Energy Tidbits

OPEC: OECD/non-OECD Global Oil Stocks Down 938 Million Barrels Since June 2020 Peak

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November 14, 2021

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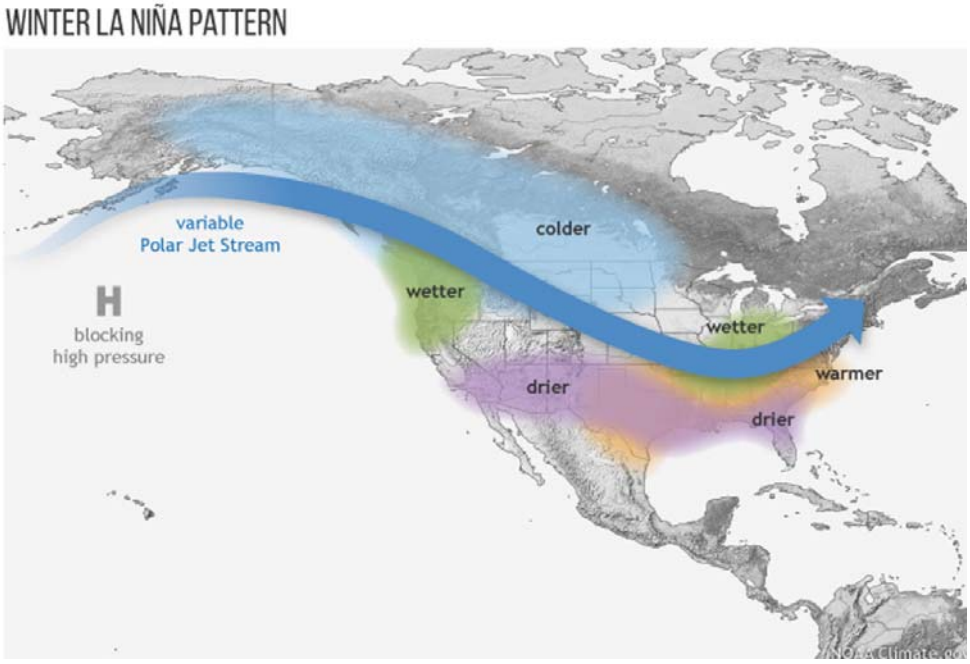
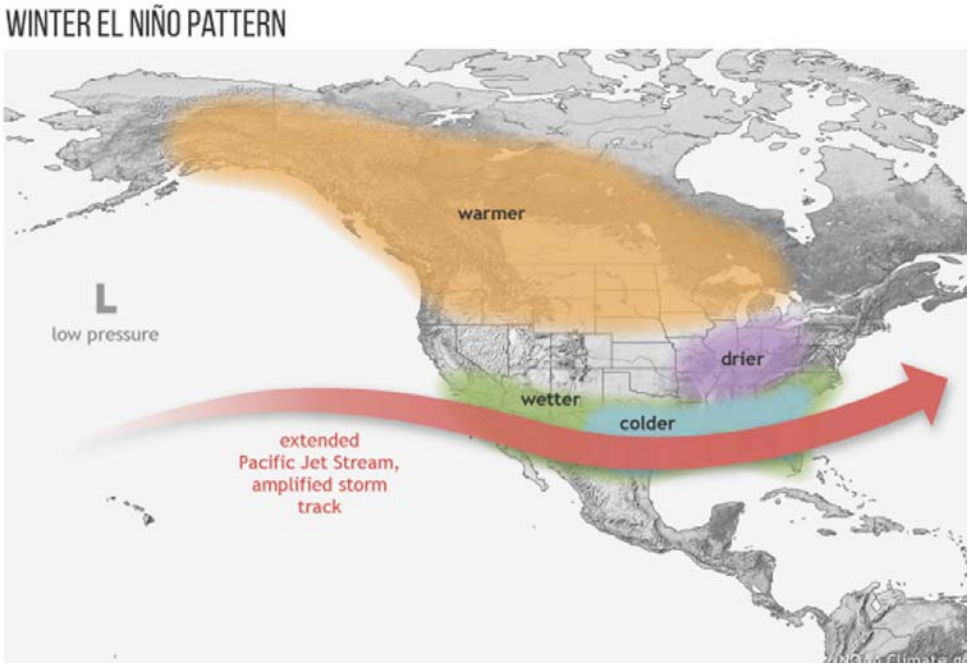
https://www.climate.gov/news-features/featured-images/how-el-ni%C3%B1o-and-la-ni%C3%B1a-affect-winter-jet-stream-and-us-climate

How El Niño and La Niña affect the winter jet stream and U.S. climate

BY REBECCA LINDSEY REVIEWED BY TOM DI LIBERTO
PUBLISHED SEPTEMBER 18, 2017 UPDATED JULY 27, 2021





DETAILS

The arrival of El Niño or La Niña in the tropical Pacific Ocean triggers a cascade of changes in tropical rainfall and wind patterns that echo around the globe. For the United States, the most significant impact is a shift in the path of the mid-latitude jet streams. These swift, high-level winds play a major role in separating warm and cool air masses and steering storms from the Pacific across the U.S.

These maps illustrate the typical impacts of El Niño and La Niña on U.S. winter weather. During La Niña, the Pacific jet stream often meanders high into the North Pacific and and is less reliable across the southern tier of the United States. Southern and interior Alaska and the Pacific Northwest tend to be cooler and wetter than average, and the southern tier of U.S. states—from California to the Carolinas—tends to be warmer and drier than average. Farther north, the Ohio and Upper Mississippi River Valleys may be wetter than usual. During El Niño, these deviations from the average are approximately (but not exactly) reversed.

One or more of these climate patterns have occurred during many El Niño and La Niña events in the past. That doesn't mean that **all** of these impacts happen during **every** episode. Every event is somewhat different. In other words, the influence of El Niño on U.S. winter climate is a matter of *probability*, not certainty.

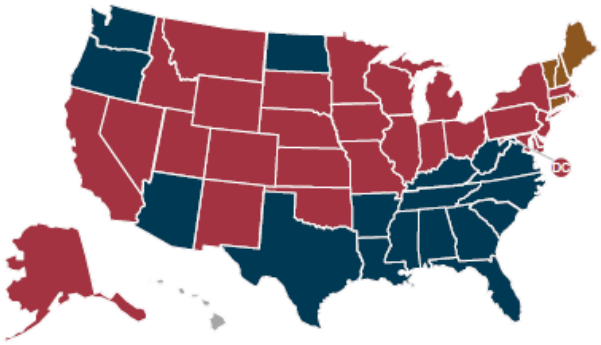
El Niño and La Niña are opposite phases of a natural climate pattern across the tropical Pacific Ocean that swings back and forth every 3-7 years on average. El Niño and La Niña alternately warm and cool large areas of the tropical Pacific—the world's largest ocean—which significantly influences where and how much it rains there.

Like a boulder dropped into a stream, this shift in the location of tropical rainfall disrupts the atmospheric circulation patterns that connect the tropics with the middle latitudes, which in turn modifies the mid-latitude jet streams. By modifying the jet streams, El Niño and La Niña can affect temperature and precipitation across the United States and other parts of the world. The influence on the U.S. is strongest during the winter (December-February), but it may linger into early spring.

Excerpt EIA Winter Fuels Outlook https://www.eia.gov/outlooks/steo/special/winter/2021_Winter_Fuels.pdf

Almost 90% of U.S. homes are primarily heated by natural gas or electricity; heating oil and propane are regionally concentrated

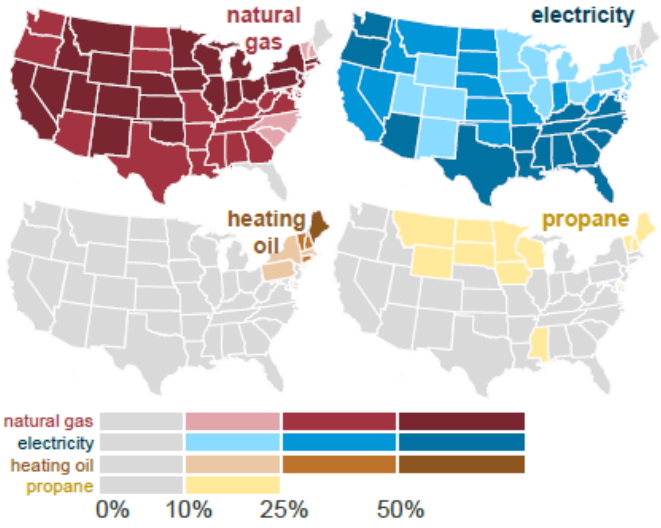
Most prevalent home heating fuel by state (2019)



share of U.S. households from 2019 ACS

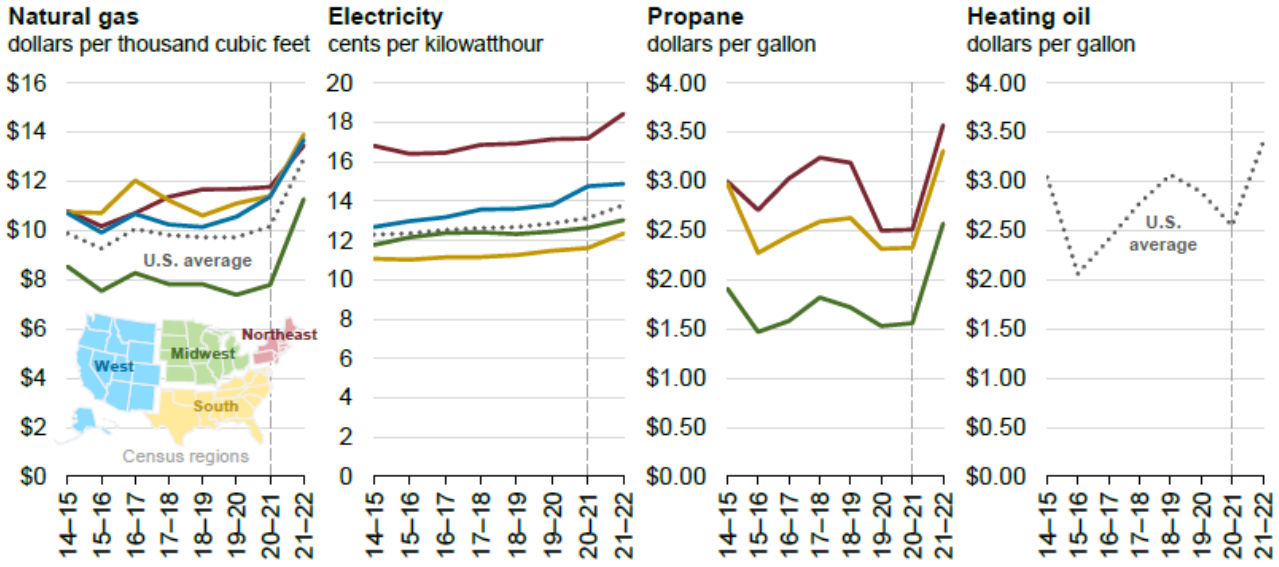
- natural gas (48%)
- electricity (39%)
- heating oil (4%)
- propane (5%)
- other / none (3%)

Primary home heating fuel by state (2019)



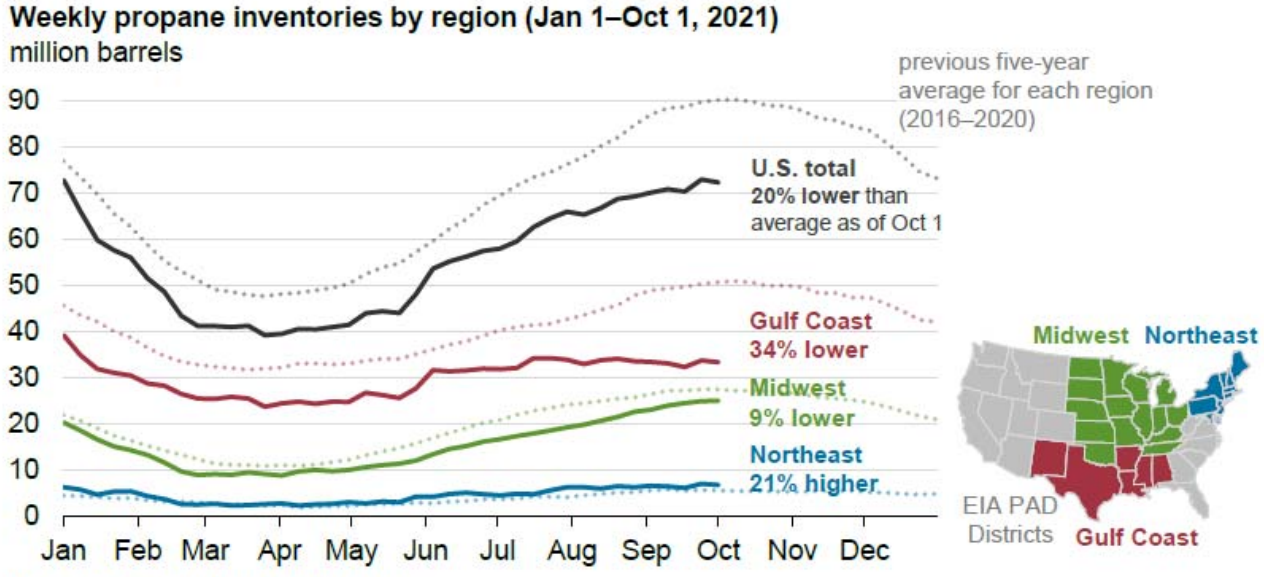
Source: U.S. Energy Information Administration based on data from the U.S. Census Bureau, American Community Survey 2019

Prices across all fuels and all regions in the forecast are higher compared with recent winters



Source: U.S. Energy Information Administration

Propane inventories are particularly low in the Gulf Coast and Midwest



Source: U.S. Energy Information Administration

Independent Statistics & Analysis
U.S. Energy Information Administration

November 2021

Short-Term Energy Outlook

Forecast highlights

Global liquid fuels

- The November *Short-Term Energy Outlook* (STEO) remains subject to heightened levels of uncertainty related to the ongoing recovery from the COVID-19 pandemic. U.S. gross domestic product (GDP) declined by 3.4% in 2020 from 2019 levels. This STEO assumes U.S. GDP will grow by 5.4% in 2021 and by 4.2% in 2022. The U.S. macroeconomic assumptions in this outlook are based on forecasts by IHS Markit. In addition to uncertainty about macroeconomic conditions, the evolving effects of consumer behavior on energy demand because of the pandemic present a wide range of potential outcomes for energy consumption. Supply uncertainty in the forecast results from the production decisions of OPEC+ along with the rate at which U.S. oil and natural gas producers increase drilling at forecast price levels.

- Brent crude oil spot prices averaged $84 per barrel (b) in October, up $9/b from September and up $43/b from October 2020. Crude oil prices have risen over the past year as result of steady draws on global oil inventories, which averaged 1.9 million barrels per day (b/d) during the first three quarters of 2021. In addition to sustained inventory draws, prices increased after OPEC+ announced in early October—and reaffirmed on November 4—that the group would keep current production targets unchanged. We expect Brent prices will remain near current levels for the rest of 2021, averaging $82/b in the fourth quarter of 2021. In 2022, we expect that growth in production from OPEC+, U.S. tight oil, and other non-OPEC countries will outpace slowing growth in global oil consumption and contribute to Brent prices declining from current levels to an annual average of $72/b.

- We estimate that 98.9 million b/d of petroleum and liquid fuels was consumed globally in October, an increase of 4.5 million b/d from October 2020 but 1.9 million b/d less than in October 2019. We revised up our forecast for consumption of petroleum and liquid fuels for the fourth quarter of 2021, partially as a result of fuel switching from natural gas to petroleum in the electric power sector in parts of Asia and Europe. This fuel switching is a result of increases in natural gas prices in Asia and Europe. We forecast that global consumption of petroleum and liquid fuels will average 97.5 million b/d for all of 2021, which is a 5.1 million b/d increase from 2020. We forecast that global consumption of petroleum and liquid fuels will increase by 3.3 million b/d in 2022.

Note: EIA completed modeling and analysis for this report on Thursday November 4, 2021

- U.S. regular gasoline retail prices averaged $3.29 per gallon (gal) in October, up 12 cents/gal from September, and $1.13/gal higher than in October 2020. The October price was the highest monthly average since September 2014. We forecast that retail gasoline prices will average $3.32/gal in November before falling to $3.16/gal in December, which are 16 cents/gal and 11 cents/gal higher than our previous forecast, respectively.

- U.S. crude oil production averaged an estimated 11.4 million b/d in October, up from 10.7 million b/d in September as a result of production increases following disruptions from Hurricane Ida. We forecast production will rise to 11.6 million b/d in December. We forecast annual production will average 11.1 million b/d in 2021, increasing to 11.9 million b/d in 2022 as tight oil production rises in the United States. Growth will come largely as a result of onshore operators increasing rig counts, which we expect will offset production decline rates.

Natural Gas

- In October, the natural gas spot price at Henry Hub averaged $5.51 per million British thermal units (MMBtu), which was up from the September average of $5.16/MMBtu and up from an average of $3.25/MMBtu in the first half of 2021. The rising natural gas prices in recent months reflect U.S. natural gas inventory levels that are below the five-year (2016–20) average. Despite high prices demand for natural gas for electric power generation has remained relatively high, which along with strong global demand for U.S. liquefied natural gas (LNG) has limited downward natural gas price pressures.

- The Henry Hub spot price will average $5.53/MMBtu from November through February in our forecast and then generally decline through 2022, averaging $3.93/MMBtu for the year amid rising U.S. natural gas production and slowing growth in LNG exports. We forecast that U.S. inventory draws will be similar to the five-year average this winter, and we expect that factor, along with rising U.S. natural gas exports and relatively flat production through March, will keep U.S. natural gas prices near recent levels before downward price pressures emerge. Because of uncertainty around seasonal demand, we expect natural gas prices to remain volatile over the coming months with winter temperatures to be a key driver of demand and prices.

- We estimate that U.S. LNG exports averaged 9.8 billion cubic feet per day (Bcf/d) in October 2021, up 0.3 Bcf/d from September, supported by large prices differences between Henry Hub prices in the United States and spot prices in Europe and Asia. LNG exports resumed from Cove Point LNG in late October after that facility's annual maintenance was completed. In our forecast LNG exports average 9.8 Bcf/d for all of 2021, up 50% from 2020. We expect that LNG exports will increase this winter, averaging 11.0 Bcf/d from November through March. We expect high levels of LNG

exports to continue into 2022, averaging 11.5 Bcf/d for the year, up 17% from 2021. The forecast reflects our assumption that global natural gas demand remains high and several new natural liquefaction trains—the sixth train at Sabine Pass LNG and the first trains at the new LNG export facility, Calcasieu Pass LNG—enter service.

- U.S. natural gas inventories ended October 2021 at more than 3.6 trillion cubic feet (Tcf), 3% less than the five-year average for this time of year. Injections into storage this summer were below the previous five-year average, largely as a result of more electricity consumption in June because of hot weather and increased exports, even as domestic natural gas production has remained flat. However, in recent weeks, storage levels have moved closer to average levels as injections outpaced the five-year average in September and October. We expect natural gas inventories to fall by 2.1 Tcf this winter, ending March at 1.6 Tcf, which would be 4% less than the 2017–21 average for that time of year.

- We estimate dry natural gas production averaged 94.9 Bcf/d in the United States in October (up from 94.5 Bcf/d in September) and 91.9 Bcf/d in in the first half of 2021. Production in the forecast rises to an average of 95.2 Bcf/d during the rest of this winter (November–March) and averages 96.7 Bcf/d during 2022, driven by natural gas and crude oil prices, which we expect to remain at levels that will support enough drilling to sustain production growth.

Electricity, coal, renewables, and emissions

- The share of electricity generation produced by natural gas in the United States averages 36% in 2021 and 35% in 2022 in our forecast, down from 39% in 2020. In 2021, our forecast share for natural gas as a generation fuel declines in response to our expectation of a higher delivered natural gas price for electricity generators, which we forecast will average $5.12/MMBtu compared with $2.39/MMBtu in 2020. As a result of the higher expected natural gas prices, the forecast share of electricity generation from coal rises from 20% in 2020 to about 23% in 2021 and 22% in 2022. For renewable energy sources, new additions of solar and wind generating capacity are offset somewhat by reduced generation from hydropower this year, resulting in the forecast share of all renewables in U.S. electricity generation to average 20% in 2021, about the same as last year, before rising to 22% in 2022. The nuclear share of U.S. electricity generation declines from 21% in 2020 to 20% in 2021 and 2022.

- We expect coal consumption in the electric power sector to rise by 80 million short tons (MMst), or 18%, in 2021. The increase in the electric power sector's use of coal reflects higher natural gas prices this year compared with last year. However, electricity generation from coal-fired power plants has not increased as much in response to rising natural gas prices as it has in the past or by as much as our models had forecast earlier this year. The lower price responsiveness of coal for electricity

generation, which is likely the result of constraints on coal supply and low coal stocks, is contributing to upward pressure on natural gas prices.

- U.S. coal exports in our forecast rise by 20 MMst (29%) in 2021. Higher U.S. exports reflect rising global demand for coal amid high natural gas prices. We expect exports to remain relatively unchanged in 2022, when a 3 MMst increase in metallurgical coal exports is partly offset by a 2 MMst decline in steam coal exports. U.S. coal production growth has not kept pace with rising domestic demand for steam coal in the electric power sector and export growth, leading to a draw down in coal inventories held by the electric power sector.

- Planned additions to U.S. wind and solar capacity in 2021 and 2022 increase electricity generation from those sources in our forecast. We estimate that the U.S. electric power sector added 14.6 gigawatts (GW) of new wind capacity in 2020. We expect 17.0 GW of new wind capacity will come online in 2021 and 6.9 GW in 2022. Utility-scale solar capacity rose by an estimated 10.5 GW in 2020. Our forecast for added utility-scale solar capacity is 15.7 GW for 2021 and 18.2 GW for 2022. We expect significant solar capacity additions in Texas during the forecast period. In addition, we project that after increasing by 4.5 GW to 27.7 GW in 2020, small-scale solar capacity (systems less than 1 megawatt) will grow by 5.8 GW in 2021 and by 7.8 GW in 2022.

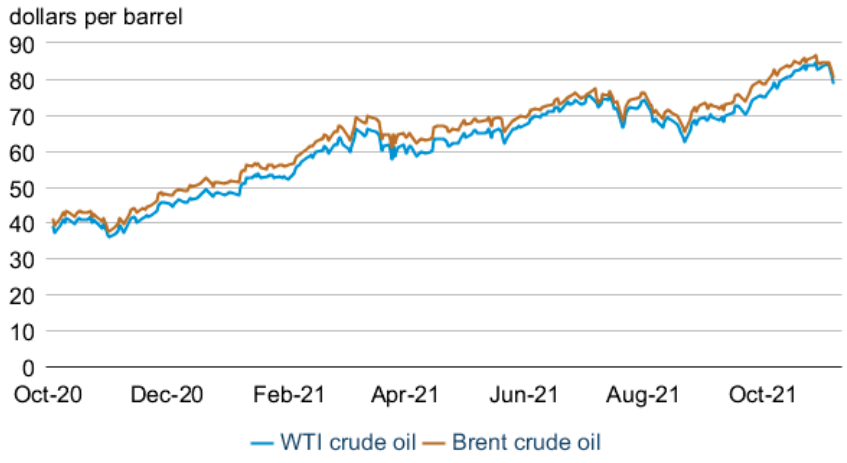
- U.S. energy-related carbon dioxide (CO_2) emissions decreased by 11% in 2020 as a result of less energy consumption due to reduced economic activity and to end user responses to COVID-19. For 2021, we forecast energy-related CO_2 emissions will increase about 7% from the 2020 level as economic activity increases and leads to rising energy use. We expect a 1% increase in energy-related CO_2 emissions in 2022. We forecast that after declining by 19% in 2020, coal-related CO_2 emissions will rise by 18% in 2021 and then fall by 5% in 2022.

Petroleum and natural gas markets review

Crude oil

Prices: The front-month futures price for Brent crude oil settled at $80.54 per barrel (b) on November 4, 2021, up $1.26/b from $79.28/b on October 1. The front-month futures price for West Texas Intermediate (WTI) crude oil for delivery at Cushing, Oklahoma, increased by $2.93/b during the same period, settling at $78.81/b on November 4 **(Figure 1)**.

Figure 1. Crude oil front-month futures prices

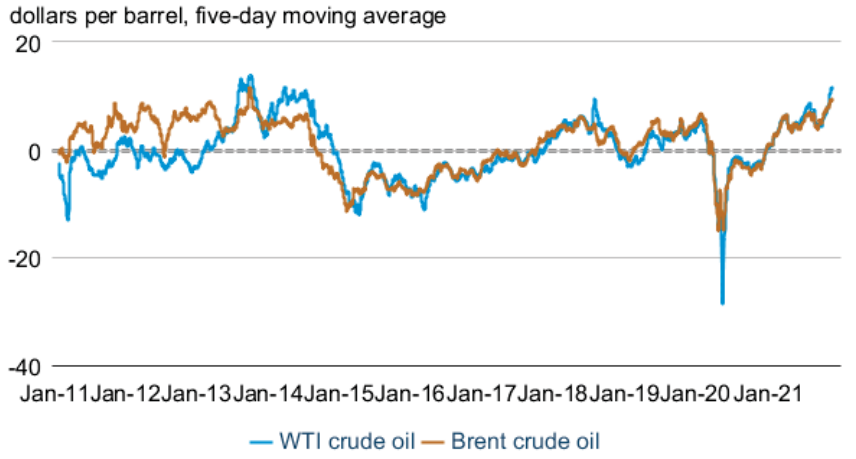


Source: Graph by EIA, based on CME Group and Intercontinental Exchange, compiled by Bloomberg L.P.
Note: WTI=West Texas Intermediate

The front-month Brent crude oil price averaged $84/b in October, an increase of $9/b from September, and the WTI price averaged $81/b, an increase of $10/b from September. Without adjusting for inflation, these prices were the highest monthly average nominal prices since October 2014. Restraints on global production and expectations of higher demand this winter continue to contribute to upward price pressures. Trade press has indicated increased purchases of oil and petroleum products from electric generators in parts of Asia and Europe that may switch fuels from natural gas to oil in the winter. Furthermore, several countries, such as Thailand, Israel, Australia, and the United States, eased international border and travel restrictions in early November, which could support more fuel demand for air travel in some locations this winter.

Differences in prices between crude oil contracts for delivery in the near term compared with contracts for delivery further into the future indicate market expectations that stock draws will moderate in the future. Crude oil stock levels, among other factors, affect the relationship between near-term and longer-term futures prices. Because crude oil stocks are currently low globally and in the United States, both Brent and WTI are backwardated (when near-month prices are higher than longer-dated ones) **(Figure 2)**.

Figure 2. Crude oil front-month to 13th month futures price spread



Source: Graph by EIA, based on data from CME Group and Intercontinental Exchange, as compiled by Bloomberg
Note: WTI=West Texas Intermediate

The five-day moving average of the spread between prices for the 1st month futures contract and 13th month contract for Brent increased to $9.04/b on November 4 (up from $7.05/b on October 1), and on November 2 was at its highest spread since September 13, 2013. The 1st-13th spread for WTI increased to $11.20/b on November 4 (from $6.78/b on October 1), and on November 2 was at its highest spread since September 20, 2013. We estimate total U.S. crude oil stocks ended October at 435.4 million barrels, the lowest October level since 2018 and 6.2% below the five-year (2016–2020) average for the month. Crude oil inventories are especially low in Cushing, Oklahoma, the delivery point for the WTI crude oil futures contract. In the week ending October 29, crude oil inventories in Cushing were 24.0 million barrels, meaning Cushing's storage capacity utilization was only about 31%. We forecast global stock builds starting in the spring of 2022, which likely will reduce some of the tightness in the market that may be contributing to high front-month prices.

During the past decade, similarly high levels of backwardation in Brent and WTI crude oil have typically only occurred during periods of large, unplanned supply disruptions. This year, however, the significant decline in inventories and resulting backwardation are the result of a strong increase in oil demand as well as restrained crude oil production levels among OPEC+ members. At its early October meeting—and reaffirmed at its November 4 meeting, OPEC+ committed to maintaining its scheduled crude oil production increase of 400,000 barrels per day (b/d) in December rather than increase production by more in response to high crude oil prices and increasing demand.

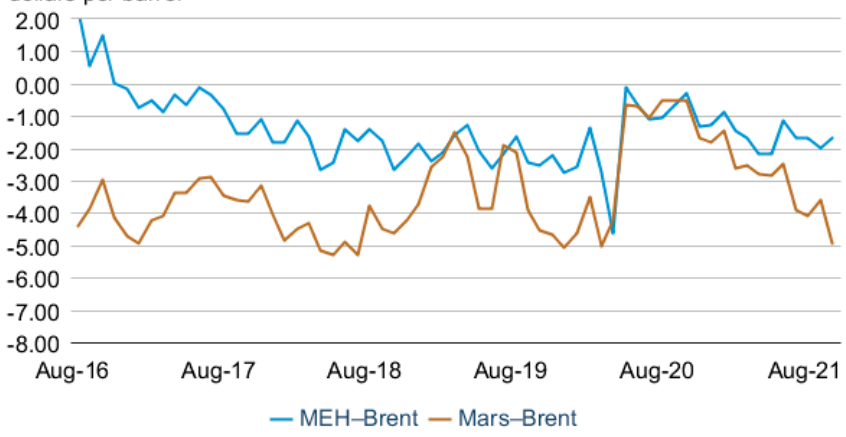
We estimate that world crude oil consumption has exceeded crude oil production for five consecutive quarters going back to the third quarter of 2020. During this period, total petroleum stocks among countries in the Organization for Economic Cooperation and Development (OECD) fell by 424 million barrels–from 9% above the five-year average in June 2020 to 7% below the five-year average at the end of September 2021. We forecast global crude oil demand will

exceed global supply through the end of the year, contribute to some additional stocks draws, and keep the Brent crude oil price above $80/b through December. However, we forecast that global oil stocks will begin building in 2022, driven by rising production from OPEC+ and the United States, along with slowing growth in global oil demand. We expect this shift will put downward pressure on the Brent price, which averages $72/b for 2022 in our forecast.

***Crude oil price spreads*:** The price for crude oils with high levels of sulfur declined relative to those with lower levels, as a result of both rising crude oil exports from OPEC and high natural gas prices that may be affecting the costs of certain refinery operations, among other factors. OPEC has been increasing production and exports during the second half of 2021. Crude oil production from many OPEC countries tend be a sour grade. The increase in OPEC exports has added to global supplies of sour crude oils. Additionally, sour crude oils must first be treated with hydrogen to meet low-sulfur fuel specifications and to avoid damage to refinery units. Because natural gas is used in hydrogen production, the recently high global natural gas prices have contributed to higher refinery feedstock costs, particularly in Europe and Asia. When the cost of natural gas increases, sour crude oils become more costly to run. Higher treatment costs of sour crude oil have likely made them less economic for refiners as global natural gas prices have increased, contributing to higher demand for sweeter crude (lower sulfur) oils such as Magellan East Houston (MEH) and lower demand for more sour crude oils, such as Mars.

These factors are likely reducing the price of certain grades of crude oil that require more processing to be converted to finished petroleum products. For example, Mars crude oil, which is produced in the Federal Offshore Gulf of Mexico and has a sulfur content of 1.93%, decreased in price in October relative to light sweet crude oils such as MEH and Brent, which both have sulfur contents of 0.45%. The Mars–Brent spread widened to an average of -$4.93b in October, from -$3.58/b in September. In comparison, MEH crude oil prices narrowed slightly relative to Brent in October **(Figure 3)**.

Figure 3. Crude oil differentials to Brent

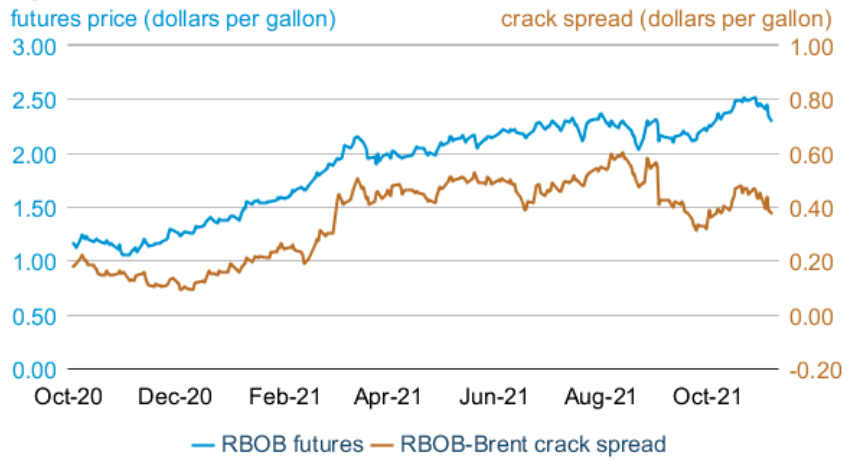


Source: Graph by EIA, based on data from CME Group, as compiled by Bloomberg L.P.

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 $2.29 per gallon (gal) on November 4, up 4 cents/gal from October 1 **(Figure 4)**. The RBOB–Brent crack spread (the difference between the price of RBOB and the price of Brent crude oil) increased by 1 cent/gal to settle at 37 cents/gal during the same period. The average RBOB–Brent crack spread in October was 43 cents/gal, up from 38 cents/gal in September.

Figure 4. Historical RBOB front-month futures prices and crack spreads



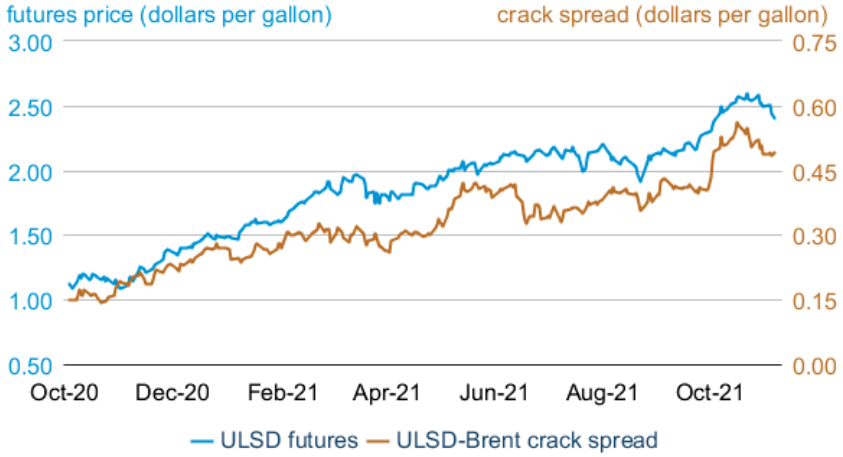
Source: Graph by EIA, based on data from CME Group, as compiled by Bloomberg L.P.
Note: RBOB is the petroleum component of gasoline used in many parts of the country.

