Energy Tidbits

IEA Birol's Blog Sounds Like a Recipe/Warning For an Energy Crisis for 2020s

Produced by: Dan Tsubouchi

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Dan Tsubouchi
Principal, Chief Market Strategist
dtsubouchi@safgroup.ca

Ryan Dunfield
Principal, CEO
rdunfield@safgroup.ca

Aaron Bunting
Principal, COO, CFO
abunting@safgroup.ca

Ryan Haughn
Principal, Energy
rhaughn@safgroup.ca

Independent Statistics & Analysis
U.S. Energy Information Administration

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Short-Term Energy Outlook

Forecast highlights

Global liquid fuels

- The May *Short-Term Energy Outlook* (STEO) is subject to heightened levels of uncertainty resulting from a variety of factors, including Russia's full-scale invasion of Ukraine. This STEO assumes U.S. GDP will grow by 3.1% in both 2022 and 2023, following growth of 5.7% in 2021. We use the S&P Global macroeconomic model to generate our U.S. economic assumptions. Global macroeconomic assumptions in our forecast are from Oxford Economics and include global GDP growth of 3.4% in 2022 and 3.5% in 2023, compared with growth of 6.0% in 2021. A wide range of potential macroeconomic outcomes could significantly affect energy markets during the forecast period. Major factors driving energy supply uncertainty include how sanctions affect Russia's oil production, the production decisions of OPEC+, and the rate at which U.S. oil and natural gas producers increase drilling.

- The Brent crude oil spot price averaged $105 per barrel (b) in April, a $13/b decrease from March. Although down from March, crude oil prices remain above $100/b following Russia's full-scale invasion of Ukraine. Sanctions on Russia and other independent corporate actions contributed to falling oil production in Russia and continue to create significant market uncertainties about the potential for further oil supply disruptions. These events occurred against a backdrop of low oil inventories and persistent upward oil price pressures. Global oil inventory draws averaged 1.7 million barrels per day (b/d) from the third quarter of 2020 (3Q20) through the end of 2021. We estimate that commercial oil inventories in the OECD ended 1Q22 at 2.63 billion barrels, up slightly from February, which was the lowest level since April 2014.

- We expect the Brent price will average $107/b in 2Q22 and $103/b in the second half of 2022 (2H22). We expect the average price to fall to $97/b in 2023. However, this price forecast is highly uncertain. Actual price outcomes will largely depend on the degree to which existing sanctions imposed on Russia, any potential future sanctions, and independent corporate actions affect Russia's oil production or the sale of Russia's oil in the global market. We completed this outlook on May 5, therefore it does not include an EU ban on oil imports from Russia. However, the bans being reported at the time of writing would likely contribute to tighter oil balances and higher oil prices than our current forecast. In addition, the degree to which other oil producers respond to current oil prices and the effects macroeconomic developments might have on global oil

Note: EIA completed modeling and analysis for this report on Thursday, May 5, 2022

demand will be important for oil price formation in the coming months. We reduced Russia's oil production in this month's forecast compared with our April forecast, and we now expect oil markets to be mostly balanced from 2Q22 through the end of 2023. Because oil inventories are currently low, we expect downward oil price pressures will be limited and market conditions will exist for significant price volatility.

- We estimate that 97.4 million b/d of petroleum and liquid fuels was consumed globally in April 2022, an increase of 2.1 million b/d from April 2021. We forecast that global consumption of petroleum and liquid fuels will average 99.6 million b/d for all of 2022, which is a 2.2 million b/d increase from 2021. We revised down our forecast for 2022 global consumption of petroleum and liquid fuels by 0.2 million b/d from the April STEO, primarily as a result of downward revisions to consumption growth in China and the United States. We forecast that global consumption of petroleum and liquid fuels will increase by 1.9 million b/d in 2023 to average 101.5 million b/d.

- U.S. crude oil production in the forecast averages 11.9 million b/d in 2022, up 0.7 million b/d from 2021. We forecast that production will increase to more than 12.8 million b/d in 2023, surpassing the previous annual average record of 12.3 million b/d set in 2019.

Natural gas

- In April, the Henry Hub natural gas spot price averaged $6.59 per million British thermal units (MMBtu), which was up from the March average of $4.90/MMBtu and higher than the April 2021 average of $2.66/MMBtu. We expect the Henry Hub price to average $7.83/MMBtu in 2Q22 and average $8.59/MMBtu in 2H22. High forecast natural gas prices reflect our expectation that natural gas storage levels will remain less than the five-year (2017–2021) average this summer. Lower-than-average storage levels partly result from limited opportunities for natural gas-to-coal switching for power generation, which we forecast will keep the demand for natural gas for power generation high despite high prices. Natural gas prices could rise significantly above forecast levels if summer temperatures are hotter than assumed in this forecast and electricity demand is higher. In addition, we expect that U.S. liquefied natural gas exports (LNG) will remain high during the summer. We expect the Henry Hub spot price will average $4.74/MMBtu in 2023. The forecast drop in prices for 2023 reflects our expectation that the rate of natural gas production will increase next year while LNG export and demand growth slow, contributing to higher storage levels in 2023 than in 2022.

- We estimate that natural gas inventories ended April at 1.6 trillion cubic feet (Tcf), which is 17% below the five-year average. Inventories at the end of April were 190 billion cubic feet (Bcf) higher than at the end of March. This increase was below the five-year average as a result of below-normal temperatures that raised demand for natural gas for heating amid relatively flat production. We expect natural gas inventories to increase by 418 Bcf in May, ending the month at 2.0 Tcf, which would be 14% below the

five-year average for this time of year. We forecast that natural gas inventories will end the 2022 injection season (end of October) at almost 3.4 Tcf, which is 9% below the five-year average. However, summer temperatures will be key to storage, and a hotter-than-normal summer that results in high electricity demand could cause inventories to be lower than forecast and result in prices that are higher than forecast.

- In April, U.S. LNG exports averaged 11.6 billion cubic feet per day (Bcf/d), slightly below an all-time peak of almost 12.0 Bcf/d set in March. We forecast that U.S. LNG exports will average 12.1 Bcf/d from May through August, which is slightly lower than our previous forecast. This forecast reflects our assumption of slightly lower LNG demand in Asia and Europe this summer compared with our previous assumption, in part because of sustained high natural gas prices. We expect U.S. LNG exports to average 12.0 Bcf/d this year, a 23% increase from 2021. Growth in LNG exports in recent years has been driven by capacity expansions. However, we do not expect any new export facilities to come online in the forecast period, and as a result, forecast growth in LNG exports slows to 5% in 2023, with LNG exports averaging 12.6 Bcf/d for the year.

- We expect that U.S. consumption of natural gas will average 85.7 Bcf/d in 2022, up 3% from 2021. The increase in U.S. natural gas consumption is a result of colder temperatures and related higher consumption in the residential and commercial sectors in 2022 compared with 2021. We also expect the industrial sector to consume more natural gas in 2022 in response to expanding economic activity. In addition, forecast natural gas consumption in the electric power sector increases in 2022 because of limited natural gas-to-coal switching despite high natural gas prices. For 2023, we forecast natural gas consumption will average 85.3 Bcf/d, down 1%, mostly as a result of assumed milder winter temperatures (based on forecasts from the National Oceanic and Atmospheric Administration) that will reduce residential and commercial consumption.

- We estimate dry natural gas production averaged 95.5 Bcf/d in the United States in April, up 0.4 Bcf/d from March. Although production in April was lower than the recent peak in December 2021, it increased in each of the past two months. Periods of below-normal temperatures and snow in some producing regions, along with seasonal maintenance on pipelines, limited the production increases in April compared with March. We forecast dry natural gas production to average 95.8 Bcf/d in May. For all of 2022, we expect that dry natural gas production will average 96.7 Bcf/d, which would be 3.2 Bcf/d more than in 2021. We expect dry natural gas production to average 101.7 Bcf/d in 2023.

Electricity, coal, renewables, and emissions

- We forecast that the annual share of U.S. electricity generation from renewable energy sources will rise from 20% in 2021 to 22% in 2022 and to 23% in 2023 because of continuing increases in solar and wind generating capacity. We forecast that natural gas

will provide almost 37% of generation in 2022, which is similar to the level in 2021, and we forecast natural gas generation will provide 36% of generation in 2023. Despite significantly higher natural gas fuel costs this year compared with last year, we do not expect an increase in electricity generation from coal-fired power plants, which have in the past acted as a primary substitute for natural gas in the power industry. Along with the continued retirement of coal-fired generating capacity, the remaining coal fleet has been facing constraints in regard to fuel delivery and coal stocks. We forecast coal will provide 21% of total U.S. generation 2022 and 20% in 2023, compared with a share of 23% last year. Nuclear generation remains relatively constant in the forecast at an average share between 19% and 20%. One nuclear reactor will retire during 2022, and two reactors at the Vogtle nuclear power plant are scheduled to come online in 2023, the first new nuclear units to open in the United States since 2016.

- Planned additions to U.S. wind capacity increase wind electricity generation in our forecast. We estimate that the U.S. electric power sector added 14 GW of wind capacity in 2021. Wind capacity additions in the forecast total 10 GW in 2022 and 4 GW in 2023. The electric power sector added 13 GW of utility-scale solar capacity in 2021, and forecast solar capacity additions in the power sector total 20 GW for 2022 and 23 GW for 2023. We expect additions to solar capacity and batteries to account for more than half of new electric sector capacity in 2022 and 2023. In addition, in 2021 small-scale solar (systems less than 1 megawatt) rose by 5 GW to 33 GW. We expect that small-scale solar capacity will grow by 5 GW in 2022 and 6 GW in 2023.

- U.S. coal production in the forecast increases by 20 million short tons (MMst) (3%) in 2022 to 598 MMst and by 7 MMst (1%) in 2023. We expect production in the Western region to drive the forecast increases. The forecast increase occurs despite our expectation that coal use in the power sector will decline. We expect rising coal production will replenish electric power sector inventories in 2023 that were depleted during 2021. We also expect coal exports will remain at high levels during the forecast period as a result of high global coal prices. Although exports and inventory builds contribute to rising coal production in the forecast, labor shortages, rail congestion, and challenges obtaining equipment are expected to limit production gains.

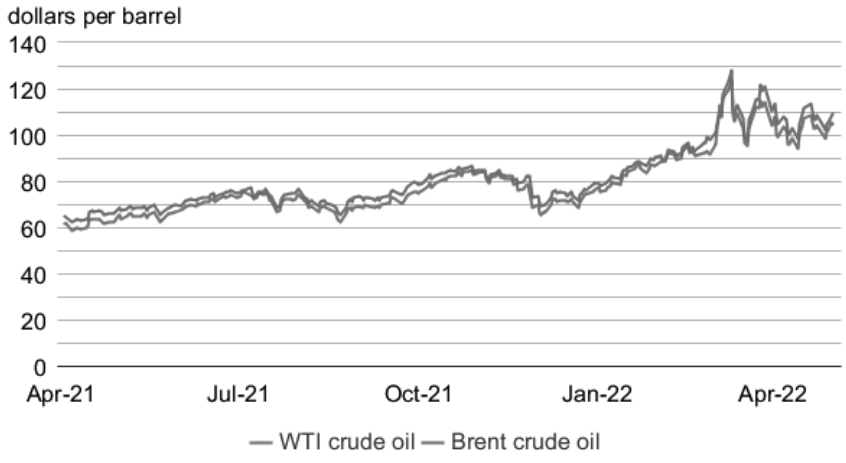
- U.S. energy-related carbon dioxide (CO_2) emissions increased by more than 6% in 2021 as a result of rising energy use. We expect a 2% increase in energy-related CO_2 emissions in 2022, primarily from growing transportation-related petroleum consumption. Forecast energy-related CO_2 emissions remain relatively unchanged in 2023. We expect petroleum emissions to increase by 3% in 2022 compared with 2021 before growth slows to 1% in 2023. Natural gas emissions rise by 3% in our forecast for 2022, then remain unchanged in 2023. We forecast that coal-related CO_2 emissions will fall by 2% in 2022 and by 5% in 2023.

Petroleum and Natural Gas Markets Review

Crude oil

Prices: The front-month futures price for Brent crude oil settled at $110.90 per barrel (b) on May 5, 2022, an increase of $6.51/b from the April 1, 2022, price of $104.39/b. The front-month futures price for West Texas Intermediate (WTI) crude oil for delivery at Cushing, Oklahoma, increased by $8.99/b during the same period, settling at $108.26/b on May 5 **(Figure 1)**.

Figure 1. Crude oil front-month futures prices



Source: Based on CME Group and Intercontinental Exchange, as compiled by Bloomberg L.P.
Note: WTI=West Texas Intermediate

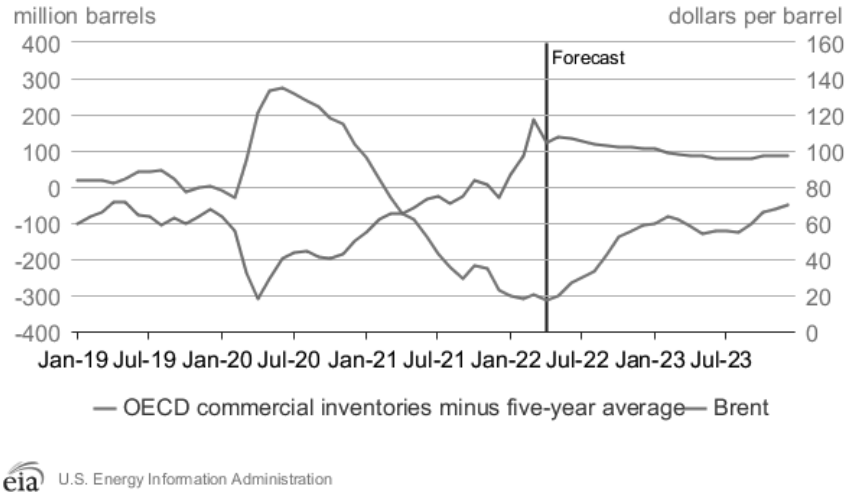
The April monthly average front-month Brent crude oil price was $106/b, $7/b less than the March 2022 average but $41/b more than April 2021. The monthly average WTI crude oil price was $102/b, similarly $7/b less than March 2021 and $40/b more than April 2021. Monthly average crude oil prices in April decreased slightly from March levels but remained near the highest prices since 2014 on an inflation-adjusted basis. The possibility of oil supply disruptions resulting from Russia's full-scale invasion of Ukraine and associated sanctions on Russia continue to contribute to the Brent crude oil price remaining above $100/b. This uncertainty is occurring amid low inventory levels globally. Relatively slow increases in global oil production amid more rapid increases in consumption contributed to global inventories declining for six consecutive quarters from the third quarter of 2020 to the fourth quarter of 2021 (3Q20 through 4Q21). Global inventories increased in 1Q22 as a result of reduced January consumption related to COVID-19 measures, reduced March consumption related to COVID-19 responses in China, and relatively steady global production increases; declines in Russia's oil production were not substantial until April. At the same time, potential decreases in demand from factors including the ongoing severe COVID-19 containment measures in China, particularly in Shanghai, as well as a decrease in the reported first-quarter U.S. GDP estimate contributed to lower crude oil prices relative to March.

In addition to the decrease in monthly average prices in April, crude oil price volatility declined compared with the high level of volatility in March. The Brent crude oil price range in April was $17/b, down from a $42/b range in March. Although narrower than in March, the range in prices remains wider than in any month during 2021. Many of the key uncertainties that we noted in last month's STEO remain, including:

- The impact of sanctions on Russia in relation to its full-scale invasion of Ukraine and the ongoing effect of current sanctions and private sector actions
- The potential for new sanctions on Russia, including the discussion of an EU-wide ban on energy imports from Russia, and the pace of its implementation
- The pace of petroleum demand growth through the summer and the potential for demand destruction because of high retail fuel prices
- The volume of new crude oil production that will come online at price levels near or above $100/b
- The potential for renewed resurgences in COVID-19 cases and the nature of government responses
- The ongoing impact of the coordinated release of petroleum supplies from strategic reserves in the United States and in Europe
- Other geopolitical uncertainties related to Libya, the ceasefire in Yemen, or potential new developments on an Iran deal

In this month's STEO, we expect lower global crude oil and other liquid fuels production in the forecast compared with last month's outlook, contributing to relatively balanced oil markets through the end of 2023. We estimate that OECD commercial liquid inventories in April were 315 million barrels below their five-year (2017–2021) April average, the lowest amount relative to the five-year average in our data going back to 2004. We expect some builds in global oil inventories will allow OECD inventories to move closer to the five-year average, particularly in the second half of 2022, which could contribute to limited downward pressure on crude oil prices. We expect the monthly average Brent price to remain above $100/b for the rest of 2022, but we forecast the Brent crude oil spot price will decrease to an average of $102/b in 4Q22 and $97/b by 4Q23 **(Figure 2)**. Although we forecast some price declines, the possibility for significant crude oil price increases and high volatility remains, given low inventory levels and the wide range of possible outcomes for oil supply, particularly from Russia.

Figure 2. OECD commercial liquid inventories minus five-year average and Brent price



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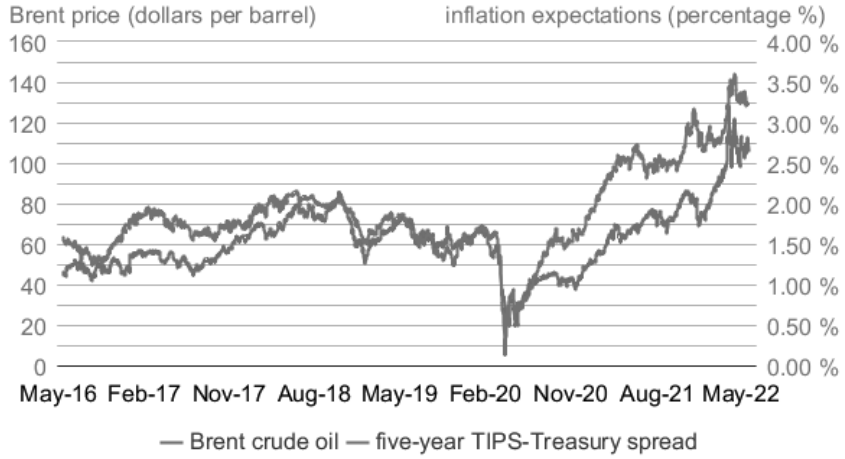
Our Brent crude oil price forecast of $97/b in 2023 is up $5/b compared with our forecast from the April 2022 *Short-Term Energy Outlook*. The higher forecast price reflects our expectation that oil markets will be relatively balanced in the forecast compared with our expectation of inventory builds last month, and we now forecast OECD commercial inventories to remain below their five-year average throughout the forecast period. This downward revision in OECD inventories is a result of our forecast for lower supply growth because we expect production declines in Russia to persist throughout the forecast period. Our forecast for total liquid fuels production in Russia from 2Q22 through the end of 2023 is 0.6 million b/d lower in this month's outlook compared with last month. This forecast assumes existing sanctions as of May 5. Actual price outcomes will be affected by the degree to which existing sanctions imposed on Russia, any potential future sanctions, and independent corporate actions affect Russia's oil production or the sale of Russia's oil in the global market. We expect this supply reduction to only partially be offset by lower consumption expectations in China as well as the effect of lower global economic growth on global oil consumption.

Crude oil and inflation expectations: The spread between five-year treasury bonds and Treasury Inflation-Protected Securities (TIPS) is one indicator of financial market expectations of inflation because it measures the difference in yields between Treasury bonds that adjust their yield with the Consumer Price Index (CPI) and those that do not. In March 2022, the spread reached 3.6%, its highest level since at least 2003, and averaged 3.4% throughout the month **(Figure 3)**.

Figure 3. Crude oil and inflation expectations



Source: Based on data from Bloomberg L.P. and Federal Reserve Bank of St. Louis
Note: TIPS=Treasury Inflation Protected Securities

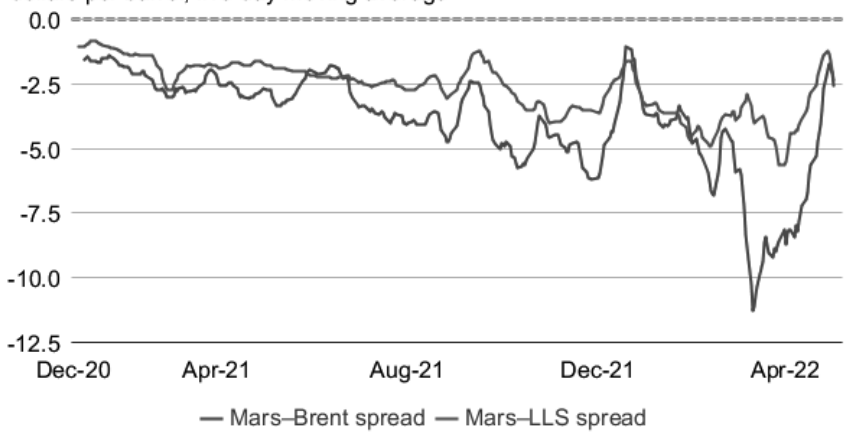
The spread decreased sharply during the onset of the COVID-19 pandemic in 2020 but has increased since mid-2020 and had risen above pre-COVID levels by the end 1Q21. Inflationary concerns can encourage market participants to invest in commodities and commodity-derived assets, such as crude oil or precious metals, which tend to increase in value in highly inflationary environments. As a result, higher inflationary expectations can contribute to increased demand for crude oil-backed contracts, which can contribute to higher commodity prices and associated securities. At the same time, higher energy prices can contribute to increased inflation and inflationary concerns, either directly–through increased consumer fuel prices–or indirectly–through higher transportation costs for finished goods. These interrelated effects tend to result in a high correlation between crude oil prices and the TIPS-Treasury spread.

The March TIPS-Treasury spread increased by 0.5 percentage points compared with the February monthly average, and like crude oil prices, the TIPS-Treasury spread decreased slightly in April, falling 0.1 percentage points from March to average 3.3%. The April average spread was 0.8 percentage points higher than the April 2021 level and still 0.4 percentage points higher than February 2022. Sustained higher crude oil prices as a result of market fundamentals discussed previously are likely to continue contributing to inflationary concerns. At the same time, the TIPS-Treasury spread and inflationary concerns can also result from other macroeconomic indicators as well as the prices of other staple commodities that comprise a significant share of the CPI.

Crude oil price differentials: In April, the differential between crude oil grades with high API gravity and low sulfur content (sweet) and those with medium API gravity and higher sulfur contents (sour) narrowed compared with March **(Figure 4)**. In the crude oil markets review in last month's STEO, we noted the widening of the spread between Houston-based Mars medium sour crude oil prices and the price of Brent and Light Louisiana Sweet (LLS) crude oil grades, despite the impact of sanctions on the availability of Russia's medium sour Urals grade crude oil.

Mars crude oil has an API gravity of 28 and a sulfur content of 1.93%, making it more comparable to Russia's Urals grade (API gravity of 30.6, sulfur content of 1.48%) than LLS (API gravity of 38.5, sulfur content of 0.39) or Brent (API gravity of 37.9, sulfur content of 0.45%). In April, both the Mars-Brent and Mars-LLS spreads have contracted sharply, suggesting that the effect of sanctions and self-sanctioning by many crude oil buyers has contributed to less availability of medium sour crude oil, contributing to higher prices for medium sour grades such as Mars relative to lighter grades such as Brent or LLS.

Figure 4. Mars crude oil price spreads



Source: Based on data from CME Group and Intercontinental Exchange, as compiled by Bloomberg L.P.
Note: LLS=Light Louisiana Sweet.

In April, the five-day moving average of the Mars-Brent spread narrowed by $3.87/b from April 1 to May 5, while the Mars-LLS spread narrowed by $1.17/b compared with April 1. Both spreads are still wider than they were around the same time last year; the Mars-Brent spread widened by $1.14/b and the Mars-LLS spread widened by $1.34/b compared with May 5, 2021. Although trade press reports indicate Russia's medium sour crude oil grades have been selling at a substantial discount to other benchmark grades because of sanctions and private company boycotts, the increasing shipping prices and associated insurance prices needed to take possession of Russia's crude oil are likely contributing to increased end-user prices for buyers still willing to purchase Russia's crude oil. These increased delivered prices may be mitigating the value of the wholesale discount that is captured by potential buyers. Given the narrowing of light-medium crude oil quality spreads in April, it is unlikely that discounts on Russia's crude oil are effectively pulling down medium sour crude oil prices globally, while higher prices associated with less availability of medium sour crude grades from outside of Russia—such as Mars—are now becoming apparent.

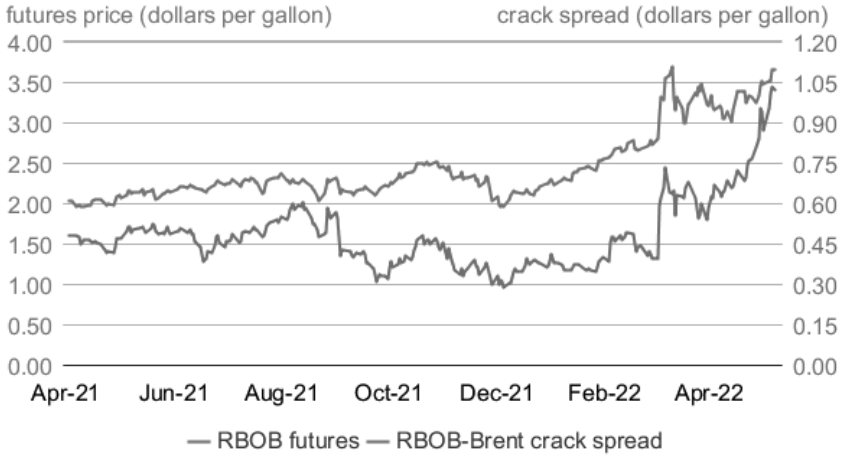
The narrowing Mars-Brent spread also reflects regional effects, primarily a narrowing spread between crude oils from Europe such as Brent with U.S.-based crude oils such as WTI, Mars, and LLS. Although the impact of sanctions on Russia initially manifested predominately in the Brent price—a global benchmark linked geographically to Europe—the call on global crude oil supplies

by European refiners has begun to affect other regional markets as global refiners make crude oil purchases and reroute ships. As a result, the difference between the Mars-LLS spread and the Mars-Brent spread, which incorporates this global dynamic, has decreased considerably. As of May 5, the difference between the Mars-Brent spread and the Mars-LLS spread decreased to $1.06/b, compared with a monthly average of $4.67/b in March.

Petroleum products

Gasoline prices: The front-month futures price of RBOB (the petroleum component of gasoline used in many parts of the country) settled at $3.66 per gallon (gal) on May 5, up 51 cents/gal from April 1 **(Figure 5)**. The RBOB–Brent crack spread (the difference between the price of RBOB and the price of Brent crude oil) settled at $1.02/gal on May 5, up 35 cents/gal during the same period. The RBOB–Brent crack spread increased by 11 cents/gal (13%) on April 27, the third-highest daily percentage increase in 2022 (March 1 marked the highest increase when the RBOB futures contract rolled to a new month reflecting more expensive summer grade gasoline).

Figure 5. Historical RBOB front-month futures prices and crack spreads



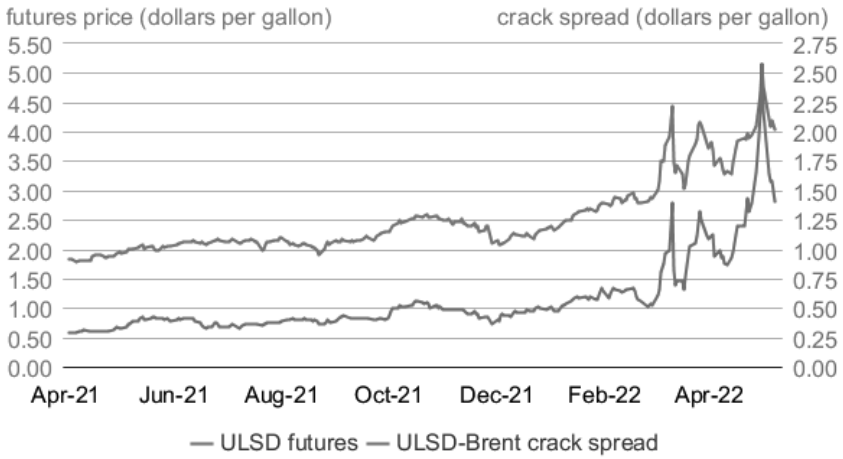
Source: Based on data from CME Group, as compiled by Bloomberg L.P.
Note: RBOB is the petroleum component of gasoline used in many parts of the country.

April's increasing RBOB–Brent crack spread was likely due to decreasing gasoline inventories. We estimate that U.S. gasoline inventories decreased from March to April by 8.2 million barrels (3.5%). One reason for this inventory decrease was increased driving. We estimate that gasoline consumption increased to 8.7 million barrels per day (b/d) in April, a 0.1 million b/d (1%) increase from March. Gasoline inventories have been particularly low on the East Coast where, according to our *Weekly Petroleum Status Report* (WPSR), inventories on April 22 were at their lowest levels since November 2014. The RBOB futures contract is for delivery in New York Harbor (NYH), and particularly low inventories in that region could be contributing to higher RBOB-Brent crack spreads. Gasoline inventories in the Northeast (PADD 1A and 1B) were 28 million barrels on April 22, according to WPSR data, the lowest level for April since 2011. Low inventories and high RBOB prices likely supported imports from international markets in late

April. Gasoline imports to the East Coast in the week ending April 29 were 812,000 b/d, the highest since the week ending October 1, 2021, according to WPSR data.

Ultra-low sulfur diesel prices: The front-month futures price for ultra-low sulfur diesel (ULSD) for delivery in New York Harbor settled at $4.04/gal on May 5, a 62 cents/gal increase from April 1 **(Figure 6)**. The ULSD-Brent crack spread (the difference between the price of ULSD and the price of Brent crude oil) increased by 46 cents/gal during the same period and settled at $1.40/gal on May 5. The ULSD-Brent average crack spread in April was the highest recorded in real terms in data going back to July 1988. The ULSD front-month futures average price in April was the highest in real terms since February 2013.

Figure 6. Historical ULSD front-month futures prices and crack spreads



Source: Based on data from CME Group, as compiled by Bloomberg L.P.
Note: ULSD=ultra-low sulfur diesel

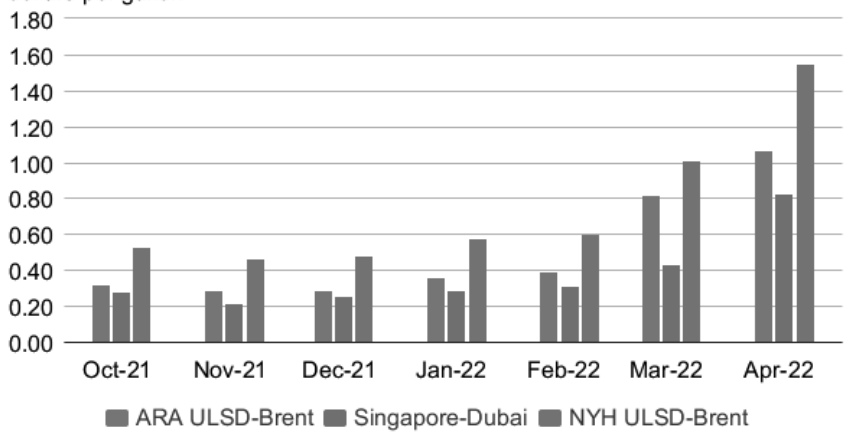
High global demand and low inventories continued to support higher distillate prices and crack spreads in April. Distillate exports from Russia have declined as a result of sanctions. This drop in global supply combined with refinery closures over the past few years has produced a tight U.S. distillate market. U.S. distillate stocks declined by 9.4 million barrels (8%) from March, falling to 24% below the five-year average. Increased trucking activity and increased distillate demand for oil and natural gas drilling could be contributing to higher domestic diesel demand and supporting ULSD prices. In addition, distillate exports are contributing to lower stock levels. Our estimate for April net distillate exports of 1.3 million b/d, if confirmed in monthly data, would be the highest amount of net distillate exports since September 2019.

Front-month ULSD prices increased significantly in the last week of April and may have been the result of reduced liquidity in the expiring May ULSD futures contract. Liquidity in financial markets refers to the ease of buyers and sellers to make trades at stable, transparent prices. During periods of low liquidity, market participants may need to bid at price levels higher or lower than during periods of ample liquidity to transact in the market. From April 25 to April 28, the May ULSD futures contract increased $1.04/gal (26%), and the June ULSD futures contract

increased 35 cents/gal (10%), suggesting low liquidity ahead of expiration may have added price volatility. This volatility was also evident when comparing the May ULSD futures price with Brent crude oil. ULSD futures prices usually follow movements in the underlying price of crude oil because it makes up the largest part of the overall cost to produce diesel fuel. However, between April 25 and April 28 when ULSD futures prices increased by 26%, Brent crude oil futures prices increased by just 5%.

International distillate crack spreads: Global spot distillate crack spreads at the major global trading hubs in Amsterdam, Rotterdam, and Antwerp (ARA); Singapore; and NYH increased substantially in April. The ARA ULSD-Brent crack spread averaged $1.07/gal, the Singapore-Dubai crack spread averaged 83 cents/gal, and the NYH ULSD-Brent crack spread averaged $1.55/gal **(Figure 7)**. On average, inventories in all three trading hubs have been more than 30% below the five-year average since the beginning of the year. However, crack spreads increased more at the Singapore and NYH trading hubs as new dynamics interacted with the already tight global distillate market. In Singapore, lower refinery runs in China as a result of mobility restrictions in response to increased COVID-19 cases as well as lower export quotas constrained regional petroleum trade, leading the crack spread to nearly double from 43 cents/gal in March. In NYH, increasing distillate exports in the U.S. Gulf Coast, fewer imports from Europe, and lower refining capacity in PADD 1 pushed the crack spread to reach its highest level on record. Meanwhile, concerns about replacing Russia's distillate exports to Europe continued to drive ARA crack spreads higher, rising by 25 cents/gal over March.

Figure 7. International ULSD crack spreads



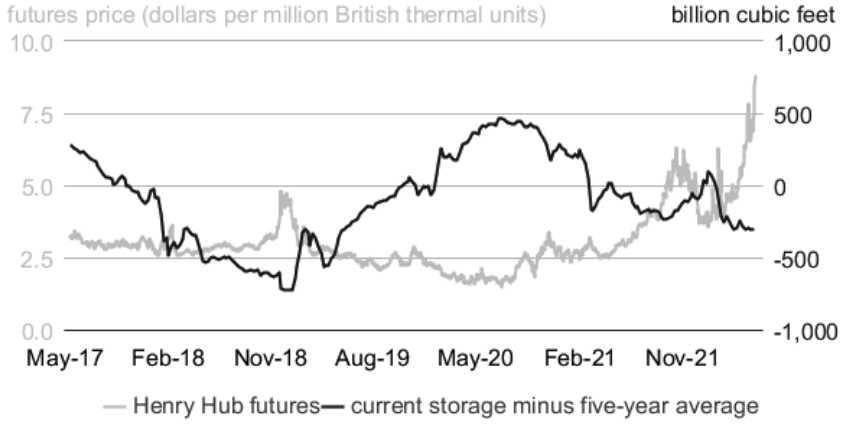
Source: Based on data from CME Group, as compiled by Bloomberg L.P.
Note: ARA=Amsterdam, Rotterdam, and Antwerp; ULSD=ultra-low sulfur diesel; NYH=New York Harbor

Natural gas

***Prices*:** On May 5, 2022, the front-month natural gas futures contract for delivery at the Henry Hub settled at $8.78 per million British thermal units (MMBtu), which was up $3.06/MMBtu

from April 1, 2022 **(Figure 8)**. The average closing price for front-month natural gas futures contracts in April was $6.70/MMBtu, the highest April monthly average in real terms since 2008.

Figure 8. U.S. natural gas front-month futures prices and current storage deviation from five-year average



eia Source: Based on data from CME Group, as compiled by Bloomberg L.P.

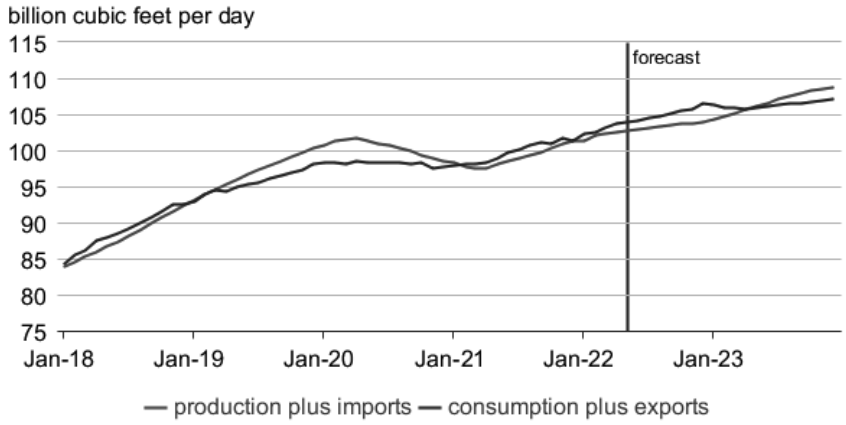
The average front-month natural gas futures price for the month of April increased $1.73/MMBtu from its monthly average in March. Several factors have contributed to the rapid increase in natural gas futures prices:

- Storage inventories below the five-year average
- Steady demand, driven by the high levels of U.S. liquefied natural gas (LNG) exports, a cooler-than-normal spring that contributed to higher levels of residential and commercial demand, and high demand in the electric power sector
- Lower-than-expected increases in dry natural gas production

April's natural gas stock builds were lower than the five-year (2017–2021) average by 33 billion cubic feet (Bcf). At the end of the month, natural gas inventories were at 1,597 Bcf, which is 320 Bcf (17%) below the five-year average. U.S. LNG exports reached a record-high level in March at just under 12.0 Bcf/d, and averaged 11.6 Bcf/d in the first quarter of 2022 (1Q22). We estimate LNG exports averaged 11.6 Bcf/d in April. High export levels are supported by high international LNG prices, as well by additional export capacity created by a new U.S. LNG export facility, Calcasieu Pass LNG, which exported its first LNG cargo on March 1 and continues to ramp up production. U.S. dry natural gas production reached 97.0 Bcf/d in December 2021 before declining to 94.1 Bcf/d in February, partially as a result of freeze-offs in key producing regions. Dry natural gas production has yet to return to its December level and averaged 95.5 Bcf/d in April, partly because of cost increases for key input materials as well as labor shortages that are limiting the ability of producers to use more rigs for increased production.

***Supply and demand balance*:** Comparing overall U.S. production and consumption balances is a helpful indicator in determining the trajectory of natural gas prices. When natural gas supply (production plus imports) is lower than natural gas demand (consumption plus exports), natural gas prices increase because more natural gas is pulled from storage to meet demand. Natural gas demand has exceeded supply since February 2021. We expect this trend to continue through 2022, and we expect the Henry Hub spot price will remain elevated, averaging $8.34/MMBtu from 2Q22 through 4Q22. Limited opportunities for natural gas-to-coal switching for power generation keep the use of natural gas for power generation high in our forecast despite high natural gas prices. This dynamic creates conditions for natural gas prices to rise significantly above forecast levels, particularly if summer temperatures are hotter than assumed in this forecast and lead to higher-than-expected levels of electricity demand. However, we forecast supply to begin outpacing demand by early 2023 as producers steadily increase production in response to higher natural gas prices as well as higher oil prices, and demand stays relatively constant given close to normal weather conditions forecast in 2023 **(Figure 9)**.

Figure 9. Natural gas production plus imports and consumption plus exports, 12-month moving average



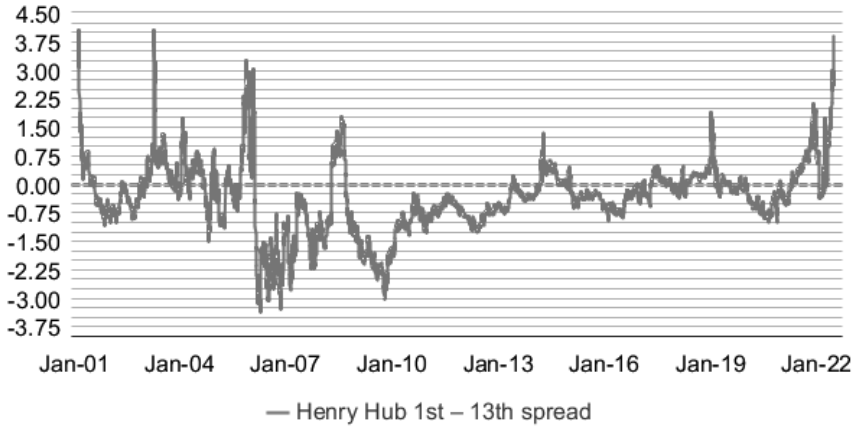
eia Source: U.S. Energy Information Administration

***Futures price spreads*:** The natural gas 1st–13th price spread averaged $2.36/MMBtu in April, the highest backwardation (where near-term contract prices are higher than longer-dated contract prices) since October 2005, when it averaged $2.50/MMBtu **(Figure 10)**. Often, the 1st–13th price spread increases when natural gas inventories are below the five-year range, and the price spread often decreases when inventories are above the five-year range. With inventories starting the injection season below the five-year average, high demand for natural gas is pushing prices up in the short term. The combination of low storage inventories to start the injection season, high demand for U.S. LNG exports, and lower-than-expected production levels are all contributing to near-term natural gas prices being much higher now compared with natural gas for delivery next year. We expect natural gas prices to remain high throughout the summer because opportunities for natural gas-to-coal switching for power generation are limited,

production increases will take several months to emerge, and continued high levels of LNG exports will contribute to high demand.

Figure 10. Natural gas 1st – 13th futures price spread

dollars per million British thermal units



eia Source: CME Group, as compiled by Bloomberg L.P.

Notable forecast changes

- Russia's liquid fuels production in the May STEO averages 10.0 million barrels per day (b/d) in 2022, which is 0.4 million b/d less than we forecast in the April STEO. Our forecast for Russia's production averages 9.1 million b/d in 2023, which is 0.6 million b/d less than we forecast in the April STEO. The updated forecast reflects a larger drop in production during April than we had expected, lowering the starting point for our forecast.

- We have reevaluated our modeling of electricity generation to better account for the current constraints on the deliveries of coal and inventories at coal-fired power plants. Coal-fired power plants have been running more selectively in recent months as a result of low coal inventory levels and reduced abilities to replenish those inventories because of mine closures, rail capacity constraints, and labor market tightness. Coal plants have been running at high levels during peak demand periods in the winter and summer, but scaling-back operations during the shoulder months to conserve coal supply. These changes contributed to a shift toward natural gas generation and away from coal compared with our forecast in the April STEO, despite higher natural gas prices in this forecast. We now forecast coal generation in 2022 will decline by 30 billion kilowatthours (kWh) (3%) compared with a forecast increase of 27 billion (3%) kWh in the last STEO. Conversely, forecast natural gas generation rises by 13 billion kWh (1%) in this STEO compared with a forecast decline of 66 billion kWh (5%) in last month's outlook.

- The Henry Hub spot price in our forecast averages $7.42 million British thermal units (MMBtu) in 2022, which is $2.19/MMBtu higher than our forecast in the April STEO. The higher forecast is mostly the result of updates to our power generation model to better account for coal market constraints.

- We expect natural gas inventories will end October at almost 3.4 trillion cubic feet, which is 9% below the five-year average, compared with our forecast of 4% below the five-year average in last month's STEO. The lower storage levels largely reflect higher expected power generation this summer compared with last month's forecast.

- U.S. coal production in our forecast totals 598 million short tons in 2022, up 3% from 2021. In last month's forecast, we expected coal production to rise 7% from 2021. The updated forecast reflects adjustments to our power generation model that resulted in lower coal demand than previously forecast.

- You can find more information in the detailed table of forecast changes.

This report was prepared by the U.S. Energy Information Administration (EIA), the statistical and analytical agency within the U.S. Department of Energy. By law, EIA's data, analyses, and forecasts are independent of approval by any other officer or employee of the U.S. Government. The views in this report therefore should not be construed as representing those of the U.S. Department of Energy or other federal agencies.

Table 3a. International Petroleum and Other Liquids Production, Consumption, and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - May 2022

	2021				2022				2023				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2021	2022	2023
Production (million barrels per day) (a)															
OECD	**30.08**	**30.74**	**31.06**	**32.20**	**31.58**	*32.32*	*32.75*	*33.52*	*33.88*	*34.05*	*34.20*	*34.78*	**31.02**	*32.55*	*34.23*
U.S. (50 States)	**17.62**	**19.05**	**18.94**	**19.87**	**19.33**	*20.02*	*20.47*	*20.95*	*21.11*	*21.34*	*21.60*	*22.00*	**18.88**	*20.20*	*21.52*
Canada	**5.62**	**5.37**	**5.49**	**5.68**	**5.69**	*5.66*	*5.74*	*5.85*	*5.92*	*5.88*	*5.90*	*5.91*	**5.54**	*5.74*	*5.90*
Mexico	**1.93**	**1.95**	**1.90**	**1.92**	**1.91**	*1.92*	*1.90*	*1.86*	*1.90*	*1.87*	*1.83*	*1.79*	**1.92**	*1.90*	*1.85*
Other OECD	**4.92**	**4.37**	**4.73**	**4.72**	**4.65**	*4.72*	*4.63*	*4.86*	*4.94*	*4.96*	*4.88*	*5.07*	**4.68**	*4.72*	*4.96*
Non-OECD	**62.53**	**63.95**	**65.58**	**66.08**	**67.25**	*66.95*	*67.70*	*67.46*	*67.13*	*67.50*	*67.67*	*67.16*	**64.55**	*67.34*	*67.37*
OPEC	**30.34**	**30.88**	**32.28**	**33.10**	**33.75**	*34.27*	*34.75*	*35.02*	*35.16*	*35.01*	*35.00*	*34.99*	**31.66**	*34.45*	*35.04*
Crude Oil Portion	**25.08**	**25.49**	**26.84**	**27.67**	**28.19**	*28.83*	*29.27*	*29.50*	*29.60*	*29.58*	*29.52*	*29.47*	**26.28**	*28.95*	*29.54*
Other Liquids (b)	**5.26**	**5.39**	**5.44**	**5.44**	**5.56**	*5.43*	*5.48*	*5.52*	*5.56*	*5.43*	*5.48*	*5.52*	**5.38**	*5.50*	*5.50*
Eurasia	**13.38**	**13.61**	**13.58**	**14.23**	**14.34**	*12.75*	*12.55*	*12.52*	*12.43*	*12.19*	*12.08*	*12.06*	**13.70**	*13.03*	*12.19*
China	**4.99**	**5.03**	**5.01**	**4.93**	**5.19**	*5.05*	*5.05*	*5.09*	*5.07*	*5.10*	*5.09*	*5.14*	**4.99**	*5.09*	*5.10*
Other Non-OECD	**13.82**	**14.42**	**14.70**	**13.82**	**13.97**	*14.88*	*15.35*	*14.83*	*14.47*	*15.20*	*15.49*	*14.97*	**14.19**	*14.76*	*15.04*
Total World Production	**92.62**	**94.68**	**96.63**	**98.28**	**98.83**	*99.27*	*100.45*	*100.98*	*101.01*	*101.55*	*101.87*	*101.94*	**95.57**	*99.89*	*101.60*
Non-OPEC Production	**62.27**	**63.81**	**64.35**	**65.17**	**65.08**	*65.00*	*65.70*	*65.96*	*65.85*	*66.54*	*66.87*	*66.95*	**63.91**	*65.44*	*66.56*
Consumption (million barrels per day) (c)															
OECD	**42.45**	**44.08**	**45.82**	**46.80**	**45.64**	*45.23*	*46.22*	*46.61*	*46.13*	*45.73*	*46.52*	*46.81*	**44.80**	*45.93*	*46.30*
U.S. (50 States)	**18.45**	**20.03**	**20.21**	**20.41**	**20.03**	*20.30*	*20.74*	*20.94*	*20.28*	*20.76*	*21.00*	*21.08*	**19.78**	*20.51*	*20.78*
U.S. Territories	**0.21**	**0.19**	**0.19**	**0.20**	**0.22**	*0.20*	*0.20*	*0.21*	*0.22*	*0.20*	*0.21*	*0.22*	**0.20**	*0.21*	*0.21*
Canada	**2.26**	**2.24**	**2.50**	**2.40**	**2.36**	*2.38*	*2.51*	*2.48*	*2.47*	*2.41*	*2.52*	*2.49*	**2.35**	*2.43*	*2.47*
Europe	**11.91**	**12.62**	**13.83**	**13.88**	**13.02**	*13.22*	*13.55*	*13.26*	*13.16*	*13.18*	*13.58*	*13.34*	**13.07**	*13.26*	*13.32*
Japan	**3.73**	**3.08**	**3.18**	**3.67**	**3.83**	*3.13*	*3.19*	*3.52*	*3.80*	*3.13*	*3.16*	*3.47*	**3.42**	*3.41*	*3.39*
Other OECD	**5.89**	**5.92**	**5.90**	**6.23**	**6.18**	*6.00*	*6.03*	*6.19*	*6.20*	*6.04*	*6.06*	*6.21*	**5.99**	*6.10*	*6.13*
Non-OECD	**51.83**	**52.25**	**52.58**	**53.69**	**53.09**	*53.37*	*53.96*	*54.28*	*55.35*	*55.58*	*55.21*	*54.87*	**52.59**	*53.68*	*55.25*
Eurasia	**4.66**	**4.73**	**5.09**	**4.95**	**4.44**	*4.30*	*4.67*	*4.60*	*4.29*	*4.44*	*4.75*	*4.67*	**4.86**	*4.50*	*4.54*
Europe	**0.74**	**0.74**	**0.74**	**0.76**	**0.75**	*0.75*	*0.76*	*0.76*	*0.75*	*0.77*	*0.77*	*0.77*	**0.75**	*0.75*	*0.77*
China	**15.27**	**15.48**	**14.99**	**15.33**	**15.34**	*15.46*	*15.56*	*15.88*	*16.47*	*16.37*	*15.73*	*15.65*	**15.27**	*15.56*	*16.05*
Other Asia	**13.43**	**12.98**	**12.84**	**13.69**	**13.83**	*13.90*	*13.52*	*13.94*	*14.57*	*14.55*	*13.96*	*14.26*	**13.23**	*13.80*	*14.33*
Other Non-OECD	**17.73**	**18.32**	**18.92**	**18.96**	**18.73**	*18.97*	*19.46*	*19.09*	*19.26*	*19.46*	*19.99*	*19.52*	**18.49**	*19.06*	*19.56*
Total World Consumption	**94.28**	**96.33**	**98.40**	**100.48**	**98.73**	*98.60*	*100.18*	*100.88*	*101.47*	*101.31*	*101.73*	*101.68*	**97.39**	*99.61*	*101.55*
Total Crude Oil and Other Liquids Inventory Net Withdrawals (million barrels per day)															
U.S. (50 States)	**0.47**	**0.51**	**0.37**	**0.77**	**0.82**	*0.38*	*0.73*	*0.69*	*-0.11*	*-0.33*	*-0.07*	*0.43*	**0.53**	*0.66*	*-0.02*
Other OECD	**0.87**	**0.16**	**0.96**	**0.69**	**-0.32**	*-0.34*	*-0.32*	*-0.26*	*0.18*	*0.03*	*-0.02*	*-0.22*	**0.67**	*-0.31*	*-0.01*
Other Stock Draws and Balance	**0.33**	**0.98**	**0.44**	**0.75**	**-0.60**	*-0.71*	*-0.68*	*-0.54*	*0.39*	*0.06*	*-0.05*	*-0.47*	**0.62**	*-0.63*	*-0.02*
Total Stock Draw	**1.66**	**1.65**	**1.77**	**2.21**	**-0.10**	*-0.67*	*-0.27*	*-0.10*	*0.47*	*-0.24*	*-0.14*	*-0.27*	**1.82**	*-0.28*	*-0.05*
End-of-period Commercial Crude Oil and Other Liquids Inventories (million barrels)															
U.S. Commercial Inventory	**1,302**	**1,271**	**1,241**	**1,194**	**1,149**	*1,194*	*1,216*	*1,190*	*1,204*	*1,241*	*1,250*	*1,221*	**1,194**	*1,190*	*1,221*
OECD Commercial Inventory	**2,908**	**2,864**	**2,745**	**2,634**	**2,619**	*2,694*	*2,746*	*2,744*	*2,740*	*2,776*	*2,787*	*2,778*	**2,634**	*2,744*	*2,778*

(a) Supply includes production of crude oil (including lease condensates), natural gas plant liquids, biofuels, other liquids, and refinery processing gains.

(b) Includes lease condensate, natural gas plant liquids, other liquids, and refinery processing gain. Includes other unaccounted-for liquids.

(c) Consumption of petroleum by the OECD countries is synonymous with "petroleum product supplied," defined in the glossary of the EIA *Petroleum Supply Monthly* , DOE/EIA-0109. Consumption of petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.

- = no data available

OECD = Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom, the United States.

OPEC = Organization of the Petroleum Exporting Countries: Algeria, Angola, Congo (Brazzaville), Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, the United Arab Emirates, Venezuela.

Notes: EIA completed modeling and analysis for this report on May 5, 2022.

The approximate break between historical and forecast values is shown with historical data printed in bold; estimates and forecasts in italics.

Historical data: Latest data available from Energy Information Administration international energy statistics.

Minor discrepancies with published historical data are due to independent rounding.

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 4a. U.S. Petroleum and Other Liquids Supply, Consumption, and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - May 2022

	2021				2022				2023				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2021	2022	2023
Supply (million barrels per day)															
Crude Oil Supply															
Domestic Production (a)	**10.69**	**11.28**	**11.13**	**11.63**	**11.42**	*11.78*	*12.07*	*12.35*	*12.56*	*12.71*	*12.94*	*13.18*	**11.19**	*11.91*	*12.85*
Alaska	**0.46**	**0.44**	**0.41**	**0.44**	**0.45**	*0.38*	*0.40*	*0.42*	*0.44*	*0.39*	*0.41*	*0.45*	**0.44**	*0.41*	*0.42*
Federal Gulf of Mexico (b)	**1.80**	**1.79**	**1.49**	**1.73**	**1.69**	*1.79*	*1.74*	*1.77*	*1.84*	*1.82*	*1.74*	*1.73*	**1.70**	*1.75*	*1.78*
Lower 48 States (excl GOM)	**8.44**	**9.05**	**9.24**	**9.46**	**9.29**	*9.61*	*9.94*	*10.16*	*10.29*	*10.51*	*10.78*	*11.00*	**9.05**	*9.75*	*10.65*
Crude Oil Net Imports (c)	**2.87**	**2.96**	**3.60**	**3.09**	**2.99**	*3.12*	*3.00*	*3.06*	*2.72*	*3.24*	*2.93*	*2.47*	**3.13**	*3.04*	*2.84*
SPR Net Withdrawals	**0.00**	**0.18**	**0.04**	**0.26**	**0.32**	*0.88*	*0.98*	*0.41*	*0.04*	*0.09*	*0.03*	*0.11*	**0.12**	*0.65*	*0.07*
Commercial Inventory Net Withdrawals	**-0.18**	**0.59**	**0.30**	**-0.01**	**0.10**	*0.11*	*0.21*	*-0.07*	*-0.47*	*0.12*	*0.23*	*-0.05*	**0.18**	*0.09*	*-0.04*
Crude Oil Adjustment (d)	**0.42**	**0.63**	**0.54**	**0.54**	**0.70**	*0.48*	*0.23*	*0.16*	*0.22*	*0.22*	*0.23*	*0.16*	**0.53**	*0.39*	*0.21*
Total Crude Oil Input to Refineries	**13.81**	**15.65**	**15.60**	**15.51**	**15.54**	*16.37*	*16.49*	*15.91*	*15.07*	*16.37*	*16.34*	*15.87*	**15.15**	*16.08*	*15.92*
Other Supply															
Refinery Processing Gain	**0.84**	**0.97**	**0.97**	**1.04**	**0.98**	*1.08*	*1.06*	*1.06*	*1.03*	*0.98*	*0.99*	*1.01*	**0.95**	*1.04*	*1.00*
Natural Gas Plant Liquids Production	**4.86**	**5.46**	**5.52**	**5.74**	**5.52**	*5.76*	*5.94*	*6.10*	*6.15*	*6.23*	*6.26*	*6.35*	**5.40**	*5.83*	*6.25*
Renewables and Oxygenate Production (e)	**1.03**	**1.13**	**1.10**	**1.24**	**1.19**	*1.17*	*1.18*	*1.21*	*1.16*	*1.20*	*1.19*	*1.25*	**1.12**	*1.19*	*1.20*
Fuel Ethanol Production	**0.90**	**0.99**	**0.96**	**1.06**	**1.03**	*0.98*	*1.00*	*1.01*	*0.97*	*0.99*	*0.99*	*1.02*	**0.98**	*1.01*	*0.99*
Petroleum Products Adjustment (f)	**0.19**	**0.22**	**0.22**	**0.23**	**0.21**	*0.22*	*0.22*	*0.22*	*0.21*	*0.22*	*0.22*	*0.22*	**0.22**	*0.22*	*0.21*
Product Net Imports (c)	**-2.94**	**-3.13**	**-3.24**	**-3.86**	**-3.87**	*-3.69*	*-3.69*	*-3.92*	*-3.66*	*-3.71*	*-3.68*	*-3.98*	**-3.29**	*-3.79*	*-3.76*
Hydrocarbon Gas Liquids	**-2.02**	**-2.23**	**-2.16**	**-2.19**	**-2.09**	*-2.16*	*-2.26*	*-2.40*	*-2.51*	*-2.54*	*-2.62*	*-2.63*	**-2.15**	*-2.23*	*-2.57*
Unfinished Oils	**0.14**	**0.25**	**0.22**	**0.08**	**0.13**	*0.34*	*0.36*	*0.21*	*0.19*	*0.22*	*0.36*	*0.22*	**0.17**	*0.26*	*0.24*
Other HC/Oxygenates	**-0.08**	**-0.04**	**-0.03**	**-0.06**	**-0.08**	*-0.02*	*-0.04*	*-0.02*	*-0.03*	*-0.02*	*-0.02*	*-0.01*	**-0.05**	*-0.04*	*-0.02*
Motor Gasoline Blend Comp.	**0.55**	**0.79**	**0.66**	**0.40**	**0.33**	*0.79*	*0.43*	*0.21*	*0.38*	*0.58*	*0.39*	*0.41*	**0.60**	*0.44*	*0.44*
Finished Motor Gasoline	**-0.66**	**-0.66**	**-0.68**	**-0.85**	**-0.81**	*-0.77*	*-0.67*	*-0.52*	*-0.63*	*-0.52*	*-0.44*	*-0.68*	**-0.71**	*-0.69*	*-0.57*
Jet Fuel	**0.03**	**0.09**	**0.09**	**0.00**	**-0.05**	*-0.09*	*-0.01*	*-0.04*	*-0.03*	*0.04*	*0.08*	*0.05*	**0.05**	*-0.05*	*0.04*
Distillate Fuel Oil	**-0.49**	**-0.90**	**-0.94**	**-0.89**	**-0.88**	*-1.25*	*-1.03*	*-0.94*	*-0.63*	*-1.02*	*-0.96*	*-0.94*	**-0.80**	*-1.03*	*-0.89*
Residual Fuel Oil	**0.08**	**0.05**	**0.08**	**0.16**	**0.13**	*0.11*	*0.03*	*0.09*	*-0.01*	*0.02*	*-0.01*	*0.08*	**0.09**	*0.09*	*0.02*
Other Oils (g)	**-0.49**	**-0.49**	**-0.50**	**-0.50**	**-0.55**	*-0.63*	*-0.50*	*-0.51*	*-0.39*	*-0.47*	*-0.45*	*-0.48*	**-0.49**	*-0.55*	*-0.45*
Product Inventory Net Withdrawals	**0.65**	**-0.26**	**0.03**	**0.52**	**0.40**	*-0.60*	*-0.46*	*0.35*	*0.32*	*-0.53*	*-0.32*	*0.37*	**0.23**	*-0.08*	*-0.04*
Total Supply	**18.43**	**20.03**	**20.21**	**20.41**	**19.98**	*20.30*	*20.74*	*20.94*	*20.28*	*20.76*	*21.00*	*21.08*	**19.78**	*20.49*	*20.78*
Consumption (million barrels per day)															
Hydrocarbon Gas Liquids	**3.40**	**3.33**	**3.31**	**3.60**	**3.91**	*3.37*	*3.44*	*3.88*	*3.93*	*3.50*	*3.47*	*3.83*	**3.41**	*3.65*	*3.68*
Other HC/Oxygenates	**0.11**	**0.13**	**0.11**	**0.16**	**0.14**	*0.18*	*0.17*	*0.22*	*0.21*	*0.21*	*0.19*	*0.25*	**0.13**	*0.18*	*0.21*
Unfinished Oils	**0.05**	**0.03**	**-0.05**	**-0.01**	**0.08**	*0.00*	*0.00*	*0.00*	*0.00*	*-0.03*	*-0.01*	*0.01*	**0.00**	*0.02*	*-0.01*
Motor Gasoline	**8.00**	**9.07**	**9.13**	**8.96**	**8.38**	*9.04*	*9.20*	*9.01*	*8.47*	*9.12*	*9.21*	*9.02*	**8.80**	*8.91*	*8.95*
Fuel Ethanol blended into Motor Gasoline	**0.82**	**0.93**	**0.94**	**0.95**	**0.88**	*0.94*	*0.93*	*0.93*	*0.86*	*0.94*	*0.94*	*0.94*	**0.91**	*0.92*	*0.92*
Jet Fuel	**1.13**	**1.34**	**1.52**	**1.49**	**1.44**	*1.53*	*1.58*	*1.57*	*1.49*	*1.63*	*1.68*	*1.64*	**1.37**	*1.53*	*1.61*
Distillate Fuel Oil	**3.97**	**3.93**	**3.87**	**4.00**	**4.08**	*3.85*	*3.91*	*4.06*	*4.14*	*4.04*	*4.01*	*4.10*	**3.94**	*3.97*	*4.07*
Residual Fuel Oil	**0.26**	**0.25**	**0.33**	**0.41**	**0.33**	*0.31*	*0.30*	*0.30*	*0.25*	*0.26*	*0.27*	*0.29*	**0.31**	*0.31*	*0.27*
Other Oils (g)	**1.53**	**1.95**	**1.98**	**1.81**	**1.67**	*2.03*	*2.14*	*1.90*	*1.79*	*2.06*	*2.18*	*1.94*	**1.82**	*1.94*	*1.99*
Total Consumption	**18.45**	**20.03**	**20.21**	**20.41**	**20.03**	*20.30*	*20.74*	*20.94*	*20.28*	*20.76*	*21.00*	*21.08*	**19.78**	*20.51*	*20.78*
Total Petroleum and Other Liquids Net Imports	**-0.07**	**-0.16**	**0.35**	**-0.77**	**-0.88**	*-0.57*	*-0.69*	*-0.86*	*-0.94*	*-0.46*	*-0.76*	*-1.52*	**-0.16**	*-0.75*	*-0.92*
End-of-period Inventories (million barrels)															
Commercial Inventory															
Crude Oil (excluding SPR)	**501.9**	**448.0**	**420.4**	**421.4**	**412.4**	*402.4*	*383.1*	*389.4*	*432.0*	*421.2*	*400.3*	*405.0*	**421.4**	*389.4*	*405.0*
Hydrocarbon Gas Liquids	**168.6**	**195.8**	**225.6**	**188.4**	**138.1**	*192.5*	*238.3*	*193.6*	*156.9*	*206.7*	*245.8*	*204.2*	**188.4**	*193.6*	*204.2*
Unfinished Oils	**93.3**	**93.0**	**90.2**	**80.3**	**87.8**	*88.7*	*89.4*	*82.9*	*92.3*	*89.8*	*89.4*	*82.5*	**80.3**	*82.9*	*82.5*
Other HC/Oxygenates	**29.1**	**27.5**	**25.4**	**28.6**	**33.4**	*30.6*	*30.3*	*30.6*	*32.7*	*31.4*	*31.2*	*31.4*	**28.6**	*30.6*	*31.4*
Total Motor Gasoline	**237.6**	**237.2**	**227.0**	**232.2**	**236.8**	*242.4*	*233.1*	*249.0*	*247.7*	*245.5*	*237.9*	*250.4*	**232.2**	*249.0*	*250.4*
Finished Motor Gasoline	**20.3**	**18.6**	**18.5**	**17.7**	**16.5**	*21.8*	*23.7*	*27.0*	*23.5*	*24.3*	*25.4*	*27.9*	**17.7**	*27.0*	*27.9*
Motor Gasoline Blend Comp.	**217.4**	**218.6**	**208.5**	**214.5**	**220.3**	*220.5*	*209.4*	*222.0*	*224.2*	*221.2*	*212.5*	*222.5*	**214.5**	*222.0*	*222.5*
Jet Fuel	**39.0**	**44.7**	**42.0**	**35.8**	**35.4**	*37.0*	*40.2*	*37.5*	*37.4*	*38.5*	*41.1*	*38.1*	**35.8**	*37.5*	*38.1*
Distillate Fuel Oil	**145.5**	**140.1**	**131.7**	**129.9**	**114.3**	*110.0*	*122.2*	*124.5*	*113.2*	*118.2*	*125.1*	*127.1*	**129.9**	*124.5*	*127.1*
Residual Fuel Oil	**30.9**	**31.1**	**28.0**	**25.4**	**28.8**	*30.4*	*29.4*	*30.9*	*30.5*	*31.3*	*29.9*	*31.4*	**25.4**	*30.9*	*31.4*
Other Oils (g)	**55.8**	**54.1**	**50.5**	**51.8**	**62.0**	*59.7*	*50.4*	*51.8*	*61.0*	*58.8*	*49.6*	*50.9*	**51.8**	*51.8*	*50.9*
Total Commercial Inventory	**1301.7**	**1271.5**	**1240.7**	**1193.8**	**1148.9**	*1193.7*	*1216.4*	*1190.2*	*1203.7*	*1241.4*	*1250.2*	*1220.9*	**1193.8**	*1190.2*	*1220.9*
Crude Oil in SPR	**637.8**	**621.3**	**617.8**	**593.7**	**564.6**	*484.9*	*394.9*	*357.1*	*353.3*	*345.5*	*342.9*	*332.4*	**593.7**	*357.1*	*332.4*

(a) Includes lease condensate.

(b) Crude oil production from U.S. Federal leases in the Gulf of Mexico (GOM).

(c) Net imports equals gross imports minus gross exports.

(d) Crude oil adjustment balances supply and consumption and was previously referred to as "Unaccounted for Crude Oil."

(e) Renewables and oxygenate production includes pentanes plus, oxygenates (excluding fuel ethanol), and renewable fuels. Beginning in January 2021, renewable fuels includes biodiesel, renewable diesel, renewable jet fuel, renewable heating oil, renewable naphtha and gasoline, and other renewable fuels. For December 2020 and prior, renewable fuels includes only biodiesel.

(f) Petroleum products adjustment includes hydrogen/oxygenates/renewables/other hydrocarbons, motor gasoline blend components, and finished motor gasoline.

(g) "Other Oils" includes aviation gasoline blend components, finished aviation gasoline, kerosene, petrochemical feedstocks, special naphthas, lubricants, waxes, petroleum coke, asphalt and road oil, still gas, and miscellaneous products.

- = no data available

SPR: Strategic Petroleum Reserve

HC: Hydrocarbons

Notes: EIA completed modeling and analysis for this report on May 5, 2022.

The approximate break between historical and forecast values is shown with historical data printed in bold; estimates and forecasts in italics.

Historical data: Latest data available from Energy Information Administration databases supporting the following reports: *Petroleum Supply Monthly* , DOE/EIA-0109; *Petroleum Supply Annual* , DOE/EIA-0340/2; and *Weekly Petroleum Status Report* , DOE/EIA-0208.

Minor discrepancies with published historical data are due to independent rounding.

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 5a. U.S. Natural Gas Supply, Consumption, and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - May 2022

	2021				2022				2023				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2021	2022	2023
Supply (billion cubic feet per day)															
Total Marketed Production	**97.65**	**101.12**	**101.89**	**104.86**	**102.63**	*103.90*	*105.37*	*107.50*	*108.85*	*110.24*	*111.18*	*111.37*	**101.40**	*104.87*	*110.42*
Alaska	**1.02**	**0.95**	**0.90**	**1.02**	**1.03**	*0.78*	*0.73*	*0.87*	*0.93*	*0.78*	*0.74*	*0.89*	**0.97**	*0.85*	*0.84*
Federal GOM (a)	**2.26**	**2.25**	**1.82**	**2.11**	**2.16**	*2.30*	*2.17*	*2.16*	*2.18*	*2.11*	*1.99*	*1.93*	**2.11**	*2.19*	*2.05*
Lower 48 States (excl GOM)	**94.37**	**97.92**	**99.17**	**101.73**	**99.44**	*100.82*	*102.47*	*104.48*	*105.75*	*107.35*	*108.45*	*108.54*	**98.32**	*101.82*	*107.53*
Total Dry Gas Production	**90.59**	**93.15**	**93.86**	**96.53**	**94.66**	*95.82*	*97.17*	*99.14*	*100.25*	*101.55*	*102.42*	*102.59*	**93.55**	*96.71*	*101.71*
LNG Gross Imports	**0.15**	**0.02**	**0.03**	**0.04**	**0.17**	*0.18*	*0.18*	*0.20*	*0.32*	*0.18*	*0.18*	*0.20*	**0.06**	*0.18*	*0.22*
LNG Gross Exports	**9.27**	**9.81**	**9.60**	**10.32**	**11.57**	*11.86*	*11.74*	*12.78*	*13.08*	*12.51*	*12.19*	*12.78*	**9.76**	*11.99*	*12.63*
Pipeline Gross Imports	**8.68**	**6.81**	**7.24**	**7.82**	**8.59**	*6.62*	*6.40*	*6.71*	*7.77*	*6.47*	*6.32*	*6.50*	**7.63**	*7.07*	*6.76*
Pipeline Gross Exports	**8.31**	**8.66**	**8.50**	**8.40**	**8.23**	*8.02*	*9.05*	*9.11*	*9.07*	*9.00*	*9.32*	*9.23*	**8.47**	*8.61*	*9.15*
Supplemental Gaseous Fuels	**0.17**	**0.15**	**0.15**	**0.17**	**0.18**	*0.17*	*0.17*	*0.17*	*0.17*	*0.18*	*0.18*	*0.18*	**0.16**	*0.17*	*0.18*
Net Inventory Withdrawals	**17.18**	**-9.12**	**-7.87**	**1.03**	**20.07**	*-9.72*	*-7.84*	*2.31*	*13.58*	*-12.48*	*-8.38*	*3.13*	**0.24**	*1.13*	*-1.09*
Total Supply	**99.18**	**72.53**	**75.31**	**86.87**	**103.87**	*73.18*	*75.30*	*86.64*	*99.95*	*74.39*	*79.21*	*90.59*	**83.42**	*84.68*	*85.99*
Balancing Item (b)	**0.26**	**-0.58**	**-0.21**	**-1.25**	**0.74**	*1.24*	*0.94*	*1.30*	*0.53*	*-1.32*	*-1.59*	*-0.44*	**-0.45**	*1.06*	*-0.71*
Total Primary Supply	**99.44**	**71.95**	**75.10**	**85.62**	**104.61**	*74.42*	*76.24*	*87.95*	*100.48*	*73.07*	*77.62*	*90.15*	**82.97**	*85.73*	*85.28*
Consumption (billion cubic feet per day)															
Residential	**25.67**	**7.50**	**3.62**	**14.43**	**25.92**	*8.45*	*3.99*	*16.61*	*24.70*	*8.18*	*4.06*	*16.50*	**12.75**	*13.69*	*13.31*
Commercial	**14.87**	**6.23**	**4.68**	**10.08**	**15.63**	*6.84*	*4.96*	*10.52*	*14.90*	*6.71*	*4.98*	*10.53*	**8.94**	*9.46*	*9.25*
Industrial	**23.81**	**21.46**	**21.14**	**23.44**	**25.21**	*22.02*	*20.99*	*23.22*	*23.49*	*21.35*	*21.90*	*25.05*	**22.46**	*22.85*	*22.95*
Electric Power (c)	**26.79**	**29.20**	**37.94**	**29.47**	**29.15**	*29.36*	*38.41*	*29.21*	*28.52*	*28.82*	*38.47*	*29.43*	**30.88**	*31.55*	*31.33*
Lease and Plant Fuel	**4.87**	**5.04**	**5.08**	**5.23**	**5.12**	*5.18*	*5.25*	*5.36*	*5.43*	*5.50*	*5.54*	*5.55*	**5.05**	*5.23*	*5.50*
Pipeline and Distribution Use	**3.29**	**2.38**	**2.48**	**2.83**	**3.45**	*2.43*	*2.48*	*2.89*	*3.31*	*2.37*	*2.52*	*2.95*	**2.74**	*2.81*	*2.79*
Vehicle Use	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	**0.15**	*0.15*	*0.15*
Total Consumption	**99.44**	**71.95**	**75.10**	**85.62**	**104.61**	*74.42*	*76.24*	*87.95*	*100.48*	*73.07*	*77.62*	*90.15*	**82.97**	*85.73*	*85.28*
End-of-period Inventories (billion cubic feet)															
Working Gas Inventory	**1,801**	**2,585**	**3,306**	**3,210**	**1,407**	*2,291*	*3,012*	*2,800*	*1,578*	*2,714*	*3,485*	*3,197*	**3,210**	*2,800*	*3,197*
East Region (d)	**313**	**515**	**804**	**766**	**245**	*459*	*738*	*644*	*280*	*612*	*888*	*774*	**766**	*644*	*774*
Midwest Region (d)	**395**	**630**	**966**	**887**	**299**	*528*	*856*	*772*	*343*	*650*	*981*	*860*	**887**	*772*	*860*
South Central Region (d)	**760**	**993**	**1,053**	**1,143**	**588**	*881*	*926*	*941*	*672*	*1,019*	*1,083*	*1,081*	**1,143**	*941*	*1,081*
Mountain Region (d)	**113**	**175**	**205**	**171**	**91**	*138*	*189*	*174*	*105*	*147*	*210*	*189*	**171**	*174*	*189*
Pacific Region (d)	**197**	**246**	**248**	**218**	**164**	*266*	*283*	*249*	*158*	*266*	*304*	*272*	**218**	*249*	*272*
Alaska	**23**	**27**	**30**	**25**	**20**	*20*	*20*	*20*	*20*	*20*	*20*	*20*	**25**	*20*	*20*

(a) Marketed production from U.S. Federal leases in the Gulf of Mexico.

(b) The balancing item represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas demand.

(c) Natural gas used for electricity generation and (a limited amount of) useful thermal output by electric utilities and independent power producers.

(d) For a list of States in each inventory region refer to *Weekly Natural Gas Storage Report, Notes and Definitions (http://ir.eia.gov/ngs/notes.html)* .

- = no data available

LNG: liquefied natural gas.

Notes: EIA completed modeling and analysis for this report on May 5, 2022.

The approximate break between historical and forecast values is shown with historical data printed in bold; estimates and forecasts in italics.

Historical data: Latest data available from Energy Information Administration databases supporting the following reports: *Natural Gas Monthly* , DOE/EIA-0130; and *Electric Power Monthly* , Minor discrepancies with published historical data are due to independent rounding.

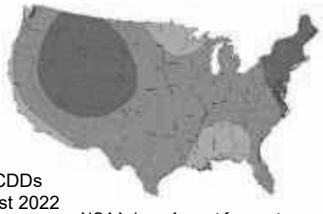
Forecasts: EIA Short-Term Integrated Forecasting System.

Demand: Summer Cooling Season Weather (April-October)

Last Summer | 2021 ACTUAL	This Summer | 2022 FORECAST
ACTUAL: 1,372 Cooling degree days *Same as the 10-year average*	**FORECAST:** 1,299 Cooling degree days 5% *cooler* than 2021 cooling season 5% *cooler* than 10-year average

1,372 CDDs
Actual 2021

1,299 CDDs
Forecast 2022



NOAA June-August forecast

Summer-to-summer pressure on natural gas prices

Data Source: National Oceanic and Atmospheric Administration, Energy Ventures Analysis.

5

Demand: Customer Demand

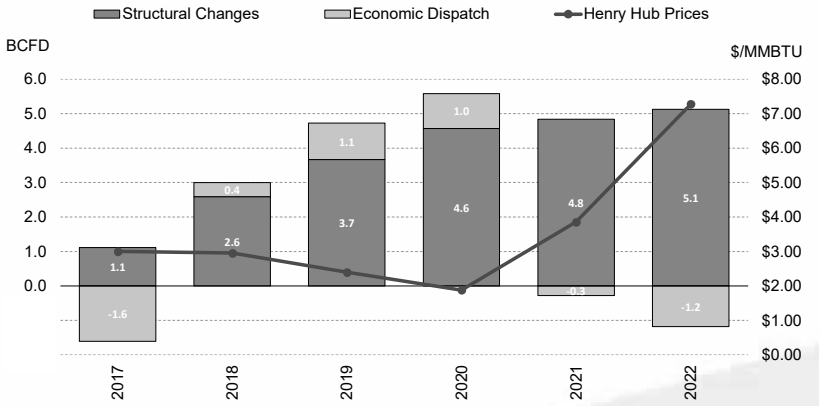
Summer Season Period-to-period change	Last Summer 2021 ACTUAL	This Summer 2022 FORECAST	PREVIOUS 3-YEAR SUMMER AVERAGE
Domestic Demand			
▪ Power burn	33.0 Bcf/d	32.4 Bcf/d	33.4 Bcf/d
▪ Industrial	21.3 Bcf/d	22.0 Bcf/d	21.3 Bcf/d
▪ Residential/Commercial	11.2 Bcf/d	11.2 Bcf/d	11.4 Bcf/d
Subtotal	*65.5 Bcf/d*	*65.6 Bcf/d*	*66.1 Bcf/d*
Exports			
▪ Pipeline exports - Mexico	6.2 Bcf/d	6.7 Bcf/d	5.7 Bcf/d
▪ LNG exports	10.7 Bcf/d	12.7 Bcf/d	7.3 Bcf/d
Subtotal	*16.9 Bcf/d*	*19.4 Bcf/d*	*13.0 Bcf/d*
Total Natural Gas Demand*	**89.0 Bcf/d**	**91.7 Bcf/d**	**84.6 Bcf/d**
Growth sector		Exports Industrial	
Summer-to-summer pressure on natural gas prices			+ 3%

**Total Natural Gas Demand* includes "Lease, Plant and Pipeline Fuel"*
Data Source: Energy Ventures Analysis.

6

Power Burn Growth: Structural Growth vs. Economic Switching

Power Burn Increase
Summer Structural Growth vs. Economic Switching 2017-2022
(compared to baseline of summer 2015)



Data Source: Energy Ventures Analysis
Note: 2022 summer prices are NYMEX settlements as of 4/14/2022

7

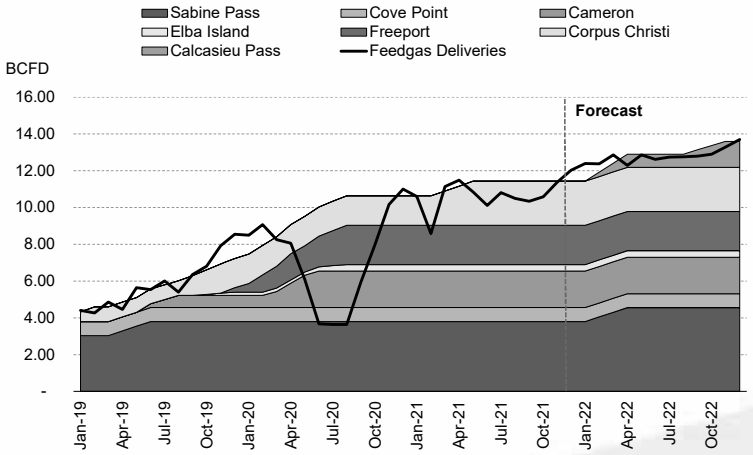
Focus: Industrial Demand Peak Growth Phase

Data Source: Energy Ventures Analysis, September 2021
Photo Courtesy: Chevron U.S.A. Inc., 2017 (Pascagoula)

8

U.S. LNG Exports: Steady Growth Expected to Continue

U.S. LNG Export Capacity vs. Feedgas Deliveries



Data Source: Energy Ventures Analysis, EIA

9

Supply: Summer Production and Imports

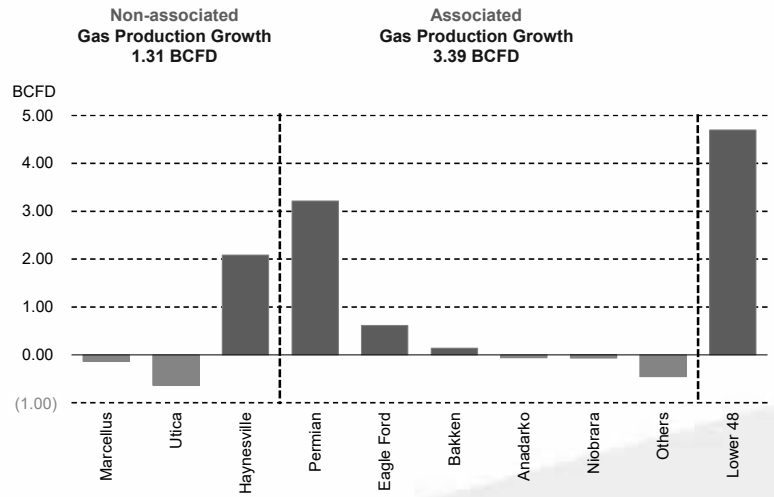
Summer Season Period-to-period change	Last Summer 2021 ACTUAL	This Summer 2022 FORECAST	3-YEAR SUMMER AVERAGE
Summer average production (Lower 48)	92.9 Bcf/d	96.6 Bcf/d	91.3 Bcf/d
Canadian imports (net)	4.8 Bcf/d	4.8 Bcf/d	4.4 Bcf/d
LNG imports	0.0 Bcf/d	0.1 Bcf/d	0.1 Bcf/d
Summer-to-summer pressure on natural gas prices		⌄	

Data Source: Energy Ventures Analysis.

10

Production Trends: Strong Growth from Associated Gas Bolstered by Modest Growth from Non-associated Gas

Production Growth by Basin, 2021 vs. 2020 (through August)

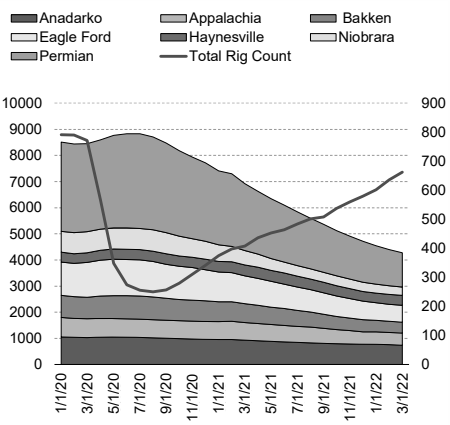


Data Source: EIA, Energy Ventures Analysis.

11

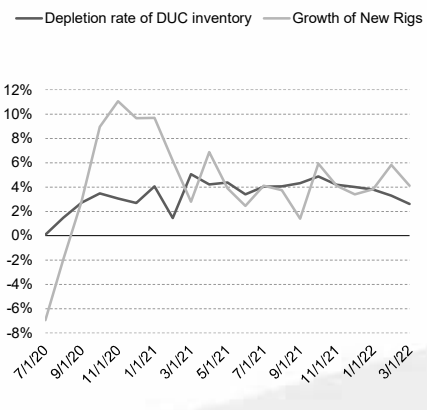
Production Growth Reflected by Rig Count Increase and Continued Steady Completion of "DUCs"

Drilling Uncompleted Wells (DUC) Inventory in Major U.S. Producing Areas



Data Source: EIA

New Gas Supply Source Growth Indicators: DUC vs Rig

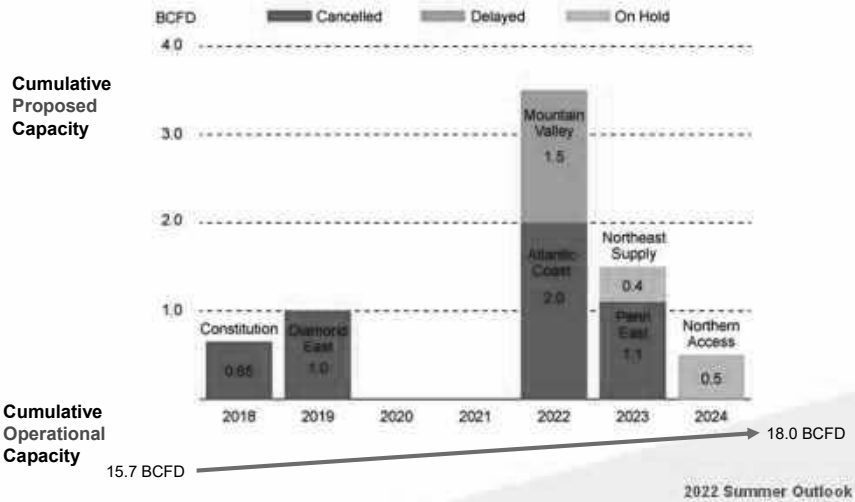


Data Source: EIA; Energy Ventures Analysis

12

Cancelled, Delayed Pipelines Reflect Difficulty of Siting Infrastructure in the Northeast

TOTAL OF 7.1 BCFD OF PIPELINE CAPACITY CANCELLED OR PUT ON HOLD IN NORTHEAST /MID-ATLANTIC SINCE 2018 – BUT ONLY 2.3 BCFD ADDED

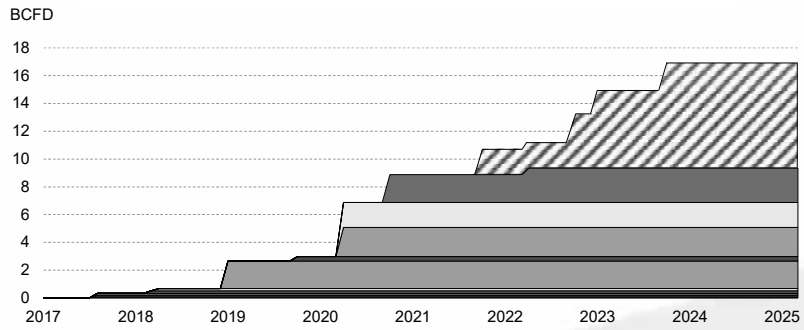


13

New Pipeline Capacity in Permian Has Improved Supply, Potential for More to Come

Permian Production Takeaway Capacity

- Bakersfield Compressor Station
- Permian North Expansion-El Paso
- Gulf Coast Express
- Permian Highway Pipeline
- Whistler
- WT-1 Compressor Station Modification
- North Texas
- El Paso South Mainline Expansion
- Agua Blanca Expansion
- Potential additional capacity



Data Source: OPIS PaintLogic, Energy Ventures Analysis.

14

Summer Storage

Summer Season Period-to-period change	Last Summer 2021 ACTUAL	This Summer 2022 FORECAST
Summer starting point	1,777 Bcf	1,382 Bcf
Average daily injections	8.6 Bcf/d	9.8 Bcf/d
End of injection season	3,634 Bcf	3,478 Bcf

Summer-to-summer pressure on natural gas prices

Data Source: Energy Information Administration and Energy Ventures Analysis.

