with Qatargas slated to ship up to 1.1 mt/y of LNG to the Netherlands' Gate terminal, where OMV has a total import capacity of 3 bcm/y. The Gate terminal has been chronically underutilized for years, and in 2017 had a total utilization rate of just 12.5%. OMV, a founding shipper in the Gate terminal, is hoping this deal will begin to change Gate's low utilization rate.^{xxxi}

Imports/Demand

Indian utility Gail revised its terms with Gazprom, lowering prices and boosting contracted supply of Russian LNG volumes.

India's Gail has renegotiated its long-term supply contracts with Gazprom for the third time, hoping to make imported fuel more affordable for Gail's price sensitive customers. This new deal will extend the duration of Gail and Gazprom's partnership by two to three years, with Gail agreeing to buy an additional 6 million tons of LNG shipments. The greater overall volume of the deal will offset initial reductions in Gazprom imports for the first three years of the deal, with Gail now slated to buy .5 million tons of Russian LNG in year one, .75 million tons in year two, and 1.5 million tons in year three. The move comes amidst other LNG supply renegotiations between India and major producers, namely

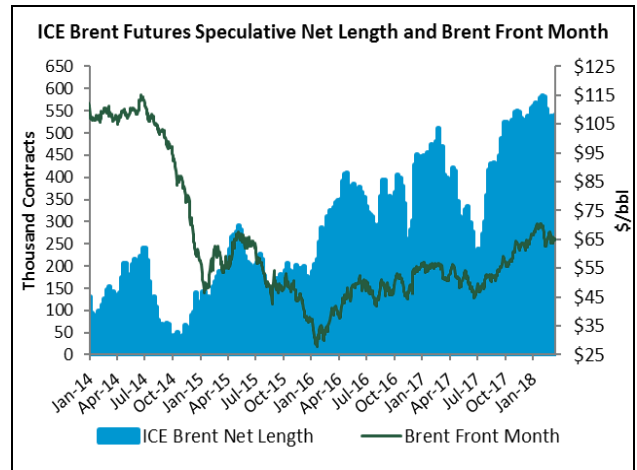
Qatar's RasGas and Exxon Mobil, as the nation has leveraged its power as one of the world's largest energy consumers.^{xxxii}

Oil Market

Prices/Fundamentals



After record run-up for long positions in Brent, investors begin to taper exposure: A primary force driving oil price volatility generally – as well as the rally in Brent from ~\$50/bbl in September to \$70/bbl over the first months of 2018 – is the continued expansion of capital invested in futures contracts for Brent. Net length for Brent (i.e. all outstanding long contracts less all outstanding short positions) positions held by speculators peaked at 582,000 contracts in late January – equal to 582 Mbbl – before sliding back to 540,000 positions through March 13. While there have been indications of rapid US production growth, as well as incremental supply growth from other producers, such as Brazil, investors do not seem to be shifting back to a bearish consensus but are simply awaiting another indicator from physical markets. The key metric to watch will be whether speculators begin growing short positions again, or if continued tightening of balances prompts a fresh accumulation of long contracts.^{xxxiii}



Even though oil prices have risen significantly over 4Q2017 and into 2018, overall oil price volatility has reached lows last seen before the collapse in prices from mid-2014. Such stability, along with generally higher prices currently, have allowed for accelerated pronouncements of project sanctioning from IOCs necessary to meet medium-term demand growth.^{xxxiv}

China set to launch delayed yuan-denominated crude futures contract: After several years of proposals and aborted launches of a crude futures contract denominated in Chinese yuan and traded at a domestic exchange, the first official trading in such a crude oil futures contract has begun on March 26. With an initial price of \$65.80/bbl, the nascent contract will be traded on the Shanghai Futures Exchange (ShFE).^{xxxv} Although there have been factors that have turned off traders in the traditional markets, WTI and Brent futures, domestic investors and commercial players, such as PetroChina and Sinopec, could offer the necessary liquidity to boost initial efforts to get the new Chinese crude contract off the ground.^{xxxvi}