In October, rising crude oil prices contributed to the highest gasoline prices (in nominal prices) since September 2014. Crude oil prices are the primary driver of the higher gasoline price, but the gasoline crack spread also increased in October compared with September, reaching a high of 48 cents/gal on October 18, before it decreased near the end of the month. Rapidly increasing crude oil prices typically reduce product crack spreads, but low inventories are supporting crack spreads. Gasoline inventory draws were relatively large in September, which likely reflects a combination of less refinery production throughout 2021 than in recent years and higher gasoline demand compared with earlier in 2021. We estimate total U.S. gasoline inventories fell by 11.4 million barrels in October compared with September, which was a larger inventory draw than the five-year average and has also resulted in inventory levels near the five-year low.

We estimate U.S. gasoline consumption in October 2021 increased to 9.2 million b/d, higher than levels seen in August and September. Typically, gasoline consumption decreases substantially from August to October, declining by 5% over that period in both 2018 and 2019 and declining by 2% over that period in 2020. We forecast gasoline consumption will decrease to less than 9.0 million b/d in November and remain below that level until May 2022.

Ultra-low sulfur diesel prices: The front-month futures price for ultra-low sulfur diesel (ULSD) for delivery in New York Harbor settled at $2.41/gal on November 4, up 2 cents/gal from October 1 **(Figure 5)**. The ULSD-Brent crack spread (the difference between the price of ULSD and the price of Brent crude oil) decreased 1 cent/gal during the same period and settled at 49 cents/gal on November 4. The ULSD–Brent crack spread averaged 52 cents/gal in October.

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



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

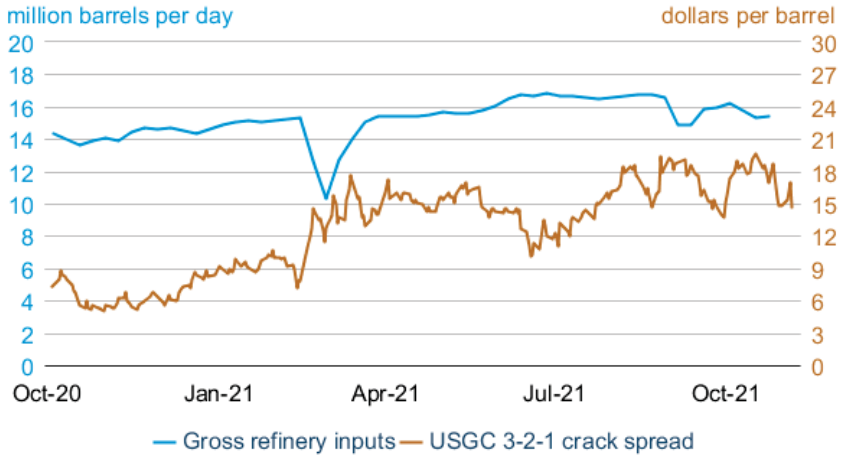
The distillate futures price rose to its highest level (in nominal prices) since October 2014, reaching $2.59/gal on October 20, before declining several cents toward the end of October, reflecting recent movements in crude oil prices. Distillate crack spreads remained elevated in October due to low refinery production, which has contributed to inventory levels near the five-year low. The ULSD crack spread only accounts for the price of crude oil inputs; it does not consider other inputs or operational costs associated with ULSD production. In particular, hydrogen produced at natural gas plants is an important secondary input for ULSD production at many refineries. Higher natural gas prices may be contributing to increased crack spreads, as well as increased refinery costs that may prevent ULSD producers from achieving higher margins.

We estimate U.S. distillate consumption at 4.0 million b/d in October, about the same level compared with September. However, distillate consumption typically increases from September to October. Agricultural use in the peak of the harvest season likely drove this increase in distillate consumption. The rising consumption was likely offset by a mild October in the Northeast that may have reduced some home heating oil consumption there. In addition, a shortage of truck drivers may have limited diesel consumption as well, despite high demand for trucking and rail volumes to respond to supply chain backlogs at U.S. ports. Based on our *Weekly Petroleum Status Report* (WPSR), we estimate four-week average exports as of October 29 were 1.0 million b/d. If confirmed in monthly data, this average for exports would be the lowest level for October since 2014 and would continue the trend of exports lower than the five-year

average in every month since August 2020. This low level of exports contributed to the lowest distillate inventory withdrawals for October since 2009.

Crack spreads and refinery runs: Higher gasoline and distillate crack spreads associated with lower inventories have resulted in sharp increases in estimated overall refining margins during seasonal refinery maintenance **(Figure 6).** Rising gasoline demand contributed to increased gross refinery inputs (runs) in the United States throughout the summer, and runs remained above 16 million b/d from May through August, according to our *Petroleum Supply Monthly* (PSM). September and October are typically the time for seasonal refinery maintenance, and U.S. Gulf Coast refinery operations were reduced because of inclement weather from hurricanes and tropical storms during late August and early September. During this period, the U.S. Gulf Coast 3-2-1 crack spread, which serves as a measure of refinery profitability (by subtracting the prices of two-thirds of a barrel of gasoline and one-third of a barrel of diesel from the price of a barrel of WTI crude oil), increased from $11/b at the start of July to more than $19/b in late August and again in mid-October.

Figure 6. U.S. Refinery runs and 3-2-1 crack spread



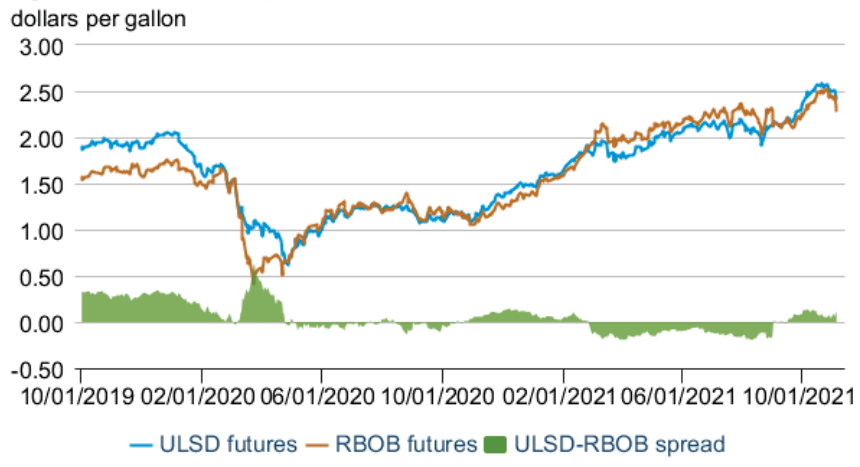
Graph by EIA, based on data from EIA and Bloomberg L.P.

Refinery runs also decreased in early October because of seasonal maintenance, and lower than average product inventories resulted in another increase in the crack spread, which reached $19.63/b on October 15, setting a new high for 2021. Although refinery maintenance often occurs in the fall, higher gasoline demand compared with earlier this year and lower relative inventories of both gasoline and distillate appear to be contributing to a tighter market in 2021.

ULSD-RBOB spread: Relatively higher RBOB prices in the summer months typically indicate higher gasoline demand in the summer and more expensive summer-grade gasoline. Lower gasoline demand in the fall and winter and the lower price of winter-grade gasoline, combined with higher diesel demand from the agricultural and home heating sectors, typically contribute to relatively higher ULSD prices from September through the end of the year. ULSD front-month

futures prices were lower than RBOB prices on a monthly-average basis from March through August of 2021, but traded at a premium to RBOB prices during September and October **(Figure 7)**. We calculate the ULSD-RBOB spread by subtracting the price of ULSD from the price of RBOB.

Figure 7. ULSD-RBOB spread



Source: Graph by EIA, based on data compiled by Bloomberg L.P.
Note: ULSD = ultra low sulfur diesel, RBOB is the petroleum component of gasoline

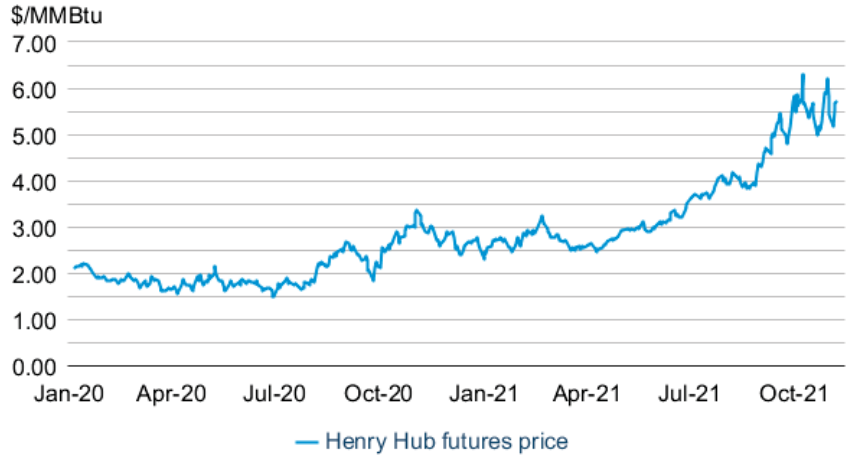
From March to August, RBOB traded on average 13 cents/gal higher than ULSD. During the past five years, the fuels have typically traded at roughly equal prices over that period. The relatively high RBOB prices likely reflected high summer gasoline exports and higher prices for renewable identification numbers (RINS)—which affect gasoline prices more than ULSD prices — over the summer. In addition, low jet fuel demand resulted in refineries reducing jet fuel production and shifting some of that production to ULSD, limiting upward pressure on ULSD prices.

In September, ULSD prices increased relative to RBOB prices and traded at a premium of 4 cents/gal to RBOB, the first monthly average premium since February 2021. However, the spread remained 9 cents/gal below the five-year average in October because some of the trends in 2021 that have contributed to higher relative gasoline prices still persist.

Natural Gas

Prices: The front-month natural gas futures contract for delivery at the Henry Hub settled at $5.72 per million British thermal units (MMBtu) on November 4, 2021, which was up $0.10/MMBtu from October 1, 2021 **(Figure 8)**. The average closing price for front-month natural gas futures contracts in October was $5.57/MMBtu, the highest October monthly average in real terms since October 2009.

Figure 8. Historical nominal front-month U.S. natural gas prices



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

Despite mild weather that contributed to larger-than-average inventory builds, monthly average natural gas prices increased in October. Although builds were larger-than-average, inventories remain below the five-year (2016–20) average level, a condition which has contributed to rising natural gas prices in recent months. Relatively low inventory levels have been partly driven by demand for natural gas in the electric power sector that remained high because of limited ability for utilities to switch to coal for electric power generation. Consumption of natural gas in the United States tends to decline during September and October because temperatures are typically mild, resulting in low demand for both air conditioning and space heating. Consumption of natural gas was 71.8 billion cubic feet per day (Bcf/d) in October, down from an average of 75.0 Bcf/d in the third quarter. The decreased consumption was primarily driven by a decrease in natural gas-fired electric power generation, falling from 37.9 Bcf/d in the third quarter to 29.5 Bcf/d in October. However, natural gas use for power generation in October was 1.9 Bcf/d higher than we had forecast in last month's STEO. Higher-than-expected natural gas use in the electric power sector reflects limited natural gas-to-coal switching capabilities across the country, several planned nuclear outages in October, and lower-than-forecast electricity generation from wind.

As the weather gets colder, natural gas consumption typically shifts from the electric power sector to the residential and commercial sectors. Consumption in these sectors typically begins to increase in October due to colder temperatures, which results in increased natural gas consumption by buildings for space heating. However, because of milder temperatures this year, the residential and commercial sectors combined consumed 12.2 Bcf/d in October, which is 1.8 Bcf/d less than the five-year average. The United States as whole had 186 heating degree days (HDDs) in October, 52 fewer days than the October 2011–20 average of 238 HDDs.

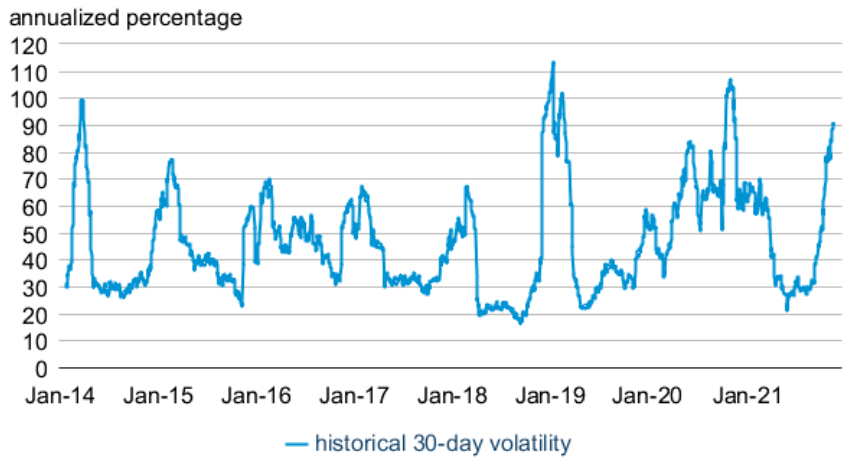
Despite higher-than-expected consumption in the electric power sector, lower-than-average consumption in the residential and commercial sectors during October contributed to natural

gas storage injections outpacing the five-year average. We estimate that U.S. working natural gas inventories increased by 343 billion cubic feet (Bcf) during October, which is 34% more than the five-year average build from September to October. This build resulted in inventories ending October at 3,646 Bcf, which is 3% below the five-year average. This level is a decrease in the deficit to the five-year average compared with September, which ended the month at 6% below the five-year average. Until October, inventories had built at a slower rate than the five-year average for much of the storage injection season that typically begins in April and ends in late October or early November. Low inventory levels have been a contributor to higher prices in recent months. Higher-than-average storage injections in October likely limited upward pressure on natural gas prices toward the end of the month.

The spread between international and domestic prices remained high in October, and contributed to continued strong demand for U.S. liquefied natural gas (LNG) cargoes. U.S. LNG exports averaged 9.8 Bcf/d in October, or approximately 103% of total LNG export capacity. LNG production capacity at U.S. LNG export terminals can be optimized to run at peak (maximum) rates in periods of high demand, above the nameplate (baseload) capacity that LNG export facilities were designed to operate under normal conditions.

Historical volatility: Volatility of U.S. natural gas futures prices has risen substantially in the past two months **(Figure 9)**. Historical volatility measures the magnitude of daily changes in closing prices for a commodity during a given time in the past. Based on rolling front-month contracts, the 30-day historical volatility of U.S. natural gas futures prices was 29.8% for April through August of this year. In September, volatility rose to 49.4%, compared with the 2015–2019 September average of 30.6%. In October, volatility rose to 78.3%, compared with the 2015–2019 October average of 32.7%. In October, daily front-month natural gas futures contract intraday prices ranged as high as $6.47/MMBtu on October 6 and as low as $4.83/MMBtu on October 19. The historical volatility of the natural gas futures price at the Henry Hub in October has corresponded with high volatility at international pricing hubs in Europe and Asia.

Figure 9. Natural gas historical volatility

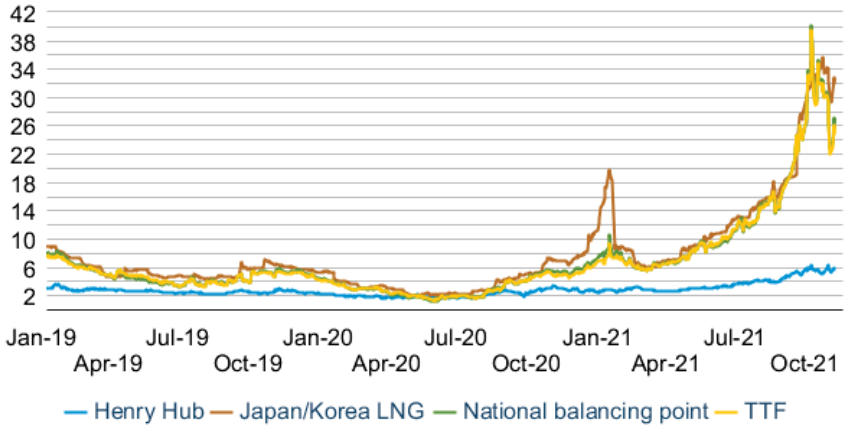


Source: Graph by EIA, based on data from Bloomberg L.P.

International natural gas prices: International LNG spot and forward prices reached record highs in the first week of October. Prices reached $35/MMBtu in northern Asia and nearly $40/MMBtu in Europe in the first week of October **(Figure 10),** according to pricing data by Bloomberg Finance, L.P. Prices in Asia were up nearly twentyfold—and prices in Europe up nearly thirty fold—from record lows during the summer of 2020, when economic responses to the COVID-19 pandemic significantly reduced global energy consumption. Several factors contributed to significant increases in global spot natural gas prices this year, including:

- Large increases in natural gas demand in Asia and Latin America
- Low natural gas storage inventories in Europe following a cold winter and a hot summer
- Reduced global LNG supply because of planned and unplanned outages at LNG export facilities in several countries

Figure 10. International natural gas prices



Source: Graph by EIA, based on data from CME Group, as compiled by Bloomberg L.P.
Note: TTF=Title Transfer Facility

Significant growth in natural gas demand in response to economic recovery from the COVID-19 pandemic in Asia, led by China, contributed to increased demand for global spot LNG supplies, in addition to LNG imports supplied under long-term contracts. A shortage of coal supplies in China, higher LNG demand by the electric power and industrial sectors in Japan, and lower output by nuclear power plants in South Korea all contributed to a significant increase in LNG imports into Asia. In addition, natural gas storage inventories in Europe remained relatively low in October, compared with historical averages. At the end of October, natural gas inventories in Europe were 77% full, compared with 95% last year at this time and the 91% five-year average, according to data from Gas Infrastructure Europe's (GIE) Aggregated Gas Storage Inventory (AGSI+).

Recent price declines in Northeast Asia and Western Europe suggest concerns about natural gas supply during the winter have eased to some extent. Natural gas delivered from Europe's LNG import terminals, which between April and September 2021 had been at its lowest level since 2018, started to increase in October, averaging 6.6 Bcf/d, 2% higher than in October 2020, according to data from the GIE's Aggregated LNG Storage Inventory (ALSI). LNG inventories in key Asian LNG-consuming countries have also been gradually filling up, with Japan's LNG stocks reaching five-year high in October.

The difference in natural gas prices in Asia and Europe compared with the Henry Hub price, even after including acquisition and delivery costs to U.S. terminals, remains high. U.S. LNG exports indexed off natural gas futures at the Henry Hub are cost-competitive on the international market. U.S. LNG export capacity utilization was above 100% in September and October, and we expect it to remain at high levels this winter, even with additional liquefaction capacity set to come online in the next few months.

Our forecast assumes total U.S. LNG export capacity will continue to increase between December 2021 and late 2022 as a result of:

- Optimizing operations at Cheniere's Sabine Pass and Corpus Christi terminals, adding up to 0.7 Bcf/d of additional capacity (the Federal Energy Regulatory Commission (FERC) granted Cheniere approval to increase output by up to 11%)
- Completing Train 6 at Sabine Pass LNG, which is expected to be online in December 2021
- Commissioning of 10 mid-scale liquefaction units at a new facility, Calcasieu Pass, in Louisiana, starting in December 2021 and continuing through 2022

We forecast LNG exports will average 11.1 Bcf/d from December 2021 to February 2022, which would be the highest level of U.S. LNG exports on record.

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

U.S. Energy Information Administration | Short-Term Energy Outlook - November 2021

	2020				2021				2022				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2020	2021	2022
Supply (million barrels per day) (a)															
OECD	**33.05**	**29.27**	**29.95**	**30.66**	**30.18**	**30.88**	**31.15**	*32.22*	*32.54*	*32.65*	*32.93*	*33.44*	**30.73**	*31.11*	*32.89*
U.S. (50 States)	**20.33**	**17.44**	**18.29**	**18.29**	**17.62**	**19.05**	**18.87**	*19.44*	*19.69*	*19.96*	*20.34*	*20.60*	**18.58**	*18.75*	*20.15*
Canada	**5.64**	**4.90**	**4.94**	**5.54**	**5.63**	**5.40**	**5.52**	*5.80*	*5.84*	*5.81*	*5.83*	*5.86*	**5.26**	*5.59*	*5.84*
Mexico	**2.00**	**1.94**	**1.91**	**1.90**	**1.93**	**1.95**	**1.91**	*1.91*	*1.94*	*1.90*	*1.86*	*1.83*	**1.94**	*1.93*	*1.88*
Other OECD	**5.08**	**4.99**	**4.81**	**4.93**	**5.00**	**4.47**	**4.86**	*5.06*	*5.07*	*4.98*	*4.89*	*5.15*	**4.95**	*4.85*	*5.02*
Non-OECD	**67.70**	**63.03**	**61.06**	**62.08**	**62.62**	**63.90**	**65.67**	*67.18*	*67.37*	*68.45*	*69.17*	*69.09*	**63.46**	*64.86*	*68.53*
OPEC	**33.50**	**30.72**	**28.65**	**30.00**	**30.36**	**30.76**	**32.23**	*33.32*	*33.70*	*33.84*	*34.01*	*34.05*	**30.71**	*31.68*	*33.90*
Crude Oil Portion	**28.28**	**25.65**	**23.63**	**24.88**	**25.08**	**25.49**	**26.87**	*27.88*	*28.10*	*28.38*	*28.49*	*28.49*	**25.60**	*26.34*	*28.37*
Other Liquids (b)	**5.22**	**5.07**	**5.02**	**5.12**	**5.29**	**5.27**	**5.36**	*5.43*	*5.59*	*5.47*	*5.52*	*5.56*	**5.11**	*5.34*	*5.53*
Eurasia	**14.72**	**13.17**	**12.70**	**13.12**	**13.38**	**13.62**	**13.59**	*14.19*	*14.42*	*14.59*	*14.72*	*14.89*	**13.42**	*13.70*	*14.66*
China	**4.97**	**4.92**	**4.96**	**4.91**	**5.05**	**5.09**	**5.09**	*5.07*	*5.06*	*5.09*	*5.09*	*5.14*	**4.94**	*5.07*	*5.09*
Other Non-OECD	**14.51**	**14.22**	**14.75**	**14.04**	**13.82**	**14.43**	**14.75**	*14.60*	*14.20*	*14.92*	*15.35*	*15.02*	**14.38**	*14.41*	*14.88*
Total World Supply	**100.74**	**92.30**	**91.01**	**92.74**	**92.80**	**94.78**	**96.82**	*99.40*	*99.90*	*101.09*	*102.10*	*102.53*	**94.19**	*95.97*	*101.42*
Non-OPEC Supply	**67.24**	**61.58**	**62.36**	**62.74**	**62.44**	**64.01**	**64.58**	*66.08*	*66.21*	*67.25*	*68.09*	*68.48*	**63.48**	*64.29*	*67.52*
Consumption (million barrels per day) (c)															
OECD	**45.50**	**37.45**	**42.27**	**42.84**	**42.30**	**43.94**	**45.40**	*45.85*	*45.31*	*44.95*	*46.01*	*45.97*	**42.02**	*44.38*	*45.56*
U.S. (50 States)	**19.50**	**16.07**	**18.45**	**18.72**	**18.45**	**20.03**	**20.14**	*20.07*	*19.75*	*20.27*	*20.81*	*20.65*	**18.19**	*19.68*	*20.37*
U.S. Territories	**0.17**	**0.15**	**0.16**	**0.17**	**0.20**	**0.18**	**0.18**	*0.20*	*0.20*	*0.18*	*0.19*	*0.20*	**0.16**	*0.19*	*0.19*
Canada	**2.42**	**1.97**	**2.25**	**2.14**	**2.12**	**2.16**	**2.42**	*2.42*	*2.37*	*2.32*	*2.42*	*2.40*	**2.19**	*2.28*	*2.38*
Europe	**13.34**	**11.01**	**12.88**	**12.51**	**11.90**	**12.57**	**13.68**	*13.56*	*13.20*	*13.22*	*13.51*	*13.16*	**12.43**	*12.94*	*13.27*
Japan	**3.78**	**2.93**	**3.06**	**3.53**	**3.73**	**3.08**	**3.08**	*3.43*	*3.66*	*2.98*	*3.07*	*3.39*	**3.33**	*3.33*	*3.27*
Other OECD	**6.30**	**5.34**	**5.47**	**5.77**	**5.89**	**5.91**	**5.90**	*6.17*	*6.13*	*5.97*	*6.01*	*6.17*	**5.72**	*5.97*	*6.07*
Non-OECD	**50.33**	**47.44**	**51.21**	**52.59**	**52.39**	**52.75**	**53.20**	*54.25*	*54.52*	*55.48*	*55.58*	*55.67*	**50.40**	*53.15*	*55.32*
Eurasia	**4.86**	**4.48**	**5.28**	**5.17**	**4.96**	**5.04**	**5.44**	*5.26*	*5.09*	*5.16*	*5.56*	*5.41*	**4.95**	*5.18*	*5.31*
Europe	**0.71**	**0.69**	**0.71**	**0.72**	**0.73**	**0.74**	**0.74**	*0.75*	*0.75*	*0.75*	*0.75*	*0.76*	**0.71**	*0.74*	*0.75*
China	**13.89**	**14.08**	**14.65**	**15.11**	**15.30**	**15.51**	**15.02**	*15.49*	*15.81*	*15.98*	*15.69*	*15.96*	**14.43**	*15.33*	*15.86*
Other Asia	**13.35**	**11.63**	**12.59**	**13.61**	**13.76**	**13.24**	**13.13**	*13.94*	*14.34*	*14.46*	*14.04*	*14.43*	**12.80**	*13.52*	*14.31*
Other Non-OECD	**17.53**	**16.55**	**17.98**	**17.99**	**17.64**	**18.22**	**18.86**	*18.81*	*18.54*	*19.13*	*19.55*	*19.11*	**17.51**	*18.39*	*19.08*
Total World Consumption	**95.83**	**84.90**	**93.47**	**95.43**	**94.68**	**96.69**	**98.59**	*100.10*	*99.83*	*100.43*	*101.59*	*101.64*	**92.42**	*97.53*	*100.88*
Total Crude Oil and Other Liquids Inventory Net Withdrawals (million barrels per day)															
U.S. (50 States)	**-0.49**	**-1.67**	**0.53**	**0.91**	**0.47**	**0.51**	**0.40**	*0.45*	*-0.12*	*-0.69*	*-0.07*	*0.40*	**-0.18**	*0.46*	*-0.12*
Other OECD	**-0.51**	**-1.16**	**0.04**	**0.69**	**0.77**	**0.13**	**0.62**	*0.08*	*0.02*	*0.01*	*-0.14*	*-0.40*	**-0.23**	*0.40*	*-0.13*
Other Stock Draws and Balance	**-3.92**	**-4.58**	**1.90**	**1.09**	**0.65**	**1.28**	**0.76**	*0.18*	*0.03*	*0.01*	*-0.30*	*-0.88*	**-1.36**	*0.71*	*-0.29*
Total Stock Draw	**-4.91**	**-7.40**	**2.46**	**2.69**	**1.88**	**1.92**	**1.78**	*0.70*	*-0.07*	*-0.67*	*-0.51*	*-0.89*	**-1.77**	*1.57*	*-0.54*
End-of-period Commercial Crude Oil and Other Liquids Inventories (million barrels)															
U.S. Commercial Inventory	**1,327**	**1,458**	**1,423**	**1,343**	**1,302**	**1,271**	**1,238**	*1,214*	*1,225*	*1,288*	*1,294*	*1,267*	**1,343**	*1,214*	*1,267*
OECD Commercial Inventory	**2,970**	**3,206**	**3,168**	**3,025**	**2,914**	**2,873**	**2,782**	*2,751*	*2,760*	*2,822*	*2,841*	*2,851*	**3,025**	*2,751*	*2,851*

(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 November 4, 2021.

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 - November 2021

	2020				2021				2022				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2020	2021	2022
Supply (million barrels per day)															
Crude Oil Supply															
Domestic Production (a)	**12.81**	**10.67**	**10.79**	**10.87**	**10.69**	**11.28**	**11.07**	*11.47*	*11.69*	*11.77*	*11.97*	*12.16*	**11.28**	*11.13*	*11.90*
Alaska	**0.48**	**0.41**	**0.44**	**0.46**	**0.46**	**0.44**	**0.41**	*0.45*	*0.43*	*0.38*	*0.41*	*0.44*	**0.45**	*0.44*	*0.41*
Federal Gulf of Mexico (b)	**1.99**	**1.66**	**1.43**	**1.50**	**1.80**	**1.79**	**1.49**	*1.77*	*1.84*	*1.81*	*1.82*	*1.85*	**1.64**	*1.71*	*1.83*
Lower 48 States (excl GOM)	**10.35**	**8.60**	**8.92**	**8.91**	**8.44**	**9.05**	**9.17**	*9.25*	*9.42*	*9.59*	*9.74*	*9.87*	**9.19**	*8.98*	*9.66*
Crude Oil Net Imports (c)	**2.89**	**3.06**	**2.24**	**2.50**	**2.87**	**2.96**	**3.57**	*3.73*	*3.68*	*4.49*	*4.63*	*3.62*	**2.67**	*3.29*	*4.11*
SPR Net Withdrawals	**0.00**	**-0.23**	**0.15**	**0.04**	**0.00**	**0.18**	**0.04**	*0.19*	*0.00*	*0.00*	*0.00*	*0.10*	**-0.01**	*0.10*	*0.03*
Commercial Inventory Net Withdrawals	**-0.56**	**-0.54**	**0.38**	**0.13**	**-0.18**	**0.59**	**0.29**	*-0.12*	*-0.32*	*-0.04*	*0.26*	*-0.02*	**-0.14**	*0.15*	*-0.03*
Crude Oil Adjustment (d)	**0.63**	**0.20**	**0.46**	**0.36**	**0.42**	**0.63**	**0.61**	*0.30*	*0.22*	*0.22*	*0.23*	*0.16*	**0.41**	*0.49*	*0.21*
Total Crude Oil Input to Refineries	**15.77**	**13.16**	**14.02**	**13.90**	**13.81**	**15.65**	**15.58**	*15.57*	*15.26*	*16.44*	*17.09*	*16.02*	**14.21**	*15.16*	*16.21*
Other Supply															
Refinery Processing Gain	**1.02**	**0.82**	**0.93**	**0.92**	**0.84**	**0.97**	**0.98**	*1.05*	*1.06*	*1.05*	*1.09*	*1.09*	**0.92**	*0.96*	*1.07*
Natural Gas Plant Liquids Production	**5.17**	**4.96**	**5.34**	**5.22**	**4.86**	**5.46**	**5.51**	*5.59*	*5.67*	*5.81*	*5.94*	*6.01*	**5.17**	*5.36*	*5.86*
Renewables and Oxygenate Production (e)	**1.11**	**0.81**	**1.03**	**1.07**	**1.03**	**1.13**	**1.09**	*1.12*	*1.07*	*1.11*	*1.13*	*1.12*	**1.01**	*1.09*	*1.11*
Fuel Ethanol Production	**1.02**	**0.70**	**0.92**	**0.97**	**0.90**	**0.99**	**0.96**	*1.01*	*0.97*	*1.00*	*1.02*	*1.01*	**0.91**	*0.97*	*1.00*
Petroleum Products Adjustment (f)	**0.22**	**0.19**	**0.20**	**0.19**	**0.19**	**0.22**	**0.22**	*0.21*	*0.20*	*0.22*	*0.22*	*0.22*	**0.20**	*0.21*	*0.22*
Product Net Imports (c)	**-3.86**	**-2.96**	**-3.07**	**-3.33**	**-2.94**	**-3.13**	**-3.32**	*-3.85*	*-3.72*	*-3.70*	*-4.32*	*-4.13*	**-3.30**	*-3.31*	*-3.97*
Hydrocarbon Gas Liquids	**-1.95**	**-1.84**	**-1.83**	**-2.06**	**-2.02**	**-2.23**	**-2.17**	*-2.24*	*-2.28*	*-2.34*	*-2.39*	*-2.26*	**-1.92**	*-2.17*	*-2.32*
Unfinished Oils	**0.37**	**0.23**	**0.35**	**0.18**	**0.14**	**0.25**	**0.29**	*0.28*	*0.21*	*0.26*	*0.30*	*0.20*	**0.29**	*0.24*	*0.24*
Other HC/Oxygenates	**-0.09**	**-0.04**	**-0.04**	**-0.04**	**-0.08**	**-0.04**	**-0.07**	*-0.08*	*-0.06*	*-0.04*	*-0.04*	*-0.04*	**-0.05**	*-0.07*	*-0.04*
Motor Gasoline Blend Comp.	**0.40**	**0.37**	**0.49**	**0.44**	**0.55**	**0.79**	**0.63**	*0.14*	*0.55*	*0.77*	*0.43*	*0.21*	**0.42**	*0.53*	*0.49*
Finished Motor Gasoline	**-0.71**	**-0.41**	**-0.58**	**-0.76**	**-0.66**	**-0.66**	**-0.66**	*-0.76*	*-0.93*	*-0.65*	*-0.66*	*-0.81*	**-0.62**	*-0.69*	*-0.76*
Jet Fuel	**-0.07**	**0.09**	**0.12**	**0.08**	**0.03**	**0.09**	**0.09**	*0.07*	*-0.06*	*-0.04*	*0.02*	*0.07*	**0.05**	*0.07*	*0.00*
Distillate Fuel Oil	**-1.14**	**-0.86**	**-1.16**	**-0.72**	**-0.49**	**-0.90**	**-0.97**	*-0.71*	*-0.62*	*-1.04*	*-1.27*	*-0.93*	**-0.97**	*-0.77*	*-0.97*
Residual Fuel Oil	**-0.02**	**-0.01**	**0.05**	**0.05**	**0.08**	**0.05**	**0.08**	*0.10*	*-0.02*	*0.00*	*-0.04*	*0.04*	**0.02**	*0.08*	*-0.01*
Other Oils (g)	**-0.64**	**-0.49**	**-0.48**	**-0.48**	**-0.49**	**-0.49**	**-0.54**	*-0.65*	*-0.50*	*-0.59*	*-0.67*	*-0.61*	**-0.52**	*-0.54*	*-0.59*
Product Inventory Net Withdrawals	**0.06**	**-0.90**	**0.00**	**0.73**	**0.65**	**-0.26**	**0.07**	*0.38*	*0.20*	*-0.65*	*-0.33*	*0.32*	**-0.02**	*0.21*	*-0.12*
Total Supply	**19.50**	**16.07**	**18.45**	**18.72**	**18.43**	**20.03**	**20.14**	*20.07*	*19.75*	*20.27*	*20.81*	*20.65*	**18.19**	*19.67*	*20.37*
Consumption (million barrels per day)															
Hydrocarbon Gas Liquids	**3.37**	**2.85**	**3.01**	**3.68**	**3.40**	**3.33**	**3.23**	*3.59*	*3.77*	*3.26*	*3.32*	*3.87*	**3.23**	*3.39*	*3.55*
Unfinished Oils	**0.18**	**0.12**	**0.03**	**0.03**	**0.05**	**0.03**	**-0.05**	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	**0.09**	*0.00*	*0.00*
Motor Gasoline	**8.51**	**7.12**	**8.51**	**8.06**	**8.00**	**9.07**	**9.17**	*8.88*	*8.40*	*9.23*	*9.41*	*8.85*	**8.05**	*8.78*	*8.97*
Fuel Ethanol blended into Motor Gasoline	**0.85**	**0.73**	**0.87**	**0.85**	**0.82**	**0.93**	**0.94**	*0.92*	*0.85*	*0.94*	*0.95*	*0.92*	**0.82**	*0.90*	*0.92*
Jet Fuel	**1.56**	**0.69**	**0.97**	**1.09**	**1.13**	**1.34**	**1.52**	*1.51*	*1.46*	*1.57*	*1.70*	*1.68*	**1.08**	*1.38*	*1.60*
Distillate Fuel Oil	**4.02**	**3.49**	**3.70**	**3.94**	**3.97**	**3.93**	**3.85**	*4.01*	*4.14*	*4.01*	*3.97*	*4.14*	**3.79**	*3.94*	*4.07*
Residual Fuel Oil	**0.17**	**0.11**	**0.32**	**0.22**	**0.26**	**0.25**	**0.32**	*0.29*	*0.23*	*0.21*	*0.26*	*0.26*	**0.21**	*0.28*	*0.24*
Other Oils (g)	**1.69**	**1.68**	**1.92**	**1.71**	**1.63**	**2.08**	**2.10**	*1.79*	*1.75*	*2.00*	*2.14*	*1.86*	**1.75**	*1.90*	*1.94*
Total Consumption	**19.50**	**16.07**	**18.45**	**18.72**	**18.45**	**20.03**	**20.14**	*20.07*	*19.75*	*20.27*	*20.81*	*20.65*	**18.19**	*19.68*	*20.37*
Total Petroleum and Other Liquids Net Imports	**-0.97**	**0.11**	**-0.83**	**-0.84**	**-0.07**	**-0.16**	**0.25**	*-0.12*	*-0.04*	*0.79*	*0.31*	*-0.51*	**-0.63**	*-0.03*	*0.14*
End-of-period Inventories (million barrels)															
Commercial Inventory															
Crude Oil (excluding SPR)	**483.3**	**532.7**	**497.7**	**485.5**	**501.9**	**448.0**	**420.9**	*431.8*	*461.0*	*464.5*	*440.4*	*442.6*	**485.5**	*431.8*	*442.6*
Hydrocarbon Gas Liquids	**182.9**	**235.7**	**298.7**	**228.2**	**168.6**	**195.8**	**228.8**	*183.7*	*144.5*	*197.0*	*242.7*	*204.1*	**228.2**	*183.7*	*204.1*
Unfinished Oils	**101.9**	**92.5**	**81.4**	**77.6**	**93.3**	**93.0**	**89.0**	*82.8*	*93.3*	*91.1*	*90.0*	*83.1*	**77.6**	*82.8*	*83.1*
Other HC/Oxygenates	**33.4**	**25.4**	**24.6**	**29.7**	**29.1**	**27.5**	**25.2**	*26.1*	*28.2*	*27.0*	*26.7*	*27.0*	**29.7**	*26.1*	*27.0*
Total Motor Gasoline	**261.8**	**254.5**	**227.6**	**243.4**	**237.6**	**237.2**	**225.1**	*231.9*	*241.4*	*246.5*	*233.9*	*248.8*	**243.4**	*231.9*	*248.8*
Finished Motor Gasoline	**22.6**	**23.5**	**22.5**	**25.4**	**20.3**	**18.6**	**17.6**	*24.2*	*24.1*	*23.9*	*23.1*	*26.1*	**25.4**	*24.2*	*26.1*
Motor Gasoline Blend Comp.	**239.2**	**231.0**	**205.0**	**218.0**	**217.4**	**218.6**	**207.5**	*207.7*	*217.3*	*222.5*	*210.7*	*222.7*	**218.0**	*207.7*	*222.7*
Jet Fuel	**39.9**	**41.6**	**40.1**	**38.6**	**39.0**	**44.7**	**41.3**	*37.7*	*37.7*	*39.0*	*41.7*	*38.8*	**38.6**	*37.7*	*38.8*
Distillate Fuel Oil	**126.8**	**176.9**	**172.5**	**161.2**	**145.5**	**140.1**	**129.3**	*136.0*	*125.6*	*130.6*	*137.8*	*139.1*	**161.2**	*136.0*	*139.1*
Residual Fuel Oil	**34.8**	**39.5**	**32.1**	**30.2**	**30.9**	**31.1**	**28.2**	*30.6*	*31.0*	*32.0*	*30.2*	*31.6*	**30.2**	*30.6*	*31.6*
Other Oils (g)	**61.9**	**59.0**	**48.3**	**49.1**	**55.8**	**54.1**	**50.1**	*53.4*	*62.4*	*60.1*	*50.8*	*52.2*	**49.1**	*53.4*	*52.2*
Total Commercial Inventory	**1326.7**	**1457.7**	**1423.2**	**1343.3**	**1301.7**	**1271.5**	**1237.9**	*1214.1*	*1225.2*	*1287.8*	*1294.3*	*1267.1*	**1343.3**	*1214.1*	*1267.1*
Crude Oil in SPR	**635.0**	**656.0**	**642.2**	**638.1**	**637.8**	**621.3**	**617.8**	*600.6*	*600.6*	*600.6*	*600.6*	*591.0*	**638.1**	*600.6*	*591.0*