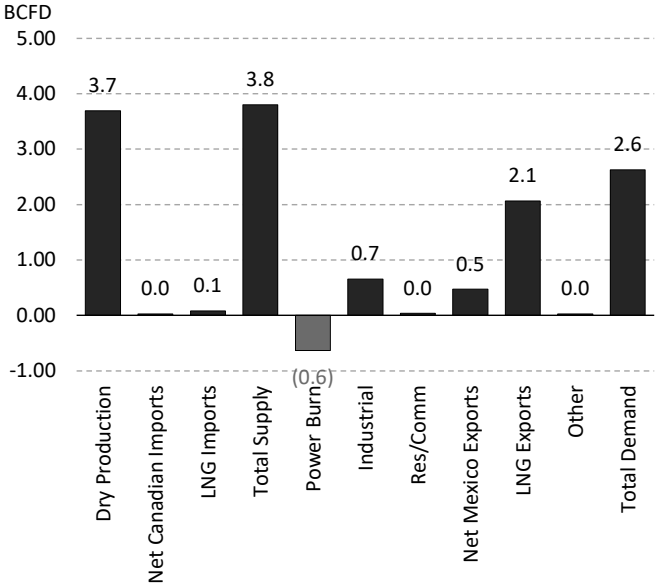
15

Summer Outlook: Wild Cards

16

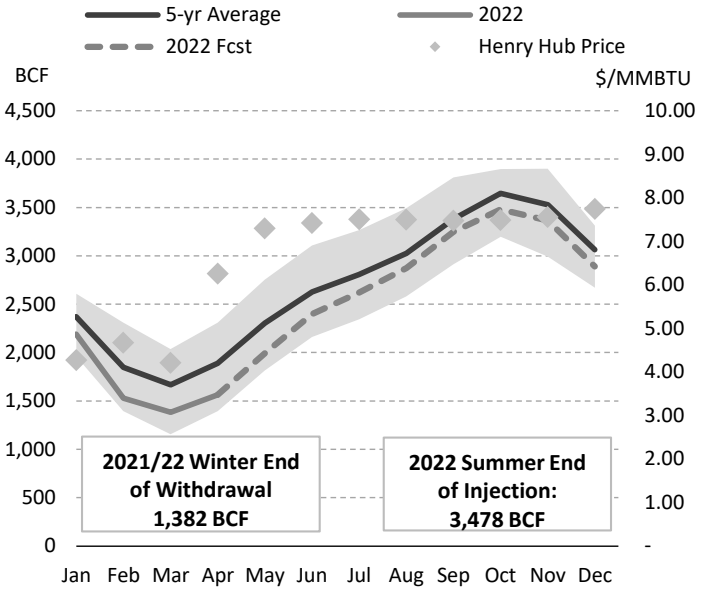
Modest production growth will keep L48 storage below 5-year average through Summer 2022—

Natural Gas Supply and Demand, 2022 Summer vs 2021 Summer



Source: Energy Ventures Analysis

U.S. Working Gas in Underground Storage



Henry Hub prices are NYMEX settlements as of 4/14.
Source: EIA, Energy Ventures Analysis

Summer Natural Gas Supply and Demand Summary	2022 Summer	2021 Summer	Difference vs Last Summer	Difference vs Last Three Summers
Supply (BCFD)				
Dry Production	96.6	92.9	3.7	5.3
Net Canadian Imports	4.8	4.8	0.0	0.4
LNG Imports	0.1	0.0	0.1	0.0
Total Supply	101.5	97.7	3.8	5.7
Demand (BCFD)				
Power Burn	32.4	33.0	(0.6)	(1.0)
Industrial	22.0	21.3	0.7	0.7
Res/Comm	11.2	11.2	0.0	(0.2)
Net Mexico Exports	6.7	6.2	0.5	1.0
LNG Exports	12.7	10.7	2.1	5.4
Other	6.7	6.6	0.0	0.1
Total Demand	91.7	89.0	2.6	6.1
Average Injection (BCFD)	9.8	8.6	1.2	(0.4)
Total Injection (BCF)	2,096	1,857	239	(88.7)
CDDs	1,299	1,372	(73.0)	(90.0)

- Compared to last summer, U.S. natural gas dry gas production is expected to grow by 3.7 BCFD in Summer 2022, primarily driven by increased associated gas output. Canada imports remain nearly flat, but the widened US-Canada basis differentials could lead to higher Canadian supply.
- On the demand side of the ledger, the estimated power burn for Summer 2022 is lower by 0.6 BCFD YoY, while the decline will be largely offset by higher industrial demand. Export sectors will continue to lead the growth, with LNG feedgas demand expanding by 2.1 BCFD and Mexico pipeline flows up by 0.4 BCFD.
- The latest forecast for summer weather is milder than last year and the past three summers. However, as the La Nina climate pattern still has over a 50% chance of prevailing through June-August, there is a significant risk of an active hurricane season.

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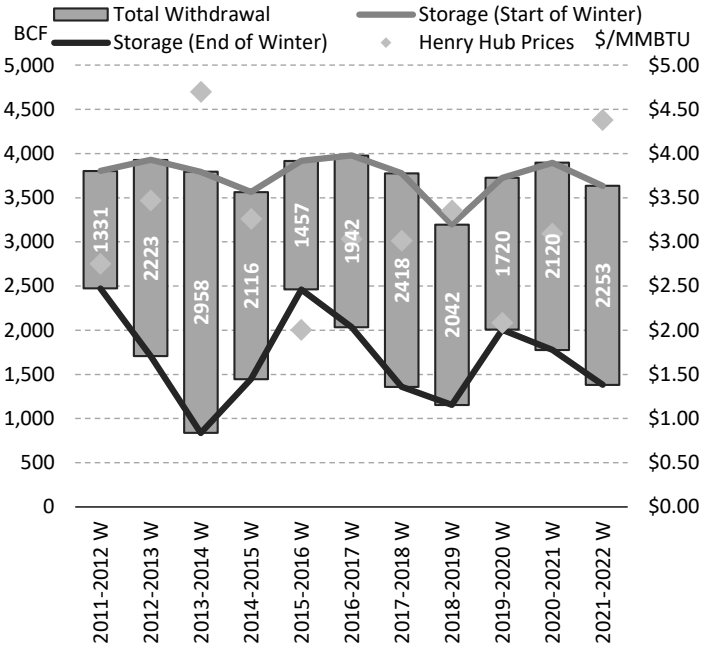
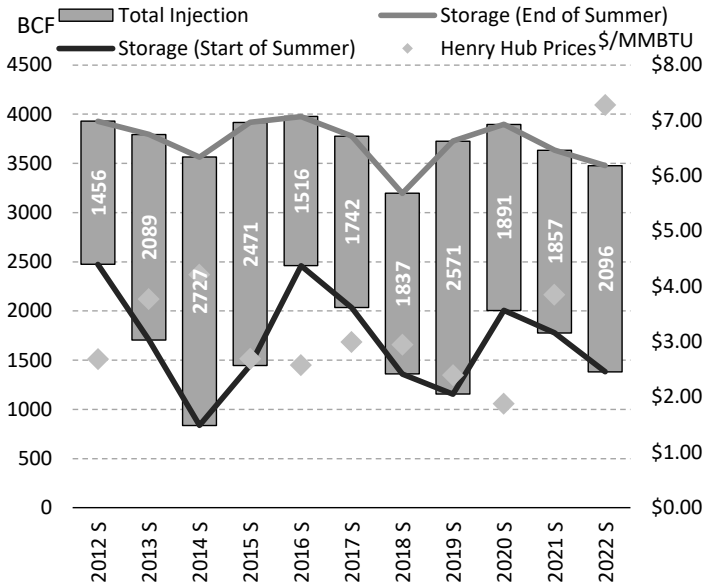
U.S. natural gas markets will remain tight this summer—

U.S. L48 Winter Gas Storage Withdrawal



U.S. L48 Summer Gas Storage Injection



- The U.S. natural gas markets finished the 2021-22 winter with a tighter balance. Although reliability was not impacted, freeze-offs during extreme cold events briefly limited natural gas production and simultaneously added heating demand. On the other side of the balance sheet, the ongoing coal supply shortages and the commissioning of 1.6 BCFD of LNG exporting capacity expanded the non-weather-related demand.
- Geopolitical tensions in Europe resulted in fuel reliability concerns for coal, oil and gas supply in international energy markets, driving increased price volatility.
- Henry Hub prices surged above $8/MMBTU for the first time since 2008, reflecting a strong demand outlook and the inflationary shock from energy production to service sectors.
- Looking forward, U.S. natural gas markets will remain tight this summer. Elevated coal prices and limited inventories will discourage economically- motivated fuel switching and support gas-fired generation. Solid LNG demand overseas will also keep U.S. LNG terminals operating at or above the nameplate capacity. Phase II of Calcasieu Pass LNG will add 0.7 BCFD of capacity by Q4 2022. Beyond that, U.S. LNG exporting capacity will remain static at 13.5 BCFD until 2024, when the 0.7-BCFD Golden Pass Train 1 comes online.
- Although the extensive gain in oil and gas prices should signal for more drilling, increased price volatility, military conflict in Europe, and uncertainty around incorporating ESG concerns into environmental reviews are fueling uncertainty around the long-term demand. EVA expects a moderate near-term production growth as North American producers stick to financial disciplines to avoid over-investment.
- U.S. working gas inventory fell to 1,380 BCF at the end of March, extending the stockpile deficit against the 5-year average from 100 BCF to 285 BCF over the winter. The draw of 2,250 BCF in Nov-Mar 2021/22 was the largest in the past three years and the third tightest since 2011. EVA projects an injection of 2,096 BCF for Summer 2022, 116 BCF looser than the 5-year average. U.S. working gas storage is expected to remain below the 5-year average throughout the year.

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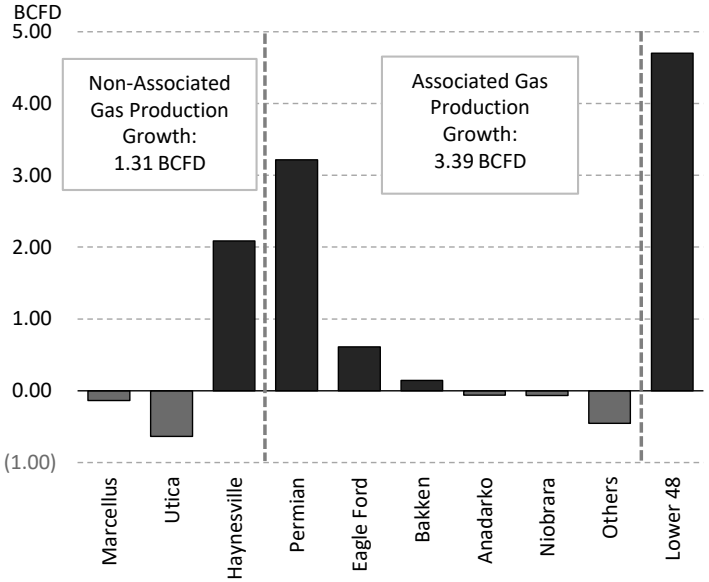
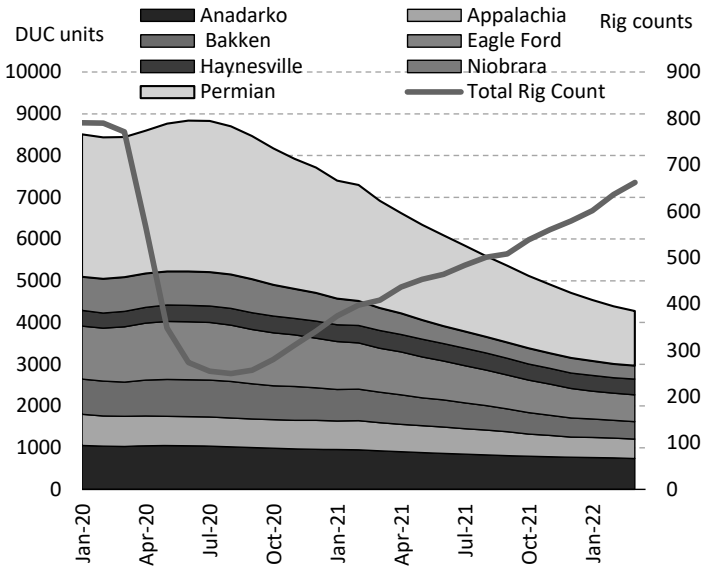
Despite stronger energy prices, major producers proceed with caution—

Year-over-year Production Change by Basin (Winter 2021/22 vs. 2020/21)



Source: EIA, Energy Ventures Analysis

Drilling but Uncompleted Wells Inventory vs. Rig Count



Source: EIA, Baker Hughes

- Natural gas output will likely resume the upward trend seen before the cold weather of January through March, although the magnitude of growth remains uncertain. U.S. dry gas production rose to 96 BCFD in Dec-2021, the highest level observed since the pandemic. Gas production in Winter 2021/22 was 4.7 BCFD higher YoY, with Permian and Haynesville leading the growth, underscoring strength in both associated and non-associated gas production.
- The price rally will likely incentivize more drilling activity in the short term, especially with the steady decline of the drilled-but-uncompleted wells (DUC) inventory. The number of DUC wells has been falling at a 4% monthly rate since April 2021. To maintain or expand the current output, new drillings is necessary.
- U.S. gas-weighted producers are forecast to increase CAPEX by 30% in 2022 while oil-focused producers are expected to raise spending by 17%. However, with the inflationary shock and a sharp decline in the DUC units, the published budget may only be able to support a moderate growth from the current production level. EVA expects U.S. dry gas output to average 96.6 BCFD in Summer 2022, 3% higher YoY.
- As of March, natural gas and oil rig counts jumped nearly 50% and 70% YoY, respectively, but were still below the pre-pandemic level as the upstream sector suffered from equipment/labor shortages and inflated costs.
- The development of takeaway capacity also plays a role in E&P investment. The certification of new gas projects, including pipelines and LNG terminals, will be subject to greater scrutiny if FERC finalizes the new permitting guideline, which requires the consideration of difficult-to-quantify indirect and cumulative GHG emissions.
- The 2-BCFD Mountain Valley Pipeline (MVP), already 94% completed, faced increased regulatory challenges after the federal court revoked a key permit in January. Because of the further delay, Northeast customers will not benefit from the cost reduction associated with MVP this summer. The mid-term Northeast gas production outlook will largely hinge on the development of this project.
- The robust production growth in Permian will also test the takeaway capacity limit in the next two years. Major pipelines Agua Blanca (1.8 BCFD), Gulf Coast Express (2 BCFD), and Whistler (2 BCFD) completed in the past three years were over 90% utilized in 2021. However, around 6 BCFD of regional takeaway pipeline projects are still on hold due to economic concerns.

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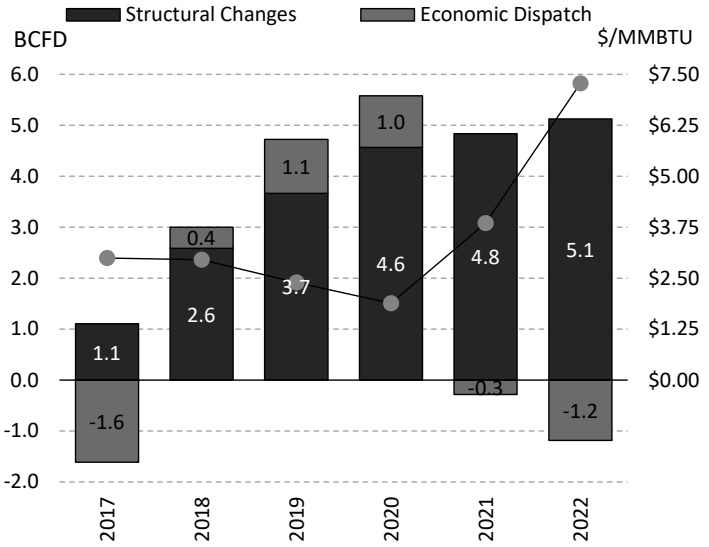
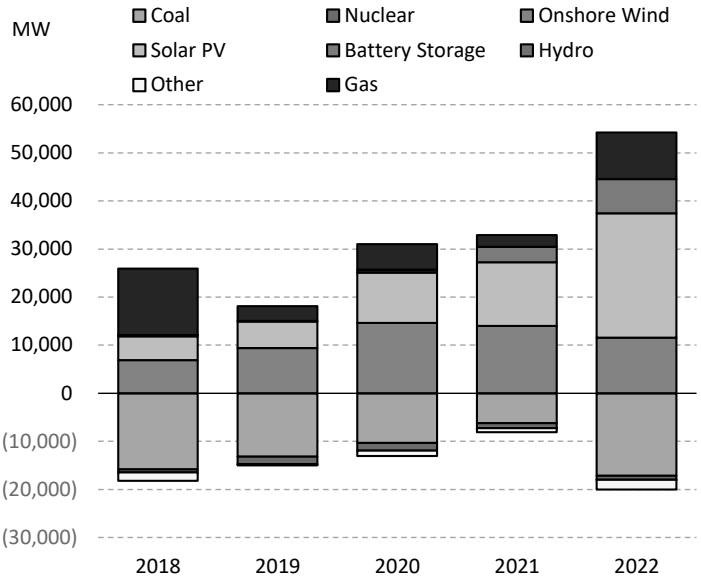
Summer natural gas-fired generation is supported by coal supply shortages and delayed renewable installation—

Power Burn Increase from 2015 Summer: Structural Growth vs. Economic Switching



Source: Energy Ventures Analysis
Note: 2022 Summer prices are NYMEX settlements as of 4/14

Net Change in U.S. Generating Capacity



Source: Energy Ventures Analysis, U.S. EIA

- With Henry Hub prices gaining over $3/MMBTU year-over-year, power generation by natural gas is expected to decrease by 0.6 BCFD this summer compared to last summer. Comparing this summer to a baseline of 2015, a gain of 5.1 BCFD of long-term structural demand growth from new combined-cycle gas units (CCGT) will be offset by a short-term decline of 1.2 BCFD due to higher natural gas prices reducing the dispatch of natural gas-fired generation.
- However, higher prices for replacement coal due to spikes in international coal markets will keep the competition between coal and gas tight for the summer, especially in the eastern part of the country. Coal stocks and the average number of burns have been declining steadily since May 2020. A widespread ban on Russian coal increased demand for U.S. coal exports. With little additional coal available on the spot market, U.S. coal plant dispatch is likely to be limited by the amount of coal already contracted for delivery in 2022.
- According to EVA's coal gas price sensitivity analysis, gas power burn could swing by 3 BCFD if natural gas prices move up or down by $1/MMBTU at the current level. South Central and East regions are most sensitive to price changes.
- In 2022, nearly 17 GW of coal capacity will be retired while 10 GW of gas-fired units will be added - the biggest annual capacity shift for each resource category since 2019.
- 2022 will also be a milestone year for renewable installations. Nearly 45 GW of new wind, solar, and battery storage resources will be integrated into the generation mix. However, supply chain constraints owing to the pandemic delays, the Russia-Ukraine conflict, and the expected U.S. ban on Chinese panels allegedly produced using forced labor have increased uncertainties to the project timelines.
- The prediction of continued extreme drought in the West also poses a threat to hydropower generation. With the delayed renewable installation, rapid retirement in coal capacity, and restricted hydropower availability, gas-fired generators will become more important this summer to ensure grid reliability.

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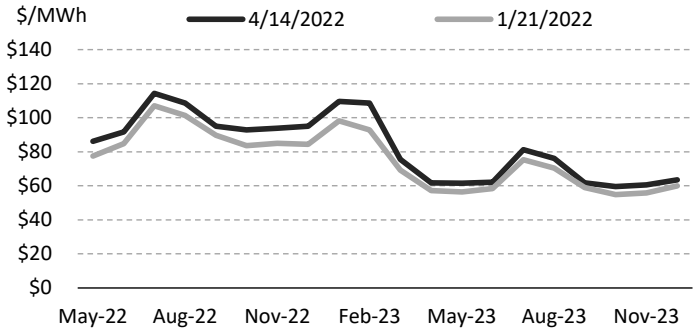
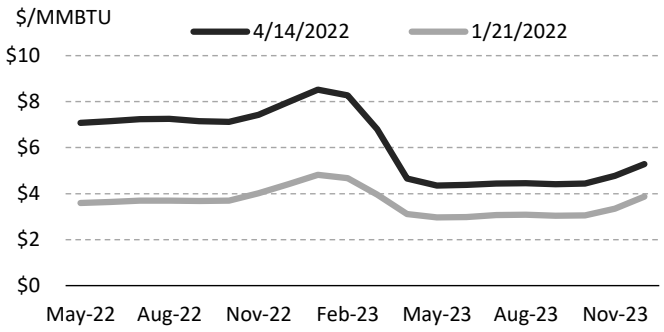
Reliability concerns were reflected on the price forefront of power and natural gas markets—

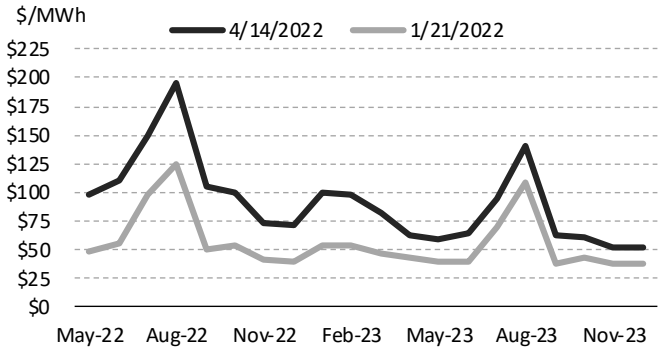
- Over the past three months, forward market prices at major U.S. power and natural gas hubs surged on escalated grid reliability concerns through 2023. Continued coal supply shortages, a substantial amount of coal capacity retirement, delayed renewable project timeline, and persistent drought in the West created significant upward pressure on natural gas and power prices. Natural gas supply will play an increasingly critical role in ensuring short- to mid-term U.S. grid reliability.

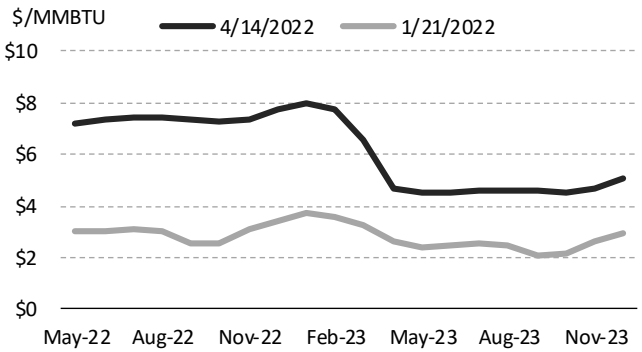
On-Peak MISO Illinois Hub Power Forwards vs Delivered Gas Prices at Chicago City Gate



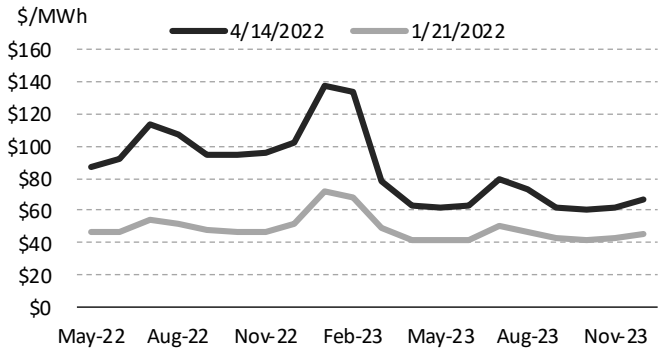


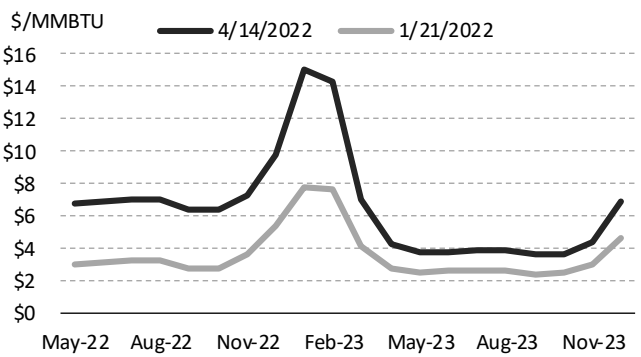
On-Peak ERCOT Houston Power Forwards vs Delivered Gas Prices at Houston Ship Channel





On-Peak PJM West Hub Power Forwards vs Delivered Gas Prices at TETCO M3





Source: On-Peak power prices and delivered gas prices are historical settlements on 4/14/2022 and 1/21/2022.

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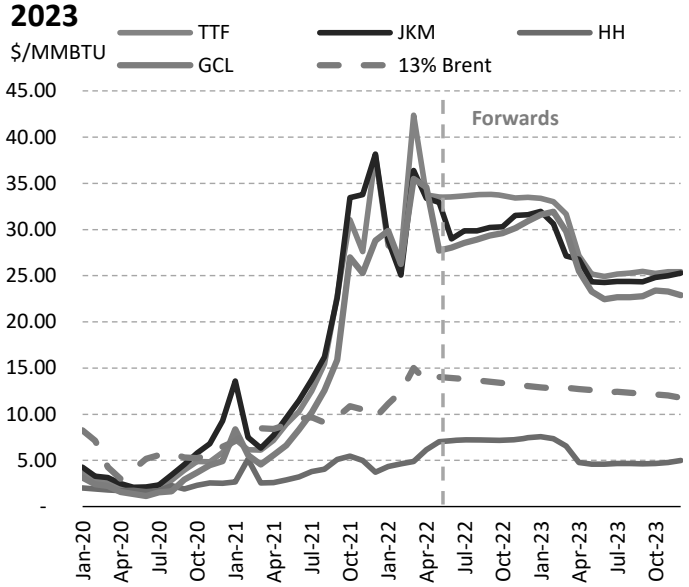
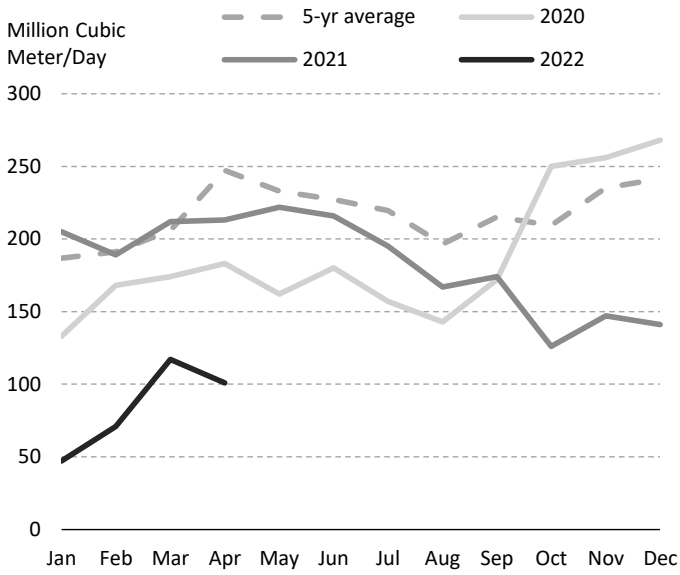
Sanctions on Russia's invasion of Ukraine threaten energy reliability in Europe—

Global LNG Prices at Different Locations 2020-2023

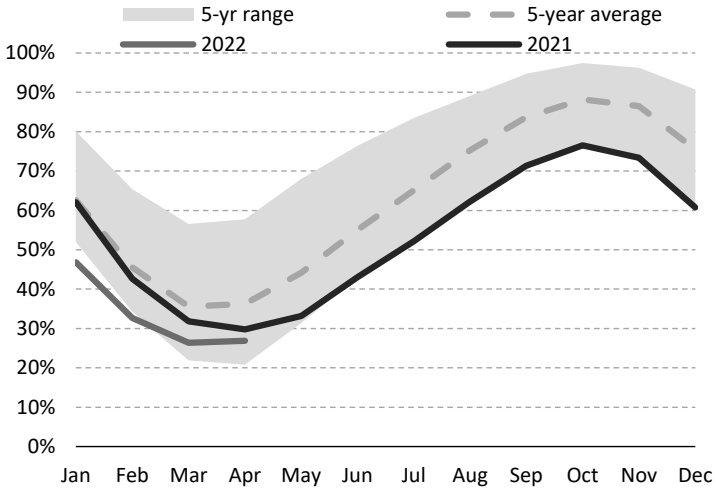


Source: ICE. Future curves are based on 4/14 settlements

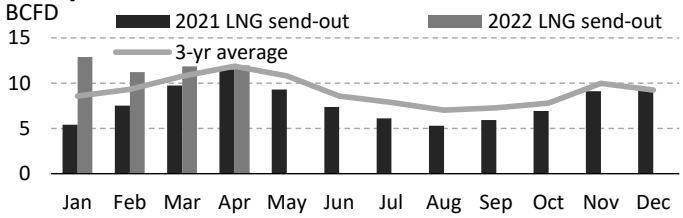
Russian Natural Gas Supply to Central & Eastern Europe 2022 vs. Historical



European Natural Gas Storage Utilization



European LNG send-out



Source: GIE, Energy Ventures Analysis

- The uncertainty over Russian gas supply to Europe surged after Russia invaded Ukraine. The potential disruption of Russian pipeline gas threatens the economy of Europe as it supplies 40% of EU's natural gas imports. The risk premium could keep prices at TTF (European benchmark) trading above the JKM (Asian benchmark) index until Europe secures alternative sources. Although Gazprom still meets the minimal contracted volume, flows to Central and Eastern Europe slumped starting Q4 2021. The suspension of Nord Stream 2, originally scheduled online in 2022 to double Russian gas deliveries to Germany, created a substantial market share for spot LNG cargoes.
- European storage remained below the seasonal normal as of April, but the deficit against the 5-yr average has narrowed with increased LNG supply. The European Commission has announced a target to refill the EU gas storage to 80% of capacity by November 1 while reducing the purchase of Russian gas by two-thirds before the end of the year. However, the path to meeting those goals can be rocky. The intensified competition for LNG cargoes limited the availability of spot cargoes as buyers have been trying to maximize purchases through long-term LNG contracts, which are less expensive than the current spot LNG prices. The market share of spot cargo fell to just 25% of total LNG trade this spring from as high as 40% in 2020. Downstream pipeline bottlenecks in NW Europe are further complicating Europe's energy woes and limiting the LNG send-out from regasification plants, even though the importing terminals are not fully utilized.

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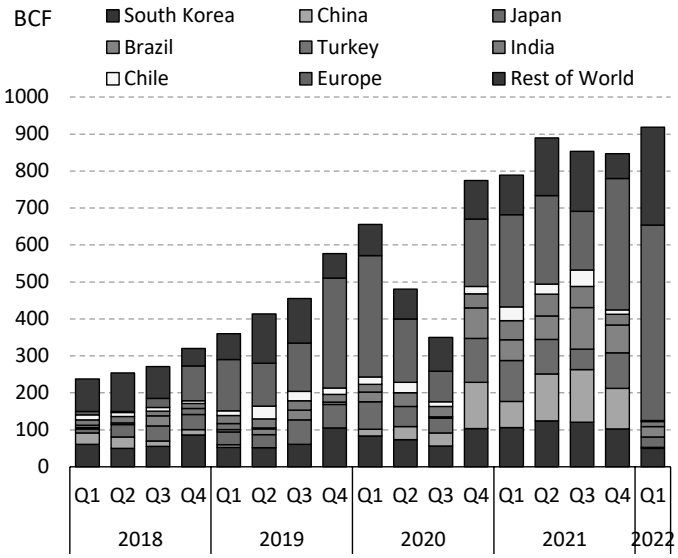
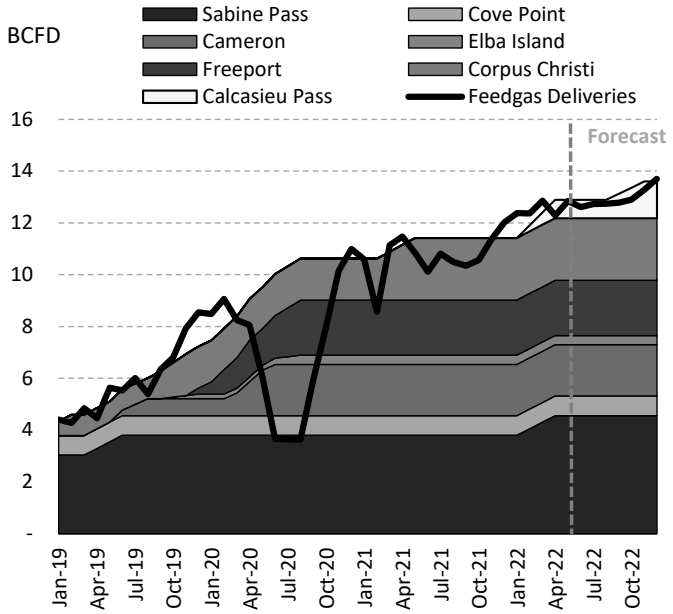
More U.S. LNG to flow into Europe while the total exports remain limited by U.S. LNG exporting capacity—

U.S. LNG Exports by Destination



Source: US DOE, Energy Ventures Analysis

U.S. LNG export capacity vs feedgas deliveries



Source: Energy Ventures Analysis, EIA

- U.S. LNG has become an increasingly important strategic energy source in Europe. The percentages of U.S. LNG cargoes flowing to Europe expanded from 18% in Q3 2021 to over 50% in Q1 2022, as European gas prices gained strength on Russian supply risk, trading at a premium above the Asian LNG benchmark JKM.
- President Biden's pledge to supply 15 billion cubic meters (BCM) more LNG (1.6 BCFD) to the EU in 2022 will not have a significant impact on U.S. LNG feedgas demand as all seven U.S. exporting plants were already operating at capacity (12.8 BCFD). Instead, the announcement could redirect more U.S. cargoes from other markets to Europe, which was exactly how the European price signals affected the shipments over the past two quarters. Due to unchanged U.S. exporting capacity since spring 2022, the war situation in Europe will not have a material impact on the U.S. domestic gas markets fundamentals this summer.
- As of March 2022, seven projects totaling 12.8 BCFD of exporting capacity are operating or are currently undergoing commissioning. Sabine Pass Train 6 (0.76 BCFD) began production in October 2021, and Calcasieu Pass Phase I (0.7 BCFD) followed in January 2022.
- Based on the current forward market settlements, estimated netbacks of U.S. LNG exports to NW Europe and NE Asia remained above $15/MMBTU through 2023. In the near term, U.S. LNG feedgas demand will be constrained at the nameplate capacity (12.8 BCFD) until Calcasieu Pass Phase II (0.7 BCFD) starts service by Q4 2022. The next major expansion will wait until 2024 when the 2.4-BCFD Golden Pass LNG project comes online.
- EVA expects U.S. LNG feedgas demand to average 12.7 BCFD in Summer 2022, an increase of 2.1 BCFD since last summer, but essentially the same as in Fall 2021.

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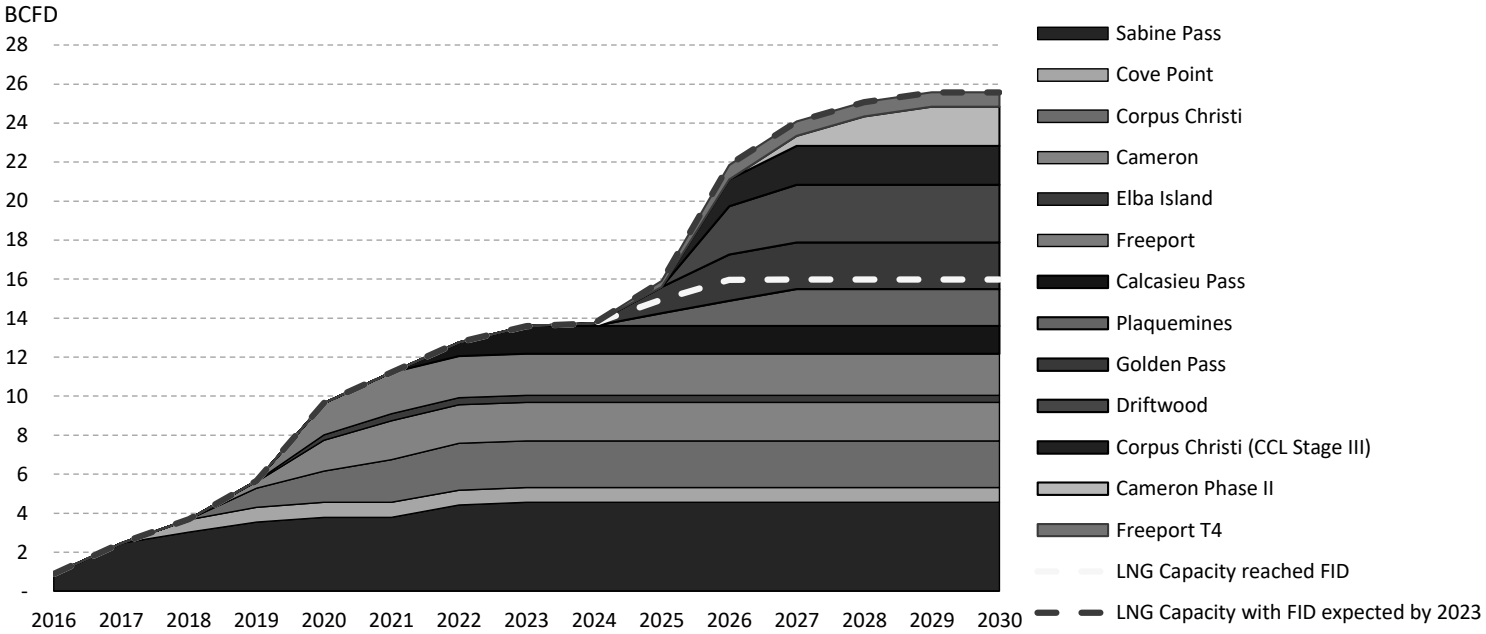
U.S. LNG projects advance as EU cuts dependence on Russian gas—

U.S. LNG Project Development



Source: Energy Ventures Analysis, EIA
1 million metric tons of LNG per annum (MTPA) is equivalent to 0.13 billion cubic feet of natural gas per day (BCFD)
FID is the abbreviation of Final Investment Decision

- Europe's efforts to cut the Russian gas supply could accelerate the next wave of LNG development. The White House and EU's agreement to secure another 5 BCFD of U.S. LNG supply for Europe until at least 2030 could be an assurance of demand growth for U.S developers.
- Several U.S. LNG projects advanced development in the past quarter but will not come online until 2025. Shell agreed to purchase another 2 MTPA of LNG supply from Venture Global's proposed Plaquemines LNG project in Louisiana. With earlier deals signed with Polish Oil and Gas and China's Sinopec, 70% of Plaquemine's 20-MTPA capacity are under contract. The first stage is expected to come online by 2025, providing 10 MTPA of supply. In April, Tellurian began constructing the 11-MTPA Driftwood LNG project, on track to reach FID for this project in Q2 2022. Freeport LNG expects to secure enough financing for the 5-MTPA Train 4 expansion by early 2023. Additionally, Cheniere signed EPC contracts with Bechtel for the Corpus Christi Stage III project, which is expected to provide 12-MTPA of supply by 2025. The company anticipates reaching FID on the project this summer.
- •Starting Q4 2021, Chinese buyers have shown a growing interest in U.S. LNG projects. In November 2021, Sinopec agreed to purchase 4 MTPA of LNG supply from the proposed Plaquemine plant for 20 years. In the same month, Sinopec's trading arm Unipec also reached a deal to buy 3.8 MTPA of supply from Calcasieu Pass. China's Sinochem also secured 1.8 MTPA of Cheniere's LNG supply, which will start at 0.9 MTPA in July 2022 and rise to 1.8 MTPA over 17.6 years.
- Energy Transfer agreed to supply China's ENN Energy Holding 2.7 MTPA of LNG for 20 years starting in 2026 from the proposed Lake Charles exporting facility. The same buyer also signed a 20-year contract with NextDecade for 1.5 MTPA of LNG from the proposed Rio Grande LNG export project.
- Four projects (Plaquemines, Corpus Christi Stage III, Driftwood LNG, Freeport LNG) totaling over 6.5 BCFD (50 MTPA) are expected to reach FID by 2023. If sanctioned, those projects will boost U.S. exporting capacity to 25 BCFD by 2030.

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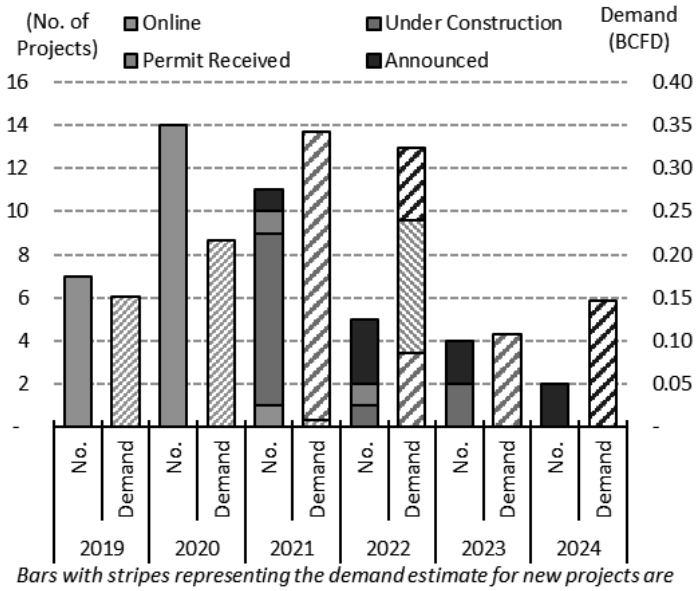
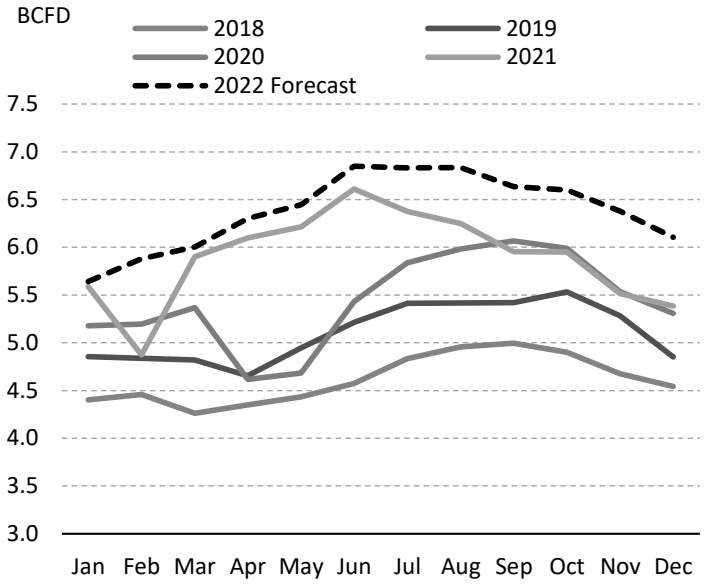
Structural growth expands natural gas demand from industrial customers and Mexico exports—

Industrial Projects and Gas Demand



Bars with stripes representing the demand estimate for new projects are indexed in the same color as the project status.
Source: Energy Ventures Analysis

U.S. Pipeline Exports to Mexico



Source: Energy Ventures Analysis

- Industrial natural gas demand has remained strong since 2022 due to increased heating demand and improved industrial utilization. According to the U.S. Federal Reserve, the industrial capacity utilization rate rose to 77.6% in February, 4.9 percentage points higher YoY. The index for mining remained nearly flat. Capacity utilization for manufacturing increased by 0.9 percentage points, 2.5 percentage points higher than the pre-pandemic level but marginally lower than the long-run average. Despite the increased risk of demand destruction by the soared natural gas prices, the growth of industrial activity will likely continue as manufacturers try to ease the bottlenecks in the supply chain. U.S. industrial gas demand is expected to rise by 3% this summer.
- The development of new industrial projects has supported the structural growth of weather-adjusted industrial demand. Despite delays associated with the pandemic, 53 projects came online during 2016-2020, solidifying 1.7 BCFD of natural gas demand. An additional 22 projects are expected to come online between 2021 and 2024, which could potentially add 1.0 BCFD of incremental gas demand.

- Mexico's demand for U.S. natural gas has increased by 40% in the past five years. As nearly half of Mexico's power generation came from natural gas in 2020-2021, the U.S. has become an increasingly critical supplier to Mexico's energy sector. U.S. natural gas exports to Mexico averaged 5.9 BCFD in 2021, 0.5 BCFD higher year-over-year, with expanded cross-border takeaway capacity that improved utilization of the downstream pipelines.
- EVA expects pipeline exports to Mexico to average 6.7 BCFD in summer 2022, 0.4 BCFD higher than last summer.
- TC Energy aims to start the Villa de Reye pipeline by Q2 2022, allowing U.S. natural gas to reach central Mexico power plants and industrial facilities. The service of this project will further improve the utilization rate on the Sur de Texas-Tuxpan pipeline that draws gas from the Permian basin to Mexico.

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https://www.rystadenergy.com/newsevents/news/press-releases/a-perfect-and-unavoidable-storm-LNG-supply-crisis-will-make-landfall-in-winter-2022/

A perfect and unavoidable storm: LNG supply crisis will make landfall in winter 2022

May 9, 2022

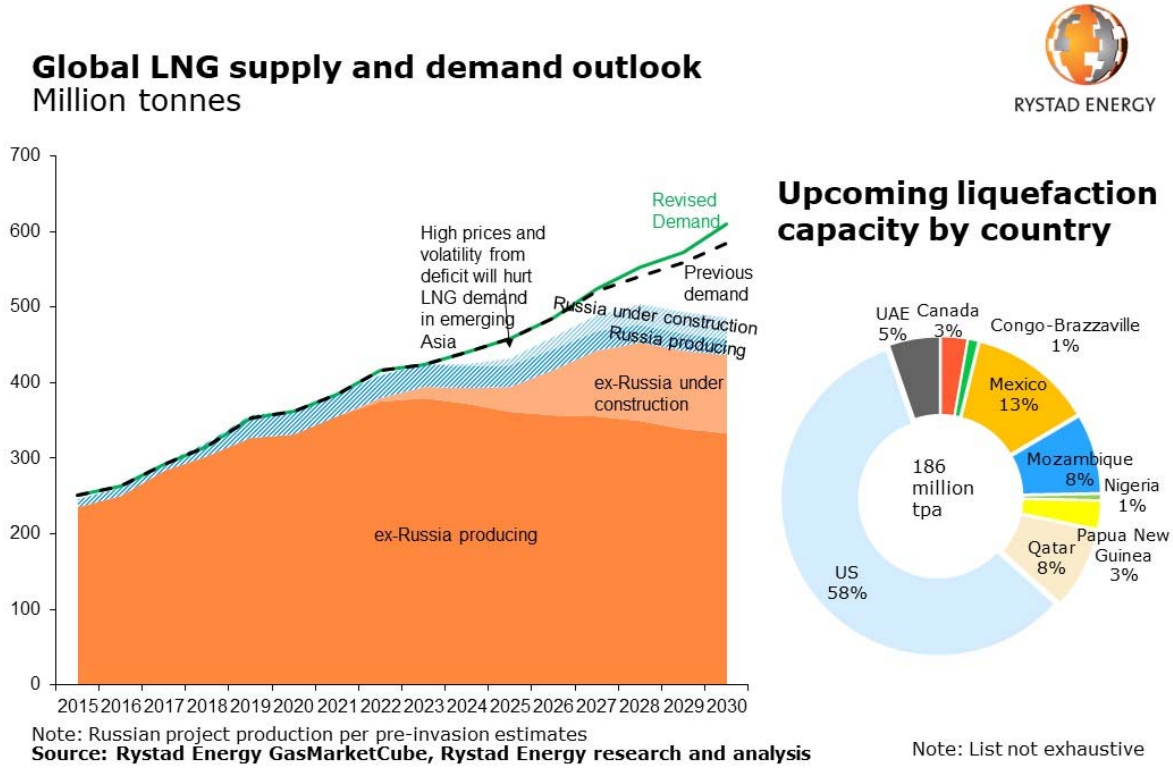
A liquified natural gas (LNG) crisis is brewing for European countries dealing with energy insecurity in the wake of Russia's invasion of Ukraine, as demand will outstrip supply by the end of this year, Rystad Energy research shows. Although soaring demand has spurred the greatest rush of new LNG projects worldwide in more than a decade, construction timelines mean material relief is unlikely only after 2024.

Global LNG demand is expected to hit 436 million tonnes in 2022, outpacing the available supply of just 410 million tonnes. A perfect winter storm may be forming for Europe as the continent seeks to limit Russian gas flows. The supply imbalance and high prices will set the scene for the most bullish environment for LNG projects in more than a decade, although supply from these projects will only arrive and provide relief from after 2024

The European Union's REPowerEU plan has set an ambitious target to reduce dependence on Russian gas by 66% within this year – an aim that will clash with the EU's goal of replenishing gas storage to 80% of capacity by 1 November. By shunning Russian gas, Europe has destabilized the entire global LNG market that began the year with a precarious balance after a tumultuous 2021. The decision to sharply reduce reliance on Russian gas and LNG from current levels of between 30-40% will transform the global LNG market, resulting in a steep increase in energy-security based European LNG demand that current and under-development projects will not be able to supply.

Russia last year sent 155 billion cubic meters (Bcm) of gas to Europe, providing more than 31% of the region's gas supply. Replacing a significant portion of this will be exceedingly difficult, with far-reaching consequences for Europe's population, economy, and for the role of gas in the region's energy transition. This will also likely create a boom for LNG producers elsewhere of a scale and duration not seen in over a decade.

"There simply is not enough LNG around to meet demand. In the short term this will make for a hard winter in Europe. For producers, it suggests the next LNG boom is here, but it will arrive too late to meet the sharp spike in demand. The stage is set for a sustained supply deficit, high prices, extreme volatility, bullish markets, and heightened LNG geopolitics," says Kaushal Ramesh, senior analyst for Gas and LNG at Rystad Energy.



Learn more with Rystad Energy's GasMarketCube.

The expected reduction in Russian gas for Europe in 2022 is 37 Bcm, rising to more than 100 Bcm by 2030. As a result, Europe's gas consumption likely peaked in 2019 and will now decline steadily through to 2030. Gas and LNG is therefore set to play a reduced role in Europe's energy mix, providing further impetus for renewables and potentially a greater role for nuclear and coal. Europe was in fact on course to increase Russian imports of gas and LNG to over 40% of its supply by 2030, if the now stalled Nord Stream 2 pipeline had been approved. This will instead drop to around 20% by 2030 as current contracts are not renewed. To facilitate additional LNG imports, a slew of regasification terminals has been planned across Europe – some new and some reactivated from deep slumber.

If Russian flows were to stop tomorrow, the gas currently in storage (about 35% full) would likely run out before the end of the year, leaving Europe exposed to a brutal winter. Under this scenario, in the absence of joint buying arrangements and countries competing for limited molecules, the TTF gas price could climb to more than $100 per million British thermal units (MMBtu), resulting in industrial curtailments and widespread fuel switching in the power sector. We have already seen curtailments to fertilizer, steel and paper manufacturers in Europe, underscoring the economic pain that awaits. In an extreme scenario of a severely cold winter, not even the residential sector would be safe.

LNG markets go bullish with wave of new projects

More than LNG 20 projects with a combined capacity of over 180 million tonnes per annum (tpa) have reported some development progress recently. To be certain of LNG supply in 2030, the market will need more than 150 million tpa of production from the 186 million tp a planned, which means more than 80% of the project pipeline must be realized.

US projects are in pole position – some of which have been dormant waiting for demand to rise, and have now been given new life. Projects such as Energy Transfer's Lake Charles and NextDecade's Rio Grande that were previously on ice have reported 9.45 million tpa worth of deals after the invasion, including an about-face deal by French player Engie, which pulled out of negotiations with NextDecade in November 2020 but recently closed a 1.75 million tpa deal with the same project.

However, the project pipeline globally remains far from able to rescue the market. It includes the 15 million tpa Rovuma Area 4 LNG project, to be located adjacent to TotalEnergies' Area 1 LNG in the currently at-risk Palma region of Mozambique. We expect little to no progress on this project until TotalEnergies resumes construction.

Mexico is also well-positioned for Asian exports due to geographical proximity and non-dependence on transit through the Panama Canal, and appears to be gaining momentum among Asian buyers. At the same time, higher prices will slow Asian LNG demand growth in the medium term, which means the continent will remain dependent on fuel oil and coal. In some scenarios, Asian LNG demand may be permanently dented, and deployment of renewables accelerated.

For more analysis, insights and reports, clients and non-clients can apply for access to Rystad Energy's Free Solutions and get a taste of our data and analytics universe.

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Contacts

Kaushal Ramesh
LNG senior analyst
Phone: +47 24 00 42 00
kaushal.ramesh@rystadenergy.com

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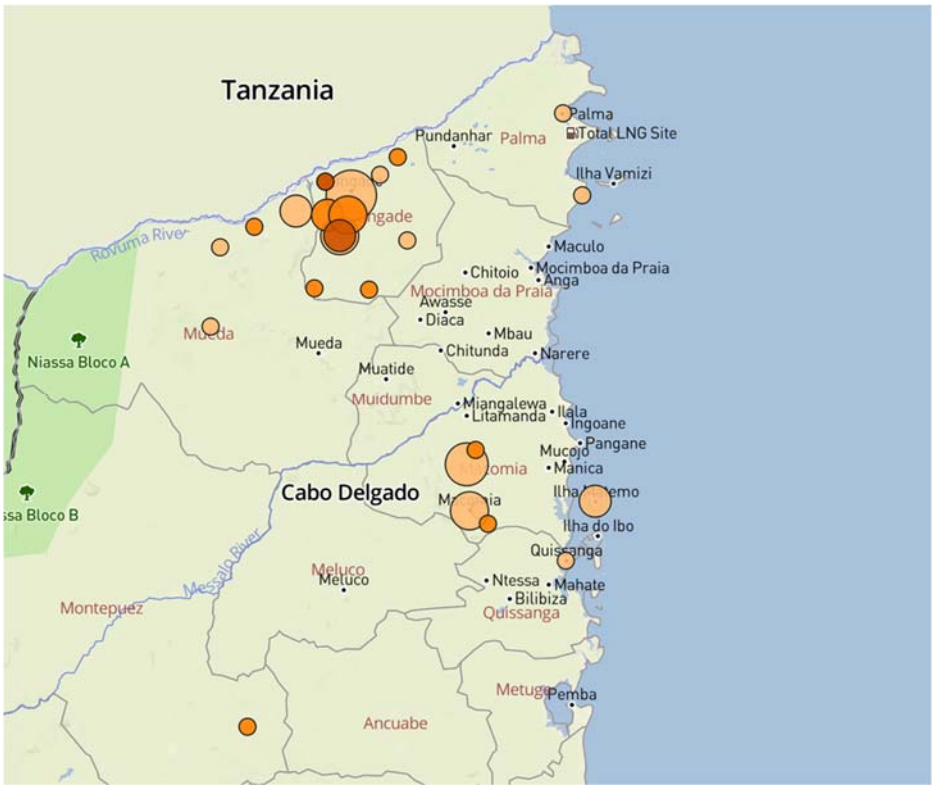
Cabo Ligado Weekly: 25 April-8 May 2022

May 10, 2022



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By the Numbers: Cabo Delgado, October 2017-May 2022 [1]

- **Total number of organized political violence events**: 1,232
- **Total number of reported fatalities from organized political violence**: 3,950
- **Total number of reported fatalities from organized violence targeting civilians**: 1,701

All ACLED data are available for download via the data export tool and curated data files.

Situation Summary

The last two weeks have seen a resurgence of attacks and kidnappings in Nangade, Palma, and Macomia districts. On Saturday 30 April, insurgents were spotted approximately 6 km south of Nangade town, around the village of Chibau, where they reportedly killed an old man and burned down several buildings. One source alleges that civilians were also captured but the numbers cannot be confirmed.

The following morning, a 21-seat minibus was ambushed in the woods outside Litingina, 10 km south of Chibau in Nangade. The driver was able to evade the insurgents, who opened fire on the vehicle as it drove past. No deaths have been reported but three passengers were injured, including a woman, a child, and a man. Another source claims the insurgents then moved into Litingina, where they killed one person and injured another.

On 3 May, insurgents appeared again in the village of Muhia, about 10 km north from Nangade town, near the Tanzanian border. Local reports suggest they beheaded several people but the number of victims is not yet known.

The Nangade area is formally the responsibility of troops from Tanzania and Lesotho under the Southern African Development Community (SADC) Mission in Mozambique (SAMIM), working with the Mozambican Defense Forces, but locals report that these forces have been ineffective in combating the insurgent threat in the district. SAMIM forces have reportedly failed to respond, even when insurgents came within 2 km of their positions. This apparent lack of action has further undermined public confidence in the SAMIM operation to protect civilians, even when reports suggest the number of active insurgents in the area may be as low as six to eight, with only two or three who are actually armed.

Due to the security forces' failure to contain the insurgent threat, the Nangade-Mueda road has been closed since 1 May, leaving the town cut off from supplies. This has disrupted banking services, leaving many unable to access their salaries, and stalled the ongoing polio vaccination drive.

Multiple sources confirm that troops from the Rwandan Defence Force (RDF), who are usually responsible for Palma and Mocímboa da Praia districts, have now intervened in Nangade to pursue the insurgents. Despite this, insurgents continued to circulate around the area and on 7 May, they attacked the village of 3 de Fevereiro, just east of Nangade town, and attempted to capture a woman and child, who both eventually escaped.

On 8 May, the insurgents struck again in the Rovuma village lowlands, capturing several people in fields around Nankuka, also in Nangade district. Local Forces – militias loyal to the government and Frelimo – reportedly went to confront the insurgents but turned back after they were unable to free the hostages. This insurgent group is reportedly composed of three Tanzanians and four Mozambicans, of whom one is missing an arm and the other has been shot. Once again, SAMIM and Local Forces were criticized for merely trying to deter the insurgents without fighting them.

Palma district also saw an insurgent attack on the village of Olumbe on 6 May. According to one source, the insurgents told the villagers to leave and looted the area for supplies, mainly food. Joint forces consisting of the RDF and the Mozambican Defense and Security Forces (FDS) soon arrived and following a stand-off, all 20 insurgents were killed. Another source claims that before the insurgents were eliminated, three Mozambican soldiers were beheaded, suggesting there was already a military presence in the village when the insurgents arrived. A further source confirmed the presence of a military base on the outskirts of Olumbe. The incident is highly significant as the insurgents were driven out of Palma district at the beginning of February, according to a statement from the Mozambican Ministry of Defense. Ever since, the majority of violent incidents have occurred in Nangade, Mueda, and Macomia districts. Their return to Palma indicates that containing the insurgency remains a struggle for the security forces.

Islamic State (IS) issued a claim on 9 May for the killing of three members of the "Mozambican crusader army," and the burning of a "barracks" at Quiterajo. A source in Mozambique Armed Defence Forces (FADM) has also reportedly confirmed the attack and the fatalities. Other sources said the attack occurred on the morning of 7 May, and also reported three deaths, as well as the injury of two others.

The attacks in Olumbe and Quiterajo, and the claim of responsibility by IS for the latter are significant, for what they tell us about the insurgents' capacity, and what they tell us about IS. The decline in the scale and frequency of insurgent attacks in recent weeks suggested a diminished capacity to sustain an offensive. Attacks in these well-manned areas suggest otherwise. On the other hand, the weakness of the insurgents elsewhere brought into relief on 6 May when a group of insurgents in Macomia laid down their arms and surrendered to Rwandan troops. The size of the group is not known but it is said they come from various backgrounds, including Macomia itself and beyond.

Other reports suggest that not all of the insurgents surrendered peacefully. According to one source, Rwandan forces killed 10 insurgents in Pangane village in Macomia on the night of 6-7 May. The insurgents were reportedly all staying in the house of a local businessman, which Rwandan troops surrounded before opening fire, killing them all.

Civilians in Cabo Delgado have suffered mistreatment at the hands of government security forces. In Macomia, on 28 April, around seven youths fishing along the Messalo river near Chai were beaten and robbed by Local Forcesmilitia, who stole their fishing nets, fish, and money. In Nangade, on 23 April, at least nine youths were captured by Local Forces in the Rovuma lowlands, also on suspicion of working with insurgents, and were left in the forest with nothing to eat. Their fate is not known.

Two cases illustrate the variety of support roles that the insurgency relies on. Investigation by Carta newspaper into the arrest of five men on terrorism charges in Balama district has shed some light on the insurgency's finance networks. Four men were arrested at the house of a primary school teacher who transferred funds to accounts in Montepuez district, and also used funds to purchase supplies for members of the insurgency who would stay in his house. The teacher's younger brother was also involved with the insurgents, joining as a fighter after working as a trader between Palma and Mocímboa da Praia.

In a second case reported by Jornal Noticias, a man's involvement ranged from fishing to feeding the insurgents, to tracking FDS movements. Originally from Nacala, he moved to Macaloé island in Macomia district where he worked as a fisher with his Tanzanian wife, and Congolese and Kenyan companions, allegedly to supply the insurgents. He was later taken for training along the Messalo river before being deployed as a scout. He was formally charged by the public prosecutor of Cabo Delgado with espionage, possession of weapons, criminal association, and membership of a terrorist organization on 28 April.

In Mtwara, sources say that in the second week of April, a man was arrested on suspicion of trafficking a child to Mozambique. The man reportedly had on him directions to the border in Mtwara. There have been cases of children trafficked to Cabo Delgado by people connected to the insurgency before, and it is suspected that was the case with this incident. The child has been returned to their family. Prior to this, there had been no recorded incidents in Tanzania related to the Cabo Delgado insurgency since February this year. Whether this reflects the success of security measures, or just that the Rovuma river is high after the rainy season, will become clear in coming weeks. With the rains over, the river should be easily crossable by the end of May.

Weekly Focus: Northern Strategy Delays

The Resilience and Integrated Development Strategy for the North (ERDIN) remains stalled, over six months since its completion. ERDIN, prepared by the Northern Integrated Development Agency (ADIN), has been awaiting approval for over a month by the Council of Ministers. Two fundamental issues have reportedly delayed it: its identification of domestic issues that drove the insurgency, and absence of a military component. It is also thought to be perceived by elements in Frelimo as a donor-driven analysis.

ERDIN was to be the strategy of ADIN, a body created in March 2020 to coordinate government action in Cabo Delgado, Niassa, and Nampula provinces. Cabo Delgado dominates ADIN of course, hence the approval in September 2021 of the Reconstruction Plan for Cabo Delgado (PRCD), focusing on the restoration and development of infrastructure and public services.

The delay in approving ERDIN has been noted in the past three weeks by Joseph Hanlon of the UK's Open University, the Center for Democracy and Development (CDD) in Maputo, and Mozambique weekly newspaper Savana. Savana claims that the document has been with the Council of Ministers for more than a month but is meeting resistance.

The first obstacle, according to Hanlon, CDD, and Savana, is its focus on internal factors as being at the root of the conflict in Cabo Delgado. The draft strategy states that "at the root of the insurgency are perceptions of inequality, exclusion, and marginalization, which date back to the period of independence, and are all the more poignant given the region's wealth and economic potential." ERDIN doesn't ignore external factors, referring to the porousness of national borders, drug trafficking, ivory poaching and smuggling, and the illicit gemstone trade, as well as links with "terrorist" networks in East Africa as contributing factors to the insurgency. But the complementary focus on internal issues contradicts the official position. The Mozambican government sees the insurgency as an externally driven attack on national sovereignty. President Filipe Nyusi said last September that the captured insurgents are of foreign nationality and that their leadership is unknown to Mozambicans. Studies by Mozambican think tanks such as the Rural Environment Observatory (OMR) and Institute of Social and Economic Studies (IESE) contradict this, identifying several Mozambican leaders among the insurgents.

The second obstacle preventing the approval of the ERDIN is the absence of a significant military component. Its focus on strengthening the capacity of the state and the justice sector reflects the significance it gives to internal drivers of the insurgency. It proposes supporting the FDS in establishing "meaningful dialogue" with communities, and to provide training in human rights.

Reforming and re-equipping the FDS, as well as financing the Rwandan and SAMIM deployments in Mozambique, has been a priority for Nyusi's government. In February, President Nyusi requested EU assistance for both interventions. In April, the EU announced €1.9 million for SAMIM under the SADC Rapid Response Mechanism in Cabo Delgado and provided €89 million for training and capacity building of Mozambican troops under the European Peace Facility.

Such funding does not match President Nyusi's ambitions. As ERDIN does not provide a mechanism to fund security sector reform, the government is now looking for alternative means. On 5 May, President Nyusi, speaking at the Ministry of Foreign Affairs, announced that a strategy for mobilizing funds to strengthen military capacity is underway. The proposed Mozambique Support Trust Fund would complement the work of ADIN with reform, capacity building, and modernization of the FDS. This may provide the mechanism that President Nyusi can present to donors to underwrite reform and re-equipping of the FDS. The idea of a trust fund was first mentioned by the finance minister, Max Tonela, in an interview he gave in Washington DC in April.

Joseph Hanlon has observed that donors thought that in November 2021, they had government support for this approach, through their engagement with the responsible minister, Celso Correia. Delays since November suggest this was a miscalculation — and Correia is no longer the responsible minister, Savana reports, with ADIN having passed to the finance ministry under Max Tonela.

Delaying ERDIN approval may be a means of Frelimo reasserting control over ADIN's mission, despite it being dependent on donors financially. ERDIN followed an approach – Recovery and Peacebuilding Assessments – developed by the United Nations, World Bank, and the EU. One of its primary purposes is to "provide an inclusive process to support political dialogue and participation of stakeholders," something that does not sit easily with Frelimo's analysis of the conflict. Delaying ERDIN approval, while presenting a complementary mechanism through the trust fund may be a response to perceived donor overreach.

ERDIN itself may get a chance at approval following a meeting of Frelimo's Central Committee at the end of this month, which could discuss the plan and potentially approve it. The Central Committee is the most powerful Frelimo organ outside of the five-yearly Congress, and outranks the Political Commission which meets every fortnight to guide government policy.

Government Response

The process of reconstruction and the return of displaced people to their areas of origin in Cabo Delgado was the theme of Cabo Delgado Governor Valige Tauabo's tour of conflict-affected districts. Starting in Quissanga

on 29 April, he claimed, without presented figures, that returns had been significant, but urged they be done gradually, according to a source in the district. He said the government's plan for returns to the district would be done in phases, with people firstly returning to Quissanga town. Quissanga has already benefited from some rehabilitation, with the local health center and the Police District Command both having been reconstructed.

The following day, Tauabo visited the districts of Macomia and Muidumbe. A source in Miangalewa, Muidumbe district, said the rate of return there is lower than in Macomia partly because there is still a climate of fear, although the area has seen some security reinforcement. In Macomia, Tauabo visited the Rwandan troops deployed at Chai. The Rwandans have been conducting joint operations with SAMIM forces there since 30 March 2022, an area under the responsibility of SAMIM. The governor praised the work of the Rwandan forces and said that the return of the population to that area would take place soon.

In Mocímboa da Praia, work is underway to restore essential services, though return to the town has yet to start. By the end of April, several containers were installed in the main town to allow the resumption of state services while the rehabilitation of destroyed infrastructure continues. Sources on the ground say the containers were provided by TotalEnergies.

Meanwhile, reports of the alleged coercion of civil servants have emerged this week. According to Carta de Moçambique, civil servants from the Municipality of Mocímboa da Praia were given a 10-day deadline to report to their posts, or face administrative measures. The memo, from the president of Mocímboa da Praia's Municipal Council, and seen by Cabo Ligado, ordered civil servants to be in Mueda by 15 May, when they would be taken to Mocímboa da Praia.

Further south, some 180,000 displaced persons in the districts of Metuge, Ancuabe, and Chiúre will get replacement identity cards thanks to an initiative of the secretary of state of Cabo Delgado province. The authorities have stated that returnees must be fully identified to be accepted back to their areas of origin.

Difficulties in providing food assistance in the internally displaced people (IDP) centers could worsen in the coming days. According to the Famine Early Warning Systems Network (FEWS NET), the World Food Programme (WFP) has said that it may further reduce, or even be forced to suspend food aid rations from June 2022 if funding is not guaranteed as soon as possible. WFP had already halved its food rations for April and May, to the equivalent of 39 percent of a basic 2,100 kilcalorie daily intake. To continue to ensure its operations in northern Mozambique run at full capacity, WFP needs about $17.3 million monthly.

The United Nations Children's Fund (UNICEF) has expressed concern over the increased number of children abducted in Cabo Delgado in areas affected by the conflict. Official figures indicate that at least 51 children have been abducted by insurgents in Cabo Delgado in the past 12 months, and at least 350,000 children are displaced. To address this and other violations against children and women, UNICEF will support the purchase of equipment for the National Criminal Investigation Service (SERNIC) to strengthen its capacity to investigate cases related to violence against children, as well as gender-based violence.

ERDIN concerns notwithstanding, the PRCD reconstruction plan moves ahead. Joao Machatine Laimone, ADIN's Coordinator of the Communication Programs and Crosscutting Issues Unit, told the ADIN Supervision Committee on 29 April that actions are already underway to rehabilitate infrastructure in Macomia and Quissanga districts. Machatine also said that ADIN was witnessing spontaneous returns in most of its areas of operation.

Machatine was also present at the launch of the CDD annual report on "Conflict Resolution in Cabo Delgado and Resolution Dialogue in 2022 and Beyond." At the launch, he reaffirmed ADIN's leadership role in the reconstruction process of Cabo Delgado, and that the focus of his organization is on tackling the socio-economic factors that contributed to the insurgency. At the same event, CDD advocated the adoption of

inclusive dialogue between the different actors as a central approach in the conflict resolution strategy. CDD suggested a dialogue approach should be taken from national to district levels in order to discuss "issues of power, resources, rights or financial gains, but also less tangible issues such as respect, esteem, and feelings." It was not clear whether the proposal also refers to a direct dialogue between the government and the armed insurgency in Cabo Delgado.

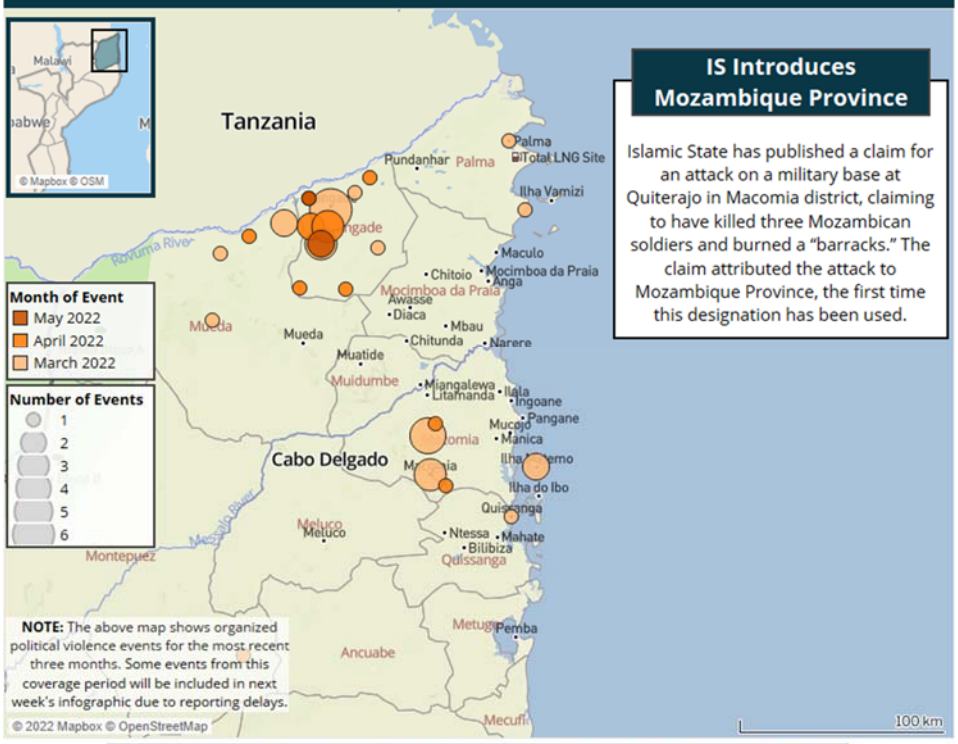
President Nyusi was in Cabo Delgado to attend the graduation ceremony of the Mozambican Civic Service at the Montepuez Education and Basic Center on 6 May. These forces, a type of reserve, are playing an important role in Palma, particularly in restoring destroyed infrastructure, according to the president.

President Nyusi's visit to Montepuez followed a three day official visit to Uganda, that began on 27 April. The most interesting development during the trip was President Nyusi's statement on Facebook that Uganda had been providing logistical support to the Local Forces in Cabo Delgado. As for further support, President Museveni was non-committal, but expressed willingness to support if needed. What constitutes "logistical support" is not yet known.

Montepuez also carries symbolic value in relations between Mozambique and Uganda, where Nyusi made an official visit in the last week of April. President Yoweri Museveni was trained at the Montepuez base when the Front for the National Salvation of Uganda (FRONASA) was formed, a forerunner of today's ruling National Resistance Movement (NRM).

Vice Admiral Hervé Blejean, in charge of the EU military training mission for Mozambican praised the role played by SAMIM and Rwandan forces, as well as the important coordination role of Mozambican forces in ensuring security in Cabo Delgado province. Blejean made these statements after a visit to Cabo Delgado, including Macomia district, where operations are ongoing. There, he said he saw a safe environment although he believes that much remains to be done, as the insurgent threat is still present.

Ligado Weekly #96



IS Introduces Mozambique Province

Islamic State has published a claim for an attack on a military base at Quiterajo in Macomia district, claiming to have killed three Mozambican soldiers and burned a "barracks." The claim attributed the attack to Mozambique Province, the first time this designation has been used.

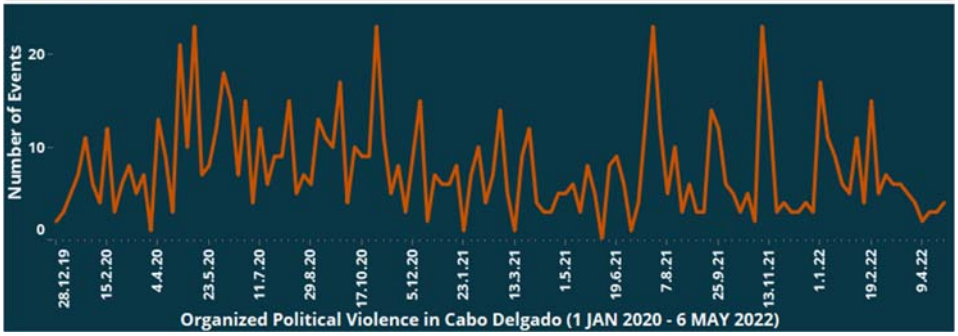
By the Numbers: Cabo Delgado (1 October 2017 - 6 May 2022)

Total number of organized political violence events: **1,232**

Total number of reported fatalities from organized political violence: **3,950**

Total number of reported fatalities from organized violence targeting civilians: **1,701**

*Numbers shown here and in the line graph below are for Cabo Delgado province only. See full report and ACLED website for more information about terminology.



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https://ventureglobalIng.com/press/venture-global-announces-lng-sales-and-purchase-agreements-with-exxonmobil/

MAY 10, 2022

VENTURE GLOBAL ANNOUNCES LNG SALES AND PURCHASE AGREEMENTS WITH EXXONMOBIL

Arlington, VA– Today, Venture Global LNG announced the execution of two new long-term Sales and Purchase Agreements (SPAs) with ExxonMobil LNG Asia Pacific (EMLAP) for the sale of 2 million tonnes per annum (MTPA) of liquefied natural gas (LNG). Under the agreements, the ExxonMobil affiliate will purchase 1 MTPA from the Plaquemines LNG facility (Plaquemines) as well as 1 MTPA from the CP2 LNG facility (CP2). This is the second supply agreement for CP2, which is expected to commence construction in 2023. Both facilities will replicate the same successful innovative design seen in operation today at Calcasieu Pass, where speed of execution resulted in the production of first LNG only 29 months after FID.

“Venture Global is deeply honored that ExxonMobil has chosen to collaborate with our company across both of our next projects: Plaquemines and CP2” said Mike Sabel, CEO of Venture Global LNG. “As a global LNG leader, ExxonMobil’s support for Venture Global’s innovation and engineering execution is a defining moment for our combined teams and the wider LNG market. Venture Global looks forward to many years of collaboration between our companies to bring lower carbon energy to the world.”

“LNG has an important role to play in helping society reduce emissions from industrial sectors,” said Peter Clarke, senior vice president of LNG for the ExxonMobil Upstream Company. “We look forward to working with Venture Global as we continue to grow ExxonMobil’s LNG portfolio and progress our plans to reliably deliver natural gas from the U.S. Gulf Coast to global markets.”

About Venture Global LNG

Venture Global is a long-term, low-cost provider of U.S. LNG sourced from resource rich North American natural gas basins. Venture Global’s first facility, Calcasieu Pass, commenced producing LNG in January 2022. The company is also constructing or developing an additional 60 MTPA of production capacity in Louisiana to provide clean, affordable energy to the world. The company is developing Carbon Capture and Sequestration (CCS) projects at each of its LNG facilities.

https://ventureglobalIng.com/press/venture-global-and-petronas-announce-sales-and-purchase-agreement/

MAY 11, 2022

VENTURE GLOBAL AND PETRONAS ANNOUNCE SALES AND PURCHASE AGREEMENT

Arlington, Virginia– Today, Venture Global LNG and PETRONAS LNG Ltd. ("PLL"), a subsidiary of the Malaysian state-owned oil and gas company, PETRONAS, announced the execution of a new 20-year Sales and Purchase Agreement (SPA) for the purchase of 1 million tonnes per annum (MTPA) of liquefied natural gas (LNG) from Venture Global's Plaquemines LNG facility. With this agreement, Venture Global has now announced 20-year sales for 16 MTPA of the 20 MPTA nameplate capacity at Plaquemines LNG.

"Venture Global is proud to begin a new, long-term supply partnership with PETRONAS, a world renowned and experienced leader in global LNG engineering and operations," said **Venture Global CEO Mike Sabel**. "This contract represents a significant expansion of our existing customer base in Asia and we particularly look forward to PETRONAS bringing our competitive, lower carbon energy into Southeast Asia, a region with rapidly growing gas demand."

PETRONAS Vice President of LNG Marketing & Trading, Shamsairi Ibrahim said, "PETRONAS looks forward to the long-term LNG partnership with Venture Global which will support the growth and accessibility of natural gas. With the growing demand for energy security, the addition of the new volume certainly enhances PETRONAS' global supply portfolio and demonstrates our support of the energy transition towards a lower carbon future."

About Venture Global LNG

Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?

Posted Wednesday April 28, 2021. 9:00 MT

The next six months will determine the size and length of the new LNG supply gap that is hitting harder and faster than anyone expected six months ago. Optimists will say the Mozambique government will bring sustainable security and safety to the northern Cabo Delgado province and provide the confidence to Total to quickly get back to LNG development such that its LNG in-service delay is a matter of months and not years. We hope so for Mozambique's domestic situation, but will it be that easy for Total's board to quickly look thru what just happened? Total suspended LNG development for 3 months, restarted development on March 25, but then 3 days of violence led it to suspend development again on March 28, and announce force majeure on Monday April 26. Even if the optimists are right, Mozambique LNG is counted on for LNG supply and the major LNG supply project that are in LNG supply forecasts are now all delayed – Total Phase 1 of 1.7 bcf/d and its follow on Phase 2 of 1.3 bcf/d, and Exxon's Rozuma Phase 1 of 2.0 bcf/d. It is important to remember this 5.0 bcf/d of major LNG supply is being counted in LNG supply forecasts and starting in 2024. At a minimum, we think the more likely scenario is a delay of at least 2 years in this 5.0 bcf/d from the pre-Covid timelines. And this creates a much bigger and sooner LNG supply gap starting ~2025 and stronger outlook for LNG prices. Thermal coal in Asia will play a role in keeping a lid on LNG prices. But there will be the opportunity for LNG suppliers to at least review the potential for brownfield LNG projects to fill the growing supply gap. The thought of increasing capex was a non-starter six months ago, but there is a much stronger outlook for global oil and gas prices. Oil and gas companies are pivoting from cutting capex to small increases in 2021 capex and expecting for higher capex in 2022. We believe this sets the stage for looking at potential FID of brownfield LNG projects before the end of 2021 to be included in 2022 capex budgets. Mozambique is causing an LNG supply gap that someone will try to fill. And if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? Cdn natural gas producers hope so as this would mean more Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub.

Total declares force majeure on Mozambique LNG, Yesterday, Total announced [LINK] "*Considering the evolution of the security situation in the north of the Cabo Delgado province in Mozambique, Total confirms the withdrawal of all Mozambique LNG project personnel from the Afungi site. This situation leads Total, as operator of Mozambique LNG project, to declare force majeure. Total expresses its solidarity with the government and people of Mozambique and wishes that the actions carried out by the government of Mozambique and its regional and international partners will enable the restoration of security and stability in Cabo Delgado province in a sustained manner".* Total is working Phase 1 is ~1.7 bcf/d (Train 1 + 2, 6.45 mtpa/train) and was originally expected to being LNG deliveries in 2024. There was no specific timeline for Phase 2 of 1.3 bcf/d (Train 3 + 4, 5.0 mtpa/train), but was expected to follow Phase 1 in short order to keep capital costs under control with a continuous construction process with a potential onstream shortly after 2026.

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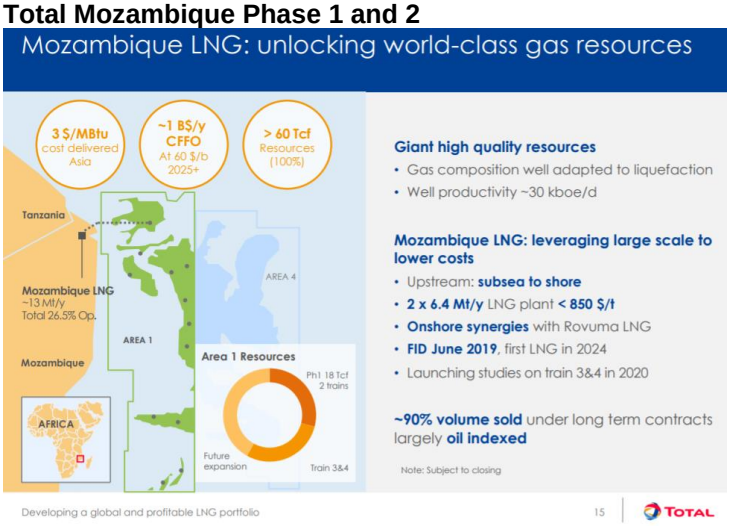
Total Mozambique Phase 1 and 2



Source: Total Investor Day September 24, 2019

Total's Mozambique force majeure is no surprise, especially the need to the restoration of security and stability "in a sustained manner". Yesterday, Total announced [LINK] "*Considering the evolution of the security".* No one should be surprised by the force majeure or the sustained manner caveat. SAF Group posts a weekly Energy Tidbits research memo [LINK], wherein we have, in multiple weekly memos, that Total had shut down development in December for 3 months due to the violent and security risks. It restarted development on Wed March 24, violence/attacks immediately resumed for 3 consecutive days, and then Total suspended development on Sat March 27. Local violence/attacks shut development down in Dec, the situation gets settled enough for Total to restart in March, only to be shut down 3 days thereafter. No one should be surprised especially with Total's need to see security and stability "in a sustained manner".

Does anyone really think Total will risk another quick 2-3 month restart or even in 2021? The Mozambique government will be working hard to convince Total to restart soon. We just find it hard to believe Total board will risk a replay of March 24-27 in 2021. Unfortunately, Mozambique has had internal conflict for years. It reached a milestone to the positive in August 2019. Our SAF Group August 11, 2019 Energy Tidbits memo [LINK] highlighted the signing of a peace pact between Mozambique President Nyusi and leader of the Renamo opposition Momade. This was the official end to a 2013 thru 2016 conflict following a failure to hold up the prior peace pact. At that time, FT reported [LINK] "Mr Nyusi has said that "*the government and Renamo will come together and hunt" rebels who fail to disarm. The government has struggled to stem the separate insurgency in the north, which has killed or displaced hundreds near the gas-rich areas during the past two years. While the roots of the conflict remain murky, it is linked to a local Islamist group and appears to be drawing on disaffection over sharing gas investment benefits, say analysts*." This is just a reminder this is not a new issue. LNG is a game changer to Mozambique's economic future. It is, but also has been, a government priority to have the security and safety for Total and Exxon to move on their LNG developments. Its hard to believe the Mozambique government will be able to quickly convince Total and Exxon boards that they can be comfortable there is a sustained security/safety situation and they can send their people back in to develop the LNG. Total's board would allow any resumption of development before year end 2021. The last thing Total wants is a replay of March 24-27. The first question is how long will it take before the Total board is convinced its safe to restart. Could you imagine them doing a replay of what just happened? Wait three months, restart development and have to stop again right away? We have to believe that could lead the Total board to believe it is unfixable for years. We just don't think they are to prepared to risk that decision in 3 months. Its why we have to think there isn't a restart approval until at least in 2022 at the earliest ie. why we think the likely scenario is a delay of 2-3 years, and not a matter of months.