Upstream/Supply

UAE rapidly signs new partners to offshore concessions amid structural changes at ADNOC: Among the most active upstream sectors over the past year has been in Abu Dhabi. The primary state-run oil firm of the UAE, Abu Dhabi National Oil Company (ADNOC) is in the midst a corporate restructuring while also

seeking new partners for an offshore concession that expired in early March 2018. Furthermore, this concession itself, formerly Adma-Opco, is being reorganized to regroup the offshore assets for a more efficient development process.^{xxxvii}

When the ADNOC saw its main onshore concession, ADCO, expired in 2014, it took several years to secure partners for the full stakes, delaying progress on field development. After first signing Total in early 2015, ADNOC did not sign the final partner until February 2017, when a pair of Chinese firms, CNPC and CEFC, acquired the final 12%.^{xxxviii}

There were concerns that the offshore would suffer the same fate, causing further delays in several projects that are approaching final stages of development. However, once ADNOC agreed to terms with the Indian state oil company, ONGC, it has taken just months to sign on a vast majority of stakes in the reconstituted consortia.^{xxxix} This should clear the way for major fields such as Umm Lulu and Satah al-Razboot (SARB) to proceed without the uncertainty that faced the onshore assets as the ADCO concession expired.

North Sea sees rejuvenated investor interest as Catcher reaches first oil: After years of production declines, lack of investment, and high operating costs, the North Sea has suffered from a lack of new projects. Starting in December, however, the prospects for the North Sea brightened, with one field reaching first oil followed by the first major FID for a project offshore UK in years.

The Catcher development in the Central North Sea area started production in late December. The operator, Premier Oil, will initially produce 10 Kbb/d, a figure slated to rise to 60 Kbb/d later in 2018, 20% higher than original estimates.^{xi}

This development was followed weeks later by the first sanctioning of a major project in the UK North Sea since the price collapse of 2014. Shell reached a final investment decision (FID) to expand its Penguins project, which the firm operates with a 50% stake. This phase should

reach an ultimate plateau of 45 Kboe/d.^{xii} After years of anemic exploration and development in the North Sea, as many as 14 FIDs could be passed in the UK alone, marking a potential reversal of fortunes for the prominent producing region.^{xiii}

Pipelines/Maritime Flows

Halt in Forties pipeline flows disrupts key component of North Sea benchmark: One of the largest recent disruptions in global oil supply came when the major Forties Oil Pipeline System, a primary conduit for North Sea oil production, sprung a leak on December 13. At traditional operating capacity, as much as 450 tb/d flows through the system, making up a key component of the Brent crude stream.^{xiii} The drop in supply not only was supportive of oil prices generally, but also pushed the WTI-Brent spread above \$7/bbl.

Imports/Refining/Product Demand

Indian oil imports hit record high in 2017 after tough economic year: The demonetization drive implemented by Prime Minister Modi at the outset of 2017 abruptly, albeit temporarily, slowed both economic growth and refined product consumption in India. After expanding steadily at over 7% for all of 2016, GDP growth slumped to 5.7% by the second quarter of 2017.^{xiv} This economic slowdown included a relatively suppressed growth in product consumption for much of the year. However, due to an export-oriented refining sector and additional downstream capacity coming on-line, India imported its highest volume of crude oil on record, averaging 4.4 Mbb/d on the year, an increase of ~2% from 2016. Of note, Iraq became the main supplier last year, supplanting Saudi Arabia, with Iran taking over third-place from a Venezuela that is seeing a collapse in its oil sector currently.^{xv}

As China Turns Increasingly to the US for Oil, Refiners Given Higher Crude Quotas: A key driver behind the recent uptick in US crude exports has been demand from an expanding downstream network in China. In October, oil

imports from the US hit a record 448 Kbb/d, with an average of 220 Kbb/d over the first eleven months of the year; the average for 2016 was just 22 Kbb/d.^{xlvi}

One factor behind the growing thirst for US crude in China is the increasing access to crude imports the government is issuing for refiners, particularly independent refiners.^{xlvii} However, export quotas for refined product have also been raised, increased supply that has already begun to have an impact on refining margins in the Asia-Pacific market.^{xlviii} Yet, recent uncertainty regarding future tax regulations aimed at the independents, as well as more stringent anti-pollution standards, caused a steep drop in Chinese crude imports for February, down more than 10% month-on-month to 8.4 Mbb/d.^{xlix}