(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) For net imports and inventories “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; for consumption “Other Oils” also includes renewable fuels except fuel ethanol.

- = no data available

SPR: Strategic Petroleum Reserve

HC: Hydrocarbons

Notes: EIA completed modeling and analysis for this report on November 4, 2021.

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 - November 2021

	2020				2021				2022				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2020	2021	2022
Supply (billion cubic feet per day)															
Total Marketed Production	**103.02**	**96.83**	**97.29**	**98.53**	**97.65**	**101.12**	**102.51**	*102.98*	*103.49*	*104.13*	*105.34*	*106.49*	**98.91**	*101.09*	*104.87*
Alaska	**0.96**	**0.88**	**0.88**	**0.98**	**1.02**	**0.95**	**0.87**	*0.91*	*0.92*	*0.77*	*0.73*	*0.88*	**0.92**	*0.94*	*0.83*
Federal GOM (a)	**2.80**	**2.28**	**1.75**	**1.81**	**2.26**	**2.25**	**1.94**	*2.31*	*2.33*	*2.25*	*2.14*	*2.10*	**2.16**	*2.19*	*2.20*
Lower 48 States (excl GOM)	**99.25**	**93.68**	**94.67**	**95.75**	**94.37**	**97.92**	**99.70**	*99.76*	*100.25*	*101.11*	*102.47*	*103.51*	**95.83**	*97.96*	*101.84*
Total Dry Gas Production	**95.29**	**89.57**	**89.99**	**91.14**	**90.62**	**93.20**	**94.52**	*94.94*	*95.41*	*96.00*	*97.12*	*98.18*	**91.49**	*93.34*	*96.69*
LNG Gross Imports	**0.24**	**0.12**	**0.09**	**0.09**	**0.15**	**0.02**	**0.05**	*0.20*	*0.32*	*0.18*	*0.18*	*0.20*	**0.13**	*0.10*	*0.22*
LNG Gross Exports	**7.92**	**5.52**	**3.91**	**8.78**	**9.27**	**9.81**	**9.62**	*10.50*	*11.14*	*11.26*	*11.55*	*12.01*	**6.53**	*9.81*	*11.49*
Pipeline Gross Imports	**7.60**	**6.08**	**6.39**	**7.27**	**8.68**	**6.81**	**7.10**	*6.80*	*7.35*	*6.36*	*6.38*	*6.72*	**6.84**	*7.34*	*6.70*
Pipeline Gross Exports	**8.15**	**7.17**	**8.09**	**8.21**	**8.31**	**8.67**	**8.62**	*9.13*	*9.14*	*8.56*	*9.33*	*9.35*	**7.91**	*8.68*	*9.09*
Supplemental Gaseous Fuels	**0.18**	**0.17**	**0.17**	**0.17**	**0.18**	**0.15**	**0.15**	*0.17*	*0.17*	*0.17*	*0.17*	*0.18*	**0.17**	*0.16*	*0.17*
Net Inventory Withdrawals	**12.74**	**-12.24**	**-7.68**	**5.36**	**17.19**	**-9.12**	**-7.83**	*4.11*	*14.46*	*-10.33*	*-7.98*	*4.80*	**-0.46**	*1.03*	*0.19*
Total Supply	**99.98**	**71.00**	**76.96**	**87.05**	**99.23**	**72.57**	**75.75**	*86.59*	*97.43*	*72.56*	*74.99*	*88.71*	**83.74**	*83.48*	*83.38*
Balancing Item (b)	**-0.55**	**-0.29**	**-0.20**	**-0.93**	**0.06**	**-0.63**	**-0.74**	*-0.48*	*-0.65*	*-0.87*	*0.38*	*-0.14*	**-0.49**	*-0.45*	*-0.32*
Total Primary Supply	**99.44**	**70.72**	**76.76**	**86.12**	**99.29**	**71.94**	**75.01**	*86.11*	*96.77*	*71.69*	*75.37*	*88.57*	**83.25**	*83.03*	*83.06*
Consumption (billion cubic feet per day)															
Residential	**22.95**	**8.25**	**3.84**	**16.10**	**25.67**	**7.51**	**3.46**	*16.38*	*24.56*	*7.83*	*3.84*	*17.43*	**12.77**	*13.20*	*13.37*
Commercial	**14.04**	**5.85**	**4.39**	**10.40**	**14.87**	**6.24**	**4.69**	*11.01*	*14.62*	*6.66*	*5.16*	*11.81*	**8.66**	*9.18*	*9.54*
Industrial	**24.31**	**20.32**	**20.92**	**23.53**	**23.81**	**21.49**	**21.26**	*23.94*	*24.32*	*22.33*	*21.55*	*24.46*	**22.27**	*22.62*	*23.16*
Electric Power (c)	**29.55**	**29.05**	**40.10**	**28.19**	**26.65**	**29.14**	**37.86**	*26.63*	*24.72*	*27.16*	*36.91*	*26.44*	**31.74**	*30.09*	*28.83*
Lease and Plant Fuel	**5.14**	**4.83**	**4.85**	**4.91**	**4.87**	**5.04**	**5.11**	*5.13*	*5.16*	*5.19*	*5.25*	*5.31*	**4.93**	*5.04*	*5.23*
Pipeline and Distribution Use	**3.31**	**2.32**	**2.53**	**2.85**	**3.28**	**2.38**	**2.48**	*2.87*	*3.24*	*2.37*	*2.49*	*2.95*	**2.75**	*2.75*	*2.76*
Vehicle Use	**0.13**	**0.10**	**0.13**	**0.13**	**0.14**	**0.15**	**0.15**	*0.15*	*0.16*	*0.16*	*0.16*	*0.16*	**0.13**	*0.15*	*0.16*
Total Consumption	**99.44**	**70.72**	**76.76**	**86.12**	**99.29**	**71.94**	**75.01**	*86.11*	*96.77*	*71.69*	*75.37*	*88.57*	**83.25**	*83.03*	*83.06*
End-of-period Inventories (billion cubic feet)															
Working Gas Inventory	**2,029**	**3,133**	**3,840**	**3,341**	**1,801**	**2,583**	**3,303**	*2,925*	*1,623*	*2,563*	*3,297*	*2,856*	**3,341**	*2,925*	*2,856*
East Region (d)	**385**	**655**	**890**	**763**	**313**	**515**	**806**	*675*	*234*	*487*	*702*	*510*	**763**	*675*	*510*
Midwest Region (d)	**471**	**747**	**1,053**	**918**	**395**	**630**	**966**	*817*	*335*	*569*	*913*	*802*	**918**	*817*	*802*
South Central Region (d)	**857**	**1,221**	**1,313**	**1,155**	**760**	**991**	**1,048**	*1,044*	*782*	*1,047*	*1,102*	*1,004*	**1,155**	*1,044*	*1,004*
Mountain Region (d)	**92**	**177**	**235**	**195**	**113**	**175**	**205**	*156*	*97*	*150*	*219*	*201*	**195**	*156*	*201*
Pacific Region (d)	**200**	**308**	**318**	**282**	**197**	**246**	**247**	*202*	*144*	*279*	*330*	*307*	**282**	*202*	*307*
Alaska	**23**	**25**	**31**	**28**	**23**	**27**	**31**	*31*	*31*	*31*	*31*	*31*	**28**	*31*	*31*

(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 November 4, 2021.

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.

https://australia.chevron.com/news/2021/chevron-announces-aud40-million-western-australian-lower-carbon-investment

chevron announces $40 million western australian lower carbon investment

PERTH, Western Australia, 11 November 2021 – Chevron Australia, as operator of the Gorgon Project, today announced an AUD$40 million investment in Western Australian lower carbon projects.

The investment is part of an offsets package Chevron will implement to address a carbon dioxide injection shortfall at the Gorgon natural gas facility over the five-year period ending 17 July 2021.

The package will also see Chevron fulfil its regulatory obligations through the acquisition and surrender of 5.23 million greenhouse gas offsets.

Chevron Australia managing director Mark Hatfield said Chevron is proud of the significant emissions reductions being achieved by the Gorgon carbon capture and storage system, despite its early challenges.

“Since starting up in August 2019, the Gorgon carbon capture and storage system has safely injected approximately 5.5 million tonnes of greenhouse gas emissions and is demonstrating the importance of CCS technology in advancing a lower carbon future.

“We take our regulatory obligations seriously. The package we have announced will see us make good on our commitment to offset the injection shortfall, and ensures we meet the expectations of the regulator, the community and those we place on ourselves as a leading energy producer in Australia,” Hatfield said.

“We look forward to further discussions with the Western Australian Government to develop lower carbon projects and unlock emissions reduction potential across the state.”

The Chevron-operated Gorgon Project is a joint venture between the Australian subsidiaries of Chevron (47.333 percent), ExxonMobil (25 percent), Shell (25 percent), Osaka Gas (1.25 percent), Tokyo Gas (1 percent) and JERA (0.417 percent).

Chevron is one of the world's leading integrated energy companies and through its Australian subsidiaries, has been present in Australia for more than 60 years. With the ingenuity and commitment of thousands of workers, Chevron Australia operates the Gorgon and Wheatstone natural gas facilities; manages its equal one-sixth interest in the North West Shelf Venture; operates Australia’s largest onshore oilfield on Barrow Island; is a significant investor in exploration; and via Puma Energy delivers quality fuel products and services across Australia, operating or supplying a network of more than 360 retail locations and an extensive 24-hour hour diesel stop network, as well as 14 depots and three seaboard terminals.

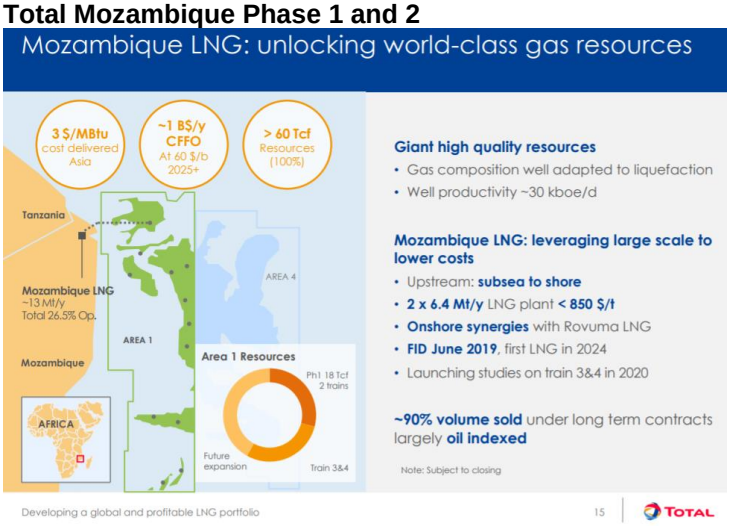
Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?

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.

Total Mozambique Phase 1 and 2



Source: Total Investor Day September 24, 2019

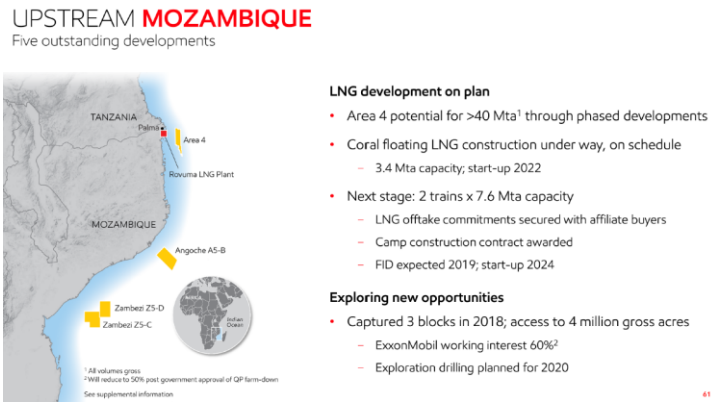
Total's Mozambique force majeure is no surprise, especially the need to the restoration of security and stability "in a sustained manner". Yesterday, Total announced [LINK] "*Considering the evolution of the security".* No one should be surprised by the force majeure or the sustained manner caveat. SAF 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

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

[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

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

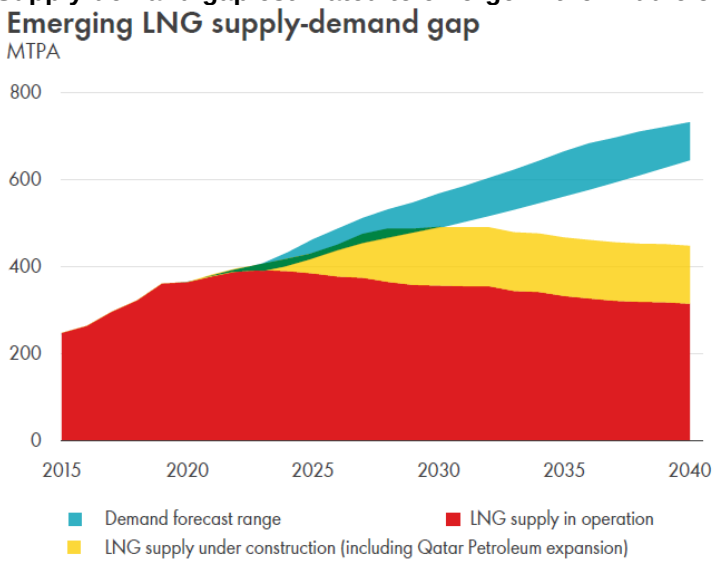
Source: IEA Tracking Clean Energy Progress, June 2020

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

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

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.

Morocco Eyes Global LNG Market Amid Spat With Neighbor Algeria
2021-11-08 17:53:27.815 GMT

By Souhail Karam
(Bloomberg) -- Morocco is exploring the international market for liquefied natural gas after its neighbor Algeria cut off piped supplies.
With tensions simmering between the two North African countries, authorities in Rabat are “working to develop our port infrastructure” so as to accommodate imports of LNG, Energy Transition and Sustainable Development Minister Leila Benali told lawmakers in a televised debate.
Buying supplies internationally comes at a time of soaring prices for gas and concerns about shortages in many of the major consuming markets, especially in Europe.
Spain’s Algerian Gas Imports Via Morocco Stop as Deal Ends
The government plans to quickly develop an LNG floating storage and regasification unit and is currently in the phase of organizing financing for the project, Benali said.
Morocco relied on the Algerian pipeline for about 1 billion cubic meters of natural gas that mostly fed two power plants, which have been idled since flows stopped, Benali said. Demand for the fuel is expected to grow to 3 billion cubic meters by 2040.
The kingdom also imports 2.6 billion cubic meters of butane, mostly for domestic use, Benali said.
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The minister also said:
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Morocco plans a 450-megawatt gas-fired power plant before end-2025Government is getting “strong” interest from operators regarding planned FSRU unitGovt on track to more than double clean-electricity production capacity to about 8,000 megawatts through 2025Electricity demand to rise 4.2% a year over 2021-2025 after 1.2% drop in 2020
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Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs

Posted 11am on July 14, 2021

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

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.*

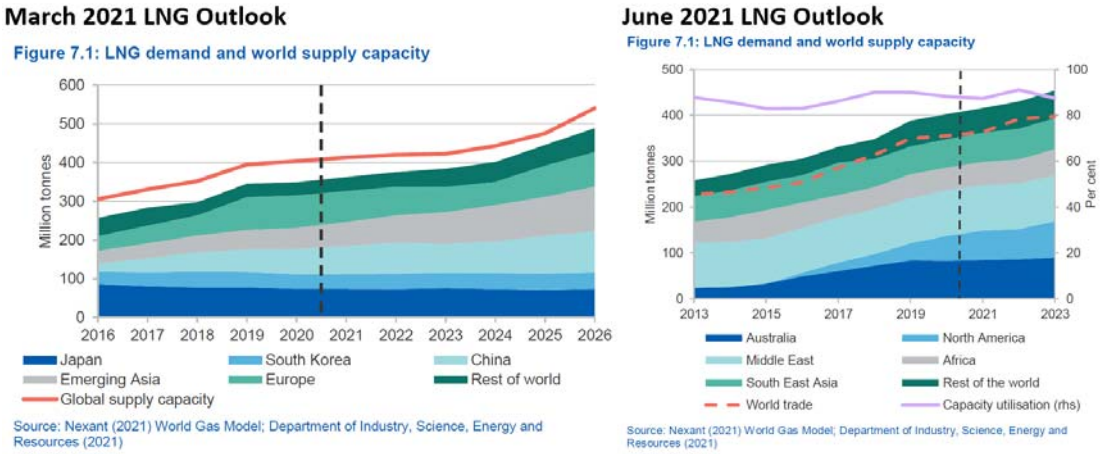
Common theme - new LNG supply is being delayed ie. [Total] Mozambique. Don't forget need capacity>demand due to normal maintenance, etc. Positive for LNG." (ii) Chevron's Gorgon. A big LNG story in H2/20 was the emergence of weld quality issues in the propane heat exchangers at Train 2, which required 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

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

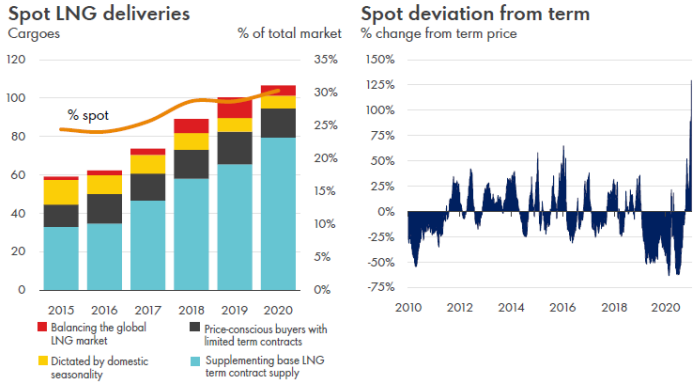


Source: Australia Resources and Energy Quarterly

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."*

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.

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%*

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.

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.

https://tass.ru/mezhdunarodnaya-panorama/12894135

THE SITUATION WITH MIGRANTS ON THE BORDER OF POLAND AND BELARUS

NOV 11, 02:52Updated Nov 11, 03:40

Lukashenko threatened to cut off gas transit to Europe in response to expansion of EU sanctions

The President of Belarus said that he would recommend the leadership of Poland and Lithuania to "think before speaking"

President of Belarus Alexander Lukashenko

© Pavel Orlovsky / BelTA / TASS

MINSK, November 11. / TASS /. President of Belarus Alexander Lukashenko has threatened the European Union in the event of expansion of sanctions to cut off the transit of gas to Europe, which goes through the transnational gas pipeline "Yamal - Europe". This statement was made by Lukashenka on Thursday at a meeting with the country's government.

"We are heating Europe, they still threaten us that they will close the border. And if we cut off natural gas there? Therefore, I would recommend that the Polish leadership, Lithuanians and other headless people think before speaking," Lukashenko was quoted by the BelTA news agency .

The President of Belarus noted that as a tough response to the new packages of EU sanctions, his country may be closed for transit. “And if we close the transit through

Belarus? It will not go through Ukraine: the Russian border is closed there, there are no roads through the Baltic states. If we close it for the Poles and, for example, for the Germans, what will happen then? , stop at nothing, "Lukashenko said, commenting on Warsaw's plans to close the Polish-Belarusian border.

"But this is their business. If they close (the border - TASS note), let them close it," Lukashenko said. At the same time, he instructed the Foreign Ministry "to warn everyone in Europe: if only they impose additional sanctions on us," indigestible "and" unacceptable "for us, we must respond." “How to answer, we agreed with you six months ago,” the President of Belarus said.

Currently, the EU is discussing the possibility of adopting a fifth package of sanctions against Belarus.

https://tass.ru/ekonomika/12914493

NOV 13, 01:03Updated Nov 13, 02:55

Putin hopes that it will not come to the blocking of the transit of Russian gas by Belarus

The Russian President is going to discuss with his Belarusian counterpart his words about the possibility of blocking gas transit to EU countries

MOSCOW, November 13. / TASS /. Russian President Vladimir Putin hopes that Belarus will not block the transit of Russian gas to the EU.

"In theory, of course, [President of Belarus Alexander] Lukashenko, as the president of a transit country, can probably give an order to cut off our supplies to Europe. Although this would be a violation of our transit contract, and I hope it will not come to that," said the head of the Russian state in an interview with the journalist of the program "Moscow. Kremlin. Putin" Pavel Zarubin. At the same time, the Russian leader drew attention to the fact that against Lukashenka "they always apply and threaten to apply new sanctions."

"But this [blocking gas transit] would cause great damage to the energy sector of Europe, the energy sector of Europe and would not contribute to the development of our relations with Belarus as a transit country," Putin said.

He said that he was going to discuss with his Belarusian counterpart his words about the possibility of cutting off gas transit to the EU countries. "To be honest, this is the first time I hear about this, because I have twice talked with Alexander Grigorievich recently, he never told me about it, did not even hint," the head of state admitted in response to a question about Lukashenka's statement about the possibility block the transit of gas.

“But he can, probably,” Putin suggested. At the same time, the President of the Russian Federation stressed that "there is nothing good in this." "I will, of course, talk to him on this topic, if he just said it not in his hearts," the Russian leader assured.

The President of the Russian Federation recalled a similar situation. “But we already have such a practice - with Ukraine. In 2008, God forbid, we were faced with this crisis, when, due to endless disputes over the price of gas and the price of transit, we did not agree with our Ukrainian friends. We

were able to agree on the main parameters of these contracts. Everything went so far that Ukraine has blocked our gas, which is intended for consumers in Europe, "- stated Putin. “It’s just, as experts say, relatively speaking, the valve was turned on, they simply cut off Russian gas to Europe. It was the same,” he said.

https://www.reed.senate.gov/news/releases/as-gas-prices-rise-reed-urges-biden-administration-to-take-action-and-invest-in-making-america-more-energy-independent-and-efficient

NOVEMBER 09, 2021

As Gas Prices Rise, Reed Urges Biden Administration to Take Action & Invest in Making America More Energy Independent and Efficient

WASHINGTON, DC -- The average price of gas in Rhode Island as of this week is $3.40 per gallon, according to AAA. Gas prices in Rhode Island have risen by 25 cents over the past month, and are forecasted to continue rising.
In an effort to help alleviate gas prices, U.S. Senator Jack Reed and 10 colleagues sent a letter to President Biden urging the administration to *"consider all tools available at your disposal to lower U.S. gasoline prices. This includes a release from the Strategic Petroleum Reserve and a ban on crude oil exports. We hope you will consider these tools and others to make gasoline more affordable for all Americans."*
In addition to Senator Reed, the letter was signed by U.S. Senators Bob Casey (D-PA), Patrick Leahy (D-VT), Elizabeth Warren (D-MA), Maggie Hassan (D-NH), Ed Markey (D-MA), Tina Smith (D-MN), Chris Van Hollen (D-MD), Jeanne Shaheen (D-NH), Richard Blumenthal (D-CT), and Sherrod Brown (D-OH).

Crude oil prices represent the biggest factor in terms of the prices that consumers pay at the gas pump. But the cost of refining, distribution expenses, taxes, and rent for the gas station also influence the price at the pump.

Gas price experts have pointed to a "perfect storm" of factors that have contributed to the recent gas price spike, including: U.S. oil producers slowing production down during the height of the pandemic and laying workers off; COVID-related bottlenecks in the supply chain; OPEC countries like Saudi Arabia are severely limiting petroleum production; extensive hurricane damage to Louisiana refineries; and a downed pipeline from Atlanta to the East Coast.

Senator Reed also noted that the Trump Administration's reckless energy policy -- including his disastrous election year deal with Saudi Arabia and Russia that saw a slash in OPEC production to try to increase crude oil prices -- has contributed to the pain consumers are now feeling at the pump.

"Instead of allowing the market to work, investing in clean energy technology, and strengthening domestic energy infrastructure, the Trump Administration fixated on propping up the stock price of big oil companies, rolling back vehicle fuel efficiency standards, and cozying up to Saudi Arabia and Russia. Now Americans are paying more at the pump and our nation is more vulnerable to the oil whims of Saudi Arabia, Russia, and other adversarial dictatorships abroad," stated Reed. "Oil companies are enjoying the surge in fuel prices. Consumers are not. And it has to end. Some of the upward pressure on oil prices today is directly tied to the fact that oil producers can make more money by producing less oil. For the good of our economy and national security, we must ween ourselves off a system that is so ripe for foreign manipulation and driven by greed."

“No one President is entirely responsible for gas prices. But the smartest thing we can do to insulate America from future global oil price shocks is to reduce our dependence on oil in general, and especially foreign oil. That means investing in America’s transition to a clean energy future, upgrading our energy technology infrastructure, and making our communities and economy more energy efficient,” concluded Reed.

Full text of the letter follows:

November 8, 2021
President Joseph R. Biden
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Dear President Biden:
We are writing to express our support for your efforts to help families and businesses across the nation who are struggling to cope with soaring gasoline prices. We agree with your recent comments at the United Nations Climate Change Conference (COP26) that as the United States works to boost the development of clean and renewable energy over the long-term, we must ensure that Americans are able to afford to fill up their cars at the pump in the meantime.
According to AAA, the national average price for a gallon of gasoline is the highest it has been since 2014, with an increase of more than $1 per gallon since this time last year. In our home states, high gasoline prices have placed an undue burden on families and small businesses trying to make ends meet, and have proven especially burdensome as our constituents continue to recover from the economic fallout of the COVID-19 pandemic.
We share the administration’s concerns that the decision by the Organization of the Petroleum Exporting Countries (OPEC) and others to purposefully manipulate gas prices by constraining supply, as well as the choice of domestic leaseholders and producers to continue to export U.S. petroleum, threaten to send already record prices even higher. Continued U.S. exports and overseas supply collusion could be devastating to many in our states, contributing to higher bills for American families and businesses.
In light of these pressing concerns, we ask that you consider all tools available at your disposal to lower U.S. gasoline prices. This includes a release from the Strategic Petroleum Reserve and a ban on crude oil exports. We hope you will consider these tools and others to make gasoline more affordable for all Americans
Please do not hesitate to contact our offices if you have any questions. We look forward to your prompt response on this important issue.
Sincerely,

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Phillips 66 to Convert Alliance Refinery to Terminal Facility

November 08, 2021

HOUSTON--(BUSINESS WIRE)-- Phillips 66 (NYSE: PSX) announced today it plans to convert its Alliance Refinery in Belle Chasse, La., to a terminal facility. The conversion is expected to take place in 2022.

“We made this decision after exploring several options and considering the investment needed to repair the refinery following Hurricane Ida,” said Greg Garland, Chairman and CEO of Phillips 66. “Alliance’s existing infrastructure and Gulf Coast location make it an attractive midstream asset. Phillips 66 will continue to be a major refiner with 12 facilities in the U.S. and Europe.”

The Alliance Refinery employs approximately 500 employees and 400 contractors.

“Our decision was a difficult one, and we understand it has a profound impact on our employees, contractors and the broader Belle Chasse community,” Garland said. “We will work to help them through this transition and support them as Alliance takes on a new role in our portfolio.”

About Phillips 66

Phillips 66 is a diversified energy manufacturing and logistics company. With a portfolio of Midstream, Chemicals, Refining, and Marketing and Specialties businesses, the company processes, transports, stores and markets fuels and products globally. Headquartered in Houston, the company has 14,100 employees committed to safety and operating excellence. Phillips 66 had $56 billion of assets as of Sept. 30, 2021. For more information, visit www.phillips66.com or follow us on Twitter @Phillips66Co.

Oil Market Highlights

Crude Oil Price Movements

Crude oil spot prices surged by more than 12% in October, on the back of soaring energy prices in Europe and Asia. Strong oil market fundamentals, compounded by expectations of higher oil demand in the winter months from “gas to oil switching”, have supported both spot and futures prices. The OPEC Reference Basket (ORB) increased $8.23 or 11.1%, m-o-m, in October to average $82.11/b. Year-to-date, the ORB averaged $68.33/b, for a gain of $27.77, or 68.4%, compared to the same period last year. In the futures market, the ICE Brent front-month contract rose $8.87 or 11.8%, m-o-m, to average $83.75/b in October, while NYMEX WTI increased $9.68 or 13.5%, m-o-m, to average $81.22/b. Consequently, the Brent/WTI spread narrowed by 81¢ to stand at $2.53/b in October. The market structure of all three major oil benchmarks – Brent, WTI and Dubai – strengthened, moving deeper into backwardation on further declines in OECD commercial oil stocks in September and the prospect of stronger near-term market fundamentals. Hedge funds and other money managers boosted bullish positions related to NYMEX WTI in October as data showed ongoing drawdowns in inventories at the Cushing, Oklahoma, trading hub. However, speculators cut bullish positions related to ICE Brent.

World Economy

Global economic growth forecasts for both 2021 and 2022 remain unchanged from the last month’s assessment at 5.6% and 4.2%, respectively. For the US, lower-than-expected economic growth in 3Q21 has resulted in a downward revision for both 2021 and 2022. The US economy is now expected to grow by 5.5% in 2021 and by 4.1% in 2022. Euro-zone economic growth for 2021 is revised up slightly to 5.1%, after continued strong growth in 3Q21, and remains at 3.9% for 2022. Japan’s economic growth forecast for 2021 is revised down slightly to 2.5%, due to ongoing COVID-19-related social-distancing measures in 3Q21, while the forecast for 2022 remains at 2%. After a strong recovery in the first half of the year, China’s economic growth forecast remains at 8.3% in 2021 and 5.8% in 2022. Similarly, India’s economic growth forecast for 2021 is also unchanged at 9% for 2021 and 6.8% for 2022. Russia remains at 4% for 2021 at 2.7% for 2022. Brazil’s economic growth forecast is also unchanged for 2021, but was revised down slightly to 2% for 2022. The ongoing robust growth in the world economy continues to be challenged by uncertainties related to the spread of COVID-19 variants and the pace of vaccine rollouts worldwide, as well as ongoing global supply-chain bottlenecks. Additionally, sovereign debt levels in many regions, together with rising inflationary pressures and potential central bank responses, remain key factors requiring close monitoring.