Mozambique's security issues pushes back 5.0 bcf/d of new LNG supply at least a couple years. The global LNG issue is that 5 bcf/d of new Mozambique LNG supply (apart from the Eni Coral FLNG of 0.45 bcf/d) won't start up in 2024 and

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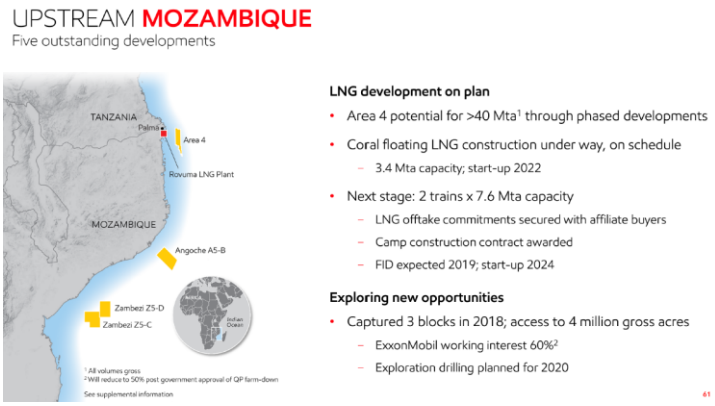
continuing thru the 2020s. And we believe all LNG forecasts included this 5.0 bcf/d to be in service in the 2020s as Mozambique had been considered the best positioned LNG supply to access Asia after Australia and Papua New Guinea. (i) Eni Coral Sul (Rovuma Basin) FLNG of 0.45 bcf/d planned in service in 2022. [LINK] This is an offshore floating LNG vessel that is still expected to be in service in 2022. (ii) Total Phase 1 to add 1.7 bcf/d with an in service originally planned for 2024. We expect the in service data to be pushed back to at least 2026 assuming Total gives a development restart approval in Dec 2021. In theory, this would only be a 1 year loss of time. However, Total has let services go, the project will be idle for 9 months, it isn't clear if the need to get people out quickly let them do a complete put the project on hold, and how many people will be on site maintaining the status of the development during the force majeure. Also what new procedures and safety will be put in place for a restart. These all mean there will be added time needed to get the project back to where it was when force majeure was declared ie. why we think a 12 month time delay will be more like an 18 month project delay. (iii) Exxon's Rozuma Phase 1 LNG will add 2.0 bcf/d and, pre-Covid, was expected to be in service in 2025. We believe the delays related to security and safety at Total are also going to impact Exxon. We find it highly unlikely the Exxon board would take a different security and safety decision than Total. Pre-pandemic, Exxon's March 6, 2019 Investor Day noted their operated Mozambique Rovuma LNG Phase 1 was to be 2 trains each with 1.0 bcf/d capacity for total initial capacity of 2.0 bf/d with FID expected in 2019 and first LNG deliveries in 2024. The 2019 FID expectation was later pushed to be expected just before the March 2020 investor day. But the pandemic hit, and on March 21, 2020, we tweeted [LINK] on the Reuters story "*Exclusive: Coronavirus, gas slump put brakes on Exxon's giant Mozambique LNG plan"* [LINK] that noted Exxon was expected to delay the Rovuma FID. There was no timeline, but the expectation was that FID would now be in 2022 (3 years later than original timeline0 and that would push first LNG likely to 2027. (iv) Total Phase 2 was to add 1.3 bcf/d. There was no firm in service date but it was expected to follow closely behind Phase 1 to maintain services. That would have put it originally in the 2026/2027 period. But if Phase 1 is pushed back 2 years, so will Phase 2 so more likely 2028/2029.. (v) Total Phase 1 + 2 and Exxon Rozuma Phase 1 total 5.0 bcf/d and would have been (and still are) in all LNG supply forecasts for the 2020s. (vi) We aren't certain if the LNG supply forecasts include Exxon Rozuma Phase 2 ,which would be an additional 2.0 bcf/d on top of the 5.0 bcf/d noted above. Exxon Rozuma has always been expected to be at least 2 Phases. This has been the plan since the Anadarko days given the 85 tcf size of the resource on Exxon's Area 4. There was no firm in service data for Phase 2, but it was expected they would also closely follow Phase 1 to maintain services. We expect that original timeline would have been 2026/2027 and that would not be pushed back to 2029/2030. (vii) It doesn't matter if its only 5 bcf/ of Mozambique that is delayed 2 to 3 years, it will cause a bigger LNG supply gap and sooner. The issue for LNG markets is this is taking projects that are in development effectively out of the queue for some period.

Exxon Mozambique LNG



Source: Exxon Investor Day March 6, 2019

Won't LNG and natural gas get hit by Biden's push for carbon free electricity? Yes, in the US. For the last 9 months, we have warned on Biden's climate change plan that were his election platform and now form his administration's energy transition map. We posted our July 28, 2020 blog "*Biden To Put US On "Irreversible Path to Achieve Net-Zero Emissions, Economy-Wide" Is a Major Negative To US Natural Gas in 2020s* "[LINK] on Biden's platform "*The Biden Plan to Build a Modern, Sustainable Infrastructure and an Equitable Clean Energy Future*" [LINK]. Biden's new American Jobs Plan

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[LINK] lines up with his campaign platform including to put the US "*on the path to achieving 100 percent carbon-free electricity by 2035*.". Our July 28, 2020 blog noted that it would require replacing ~60% of US electricity generation with more renewable and it could eliminate ~40% (33.5 bcf/d) of 2019 US natural gas consumption. If Biden is 25% successful by 2030, it would replace ~6.3 bcf/d of natural gas demand. It would be a negative to US natural gas and force more US natural gas to export markets. The wildcard when does US natural gas start to decline if producers are faced with the reality of natural gas being phased out for electricity. The other hope is that when Biden says "carbon-free", its not what ends up in the details of any formal policy statement ie. carbon electricity will be allowed with Biden's push for CCS.

Will Cdn natural gas be similarly hit by if Trudeau move to "emissions free" and not "net zero emissions" electricity? Yes and No. Our SAF Group April 25, 2021 Energy Tidbits memo [LINK] was titled ""*Bad News For Natural Gas, Trudeau's Electricity Goal is Now 100% "Emissions Free" And Not "Net Zero Emissions*". On Thursday, PM Trudeau spoke at Biden's global climate summit [LINK] and looks like he slipped in a new view on electricity than was in last Monday's budget and his Dec climate plan. Trudeau said "*In Canada, we've worked hard to get to over 80% emissions-free electricity, and we're not going to stop until we get to 100%."* Speeches, especially ones made on a global stage are checked carefully so this had to be deliberate. Trudeau said "*emissions free*" and not net zero emissions electricity. It seems like this language is carefully written to exclude any fossil fuels as they are not emissions free even if they are linked to CCS. Recall in Liberals big Dec 2020 climate announcement [LINK], Liberals said ""*Work with provinces, utilities and other partners to ensure that Canada's electricity generation achieves net-zero emissions before 2050*." There is no way Trudeau changed the language unless he meant to do so. And this is a major change as it would seem to indicate his plan to eliminate all fossil fuels used for electricity. If so this would be a negative to Cdn natural gas that would be stuck within Western Canada and/or continuing to push into the US when Biden is trying to switch to carbon free electricity. We recognize that there is still some ambiguity in what will be the details of policy and the Liberals aren't changing to no carbon sourced electricity at all. Let's hope so. But let's also be careful that politicians don't change language without a reason or at least with a view to setting up for some future hit. Plus Trudeau had a big warning in that same speech saying "*we will make it law to respect our new 2030 target and achieve net-zero emissions by 2050*". They plan to make it the law that Canada has to be on track for the Liberals 2030 emissions targets. This means that the future messaging will be that the Liberals have no choice but to take harder future emissions actions as it is the law. They will be just obeying the law as they will be obligated to obey the law. Everyone knows the messaging will be we have to do more get to Net Zero, that in itself will inevitably mean it will be the law if he actually does move to eliminate any carbon based electricity. So yes it's a negative, that is unless more Cdn natural gas can be exported via LNG to Asia. We believe this would be a plus to be priced against global LNG instead of Henry Hub.

Biden's global climate summit reminded there is too much risk to skip over natural gas as the transition fuel. Apart from the US and Canada, we haven't seen a sea shift to eliminating natural gas for power generation, especially from energy import dependent countries. There is a strong belief that hydrogen and battery storage will one day be able to scale up at a competitive cost to lead to the acceleration away from fossil fuels. But that time isn't yet here, at least not for energy import dependent countries. One of the key themes from last week's leader's speeches at the Biden global climate summit – to get to Net Zero, the world is assuming there wilt be technological advances/discoveries that aren't here today and that have the potential to immediately ramp up in scale. IEA Executive Director Faith Birol was blunt in his message [LINK] saying "*Right now, the data does not match the rhetoric – and the gap is getting wider*." And "*IEA analysis shows that about half the reductions to get to net zero emissions in 2050 will need to come from technologies that are not yet ready for market. This calls for massive leaps in innovation. Innovation across batteries, hydrogen, synthetic fuels, carbon capture and many other technologies.* US Special Envoy for Climate John Kerry said a similar point that half of the emissions reductions will have to come from technologies that we don't yet have at scale. UK PM Johnson [LINK] didn't say it specifically, but points to this same issue saying "*To do these things we've got to be constantly original and optimistic about new technology and new solutions whether that's crops that are super-resistant to drought or more accurate weather forecasts like those we hope to see from the UK's new Met Office 1.2bn supercomputer that we're investing in*." It may well be that the US and other self sufficient energy countries are comfortable going on the basis of assuming technology developments will occur on a timely basis. But, its clear that countries like China, India, South Korea and others are not prepared to do so. And not prepared to have the confidence to rid themselves of coal power generation. This is why there hasn't been any material change in the LNG demand outlook

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We expect the IEA's blunt message that the gap is getting wider will be reinforced on May 18. We have had a consistent view on the energy transition for the past few years. We believe it is going to happen, but it will take longer, be a bumpy road and cost more than expected. This is why we believe the demise of oil and natural gas won't be as easy and fast as hoped for by the climate change side. The IEA's blunt warning on the gap widening should not be a surprise as they warned on this in June 2020. Birol's climate speech also highlighted that the IEA will release on May 18 its roadmap for how the global energy sector can reach net zero by 2050. Our SAF Group June 11, 2020 blog "*Will The Demise Of Oil Take Longer, Just Like Coal? IEA and Shell Highlight Delays/Gaps To A Smooth Clean Energy Transition*" [LINK] feature the IEA's June 2020 warning that the critical energy technologies needed to reduce emissions are nowhere near where they need to be. In that blog, we said "there was an excellent illustration of the many significant areas, or major pieces of the puzzle, involved in an energy transition by the IEA last week. The IEA also noted the progress of each of the major pieces and the overall conclusion is that the vast majority of the pieces are behind or well behind where they should be to meet a smooth timely energy transition. It is important to note that these are just what the IEA calls the "*critical energy technologies*" and does not get into the wide range of other considerations needed to support the energy transition. The IEA divides these "critical energy technologies "into major groupings and then ranked the progress of each of these pieces in its report "*Tracking Clean Energy Progress"* [LINK] by on track, more efforts needed, or not on track". Our blog included the below IEA June 2020 chart.

IEA's Progress Ranking For "Critical Energy Technologies" For Clean Energy Transition

Power	Renewable Power	Geothermal
	Solar PV	Ocean Power
	Onshore Wind	Nuclear Power
	Offshore Wind	Natural Gas-Fired Power
	Hydropower	Coal-Fired Power
	Bioenergy Power Generation	CCUS in Power
	Concentrating Solar Power	
Fuel Supply	Methane Emissions from O&G	Flaring Emissions
Industry	Chemicals	Pulp and Paper
	Iron and Steel	Aluminum
	Cement	CCUS in Industry and Transformation
Transport	Electric Vehicles	Transport Biofuels
	Rail	Aviation
	Fuel Consumption of Cars and Vans	International Shipping
	Trucks and Busses	
Buildings	Building Envelopes	Lighting
	Heating	Appliances and Equipment
	Heat Pumps	Data Centres and Data Transmission Networks
	Cooling	
Energy Integration	Energy Storage	Demand Response
	Hydrogen	Direct Air Capture
	Smart Grids	

Source: IEA

On Track More Efforts Needed Not on Track

Source: IEA Tracking Clean Energy Progress, June 2020

We are referencing Shell's long term outlook for LNG We recognize there are many different forecasts for LNG, but are referencing Shell' LNG Outlook 2021 from Feb 25, 2021 for a few reasons. (i) Shell's view on LNG is the key view for when and what decision will be made for LNG Canada Phase 2. (ii) Shell is one of the global leaders in LNG supply and trading. (iii) Shell provides on the record LNG outlooks every year so there is the ability to compare and make sure the outlook fits the story. It does. (iv) Shell, like other supermajors, has had to make big capex cuts post pandemic and that certainly wouldn't put any bias to the need for more capex.

Shell's March 2021 long term outlook for LNG demand was basically unchanged vs 2020 and leads to a LNG supply gap in mid 2020s Shell does not provide the detailed numbers in their Feb 25, 2021 LNG forecast. We would assume they

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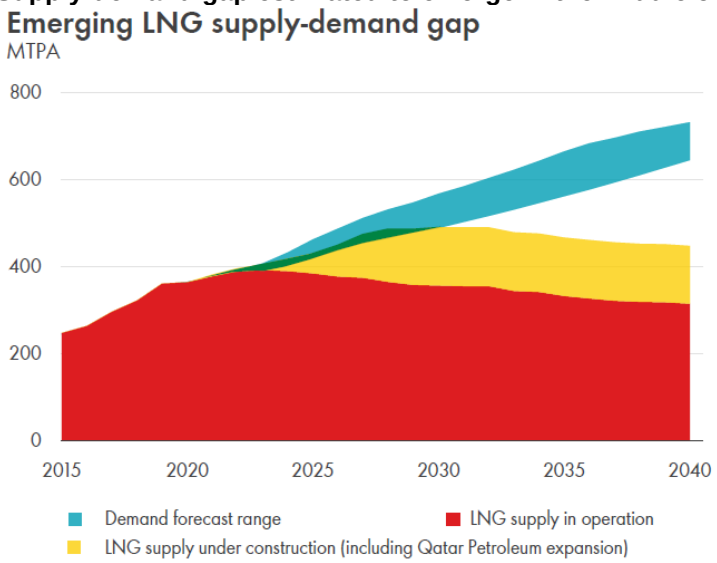
would have reflected some delay, perhaps 1 year, at Mozambique but would be surprised if they put a 2-3 year delay in for the 5 bcf/d from Total Phase 1 +2 and Exxon Rozuma Phase 1. Compared to their LNG Outlook 2020, it looks like there was no change for their estimate of global natural gas demand growth to 2040, which looked relatively unchanged at approx. 5,000 bcm/yr or 484 bcf/d. Similarly, long term LNG demand looked unchanged to 2040 of ~700 mm tonnes (92 bcf/d) vs 360 mm tonnes (47 bcf/d) in 2020. In the 2021 outlook, Shell highlighted that the pandemic delayed project construction timelines and that the "*lasting impact expected on LNG supply not demand"*. And that Shell sees a LNG "*supply-demand gap estimated to emerge in the middle of the current decade as demand rebounds*". Comparing to 2020, it looks like the supply-demand gap is sooner.

Supply-demand gap estimated to emerge in the middle of the current decade



Source: Shell LNG Outlook 2021, Feb 25, 2021

Mozambique delays are redefining the LNG markets for the 2020s: Delaying 5 bcf/d of Mozambique new LNG supply 2-3 years means a much bigger supply gap starting in 2025.. Even if the optimists are right, there are now delays to all major Mozambique LNG supply from LNG supply forecasts. We don't have the detail, but we believe all LNG forecasts, including Shell's LNG Outlook 2021, would have included Total's Phase 1 and Phase 2 and Exxon Rozuma Phase 1. As noted earlier, we believe that the likely impact of the Mozambique security concerns is that these forecasts would likely have to push back 1.7 bcf/d from Total Phase 1 to at least 2026, 2.0 bcf/d Exxon Rozuma Phase 1 to at least 2027, and 1.3 bcf/d Total Phase 2 to at least 2028/2029 with the real risk these get pushed back even further. 5.0 bcf/d is equal to 38 mtpa. These delays would mean there is an increasing LNG supply gap in 2025 and increasingly significantly thereafter. And even if a new greenfield LNG project is FID's right away, it wouldn't be able to step in to replace Total Phase 1 prior startup timing for 2024 or likely the market at all until at least 2027. Its why the decision on filling the gap will fall on brownfield LNG projects.

And does this bigger, nearer supply gap force LNG players to look at what brownfield LNG projects they could advance? A greenfield LNG project would likely take at least until 2027 to be in operations. Its why we believe the Mozambique delays will effectively force major LNG players to look to see if there are brownfield LNG projects they should look to advance. Prior to the just passed winter, no one would think Shell or other major LNG players would be considering any new LNG FIDs in 2021. All the big companies are in capital reduction mode and debt reduction mode. But Brent oil is now solidly over $60 and LNG prices hit record levels in Jan and the world's economic and oil and gas demand outlook are increasing with vaccinations. And we are starting to see companies move to increasing capex with the higher cash flows. We would not expect any major LNG players to move to FID right away. But we see them watching to see if 2021 plays out to still support this increasing LNG supply gap. And unless new mutations prevent vaccinations from returning the world to normal, we suspect that major LNG players, like other oil and gas companies, will be looking to increase

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capex as they approve 2022 budgets. The outlook for the future has changed dramatically in the last 5 months. The question facing Shell and others, should they look to FID new LNG brownfield projects in the face of an increasing LNG supply gap that is going to hit faster and harder than expected a few months ago. We expect these decisions to be looked at before the end of 2021. LNG prices will be stronger, but we expect the limiting cap in Asia will be that thermal coal will be used to mitigate some LNG price pressure.

Back to Shell, does increasing LNG supply gap provide the opportunity to at least consider a LNG Canada Phase 2 FID over the next 9 months? Shell is no different than any other major LNG supplier in always knowing the market and that the oil and gas outlook is much stronger than 6 months ago. No one has been or is talking about this Mozambique impact and how it will at least force major LNG players to look at if they should FID new brownfield LNG projects to take advantage of this increasing supply gap. We don't have any inside contacts at Shell or LNG Canada, but that is no different than when we looked at the LNG markets in September 2017 and saw the potential for Shell to FID LNG Canada in 2018. We posted a September 20, 2017 blog *"China's Plan To Increase Natural Gas To 10% Of Its Energy Mix Is A Global Game Changer Including For BC LNG*" [LINK]. Last time, it was a demand driven supply gap, this time, it's a supply driven supply gap. We have to believe any major LNG player, including Shell, will be at least looking at their brownfield LNG project list and seeing if they should look to advance FID later in 2021. Shell has LNG Canada Phase 2, which would add 2 additional trains or approx. 1.8 bcf/d. And an advantage to an FID would be that Shell would be able to commit to its existing contractors and fabricators for a continuous construction cycle following on LNG Canada Phase 1 ie. to help keep a lid on capital costs. No one is talking about the need for these new brownfield LNG projects, but, unless Total gets back developing Mozambique and keeps the delay to a matter of months, its inevitable that these brownfield LNG FID internal discussions will be happening in H2/21. Especially since the oil and gas price outlook is much stronger than it was in the fall and companies will be looking to increase capex in 2022 budgets

A LNG Canada Phase 2 would be a big plus to Cdn natural gas. A LNG Canada Phase 2 FID would be a big plus for Cdn natural gas. It would allow another ~1.8 bcf/d of Cdn natural gas to be priced against Asian LNG prices and not against Henry Hub. And it would provide demand offset versus Trudeau if he moves to make electricity "emissions free" and not his prior "net zero emissions". Mozambique may be in Africa, but, unless sustained peace and security is attained, it is a game changer to LNG outlook creating a bigger and sooner LNG supply gap. And with a stronger tone to oil and natural gas prices in 2021, the LNG supply gap will at least provide the opportunity for Shell to consider FID for its brownfield LNG Canada Phase 2 and provide big support to Cdn natural gas for back half of the 2020s. And perhaps if LNG Canada is exporting 3.6 bcf/d from two phases, it could help flip Cdn natural gas to a premium to US natural gas especially if Biden is successful in reducing US domestic natural gas consumption for electricity. The next six months will be very interesting to watch for LNG markets.

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Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs

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The last 7 days has shown there is a sea change as Asian LNG buyers have made an abrupt change in their LNG contracting and are moving to lock in long term LNG supply. This is the complete opposite of what they were doing pre-Covid when they were trying to renegotiate Qatar LNG long term deals lower and moving away from long term deals to spot/short term sales. Why? We think they did the same math we did in our April 28 blog "*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*" and saw a much bigger and sooner LNG supply gap driven by the delay of 5 bcf/d of Mozambique LNG that was built into most, if not all LNG supply forecasts. Asian LNG buyers are committing real dollars to long term LNG deals, which we believe is the best validation for the LNG supply gap. Another validation, Shell, Total and others are aggressively competing to invest long term capital to partner in Qatar Petroleum's massive 4.3 bcf/d LNG expansion despite plans to reduce fossil fuels production in the 2020s. And even more importantly to LNG suppliers, the return to long term LNG contracts provides the financing capacity to commit to brownfield LNG FIDs. The abrupt change by Asian LNG buyers to long term contracts is a game changer for LNG markets and sets the stage for brownfield LNG FIDs likely as soon as before year end 2021. It has to be brownfield LNG FIDs if the gap is coming bigger and sooner. And we return to our April 28 blog point, if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? LNG Canada Phase 1 at 1.8 bcf/d capacity is already a material positive for Cdn natural gas producers. A FID on LNG Canada Phase 2 would be huge, meaning 3.6 bcf/d of Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub. And with a much shorter distance to Asian LNG markets. This is why we focus on global LNG markets for our views on the future value of Canadian natural gas.

Sea change in Asian LNG buyers is also the best validation of the LNG supply gap and big to LNG supply FIDs. Has the data changed or have the market participants changed in how they react to the data? We can't recall exactly who said that on CNBC on July 12, it's a question we always ask ourselves. In the LNG case, the data has changed with Mozambique LNG delays and that has directly resulted in market participants changing and entering into long term contracts. We can't stress enough how important it is to see Asian LNG buyers move to long term LNG deals. (i) Validates the sooner and bigger LNG supply gap. We believe LNG markets should look at the last two weeks of new long term deals for Asian LNG buyers as being the validation of the LNG supply gap that clearly emerged post Total declaring force majeure on its 1.7 bcf/d Mozambique LNG Phase 1 that was under construction and on track for first LNG delivery in 2024. Since then, markets have started to realize the Mozambique delays are much more than 1.7 bcf/d. They have seen major LNG suppliers change their outlook to a more bullish LNG outlook and, most importantly, are now seeing Asian LNG buyers changing from trying to renegotiate long term LNG deals lower to entering into long term LNG deals to have security of supply. Asian LNG buyers are cozying up to Qatar in a prelude to the next wave of Asian buyer long term deals. What better validation is there than companies/countries putting their money where their mouth is. (ii) Provides financial commitment to help push LNG suppliers to FID. We believe these Asian LNG buyers are doing much more than validating a LNG supply gap to markets. The big LNG suppliers can move to FID based on adding more LNG supply to their portfolio, but having more long term deals provides the financial anchor/visibility to long term capital commitment from the buyers. Long term contracts will only help LNG suppliers get to FID.

It was always clear that the Mozambique LNG supply delay was 5.0 bcf/d, not just 1.7 bcf/d from Total Phase 1. LNG markets didn't really react to Total's April 26 declaration of force majeure on its 1.7 bcf/d Mozambique LNG Phase 1. This was an under construction project that was on time to deliver first LNG in 2024. It was in all LNG supply forecasts. There was no timeline given but, on the Apr 29 Q1 call, Total said that it expected any restart decision would be least a year away. If so, we believe that puts any actual construction at least 18 months away. There will be work to do just to get back to where they were when they were forced to stop development work on Phase 1. Surprisingly, markets didn't look the broader implications, which is why we posted our 7-pg Apr 28 blog "*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*" [LINK] We highlighted that Mozambique LNG delays were actually 5 bcf/d, not 1.7 bcf/d. And this 5 bcf/d of Mozambique LNG supply was built into most, if not all, LNG supply forecasts. The delay in Total Phase 1 would lead to a commensurate delay in its Mozambique LNG Phase 2 of 1.3 bcf/d. Total Phase 2 was to add 1.3 bcf/d. There was no firm in service date, but it was expected to

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follow closely behind Phase 1 to maintain services. That would have put it originally in the 2026/2027 period. But if Phase 1 is pushed back at least 2 years, so will the follow on Phase 2, so more likely, it will be at least 2028/2029. The assumption for most, if not all, LNG forecasts was that Phase 2 would follow Phase 1. Exxon Rozuma Phase 1 of 2.0 bcf/d continues to be pushed back in timeline especially following Total Phase 1. Exxon's Mozambique Rozuma Phase 1 LNG will add 2.0 bcf/d and, pre-Covid, was originally expected to be in service in 2025. The project was being delayed and Total's force majeure has added to the delays. Rozuma onshore LNG facilities are right by Total. On June 20, we tweeted [LINK] on the Reuters report "*Exclusive: Galp says it won't invest in Rovuma until Mozambique ensures security*" [LINK]. Galp is one of Exxon's partners in Rozuma. Reuters reported that Galp said they won't invest in Exxon's Rozuma LNG project until the government ensures security, that this may take a while, they won't be considering the project until after Total has reliably resumed work on its Phase 1, which likely puts any Rozuma decision until at least end of 2022 at the earliest. Galp has taken any Rozuma Phase 1 capex out of their new capex plans thru 2025 and will have to take out projects in their capex plan if Rozuma does come back to work. This puts Rozuma more likely 2028 at the earliest as opposed to before the original expectations of before 2025. Pre-pandemic, Exxon's March 6, 2019 Investor Day noted their operated Mozambique Rovuma LNG Phase 1 was to be 2 trains each with 1.0 bcf/d capacity for total initial capacity of 2.0 bf/d with FID expected in 2019 and first LNG deliveries sometime before 2025. LNG forecasts had been assuming Exxon Rozuma would be onstream around 2025. The 2019 FID expectation was later pushed to be expected just before the March 2020 investor day. But the pandemic hit, and on March 21, 2020, we tweeted [LINK] on the Reuters story "*Exclusive: Coronavirus, gas slump put brakes on Exxon's giant Mozambique LNG plan"* [LINK] that noted Exxon was expected to delay the Rovuma FID. There was no timeline, but now, any FID is not expected until late 2022 at the earliest, that would push first LNG likely to at least 2028. What this means is that the Mozambique LNG delays are not 1.7 bcf/d but 5.0 bcf/d of projects that were in all, if not most, LNG supply forecasts. There is much more in our 7-pg blog. But Mozambique is what is driving a much bigger and sooner LNG supply gap starting ~2025 and stronger outlook for LNG prices

<u>One of the reasons why it went under the radar is that major LNG suppliers played stupid on the Mozambique impact.</u> It makes it harder for markets to see a big deal when the major LNG suppliers weren't making a big deal of Mozambique or playing stupid in the case of Cheniere in their May 4 Q1 call. In our May 9, 2021 Energy Tidbits memo, we said we had to chuckle when we saw Cheniere's response in the Q&A to its Q1 call on May 4 that they only know what we know from reading the Total releases on Mozambique and its impact on LNG markets. It's why we tweeted [LINK] "*Hmm! $LNG says only know what we read on #LNG market impact from $TOT $XOM MZ LNG delays. Surely #TohokuElectric & other offtake buyers are reaching out to #Cheniere. MZ LNG delays is a game changer to LNG in 2020s, see SAF Group blog. Thx @olympe_mattei @TheTerminal #NatGas".* How could they not be talking to LNG buyers for Total and /or Exxon Mozambique LNG projects. In the Q1 Q&A, mgmt was asked about Mozambique and didn't know any more than what you or I have read. Surely, they were speaking to Asian LNG buyers who had planned to get LNG supply from Total Mozambique or Exxon Rozuma Mozambique or both. Mgmt is asked "*wanted to just kind of touch on the color use talking about for these supply curve. And are you able to kind of provide any thoughts on the Mozambique and a deferral with the project of that size on 13 and TPA being deferred by we see you have you noticed any impact to the market has is there any impact for stage 3 with that capacity? Thanks*." Mgmt replies "*No. Look, I only know about the Mozambique delay with what I read as well as what you read that from total and an Exxon. And it's a sad situation and I hope everybody is safe and healthy that were there to experience that unrest but no I don't think it's, again it's a different business paradigm than what we offer. So, we offer a full value product, the customer doesn't have to invest in equity, customer doesn't have to worry about the E&P side of the business because, we've been able to both the by at our peak almost 7 Dee's a day of US NAT gas from almost a 100 different producers on 26 different pipelines and deliver it to our to facilities. So we take care of a lot of what the customer needs".*

<u>There are other LNG supply delays/interruptions beyond Mozambique.</u> There have been a number of other smaller LNG delay or existing supply interruptions that add to Asian LNG buyers feeling less secure about the reliability of mid to long term LNG supply. Here are just a few examples. (i) Total Papua LNG 0.74 bcf/d. On June 8, we tweeted [LINK] *"Timing update Papua #LNG project. $OSH June 8 update "2022 FEED, 2023 FID targeting 2027 first gas". $TOT May 5 update didn't forecast 1st gas date. Papua is 2 trains w/ total capacity 0.74 bcf/d."* We followed the tweet saying [LINK] *"Bigger #LNG supply gap being created >2025. Papua #LNG originally expected FID in 2020 so 1st LNG is 2 years delayed.*

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Common theme - new LNG supply is being delayed ie. [Total] Mozambique. Don't forget need capacity>demand due to normal maintenance, etc. Positive for LNG." (ii) Chevron's Gorgon. A big LNG story in H2/20 was the emergence of weld quality issues in the propane heat exchangers at Train 2, which required additional downtime for repair. Train 2 was shut on May 23 with an original restart of July 11, but the repairs to the weld quality issues meant it didn't restart until late Nov. The same issue was found in Train 1 but repairs were completed. However extended downtime for the trains led to lower LNG volumes. Gorgon produced ~2.3 bcf/d in 2019 but was down to 2.0 bcf/d in 2020. (iii) Equinor's Melkoeya 0.63 bcf/d shut down for 18 months due to a fire. A massive fire led to the Sept 28, 2020 shutdown of the 0.63 bcf/d Melkoeya LNG facility in Norway. On April 26, Equinor released "*Revised start-up date for Hammerfest LNG*" [LINK] with regard to the 0.63 bcf/d Melkoeya LNG facility. The original restart date was Oct 1, 2021 (ie. a 12 month shut down), but Equinor said "*Due to the comprehensive scope of work and Covid-19 restrictions, the revised estimated start-up date is set to 31 March 2022".* When we read the release, it seemed like Equinor was almost setting the stage for another potential delay in the restart date. Equinor had two qualifiers to this March 31, 2022 restart date. Equinor said "*there is still some uncertainty related to the scope of the work*" and "*Operational measures to handle the Covid-19 situation have affected the follow-up progress after the fire. The project for planning and carrying out repairs of the Hammerfest LNG plant must always comply with applicable guidelines for handling the infection situation in society. The project has already introduced several measures that allow us to have fewer workers on site at the same time than previously expected. There is still uncertainty related to how the Covid-19 development will impact the project progress."*

Cheniere stopped the game playing the game on June 30. Our July 4, 2021 Energy Tidbits memo noted that it looks like Cheniere has stopped playing stupid with respect to the strengthening LNG market in 2021. We can't believe they thought they were fooling anyone, especially their competitors. Bu that week, they came out talking about how commercial discussions have picked up in 2021 and it's boosted their hope for a Texas (Corpus Christi) LNG expansion. On Wednesday, Platts reported "*Pickup in commercial talks boosts Cheniere's hopes on mid-scale LNG project*" [LINK] Platts wrote "*Cheniere Energy expects to make a "substantial dent" by the end of 2022 in building sufficient buyer support for a proposed mid-scale expansion at the site of its Texas liquefaction facility, Chief Commercial Officer Anatol Feygin said June 30 in an interview." " As a result, he said, " The commercial engagement, I think it is very fair to say, has really picked up steam, and we are quite optimistic over the coming 12-18 months to make a substantial dent in that Stage 3 commercialization."* Platts also reported that Cheniere noted this has been a tightening market all year (ie would have been known by the May 4 Q1 call). Platts wrote "*We obviously find ourselves at the beginning of this year and throughout in a very tight market where prices today into Asia and into Europe are at levels that we frankly haven't seen in a decade-plus," Feygin said. "We've surpassed the economics that the industry saw post the Fukushima tragedy in March 2011, and that's happened in the shoulder period."* It's a public stance as to a more bullish LNG outlook

But we still see major LNG suppliers like Australia hinting but not outright saying that LNG supply gap is coming sooner. We have to believe Australia will be unveiling a sooner LNG supply gap in their September forecast. On June 28, we tweeted [LINK] on Australia's Resources and Energy Quarterly released on Monday [LINK] because there was a major change to their LNG outlook versus their March forecast. We tweeted "*#LNGSupplyGap. AU June fcast now sees #LNG mkt tighten post 2023 vs Mar fcast excess supply thru 2026. Why? $TOT Mozambique delays. See below SAF Apr 28 blog. Means brownfield LNG FID needed ie. like #LNGCanada Phase 2. #OOTT #NatGas".* Australia no longer sees supply exceeding demand thru 2026. In their March forecast, Australia said "*Nonetheless, given the large scale expansion of global LNG capacity in recent years, demand is expected to remain short of total supply throughout the projection period."* Note this is thru 2026 ie. a LNG supply surplus thru 2026. But on June 28, Australia changed that LNG outlook and now says the LNG market may tighten beyond 2023. Interestingly, the June forecast only goes to 2023 and not to 2026 as in March. Hmmm! On Monday, they said "*Given the large scale expansion of global LNG capacity in recent years, import demand is expected to remain short of export capacity throughout the outlook period. Beyond 2023, the global LNG market may tighten, due to the April 2021 decision to indefinitely suspend the Mozambique LNG project, in response to rising security issues. This project has an annual nameplate capacity of 13 million tonnes, and was previously expected to start exporting LNG in 2024*." 13 million tonnes is 1.7 bcf/d so they are only referring to Total Mozambique LNG Phase 1. So no surprise the change is Mozambique LNG driven but we have to believe the reason why they cut their forecast off this time at 2023 is that they are looking at trying to figure out what to forecast beyond 2023 in addition to Total Phase 1. And, importantly, we believe they will be changing their LNG forecast for more than Mozambique ie. India

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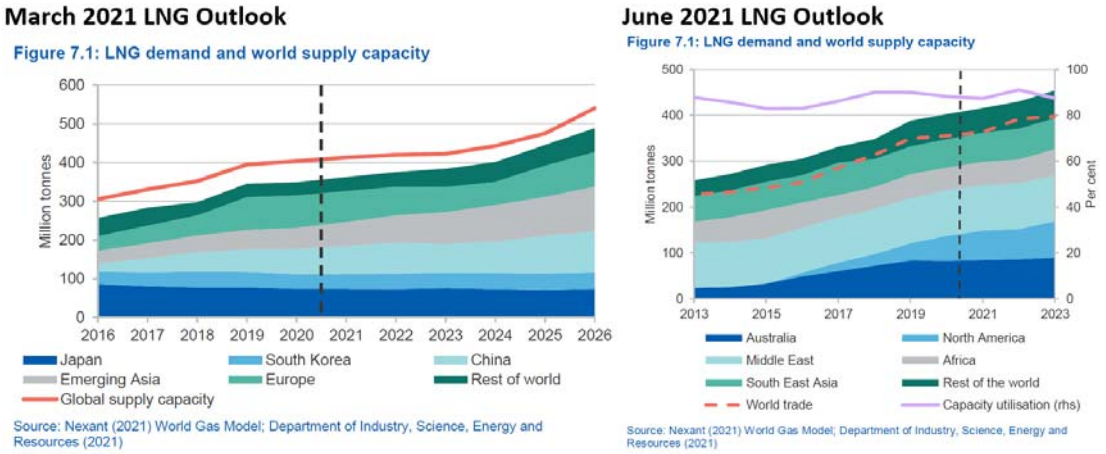
demand that we highlight later in the blog. They didn't say anything else specific on Mozambique but, surely they have to also be delaying the follow on Total Phase 2 of 1.3 bcf/d and Exxon Rozuma Phase 1 of 2.0 bcf/d.

Australia's LNG Outlook: March 2021 vs June 2021 Forecasts



Source: Australia Resources and Energy Quarterly

Clearly Asian LNG buyers did the math, saw the new LNG supply gap and were working the phones in March/April/May trying to lock up long term supply. We wrote extensively on the Total Mozambique LNG situation before the April 26 force majeure as it was obvious that delays were coming to a project counted on for first LNG in 2024. Total had shut down Phase 1 development in December for 3 months due to the violence and security risks. It restarted development on Wed March 24, violence/attacks immediately resumed for 3 consecutive days, and then Total suspended development on Sat March 27. That's why no one should have been surprised by the April 26 force majeure. Asian LNG buyers were also seeing this and could easily do the same math we were doing and saw a bigger and sooner LNG supply gap. They were clearly working the phones with a new priority to lock up long term LNG supply. Major long term deals don't happen overnight, so it makes sense that we started to see these new Asian long term LNG deals start at the end of June.

A big pivot from trying to renegotiate down long term LNG deals or being happy to let long term contracts expire and replace with spot/short term LNG deals. This is a major pivot or abrupt turn on the Asian LNG buyers contracting strategy for the 2020s. There is the natural reduction of long term contracts as contracts reach their term. But with the weakness in LNG prices in 2019 and 2020, Asian LNG buyers weren't trying to extend long term contracts, rather, the push was to try to renegotiate down its long term LNG deals. The reason was clear, as spot prices for LNG were way less than long term contract prices. And this led to their LNG contracting strategy – move to increase the proportion of spot LNG deliveries out of total LNG deliveries. Shell's LNG Outlook 2021 was on Feb 25, 2021 and included the below graphs. The spot LNG price derivation from long term prices in 2019 and 2020 made sense for Asian LNG buyers to try to change their contract mix. Yesterday, Maeil Business News Korea reported on the new Qatar/Kogas long term LNG deal with its report "*Korea may face LNG supply cliff or pay hefty price after long-term supplies run out*" [LINK], which highlighted this very concept – Korea wasn't worried about trying to extend expiring long term LNG contracts. Maeil wrote "*Seoul in 2019 secured a long-term LNG supply contract with the U.S. for annual 15.8 million tons over a 15-year period. But even with the latest two LNG supply contracts, the Korean government needs extra 6 million tons or more of LNG supplies to keep up the current power pipeline. By 2024, Korea's long-term supply contracts for 9 million tons of LNG will expire - 4.92 million tons on contract with Qatar and 4.06 million tons from Oman, according to a government official who asked to be unnamed."*

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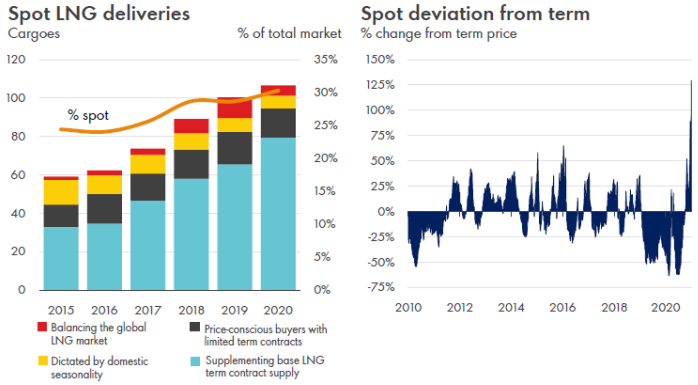
Spot LNG deliveries and Spot deviation from term price



Source: Shell LNG Outlook 2021 on Feb 25, 2021

Asian LNG buyers moving to long term LNG deals provide financing capacity for brownfield LNG FIDs. We believe this abrupt change and return to long term LNG deals is even more important to LNG suppliers who want to FID new projects. The big LNG players like Shell can FID new LNG supply without new long term contracts as they can build into their supply options to fill their portfolio of LNG contracts. But that doesn't mean the big players don't want long term LNG supply deals, as having long term LNG contracts provide better financing capacity for any LNG supplier. It takes big capex for LNG supply and long term deals make the financing easier.

Four Asian buyer long term LNG deals in the last week. It was pretty hard to miss a busy week for reports of new Asian LNG buyer long term LNG deals. There were two deals from Qatar Petroleum, one from Petronas and one from BP. The timing fits, it's about 3 months after Total Mozambique LNG problems became crystal clear. And as noted later, there are indicators that more Asian buyer LNG deals are coming.

> Petronas/CNOOC is 10 yr supply deal for 0.3 bcf/d. On July 7, we tweeted [LINK] on the confirmation of a big positive to Cdn natural gas with the Petronas announcement [LINK] of a new 10 year LNG supply deal for 0.3 bcf/d with China's CNOOC. The deal also has special significance to Canada. (i) Petronas said "*This long-term supply agreement also includes supply from LNG Canada when the facility commences its operations by middle of the decade*". This is a reminder of the big positive to Cdn natural gas in the next 3 to 4 years – the start up of LNG Canada Phase 1 is ~1.8 bcf/d capacity. This is natural gas that will no longer be moving south to the US or east to eastern Canada, instead it will be going to Asia. This will provide a benefit for all Western Canada natural gas. (ii) First ever AECO linked LNG deal. It's a pretty significant event for a long term Asia LNG deal to now have an AECO link. Petronas wrote "*The deal is for 2.2 million tonnes per annum (MTPA) for a 10-year period, indexed to a combination of the Brent and Alberta Energy Company (AECO) indices. The term deal between PETRONAS and CNOOC is valued at approximately USD 7 billion over ten years.*" 2.2 MTPA is 0.3 bcf/d. (iii) Reminds of LNG Canada's competitive advantage for low greenhouse gas emissions. Petronas said "*Once ready for operations, the LNG Canada project paves the way for PETRONAS to supply low greenhouse gas (GHG) emission LNG to the key demand markets in Asia."*
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> Qatar Petroleum/CPC (Taiwan) is 15 yr supply deal for 0.16 bcf/d. Pre Covid, Qatar was getting pressured to renegotiate lower its long term LNG contract prices. Now, it's signing a 15 year deal. On July 9, they entered in a new small long term LNG sales deal [LINK], a 15-yr LNG Sale and Purchase Agreement with CPC Corporation in Taiwan to supply it ~0.60 bcf/d of LNG. LNG deliveries are set to begin in January 2022. H.E. Minister for Energy Affairs & CEO of Qatar Petroleum Al-Kaabi said *"We are pleased to enter into this long term LNG SPA, which is another milestone in our relationship with CPC, which dates back to almost three decades. We look forward to commencing deliveries under this SPA and to continuing our supplies as a trusted and reliable global LNG provider."* The pricing was reported to be vs a basket of crudes.

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BP/Guangzhou Gas, a 12-yr supply deal for 0.13 bcf/d. On July 9, there was a small long term LNG supply deal with BP and Guangzhou Gas (China). Argus reported [LINK] BP had signed a 12 year LNG supply deal with Guangzhou Gas (GG), a Chinese city's gas distributor, which starts in 2022. The contract prices are to be linked to an index of international crude prices. Although GG typically gets its LNG from the spot market, it used a tender in late April for ~0.13 bcf/d starting in 2022. BP's announcement looks to be for most of the tender, so it's a small deal. But it fit into the trend this week of seeing long term LNG supply deals to Asia. This was intended to secure deliveries to the firm's Xiaohudao import terminal which will become operational in August 2022.

Qatar/Korea Gas is a 20-yr deal to supply 0.25 bcf/d. On Monday, Reuters reported [LINK] "*South Korea's energy ministry said on Monday it had signed a 20-year liquefied natural gas (LNG) supply agreement with Qatar for the next 20 years starting in 2025. South Korea's state-run Korea Gas Corp (036460.KS) will buy 2 million tonnes of LNG annually from Qatar Petroleum".* There was no disclosure of pricing.

More Asian buyer long term LNG deals (ie. India) will be coming. There are going to be more Asian buyer long term LNG deals coming soon. Our July 11, 2021 Energy Tidbits highlighted how India's new petroleum minister Hardeep Singh Puri (appointed July 8) hit the ground running with what looks to be a priority to set the stage for more India long term LNG deals with Qatar. On July 10, we retweeted [LINK] "*New India Petroleum Minister hits ground running. What else w/ Qatar but #LNG. Must be #Puri setting stage for long term LNG supply deal(s). Fits sea change of buyers seeing #LNGSupplyGap (see SAF Apr 28 blog http://safgroup.ca) & wanting to tie up LNG supply. #OOTT".* It's hard to see any other conclusion after seeing what we call a sea change in LNG buyer mentality with a number of long term LNG deals this week. Puri tweeted [LINK] "*Discussed ways of further strengthening mutual cooperation between our two countries in the hydrocarbon sector during a warm courtesy call with Qatar's Minister of State for Energy Affairs who is also the President & CEO of @qatarpetroleum HE Saad Sherida Al-Kaabi".* As noted above, we believe there is a sea change in LNG markets that was driven by the delay in 5 bcf/d of LNG supply from Mozambique (Total Phase 1 & Phase 2, and Exxon Rozuma Phase 1) that was counted on all LNG supply projections for the 2020s. Puri's tweet seems to be him setting the stage for India long term LNG supply deals with Qatar.

Supermajors are aggressively competing to commit 30+ year capital to Qatar's LNG expansion despite stated goal to reduce fossil fuels production. It's not just Asian LNG buyers who are now once again committing long term capital to securing LNG supply, it's also supermajors all bidding to be able to commit big capex to part of Qatar Petroleum's 4.3 bcf/d LNG expansion. Qatar Petroleum received a lot of headlines following the their June 23 announcement on its LNG expansion [LINK] on how they received bids for double the equity being offered. And there were multiple reports that these are on much tougher terms for Qatar's partners. Qatar Petroleum CEO Saad Sherida Al-Kaabi specifically noted that, among the bidders, were Shell, Total and Exxon. Shell and Total have two of the most ambitious plans to reduce fossil fuels production in the 2020's, yet are competing to allocate long term capital to increase fossil fuels production. And Shell and Total are also two of the global LNG supply leaders. It has to be because they are seeing a bigger and sooner LNG supply gap.

Remember Qatar's has a massive expansion but India alone needs 3x the Qatar expansion LNG capacity. In addition to the competition to be Qatar Petroleum's partners, we remind that, while this is a massive 4.3 bcf/d LNG expansion, India alone sees its LNG import growing by ~13 bcf/d to 2030. The Qatar announcement reminded they see a LNG supply gap and continued high LNG prices. We had a 3 part tweet. (i) First, we highlighted [LINK] "*1/3. #LNGSupplyGap coming. big support for @qatarpetroleum expansion to add 4.3 bcf/d LNG. but also say "there is a lack of investments that could cause a significant shortage in gas between 2025-2030" #NatGas #LNG".* This is after QPC accounts for their big LNG expansion. The QPC release said "*However, His Excellency Al-Kaabi voiced concern that during the global discussion on energy transition, there is a lack of investment in oil and gas projects, which could drive energy prices higher by stating that "while gas and LNG are important for the energy transition, there is a lack of investments that could cause a significant shortage in gas between 2025-2030, which in turn could cause a spike in the gas market."* (ii) Second, this is a big 4.3 bcf/d expansion, but India alone has 3x the increase in LNG import demand. We tweeted [LINK] "*2/3. Adding 4.3 bcf/d is big, but dwarfed by items like India. #Petronet gave 1st specific forecast for what it means if #NatGas is to be 15%*

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of energy mix by 2030 - India will need to increase #LNG imports by ~13 bcf/d. See SAF Group June 20 Energy Tidbits memo." (iii) Third, Qatar's supply gap warning is driven by the lack of investments in LNG supply. We agree, but note that the lack of investment is in great part due to the delays in both projects under construction and in FIDs that were supposed to be done in 2019. We tweeted [LINK] "3/*3. #LNGSupplyGap is delay driven. $TOT Mozambique Phase 1 delay has chain effect, backs up 5 bcf/d. See SAF Group Apr 28 blog Multiple Brownfield LNG FIDs Now Needed To Fill New #LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2? #NatGas*."

Seems like many missed India's first specific LNG forecast to 2030. Our June 20, 2021 Energy Tidbits memo highlighted the first India forecast that we have seen to estimate the required growth in natural gas consumption and LNG imports if India is to meet its target for natural gas to be 15% of its energy mix by 2030. India will need to increase LNG imports by ~13 bcf/d or 3 times the size of the Qatar LNG expansion. Our June 6, 2021 Energy Tidbits noted the June 4 tweet from India's Energy Minister Dharmendra Pradhan [LINK] reinforcing the 15% goal "*We are rapidly deploying natural gas in our energy mix with the aim to increase the share of natural gas from the current 6% to 15% by 2030."* But last week, Petronet CEO AK Singh gave a specific forecast. Reuters report "*LNG's share of Indian gas demand to rise to 70% by 2030: Petronet CEO"* [LINK] included Petronet's forecast if India is to hit its target for natural gas to be 15% of energy mix by 2030. Singh forecasts India's natural gas consumption would increase from current 5.5 bcf/d to 22.6 bcf/d in 2030. And LNG shares would increase from 50% to 70% of natural gas consumption ie. an increase in LNG imports of ~13 bcf/d from just under 3 bcf/d to 15.8 bcf/d in 2030. Singh did not specifically note his assumption for India's natural gas production, but we can back into the assumption that India natural gas production grows from just under 3 bcf/d to 6.8 bcf/d. It was good to finally see India come out with a specific forecast for 2030 natural gas consumption and LNG imports if India is to get natural gas to 15% of its energy mix in 2030. Petronet's Singh forecasts India natural gas consumption to increase from 5.5 bcf/d to 22.6 bcf/d in 2030. This forecast is pretty close to our forecast in our Oct 23, 2019 blog "*Finally, Some Visibility That India Is Moving Towards Its Target For Natural Gas To Be 15% Of Its Energy Mix By 2030*". Here part of what we wrote in Oct 2019. "*It's taken a year longer than we expected, but we are finally getting visibility that India is taking significant steps towards India's goal to have natural gas be 15% of its energy mix by 2030. On Wednesday, we posted a SAF blog [LINK] "Finally, Some Visibility That India Is Moving Towards Its Target For Natural Gas To Be 15% Of Its Energy Mix By 2030".* Our 2019 blog estimate was for India natural gas demand to be 24.0 bcf/d in 2030 (vs Singh's 22.6 bcf/d) and for LNG import growth of +18.4 bcf/d to 2030 (vs Singh's +13 bcf/d). The difference in LNG would be due to our Oct 2019 forecast higher natural gas consumption by 1.4 bcf/d plus Singh forecasting India natural gas production +4 bcf/d to 2030. Note India production peaked at 4.6 bcf/d in 2010.

Bigger, nearer LNG supply gap + Asian buyers moving to long term LNG deals = LNG players forced to at least look at what brownfield LNG projects they could advance and move to FID. All we have seen since our April 28 blog is more validation of the bigger, nearer LNG supply gap. And now market participants (Asian LNG buyers) are reacting to the new data by locking up long term supply. Cheniere noted how the pickup in commercial engagement means they "*are quite optimistic over the coming 12-18 months to make a substantial dent in that Stage 3 commercialization."* Cheniere can't be the only LNG supplier having new commercial discussions. It's why we believe the Mozambique delays + Asian LNG buyers moving to long term deals will effectively force major LNG players to look to see if there are brownfield LNG projects they should look to advance. Prior to March/April, no one would think Shell or other major LNG players would be considering any new LNG FIDs in 2021. Covid forced all the big companies into capital reduction mode and debt reduction mode. But Brent oil is now solidly over $70, and LNG prices are over $13 this summer and the world's economic and oil and gas demand outlook are increasing with vaccinations. And we are starting to see companies move to increasing capex with the higher cash flows. The theme in Q3 reporting is going to be record or near record oil and gas cash flows, reduced debt levels and increasing returns to shareholders. And unless new mutations prevent vaccinations from returning the world to normal, we suspect that major LNG players, like other oil and gas companies, will be looking to increase capex as they approve 2022 budgets. The outlook for the future has changed dramatically in the last 8 months. The question facing major LNG players like Shell is should they look to FID new LNG brownfield projects in the face of an increasing LNG supply gap that is going to hit faster and harder and Asian LNG buyers prepared to do long term deals. We expect these decisions to be looked at before the end of 2021 for 2022 capex budget/releases. One wildcard that could force these decisions sooner is the already stressed out global supply chain. We have to believe that discussion there will be pressure for more Asian LNG buyer long term deals sooner than later.

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For Canada, does the increasing LNG supply gap provide the opportunity to at least consider a LNG Canada Phase 2 FID over the next 6 months? Our view on Shell and other LNG players is unchanged since our April 28 blog. Shell is no different than any other major LNG supplier in always knowing the market and that the oil and gas outlook is much stronger than 9 months ago. Even 3 months post our April 28 blog, we haven't heard any significant talks on how major LNG players will be looking at FID for new brownfield LNG projects. We don't have any inside contacts at Shell or LNG Canada, but that is no different than when we looked at the LNG markets in September 2017 and saw the potential for Shell to FID LNG Canada in 2018. We posted a September 20, 2017 blog *"China's Plan To Increase Natural Gas To 10% Of Its Energy Mix Is A Global Game Changer Including For BC LNG*" [LINK]. Last time, it was a demand driven supply gap, this time, it's a supply driven supply gap. We have to believe any major LNG player, including Shell, will be at least looking at their brownfield LNG project list and seeing if they should look to advance FID later in 2021. Shell has LNG Canada Phase 2, which would add 2 additional trains or approx. 1.8 bcf/d. And an advantage to an FID would be that Shell would be able to commit to its existing contractors and fabricators for a continuous construction cycle following on LNG Canada Phase 1 ie. to help keep a lid on capital costs. We believe maintaining a continuous construction cycle is even more important given the stressed global supply chain. No one is talking about the need for these new brownfield LNG projects, but, unless some major change in views happen, we believe its inevitable that these brownfield LNG FID internal discussions will be happening in H2/21. Especially since the oil and gas price outlook is much stronger than it was in the fall and companies will be looking to increase capex in 2022 budgets.

A LNG Canada Phase 2 would be a big plus to Cdn natural gas. LNG Canada Phase 1 is a material natural gas development as its 1.8 bcf/d capacity represents approx. 20 to 25% of Cdn gas export volumes to the US. The EIA data shows US pipeline imports of Cdn natural gas as 6.83 bcf/d in 2020, 7.36 bcf/d in 2019, 7.70 bcf/d in 2018, 8.89 bcf/d in 2017, 7.97 bcf/d in 2016, 7.19 bcf/d in 2015 and 7.22 bcf/d in 2014. A LNG Canada Phase 2 FID would be a huge plus for Cdn natural gas. It would allow another ~1.8 bcf/d of Cdn natural gas to be priced against pricing points other than Henry Hub. And it would provide demand offset versus Trudeau if he moves to make electricity "emissions free" and not his prior "net zero emissions". Mozambique has been a game changer to LNG outlook creating a bigger and sooner LNG supply gap. And with a stronger tone to oil and natural gas prices in 2021, the LNG supply gap will at least provide the opportunity for Shell to consider FID for its brownfield LNG Canada Phase 2 and provide big support to Cdn natural gas for the back half of the 2020s. And perhaps if LNG Canada is exporting 3.6 bcf/d from two phases, it could help flip Cdn natural gas to a premium vs US natural gas especially if Biden is successful in reducing US domestic natural gas consumption for electricity. The next six months will be very interesting to watch for LNG markets and Cdn natural gas valuations. Imagine the future value of Cdn natural gas is there was visibility for 3.6 bcf/d of Western Canada natural gas to be exported to Asia.

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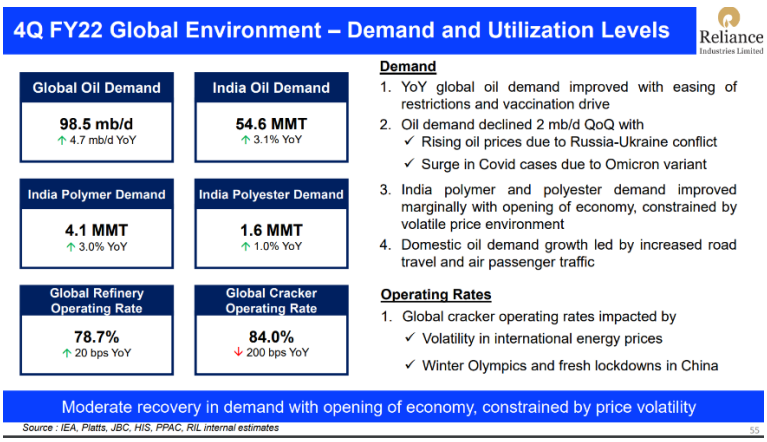
Items in “italics” are from Bloomberg Transcripts of **Reliance Industries** (India) Q4/F2022 call. Slides are from Reliance’s Q4/F2022 call slide deck [LINK] .

“Next slide. So just to give a perspective on the gas market and its outlook. As you can see, the tightness continues. Again, it's been exacerbated by the conflict. Now in Europe as more as they try to diversify their source from Russian supplies, there seems to be quite a bit of competition with the Asian consumption. Europe itself consumes about 85 million tonnes per annum, which is 1% of global supplies.
So with them moving away from Russian supplies, there's going to be tightness, particularly because there's no additional capacity coming on stream until at least '26 or so. So we expect this tightness to continue, prices to be elevated. And in India, we have seen a slight pullback because of the high prices, but KG-D6, which has the price ceiling that would be quite attractive because of the lower prices compared to the market prices.
So that's an outlook that we believe will mean.

“The last presentation of the evening on the -- for O2C. Looking at demand, overall year-on-year demand, as you know, was up 4.7 million barrels with the easing of restrictions, vaccination drive. However, on a quarter-on-quarter, we did see a fall in demand almost 2 million barrels on the back of the Russian, Ukraine conflict as well as some aspect of the Omicron variant coming in. Polymer and polyester demand year-on-year improved, but it was constrained in a volatile price environment.
Overall, domestic oil demand up 3.1% on the back of road travel and air passenger traffic that we saw. And operating rates on the cracker side, we did see a reduction because of the volatility as well as the winter Olympics and fresh lockdown in China. So overall, I would say, a more moderate recovery in demand with opening up of the economy, which was constrained by price volatility.”



https://twitter.com/PetroleumMin/status/1524041437339291648

Ministry of Petroleum and Natural Gas
@PetroleumMin

India's capacity to regasify LNG to increase by 55% by 2025. LNG holds around 49% share in total natural gas consumption in FY 2021-22. LNG is bound to be the key driver for India's #PragatiKiGati

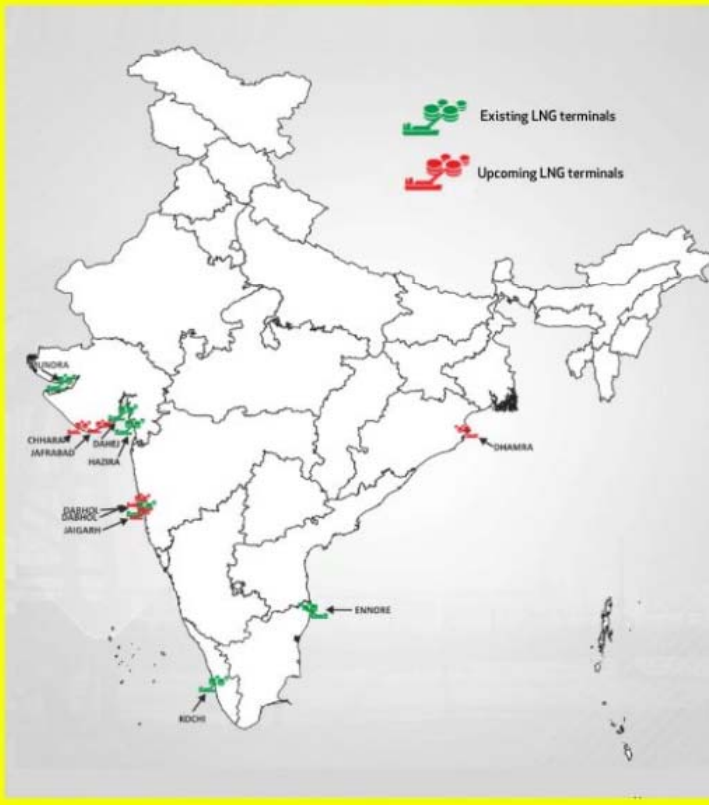
#PMGatiShakti @Logistics_MoCI

Ministry of Petroleum and Natural Gas
Government of India

PM GatiShakti
National Master Plan for Multi-Modal Connectivity

Azadi Ka Amrit Mahotsav

LNG holds around 49% share in total natural gas consumption during FY 2021-22



India's capacity to regasify LNG is likely to increase from 40 MMTPA (6 terminals) to 62 MMPTA (10 terminals) by 2025

India's LNG Imports to Jump Near 5 Times by 2030: Petronet

2021-10-22 09:02:33.799 GMT

By Debjit Chakraborty and Rajesh Kumar Singh

(Bloomberg) -- India's import of natural gas is expected to hit 120 million tons/year by 2030 as the nation targets an energy mix goal, Akshay Kumar Singh, CEO of Petronet LNG, said at the India Energy Forum by CERAWeek.

* NOTE: India aims to boost use to natural gas to 15% of primary energy mix from about 6% now
* India's current annual LNG import is about 26 million tons
* The nation's gas production by 2030 is expected to reach 40 million-50 million tons
* Current LNG import capacity is 42 million tons/year, while about 19 million tons/year capacity is under construction
* Another 9 million-10 million tons of capacity addition are at design stage
* Petronet is expanding its biggest terminal at Dahej to 22.5 million tons a year from 17.5 million currently
* India's biggest LNG importer is also looking at building a new terminal on the east coast
* The current volatility in global gas prices is causing demand destruction
* Price volatility pushing consumers to long term LNG contracts
* Consumers are looking at a mix of oil, gas indexation for long LNG deals, which can work good for buyers

To contact the reporters on this story:
Debjit Chakraborty in New Delhi at dchakrabor10@bloomberg.net;
Rajesh Kumar Singh in New Delhi at rsingh133@bloomberg.net
To contact the editors responsible for this story:
Serene Cheong at scheong20@bloomberg.net
Devidutta Tripathy

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https://www.narendramodi.in/text-of-prime-minnister-narendra-modi-s-address-from-the-red-fort-on-75th-independence-day-556737

Sabka Saath, Sabka Vikas, Sabka Vishwas and now Sabka Prayas are vital for the achievement of our goals: PM Modi on 75th Independence Day

August 15, 2021

Share

TELL A FRIEND

My dear countrymen!

Best wishes to all of you and those who love India and democracy from all over the world on the occasion of the Amrit Mahotsav of freedom, the 75th Independence Day.

Today, on the pious festival of the Amrit Mahotsav of freedom, the country is bowing to all its freedom fighters and brave heroes who continue to sacrifice themselves day and night in the defense of the nation. The country is remembering every personality, including the revered Bapu, who made freedom a mass movement, Netaji Subhash Chandra Bose, who sacrificed everything for the freedom, or great revolutionaries like Bhagat Singh, Chandrasekhar Azad, Bismil and Ashfaqulla Khan; Rani of Jhansi Lakshmibai, Queen Chennamma of Kittur or Rani Gaidinliu or the valour of MatanginiHazra in Assam; the country's first Prime Minister Pandit Nehru ji, Sardar Vallabhbhai Patel, who integrated the country into a united nation, and Baba Saheb Ambedkar, who determined and paved the way for the future direction of India. The country is indebted to all these great personalities.

India is a land endowed with gems. I salute countless people from every corner of India whose names don't even figure in history, but who have built this nation and have also taken it forward in every period.

India has fought for the motherland, culture and freedom for centuries. This country never gave up the pain of slavery and the longing for freedom for centuries. In the midst of victories and defeats, the aspiration of freedom engraved in the mind was never diminished. Today is the time to bow down to the leaders of all these struggles, the warriors of centuries of struggle and they also deserve our reverence.

Our doctors, nurses, paramedical staff, sanitation staff, scientists engaged in developing vaccines, millions of countrymen engaged with the spirit of service during this Corona global pandemic also deserve praise from all of us.

Today there are floods in some areas of the country, landslides have also occurred. Some sad news also keeps coming. The hardships of the people have increased in many areas. At such a time, both the Central and State Governments are with them in complete readiness. Today, the young athletes and our players who have brought laurels to India are also present in this event.

Some are present and sitting here. Today, I appeal to all the countrymen, those who are present here and all those who are present in this ceremony from every corner of India, that in the honour of our players, for a few moments let's salute them with resounding clapping applause and show respect for their huge accomplishments.

Let us show our respect to the sports of India, youth of India and honour the young Indians who bring laurels to the nation. Crores of countrymen are showing respect to the youth of India, especially the athletes who brought honour to India with a thunderous applause. I can be proud that they have not only won our hearts today, but also inspired the youth of India and future generations with their huge achievements.

My dear countrymen,

While we celebrate our freedom today, we cannot forget the pain of partition that still pierces through the heart of all Indians. This has been one of the biggest tragedies of the last century. After attaining freedom, these people were forgotten too soon. Just yesterday India has taken an emotional decision in their memory. We will henceforth commemorate August 14 as “Partition Horrors Remembrance Day” in the memory of all the victims of partition. Those who were subjected to inhuman circumstances, suffered torturous treatment, they could not even receive a dignified cremation. They must all remain alive and never get erased from our memories. The decision of celebrating “Partition Horrors Remembrance Day” on the 75th Independence Day is a befitting tribute from every Indian to them.

My dear countrymen,

For the country moving on the path of progress and humanity in the entire world, the Corona period came as a major challenge. Indians fought this fight with great grit and patience. We had many challenges. Countrymen performed extraordinarily in every field. It is due to the power of our entrepreneurs and scientists that the country is not dependent on anyone or any country for vaccines. Imagine for a ment, if we did not have the vaccine. How long did it take to get polio vaccine?

It was extremely difficult to get vaccines during such a major crisis, with pandemic plaguing the entire world. India might or might not have received it and even if it had received the vaccine there was no certainty of getting that in time. But today we can proudly say that the world's largest vaccination programme is being run in our country. More than 54 crore people have received the vaccine dose. Online systems like Cowin and digital certificates are attracting the world today.

The way India has kept the stoves burning in the poor households by providing free food grains to 80 crore countrymen continuously for months during the pandemic is not only astonishing to the world but also a matter of discussion. It is true that fewer people have been infected in India as compared to other countries; it is also true that in comparison to the population of other countries of the world, we managed to save more citizens in India but it is not something to be proud of! We cannot rest on these laurels. To say that there was no challenge, will become a restrictive thought in the path of our own development.

Our systems are insufficient compared to that of the rich countries of the world, we do not have what the rich countries have. Moreover, we also have a greater population compared to the other countries of the world. And our lifestyle is also different. Despite all our efforts, we could not save many people. So many children have been orphaned. This unbearable pain is going to remain forever.

My dear countrymen,

There comes a time in the development journey of every country when the country redefines itself afresh and pushes forward with new resolutions. Today that time has arrived in the development journey of India. We should not limit the occasion of 75 years of Indian independence to just one ceremony. We must lay the groundwork for new resolutions and move forward with new resolutions. Starting from here, the entire journey of the next 25 years, when we celebrate the centenary of Indian independence, marks the Amrit period of creation of a new India. The fulfillment of our resolutions in this Amrit period will take us to the hundredth anniversary of Indian independence with pride.

The goal of 'Amrit Kaal' is to ascend to new heights of prosperity for India and the citizens of India. The goal of 'Amrit Kaal' is to create an India where the level of facilities is not dividing the village and the city. The goal of 'Amrit Kaal' is to build an India where the government does not interfere unnecessarily in the lives of citizens. The goal of 'Amrit Kaal' is to build an India where there is world’s every modern infrastructure.

We should not be lesser than anyone. This is the resolve of the crores of countrymen. But the resolve remains incomplete until it is not accompanied by the extreme hard work and courage. Therefore, we have to realize all our resolutions with hard work and courage, and these dreams and resolutions are also for effective contribution to a safe and prosperous world beyond our borders.

Amrit Kaal is of 25 years. But we don't have to wait for long to achieve our goals. We have to start now. We don't have a moment to lose. This is the right time. Our country also has to change and we as citizens have to change ourselves too. We also have to adapt ourselves to the changing era. We have started with the spirit of 'SabkaSaath, Sabka Vikas, Sabka Vishwas'. Today I am requesting from the ramparts of the Red Fort that 'SabkaSaath, Sabka Vikas, Sabka Vishwas' and now 'SabkaPrayas' are very important for the achievement of our goals. Crores of people are getting the benefits of many schemes started in the last seven years. Every poor of the country knows the importance of Ujjwala to Ayushman Bharat. Today the speed of government schemes has increased and they are achieving the desired goals.

We have progressed much faster than before. But it does not end here. We have to achieve saturation. All the villages should have roads, all the households should have bank accounts, all the beneficiaries should have Ayushman Bharat cards and all the eligible persons should get the benefit of Ujjwala Yojana and should have gas connections. We have to connect every entitled person with the government's insurance, pension and housing schemes. We have to move ahead with a mindset of cent percent achievement. Till now, no thought was given for our street vendors, who sell their goods on tracks, footpaths and carts. All these colleagues are now being linked to the banking system through the SVANidhi scheme.

Just as we have made electricity accessible to 100% households, and have made authentic efforts to construct toilets in 100% households, similarly, we now have to move ahead with the goal of achieving saturation of schemes, and, for this, we do not have to keep a distant deadline. We have to make our resolutions come true within a few years.

Today, our country is working with speed on the Har Ghar Jal Mission. I am happy that in just two years of the Jal Jeevan Mission, more than four and a half crore families have started getting water from taps. They have started getting water from pipes. Receiving the blessings from crores of mothers and sisters, is our true capital. The biggest advantage of this 100 percent accomplishment rate is that no one remains deprived of the benefits of the government scheme. When the government operates with a target to reach the person in the last line, only then there is no discrimination and there is no scope for corruption.

My dear countrymen,

Providing nutrition to every poor person of the country is also a priority of this government. Malnutrition and lack of essential nutrients in poor women and poor children poses major obstacles in their development. In view of this, it has been decided that the government will fortify the rice given to the poor under its various schemes. Will give rice fortified with nutrition to the poor. Be it the rice available at the ration shop, the rice provided to the children in the mid-day meal, or the rice available through every scheme, it shall be fortified by the year 2024.

My dear countrymen,

Today, the campaign to provide better health facilities to every poor in the country is also going on at a fast pace. For this, important reforms have also been made in medical education. Equal attention has been paid to preventive healthcare. Simultaneously, there has been a substantial increase in the number of medical seats in the country. Under the Ayushman Bharat scheme, quality health services are being provided to every village in the country. Affordable medicines are being made available to the poor and middle class through Jan Aushadhi Yojana. So far, more than 75 thousand Health and Wellness centers have been set up. At the block level too, modern health infrastructure is being exclusively set up on a network of good

hospitals and modern labs. Very soon thousands of hospitals in the country will also have their own oxygen plants.

My dear countrymen,

To take India to new heights in the 21st century, the optimal utilisation of India's potential is the need of the hour.

This is extremely important. For this, we need to provide hand holding to the backward categories and sectors. Alongwith the concern of fulfilling the basic needs, reservation is being ensured for the Dalits, Backward classes, Adivasis and the poor people from general category. More recently, in the field of medical education, reservation has also been ensured for the OBC category in the All India quota. By formulating a law in Parliament, the right to make their own list of OBC has been given to the states.

My dear countrymen,

Just as we are making sure that no person or no class should be left behind in the development journey of society, similarly no part of the country, no corner of the country should be left behind. Development should be all-round, development should be all-pervasive, development should be all-inclusive. We are now accelerating the efforts that have been made in the last seven years to bring forward such backward areas of the country. Be it the eastern India, the North-east, Jammu-Kashmir, Ladakh including the entire Himalayan region, be it our coastal belt or the tribal region, these regions are going to turn into a major foundation for India's development in future, India's development journey.

Today a new history of connectivity is being written in the North-East. This is a connectivity of both the hearts and the infrastructure. Very soon the work of connecting all the state capitals of the North-East with rail service is going to be completed. Under the Act-East Policy, today North-East, Bangladesh, Myanmar and South-East Asia are also being connected. Due to the efforts made in the past years, now the enthusiasm for the creation of Shreshtha Bharat and long lasting peace in the North-East has increased manifold.

There is a huge potential in the fields of tourism, adventure sports, organic farming, herbal medicine, and oil pump in the North East. We have to fully harness this potential and make it a part of the development journey of the country. And we have to complete this work within a few decades of the 'Amrit kaal'. Giving a fair opportunity to the capabilities of all is the true spirit of democracy. Be it Jammu or Kashmir, the balance of development is now visible on the ground.

The Delimitation Commission has been constituted in Jammu and Kashmir and preparations are also going on for the assembly elections. Ladakh has also progressed towards its limitless possibilities of development. On one hand Ladakh is witnessing the creation of modern infrastructure, while on the other hand Sindhu Central University is also making Ladakh a center of higher education.

In this decade of the 21st century, India will further accelerate its efforts towards the Blue Economy. Along with aquaculture, we have to take full advantage of the new possibilities that are emerging in the cultivation of seaweed. The Deep Ocean Mission is the result of our ambition to explore the unlimited possibilities of the ocean. The mineral wealth which is hidden in the sea, the thermal energy which is in the sea water, can give new heights to the development of the country.

We have also awakened the aspirations of the districts of the country believed to have been left behind. Priority is being given to schemes related to education, health, nutrition, roads and employment in more than 110 aspirational districts in the country. Many of these districts are in our tribal areas. We have created a spirit of healthy competition for development among these districts. There is a strong competition going on in that direction so that these aspirational districts are at par with other districts of India.

My dear countrymen,

Capitalism and socialism are discussed a lot in the world of economics, but India also emphasizes cooperativism. Cooperativism is also compatible with our traditions and values. Cooperativism, in which the collective power of the masses becomes the driving force of the economy, is important for the country's grassroots level economy. Co-operatives are not just a system with a network of laws and rules, but co-operative is a spirit, culture, and a mindset of collective growth. We have taken steps to empower them by forming a separate ministry. We have taken this step to empower the cooperative sector in the states.

My dear countrymen,

We will have to put all our efforts to build a new economy in the villages in this decade. Today we can see our villages changing rapidly. In the last few years, our government has provided roads and electricity to the villages. Now these villages have been strengthened with optical fibernetwork data and the Internet. Digital entrepreneurs are emerging in the villages also. The more than eight crore sisters in the villages, who are associated with Self-Help Groups, design top-end products. Now the government will also prepare an e-commerce platform for their products so that get a big market in our country and abroad. Today, when the country is moving forward with the mantra of Vocal for Local, this digital platform will connect the products of women self-help groups with people across the length and breadth of the country as well as internationally. Their horizon shall thus get enhanced.

During Corona, the country has witnessed the power of technology, as well as the commitment and capabilities of our scientists. The scientists of our country are working very diligently and strategically across the expanse of the country. Now the time has come for us to integrate the capabilities of scientists and their suggestions in our agriculture sector as well. Now we cannot wait any longer. We have to leverage this strength. This will go a long way in increasing the production of fruits, vegetables and grains along with giving food security to the country. Thus we shall catapult ourselves strongly into the world orbit.

Amongst these concerted efforts, we need to take cognizance of a major challenge posed in our agriculture sector. Challenge of shrinking of land of villagers which is due to immense rise in population, and smaller land holdings due to the divisions happening in the family. Farming land has shrunk alarmingly. More than 80 percent of the farmers of the country are those who have less than two hectares of land. If we see, 80 out of 100 farmers have less than two hectares of land i.e. the farmers of our country are practically in the small farmer category. Unfortunately, this segment remained eliminated from the benefits in our yesteryear's policies. They did not get their due importance. Now, keeping in mind these small farmers in the country, agricultural reforms are being undertaken, and critical decisions are being taken to benefit them.

Whether the improvement in the crop insurance scheme or important decision of increasing the MSP by one and a half times; a system to provide loans from banks at cheaper rates through Kisan Credit Card; taking the schemes related to solar power to the farm, formulate a Farmer Producer Organization. All these efforts will increase the power of the small farmer. In the coming times, a campaign will also be launched to create a warehouse facility up to the block level.

Keeping in mind the small expenses of every small farmer, PM KisanSamman Nidhi Yojana is being run. So far, more than 1.5 lakh crores have been deposited directly into the bank accounts of more than ten crore farmer families. The small farmer is now our resolve and mantra for us. The small farmer becomes the country's pride.... the small farmer becomes the nation's pride. This is our dream. In the coming years, we will have to increase the collective power of the small farmers of the country. New facilities have to be provided.

Today, Kisan Rail is plying on more than 70 rail routes of the country. Kisan Rail can help small farmers with this modern facility to reach far flung areas on a low cost of produce and transportation. Several

products like Kamalam, Shahi litchi, BhutJolokiachillis, black rice or turmeric are being exported to different countries of the world. Today, the country feels delighted when the aroma of these products produced in the soil of India reaches different countries of the world. Today the world is developing a taste for the vegetables and food grains grown in the fields of India.

My dear countrymen,

Swamitva Yojana is an example of one of the initiatives taken to boost the capabilities of the villages today. We all know what happens to the price of land in villages. They do not get any loan from the banks on the basis of land, despite being the owners of the land because no work had been done in terms of documents of rural land for several years. People do not have this system. The Swamitva scheme attempted to change this situation. Today every village, every house, every land is being mapped through drones. The data and property papers of village lands are being uploaded online. With this, not only the disputes related to land in the villages are being ended, but a system has also been created for the people of the village to get loans easily from the banks. The lands of village poor should be the foundation for development rather than disputes. And the country is moving in the same direction today.

My dear countrymen,

When Swami Vivekananda used to talk about the future of India, when he used to see the magnificence of Mother Bharati in front of his eyes, he used to say – Try to look into the past as far as possible. Drink the water of the ever new spring flowing back there, and after that, look ahead. Go ahead and make India brighter, greater & better than ever. In this 75th year of independence, it is our duty to move forward believing in the immense potential of the country. We have to work together for new generation infrastructure; we have to work together for world class manufacturing; we have to work together for cutting edge innovations; we have to work together for new age technology.

My dear countrymen,

The foundation of progress in the modern world lies on modern infrastructure. It also fulfills the needs and aspirations of the middle class. Weak infrastructure derails the pace of development and the urban middle class also suffers.

We have to work together for next generation infrastructure, for world class manufacturing, for cutting edge innovation and for New Age technology.

My dear countrymen,

Realizing this need, the country has demonstrated extraordinary speed and scale in every field from the seas, land to the skies. Rapid progress is underway whether it is development of new waterways or connecting new places with seaplanes. Indian Railways is also rapidly adapting to its modern avatar. The country has resolved to celebrate the Amrit Mahotsav of independence. You would know that we have decided to celebrate this Amrit Mahotsav of independence for 75 weeks. It started from 12th March and will continue till 15th August, 2023. We have to move forward with new enthusiasm and, therefore, the country has made a very important decision.

During these 75 weeks of the Amrit Mahotsav of Independence, 75 Vande Bharat trains will connect every corner of the country. The pace at which new airports are being built in the country and the UDAN scheme connecting remote areas is unprecedented. We can see how better air connectivity gives new flights to people's dreams.

My dear countrymen,

Along with modern infrastructure, there is a great need for adopting a holistic and integrated approach in infrastructure construction. In the near future, we are going to launch the National Master Plan of Prime Minister 'Gati Shakti' which will be a huge scheme and fulfill the dreams of crores of countrymen. This scheme of more than 100 lakh crores rupees will result in new employment opportunities for lakhs of youth.

Gati Shakti will be a National Infrastructure Master Plan for our country which will lay the foundation of holistic Infrastructure and will lead to an integrated and holistic pathway to our economy. Right now, there is no coordination between our means of transport. Gati Shakti will break the silos, and will remove all these obstacles. This will reduce the travel time for the common man and the productivity of our industry will also increase. Gati Shakti will also go a long way in making our local manufacturers globally competitive and this will also develop new possibilities for the creation of future economic zones. In this decade, the power of speed will form the basis of India's transformation.

My dear countrymen,

India will have to increase both its manufacturing and exports while moving ahead on the path of development.

My dear countrymen,

Treading ahead on the path of development, India will have to augment both its manufacturing and exports. You have witnessed, just a few days ago, India launched its first indigenous Aircraft Carrier INS Vikrant for trial in the sea. Today India is making its own indigenous fighter aircraft, its own submarine. Gaganyaan is also slated to hoist India's flag in space. This itself is evidential of our immense capabilities in indigenous manufacturing.

The country has also announced Production Linked Incentive to consolidate our Make in India campaign in the wake of the new economic conditions that have emerged due to Corona. The electronic manufacturing sector stands as an example of the change that is enforced through this scheme. Seven years ago we used to import mobile phones worth about eight billion dollars. However, now the import has reduced considerably, and today we are also exporting mobile phones worth three billion dollars.

Today, when our manufacturing sector is gaining momentum, our focus should be that whatever we make in India should be of highest quality standards so that we sustain in the global competition. Rather, if possible we should aim at going a step ahead and take proactive steps to prepare ourselves for the global market. We have to target that. I want to say emphatically to all the manufacturers of the country, that you should never forget that the product you sell overseas is not just a product made by your company, it is the identity of our nation, India's prestige and the faith of all the citizens of our country.

My dear countrymen

That is why I tell all our manufacturers that each of your products is a brand ambassador of India. When someone will buy and use your product, the customer should say with pride- now "This is Made in India". That's the mindset we need. You all should now aspire to win over the global market. The government is fully with you in realising this dream.

My dear countrymen,

Today, several new start-ups are being formed in different sectors of the country and even in smaller tier 2, tier 3 cities of the country. They also have a big role to play in getting entry of their Indian products into the inter-state market.The government stands with all its might, with these start-ups. Whether it is giving them financial help, cash discounts, rules simplification for them, the government is fully with them. We have seen that thousands of new start-ups have emerged in this difficult period of Corona. They are moving

forward with great success. Yesteryear's start-ups are becoming today's unicorns. Their market value is reaching thousands of crores of rupees.

These are new types of wealth creators in our country today. They are standing on their feet with the power of their unique ideas, moving ahead and walking with the dream of conquering the world. They are new kinds of wealth creators. They are moving by the force of their unique ideas and a dream to win over the world. In this decade, we need to relentlessly work towards making India's Startups and the Startup Ecosystem the best in the whole world.

My countrymen,

Political will is needed to bring about major changes and reforms. Today the world is witnessing that there is no dearth of political will in India. Good and smart governance is required to implement the reforms. Today the world is also a witness to how India is writing a new chapter of governance here. In this decade of 'Amrit Kaal', we will give priority to Next Generation reforms... We will ensure that all the facilities like service delivery should reach citizens up to the last mile; it should reach the last person seamlessly, without hesitation or any kind of difficulty. For the overall development of the country, unnecessary interference by the government and the government processes in the lives of the people has to be ended.

Earlier, the government itself was on the driving seat. This might have been the demand of that time. But now the time has changed. In the last seven years, efforts have also intensified in the country to liberate the people of the country from the web of unnecessary laws and procedures. Till now hundreds of old laws of the country have been abolished. Even during this period of Corona pandemic, the government has abolished more than 15,000 compliances. Now you see, you might have experienced a lot of hassles and paperwork for a small government work. That has been the situation so far. We have ended 15,000 compliances.

Just imagine.....I want to give you an example. A law has been in place in India for over 200 years, 200 years i.e. even before 1857. As per this law, the citizens of the country did not have the right to create maps. Now imagine, it was in place since 1857. If you want to create a map, then seek permission from the government, if you want to print the map in a book, then seek permission from the government; there is a provision for arrest if the map is lost. Nowadays every phone has a Map app. Satellites have so much power! Then how will we take the country forward with a burden of such laws? It is very important to get rid of this burden of compliances. We have abolished several regulations in various sectors like mapping, space, information technology and BPO.

My dear countrymen,

Freedom from the clutches of unnecessary laws is very important for both Ease of Living as well as Ease of Doing Business. Our country's industries and businesses are experiencing this change today.

Today dozens of labor laws have been subsumed into just 4 codes. Tax related arrangements have also been made easy and become faceless now. We will have to work together so that such reforms are not limited to the government only, but percolate down to gram panchayats, municipal corporations and municipalities. I am calling upon, making an earnest appeal to all the central and state departments to launch a campaign to review the existing rules and procedures. We have to get rid of every rule, every process which has become a hindrance and a burden for the people of the country. I know what has accumulated in 70-75 years will not go away in a day or in a year. But if we start working with a purpose, we will definitely be able to do this.

My dear countrymen,

Keeping this in mind, the government has also started Mission Karmayogi and Capacity Building Commission to increase people-centric approach in bureaucracy and improve their efficiency.

My dear countrymen,

Our education, education system, education tradition has a great role in preparing the youth, who are possessed with skill and ability, and who have the spirit to do something for the country. Today the country also has a new National Education Policy to meet the needs of the 21st century. Now our children will neither stop due to lack of skills nor will they be bound by language barriers. Unfortunately, there is a massive divide in our country regarding language. We have tied a huge talent of the country to the cage of language. One can find promising people in their mother tongue. If people from the vernacular medium come forward, their self-confidence will grow. Justice will be done to the potential of the poor children when they will become professionals by studying in their mother tongue.

I believe that language is the instrument of the fight against poverty in the new National Education Policy. This new National Education Policy is also going to be a great tool to fight against poverty in a way. The basis of winning the war against poverty is also the education, prestige and importance of the vernacular language. The country has seen this in the playground... and we are experiencing that language has not become a barrier and as a result we have seen that the youth are playing and blossoming. Now the same thing will happen in other fields of life as well.

Another special feature of the new National Education Policy is that sports has been made a part of mainstream education instead of extra-curricular. Sports is also one of the most effective means of pursuing life. It is very important to have sports in life for perfection in life. There was a time when sports was not considered mainstream. Parents also considered indulging in sports as wastage of life. Now, there is a new awareness about fitness and sports. We have seen and felt this in the olympics. This change is a big turning point for us. That is why, we need to speed up and expand the campaign that is going on in the country for infusing talent, technology and professionalism in sports.

It is a matter of pride for the country that our daughters are performing in an unprecedented manner in the fields of education, sports, Boards results or olympics. Today daughters are raring to occupy their place. We have to ensure that women have equal partnership in every career and workspace. We have to ensure that they feel safe from roads to the workplace and everywhere. There should be a feeling of respect for them and in this, the government, administration, police and justice system will have to perform their duty cent percent. We have to make this resolution , the resolution of the 75 years of Independence.

Today I am sharing good news with the countrymen. I used to get lakhs of messages from our daughters that they want to study in the Sainik Schools. The Doors of the schools should be opened for them. We dis aq pilot project in the Sainik School of Mizoram two-two and half years ago by giving admission to our daughters. Now the Government has decided that all the Sainik Schools will be open for the girls. Daughter too will study in all the Sainik Schools of the Country.

Environmental security is getting the same importance in the world as national security.Today India is a vibrant voice of environmental security, whether it is biodiversity or land neutrality, climate change or waste recycling, organic farming or biogas, energy conservation or clean energy transition. India’s efforts in environment are giving results today. Increase in forest cover, number of national parks, increase in number of tigers and Asiatic lions are a matter of happiness for the countrymen.

Among all these successes one truth needs to be understood. India is not yet energy independent. India today spends more than 12 lakh crore rupees annually for importing energy. For India's progress and to build a self-reliant India, India's energy independence is the need of the hour! Therefore today, India has to make a resolution to make India energy independent before the completion of 100 years of independence and our roadmap is very clear for the same. It should be a gas based economy. There should

be a network of CNG & PNG across the country. There should be a target of 20 percent ethanol blending. India is moving ahead with a set goal. India has also made a move towards Electric Mobility and the work on 100% electrification of Railways is also progressing at a fast pace. Indian Railways has set a target of becoming Net Zero Carbon Emitter by 2030. Besides these efforts, the country is also emphasizing on Mission Circular Economy. Our Vehicle Scrap Policy is a great example of the same. Today, India is the only country in the group of G-20 countries, which is moving fast towards achieving its climate goals.

India has set a target of 450 GW of renewable energy by the end of this decade - 450 GW by 2030. Of this, the target of 100 GW has been achieved by India ahead of schedule. These efforts are also instilling confidence in the world. The formation of the International Solar Alliance on the Global State is a great example of the same.

Of every effort being made by India today, the thing that is going to help India with a quantum leap in terms of climate is the field of Green Hydrogen. To achieve the goal of Green Hydrogen, I am announcing the National Hydrogen Mission today with this tricolour as a witness. We have to make India a Global Hub for Green Hydrogen Production and Export in the 'Amrit Kaal'. This will not only help India to make a new progress in the field of energy self-reliance but will also become a new inspiration for Clean Energy Transition all over the world. New opportunities from Green Growth to Green Job are opening up today for our start-ups & youth.