Political-Economy

Macroeconomy

IMF Revises its Outlook for Global Growth in 2018 and 2019: Released as world leaders were gathering in Davos for the World Economic Forum, the IMF released its latest World Economic Outlook, which saw an upward revision in global GDP growth to 3.9% for both 2018 and 2019.ⁱ The passage of the US tax overhaul boosting investment domestically and for those economies highly connected the US market. Upward revisions were also made for China, where expansion is forecasted to register 6.6% in 2018, before declining to 6.4% the following year. Oil markets saw this as a boom for near-term demand growth, with hopes that high consumption can withstand incremental supply increases over the next year.

Projection for Turkish Growth Expected to Hit 7% for 2017, IMF Raises 2018 Outlook: The IMF raised its 2018 outlook for Turkish growth to 4%, an upward revision of .5% relative to its previous outlook. This follows remarkable growth over 2017 of 7%, driven by the creation of a \$70 billion state loan guarantee fund that boosted domestic consumption significantly. Turkey's economy grew 5.2% and 5.1% in the

first and second quarter, economic growth that surged to a remarkable yet unsustainable 11.1% in the third quarter. The central bank guaranteed loans to the private sector and is focused on lending to small and medium enterprises.ⁱⁱ

Although the factors that drove such high growth rates have been leveraged for the most part, Qatar National Bank just released an economic forecast indicating another hike in expectations for 2018 to 5.4%. While not the bumper rates of 2017, external demand for Turkish goods from Europe continues to be strong, creating a robust export market for the Turkish manufacturing sector.ⁱⁱⁱ Expansion of the EU economy rose to 2.3% in 2017, which helped to push Turkish exports higher by 10.2%, totaling some \$157 billion on the year. The Turkish Statistical Institute (TurkStat) announced recently that Turkey's exports rose 16.3% on a yearly basis to reach nearly \$12.2 billion in January.ⁱⁱⁱ

US proposes several rounds of new tariffs, raising specter of retaliatory measures: The US economy performed above expectations in 2017, with GDP growth hitting 2.3% on the year, up from 1.5% over 2016. However, an increase in import flows over the fourth quarter caused a slowdown relative to the previous quarter, falling from an annual rate of 3.3% to 2.6%.^{iv} A driver of these higher imports is based on potentially solid economic indicators, such as durable goods orders, which saw a rise of 2.9% in December, following an uptick of 1.7% in November, stronger than expectations.^{iv} With the recent upgrade in economic outlook for the US by the IMF, continued strong demand from the US market is crucial to global fundamentals.

Geopolitics

Trump Administration Puts Iran Nuclear Deal on the Clock: After de-certifying the JCPOA in December, the Trump administration extended sanctions waivers in January while stating that unless there were fundamental changes made to the deal, no additional waivers from secondary sanctions would be forthcoming.^{vi} This announcement was made on the heels of a joint

announcement by European leaders defending the Iran Nuclear Deal and affirming that Tehran remained in firm compliance with the provisions of the JCPOA.^{lvii} While the original sanctions regime ultimately brought Iranian exports to below 1 Mbb/d from the current ~2.1 Mbb/d, reaching a peak in late 2012 as the most strict of the EU and US sanctions were implemented, it is unclear that a resumption of US secondary sanctions on Iranian crude exports would have the same impact this time around.

Although Trump has been vociferous in his condemnation of the Iran deal, he has still maintained its integrity until now. This may have been the result of more moderate voices prevailing at the White House and from key posts, such as former Secretary of State Rex Tillerson. A marked shift in the composition of the cabinet, particularly as it pertains to national security, has raised questions about whether such restraint would endure. The first sign of growing possibility for more hardline stances on foreign policy emerged with the appointment of Mike Pompeo, who was heading up the CIA, as Trump's new presumptive Secretary of State. Pompeo is known to harbor a much more hawkish perspective, as well as documented skepticism of the JCPOA itself and US policy towards Iran generally.^{lviii}

If the departure of Rex Tillerson and his replacement with Pompeo is a sign of increased hawkish disposition relative to Iran and the JCPOA, the subsequent appointment of John Bolton as National Security Advisor after the resignation of H.R. McMaster cases even further doubt over the sustainability of the Iran Nuclear Deal.^{lix}

The growing potential for the re-implementation of sanctions, Total has begun to seek waivers from European authorities over its investment in South Pars Phase 11.^{lx} The political uncertainty of sanctions has kept foreign companies off, particularly European operators. The US will next decide to renew sanctions waivers in mid-May.