World Oil Demand

World oil demand growth is revised lower by around 0.16 mb/d, compared to last month’s assessment, to stand at 5.7 mb/d. Revisions were mainly to account for slower than anticipated demand from China and India in 3Q21. Global oil demand is now estimated to reach 96.4 mb/d in 2021. For 2022, growth in global oil demand remains unchanged compared to the previous month’s assessment, to stand at 4.2 mb/d. World total demand in 2022 is now estimated to reach 100.6 mb/d, around 0.5 mb/d above 2019 levels. Marginal upward revisions in OECD Europe, due better economic views in some European countries, were offset by softer growth in industrial fuel demand, in OECD America and Latin America.

World Oil Supply

Non-OPEC liquids supply is expected to grow by 0.7 mb/d in 2021, unchanged from last month’s assessment, to average 63.6 mb/d. This is despite a marginal upward revision of 0.02 mb/d from the US, Canada, and Mexico, which were offset by a similar downward adjustment in the non-OECD. The main drivers of 2021 supply growth continue to be Canada, Russia, China, Norway, Brazil and Guyana. The forecast for non-OPEC liquids supply growth in 2022 is also unchanged at 3.0 mb/d to average 66.7 mb/d. Russia and the US are expected to be the main drivers of next year’s growth, contributing increments of 1.0 mb/d and 0.9 mb/d, respectively, followed by Brazil, Canada, Kazakhstan, Norway, Guyana and other countries in the DoC. OPEC NGLs are forecast to grow by 0.1 mb/d both in 2021 and 2022 to average 5.2 mb/d and 5.3 mb/d, respectively. In October, OPEC crude oil production increased by 0.22 mb/d m-o-m, to average 27.45 mb/d, according to available secondary sources.

Product Markets and Refining Operations

Product markets in all main trading hubs retained their previous month's strength in October, as refining economics continued to trend upwards, posting solid gains. Further declines in refinery processing rates attributable to the peak maintenance season weighed on product inventory levels and continued to keep product balances tight. This drove middle distillates to retain their position as the strongest margin contributors in the Atlantic Basin. In Asia, sustained fuel demand, amid limited product exports from China as refiners focused on supplying the domestic market, provided considerable support to Asian fuel markets, particularly at the top and middle sections of the barrel.

Tanker Market

Dirty tanker spot freight rates gained some positive momentum in October, with increases across all classes. VLCCs and Suezmax enjoyed the highest rates so far this year, with gains averaging 16% and 29%, respectively, m-o-m, while Aframax rates were up 22% m-o-m. For VLCCs, the Middle East-to-East route gained 17% m-o-m. For Suezmax, the West Africa-to-US Gulf Coast increased 35%. In the clean market, spot freight rates strengthened, as a 22% gain West of Suez offset a 6% decline in the East. The tanker market's performance is likely to improve through the end of the year, as concerns regarding an energy crunch in the power sector over winter support tonnage demand for crude and products, particularly in Asia.

Crude and Refined Products Trade

Preliminary data shows US crude imports in October eased from their summer highs to average 6.1 mb/d, while crude exports averaged 2.8 mb/d, supported by a pickup of flows to Europe. The latest data for September shows China's crude imports fell back, averaging 10.0 mb/d as independent refiners remained on the sidelines, due to a lack of crude import quotas. In India, crude imports hit a five-month high, averaging 4.3 mb/d in September, as refiners boosted runs amid a recovery in economic activity. Japan's crude imports declined from the previous month's peak but still remained at a relatively good level of 2.5 mb/d in September as refiners looked toward preparations for winter. In OECD Europe, the latest data for July shows crude imports remaining strong at 8.6 mb/d, while crude exports continued to edge higher reaching 0.4 mb/d, amid a return of flows to Asia.

Commercial Stock Movements

Preliminary September data sees total OECD commercial oil stocks up by 18.5 mb, m-o-m. At 2,805 mb, inventories were 374 mb lower than the same month last year; 206 mb lower than the latest five-year average; and 163 mb lower than the 2015-2019 average. Within the components, crude and products stocks fell by 9.3 mb and 9.2 mb, m-o-m, respectively. At 1,334 mb, OECD crude stocks stood 118 mb below the latest five-year average and 103 mb below the 2015-2019 average. At 1,471 mb, OECD product stocks stood 89 mb below the latest five-year average, and were 60 mb below the 2015-2019 average. In terms of days of forward cover, OECD commercial stocks fell 0.2 days, m-o-m, in September to stand at 61.5 days. This is 12.4 days lower than the same month last year; 2.8 days below the latest five-year average; and 0.7 days lower than the 2015-2019 average.

Balance of Supply and Demand

Demand for OPEC crude in 2021 was revised slightly down by 0.1 mb/d from the previous month to stand at 27.6 mb/d, around 4.9 mb/d higher than in 2020. Demand for OPEC crude in 2022 was also revised slightly down by 0.1 mb/d from the previous month to stand at 28.7 mb/d, around 1.0 mb/d higher than in 2021.

Feature Article

Recent developments of global oil inventories

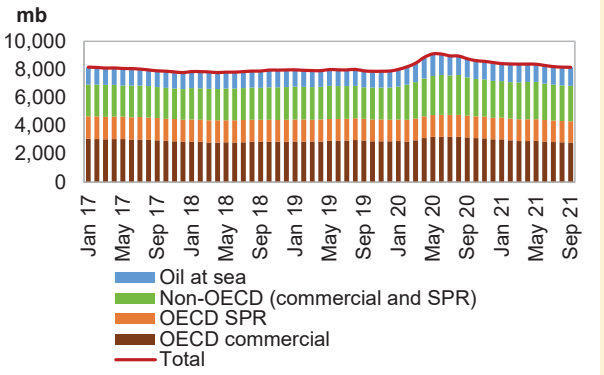
Global oil inventories, which serve as a tangible measure of the oil market balance, are grouped in three major components. The first group is OECD's commercial oil stocks and Strategic Petroleum Reserves (SPR). Clearly, the OECD commercial stocks serve as a key indicator of the status of the oil market balance, as they are frequently published by national government reporting systems, and as the seasonal variations in the OECD commercial stock levels are linked to oil demand through an inverse relationship.

The second major group is the non-OECD commercial inventories and SPR, which have become more important in recent years as non-OECD oil demand has increased, taking a higher share than the OECD in total world oil demand and requiring more stockpiling. However, inventory levels in the non-OECD are hard to track due to a lack of complete data. In the absence of regularly reported data, stock levels in non-OECD are often estimated using information released by companies and ministries, as well as data published in the JODI database. The final group is oil at sea, which includes "oil afloat" and "oil in transit".

In the 2Q20, the global oil market saw oil supply heavily outpacing world oil demand, leading to a drastic surge in global oil inventories, within a short span of a couple of months. In response to this critical situation, in April 2020, OPEC and non-OPEC oil producing countries participating in the 'Declaration of Cooperation' (DoC) announced voluntary productions adjustments commensurate with the huge oil stock surplus, to achieve the rebalancing and stabilization of the global oil market.

Since its historic peak in June 2020, global oil inventories have declined significantly. At the end of September 2021 they had fallen by 938 mb, with all components witnessing stock draws.

Graph 1: Global oil inventory stocks



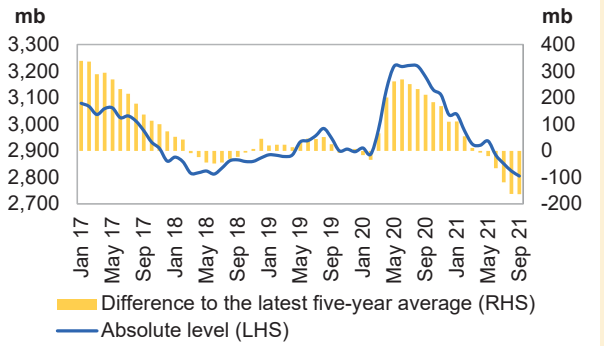
Sources: Argus Media, EIA, Euroilstock, IEA, METI and OPEC.

Over this period, total OECD commercial and SPR stocks have dropped by 411 mb and 46 mb, respectively, while non-OECD and oil at sea have fallen by 320 mb and 160 mb, respectively (***Graph 1***).

Moreover, OECD commercial oil inventories, compared to the latest five-year average (2015-2019), reached a high of around 270 mb in June 2020, clearly reflecting a huge supply excess. This surplus has since declined to a deficit of 163 mb at the end of September 2021, mainly driven by DoC successful efforts to stabilize the market and supported by higher refinery crude runs, which is an indicator of an improvement in oil demand on the back of an economic recovery following the initial impact of the COVID-19 pandemic (***Graph 2***).

Clearly, the global stock draws during the first three quarters of 2021were largely due to efforts of the DoC and a pick up in global oil demand, which outpaced global supply by 0.1 mb/d, 1.5 mb/d, 2.2 mb/d in 1Q21, 2Q21 and 3Q21 respectively. This is equivalent to a total implied stock draw of 342 mb.

Graph 2: OECD commercial oil stocks



Note: 2021 refers to the difference from 2015-19 average.
Sources: IEA and OPEC.

With these market developments, the countries participating in the DoC continue their course to increase production starting August 2021, to gradually return the adjusted production volumes by 0.4 mb/d on a monthly basis, until the phasing out of the total 5.8 mb/d adjustment in 2022. The DoC will continue to review the market conditions on a regular basis, reaffirming the participating countries' commitment to ensure adequate supply and support efforts to maintain global oil market stability.

World Oil Demand

In 2021, world oil demand was revised lower by around 0.2 mb/d compared to last month's assessment mainly to account for slower-than-anticipated demand from China and India in 3Q21. In addition, a slowdown in the pace of recovery in 4Q21 is now assumed due to elevated energy prices. World total oil demand is now estimated to reach 96.4 mb/d in 2021.

In the OECD, 2021 oil demand estimates were revised marginally lower by around 0.04 mb/d compared to last month's projections despite upward revisions to 1Q21 data. Oil demand recovery momentum softened in the following quarters on the back of slower-than-anticipated requirements for industrial and transportation fuels. OECD oil demand projections in 4Q21 were also adjusted lower taking into consideration down revisions in the region's economic outlook, high energy prices and uptick in COVID-19 cases.

In the non-OECD, oil demand was revised lower by 0.12 mb/d compared to last month's report. A wave of COVID-19 infections that forced targeted lockdown measures, as well as weaker manufacturing output and power sector challenges in China, have reduced 3Q21 transportation and industrial fuels demand in contrast to initial expectations. India's oil demand in 3Q21 was also adjusted lower due to a slower recovery in the demand for industrial fuels. Some of this slower momentum is now projected to spill over into the following quarters.

In 2022, oil demand growth was kept unchanged compared to the previous month's forecasts, to stand at 4.2 mb/d. World total demand is now estimated to reach 100.6 mb/d around 0.5 mb/d above 2019's levels. However, some minor opposing revisions were considered, mainly taking into account adjustments to macroeconomic projections and challenges affecting demand performance in the world's main consuming centres. Thus, marginal upward revisions in OECD Europe, due to better economic views in some European countries, were offset by softer growth in industrial fuel demand in OECD America and Latin America.

Gasoline and diesel are projected to record the highest gains in 2022 in both the OECD and non-OECD. Gasoline is projected to increase the most in the US followed by China and India while OECD Americas and Europe are assumed to have the lion's share of diesel growth. Despite increasing y-o-y, reductions in intercontinental flights are assumed to pressure the jet fuel recovery in 2022 and push the full recovery to pre-pandemic levels beyond next year. From a regional perspective, OECD Americas and China are anticipated to lead demand growth next year on the back of healthy economic outlooks, controlled COVID-19 cases and stable petrochemicals sector 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	22.44	22.73	24.33	24.99	24.46	24.14	1.70	7.56
of which US	*18.35*	*18.65*	*20.21*	*20.38*	*20.20*	*19.87*	*1.52*	*8.28*
Europe	12.44	11.91	12.61	13.71	13.59	12.96	0.53	4.24
Asia Pacific	7.14	7.67	7.04	7.15	7.57	7.36	0.22	3.03
Total OECD	**42.02**	**42.30**	**43.98**	**45.85**	**45.63**	**44.46**	**2.44**	**5.81**
China	13.36	13.29	14.55	14.47	15.11	14.36	0.99	7.42
India	4.51	4.94	4.50	4.67	5.52	4.91	0.40	8.86
Other Asia	8.13	8.36	8.98	8.49	8.62	8.61	0.48	5.93
Latin America	6.01	6.15	6.16	6.54	6.40	6.31	0.30	5.02
Middle East	7.55	7.95	7.77	8.24	7.97	7.99	0.44	5.84
Africa	4.06	4.35	4.06	4.16	4.44	4.25	0.19	4.66
Russia	3.37	3.57	3.42	3.61	3.74	3.58	0.22	6.44
Other Eurasia	1.07	1.18	1.24	1.14	1.28	1.21	0.14	12.70
Other Europe	0.70	0.78	0.72	0.73	0.79	0.75	0.06	8.29
Total Non-OECD	**48.76**	**50.57**	**51.41**	**52.04**	**53.87**	**51.98**	**3.22**	**6.59**
Total World	**90.79**	**92.87**	**95.38**	**97.89**	**99.49**	**96.44**	**5.65**	**6.23**
Previous Estimate	90.79	92.77	95.36	98.33	99.82	96.60	5.82	6.41
Revision	0.00	0.10	0.02	-0.44	-0.33	-0.16	-0.16	-0.18

*Note: * 2021 = Forecast. 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	24.14	24.04	25.42	26.02	25.27	25.20	1.06	4.38
of which US	*19.87*	*19.69*	*21.07*	*21.35*	*20.92*	*20.76*	*0.90*	*4.52*
Europe	12.96	12.55	13.28	14.35	14.10	13.58	0.61	4.74
Asia Pacific	7.36	7.91	7.22	7.28	7.68	7.52	0.17	2.27
Total OECD	**44.46**	**44.50**	**45.92**	**47.64**	**47.05**	**46.30**	**1.84**	**4.13**
China	14.36	14.14	15.44	14.95	15.55	15.02	0.66	4.63
India	4.91	5.40	4.90	5.05	5.84	5.30	0.39	7.96
Other Asia	8.61	9.05	9.59	9.07	8.95	9.16	0.55	6.39
Latin America	6.31	6.38	6.33	6.69	6.56	6.49	0.18	2.81
Middle East	7.99	8.29	8.01	8.49	8.20	8.25	0.26	3.31
Africa	4.25	4.53	4.19	4.28	4.57	4.39	0.14	3.29
Russia	3.58	3.67	3.47	3.66	3.79	3.65	0.07	1.82
Other Eurasia	1.21	1.25	1.29	1.17	1.32	1.26	0.05	3.72
Other Europe	0.75	0.80	0.73	0.74	0.81	0.77	0.02	2.18
Total Non-OECD	**51.98**	**53.51**	**53.96**	**54.11**	**55.58**	**54.29**	**2.31**	**4.45**
Total World	**96.44**	**98.02**	**99.88**	**101.75**	**102.63**	**100.59**	**4.15**	**4.31**
Previous Estimate	96.60	97.95	99.88	102.16	102.93	100.76	4.15	4.30
Revision	-0.16	0.07	-0.01	-0.41	-0.30	-0.16	0.00	0.01

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

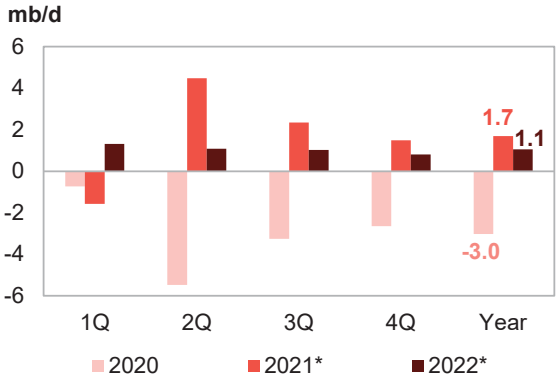
OECD

OECD Americas

Update on the latest developments

The latest available **oil demand data in OECD Americas** show y-o-y increases of 2.4 mb/d in **August**, following an increase of 1.9 mb/d in July. Gasoline demand continued to be strong during the warmer weather in the region and accounted for around 30% of the overall increase, while jet kerosene requirements accounted for a 26% overall growth share. In terms of the oil demand level, August appears to have recovered to 96%, while during the first eight months of 2021 the recovery stood at only 43%. Gasoline demand grew for the sixth month in a row, rising by 0.7 mb/d y-o-y. Oil demand remained lower than August 2019 levels by 1.2 mb/d. All countries in the region posted demand gains on top of a lower baseline during 2020.

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



*Note: * 2021-2022 = Forecast. Source: OPEC.*

The latest available **US monthly demand data for August** imply strong demand growth of approximately 1.9 mb/d y-o-y, making up 75% of losses incurred in August 2020 but remaining lower from August 2019 by 0.6 mb/d. LPG, gasoline, jet kerosene and diesel requirements contributed the most to the bulk of increases, with LPG and gasoline gaining in August 2021 by 0.4 and 0.6 mb/d y-o-y, while jet kerosene increased by 0.6 mb/d and diesel 0.2 mb/d, y-o-y. The demand for gasoline, jet kerosene and diesel fell during August 2020 by 1.3 mb/d, 0.8 mb/d and 0.4 mb/d y-o-y respectively. According to the Federal Highway Administration (FHA), vehicle miles of travel in the US increased by 8.5% y-o-y in August after rising by 13.0% y-o-y in July. In August 2020, the indicator fell by 11.3% y-o-y. Light vehicle retail sales, as reported by Autodata and Haver Analytics, were at 13.2 million units in August of the current year, according to seasonally adjusted annual rates (SAAR), compared with 14.8 million units in July, 15.4 million units in August 2020 and 17.2 million units in August 2019. Industrial production was also higher by 5.6% y-o-y in August after increasing by 6.9% y-o-y in July. Preliminary data for September based on weekly data indicates a continuation of a recovery in transportation fuel performance, with both gasoline and jet kerosene demand increasing by more than 1.3 mb/d y-o-y in total.

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

By product	Aug 20	Aug 21	Change Growth	Aug 21/Aug 20 %
LPG	2.71	3.09	0.38	13.9
Naphtha	0.20	0.18	-0.02	-8.0
Gasoline	8.52	9.11	0.59	6.9
Jet/kerosene	1.03	1.58	0.55	54.0
Diesel	3.67	3.89	0.22	5.9
Fuel oil	0.31	0.35	0.04	13.7
Other products	2.41	2.60	0.19	8.0
Total	**18.85**	**20.80**	**1.95**	**10.4**

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

Near-term expectations

Going forward, risks related to COVID-19 developments during the emergence of colder weather, as well as possible economic-related challenges are assumed to soften transportation and industrial fuels recovery in 4Q21. On the other hand, transportation fuels performance, including gasoline, is linked to gasoline retail prices, which currently are assumed to be marginal amid large stimulus packages and high household savings. Risks associated to potential changes in consumer behaviour amid structural impact of COVID-19, as well as the emergence of COVID-19 treatments are to be monitored closely going forward.

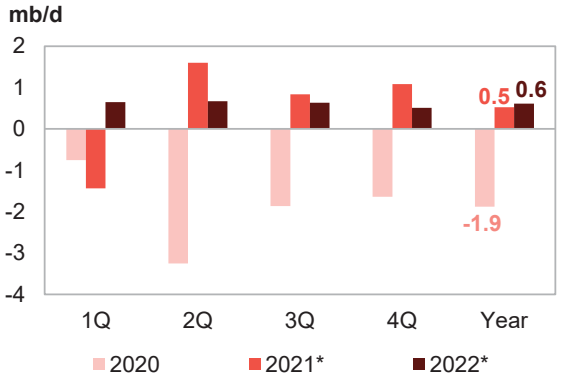
In **2022**, OECD Americas oil demand will be supported by solid economic growth and is expected to rise by around 1.1 mb/d y-o-y with the US oil demand accounting for 0.9 mb/d y-o-y. The petrochemical and transportation sectors will drive oil demand during 2022. Despite the ongoing penetration of alternative fuelled cars and increasing efficiencies, gasoline demand will be backed by increases in vehicle sales. Several expansions in the petrochemical industry will provide support to light distillates demand growth in 2022. Downside risks relate to the COVID-19 pandemic and economic challenges, in particular inflation and supply chain.

OECD Europe

Update on the latest developments

OECD Europe oil demand increased by 1.3 mb/d y-o-y in **August**, following an increase of 0.8 mb/d y-o-y in July, implying a recovery rate in growth of 61.6% compared to same month in 2020. Demand for all petroleum product categories showed solid gains on top of a low historical baseline and as a result of seasonal travel activities within and across countries of the region. The strongest demand was for jet kerosene, gasoline and diesel. For the third month in a row, demand for jet kerosene was above the 0.3 mb/d threshold. In y-o-y percentage terms, jet kerosene demand grew for the fifth month in a row above the 50% mark and remained on a upward trajectory in line with rising travel activities. Demand for transportation fuels has been in positive territory since April 2021.

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



*Note: * 2021-2022 = Forecast. Source: OPEC.*

In August, demand in Germany grew by a solid 0.3 mb/d, while requirements in Italy, France and the UK increased by 0.1 y-o-y. Oil demand flourished in all other countries of the region, coupled with travel and leisure activities. The industrial production index, which excludes construction, rose 5.0% compared to the same month in 2020, as reported by Eurostat and Haver Analytics. New passenger car registrations fell 20.4% y-o-y, following a 23.9% y-o-y decline in July.

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

By product	Aug 20	Aug 21	Change Growth	Aug 21/Aug 20 %
LPG	0.40	0.39	-0.01	-3.0
Naphtha	0.52	0.54	0.02	3.1
Gasoline	1.15	1.23	0.08	7.0
Jet/kerosene	0.39	0.57	0.18	47.7
Diesel	2.82	3.13	0.31	11.0
Fuel oil	0.15	0.17	0.01	9.3
Other products	0.44	0.48	0.04	9.2
Total	**5.86**	**6.49**	**0.63**	**10.8**

*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

The 3Q21 has contributed significantly to oil demand developments, however, going forward, COVID-19 challenges are assumed to partially cap oil demand in **4Q21**. Generally, the outlook for the region's oil demand in **2021** remains optimistic amid COVID-19 containment efforts and increasing vaccination rates, and despite rising cases in some countries of the region. Transportation fuels are anticipated to lead the recovery going into the final part of the year with factors such as, economic challenges, high energy prices and winter conditions are to be closely monitored.

In **2022**, OECD Europe oil demand is expected to rise by around 0.6 mb/d. The positive projections for the economy and progress in controlling COVID-19 are the main supporting factors in 2022, bolstered by improvements in mobility and positive developments in the industrial and construction sectors. Downside risks pertain to COVID-19, high debt levels, inflation as well as national budgetary constraints.

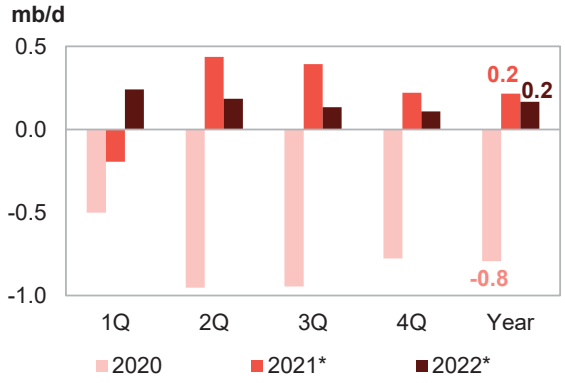
OECD Asia Pacific

Update on the latest developments

OECD Asia Pacific oil demand increased in **August** by 0.3 mb/d y-o-y, less than the corresponding increases recorded in July of 0.4 mb/d. Gains were largely attributed to rising naphtha requirements in South Korea and Japan as well as diesel and jet kerosene demand in Australia. Demand for light distillates in the Asia Pacific during August grew by 0.2 mb/d y-o-y after rising by 0.1 mb/d in July. Transportation fuels demand was down slightly y-o-y in August, following small gains in July y-o-y.

Oil demand in Japan and South Korea grew by 0.3 mb/d, y-o-y. Preliminary data from by Japan's Ministry of Economy, Trade and Industry (METI) indicates a rise in September 2021 oil demand of 0.1 mb/d, y-o-y.

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



*Note: * 2021-2022 = Forecast. Source: OPEC.*

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

By product	Sep 20	Sep 21	Change Growth	Sep 21/Sep 20 %
LPG	0.36	0.38	0.02	6.3
Naphtha	0.68	0.78	0.10	14.4
Gasoline	0.81	0.76	-0.05	-5.6
Jet/kerosene	0.19	0.22	0.03	17.6
Diesel	0.68	0.70	0.02	2.5
Fuel oil	0.20	0.24	0.04	19.2
Other products	0.18	0.16	-0.03	-15.1
Total	**3.10**	**3.24**	**0.14**	**4.4**

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

Near-term expectations

Japan and South Korea have efficiently managed the COVID-19 pandemic with immediate positive impacts on their economies and oil demand. The removal of lockdowns in Australia and New Zealand are expected to support oil demand for the remainder of **2021**. Overall demand in 2021 in the region is projected to increase y-o-y, with petrochemical feedstock as one of the main contributors to oil demand growth.

In **2022**, OECD Asia Pacific oil demand is projected to increase by 0.2 mb/d, in line with healthy GDP growth and despite rising fuel efficiencies and fuel substitution. Fuel substitution may also provide support to oil demand as a result of high natural gas prices.

Non-OECD

China

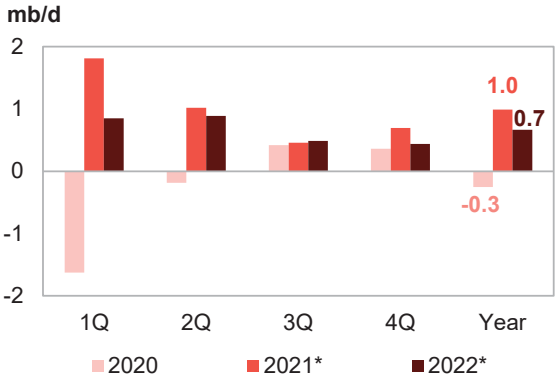
Update on the latest developments

Oil demand in China grew by a marginal 0.1 mb/d in **September** compared to a 0.3 mb/d y-o-y increase in August. Demand was impacted by localised lockdowns and slower-than-expected economic momentum. Middle distillates were affected the most and declined sharply y-o-y. Both jet/kerosene and diesel showed significant drops of more than 0.5 mb/d y-o-y, offset by strong fuel oil gains and healthy petrochemical feedstock demand.

Fuel oil posted strong gains of around 0.3 mb/d y-o-y, matching the August gains, and high natural gas prices supported additional fuel oil demand in the power generation sector. These developments are anticipated to continue in the coming months and further support fuel oil demand. Light distillates demand, mainly for petrochemical feedstock, recorded steady growth in September.

LPG grew by more than 0.2 mb/d y-o-y with naphtha showing similar gains. Naphtha was favoured due to its price advantage over LPG and was further supported by capacity additions that are also projected to support naphtha in 4Q21.

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



*Note: * 2021-2022 = Forecast. Source: OPEC.*

Steady demand for polypropylene continues to support higher LPG demand for propylene dehydrogenation plants (PDH) despite high prices for the fuel. By contrast, jet fuel remained a drag on oil demand amid reduced international travel and the shutdown of a number of airports to control the spread of Delta variant of COVID-19. Jet fuel showed a decline of around 0.4 mb/d y-o-y in September. Diesel also fell in in September, by around 0.2 mb/d y-o-y amid supply chain disruptions and power outages along with COVID-19-related restrictions.

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

By product	Sep 20	Sep 21	Change Growth	Sep 21/Sep 20 %
LPG	2.17	2.40	0.23	10.6
Naphtha	1.15	1.34	0.18	15.8
Gasoline	3.44	3.45	0.01	0.4
Jet/kerosene	0.84	0.48	-0.35	-42.3
Diesel	3.40	3.22	-0.18	-5.3
Fuel oil	0.44	0.73	0.29	64.8
Other products	1.75	1.65	-0.10	-5.7
Total	**13.19**	**13.26**	**0.08**	**0.6**

*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

Going forward, oil demand growth is anticipated to increase in **4Q21** albeit at a slower pace than last month's projections. Localised COVID-19 containment measures in parts of the country and economic challenges led to this downward revision for China in 4Q21. Some spill-over effects are anticipated for 1H22 oil demand. However, demand is projected to show respectable growth in 2021 supported by healthy y-o-y performance in various economic sectors. The transportation, petrochemical and industrial sectors are assumed to stimulate demand for petroleum products led by gasoline and diesel. LPG and naphtha will record positive gains going forward, due to healthy petrochemical margins and recent capacity development.

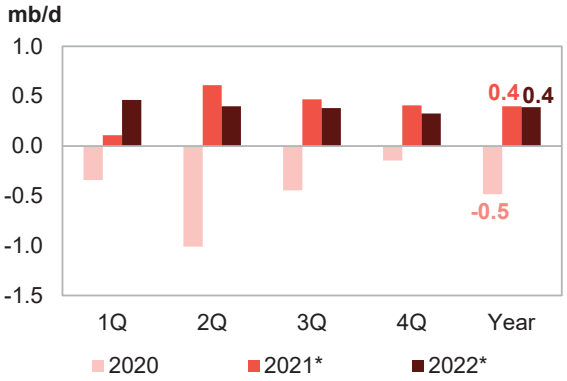
In **2022**, China's oil demand is anticipated to increase by more than 0.7 mb/d, unchanged from last month projections, mainly supported by steady economic momentum and despite rising challenges which will require close monitoring. Oil demand for the transportation and industrial sectors is projected to rise, buoyed by firm increases in mobility, rising passenger car sales and a healthy industrial sector. However, issues related to high energy prices, supply chain challenges and COVID-19 developments will put downward pressure on oil demand particularly during 1H22.

India

Update on the latest developments

Indian oil demand grew in **September** by around 0.2 mb/d y-o-y, compared to an increase of around 0.4 mb/d y-o-y in August and a decline of 0.1 mb/d y-o-y in September 2020. A revival in economic activities, better control of COVID-19 cases, improving mobility and receding monsoon rains encouraged demand for petroleum products in September. Compared to September 2020, increasing demand was noticed across all petroleum products with the exception of naphtha, which fell y-o-y despite healthy steam cracking margins. Gasoline, LPG and the other product categories, including asphalt, posted y-o-y gains in September while middle distillates and fuel oil demand grew only marginally.

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



*Note: * 2021-2022 = Forecast. Source: OPEC.*

Gasoline demand increased by around 0.04 mb/d y-o-y after a nearly 0.1 mb/d y-o-y rise in August, supported by reduced monsoon rains and a steady rise in mobility. According to Google maps and Apple's mobility index, mobility continued its upward trajectory in September, reaching 122% of pre-pandemic levels (using January 2020 as a reference) compared 116% in August. LPG demand inched up in September, recording gains of around 0.04 mb/d y-o-y and similar to growth levels recorded during the prior two months. Rising household LPG demand for cooking will be a supportive factor for LPG demand going forward. Demand for fuel oil and the other products category was supported by the further easing of lockdown measures and economic improvements.

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

By product	Sep 20	Sep 21	Change Growth	Sep 21/Sep 20 %
LPG	0.97	1.01	0.04	4.0
Naphtha	0.29	0.29	0.00	-0.6
Gasoline	0.74	0.78	0.04	5.6
Jet/kerosene	0.12	0.13	0.01	12.5
Diesel	1.59	1.60	0.01	0.7
Fuel oil	0.20	0.22	0.02	10.7
Other products	0.72	0.80	0.08	11.4
Total	**4.63**	**4.84**	**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

Going forward, the economic outlook remains positive for the final quarter of the year, supported by efforts to control COVID-19 infections and steady industrial sector gains. However, high energy prices, which require close monitoring over the next months, are a concern when it comes to consumer spending and subsequently oil consumption. Nevertheless, oil demand is expected to continue to grow in **4Q21**, supported by the low baseline and an uptick in diesel demand in the construction and agricultural sectors. The recovery in transportation fuels is anticipated to continue, though it remains dependent on developments related to the COVID-19 pandemic. Demand for transportation fuel will lead product demand, followed by middle distillates for the remainder of 2021.

In **2022**, similar to last month's expectations, 1Q22 Indian oil demand estimates are at around 0.5 mb/d with 2022 annualized growth expected at around 0.4 mb/d y-o-y. Total volumes are expected to exceed pre-pandemic levels on an annualized basis by more than 0.3 mb/d. Regarding products, gasoline is anticipated to be the strongest product in 2022, supported by an acceleration in mobility, an uptick in vehicle sales and overall steady economic growth. Diesel is assumed to be supported by healthy growth in the industrial, construction and agricultural sectors during 2022.

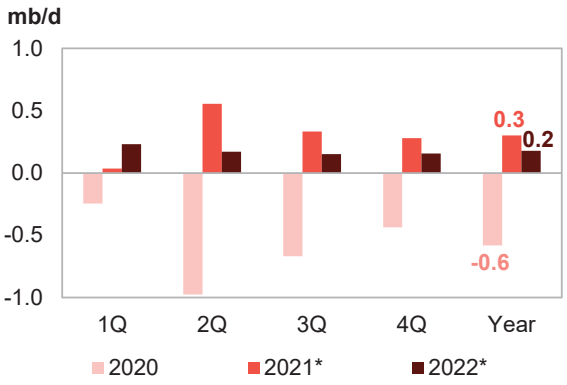
Latin America

Update on the latest developments

Following six months of steady growth, **oil demand in Latin America** continued to record respectable growth in **August**. Demand for petroleum products was higher by more than 0.3 mb/d y-o-y in August, compared with an increase of around 0.4 mb/d y-o-y in July.

Compared to pre-pandemic levels in August 2019, demand fell by more than 0.1 mb/d in the whole region. August's rise in oil consumption was mainly supported by transportation fuels recovering from the low base of last year and some uptick in mobility data, particularly in Brazil. Mobility in Latin America exceeded pre-pandemic levels and was at 104%, according to Google maps and Apple mobility indicators, following 102% in July and 95% in June. Gasoline and jet fuel recorded gains of around 0.2 mb/d y-o-y collectively after posting similar gains in July. Both fuels remained 0.1 mb/d below pre-pandemic level. Diesel demand was driven by stable industrial and agricultural demand. Diesel increased by more than 0.1 mb/d y-o-y and was also higher than August 2019 by around 0.1 mb/d.