My dear countrymen,

Today, the 21st century India has the ability to create and achieve big goals as well. Today India is also solving those subject areas, which were hanging fires for decades and centuries. Be it a historic decision to abrogate Article 370, introduction of GST, a system that frees the country from the web of taxes, a decision regarding 'One Rank-One Pension' for our military friends, a peaceful solution to the Ram Janmabhoomi issue, we have seen it come true in a few years

India’s willpower is realizing all the resolutions whether it is the Bru-Reang agreement in Tripura after decades, constitutional status to the OBC commission or the BDC and DDC elections in Jammu and Kashmir for the first time since independence.

Even in this period of Corona, record foreign investment is coming to India. India's foreign exchange reserves are also at an all-time high. India has also given the message of the might of New India to the enemies of the country by carrying out surgical and air strikes. It shows that India is changing. India can change. India can take the toughest decisions and it does not hesitate and stop in taking even the toughest decisions.

My dear countrymen,

The nature of global relations has changed after the Second World War. There is a possibility of a new world order post Corona. The world has seen and appreciated India's efforts during Corona. Today the world is looking at India from a new perspective. There are two important aspects of this perception -- one is terrorism and the other is expansionism. India is fighting both these challenges and is also responding strongly in a restrained manner. Our defense preparedness has to be equally strong if India has to fulfil its obligations properly.

We are making constant efforts to provide new opportunities to our hardworking entrepreneurs and to encourage Indian companies to make the country self-reliant in the field of defence. I assure the country that we will leave no stone unturned to strengthen the hands of our forces engaged in the defense of the country.

My dear countrymen,

Today is also the birth anniversary of the great thinker of the country, Sri Aurobindo. His 150th birth anniversary will be celebrated in 2022. Sri Aurobindo was a visionary of India's bright future. He used to say that we have to be as powerful as we were never before. We have to change our habits. We have to re-awaken ourselves. These words of Sri Aurobindo remind us of our duties. We also have to think about what we are giving to the country as a citizen and as a society. We have always given importance to rights. They were needed during that period, but now we have to make duties paramount. Everybody will have to contribute in fulfilling the resolutions of the country. Every citizen will have to own this up.

Our country has initiated a campaign of water conservation, so it is our duty to include saving water in our habits. If the country is emphasizing on digital transactions, then it is also our duty to do minimum cash transactions. The country has started the campaign of Local for Vocal, so it is our duty to buy as many local products as possible. To strengthen our vision of a plastic-free India of the country, it is our duty to completely stop the use of single use plastic. It is our duty not to throw dirt in our rivers, keep our sea shores clean. We also have to take the Swachh Bharat Mission to another new level.

Today, when the country is celebrating the Amrit Mahotsav on the occasion of 75 years of independence, it is the duty of all of us to join this event, participate in it enthusiastically, and keep kindling our resolutions again and again. Keeping freedom struggle in mind, whatever little you do… whatever… will be pure like a drop of nectar, and this Amrit Kumbh made by the pure efforts of many Indians will inspire the entire nation for years to come.

My dear countrymen,

I am not a fortune teller, I believe in action. I have faith in the youth of my country, I trust the sisters of the country, the daughters of the country, the farmers of the country, and the professionals of the country. This 'CAN DO' generation can achieve every goal imaginable.

I believe that in 2047, on the occasion of celebrating 100 years of independence… whoever will be the Prime Minister… whoever will be the Prime Minister after 25 years from today, when he will be unfurling the flag… I say this with confidence today that he or she shall be chronicling those accomplishments in his speech about which the country has taken a vow today... This is my firm belief of victory.

Today whatever I am speaking of in the form of a resolution, whoever hoists the flag after 25 years, shall be speaking of the same in the form of accomplishments. The country would be singing its glory in the form of these accomplishments. Youth of the country of today, shall also see at that time how the country has achieved this glory.

In the 21st century, no obstacle can stop us from fulfilling the dreams and aspirations of India. Our strength is our vitality, our strength is our solidarity, our vitality is the spirit of nation first - always first. This is the time for shared dreams, this is the time for shared resolve, this is the time for shared efforts... and this is the time to move towards victory.

And so I say once again-

This is the time,

This is the time.. the right time!

India's precious time!

This is the time, the right time! India's precious time!

The power of countless arms,

The power of countless arms,

There is patriotism everywhere!

There is the power of innumerable arms, there is patriotism everywhere…

Come, rise and unfurl the Tricolour!

Come, rise and unfurl the Tricolour!

Turn the fate of India,

Turn the fate of India,

This is the time, the right time! India's precious time!

There is nothing..

There is nothing you cannot do,

There is nothing you cannot achieve,

You Rise...

You Rise and Begin,

Recognize your abilities,

Recognize your abilities,

Understand all your duties,

Understand all your duties!

This is the time, the right time! India's precious time!

When the country completes 100 years of independence, the goals of the countrymen must be turned into reality; that is my desire. With my best wishes, I once again congratulate all the countrymen on the 75th Independence Day! Say aloud with your fists up -

Jai Hind,

Jai Hind,

Jai Hind!

VandeMatram,

VandeMatram,

VandeMatram!

Long live Mother India,

Long live Mother India,

Long live Mother India!

Thanks a lot!

https://www.kankyo.metro.tokyo.lg.jp/climate/tokyo_coolhome_coolbiz/index.html#cmsC358F

Tokyo Cool Home & Biz

HTT 電力を へらす つくる ためる TokyoTokyo

The Tokyo Metropolitan Government will strengthen and accelerate its efforts not only from the perspective of the climate crisis, but also from the perspective of ensuring stable energy over the medium to long term.
The point is to reduce power consumption, create it, and store it. The keyword is HTT.
From these three perspectives, we need to work together with the citizens of Tokyo and businesses in a total war.
Specifically, as "Tokyo Cool Home" for homes and "Tokyo Cool Biz" for businesses.
We will prepare and develop various menus.

Tokyo Cool Home & Biz Tokyo Cool Home & Biz

what's new

2022.05.06
> Let's proceed with "Reduce H T Create T Save"! New! > Created a PR tool for securing electricity for businesses **New! >**
Held "Tokyo Cool Home & Biz" **New!** 2022.05.02 > Shareholder proposal to Tokyo Electric Power Company Holdings, Inc. And request for discussions to conclude an agreement (external site) **New!** 2022.04.22 > Tokyo Cool Home & Biz will be implemented (external site) > Tokyo Cool Home & Biz portal site has been opened > Power saving this summer We will hold an event "Tokyo Cool Home & Biz" that calls for accelerated action (external site)

We have created a PR tool for securing electricity for businesses.

At a glance, we are promoting power saving efforts and other power saving efforts for businesses that cooperate with and support the city's power saving efforts ~ HTT <H reduce T create T store> ~. I created a PR tool. We ask that you post it on the storefront or on our website to publicize your own efforts, and encourage visitors to save electricity widely, so that we can ensure the securing of electricity.
Please use it by downloading and posting this data.

Poster

(Notes on the logo)

・ This logo indicates that the citizens of Tokyo and businesses will cooperate in efforts to save electricity in the city.

・ This logo is displayed and the poster cannot be used for commercial purposes.

Let's proceed with "H reduce T create T store"!

We would like to introduce the concrete and profitable "H reduce T create T store" efforts that we would like the citizens of Tokyo and businesses to work on to secure electricity

.

・ Review of contract amperage

・ Zero emi point business

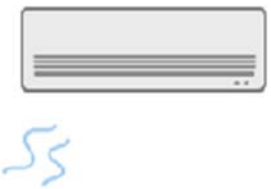
今夏の節電アクション HTT

<Tokyo Cool Home>

★ There is a support menu for the city (including some)

H 少しの工夫で今すぐ節電

減らす



・ Thorough room temperature of 28 ℃ during cooling, filter-cleaning

・ Refrigerator is not overloaded, set temperature is changed from strong to inside in

summer
・ Electric pot ・ Stops long-term heat retention of rice cooker ・
Toilet seat heating and hot water setting except winter OFF

★ Significantly save electricity bills by replacing LED bulbs and replacing air conditioners, refrigerators, and water heaters with high energy-saving performance . Easy eco-friendly by sticking and replacing the water-saving shower head

★ Solar power generation on the roof of the house
★ Further energy saving by installing highly efficient EcoCute (electric water heater) and ENE-FARM (household fuel cell)

★ Electricity generated by sunlight is stored in an electric vehicle (EV) and used as an emergency power source.

★ Storage batteries save electricity costs and provide peace of mind in the event of a disaster.

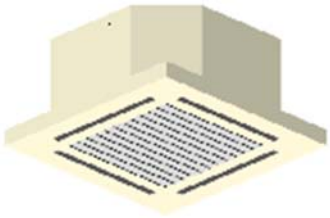
<Tokyo Cool Biz>

★ There is a support menu for the city (including some)

H オフィスも人も快適に
減らす

・ Energy saving and comfortable clothes with Cool Biz fashion ・
Review of lighting illuminance (about 500 lux in living room)
・ Review of PC power supply options (sleep mode, etc.)
・ Cut sunlight with blinds, etc. ・
Implementation of morning shift and telework

H 賢くエネルギーコスト削減
減らす



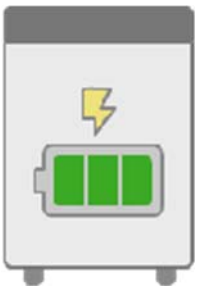
★ Review energy waste with free energy-saving diagnosis
★ Introduce highly efficient air conditioning and ventilation equipment to reduce costs
★ Introducing LED lighting and energy management equipment is also effective

T 脱炭素経営で選ばれる企業へ
創る

★ Solar power generation in rooftop spaces such as offices and factories
★ Further energy saving by installing renewable energy heat utilization equipment
★ Utilization of renewable energy electricity that leads to new installation

T 蓄エネでBCP対策

蓄める



★ Zero emission vehicle when updating company cars!
★ Charging from sunlight further saves energy and costs
★ BCP measures and energy management are also realized with storage batteries

Tokyo Cool Home Efforts and support for homes

EU Drafts Plan for Buying Russian Gas Without Breaking Sanctions
2022-05-14 19:06:17.894 GMT

By Ewa Krukowska and Alberto Nardelli
(Bloomberg) -- The European Union is set to offer its gas importers a solution to avoid a breach of sanctions when buying fuel from Russia and still effectively satisfy President Vladimir Putin's demands over payment in rubles.
In new guidance on gas payments, the European Commission plans to say that companies should make a clear statement that they consider their obligations fulfilled once they pay in euros or dollars, in line with existing contracts, according to people familiar with the matter. The EU's executive arm told the governments that the guidance does not prevent companies from opening an account at Gazprombank and will allow them to purchase gas in accordance with EU sanctions following Russia's invasion of Ukraine, the people added.
European companies have been scrambling for weeks to figure out how they can meet Moscow's demand and keep the crucial gas flowing without violating sanctions on Russia's central bank.
Putin said on March 31 that if payments aren't made in rubles, gas exports would be halted. Europe depends heavily on the Russian fuel to heat homes and power industry.
Initially, the EU had assessed that the payment mechanism demanded by Putin handed Moscow total control of the process, breached contracts and -- crucially -- violated the bloc's sanctions.
On Friday, the commission told member states in a closed-door meeting that the updated guidance will clarify that companies can open an account in euros or dollars at Gazprombank as ordered by the Kremlin, according to the people, who asked not to be identified because the meeting was private.
But the EU's executive arm stopped short of saying whether also having an account in rubles -- a step included in the Russian decree -- was in line with EU regulations. Previously, officials had indicated, though never in writing, that opening such an account would breach sanctions. The updated guidance, as presented to member states, fails to address this specific point, the people said.
Another key point in the guidance is that once European companies make a payment in euros or dollars and declare their obligation complete, no further action should be required of them from the Russian side in regard to the payment.
The clock is ticking because many firms have payment deadlines falling due later this month -- and if they don't pay, gas flows could be cut off. Poland and Bulgaria already saw their supplies cut after failing to comply with Russia's requests.
Putin's demands to pay in rubles have divided EU member states, highlighting the dependence of some nations on Russian imports. Italian Prime Minister Mario Draghi said earlier this week European companies will be able to pay for gas in rubles

without breaching sanctions.
At the Friday meeting, government representatives were split too, according to one of the people. While Germany, Hungary, Italy and France broadly endorsed the commission's plan, Poland said it failed to offer legal clarity and called for the matter to be discussed by EU ambassadors. Others were confused by the lack of specific guidance on opening accounts in rubles.
Germany said at the meeting that it consulted its companies on the proposal and got positive feedback, the person added. It also sought to fine-tune the recommendations by clarifying that EU sanctions don't prohibit opening multiple accounts at Gazprombank.
The commission declined to comment on the revised guidance.

Individual member states are ultimately responsible for enforcing EU sanctions, but the commission provides legal guidance.
Putin's decree called for companies to open two accounts with Gazprombank -- one in euros and one in rubles -- and stipulated that gas payments aren't settled until euros are converted into rubles.
Russia clarified its decree earlier this month, stating that payments received in foreign currency would be exchanged to rubles via accounts with Russia's National Clearing Center, and Gazprom provided buyers with additional assurances that the central bank would not be involved in the conversion process.

To contact the reporters on this story:
Ewa Krukowska in Brussels at ekrukowska@bloomberg.net;
Alberto Nardelli in London at anardelli@bloomberg.net
To contact the editors responsible for this story:
Emma Ross-Thomas at erossthomas@bloomberg.net;
Kevin Whitelaw at kwhitelaw@bloomberg.net

NS1 05/09 17:13 Yahoo! Finance: Exclusive-Germany, Qatar at odds over terms in talks on LNG supply deal -sources
BN 05/09 17:24 *GERMANY, QATAR AT ODDS OVER TERMS IN TALKS ON LNG DEAL: REUTERS

Germany, Qatar at Odds Over Terms in Talks on LNG Deal: Reuters
2022-05-09 17:44:12.550 GMT

By Brandon Sapienza
(Bloomberg) -- Germany and Qatar are at odds about duration of any contract as they continue talks about liquefied natural gas supply deals, Reuters reports, citing three people familiar with the discussions.

* Germany has expressed reluctance to accept Qatar's proposed deals of at least 20 years, due to its goal of cutting its carbon emissions 88% by 2040
* Qatar seeks a destination clause that would prevent any LNG from being rerouted to other countries in Europe, a condition the EU opposes
* A deal isn't expected soon, one of the people said
* German utilities RWE and Uniper have participated in the talks; they both declined to comment on the discussions: Reuters
* Qatar's government communication office declined to comment to Reuters
* Germany's Economy Ministry wasn't immediately available to comment: Reuters

To view the source of this information click here

To contact the reporter on this story:
Brandon Sapienza in New York at bsapienza@bloomberg.net
To contact the editors responsible for this story:
Sunil Kesur at skesur@bloomberg.net
Jim Silver

Director's Cut
March 2022 Production

Oil Production

February 30,494,557 barrels = 1,089,091 barrels/day (final)
(New Mexico) **36,510,147 barrels = 1,303,934 barrels/day**

March 34,720,679 barrels = 1,120,022 barrels/day **(+2.8%)**
1,078,022 barrels/day or 96% from Bakken and Three Forks
42,000 barrels/day or 4% from legacy pools

1,519,037 all-time North Dakota high Nov 2019

Revised Revenue Forecast **= 1,200,000→1,100,000→1,000,000 barrels/day (+2%)**

Crude Price[1] ($/barrel)

	North Dakota Light Sweet	WTI	ND Market estimate
February	86.17	91.63	86.96 **RF +74%**
March	104.68	108.26	104.64 **RF +109%**
Today	101.75	106.13	103.94 **Est. RF +108%**
All-time high (6/2008)	$125.62	$134.02	$126.75

Revised Revenue Forecast **= $50.00**

Gas Production & Capture

February Production 80,383,201 MCF = 2,870,829 MCF/day
Gas Captured: 94% 75,867,797 MCF = 2,447,348 MCF/day

March Production 93,047,593 MCF = 3,001,535 MCF/day **+4.6%**
Gas Captured: 95% 87,952,380 MCF = 2,931,746 MCF/day
3,145,172 MCF/day all-time high production Nov 2019
2,931,746 MCF/day all-time high capture Mar 2022

Rig Count

February	34
March	34
April	38
Today	*40 NM 98*
Federal Surface	0
All-time high	*218 (5/29/2012)*

[1] Pricing References: WTI: EIA and CME Group; ND Light Sweet: Flint Hills Resources

Wells

	February	March	April	Revised Revenue Forecast
Permitted	32 drilling 0 seismic	65 drilling 0 seismic	55 drilling 0 seismic (All-time high was 370 – Oct. 2012)	-
Completed	90 (Preliminary)	53 (Revised)	33 (Preliminary) (-18% above RF)	**30→40→50→60**
Inactive[2]	1,872	1,928	-	-
Waiting on Completion[3]	463	451	-	-
Producing	16,749	17,070 (Preliminary) *14,812 (87%) from unconventional Bakken – Three Forks* *2,258 (13%) from legacy conventional pools*	-	-

Fort Berthold Reservation Activity

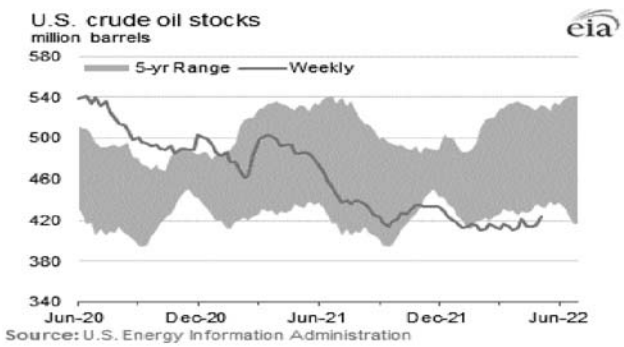
	Total	Fee Land	Trust Land
Oil Production (barrels/day)	213,713	89,059	124,654
Drilling Rigs	5	1	4
Active Wells	2,631	659	1,972
Waiting on completion	20		
Approved Drilling Permits	324	58	266
Potential Future Wells	3,921	1,105	2,816

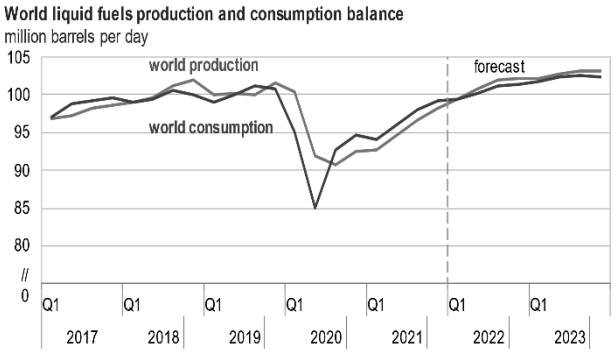
Drilling and Completions Activity & Crude Oil Markets

The drilling rig count continues to slowly increase.

The number of active completion crews increased to 15 this week.

OPEC+ continues to phase out oil production cuts beginning September 2021 through the end of 3Q 2022. At their May 2022 meeting OPEC+ decided to stick with their plan to increase production approximately 400,000 barrels per day each month going forward. Russia sanctions have exacerbated an already tight market. The strategic petroleum reserve releases by OECD countries resulted in a very short term drop in oil prices.





[2] Includes all well types on IA and AB statuses: **IA** = Inactive shut in >3 months and <12 months;
AB = Abandoned (Shut in >12 months)

[3] The number of wells waiting on completions is an estimate on the part of the director based on idle well count and a typical five-year average. Neither the State of North Dakota, nor any agency officer, or employee of the State of North Dakota warrants the accuracy or reliability of this product and shall not be held responsible for any losses caused by this product. Portions of the information may be incorrect or out of date. Any person or entity that relies on any information obtained from this product does so at his or her own risk.

Crude oil transportation capacity including rail deliveries to coastal refineries is adequate, but could be disrupted due to:

- US Appeals Court for the ninth circuit upholding of a lower court ruling protecting the Swinomish Indian Tribal Community's right to sue to enforce an agreement that restricts the number of trains that can cross its reservation in northwest Washington state.
- DAPL Civil Action No. 16-1534 continues, but the courts have now ruled that DAPL can continue normal operations until the USACOE EIS is completed.

Drilling activity is expected to slowly increase while operators maintain a permit inventory of approximately 12 months.

Gas Capture

US natural gas storage is now 16% below the five-year average. Crude oil inventories remain well below normal in the US, and world storage is now below the five-year average.

The price of natural gas delivered to Northern Border at Watford City has returned to an elevated level of $6.34/MCF today for a current oil to gas price ratio of 16 to 1. The state wide gas flared volume from February to March increased 3,099 MCFD to 164,364 MCF per day, the statewide percent flared is unchanged at 5.5% while Bakken capture percentage increased to 95%. The historical high flared percent was 36% in 09/2011.

Gas capture details are as follows:

Statewide	95%
Statewide Bakken	95%
Non-FBIR Bakken	95%
FBIR Bakken	95%
Trust FBIR Bakken	97%
Fee FBIR	86%
Big Bend	*78%*
Deep Water Creek Bay	*88%*
Twin Buttes	*66%*
Charlson	*76%*

The Commission established the following gas capture goals:

74%	October 1, 2014 - December 31, 2014
77%	January 1, 2015 - March 31, 2016
80%	April 1, 2016 - October 31, 2016
85%	November 1, 2016 - October 31, 2018
88%	November 1, 2018 - October 31, 2020
91%	November 1, 2020

Seismic

There is currently no seismic activity for oil and gas.

Active Surveys	Recording	NDIC Reclamation Projects	Remediating	Suspended	Permitted (Oil and Gas)	Permitted (CCS)
0	1	0	1	7	0	0

https://bismarcktribune.com/news/state-and-regional/north-dakotas-oil-output-almost-back-to-normal-after-april-blizzards/article_e1ae79b0-d306-11ec-a0ac-a7006c4ec56e.html#tracking-source=home-top-story

North Dakota's oil output almost back to normal after April blizzards

- **AMY R. SISK**

North Dakota's oil production is about 90% back online following back-to-back April blizzards that downed power lines and caused massive disruptions across the Bakken region.

State Mineral Resources Director Lynn Helms on Friday estimated that the state's oil production had rebounded to about 1 million barrels per day after falling as low as 300,000 barrels per day during the second blizzard in late April. He told reporters that "we're recovering" as oil patch crews work to bring the remaining 10% of idled wells back online.

Prior to April, North Dakota's oil production had been slowly climbing. New data released Friday shows that the state's daily oil output was 1.12 million barrels in March, a 2.8% increase over February. The state's official oil figures lag two months as officials collect and analyze data from energy companies.

High oil prices -- the result of the ongoing war in Ukraine -- have helped the state's oil industry as it continues to recover from the coronavirus pandemic, which sent oil demand and prices plummeting in 2020.

Forty drilling rigs were operating Friday, up from the low 30s at the start of 2022. Helms said 15 frack crews were operating in the state, completing the work necessary once a well is drilled to get it producing oil. That's up from 11 at the start of the year and up from just one that operated at the height of the downturn in 2020.

A worker shortage continues to hamper the oil industry's ability to drill more in North Dakota, Helms said. He added that companies have moved a lot of oil field equipment to the Permian Basin of Texas and New Mexico, where oil production is more robust.

“It’s taking around two months to train and deploy a drilling rig and crew,” he said. “It’s very, very slowly coming back.”

April’s oil production figures are likely to be down in light of the blizzards, he said.

North Dakota produced just over 3 billion cubic feet of natural gas per day in March, a 4.6% increase over February. The industry captured 95% of gas and is exceeding the state’s 91% target. Energy producers captured 94% in February. The rest was burned off at well sites in a process known as flaring, due to a lack of access to pipelines and processing plants.

“Those are the best back-to-back months we’ve seen in the state,” said Justin Kringstad, director of the North Dakota Pipeline Authority.

He said the blizzards caused a major shift in gas flowing through the Northern Border Pipeline, which begins in Canada yet transports much of the gas produced in the Bakken to markets in the Midwest. The storms knocked every gas processing plant offline in North Dakota for various lengths of time, so gas from Alberta and British Columbia temporarily filled in the gap.

Reach Amy R. Sisk at 701-250-8252 or **amy.sisk@bismarcktribune.com**.

MONTHLY UPDATE

MAY 2022 PRODUCTION & TRANSPORTATION

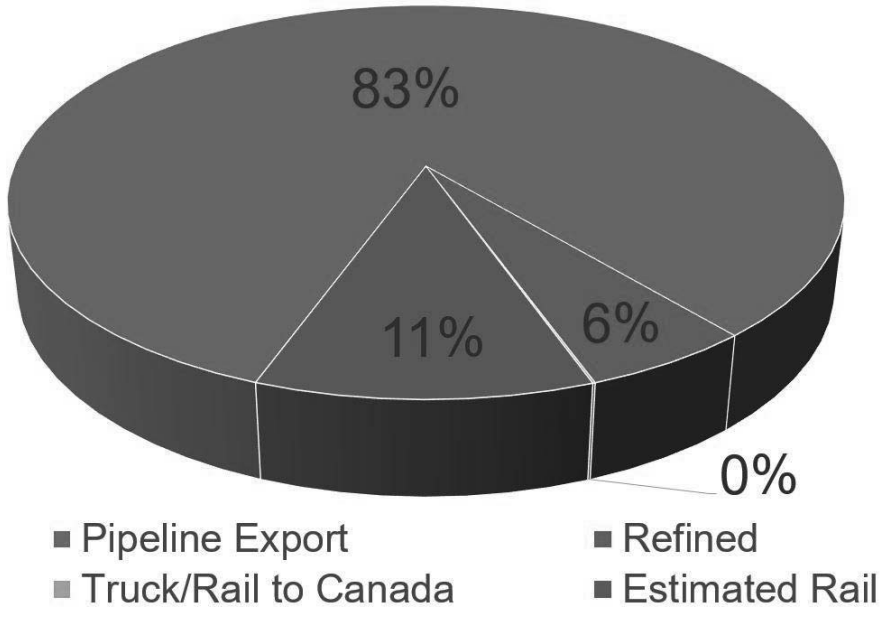
North Dakota Oil Production

Month	Monthly Total, BBL	Average, BOPD
Feb. 2022 - Final	30,494,557	1,089,091
Mar. 2022 - Prelim.	34,720,679	1,120,022

North Dakota Natural Gas Production

Month	Monthly Total, MCF	Average, MCFD
Feb. 2022 - Final	80,383,201	2,870,829
Mar. 2022 - Prelim.	93,047,593	3,001,535

Estimated Williston Basin Oil Transportation, Mar. 2022



CURRENT DRILLING ACTIVITY:

NORTH DAKOTA[1]

40 Rigs

EASTERN MONTANA[2]

2 Rigs

SOUTH DAKOTA[2]

0 Rigs

SOURCE (MAY 13, 2022):

1. ND Oil & Gas Division
2. Baker Hughes

PRICES:

Crude (WTI): $110.03

Crude (Brent): $111.04

NYMEX Gas: $7.54

SOURCE: BLOOMBERG (MAY 13, 2022 11AM CST)

GAS STATS*

95% CAPTURED & SOLD

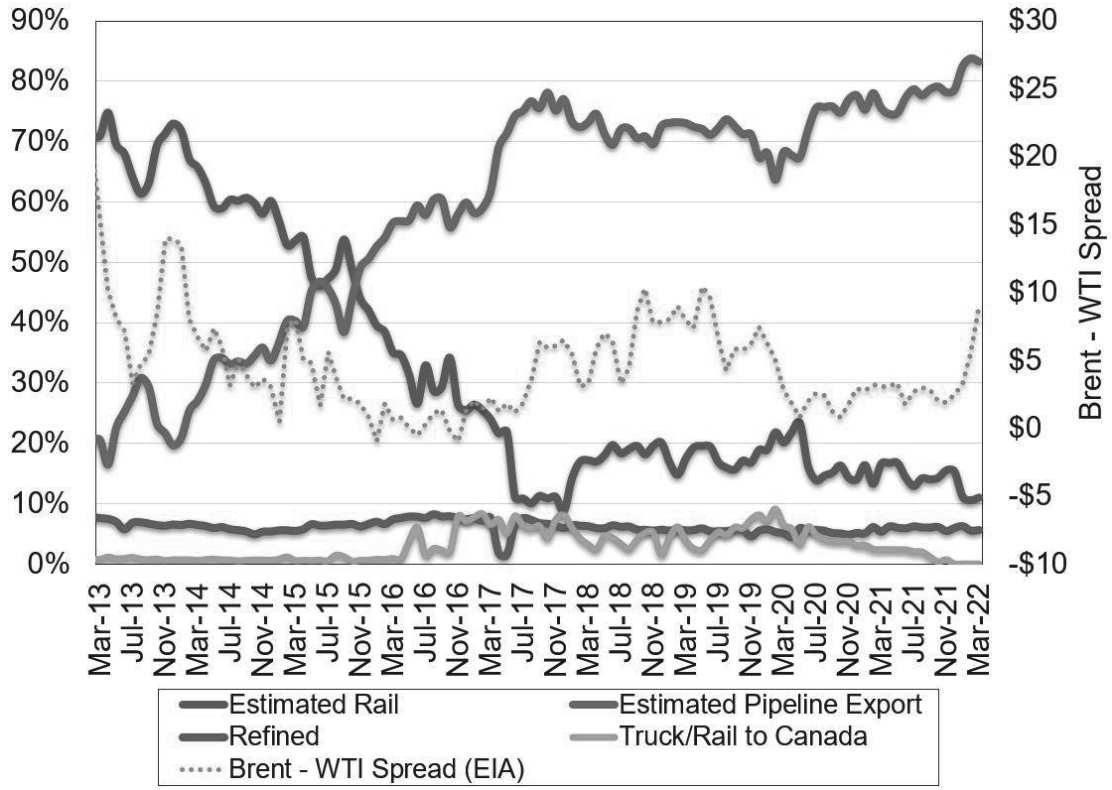
4% FLARED DUE TO CHALLENGES OR CONSTRAINTS ON EXISTING GATHERING SYSTEMS

1% FLARED FROM WELL WITH ZERO SALES

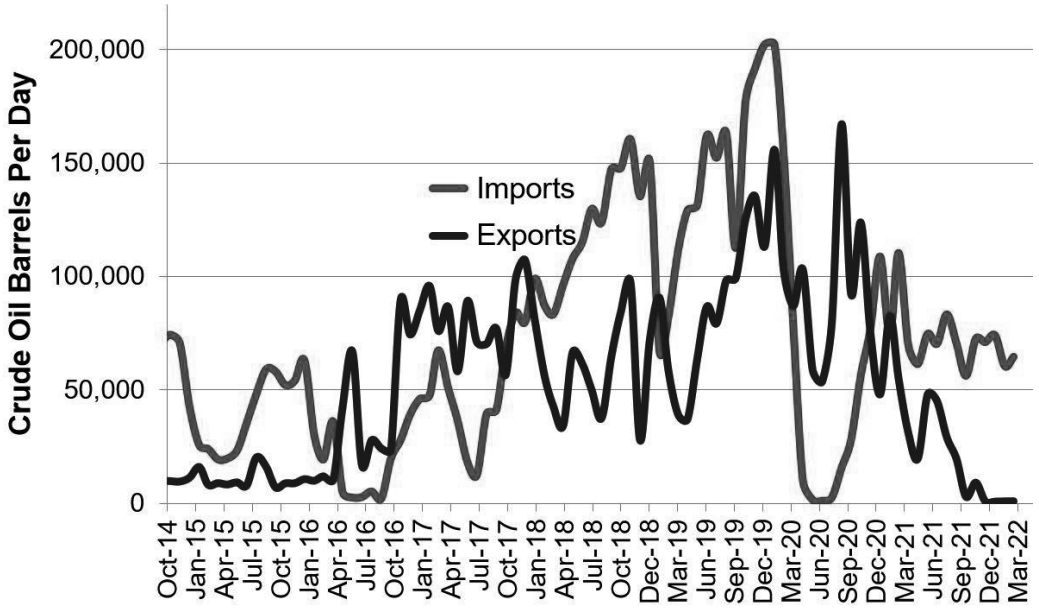
MAR. 2022 NON-CONF DATA

Estimated North Dakota Rail Export Volumes

Estimated Williston Basin Oil Transportation

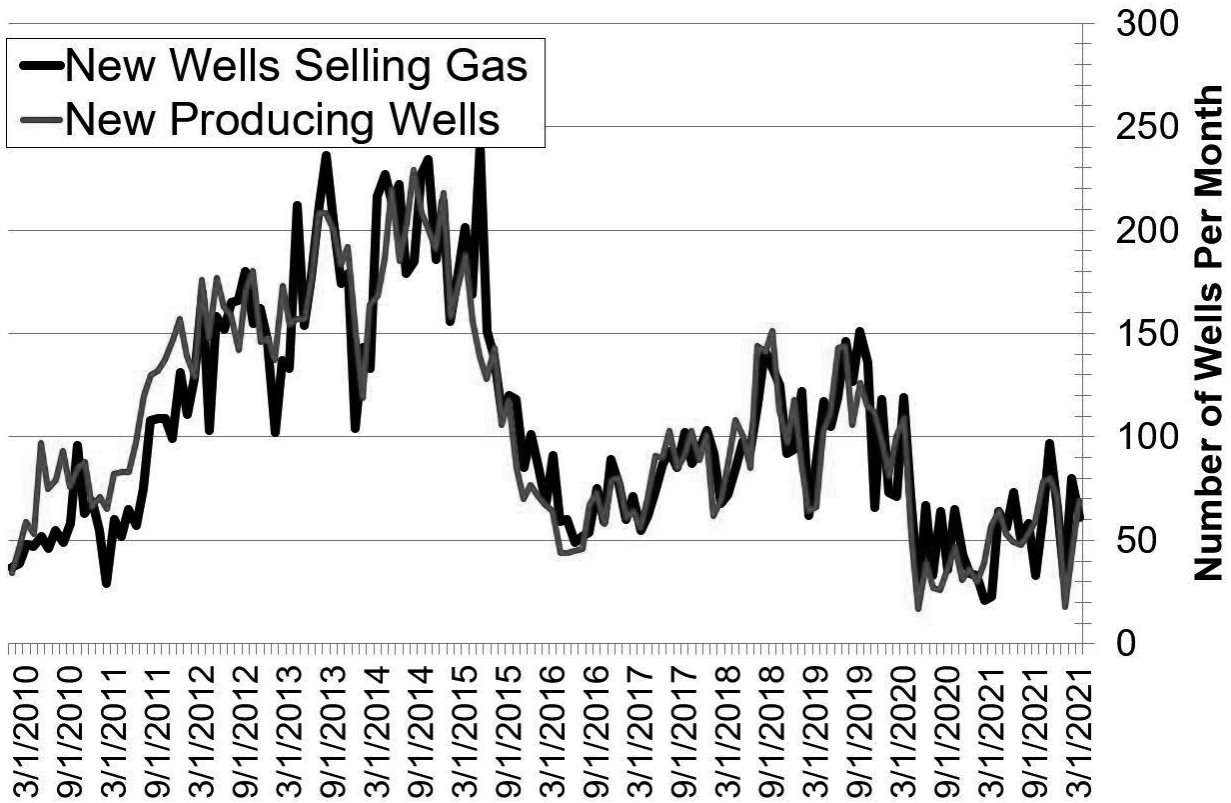


Williston Basin Truck/Rail Imports and Exports with Canada



Data for imports/exports chart is provided by the US International Trade Commission and represents traffic across US/Canada border in the Williston Basin area.

New Gas Sales Wells per Month



US Williston Basin Oil Production, BOPD

2021

MONTH	ND	EASTERN MT*	SD	TOTAL
January	1,147,724	50,417	2,874	1,201,015
February	1,083,820	48,251	2,828	1,134,899
March	1,109,005	49,525	2,744	1,161,275
April	1,121,776	48,439	2,644	1,172,859
May	1,129,785	47,276	2,640	1,179,702
June	1,134,758	44,083	3,103	1,181,944
July	1,078,883	43,755	2,884	1,125,522
August	1,108,084	47,281	2,892	1,158,257
September	1,113,963	50,407	2,847	1,167,217
October	1,110,828	49,404	2,853	1,163,085
November	1,158,553	48,538	2,780	1,209,871
December	1,144,999	48,141	2,717	1,195,857

2022

MONTH	ND	EASTERN MT*	SD	TOTAL
January	1,088,613	47,865	2,709	1,139,187
February	1,089,091		2,742	
March	1,120,022			
April				
May				
June				
July				
August				
September				
October				
November				
December				

** Eastern Montana production composed of the following Counties: Carter, Daniels, Dawson, Fallon, McCone, Powder River, Prairie, Richland, Roosevelt, Sheridan, Valley, Wibaux*

https://tass.ru/ekonomika/14580901
MAY 9, 02:25Updated May 9, 03:04

Novak: Russia expects oil production to increase in May compared to April

The Deputy Prime Minister of the Russian Federation added that the Cabinet notes an increase in the number of new buyers of Russian oil, including in Asian countries

Deputy Prime Minister of Russia Alexander Novak
© Alexey Maishev/POOL/TASS

MOSCOW, 9 May. /TASS/. The Russian government expects to partially restore oil production in May after its decline in April. The situation, according to the data for the first days of May, has already stabilized, Russian Deputy Prime Minister Alexander Novak told reporters.

"If you look at the indicators of early May, they are better than April. The situation is stable. Production increased compared to April. We expect that the indicators in May will be partially restored and will be better," he said.

He added that Russia began selling oil to a number of new buyers, the volume of Russian oil supplies increased in several directions, including to the countries of the Asia-Pacific region. "Of course, they (Russian oil companies - TASS note) are looking for new directions in the new situation, building new supply chains. We see, of course, that there are new buyers, including an increase in [oil exports] to suppliers in other directions, including the Asia-Pacific region," he said.

According to the Deputy Prime Minister, Russia is also considering a number of new infrastructure projects to diversify oil supplies. According to him, the expansion of the ESPO (Eastern Siberia - Pacific Ocean) pipeline to China is one of the options, as is the construction of new port facilities. A working group has now been set up to discuss these issues.

https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/08/g7-leaders-statement-2/

G7 Leaders' Statement

MAY 08, 2022•STATEMENTS AND RELEASES

1. Today, on 8 May, we, the Leaders of the Group of Seven (G7), alongside Ukraine and the wider global community, commemorate the end of the Second World War in Europe and the liberation from fascism and the National Socialist reign of terror, which caused immeasurable destruction, unspeakable horrors and human suffering. We mourn the millions of victims and offer our respect, especially to all those who paid the ultimate price to defeat the National Socialist regime, including the western Allies and the Soviet Union.

2. Seventy-seven years later, President Putin and his regime now chose to invade Ukraine in an unprovoked war of aggression against a sovereign country. His actions bring shame on Russia and the historic sacrifices of its people. Through its invasion of and actions in Ukraine since 2014, Russia has violated the international rules-based order, particularly the UN Charter, conceived after the Second World War to spare successive generations from the scourge of war.

3. Today, we were honoured to be joined by Ukraine's President Volodymyr Zelenskyy. We assured him of our full solidarity and support for Ukraine's courageous defence of its sovereignty and territorial integrity, and its fight for a peaceful, prosperous and democratic future within its internationally recognised borders, with the liberties and freedoms that so many of us enjoy today.

4. President Zelenskyy underlined the strong resolve of Ukraine to protect its sovereignty and territorial integrity. He stated that Ukraine's ultimate aim is to ensure full withdrawal of Russia's military forces and equipment from the entire territory of Ukraine and to secure its ability to protect itself in the future and thanked G7 members for their support. In this regard, Ukraine emphasised that it relies on its international partners, in particular on G7 members, in providing necessary assistance in the domain of defense capabilities, as well as with a view to ensuring a swift and effective recovery of Ukraine's economy and to securing its economic and energy security. Ukraine has entered into discussions with international partners on security mechanisms for a viable post-war peace settlement. Ukraine remains committed to working closely with G7 members to support Ukraine's macroeconomic stability in the face of the challenges posed by the full-scaled Russian invasion, massive destruction of critical infrastructure and disruption of traditional shipping routes for Ukrainian exports. President Zelenskyy

noted his country's commitment to uphold our common democratic values and principles, including respect for human rights and the rule of law.

5. Today, we, the G7, reassured President Zelenskyy of our continued readiness to undertake further commitments to help Ukraine secure its free and democratic future, such that Ukraine can defend itself now and deter future acts of aggression. To this end, we will pursue our ongoing military and defence assistance to the Ukrainian Armed Forces, continue supporting Ukraine in defending its networks against cyber incidents, and expand our cooperation, including on information security. We will continue to support Ukraine in increasing its economic and energy security.

6. Together with the international community, we, the G7, have provided and pledged additional support since the start of the war exceeding USD 24 billion for 2022 and beyond, in both financial and material means. In the coming weeks, we will step up our collective short-term financial support to help Ukraine close financing gaps and deliver basic services to its people, while also developing options – working with the Ukrainian authorities and international financial institutions – to support long-term recovery and reconstruction. In this regard, we welcome the establishment of the International Monetary Fund's Multi-Donor Administered Account for Ukraine and the European Union announcement to develop a Ukraine Solidarity Trust Fund. We support the World Bank Group's support package to Ukraine and the European Bank for Reconstruction and Development's Resilience Package.

7. We call on all partners to join our support for the Ukrainian people and for refugees, and to help Ukraine to rebuild its future.

8. We reiterate our condemnation of Russia's unprovoked, unjustifiable and illegal military aggression against Ukraine and the indiscriminate attacks against civilians and civilian infrastructure, which has resulted in terrible humanitarian catastrophe in the heart of Europe. We are appalled by the large-scale loss of human life, assault on human rights, and destruction that Russia's actions have inflicted on Ukraine.

9. Under no circumstances can civilians and those not taking an active part in the hostilities be legitimate targets. We will spare no effort to hold President Putin and the architects and accomplices of this aggression, including the Lukashenko regime in Belarus, accountable for their actions in accordance with international law. To this end, we will continue to work together, along with our allies and partners around the world. We reaffirm our support for all efforts to ensure full accountability. We welcome and support the ongoing work to investigate and gather evidence on this, including by the Prosecutor of the International Criminal Court, the independent investigation commission mandated by the United Nations

Human Rights Council and the Organization for Security and Co-operation in Europe's mission of experts.

10. We further condemn Russia's attempts to replace democratically elected Ukrainian local authorities with illegitimate ones. We will not recognise these acts in violation of Ukraine's sovereignty and territorial integrity.

11. We will continue to counter the Russian strategy of disinformation, which deliberately manipulates the global – including the Russian – public in the hope of shrouding the Russian regime's culpability for this war.

12. Our unprecedented package of coordinated sanctions has already significantly hindered Russia's war of aggression by limiting access to financial channels and ability to pursue their objectives. These restrictive measures are already having a significant impact on all Russian economic sectors – financial, trade, defence, technology, and energy – and will intensify pressure on Russia over time. We will continue to impose severe and immediate economic costs on President Putin's regime for this unjustifiable war. We collectively commit to taking the following measures, consistent with our respective legal authorities and processes:

    a. First, we commit to phase out our dependency on Russian energy, including by phasing out or banning the import of Russian oil. We will ensure that we do so in a timely and orderly fashion, and in ways that provide time for the world to secure alternative supplies. As we do so, we will work together and with our partners to ensure stable and sustainable global energy supplies and affordable prices for consumers, including by accelerating reduction of our overall reliance on fossil fuels and our transition to clean energy in accordance with our climate objectives.

    b. Second, we will take measures to prohibit or otherwise prevent the provision of key services on which Russia depends. This will reinforce Russia's isolation across all sectors of its economy.

    c. Third, we will continue to take action against Russian banks connected to the global economy and systemically critical to the Russian financial system. We have already severely impaired Russia's ability to finance its war of aggression by targeting its Central Bank and its largest financial institutions.

    d. Fourth, we will continue our efforts to fight off the Russian regime's attempts to spread its propaganda. Respectable private companies should not provide revenue to the Russian regime or to its

affiliates feeding the Russian war machine.

e. Fifth, we will continue and elevate our campaign against the financial elites and family members, who support President Putin in his war effort and squander the resources of the Russian people. Consistent with our national authorities, we will impose sanctions on additional individuals.

13. We continue to work with our international partners and invite them to stand with us and to follow suit with similar actions, including to prevent sanctions evasion, circumvention and backfilling.

14. President Putin's war is causing global economic disruptions, impacting the security of global energy supply, fertiliser and food provision, and the functioning of global supply chains in general. The most vulnerable countries are affected most severely. Together with partners globally, we are stepping up our efforts to counter these adverse and harmful impacts of this war.

15. President Putin's war against Ukraine is placing global food security under severe strain. Together with the United Nations, we call on Russia to end its blockade and all other activities that further impede Ukrainian food production and exports, in line with its international commitments. Failure to do so will be seen as an attack on feeding the world. We will step up efforts to help Ukraine to keep producing in view of the next harvest season and exporting, including by alternative routes.

16. In support of the United Nations Global Crises Response Group, we will address the causes and consequences of the global food crisis through a Global Alliance for Food Security, as our joint initiative to ensure momentum and coordination, and other efforts. We will closely cooperate with international partners and organisations beyond the G7, and, with the aim of transforming political commitments into concrete actions as planned by various international initiatives such as the Food and Agriculture Resilience Mission (FARM) and key regional outreach initiatives, including towards African and Mediterranean countries. We reiterate that our sanctions packages are carefully targeted so as not to impede the delivery of humanitarian assistance or the trade of agricultural products and reaffirm our commitment to avoid food export restrictions which impact the most vulnerable.

17. The G7 and Ukraine stand united in this difficult time and in their quest to ensure Ukraine's democratic, prosperous future. We remain united in our resolve that President Putin must not win his war against Ukraine. We owe it to the memory of all those who fought for freedom in the Second World War, to continue fighting for it today, for the people of Ukraine, Europe and the global community.

###

Oil Market Highlights

Crude Oil Price Movements

Crude oil spot prices dropped in April after three-consecutive months of rises. The OPEC Reference Basket dropped by $7.84, or 6.9%, to settle at $105.64/b. Crude futures prices declined m-o-m in April, amid elevated market volatility, fuelled by persistent uncertainty regarding market outlook. The ICE Brent front month fell $6.54, or 5.8%, in April to average $105.92/b and NYMEX WTI decreased by $6.62, or 6.1%, to average $101.64/b. Consequently, the Brent/WTI futures spread widened 8¢ to average $4.28/b. The market structure of all three major crude benchmarks – ICE Brent, NYMEX WTI and DME Oman – softened significantly, but remained in backwardation. Hedge funds and other money managers kept net long positions in WTI and Brent little changed after the previous month's sharp selloff.

World Economy

World economic growth in 2022 is revised down to 3.5% from 3.9% in last month's assessment, following growth of 5.8% in 2021. US GDP growth for 2022 is revised down to 3.2% from 3.8%, after growth was reported at 5.7% for 2021. Euro-zone economic growth for 2022 is revised down to 3.1% from 3.5%, following growth of 5.4% in 2021. Japan's economic growth for 2022 is revised down to 1.8% from 1.9%, after growth of 1.7% in 2021. China's 2022 growth is revised down to 5.1% from 5.3%, after growth of 8.1% in 2021. India's 2022 GDP growth was revised down to 7.1% from 7.2%, after 2021 growth stood at 8.1%. Brazil's economic growth forecast for 2022 is revised down to 0.7% from 1.2%, following growth of 4.6% in 2021. For Russia, the 2022 GDP growth forecast is revised down to show a contraction of 6%, compared with a contraction of 2% expected in last month's assessment, which follows reported growth of 4.7% in 2021. Challenges related to ongoing geopolitical tensions, the continued pandemic, rising inflation, aggravated supply chain issues, high sovereign debt levels in many regions and expected monetary tightening by central banks in the US, the UK, Japan and the euro area require close monitoring.

World Oil Demand

World oil demand growth in 2021 remains broadly unchanged from the previous month's assessment at 5.7 mb/d. World oil demand growth in 2022 is expected to increase by 3.4 mb/d y-o-y, representing a downward revision of 0.3 mb/d from last month's report, with 1.8 mb/d in the OECD and 1.6 mb/d in the non-OECD. Oil demand growth in 2Q22 is projected to be slower at 2.8 mb/d, compared with 5.2 mb/d in 1Q22. Demand in 2022 is expected to be impacted by ongoing geopolitical developments in Eastern Europe, as well as COVID-19 pandemic restrictions.

World Oil Supply

Non-OPEC liquids supply growth y-o-y in 2021 is broadly unchanged at around 0.6 mb/d. Total US liquids production is estimated to have increased y-o-y by 0.15 mb/d. Non-OPEC supply growth for 2022 is revised down by 0.3 mb/d y-o-y to 2.4 mb/d. Russia's liquids production for 2022 is revised down by 0.36 mb/d. The US liquids supply growth forecast for 2022 is broadly unchanged at 1.29 mb/d. The main drivers of liquids supply growth for the year are expected to be the US, Canada, Brazil, Kazakhstan, Guyana and Norway. OPEC NGLs are forecast to grow by 0.1 mb/d both in 2021 and 2022 to average 5.1 mb/d and 5.3 mb/d, respectively. OPEC-13 crude oil production in April, increased by 153 tb/d m-o-m, to average 28.65 mb/d, according to available secondary sources.

Product Markets and Refining Operations

Refinery margins on all main trading hubs continued to soar in April, amid a continued tightening in global product balances, and lower crude prices. Favourable product demand-side dynamics, as the overall negative impact of Covid-19 further diminishes on a global level, strengthened fuel markets in general, including that of jet fuel, despite some mobility restrictions in a few Asian countries. Middle distillates were the main margin contributor over the month, while their margins spread widened further versus that of gasoline. Going forward, refinery intakes are expected to rise and that could provide partial relief to the global product shortage, and potentially de-pressure product prices.

Tanker Market

Suezmax and Aframax rates continued to outperform those in the VLCC class, with gains of 61% and 28% m-o-m. The Suezmax market was supported by a strong market in the Atlantic basin while Aframax saw from support from both the East and West markets. After a sluggish start to the year, VLCC rates finally saw a pickup of 24%. However, gains were short-lived dissipating by the end of the month amid ample availability. Clean rates continued to perform well, gaining a further 15%. The market has been supported by strength in the East and rising activity in tanker demand West of Suez, amid preparations ahead of the driving season in the Northern Hemisphere.

Crude and Refined Products Trade

Preliminary data shows US crude imports declined to an 11-month low of 5.9 mb/d in April, while exports averaged 3.4 mb/d for a gain of 5% m-o-m. US product exports strengthened for the seventh month in a row, averaging 6.4 mb/d, supported by strong flows to Latin America and increasing flows to Europe. In March, China's crude imports averaged 10.1 mb/d, recovering from the weak performance the month before. Recently released customs data shows China's crude imports increased to 10.5 mb/d in April, despite expectations that reduced demand due to COVID-19 lockdowns would weigh on imports. China's product imports declined 8%, while product exports rebounded, amid unexpectedly strong gasoil outflows. With domestic demand impacted by lockdowns, China's product outflows are likely to be higher than previously expected in April, particularly for jet fuel. India's crude imports dipped in March, but remained near the strong performance seen over the previous four months, averaging 4.5 mb/d for the month. Product exports saw a robust increase of 26% or about 0.3 mb/d to average 1.7 mb/d in March, the highest since September 2013, as Europe sought alternatives to Russian oil product flows. Japan's crude imports have risen steadily since the start of the year, averaging 2.9 mb/d in March, amid healthy demand.

Commercial Stock Movements

Preliminary March data showed total OECD commercial oil stocks increasing m-o-m by 10.1 mb. At 2,621 mb, inventories were 298 mb lower than the same time a year ago, 304 mb lower than the latest five-year average, and 293 mb below the 2015–2019 average. Within the components, crude stocks rose m-o-m by 12.9 mb, while products stocks fell m-o-m by 2.8 mb. At 1,265 mb, OECD crude stocks were 189 mb lower than the latest five-year average and 198 mb below the 2015-2019 average. OECD product stocks stood at 1,356 mb, representing a deficit of 115 mb compared with the latest five-year average and 95 mb below the 2015–2019 average. In terms of days of forward cover, OECD commercial stocks fell m-o-m by 0.3 days in March to stand at 57.4 days. This is 8.8 days below March 2021 levels, 8.7 days less than the latest five-year average, and 5.0 days lower than the 2015–2019 average

Balance of Supply and Demand

Demand for OPEC crude in 2021 was revised up by 0.1 mb/d from the previous month's assessment to stand at 28.2 mb/d, which is around 5.0 mb/d higher than in 2020. Demand for OPEC crude in 2022 was revised up by 0.1 mb/d from the previous month to stand at 29.0 mb/d, which is around 0.8 mb/d higher than in 2021.

Feature Article

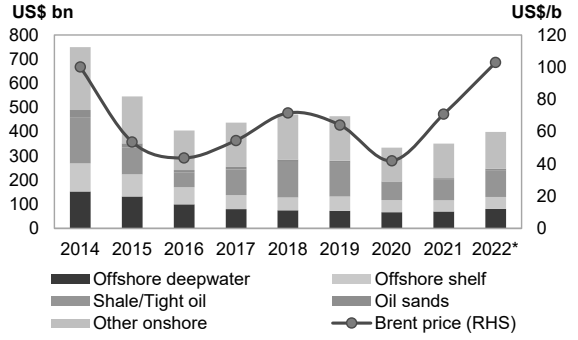
Non-OPEC oil supply development

In 2021, non-OPEC supply increased by 0.59 mb/d. US liquids production increased by 0.15 mb/d y-o-y, mainly on the back of increased NGLs output from non-conventional basins and a few project start-ups in the Gulf of Mexico. At the same time, US tight crude and condensate production decreased by 70 tb/d, with all major US shale basins showing drops, except for the Permian. Output in the Permian increased by 0.2 mb/d y-o-y, supported by a lower breakeven price and higher drilling rig activities. Cumulative production in Canada rose by around 0.3 mb/d as production from oil sand basins hit a high of 3.3 mb/d in October 2021. China, Guyana, Argentina and Norway also contributed to production growth in 2021. This was offset by a cumulative supply decline of 0.6 mb/d, mainly from the UK, Brazil, Colombia and Indonesia.

Spending for oil and gas exploration and production (E&P) in non-OPEC countries increased by US$16 bn in 2021 to US$350 bn, and is expected to rise by around 14% in 2022. On a country level, E&P spending for 2022 is forecast to increase in Brazil, the US, Canada, and Norway by 36%, 28%, 15%, and 11%, respectively.

However, the overall level remains below pre-pandemic levels and significantly below the high of US$749 bn seen in 2014. Upstream spending by major international companies has increased in response to higher oil prices and world oil demand growth, but remains lower than the level seen in 2019, as major shale producers continue to focus on capital discipline to improve their balance sheets.

Graph 1: Non-OPEC investment in oil and gas vs. crude price



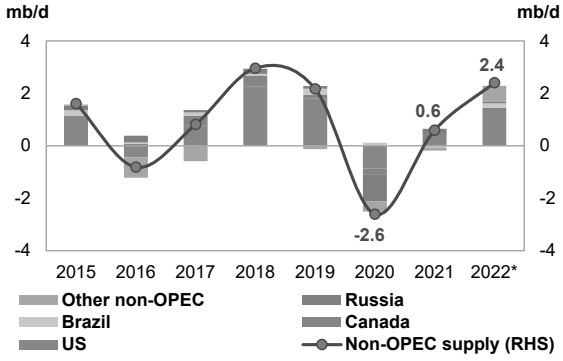
*Note: * 2022 = Forecast; Oil price average Jan 22-Apr 22.*
Sources: OPEC and Rystad Energy.

For 2022, non-OPEC liquids supply is forecast to grow y-o-y by 2.4 mb/d, a downward revision of 0.3 mb/d from the previous month's assessment. This is on the back of geopolitical developments and the impact of sanctions on Russian oil imports.

Liquids output in the OECD is expected to increase by 1.6 mb/d, on the back of production increases in the US, Canada, and Norway. US crude oil production is anticipated to grow by 0.9 mb/d, y-o-y, with NGLs and biofuels production set to rise too. In the US, the oil rig count has rebounded from 287 units in January 2021 to 552 units in the last week of April 2022. Moreover, US core oil frac operations continue to show steady increases.

Canadian oil production, particularly Alberta's oil sands, is forecast to grow by 0.16 mb/d y-o-y. Production growth in the North Sea and OECD Europe countries is projected at around 0.1 mb/d, supported by the start-up of the second phase of the Johan Sverdrup field development in 4Q22, which is projected to add 0.22 mb/d to Norway's output.

Graph 2: Non-OPEC supply changes by selected country



*Note: * 2022 = Forecast. Source: OPEC.*

In the non-OECD region, total liquids output growth is forecast at 0.7 mb/d y-o-y. Latin America is the key driver of this supply growth. It is forecast to increase by 0.27 mb/d y-o-y in 2022, mainly from two offshore start-ups of Mero-1 and Peregrino Phase 2 in Brazil and Liza-2 FPSO in Guyana. Kazakhstan and China's liquids output are also expected to rise, by 0.14 mb/d and 0.08 mb/d, respectively.

Uncertainties to the forecast remain large, especially given recent geopolitical developments in Eastern Europe. Moreover, high inflation levels, coupled with labour shortages and tighter monetary policies by major central banks may also impact the cost of oil production and investment levels in the upstream beyond the short term. Ineede OPEC Member Countries and countries participating in the DoC will continue to closely monitor market developments over the course of the year and safeguard a stable and balanced market for the benefit of all oil market participants; consumers and producers alike.

World Oil Demand

World oil demand growth in 2021 was revised up by a slight 0.04 mb/d to 5.7 mb/d to accommodate trends in the historical data. The changes reflect latest annual data, as well as upwardly adjusted OECD oil demand as a result of improvements in 4Q21. In 2021, OECD oil demand increased by 2.6 mb/d, while non-OECD oil demand showed growth of 3.1 mb/d y-o-y.

In 2022, oil demand growth was revised down by 0.3 mb/d to average 3.4 mb/d y-o-y, accounting for potential declines in global GDP and the resurgence of the Omicron variant of COVID-19 in China and its impact on global oil demand. World oil demand is projected to average 100.3 mb/d, which is 0.2 mb/d lower than the previous month's estimates and approximately 0.1 mb/d higher than 2019.

In 1Q22, world oil demand recorded robust growth, mainly due to a strong economic rebound, supported by stimulus programmes and a further easing of COVID-19 containment measures amid accelerated vaccination rollouts. OECD oil demand grew by 3.3 mb/d y-o-y while non-OECD requirements gained 1.9 mb/d as compared to the same quarter in 2021. Downward revisions in 2Q22, 3Q22 and 4Q22 oil demand growth mainly took into account current economic forecasts and other developments that could potentially impact world oil requirements.

Diesel and gasoline are anticipated to be the main drivers of demand for petroleum products y-o-y as economic activity, mobility and industrial activities recover globally. A recovery in mobility, coupled with decreasing COVID-19 restrictions and an easing of trade-related bottlenecks in major consuming countries, will support gasoline and diesel demand, while light distillates will be largely supported by strong petrochemical demand, notably in China, the US and India. Finally, the recovery in global air travel amid the relaxation of travel restrictions will back jet kerosene demand.

Table 4 - 1: World oil demand in 2021*, mb/d

							Change 2021/20	
World oil demand	**2020**	**1Q21**	**2Q21**	**3Q21**	**4Q21**	**2021**	**Growth**	**%**
Americas	22.56	22.82	24.38	24.83	25.05	24.28	1.72	7.62
of which US	*18.35*	*18.60*	*20.17*	*20.35*	*20.56*	*19.93*	*1.58*	*8.60*
Europe	12.43	11.91	12.64	13.85	13.90	13.08	0.65	5.21
Asia Pacific	7.14	7.67	7.04	7.11	7.82	7.41	0.27	3.77
Total OECD	**42.13**	**42.40**	**44.05**	**45.79**	**46.76**	**44.76**	**2.64**	**6.26**
China	13.76	14.08	14.98	14.85	15.44	14.84	1.08	7.83
India	4.51	4.98	4.50	4.59	5.02	4.77	0.26	5.81
Other Asia	8.13	8.56	8.98	8.34	8.62	8.63	0.50	6.09
Latin America	5.90	6.17	6.08	6.38	6.26	6.23	0.32	5.50
Middle East	7.55	7.85	7.62	8.16	7.95	7.89	0.35	4.63
Africa	4.05	4.35	4.01	4.11	4.42	4.22	0.17	4.22
Russia	3.39	3.65	3.42	3.63	3.76	3.61	0.23	6.69
Other Eurasia	1.07	1.23	1.24	1.09	1.28	1.21	0.14	12.69
Other Europe	0.70	0.78	0.72	0.73	0.79	0.75	0.06	8.27
Total Non-OECD	**49.06**	**51.65**	**51.55**	**51.87**	**53.54**	**52.16**	**3.10**	**6.32**
Total World	**91.19**	**94.05**	**95.60**	**97.66**	**100.30**	**96.92**	**5.74**	**6.29**
Previous Estimate	91.13	93.98	95.53	97.59	100.12	96.82	5.70	6.25
Revision	0.06	0.07	0.07	0.07	0.18	0.10	0.04	0.04

*Note: * 2021 = Estimation. Totals may not add up due to independent rounding. Source: OPEC.*

Table 4 - 2: World oil demand in 2022*, mb/d

World oil demand	2021	1Q22	2Q22	3Q22	4Q22	2022	Change 2022/21 Growth	Change 2022/21 %
Americas	24.28	24.78	25.09	25.67	25.72	25.32	1.04	4.30
of which US	*19.93*	*20.10*	*20.67*	*21.17*	*21.18*	*20.78*	*0.86*	*4.30*
Europe	13.08	12.98	13.06	14.29	14.14	13.62	0.54	4.14
Asia Pacific	7.41	7.96	7.22	7.25	7.93	7.59	0.18	2.42
Total OECD	**44.76**	**45.71**	**45.36**	**47.21**	**47.79**	**46.53**	**1.76**	**3.94**
China	14.84	14.57	15.26	15.28	15.83	15.24	0.40	2.70
India	4.77	5.18	4.82	4.97	5.35	5.08	0.31	6.43
Other Asia	8.63	9.13	9.59	8.93	8.95	9.15	0.52	6.04
Latin America	6.23	6.32	6.25	6.53	6.42	6.38	0.16	2.53
Middle East	7.89	8.16	7.86	8.41	8.18	8.15	0.26	3.29
Africa	4.22	4.51	4.14	4.23	4.55	4.36	0.13	3.13
Russia	3.61	3.67	3.28	3.45	3.54	3.48	-0.13	-3.58
Other Eurasia	1.21	1.22	1.15	1.01	1.24	1.15	-0.06	-4.71
Other Europe	0.75	0.81	0.71	0.73	0.80	0.76	0.01	1.01
Total Non-OECD	**52.16**	**53.57**	**53.08**	**53.53**	**54.85**	**53.76**	**1.60**	**3.07**
Total World	**96.92**	**99.28**	**98.44**	**100.74**	**102.64**	**100.29**	**3.36**	**3.47**
Previous Estimate	96.82	98.95	99.12	101.06	102.81	100.50	3.67	3.79
Revision	0.10	0.33	-0.67	-0.32	-0.16	-0.21	-0.31	-0.32

*Note: * 2021 = Estimation and 2022 = Forecast. Totals may not add up due to independent rounding. Source: OPEC.*

OECD

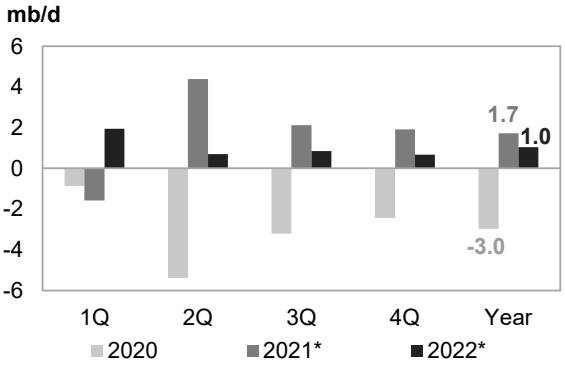
OECD Americas

Update on the latest developments

US oil demand rebounded in **February** amid mobility improvements and the petrochemical sector's requirements for distillates. February data indicates bullish oil demand growth of 3.0 mb/d, y-o-y growing by 17%, comfortably above January's level by almost 0.7 mb/d. Demand in February was above pre-pandemic levels as well. Behind the strong mobility recovery, the Apple mobility index for February shows annual growth of 34%, coupled with GDP expansion which fuelled gasoline demand growth of 0.9 mb/d y-o-y.

Strong petrochemical industry requirements, in line with a viable and economical steam cracker feedstock in the US backed the demand for LPG to grow by 1.1 mb/d, or equivalently 39% y-o-y during February.

Graph 4 - 1: OECD Americas oil demand, y-o-y change



*Note: * 2021 = Estimation and 2022 = Forecast.*
Source: OPEC.

2022. As naphtha demand remained flat y-o-y, LPG always become viable substitute to naphtha as feedstock for steam cracker when the price of the latter is higher. LPG demand was also supported by residential sector demand. The demand for diesel remained in positive territory in February, though it was still below pre-pandemic levels. Diesel posted growth of 0.2 mb/d y-o-y, with demand in the US is backed by trucking and industrial sector requirements as well as demand for power generation in the residential sector and construction. The strong recovery in air traffic also featured in rising jet kerosene demand, which grew by 0.3 mb/d y-o-y in February. North American air traffic grew in February by 237% compared with 2021 levels, and by 149% compared with January 2022, according to the International Air Transport Association (IATA).

Table 4 - 3: US oil demand, mb/d

By product	Feb 21	Feb 22	Change Growth	Feb 22/Feb 21 %
LPG	2.70	3.76	1.06	39.1
Naphtha	0.13	0.14	0.01	7.9
Gasoline	7.74	8.60	0.85	11.0
Jet/kerosene	1.12	1.40	0.28	24.9
Diesel	3.95	4.18	0.23	5.9
Fuel oil	0.26	0.36	0.10	40.2
Other products	1.84	2.29	0.46	24.9
Total	**17.73**	**20.73**	**2.99**	**16.9**

Note: Totals may not add up due to independent rounding. Sources: EIA and OPEC.

Near-term expectations

Looking ahead, US oil demand is expected to be impacted by some challenges with glimpse of expectations, and the current global economic trajectories necessitate a downward review of economic performance in the US. On the downside, the lower-than-expected performance of the US economy in the near-term is expected to weigh on industrial production and GDP expansion. For now, inflation in the US is at a four-decade high; these factors are expected to suppress oil demand growth to below pre-pandemic levels. Consequently, US oil demand is forecast to grow by 0.9 mb/d y-o-y in 2022. On the other hand, massive government stimulus packages, including a tax holiday, combined with a recovery in mobility, air traffic and petrochemical feedstock requirements are expected to boost oil demand in the near term. In 1Q22, US oil demand is expected to post growth of 1.5 mb/d y-o-y. In this quarter, transportation fuels, gasoline, diesel and jet kerosene are expected to be the main drivers of the demand recovery. Petrochemical feedstock requirements for diesel and residential sector requirements are projected to boost the consumption of LPG.

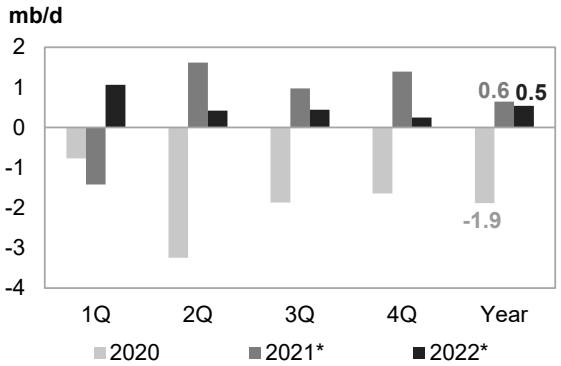
However, in 2Q22, US oil demand growth is expected to fall to 0.5 mb/d y-o-y, on the back of rising inflation, although summer driving activities will bring succour to transportation fuels, including gasoline, diesel and jet kerosene. In 3Q22, demand is expected to slightly pick up and grow by 0.8 mb/d, supported mostly by transportation fuel demand. However, demand will slide to 0.6 mb/d y-o-y in 4Q22 as driving activity is expected to slow during the winter.

OECD Europe

Update on the latest developments

February 2022 oil demand in Europe remained robust ahead of geopolitical challenges in the region. The latest available data for February in OECD Europe shows oil demand in the region robust, posting growth of approximately 1.5 mb/d y-o-y. Driven by a strong transportation sector recovery, mobility and freight activities strongly supported demand for transportation fuels in the region. Apple's mobility index for February indicated a strong driving appetite by motorists, despite the colder weather, with Italy posting 69% y-o-y growth, Germany recording mobility growth of 37%, while Spain, the UK and France posted growth of 39%, 38% and 30%, respectively. Consequently, gasoline recorded growth of 0.4 mb/d y-o-y, equivalent to 26%, stemming, however, from low the historical levels of the same month in 2021.

Graph 4 - 2: OECD Europe's oil demand, y-o-y change



*Note: * 2021 = Estimation and 2022 = Forecast.*
Source: OPEC.

On the back of improved demand for tracking and haulage, European diesel demand was additionally supported by fuel switching in households and small generating plants to avoid higher costs of natural gas. Diesel posted growth of 0.7 mb/d y-o-y, equivalent to 12%. Air travel rose significantly in February with air traffic demand up by 381%, according to IATA. Compared with the same period last year, air traffic demand improved 224% m-o-m. Consequently, jet kerosene requirements increased by 0.4 mb/d y-o-y, or 56%. LPG recorded marginal growth of 41 tb/d y-o-y and naphtha contracted by 65 tb/d y-o-y in February.

Table 4 - 4: Europe's Big 4* oil demand, mb/d

By product	Feb 21	Feb 22	Change Growth	Feb 22/Feb 21 %
LPG	0.46	0.47	0.02	3.3
Naphtha	0.65	0.58	-0.07	-10.7
Gasoline	0.90	1.12	0.22	24.7
Jet/kerosene	0.42	0.58	0.17	40.0
Diesel	2.88	3.11	0.23	7.9
Fuel oil	0.15	0.17	0.02	14.8
Other products	0.38	0.48	0.10	25.5
Total	**5.83**	**6.51**	**0.68**	**11.7**

*Note: * Germany, France, Italy and the UK. Totals may not add up due to independent rounding.*

Sources: JODI, UK Department for Business, Energy & Industrial Strategy, Unione Petrolifera and OPEC.

Near-term expectations

Looking ahead, the region is likely to be mostly affected by geopolitical challenges, which are expected to affect commodity flows and may have spill over effects on the region's economies. Consequently, the risks for oil demand in 2022 are rather skewed to the downside in line with the economic forecast for the region. These developments are likely to affect oil demand in the transportation and industry sectors as well as others.

European oil demand is forecast to grow by 0.5 mb/d y-o-y in 2022. In 1Q22, oil demand is expected to post strong growth of 1.1 mb/d y-o-y, supported by the transportation sector, with gasoline and diesel as the main gainers. Jet kerosene will also benefit from the ongoing air travel recovery. However, in 2Q22, oil demand growth is forecast to slow to 0.4 mb/d y-o-y because of geopolitical challenges, spill over effects to economies, as well as the high historical baseline in 2021. Risks are furthermore skewed to the downside depending on the degree of impacts on the region's trade-related supply chain management and the overall performance of the manufacturing sector. Furthermore, persistently high inflation in the region will impact mobility and social activities. In 3Q22, oil demand is forecast to post growth of 0.4 mb/d y-o-y, while in 4Q22 oil demand growth will decline to 0.2 mb/d.

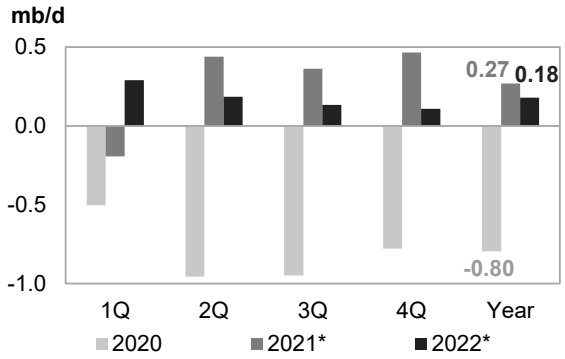
Factors that could further increase oil demand growth are an easing of geopolitical challenges, more government stimulus packages and consequent economic support, as well as lower inflation rates.

OECD Asia Pacific

Update on the latest developments

Oil demand in the Asia Pacific recorded growth of 0.2 mb/d y-o-y in **February**, following growth of 0.5 mb/d in January. Demand for major transportation fuels – gasoline and diesel – contracted amid poor mobility in some major oil-consuming countries in the region. South Korea recorded a 19% decline in mobility in February, according to Apple's mobility index. However, Japan saw a mobility recovery of 30% in February, but lower than the previous month. Consequently, gasoline and diesel posted y-o-y losses of 57 tb/d and 23 tb/d, respectively. Similarly, demand for naphtha nosedived by 0.1 mb/d y-o-y after a positive gain of 0.2 mb/d y-o-y in January.

Graph 4 - 3: OECD Asia Pacific oil demand, y-o-y change



*Note: * 2021 = Estimation and 2022 = Forecast.*
Source: OPEC.

Demand for jet kerosene remained on a positive trajectory in response to the region's air traffic recovery. A report from IATA shows that total traffic in February 2022 was up 115.9% compared to February 2021, an improvement from January 2022, which was up 83.1%. On the back of this development in the aviation industry, the demand for jet kerosene remained healthy and grow by 0.1 mb/d y-o-y, up by 13%. Similarly, LPG was also on a recovery trajectory, backed by household and petrochemical feedstock requirements as a viable alternative to naphtha. LPG demand posted positive growth in February of 67 tb/d, an increase of 7% y-o-y.

Table 4 - 5: Japan's oil demand, mb/d

By product	Mar 21	Mar 22	Change Growth	Mar 22/Mar 21 %
LPG	0.47	0.48	0.01	2.1
Naphtha	0.75	0.60	-0.15	-20.0
Gasoline	0.73	0.71	-0.02	-2.6
Jet/kerosene	0.41	0.43	0.03	6.6
Diesel	0.75	0.75	-0.01	-0.8
Fuel oil	0.26	0.28	0.01	4.5
Other products	0.20	0.21	0.01	2.6
Total	**3.58**	**3.46**	**-0.12**	**-3.4**

Note: Totals may not add up due to independent rounding. Sources: JODI, METI and OPEC.

Near-term expectations

Looking ahead, 2022 oil demand in the Asia Pacific is forecast to grow by 0.2 mb/d y-o-y. The bulk of this growth will be in 1Q22, recording 0.3 mb/d. Non-road transportation and jet kerosene demand are expected to be the main drivers of oil demand growth in 1Q22. In line with the regional aviation sector and improving trade, jet kerosene demand will continue to recover and provide additional support for the 2022 oil demand recovery in the region. In addition, household requirements and petrochemical feedstock demand will boost LPG demand in the near future. In 2Q22, in line with the expected slowdown in global GDP, oil demand growth in the region is projected to slow by 0.1 mb/d, to grow at 0.2 mb/d, y-o-y. Transportation fuels, gasoline and diesel are expected to recover due to summer driving activity and industrial sector requirements for distillates as jet fuel and other products continue to take the lion's share of the oil products recovery mix. Oil demand in the Asia Pacific is expected to continue the same trend, as for 2Q22, into 3Q22 and 4Q22, slowing to 0.1 mb/d in both quarters. Overall, there are prospects for gradual demand recovery as regional economies improve amid sustained government support and as trade-related bottlenecks ease. However, the risk is still tilted to the downside.

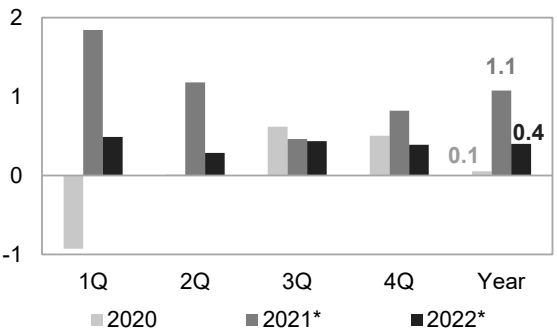
Non-OECD

China

Update on the latest developments

China's oil demand growth sank to a mere 0.1 mb/d y-o-y in **March** 2022, following higher growth of 0.5 mb/d in February 2022 and 0.8 mb/d in January 2022. The resurgence of COVID-19 Omicron cases in China, which necessitated the re-introduction of lockdowns in some major provinces and in line with the domestic zero COVID-19 containment policy, consequently weighing heavily on mobility, manufacturing activities and logistics, with resultant negative impact on oil products demand.

Graph 4 - 4: China's oil demand, y-o-y change



*Note: * 2021 = Estimation and 2022 = Forecast.*
Source: OPEC.

LPG remains the main gainer in March 2022 oil demand, recording growth of 0.2 mb/d y-o-y, or equivalently 7%. LPG demand in China mostly originates in the residential and commercial sectors with significant industrial and petrochemical sector's propane dehydrogenation (PDH) plants, including two newly commissioned Tengda and Jiangsu Sailboat and Qixiang Tengda. Naphtha demand also grew by 0.1 mb/d y-o-y.

Demand for transportation fuels has been negatively affected by lockdown policies, which weighed heavily on mobility and domestic road freight with more than 20 provinces restricting access to highways in an effort to curb the spread of COVID-19. Those factors, apart from slowing down mobility and trucking activities, impacted factory operations, which slowed demand for gasoline and diesel in March 2022. Consequently, gasoline and diesel witnessed growth of a mere 0.1 mb/d y-o-y, each. The main looser in March 2022 oil demand is the aviation sector with jet kerosene demand showing the biggest contraction among all oil products due to a drastic decline in the daily number of flights. Flights registered a sharp decline of more than 70% in March 2022, m-o-m, while jet kerosene demand contracted by 0.3 mb/d y-o-y.

Table 4 - 6: China's oil demand*, mb/d

By product	Mar 21	Mar 22	Change Growth	Mar 22/Mar 21 %
LPG	2.26	2.42	0.16	6.9
Naphtha	1.33	1.45	0.13	9.5
Gasoline	3.12	3.21	0.10	3.1
Jet/kerosene	0.79	0.54	-0.25	-31.5
Diesel	3.01	3.13	0.13	4.2
Fuel oil	0.69	0.70	0.02	2.6
Other products	1.62	1.50	-0.12	-7.7
Total	**12.81**	**12.96**	**0.15**	**1.1**

*Note: * Apparent oil demand. Totals may not add up due to independent rounding.*
Sources: Argus Global Markets, China OGP (Xnhua News Agency), Facts Global Energy, JODI, National Bureau of Statistics China and OPEC.

Near-term expectations

In the near term, the prospects for demand recovery is surrounded by some uncertainties but there is also a glimpse of hope. Overall, oil demand is expected to grow by 0.4 mb/d in 2022. Most of the growth will materialize in 1Q22, with 0.5 mb/d y-o-y. The growth in 2Q22 has been lowered to 0.3 mb/d due to the recent COVID-19 outbreak; many provinces, including Shanghai, have extended lockdowns and the asymmetric rise of cases across the country pose some challenges for a complete recovery in 2Q22. Nevertheless, with vaccinations and other containment measures, by 3Q22, the virus will most likely be contained, enabling an easing of restrictions and leading to mobility recovery and an easing of logistical bottlenecks. Additionally, the economy is expected to be supported by stimulus packages. Under these assumptions, oil demand is projected to grow by 0.4 mb/d in 3Q22 y-o-y; oil demand growth will remain flat at the level of 0.4 mb/d in 4Q22 to account for a seasonal slowdown in gasoline demand during 4Q22.

Among oil products, diesel is likely to be the major beneficiary for the stipulated 2022 oil demand growth as local authorities in China plan to resume factory operations and improve logistics. Similarly, if COVID-19 is fully controlled, the summer travel season will boost demand for gasoline, with some recovery in jet kerosene demand. The LPG and naphtha requirements will continue to gain support from domestic cooking requirements for LPG and requirements from two new PDH plants, Qixiang Tengda and Jiangsu Sailboat, which started operations in March. Qixiang Tengda started trial runs in early March and achieved on-spec propylene production within a week. However, it is important to stress that, despite these prospects, there are also some risks to the downside and these relate to COVID-19 developments, challenges in economy, as well as fuel substitution and efficiencies.

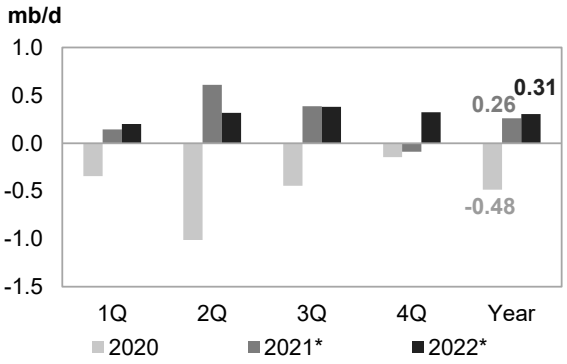
India

Update on the latest developments

India's social and economic activities have been rising since the lifting of COVID-19 restrictions. These developments have significantly supported oil demand growth. The latest available data for **March 2022** show an increase of 0.2 mb/d y-o-y, following a strong y-o-y increase also during January 2022. Transportation fuels are among the major components of March 2022 oil demand growth, as mobility has continued to improve and average driving activity in India increased by more than 40% according to the Apple Global Mobility Index. Furthermore, Indian transportation fuel demand has been on increase as people show a preference for private vehicles rather than public transportation for safety reasons. India's gasoline demand rose solidly y-o-y in March, as the market accumulated supplies, foreseeing price spikes while easing COVID-19-related curbs boosted demand.

Spurred by the recovery in mobility, an increase in construction activity and rising industrial sector requirements, diesel demand increased by 0.1 mb/d, or 6%, y-o-y. Similarly, economic growth and consequently mobility-related driving activities boosted gasoline demand by 46 tb/d y-o-y. LPG demand rose by 84 tb/d y-o-y, recording a 9% y-o-y increase, as small-scale industrial requirements and household demand for cooking continue to recover. Air traffic remains weak; it has been on a recovery path since February, yet jet kerosene demand grew by only about 7 tb/d y-o-y. Naphtha demand witnessed a 46 tb/d y-o-y contraction in March, as higher retail prices impacted segments in the industrial sector, particularly weakening naphtha and pet coke requirements in India.

Graph 4 - 5: India's oil demand, y-o-y change



*Note: * 2021 = Estimation and 2022 = Forecast.*
Source: OPEC.

Table 4 - 7: India's oil demand, mb/d

By product	Mar 21	Mar 22	Change Growth	Mar 22/Mar 21 %
LPG	0.88	0.97	0.08	9.5
Naphtha	0.42	0.38	-0.05	-10.9
Gasoline	0.80	0.85	0.05	5.8
Jet/kerosene	0.19	0.19	0.01	3.8
Diesel	1.78	1.88	0.11	5.9
Fuel oil	0.25	0.27	0.02	6.5
Other products	0.50	0.50	0.00	0.4
Total	**4.83**	**5.04**	**0.21**	**4.5**

Note: Totals may not add up due to independent rounding.

Sources: JODI, Petroleum Planning and Analysis Cell of India and OPEC.

Near-term expectations

As the Indian economy continues to recover from the recent Omicron wave, oil demand is expected to rise robustly in 2022. The economy is forecast to record robust growth of 7.1%, and as the impact of the COVID-19, domestic economic and social activities will also rebound. Backed by easing logistical bottlenecks and a rise in mobility, oil demand in India is forecast to record annual growth of 0.3 mb/d in 2022 y-o-y. In 1Q22, India's oil demand is forecast to register growth of 0.2 mb/d. For 2Q22, y-o-y oil demand growth is expected to reach 0.3 mb/d followed by 0.4 mb/d in 3Q22, due to summer driving activities. However, the demand will decline slightly to 0.3 mb/d in 4Q22 due to the seasonal slowdown in mobility.

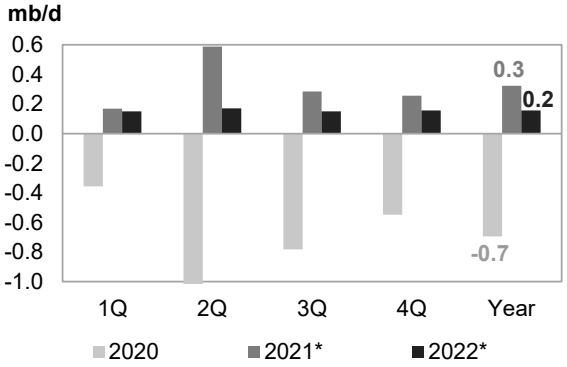
Driven by the post-COVID-19 recovery in mobility and tracking, the transportation fuels segments are expected to be the main drivers of oil demand growth, with gasoline and diesel being the main beneficiaries. Gasoline and diesel demand is likely to be particularly favoured by the expected rise in domestic economic activity and recovering mobility and consequently driving activity. Similarly, in line with a forecast for a robust economy in 2022, the industrial sector will provide support for diesel, LPG and naphtha. LPG will also gain an additional push from vibrant residential sector cooking requirements. Jet kerosene demand is also expected to recover during 2Q22.

Latin America

Update on the latest developments

In **Latin America**, **February data** suggest that oil demand is still healthy showing growth of 0.1 mb/d y-o-y. On a monthly basis, oil demand growth is stronger than in January. Transportation fuels (gasoline and diesel) were the main drivers of February oil demand in the region. Gasoline demand was backed by strong mobility improvements in Brazil as Apple mobility trends indicate 33% annual mobility growth in Brazil in February. During February, gasoline demand in the region posted growth of 0.2 mb/d, or equivalently of about 17%, y-o-y Increasing diesel demand was backed by heating and power generation; diesel demand recorded growth of 0.1 mb/d y-o-y, marginally higher than January growth levels. Air traffic in the region rose by 243% as compared to February 2021, lending support for jet kerosene to grow by 22 tb/d y-o-y, and an improvement of 24%, y-o-y. Naphtha posted a 2 tb/d growth as LPG declined by 10 tb/d y-o-y.

Graph 4 - 6: Latin America's oil demand, y-o-y change



*Note: * 2021 = Estimation and 2022 = Forecast.*
Source: OPEC.

Near-term expectations

Looking ahead, the oil demand forecast for 2022 in the region remains dependent on developments in the economies of major oil-consuming countries as more than two-thirds of people in the region have now received two COVID-19 vaccine doses. As economies of the countries continue to improve, mobility and economic activities are expected to respond positively. Accordingly, Latin America's 2022 oil demand is forecast to grow by 0.2 mb/d y-o-y. Mobility-induced gasoline and diesel are expected to be the driving force for demand recovery in the region. Furthermore, as international and local aviation continue to improve, jet kerosene will maintain its positive growth trajectory. LPG is also expected to grow.

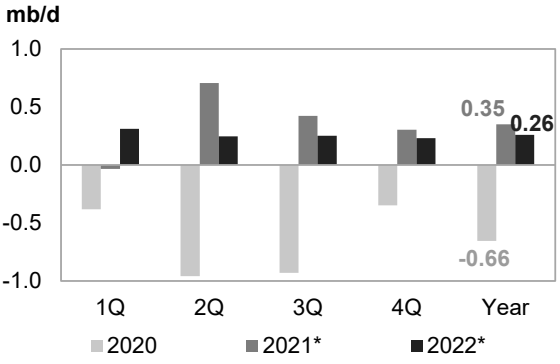
Middle East

Update on the latest developments

Oil demand in the **Middle East** was healthy due to continuous mobility improvements, with **February** data indicating growth of 0.3 mb/d, or equivalently 6%, y-o-y.