Iraq Sees Production Drop in the North as Baghdad Keeps Kirkuk Flows Shut-in:

Following the advance by Iraqi federal military forces into areas in and around Kirkuk, oil production from the North fell quickly due to shut-downs at the Avana and Bai Hasan oil fields, with combined capacity of 280,000 b/d. Baghdad reclaimed these fields in October 2017 following the independence vote held by the KRG on 25 September, which prompted an advance of federal military forces. These two fields were formerly under the management of the federal subsidiary North Oil Co. (NOC) but had come under the control of the Kurdish Peshmerga since mid-2014 when IS invaded the surrounding area. After expelling the previous operator, the KAR Group, flows from the Kirkuk reservoir and several satellite fields were halted in mid-October. By January, Baghdad signed a deal with BP to reinvigorate the Kirkuk field, eventually taking output back to 750,000 b/d in the medium-term.^{lxi} This agreement was to allow for flows through the export pipeline to resume, which is expected within the coming weeks, but as of yet production has only ramped up to 50,000 b/d, volumes that are serving domestic refineries, which indicates that the disruption still sits at upwards of 225,000 b/d. While negotiations have been held, they have shown little progress, prompting calls from Baghdad to revitalize the Iraq-Turkey Pipeline (ITP), which traverses federal territory rather than the only current export outlet, a 700,000 b/d pipeline that crosses primarily Kurdish terrain (KRG).^{lxii} However, after weeks of negotiations between Baghdad and Erbil, a final deal involving crude exports and the resumption of allocations of the federal budget to KRG was announced on February 28, paving the way for elevated flows through the KRG pipeline to Ceyhan in the coming weeks, as Rosneft, now a major investor in the Kurdish oil and gas sector, mediating the final terms of any presumptive agreement.^{lxiii}

Niger Delta Avengers (NDA) Steps up Threats to Oil Installations: Nigerian oil production has fluctuated drastically over the past two years.

Much of these supply disruptions came at the hands of militant attacks on vital energy infrastructure in the Niger Delta. While output has indeed seen an uplift and relative stabilization in 2017, signs are emerging that there is a growing risk that the threat posed by the most prominent militant groups in the Delta, Niger Delta Avengers (NDA). First, in November, the group quit a formalized cease-fire that had been in place for much of the year.^{lxiv} Although attacks have not materialized as yet, by January NDA extended its threat to offshore installations, which compounds the potential downside to Nigerian oil production substantially.^{lxv} With current production hovering around 1.8 Mbb/d, the rate at which Nigeria had informally told OPEC they would maintain output,^{lxvi} this could rapidly decline, should certain crucial pipelines experience a spike in sabotage by groups such as NDA.

Tensions in South China Sea grow as Beijing pressures Vietnam to halt drilling in disputed development block: The Spanish firm Repsol, operator of the Red Emperor project offshore Vietnam, was asked to stop its drilling program

by Vietnamese authorities. Red Emperor has estimated reserves of 45 Mbb of crude, 4.8 bcm, and 2.3 Mbb of condensate, in which Repsol owns 51.75%, could now cost the company significantly.^{lxvii} This is in fact the second time in less than a year that Repsol has had to cease drilling activity in Vietnam due to pressure from China. Last July, Talisman-Vietnam, a subsidiary of Repsol, stopped drilling in Block 136-03 at the behest of Hanoi, as well as direct pressure on the firm directly from Beijing. With the second such stoppage, the risk profile of Repsol interests in Vietnam, accounting for nearly half of the \$1.2 billion capital program for 2018, now entails substantially higher levels of uncertainty.^{lxviii}

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