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



*Note: * 2021-2022 = Forecast. Source: OPEC.*

The latest available data for **Brazil** indicates an increase of more than 0.1 mb/d y-o-y in September. This is a deceleration in the pace of growth as compared to recent months when demand was increasing by 0.2-0.3 mb/d. However, the baseline effect and slower diesel growth largely impacted the level of growth. Transportation fuels continued to recover, particularly gasoline, showing steady y-o-y gains. Both gasoline and jet fuels posted gains of more around 0.1 mb/d with gasoline exceeding pre-pandemic consumption.

Mobility was the main supportive factor and was 15% higher than pre-pandemic levels, according to Google and Apple's mobility indicators.

Table 4 - 8: Brazil's oil demand*, mb/d

By product	Sep 20	Sep 21	Change Growth	Sep 21/Sep 20 %
LPG	0.24	0.23	-0.01	-3.3
Naphtha	0.14	0.14	0.00	2.1
Gasoline	0.66	0.73	0.08	11.6
Jet/kerosene	0.05	0.08	0.03	68.6
Diesel	1.10	1.14	0.04	3.4
Fuel oil	0.06	0.12	0.06	96.7
Other products	0.42	0.33	-0.09	-21.4
Total	**2.66**	**2.77**	**0.11**	**4.2**

*Note: * = Inland deliveries. Totals may not add up due to independent rounding.*

Sources: JODI, Agencia Nacional do Petroleo, Gas Natural e Biocombustiveis and OPEC.

Near-term expectations

Going forward, drought-related impacts on hydropower production should encourage fuel oil consumption and thus support oil demand. Additionally, accelerated vaccination programmes and steady economic momentum should boost demand in the coming months. COVID-19-related risks and uncertainties related to next year's general elections put downward pressure on the forecast. Gasoline, jet fuel and diesel are expected to be affected the most.

In **2022**, oil demand in Latin America is expected to rise y-o-y consistent with the better economic outlook and despite marginal downward revision due to adjustment in macroeconomic outlook. All countries are anticipated to show steady oil demand growth, with Brazil leading the region as in recent years. In terms of petroleum products, diesel is anticipated to account for most gains, followed by gasoline. LPG is expected to be supported by healthy petrochemical sector.

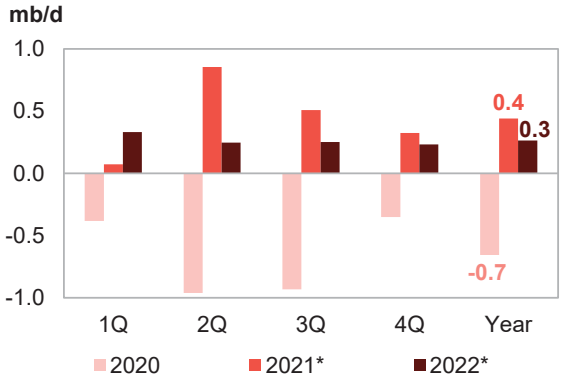
Middle East

Update on the latest developments

Middle East oil demand showed steady gains in **August**, growing by more than 0.4 mb/d y-o-y, following a more than 0.5 mb/d y-o-y increase in July.

However, demand remained lower than August 2019 by 0.25 mb/d amid a lagging jet and fuel oil recovery. Demand exhibited solid gains in Iraq, Kuwait and the United Arab Emirates (UAE) and declined in Saudi Arabia compared to August of last year. Stable growth in gasoline and jet fuel led the recovery due to reduced travel restrictions and improving mobility. According to Google maps and Apple's mobility index, mobility inched higher in August to reach 109% compared to the reference month of January 2020. The mobility index was at 106% in July. Gasoline and jet fuel increased by more than 0.3 mb/d y-o-y collectively after rising by more than 0.2 mb/d y-o-y in July. However, while gasoline marginally exceeded August 2019 levels amid the easing of pandemic-related restrictions, jet fuel remained lower than pre-pandemic levels by more than 0.1 mb/d.

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



*Note: * 2021-2022 = Forecast. Source: OPEC.*

Industrial fuels as well as petrochemical feedstock also showed respectable gains. Diesel was higher by nearly 0.1 mb/d y-o-y while LPG and naphtha both increased by around the same levels. The increase in diesel demand is supported by an uptick in construction and truck movements mainly in Saudi Arabia.

The latest data for September indicates a continuation of rising demand in Saudi Arabia and Iraq. Demand increased in both countries by a similar level (0.01 mb/d y-o-y) and was driven by strong fuel oil demand primarily in the industrial and power generation sectors. Fuel oil gained around 0.05 mb/d y-o-y in each country.

Transportation fuel also supported this increase, particularly in Saudi Arabia as demand for gasoline and jet fuel increased by around 0.1 mb/d y-o-y.

Table 4 - 9: Saudi Arabia's oil demand, mb/d

By product	Sep 20	Sep 21	Change Growth	Sep 21/Sep 20 %
LPG	0.05	0.04	0.00	-9.8
Gasoline	0.48	0.52	0.04	7.4
Jet/kerosene	0.03	0.06	0.03	120.3
Diesel	0.52	0.56	0.03	6.2
Fuel oil	0.60	0.65	0.05	7.8
Other products	0.69	0.63	-0.07	-9.5
Total	**2.38**	**2.46**	**0.08**	**3.3**

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

Sources: JODI and OPEC.

Near-term expectations

The recent announcements that Saudi Arabia, Kuwait and the UAE would relax COVID-19 measures and the return of normality almost to pre-pandemic levels, oil demand is anticipated to be very well supported in the **4Q21** and going into 2022. Risks of a resurgence of COVID-19 cases will remain a concern, however, but the sound management of the pandemic over the past few months will minimize the impact on oil demand. Infrastructure projects and healthy petrochemical sectors are assumed to provide solid support to oil demand in the coming months.

In **2022**, oil demand is anticipated to increase by 0.3 mb/d y-o-y in 1Q22 and is projected to rise by similar levels on an annualized basis. The positive economic outlook and management of the COVID-19 pandemic are main drivers for oil demand next year. Gasoline, diesel and light distillates are anticipated to be the leading products supporting oil demand growth in 2022. Saudi Arabia is expected to provide the largest share of oil demand growth in the region, supported by the healthy economic outlook, well-managed COVID-19 efforts and the expanding petrochemical sector.

World Oil Supply

Non-OPEC liquids supply growth in 2021 (including processing gains by 0.13 mb/d) remains unchanged at 0.7 mb/d y-o-y growth to average 63.6 mb/d. The minor upward revisions to liquids supply of the US, Canada, Mexico, and China in 3Q21, were offset by downward revisions in the supply forecast of other countries. The US liquids supply forecast was revised up by 19 tb/d following higher than expected output of NGLs in August by 113 tb/d, m-o-m, to average 5.6 mb/d. The 2021 oil supply forecast primarily sees growth in Canada, Russia, China, Norway, Brazil, Guyana, and Qatar, while output is projected to decline in the UK, Colombia, Indonesia and Egypt.

Non-OPEC supply growth for 2022 also remains unchanged at 3.0 mb/d y-o-y, and averages 66.7 mb/d. Following plans to increase natural gas production, US liquids supply is now forecast to grow by 0.9 mb/d due to higher NGLs production by 0.3 mb/d. However, this increase is offset by downward revisions in the supply forecasts of Norway, Mexico, India, and Asia others. The main drivers of liquids supply growth are expected to be Russia (1.0 mb/d) and the US (0.9 mb/d), followed by Brazil, Canada, Norway, Kazakhstan and Guyana. Nevertheless, investment levels, particularly in the US shale sector, remain a concern.

OPEC NGLs and non-conventional liquids production in 2021 was revised down by 15 tb/d due to lower-than-expected output in 2H21, to now stand at growth of 0.1 mb/d y-o-y, to average 5.2 mb/d and to grow by 0.1 mb/d y-o-y in 2022, to average 5.3 mb/d. OPEC-13 crude oil production in October increased by 0.22 mb/d m-o-m to average 27.45 mb/d, according to secondary sources.

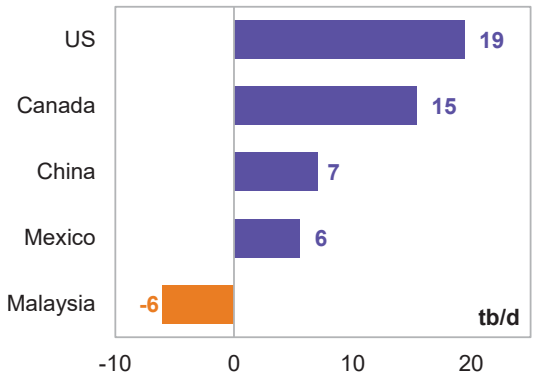
Preliminary non-OPEC liquids production in October, including OPEC NGLs, is estimated to have grown by 1.5 mb/d m-o-m to average 70.1 mb/d, up by 3.7 mb/d y-o-y. As a result, preliminary data indicates that global oil supply in October has grown by 1.74 mb/d m-o-m to average 97.56 mb/d, up by 6.74 mb/d y-o-y.

Non-OPEC liquids production growth in 2021 has remained unchanged from the previous assessment, as upward and downward revisions offset each other.

In the OECD, upward revisions by 120 tb/d in 3Q21, including a revision of 167 tb/d in OECD Americas, led to an upward revision of 24 tb/d for the year. On the other hand, the supply forecast of the non-OECD region for 2021 was revised down by 25 tb/d. With these revisions, the non-OPEC liquids supply growth forecast for this year remains at 0.66 mb/d to average 63.64 mb/d.

Within the regions, the main upward revision took place in OECD Americas' supply forecast by 40 tb/d (167 tb/d in 3Q21), mainly due to higher NGLs production in the US in August, higher than expected oil sands output and conventional oil compared to 2Q21 in Canada, and also due to a surge in production of crude oil in Mexico in September.

Graph 5 - 1: Major revisions to annual supply change forecast in 2021*, November MOMR/October MOMR



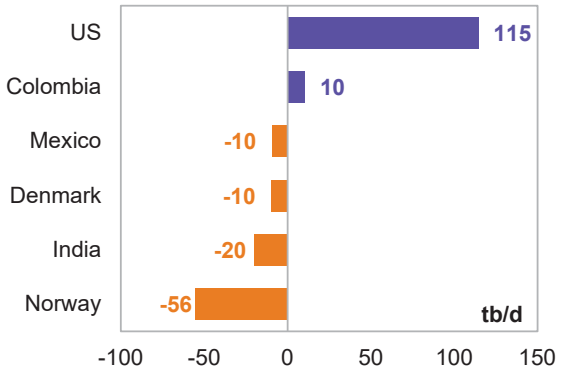
*Note: * 2021 = Forecast. Source: OPEC.*

Supply growth in the US and Canada in 2021 was revised up by 19 tb/d, and 15 tb/d, respectively. Mexico's supply was also revised up by minor 6 tb/d for 2021. Moreover, lower-than-expected oil output in Norway in 3Q21, led to a downward adjustment of a minor 4 tb/d. In the non-OECD, while the supply growth forecast of China was revised up by 7 tb/d on higher-than-expected output in 3Q21, the supply forecast of Malaysia revised down by 6 tb/d due to lower output in 3Q21.

The **non-OPEC supply growth forecast for 2022** also remained unchanged at 3.02 mb/d. Nevertheless, US liquids supply was revised up by 115 tb/d to stand at 0.94 mb/d, y-o-y, due to the re-assessment of NGLs output, which is now forecast at 0.3 mb/d.

The upward revision to the US supply forecast is offset by a downward adjustment in the forecast for Norway by 0.06 mb/d, as green field production was more than offset by the natural decline from mature fields. The oil supply forecasts of India and Mexico were also revised down by 0.02 mb/d and 0.01 mb/d in 2022.

Graph 5 - 2: Major revisions to annual supply change forecast in 2022*, November MOMR/October MOMR

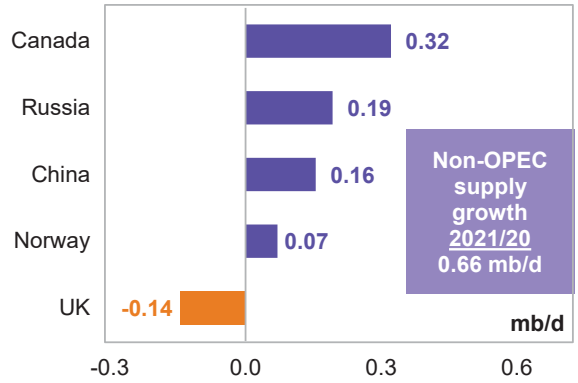


*Note: * 2022 = Forecast. Source: OPEC.*

Key drivers of growth and decline

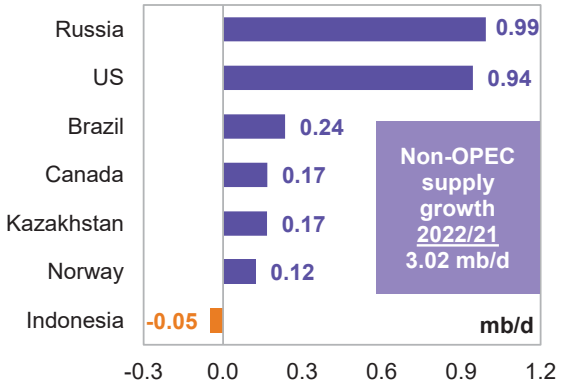
The **key drivers of non-OPEC liquids supply growth in 2021** are estimated to have been Canada, Russia, China, Norway, and, to some extent, Brazil and Guyana. Oil production is expected to decline, mainly in the UK, while the US, Indonesia, Colombia and Egypt will also show a y-o-y decline to a lesser degree.

Graph 5 - 3: Annual liquids production changes for selected countries in 2021*



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

Graph 5 - 4: 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 Russia, the US, Brazil, Canada, Kazakhstan, Guyana, and other non-OPEC countries participating in the DoC, while oil production is projected to decline, mainly in Indonesia, Egypt and Thailand.

Non-OPEC liquids production in 2021 and 2022

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

Non-OPEC liquids production	2020	1Q21	2Q21	3Q21	4Q21	2021	Change 2021/20 Growth	Change 2021/20 %
Americas	24.70	24.10	25.17	25.15	25.58	25.00	0.30	1.23
of which US	*17.61*	*16.63*	*17.93*	*17.70*	*18.01*	*17.57*	*-0.03*	*-0.19*
Europe	3.90	3.96	3.52	3.80	3.98	3.81	-0.09	-2.22
Asia Pacific	0.52	0.50	0.45	0.54	0.54	0.51	-0.01	-2.21
Total OECD	**29.12**	**28.56**	**29.13**	**29.48**	**30.10**	**29.32**	**0.21**	**0.71**
China	4.16	4.30	4.34	4.35	4.28	4.32	0.16	3.73
India	0.77	0.76	0.75	0.75	0.74	0.75	-0.01	-1.78
Other Asia	2.51	2.52	2.46	2.36	2.45	2.45	-0.06	-2.38
Latin America	6.04	5.97	6.00	6.10	6.46	6.13	0.09	1.48
Middle East	3.19	3.22	3.23	3.24	3.30	3.25	0.05	1.70
Africa	1.41	1.37	1.35	1.33	1.30	1.34	-0.07	-5.26
Russia	10.59	10.47	10.74	10.81	11.11	10.78	0.19	1.82
Other Eurasia	2.91	2.96	2.89	2.79	3.01	2.91	0.00	-0.13
Other Europe	0.12	0.11	0.11	0.11	0.10	0.10	-0.01	-12.10
Total Non-OECD	**31.71**	**31.67**	**31.86**	**31.84**	**32.76**	**32.04**	**0.33**	**1.03**
Total Non-OPEC production	60.83	60.23	61.00	61.32	62.86	61.36	0.53	0.87
Processing gains	2.15	2.28	2.28	2.28	2.28	2.28	0.13	6.03
Total Non-OPEC liquids production	**62.98**	**62.51**	**63.28**	**63.60**	**65.14**	**63.64**	**0.66**	**1.05**
Previous estimate	62.98	62.49	63.27	63.53	65.24	63.64	0.66	1.05
Revision	0.00	0.02	0.01	0.07	-0.10	0.00	0.00	0.00

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

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

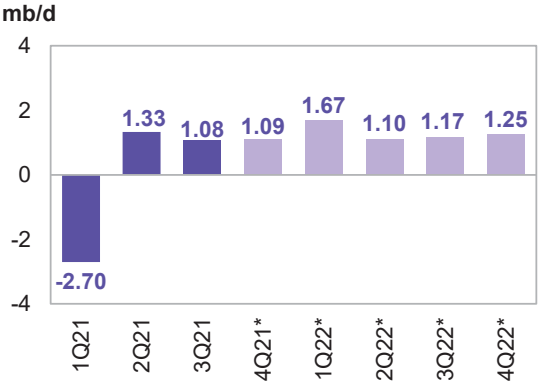
Non-OPEC liquids production	2021	1Q22	2Q22	3Q22	4Q22	2022	Change 2022/21 Growth	Change 2022/21 %
Americas	25.00	25.78	25.89	26.25	26.63	26.14	1.14	4.55
of which US	*17.57*	*18.13*	*18.45*	*18.58*	*18.89*	*18.52*	*0.94*	*5.37*
Europe	3.81	3.91	3.80	3.86	4.18	3.94	0.13	3.31
Asia Pacific	0.51	0.55	0.54	0.54	0.54	0.54	0.03	6.28
Total OECD	**29.32**	**30.23**	**30.24**	**30.65**	**31.35**	**30.62**	**1.30**	**4.42**
China	4.32	4.32	4.32	4.36	4.44	4.36	0.04	1.01
India	0.75	0.73	0.75	0.78	0.80	0.77	0.01	1.59
Other Asia	2.45	2.45	2.42	2.40	2.39	2.42	-0.03	-1.17
Latin America	6.13	6.51	6.45	6.39	6.60	6.49	0.36	5.82
Middle East	3.25	3.34	3.34	3.36	3.36	3.35	0.10	3.16
Africa	1.34	1.29	1.26	1.23	1.20	1.25	-0.09	-7.06
Russia	10.78	11.51	11.83	11.88	11.88	11.78	0.99	9.22
Other Eurasia	2.91	3.09	3.11	3.15	3.22	3.14	0.23	7.94
Other Europe	0.10	0.10	0.10	0.09	0.09	0.10	-0.01	-7.71
Total Non-OECD	**32.04**	**33.34**	**33.59**	**33.65**	**33.99**	**33.64**	**1.61**	**5.02**
Total Non-OPEC production	61.36	63.57	63.82	64.30	65.34	64.26	2.91	4.74
Processing gains	2.28	2.39	2.39	2.39	2.39	2.39	0.11	4.91
Total Non-OPEC liquids production	**63.64**	**65.97**	**66.21**	**66.69**	**67.73**	**66.66**	**3.02**	**4.74**
Previous estimate	63.64	66.09	66.34	66.56	67.63	66.66	3.02	4.74
Revision	0.00	-0.12	-0.13	0.14	0.11	0.00	0.00	0.00

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

OECD

OECD liquids production in 2021 is forecast to increase by 0.21 mb/d y-o-y to average 29.32 mb/d, revised up by 0.02 mb/d m-o-m owing to an upward revision of 0.04 mb/d in the production forecast for OECD Americas, which is now projected to grow by 0.30 mb/d to average 25.0 mb/d. OECD Europe is forecast to decline by 0.09 mb/d, with an average supply of 3.81 mb/d. The supply forecast in OECD Asia Pacific is also forecast to decline by 0.01 mb/d y-o-y to average 0.51 mb/d.

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



*Note: * 4Q21-4Q22 = Forecast. Source: OPEC.*

For **2022**, oil production in the OECD is forecast to increase by 1.30 mb/d y-o-y to average 30.62 mb/d, unchanged compared to a month earlier, despite upward revisions in OECD Americas by 105 tb/d, which are offset by a downward adjustment in the supply forecast of OECD Europe. Based on these revisions, OECD Americas is forecast to grow by 1.14 mb/d to average 26.14 mb/d. Oil production in OECD Europe and OECD Asia Pacific is anticipated to grow respectively by 0.13 mb/d and 0.03 mb/d y-o-y to average 3.94 mb/d and 0.54 mb/d.

OECD Americas

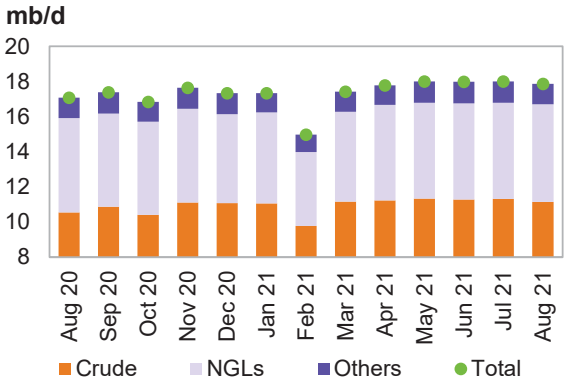
US

US liquids production in August 2021 was down by 0.13 mb/d m-o-m to average 17.87 mb/d, higher by 0.78 mb/d compared with August 2020.

Crude oil production decreased in August 2021 by 185 tb/d m-o-m to average 11.14 mb/d, up by 0.58 mb/d y-o-y. Regarding crude and condensate production breakdown by region (PADDs), production decreased on the US Gulf Coast (USGC) by 257 tb/d to average 7.86 mb/d, while it increased in the other four PADDs in August.

NGLs production was up by 113 tb/d to a record high at average 5.57 mb/d in August. Meanwhile, production of **non-conventional liquids** (mainly ethanol) in July decreased by 12 tb/d m-o-m to average 1.22 mb/d, according to the Department of Energy (DOE). It is estimated that output continued declining to 1.17 mb/d in August.

Graph 5 - 6: US monthly liquids output by key component



Source: OPEC.

Looking at states, production in the Gulf of Mexico (GoM), declined by 312 tb/d m-o-m to average 1.54 mb/d. Part of this monthly decline in the GoM was offset by higher output in new Mexico, North Dakota, Alaska, and Texas.

In the US Midwest, production in North Dakota increased by 29 tb/d to average 1.09 mb/d, but still is lower by 65 tb/d y-o-y. Production in Alaska recovered by 29 tb/d m-o-m to average 0.41 mb/d amid easing of maintenance. Oil output in Oklahoma and Colorado showed a minor increase m-o-m, and finally production in New Mexico and Texas rose m-o-m by 50 tb/d to average 1.35 mb/d and 18 tb/d to average

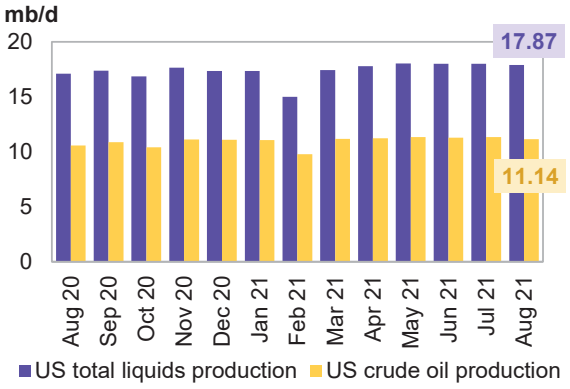
Table 5 - 3: US crude oil production by selected state and region, tb/d

State	Jul 21	Aug 21	Change Aug 21/Jul 21
Oklahoma	379	380	*1*
Colorado	390	391	*1*
Alaska	380	409	*29*
North Dakota	1,060	1,089	*29*
New Mexico	1,296	1,346	*50*
Gulf of Mexico (GoM)	1,847	1,535	*-312*
Texas	4,816	4,834	*18*
Total	**11,326**	**11,141**	***-185***

Sources: EIA and OPEC.

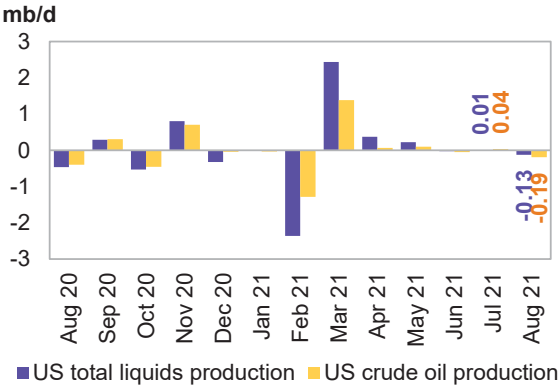
4.83 mb/d, respectively. In the onshore lower 48, August production increased by 98 tb/d to 9.18 mb/d.

Graph 5 - 7: US monthly crude oil and total liquids supply



Sources: EIA and OPEC.

Graph 5 - 8: US monthly crude oil and total liquids supply, m-o-m changes



Sources: EIA and OPEC.

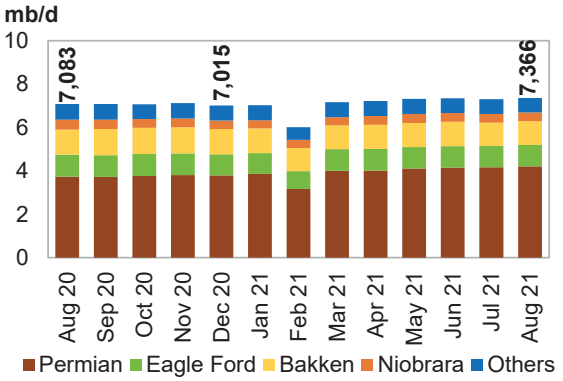
US tight crude output in August increased by 62 tb/d m-o-m to average 7.37 mb/d, 283 tb/d higher than the same month a year earlier, according to Energy Information Administration (EIA) estimates.

The m-o-m increase from shale and tight formations through horizontal wells came from the Permian, rising by 42 tb/d mainly from that part which is located in New Mexico rather than in Texas, to average 4.21 mb/d, higher by 0.47 mb/d y-o-y.

In the Williston Basin, production in the Bakken shale rose by 31 tb/d to average 1.09 mb/d, down by 60 tb/d y-o-y. Tight crude output at the Eagle Ford in Texas and Niobrara-Codell in Colorado and Wyoming declined by 5 tb/d and 3 tb/d, respectively, to average 0.98 mb/d and 0.41 mb/d.

Average tight crude output in the first eight months of the year was estimated at 7.1 mb/d, 283 tb/d lower than during the same period in 2020.

Graph 5 - 9: US tight crude output breakdown



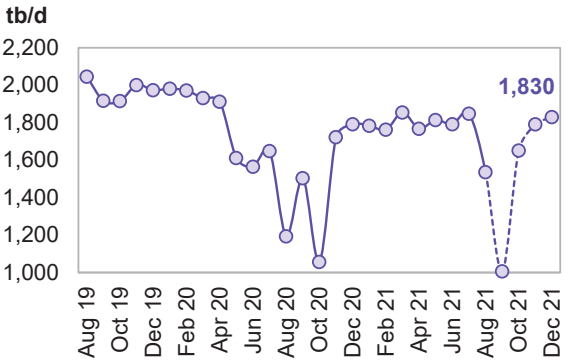
Sources: EIA, Rystad Energy and OPEC.

Hurricane Ida and its impact on US Gulf of Mexico (GoM) production

With 1.54 mb/d of **oil production in the GoM** in August and assuming output at around 1.0 mb/d in September, following Hurricane Ida-related disruptions, average oil production from the GoM in 2021 is now forecast to stand at 1.70 mb/d, revised up by 0.03 mb/d.

Shell has meanwhile re-started production at its Mars and Ursa platforms ahead of schedule from initial estimates, and began exporting oil and gas through the West Delta-143 (WD-143) "A" facility. With this revision, production from the GoM in 2021 will grow by 0.06 mb/d.

Graph 5 - 10: GoM's oil output and forecast in the coming months



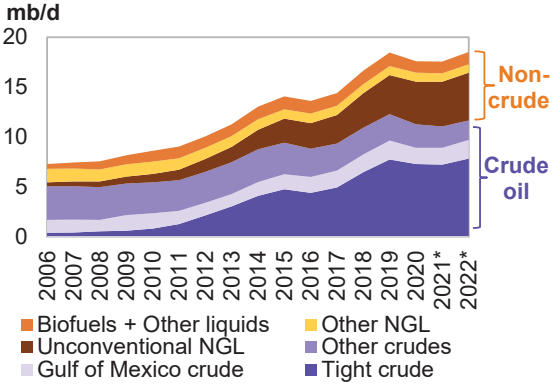
Note: Sep 20-Dec 21 = Forecast by OPEC.
Sources: EIA and OPEC.

The **US liquids production growth forecast for 2021** was revised up by 19 tb/d and now stands to decline by 0.03 mb/d y-o-y to average 17.57 mb/d. This was due to upward revisions by 77 tb/d in 3Q21, following higher-than-expected NGLs production.

Regarding the liquids breakdown, the US crude and condensate production forecast for 2021 is expected to decline by 0.23 mb/d to average 11.06 mb/d. The growth forecast for NGLs and non-conventional liquids is expected at 0.16 mb/d and 0.03 mb/d to average 5.34 mb/d and 1.17 mb/d, respectively.

US crude oil production is expected to exit December 2021 at 11.28 mb/d (as of November 2021), although production might again be affected negatively in October, as was seen in 2020. US tight and conventional crude oil are forecast to see contractions of 0.07 mb/d and 0.21 mb/d in 2021, to average 7.24 mb/d and 2.12 mb/d, respectively.

Graph 5 - 11: US liquids supply developments by component, including forecast for 2021 and 2022



*Note: * 2021-2022 = Forecast. Source: OPEC.*

US liquids production in 2022, excluding processing gains, is anticipated to grow by 0.94 mb/d y-o-y to average 18.52 mb/d, revised up by 0.11 mb/d. With the current pace of drilling and well completion in oil fields, production of crude oil is forecast to grow by 0.6 mb/d y-o-y, to average 11.66 mb/d, and to exit 2022 at 12.1 mb/d. This forecast assumes ongoing capital discipline, limited active drilling rigs, completion crews and labour shortages. NGLs and non-conventional liquids are forecast to continue to grow by 0.30 mb/d and 0.05 mb/d, respectively.

Regarding the US crude oil production forecast breakdown for 2022, production from the GoM will grow by 0.17 mb/d to average 1.87 mb/d, revised down from last month's assessment, as we revised up the GoM output for 2021 following the re-start of Shell platforms. At the same time, the US tight crude and conventional crude oil forecast was updated to account for the latest production and activity trends, with growth of 0.61 mb/d to average 7.85 mb/d, and a contraction of 0.18 mb/d to average 1.94 mb/d, respectively.

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	7.30	-0.47	7.24	-0.07	7.85	0.61
Gulf of Mexico crude	1.64	-0.25	1.70	0.06	1.87	0.17
Conventional crude oil	2.33	-0.29	2.12	-0.21	1.94	-0.18
Total crude	11.28	-1.01	11.06	-0.22	11.66	0.60
Unconventional NGLs	4.27	0.35	4.48	0.21	4.80	0.32
Conventional NGLs	0.91	0.00	0.86	-0.05	0.84	-0.02
Total NGLs	5.17	0.35	5.34	0.16	5.64	0.30
Biofuels + Other liquids	1.15	-0.20	1.17	0.03	1.22	0.05
US total supply	**17.61**	**-0.86**	**17.57**	**-0.03**	**18.52**	**0.94**

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

US tight crude production in 2021 and 2022 is expected to show continuous y-o-y growth in the Permian Basin by 206 tb/d and 500 tb/d, to average 4.09 mb/d, and 4.59 mb/d, respectively. The forecast for the next year is revised up by 0.04 mb/d, m-o-m.

It should be noted that the EIA has undertaken considerable revisions to US tight crude production data, which have been incorporated in this month's review and forecast.

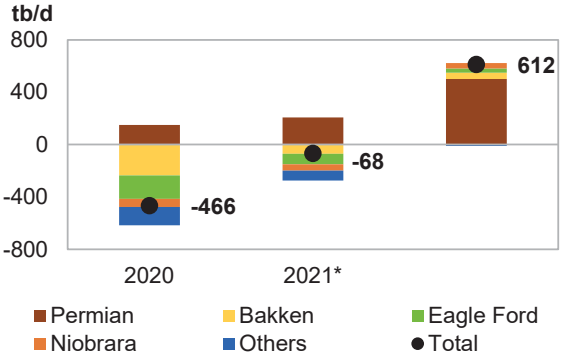
Bakken shale production fell by 0.23 mb/d in 2020 and is expected to contract by 0.07 mb/d in 2021 to average 1.11 mb/d, while for 2022, output is expected to grow by 0.05 mb/d to average 1.16 mb/d.

Eagle Ford in Texas is expected to decline this year by 0.08 mb/d, but is forecast to grow next year by 0.03 mb/d to average 1.01 mb/d.

Production in Niobrara, following a decline of 47 tb/d in this year, is likely to grow by 40 tb/d to average 0.45 mb/d in 2022. Other shale plays are not expected to grow in 2021 or 2022, given current drilling and completion activities.

US tight crude saw a contraction of 0.47 mb/d in 2020 and is expected to decline by 0.07 mb/d y-o-y this year. In 2022, production is forecast to grow by 0.61 mb/d to average 7.85 mb/d.

Graph 5 - 12: US tight crude output by shale play, y-o-y changes



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

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	3.88	0.15	4.09	0.21	4.59	0.50
Bakken shale	1.18	-0.23	1.11	-0.07	1.16	0.05
Eagle Ford shale	1.05	-0.18	0.97	-0.08	1.01	0.03
Niobrara shale	0.45	-0.06	0.41	-0.05	0.45	0.04
Other tight plays	0.74	-0.14	0.66	-0.08	0.65	-0.01
Total	**7.30**	**-0.47**	**7.24**	**-0.07**	**7.85**	**0.61**

*Note: * 2021-2022 = Forecast. Source: OPEC.*

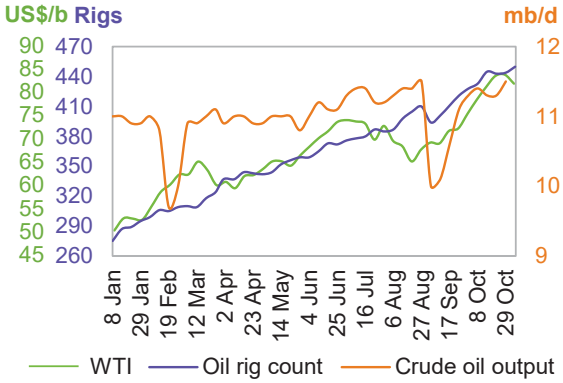
US rig count, spudded, completed, DUC wells and fracking activity

Total **US active drilling rigs** were up by 6 units w-o-w to 550 rigs in the week ended 5 November. The number of active offshore rigs remained at 13 and still is lower by 2 rigs compared to before the hurricane hit. Moreover, 535 rigs (oil & gas) were active onshore and 2 in inland waters.