According to Apple mobility data. Saudi Arabia recorded a rise in driving mobility of 12% annually, while driving mobility in the United Arab Emirates (UAE) rose 48% as compared to same period a year earlier. Behind these healthy developments, gasoline posted growth of 0.1 mb/d, about 8% y-o-y. Diesel demand recorded growth of 81 tb/d y-o-y, up by 6%. Diesel demand Middle East in February was supported by construction activities in the Saudi Arabia and the UAE as well as trucking and energy requirements for small electricity generating plants.

Graph 4 - 7: Middle East's oil demand, y-o-y change



*Note: * 2021 = Estimation and 2022 = Forecast.*
Source: OPEC.

Furthermore, industrial requirements for distillates helped residual fuel oil to grow by 0.1 mb/d y-o-y. Finally, jet kerosene demand continued to gradually improve as governments in the Middle East relaxed all travel restrictions.

Consequently, Middle East airline traffic climbed 215% in February 2022, according to IATA. Backed by these developments, jet kerosene demand grew in February by 12 tb/d y-o-y, an improvement over a decline of 18 tb/d in January, y-o-y.

Table 4 - 8: Saudi Arabia's oil demand, mb/d

By product	Mar 21	Mar 22	Change Growth	Mar 22/Mar 21 %
LPG	0.05	0.05	0.00	-4.6
Gasoline	0.47	0.51	0.03	7.1
Jet/kerosene	0.02	0.07	0.05	235.6
Diesel	0.51	0.55	0.04	7.3
Fuel oil	0.56	0.46	-0.10	-17.1
Other products	0.40	0.42	0.02	4.4
Total	**2.02**	**2.06**	**0.04**	**1.8**

Note: Totals may not add up due to independent rounding.

Sources: JODI and OPEC.

Near-term expectations

Behind the healthy developments in transportation sector demand in the Middle East, oil demand in the near term is expected to remain firm and maintain its positive growth trajectory. Accordingly, oil demand is projected to post positive growth of 0.3 mb/d in 2022. This growth is expected to be driven by transportation fuel requirements as driving and trucking activities continue to progress. As a result, demand for gasoline and diesel will continue picking up. Similarly, the recovery in international aviation activities in Saudi Arabia and the UAE will accelerate demand for jet kerosene in the region. In addition, stable GDP growth and resumption in social activities coupled with an easing of trade-related bottlenecks are expected to support the oil demand recovery process in the region.

In 1Q22, oil demand is projected to grow by 0.3 mb/d, y-o-y. Demand growth will decline slightly during the remaining quarters of the year, marking a growth of 0.2 mb/d, y-o-y for each. On a final note, there are expectations for a positive growth in the region in the near future.

World Oil Supply

Non-OPEC liquids supply growth y-o-y in 2021 (including processing gains of 0.1 mb/d) is broadly unchanged at around 0.6 mb/d, for an average of 63.6 mb/d. Total US liquids production is estimated to have increased y-o-y by 0.15 mb/d in 2021. The largest increases for the year were seen in Canada, which rose by 0.3 mb/d, followed by Russia and China, which are estimated to each have grown by 0.2 mb/d. At the same time, production is estimated to have declined in the UK, Brazil, Colombia and Indonesia.

Non-OPEC supply growth for 2022 is revised down by 0.3 mb/d y-o-y to 2.4 mb/d, for a yearly average level of 65.97 mb/d. Russia's liquids production for 2022 is revised down by 0.36 mb/d. Increased drilling and completion activities in the US could support higher production levels in the coming months, with possible higher shale production in 2H22. Nevertheless, the US liquids supply growth forecast for 2022 remained broadly unchanged at 1.29 mb/d. The main drivers of liquids supply growth for the year are expected to be the US, Brazil, Canada, Kazakhstan, Guyana and Norway.

OPEC NGLs and non-conventional liquids production in 2021 is unchanged from the previous assessment and estimated to have grown by 0.1 mb/d y-o-y for an average of 5.1 mb/d. Similarly, growth of 0.1 mb/d y-o-y is forecast for 2022. OPEC-13 crude oil production in April increased by 153 tb/d m-o-m to average 28.65 mb/d, according to available secondary sources.

Preliminary non-OPEC liquids production in April, including OPEC NGLs, is estimated to have declined m-o-m by 0.92 mb/d to average 70.10 mb/d, but is up by 1.69 mb/d y-o-y. As a result, preliminary data indicates that global oil supply in April decreased by 0.77 mb/d m-o-m to average 98.74 mb/d, up by 5.22 mb/d y-o-y.

Non-OPEC liquids production growth in 2021 remained unchanged from the previous month's assessment to average 0.6 mb/d. The OECD region is estimated to have grown by 0.3 mb/d and the non-OECD region by 0.2 mb/d.

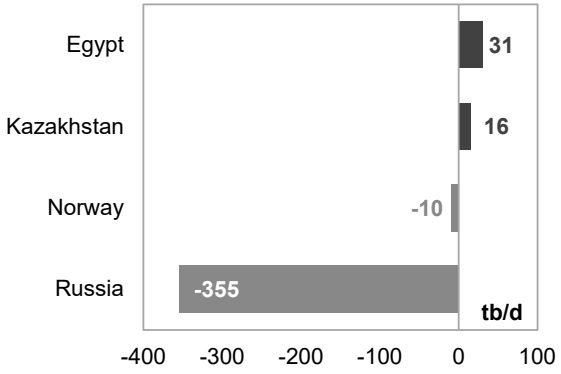
The **non-OPEC supply growth forecast for 2022** was revised down by 0.3 mb/d from the previous month's assessment to 2.4 mb/d. This month's upward revisions were more than offset by downward adjustments in Eurasian countries.

In the OECD, a downward revision of 230 tb/d in 1Q22 was mostly offset by upward revisions in the following quarters, leading to a minor downward revision of 8 tb/d for the year. The main downward adjustment was due to lower-than-expected production in Norway. However, lower 1Q22 production in the US is expected to be compensated in 2H22.

The non-OECD supply forecast for 2022 was revised down by 0.3 mb/d, mainly due to a downward revision in Russia, which was much higher than minor growth revisions to Africa.

With this, the non-OPEC liquids supply forecast for 2022 was revised down by 300 tb/d to average 65.97 mb/d, with y-o-y growth revised down to 2.4 mb/d.

Graph 5 - 1: Major revisions to annual supply change forecast in 2022*, MOMR May 22/Apr 22

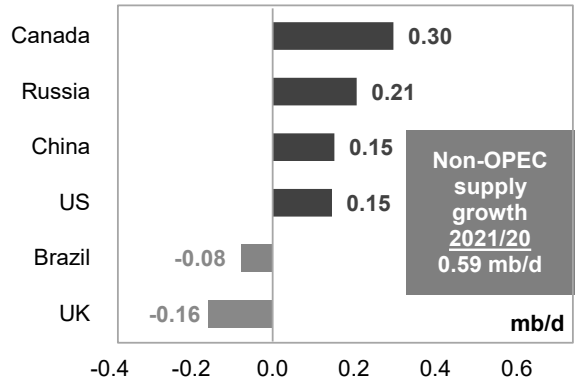


*Note: * 2022 = Forecast. Source: OPEC.*

Key drivers of growth and decline

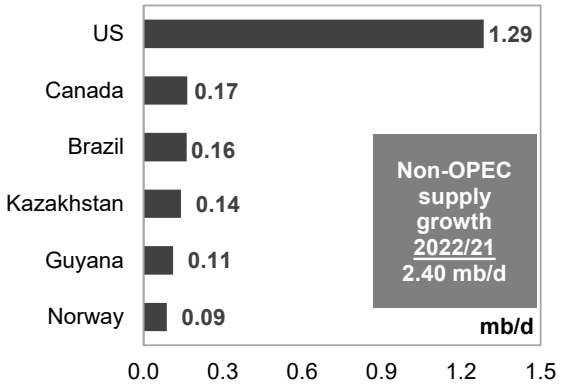
The **key drivers of non-OPEC liquids supply growth in 2021** are estimated to have been Canada, Russia, China and the US, while output is estimated to have declined in the UK and Brazil.

Graph 5 - 2: Annual liquids production changes for selected countries in 2021*



*Note: * 2021 = Estimation. Source: OPEC.*

Graph 5 - 3: Annual liquids production changes for selected countries in 2022*



*Note: * 2022 = Forecast. Source: OPEC.*

For **2022**, the key drivers of non-OPEC supply growth are forecast to be the US, Canada, Brazil, Kazakhstan, Guyana and Norway, while oil production is projected to decline mainly in Indonesia and Thailand.

Non-OPEC liquids production in 2021 and 2022

Table 5 - 1: Non-OPEC liquids production in 2021*, mb/d

							Change 2021/20	
Non-OPEC liquids production	**2020**	**1Q21**	**2Q21**	**3Q21**	**4Q21**	**2021**	**Growth**	**%**
Americas	24.70	24.10	25.17	25.20	26.13	25.15	0.46	1.84
of which US	*17.61*	*16.63*	*17.93*	*17.85*	*18.58*	*17.75*	*0.15*	*0.83*
Europe	3.89	3.95	3.51	3.81	3.78	3.76	-0.13	-3.34
Asia Pacific	0.52	0.50	0.45	0.53	0.51	0.50	-0.02	-4.02
Total OECD	**29.11**	**28.55**	**29.13**	**29.53**	**30.42**	**29.41**	**0.30**	**1.05**
China	4.15	4.30	4.34	4.33	4.26	4.31	0.15	3.65
India	0.78	0.78	0.77	0.77	0.77	0.77	0.00	-0.44
Other Asia	2.51	2.51	2.45	2.33	2.35	2.41	-0.10	-4.09
Latin America	6.03	5.94	5.97	6.09	5.83	5.96	-0.08	-1.26
Middle East	3.19	3.22	3.23	3.24	3.27	3.24	0.05	1.46
Africa	1.41	1.37	1.35	1.32	1.32	1.34	-0.07	-5.28
Russia	10.59	10.47	10.74	10.81	11.17	10.80	0.21	1.95
Other Eurasia	2.92	2.96	2.89	2.79	3.08	2.93	0.02	0.57
Other Europe	0.12	0.12	0.11	0.11	0.11	0.11	-0.01	-4.66
Total Non-OECD	**31.71**	**31.66**	**31.86**	**31.79**	**32.17**	**31.87**	**0.16**	**0.50**
Total Non-OPEC production	60.82	60.22	60.98	61.32	62.59	61.28	0.46	0.76
Processing gains	2.15	2.28	2.28	2.28	2.28	2.28	0.13	6.03
Total Non-OPEC liquids production	**62.97**	**62.50**	**63.26**	**63.60**	**64.87**	**63.56**	**0.59**	**0.94**
Previous estimate	62.97	62.50	63.26	63.60	64.87	63.56	0.59	0.94
Revision	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*Note: * 2021 = Estimation. Totals may not add up due to independent rounding. Source: OPEC.*

Table 5 - 2: Non-OPEC liquids production in 2022*, mb/d

Non-OPEC liquids production	2021	1Q22	2Q22	3Q22	4Q22	2022	Change 2022/21 Growth	Change 2022/21 %
Americas	25.15	25.74	26.29	27.01	27.47	26.63	1.48	5.88
of which US	*17.75*	*18.22*	*18.94*	*19.29*	*19.69*	*19.04*	*1.29*	*7.24*
Europe	3.76	3.73	3.74	3.80	4.12	3.85	0.09	2.36
Asia Pacific	0.50	0.49	0.54	0.53	0.53	0.52	0.02	4.41
Total OECD	**29.41**	**29.96**	**30.56**	**31.34**	**32.13**	**31.00**	**1.59**	**5.41**
China	4.31	4.48	4.31	4.35	4.43	4.39	0.08	1.97
India	0.77	0.77	0.78	0.80	0.83	0.79	0.02	2.78
Other Asia	2.41	2.38	2.39	2.37	2.36	2.38	-0.03	-1.43
Latin America	5.96	6.15	6.21	6.17	6.40	6.23	0.27	4.62
Middle East	3.24	3.30	3.36	3.38	3.38	3.35	0.11	3.52
Africa	1.34	1.32	1.31	1.30	1.31	1.31	-0.03	-2.13
Russia	10.80	11.33	10.68	10.76	10.74	10.88	0.08	0.72
Other Eurasia	2.93	3.06	3.06	3.17	3.22	3.13	0.20	6.67
Other Europe	0.11	0.11	0.11	0.10	0.10	0.10	-0.01	-6.90
Total Non-OECD	**31.87**	**32.89**	**32.22**	**32.41**	**32.77**	**32.57**	**0.70**	**2.19**
Total Non-OPEC production	61.28	62.85	62.78	63.75	64.89	63.57	2.29	3.73
Processing gains	2.28	2.39	2.39	2.39	2.39	2.39	0.11	4.91
Total Non-OPEC liquids production	**63.56**	**65.24**	**65.17**	**66.14**	**67.28**	**65.97**	**2.40**	**3.78**
Previous estimate	63.56	65.47	65.65	66.42	67.50	66.26	2.70	4.25
Revision	0.00	-0.23	-0.48	-0.28	-0.21	-0.30	-0.30	-0.47

*Note: * 2021 = Estimation and 2022 = Forecast. Totals may not add up due to independent rounding. Source: OPEC.*

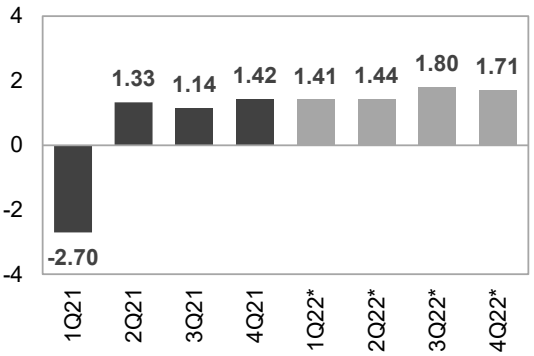
OECD

OECD liquids production in 2021 is estimated to have increased by 0.30 mb/d y-o-y to average 29.41 mb/d, unchanged from the previous assessment.

OECD Americas is estimated to have grown by 0.46 mb/d to average 25.15 mb/d for the year. Production in OECD Europe and OECD Asia Pacific is estimated to have declined y-o-y by 0.13 mb/d and 0.02 mb/d, to average 3.76 mb/d and 0.50 mb/d, respectively.

For **2022**, oil production in the OECD region is forecast to increase by 1.6 mb/d y-o-y, to average 31 mb/d. This has been revised down by a minor 8 tb/d compared to a month earlier, amid a slight downward revision of 10 tb/d for OECD Europe, mainly due to lower-than-expected production in the North Sea. At the same time, OECD Americas was revised up by a minor 6 tb/d.

Graph 5 - 4: OECD quarterly liquids supply, y-o-y changes



*Note: * 1Q22-4Q22 = Forecast. Source: OPEC.*

Based on these revisions, OECD Americas is forecast to grow by 1.48 mb/d, to average 26.63 mb/d. Oil production in OECD Europe and OECD Asia Pacific is anticipated to grow y-o-y by 0.10 mb/d and 0.02 mb/d to average 3.85 mb/d and 0.52 mb/d, respectively.

OECD Americas

US

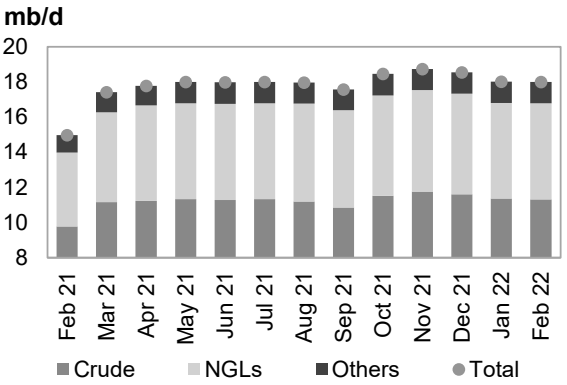
US liquids production in 2021 is estimated to have increased by 0.15 mb/d to average 17.75 mb/d, unchanged m-o-m. Crude oil output fell by 0.1 mb/d y-o-y to average 11.2 mb/d, while NGLs production and non-conventional liquids, particularly ethanol, increased by 0.2 mb/d and 0.02 mb/d y-o-y to average 5.4 and 1.2 mb/d, respectively. Average tight crude output in 2021 is estimated at 7.28 mb/d, according to the latest information from the US Energy Information Administration (EIA).

US liquids production declined m-o-m in **February 2022** by a minor 9 tb/d to average 18.0 mb/d, but was higher by 3.0 mb/d compared with February 2021, when freezing weather caused a slump in US output.

Crude oil and condensate production fell in **February 2022** by 50 tb/d m-o-m to average 11.31 mb/d, but was up by 1.54 mb/d y-o-y.

Regarding the crude and condensate production breakdown by region (PADDs), production declined mainly in the US Gulf Coast (USGC), dropping by 54 tb/d to average 8.0 mb/d. It also decreased slightly in the Midwest in North Dakota and Oklahoma, while the Rocky Mountains and East Coast showed a slight increase, and the West Coast remained unchanged, m-o-m. The decline in some regions was mainly due to freezing weather in some parts of US in February.

Graph 5 - 5: US monthly liquids output by key component



Source: OPEC.

NGLs production was up by 29 tb/d m-o-m to average 5.48 mb/d in February, which was higher by 1.26 mb/d y-o-y. Production of **non-conventional liquids** (mainly ethanol) increased by 12 tb/d m-o-m to average 1.22 mb/d, according to the US Department of Energy (DOE). Preliminary estimates see non-conventional liquids averaging 1.24 mb/d in March 2022, up by 16 tb/d compared to the previous month.

Production in the **Gulf of Mexico (GoM)** declined marginally m-o-m by 93 tb/d in February to average 1.6 mb/d due to the maintenance events.

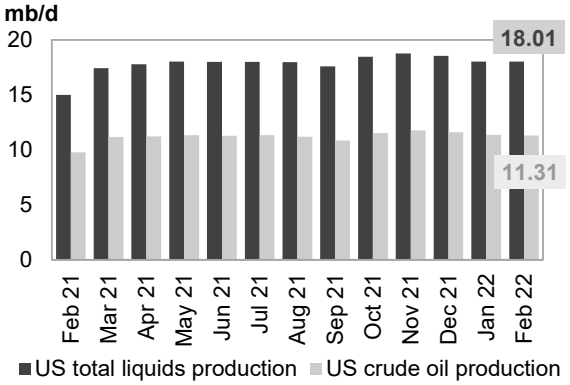
Looking at individual states, oil production in New Mexico increased by 64 tb/d m-o-m to average 1.4 mb/d, 424 tb/d higher than a year ago. Production in Texas decreased by 27 tb/d to average 4.8 mb/d, 1.1 mb/d higher than a year ago. Production in North Dakota dropped by 23 tb/d m-o-m to average 1.1 mb/d, up by 55 tb/d y-o-y. Production in Colorado was up slightly by 18 tb/d to average 0.4 mb/d. However, oil output in Alaska remained unchanged while Oklahoma showed a marginal m-o-m decline of 10 tb/d. In the onshore lower 48, February production increased m-o-m by 43 tb/d to average 9.25 mb/d.

Table 5 - 3: US crude oil production by selected state and region, tb/d

				Change	
State	Feb 21	Jan 22	Feb 22	m-o-m	y-o-y
Texas	3,745	4,858	4,831	-27	1,086
Gulf of Mexico (GOM)	1,762	1,708	1,615	-93	-147
New Mexico	983	1,343	1,407	64	424
North Dakota	1,016	1,094	1,071	-23	55
Alaska	457	450	450	0	-7
Colorado	373	403	421	18	48
Oklahoma	315	395	385	-10	70
Total	**9,773**	**11,362**	**11,312**	**-50**	**1,539**

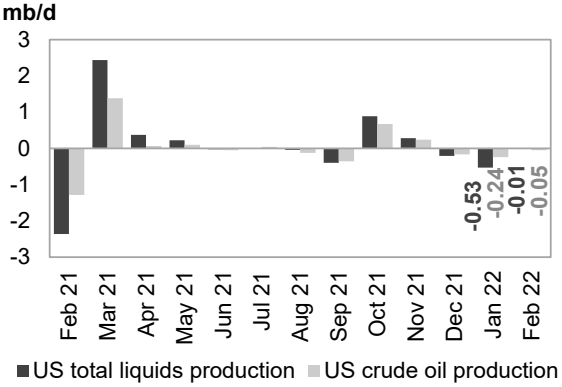
Sources: EIA and OPEC.

Graph 5 - 6: US monthly crude oil and total liquids supply



Sources: EIA and OPEC.

Graph 5 - 7: US monthly crude oil and total liquids supply, m-o-m changes



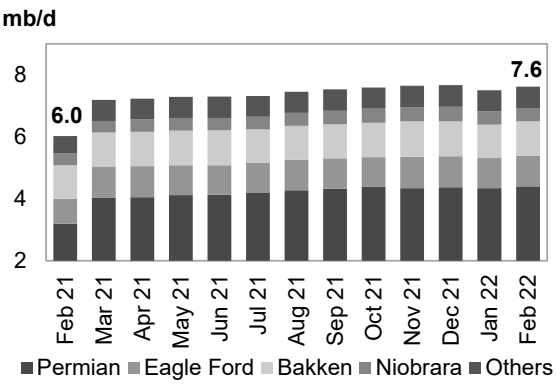
Sources: EIA and OPEC.

US tight crude output in **February 2022** increased by 111 tb/d m-o-m to average 7.6 mb/d, which was 1.6 mb/d higher than the same month a year earlier, according to EIA estimates.

The m-o-m increase from shale and tight formations through horizontal wells came mostly from the Permian, which increased by 58 tb/d to average 4.4 mb/d. This was up by 1.2 mb/d, y-o-y.

In the Williston Basin, production in the Bakken shale rose marginally by 39 tb/d to average 1.1 mb/d, and was up by 45 tb/d y-o-y. Tight crude output at Eagle Ford in Texas rose by a minor 10 tb/d to average 1.0 mb/d up by 165 tb/d y-o-y, while production in Niobrara-Codell in Colorado and Wyoming was down marginally by 2 tb/d to average 0.4 mb/d.

Graph 5 - 8: US tight crude output breakdown



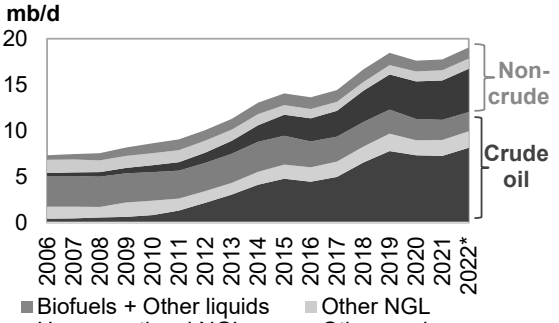
Sources: EIA, Rystad Energy and OPEC.

US liquids production in 2022, excluding processing gains, is forecast to grow y-o-y by 1.29 mb/d to average 19.0 mb/d, unchanged from the previous assessment. The 2022 gains are due primarily to expected tight crude production growth of 0.9 mb/d, to average 8.16 mb/d, NGLs growth mainly from unconventional basins of 0.4 mb/d, to average 5.8 mb/d, and projected growth of 0.1 mb/d in the GoM. Non-conventional liquids are projected to grow by 0.04 mb/d to average 1.21 mb/d.

However, the expected growth will be partially offset by natural declines in onshore conventional fields of 0.1 mb/d y-o-y.

Given the current pace of drilling and well completions in oil fields, **production of crude oil and condensate** is forecast to grow by 0.8 mb/d y-o-y to average 12.0 mb/d in 2022. This forecast assumes ongoing capital discipline, current inflation rates, continuing supply chain issues, and the oil field service section limitations (labour and equipment).

Graph 5 - 9: US liquids supply developments by component



*Note: * 2021 = Estimation and 2022 = Forecast.*
Source: OPEC.

Table 5 - 4: US liquids production breakdown, mb/d

US liquids	2020	Change 2020/19	2021	Change 2021/20	2022*	Change 2022/21
Tight crude	7.33	-0.45	7.28	-0.06	8.16	0.88
Gulf of Mexico crude	1.64	-0.25	1.70	0.06	1.78	0.08
Conventional crude oil	2.31	-0.30	2.21	-0.10	2.11	-0.10
Total crude	**11.28**	**-1.01**	**11.19**	**-0.10**	**12.04**	**0.85**
Unconventional NGLs	4.09	0.25	4.28	0.20	4.70	0.42
Conventional NGLs	1.09	0.10	1.12	0.03	1.10	-0.02
Total NGLs	**5.17**	**0.35**	**5.40**	**0.22**	**5.80**	**0.40**
Biofuels + Other liquids	1.15	-0.20	1.17	0.02	1.21	0.04
US total supply	**17.61**	**-0.86**	**17.75**	**0.15**	**19.04**	**1.29**

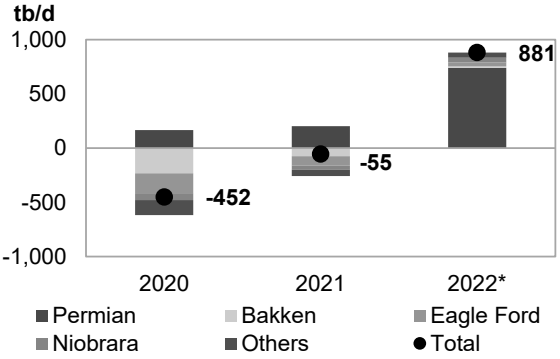
*Note: * 2021 = Estimation and 2022 = Forecast. Sources: EIA, OPEC and Rystad Energy.*

US tight crude production in the Permian in **2021** is estimated to have increased by 202 tb/d to 4.1 mb/d and is forecast to grow by 740 tb/d y-o-y to average 4.9 mb/d in **2022**.

The decline rate in Bakken shale production slowed in 2021 compared with 2020, from a contraction of 234 tb/d to a decline of 75 tb/d. Production is now estimated to average 1.1 mb/d in 2021. For 2022, tight crude production from the Bakken shale is forecast to grow by 11 tb/d on the back of increased drilling activity in North Dakota and available DUC wells, and despite the impact of a blizzard in April.

The Eagle Ford in Texas is estimated to have declined by 86 tb/d in 2021 to average 0.97 mb/d, but is forecast to expand in 2022 by 38 tb/d to average 1.0 mb/d. The rig-weighted average productivity (new-well oil production per rig) shows a m-o-m drop of 62 b/d in the Eagle Ford, according to the EIA-DPR (Drilling Productivity Report) forecast for May 2022. However, overall Eagle Ford production is expected to increase m-o-m by 26 tb/d during the same time.

Graph 5 - 10: US tight crude output by shale play, y-o-y changes



*Note: * 2021 = Estimation and 2022 = Forecast. Sources: EIA, Rystad Energy and OPEC.*

Production in the Niobrara, following an estimated decline of 37 tb/d in 2021, is likely to grow by 44 tb/d y-o-y in 2022, to average 0.46 mb/d. Other shale plays are expected to show marginal increases totalling 47 tb/d in 2022, given current drilling activities.

Table 5 - 5: US tight oil production growth, mb/d

US tight oil	2020	Change 2020/19	2021	Change 2021/20	2022*	Change 2022/21
Permian tight	3.91	0.17	4.11	0.20	4.85	0.74
Bakken shale	1.18	-0.23	1.11	-0.07	1.12	0.01
Eagle Ford shale	1.05	-0.18	0.97	-0.09	1.01	0.04
Niobrara shale	0.45	-0.06	0.41	-0.04	0.46	0.04
Other tight plays	0.73	-0.14	0.67	-0.06	0.72	0.05
Total	**7.33**	**-0.45**	**7.28**	**-0.06**	**8.16**	**0.88**

*Note: * 2021 = Estimation and 2022 = Forecast. Source: OPEC.*

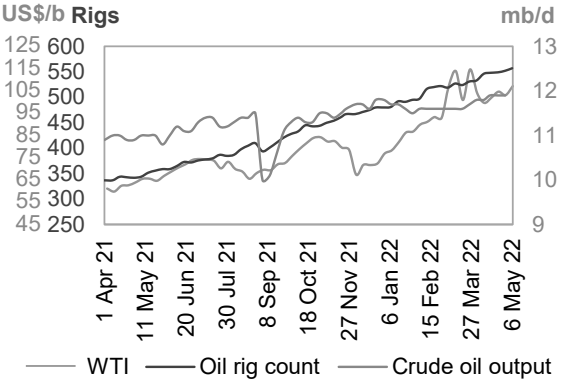
US rig count, spudded, completed, DUC wells and fracking activity

Total **US active drilling rigs** increased by seven to 705 rigs in the week ending 6 May, which is 257 more rigs than a year ago. The number of active offshore rigs was up by three w-o-w to 17, four rigs more than the same month in 2021. Moreover, 688 rigs (oil and gas) were active onshore, up by four w-o-w, with no rig in inland waters.

The **US horizontal rig count** rose by three rigs w-o-w to 646 rigs, compared with 408 horizontal rigs a year ago. The number of drilling rigs for oil climbed by five to 552, w-o-w.

While the rig count in the Permian remained unchanged w-o-w at 335 rigs, the number of active rigs remains unchanged at 61 in the Eagle Ford, at 37 in Williston basin, and at 15 in the DJ-Niobrara basins. They declined by one in the Cana Woodford to 25. Three oil rigs have been operating in the Barnett basin.

Graph 5 - 11: US weekly rig count vs. US crude oil output and WTI price

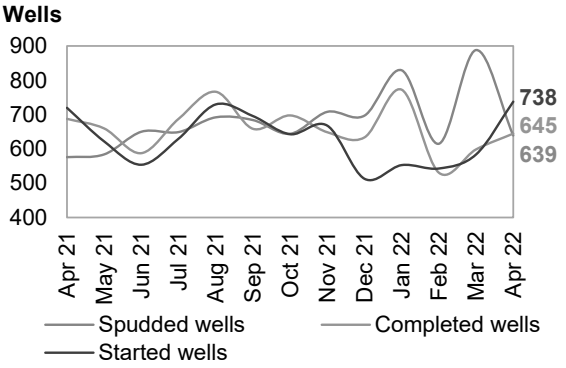


Sources: Baker Hughes, EIA and OPEC.

Drilling and completion (D&C) activities for spudded, completed and started wells in all US shale plays, based on the EIA-DPR regions, saw 888 horizontal wells spudded in March 2022 (as per preliminary data), up by 273 m-o-m, and 61% higher than in March 2021.

In March 2022, preliminary data indicates a higher number of completed wells at 599 m-o-m, but this is down by 5% y-o-y. Moreover, the number of started wells was estimated at 584, which is 6% lower than in March 2021. Preliminary data for April estimates 639 spudded, 645 completed and 738 started wells, according to Rystad Energy.

Graph 5 - 12: Spudded, completed and started wells in US shale plays

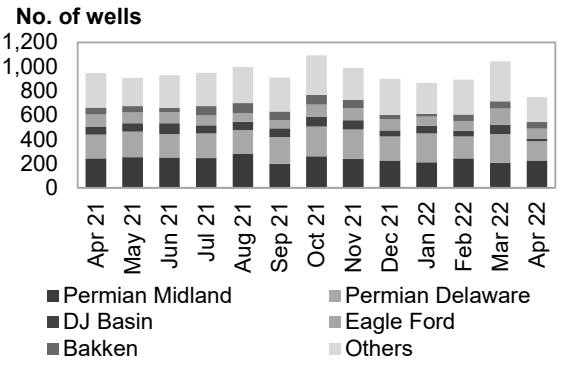


Note: Mar 22-Apr 22 = Preliminary data.
Sources: Rystad Energy and OPEC.

In terms of identified **US oil and gas fracking operations** by region, Rystad Energy reported that after the highest number of fracked wells seen since March 2020, with 1,092 fracked in October 2021, 1,043 and 749 wells started to frack in March and April, respectively. This preliminary number is based on analysis of high-frequency satellite data.

Preliminary data on fracking in March shows that 207 and 236 wells were fracked in the Permian Midland Tight and Permian Delaware Tight, respectively. In comparison with February, there was a drop of 36 wells fracked in the Midland and a jump of 55 wells fracked in the Delaware tight, according to preliminary data. Data also indicated that 78 wells were fracked in the DJ Basin, 133 in the Eagle Ford and 61 in the Bakken in March.

Graph 5 - 13: Fracked wells count per month



Note: Mar 22-Apr 22 = Preliminary data.
Sources: Rystad Energy Shale Well Cube and OPEC.

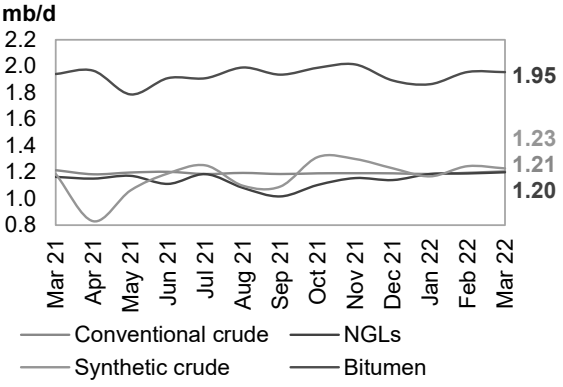
Canada

Canada's liquids production in **March** is estimated to remain unchanged to average 5.6 mb/d.

Crude bitumen production and synthetic crude output decreased by 17 tb/d and 1 tb/d, respectively. Taken together, crude bitumen and synthetic crude output declined by 18 tb/d to 3.2 mb/d. On the other hand, production of conventional crude and NGLs increased slightly to average 1.2 mb/d, each, offsetting the bitumen output decline.

Following freezing weather in previous months, most oil sands operators managed to continue to pump high volumes of crude bitumen and synthetic crude in March. However, upstream maintenance projects in 2Q22 in sand mine facilities are expected to affect 1H22 production rates.

Graph 5 - 14: Canada's monthly liquids production development by type

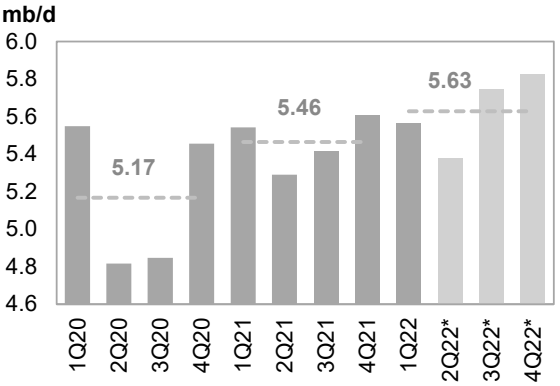


Sources: National Energy Board and OPEC.

The growth of Canadian liquids supply for **2021** is estimated at 0.3 mb/d for a yearly average of 5.46 mb/d, unchanged from the previous assessment.

For **2022**, Canada's liquids production is forecast to increase at a slower pace compared with 2021, rising by 0.17 mb/d to average 5.63 mb/d, showing a minor upward revision of 7 tb/d from last month's report due to a slight upward revision in 1Q22 output by Alberta Energy Regulator. Lower production in 1Q22 is projected to be compensated by the end of the year on the back of higher investment in oil sands basins. However, production in 2Q22 is expected to decline amid maintenance in the major oil sand plays.

Graph 5 - 15: Canada's quarterly liquids production and forecast



*Note: * 2Q22-4Q22 = Forecast. Source: OPEC.*

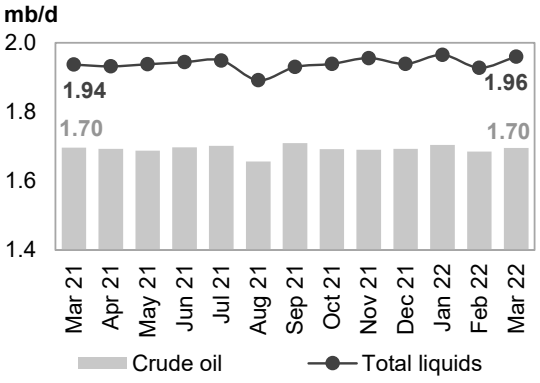
Mexico

Mexico's crude output increased slightly in **March** by 12 tb/d to average 1.7 mb/d. NGLs output rose by 20 tb/d. Therefore, Mexico's total liquids output in March increased by 32 tb/d m-o-m, to average 1.96 mb/d. The heavy Ku-Maloob-Zaap asset (KMZ) led the main loss in crude output.

For **2021**, liquids production in Mexico is estimated to have grown by 0.01 mb/d to average 1.93 mb/d, unchanged from the previous assessment.

For **2022**, growth is forecast at 0.03 mb/d to average 1.96 mb/d. Pemex's total crude production in mature fields continues to decline and new project output is not sufficient to offset the trend, while foreign-operated field production is expected to rise. No new field was reported to have started production in February.

Graph 5 - 16: Mexico's monthly liquids and crude production development



Sources: PEMEX and OPEC.

OECD Europe

Norway

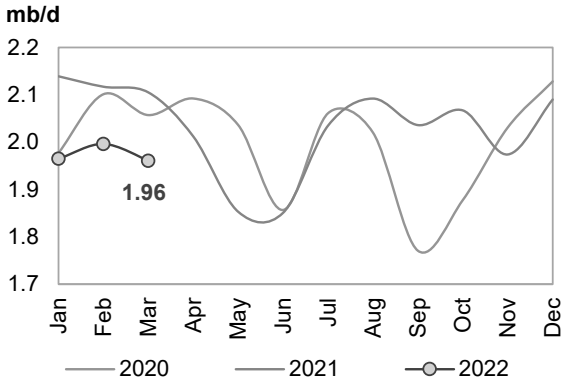
Norwegian liquids production in **March** declined by 35 tb/d m-o-m to average 1.96 mb/d.

Following an 11-year high in December 2021 and a significant drop of 113 tb/d in January, Norway's crude production decreased again by 36 tb/d m-o-m in March to average 1.74 mb/d, down by 44 tb/d y-o-y. Oil production in March is 5.9% lower than the Norwegian Petroleum Directorate's (NPD) forecast. Production of NGLs and condensates marginally declined by 1 tb/d m-o-m to average 0.2 mb/d, according to NPD data.

For **2021**, Norway's liquids supply growth is estimated to have expanded by 31 tb/d to average 2.0 mb/d.

For **2022**, Norway's liquids production is expected to grow by 0.1 mb/d to average 2.1 mb/d, revised down slightly by 10 tb/d from last month's assessment. This downward revision was mainly because of lower-than-expected production in March. However, following the end of the maintenance season in 2Q22, the main boost is projected to be seen in 4Q22, when the second phase of the Johan Sverdrup field development starts production, adding around 220,000 b/d on top of the 535,000 b/d already being produced.

Graph 5 - 17: Norway's monthly liquids production development



Sources: NPD and OPEC.

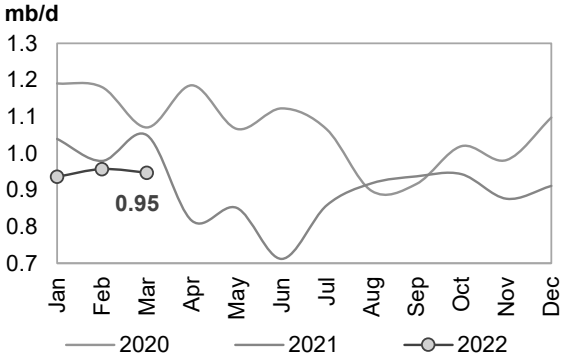
UK

UK liquids production decreased in **March** by 10 tb/d m-o-m to average 0.95 mb/d. Crude oil output decreased by 11 tb/d m-o-m to average 0.81 mb/d, according to official data, and was down by 104 tb/d y-o-y. NGLs output was broadly flat in March at 99 tb/d.

For **2021**, UK liquids production is estimated to have contracted by 0.16 mb/d to average 0.91 mb/d.

For **2022**, UK liquids production is forecast to grow by a minor 0.02 mb/d to average 0.93 mb/d, following two consecutive years of heavy declines, unchanged from the previous month. Low investment levels, COVID-19-related delays, and poor mature reservoir performance have been the cause of this weak growth forecast. Liquids production in 2022 is expected to be supported by new developments such as the Triton and Penguins fields.

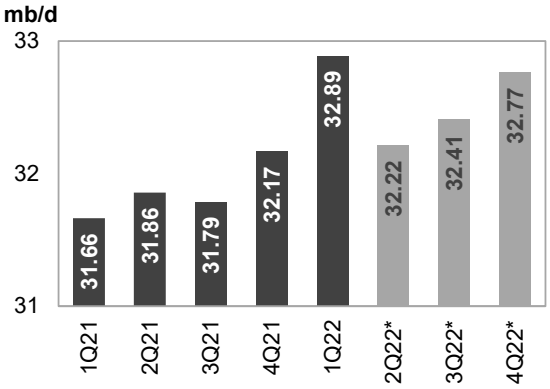
Graph 5 - 18: UK monthly liquids production development



Sources: Department of Energy & Climate Change and OPEC.

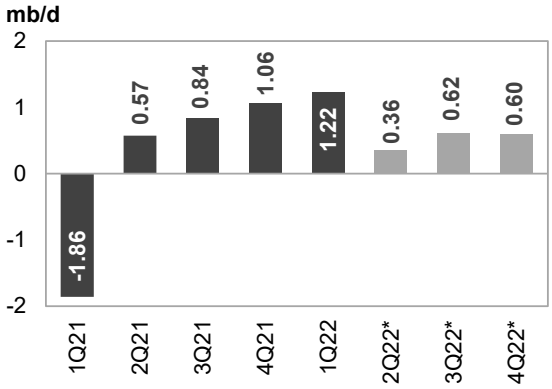
Non-OECD

Graph 5 - 19: Non-OECD quarterly liquids production and forecast



*Note: * 2Q22-4Q22 = Forecast. Source: OPEC.*

Graph 5 - 20: Non-OECD quarterly liquids supply, y-o-y changes

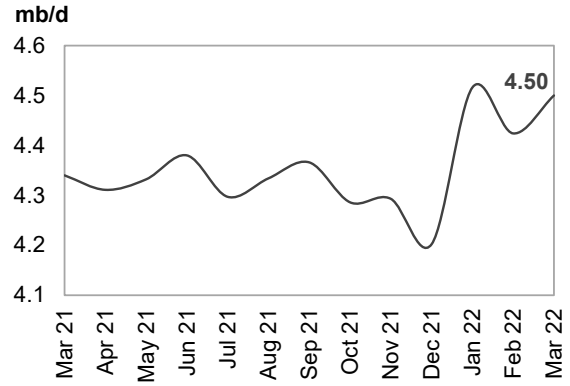


*Note: * 2Q22-4Q22 = Forecast. Source: OPEC.*

China

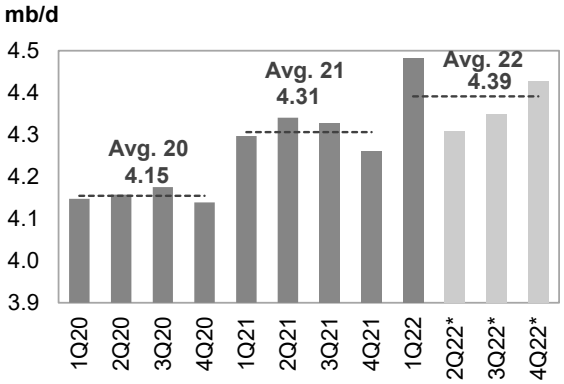
China's liquids production increased by 76 tb/d m-o-m in **March** to average 4.5 mb/d, which was up by 160 tb/d y-o-y, according to official data. Crude oil output in March rose by 76 tb/d to average 4.17 mb/d, higher by 146 tb/d y-o-y.

Graph 5 - 21: China's monthly liquids production development



Sources: CNPC and OPEC.

Graph 5 - 22: China's quarterly liquids production and forecast



*Note: * 2Q22-4Q22 = Forecast. Sources: CNPC and OPEC.*

For **2021**, China's liquids supply is estimated to have grown by 0.15 mb/d y-o-y, to average 4.31 mb/d.

For **2022**, growth of 0.08 mb/d is forecast for an average of 4.39 mb/d, revised up slightly by 7 tb/d on better-than-expected March production data.

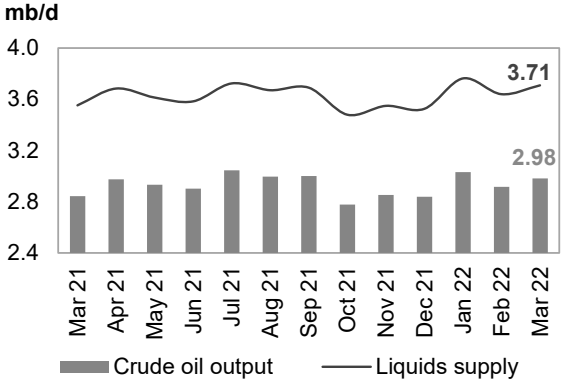
Natural decline rates are expected to be offset by Chinese companies' investment in new project start-ups, additional in-fill wells and EOR projects. Petro China increased its domestic crude production by 1.3% on the year to 2.06 mb/d in 2021, according to its senior vice president. Petro China's crude output growth is expected to be supported by its Changqing, Tarim, Xinjiang and Southwest fields.

Latin America

Brazil

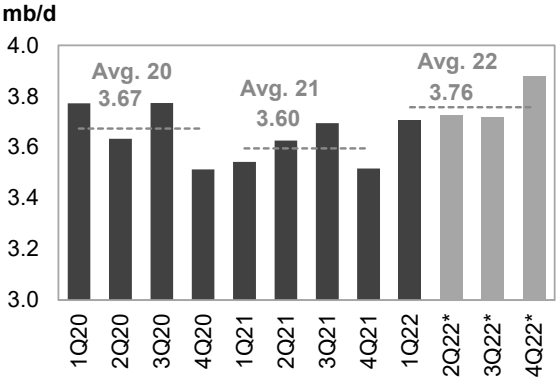
Brazil's crude output in **March** increased by 64 tb/d m-o-m to average 2.98 mb/d. NGLs production slightly increased by 5 tb/d to average 95 tb/d and is expected to remain flat in April. Biofuel output (mainly ethanol) remained unchanged in March to average 632 tb/d, with preliminary data showing a flat trend in April as well. Therefore, in March, total liquids production increased by 69 tb/d to average 3.71 mb/d, higher by 156 tb/d y-o-y, despite some maintenance events in Buzios and Tupi fields.

Graph 5 - 23: Brazil's monthly liquids production development by type



Sources: ANP, Petrobras and OPEC.

Graph 5 - 24: Brazil's quarterly liquids production



*Note: * 2Q22-4Q22 = Forecast. Sources: ANP and OPEC.*

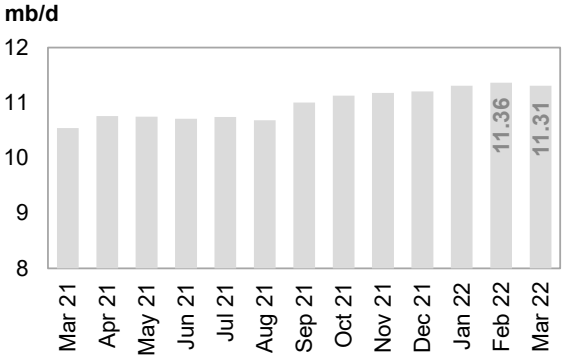
Liquids supply for **2021** is estimated to have averaged 3.60 m/d, a decline of 0.08 mb/d y-o-y, unchanged from the previous month's assessment.

For **2022,** Brazil's liquids supply, including biofuels, is forecast to increase by 0.16 mb/d y-o-y to average 3.76 mb/d, unchanged from the previous assessment. Petrobras stated that it would need to scale back production at the Atapua field owing to gas flaring issues, which could affect production in the coming months. Equinor also announced that the Peregrino oil field might restart in 3Q22. The main growth in 2022 will be driven by the continued ramp-up of the Sepia field, which came online in August 2021, along with two start-ups of Mero 1 and Peregrino Phase 2 in the pre-salt Santos basin. Petrobras expects to start up the FPSO Guanabara in May at the Mero field in the deep water Libra block, according to Offshore Magazine. However, Brazil's March crude output rose mainly due to the ramp-up of the P-68 FPSO in the post-salt basin.

Russia

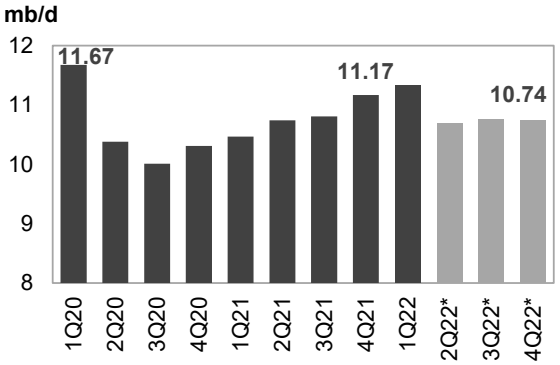
Russia's liquids production in March declined m-o-m by 52 tb/d to average 11.31 mb/d. This includes 10.01 mb/d of crude oil and condensate and 1.3 mb/d of NGLs. A preliminary estimate for Russia's crude and condensate production in April 2022 shows an expected decrease of 0.93 mb/d m-o-m for crude and condensate to average 9.08 mb/d, and around a 91 tb/d decline for NGLs.

Graph 5 - 25: Russia's monthly liquids production



Sources: Nefte Compass, The Ministry of Energy of the Russian Federation and OPEC.

Graph 5 - 26: Russia's quarterly liquids production



*Note: * 2Q22-4Q22 = Forecast.*
Sources: Nefte Compass and OPEC.

Annual liquids production in **2021** is estimated to have increased by 0.2 mb/d y-o-y to average 10.80 mb/d.

For **2022**, Russian liquids output is expected to increase by 0.1 mb/d to average 10.88 mb/d, revised down by 0.36 mb/d, compared to the previous assessment. It should be noted that this forecast is subject to very high uncertainty.

Caspian

Kazakhstan & Azerbaijan

Liquids output in Kazakhstan decreased by 49 tb/d to average 1.9 mb/d in **March**. Crude production declined by 48 tb/d m-o-m to average 1.6 mb/d, still lower than December 2021, when the highest output since April 2020 was recorded. Production of NGLs declined marginally m-o-m in March to average 0.38 mb/d.

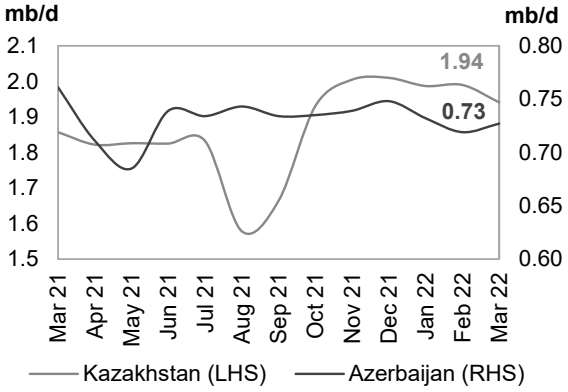
Kazakhstan's liquids supply forecast for **2021** is estimated to have averaged 1.84 mb/d, higher by 0.01 mb/d y-o-y. For **2022**, liquids supply is forecast to grow by 0.14 mb/d to average 1.98 mb/d, revised up by 16 tb/d. The output disruption in the Caspian Pipeline Consortium (CPC) terminal in the Black Sea was less than the previous estimation for March and April production, which necessitated an upward revision to this month's assessment.

Azerbaijan's liquids production in March rose by a slight 8 tb/d m-o-m to average 0.7 mb/d, down by 34 tb/d y-o-y. Crude production increased by 8 tb/d m-o-m to average 575 tb/d, while NGL output held steady at 150 tb/d, according to official sources. No new project is expected to come online in 2022 and the main decline in the offshore ACG crude is expected to be partially offset by ramp-ups in other fields, such as Shah Deniz Phase 2.

Azerbaijan's liquids production is expected to increase in April 2022 to average 0.8 mb/d, according to preliminary data.

For **2021**, liquids supply is estimated to have grown by 0.01 mb/d y-o-y to average 0.74 mb/d, while for **2022**, y-o-y growth of 0.06 mb/d is forecast for an average of 0.8 mb/d, revised down by 6 tb/d on lower-than-expected production in 1Q22.

Graph 5 - 27: **Caspian monthly liquids production development by selected country**



Sources: Nefte Compass and OPEC.

OPEC NGLs and non-conventional oils

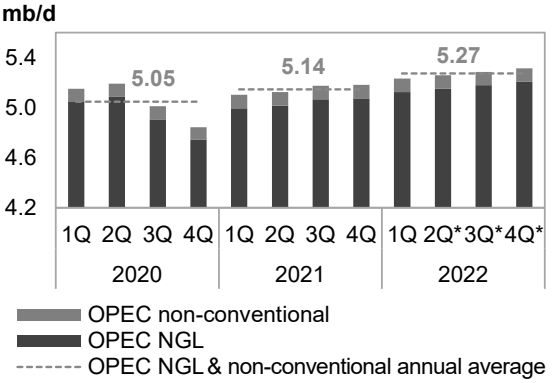
OPEC NGLs and non-conventional liquids in 2021 are estimated to have grown by 0.1 mb/d, to average 5.14 mb/d.

Production of OPEC NGLs and non-conventional oils has declined from 5.35 mb/d in 2Q18. In 2021, output increased from 5.1 mb/d in 1Q21 to 5.18 mb/d in 4Q21.

Output of NGLs in 1Q22 is estimated to have averaged 5.12 mb/d, while OPEC non-conventionals remained steady at 0.11 mb/d.

For **2022**, OPEC NGLs and non-conventional liquids production is forecast to grow by 0.13 mb/d to average 5.27 mb/d.

Graph 5 - 28: OPEC NGLs and non-conventional liquids quarterly production and forecast



*Note: * 2Q22-4Q22 = Forecast. Source: OPEC.*

Table 5 - 6: OPEC NGL + non-conventional oils, mb/d

OPEC NGL and non-coventional oils	2020	Change 20/19	2021	Change 21/20	1Q22	2Q22	3Q22	4Q22	2022	Change 22/21
OPEC NGL	**4.94**	*-0.18*	**5.04**	*0.09*	5.12	5.15	5.18	5.20	**5.16**	*0.13*
OPEC non-conventional	**0.10**	*0.01*	**0.11**	*0.00*	0.11	0.11	0.11	0.11	**0.11**	*0.00*
Total	**5.05**	***-0.17***	**5.14**	***0.10***	**5.23**	**5.26**	**5.29**	**5.31**	**5.27**	***0.13***

Note: 2021 = Estimation and 2022 = Forecast. Source: OPEC.

OPEC crude oil production

According to secondary sources, total **OPEC-13 crude oil production** averaged 28.65 mb/d in April 2022, higher by 153 tb/d m-o-m. Crude oil output increased mainly in Saudi Arabia, Iraq and the UAE, while production in Libya declined.

Table 5 - 7: OPEC crude oil production based on *secondary sources*, tb/d

Secondary sources	2020	2021	3Q21	4Q21	1Q22	Feb 22	Mar 22	Apr 22	*Change* Apr/Mar
Algeria	904	913	926	959	984	980	994	1,001	*7*
Angola	1,247	1,117	1,108	1,124	1,150	1,165	1,142	1,160	*19*
Congo	294	269	263	269	264	270	261	265	*4*
Equatorial Guinea	114	100	99	91	92	88	93	94	*2*
Gabon	194	186	184	188	200	200	209	194	*-15*
IR Iran	1,991	2,392	2,472	2,472	2,528	2,538	2,549	2,564	*16*
Iraq	4,076	4,049	4,078	4,240	4,286	4,302	4,302	4,405	*103*
Kuwait	2,439	2,419	2,448	2,532	2,614	2,615	2,641	2,662	*21*
Libya	366	1,143	1,146	1,111	1,062	1,112	1,074	913	*-161*
Nigeria	1,575	1,372	1,335	1,321	1,376	1,373	1,340	1,322	*-17*
Saudi Arabia	9,204	9,111	9,554	9,878	10,162	10,211	10,219	10,346	*127*
UAE	2,804	2,727	2,770	2,861	2,956	2,956	2,979	3,015	*36*
Venezuela	512	555	540	662	681	688	693	707	*14*
Total OPEC	**25,721**	**26,354**	**26,923**	**27,708**	**28,356**	**28,499**	**28,495**	**28,648**	***153***

Notes: Totals may not add up due to independent rounding, given available secondary sources to date. Source: OPEC.

Table 5 - 8: OPEC crude oil production based on *direct communication*, tb/d

Direct communication	2020	2021	3Q21	4Q21	1Q22	Feb 22	Mar 22	Apr 22	*Change* Apr/Mar
Algeria	899	911	924	958	984	978	996	1,006	*10*
Angola	1,271	1,124	1,114	1,122	1,161	1,158	1,133	1,183	*50*
Congo	300	267	266	260	267	260	264	261	*-3*
Equatorial Guinea	114	94	94	79	95	95	95	95	*0*
Gabon	207	181	180	183	197	195	198	..	*..*
IR Iran	..	..	..	..	..	..	..	..	*..*
Iraq	3,997	3,971	3,979	4,167	4,188	4,260	4,148	4,430	*282*
Kuwait	2,438	2,415	2,447	2,528	2,612	2,612	2,639	2,639	*0*
Libya	389	1,207	1,220	1,182	1,151	1,220	1,166	..	*..*
Nigeria	1,493	1,312	1,270	1,233	1,299	1,258	1,238	1,219	*-18*
Saudi Arabia	9,213	9,125	9,565	9,905	10,224	10,225	10,300	10,441	*141*
UAE	2,779	2,718	2,758	2,854	2,949	2,954	2,970	3,011	*41*
Venezuela	569	636	635	817	756	788	728	775	*47*
Total OPEC	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	***..***

Notes: .. Not available. Totals may not add up due to independent rounding. Source: OPEC.

Commercial Stock Movements

Preliminary March data sees total OECD commercial oil stocks up m-o-m by 10.1 mb. At 2,621 mb, they were 298 mb lower than the same time one year ago, 304 mb lower than the latest five-year average and 293 mb below the 2015-2019 average. Within the components, crude stocks rose m-o-m by 12.9 mb, while products stocks fell m-o-m by 2.8 mb.

At 1,265 mb, OECD crude stocks were 189 mb lower than the latest five-year average and 198 mb below the 2015-2019 average. OECD product stocks stood at 1,356 mb, representing a deficit of 115 mb compared with the latest five-year average and 95 mb below the 2015-2019 average.

In terms of days of forward cover, OECD commercial stocks fell m-o-m by 0.3 days in March to stand at 57.4 days. This is 8.8 days below March 2021 levels, 8.7 days less than the latest five-year average and 5.0 days lower than the 2015-2019 average.

Preliminary data for April showed that total US commercial oil stocks rose m-o-m by 2.6 mb to stand at 1,146 mb. This is 142.9 mb, lower than the same month in 2021 and 152.3 mb, below the latest five-year average. Crude stocks rose by 3.4 mb, while product stocks fell m-o-m by 0.8 mb.

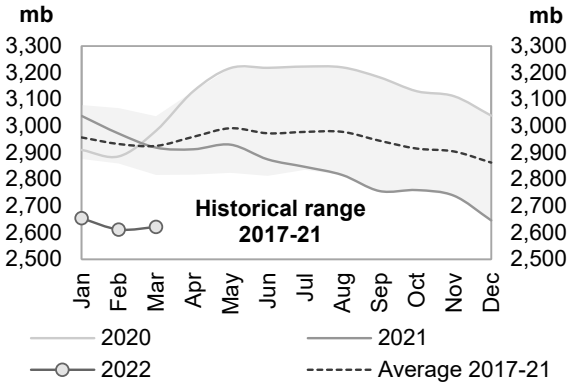
OECD

Preliminary March data sees **total OECD commercial oil stocks** up m-o-m by 10.1 mb. At 2,621 mb, they were 298 mb less than the same time one year ago, 304 mb lower than the latest five-year average and 293 mb below the 2015-2019 average.

Within the components, crude stocks rose m-o-m by 12.9 mb, while products stocks fell m-o-m by 2.8 mb. Total commercial oil stocks in March rose in OECD Europe, while they declined in OECD America and OECD Asia Pacific.

OECD **commercial crude stocks** stood at 1,265 mb in March. This is 173 mb lower than the same time a year ago and 189 mb below the latest five-year average. Compared with the previous month, OECD Americas saw a stock build of 3.2 mb, OECD Asia Pacific rose by 4.5 mb and OECD Europe increased by 5.1 mb.

Graph 9 - 1: OECD commercial oil stocks



Sources: Argus, EIA, Euroilstock, IEA, METI and OPEC.

Total product inventories stood at 1,356 mb in March. This is 125 mb less than the same time a year ago, and 115 mb lower than the latest five-year average. Product stocks in OECD Americas and OECD Asia Pacific fell m-o-m by 9.5 mb and 6.4 mb, respectively, while product stocks rose m-o-m by 13.1 mb in OECD Europe.

Table 9 - 1: OECD's commercial stocks, mb

OECD stocks	Mar 21	Jan 22	Feb 22	Mar 22	Change Mar 22/Feb 22
Crude oil	1,438	1,252	1,252	1,265	*12.9*
Products	1,481	1,401	1,359	1,356	*-2.8*
Total	**2,919**	**2,653**	**2,611**	**2,621**	***10.1***
Days of forward cover	**66.3**	**58.7**	**57.7**	**57.4**	***-0.3***

Note: Totals may not add up due to independent rounding.

Sources: Argus, EIA, Euroilstock, IEA, METI and OPEC.

In terms of **days of forward cover**, OECD commercial stocks fell m-o-m by 0.3 days in March to stand at 57.4 days. This is 8.8 days below March 2021 levels, 8.7 days less than the latest five-year average and 5.0 days lower than the 2015-2019 average. All three OECD regions were below the latest five-year average: the Americas by 8.6 days at 56.4 days, Asia Pacific by 8.3 days at 43.0 days and Europe by 9.0 days at 67.4 days.

OECD Americas

OECD Americas total commercial stocks fell by 6.2 mb m-o-m in March to settle at 1,424 mb. This is 146 mb less than the same month in 2021 and 122 mb lower than the latest five-year average.

Commercial crude oil stocks in OECD Americas rose m-o-m by 3.2 mb in March to stand at 734 mb, which is 94 mb lower than in March 2021 and 72 mb less than the latest five-year average. The stock build came on the back of higher crude imports.

Total product stocks in OECD Americas fell m-o-m by 9.5 mb in March to stand at 690 mb. This was 52 mb lower than in the same month of 2021 and 50 mb below the latest five-year average. Higher total consumption in the region was behind the stock draw.

OECD Europe

OECD Europe total commercial stocks rose m-o-m by 18.3 mb in March to settle at 887 mb. This is 115 mb less than the same month in 2021 and 117 mb below the latest five-year average.

OECD Europe's **commercial crude stocks** in March rose m-o-m by 5.1 mb to end the month at 377 mb, which is 53 mb lower than one year ago and 61 mb below the latest five-year average. The build in crude oil inventories came on the back of lower m-o-m refinery throughputs in the EU-14, plus UK and Norway, which decreased by 0.28 mb/d to stand at 9.19 mb.

Europe's **product stocks** also rose m-o-m by 13.1 mb to end March at 510 mb. This is 62 mb lower than a year ago and 56 mb below the latest five-year average.

OECD Asia Pacific

OECD Asia Pacific's total commercial oil stocks fell m-o-m by 1.9 mb in March to stand at 310 mb. This is 36 mb lower than a year ago and 65 mb below the latest five-year average.

OECD Asia Pacific's **crude inventories** rose by 4.5 mb m-o-m to end March at 155 mb, which is 26 mb lower than one year ago and 56 mb below the latest five-year average.

OECD Asia Pacific's **total product inventories** fell m-o-m by 6.4 mb to end March at 156 mb. This is 10.4 mb lower than the same time a year ago and 8.9 mb below the latest five-year average.

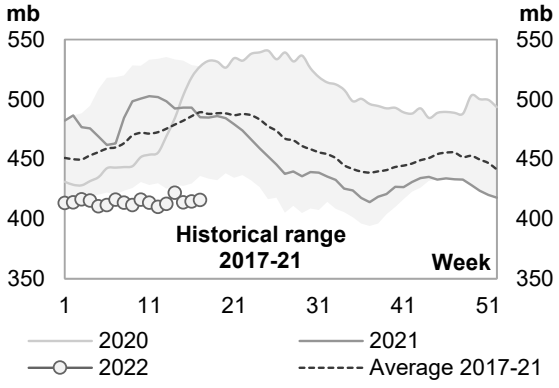
US

Preliminary data for April showed that **total US commercial oil stocks** rose m-o-m by 2.6 mb to stand at 1,146 mb. This is 142.9 mb, or 11.1%, lower than the same month in 2021 and 152.3 mb, or 11.7%, below the latest five-year average. Crude stocks rose by 3.4 mb, while product stocks fell m-o-m by 0.8 mb.

US commercial crude stocks in April stood at 415.7 mb. This is 74.0 mb, or 15.1%, lower than the same month of the previous year, and 74.2 mb, or 15.1%, below the latest five-year average. The monthly build in crude oil stocks can be attributed to additions from the SPR release.

Total product stocks in April stood at 730.7 mb. This is 68.9 mb, or 8.6%, below April 2021 levels, and 78.2 mb, or 9.7%, lower than the latest five-year average. The stock draw was mainly driven by higher US consumption.

Graph 9 - 2: US weekly commercial crude oil inventories



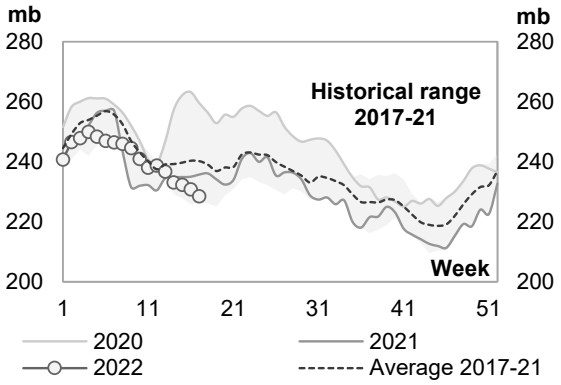
Sources: EIA and OPEC.

Gasoline stocks in April fell m-o-m by 8.2 mb to settle at 228.6 mb. This is 9.8 mb, or 4.1 % lower than in the same month in 2021, and 13.7 mb, or 5.7%, lower than the latest five-year average. The monthly stock draw came mainly on the back of higher gasoline consumption.

Distillate stocks also fell m-o-m in April by 9.4 mb to stand at 104.9 mb. This is 31.1 mb, or 22.8%, lower than the same month of the previous year, and 33.3 mb, or 24.1%, below the latest five-year average.

Residual fuel oil stocks fell by 0.6 mb m-o-m in April. At 28.2 mb, this was 3.0 mb, or 9.7%, lower than a year earlier, and 4.8 mb, or 14.6%, below the latest five-year average.

Graph 9 - 3: US weekly gasoline inventories



Sources: EIA and OPEC.

By contrast, **jet fuel stocks** rose m-o-m by 0.8 mb, ending April at 36.2 mb. This is 4.3 mb, or 10.7%, lower than the same month of 2021, and 5.2 mb, or 12.7%, below the latest five-year average.

Table 9 - 2: US commercial petroleum stocks, mb

US stocks	Apr 21	Feb 22	Mar 22	Apr 22	Change Apr 22/Mar 22
Crude oil	**489.7**	**409.1**	**412.4**	**415.7**	***3.4***
Gasoline	238.4	250.4	236.8	228.6	*-8.2*
Distillate fuel	136.0	120.8	114.3	104.9	*-9.4*
Residual fuel oil	31.3	27.5	28.8	28.2	*-0.6*
Jet fuel	40.5	39.9	35.4	36.2	*0.8*
Total products	**799.6**	**756.3**	**731.5**	**730.7**	***-0.8***
Total	**1,289.4**	**1,165.5**	**1,143.8**	**1,146.4**	***2.6***
SPR	**633.4**	**578.9**	**564.6**	**550.0**	***-14.6***

Sources: EIA and OPEC.

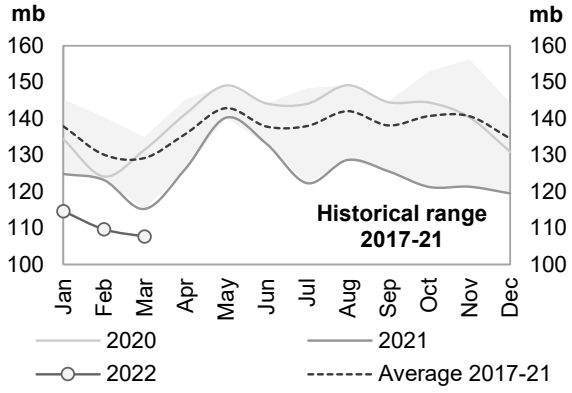
Japan

In **Japan**, **total commercial oil stocks** in March fell m-o-m by 1.9 mb to settle at 107.7 mb. This is 7.5 mb, or 6.5%, lower than the same month in 2021, and 21.5 mb, or 16.6%, below the latest five-year average. Crude stocks rose by 4.5 mb, while product stocks fell by 6.4 mb.

Japanese **commercial crude oil stocks** rose in March to stand at 60.5 mb. This is 0.6 mb, or 0.9%, higher than the same month of the previous year, but 13.8 mb, or 18.6%, lower than the latest five-year average. The build came on the back of higher crude imports.

By contrast, Japan's **total product inventories** fell m-o-m by 6.4 mb to end March at 47.2 mb. This is 8.1 mb, or 14.6%, lower than the same month in 2021 and 7.7 mb, or 14.0%, below the latest five-year average.

Graph 9 - 4: Japan's commercial oil stocks



Sources: METI and OPEC.

Gasoline stocks fell m-o-m by 1.2 mb to stand at 9.9 mb in March. This was 2.7 mb, or 21.2% lower than a year earlier, and 1.3 mb, or 11.5%, lower than the latest five-year average. Higher gasoline sales, which rose by 14.9%, were behind the gasoline stock draw.

Distillate stocks also fell m-o-m by 3.1 mb to end March at 19.3 mb. This is 3.7 mb, or 16.1%, lower than the same month in 2021, and 3.1 mb, or 13.9%, below the latest five-year average. Within the distillate components, **jet fuel rose** by 1.6%, while **kerosene** and **gasoil stocks** fell m-o-m by 8.8% and 7.2%, respectively.

Total residual fuel oil stocks fell m-o-m by 1.2 mb to end March at 10.1 mb. This is 1.2 mb, or 10.5%, lower than in the same month of the previous year, and 2.1 mb, or 17.3%, below the latest five-year average. Within the components, fuel oil A and fuel oil B.C stocks fell by 7.1% and 12.4%, respectively.

Table 9 - 3: Japan's commercial oil stocks*, mb

Japan's stocks	Mar 21	Jan 22	Feb 22	Mar 22	Change Mar 22/Feb 22
Crude oil	**60.0**	**55.9**	**56.0**	**60.5**	***4.5***
Gasoline	12.5	11.4	11.1	9.9	*-1.2*
Naphtha	8.6	9.1	9.0	8.0	*-1.0*
Middle distillates	23.0	26.3	22.4	19.3	*-3.1*
Residual fuel oil	11.3	11.9	11.2	10.1	*-1.2*
Total products	**55.3**	**58.7**	**53.6**	**47.2**	***-6.4***
Total**	**115.2**	**114.6**	**109.6**	**107.7**	***-1.9***

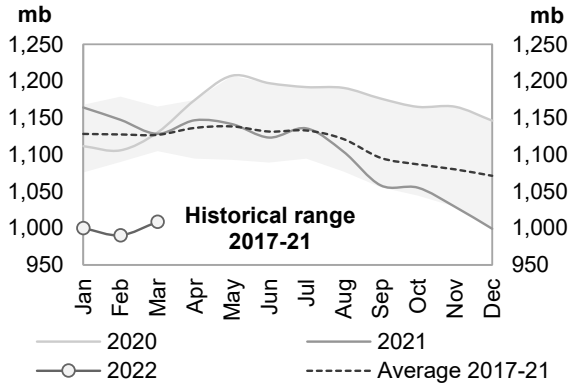
*Note: * At the end of the month. ** Includes crude oil and main products only.*
Sources: METI and OPEC.

EU-14 plus UK and Norway

Preliminary data for March showed that **total European commercial oil stocks** rose m-o-m by 18.3 mb to stand at 1,009 mb. At this level, they were 119.9 mb, or 10.6%, below the same month a year earlier, and 118.4 mb, or 10.5%, lower than the latest five-year average. Crude and product stocks rose by 5.1 mb and 13.1 mb respectively.

European **crude inventories** rose in March to stand at 424.9 mb. This is 45.1 mb, or 9.6% lower than the same month in 2021, and 59.0 mb, or 12.2%, below the latest five-year average. The build in crude oil inventories came on the back of lower m-o-m refinery throughputs in the EU-14, plus UK and Norway, which decrease by 0015 mb/d to stand at 9.37 mb.

Graph 9 - 5: EU-14 plus UK and Norway's total oil stocks



Sources: Argus, Euroilstock and OPEC.

Total European product stocks also rose m-o-m by 13.1 mb to end March at 583.7 mb. This is 74.7 mb, or 11.4%, lower than the same month of the previous year, and 59.4 mb, or 9.2%, below the latest five-year average.

Gasoline stocks declined m-o-m by 1.3 mb in March to stand at 108.7 mb. At this level, they were 3.2 mb, or 2.8%, lower than the same time a year earlier, and 10.5 mb/d, or 8.8%, less than the latest five-year average.

In contrast, **distillate stocks** rose m-o-m by 12.4 mb in March to stand at 391.7 mb. This is 55.9 mb, or 12.5%, below the same month in 2021, and 33.4 mb, or 7.9%, less than the latest five-year average.

Residual fuel stocks also rose m-o-m by 2.0 mb in March to stand at 59.2 mb. This is 7.6 mb, or 11.4%, lower than the same month in 2021, and 8.8 mb, or 12.9%, below the latest five-year average.

Naphtha stocks also rose slightly by 0.1 mb in March, ending the month at 24.0 mb. This is 8.2 mb, or 25.4%, below March 2021 levels, and 6.8 mb, or 22.0%, below the latest five-year average.

Table 9 - 4: EU-14 plus UK and Norway's total oil stocks, mb

EU stocks	Mar 21	Jan 22	Feb 22	Mar 22	Change Mar 22/Feb 22
Crude oil	**469.9**	**417.7**	**419.8**	**424.9**	***5.1***
Gasoline	111.9	113.2	110.0	108.7	*-1.3*
Naphtha	32.2	24.1	23.9	24.0	*0.1*
Middle distillates	447.6	384.7	379.4	391.7	*12.4*
Fuel oils	66.8	60.3	57.3	59.2	*2.0*
Total products	**658.5**	**582.3**	**570.6**	**583.7**	***13.1***
Total	**1,128.4**	**1,000.0**	**990.3**	**1,008.6**	***18.3***

Sources: Argus, Euroilstock and OPEC.

Singapore, Amsterdam-Rotterdam-Antwerp (ARA) and Fujairah

Singapore

In March, **total product stocks in Singapore** fell m-o-m by 1.8 mb to 41.5 mb. This is 9.1 mb, or 18.0%, lower than the same month in 2021.

Light distillate stocks fell m-o-m by 0.4 mb in March to stand at 13.6 mb. This is 0.6 mb, or 4.2%, lower than the same month of the previous year.

Middle distillate stocks also fell m-o-m by 0.7 mb in March to stand at 7.0 mb. This is 6.3 mb, or 47.3%, lower than a year earlier.

Residual fuel oil stocks fell m-o-m by 0.7 mb, ending March at 20.9 mb. This is 2.3 mb, or 9.8%, lower than in March 2021.

ARA

Total product stocks in ARA rose m-o-m in March by 1.5 mb, reversing the draw of last month. At 39.2 mb, they are 10.6 mb, or 21.3%, lower than the same month in 2021.

Gasoline stocks in March rose m-o-m by 1.6 mb to stand at 11.8 mb, which is 0.7 mb, or 6.6%, lower than the same month of the previous year.

Jet oil stocks also rose m-o-m by 0.8 mb to end March at 7.5 mb. This is 0.5 mb, or 6.4%, higher than the level registered one year earlier.

By contrast, gasoil stocks fell by 0.4 mb to end March at 11.8 mb. This is 5.8 mb, or 33.1%, lower than the level seen in March 2021.

Fuel oil stocks also fell m-o-m by 1.0 mb in March to stand at 5.6 mb, which is 6.0 mb, or 51.6%, lower than in March 2021.

Fujairah

During the week ending 2 May 2022, **total oil product stocks in Fujairah** rose w-o-w by 0.8 mb to stand at 16.89 mb, according to data from Fed Com and S&P Global Platts. At this level, total oil stocks were 7.16 mb lower than the same time a year ago.

Light distillate stocks rose by 0.31 mb w-o-w to stand at 4.06 mb in the week to 2 May 2022, which is 1.27 mb lower than the same period a year ago. **Middle distillate stocks** also rose by 0.29 mb to stand at 1.56 mb, which is 2.30 mb lower than a year ago. **Heavy distillate stocks** rose w-o-w by 0.20 mb to stand at 11.27 mb, which is 3.59 mb lower than the same time last year.

Balance of Supply and Demand

Demand for OPEC crude in 2021 was revised up by 0.1 mb/d from the previous MOMR to stand at 28.2 mb/d. This is around 5.0 mb/d higher than in 2020.

According to secondary sources, OPEC crude production averaged 25.2 mb/d in 1Q21, which is 1.3 mb/d lower than demand for OPEC crude in the same period. In 2Q21, OPEC crude production averaged 25.6 mb/d, which is 1.7 mb/d lower than demand for OPEC crude. In 3Q21, OPEC crude oil production averaged 26.9 mb/d, which is 2.0 mb/d lower than demand for OPEC crude. In 4Q21, OPEC crude oil production averaged 27.7 mb/d, which is 2.5 mb/d lower than demand for OPEC crude.

For 2021, OPEC crude production averaged 26.4 mb/d, which was 1.9 mb/d below demand for OPEC crude.

Demand for OPEC crude in 2022 was revised up by 0.1 mb/d from the previous month to stand at 29.0 mb/d, which is around 0.8 mb/d higher than in 2021. According to secondary sources, OPEC crude production averaged 28.4 mb/d in 1Q22, which is 0.4 mb/d lower than demand for OPEC crude during the same period.

Balance of supply and demand in 2021

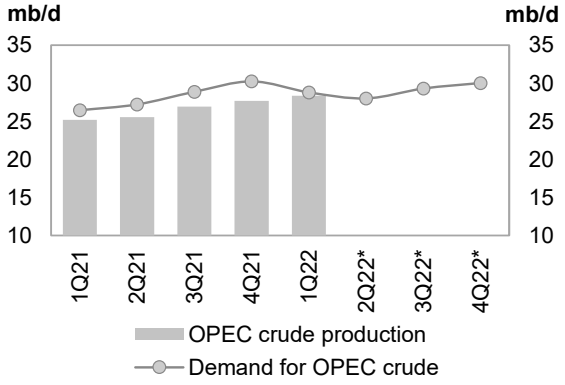
Demand for OPEC crude in 2021 was revised up by 0.1 mb/d from the previous MOMR to stand at 28.2 mb/d. This is around 5.0 mb/d higher than in 2020. Compared with the previous assessment, the first three quarters were revised up by 0.1 mb/d, while 4Q21 was revised up by 0.2 mb/d.

When compared with the same quarters in 2020, demand for OPEC crude in 1Q21 and 2Q21 was higher by 3.9 mb/d and 9.6 mb/d, respectively. The 3Q21 and 4Q21 are estimated to show y-o-y increases of 3.8 mb/d and 3.0 mb/d, respectively.

According to secondary sources, OPEC crude production averaged 25.2 mb/d in 1Q21, which is 1.3 mb/d lower than demand for OPEC crude in the same period. In 2Q21, OPEC crude production averaged 25.6 mb/d, which is 1.7 mb/d lower than demand for OPEC crude. In 3Q21, OPEC crude oil production averaged 26.9 mb/d, which is 2.0 mb/d lower than demand for OPEC crude. In 4Q21, OPEC crude oil production averaged 27.7 mb/d, which is 2.5 mb/d lower than demand for OPEC crude.

For 2021, OPEC crude production averaged 26.4 mb/d, which was 1.9 mb/d below the demand for OPEC crude.

Graph 10 - 1: Balance of supply and demand, 2021–2022*



*Note: * 2Q22-4Q22 = Forecast. Source: OPEC.*

Table 10 - 1: Supply/demand balance for 2021*, mb/d

	2020	1Q21	2Q21	3Q21	4Q21	2021	Change 2021/20
(a) World oil demand	**91.19**	**94.05**	**95.60**	**97.66**	**100.30**	**96.92**	***5.74***
Non-OPEC liquids production	62.97	62.50	63.26	63.60	64.87	63.56	*0.59*
OPEC NGL and non-conventionals	5.05	5.10	5.12	5.17	5.18	5.14	*0.10*
(b) Total non-OPEC liquids production and OPEC NGLs	**68.02**	**67.60**	**68.39**	**68.77**	**70.05**	**68.71**	***0.69***
Difference (a-b)	**23.17**	**26.45**	**27.22**	**28.88**	**30.25**	**28.21**	***5.05***
OPEC crude oil production	**25.72**	**25.18**	**25.57**	**26.92**	**27.71**	**26.35**	***0.63***
Balance	**2.55**	**-1.27**	**-1.65**	**-1.96**	**-2.55**	**-1.86**	***-4.41***

*Note: * 2021 = Estimation. Totals may not add up due to independent rounding. Source: OPEC.*

https://www.iea.org/reports/oil-market-report-may-2022

Oil Market Report - May 2022

Flagship report — May 2022

About this report

The IEA Oil Market Report (OMR) is one of the world's most authoritative and timely sources of data, forecasts and analysis on the global oil market – including detailed statistics and commentary on oil supply, demand, inventories, prices and refining activity, as well as oil trade for IEA and selected non-IEA countries.

Highlights

- World oil demand growth is forecast to slow to 1.9 mb/d in 2Q22 from 4.4 mb/d in 1Q22 and is now projected to ease to 490 kb/d on average in the second half of the year on a more tempered economic expansion and higher prices. As summer driving escalates and jet fuel continues to recover, world oil demand is set to rise by 3.6 mb/d from April to August. For 2022, demand is expected to increase by 1.8 mb/d on average to 99.4 mb/d.
- Russia shut in nearly 1 mb/d in April, driving down world oil supply by 710 kb/d to 98.1 mb/d. Over time, steadily rising volumes from Middle East OPEC+ and the US along with a slowdown in demand growth is expected to fend off an acute supply deficit amid a worsening Russian supply disruption. Excluding Russia, output from the rest of the world is set to rise by 3.1 mb/d from May through December.
- Global refinery margins have surged to extraordinarily high levels due to depleted product inventories and constrained refinery activity. Throughputs in April fell 1.4 mb/d to 78 mb/d, the lowest since May 2021, largely driven by China. Between now and August, runs are forecast to ramp up by 4.7 mb/d, but the tightness in product markets is expected to continue based on our current oil demand outlook.
- Global observed oil inventories declined by a further 45 mb during March and are now a total 1.2 billion barrels lower since June 2020. In the OECD, the release of 24.7 mb of government stocks during March halted the precipitous decline in industry inventories. OECD industry stocks rose by 3 mb to 2 626 mb, but remained 299 mb below the five-year average. Preliminary data for April show OECD industry inventories increased by 5.3 mb.
- Crude prices fell in April to trade in a narrow $10/bbl range above $100/bbl. ICE Brent last traded around $105/bbl and WTI $102/bbl. Rapid early-May advances on the sixth round of EU sanctions for Russia drove renewed price tensions. High crude prices and exceptional product cracks are supporting strong inflation trends.

Pressure mounting

Russia's isolation following its invasion of Ukraine is deepening as the EU and G7 contemplate tougher sanctions that include a full phase out of oil imports from the country. If agreed, the new embargoes would accelerate the reorientation of trade flows that is already underway and will force Russian oil companies to shut in more wells. Even so, steadily rising output elsewhere,

coupled with slower demand growth, especially in China, is expected to fend off an acute supply deficit in the near term. Amid the widening supply and demand uncertainties, oil market volatility remains rife, but prices are trading in a lower and narrower $10/bbl range above $100/bbl. Brent last traded at $ 105/bbl and WTI $102/bbl.

Despite mounting international pressure and falling oil production, Russian exports have so far held up by and large. But now major trading houses are winding down deals ahead of a 15 May deadline to halt all transactions with state-controlled Rosneft, Gazprom Neft and Transneft. Following a supply decline of nearly 1 mb/d in April, losses could expand to around 3 mb/d during the second half of the year.

Global refinery maintenance and capacity constraints are exacerbating dislocations caused by Russia's war in Ukraine. During April, crude and product markets saw diverging trends. While crude prices trended lower overall, diesel and gasoline cracks surged to record levels, pulling up refinery margins and end-user prices.

Limited spare capacity in the global refining system, together with reduced exports of Russian fuel oil, diesel and naphtha have aggravated the tightness in product markets, which have now seen seven consecutive quarters of stock draws. While a first tranche of SPR releases halted the precipitous decline in OECD industry stocks in March, crude made up the majority of it and product stocks have continued to fall. Notably, middle distillate reserves reached their lowest levels since April 2008.

Soaring pump prices and slowing economic growth are expected to significantly curb the demand recovery through the remainder of the year and into 2023. Moreover, extended lockdowns across China where the government struggles to contain the spread of Covid-19 are driving a significant slowdown in the world's second largest oil consumer. For the year as a whole, global oil demand is forecast to average 99.4 mb/d in 2022, up 1.8 mb/d y-o-y.

As restrictions in China ease, summer driving picks up and jet fuel continues to recover, world oil demand is set to rise by 3.6 mb/d from an April low through August. If refiners cannot keep pace, product markets and consumers could come under additional strain. The IEA's recent 10-Point Plan to Cut Oil Use outlines measures that can be taken immediately to cut consumption and ease the pain caused by high oil prices.

OPEC+ crude oil production[1]

million barrels per day

	Feb 2022 supply	Mar 2022 supply	March compliance	Mar 2022 target	Sustainable capacity[2]	Spare cap vs. Mar
Algeria	1.00	1.00	1.04	1.00	1.00	0.00
Angola	1.14	1.18	4.46	1.45	1.15	0.00
Congo	0.26	0.27	3.44	0.31	0.29	0.02
Equatorial Guinea	0.09	0.10	4.50	0.12	0.11	0.01
Gabon	0.20	0.19	-0.30	0.18	0.20	0.01
Iraq	4.33	4.42	0.97	4.41	4.82	0.40
Kuwait	2.64	2.65	1.10	2.67	2.79	0.14
Nigeria	1.25	1.23	6.37	1.74	1.52	0.29
Saudi Arabia	10.28	10.40	1.06	10.44	12.24	1.84
UAE	3.03	3.03	0.85	3.01	4.12	1.09
Total OPEC-10	**24.22**	**24.47**	**1.62**	**25.32**	**28.25**	**3.81**
Iran[3]	2.58	2.55	0.00	0.00	3.80	1.25
Libya[3]	1.10	0.90	0.00	0.00	1.20	0.30
Venezuela[3]	0.72	0.75	0.00	0.00	0.75	0.00
Total OPEC	**28.62**	**28.67**	**0.00**	**0.00**	**34.00**	**5.37**
Azerbaijan	0.58	0.58	3.76	0.68	0.60	0.02
Kazakhstan	1.60	1.41	3.40	1.62	1.69	0.28
Mexico[4]	1.63	1.64	0.00	1.75	1.69	0.05
Oman	0.83	0.84	1.00	0.84	0.87	0.03
Russia	10.00	9.10	3.37	10.44	10.23	1.13
Others[5]	0.89	0.89	3.92	1.05	0.94	0.05
Total Non-OPEC	**15.53**	**14.45**	**3.30**	**16.38**	**16.02**	**1.56**
OPEC+-19 in cut deal[4]	**38.12**	**37.28**	**2.23**	**39.94**	**42.58**	**5.33**
Total OPEC+	**44.15**	**43.12**	**0.00**	**0.00**	**50.02**	**6.93**

1. Excludes condensates. 2. Capacity levels can be reached with 90 days and sustained for extended period. 3. Iran, Libya, Venezuela exempt from cuts. 4. Mexico excluded from OPEC+ compliance. Only cut in May, June 2020. 5. Bahrain, Brunei, Malaysia, Sudan and South Sudan.