The US horizontal oil rig count rose by 9 to 492 rigs, as the Permian Basin posted its biggest weekly gain since January, further adding to evidence of a renewed sense of optimism in the industry amid high oil prices and a firm demand growth outlook as the global economy recovers.

The Permian total rose by 3 w-o-w to 271 rigs, and horizontal oil rigs were up by eight to 257, pushing the onshore count higher by the same number, to 409 for oil, in its biggest gain in four weeks.

Graph 5 - 13: US weekly rig count vs US crude oil output and WTI price



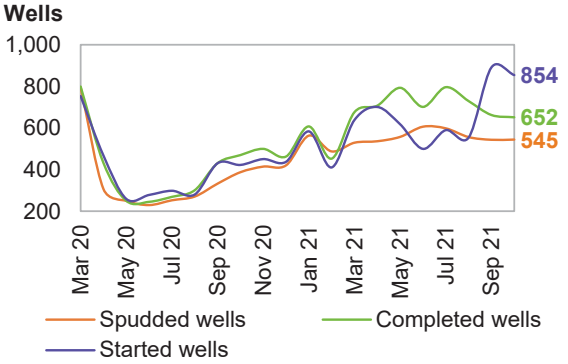
Sources: Baker Hughes, EIA and OPEC.

US rigs targeting crude oil rose by 6 units to 450 rigs, while gas rigs remained flat at 100.

Drilling and completion (D&C) activities for spudded, completed and started wells in all US shale plays saw 545 horizontal wells spudded in October (as per preliminary data), up by 1 m-o-m, but 40% higher than in October 2020.

In October 2021, preliminary data indicates a lower number of completed wells at 652, as well as a lower number of started wells at 854. However, the number of completed and started wells increased by 39% and 102% y-o-y, respectively.

Graph 5 - 14: Spudded, completed and started wells in US shale plays

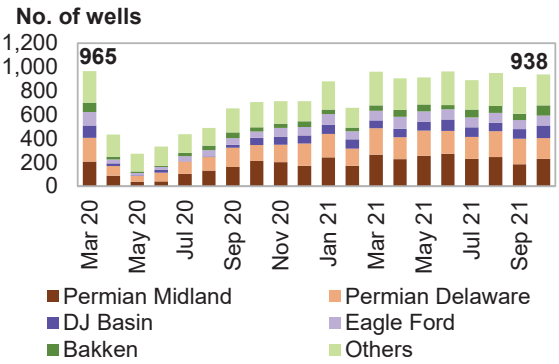


Note: October 2021 = Preliminary data.
Sources: Rystad Energy and OPEC.

Regarding identified US oil and gas fracking operations by region, Rystad Energy reported that after 832 fracking wells were seen in September, 938 started fracking in October. This preliminary number is based almost exclusively on analysis of high-frequency satellite data.

Preliminary data on fracking in October shows that 229 and 174 wells were fracked in the Permian Midland Tight and Permian Delaware Tight, respectively. Data also indicated that 106 wells were fracked in the DJ Basin compared with 83 in Eagle Ford and 86 in Bakken in North Dakota.

Graph 5 - 15: Fracked wells count per month



Note: October 2021 = Preliminary data.
Sources: Rystad Energy Shale Well Cube and OPEC.

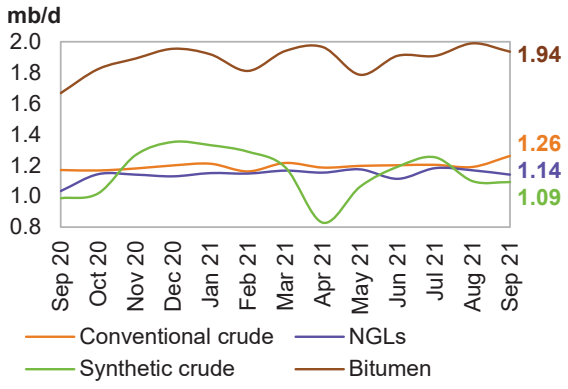
Canada

Canada's liquids production in September is estimated to have declined by 0.02 mb/d m-o-m to average 5.46 mb/d, mainly due to lower bitumen crude and NGLs output.

While production of crude bitumen and NGLs in September declined by 0.05 mb/d and 0.03 mb/d m-o-m to average 1.94 mb/d and 1.14 mb/d, respectively, conventional crude was up by 72 tb/d m-o-m to average 1.26 mb/d.

Despite lower monthly liquids output in September, Canadian liquids supply growth was revised up by 15 tb/d due to higher output in 3Q21, and now stands at 0.32 mb/d to average 5.49 mb/d in 2021.

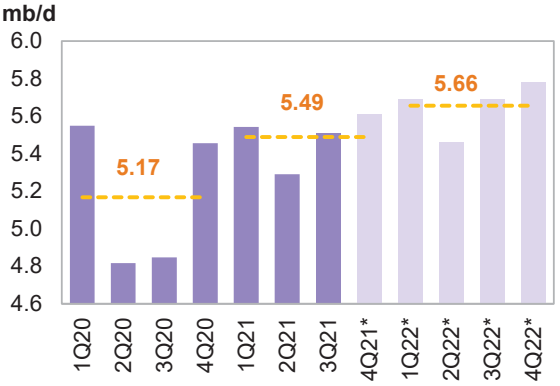
Graph 5 - 16: Canada's monthly liquids production development by type



Sources: National Energy Board and OPEC.

For **2022**, Canada's production is forecast to increase at a slower pace compared with the current year, rising by 0.17 mb/d to average 5.66 mb/d, unchanged from the previous month's assessment.

Graph 5 - 17: Canada's quarterly liquids production and forecast



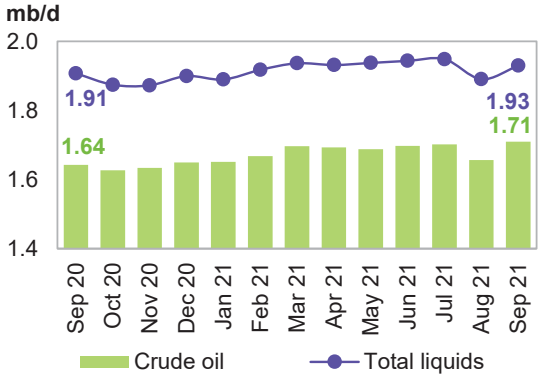
*Note: * 4Q21-4Q22 = Forecast. Source: OPEC.*

Mexico

Mexico's crude output rose in September by 52 tb/d to average 1.71 mb/d, owing to a production recovery in Ku-Maloob-Zaap that shut in for a while due to a fire in August.

However, total liquids output in September increased by 39 tb/d to average 1.93 mb/d, due to lower NGLs output by 13 tb/d m-o-m to average 216 tb/d. Mexico's state-owned Pemex has cut its crude production targets for 2021 to 1.77 mb/d, following a series of accidents, such as a fire at a platform in Campeche Sound and a leak at another shallow-water platform, and weather-related events. This is far from the original forecast in January 2021 at 1.94 mb/d. Pemex produced 1.68 mb/d during the three quarters this year and the target for 2022 is 1.95 mb/d.

Graph 5 - 18: Mexico's monthly liquids and crude production development



Sources: PEMEX and OPEC.

For **2021**, liquids production in Mexico is forecast to grow by 0.02 mb/d to average 1.93 mb/d, and for 2022 growth of 0.03 mb/d to average 1.96 mb/d is forecast.

OECD Europe

Norway

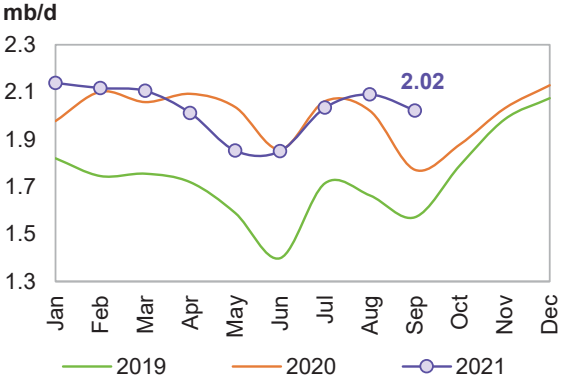
Norwegian crude production in September dropped by 39 tb/d m-o-m, to average 1.77 mb/d, up by 287 tb/d y-o-y. Production of NGLs and condensates also declined by 29 tb/d m-o-m, to average 0.25 mb/d.

Repsol Norge has produced first oil on 25 October from the re-developed Yme field in the southeastern Norwegian North Sea. At peak, the field should deliver around 56 tboe/d. Production ceased prematurely in 2001 due to low oil prices at the time. At the same time, Aker BP has commemorated 35 years of production at the Ula field in the southern Norwegian North Sea.

For **2021**, Norway's liquids supply growth forecast has been revised down by a minor 4 tb/d m-o-m due to lower-than-expected output in 3Q21 by 40 tb/d. Production is now expected to average 2.07 mb/d, with growth of 0.07 mb/d y-o-y.

For **2022**, Norwegian liquids production is expected to grow by 0.12 mb/d to average 2.20 mb/d, revised down by 0.06 mb/d owing to a re-assessment of natural decline from the mature fields which is now forecast to more than offset the growth from the anticipated start-up of new offshore projects such as Nova, Hod (redevelopment), Njord Future, Bauge and Fenja-phase 1. Moreover, Johan Sverdrup phase-2 is expected to come on-stream in late 2022, and is projected to lift Norwegian crude oil production to more than 2 mb/d.

Graph 5 - 19: Norway's monthly liquids production development



Sources: NPD and OPEC.

UK

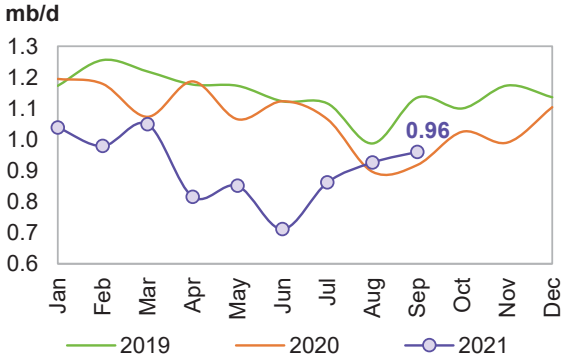
UK liquids production in September was up by 0.03 mb/d m-o-m to average 0.96 mb/d, and higher by 0.04 mb/d y-o-y. The lowest-ever production recorded this year in 2Q21 of 0.79 mb/d was due to extensive maintenance on the Forties Pipeline System (FPS), planned workovers, and a full production shut-in at the UK's largest producing field, Buzzard.

Crude oil output rose by 25 tb/d m-o-m to average 0.83 mb/d, according to official data, up by 0.02 mb/d y-o-y. NGLs output also increased by 9 tb/d m-o-m in September to average 96 tb/d.

For **2021**, UK liquids production is forecast to contract by 0.14 mb/d to average 0.92 mb/d.

For **2022**, UK liquids production is forecast to grow by 0.03 mb/d to average 0.96 mb/d, following two consecutive years of heavy declines.

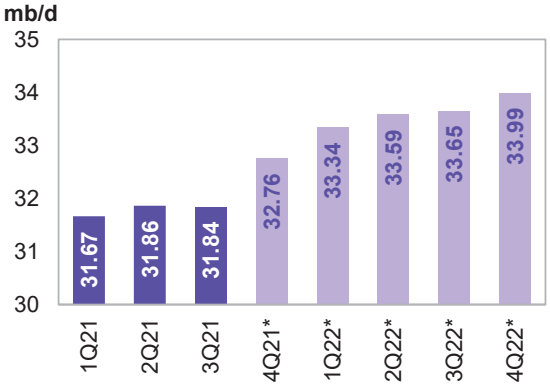
Graph 5 - 20: UK monthly liquids production development



Sources: Department of Energy & Climate Change and OPEC.

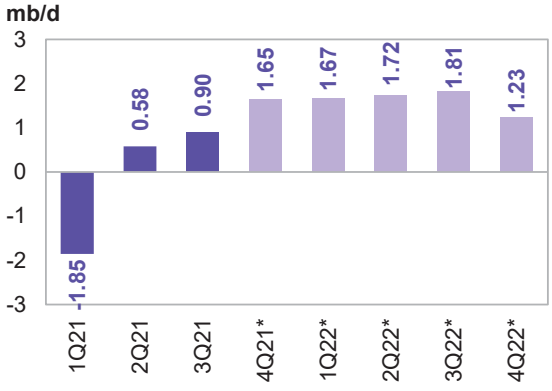
Non-OECD

Graph 5 - 21: Non-OECD quarterly liquids production and forecast



*Note: * 4Q21-4Q22 = Forecast. Source: OPEC.*

Graph 5 - 22: Non-OECD quarterly liquids supply, y-o-y changes

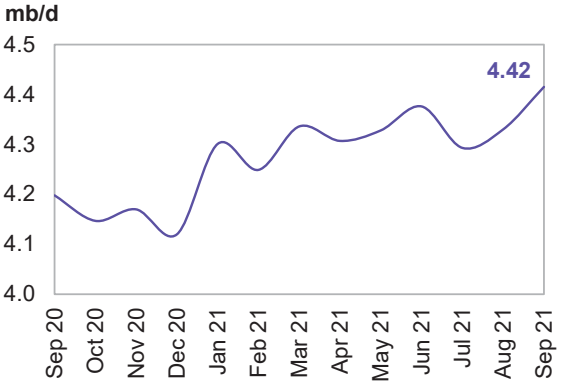


*Note: * 4Q21-4Q22 = Forecast. Source: OPEC.*

China

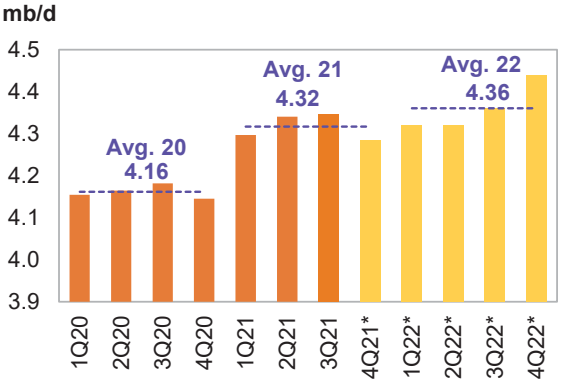
China's liquids production was up by 0.09 mb/d m-o-m to average 4.42 mb/d in September, higher by 0.22 mb/d y-o-y, according to official data. Crude oil output in September increased by 88 tb/d to average 4.1 mb/d and was higher by around 180 tb/d y-o-y.

Graph 5 - 23: China's monthly liquids production development



Sources: CNPC and OPEC.

Graph 5 - 24: China's quarterly liquids production and forecast



*Note: * 4Q21-4Q22 = Forecast. Sources: CNPC and OPEC.*

For **2021**, China's liquids supply is projected to see growth of 0.16 mb/d, revised up by 0.01 mb/d. For **2022**, growth of 0.04 mb/d is anticipated to average 4.35 mb/d.

Latin America

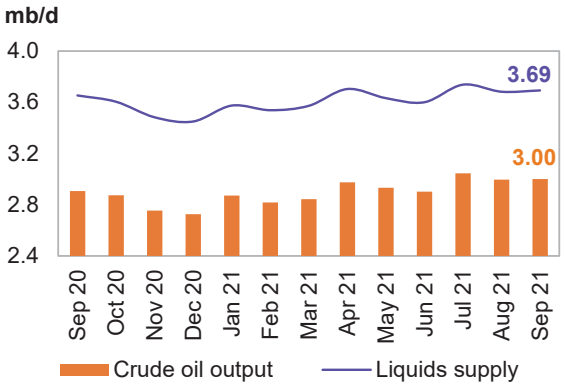
Brazil

Brazil's crude output in September was flat m-o-m at 3.0 mb/d despite the production ramp-up in the Sepia field, which had started-up in August at the Carioca FPSO at 45 tb/d. The preliminary production in October indicates a m-o-m decline in crude oil production by more than 0.15 mb/d, mainly due to maintenance in the P-76 FPSO in Buzios field. Maintenance has impacted crude production this year and this is expected to continue until the end of year. Hence, the initial forecast has been revised down m-o-m, to now stand at growth of 0.04 mb/d to average 3.72 m/d including non-crude, mainly biofuels.

In September, total liquids production was pegged at 3.69 mb/d, including biofuels and NGLs, up by 0.01 mb/d m-o-m and higher by 0.04 mb/d y-o-y.

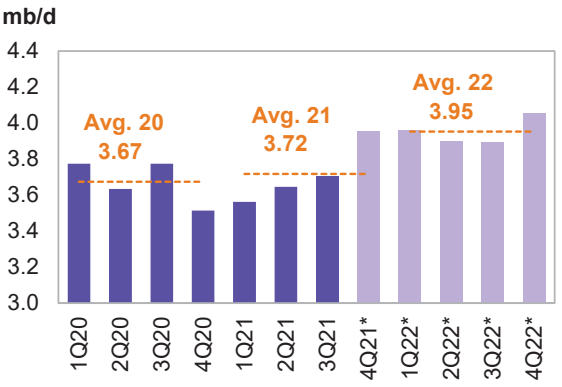
For **2022**, Brazil's liquids supply forecast, including biofuels, is set to increase by 0.24 mb/d y-o-y to average 3.95 mb/d. Crude oil production is expected to rise through two new project start-ups: Mero-1 (Guanabara), which was initially planned to start up in 2021 and Peregrino-Phase 2. Moreover, in Buzios, a fifth unit, the Almirante Barroso FPSO — to be supplied by Japan's Modec — is due to begin operation in 2022.

Graph 5 - 25: Brazil's monthly liquids production development by type



Sources: ANP, Petrobras and OPEC.

Graph 5 - 26: Brazil's quarterly liquids production and forecast



*Note: * 4Q21-4Q22 = Forecast. Sources: ANP and OPEC.*

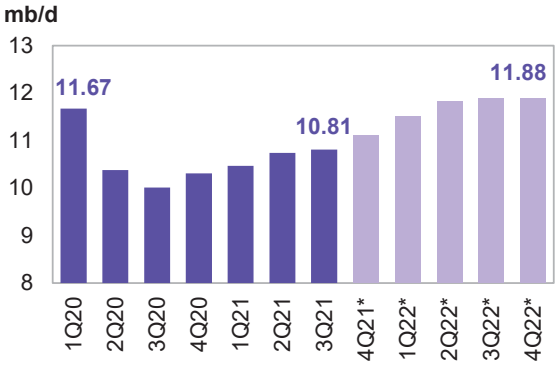
Russia

Preliminary data for **Russia's liquids production in October** shows an increase of 0.12 mb/d m-o-m to average 11.12 mb/d, higher by 0.84 mb/d y-o-y. Regarding condensate and NGLs output in October, production is estimated at the same level of the last month and a year ago, at 1.18 mb/d.

Annual liquids production in **2021** is forecast to increase by 0.19 mb/d y-o-y to average 10.78 mb/d, unchanged m-o-m.

For **2022**, Russian liquids output is expected to increase by 0.99 mb/d to average 11.78 mb/d, with 3Q22 and 4Q22 both expected to reach 11.88 mb/d, unchanged from the previous assessment.

Graph 5 - 27: Russia's quarterly liquids production and forecast



*Note: * 4Q21-4Q22 = Forecast.*
Sources: Nefte Compass and OPEC.

Caspian

Kazakhstan & Azerbaijan

Liquids output in Kazakhstan recovered to 1.67 mb/d in September, following the end of maintenance in the Tengiz field, where production had dropped to 1.58 mb/d in August, but output remains lower than the July level of 1.83 mb/d. Kazakh crude production recovered by 0.1 mb/d m-o-m in September. Production of condensate and NGLs is estimated to have declined by 11 tb/d m-o-m to average 303 t/d.

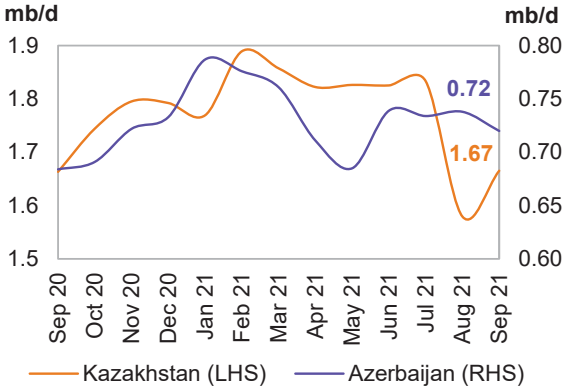
Kazakhstan liquids supply forecast for **2021** is expected to decline by 0.01 mb/d and average 1.81 mb/d, while for **2022**, liquids supply is freocast to grow by 0.17 mb/d to average 1.98 mb/d.

Azerbaijan's liquids production in September declined by 0.02 mb/d m-o-m, to average 0.72 mb/d, up by 0.04 mb/d y-o-y. While crude production declined by 10 tb/d m-o-m to average 586 tb/d, condensate output was up marginally to around 117 tb/d, according to official sources.

Azeri crude oil output has been edging lower since hitting a year-to-date high of 618 tb/d in June. Crude oil output in July was reported at 593 tb/d by JODI. Preliminary estimates also show that crude output in August and September continued at 596 tb/d and 593 tb/d, respectively.

Maintenance at the Chirag deepwater platform had begun on 23 September and was due to last 25 days. Chirag is one of six platforms that make up the BP-led Azeri-Chirag-Gunashli (ACG) complex in the Caspian Sea.

Graph 5 - 28: Caspian monthly liquids production development by selected country



Sources: Nefte Compass and OPEC.

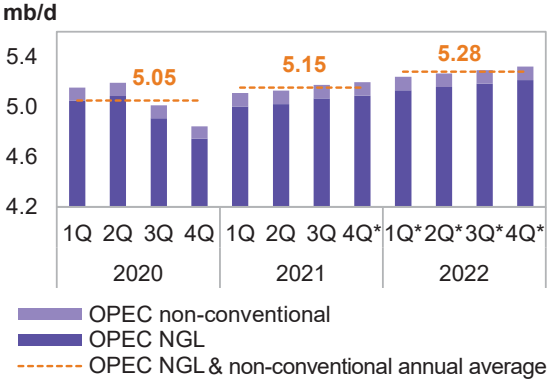
Azerbaijan's liquids supply is expected to show growth of 0.02 mb/d y-o-y to average 0.75 mb/d in 2021, while for the next year a growth of 0.07 mb/d, y-o-y to average 0.82 mb/s is anticipated.

OPEC NGLs and non-conventional oils

OPEC NGLs and non-conventional liquids in 2021 are estimated to grow by 0.10 mb/d, following a decline of 0.17 mb/d in 2020, to average 5.15 mb/d, revised down from last month's assessment by 15 tb/d due to lower output than expected in 3Q21 and 4Q21.

The preliminary **2022** forecast indicates y-o-y growth of 0.13 mb/d to average 5.28 mb/d. OPEC NGLs production is expected to grow by 0.13 mb/d to average 5.17 mb/d, while non-conventional liquids are projected to remain unchanged at 0.11 mb/d.

Graph 5 - 29: OPEC NGLs and non-conventional liquids quarterly production and forecast



*Note: * 4Q21-4Q22 = 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**	*0.10*	5.13	5.16	5.18	5.21	**5.17**	*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***	**5.15**	***0.10***	**5.24**	**5.27**	**5.29**	**5.32**	**5.28**	***0.13***

Note: 2021-2022 = Forecast. Source: OPEC.

OPEC crude oil production

According to secondary sources, total **OPEC-13 crude oil production** averaged 27.45 mb/d in October 2021, higher by 0.22 mb/d m-o-m. Crude oil output increased mainly in Saudi Arabia, Venezuela, the UAE, and Kuwait, while production in Nigeria, Gabon and Equatorial Guinea declined.

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

Secondary sources	2019	2020	1Q21	2Q21	3Q21	Aug 21	Sep 21	Oct 21	*Change* Oct/Sep
Algeria	1,022	897	870	886	922	920	934	944	*10*
Angola	1,401	1,255	1,141	1,109	1,102	1,115	1,125	1,124	*-1*
Congo	324	288	271	261	256	254	258	273	*15*
Equatorial Guinea	117	115	106	106	99	97	100	87	*-13*
Gabon	208	195	185	186	185	178	196	179	*-17*
IR Iran	2,356	1,988	2,218	2,440	2,484	2,468	2,492	2,502	*10*
Iraq	4,678	4,049	3,881	3,940	4,053	4,056	4,142	4,149	*7*
Kuwait	2,687	2,432	2,328	2,356	2,445	2,441	2,470	2,502	*32*
Libya	1,097	367	1,175	1,151	1,154	1,153	1,149	1,164	*15*
Nigeria	1,786	1,579	1,413	1,423	1,359	1,296	1,399	1,354	*-45*
Saudi Arabia	9,794	9,182	8,445	8,503	9,538	9,539	9,649	9,759	*110*
UAE	3,094	2,802	2,610	2,644	2,762	2,774	2,790	2,828	*38*
Venezuela	796	500	517	514	532	534	533	590	*57*
Total OPEC	**29,361**	**25,650**	**25,159**	**25,522**	**26,891**	**26,826**	**27,236**	**27,453**	***217***

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	2019	2020	1Q21	2Q21	3Q21	Aug 21	Sep 21	Oct 21	*Change* Oct/Sep
Algeria	1,023	899	874	886	924	921	937	949	*12*
Angola	1,373	1,271	1,136	1,125	1,114	1,129	1,110	1,106	*-4*
Congo	329	300	276	265	265	270	277	277	*0*
Equatorial Guinea	110	114	104	99	94	101	82	81	*-2*
Gabon	218	207	183	179	180	179	175	..	*..*
IR Iran	..	..	..	..	..	..	..	..	*..*
Iraq	4,576	3,997	3,846	3,890	3,979	3,961	4,093	4,070	*-23*
Kuwait	2,678	2,438	2,327	2,355	2,447	2,445	2,474	2,503	*29*
Libya	..	389	1,214	1,213	1,220	1,223	1,161	1,244	*84*
Nigeria	1,737	1,493	1,404	1,343	1,270	1,239	1,247	1,228	*-19*
Saudi Arabia	9,808	9,213	8,473	8,535	9,565	9,562	9,662	9,780	*118*
UAE	3,058	2,779	2,610	2,645	2,758	2,768	2,786	2,833	*47*
Venezuela	1,013	569	533	556	635	641	650	756	*106*
Total OPEC	**..**	**..**	**..**	**..**	**..**	**..**	**..**	**..**	***..***

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

Commercial Stock Movements

Preliminary September data sees total OECD commercial oil stocks down by 18.5 mb m-o-m. At 2,805 mb, they were 374 mb lower than the same time one year ago, 206 mb lower than the latest five-year average and 163 mb below the average of 2015-2019. Within the components, crude and product stocks fell m-o-m by 9.3 mb and 9.2 mb, respectively.

At 1,334 mb, crude stocks in the OECD were 118 mb less than the latest five-year average and 103 mb below the 2015-2019 average. OECD product stocks stood at 1,471 mb, representing a deficit of 89 mb compared with the latest five-year average and 60 mb below the 2015-2019 average.

In terms of days of forward cover, OECD commercial stocks fell m-o-m by 0.2 days in September to stand at 61.5 days. This is 12.4 days below September 2020 levels, 2.8 days less than the latest five-year average and 0.7 days lower than the 2015-2019 average.

Preliminary data for October showed that total US commercial oil stocks rose slightly m-o-m by 0.1 mb to stand at 1,234 mb. This is 152.4 mb, or 11.0%, lower than the same month a year ago and 77.3 mb, or 5.9%, below the latest five-year average. Crude stocks rose m-o-m by 13.2 mb, while product stocks fell m-o-m by 13.1 mb.

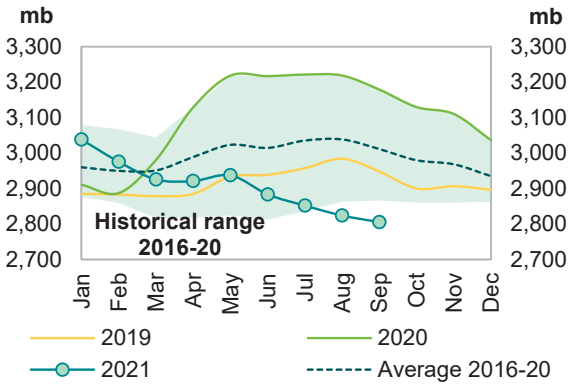
OECD

Preliminary September data sees **total OECD commercial oil stocks** down by 18.5 mb m-o-m. At 2,805 mb, they were 374 mb lower than the same time one year ago, 206 mb lower than the latest five-year average and 163 mb below the average of 2015-2019.

Within the components, crude and products stocks fell m-o-m by 9.3 mb and 9.2 mb, respectively. Total commercial oil stocks in September fell in all OECD regions.

OECD **commercial crude stocks** fell m-o-m in September by 9.3 mb to stand at 1,334 mb. This is 195 mb lower than the same time a year ago and 118 mb below the latest five-year average. Compared with the previous month, OECD Americas saw stock draw of 0.8 mb, OECD Europe declined by 3.4 mb, and OECD Asia Pacific saw a stock draw of 5.1 mb.

Graph 9 - 1: OECD commercial oil stocks



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

Total product inventories fell m-o-m by 9.2 mb in September to stand at 1,471 mb. This is 179 mb less than the same time a year ago, and 89 mb lower than the latest five-year average. Product stocks in OECD Americas and OECD Europe fell m-o-m by 2.1 mb and 9.1 mb, respectively, while OECD Asia Pacific rose by 2.0 mb.

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

OECD stocks	Sep 20	Jul 21	Aug 21	Sep 21	Change Sep 21/Aug 21
Crude oil	1,529	1,376	1,344	1,334	*-9.3*
Products	1,650	1,476	1,480	1,471	*-9.2*
Total	**3,179**	**2,852**	**2,824**	**2,805**	***-18.5***
Days of forward cover	**73.9**	**62.0**	**61.7**	**61.5**	***-0.2***

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 0.2 days in September to stand at 61.5 days. This is 12.4 days below September 2020 levels, 2.8 days less than the latest five-year average and 0.7 days lower than the 2015-2019 average. All three OECD regions were below the latest five-year average: the Americas by 2.7 days at 61.4 days, Asia Pacific by 2.1 days at 49.7 days and Europe by 4.2 days below the latest five-year average, at 67.9 days.

OECD Americas

OECD Americas total commercial stocks fell m-o-m by 2.9 mb in September to settle at 1,519 mb. This is 169.2 mb less than the same month last year and 77.3 mb lower than the latest five-year average.

Commercial crude oil stocks in OECD Americas fell m-o-m by 0.8 mb in September to stand at 766 mb, which is 68.7 mb lower than in September 2020 and 20.6 mb less than the latest five-year average. The stock draw came despite lower crude runs in September.

Total product stocks in OECD Americas fell m-o-m by 2.1 mb in September to stand at 753 mb. This was 100.5 mb lower than the same month one year ago and 56.7 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 fell m-o-m by 12.5 mb in September to settle at 930 mb. This is 149.4 mb less than the same month last year and 68.0 mb below the latest five-year average.

OECD Europe's **commercial crude stocks** in September fell m-o-m by 3.4 mb to end the month at 398 mb, which is 68.5 mb lower than one year ago and 34.6 mb below the latest five-year average. The fall in crude oil inventories came despite lower m-o-m refinery throughputs in the EU-14 plus the UK and Norway, which decreased by around 380 tb/d to 9.47 mb/d in September.

OECD Europe's **commercial product stocks** also fell m-o-m by 9.1 mb to end September at 532 mb. This is 80.9 mb lower than a year ago and 33.4 mb below the latest five-year average.

OECD Asia Pacific

OECD Asia Pacific's total commercial oil stocks fell m-o-m by 3.1 mb in September to stand at 356 mb. This is 54.9 mb lower than a year ago and 60.9 mb below the latest five-year average.

OECD Asia Pacific's **crude inventories** fell by 5.1 mb m-o-m to end September at 170 mb, which is 57.5 mb lower than one year ago and 62.3 mb below the latest five-year average.

In contrast, OECD Asia Pacific's **total product inventories** increased by 2.0 mb m-o-m to end September at 186 mb. This is 2.6 mb higher than the same time a year ago and 1.5 mb above the latest five-year average.

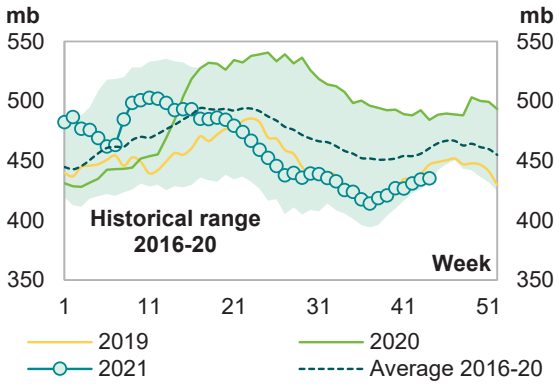
US

Preliminary data for October showed that **total US commercial oil stocks** rose slightly m-o-m by 0.1 mb to stand at 1,234 mb. This is 152.4 mb, or 11.0%, lower than the same month a year ago and 77.3 mb, or 5.9%, below the latest five-year average. Crude stocks rose m-o-m by 13.2 mb, while product stocks fell m-o-m by 13.1 mb.

US **commercial crude stocks** in October rose m-o-m by 13.2 mb to stand at 434.1 mb. This is 59.8 mb, or 12.1%, lower than the same month last year, and 30.3 mb, or 6.5%, below the latest five-year average. The stock build came on the back of higher crude production.

In contrast, **total product stocks** in October fell m-o-m by 13.1 mb to stand at 799.8 mb. This is 92.6 mb, or 10.4%, below October 2020 levels, and 46.9 mb, or 5.5%, 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



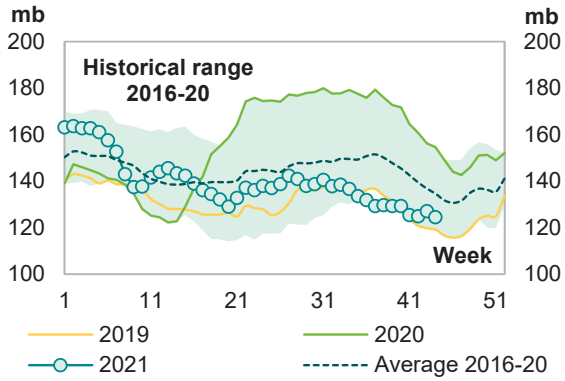
Sources: EIA and OPEC.

Gasoline stocks in October fell m-o-m by 10.8 mb to settle at 214.3 mb. This is 13.4 mb, or 5.9%, below the same month last year, and 11.0 mb, or 4.9%, lower than the latest five-year average. The monthly stock draw came mainly on the back of higher gasoline consumption.

Distillate stocks dropped m-o-m by 2.2 mb in October to stand at 127.1 mb. This is 29.1 mb, or 18.6%, lower than the same month last year, and 10.0 mb, or 7.3%, below the latest five-year average.

Jet fuel fell m-o-m by 1.6 mb, ending October at 39.6 mb. This is 2.0 mb, or 5.3%, higher than the same month last year, but 1.6 mb, or 4.0%, lower than the latest five-year average.

Graph 9 - 3: US weekly distillate inventories



Sources: EIA and OPEC.

In contrast, **residual fuel oil stocks** rose m-o-m in October, increasing by 1.2 mb. At 29.4 mb, this was 1.8 mb, or 5.9%, lower than a year ago, and 2.5 mb, or 7.8%, below the latest five-year average.

Table 9 - 2: US commercial petroleum stocks, mb

US stocks	Oct 20	Aug 21	Sep 21	Oct 21	*Change* Oct 21/Sep 21
Crude oil	**493.9**	**421.7**	**420.9**	**434.1**	***13.2***
Gasoline	227.6	225.7	225.1	214.3	*-10.8*
Distillate fuel	156.2	137.9	129.3	127.1	*-2.2*
Residual fuel oil	31.2	29.4	28.2	29.4	*1.2*
Jet fuel	37.6	42.5	41.3	39.6	*-1.6*
Total products	**892.4**	**819.5**	**812.9**	**799.8**	***-13.1***
Total	**1,386.3**	**1,241.3**	**1,233.8**	**1,233.9**	***0.1***
SPR	**638.6**	**621.3**	**617.8**	**612.5**	***-5.2***

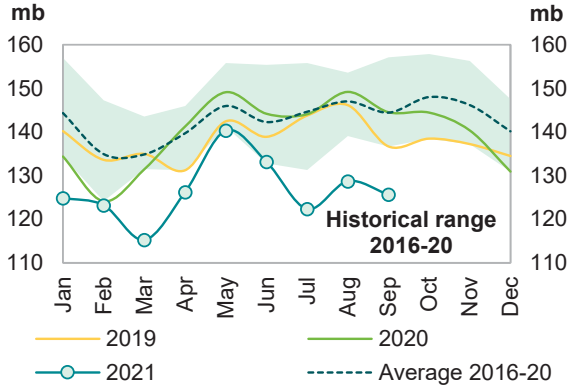
Sources: EIA and OPEC.

Japan

In **Japan**, **total commercial oil stocks** in September fell m-o-m by 3.1 mb to settle at 125.6 mb. This is 18.9 mb, or 13.1%, lower than the same month last year, and 18.8 mb, or 13.0%, below the latest five-year average. Crude stocks fell by 5.1 mb, while products stocks rose m-o-m by 2.0 mb.

Japanese **commercial crude oil stocks** fell in September to stand at 62.0 mb. This is 16.8 mb, or 21.3%, below the same month a year ago, and 17.6 mb, or 22.1%, lower than the latest five-year average. The drop came on the back of lower crude imports, which decreased by 10% m-o-m, to stand at 2.47 mb/d.

Graph 9 - 4: Japan's commercial oil stocks



Sources: METI and OPEC.

By contrast, Japan's **total product inventories** rose m-o-m by 2.0 mb to end September at 63.6 mb. This is 2.1 mb, or 3.3%, lower than the same month last year, and 1.2 mb, or 1.9%, below the latest five-year average.

Gasoline stocks rose m-o-m by 0.2 mb to stand at 10.3 mb. This was 2.0 mb, or 16.2%, lower than a year ago, and 0.3 mb, or 2.6%, below the latest five-year average. Lower domestic sales, which fell by 6.7%, were behind the build in gasoline stocks.

Distillate stocks also rose m-o-m by 1.6 mb to end September at 31.4 mb. This is 1.6 mb, or 4.9%, lower than the same month a year ago, and 0.5 mb, or 1.6%, below the latest five-year average. Within distillate components, **jet fuel and kerosene** rose m-o-m by 9.1% and 12.8%, respectively, while **gasoil stocks** fell by 6.3%.

Total residual fuel oil stocks rose m-o-m by 0.1 mb to end September at 12.5 mb. This is 0.6 mb, or 5.0%, higher than the same month last year, but 0.3 mb, or 2.7%, below the latest five-year average. Within the components, fuel oil A and fuel oil B.C stocks rose by 2.1% and 0.1%, respectively.

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

Japan's stocks	Sep 20	Jul 21	Aug 21	Sep 21	Change Sep 21/Aug 21
Crude oil	**78.8**	**65.5**	**67.1**	**62.0**	***-5.1***
Gasoline	12.2	10.0	10.0	10.3	*0.2*
Naphtha	8.6	8.5	9.4	9.4	*0.1*
Middle distillates	33.1	26.5	29.8	31.4	*1.6*
Residual fuel oil	11.9	11.8	12.4	12.5	*0.1*
Total products	**65.8**	**56.8**	**61.6**	**63.6**	***2.0***
Total**	**144.5**	**122.3**	**128.7**	**125.6**	***-3.1***

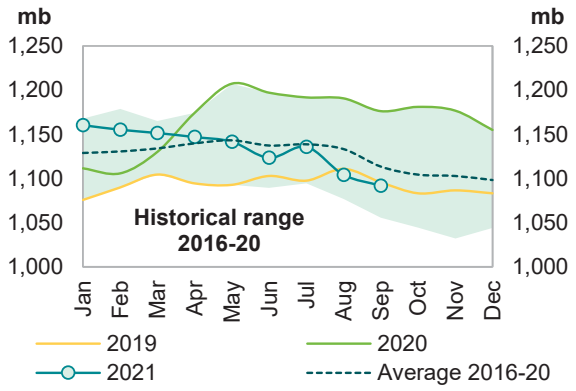
*Note: * At the end of the month. ** Includes crude oil and main products only.*
Sources: METI and OPEC.

EU-14 plus UK and Norway

Preliminary data for September showed that **total European commercial oil stocks** fell m-o-m by 12.5 mb to stand at 1,092 mb. At this level, they were 84.5 mb, or 7.2%, below the same month a year ago, and 21.9 mb, or 2.0%, lower than the latest five-year average. Crude and product stocks dropped m-o-m by 3.4 mb and 9.1 mb, respectively.

European **crude inventories** fell in September to stand at 455.4 mb. This is 42.7 mb, or 8.6%, lower than the same month a year ago and 23.8 mb, or 5.0%, lower than the latest five-year average. The fall in crude oil inventories came despite lower m-o-m refinery throughputs in the EU-14 plus the UK and Norway, which decreased by around 380 tb/d to 9.47 mb/d in September.

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



Sources: Argus, Euroilstock and OPEC.

Total European product stocks fell m-o-m by 9.1 mb to end September at 636.3 mb. This is 41.7 mb, or 6.2%, lower than the same month a year ago, but 2.0 mb, or 0.3%, above the latest five-year average.

Gasoline stocks fell m-o-m by 4.9 mb in September to stand at 107.3 mb. At this level, they are 4.5 mb, or 4.1%, lower than the same time a year ago and 1.6 mb/d, or 1.5%, less than the latest five-year average.

Distillate stocks decreased m-o-m by 6.1 mb in September to stand at 433.1 mb. This is 32.9 mb, or 7.1%, below the same month last year, but 1.0 mb, or 0.2%, above the latest five-year average.

Naphtha stocks remained unchanged in September, ending the month at 30.8 mb. This is 1.9 mb, or 5.8%, below September 2020 levels, but 3.4 mb, or 12.5%, higher than the latest five-year average.

In contrast, **residual fuel stocks** rose m-o-m by 1.9 mb in September to 65.1 mb. This is 2.4 mb, or 3.6%, lower than the same month one year ago, and 0.9 mb, or 1.4%, below the latest five-year average.

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

EU stocks	Sep 20	Jul 21	Aug 21	Sep 21	Change Sep 21/Aug 21
Crude oil	**498.1**	**476.5**	**458.7**	**455.4**	***-3.4***
Gasoline	111.8	113.6	112.1	107.3	*-4.9*
Naphtha	32.7	31.2	30.8	30.8	*0.0*
Middle distillates	466.0	449.6	439.3	433.1	*-6.1*
Fuel oils	67.6	65.1	63.3	65.1	*1.9*
Total products	**678.1**	**659.4**	**645.5**	**636.3**	***-9.1***
Total	**1,176.2**	**1,135.9**	**1,104.2**	**1,091.7**	***-12.5***

Sources: Argus, Euroilstock and OPEC.

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

Singapore

In September, **total product stocks in Singapore** fell m-o-m by 4.0 mb to 41.3 mb. This is 11.5 mb, or 21.8%, lower than the same month a year ago.

Light distillate stocks dropped m-o-m by 1.4 mb in September to stand at 11.8 mb. This is 1.8 mb, or 12.9%, lower than the same month one year ago.

Middle distillate stocks also fell m-o-m by 0.9 mb in September to stand at 10.5 mb. This is 4.8 mb, or 31.3%, lower than a year ago.

Residual fuel oil stocks fell m-o-m by 1.7 mb, ending September at 19.0 mb, which is 5 mb, or 20.9%, lower than in September 2020.

ARA

Total product stocks in ARA fell for the seventh consecutive month in September and were down by 0.5 mb m-o-m at 39.1 mb. This is 12.8 mb, or 24.6%, lower than the same month a year ago.

Gasoline stocks in September rose m-o-m by 1.2 mb to stand at 7.0 mb, which is 4.4 mb, or 38.6%, lower than the same month one year ago.

In contrast**, gasoil stocks** dropped m-o-m by 0.4 mb in September to stand at 14.9 mb, which is 5.7 mb, or 27.7%, lower than in September 2020.

Jet oil stocks fell m-o-m by 0.7 mb to end September at 7.3 mb. This is 0.2 mb, or 2.4%, below the level registered one year ago.

Residual fuel oil stocks fell m-o-m by 0.2 mb to end September at 7.5 mb. This is 1.3 mb, or 14.5%, lower than the level seen one year ago.

Fujairah

During the week ending 1 November 2021, **total oil product stocks in Fujairah** fell w-o-w by 0.13 mb to stand at 15.58 mb, according to data from Fed Com and S&P Global Platts. At this level, total oil stocks were 4.66 mb lower than the same time a year ago. While middle distillates witnessed a stock build w-o-w, light and heavy distillate stocks showed a stock draw.

Light distillate stocks fell by 0.15 mb w-o-w to stand at 4.92 mb in the week to 1 November 2021, which is 0.39 mb lower than the same period a year ago. **Heavy distillate stocks** also decreased by 0.32 mb to stand at 7.39 mb, which is 2.11 mb lower than the same time last year. In contrast, **middle distillate stocks** rose by 0.35 mb to stand at 3.28 mb, which is 2.17 mb lower than a year ago.

Balance of Supply and Demand

Demand for OPEC crude in 2021 was revised slightly down by 0.1 mb/d from the previous MOMR to stand at 27.6 mb/d, around 4.9 mb/d higher than in 2020.

According to secondary sources, OPEC crude production averaged 25.2 mb/d in 1Q21, 0.1 mb/d lower than demand for OPEC crude in the same period. In 2Q21, OPEC crude production averaged 25.5 mb/d, which was 1.5 mb/d lower than demand for OPEC crude. In 3Q21, OPEC crude oil production averaged 26.9 mb/d, 2.2 mb/d lower than demand for OPEC crude.

Demand for OPEC crude in 2022 was also revised slightly down by 0.1 mb/d from the previous month to stand at 28.7 mb/d, around 1.0 mb/d higher than in 2021.

Balance of supply and demand in 2021

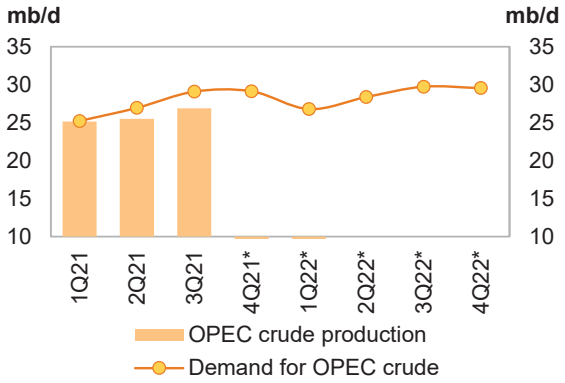
Demand for OPEC crude in 2021 was revised down by 0.1 mb/d from the previous MOMR to stand at 27.6 mb/d, around 4.9 mb/d higher than in 2020.

Compared with the previous assessment, 1Q21 was revised up by 0.1 mb/d, while 3Q21 and 4Q21 were revised down by 0.5 mb/d and 0.2 mb/d, respectively. Meanwhile, 2Q21 remained unchanged.

When compared with the same quarters in 2020, demand for OPEC crude in 1Q21 and 2Q21 is estimated to be higher by 3.7 mb/d and 9.6 mb/d, respectively. In 3Q21 and 4Q21, there is an expected rise of 4.1 mb/d and 2.1 mb/d, respectively.

According to secondary sources, OPEC crude production averaged 25.2 mb/d in 1Q21, 0.1 mb/d lower than the same level as demand for OPEC crude in the same period. In 2Q21, OPEC crude production averaged 25.5 mb/d, 1.5 mb/d lower than demand for OPEC crude. In 3Q21, OPEC crude oil production averaged 26.9 mb/d, 2.2 mb/d lower than demand for OPEC crude.

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



*Note: * 4Q21-4Q22 = 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	**90.79**	**92.87**	**95.38**	**97.89**	**99.49**	**96.44**	***5.65***
Non-OPEC liquids production	62.98	62.51	63.28	63.60	65.14	63.64	*0.66*
OPEC NGL and non-conventionals	5.05	5.11	5.13	5.17	5.20	5.15	*0.10*
(b) Total non-OPEC liquids production and OPEC NGLs	**68.03**	**67.62**	**68.41**	**68.77**	**70.34**	**68.79**	***0.76***
Difference (a-b)	**22.76**	**25.25**	**26.98**	**29.12**	**29.16**	**27.65**	***4.89***
OPEC crude oil production	**25.65**	**25.16**	**25.52**	**26.89**			
Balance	**2.89**	**-0.10**	**-1.46**	**-2.22**			

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

Balance of supply and demand in 2022

Demand for OPEC crude in 2022 was also revised down by 0.1 mb/d from the previous month to stand at 28.7 mb/d, around 1.0 mb/d higher than in 2021.

Compared with the previous assessment, 1Q22 and 2Q22 were revised up by 0.2 mb/d and 0.1 mb/d respectively, while 3Q22 and 4Q22 were revised down by 0.5 mb/d and 0.4 mb/d, respectively,

Compared with the same quarters in 2021, demand for OPEC crude in 1Q22 and 2Q22 is forecast to be higher by 1.6 mb/d and 1.4 mb/d, respectively. Meanwhile, 3Q22 and 4Q22 are projected to show an increase of 0.7 mb/d and 0.4 mb/d, respectively.

Table 10 - 2: Supply/demand balance for 2022*, mb/d

							Change
	2021	1Q22	2Q22	3Q22	4Q22	2022	2022/21
(a) World oil demand	**96.44**	**98.02**	**99.88**	**101.75**	**102.63**	**100.59**	***4.15***
Non-OPEC liquids production	63.64	65.97	66.21	66.69	67.73	66.66	*3.02*
OPEC NGL and non-conventionals	5.15	5.24	5.27	5.29	5.32	5.28	*0.13*
(b) Total non-OPEC liquids production and OPEC NGLs	**68.79**	**71.20**	**71.48**	**71.99**	**73.05**	**71.94**	***3.15***
Difference (a-b)	**27.65**	**26.81**	**28.40**	**29.77**	**29.57**	**28.66**	***1.01***

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

Aramco Warns Oil Spare Capacity to Shrink as People Fly More (1)
2021-11-09 10:19:15.758 GMT

By Paul Wallace
(Bloomberg) -- Spare capacity in the oil market will shrink significantly next year as travel rebounds and due to a lack of investment among producers, according to Saudi Aramco.
Surplus capacity is the equivalent of 3 million to 4 million barrels a day and will drop as demand for jet fuel increases, Chief Executive Officer Amin Nasser said.
“The buffer might diminish, especially next year,” he said Tuesday via video during the Nikkei Global Management Forum.
Airline fuel is one of the last oil products for which demand is still down heavily since the onset of the coronavirus pandemic. Daily use of jet fuel and kerosene stands at about 5.5 million barrels, compared with almost 8 million in 2019, according to the International Energy Agency.
Overall oil consumption will climb above 100 million barrels a day in 2022, according to Nasser. That would take it close to record levels.
Diminishing spare capacity is made worse because too few oil companies are trying to raise their output capacity, he said.
“Renewable energy can’t yet meet the world’s energy needs,” he said. “Oil and gas demand will remain healthy” for decades.
Still, Aramco is investing heavily in blue hydrogen. The company is talking to potential buyers in Japan and South Korea about supply contracts, Nasser said.
“These are huge investments and we need off-take agreements for them” to work, he said.
Blue hydrogen’s made by converting natural gas and capturing the carbon emissions. Hydrogen is seen as crucial for the transition to cleaner energy since it produces only water vapor when burned.

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https://asia.nikkei.com/Spotlight/Global-Management-Forum/Global-Management-Forum-2021/World-needs-inclusive-equitable-energy-transition-Saudi-Aramco-CEO
GLOBAL MANAGEMENT FORUM 2021

World needs 'inclusive, equitable' energy transition: Saudi Aramco CEO

Top execs from Shiseido, BHP, other global companies share visions at Nikkei forum

TOKYO -- Governments around the world should not attempt a one-size-fits-all policy for clean energy transitions, said Amin Nasser, the president and CEO of Saudi Aramco.

Speaking via video conference at Nikkei's two-day Global Management Forum, the head of the world's largest oil exporter said the "speed of transition will vary across the world between the developing and developed industries or countries."

As an example, he said the transition plan for Europe, which can afford expensive steps to achieve its green energy targets, "is unlikely to be suitable for developing countries."

"The world needs energy policies that are more inclusive and equitable," he said.

While calls for a faster transition to clean energy are growing, the price of oil has climbed to its highest level in seven years amid a global economic recovery. OPEC Plus, which includes non-OPEC states like Russia, recently decided to stick to a planned output increase rather than raising it on global supply worries.

Nasser expressed "concern" over a potential decline in excess oil production capacity next year, when "demand is expected to pick up further."

"Unfortunately, there is not enough investment in the sector to increase supplies and maintain that spare capacity."

Still, Nasser said he is "very confident" about reducing Saudi Aramco's emissions. The company recently set a goal of reaching net-zero emissions from its wholly owned operations by 2050. Among its plans is boosting production of blue hydrogen and developing non-combustible uses for oil.

"Oil and gas will continue to be our key businesses for a long time to come," he said. "However, we will continue our efforts to further reduce our carbon footprint of oil and gas."

Reporting by Wataru Suzuki and Shoichiro Taguchi.

https://www.reuters.com/world/middle-east/oil-demand-exceed-100-mln-bpd-2022-saudi-aramco-says-arabiya-tv-2021-11-09/
November 9, 20213:48 AM MSTLast Updated 40 minutes ago

Oil spare capacity to diminish as jet demand returns, Aramco says

Reuters

2 minute read

DUBAI/LONDON, Nov 9 (Reuters) - Global oil spare production capacity could diminish next year as air passengers return to the skies, removing an important cushion that the market is currently enjoying, Saudi Aramco Chief Executive Officer Amin Nasser said on Tuesday.

"The industry's spare capacity, currently at 3-4 million barrels per day (bpd) is providing some comfort to the market, however, my concern is that the buffer ... might diminish, especially next year when demand is expected to pick up further," Nasser told the Nikkei Global Management Forum.

He added that a pick up in jet fuel demand, currently lagging some 3 million bpd behind 2019's 7.5 million bpd mark, will eliminate all the spare capacity.

Spare capacity is an important buffer for the oil market as it allows producers to quickly respond to unplanned outages that could tighten the market and cause big fluctuations in prices.

Nasser reiterated that Saudi Arabia, the world's biggest oil exporter, plans to raise its maximum sustained production capacity by a further 1 million bpd to 13 million bpd by 2027.

"Expanding capacity in our industry takes around 5-7 years, and there is not enough investment in the world to increase capacity, this is a huge concern," Nasser said.

He added that oil demand is expected to exceed 100 million barrels per day in 2022.

Reporting by Maher Chmaytelli and \; Editing by Kirsten Donovan
Our Standards: The Thomson Reuters Trust Principles.

https://www.mofa.go.jp/press/release/press1e_000227.html

Video conference between Ms. Ono, Director General of Economic Affairs Bureau, Ministry of Foreign Affairs of Japan, and Dr. Birol, Executive Director of the International Energy Agency (IEA)

e-mail

November 9, 2021

Japanese

On November 9, Ms. ONO Hikariko, Director General of Economic Affairs Bureau, held a videoconference with Dr. Fatih Birol, Executive Director of the IEA.

1. At the outset, Ms. Ono expressed concern over the rapid surge in crude oil prices, which could hamper the global economic recovery from COVID-19. She stated that Japan is engaged in dialogues with oil-producing countries and would like to work closely with the IEA, which plays a central role in stabilizing the energy market.
2. In his response, Dr. Birol mentioned that he is closely watching the energy market including oil, and expressed the IEA's willingness to cooperate with member countries and oil-producing countries to work for stabilization of market. He also shared with Ms. Ono the IEA's analysis of the future energy market following the results of the OPEC Plus Ministerial Meeting held on November 4, 2021. He pointed out that the gap between supply and demand will continue to be tight in the short term, however, the supply and demand balance will improve around the turn of the year and the market will gradually regain stability.
   Furthermore, he underscored the need for additional investment to meet future demand, explaining that the demand for oil and natural gas will not drastically decrease even through our path towards transition to renewable energy. The two sides agreed to further strengthen cooperation to enhance energy security, including that of oil. Dr. Birol expressed his wish to visit Japan to exchange views with Japanese counterparts.
3. The two sides also exchanged views on acceleration of decarbonization efforts following COP26, and shared the importance on measures with pragmatic time frame based on individual circumstances that each countries face including its renewable energy potentials, while it is important to expand investment on renewable energy to achieve carbon neutral. In addition, the two sides frankly exchanged their views on Japan's funded initiative with the IEA for clean energy transition in resource producing countries, as well as on the Ministerial meeting scheduled to be held in February 2022.

Excerpt Rosneft Q3 release https://www.rosneft.com/press/releases/item/208379/

Commenting on 9M 2021 financial results Rosneft's Chairman of the Management Board and Chief Executive Officer Igor Sechin said:

"In the third quarter of 2021 the Company demonstrated a strong financial performance. In the reporting period, we reached a new historic record in terms of EBITDA/boe, while the absolute levels of EBITDA and Free cash flow hit the highest level in the last twelve quarters. Net income in the first nine months of the current year exceeded its level for the entire 2020 by almost five-fold providing a significant potential for an increase in the shareholder distribution. Taking into account the current favorable macroeconomic environment, the growth of the Company's production and sales volumes, as well as the high level of operational and investment efficiency, Rosneft is in a position to demonstrate a further expansion in its profits and cash flow.

Despite the uncertainty in the global economy due to the difficult epidemiological situation, we observe a rapid growth in demand for traditional energy resources. As structural discrepancies between supply and demand on global energy markets are further revealed, we may witness a new super cycle on the oil and gas markets. Under these conditions, the Company holds responsible to the consumers of our energy products and increases investments into the new projects. At the same time, the structural growth of capex in the current macroeconomic environment, allows us to both increase the income of shareholders in accordance with the dividend policy and to continue the debt reduction. In November, the Company completed the payment of record interim dividends in its history. At the end of 3Q 2021 Net debt/EBITDA ratio stood at 1.3x compared to 2.3x at the end of 2020, while in the first nine months of 2021 the absolute amount of Net financial debt and trading liabilities decreased by USD 8.4 bln."

SAF Group created transcript of excerpt from Gulf Intelligence PODCAST: Daily Energy Markets Forum – New Silk Road Nov 7th https://soundcloud.com/user-846530307/podcast-daily-energy-markets-3

Items in "*italics*" are SAF Group created transcript

Sean Evers, Managing Partner Gulf Intelligence

Mike Muller, Head, Vitol Asia

At 20:00 min mark, Evers. "*Just sticking with China for a second on that point of view, a shortage. Clearly they still have a huge, still have a significant amount of oil in storage from stockpiling last year, is there an ability to bring that to for crossing over to power generation? Is there enough coal? What sort of winter does China face from a shortage point of view do you think?*

Muller: *There's a few things there, Sean. Number one, China is a major part of the switching from gas to oil where that is possible. So there's a fleet of LNG trucks that don't make sense to run at spot marginal prices and therefore should be seeing themselves replaced by diesel fleets and so forth. There is coal to gas liquids manufacturing processes, which have been halted as well. China is pretty well the only place in the world that does it. China has gone through a cycle in the last few weeks where there have been shortages and embarrassments in terms of brownouts, traffic lights not working in some of the northern cities to edicts from the central government not to run out. to a depletion of the Australian coal that is still not open for trade but there were stockpiles in China and ships sitting off of China, which have all been sucked in to the tune of one million tons. And a clear build up in LNG stocks. And then there is the oil you refer to. China was going to release about 27 million barrels of oil in three phases. In three chunks of 7 million barrels each, in the months of October, November and December. And we saw the first cycle where only four and bit million barrels of the seven million barrels were awarded. only domestic companies can partake in this of course. And there is no sign of the second release, at present. And there always tends to be a bit of an overtone on price on this, but, if China had a conviction of sticking to what they were going to do , we would have seen the second tender by now. And we have not yet seen it. so my personal view is that China is very much in an inventory building mode because they don't want to be caught short in a colder winter. And they have had extremely high domestic prices. I mean for a couple of weeks in October, China had the world's highest LNG, coal, diesel and gasoline prices. And they very successfully talked this down by policy and by edict a couple weeks back such that the steam got taken out of the whole thing. But you cannot move markets by words, in the end its all about inventories and about behaviour at the spot end of the market. But yes. watch this space. China is very much in a state of flux on NDRC rhetoric and directives versus real demand. And as I said a few minutes ago, there is a bit of a standoff in crude markets where the Chinese buyers for the January trading cycle haven't come to the table yet and are now faced with offers that are $1 or $2 a barrel higher at differentials vs Brent and Dubai than they were a month ago. And the view on the street is they will buy it because they need to."*

Evers: "*They will buy it because they need to. That's not a good position to be in if you are a buyer".*

Prepared by SAF Group https://safgroup.ca/news-insights/

Nov 10, 2021 04:02:53

OIL DEMAND MONITOR: Covid Takes Another Bite From China's Flying

- European air traffic 21% lower than pre-pandemic year
- Gasoline demand in U.S. running 3.9% above 2019 levels: EIA

By Stephen Voss
(Bloomberg) -- Another large chunk of China's airline schedule was taken out of action in the past week by Covid-19 restrictions and the number of European flights stalled after recent gains, high-frequency data monitored by Bloomberg shows. U.S. aviation was steady.

Airline seat capacity in China fell 13% from a week earlier, according to OAG Aviation, and the nation is now operating 23% fewer seats than at the same time in 2019, meaning less demand for jet fuel, which is still the weakest segment of the global oil market. A week earlier that seat capacity deficit was only 11% and as recently as late July, China was operating 6% more seats than the pre-pandemic year.

With many provinces reporting infections, China's zero tolerance approach to coronavirus has led to more mass testing and restrictions on internal and international flights. That's shown in a decline in the number of actual departures from Beijing's main airport in the past two weeks, as tracked by FlightRadar24, when compared against the number of planes that were scheduled to leave.

In Europe, most of the biggest six markets have seen a slight dip in air traffic within the past couple of weeks, though that decline usually occurs at this time of year, and overall traffic is down about 21% versus the pre-pandemic year of 2019, according to Eurocontrol. That's still a massive improvement from the doldrums of January through early May when the region's flights were about 65% lower than 2019 levels. That deficit narrowed to about 40% in early July and continued to improve through the rest of the summer with many Europeans still managing to book holidays abroad.

Turkey's situation stands out as one of the best, with the rolling seven-day average of flights at 2,441 on Nov. 1, only 3% less than the equivalent period of 2019. That deficit widened to about 11% on Nov. 8.

U.S. air travel has shown a more consistent picture lately and airlines are optimistic of further gains now that the country is more open to visitors from across the Atlantic.

READ MORE: Doughnuts and Delays as Europeans Fly to U.S. After 600 Days

The number of people passing through U.S. airport security turnstiles monitored by the Transportation Security Administration has averaged about 1.8 million a day on a seven-day rolling average basis since early October, and while that's down from a peak above 2 million in July, it's still much closer to the normal range seen in 2019 than airline activity data for Europe.

OAG capacity data corroborates that view, with the number of seats offered in the U.S. as of Nov. 8 down only 13% from 2019, whereas the U.K., Germany and France were lower by 38%, 40% and 22%, respectively. The only major market with a stronger comparison to 2019 is Mexico, where the number of seats is just 4.7% lower than the equivalent week two years ago.

The Bloomberg weekly oil-demand monitor uses a range of high-frequency data to help identify trends that may become clearer later in more comprehensive monthly figures.
Following are the latest indicators. The first two tables show fuel demand and mobility, the next shows air travel globally and the fourth is refinery activity:

Demand Measure	Location	% y/y	% vs 2019	% m/m	Freq	Latest Date	Latest Value	Source
Gasoline	U.S.	+14	+3.9	+0.8	w	Oct. 29	9.5m b/d	EIA
Distillates	U.S.	-2	-14	-16	w	Oct. 29	3.69m b/d	EIA
Jet fuel	U.S.	+85	-7.1	-0.7	w	Oct. 29	1.68m b/d	EIA
Total oil products	U.S.	+8.9	-5.1	-7.1	w	Oct. 29	20m b/d	EIA
All vehicles miles traveled	U.S.		+1		w	Oct. 25-31	16.3b miles	DoT
Passenger car VMT	U.S.		-2		w	Oct. 25-31	n/a	DoT
Truck VMT	U.S.		+13		w	Oct. 25-31	n/a	DoT
All motor vehicle use index	U.K.	+4.3	-4	unch	d	Nov. 1	96	DfT
Car use	U.K.	+5.7	-8	+1.1	d	Nov. 1	92	DfT
Heavy goods vehicle use	U.K.	+2.8	+10	+0.9	d	Nov. 1	110	DfT
Gasoline (petrol) avg sales per filling station	U.K.	+7.8	-9.6	-32	m	Oct. 25-31	6,590 liters/d	BEIS
Diesel avg sales per station	U.K.	+1.3	-11	-27	m	Oct. 25-31	9,308 liters/d	BEIS
Total road fuels sales per station	U.K.	+3.9	-10	-29	m	Oct. 25-31	15,899 liters/d	BEIS
Gasoline	India		+8.2	+5.8	2/m	Oct. 1-31	2.49m tons	Bberg
Diesel	India		+1.3	+20	2/m	Oct. 1-31	5.86m tons	Bberg
LPG	India		+6.6	+6	2/m	Oct. 1-31	2.51m tons	Bberg
Jet fuel	India		-34	+16	2/m	Oct. 1-31	435k tons	Bberg
Total Products	India	+0.8	+3.1	+12	m	October	17.9m tons	PPAC
Toll roads volume	Italy	+36	-1		w	Oct. 25-31	n/a	Atlantia
Toll roads volume	Spain	+75	-12		w	Oct. 25-31	n/a	Atlantia
Toll roads volume	France	+36	+0.7		w	Oct. 25-31	n/a	Atlantia
Toll roads volume	Brazil	-0.3	+5.9		w	Oct. 25-31	n/a	Atlantia

Toll roads volume	Chile	+33	+47		w	Oct. 25-31	n/a	Atlantia
Toll roads volume	Mexico	+15	+12		w	Oct. 25-31	n/a	Atlantia
All vehicles traffic	Italy	+5.7		-7.1	m	September	n/a	Anas
Heavy vehicle traffic	Italy	+5.7		+25	m	September	n/a	Anas
Gasoline	Portugal	+5.8	+9.4	-12	m	September	91k tons	ENSE
Diesel	Portugal	+1.8	+4	-2.5	m	September	411k tons	ENSE
Jet fuel	Portugal	+67	-41	-5	m	September	95k tons	ENSE
Gasoline	Spain	+25	+5.5		m	October	493k m3	Exolum
Diesel	Spain	+11	-1.7		m	October	2300k m3	Exolum
Jet fuel	Spain	+165	-34		m	October	440k m3	Exolum

Note: Click here for a PDF with more information on sources, methods. The frequency column shows d for data updated daily, w for weekly, 2/m for twice a month and m for monthly.

* In Dff U.K. data, 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. data, which is only released once per month, 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.

City congestion:

Measure	Location	% chg vs 2019	% chg m/m	Nov. 8	Nov. 1	Oct. 25	Oct. 18	Oct. 11	Oct. 4	Sep. 27	Sep. 20	Sep. 13
			(Nov. 8)	Congestion minutes added to 1 hr trip at 8am local time								
Congestion	Tokyo	-10	+180	34	33	34	35	12	34	35	0	32
Congestion	Mumbai	-92	+150	3	5	7	6	1	7	11	12	11
Congestion	New York	+8	+300	34	31	38	33	8	35	31	35	39
Congestion	Los Angeles	-15	+28	30	25	25	29	23	27	30	28	31
Congestion	London	+14	-1	43	39	19	34	44	43	53	44	44
Congestion	Rome	-9	-31	44	0	41	40	64	44	53	55	41
Congestion	Madrid	-73	+220	10	0	32	37	3	41	35	35	33
Congestion	Paris	+12	+2	50	3	42	47	49	52	52	53	52
Congestion	Berlin	+2	+73	34	34	35	19	20	38	31	29	32
Congestion	Mexico City	-32	+19	34	14	29	28	28	29	26	29	28
Congestion	Sao Paulo	-26	+212	32	13	27	35	10	29	26	26	27

Source: TomTom. Click here for a PDF with more information on sources, methods.

NOTE: m/m comparisons are Nov. 8 vs Oct. 11. TomTom has been unable to provide Chinese data since late April.