IEA World Oil Supply and Demand Forecasts: Summary (Table)
2022-05-12 08:00:00.1 GMT

By Kristian Siedenburg
(Bloomberg) -- Following is a summary of world oil supply and demand forecasts from the International Energy Agency in Paris:

	4Q 2022	3Q 2022	2Q 2022	1Q 2022	4Q 2021	3Q 2021	2Q 2021	1Q 2021	2022	2021
	Demand									
Total Demand	100.4	100.0	98.2	98.8	100.7	98.8	96.3	94.3	99.4	97.5
Total OECD	46.4	46.3	45.5	45.5	46.8	45.8	44.0	42.4	45.9	44.8
Americas	25.0	25.0	24.8	24.5	25.0	24.8	24.4	22.8	24.8	24.3
Europe	13.6	13.8	13.5	13.1	13.9	13.8	12.6	11.9	13.5	13.1
Asia Oceania	7.8	7.4	7.2	7.9	7.8	7.1	7.0	7.7	7.6	7.4
Non-OECD countries	54.0	53.7	52.7	53.3	53.9	53.0	52.3	51.9	53.4	52.8
FSU	4.5	4.5	4.3	4.6	5.0	4.9	4.7	4.6	4.5	4.8
Europe	0.8	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7
China	16.0	16.0	15.1	15.5	15.7	15.7	15.7	15.0	15.6	15.5
Other Asia	13.9	13.3	13.8	13.8	13.7	12.6	12.9	13.5	13.7	13.2
Americas	6.2	6.2	6.0	6.0	6.2	6.2	5.9	5.8	6.1	6.0
Middle East	8.5	9.0	8.6	8.5	8.4	8.9	8.5	8.3	8.6	8.5
Africa	4.2	4.1	4.2	4.2	4.1	3.9	4.0	4.1	4.2	4.0
	Supply									
Total Supply	n/a	n/a	n/a	98.4	98.0	96.4	94.2	92.4	n/a	95.3
Non-OPEC	64.9	64.4	64.0	64.7	65.0	64.3	63.5	61.9	64.5	63.7
Total OECD	30.5	29.9	29.1	28.6	29.2	28.3	27.8	27.4	29.5	28.2
Americas	26.6	26.2	25.4	24.7	25.3	24.4	24.3	23.3	25.7	24.3
Europe	3.4	3.2	3.2	3.3	3.4	3.4	3.1	3.6	3.3	3.4
Asia Oceania	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Non-OECD	29.1	28.9	29.6	31.4	30.8	30.5	30.5	30.2	29.7	30.5
FSU	11.7	11.5	12.5	14.4	14.3	13.7	13.7	13.4	12.5	13.8
Europe	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
China	4.2	4.2	4.3	4.2	4.0	4.1	4.1	4.1	4.2	4.1
Other Asia	2.7	2.8	2.8	2.8	2.8	2.8	2.9	3.0	2.8	2.9
Americas	5.8	5.7	5.5	5.4	5.2	5.4	5.3	5.3	5.6	5.3
Middle East	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.2	3.1
Africa	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Processing Gains	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.1	2.3	2.3
Total OPEC	n/a	n/a	n/a	33.7	33.0	32.1	30.7	30.4	n/a	31.5
Crude	n/a	n/a	n/a	28.5	27.8	27.0	25.6	25.4	n/a	26.4
Natural gas liquids NGLs	5.4	5.4	5.4	5.3	5.2	5.1	5.1	5.1	5.4	5.1
Call on OPEC crude and stock change *	30.2	30.2	28.8	28.8	30.5	29.4	27.7	27.3	29.5	28.7

NOTE: Figures are in million of barrels per day. (*) equals total demand minus non-OPEC supply and OPEC natural gas liquids.
IEA changed the way it measures OPEC supply, adopting the industry-standard approach of counting most of Venezuela's Orinoco heavy oil as "crude oil."
SOURCE: International Energy Agency

To contact the reporter on this story: Kristian Siedenburg in Vienna at ksiedenburg@bloomberg.net

IEA: April Crude Oil Production in OPEC Countries (Table)
2022-05-12 08:00:00.0 GMT

By Kristian Siedenburg
(Bloomberg) -- Following is a summary of oil production in OPEC countries from the International Energy Agency in Paris:

	April 2022	March 2022	April MoM
Total OPEC	28.67	28.62	0.05
Total OPEC10	24.47	24.22	0.25
Algeria	1.00	1.00	0.00
Angola	1.18	1.14	0.04
Congo	0.27	0.26	0.01
Equatorial Guinea	0.10	0.09	0.01
Gabon	0.19	0.20	-0.01
Iraq	4.42	4.33	0.09
Kuwait	2.65	2.64	0.01
Nigeria	1.23	1.25	-0.02
Saudi Arabia	10.40	10.28	0.12
UAE	3.03	3.03	0.00
Iran	2.55	2.58	-0.03
Libya	0.90	1.10	-0.20
Venezuela	0.75	0.72	0.03

NOTE: Figures are in million of barrels per day. Monthly level change calculated by Bloomberg. Production data excludes condensates.
OPEC10 excludes Iran, Libya and Venezuela.
SOURCE: International Energy Agency

To contact the reporter on this story: Kristian Siedenburg in Vienna at ksiedenburg@bloomberg.net

IEA REPORT WRAP: Russia Shuts Oil Output; 2022 Demand Unrevised
2022-05-12 08:33:53.625 GMT

By Stephen Voss
(Bloomberg) -- Summary including stories from IEA's monthly
Oil Market Report on Thursday:
* IEA says Russia oil revenue up 50% this year despite boycott
** Russian shut-in nearly 1m b/d production in April
** Reorientation of trade flows already under way
** Global demand forecast for 2022 unrevised at 99.4m b/d
** Still, y/y demand growth slows to 1.9mb/d in 2Q vs 4.4m in 1Q
* Click here for summary of key IEA supply/demand forecasts
* OPEC crude output edged up 50k b/d in April: IEA
** Saudi, Iraq gains offset Libyan decline
** See full table
* Compliance with pledged target cutbacks in April:
** OPEC-10 162%; non-OPEC 330%
** Combined OPEC+ 19 nations 223%
** Compliance keeps rising as more countries can't deliver
planned production increases

** Saudi Arabia 106%, Russia 337%
* Russia oil exports in April rose on India, Turkey flows
* Russia's low fuel exports worsen market tightness
* US supply growth revised down on tight oilfield services
* Global refining runs to rise by 4.7m b/d as stockpiles fall
* Jet fuel recovery hampered by slump in Russia and China
* TABLE: IEA's quarterly supply/demand forecasts
* NOTE: OPEC is due to issue its own monthly report later Thursday
* NOTE: At another quick meeting on May 5, the OPEC+ alliance continued its policy of gradual monthly supply increases, reviving output halted during the pandemic. It meets next on June 2

--With assistance from Grant Smith, Christopher Sell, Rachel Graham, Sherry Su, Kristian Siedenburg and Jack Wittels.
To contact the reporter on this story:
Stephen Voss in London at sev@bloomberg.net

Russia Oil Revenue Up 50% This Year Despite Boycott, IEA Says
2022-05-12 08:00:00.29 GMT

By Grant Smith
(Bloomberg) -- Russia's oil revenues are up 50% this year even as trade restrictions following the invasion of Ukraine spurred many refiners to shun its supplies, the International Energy Agency said.
Moscow earned roughly $20 billion each month in 2022 from combined sales of crude and products amounting to about 8 million barrels a day, the Paris-based IEA said in its monthly market report.
Russian shipments have continued to flow even as the European Union edges towards an import ban, and international oil majors such as Shell Plc and TotalEnergies SE pledge to cease purchases. Asia has remained a keen customer, with China and India picking up cargoes no longer wanted in Europe.
READ: Russian Crude Keeps Flowing While Europe Wrangles Over Sanctions
The IEA, which advises major economies, kept its outlook for world oil markets largely unchanged in the report. Global fuel markets are tight and may face further strain in the months ahead as Chinese demand rebounds following a spate of new Covid lockdowns, it said.
Reduced flows of Russian refined products such as diesel, fuel oil and naphtha have aggravated tightness in global markets, the agency noted. Stockpiles have declined for seven consecutive quarters, with reserves of so-called middle

distillates at their lowest since 2008.
But for all the disruption, Moscow has continued to enjoy a financial windfall compared with the first four months of 2021. Despite the EU's public censure of the Kremlin's aggression, total oil export revenues were up 50% this year.
The bloc remained the largest market for Russian exports in April, taking 43% of the country's exports, the IEA said.
Still, there are signs of Russia's resilience starting to fray.
Supplies were down 1 million barrels a day last month, and these losses could triple in the second half of the year, the agency estimates. EU sanctions against Russian state-linked enterprises such as production giant Rosneft PJSC will take effect on May 15, and the bloc is moving towards a full ban on the country's supplies.
"If agreed, the new embargoes would accelerate the reorientation of trade flows that is already underway and will force Russian oil companies to shut in more wells," the IEA said.

To contact the reporter on this story:
Grant Smith in London at gsmith52@bloomberg.net
To contact the editors responsible for this story:
James Herron at jherron9@bloomberg.net
Christopher Sell

IEA World Oil Supply/Demand Key Forecasts
2022-05-12 08:00:00.3 GMT

By Kristian Siedenburg
(Bloomberg) -- World oil demand 2022 forecast was unrevised at 99.4m b/d in Paris-based Intl Energy Agency's latest monthly report.
* 2021 world demand was unrevised at 97.5m b/d
* Demand change in 2022 est. 1.8% y/y or 1.8m b/d
* Non-OPEC supply 2022 was unrevised at 64.5m b/d
* Call on OPEC crude 2022 was unrevised at 29.5m b/d
* Call on OPEC crude 2021 was unrevised at 28.7m b/d
** OPEC crude production in April rose by 50k b/d on the month to 28.67m b/d
* Detailed table: FIFW NSN RBRARJGFR4SG <GO>
* NOTE: Fcasts based off IEA's table providing one decimal point

To contact the reporter on this story:
Kristian Siedenburg in Vienna at ksiedenburg@bloomberg.net
To contact the editors responsible for this story:

Joshua Robinson at jrobinson37@bloomberg.net
Mark Evans

OPEC Crude Output Edged Up 50k B/d in April on Saudi, Iraq: IEA
2022-05-12 08:00:00.38 GMT

By Christopher Sell
(Bloomberg) -- OPEC's April crude output rose by 50k b/d to 28.67m b/d, the IEA said in its monthly report, with higher flows from Gulf producers Saudi Arabia and Iraq offsetting a substantial drop in Libya.
* Saudi Arabia pumped 10.4m b/d, up 120k b/d
* Iraq rose by 90k b/d to 4.42m b/d
* Kuwait inched up 10k b/d to 2.65m b/d, while UAE held steady at 3.03m b/d
* Production in Libya dropped by 200k b/d to 900k b/d due to political unrest
** Following Russia, it was the second-biggest decrease among the broader OPEC+ group for the month
* Output in Iran eased to 2.55m b/d from 2.58m b/d
** Negotiations between Tehran and the West to revive the 2015 nuclear deal have been on hold since March
* Dwindling spare capacity and reduced operational efficiency saw Nigeria and Angola combined pump nearly 800k b/d below April's output target
* OPEC's compliance with OPEC+ output-cuts deal was 162% for April

To contact the reporter on this story:
Christopher Sell in London at csell1@bloomberg.net
To contact the editors responsible for this story:
James Herron at jherron9@bloomberg.net
Brian Wingfield

Russia Oil Exports in April Rose on India, Turkey Flows: IEA
2022-05-12 08:00:00.19 GMT

By Rachel Graham
(Bloomberg) -- Russian oil exports rose by 620k b/d in April to 8.1m, back to the January-February average, the IEA said in its monthly Oil Market Report.
* EU share of Russian exports was 43% in April, down from 50% at the start of the year, the IEA estimates based on Kpler data

** US and UK had a combined share of 9% at the start of the year and that fell to zero in April
** Drop to EU, US and UK was mainly offset by increases to India and Turkey
* For diesel, Russian exports fell by 60k b/d m/m to 815k in April and by 155k vs pre-war average
* NOTE: Bloomberg tanker-tracking data showed an increase in Russian oil exports in April, with Urals rising by half a million barrels a day
* READ, May 11: Europe's Snub of Russian Oil Opens Door for OPEC's Minor Players

To contact the reporter on this story:
Rachel Graham in London at rgraham13@bloomberg.net
To contact the editors responsible for this story:
James Herron at jherron9@bloomberg.net
Helen Robertson

Low Russia Exports Worsening Fuel Market Tightness: IEA
2022-05-12 08:00:00.11 GMT

By Jack Wittels
(Bloomberg) -- Limited spare capacity in the global refining system and reduced exports of Russian fuel oil, diesel and naphtha have aggravated tightness in oil product markets, the IEA said in its monthly Oil Market Report.
* Oil product markets have now seen seven consecutive quarters of stock draws
** "While a first tranche of SPR releases halted the precipitous decline in OECD industry stocks in March, crude made up the majority of it and product stocks have continued to fall"
** "Notably, middle distillate reserves reached their lowest levels since April 2008"
* In April, diesel and gasoline cracks surged to record levels, pulling up refinery margins and end-user prices
* "Soaring pump prices and slowing economic growth are expected to significantly curb the demand recovery through the remainder of the year and into 2023"

To contact the reporter on this story:
Jack Wittels in London at jwittels1@bloomberg.net
To contact the editors responsible for this story:
Alaric Nightingale at anightingal1@bloomberg.net
Fred Pals

IEA Revises Down US Supply Growth on Tight Oilfield Services
2022-05-12 08:00:00.4 GMT

By Sherry Su
(Bloomberg) -- The IEA revised down its US light tight oil growth forecast for 2022 by 90k b/d due to greater than expected weather effects at the start of the year, an extremely tight oilfield services sector and a recent slowdown in completions, according to its monthly Oil Market Report.
* "With output projected to rise by 1.1m b/d on average to 8.3m b/d, continued tightness in oilfield services and supply chains could limit any upside," the IEA said
** Still, it noted that that "frack spreads, rigs and labor availability should allow for growth over the course of the year"
** Total U.S. output in 2022 is now forecast to average 17.9m b/d due to the revision
* US onshore oil rigs rose by 71, or 15%, year-to-date through April
* There are 210 more oil rigs drilling from a year ago, up 61%
* Historically, the market structure should spur the construction of new capacity, but there has been structural under-investment in the sector since the 2015 price crash; after years of lackluster performance shareholders are pushing for higher returns, according to the report
** "As slack is taken out of the system, prices will continue to increase, leading shale producers to think twice about adding margin dilutive rigs"

To contact the reporter on this story:
Sherry Su in London at lsu23@bloomberg.net
To contact the editors responsible for this story:
Alaric Nightingale at anightingal1@bloomberg.net
Brian Wingfield

Global Refining Runs to Rise by 4.7M B/d as Stockpiles Fall: IEA
2022-05-12 08:00:00.12 GMT

By Rachel Graham
(Bloomberg) -- Global refinery runs will increase by by 4.7m b/d from April to August, helping to replenish rapidly depleting inventories, the IEA said in its monthly Oil Market Report.
* NOTE: That's up from an estimate of 4.4m b/d in last month's report

* The increase will come mostly from China, Europe and the US
* There is a risk that US refiners may not be able to run at the high rates assumed in that forecast and there could also be delays to new capacity coming online elsewhere
** Russian runs slid by 310k b/d to 4.9m b/d in April, the lowest since 2011; the cumulative drop from February is almost 1m b/d
* The growth in 3Q throughput is forecast to require crude oil stockpile draws of about 1.5m b/d
* Global crude runs forecast at 82m b/d in 3Q, up from 79.4m b/d in 2Q; full 2022 figure estimated at 80.8m

To contact the reporter on this story:
Rachel Graham in London at rgraham13@bloomberg.net
To contact the editors responsible for this story:
Alaric Nightingale at anightingal1@bloomberg.net
Helen Robertson

Jet Fuel Recovery Hampered by Slump in Russia and China: IEA
2022-05-12 08:00:00.18 GMT

By Jack Wittels
(Bloomberg) -- The collapse in Russian commercial flights, combined with a drop in air traffic in China, is slowing the recovery in global demand for jet fuel, the IEA said in its monthly Oil Market Report.
* In China, air traffic fell to just over 3k flights a day in April vs 11k in February
* "While traffic within these countries and to their neighbors will be slow to recover, passenger and flight numbers continue to rise gradually elsewhere"
* IEA forecasts steady gains for global jet/kerosene demand throughout 2022, at 820k b/d y/y
* Total global jet/kerosene use should reach 6m b/d, lagging 2019 levels by 1.9m b/d
* Also see latest OIL DEMAND MONITOR

To contact the reporter on this story:
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Rachel Graham

https://www.linkedin.com/pulse/what-does-current-global-energy-crisis-mean-investment-fatih-birol/?trackingId=TF5PQAkaTSOIzjSJghDWaA%3D%3D&utm_content=buffera8119&utm_medium=social&utm_source=twitter-ieabirol&utm_campaign=buffer

What does the current global energy crisis mean for energy investment?

Fatih Birol

Fatih Birol

Executive Director at International Energy Agency (IEA)

Published May 13, 2022

As well as causing a grave humanitarian crisis, Russia's unprovoked **invasion of Ukraine** has had far-reaching impacts on the global energy system, disrupting supply and demand patterns and fracturing long-standing trading relationships.

It has pushed up energy prices for many consumers and businesses around the world, hurting households, industries and entire economies – most severely in the developing world where people can least afford it. And it threatens to derail efforts to tackle the world's critical challenge of reducing global greenhouse emissions quickly enough to avoid catastrophic climate change. We cannot allow tackling climate change to become yet another victim of Russia's aggression.

The global energy crisis and market tumult set off by Russia's actions have significantly complicated the picture for governments, companies and investors as they try to determine what energy projects to encourage, develop or fund. As the leading global authority responsible for energy security and the clean energy transition, the IEA has been providing the data, analysis and policy advice to help decision-makers around the world – especially governments – make well-informed choices on energy investments that support secure and affordable energy supplies while driving down emissions.

We will publish a range of new insights next month in our **World Energy Investment 2022** report, which will take into account the rapid changes the global energy system has experienced since last year's edition, and the upheaval of the past few months in particular. These issues are at the heart of consequential deliberations taking place around the world today – in government ministries, parliamentary debates, company shareholder meetings and at international gatherings, including the World Economic Forum Annual Meeting in Davos later this month.

A world falling short on climate goals and reliable energy supplies

Even before Russia's invasion of Ukraine, the world was far off track from achieving its shared energy and climate goals. Global CO2 emissions **reached an all-time high** in 2021, and fuel markets were already **showing signs** of strain. At the same time, investment in clean energy technologies has remained far below the levels that are needed to bring emissions down to net zero by mid-century – a critical but formidable challenge that the world needs to overcome if it is to have any chance of limiting global warming to 1.5 C.

Positive steps were taken at the COP26 Climate Change Conference in Glasgow in November – and the amount of clean energy spending in governments economic recovery plans **is increasing** – but we are not yet seeing the massive level of policy and investment efforts worldwide that would be needed to move us onto a net zero pathway. Governments, companies and

investors all need to do much more – and fast – in order to bring more affordable and clean energy into the system.

At the same time, Russia's invasion of Ukraine appears likely to lead to a substantial and prolonged reduction in Russian energy supplies, most notably to Europe. Russia was the world's largest oil and natural gas exporter in 2021. The disruption has thrown energy markets into turmoil and created major energy security and energy poverty risks worldwide today.

Investing to strengthen energy security and reach net zero

A key question is what today's energy crisis means for fossil fuel investments if we are still to achieve our collective climate goals. Are today's sky-high fossil fuel prices a signal to invest in additional supply or a further reason to invest in alternatives?

In the IEA's landmark **Roadmap to Net Zero Emission by 2050** published in May 2021, the analysis indicated that a massive surge in investment in renewables, energy efficiency and other clean energy technologies could drive declines in global demand for fossil fuels on a scale that would as a result require no investment in new oil and gas fields.

The need for this clean energy investment surge is greater than ever today. As the IEA has repeatedly stated, the key solution to today's energy crisis – and to get on track for net zero emissions – is a dramatic scaling up of energy efficiency and clean energy.

The supply disruptions triggered by Russia's war

Russia's invasion of Ukraine has brought major disruptions to the global energy system. Taking these into account, it is clear to us that any immediate shortfalls in fossil fuel production from Russia will need to be replaced by production elsewhere – even in a world working towards net zero emissions by 2050.

On the production side, the most suitable options for this are projects with short lead times and quick payback periods. This includes, for example, shale oil and gas (which can be brought to market quickly), extending production from existing fields, and making use of natural gas that is currently flared and vented.

Some new infrastructure may also be needed to facilitate the diversification of supply away from Russia. For example, many European countries are looking to install LNG import terminals and, with careful investment planning, there are opportunities for these to facilitate future imports of hydrogen or ammonia.

However, we must not lose sight of the fact that lasting solutions to today's crisis lie in reducing demand via the rapid deployment of renewables, energy efficiency and other low emissions technologies, as highlighted in the IEA's recent **10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas**. This includes making the most of nuclear power in countries around the world that see a role for it in their energy mix.

Nobody should imagine that Russia's invasion can justify a wave of new large-scale fossil fuel infrastructure in a world that wants to limit global warming to 1.5 C. We understand why some countries and companies are looking to move ahead with the exploration and approval of large longer-term supply projects. But it typically takes many years for such projects to start producing, so

they are not a good match for our immediate energy security needs. Long-lived assets also carry a dual risk of locking in fossil fuel use that would prevent the world from meeting its climate goals – or of failing to recover their upfront development costs if the world is successful in bringing down fossil demand quickly enough to reach net zero by mid-century.

The repercussions of today's turmoil

The higher near-term emissions we are witnessing today have serious consequences for our efforts to meet our climate goals. They need to be compensated for through even greater emissions reductions in the coming decades to remain within the stringent emissions budgets required to reach net zero by 2050. Today's crisis risks passing an even larger environmental challenge to our younger and future generations – and it is imperative that we strive to make the additional burden as light as possible rather than adding to it.

The extraordinary financial windfall for the oil and gas sector from today's high prices could provide a major boost to clean energy investment. Global net income from oil and gas production in 2022 is anticipated to be nearly $2 trillion higher than in 2021 and two-and-a-half times the average of the past five years, according to new IEA analysis for our **World Energy Investment 2022** report that will be published in June. If the global oil and gas industry were to invest this additional income in low emissions fuels, such as hydrogen and biofuels, it would fund all of the investment needed in these fuels for the remainder of this decade in the Net Zero Emissions by 2050 Scenario. For oil and gas producing economies, this could be a once-in-a-generation opportunity to diversify their economic structures to adapt to the new global energy economy that is emerging.

There are many ways to respond to the immediate energy crisis that can pave the way to a cleaner and more secure future. I believe the world does not need to choose between solving the energy crisis and the climate crisis – and it cannot afford to ignore either of them.

https://www.reuters.com/world/eus-borrell-says-coordinator-trip-iran-was-positive-2022-05-13/

May 13, 20221:30 PM MDTLast Updated 20 hours ago

EU says talks with Iran 'positive enough' to reopen nuclear negotiations

By John Irish

High Representative of the European Union for Foreign Affairs and Security Policy Josep Borrell attends a news conference, as Russia's invasion of Ukraine continues, in Kyiv, Ukraine, April 8, 2022. REUTERS/Janis Laizans/File Photo

WEISSENHAUS, Germany, May 13 (Reuters) - The European Union on Friday said it believed it had breathed fresh life into stalled efforts to revive the 2015 Iran nuclear deal, but both Iran and the United States put the onus on the other to compromise and there was no date set for new talks.

The EU's foreign policy chief said he believed there had been enough progress during consultations between his envoy and Iranian officials in Tehran this week to relaunch nuclear negotiations after two months of deadlock.

Talks to revive Iran's 2015 nuclear deal with world powers have been on hold since March, chiefly over Tehran's insistence that Washington remove the Islamic Revolutionary Guard Corps from the U.S. list of designated terrorist organisations.

Speaking as Enrique Mora, the EU diplomat who coordinates the talks, returned to Europe from Tehran, Josep Borrell said Iran's response had been "positive enough" after Mora had delivered a message that things could not continue as they were.

"These things cannot be resolved overnight," Borrell told reporters at a G7 foreign ministers' meeting in Germany. "Let's say the negotiations were blocked and they have been de-blocked", with the prospect of "reaching a final agreement".

The broad outline of the deal that aims to revive the accord which restrains Iran's nuclear programme in return for relief from economic sanctions was essentially agreed in March.

However, it has since been thrown into disarray after last-minute Russian demands and the dispute over the U.S. Foreign Terrorist Organization (FTO) list.

Western officials are largely losing hope that it can be resurrected, sources familiar with the matter have said, forcing them to weigh how to limit Iran's atomic programme even as Russia's invasion of Ukraine has divided the big powers.

"It has gone better than expected - the negotiations were stalled, and now they have been reopened," Borrell said.

A senior EU official sounded a more cautious tone.

"We still have difficult obstacles on the way for an agreement," he told reporters, adding that at least Iran and the U.S. remained engaged. A second EU official said no date was set for resuming indirect talks, which have taken place in Vienna.

Iranian Foreign Minister Hossein Amirabdollahian said Mora’s trip was a chance to explore how to settle the remaining issues.

"A good and reliable agreement is within reach if the United States makes a political decision and adheres to its commitments," he said.

A U.S. State Department spokesperson said there was no certainty of a deal.

"Iran needs to decide whether it insists on extraneous conditions and whether it wants to conclude a deal quickly ... It's now up to Iran," said the U.S. spokesperson on condition of anonymity.

Asked if Iran still demanded the removal of the IRGC from the FTO list the U.S. spokesperson replied: "We are not negotiating in public but the bottom line is that there is no deal and no certainty of one." read more

A French diplomatic source said on Thursday he saw little chance of the United States agreeing to remove Iran's elite security force from its list of foreign terrorist organisations any time soon.

Mora was in Tehran this week in what has been described as the last chance to salvage the 2015 accord, which then U.S. President Donald Trump withdrew from in 2018. Britain, China, France, Germany and Russia are also parties to the accord.

Additional reporting by Parisa Hafezi in Dubai, Kirstie Knolle in Berlin, Robin Emmott in Brussels; Arshad Mohammed in Saint Paul, Minn. and Paul Carrel Editing by Kirsten Donovan and Alistair Bell

SAF Group created transcript of excerpt of comments from Dyala Sabbagh (Partner & COO, Gulf Intelligence) and Rustin Edwards (Head, Fuel Oil Procurement, Euronav NV) on Gulf Intelligence Podcast: Daily Energy Markets May 11th. https://soundcloud.com/user-846530307/podcast-daily-energy-markets-may-11th

Items in "*italics*" are SAF Group created transcript

Sabbagh. "*… how worried should we be about the impact of the commodities getting much more expensive on emerging markets and the forecasts by all intense is that this is another supercycle and nothing is going to stop it?*"

Edwards. "*I would tend to agree that, or disagree with that we are entering another supercycle. I think the inflationary pressures are going to curtail a supercycle. We're going to see a pull back before we have any restart of a supercycle I wouldn't be surprised that by Q4 we have a much dramatically lower crude oil price akin to what it happened in 2008 and 2018 when the markets went into a major recession, we had a wholesale collapse from $147 down to $30 dollars. I think that the demand destruction is going to be massive. It's already being felt. You've had unprecedented, I mentioned earlier, in a lot of developing nations, because the price of energy, the price of commodities, and the soon to happen price of food is going to really put a lot of people into a distress situation. You already have the UK, a developed nation, talking about a cost of living crisis and how they are trying to tackle the cost of food and high cost of energy for their general populous. And that's just going to keep rolling on. I don't see how we get out of this inflated asset bubble until we actually get a retracement down, recession hits, revalue and then we move forward."*

Sabbagh. "*do you see that spreading to the US or are we going to see that mostly in emerging markets, economies and Europe?"*

Edwards. "*I think if you look at from a timeline. The way I have it in my mind its going to hit the European Union first and then it's going to roll in the United States. European Union will probably slow down Q3, Q4. Then the US will probably be Q4, Q1. It will be a domino effect. It's all predicated on the fact we've had inflationary pressures since the beginning of 2021 when freight rates went thru the roof on containerized goods supply chains got dislocated with the Covid outbreaks. And now it just keeps on rolling forward. I don't see any relief here in the near future*."

Prepared by SAF Group https://safgroup.ca/news-insights/

Oil price outlook – Snapshot: May 9, 2022

Disclaimer: Please note that BNEF does not offer investment advice. Clients must decide for themselves whether current market prices fully reflect the issues discussed in this note.

Category	Indicator	Signal	Comment
Fundamentals	**Refinery margins**	⇔	• Refinery margins were mixed over the past week, holding on to substantial gains accumulated from the past six weeks of growth.
	Crude stocks	↓	• In the week ending April 29, land crude-oil storage levels in BloombergNEF's tracked regions (U.S., ARA, Japan) rose by 0.3% to 534.9 million barrels (m bbl). The stockpile **deficit** against the five-year average (2015-19) **narrowed from 91.2m bbl to 88.9m bbl**. • Including global floating crude stockpiles from the same week, total crude oil inventories increased by 0.7% to 639.5m bbl, with the stockpile **deficit narrowing from 42.1m bbl to 34.9m bbl.**
	Product stocks	⇔	• In the week ending April 29, gasoline and light distillate stockpiles in BNEF's tracked regions (U.S., ARA, Singapore, Japan and Fujairah) were down 0.1m bbl week-on-week to 269.7m bbl, with the stockpile **deficit** against the three-year average (2017-19) **narrowing from 8.2m bbl to 6.3m bbl**. Gasoil and middle distillate stockpiles in BNEF's tracked regions fell by 1.8% to 131.8m bbl, with the stockpile **deficit** against the three-year average **widening from 38.7m bbl to 40.8m bbl**. • Total oil product stockpiles in tracked regions increased by 0.6% to 881.4m bbl, with the stockpile **deficit** against the three-year seasonal average **narrowing from 74.6m bbl to 71.4m bbl**. Altogether, crude and product stockpiles grew by 0.6% to 1,520.9m bbl, with the stockpile **deficit narrowing from 116.6m bbl to 106.2m bbl.**
	Demand indicators	↑	• In the week to May 3, global jet fuel demand from commercial passenger flights rose by 119,300 barrels per day (or +2.6%) week-on-week to 4.78 million barrels per day. Jet fuel consumption by international passenger departures was up by 50,900 barrels per day (or +2.0%) week-on-week, while consumption by domestic passenger departures increased by 68,500 barrels per day (or +3.3%). • The global mobility index grew slightly over the past week, despite there being national holidays in several Asian countries, and continued to sit at the highest level since March 2020, according to BNEF's calculation based on Google data. The global mobility index rose by 0.6% in the week to May 4, as growth in Europe (+2.1%) and the Americas (+2.4%) outweighed the decline in Asia Pacific ex-China (-1.1%). Meanwhile, TomTom's peak congestion data showed strong growth in Europe (+8.1%), a slight decline in the Americas (-0.3%) and a dip in Asia Pacific ex-China (-21.8%) during this same period. Road congestion in China's key 15 cities decreased by 10.1 percentage points to 90.7% of January 2021 levels in the week to May 4, according to BNEF's calculation based on Baidu data, although the data skewed due to the extended Labor Day holiday. • Daily average Covid-19 cases fell by 16% to 514,000 in the week to May 7. The Asia Pacific number fell by 17% to 176,000 daily cases, with China dropping by 37% to 19,000 daily cases. Europe was down 23% to 218,000 daily cases, while the Americas rose by 22% to 103,000 daily cases.
Financial	**Macro indicators**	↓	• The dollar index averaged at 103.4 over the past week, and was 0.7% higher than the week before. The index now sits at a 20-year high. The global manufacturing PMI fell to 52.2 in April, from 52.9 in March.
	Hedge fund positioning	↑	• In the week to May 3, Managed Money net positioning in the oil complex increased by 7.4m bbl (or +1.3%) week-on-week to 557.8m bbl and rose to the 26th percentile (versus the 22nd percentile last week) of the past five years.
	Options chains and volatility	⇔	• There was a notable increase in open interest for Brent and WTI calls for the second half of the year. Brent and WTI 1M volatility skews fell over the past week.
Outlook	**Weekly call**	↑	• BNEF is bullish on oil prices for the week ahead, with Brent Jul-22 trading at $109.93/bbl and WTI Jun-22 trading at $107.22/bbl at the time of writing. Oil demand has stayed strong, with the global mobility index growing slightly over the past week and sitting at the highest level since March 2020. In addition, jet fuel demand from commercial passenger flights rose by 2.6% week-on-week as Asia Pacific, the Middle East and the Former Soviet Union (FSU) countries drove growth. Flight departures in the Eurocontrol area stood at 85% of the equivalent week in 2019 (unchanged from last week), while passenger throughput in the U.S fell to 88% of the equivalent week in 2019 (versus 91% last week). A combination of rising oil prices and a stronger U.S. dollar could accelerate the pace of oil demand destruction, particularly in developing countries. Nigeria, for example, became the first country to ground flights due to high jet fuel prices. However, oil demand could be less price elastic during the peak summer travel season, concealing the effects of demand destruction. European Union sanctions on Russian oil, if introduced, could keep flat prices supported in the meantime, as EU-27 oil inventories are already at precarious levels. BNEF has examined the implications of the EU's plans here.

Past outlooks

Disclaimer: Please note that BNEF does not offer investment advice. Clients must decide for themselves whether current market prices fully reflect the issues discussed in this note

Date of report	Refinery margins	Crude stocks	Product stocks	Demand indicators	Commitment of traders	Options chain and volatility	BNEF week ahead call	Brent/WTI price at time of writing ($/bbl)	Web Link
May 9	⇔	↓	⇔	↑	↑	⇔	↑	Brent-Jul: 109.93 WTI-Jun: 107.22	
May 2	↑	⇔	↑	↑	⇔	⇔	↑	Brent-Jul: 103.87 WTI-Jun: 101.25	
April 25	↑	↑	⇔	↓	↑	⇔	⇔	Brent-Jul: 101.31 WTI-Jun: 97.39	
April 18	↑	↓	⇔	↑	↓	↓	⇔	Brent-Jun: 111.97 WTI-Jun: 106.31	
April 11	↑	↓	⇔	↓	↓	↓	↓	Brent-Jun: 98.34 WTI-May: 93.69	
April 4	↑	↑	⇔	↑	↓	↓	↑	Brent-Jun: 104.71 WTI-May: 99.73	
March 28	↑	⇔	⇔	⇔	↑	↓	⇔	Brent-Jun: 109.53 WTI-May: 105.58	
March 21	⇔	⇔	⇔	↓	↓	⇔	⇔	Brent-May: 112.35 WTI-May: 107.56	
March 14	↑	↑	↑	⇔	↓	↓	⇔	Brent-May: 108.66 WTI-Apr: 104.77	
February 28	⇔	⇔	⇔	↑	⇔	⇔	⇔	Brent-May: 99.00 WTI-Apr: 96.38	
February 21	⇔	⇔	↑	↑	⇔	⇔	↑	Brent-May: 91.50 WTI-Apr: 90.17	
February 14	↑	⇔	↑	↑	↓	⇔	↑	Brent-Apr: 93.75 WTI-Mar: 92.46	
February 7	↑	↑	⇔	↑	⇔	⇔	⇔	Brent-Apr: 92.83 WTI-Mar: 91.43	
January 31	↑	⇔	⇔	↑	↓	⇔	↑	Brent-Apr: 89.17 WTI-Mar: 87.55	

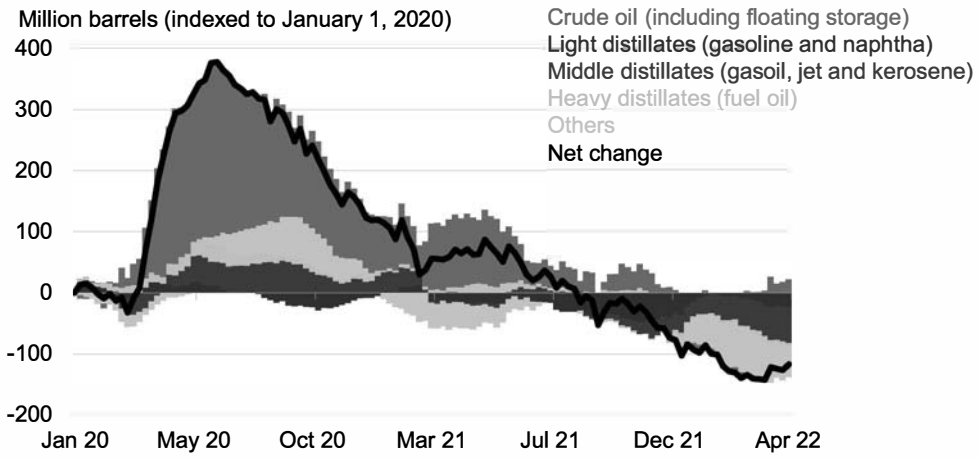
To view past reports on terminal, go to NI BNEFOIL, search for the report and click on the icon to the far right:

BloombergNEF

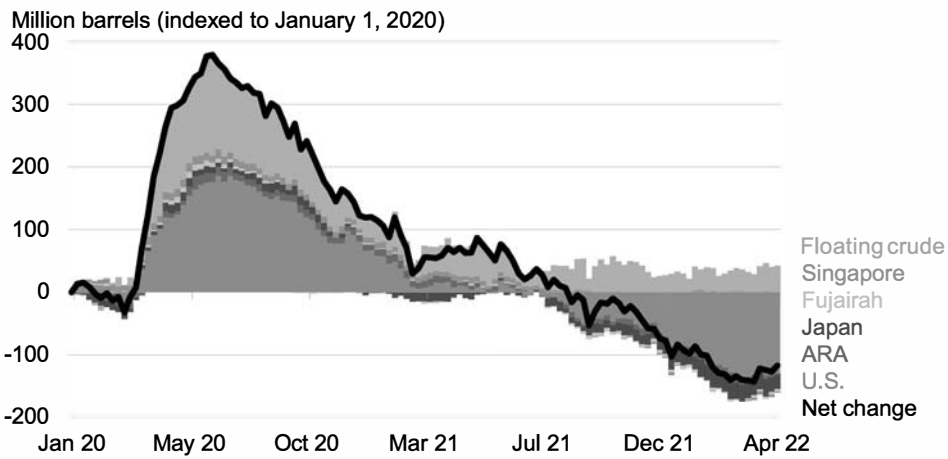
Weekly oil inventories

Middle distillate stockpile trends lower

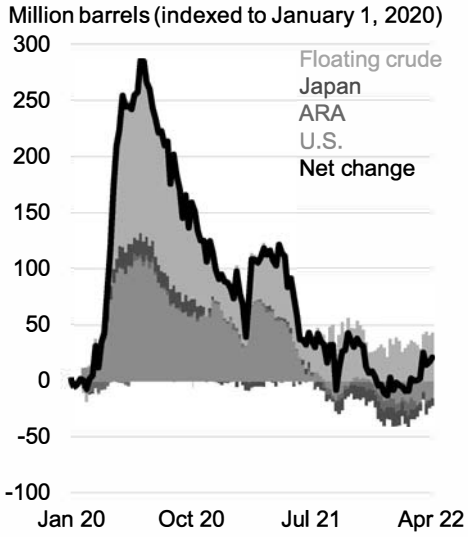
Weekly oil inventories by type



Weekly oil inventories by region

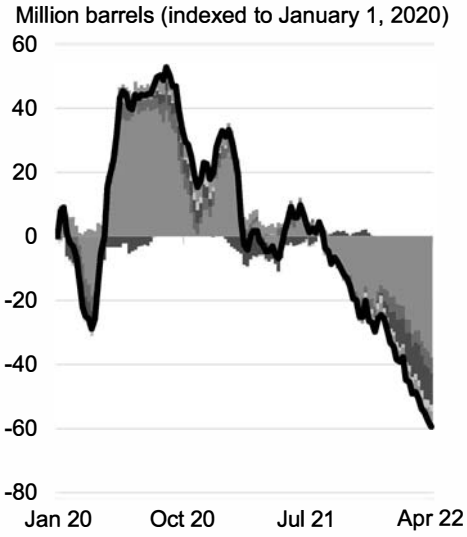


Crude inventories

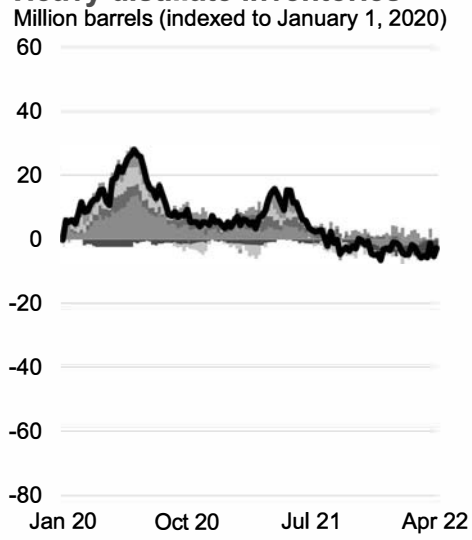


Light distillate inventories

Middle distillate inventories



Heavy distillate inventories



*Source: BloombergNEF, U.S. EIA, PJK, IE Singapore, FEDCom/Platts, PAJ ,Vortexa, Genscape. As of the week ending **April 29, 2022**.*

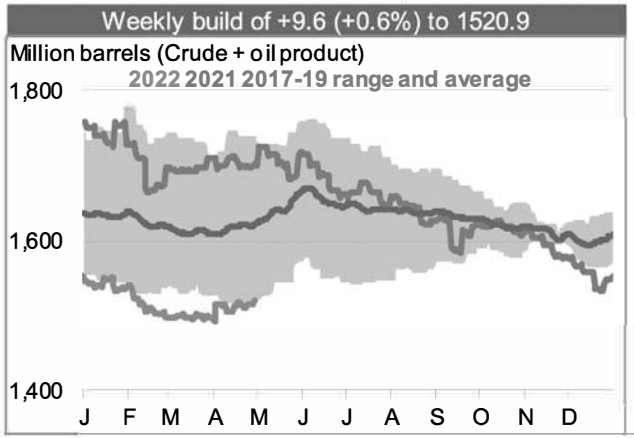
Aggregated oil stockpiles

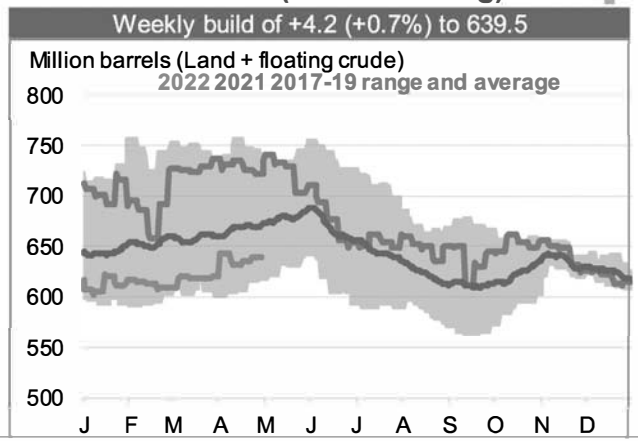
Note: We will continue to compare current inventory levels with the three-year (2017-19) seasonal average for the time being. Crude inventory data for Shandong teapots were excluded since January 10.

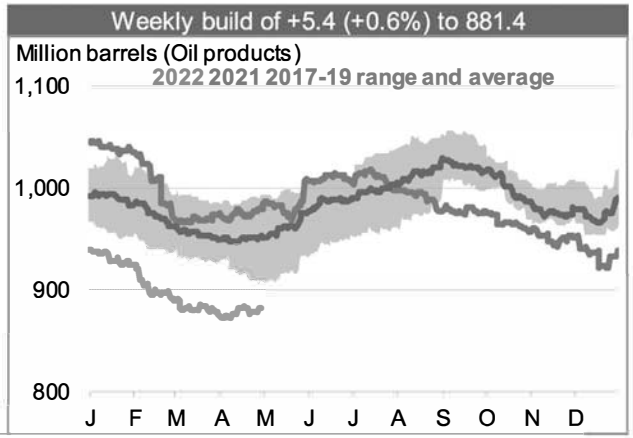
Bearish: Stockpiles deficit narrowed from 116.6m bbl to 106.2m bbl

- Charts below use the **2017-19** (three-year) seasonal stockpiles. All calculations are recalibrated to measure against their respective three-year seasonal averages, so the values below might differ from the previous slides.
- Land crude inventories include the U.S., ARA, Japan and Shandong Teapots. Floating storage data are global. Oil product storage includes the U.S., ARA, Japan, Singapore, Shandong Teapots and Fujairah. Floating crude inventories may have been adjusted since the previous report – see slide 8 for further info.

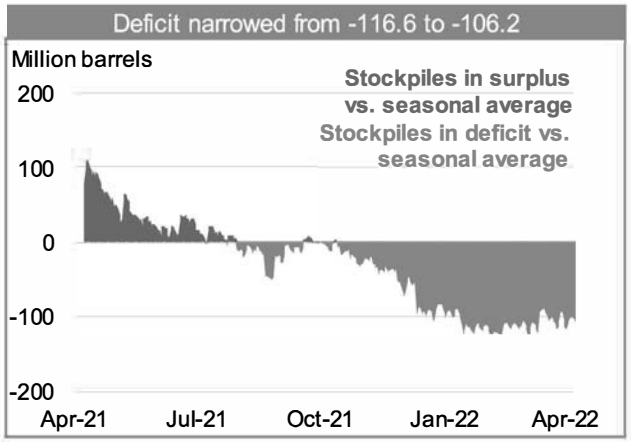
Total oil and product stocks = **Total crude stocks (land + floating)** + **Total oil product stockpiles**

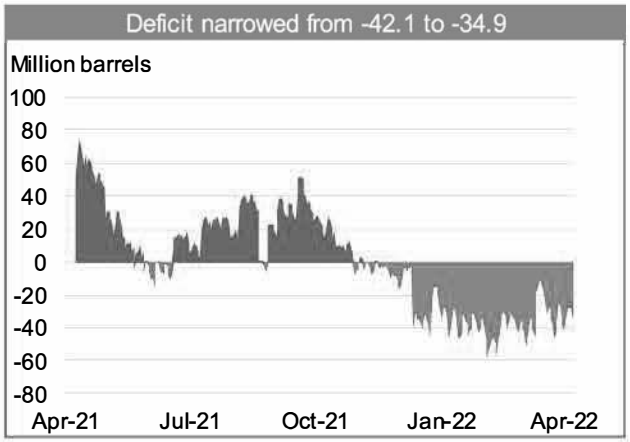


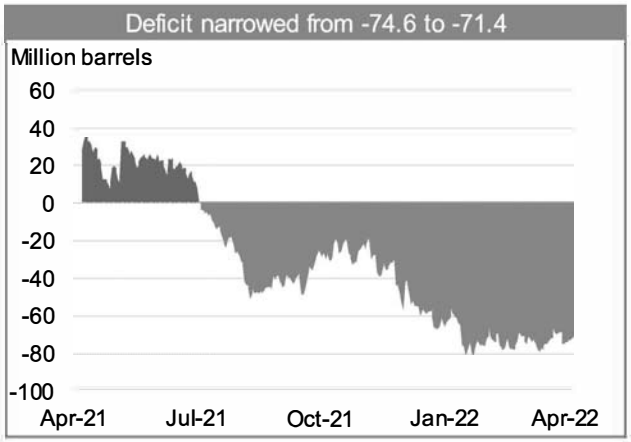




Charts below subtract current stockpiles by the 2017-19 (three-year) seasonal average







*Source: BloombergNEF, U.S. EIA, PJK, IE Singapore, FEDCom/Platts, PAJ ,Vortexa, Genscape, SCIG. As of the **week ending April 29, 2022.***

BloombergNEF

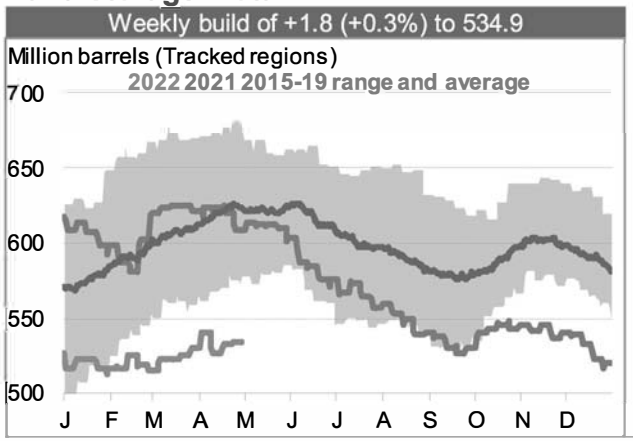
Crude stocks: Land

Note: We will continue to compare current inventory levels with the three-year (2017-19) seasonal average for the time being. Crude inventory data for Shandong teapots has been excluded since January 10.

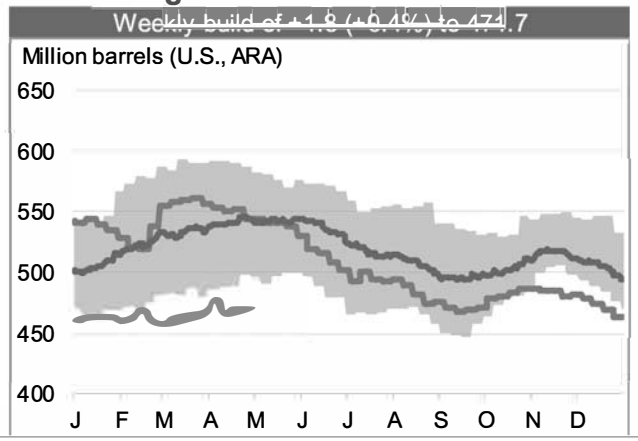
Neutral: Deficit narrowed from 91.2m bbl to 88.9m bbl against the seasonal average

- Crude inventory rises when supply outstrips demand (meaning more physical oil is available than is needed). High or rising inventories are therefore a bearish factor for oil prices. Every year, storage levels fluctuate due to seasonal demand trends. The intra-year directional movement of stockpile levels is somewhat predictable, yet the magnitude of movement can differ significantly from expectations.
- A useful way to gauge if the intra-year storage levels differ from the norm is to measure the difference between the current and seasonal average inventory levels.

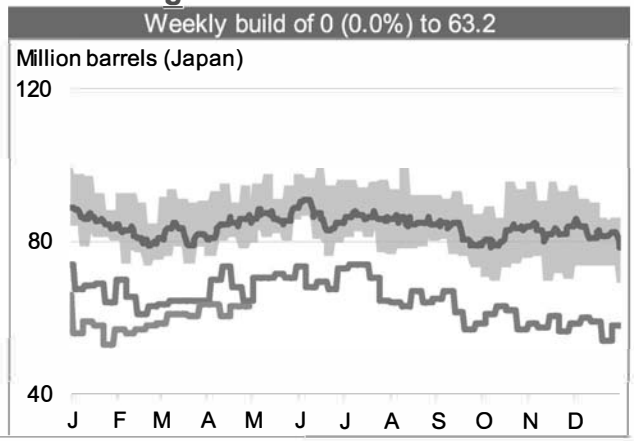
Land storage: Total



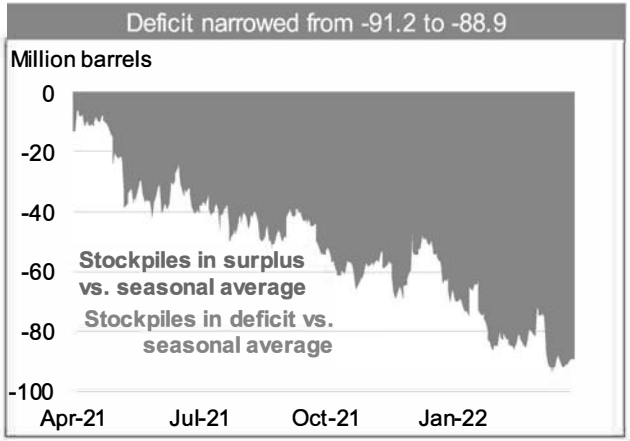
Land storage: West of Suez

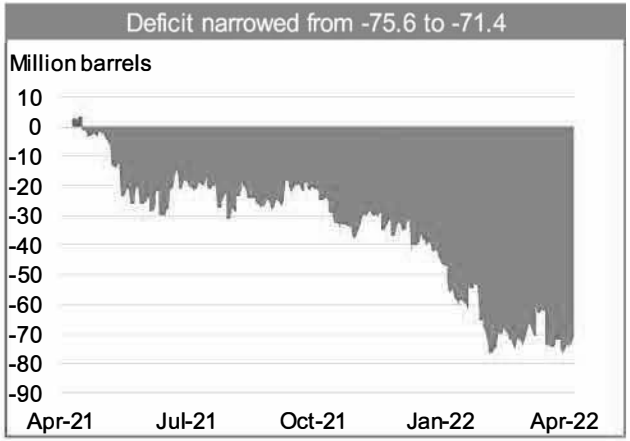


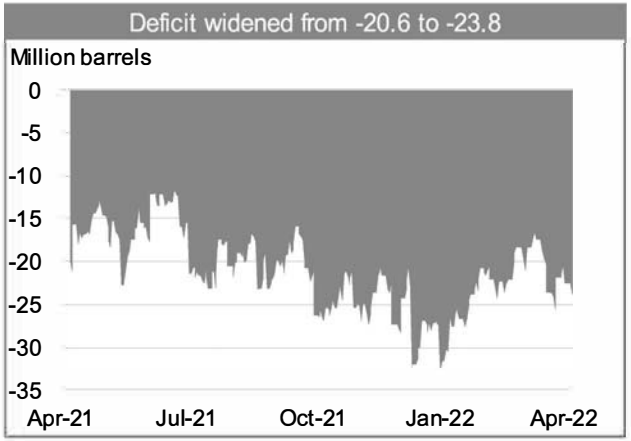
Land storage: East of Suez



Charts below subtract current stockpiles by the 2015-19 (five-year) seasonal average







*Source: BloombergNEF, U.S. EIA, Genscape, PAJ, SCIG. Note: As of the **week ending April 29, 2022.***

BloombergNEF

Crude stocks: Floating

Neutral: Surplus narrowed slightly

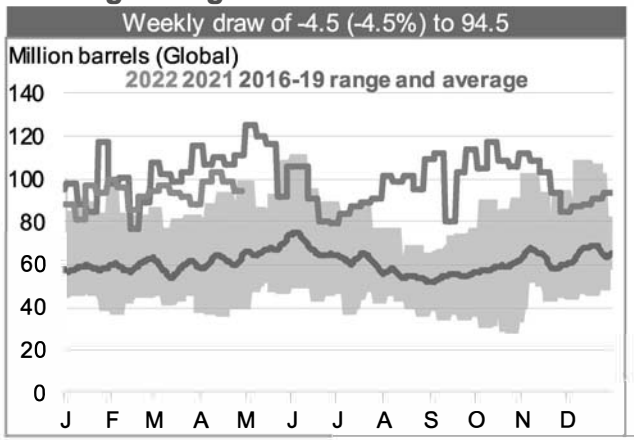
- Floating storage is only profitable if the strength of contango (future vs. prompt price) is greater than the tanker costs. Therefore, tankers become floating storage when the profit from a storage play exceeds the cost of the forward freight agreement (FFA).
- The floating storage data used in the "Oil Price Outlook" slide is for the previous week (ie, the week before the latest data shown below). That data are available in the table to the right.

Vortexa's revision to global floating crude inventories

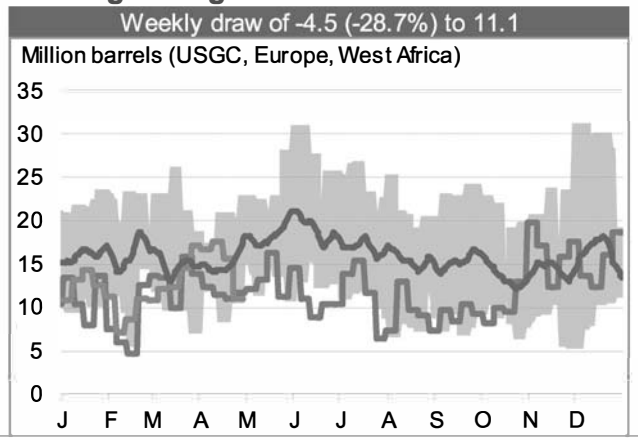
Million barrels	Previous report	Current report	Vortexa's revision
Inventories in week of April 29	94.5	**104.6***	+10.1
Inventories in week of April 22	99.0	102.3	+3.3

*Note: *Figure used to aggregate total oil inventories on page 8.*

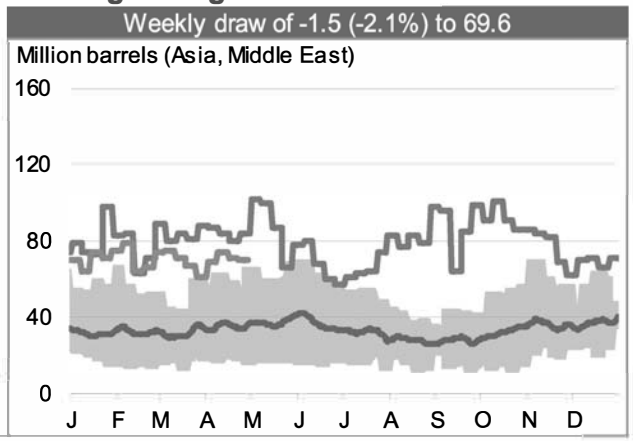
Floating storage: Total



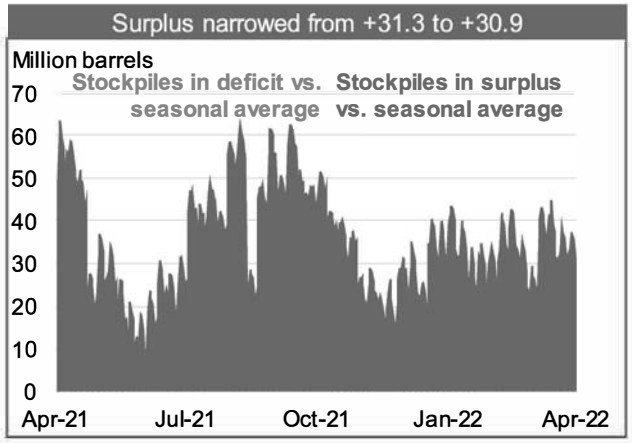
Floating storage: West of Suez

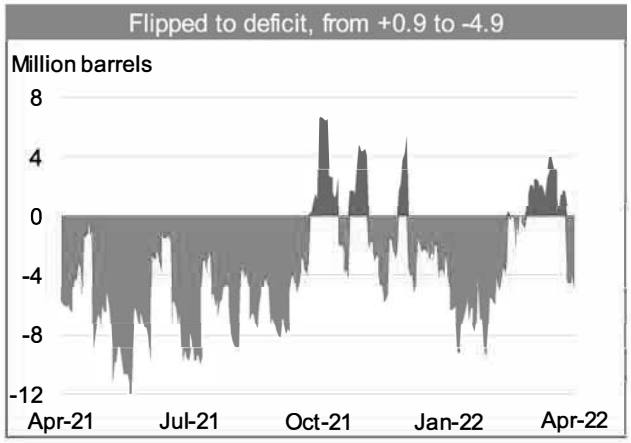


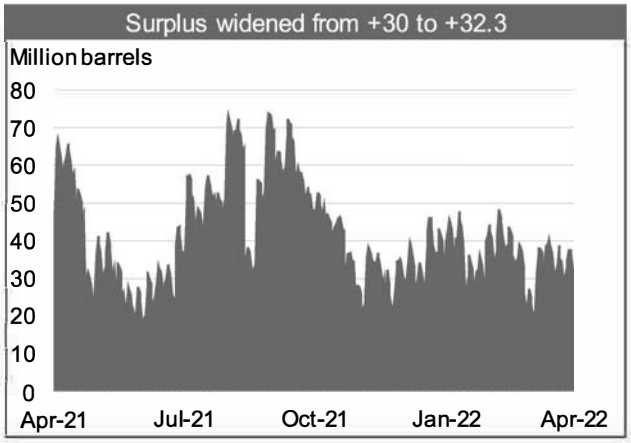
Floating storage: East of Suez



Charts below subtract current stockpiles by the 2016-19 (four-year) seasonal average







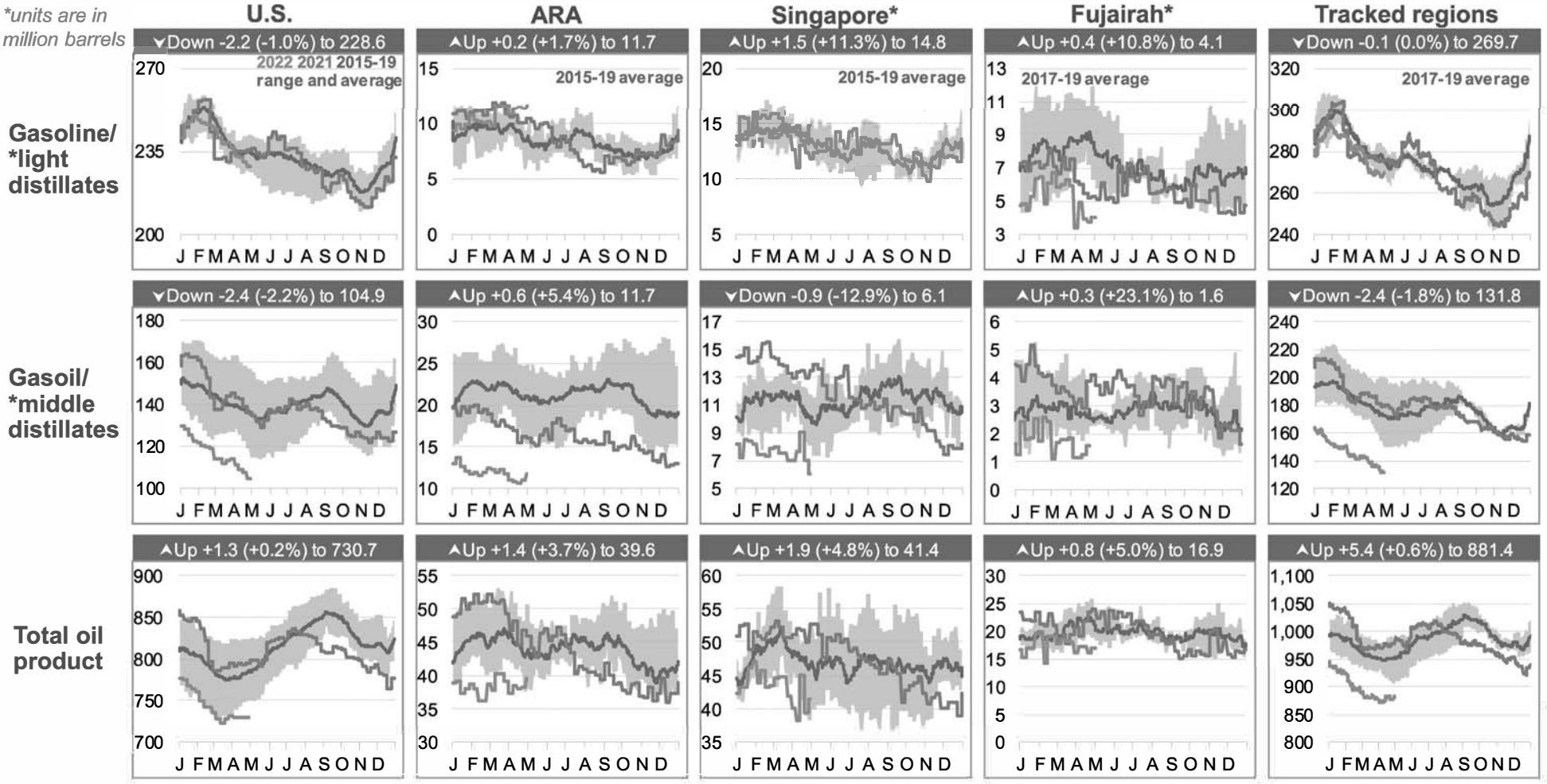
*Source: BloombergNEF, Vortexa. Note: As of the **week ending May 6, 2022**. **Raw data from Vortexa are revised frequently, so the data in this report might change week-to-week.***

Product stocks: Current vs. seasonal average

Neutral: Oil product stockpiles in tracked regions rose by 0.6% week-on-week

- Chart legend are as follows: 2021, 2020 and the 2015-19 range and average. For Fujairah and tracked regions, the **2017-19 (three-year) seasonal range** is shown. Tracked regions include U.S., ARA, Singapore, Japan and Fujairah

**units are in million barrels*



*Source: BloombergNEF, U.S. EIA, PJK, IE Singapore, FEDCom/Platts, PAJ. Note: As of the **week ending April 29, 2022.***

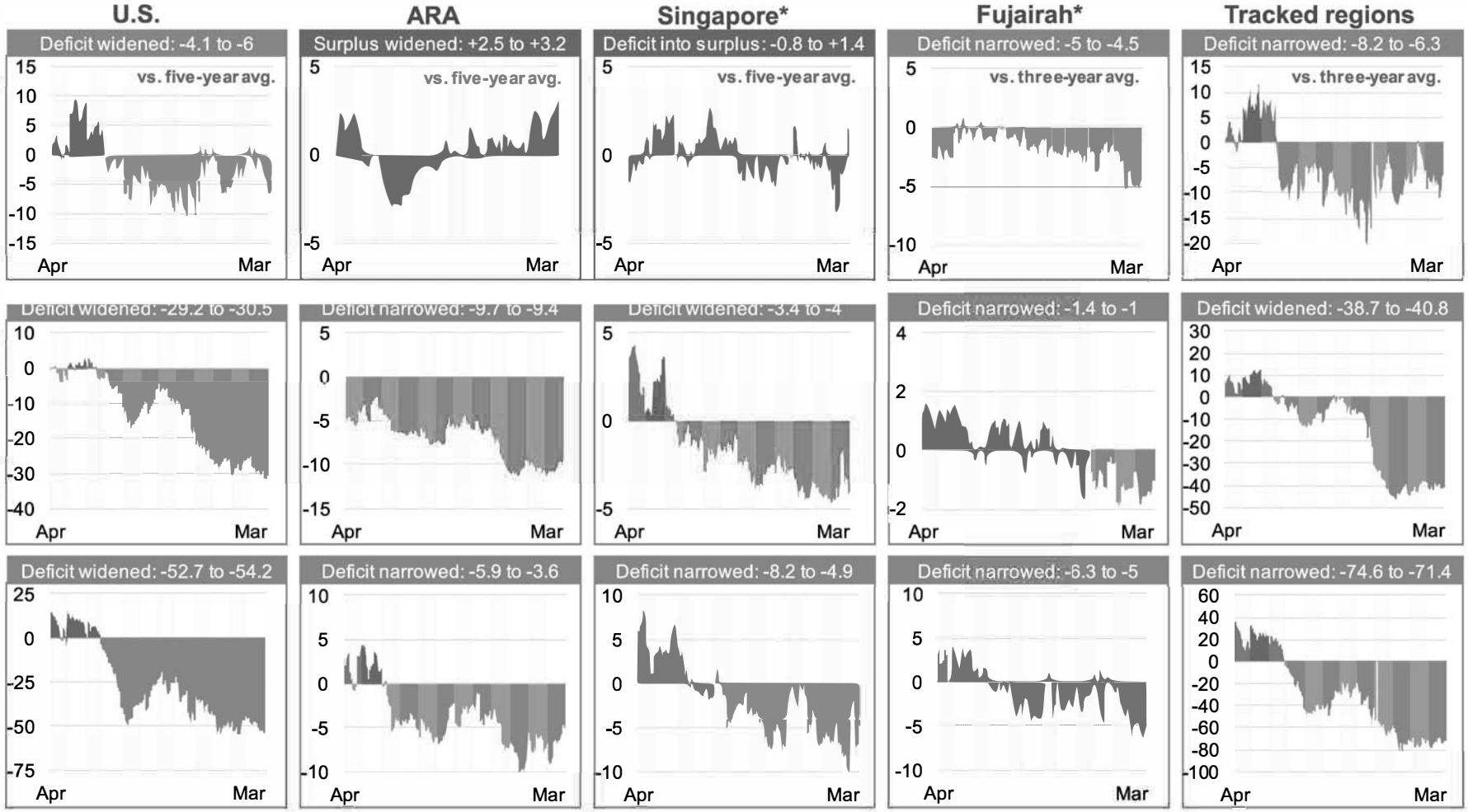
BloombergNEF

Product stocks: Current vs. seasonal average

Neutral: Oil product stockpile deficit against the seasonal average narrowed from 74.6m bbl to 71.4m bbl

- The charts below compare each respective regional product stockpile level against the seasonal average defined in the previous slide.
- **Red** signifies that the current stockpile levels are higher (in surplus) than the seasonal average, while **green** signals that the current stockpiles are lower (in deficit).

**units are in million barrels*



*Source: BloombergNEF, U.S. EIA, PJK, IE Singapore, FEDCom/Platts, PAJ. Note: As of the **week ending April 29, 2022.***

BloombergNEF

May 12, 2022 12:26:02

OIL DEMAND MONITOR: Europeans Fly More While Covid Grips China

- Rome, Berlin saw highest Monday traffic levels in many months
- Heathrow passenger numbers climb to highest since early 2020

By Stephen Voss

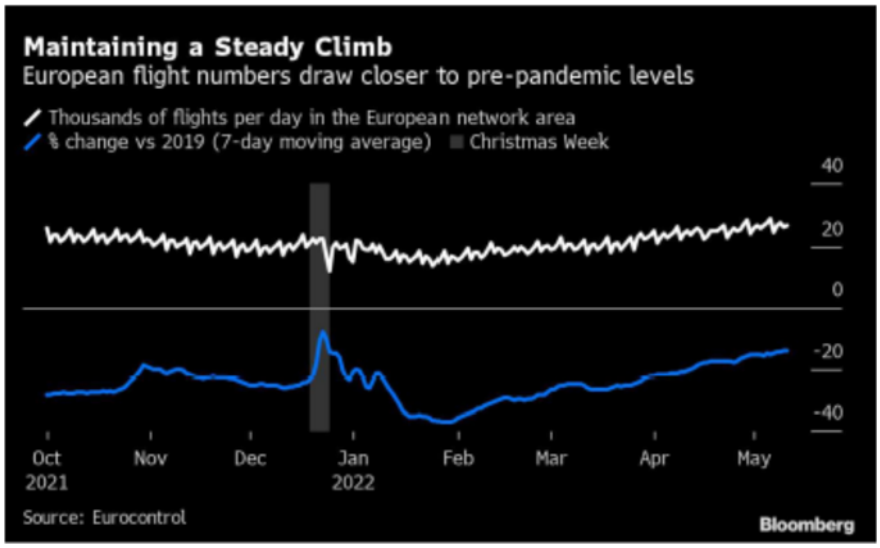
(Bloomberg) -- Airline activity is picking up, especially in Europe where coronavirus restrictions are fading, while India is setting the pace when it comes to a recovery in driving and gasoline demand.

The number of commercial flights worldwide has risen about 8% over the past month to more than 95,000, according to a seven-day average tracked by FlightRadar24. The tally now lags 2019 by 17%.

And while international flights to and from China remain rare due to Covid-19 restrictions, Europe's industry is steadily improving. The number of passengers passing through London's Heathrow airport topped 5 million in April, for the first time since February 2020.

When one includes all flights, including private jets, military and government planes, drones and helicopters, the worldwide tally counted by FlightRadar24 exceeds 2019 by about 5%, though this data set is more erratic.

European flight numbers are steadily grinding higher, according to daily tracking by Eurocontrol, which helps coordinate traffic. The count is now only 14% below equivalent 2019 levels, compared with a deficit of 37% in late January when daily infection levels were peaking in the continent.



Another way of measuring the airline business is estimating the number of seats offered by airlines on scheduled planes. OAG Aviation puts the global figure for this at 90.7 million seats for the week commencing May 9, which is about 17% below 2019 -- the same percentage as the FlightRadar data. The total number of seats rose 2% in the past week alone, mainly because of an increase in the Chinese domestic market.

There are five broad geographical regions out of 17 that currently show seat capacity higher than 2019 levels: Central-West Africa, Central Asia, Central America, Upper South America and North Africa, the OAG data shows.

The North East Asia region fares worst, lagging 2019 levels by 32%, mainly because international trips to and from China remain heavily restricted, even when domestic journeys resume. North America and Western Europe are down by 10% and 14%, respectively.

The International Energy Agency said earlier Thursday that the collapse in Russian commercial flying, plus the ongoing drop in air traffic in China, is slowing the recovery in global demand for jet fuel.

Road Fuels in India

Indian demand for all oil products in April was slightly above the equivalent month in 2019, government data show. That's also true for diesel and gasoline sales in the country, according to a separate Bloomberg survey of refinery officials. Higher pump prices are preventing further gains in demand for now, they said. Jet fuel remains the main laggard, down 19% from two years ago, before the pandemic. India is the third-largest oil consumer after the U.S. and China.

In contrast, estimated gasoline demand in the U.S. was about 12% below the 2019 level for the week ended May 6, and U.K. sales figures have consistently lagged a pre-pandemic baseline by a few percentage points for many months.

Elsewhere, major European cities showed the strongest level of congestion in a long while, according to data collected from in-car navigation devices by TomTom NV. Monday morning traffic at 8 a.m. in Rome and Berlin was the busiest since Dec. 13 while London, Paris and Madrid had the highest congestion levels since Mondays in the middle of March.

London, Berlin and Rome all showed higher congestion than the average for that time of the week back in 2019, by 14%, 9% and 2%, respectively. The other 10 cities regularly tracked in this monitor had lower-than-2019 levels.

Government data on U.K. vehicle use is more delayed than the TomTom traffic information, with the latest numbers still showing a dip for the May Day public holiday weekend.

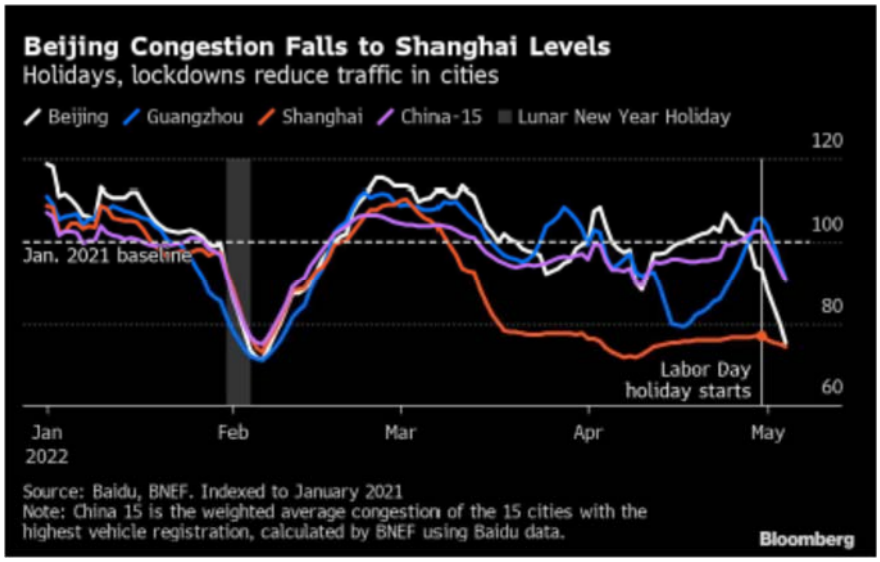
Switching to broader monthly data for Europe shows an increase in road use in Spain from March to April. The volume of traffic using toll roads in Spain last month was down only about 3% from the equivalent period of 2019, while the March reading was down 11%, according to data from motorway operator Atlantia Group.

There were smaller monthly changes for France and Italy, though collectively the three European countries all show toll road activity down from 2019 by between about 2.5% and 5%. Atlantia also collects similar toll road data for Brazil, Chile and Mexico, which were up from the pre-pandemic period by between about 8% and 11 %.

The toll road readings coincide with airline activity data in showing that Central and South America have rebounded to pre-pandemic levels more quickly than Western Europe.

Beijing Impact

Road congestion in Chinese cities showed a dip for last week, during the Labor Day holiday. The decline was much more pronounced in Beijing, however, where congestion as of May 4 had fallen to similar readings as Shanghai, where a coronavirus lockdown has been in force for more than a month, confining millions to their homes. Measures are now becoming stricter in Beijing too, with taxis being restricted from access to certain parts of the capital seeing an uptick in Covid-19 cases.



Still, industry consultant 0ilChem expects gasoline consumption in China to rise about 7% in May as lockdown measures will probably ease, encouraging drivers to make more short trips. The increase will leave this month's demand some 17% below a year earlier, while April's demand was down 21% from the prior year. Independent refiners, often referred to as teapots, will probably increase processing rates this month while maintenance will reduce activity at state-run refineries, Oilchem said.

The Bloomberg weekly oil-demand monitor uses a range of high-frequency data to help identify emerging trends.

Following are the latest indicators. The first three tables shows fuel demand and road congestion, the next shows air travel globally and the fifth is refinery activity:

Demand Measure	Location	% y/y	% vs 2020	% vs 2019	% m/m	Freq	Latest Date	Latest Value	Source
Gasoline	U.S.	-1.1	+18	-12	-0.4	w	May 6	8.7m b/d	EIA
Distillates	U.S.	-4.8	-1.1	-3.1	+8.4	w	May 6	3.78m b/d	EIA
Jet fuel	U.S.	+12	+309	-17	-10	w	May 6	1.44 b/d	EIA
Total oil products	U.S.	+10	+14	-5.8	+2.5	w	May 6	19.2m b/d	EIA
All motor vehicle use index	U.K.	+18	+74	-20	-14	w	May 2	80	DfT
Car use	U.K.	+15	+98	-17	-6.7	w	May 2	83	DfT
Heavy goods vehicle use	U.K.	+2.4	-39	-57	-59	w	May 2	43	DfT
Gasoline (petrol) avg sales per filling station	U.K.	+3.5	+166	-4.8	+1.1	w	May 1	6,943 liters/d	BEIS
Diesel avg sales per station	U.K.	-4.6	+96	-10	unch	w	May 1	9,388 liters/d	BEIS

Total road fuels sales per station	U.K.	-1.3	+121	-7.9	+0.5	w	May 1	16,331 liters/d	BEIS
China 15 cities congestion	China				+1.2	d	May 2	97	Baidu / BNEF
Gasoline	India	+20	+196	+16	+2.1	2/m	April 1-30	2.58m tons	Bberg
Diesel	India	+13	+136	+2.1	+0.3	2/m	April 1-30	6.70m tons	Bberg
LPG	India	+5.1	+4.8	+17	-9.1	2/m	April 1-30	2.21m tons	Bberg
Jet fuel	India	+29	+818	-19	+5.1	2/m	April 1-30	500k tons	Bberg
Total Products	India	+12	+99	+1.6	-4	m	April	18.6m tons	PPAC
Toll roads volume	France	+62		-4.9		m	April	n/a	Atlantia
Toll roads volume	Italy	+42		-2.4		m	April	n/a	Atlantia
Toll roads volume	Spain	+64		-2.8		m	April	n/a	Atlantia
Toll roads volume	Brazil	+19		+7.9		m	April	n/a	Atlantia
Toll roads volume	Chile	+66		+11		m	April	n/a	Atlantia
Gasoline	Portugal	+62	+61	+27	+46	m	March	105k tons	ENSE
Diesel	Portugal	+39	+44	+26	+36	m	March	504k tons	ENSE
Jet fuel	Portugal	+275	+20	-21	+16	m	March	87k tons	ENSE
Total fuel sales	Italy	+14		+3.2	+15	m	March	4.48m tons	Ministry
Gasoline	Italy	+33		+4.6	+15	m	March	619k tons	Ministry
Diesel /gasoil	Italy	+14		+3.5	+14	m	March	2.34m tons	Ministry
Jet fuel	Italy	+156		-30	+33	m	March	238k tons	Ministry

Toll roads volume	Mexico	+14		+11		m	April	n/a	Atlantia
Gasoline	Spain	+31			+11	m	April	496 m3	Exolum
Diesel (and heating oil)	Spain	+17			+2.9	m	April	2273k m3	Exolum
Jet fuel	Spain	+239			+29	m	April	503k m3	Exolum
Road fuel sales	France	+2.7			+11	m	March	4.144m m3	UFIP
Jet fuel	France	+93		-26	+23	m	March	507k m3	UFIP
Gasoline	France	+14				m	March	n/a	UFIP
Road diesel	France	-0.7				m	March	n/a	UFIP
All petroleum products	France	+6.7		+0.8	+11	m	March	4.771m tons	UFIP
All vehicles traffic	Italy	+35			+4.5	m	April	n/a	Anas
Heavy vehicle traffic	Italy	-2.1			-12	m	April	n/a	Anas

Notes: Click here for a PDF with more information on sources, methods. The frequency column shows w for data updated weekly, 2/m for twice a month and m for monthly. The column showing "vs 2020" is used for some data, such as comparing Indian fuel demand for Feb. 2022 vs Feb. 2020.
In DfT U.K. daily data, which is updated once a week, the column showing versus 2019 is actually showing the change versus the first week of February 2020, to represent the pre-Covid era.
In BEIS U.K. daily data, which is updated once a week, the column showing versus 2019 is actually showing the change versus the average of Jan. 27-March 22, 2020, to represent the pre-Covid era.
Atlantia is publishing toll road data on a monthly basis, rather than the weekly format seen in 2021, and DoT has also switched to monthly data after the week ended April 3.

City Congestion:

Measure	Location	% chg vs avg 2019	% chg m/m	May 9	May 2	Apr. 25	Apr. 18	Apr. 11	Apr. 4	Mar. 28	Mar. 21	Mar. 14
		(for May 9)		Congestion minutes added to 1 hr trip at 8am* local time								
Congestion	Tokyo	-23	+2	29	15	32	31	28	31	34	8	36
Congestion	Taipei	-61	-48	14	11	21	25	26	3	50	34	31
Congestion	Jakarta	-46	-36	21	zero	40	40	33	31	37	30	29
Congestion	Mumbai	-60	-24	19	16	22	23	25	23	22	22	22
Congestion	New York	-8	+4	29	21	27	13	28	32	30	28	29
Congestion	Los Angeles	-15	+35	30	31	31	25	22	27	19	29	29
Congestion	London	+14	+140	43	2	38	1	18	23	36	40	44
Congestion	Rome	+2	+19	50	46	zero	zero	42	37	33	35	43
Congestion	Madrid	-15	+614	30	zero	26	5	4	23	23	35	34
Congestion	Paris	-4	+13	43	14	21	1	38	39	37	39	46
Congestion	Berlin	+9	+91	37	29	28	1	19	30	26	26	25
Congestion	Mexico City	-22	+94	38	40	41	24	20	38	40	zero	39
Congestion	Sao Paulo	-32	-13	29	34	31	30	34	33	32	33	35

Source: TomTom. Click here for a PDF with more information on sources, methods.
* 9am statistics are used for Mumbai, rather than 8am. All other cities, including Sao Paulo, use 8am.
NOTE: m/m comparisons are May 9 vs April 11. Many European cities had Easter vacations on April 18, reducing traffic that day, and Italy had its Liberation Day holiday on April 25. TomTom has been unable to provide Chinese data since April 2021. Taipei and Jakarta were added to the table in December 2021.

Chinese City Congestion:

Measure	Location	% chg vs Jan. 2021	% chg m/m	% chg w/w	May 2	Apr. 25	Apr. 18	Apr. 11	Apr. 4	Mar. 28	Mar. 21	Mar. 14	Mar. 7	Feb. 28
		(comparisons for May 2)												
Congestion	Beijing	-16	-19	-20	84	105	101	92	104	95	98	108	112	114
Congestion	Guangzhou	-1	+3.1	+9.1	99	91	80	92	96	108	95	104	108	110
Congestion	Shanghai	-25	+1.8	-1.4	75	77	76	73	74	78	78	88	104	109
Congestion	China-15	-3	+1.2	-2.7	97	99	95	93	96	96	94	99	104	105

Source: BNEF calculations based on Baidu congestion data, showing a seven-day moving average indexed against a January 2021 baseline. China-15 is the weighted average of the 15 cities with the highest number of vehicle registrations. m/m comparisons are May 2 vs April 4.

Air Travel:

Measure	Location	y/y	vs 2 yrs ago	vs 2019	m/m	w/w	Freq.	Latest Date	Latest Value	Source
		changes shown as %								
Airline passenger throughput	U.S.	+42	+1046	-24	-0.7	+3.7	d	May 11	2.03m	TSA
Commercial flights	Worldwide	+23	+196	-17	+8.1	+0.6	d	May 11	95,209	FlightRadar24
All flights	Worldwide	+18	+136	+5.3	+11	+9	d	May 11	197,390	FlightRadar24
Air traffic (flights)	Europe			-14	+7.2	+1.3	d	May 11	27,112	Eurocontrol
Seat capacity	Worldwide	+46	+190	-17	+6.5	+2	w	May 9-15	90.7m	OAG
Seat capacity	North America			-10		+0.7	w	May 9-15	n/a	OAG
Seat capacity	North East Asia			-32		+14	w	May 9-15	n/a	OAG
Seat capacity	South East Asia			-31		-1.2	w	May 9-15	n/a	OAG
Seat capacity	South Asia			unch		+0.3	w	May 9-15	n/a	OAG
Seat capacity	Western Europe			-14		-0.1	w	May 9-15	n/a	OAG
Seat capacity	Central America			+6.2		+0.5	w	May 9-15	n/a	OAG
Heathrow airport passengers	U.K.	+848	+2360	-25	+21		m	April 2022	5.08m	Heathrow

NOTE: Comparisons versus 2019 are a better measure of a return to normal for most nations, rather than y/y comparisons.
FlightRadar24 data shown above, and comparisons thereof, all use 7-day moving averages, except for w/w which uses single day data.

Refineries:

Measure	Location/area	y/y	chg vs 2019	m/m chg	Latest as of Date	Latest Value	Source
		Changes are in ppt unless noted					
Crude intake	U.S.	+4.5%	-4.3%	+1.1%	May 6	15.7m b/d	EIA
Apparent Oil Demand	China	+2.4%	+15%	-2.8	March 2022	13.33m b/d	NBS
Utilization	U.S.	+3.9	+1.1	unch	May 6	90 %	EIA
Utilization	U.S. Gulf	+5.6	+1.8	-0.2	May 6	93.9 %	EIA
Utilization	U.S. East	+12	+7.1	+9.9	May 6	91 %	EIA
Utilization	U.S. Midwest	+3.3	+0.4	+0.2	May 6	88 %	EIA

NOTE: All of the refinery data is weekly, except NBS apparent demand, which is usually monthly. Changes are shown in percentages for the rows on crude intake and Chinese apparent oil demand, while refinery utilization changes are shown in percentage points. SCI99 data on Chinese refinery run rates was discontinued in late 2021.

NOTE: The latest NBS m/m change shows March versus the average for January and February combined.

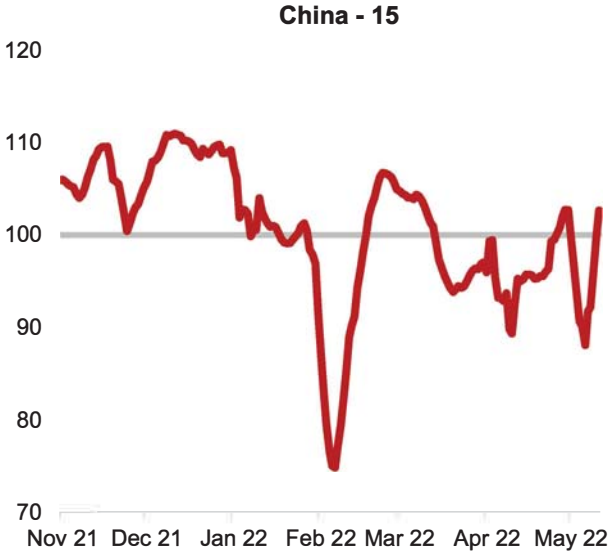
China (Baidu)

Congestion levels ramp up post Labor Day holidays

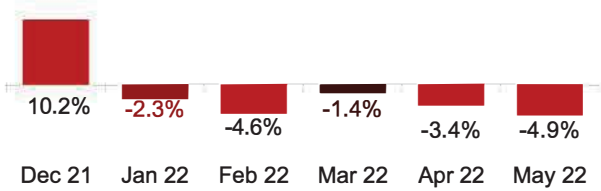
- City-level charts start from November 1, 2021. They display, in alphabetical order, the 15 cities with the highest number of vehicle registrations (excluding two- and three-wheelers). The China-15 congestion level is calculated by taking the weighted average of the congestion levels in the 15 cities and their vehicle registration numbers.

China congestion index (calculated from Baidu data)

Daily peak congestion levels, indexed to January 2021 (seven-day moving average)



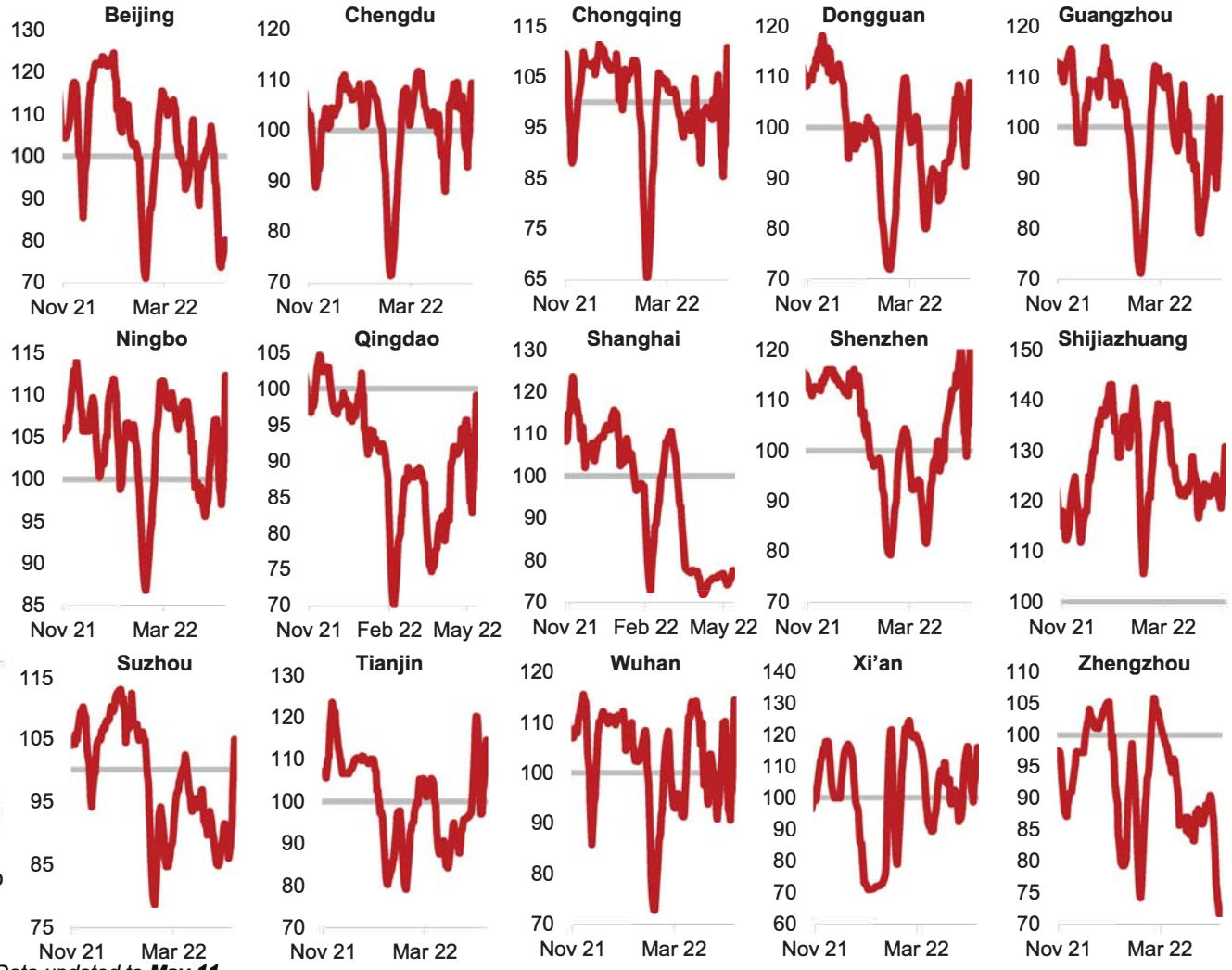
Monthly % change from January 2021 level



	Latest	Week Δ	Four-week Δ
China - 15	**102.64**	11.9 (+13.2%)	7.6 (+8.0%)

- In China, road traffic was up 11.9 percentage points to 102.64% of January 2021 levels. In April 2022, congestion levels are 3.4% lower than January 2021.

Daily peak congestion levels, indexed to January 2021 (seven-day moving average)



*Source: BloombergNEF, calculated from Baidu's data. Note: Data updated to **May 11.***

BloombergNEF

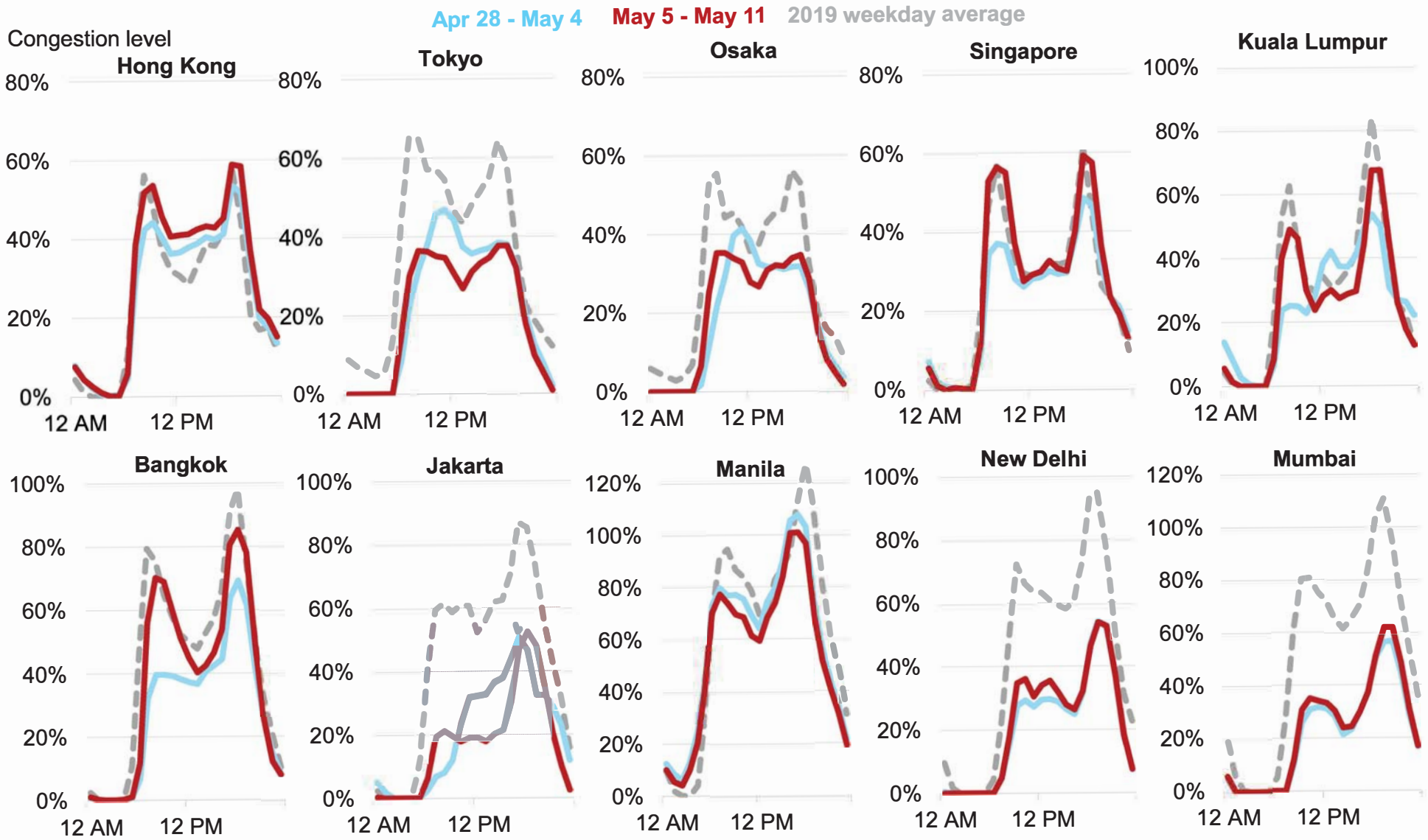
China's city-level data (Baidu)

- China's city-level congestion data are shown below. Data are available in the accompanying excel sheet.
- Congestion levels are compared against January 2021 levels. An index value below 100 indicates a decrease from January 2021 levels.
- Sparklines reflect the weekly congestion indices dating back to August 2021.

		January 2021 = 100	weekly point Δ	weekly percent Δ
Baoding	保定	102.74	13.50	15.12%
Beijing	北京	80.17	4.94	6.57%
Cangzhou	沧州	[illegible]	-76.15	-82.33%
Changchun	长春	94.31	11.36	13.69%
Changsha	长沙	109.78	16.82	18.09%
Changzhou	常州	106.74	8.94	9.14%
Chengdu	成都	109.42	13.10	13.60%
Chongqing	重庆	110.86	21.49	24.05%
Dali	大理	101.29	1.45	1.45%
Dalian	大连	103.67	8.53	8.96%
Datong	大同	104.66	7.80	8.05%
Dezhou	德州	100.02	4.01	4.18%
Dongguan	东莞	108.96	12.41	12.85%
Foshan	佛山	101.74	17.51	20.79%
Fuzhou	福州	114.25	15.48	15.67%
Ganzhou	赣州	106.37	1.51	1.44%
Guangzhou	广州	105.66	14.74	16.21%
Guilin	桂林	94.04	2.58	2.82%
Guiyang	贵阳	95.76	13.38	16.24%
Haikou	海口	95.76	9.21	10.64%
Handan	邯郸	97.54	3.88	4.15%
Hangzhou	杭州	116.36	26.13	28.96%
Harbin	哈尔滨	104.84	16.02	18.03%
Hefei	合肥	97.99	15.00	18.08%
Hengshui	衡水	97.22	5.70	6.23%
Hengyang	衡阳	94.40	4.89	5.46%
Huai'an	淮安	96.42	1.58	1.67%
Huhhot	呼和浩特	115.85	10.92	10.41%
Huizhou	惠州	100.96	7.78	8.35%
Huzhou	湖州	101.05	5.71	5.99%
Jiangmen	江门	102.22	5.58	5.78%
Jiaxing	嘉兴	94.32	5.17	5.80%
Jinan	济南	82.49	15.63	23.38%
Jinhua	金华	108.13	7.44	7.39%
Jining	济宁	92.85	3.44	3.85%
Kunming	昆明	98.43	11.88	13.73%
Langfang	廊坊	101.79	3.08	3.12%
Lanzhou	兰州	113.99	10.37	10.01%
Lasa	拉萨	99.52	2.51	2.59%
Leshan	乐山	91.22	6.30	7.42%
Lianyungang	连云港	98.66	2.50	2.60%
Linyi	临沂	99.24	16.49	19.93%
Liuzhou	柳州	93.10	3.44	3.84%
Luoyang	洛阳	95.38	1.39	1.48%
Maoming	茂名	97.73	6.14	6.70%
Mianyang	绵阳	93.92	4.83	5.42%
Nanchang	南昌	92.55	5.70	6.57%
Nanchong	南充	95.14	2.63	2.85%
Nanjing	南京	102.99	15.57	17.81%
Nanning	南宁	103.95	7.89	8.21%
Nantong	南通	101.28	10.12	11.10%
Nanyang	南阳	95.58	1.24	1.32%
Ningbo	宁波	112.32	13.53	13.69%
Qingdao	青岛	99.10	14.64	17.33%
Qingyuan	清远	99.04	4.17	4.40%
Qinhuangdao	秦皇岛	104.93	8.02	8.28%
Quanzhou	泉州	99.43	6.15	6.59%
Sanya	三亚	97.63	3.48	3.70%
Shanghai	上海	77.66	3.40	4.58%
Shantou	汕头	95.16	4.21	4.63%
Shaoguan	韶关	13.68	-61.58	-81.83%
Shaoxing	绍兴	90.35	3.23	3.71%
Shenyang	沈阳	117.06	18.18	18.38%
Shenzhen	深圳	122.64	19.03	18.37%
Shijiazhuang	石家庄	130.7[illegible]	9.93	8.22%
Suzhou	苏州	104.81	18.75	21.79%
Tai'an	泰安	99.45	5.10	5.41%
Taiyuan	太原	108.21	13.62	14.40%
Taizhou	台州	101.77	4.74	4.89%
Tangshan	唐山	97.82	-4.31	-4.22%
Tianjin	天津	114.52	14.15	14.09%
Urumqi	乌鲁木齐	89.66	2.73	3.14%
Weifang	潍坊	105.00	5.65	5.68%
Wenzhou	温州	105.37	5.44	5.44%
Wuhan	武汉	114.45	21.66	23.36%
Wuxi	无锡	104.53	8.16	8.47%
Xiamen	厦门	103.38	7.53	7.85%
Xi'an	西安	115.88	14.27	14.04%
Xianyang	咸阳	105.78	2.40	2.33%
Xingtai	邢台	107.68	2.81	2.68%
Xining	西宁	95.92	0.41	0.42%
Xinxiang	新乡	98.19	0.49	0.50%
Xuzhou	徐州	82.49	3.71	4.70%
Yancheng	盐城	96.93	1.89	1.99%
Yangquan	阳泉	101.76	6.98	7.37%
Yangzhou	扬州	85.85	2.74	3.30%
Yantai	烟台	98.83	8.56	9.48%
Yibin	宜宾	96.18	4.87	5.34%
Yinchuan	银川	101.93	5.01	5.17%
Yunfu	云浮	93.63	3.27	3.62%
Zhangjiakou	张家口	102.30	2.23	2.23%
Zhangzhou	漳州	101.36	1.03	1.03%
Zhanjiang	湛江	84.40	-6.73	-7.39%
Zhaoqing	肇庆	99.24	2.16	2.22%
Zhengzhou	郑州	72.39	-11.56	-13.77%
Zhenjiang	镇江	89.22	1.81	2.07%
Zhongshan	中山	107.69	6.05	5.95%
Zhuhai	珠海	99.06	5.91	6.34%
Zibo	淄博	101.05	9.17	9.98%

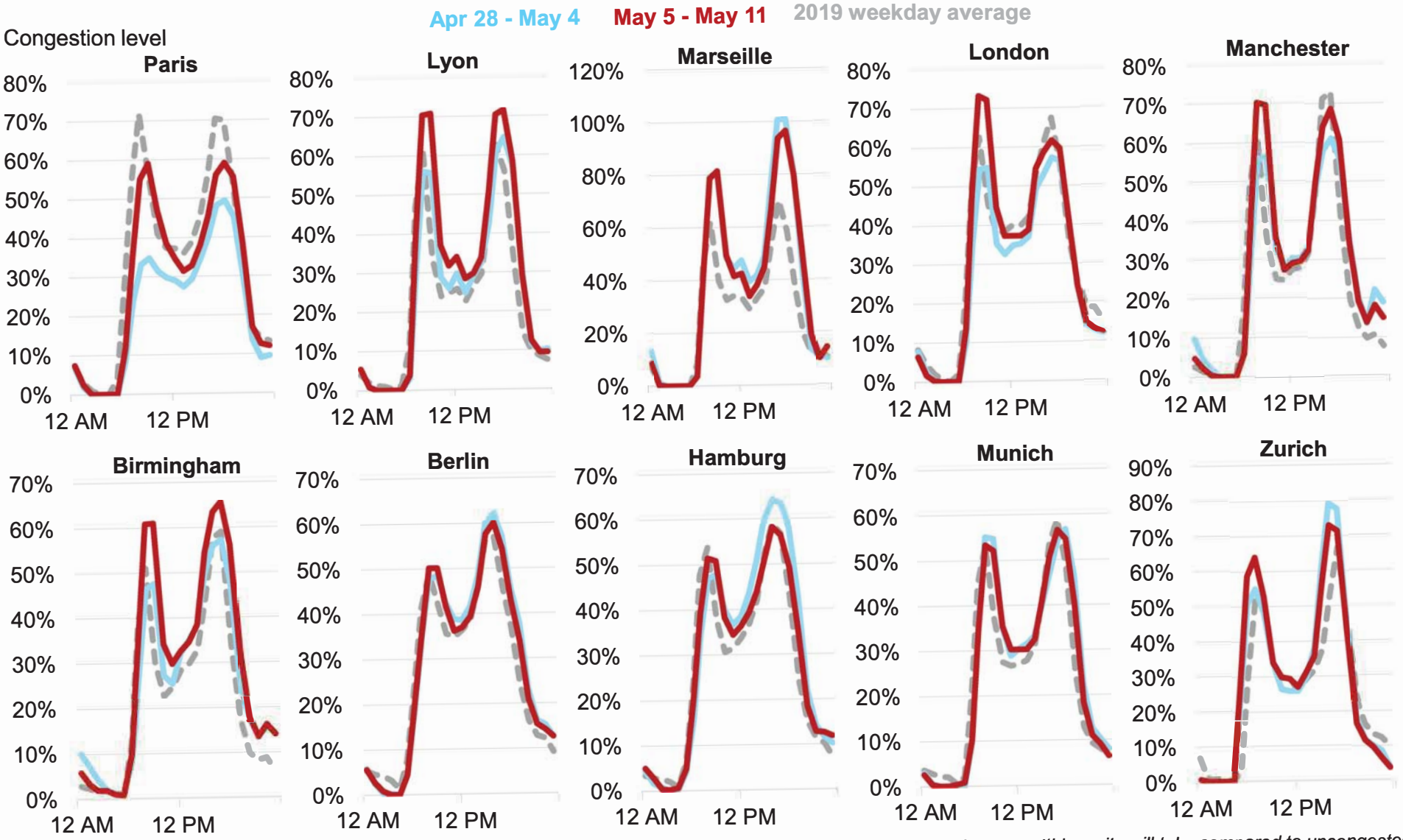
*Source: BloombergNEF, calculated from Baidu's data. Note: Data updated to **May 11**.*

Major Asian cities (TomTom)



Source: BloombergNEF, TomTom Traffic Index. Note: 'Congestion level' is an estimate of the increase in time that a journey within a city will take compared to uncongested conditions – so, 40% congestion implies that a journey will take 40% longer than on empty roads. Charts show Thursday-Wednesday average hourly congestion levels.

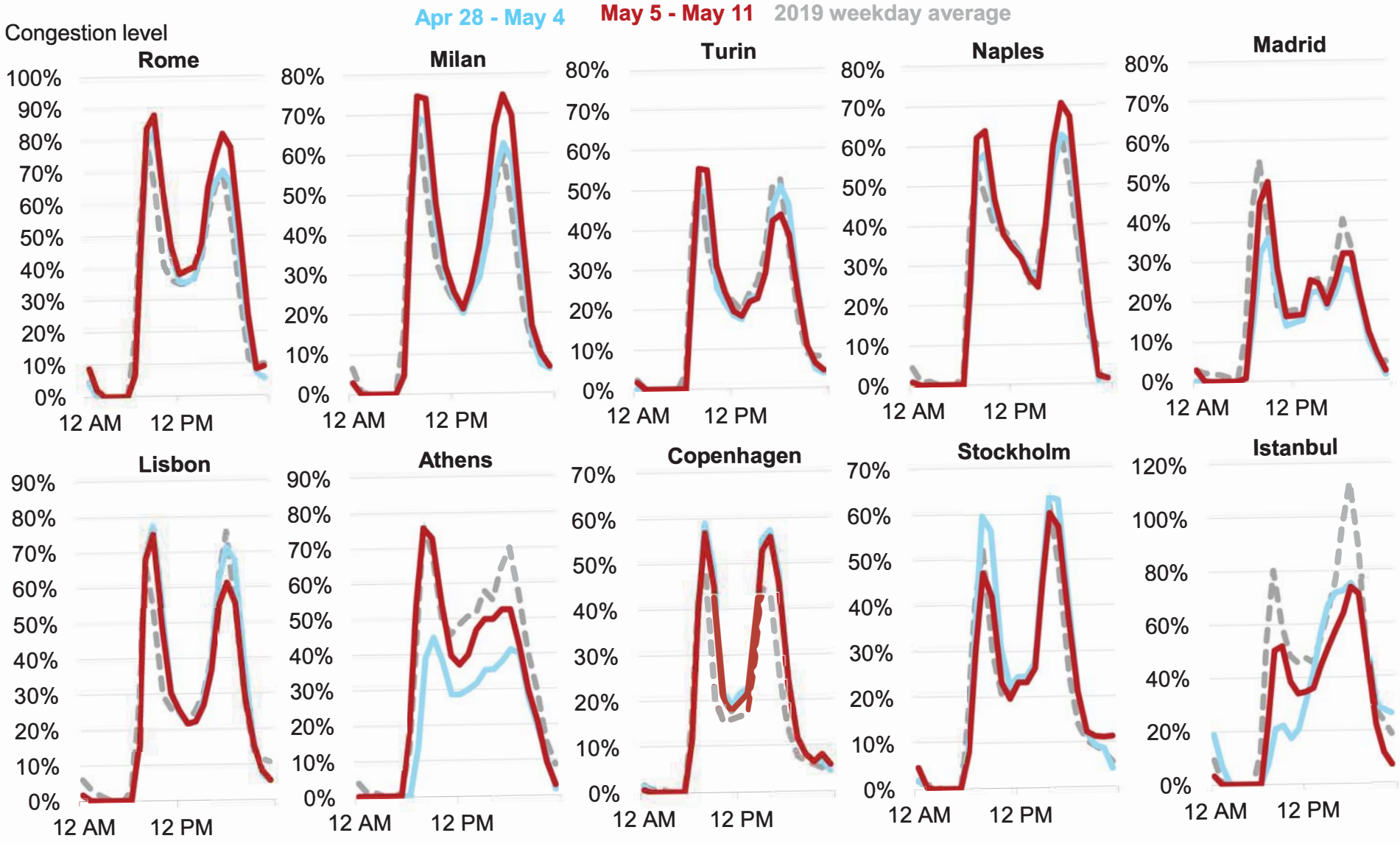
Major European cities (1/2) (TomTom)



Source: BloombergNEF, TomTom Traffic Index. Note: 'Congestion level' is an estimate of the increase in time that a journey within a city will take compared to uncongested conditions – so, 40% congestion implies that a journey will take 40% longer than on empty roads. Charts show Thursday-Wednesday average hourly congestion levels.

BloombergNEF

Major European cities (2/2) (TomTom)



Source: BloombergNEF, TomTom Traffic Index. Note: 'Congestion level' is an estimate of the increase in time that a journey within a city will take compared to uncongested conditions – so, 40% congestion implies that a journey will take 40% longer than on empty roads. Charts show Thursday-Wednesday average hourly congestion levels.

BloombergNEF

https://www.globaltimes.cn/page/202205/1265516.shtml

Beijing refutes rumors of lockdown, reassures of adequate food supplies amid hoarding

By Leng Shumei and Zhang Changyue Published: May 12, 2022 10:33 PM

Amid claims circulating that Beijing would be locked down, which led to local residents flooding supermarkets to hoard food, Beijing officials on Thursday clarified that these are just rumors, but local residents are suggested to stay at home and take nucleic acid testing in the following three days as a bid to curb transmission in communities as early as possible.

Beijing reported 36 COVID-19 infections in the past 24 hours, among whom 32 were discovered in areas under management and four outside those areas, Pang Xinghuo, an official from the Beijing health authority, said at a press conference.

Cases found in communities are still the biggest risk to and the main target of the zero-COVID strategy in Beijing, Xu Hejian, the spokesperson of the Beijing government, said at the press conference.

In order to curb virus transmission in communities outside managed areas, Beijing will launch another three rounds of nucleic acid testing from Friday to Sunday in 12 districts, including Chaoyang, Haidian and Fangshan, Xu said.

Residents in the these districts are suggested to work from home on Friday and stay home over the weekend, avoiding movement, according to Xu.

Xu refuted rumors circulating on social media platforms, which claimed that officials would announce a citywide lockdown in Beijing. He noted that it is unnecessary to hoard food.

Beijing has adequate supplies of goods and commodities to ensure people's daily lives during the epidemic, and take-away and delivery services would not be stopped, Xu said, calling for residents to stay calm and consume rationally.

Meanwhile, many Beijing residents had dashed to hoard food amid the rumors. When the press conference started at 5 pm, photos circulating online showed that some people stopped shopping and carefully watched the press conference on their hand phones at supermarkets, waiting to find out whether the capital would be locked down.

Beijing, as the capital of China, carries the hope for large Chinese cities to explore a more effective way to fight against Omicron rather than to lock down or launch static management whenever infections are found. The city is receiving some applause.

An expert from the disease prevention and control system spoke highly of Beijing's decisive move to launch mass and frequent nucleic acid testing at an early stage. He told the Global Times on condition of anonymity that nucleic acid testing is the most effective way to find infections as soon as possible.

Beijing had applied precise management in different districts in according to local epidemic situations to reduce the impact of epidemic management measures on people's lives to the lowest level, the expert noted.

The Beijing municipal government also communicated with and released information to

the public very promptly, which has helped reduce public fear. These are all experiences that could be followed by other cities in the future, the expert said.

The overall number of COVID-19 cases in Beijing is at a low level, but we must know the low level came from the great efforts Beijing residents made to actively control the pandemic, a Beijing-based respiratory expert who requested anonymity told the Global Times on Thursday.

Without these efforts, a large number of infections would emerge rather than individual cases, said the expert, emphasizing the necessity of COVID-19 prevention measures for the public to realize.

U.S. Oil Indicators Weekly

Takeaways: West Texas Intermediate crude prices continue to pinball between $100 and $110 per barrel based on the front-month contracts, as China lockdown-related concerns push and pull with fears of a supply shortfall. U.S. production surprisingly dipped to 11.8 million barrels according to this week's EIA report.

Gasoline demand has reversed course: The four-week moving average fell for the first time in three weeks at a time when it usually sees substantial growth. The figure had slowly been making up ground on the 2015-2019 seasonal average until this week, delivering a sharp blow to the idea that drivers were beginning to overcome the initial shock of high prices and hit the roads as usual. Meanwhile, jet fuel demand, which has proven relatively robust amid high prices, is beginning to look a bit shaky. Airport activity is showing signs of faltering and demand figures are stalling amid typical seasonal growth

	Frequency	Source	Snapshot: May 12, 2022
Overall market indicators:			
Mobility	Daily	Google mobility	North American traffic data from TomTom ticked up last week, but remains relatively stagnant since March
Economic activity	Daily	New York MTA, Moovit, OpenTable, Prodco	U.S. restaurant activity remains in line with 2019 levels; NYC subway ridership is refusing to break significantly above 2 million entries per day
Crude oil prices	Daily	Bloomberg	WTI prices bounced between $100-110 per barrel for yet another week, with front-month contracts sitting towards the higher end of that range as of May 12
Oil demand:			
Road congestion & gasoline	Weekly, Hourly	U.S. EIA, TomTom	Gasoline demand has reversed course, with the four-week moving average falling for the first time in three weeks; inventories continued to fall, now dipping below the five-year average
Air travel & jet fuel	Daily	U.S. TSA, FlightStats	Jet fuel demand is beginning to look a bit shaky. Airport activity is showing signs of faltering and demand figures are stalling amid typical seasonal growth
Refinery operations	Daily	U.S. EIA	Refinery utilization rates bounced back last week to 90% of capacity, with increase in utilization in all regions outside of the Rocky Mountains
Crude/product inventories	Weekly	U.S. EIA	Commercial crude inventories surprised markets with a huge build of nearly 9 million barrels, largely explained by a 20% slump in crude exports
Oil production	Weekly	U.S. EIA	U.S. crude production fell to 11.8 million barrels a day – the first decline since January – even as active oil and gas drilling rigs finally cracked the 700 mark

Source: BloombergNEF. Note: Green signals an upturn from the disruption caused by Covid-19, red indicates downturn, orange indicates no/mixed change. In most cases, the colors are indicative of changes from the prior week.

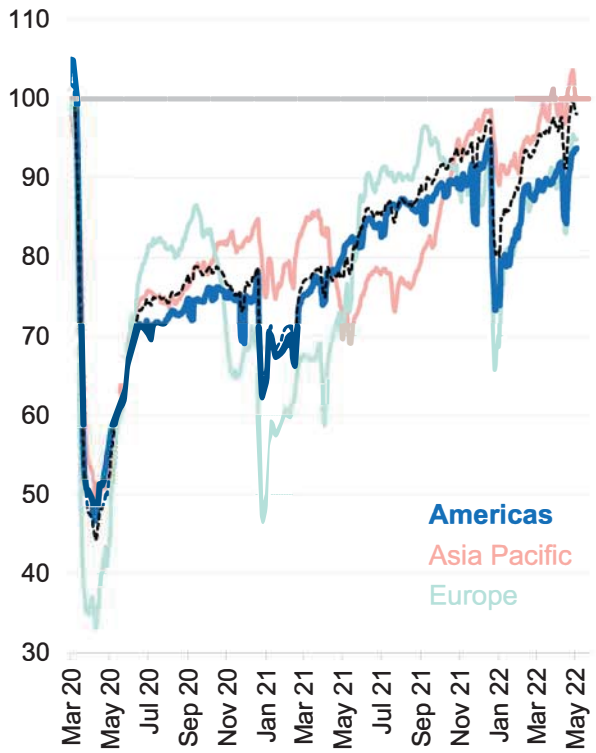
Mobility

Note: Apple Mobility reports were discontinued on April 14, 2022. We will resume updating TomTom congestion data, which were previously updated to March 16.

North American traffic data from TomTom ticked up last week, but remains relatively stagnant since March

Google mobility index

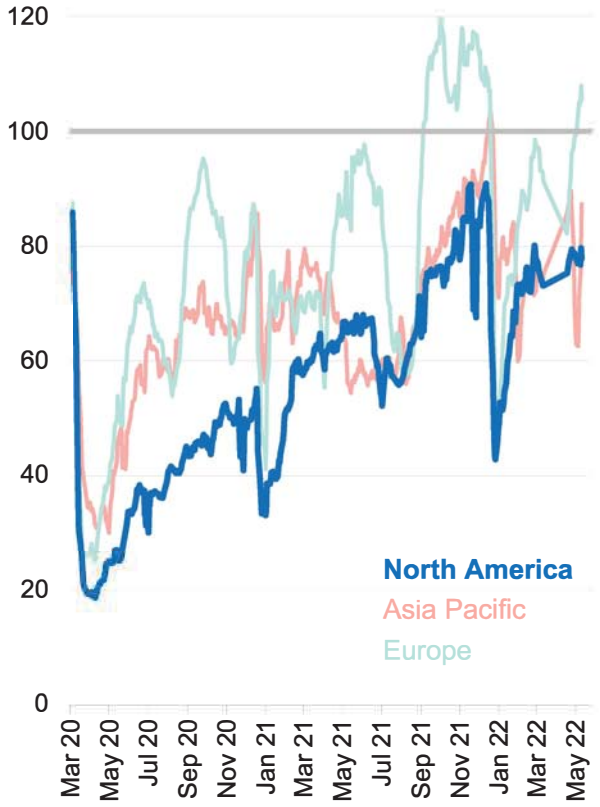
Indexed to Jan - Feb 2020 (seven day MA)



Source: Google Community Mobility Report, BloombergNEF. Note: Data exclude China and Russia. Calculation includes retail & recreation, workplaces, transport hubs. The world/regional index is weighted by the 2019 road fuels demand of each country. ***Data updated to May 7.***

TomTom congestion index

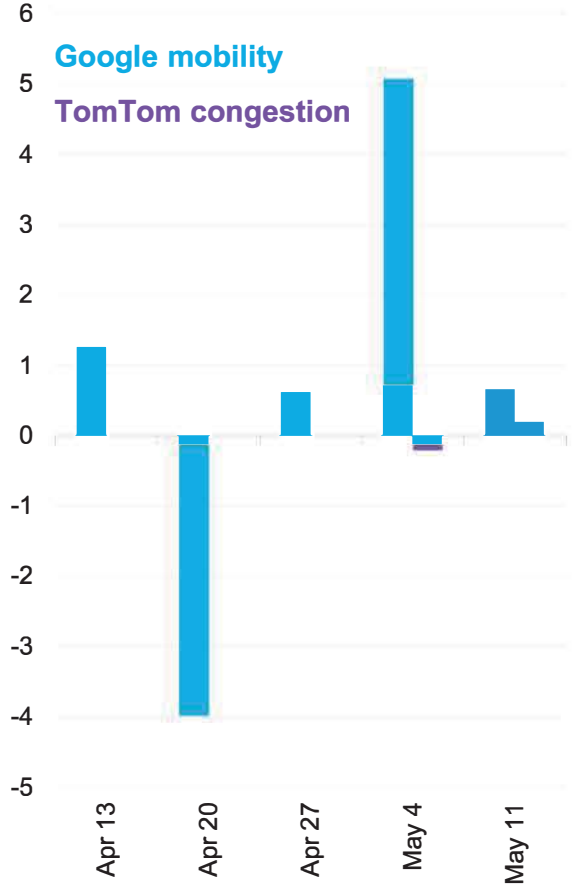
Indexed to Jan 13, 2020 (seven day MA)



Source: BloombergNEF, TomTom Traffic Index. Note: 'Peak congestion index' is calculated by BNEF. Index is the arithmetic daily average of the hourly weekday peak congestion data of various cities within the region, compared to the 2019 average values. ***Data updated to May 11.***

Americas week-on-week change

Weekly change in respective indexed value



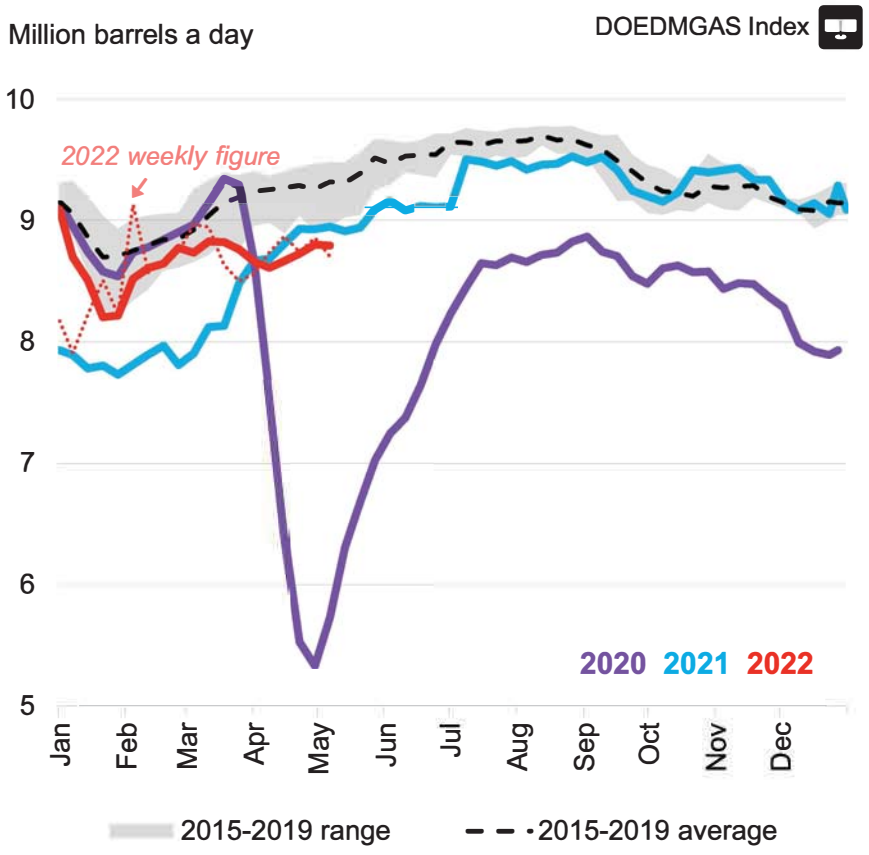
Note: TomTom data not available for March 16 – April 22 as noted above.

Gasoline demand

For more data on congestion around the world, see the BNEF Covid-19 Indicators: Road Traffic

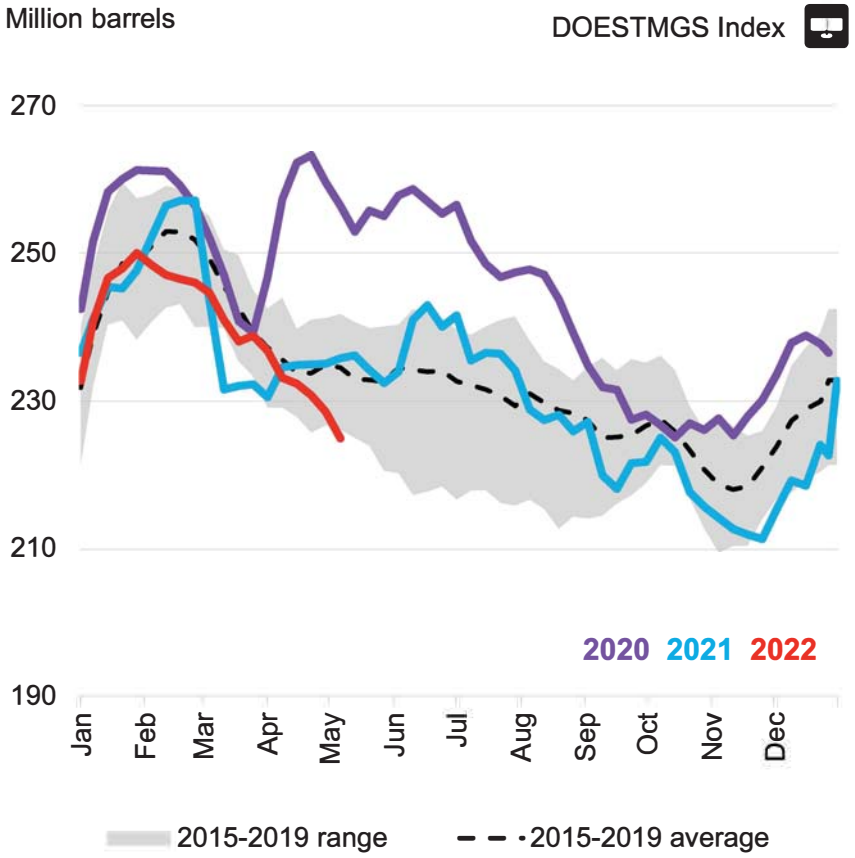
Gasoline demand has reversed course, with the four-week moving average falling for the first time in three weeks; inventories continued to fall, now dipping below the five-year average

Implied gasoline demand*



*Source: BloombergNEF, EIA; Note: *Based on the four-week moving average, except the 2022 weekly figure*

Gasoline inventory

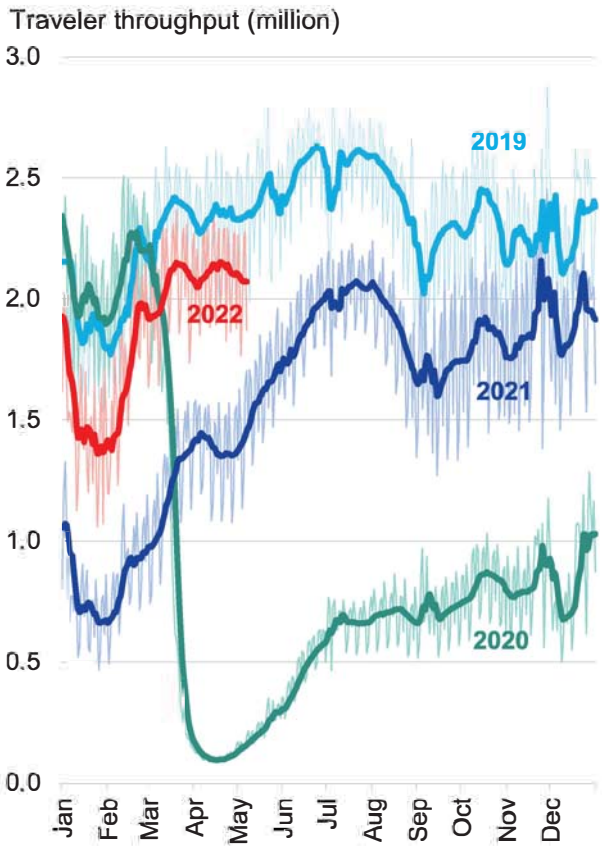


Source: BloombergNEF, EIA

Jet fuel demand

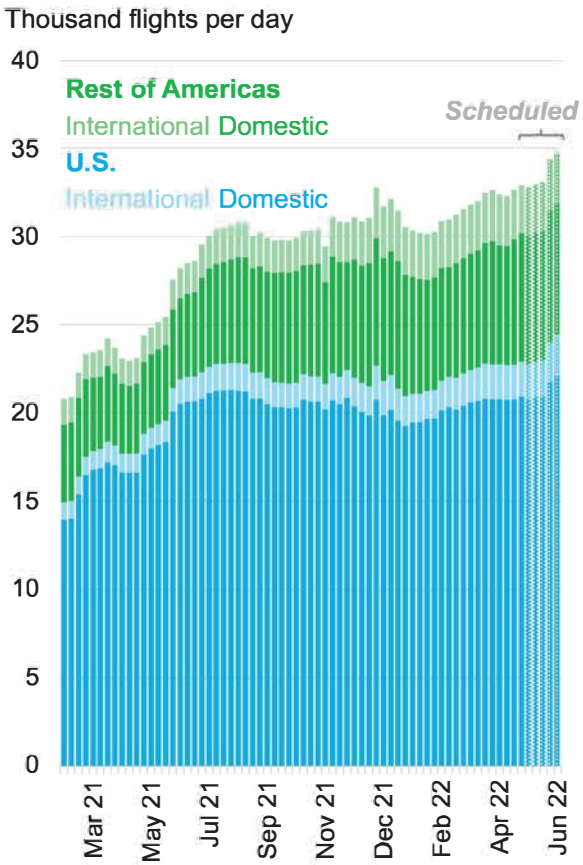
Jet fuel demand is beginning to look a bit shaky. Airport activity is showing signs of faltering and demand figures are stalling amid typical seasonal growth

TSA checkpoint traffic



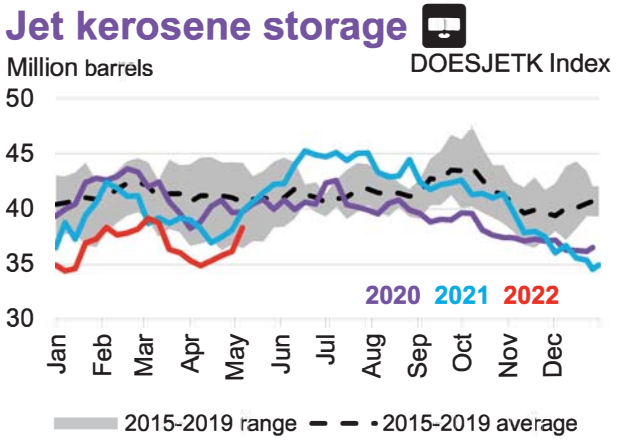
Source: BloombergNEF, TSA

Daily flight departures

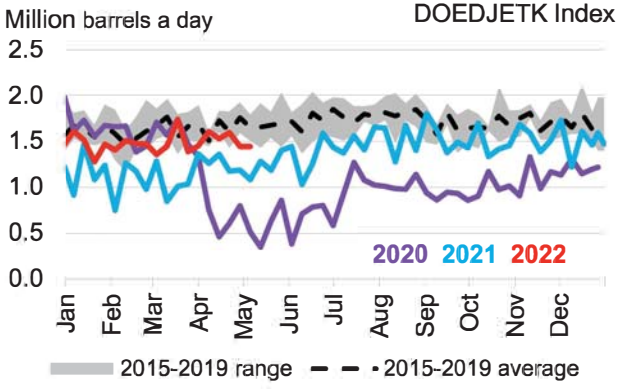


Source: BloombergNEF, FlightStats.

Jet kerosene storage



Jet kerosene implied demand



Source: BloombergNEF, EIA

For more data on congestion around the world, see the BNEF Covid-19 Indicators: Aviation

SQUAWK BOX U.S.

Gas prices are headed 'substantially higher,' says Goldman Sachs' Jeff Currie

SAF Group created transcript of CNBC's Joe Kernen interview with Goldman Sachs Global Head of Commodities Research Jeff Currie. https://www.cnbc.com/video/2022/05/09/gas-prices-are-headed-substantially-higher-says-goldman-sachs-jeff-currie.html

Items in "*italics*" are SAF Group created transcript

Kernen "*let's talk about gas if we can. I'm not talking about natural gas. I'm talking about just gas prices, which were up sharply. We've got the summer driving season coming. We've got diesel at stratospheric levels. And we had an earlier discussion about how that could hurt the supply of the gas everybody else is using when refiners are making so much money on diesel. so where are you know unleaded regular, where are those prices headed by, let's say July in your view?*"

Currie. "*Oh, substantially higher from here. you know think about it. China, you know the second largest commodity or oil consumer in the world has been locked down for the last, you know, say three to four weeks. Part of this rally that you're seeing right now is China is slowly but surely coming out of lockdowns. You know people are worried about a recession and all these other factors you know impacting commodity markets. Let's not forget, the hit to demand, particularly oil and commodities, that those lockdowns in Shanghai were substantial. And think about it, you're still at $107 a barrel right now, you know with China and Shanghai partially locked down. So you have to ask yourself, what happens when you come out of lockdowns the same time you get that huge surge in holiday travel demand come this July. And don't forget we haven't seen the full extent of the sanctions on Russia. They really begin to bite this month, and by the time we're in July, we'll see the full extent of it. So those three factors should send prices, you know at the pump, oil, all of it substantially higher*.

Kernen: "*Planes are full, people are really pent up demand for taking a vacation. I think the great American highway is going to beckon to them again, and I don't know what type of prices we're going to be talking about. Jeff, I don't do you think we'll see 6, $7 gas? Will we have European style prices this summer*?"

Currie: "*Yeah, yeah, let's not forget the macro backdrop for paying for these higher prices is much stronger than what we have seen historically. You know, there's still high savings that's left over that was built up during the pandemic. Credit capacity is still relatively high, wages are higher. So the setup going into the summer driving season also says that the tolerance for higher prices is much greater. So you know the numbers you're talking about are very feasible. And that's, as you probably talked about in your discussion around diesel fuel, you know the capacity to produce these fuels is also significantly curtailed. And think about this, if you have those really high margins for refined products right now, the refineries are shut down for maintenance. As they come out of this maintenance period again, in that July time period, their pull on crude supplies is going to be significant. And then it goes back to that whole underinvestment theme that you brought up earlier. The revenge of the old economy. We haven't, you know, invested enough in oil production capacity, refining capacity. All of the system used to deliver these fuels at a time demand is probably going to be off the charts as you point out*. "

Prepared by SAF Group https://safgroup.ca/news-insights/

https://caoec.ca/content.asp?admin=Y&contentid=482

CAOEC ANNOUNCES ITS REVISED 2022 DRILLING FORECAST.

For Immediate Release: May 10, 2022

CAOEC Drilling Activity Up, Exceeding Original Forecast (November 2021).

CAOEC announces its revised 2022 Drilling Forecast:

- **Projected 2022 wells drilled: 6,902 – an increase of 445 from original forecast (6,457)**
- **Projected 2022 operating days: 62,121 – an increase of 4,010 operating days from original forecast (58,111*)**
- **Projected 2022 average active rigs: 170 – an increase of 11 rigs from original forecast (159*)**
- **Total jobs expected = 37,409 – an increase of 2,484 jobs from original forecast (34,925*)**
  ***forecast + actual**

Drilling activity for oil and natural gas was robust in Q1 2022 thanks to stronger than expected oil and gas prices. Geopolitical conflicts including Russia's invasion of Ukraine have made energy security a global concern.

Unfortunately, labour shortages will be a drag on industry activity through the remainder of 2022. The industry was further hampered in Q1 by delays in obtaining permits in B.C. due to the Blueberry River First Nation's treaty rights challenge, a problem that should abate through the remainder of the year. The industry is also monitoring supply chain challenges in China and around the world that could impact the availability of steel casing. The forecast fully accounts for these headwinds.

"War, supply chain challenges, and surging inflation are waking up millions of people in Canada and around the world to the importance of stable, affordable, and responsibly-produced energy. Canada can meet those needs with our best-in-class energy," says CAOEC President and CEO, Mark A. Scholz. "Now is the time for Canada to rise up to the challenge and produce more oil and natural gas. Infrastructure projects are crucial to help us increase export capacity and meet demands now and for decades ahead."

The revised forecast calls for an additional 2,484 jobs, up to a total of 37,409 for the 2022 year (direct and indirect jobs). Canada's energy services sector is evolving and offers many dynamic employment opportunities. "Canada could be an energy leader for decades to come. I would encourage those who are curious about exploring a career in energy to join the energy services sector. Not only are we supplying essential oil and natural gas, we are also at the forefront of the energy transition, drilling for emerging resources including hydrogen, geothermal, and other commodities such as helium and lithium. It is an exciting time for the industry," Scholz explains. "We would like to thank the hard-working women and men who have led the industry to where it is today, providing secure and reliable energy with environmental excellence top-of-mind."

-30-

The Canadian Association of Energy Contractors (CAOEC) represents Canada's energy service contractors operating close to the wellhead.

Independent Statistics & Analysis
U.S. Energy Information Administration

Country Analysis Executive Summary: Libya

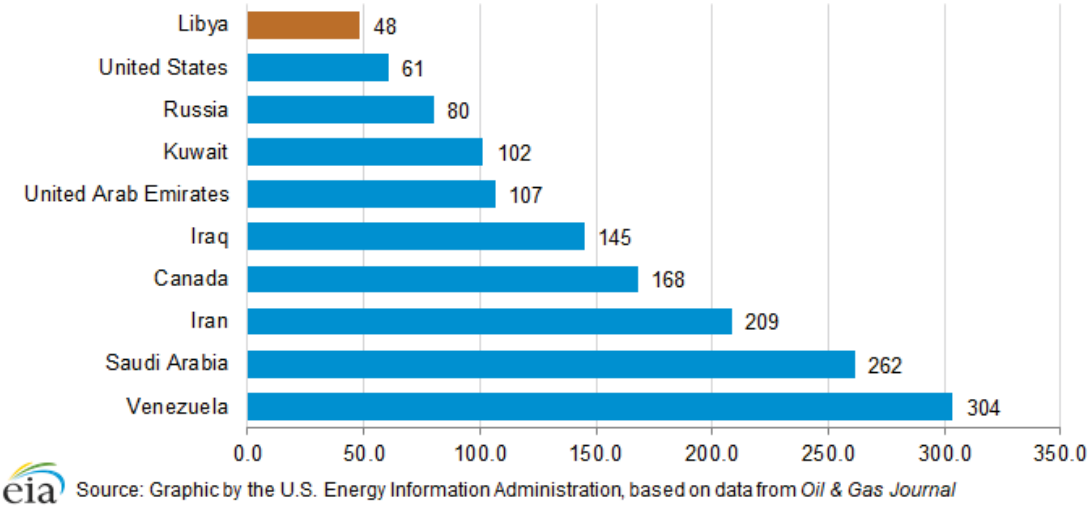
Last Updated: May 9, 2022

Overview

- Libya was the seventh-largest crude oil producer in OPEC and the third-largest total petroleum liquids producer in Africa, after Nigeria and Algeria, in 2021.[1] At the end of 2021, Libya held 3% of the world's proved oil reserves and 39% of Africa's proved oil reserves (Figure 1).[2] Despite Libya's large oil reserves, political conflicts and militia attacks on hydrocarbon infrastructure have limited investments in the country's oil and natural gas sectors. These challenges have also constrained exploration and development of its reserves since 2011.
- Although Libya is a member of OPEC, it is exempt from the production cuts under the OPEC+ agreement.[3] Crude oil production is very volatile and is frequently shut-in because of conflicts, labor disputes, budget constraints, ongoing maintenance issues, and insufficient storage capacity.
- Political instability has continued since Libya's civil war began in 2011 and continues to pose risks for the energy sector. Various local militias fought each other but subsequently formed a unified transitional government in 2012. The 2014 elections led to a split government with two major opposing parties, the internationally recognized Government of National Accord (GNA) in the western region and the Libyan National Army (LNA) in the eastern region. The GNA, the LNA, and separate local militias often fought each other and used oil exports as leverage and caused massive disruptions to Libya's oil production between 2014 and 2020. The GNA and the LNA signed a ceasefire agreement in October 2020 and formed an interim unity government, the Government of National Unity (GNU), in March 2021.[4,5] The GNU scheduled presidential and parliamentary elections for late December 2021. However, the various parties could not agree on election laws and candidates, leading to the GNU indefinitely postponing the elections. Meanwhile, Libya's parliament installed a new interim government and prime minister, Fathi Bashagha, in Tripoli in March 2022, but the previous prime minister of the GNU, Abdulhamid al-Dbeibah, had not stepped down as of April 2022, resulting in a divided government. The United Nations is working with factions in Libya to reach an agreement on constitutional laws regarding the election process and a list of candidates.[6] Political divisions and the postponed elections pose significant risks to Libya's stability and oil output and exports, which have been mostly stable since the beginning of 2021.

- Crude oil and natural gas export revenues are a significant part of Libya's economy. In 2021, oil revenues accounted for an estimated 98% of Libya's total government revenues, according to Libya's Central Bank. Libya's oil and natural gas exports accounted for 73% of the country's total value of exports in 2020.[7] Real GDP growth fell 31% in 2020 as a result of the political conflicts between factions in the eastern and western regions, the oil export port blockades and pipeline shut-ins, and to a lesser degree, the economic slowdown during the global COVID-19 pandemic.[8] After the GNA and the LNA signed a ceasefire and lifted the restrictions on oil production and exports, preliminary real GDP growth estimates rose 70% for 2021.[9] We estimate that Libya's net oil export revenues totaled $23 billion in 2019, slightly higher than 2018 totals, as a result of the country's rise in oil export volumes since 2016. We expect that the oil price declines and disruption in Libya's oil supplies in 2020 significantly reduced its net oil export revenues but that the increase in oil prices and resolution of the oil blockades boosted Libya's oil export revenues in 2021.[10]

Figure 1. Top 10 holders of proved oil reserves, December 2021



Petroleum and other liquids

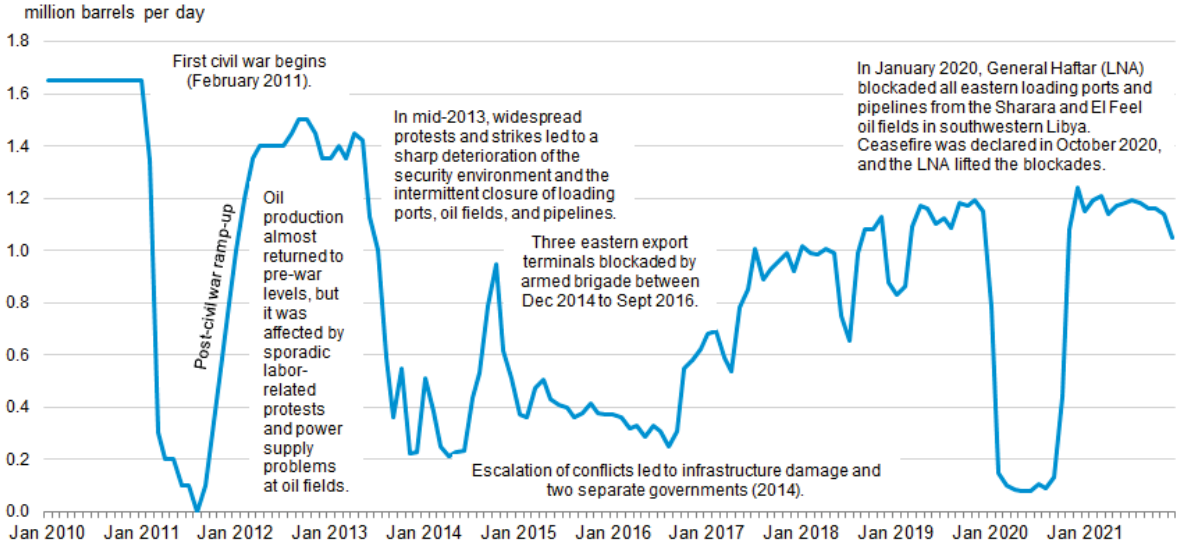
- At the end of 2021, Libya held Africa's largest proved oil reserves, at 48 billion barrels, representing 39% of the continent's total reserves. Libya ranked in the top 10 countries for global proved oil reserves, according to *Oil and Gas Journal*.[11] About 93% of Libya's recoverable reserves are located in the onshore Sirte Basin in the northeast and Murzuq Basin in the southwest. These two basins also account for most of the country's oil production capacity.[12] Most of Libya remains unexplored, and ongoing civil unrest has prevented a large-scale exploration program.
- Libya produces mostly high-quality light, sweet (low sulfur) crude oil grades, which can be processed into petroleum products in simple refineries and are valuable to import markets. After Libya's crude oil production (excluding condensates) reached around 1.7 million barrels per day (b/d), between 2006 and 2010, the 2011 civil war and ensuing political dissention over

the following decade caused a steep production decline and several major disruptions to production and exports. We assess that Libya's maximum crude oil production capacity is 1.3 million b/d, although production often falls significantly short of this capacity. Libya's production could return to pre-2011 averages if the various political factions could form a stable government, attract foreign investment for exploration and development projects, and provide sufficient revenue to strengthen the country's aging oil infrastructure.[13]

- After Libya's crude oil production fell below 400,000 b/d in 2016, it recovered through 2019. Severe disruptions in 2020 forced Libya's crude oil production to fall significantly from 1.1 million b/d in 2019 to a record-low 365,000 b/d in 2020. In January 2020, the eastern government's armed forces blockaded all of the country's eastern oil export terminals and closed the pipelines connecting major oil fields, Sharara and El Feel, in the southwestern region to the coast. During most of 2020, Libya's offshore oil fields were the only ones in production, and from February through September, crude oil production averaged 100,000 b/d. The eastern and western governments signed a ceasefire agreement in October 2020, and Libya's national oil company lifted its *force majeure* on the coastal ports, which raised oil production. In 2021, Libya's crude oil production rose to nearly 1.2 million b/d, the highest output since 2012, with temporary disruptions to ports and pipelines during certain months because of pipeline leaks, maintenance issues, insufficient funding, and labor disputes (Figure 2).[14]
- Libya's natural gas fields produce condensates and natural gas plant liquids (NGPLs), which contribute relatively small volumes to the country's total petroleum and other liquids production. In 2020, production of condensates and NGPLs fell to around 50,000 b/d from 100,000 b/d in 2019 because when most of the country's oil fields were closed, that affected some of its natural gas production. In 2021, we estimate that condensate and NGPL production recovered to less than 100,000 b/d.[15]
- Libya's national oil company (NOC) plans to bolster oil production to 2.1 million b/d by 2025.[16] To reach this target, NOC's plans include increasing oil production through developing new projects, rehabilitating fields that were damaged during the conflicts of the past decade, and increasing power supply to the fields. NOC's subsidiary, Zallaf Oil, will commission the southwestern Erawin oil project in late 2022, where peak oil production will be 16,000 b/d. Future plans include connecting the Erawin field with the large Sharara oil field.[17] TotalEnergies announced in late 2021 its plans to invest in developing the 100,000 b/d North Giallo project and the rehabilitation of the 40,000 b/d Mabrouk field, which militant groups damaged in 2014.[18] Both of these fields are located in the large Waha field concession that is a joint venture between TotalEnergies, ConocoPhillips, and the NOC. Other sizeable fields that the NOC plans to develop are Gialo III and Block NC-98, which are in the eastern Sirte Basin. The NOC anticipates that more sufficient and reliable electricity generation could add another 125,000 b/d to crude oil production.[19]
- Despite the numerous challenges to maintaining oil production, the NOC did bring online a few small fields since the 2020 ceasefire began. Agoco, a state-owned company and subsidiary of the NOC, began production from the Sinawin field in late 2020, the first new oil project to come online in Libya since 2011. Although initial production was 10,000 b/d, a second phase will add 50,000 b/d.[20] Agoco also began operating the new Tahara field in the western Ghadames Basin near Algeria in February 2022. Agoco expects that the Tahara field will produce a maximum capacity of 14,000 b/d and 2.2 billion cubic feet per year (Bcf/y) of natural gas.[21]

- After declining from 2011 through 2015, Libya's petroleum and other liquids consumption remained slightly above 200,000 b/d each year after 2015 and was 220,000 b/d in 2021.[22] We estimate that the shares of gasoline (43%), diesel (31%), and fuel oil (12%) accounted for the majority of Libya's petroleum consumption in 2019.[23]
- Most of the domestically consumed crude oil is processed in Libya's refineries, and around 11,000 b/d of crude oil was used directly in power plants in 2021.[24] Libya has five refineries with a combined nameplate crude oil distillation capacity of 380,000 b/d.[25] However, the country produces less than 125,000 b/d of petroleum products from the 120,000 b/d Zawiya refinery and three small-scale facilities. The low plant utilization is the result of damage that occurred to some facilities during the civil war and the slow progress made to rehabilitate all of the plants.[26] Ras Lanuf, Libya's largest refinery by nameplate capacity, was significantly damaged after the 2011 civil war and has been offline since 2013. A legal dispute over the damages between the joint venture (JV) owners, the NOC, and Trasta (an Emirati-owned company), finally settled in February 2022. The arbitration ruled that the NOC did not owe any damage compensation to Trasta and could buy Trasta's 50% share in the JV.[27] Although this is a significant step toward bringing Ras Lanuf refinery back online, the NOC would need to rehabilitate the refinery to make it functional.
- The NOC is constructing a 30,000 b/d refinery in southwestern Libya near the Sharara oil field. Despite the facility's small size, it would be the first refinery to serve southern Libya. This region is far from the energy demand centers along the coast, and it relies on petroleum products transported by truck from a far distance on the western coast. Construction began in October 2021, and the NOC estimates that the facility will be completed in about three years.[28]

Figure 2. Crude oil production in Libya, January 2010 to December 2021

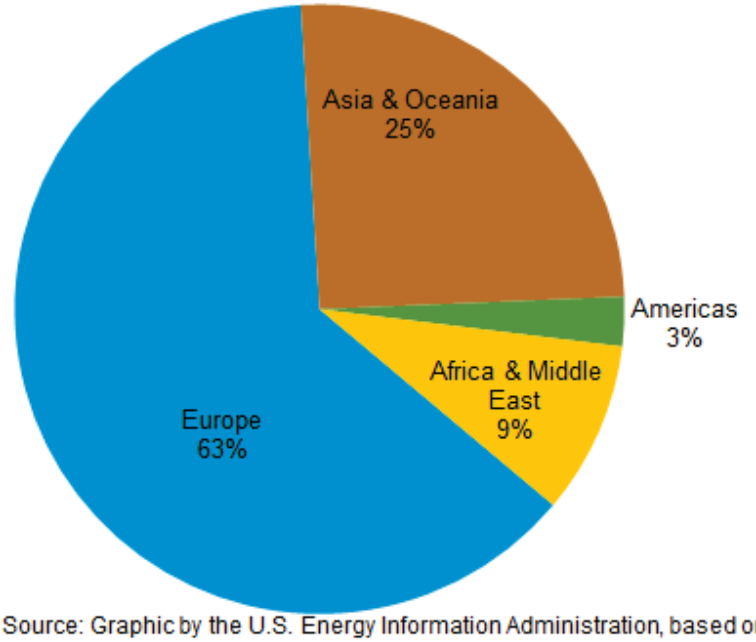


eia Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, March 2022

Exports

- Libya exported nearly 350,000 b/d of crude oil and condensates in 2020, down from about 1.1 million b/d from 2019.[29] A nearly 800,000 b/d decline in petroleum production caused by disruptions and, to a lesser extent, a decline in global demand both curtailed exports in 2020. In 2021, Libya's crude oil and condensate exports recovered to 1.1 million b/d, according to Clipper Data.[30]
- Most of Libya's crude oil is sold to European countries. In 2020, Europe's imports accounted for about 63% of Libya's crude oil and condensate exports. Most of Libya's exports went to Italy, Germany, and Spain. Asia, mostly China, received an estimated 25% of Libya's oil exports in 2020 (Figure 3). Although Europe accounts for the largest share of Libya's oil exports, Libya has diversified its oil export markets over the past few years with Asia and the Middle East receiving greater shares of total shipments.[31]
- The United States restarted oil imports from Libya in 2004, after sanctions on Libya were lifted. The United States imported 9,000 b/d of crude oil from Libya in 2020, only a fraction of the 63,000 b/d of crude oil it imported in 2019. Imports from Libya rose to 90,000 b/d in 2021.[32]
- According to trade data, Libya is a net importer of petroleum products as a result of its low operational refining capacity. Petroleum product imports rose in 2020 to more than 120,000 b/d from about 100,000 b/d as a result of refinery closures during the shutdown of both crude oil production and export terminals during most of the year.[33]

Figure 3. Libya's exports of crude oil and condensates, 2020



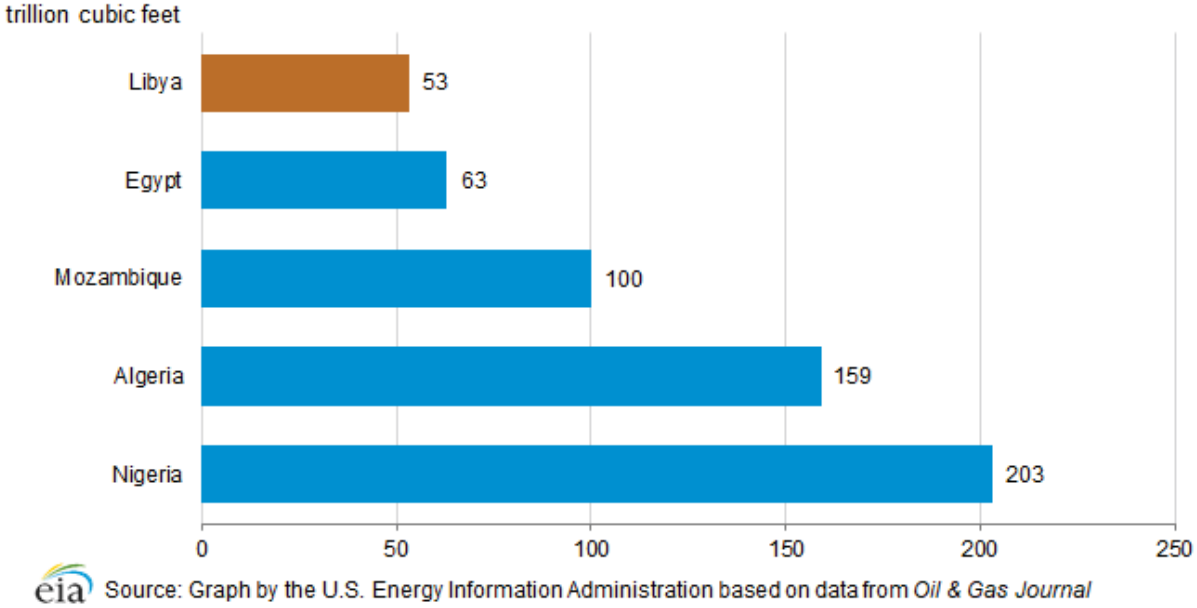
Source: Graphic by the U.S. Energy Information Administration, based on data from Eurostat, ClipperData, Global Trade Tracker
Note: Total crude oil and condensate exports averaged 344,000 barrels per day.

Natural gas

- At the end of 2021, Libya had proved natural gas reserves of 53 trillion cubic feet (Tcf), the fifth-largest in Africa behind Nigeria, Algeria, Mozambique, and Egypt (Figure 4).[34]
- Nonassociated gas, which accounted for more than 80% of Libya's natural gas production over the past decade, according to Rystad Energy, is from the offshore Bahr Essalam fields northwest of Tripoli and the onshore Wafa field in the western Ghadames Basin straddling Algeria.[35] Most of Libya's associated gas is located in the onshore Sirte Basin in the eastern region.
- Libya's dry natural gas production fell in 2020 to 438 billion cubic feet (Bcf) from 500 Bcf in 2019 (Figure 5).[36] Output has declined overall since 2014 because the volatile security situation and unfavorable regulatory environment have deterred investment and international oil companies from developing oil and natural gas fields. Also, associated gas fields have been offline for significant periods of time when the accompanying oil fields are shut-in. Libya's NOC plans to increase Libya's natural gas production by reducing natural gas flaring and developing new fields to help meet Europe's growing natural gas demand.[37] However, Libya's current political stalemate and budget constraints are major downside risks to reaching these goals. Oil and natural gas projects in Libya are typically delayed for several years because of security, regulatory, and financial challenges.
- The NOC started three new natural gas development projects since 2018 in an effort to bolster Libya's natural gas production and offset natural declines from aging fields. In late 2018, field operator, Mellitah Oil and Gas Company (partly owned by the NOC), brought online the 146 Bcf/y second phase of the Bahr Es Salam field and completed a compression upgrade at the Wafa natural gas field to increase the field's capacity.[38] The NOC started operations at the al Faregh oil and natural gas field project expansion, located in the Sirte Basin, in early 2021. This second phase adds 66 Bcf/y of natural gas and 15,000 b/d of condensate to production.[39]
- Additional NOC plans include increasing natural gas production from offshore and onshore fields. Italy's Eni and the NOC are developing the offshore project, Structures A & E development, which they expect to produce a maximum of 277 Bcf/y and 42,000 b/d of condensates. The project is slated to begin production in 2026.[40] The NOC has proposed several other natural gas development projects, notably Atshan in the southwestern region, the western Hamada Basin project, and the offshore Bouri Gas Utilization project, but these projects are in very early stages of development.[41]
- Libya's natural gas consumption totaled 271 Bcf in 2019, or about half of domestic production[42] (Figure 5). The power sector drives Libya's domestic natural gas demand and accounted for about 90% of Libya's domestic natural gas use in 2020.[43]
- Libya is one of the world's top natural gas-flaring countries, according to the World Bank's estimates. Libya vented or flared approximately 180 Bcf in 2019, ranking seventh highest in the world. Flaring decreased in 2020 to 87 Bcf because much of Libya's associated gas production was shut in along with almost all of the onshore oil fields during most of 2020.[44] Libya lacks the natural gas infrastructure, particularly processing plants, to capture natural gas from fields associated with oil production and to transport it to demand centers or power plants. Libya's NOC is in discussions with international oil companies to reduce flaring, increase the production of marketed natural gas, and free up more oil for export.[45]

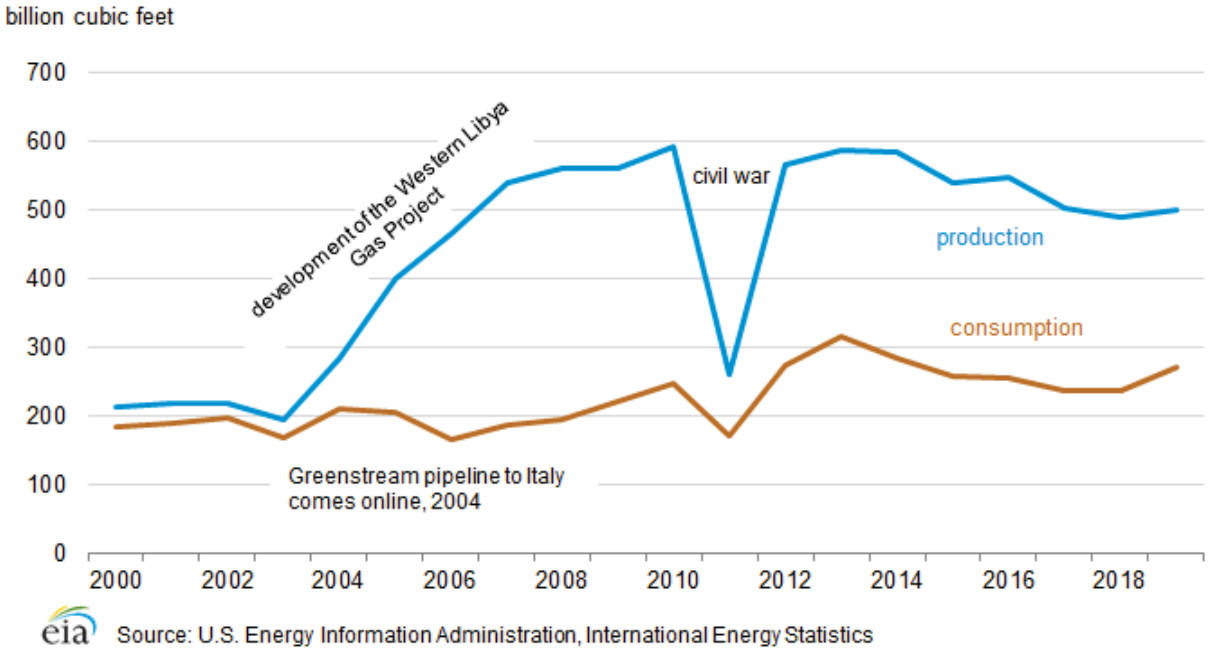
- The Greenstream natural gas pipeline connects Mellitah on Libya's northwestern coast to Gela, Italy, and became the only outlet of natural gas exports after armed conflict from the civil war destroyed the country's sole liquefaction terminal in 2011. Libya's natural gas exports reached around 200 Bcf in 2019 but fell by almost half to 114 Bcf in 2021.[46] Demand for natural gas in Europe fell during the COVID-19 pandemic in 2020, reducing the need for imports. Libya's reduced natural gas production and insufficient infrastructure have also hindered exports since 2019.

Figure 4. Top holders of proved natural gas reserves in Africa, December 2021



Source: Graph by the U.S. Energy Information Administration based on data from *Oil & Gas Journal*

Figure 5. Libya's dry natural gas production and consumption, 2000-2019



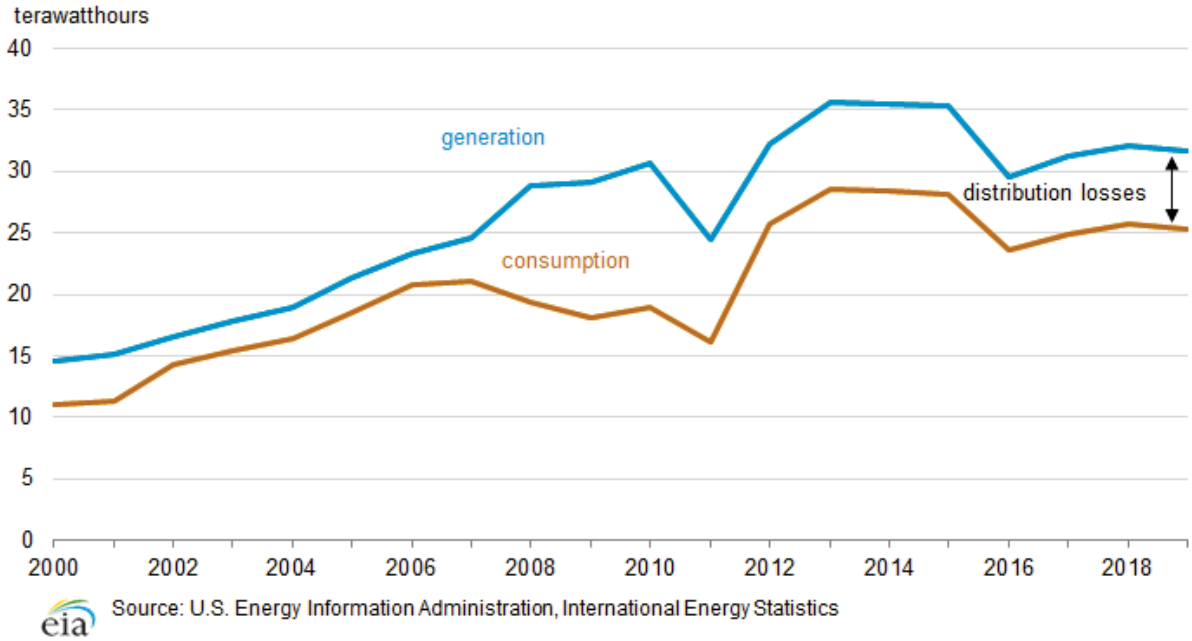
eia Source: U.S. Energy Information Administration, International Energy Statistics

Electricity

- At the beginning of 2021, Libya's Audit Bureau reported that the available capacity of power plants was 4.8 gigawatts (GW), or 42% of the country's 11.5 GW installed capacity. Peak demand was an estimated 7.5 GW in the summer, leaving a power deficit of nearly 3.0 GW.[47] Since 2011, Libya has had power outages caused by electricity shortfalls to end users, including operators of oil and natural gas fields, refineries, and natural gas processing facilities.
- Scheduled power curtailments and unscheduled blackouts occur regularly because of rising electricity demand, aging and damaged infrastructure, lack of maintenance, operational inefficiencies, theft of equipment, and at times, fuel shortages. Heavily subsidized electricity tariffs artificially boost power demand beyond what consumers can pay.[48] In 2020, severe fuel shortages of oil and natural gas caused by the port blockades and civil conflicts led to significant electricity blackouts, most acutely during the peak summer season. These prolonged power shortages sparked protests in Tripoli and Benghazi during the summer of 2020.[49]
- Libya's electricity generation has declined overall since 2013, and output was an estimated 32 terawatthours (TWh) of power generation in 2019.[50] Libya fueled nearly all of its electricity generation with natural gas (67%) and oil (33%) in 2019.[51] Diesel and fuel oil accounted for most of the petroleum used in power plants, although electricity stations located at oil fields have used crude oil in the absence of imported refined products. Because of frequent blackouts, many businesses in Libya use diesel-fired generators as a secondary source of power generation.[52]

- Libya aims to harness more of its associated gas that is currently flared and develop more nonassociated gas fields to provide for its growing electricity needs, although these goals depend on higher investment in infrastructure.
- The General Electricity Company of Libya (GECOL) has announced several power plant projects to bolster the country's available capacity, although many are in early stages. Three plants are under construction and slated to add more than 2 GW to operational capacity in 2022—the 740 megawatt (MW) Tobruk plant in the eastern region and the 650 MW Misrata and 671 MW Tripoli West plants along the western coast.[53] These plants are dual-fuel facilities that can use natural gas or distillate oil for their fuel supply.
- Solar power makes up a negligible amount of power generation in Libya, which has no utility-sized plants. All of Libya's solar power is from small-scale ventures such as mini-grids at hospitals and public lighting projects.[54] Libya's government seeks to diversify its power supply and aims to produce 22% of its electricity from renewable power by 2030.[55] Although this goal is ambitious, Libya's vast solar potential has attracted some foreign investors. In addition to its recent investment in Libya's oil and natural gas sectors, TotalEnergies intends to develop 500 MW of solar power projects in the country.[56] Libya has also discussed solar power projects with ENI and Shell.[57]
- Libya, which has electricity interconnections with Tunisia and Egypt, began to import significantly more electric power from these neighboring countries after 2015. Libya's electricity imports reached almost 0.5 TWh in 2019.[58] Egypt plans to expand its interconnection capacity to Libya from 240 MW to at least 500 MW; however, as of April 2022, the expansion date is unknown.[59]

Figure 6. Electricity net generation and consumption in Libya, 2000-2019



Independent Statistics & Analysis
U.S. Energy Information Administration

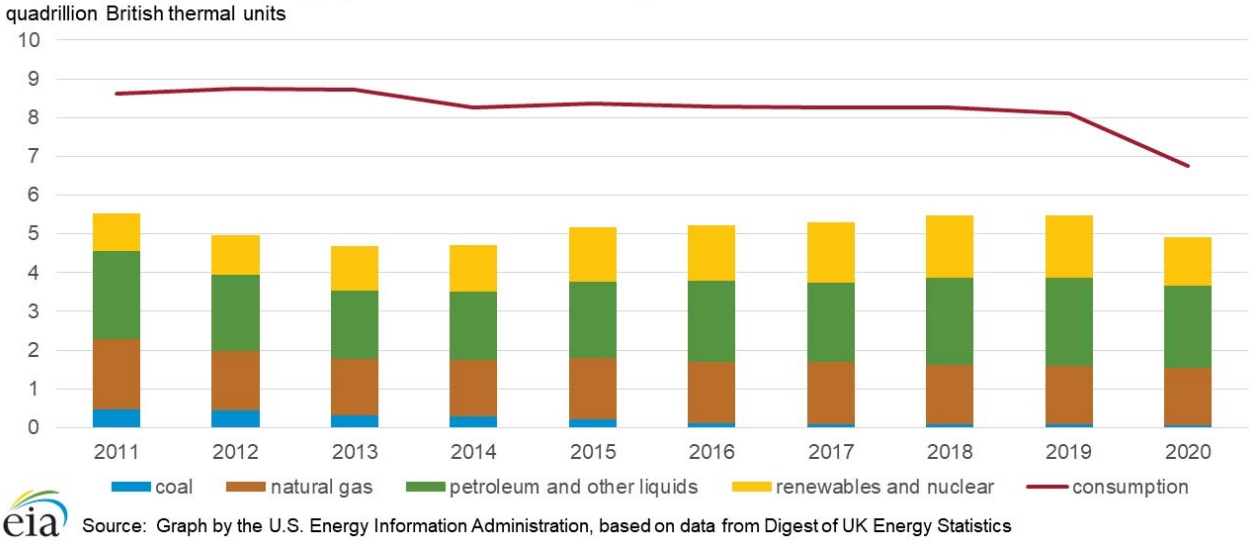
Country Analysis Executive Summary: United Kingdom

Last Updated: May 11, 2022

Overview

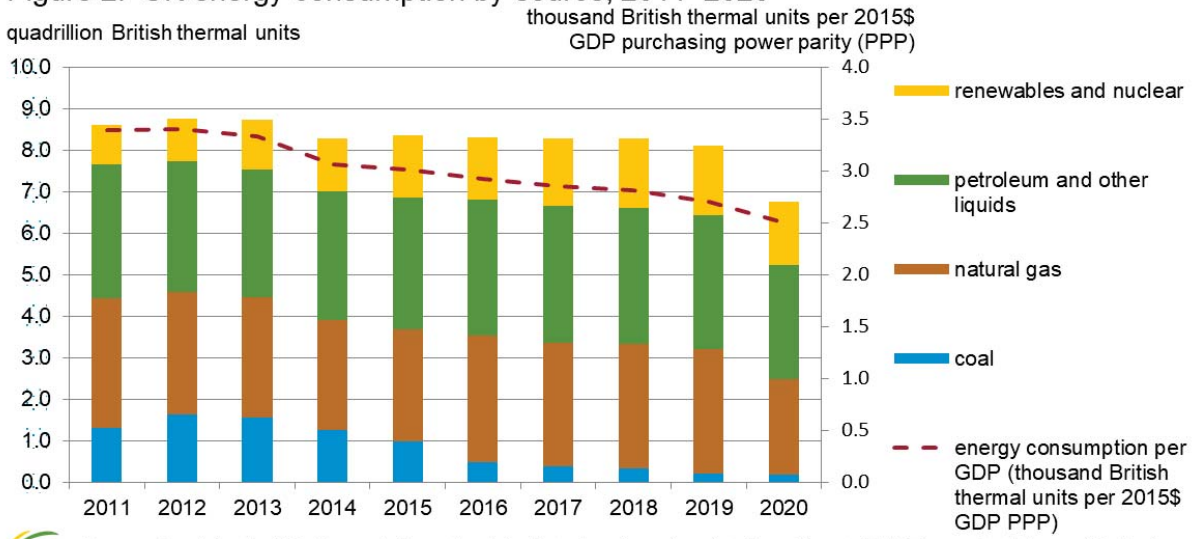
- The United Kingdom is the ninth-largest economy in the world by GDP and the third-largest energy consumer in Europe, according to Eurostat.
- In 2020, the United Kingdom produced 4.9 quadrillion British thermal units (quads) and consumed 6.8 quads of energy. Fossil fuels accounted for 75% of total energy supply and 77% of total energy demand (Figure 1 and Figure 2).
- The United Kingdom has been a net energy importer since 2004. However, lower energy demand, a result of the COVID-19 pandemic, contributed to a decline of 30% in net energy imports in 2020. The United Kingdom imported less coal, petroleum and other liquids, natural gas, and electricity that year.
- In 2021, the United Kingdom was the second-largest producer of petroleum and other liquids and natural gas in OECD Europe, after Norway.
- Nearly all UK petroleum and natural gas production comes from offshore fields. In 2021, the United Kingdom produced 934,000 barrels per day (b/d) in total liquid fuels and 1.1 trillion cubic feet (Tcf) of natural gas.
- Coal production decreased nearly 91% between 2010 and 2020, falling from 20.2 million short tons (MMst) in 2010 to 1.8 MMst in 2020. This significant decline is the result of environmental regulations and falling consumption.
- The proportion of renewable electric power generation (46%) exceeded generation from fossil fuels (38%) for the first time in 2020. In addition, renewable and nuclear energy cumulatively accounted for almost two-thirds of UK electricity generation that year. Electricity generation from natural gas represented 36% (Figure 3).[1]

Figure 1. UK total energy production and consumption, 2011–2020



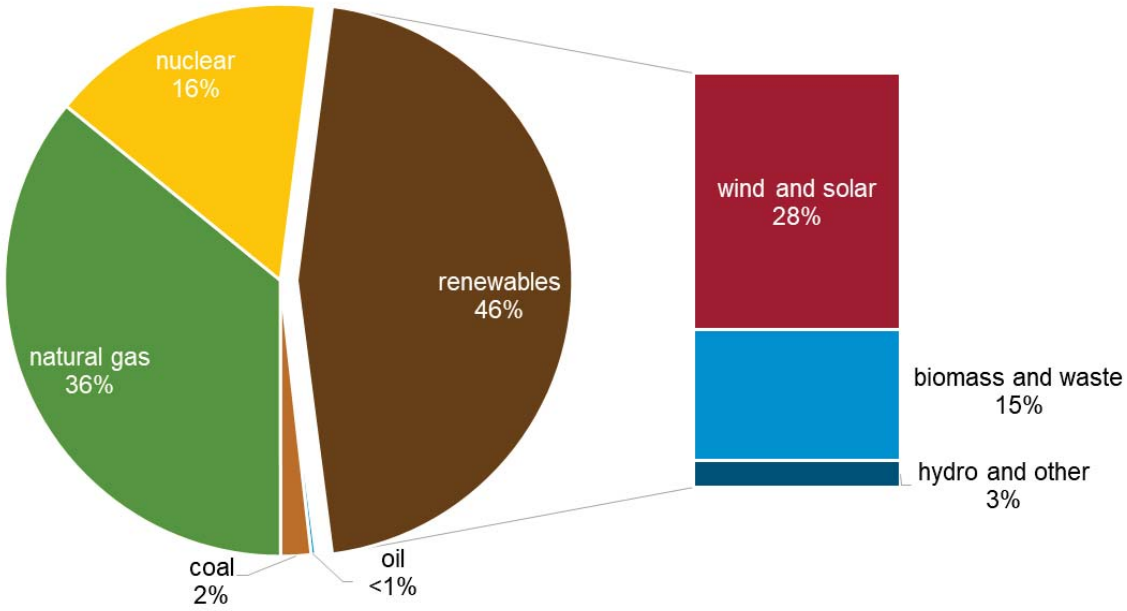
Source: Graph by the U.S. Energy Information Administration, based on data from Digest of UK Energy Statistics

Figure 2. UK energy consumption by source, 2011–2020



Source: Graph by the U.S. Energy Information Administration, based on data from Digest of UK Energy Statistics and Oxford Economics

Figure 3. UK electricity generation by source, 2020



Source: Graph by the U.S. Energy Information Administration, based on data Digest of UK Energy Statistics

Petroleum and Other Liquids

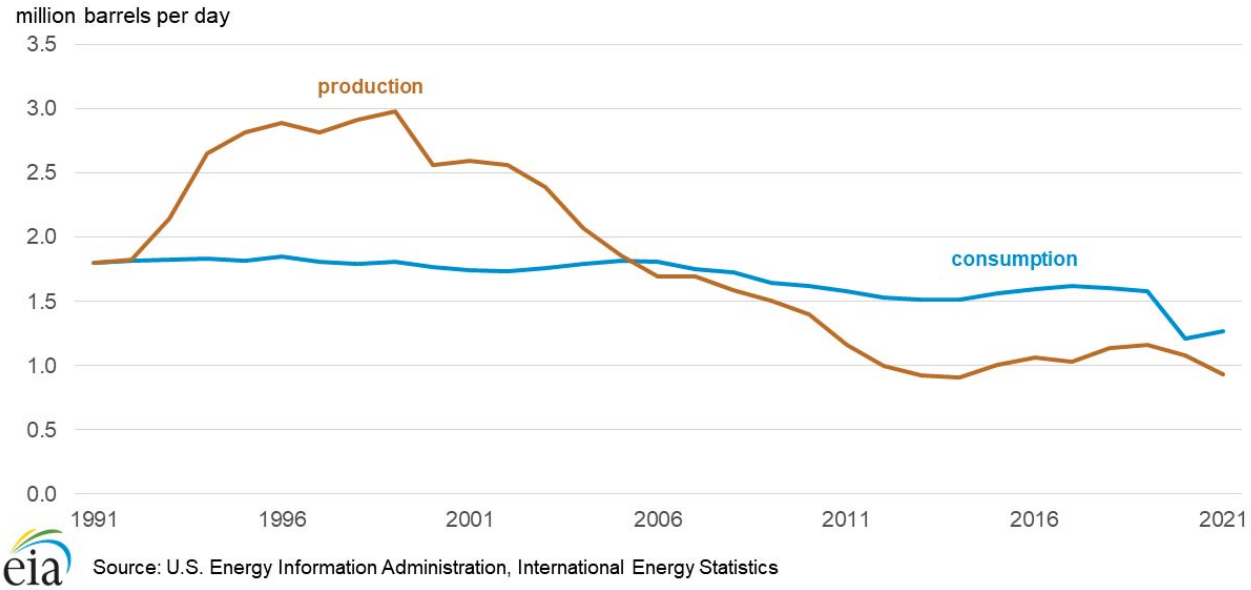
- Petroleum and other liquids production peaked at 3.0 million barrels per day (b/d) in 1999 before declining to 0.9 million b/d in 2014 (Figure 4). Between 2014 and 2019, production increased by over 28%. Fields that were brought online in the second half of 2014 contributed to this increase. Production declined after 2019, returning to 934,000 b/d in 2021.

- Despite making steady production gains in recent years, the United Kingdom became a net importer of crude oil in 2005 and continued to be through 2021. The country briefly became a net exporter in 2020 in part because of lower domestic demand for petroleum products.

- The economic slowdown in 2020 during the COVID-19 pandemic significantly affected the transportation sector, which typically accounts for about 80% of total domestic petroleum product supplied in the United Kingdom. Petroleum product supplied is a proxy measure for consumption. Petroleum products supplied to the transportation sector decreased 29% year-over-year, leading to a 25% drop in total petroleum product supplied in 2020.[2]

- In 2021, UK crude oil imports grew by 2% after declining by 21% in 2020. Similarly, imports of petroleum products increased by 5% in 2021 after falling by 25% in 2020. However, the United Kingdom exported 17% less crude oil and 2% less petroleum products than in 2020.

Figure 4. UK petroleum and other liquids production and consumption, 1991–2021



Source: U.S. Energy Information Administration, International Energy Statistics

Sector organization

- The UK government does not hold a working interest in oil production, but the sector remains important to the government because of its contributions to the overall economy. In fiscal year (FY) 2020–21, government revenues from crude oil and natural gas production were £248 million. Revenues in FY 2020–21 decreased 71% from FY 2019–20 mainly as a result of lower oil prices, driven by reduced demand for petroleum and other liquids during the COVID-19 pandemic.[3]
- The UK government regulates the oil, natural gas, and carbon storage industries through the Oil and Gas Authority (OGA). OGA issues crude oil and natural gas licenses, collects data from license holders, and promotes investment, collaboration, and efficiency in the industry. Since 2021, OGA has encouraged a North Sea energy transition, finding that closer coordination of offshore fossil fuel and renewable energy sectors (for example, wind, wave, and tidal) could help the United Kingdom meet its 2050 net zero emissions target.[4]

Exploration and production

- According to the *Oil & Gas Journal* (OGJ), the United Kingdom had 2 billion barrels of proved crude oil reserves as of the end of 2021, 20% lower than at the end of 2020.[5] Crude oil represents approximately 70% of the petroleum reserves, and most resources are located on the United Kingdom Continental Shelf (UKCS).[6]
- The United Kingdom produces three grades of light, sweet crude oil: Flotta, Forties, and Brent blends.

- In 2021, UK crude oil production decreased by 15% to 793,000 b/d, according to OGA. Five operators accounted for 58% of total crude oil output (Table 1). BP-operated fields produced the largest volume of crude oil, and the China National Offshore Oil Corporation (CNOOC), which produced crude oil from the Buzzard and Golden Eagle oil fields, ranked second (Table 2).

Table 1. The United Kingdom's top five operators of crude oil fields, 2021

Operator	Million barrels per day
BP Exploration	150
CNOOC International	104
Harbour Energy PLC	87
Totalenergies Upstream U.K. Limited	71
Enquest PLC	47
Total top five operators	**458**
Total United Kingdom	**793**

Source: U.K. Oil and Gas Authority

Table 2. The United Kingdom's top 10 producing crude oil fields, by volume, 2021

Field	Thousand barrels per day
Buzzard	62
Clair	68
Schiehallion	44
Golden Eagle	35
Mariner	30
Kraken	26
Catcher	25
Franklin	24
Captain	20
Elgin	18
Total top 10 fields	**353**
Total United Kingdom	**793**

Source: U.K. Oil and Gas Authority

Transport and refining

- The United Kingdom’s extensive network of pipelines carries oil extracted from North Sea fields to coastal terminals in Scotland and northern England. The network includes six major pipelines (Table 3).[7] Many smaller pipelines transport petroleum liquids from individual fields to the major pipelines for transport to the coast. Pipelines in the United Kingdom are privately owned and operated; however, any qualified shipper may access the pipelines.

- The United Kingdom had 1.2 million b/d of refining capacity at the end of 2020, according to the OGJ. Fuels used for transportation, specifically motor gasoline (27%), diesel (26%), and gas oil (12%), accounted for nearly two-thirds of total refined petroleum products produced that year.[8]

Table 3. United Kingdom's major crude oil and condensate pipelines

Pipeline system	Operator	Origin	Destination	Capacity (million barrels per day)	Total length (miles)
Ninian	EnQuest PLC	Ninian area fields	Sullom Voe terminal (Scotland)	0.9	109
Norpipe	ConocoPhillips	Ekofisk area fields (Norway) with a spur to UK fields	Teesside terminal (England)	0.8	217
Forties	Ineos FPS Ltd	Forties area fields	Dalmeny terminal, Hound Point terminal, Grangemouth refinery and petrochemical complex (Scotland)	0.6	235
Flotta	Repsol Sinopec Resources	Piper, Claymore, Golden Eagle platforms and associated fields	Flotta terminal (Scotland)	0.4	130
Bruce-Forties	Serica Energy	Bruce area fields	Forties Pipeline System	0.3	154
Brent	TAQA	Cormorant Alpha platform	Sullom Voe terminal (Scotland)	0.1	91

Sources: U. S. Energy Information Administration, International Energy Statistics, based on the U.K. Oil and Gas Authority, ConocoPhillips, Repsol Sinopec Resources, TAQA, EnQuest, Ineos, and Serica

Trade and consumption

- Exporting over 600,000 b/d in 2021, the United Kingdom is the second-largest exporter of crude oil in Europe. Most UK crude oil exports (73%) go to the Netherlands and other EU countries. The bulk of UK exports to Germany are used for refining and consumption, while exports to the Netherlands include crude oil ultimately destined for other countries. Most of the United Kingdom’s non-EU export trade was with China and South Korea (Figure 5).[9]

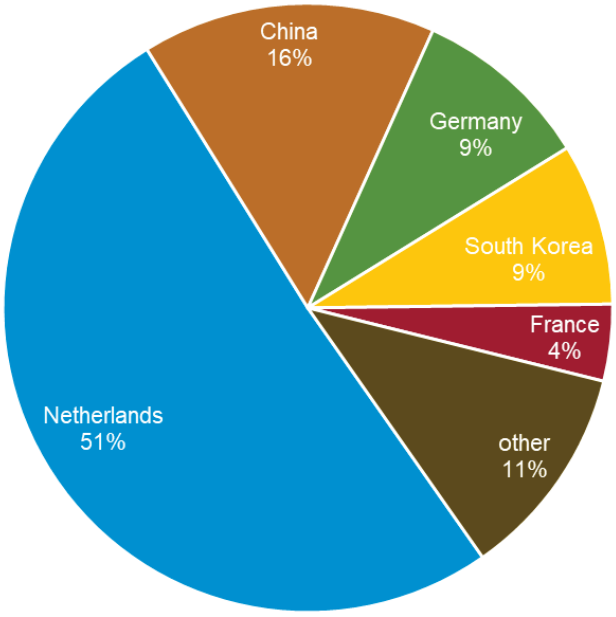
- UK refiners imported 723,000 b/d of crude oil in 2021. Together, crude oil (including condensate) from Norway, the United States, and Libya accounted for 74% of UK crude oil imports. Russia and Nigeria were also among the top five suppliers of UK crude oil imports (Figure 6).

- UK refineries produce more motor gasoline and fuel oil than is used domestically, and the country remains a net exporter of these products. Significant volumes of diesel and jet fuels are imported into the United Kingdom to meet local demand. Based on the most recent data available, net imports of diesel accounted for 43% of total diesel demand, and net imports of jet fuel accounted for 85% of total jet fuel demand in 2020.[10]

- In 2021, diesel imports from Russia represented 34% of total imports, and diesel from the Netherlands accounted for 20%. Jet fuel imports from Kuwait (18%), the United Arab Emirates (17%), and Saudi Arabia (17%) made up over half of total jet fuel imports.[11]

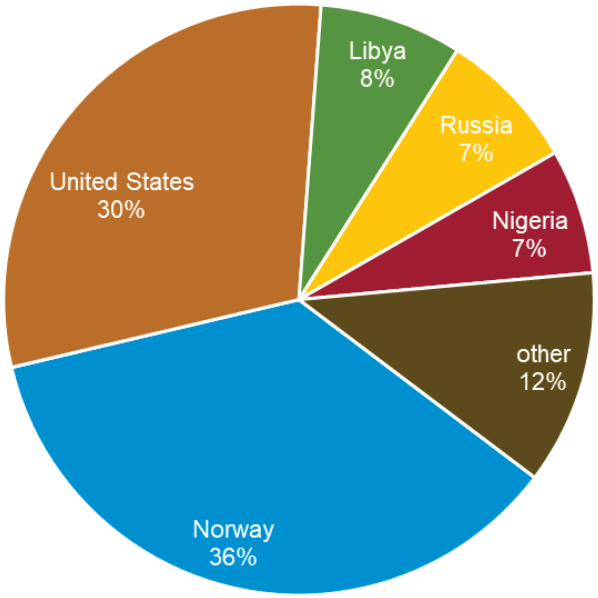
- Following a 23% decline in 2020, UK consumption of refined petroleum products increased by 5% to 1.3 million b/d in 2021 (Figure 7). In 2021, demand for jet fuel, which dropped by 60% to 107,000 b/d in 2020 because of tight air travel restrictions during the pandemic, remained well below pre-COVID levels at 101,000 b/d. Kerosene (heating oil) demand, which increased by 9% to 80,000 b/d in 2020 as more people remained indoors, decreased to 77,000 b/d as lockdowns ended in 2021.

Figure 5. UK crude oil and condensate exports by destination, 2021



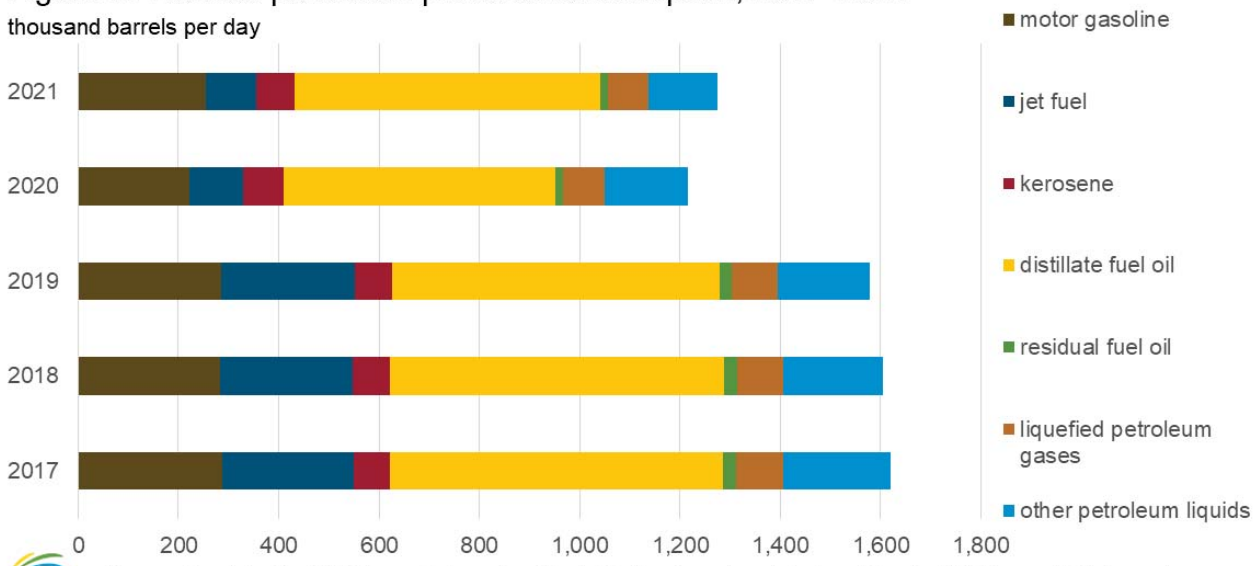
Source: Graph by the U.S. Energy Information Administration, based on data from International Energy Agency

Figure 6. UK crude oil and condensate imports by origin, 2021



Source: Graph by the U.S. Energy Information Administration, based on data from International Energy Agency

Figure 7. Refined petroleum products consumption, 2017–2021



Source: Graph by the U.S. Energy Information Administration, based on data from Digest of UK Energy Statistics and International Energy Agency

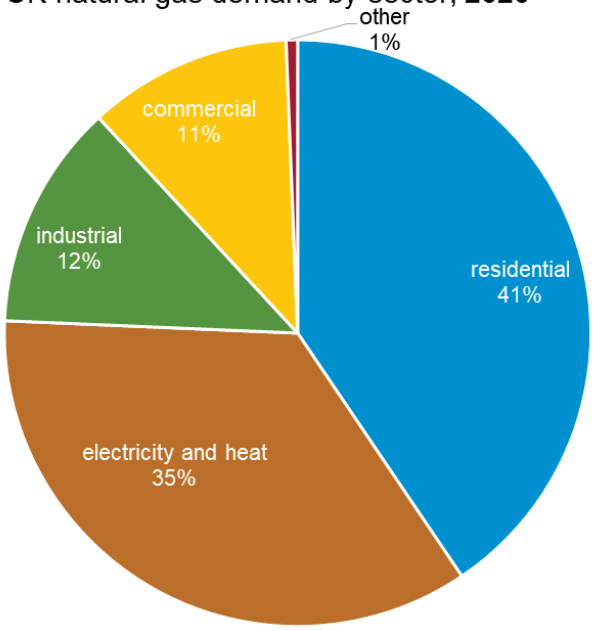
Natural Gas

- UK natural gas production peaked in 2000 at 3.8 trillion cubic feet (Tcf). From 2000 to 2014, production declined at an average rate of 7% per year. Increased investment in North Sea assets, driven by high crude oil and natural gas prices before and during 2014, led to production growth between 2014 and 2017 at an average rate of 4% per year.

- The United Kingdom has been a net importer of natural gas since 2004 and has three large-scale operational liquefied natural gas (LNG) terminals (South Hook, Dragon, and Isle of Grain) with total import capacity of 1.8 Tcf per year. A planned expansion of the Isle of Grain terminal will add another 183 billion cubic feet (Bcf) to UK total LNG import capacity by mid-2025. A fourth terminal in Teesside is idled and pending redevelopment.[12]

- In 2020, demand for natural gas in the residential sector, which accounted for 41% of UK consumption of natural gas, increased by 2% as a result of stay-at-home measures. Conversely, demand for natural gas in the industrial sector in 2020, which accounted for 12% of total consumption, decreased by 8% (Figure 8).[13]

Figure 8. UK natural gas demand by sector, 2020



Source: Graph by the U.S. Energy Information Administration, based on data from International Energy Agency

Sector organization

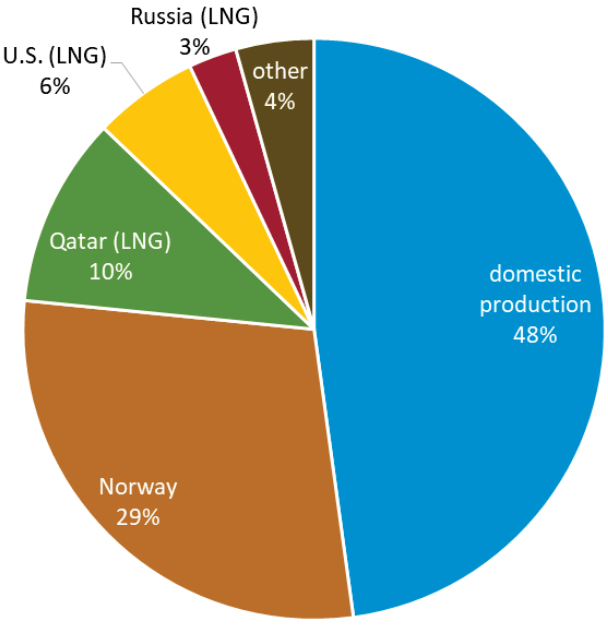
- In the United Kingdom, natural gas production, transmission, and distribution is fully privatized. With a market share of 27%, British Gas, a subsidiary of Centrica, is the largest natural gas distributor in the United Kingdom, according to the UK Office of Gas and Electricity Markets (Ofgem). E.ON and OVO Energy each hold about 10% of the distribution.[14]

- The UK natural gas distribution sector underwent a major change in 2005, when National Grid Gas sold four of the eight natural gas distribution networks to Scotia Gas Networks, Wales and West Utilities, and Northern Gas Networks. Before this sale, National Grid controlled the domestic natural gas distribution system.

Exploration and production

- According to OGJ, the United Kingdom held an estimated 4.6 Tcf of proved natural gas reserves as of January 2022, a 27% decrease from January 2021.[15]
- Domestic natural gas production accounted for 48% of total natural gas supply in 2020 (Figure 9). More than 70%, or 987 Bcf, of the total gross natural gas produced in the United Kingdom came from offshore associated gas fields. Annual production from dry natural gas fields decreased for a third year to 394 Bcf, and onshore fields continued to account for less than 1% of total gross natural gas production.[16]
- According to the British Geological Survey, the United Kingdom has identified four potentially viable areas for the commercial extraction of shale gas. These four areas are the Carboniferous Bowland-Hodder area in northwest England, Carboniferous Midland Valley in Scotland, Jurassic Weald Basin in south England, and Wessex area in south England.[17]

Figure 9. UK natural gas supply mix, 2020



Source: Graph by the U.S. Energy Information Administration, based on data from Digest of UK Energy Statistics

Pipelines

- Several pipeline systems carry natural gas from the United Kingdom's and Norway's offshore platforms to coastal landing terminals (Table 4).[18] The United Kingdom also has two natural gas pipeline interconnections with the Republic of Ireland, an undersea link from Scotland, a smaller

capacity link from Northern Ireland, and two pipeline connections with continental Europe, including the bidirectional Interconnector pipeline.

Table 4. United Kingdom's major natural gas pipelines

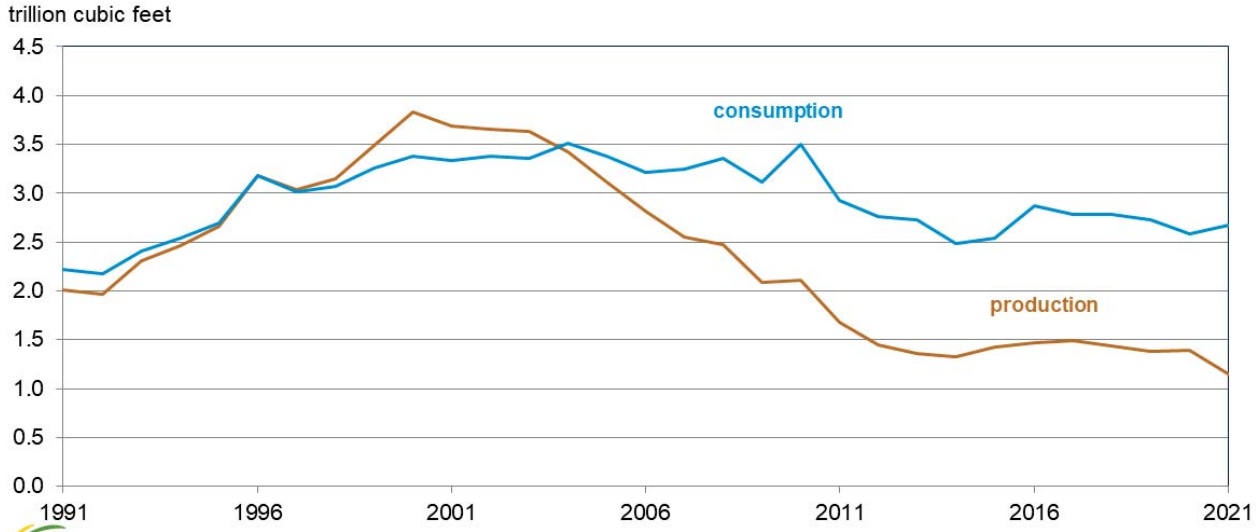
Pipeline system	Origin	Destination	Capacity (trillion cubic feet)	Total length (miles)
Langeled pipeline	Nyhamna natural gas plant, Norway	Easington, England	1.0	725
Interconnector UK (bidirectional)	Zeebrugge, Belgium	Bacton, England	0.9	146
	Bacton, UK	Zeebrugge, Belgium	0.7	146
Balgzand Bacton line (BBL)	Balgzand, Netherlands	Bacton, England	0.7	146
Shetland Island Regional Gas Export System (SIRGE)	Shetland natural gas plant at Sullom Voe	FUKA pipeline	0.7	145
Central Area Transmission System (CATS)	UK North Sea fields	Teesside terminal (England)	0.6	251
Tampen and Gjøa	Norwegian North Sea fields	FLAGS pipeline	0.6	14 (Tampen) and 81 (Gjøa)
Shearwater Elgin Area Line (SEAL)	UK North Sea fields	Bacton Gas Terminal (England)	0.5	295
Frigg (FUKA)	UK and Norwegian North Sea fields	St. Fergus gas terminal (Scotland)	0.5	225
Vesterled	Norwegian North Sea fields	St. Fergus gas terminal (Scotland)	0.5	224
Far north Liquids and Associated Gas System (FLAGS)	UK and Norwegian North Sea fields	St. Fergus gas terminal (Scotland)	0.4	280
Scottish Area Gas Evacuation (SAGE)	UK and Norwegian North Sea fields	St. Fergus gas terminal (Scotland)	0.4	201
UK-Eire Interconnector	Moffat, Scotland	Loughshinny, Ireland	0.4	120

Sources: North Sea Midstream Partners, Gassco, Shell, Apache Corp, CATS management Limited, Interconnector (UK), BG, BBL Company, and Digest of UK Energy Statistics

Trade and consumption

- The United Kingdom continues to import more natural gas than it exports. In 2021, the United Kingdom imported 1.8 Tcf of natural gas, about 73% of which arrived via pipeline and the remainder arrived as liquefied natural gas (LNG), according to the Global Trade Tracker. Natural gas from Norway and Qatar combined accounted for nearly 80% of total imports.
- In 2021, the United Kingdom imported 485 Bcf of LNG. Qatar, which was the largest source of LNG imported into the United Kingdom, accounted for 41% of total LNG imports last year. Imports of LNG from the United States and Russia accounted for 26% and 23%, respectively, of total LNG imports.[19]
- In 2021, the United Kingdom also exported 0.2 Tcf of natural gas to the Republic of Ireland and the European continent via pipelines.[20]
- In 2021, UK natural gas consumption increased by 3% to 2.7 Tcf after declining by 5% to 2.6 Tcf in 2020 (Figure 10). Increased activity in the industrial and commercial sectors contributed to higher natural gas consumption in 2021.

Figure 10. UK dry natural gas production and consumption, 1991–2021



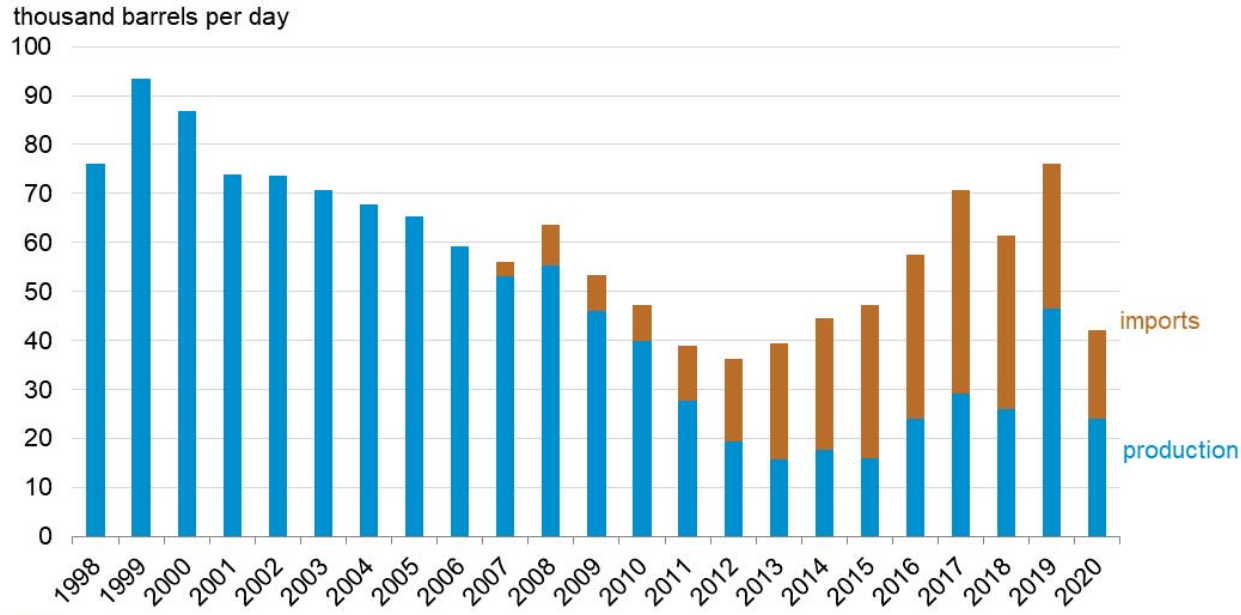
Source: Graph by the U.S. Energy Information Administration, based on data from Digest of UK Energy Statistics

Hydrocarbon Gas Liquids

- UK production of hydrocarbon gas liquids (HGLs) has been generally declining, reflecting the downward trend in UK natural gas production and refinery output. HGLs are produced alongside raw natural gas and crude oil. They are separated from dry natural gas at natural gas processing plants and are produced from crude oil at refineries.

- As a result of decreasing natural gas production in the North Sea, UK ethane production declined from a peak of 93,000 b/d in 1999 to a multiyear low of 16,000 b/d in 2015 (Figure 11).[21] In need of additional feedstock, UK petrochemical producers began importing ethane from Norway in 2007 and the United States in 2016. Although ethane production has increased since 2015, the United Kingdom continues to import ethane to meet domestic demand.

Figure 11. UK ethane supply, 2001–2020



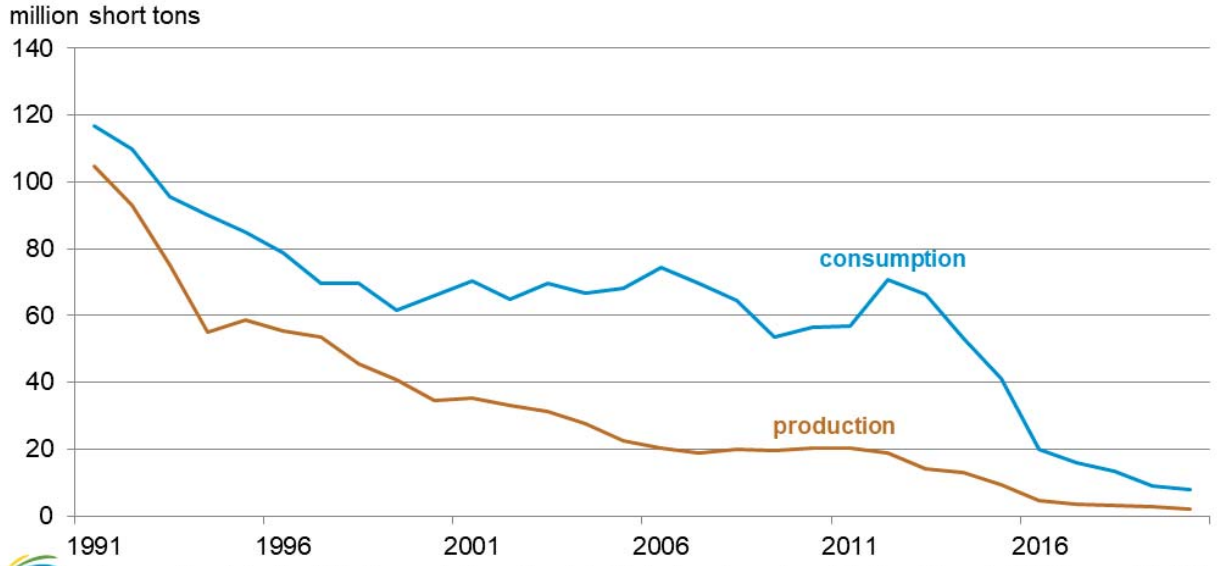
Source: Graph by the U.S. Energy Information Administration, based on data from Digest of UK Energy Statistics

Coal

- The United Kingdom had an estimated 26 million short tons (MMst) of recoverable coal reserves at the end of 2020, according to BP's *Statistical Review of World Energy* 2021.[22] The United Kingdom closed its final underground coal mine, North Yorkshire's Kellingley Colliery, in December 2015. Several surface mines, located in central and northern England, south Wales, and central and southern Scotland, remain in operation.

- Use of coal in the United Kingdom has declined because of environmental regulations and competing fuels, mainly natural gas (Figure 12). Although coal consumption experienced a brief increase in 2012, growing 14 MMst from 2011 levels, domestic coal production continued to decline. Coal imports increased to meet the increase in demand. Coal consumption resumed its decline in 2013, decreasing at an average rate of 23% per year from 2013 until 2020, in part because of the United Kingdom's Carbon Price Floor policy, which increased the cost of carbon emissions.

Figure 12. UK coal production and consumption, 1991–2020



Source: Graph by the U.S. Energy Information Administration, based on data from Digest of UK Energy Statistics

Electricity

- The United Kingdom had 76 gigawatts (GW) of installed electricity generation capacity at the end of 2020. Non-renewable single-fueled capacity, as a share of total capacity, has decreased year-over-year since 2012 because of multiple fossil fuel-fired plant and nuclear reactor closures (Figure 13). Conversely, the share of renewable capacity has more than tripled since 2012 in part because of wind and solar expansions.

- In 2020, the United Kingdom generated 300 billion kilowatthours (kWh) and consumed 280 billion kWh of electricity. Generation declined by 3%, and consumption declined by 5% compared with 2019 levels, according to the Digest of UK Energy Statistics.

- Natural gas-fired generation (111 billion kWh) continued to account for the greatest share of UK total generation, representing 36% of total generation in 2020. Together, generation from renewable sources (wind, solar, bioenergy, and hydro) grew to 46% of total generation.[23]

- In 2020, nuclear power accounted for 11% of total generation, but nearly half of the United Kingdom's current capacity is expected to retire by the end of the decade, according to the World Nuclear Association.[24] The United Kingdom plans to expand its nuclear fleet with four new nuclear plants likely to be built in Sizewell, Bradwell, Oldbury, and Wylfa Newydd.

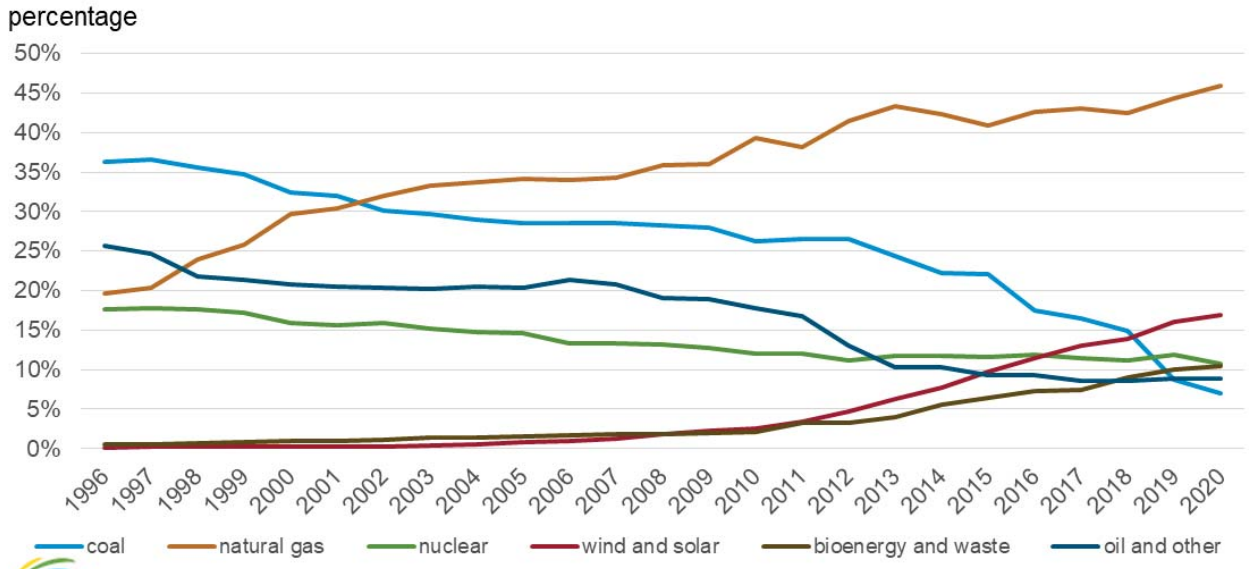
- The United Kingdom has six transnational electricity interconnectors with a total capacity of 6 gigawatts (GW): [25]

  - Interconnexion France-Angleterre (IFA) and Interconnexion France-Angleterre 2 (IFA2) with a total capacity of 3 GW to France

  - BritNed with a capacity of 1 GW to the Netherlands

- Nemo Link with a capacity of 1 GW to Belgium
- Moyle with a capacity of 0.5 GW to Northern Ireland
- East West with a capacity of 0.5 GW to Ireland

Figure 13. UK electricity capacity share by source, 1996–2020



Source: Graph by the U.S. Energy Information Administration, based on data from Digest of UK Energy Statistics

Notes

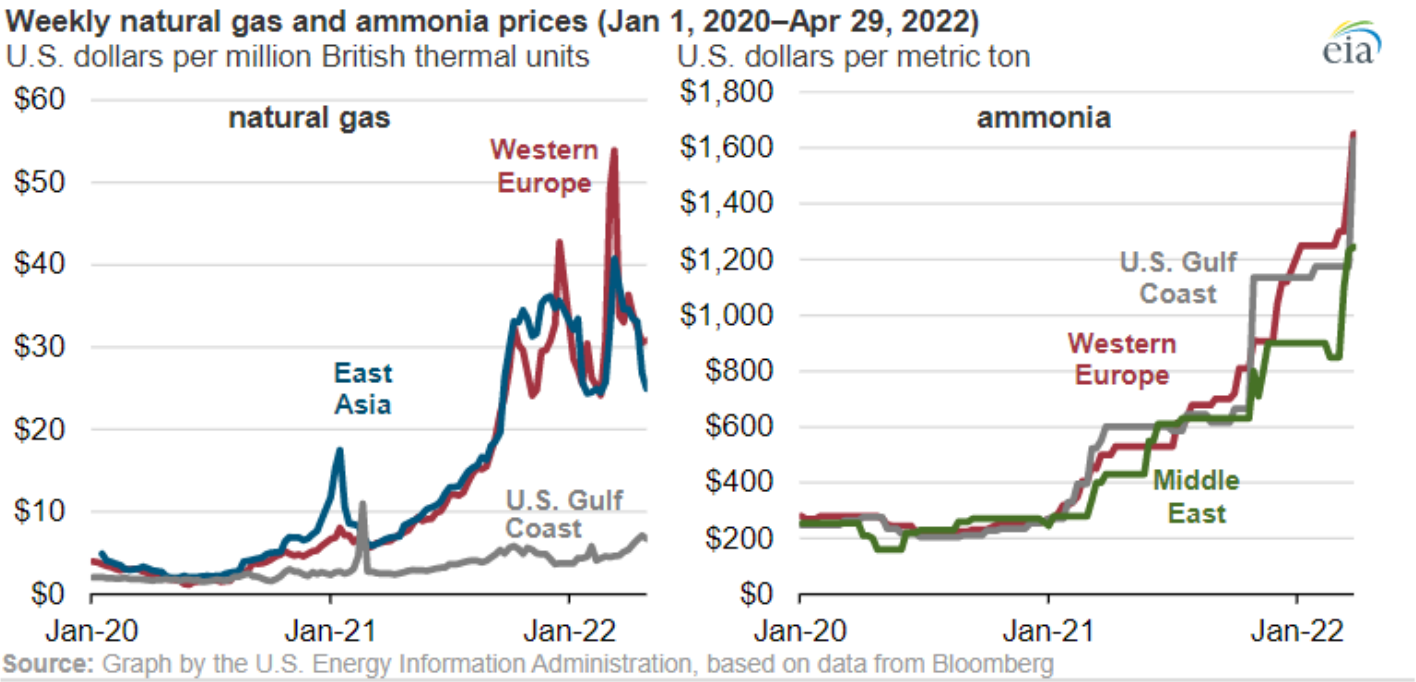
- Data in the text are the most recent available as of April 2022.
- Data are EIA estimates unless otherwise noted.

[1] UK Department for Business, Energy & Industrial Strategy, Digest of UK Energy Statistics (DUKES), Chapter 5: Electricity, Table 5.6: Electricity fuel use, generation and supply time series (updated July 29, 2021).
[2] UK Department for Business, Energy & Industrial Strategy, Digest of UK Energy Statistics (DUKES), Chapter 3: Petroleum, Table 3.1.2: Inland deliveries of petroleum (updated July 29, 2021).
[3] HM Revenue and Customs, National statistics: Statistics of government revenues from UK oil and gas production July 2021 (updated July 21, 2021).
[4] Oil & Gas Authority, OGA Overview 2021, p. 2 (accessed February 12, 2022).
[5] *Oil & Gas Journal*, "Worldwide Look at Reserves and Production," p. 22 (December 6, 2021).
[6] Oil & Gas Authority, Reserves and Resources (accessed February 14, 2022).
[7] ConocoPhillips Norway, The Pipelines, (accessed February 23, 2022); Repsol Sinopec Resources, Flotta Terminal, (updated May 2017); TAQA Global, United Kingdom Overview (accessed February 23, 2022); EnQuest, Ninian Pipeline System (accessed February 23, 2022); Ineos, Pipeline transportation, (accessed February 23, 2022); and Serica, Bruce, (accessed February 23, 2022).

https://www.eia.gov/todayinenergy/detail.php?id=52358

MAY 10, 2022

U.S. ammonia prices rise in response to higher international natural gas prices



The U.S. price of ammonia, the primary source of nitrogen fertilizer, has risen by a factor of six in the past two years, and most of these increases have occurred since March 2021. Ammonia prices generally follow natural gas prices because ammonia is produced primarily from natural gas. U.S. ammonia prices closely follow international ammonia prices because approximately 14% of total U.S. ammonia consumption is met by imports. Generally, prices of commodity chemicals (ammonia) closely correlate with prices of feedstock (natural gas). Because the global ammonia market is highly interconnected, the U.S. price of ammonia closely follows international ammonia prices rather than only U.S. natural gas prices. Compared with natural gas prices in the United States, which have remained relatively steady, international natural gas prices have risen rapidly over the past 12 months, pulling ammonia prices higher.

Nitrogen-based fertilizer is essential for producing major crops such as corn and wheat. In the United States, nitrogen-based fertilizer is used for nearly all corn acreage to increase yields.

After the 2020–21 winter heating season (November–March), international natural gas prices rose sharply, but the U.S. Henry Hub benchmark traded in a relatively narrow band, between $2.50 per million British thermal units (MMBtu) and $4.00/MMBtu, through September 2021. During this time, the price of natural gas in Western Europe (as reported at the Title Transfer Facility [TTF] in the Netherlands) and in Northeast Asia gradually rose from approximately $6.00/MMBtu in early March 2021 to approximately $18.00/MMBtu in early September 2021.

Prices of natural gas in Western Europe and Northeast Asia continued to rise during the 2021–22 heating season, and they averaged approximately $35.00/MMBtu in the last week of March. Although U.S. natural gas prices also rose, they ended the 2021–22 heating season at close to $5.00/MMBtu, compared with approximately $2.60/MMBtu in March 2021.

The United States Geological Survey (USGS) estimates that in 2021, the United States produced 17 million metric tons (MMmt) of ammonia, behind China (47 MMmt) and Russia (19 MMmt). U.S. ammonia production has nearly doubled since 2012. Consistently low U.S. natural gas prices have contributed to developing new ammonia production capacity and have resulted in restarting ammonia plants that were closed in the early 2000s during a period of high natural gas prices. Despite these capacity additions, the United States remains an ammonia net importer. Between 2012 and 2021, ammonia imports dropped from 37% of the total U.S. ammonia supply to 14% of the total supply.

Consumed as both a feedstock and a fuel, natural gas is important for producing nitrogen-based fertilizers. As a feedstock, natural gas, which is primarily methane (CH_4), is reduced to carbon and hydrogen in a steam methane reformer. The hydrogen is then purified and combined with nitrogen to make ammonia (NH_3), the foundation for all nitrogen-based fertilizers. In 2021, nearly 90% of the ammonia consumed in the United States was for fertilizer production.

Principal contributors: Tejasvi Raghuveer, Warren Wilczewski

Tags: prices, international, natural gas, Gulf Coast, China, Europe, Russia

https://financialpost.com/opinion/jay-goldberg-ottawa-looking-at-a-wealth-tax-to-pay-for-soaring-spending

1. **FP Comment**

Jay Goldberg: Ottawa looking at a wealth tax to pay for soaring spending

A wealth tax would inflict economic pain on rich Canadians, poor Canadians and everyone in between

Author of the article:
Jay Goldberg, **Special to Financial Post**
Publishing date:
May 13, 2022 • 1 day ago • 3 minute read • 204 Comments

Prime Minister Justin Trudeau has been eyeing a wealth tax to pay for his government's spending spree. Heavily redacted documents obtained by the Canadian Taxpayers Federation under an access to information request show the prime minister asked for analysis of a $60-billion wealth tax. With deficits looming to the far horizon, it must be a tempting cash grab.

But a wealth tax would inflict economic pain on rich Canadians, poor Canadians and everyone in between. Many other countries have tried and then abandoned wealth taxes, mainly because they cause the ultra-wealthy to leave the country, taking their investments and businesses with them and leaving regular people with fewer jobs and a higher tax load.

The Trudeau government has been dancing around the idea of a wealth tax for years. It has supported policies like luxury taxes on cars, boats, and planes, as well as a "flipping tax" on short-term home-owners. But it has never explicitly come out in favour of a direct tax on individual wealth.

Behind the scenes, however, documents show the prime minister has been eyeing a wealth tax quite closely. The Parliamentary Budget Officer (PBO) released a report early last year looking at the revenue implications of implementing a one-time wealth levy on Canadians. According to the report, which was written at the request of a Liberal member of parliament, a one-time three per cent tax on people with more than $10 million in assets, coupled with a one-time five per cent tax on people with more than $20 million in assets, would rake in $60 billion.

The prime minister took a personal interest in the report. According to documents, he requested an analysis of the report to explore the "merit of the policy." In a memorandum explicitly addressed to Trudeau, bureaucrats laid out exactly how a wealth tax could be imposed on Canadians. Clearly, a wealth tax is on Trudeau's mind.

This should be no surprise. The government is committed to tens of billions of dollars in new spending on programs like subsidized daycare, pharmacare and dental care — though without offering any way to pay for them. It has even struck a deal with the NDP — a deal predicated on soaring spending — to stay in power for another three years. And, even though the prime minister once argued that budgets balance themselves, these new programs are so expensive even he must know the money must come from higher taxes.

But embracing a wealth tax in Canada would be a colossal mistake. Wealth taxes don't just hurt the rich. They hurt the entire economy. The PM's own briefing note admits that wealth taxes are "complex" and generate "tremendous uncertainty" — which also means they may not generate as much revenue as the government hopes despite damaging the economy.

Consider the case of France. After 12,000 millionaires fled France within a single year, President Emmanuel Macron, a former socialist finance minister, led a successful push to repeal France's wealth tax. He saw how detrimental the tax was to the national economy. It had turned France into "Cuba without the sun," and Macron declared it had to go.

Like it or not, rich people are mobile. Macron realized that wealthy people in France could simply pick up move to Denmark. Wealthy Canadians could do the same. Consider this hypothetical. A wealthy Canadian entrepreneur makes $30 million a year and pays $10 million in income taxes. If that entrepreneur leaves Canada to avoid a wealth tax, it would take one thousand taxpayers earning $50,000 per year to cover that annual bill.

Most Canadians might not take a direct hit from a wealth tax. But its impact on the overall economy means everyone will suffer. When wealthy people flee, they take with them, not just their wealth, but also their income and spending power. Wealth taxes shrink the economic pie. France figured out the dangers of a wealth tax the hard way, losing rich people and income tax revenue as a result. Canada should learn from France's experience and take a pass on wealth taxes.

Jay Goldberg is Ontario director at the Canadian Taxpayers Federation.

Dan Tsubouchi @Energy_Tidbits · 2h

1/3 Need to use up near term #Oil #NatGas capacity to replace RUS, but don't build up future #Oil #NatGas capacity ICYMI, @IEA @fbirol says need available short cycle #Oil #NatGas ie. US shale, existing field extensions, etc to fill RUS shortfalls, Makes sense BUT ...#OOTT

1 1 1

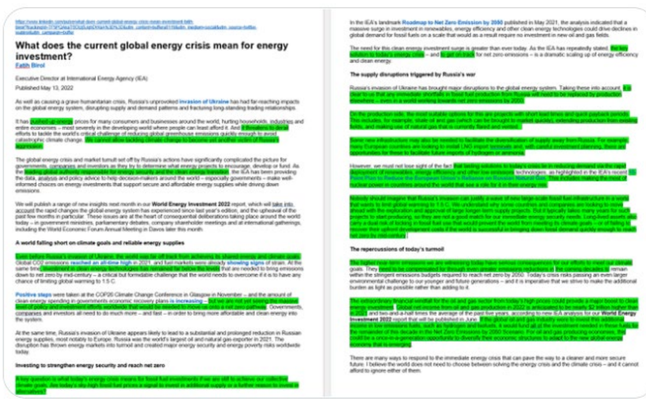
Dan Tsubouchi @Energy_Tidbits · 2h

2/3. .. then says "Nobody should imagine that Russia's invasion can justify a wave of new large-scale fossil fuel infrastructure in a world that wants to limit global warming to 1.5 C". YET clearly warns ...
#OOTT

1

Dan Tsubouchi @Energy_Tidbits · 2h

3/3.. "we are not yet seeing the massive level of policy and investment efforts worldwide that would be needed to move us onto a net zero pathway ". Looks like a recipe for 2020s to be a decade of teetering on #EnergyCrisis. Positive for #Oil #NatGas for 2020s. #OOTT



What does the current global energy crisis mean for energy investment?

Fatih Birol

Executive Director at International Energy Agency (IEA)

Published May 13, 2022

A world falling short on climate goals and reliable energy supplies

Investing to strengthen energy security and reach net zero

The supply disruptions triggered by Russia's war

The repercussions of today's turmoil

Dan Tsubouchi @Energy_Tidbits · 3h

Should have said partial positive to #Oil as "Beijing's Fangshan district, home to 1.3 million people, will strictly implement work-from-home measures for all local residents, suspending all bus, subway and car hailing services" #OOTT globaltimes.cn/page/202205/12...

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Positive to #Oil. "Shanghai planned to restart business and services activities in phases from Monday" Shanghai city officials said today. #OTT

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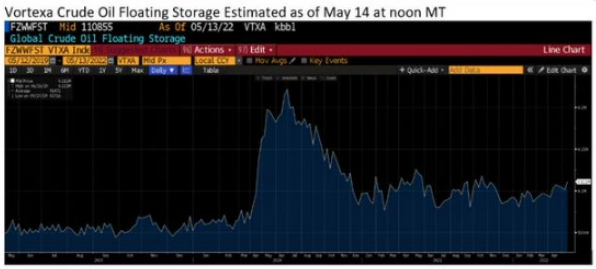
globaltimes.cn
Shanghai to restart business, services operation in phases, after one-...
Shanghai planned to restart business and services activities in phases from Monday, with shopping centers, supermarkets, pharmacies, wet ...

Dan Tsubouchi @Energy_Tidbits · 20h

#Vortexa crude #Oil floating storage at 05/14 est 110.86 mmb, +9.87 WoW vs revised up 100.99 mmb at 05/07. More revisions, not too surprising, coincides with timing RUS invasion of UKR. But looks like floating storage at higher levels +/- 105 mmb. Thx @Vortexa @TheTerminal #OOTT



Source: Bloomberg, Vortexa

Est as of May 14, noon MT

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Est as of May 7, noon MT

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Est as of Apr 30, 2pm MT

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Fr 03/11/2022	97056
Fr 03/04/2022	94408
Fr 02/25/2022	91897
Fr 02/18/2022	85737

Source: Bloomberg, Vortexa

Dan Tsubouchi @Energy_Tidbits · May 14

Another of the many #OPEC+ underperformers who are well below quota. @business Zulfugar Agayev reports Azerbaijan April crude oil production of 579,000 b/d vs OPEC+ quota of 681,000 b/d in April. Note Azerbaijan also produced 114,000 b/d condensate. #OOTT

	April 2022 Required Production
Algeria	1002
Angola	1450
Congo	309
Eq.Guinea	121
Gabon	177
Iraq	4414
Kuwait	2665
Nigeria	1735
Saudi Arabia	10436
UAE	3006
Azerbaijan	681
Bahrain	195
Brunei	97
Kazakhstan	1621
Malaysia	565
Mexico	1753
Oman	838
Russia	10436
Sudan	71
South Sudan	123
OPEC 10	25315
Non-OPEC	16379
OPEC+	41694

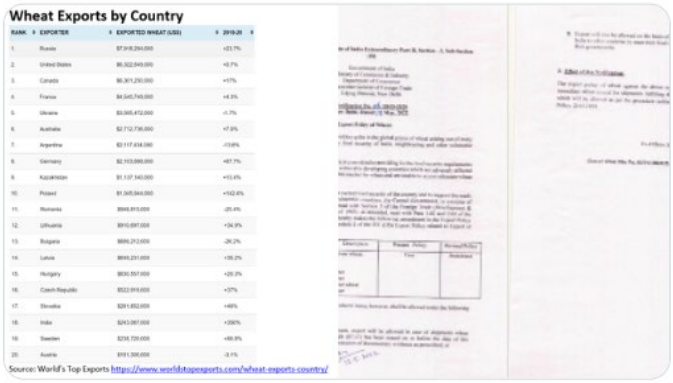
	May 2022 Required Production
Algeria	1013
Angola	1465
Congo	312
Eq.Guinea	122
Gabon	179
Iraq	4461
Kuwait	2694
Nigeria	1753
Saudi Arabia	10549
UAE	3040
Azerbaijan	688
Bahrain	197
Brunei	98
Kazakhstan	1638
Malaysia	571
Mexico	1753
Oman	846
Russia	10549
Sudan	72
South Sudan	124
OPEC 10	25589
Non-OPEC	16537
OPEC+	42126

	June 2022 Required Production
Algeria	1023
Angola	1480
Congo	315
Eq.Guinea	123
Gabon	181
Iraq	4509
Kuwait	2724
Nigeria	1772
Saudi Arabia	10663
UAE	3075
Azerbaijan	696
Bahrain	199
Brunei	99
Kazakhstan	1655
Malaysia	577
Mexico	1753
Oman	855
Russia	10663
Sudan	73
South Sudan	126
OPEC 10	25864
Non-OPEC	16694
OPEC+	42558

Source: OPEC

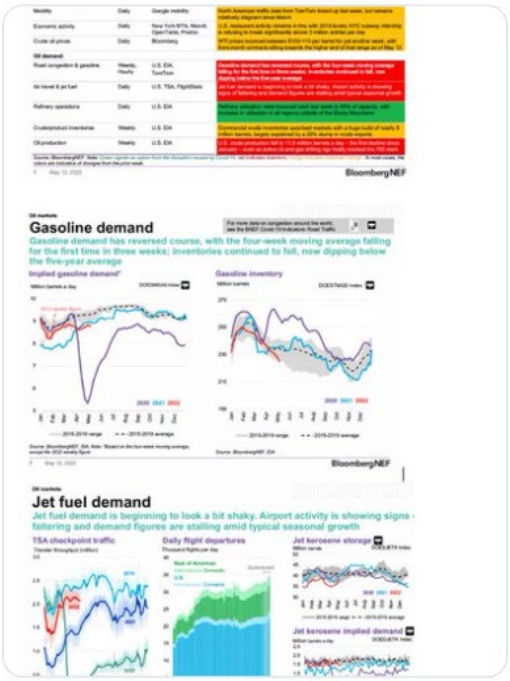
Dan Tsubouchi @Energy_Tidbits · May 14

#Inflation #FoodCrisis. India bans #Wheat exports unless existing irrevocable LC or India approves foreign govt request due to food security. With RUS/UKR exports already hit, any further hit to wheat exports should hit global wheat price. Thx @TopExports content.dgft.gov.in/Website/dgftpr...



Dan Tsubouchi @Energy_Tidbits · May 13

Looks like #PetroleumProducts price response in US. "#Gasoline demand has reversed course with 4-week moving average falling for the 1st time in 3 weeks" "jet fuel demand is beginning to look a bit shaky". Thx @BloombergNEF Danny Adkins. #OOTT



Dan Tsubouchi @Energy_Tidbits · May 13

#JCPOA. "It has gone better than expected - the negotiations were stalled, and now they have been reopened" says EU @JosepBorrellF. But hard to see a quick deal, don't think Biden would sign off on deal ahead of his Israel visit in June? #OOTT

reuters.com

EU's Borrell says coordinator trip to Iran was positive

The EU's foreign policy chief said on Friday that he believed a trip to Tehran by his coordinator to the Iran nuclear talks this week had ...

Dan Tsubouchi @Energy_Tidbits · May 13

twitter now down only 10% in pre market. glad i am not a tech analyst

> **Elon Musk** @elonmusk · May 13
>
> Still committed to acquisition
>
> Show this thread

Dan Tsubouchi @Energy_Tidbits · May 13

Twitter shares down 18% in premarket post this tweet at 3:44am MT

> **Elon Musk** @elonmusk · May 13
>
> Twitter deal temporarily on hold pending details supporting calculation that spam/fake accounts do indeed represent less than 5% of users reuters.com/technology/twi...
>
> Show this thread

Dan Tsubouchi @Energy_Tidbits · May 12

"cost parity between a BEV & an ICE at least another 10 years out" "economics of the BEV, which are, particularly that nickel based chemistry that everyone is moving towards, really just doesn't work" #WellsFargo's Colin Langan to @KellyCNBC. #Oil is needed for longer. #OOTT

Raw material costs for EV makers have spiked more than we expected, says Wells Fargo's Langan

SAF Group created transcript of comments from Wells Fargo Securities, Colin Langan in response to questions from CNBC's Kelly Evans on CNBC Power Lunch on May 12, 2022. https://www.cnbc.com/video/2022/05/12/raw-material-costs-for-ev-makers-have-spiked-more-than-we-expected-says-wells-fargos-langan.html

Items in "*italics*" are SAF Group created transcript

At 0:29 min mark, Langan says "*... the most shocking thing, I mean Tesla is a pretty well known car, but the raw material costs have actually spiked much more than we were expecting. So if you go back to 2021, you're talking about a $112 per kilowatt hour battery that is now about $168 according to those experts. That really puts cost parity between a BEV and an ICE at least another 10 years out.*"

At 1:25 min mark, Langan says "*... so what we did is we dug into the raw material supply chain to really understand whether that is going to stay sustainably high. if its' just a temporary blip. And what I thought was very concerning, if you go out to 2030, six of the seven key raw materials -- copper, nickel, lithium. All will be very tight on supply at that point. And so it's really hard to see an opportunity for these to sustainably correct downward. And that really is the big challenge because the economics of the BEV, which are particularly, that nickel based chemistry that everyone is moving towards, really just doesn't work. We've talked about the $100 per kilowatt hour target, sort of the point that people think is parity. You know the raw materials of that battery went from 62 to 119. So it's just impossible unless costs come down. and the problem is that it doesn't look like they're going to.*"

Prepared by SAF Group https://safgroup.ca/news-insights/

Dan Tsubouchi @Energy_Tidbits · May 12

Trans Mountain Expansion ~55% construction complete as of May 5, 2022. Construction completion target is Q3/23. Expansion increases capacity from 300,000 b/d to 890,000 b/d & direct access to Asian markets. #OOTT

NSMOUNTAIN

oration Releases 2021 Financial Results https://www.transmountain.com/news/2022/trans-mountain-corporation-releases-2021-financial-results?
s=Updates&utm_campaign=1f6f90eb2f-EMAIL_CAMPAIGN_12_2_2021_15_6_COPY_01&utm_medium=email&utm_term=0_f287e4f791-1f6f90eb2f-307138

e-wide safety stand down that began in December of 2020, and completion of re-training of workers and supervisors, construction resumed
ine spreads, facilities, and reactivation sites midway through the first quarter of 2021.

vas made across all fronts along the pipeline route. As of December 31, 2021, the overall Project including upfront costs of permitting, regula
aterials is approximately 55 per cent complete. Construction is approximately 44 per cent complete, with $10.5 billion in capital spending incu
capitalized since the inception of the project, with approximately 490 km of the right-of-way stripped and graded, 380 km of pipe length welde
dditionally, significant progress was made on facilities along the route, which were approximately 73 per cent complete at year-end. As of Dec
people working on the Project. As of May 5, 2022, construction of the TMEP has progressed to approximately 55 per cent completion.

onfident about what's ahead in 2022 and 2023 for Trans Mountain and the Expansion Project. We are excited to be delivering on our commi
nvironmentally conscious pipeline for tomorrow," added Anderson. "We have 100 per cent of our route confirmed by the Canada Energy Re
gy through Coldwater. With construction completed in the Greater Edmonton area and work underway in every spread with the recent start o
BC, we are making considerable progress."

ans Mountain submitted a variance application to the Canada Energy Regulator (CER) for the West Alternative Route through the Coldwater
ain completed detailed environment and engineering work for the Western Alternative Route along with engagement with area Indigenous gr
ernative Route in July 2021. The corresponding amendment to the BC Environmental Assessment Certificate was approved on October 27, 2
tivities commencing in January 2022.

Dan Tsubouchi @Energy_Tidbits · May 12

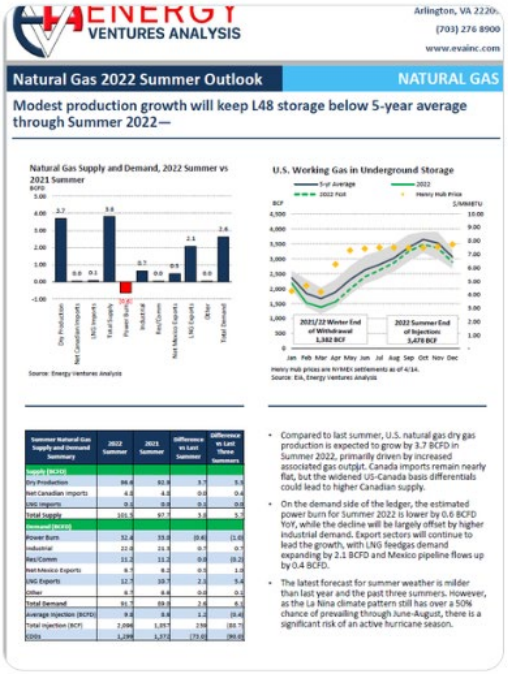
Beijing says no lockdown, but "suggests" people stay in their home for next 3 days. Will keep mobility low in Beijing. Beijing "suggests" is like when western politicians "ask" higher income people to pay a little more in taxes. #OOTT

Stay informed
This Tweet links to a China state-affiliated media website.
Find out more

globaltimes.cn
Beijing refutes rumors of lockdown, reassures of adequate food suppli...
Amid claims circulating that Beijing would be locked down, which led to local residents flooding supermarkets to hoard food, Beijing officials o...

Dan Tsubouchi @Energy_Tidbits · May 11

Positive outlook for US #NatGas from @natgas_ngsa's usual good summer outlook. End of injection season storage Oct 31/22 fcast 3.478 tcf, -156 bcf YoY vs 3.634 tcf Oct 31/21. Must read @EVA_INC backup steps thru all demand/supply line items. #OOTT
ngsa.org/wp-content/upl...



Dan Tsubouchi @Energy_Tidbits · May 11

Positive, India 👇 adding 2.9 bcfd of #LNG regas capacity by 2025. But need a big step up in 2025-30 pace to hit #Petronet est +12 bcf/d LNG import growth to reach India's target for #NatGas to be 15% of its energy mix by 2030. #OOTT
twitter.com/Energy_Tidbits...

> **Ministry of Petroleum and Natural ...** @Petroleum... · May 10
>
> India's capacity to regasify LNG to increase by 55% by 2025. LNG holds around 49% share in total natural gas consumption in FY 2021-22. LNG is bound to be the key driver for India's #PragatiKiGati
>
> #PMGatiShakti @Logistics_MoCI

Dan Tsubouchi @Energy_Tidbits · May 11

Hard to disagree food, energy, commodities prices won't hit economies. But even harder to disagree Saudi's Abdulaziz won't keep attending to #Oil markets as he has successfully done to avoid oil price crash. He is The Man and why oil is $100. #OOTT

> **Dan Tsubouchi** @Energy_Tidbits · May 11
>
> Is massive #Oil demand destruction & price drop coming? @EuronavNV Rustin Edwards says yes. Poor countries already hit. Can western govts keep subsidizing to minimize the impact & avoid Edwards scenario? Always worth reading different views. Thx @gulf_intel @DyalaSabbagh_GI.#OOTT
>
> SAF Group created transcript of excerpt of comments from Dyala Sabbagh (Partner & COO, Gulf Intelligence) and Rustin Edwards (Head, Fuel Oil Procurement, Euronav NV) on Gulf Intelligence Podcast: Daily Energy Markets May 11th.
> https://soundcloud.com/user-846530307/podcast-daily-energy-markets-may-11th
>
> Items in "*italics*" are SAF Group created transcript
>
> Sabbagh. "*... how worried should we be about the impact of the commodities getting much more expensive on emerging markets and the forecasts by all intense is that this is another supercycle and nothing is going to stop it?*"
>
> Edwards. "*I would tend to agree that, or disagree with that we are entering another supercycle. I think the inflationary pressures are going to curtail a supercycle, We're going to see a pull back before we have any restart of a supercycle. I wouldn't be surprised that by Q4 we have a much dramatically lower crude oil price akin to what it happened in 2008 and 2018 when the markets went into a major recession, we had a wholesale collapse from $147 down to $30 dollars. I think that the demand destruction is going to be massive. It's already being felt. You've had unprecedented, I mentioned earlier, in a lot of developing nations, because the price of energy, the price of commodities, and the soon to happen price of food is going to really put a lot of people into a distress situation. You already have the UK, a developed nation, talking about a cost of living crisis and how they are trying to tackle the cost of food and high cost of energy for their general populous. And that's just going to keep rolling on. I don't see how we get out of this inflated asset bubble until we actually get a retracement down, recession hits, revalue and then we move forward.*"
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>
> Prepared by SAF Group https://safgroup.ca/news-insights/

Dan Tsubouchi @Energy_Tidbits · May 11

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Prepared by SAF Group https://safgroup.ca/news-insights/

Dan Tsubouchi @Energy_Tidbits · May 11

Best indicator #LNG supply gap is coming, Huge wave of LNG buyers locking up long term LNG supply. #VentureGlobal 20-yr supply 0.13 bcfd to #Petronas. Now 7.57 bcfd of LT supply locked up since wave started 07/01/21, see SAF Group July 14, 2021 blog #OOTT ventureglobalng.com/press/venture-...

SAF GROUP

Blog Summary

Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs

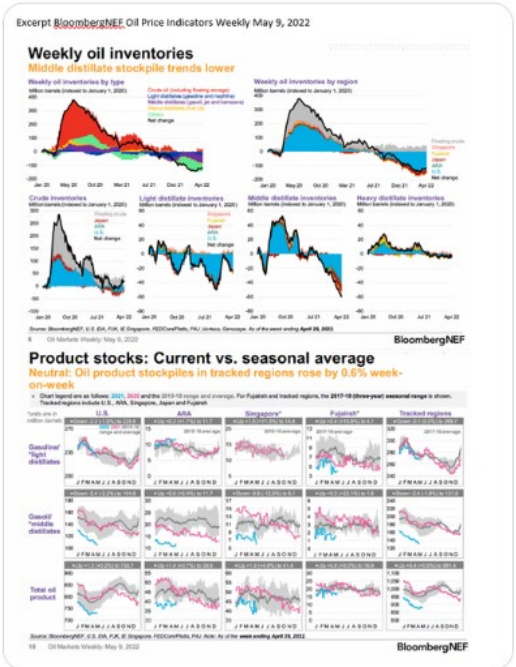
Posted Wednesday, July 14, 2021 at 10:00 MT

The last 7 days has shown there is a sea change as Asian LNG buyers have made an abrupt change in their LNG contracting and are moving to lock in long term LNG supply. This is the complete opposite of what they were doing pre-Covid when they were trying to renegotiate Qatar LNG long term deals lower and moving away from long term deals to spot/short term sales. Why? We think they did the same math we did in our April 28 blog "Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?" and saw a much bigger and sooner LNG supply gap driven by the delay of 5 bcf/d of Mozambique LNG that was built into most, if not all LNG supply forecasts. Asian LNG buyers are committing real dollars to long term LNG deals, which we believe is the best validation for the LNG supply gap. Another validation, Shell, Total and others are aggressively competing to invest long term capital to partner in Qatar Petroleum's massive 4.3 bcf/d LNG expansion despite plans to reduce fossil fuels production in the 2020s. And even more importantly to LNG suppliers, the return to long term LNG contracts provides the financing capacity to commit to brownfield LNG FIDs. The abrupt change by Asian LNG buyers to long term contracts is a game changer for LNG markets and sets the stage for brownfield LNG FIDs likely as soon as before year end 2021. It has to be brownfield LNG FIDs if the gap is coming bigger and sooner. And we return to our April 28 blog point, if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? LNG Canada Phase 1 at 1.8 bcf/d capacity is already a material positive for Cdn natural gas producers. A FID on LNG Canada Phase 2 would be huge, meaning 3.6 bcf/d of Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub. And with a much shorter distance to Asian LNG markets. This is why we focus on global LNG markets for our views on the future value of Canadian natural gas.

For Details, Please See The 8 Page Blog
http://www.safgroup.ca/research/trends-in-the-market/

Dan Tsubouchi @Energy_Tidbits · May 10

Very high #Diesel prices supported by diesel stocks well below 2017-19 ave in all global regions. Diesel aka gasoil is in middle distillates along with #JetFuel/#Kerosene. #Gasoline prices have to go way higher to get more refinery space. Thx @BloombergNEF @WayneTanMing. #OOTT



Dan Tsubouchi @Energy_Tidbits · May 10

Huge wave continues of #LNG buyers locking up long term LNG supply. #VentureGlobal long term supply of 0.26 bcfd to Exxon's "LNG Asia Pacific" group. Now 7.44 bcfd of LT supply locked up since wave started 07/01/21, see SAF Group July 14, 2021 blog. #OOTT
ventureglobalIng.com/press/venture-...

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Dan Tsubouchi @Energy_Tidbits · May 10

Tokyo's energy conservation push 👇 will be followed by EU. Also reminds of business trips to Japan post Arab Oil Embargo with office temps set to >80F except it was suits & ties, no suggestion of wearng cool (temp not fashion) short sleeve shirts to work. Thx @shoko_oda #OOTT

Shoko Oda @shoko_oda · May 8

⚡💡🔌Lil graphic poster of Tokyo's HTT campaign. Calls for people to set AC at 28C, place solar panels at home, etc.

kankyo.metro.tokyo.lg.jp/climate/tokyo_...

Show this thread

Dan Tsubouchi @Energy_Tidbits · May 9

Buckle up! Where will US #Gasoline prices be in July asks @JoeSquawk? "substantially higher from here" & "let's not forget the macro backdrop for paying for these higher prices is much stronger than what we have seen historically" says #GoldmanSach Jeff Currie. #OOTT

SQUAWK BOX U.S.

Gas prices are headed 'substantially higher,' says Goldman Sachs' Jeff Currie

SAF Group created transcript of CNBC's Joe Kernen interview with Goldman Sachs Global Head of Commodities Research Jeff Currie. https://www.cnbc.com/video/2022/05/09/gas-prices-are-headed-substantially-higher-says-goldman-sachs-jeff-currie.html

Items in "italics" are SAF Group created transcript

Kernen "let's talk about gas if we can. I'm not talking about natural gas. I'm talking about just gas prices, which were up sharply. We've got the summer driving season coming. We've got diesel at stratospheric levels. And we had an earlier discussion about how that could hurt the supply of the gas everybody else is using when refiners are making so much money on diesel. so where are you know unleaded regular, where are those prices headed by, let's say July 1st your view?"

Currie. "Oh, substantially higher from here. you know think about it. China, you know the second largest commodity or oil consumer in the world has been locked down for the last, you know, say three to four weeks. Part of this rally that you're seeing right now is China is slowly but surely coming out of lockdowns. You know people are worried about a recession and all these other factors you know impacting commodity markets. Let's not forget, the hit to demand, particularly oil and commodities, that those lockdowns in Shanghai were substantial. And think about it, you're still at $107 a barrel right now, you know with China and Shanghai partially locked down. So you have to ask yourself, what happens when you come out of lockdowns the same time you get that huge surge in holiday travel demand come this July. And don't forget we haven't seen the full extent of the sanctions on Russia. They really begin to bite this month, and by the time we're in July, we'll see the full extent of it. So those three factors should send prices, you know at the pump, oil, all of it substantially higher.

Kernen: "Planes are full, people are really pent up demand for taking a vacation. I think the great American highway is going to beckon to them again, and I don't know what type of prices we're going to be talking about. Jeff, I don't do you think we'll see 6, $7 gas? Will we have European style prices this summer?"

Currie: "Yeah, yeah, let's not forget the macro backdrop for paying for these higher prices is much stronger than what we have seen historically. You know, there's still high savings that's left over that was built up during the pandemic. Credit capacity is still relatively high, wages are higher. So the setup going into the summer driving season also says that the tolerance for higher prices is much greater. So you know the numbers you're talking about are very feasible. And that's, as you probably talked about in your discussion around diesel fuel, you know the capacity to produce these fuels is also significantly curtailed. And think about this, if you have those really high margins for refined products right now, the refineries are shut down for maintenance. As they come out of this maintenance period again, in that July time period, their pull on crude supplies is going to be significant. And then it goes back to that whole underinvestment theme that you brought up earlier. The revenge of the old economy. We haven't, you know, invested enough in oil production capacity, refining capacity. All of the system used to deliver these fuels at a time demand is probably going to be off the charts as you point out."

Prepared by SAF Group https://safgroup.ca/news-insights/

Dan Tsubouchi @Energy_Tidbits · May 9

Here is why US #LNG exports being +1.5 bcf/d or +0.55 tcf YoY is so significant, it means US #NatGas supply days of consumption + exports are down 6 days YoY. This great @RJResearch graph 👇 tells the story. Thx John Freeman, JR Weston. #OOTT

Excerpt from:

RAYMOND JAMES

US RESEARCH | PUBLISHED BY RAYMOND JAMES & ASSOCIATES

ENERGY

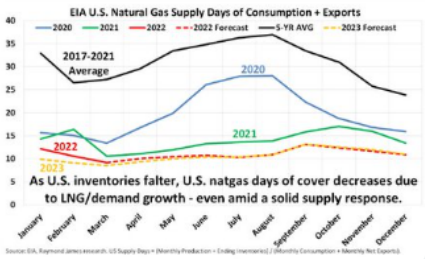
John Freeman, CFA | (713) 278-5251 | john.freeman@raymondjames.com
J.R. Weston, CFA | (713) 278-5276 | j.r.weston@raymondjames.com
Graham Price, Sr. Res. Assoc. | (713) 279-5259 | graham.price@raymondjames.com

MAY 9, 2022 | 3:00 AM EDT
INDUSTRY BRIEF

Energy Stat: Dramatic U.S. Natural Gas Price Rally Isn't Done - Look Out for $9 Natgas

Let's cut to the chase: after a historic price run, why should we be just as bullish on natural gas prices in 2023?

We often get the question "why are you bullish on gas prices if you model inventories building next year?" For one thing, inventories don't build all that much in our model (which we will outline below). Additionally, the image to the right explains that even as inventories build back into the mid-3 Tcf range in 2023, overall supply availability is not getting looser. A core tenet of our outlook is that the U.S. market should try to drive closer to "full" ending storage levels each year to provide as much cushion as possible for growing U.S. LNG exports and other demand factors — in other words, to keep days of supply from getting too tight. In 2022 and 2023, this isn't happening.



Dan Tsubouchi @Energy_Tidbits · May 9

Biggest win to US #NatGas prices continue - every possible bcf/d is being exported via #LNG. No wonder, EU is attracting every possible US #LNG cargo. US LNG netback to EU currently $21.60/mmbtu vs $13.95 to Asia. US LNG exports now >11 bcf/d or >4 tcf/yr. ...

Dan Tsubouchi @Energy_Tidbits · May 9

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By Bloomberg Automation
(Bloomberg) -- U.S. liquefied natural gas exports are currently more profitable to Europe in June, July and August. The gas price spread between Asia and Europe is $-7.32/MMBtu in June.

U.S. LNG Netbacks

The following table shows the potential profitability of U.S. liquefied natural gas exports to Europe and Asia, using BloombergNEF assumptions and Bloomberg Fair Value Commodities prices at the time of publication.
* The U.S. LNG netback to Europe is currently $21.60/MMBtu for June, up 2.2% from May 6, when it was $21.14/MMBtu.
* The U.S. LNG netback to Asia is currently $13.95/MMBtu for June, down 2% from May 6, when it was $14.23/MMBtu.
* Use BNEF's Global LNG Netback Calculator tool for dynamic analysis

$/MMBtu	U.S. LNG (115% Henry Hub)	Europe Gas Benchmark (TTF)	Europe netback	Asia spot LNG price (JKM)	Asia netback
June	9.34	31.35	21.60	24.03	13.95
July	9.44	31.64	21.80	22.09	11.92
August	9.41	31.68	21.87	22.19	12.04
September	9.36	31.68	21.91	25.14	15.04
October	9.36	31.10	21.34	26.45	16.35
November	9.44	30.62	20.78	28.76	18.58

Dan Tsubouchi @Energy_Tidbits · May 9

#Novak expects RUS production up MoM in May. ""If you look at the indicators of early May, they are better than April. The situation is stable. Production increased compared to April. We expect that the indicators in May will be partially restored and will be better". #OOTT

https://tass.ru/ekonomika/14580901

Novak: Russia expects oil production to increase in May compared to April

The Deputy Prime Minister of the Russian Federation added that the Cabinet notes an increase in the number of new buyers of Russian oil, including in Asian countries

Deputy Prime Minister of Russia Alexander Novak
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MOSCOW, 9 May. /TASS/. The Russian government expects to partially restore oil production in May after its decline in April. The situation, according to the data for the first days of May, has already stabilized, Russian Deputy Prime Minister Alexander Novak told reporters.

"If you look at the indicators of early May, they are better than April. The situation is stable. Production increased compared to April. We expect that the indicators in May will be partially restored and will be better," he said.

He added that Russia began selling oil to a number of new buyers, the volume of Russian oil supplies increased in several directions, including to the countries of the Asia-Pacific region. "Of course, they (Russian oil companies - TASS note) are looking for new directions in the new situation, building new supply chains. We see, of course, that there are new buyers, including an increase in [oil exports] to suppliers in other directions, including the Asia-Pacific region," he said.

According to the Deputy Prime Minister, Russia is also considering a number of new infrastructure projects to diversify oil supplies. According to him, the expansion of the ESPO (Eastern Siberia - Pacific Ocean) pipeline to China is one of the options, as is the construction of new port facilities. A working group has now been set up to discuss these issues.

Dan Tsubouchi @Energy_Tidbits · May 8

Elevated #LNG prices to continue. EUmove away from RUS #NatGas = "there's going to be tightness, particularly because there's no additional capacity coming on stream until at least 26 or so. So we expect tightness to continue, prices to be elevated" says #RelianceIndustries #OOTT

Reliance Industries Limited
Growth is Life

Items in "italics" are from Bloomberg Transcripts of **Reliance Industries** (India) Q4/F2022 call. Slides are from Reliance's Q4/F2022 call slide deck [LINK] .

"Next slide. So just to give a perspective on the gas market and its outlook. As you can see, the tightness continues. Again, it's been exacerbated by the conflict . Now in Europe as more as they try to diversify their source from Russian supplies, there seems to be quite a bit of competition with the Asian consumption. Europe itself consumes about 85 million tonnes per annum, which is 17% of global supplies.
So with them moving away from Russian supplies, there's going to be tightness, particularly because there's no additional capacity coming on stream until at least '26 or so. So we expect this tightness to continue, prices to be elevated. And in India, we have seen a slight pullback because of the high prices, but KG-D6, which has the price ceiling that would be quite attractive because of the lower prices compared to the market prices.
So that's an outlook that we believe will mean.

Gas Market Outlook

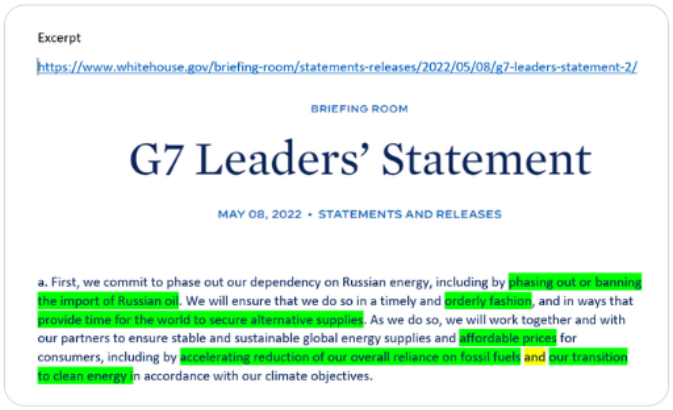
"The last presentation of the evening on the -- for O2C. Looking at demand, overall year-on-year demand, as you know, was up 4.7 million barrels with the easing of restrictions, vaccination drive. However, on a quarter-on-quarter, we did see a fall in demand almost 2 million barrels on the back of the Russian, Ukraine conflict as well as some aspect of the Omicron variant coming in. Polymer and polyester demand year-on-year improved, but it was constrained in a volatile price environment.
Overall, domestic oil demand up 3.1% on the back of road travel and air passenger traffic that we saw. And operating rates on the cracker side, we did see a reduction because of the volatility as well as the winter Olympics and fresh lockdown in China. So overall, I would say, a more moderate recovery in demand with opening up of the economy, which was constrained by price volatility."

4Q FY22 Global Environment – Demand and Utilization Levels

Moderate recovery in demand with opening of economy, constrained by price volatility

Dan Tsubouchi @Energy_Tidbits · May 8

Reality restricts #G7 Leaders ability to cut off RUS energy. Don't even mention RUS #NatGas. "phase out" of RUS #Oil in orderly fashion that provide time for "the world" not just G7 to "secure alternative supplies". #OOTT



Excerpt

https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/08/g7-leaders-statement-2/

BRIEFING ROOM

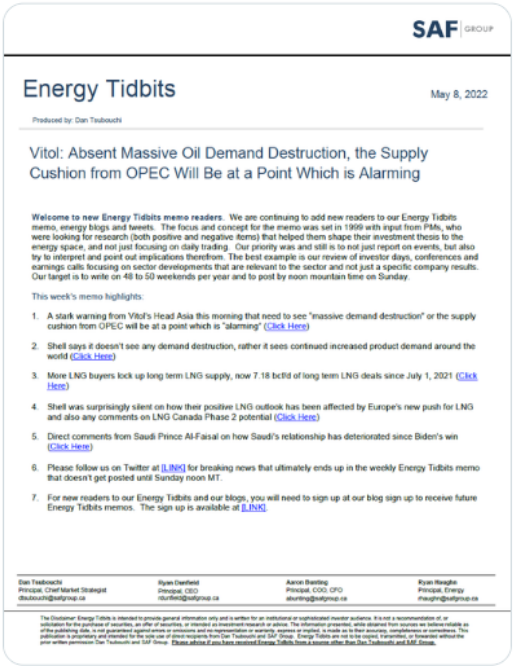
G7 Leaders' Statement

MAY 08, 2022 • STATEMENTS AND RELEASES

a. First, we commit to phase out our dependency on Russian energy, including by phasing out or banning the import of Russian oil. We will ensure that we do so in a timely and orderly fashion, and in ways that provide time for the world to secure alternative supplies. As we do so, we will work together and with our partners to ensure stable and sustainable global energy supplies and affordable prices for consumers, including by accelerating reduction of our overall reliance on fossil fuels and our transition to clean energy in accordance with our climate objectives.

Dan Tsubouchi @Energy_Tidbits · May 8

Our weekly SAF May 8, 2022 Energy Tidbits memo is posted on our SAF Group website. This 52-pg energy research memo expands upon & covers more items than tweeted this week. See news/insights section of SAF website #Oil #OOTT #LNG #NatGas #EnergyTransition safgroup.ca/news-insights/



SAF GROUP

Energy Tidbits

May 8, 2022

Produced by: Dan Tsubouchi

Vitol: Absent Massive Oil Demand Destruction, the Supply Cushion from OPEC Will Be at a Point Which is Alarming

Welcome to new Energy Tidbits memo readers. We are continuing to add new readers to our Energy Tidbits memo, energy blogs and tweets. The focus and concept for the memo was set in 1999 with input from PMs, who were looking for research (both positive and negative items) that helped them shape their investment thesis to the energy space, and not just focusing on daily trading. Our priority was and still is to not just report on events, but also try to interpret and point out implications therefrom. The best example is our review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector and not just a specific company results. Our target is to write on 48 to 50 weekends per year and to post by noon mountain time on Sunday.

This week's memo highlights:

1. A stark warning from Vitol's Head Asia this morning that need to see "massive demand destruction" or the supply cushion from OPEC will be at a point which is "alarming" (Click Here)
2. Shell says it doesn't see any demand destruction, rather it sees continued increased product demand around the world (Click Here)
3. More LNG buyers lock up long term LNG supply, now 7.18 bcf/d of long term LNG deals since July 1, 2021 (Click Here)
4. Shell was surprisingly silent on how their positive LNG outlook has been affected by Europe's new push for LNG and also any comments on LNG Canada Phase 2 potential (Click Here)
5. Direct comments from Saudi Prince Al-Faisal on how Saudi's relationship has deteriorated since Biden's win (Click Here)
6. Please follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK].

Dan Tsubouchi
Principal, Chief Market Strategist
dtsubouchi@safgroup.ca

Ryan Denfield
Principal, CEO
rdenfield@safgroup.ca

Aaron Bantling
Principal, COO, CFO
abantling@safgroup.ca

Ryan Reagho
Principal, Energy
rreagho@safgroup.ca

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