Air Travel:

Measure	Location	% chg y/y	% chg vs 2019	% chg m/m	Freq.	Latest as of Date	Latest Value	Source
Airline passenger throughput	U.S.	+121	+0.1	+3.2	d	Nov. 7	2.15m people	TSA
Commercial flights	Worldwide	+34	-20	-3.1	d	Nov. 8	91,518	FlightRadar24
Air traffic (flights)	Europe		-21	-6.5	d	Nov. 8	22,023	Eurocontrol
Seat capacity	Worldwide	+38	-29		w	Nov. 8	75.4m	OAG
Seat cap.	U.S.	+60	-13		w	Nov. 8	19.1m	OAG
Seat cap.	China	-20	-23		w	Nov. 8	12.2m	OAG
Seat cap.	India	+52	-15		w	Nov. 8	3.67m	OAG
Seat cap.	Spain	+196	-19		w	Nov. 8	2.02m	OAG
Seat cap.	Japan	+4.9	-42		w	Nov. 8	2.36m	OAG
Seat cap.	U.K.	+232	-38		w	Nov. 8	1.77m	OAG
Seat cap.	Germany	+200	-40		w	Nov. 8	1.65m	OAG
Seat cap.	Brazil	+43	-19		w	Nov. 8	2.08m	OAG
Seat cap.	Mexico	+40	-4.7		w	Nov. 8	1.78m	OAG
Seat cap.	France	+254	-22		w	Nov. 8	1.50m	OAG
Seat cap.	Australia	+37	-66		w	Nov. 8	691k	OAG
Seat cap.	S. Africa	+40	-43		w	Nov. 8	350k	OAG
Seat cap.	Singapore	+133	-79		w	Nov. 8	173k	OAG

NOTE: Comparisons versus 2019 are a better measure of a return to normal.

Refineries:

Measure	Location/area	y/y chg	vs 2019 chg	m/m chg	Latest as of Date	Latest Value	Source
		Changes in ppt unless noted					
Crude intake	U.S.	+11%	-4.7%	-4.6%	Oct. 29	15m b/d	EIA
Utilization	U.S.	+11	+0.3	-3.3	Oct. 29	86.3 %	EIA
Utilization	U.S. Gulf	+12	+0.1	-1.4	Oct. 29	87.1 %	EIA
Utilization	U.S. East	+10	+19	-10	Oct. 29	78.7 %	EIA
Utilization	U.S. Midwest	+10	-0.6	-4	Oct. 29	90 %	EIA
Apparent Oil Demand	China	-2%		-2.8%	September 2021	13.23 b/d	NBS
Indep. refs run rate	Shandong, China	-2.5	+4	+4.4	Nov. 5	72.5 %	SCI99
State refs run rate	East China	-2.1	-4.6	-3.7	Oct. 29	77.8 %	SCI99
State refs run rate	South China	-0.4	+3.4	-3.5	Oct. 29	80.7 %	SCI99

NOTE: All of the refinery data is weekly, except for SCI99 state refineries, which is twice per month, and the NBS apparent demand, which is usually monthly. Changes are shown in percentage point except for the rows on crude intake and apparent oil demand, which are shown in percent change.

https://newsroom.aaa.com/2021/11/buckle-up-aaa-predicts-thanksgiving-travel-to-rebound-almost-to-pre-pandemic-levels/

Buckle Up: Thanksgiving Travel to Rebound Almost to Pre-Pandemic Levels

AAA predicts more than 53.4 million people expected to travel, the highest single-year increase since 2005

Ellen EdmondsManager, AAA Public Relations eedmonds@national.aaa.com407-444-8011

11/9/2021

Airports and roads may seem jam-packed this year as AAA predicts 53.4 million people to travel for the Thanksgiving holiday, up 13% from 2020. This brings travel volumes within 5% of pre-pandemic levels in 2019, with air travel almost completely recovering from its dramatic fall during the pandemic, up 80% over last year. As restrictions continue to lift and consumer confidence builds, AAA urges travelers to be proactive when making their travel plans this holiday season.

“This Thanksgiving, travel will look a lot different than last year,” said Paula Twidale, senior vice president, AAA Travel. “Now that the borders are open and new health and safety guidelines are in place, travel is once again high on the list for Americans who are ready to reunite with their loved ones for the holiday.”

With 6.4 million more people traveling this Thanksgiving coupled with the recent opening of the U.S. borders to fully vaccinated international travelers—people should prepare for roads and airports to be noticeably more crowded.

2021 Thanksgiving Holiday Travelers

	Total	Automobile	Air	Other (Bus, Train, Cruise)
2021 Forecast	53.4M	48.3M	4.2M	1M
2020 Actual	47.1M	44.5M	2.3M	281,000
2019 Actual	56M	49.9M	4.6M	1.5M
Change YOY 2019 to 2021	-5%	-3%	-9%	-31%
Change YOY 2020 to 2021	+13%	+8%	+80%	+262%

“International travel re-opening will allow people to reconnect with friends and family and explore new places, while also giving a much-needed boost to the economy,” continued

Twidale. “But it also means airports will be busier than we’ve seen, so travelers must plan for long lines and extra time for TSA checks.”

The Centers for Disease Control and Prevention (CDC) recently released its recommendations for holiday gatherings and related travel, saying that the best way to minimize COVID-19 risk is to get vaccinated if you’re eligible. However, everyone’s situation is unique and therefore, AAA urges anyone considering gathering or traveling for Thanksgiving to consult CDC guidance before finalizing holiday plans.

Navigating the New Travel Landscape

This year’s forecast marks the highest single-year increase in Thanksgiving travelers since 2005, bringing travel volumes close to pre-pandemic levels in 2019. Despite gas costing over a dollar more per gallon than this time last year, 90% of people plan to travel by car as their preferred mode of travel. Although the car is still the most popular choice for travelers, a greater share will opt to travel by air and other modes such as bus, train or cruise this year. Whether you plan to do so by car or plane, it’s important to know how to navigate the new travel landscape to avoid unnecessary stress and challenges on the way to your Thanksgiving destination.

Be Proactive. Book flights, car rentals, accommodations and other activities as early as possible. Prices are not going down and are still somewhat impacted by the limited capacity of flights and staffing challenges faced by many industries. Consider working with a travel advisor who can make any last-minute changes to travel plans, explore travel insurance options and help plan a trip that meets your needs and comfort level this holiday season.

- **Air**—Even with air travel seeing a boost this year, AAA finds that the average lowest airfare is 27.3% less than last year coming in at $132. Tuesday and Wednesday are still the most expensive and heaviest travel days with Monday being the lightest and least expensive. Those wanting to book last-minute travel will find the best fares about two weeks prior to Thanksgiving but keep in mind availability may be limited.
- **Hotels**—Mid-range hotel rates have increased about 39%, with average nightly rates ranging between $137 and $172 for AAA Approved Hotels.
- **Car Rentals**—Daily car rental rates have increased 4% compared to last Thanksgiving at $98. Over the summer, consumers experienced high costs and limited availability of rental cars in some markets, due to the semi-conductor chip shortage impacting automakers. While this shortage has subsided, it is possible it could return as the holidays near.

Be Patient. The roads and airports will be busy so plan ahead.

- Arrive at the airport early so you’ll have plenty of time to get through longer TSA lines and other travel checkpoints. For domestic travel, AAA suggests 2 hours ahead of departure time and 3 hours for international.
- Consider booking a flight during non-peak travel periods to cut down on wait times.

- Hit the road when there's less traffic and allow for extra time when traveling to your destination.

Be Prepared. For the 48.3 million Americans hitting the road, make sure you and your vehicle are ready for the trip ahead as AAA expects to respond to over 400,000 for help over the Thanksgiving holiday weekend. If your vehicle has been sitting idle, AAA suggests getting an inspection to check key components like the battery, fuel system, tires, brakes and fluid levels. These systems are particularly vulnerable to deteriorating if a vehicle sits too long without proper care or maintenance.

Be Protected—Both You *and* Your Trip. If you plan to travel during the holidays, it's essential to do so safely and understand how to protect yourself, your loved ones and your investment while traveling. Also, as travel restrictions remain in flux, it's essential to know requirements and recommendations based on your vaccination status, where you're traveling from and your destination. AAA's COVID-19 Travel Restrictions Map and TripTik.AAA.com are also helpful resources travelers may use for free to understand closures, recommendations and requirements when traveling in the U.S.

- **Travel insurance**—AAA highly recommends travel insurance to cover unexpected delays or trip interruptions. It is best to consult the expertise of a travel advisor who can guide you on the coverage options available for your specific trip, including if your destination requires visitors to carry travel insurance.
- **Clean accommodations—**When booking a place to stay, look for accommodations that prioritize cleanliness and have implemented additional housekeeping standards since the start of the pandemic. Earlier this year, as part of its Diamond designation, AAA enhanced its housekeeping evaluation to include objective, scientific validation of the cleanliness of common surfaces throughout hotels. Hotels that meet these new standards are now recognized as Inspected Clean and a current listing can be found here.
- **Safe travel = smart travel**—Everything from airports to restaurants to attractions will be busier this Thanksgiving, which means more people congregating. Masks are still required for everyone on planes, buses, trains, and other forms of public transportation traveling into, within, or out of the United States and in U.S. transportation hubs such as airports and stations. The CDC also recommends everyone wear a mask indoors in public if they are in an area of substantial or high transmission.
- **Domestic and international travel guidelines—**As of November 8, the U.S. opened its borders to fully vaccinated travelers. The CDC has updated its guidance to reflect these changes. When traveling within the U.S., fully vaccinated travelers do not need a negative viral test or to self-quarantine. For international travel, refer to the CDC for specific guidelines.

Travelers Headed to Big Cities and Beaches This Thanksgiving

AAA Travel continues to see a strong recovery that began over the summer and will continue into the holiday season. AAA booking data reveals that big cities and tropical destinations are topping travelers' list this Thanksgiving both domestically and abroad:

2021 Top Thanksgiving Destinations

U.S Destinations	International Destinations
Orlando, FL	Cancun, Mexico
Anaheim, CA	Montego Bay, Jamaica
Dallas/Ft. Worth, TX	Aruba
Phoenix, AZ	Los Cabos, Mexico
Honolulu, HI	Nassau, Bahamas
Kahului, Maui, HI	St. Lucia, West Indies
Atlanta, GA	Dublin, Ireland
Tampa, FL	*(tie)* Tel Aviv, Israel and Calgary, Canada
Ft. Lauderdale, FL	Paris, France

Roads Will Be Bustling

INRIX, in collaboration with AAA, predicts drivers will experience the worst congestion heading into the holiday weekend as commuters leave work early and mix with holiday travelers. Major metro areas across the U.S. could see more than double the delays versus typical drive times, with drivers in Atlanta, Chicago, Houston, Los Angeles and New York City likely to experience more than three times the delays.

"Thanksgiving is one of the busiest holidays for road trips and this year will be no different even during the pandemic," says Bob Pishue, Transportation Analyst, INRIX. "Drivers around major metros must be prepared for significant delays, especially Wednesday afternoon. Knowing when and where congestion will build can help drivers avoid the stress of sitting in traffic."

Worst Corridors and Times to Travel

Metro Area	Corridor	Peak Congestion	% Over Normal
Atlanta	I-85 S, Clairmont Rd to MLK Dr	Wed, 1:30 – 3:30PM	340%
Boston	I-93 N, Quincy Market to MA-28	Wed, 1:00 – 3:00PM	240%
Chicago	I-290 W, Morgan St to Wolfe Rd	Wed, 2:45 – 4:45PM	329%
Detroit	I-96 W, 6 Mile Rd to Walled Lake	Wed, 2:00 – 4:00PM	211%
Houston	I-10 W, Sjolander Rd to TX-330	Wed, 3:15 – 5:15PM	344%
Los Angeles	I-5 S, Colorado St to Florence Ave	Wed, 3:45 – 5:45PM	385%
New York	I-495 E, Borden Ave to Little Neck Pkwy	Wed, 2:30 – 4:30PM	482%
San Francisco	I-80 E, I-580 to San Pablo Dam Rd	Wed, 4:00 – 6:00PM	278%
Seattle	I-5 S, WA-18 to WA-7	Wed, 4:00 – 6:00PM	257%
Washington DC	I-95 S, I-395 to VA-123	Wed, 2:00 – 4:00PM	230%

Source: INRIX

Daily Worst and Best Times to Travel

Day	Worst Time	Best Time
Wednesday	12:00 – 8:00PM	After 9:00PM
Thursday	12:00 – 3:00PM	Before 11:00AM
Friday	1:00 – 4:00PM	Before 11:00AM
Saturday	2:00 – 7:00PM	Before 12:00PM
Sunday	1:00 – 7:00PM	Before 12:00PM
Source: INRIX		

Expected Number May Change

AAA notes that the actual number of holiday travelers could fluctuate as we approach Thanksgiving. If there is an increase in reported COVID-19 cases, some people may decide to stay home, while others may note the progress in vaccinations and make last-minute decisions to travel. AAA recommends working with a travel advisor who can help you plan a vacation that meets your needs and comfort level this holiday season. To get started and to learn more, visit AAA.com/Travel.

Forecast Methodology:

In cooperation with AAA, IHS Markit—a world leader in critical information, analytics and expertise—developed a unique methodology to forecast actual domestic travel volumes. The economic variables used to forecast travel for the current holiday are leveraged from IHS Markit's proprietary databases. These data include macroeconomic drivers such as employment, output, household net worth, asset prices including stock indices, interest rates, housing market indicators, and variables related to travel and tourism, including prices of gasoline, airline travel and hotel stays.

Historical travel volume estimates come from DK SHIFFLET's TRAVEL PERFORMANCE/Monitor℠. The PERFORMANCE/Monitor℠ is a comprehensive study measuring the travel behavior of U.S. residents. DK SHIFFLET contacts over 50,000 U.S. households each month to obtain detailed travel data, resulting in the unique ability to estimate visitor volume and spending, identify trends and forecast U.S. travel behavior—all after the trips have been taken.

The travel forecast is reported in-person trips. In particular, AAA and IHS Markit forecast the total U.S. holiday travel volume and expected mode of transportation.

About AAA

AAA provides more than 62 million members with automotive, travel, insurance and financial services through its federation of 30 motor clubs and nearly 1,000 branch offices across North America. Since 1902, the not-for-profit, fully tax-paying AAA has been a leader and advocate for safe mobility. Drivers can request roadside assistance, identify nearby gas prices, locate discounts, book a hotel or map a route via the AAA Mobile app. To join, visit AAA.com.

About INRIX

INRIX is the global leader in connected car services and transportation analytics. Leveraging big data and the cloud, INRIX delivers comprehensive services and solutions to help move people, cities and businesses forward. INRIX's partners are automakers, governments, mobile operators, developers, advertisers, as well as enterprises large and small.

Media Contact for INRIX

https://www.psac.ca/media/psac-forecasts-16-per-cent-increase-in-drilling-activity-for-2022/

PSAC forecasts 16 per cent increase in drilling activity for 2022

CALGARY, AB (November 10, 2021) – Today, the Petroleum Services Association of Canada (PSAC) released its **2022 Canadian Oilfield Services Activity Forecast**. PSAC expects a total of 5,400 wells (rig releases) will be drilled in Canada in 2022. The Association is also lifting its 2021 forecast due to improved activity in the second half of the year.

"For 2022 we expect drilling activity to be higher than 2019. But, although we'll be back to pre-COVID levels, we're not going to be near where we were pre-downturn," says PSAC's President and Chief Executive Officer, Gurpreet Lail.

Lail points out, "Global supply-demand imbalances are leading to higher commodity prices, and we expect drilling activity to increase out of necessity. However, at the same time, we're also seeing a severe labour shortage, which has the potential to impact how much growth the industry can achieve in the coming year."

The final revised forecast for 2021 predicts a yearly total of 4,650 wells drilled. PSAC based its final 2021 forecast on average natural gas prices of $3.60 CDN/mcf (AECO), crude oil prices of US$67/barrel (WTI), and the Canadian dollar averaging $0.80USD. PSAC's forecast for 2022 has the WTI price at an average at $70/barrel, and AECO natural gas average at $4.10 CDN/mcf.

"Although the activity outlook is brighter than a year ago, exploration and production (E&P) companies are not deviating from strict capital discipline and are staying the course on preferring share buybacks, paying down debt, and increasing or issuing dividends," says Lail.

On a provincial basis, PSAC estimates the following drilling activity for 2022:

- 3,125 wells in Alberta, representing a year-over-year increase of 450;
- 1,495 wells for Saskatchewan, an increase of 198 wells;
- 605 wells in British Columbia, a year-over-year increase of 79 wells from 526 drilled in 2021;
- 160 wells drilled in Manitoba, up 21 wells from the 139 drilled in 2021; and
- 15 wells expected for Eastern Canada, up from 13 wells the previous year.

Similar to 2021, the majority of activity is expected to occur in the Montney and Viking formations.

"The pandemic brought an extraordinary level of challenge to an already tense industry environment," says Lail. "Through this difficult time, PSAC members supported our industry partners to produce essential oil and gas products. Those products warmed and brightened our homes – and our home offices — and enabled the manufacture of the many products that kept our hospitals, health care workers, and all Canadians safe."

PSAC and its members know that Canada can be a world leader in responsible energy development.

"For decades, companies within our sector have made huge investments to advance innovation for sustainable oil and gas development, including lower GHG emissions," says Lail. "However, the point of view that hydrocarbons can't be any part of a sustainable future – even with responsible production and new carbon technologies – is a major setback for Canada and for our industry."

To ensure Canadians get the benefit from our oil and gas resources, PSAC calls on all levels of government to come up with coherent policy approaches. And that includes clear policies to advance opportunities in carbon capture, utilization and storage, and policies for commercial development of blue hydrogen from natural gas.

***About PSAC**:*

*The **Petroleum Services Association of Canada (PSAC)** is the national trade association representing the service, supply and manufacturing sectors within the upstream petroleum industry. PSAC is* **Working Energy** *and as the voice of this sector, advocates for its members to enable the continued innovation, technological advancement and in-the-field experience they supply to energy explorers and producers in Canada and internationally, helping to increase efficiency, ensure safety and protect the environment.*

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Media contact:

https://beyondoilandgasalliance.com/wp-content/uploads/2021/11/11-10-21-BOGA-Press-Release.pdf

Members announced at Thursday's event included, in alphabetical order, Costa Rica, Denmark, France, Greenland, Ireland, Quebec, Sweden and Wales as core members; California, New Zealand and Portugal as associate members. Italy joined as a "friend" of BOGA.

"Quebec intends to fight against climate change by exploiting, in particular, its abundant hydroelectric resources. But to achieve our target of reducing GHG emissions by 37.5% in 2030 compared to 1990 and achieve carbon neutrality in 2050, we must also free ourselves from fossil fuels. By joining the Beyond Oil and Gas Coalition, Quebec is setting an example and assuming its leadership role in green energy production. We must also urge other states to find alternatives to oil and gas," said François Legault, Premier of Québec.

https://beyondoilandgasalliance.com/who-we-are/

Who We Are

BOGA is co-chaired by the governments of Denmark and Costa Rica.

The Beyond Oil and Gas Alliance (BOGA) is an international coalition of governments and stakeholders working together to facilitate the managed phase-out of oil and gas production. Led by the governments of Denmark and Costa Rica, the coalition aims to elevate the issue of oil and gas production phase-out in international climate dialogues, mobilize action and commitments, and create an international community of practice on this issue.

https://www.ft.com/content/8385f5d8-b045-46a7-a822-47a9ba09e219

Macron warns of threat to global economy from energy crisis

French president urges world leaders to act on climate change with more financial pledges ahead of COP26 summit

Leila Abboud in Paris and Leslie Hook in London YESTERDAY

President Emmanuel Macron has warned that an energy crisis threatens the world's post-pandemic recovery, calling for leaders at a G20 summit in Rome this weekend to work together to stabilise supplies.

In an interview, the French president also urged bigger financial commitments towards the fight against global warming on the eve of the COP26 climate summit in Scotland, and for particular attention to be paid to a deal to phase out coal power.

The G20 needed to co-ordinate between energy producers and consuming countries to prevent a supply breakdown this winter, which risked "extreme tensions both economically and socially", Macron said.

"In the coming weeks and months, we need to get better visibility and stability on prices so tension on the energy prices doesn't generate uncertainties, and undermine the global economic recovery, " he told the Financial Times in the Elysée Palace. "What we expect is to have co-ordination to avoid soaring prices."

Global energy costs have surged this year, disrupting industry and hitting consumers with higher prices. Eurozone inflation surged in October to a 13-year-high of 4.1 per cent, according to a flash estimate published by the EU's statistics arm on Friday.

"I don't think we're going to be able to lower prices given tensions on the demand side," Macron said. "But what we need to avoid is to have a break in supply [and further] increases in prices, particularly as we're moving into the winter period for the northern hemisphere."

Emmanuel Macron: 'I don't think we're going to be able to lower [gas] prices given tensions on the demand side' © Magali Delporte/FT

Rapid economic recovery from the pandemic has pushed up energy prices "almost too rapidly" which risked "weighing on economic growth and putting a burden on households", Macron said.

France and a number of other EU governments have sought to protect consumers and businesses with billions in aid and price freezes.

Concerns have mounted that Russia's state-backed gas producer Gazprom has kept storage levels unusually low in western Europe, exacerbating fears over supplies and driving up prices.

Asked whether he blamed high European energy prices on Russia, Macron said: "I have no evidence that there's been manipulation of prices and I'm not accusing anybody. These are trading relations. They shouldn't be used for geopolitical reasons."

Asked about Gazprom's power over Europe, Macron said: "It's not a matter of whether we're too dependent on a company or not, it's how do we create alternatives. And the only alternatives are to have European renewables and of course, European nuclear."

France is the EU's biggest user of nuclear power, contrasting with a move away from atomic power by Germany and some other countries.

Macron called for Europe to develop a more diverse gas supply but also to speed up a transition away from fossil fuels, which will be necessary to slow rising temperatures and tame the climate disruptions caused by global warming.

“What is happening now is ironic, because we are building a system where in the medium and long term fossil energy will cost more and more, that’s what we want [to fight climate change],” he said. “The problem is that industries and households will need to be accompanied in this transition . . . or it won’t be sustainable.”

The French president, who is facing national elections in April, has been a vocal advocate of multilateralism. He has pushed for more co-operation globally and at EU level to reach deals on issues including international taxation and global warming.

“The first subject for the G20 is to accelerate the exit from coal power” Emmanuel Macron

Against a backdrop of global tensions, a supply chain crisis and the Covid-19 pandemic, Macron said the G20 had a responsibility to work together, especially to help low-income countries. He urged leaders at the Rome summit to agree a plan for faster vaccine delivery to developing countries.

“France has always stressed the importance of maintaining multilateralism, but we have to get concrete results from it,” he said.

The leaders of China, Russia and Japan will not attend the summit in Rome in person this weekend because of Covid-19 concerns and an election in Japan.

Macron said the G20 meeting, which is being hosted by Italian leader Mario Draghi on the eve of COP26, would also give countries a chance to hammer out more ambitious plans to fight climate change.

“When we’ll be meeting in Rome, the major challenge is to ensure that members of G20 can usefully contribute in Glasgow, to making this COP26 a success,” he said. “Nothing can be taken for granted before a COP,” he added.

“The first subject for the G20 is to accelerate the exit from coal power,” he said. G20 leaders expect a heated debate this weekend over including a pledge to end international coal financing.

“We need the G20 to go right through to the eradication of all international financing of coal-fired power plants,” Macron said.

Macron also called for rich countries, particularly the US, to commit more financially to help developing countries meet their climate goals. And he called on China to bring forward the date at which it will peak emissions, from 2030, to 2025.

“So as not to lose more time, we have to do as much as is absolutely possible in terms of financing, and encourage the US administration so that they can convince Congress to front-load its financing.”

Another issue will be to hold countries to their emissions targets for 2030 and 2050. “Our objective is to get maximum results from all countries,” he said. “This pathway is possible, even if it’s a challenge, especially for emerging countries which at the same time are trying to recover from the Covid crisis.”

Macron also urged the G20 leaders to do more to help vaccinate the world against Covid-19. The group should end vaccine export bans, increase its donations of vaccine doses, and support vaccine production in Africa, he said.

“Every French person has given one vaccine to somebody else in the world,” he said, referring to the roughly 60m doses that were on the way to Covax, the World Health Organisation’s procurement scheme for low-income countries. “If everybody in the G20 could do that we would get to the 20 per cent of the population vaccinated. This is vital,” he said.

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Excerpt

SENATE APPROPRIATIONS COMMITTEE, ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE HEARING REVIEW OF THE FY2022 BUDGET SUBMISSION FOR THE DEPARTMENT OF ENERGY

JUNE 23, 2021

SEN. JOHN KENNEDY, R-LA., RANKING MEMBER

WITNESSES:
JENNIFER GRANHOLM, SECRETARY OF ENERGY

KENNEDY: Thank you, Madam Chair. You can probably guess from my opening comments, Madam Secretary, I see the climate as a discrete scientific issue. I think it's a mistake to approach it with too much emotion. Passion is good, but not when it interferes with your judgment.

I've got a couple of - of 30,000 foot question, feet questions. How much money in public and private dollars does the department think it would make - it would take to make the world carbon neutral?

GRANHOLM: I don't have a number for that, but probably a lot.

KENNEDY: Hundreds of trillions of dollars, do you think?

GRANHOLM: It would be a lot, for sure.

KENNEDY: Okay. How much money, in public and private doctors - dollars, does the department think it would take to make the United States carbon neutral?

GRANHOLM: Again, it would be a lot.

KENNEDY: Hundreds of trillions?

GRANHOLM: I don't know about hundreds of trillions, but it would be a lot of money.

KENNEDY: It'd be in the trillions.

GRANHOLM: Yes.

KENNEDY: Mid trillions.

GRANHOLM: I don't know.

KENNEDY: I understand. Here's my question, to make the United States carbon neutral based on the administration's plans, I think

it would be fair to say it's going to cause displacement, major displacement. Now I don't use that in a - in a - in a pejorative sense, I think that's just an accurate description. It's going to change our economy dramatically.

Many people are going to gain - many people are going to lose, and that's what I mean by displacement. If we, today, spent these, to be fair, tens of trillions of dollars that I think many members of the administration would like to spend and make the United States of American carbon neutral and nobody else has our - our aggressive - ups our aggressive approach, and they only make modest gains in CO2 emissions, how much is it going to lower the world temperature and how much is - of it - how much - how much are we going to reduce carbon emissions?

GRANHOLM: I want to say that the administration has a really firm commitment to communities to be able to take advantage of the economic opportunity (inaudible)...

KENNEDY: I know, Madam Secretary. Forgive me for interrupting, but we both know now, I'm - I'm - I'm really - want to try to probe your mind here. We both know this is going to cause major displacement. Let's don't kid each other. You're not going to turn coal miners into coders overnight, and you're not going to turn fossil fuel workers into solar experts overnight, and there not as many solar jobs as there are oil and gas, so I don't want to get off into that.

And I'm not trying to be critical of the administration, but I - these are important questions. If we - if we become carbon neutral and we don't get cooperation from China and India, what have we - what have we accomplished?

GRANHOLM: The goal is to get cooperation from China and India.

KENNEDY: I know, but what if they don't?

GRANHOLM: Well...

KENNEDY: What if we go spend these tens of trillions of dollars in President Xi Jinpiang, the people of China are wonderful people, by the way. President Xi (inaudible), we know that. The Communist Party, they're gangsters. What - what if they - what - I mean, they probably built a coal power - a coal powered power plant while we - you and I have been talking. What have we achieved?

GRANHOLM: The administration has a strategy to make sure that all of our - all of the people who have signed onto this Paris agreement meet the goals that they have articulated, and that means working with allies, and that means...

KENNEDY: I - I get it, I get it.

GRANHOLM: ... (inaudible) strategy...

KENNEDY: And that's fair, but I'm asking a very practical question. My son, who I love dearly, has a strategy to have his dad by him a 9/11 Targa Porsche, it's not going to happen. And I'm raising a very legitimate question, I think. If we spend these trillions of dollars and we go through all this displacement and we don't get cooperation from China and India, what - what -what - is the pain worth the gain, and how do we know?

GRANHOLM: I would say we have a strategy to get those countries on board. And if we don't pursue this strategy, what then? Then you have climate disasters that are upon us. California is now - could be on fire again this summer. And if we don't take action, then where are - where is - where are we with respect to the other disasters. So we have to approach our allies --

(CROSSTALK)

KENNEDY: Let me ask you one last question. I get it. I get it. If I -- if you can indulge me, Madam Chair, if we spent all the money that the Biden administration wants to spend, let's take in its current infrastructure bill to reduce CO2 admissions. What percentage of the increase in carbon admissions worldwide, not the United States, is going to be reduced?

GRANHOLM: The -- all of these countries have signed on. All of them have.

KENNEDY: No, I'm talking about -- I know and you're trusting them.

GRANHOLM: Well, no, verified.

KENNEDY: But I believe -- I believe in metrics.

GRANHOLM: Yes.

Google Translate of Interview by Corriere Della Sera with Eni CEO "*Descalzi: «Serve una transizione green aperta a tutte le tecnologie»*" https://www.corriere.it/economia/aziende/21_novembre_13/serve-transizione-green-aperta-tutte-tecnologie-9b8c3dc4-44c6-11ec-b1e5-ba5a56353c9e.shtml "

THE CEO OF ENI

Descalzi: "We need a green transition open to all technologies"

by Federico Fubini Nov 13, 2021

In the last year, natural gas in Europe has risen by 535%. By comparison, the trend of the oil barrel, which has doubled, seems stable. Yet such a shock is usually dismissed as a passing phenomenon: last long and cold winter that required more intense supplies, little wind in the North Sea that slowed the production of renewables, demand that restarts as the pandemic eases. Yet Claudio Descalzi, Eni's CEO, is not entirely convinced.

Are there also structural elements behind the explosion in prices?

"The litmus test that these are not simply increases linked to temporary circumstances is that the price increase is not timely, it does not occur in a single region of the world. It is not only in the North Sea or in Europe. There is an even greater increase in Asia. There are huge increases in Argentina, Brazil, the United States. The US has a lot of gas, yet the price has more than doubled there too. So it cannot be just that in the North Sea there has been no wind recently and, instead of using wind energy at 15% or 18%, for now it is used at 7%. It is not only this ».

Prices are said to rise as Russia restricts gas supplies.

"Russia may have an impact on Europe, but certainly not on the rest of the world. The reason is that upstream investments, those upstream of the energy supply chain for the creation of new production capacity in the fields, have had two phases of strong reduction. The first was caused by a very significant oversupply in 2014. It then went from $ 850 billion in annual global investment to $ 350 billion or $ 400 billion annually. Investments were subsequently kept low, for fear of a recurrence of oversupply. Then there was Covid, which further lowered them ".

Is there really a structural imbalance between energy supply and demand in the world, with demand running faster and faster?

"The supply is no longer in line with a rebounding demand. The easing of Covid has represented a spring that is now expanding and those who must ensure energy are unable to maintain production at the necessary pace, due to the decline in investments in recent years ".

Does the energy transition matter, in view of reducing CO2 emissions?

"The compression of investments is also due to the fact that companies have put upstream investments in competition with those in the transition and development of renewables. We at Eni have allocated almost two and a half billion euros to the development and acquisition of renewables this year. Since the resources are not infinite, choices must be made and priorities set. We feel the right need to decarbonise but this impacts on investments in traditional sources and generates a decrease in their supply in the face of a demand that still requires them structurally. So here is the real reason: there have been fewer investments ».

Are you questioning the greenhouse gas reduction targets?

"Absolutely not and the investments we have made and are making show it. I firmly believe that we need to reduce emissions. We must stay below one and a half degrees of average increase in world temperatures compared to the pre-industrial era and we must do so on the basis of technological neutrality ".

What does technological neutrality mean?

"That when we want to achieve such an important goal, we must use all the appropriate and" clean "means at our disposal. Renewables are fundamental, but there is also the capture of CO2 emissions and sequestration in exhausted fields, there are biorefineries, the circular economy - both of organic and inorganic materials - as well as technologies for future realization such as nuclear fusion. Otherwise it is as if one were to run a hundred meters, and the race towards decarbonisation must be very rapid, with hands and feet tied. Can not run. The ideologism on technologies is the enemy of achieving the climate goal ".

What are you worried about?

"So far we have been concerned with modifying the supply of energy carriers without modifying the demand that continues to be prevalent, in the industry and mobility sector, for oil, gas and coal. This gap between supply and demand is the cause of the price increase ".

But how does the question change, in your opinion?

"With laws, incentives and implementing rules. If biofuels are to be used instead of regular gasoline, regulations are needed. If you have to use green or blue hydrogen that has a higher cost than that produced by the simple transformation of methane, then you need to compensate for the difference in production costs. It is not enough to set goals for 2030 or 2050. We must build the connective tissue of infrastructures, of demand, of supply, of norms, of laws. A very in-depth analysis must be made ".

Don't you find that the demand for energy can only go up? It is already above pre-Covid levels even though the global economy is still below.

"The demand for energy will rise, also because humanity is growing. The expected 25-year increase of more than two billion people will be concentrated in Africa and Asia. There is the most important energy gap: African energy consumption is about 4% of the world, but the population is 17%. This gap is the measure of poverty. But when the development comes, the demand for energy will increase dramatically. So it will be in China, in India, in all of Asia in general ".

Were you talking about "ideologism" before? In what and by whom?

“We are witnessing a pendulum effect. There is the impression that large corporations have done what they have wanted all these years, so it is concluded that in order to be able to block emissions, corporations must be blocked. So it swings to the opposite extreme. But let's ask ourselves what effects the attacks on large oil & gas companies have. Today these majors are very careful. We are transparent about environmental impacts, with detailed sustainability reports, ambitious targets, capital and technologies to pursue them. If we big ones are pushed or forced by the market to sell our activities to small local and private companies, - these production processes will continue but will be much less controllable. They will continue, because energy will still be needed. But there will be no use of technology or attention to sustainability, because we will have sold to companies that do not have the same transparency obligations. The environmental impact can only get worse ".

When you talk about technological neutrality for the transition, do you include the new generation modular mini-plants? It is hard to bring this issue into the debate.

«In Italy, yes, it is difficult. France is asking to use nuclear and gas and so is the United States. Here in Italy there was a referendum in the mid-1980s and nuclear power was excluded. The latest generation is completely different, even if it is always fissioned. But in a country where it is difficult to install a photovoltaic panel, how can you build a nuclear power plant? To be competitive, we need to streamline procedures, find a pact with the local area to be able to develop industrial activities and be aware that industrialization done in the correct and transparent way that creates development and work is positive for the whole of society. This must be done with clear ESG objectives (of sustainability, ed), making sure not to leave anyone behind and not to create pockets of privileged or excluded people from growth ».

https://totalenergies.com/media/news/press-releases/republic-congo-planting-more-one-million-trees-begins-bateke-plateaux

Republic of the Congo: The Planting of More than One Million Trees Begins on the Batéké Plateaux

11/08/2021

News

Brazzaville, November 8, 2021 – On the occasion of the National Tree Planting Day in the Republic of the Congo, TotalEnergies has launched the "Batéké Carbon Sink" afforestation operations. This large-scale project, conducted in partnership with Forêt Ressources Management, consists of 40,000 hectares of planted forest on the Batéké Plateaux. Some 40 million trees will be planted in total over 10 years and cared for over 35 years.

During the past eight months, local tree nurseries have already produced more than one million plants, which will be progressively planted from the next rainy season on the 800 hectares of land that have been prepared since last summer.

"We are pleased to officially launch the Batéké Carbon Sink project, which is a concrete example of TotalEnergies' commitment to the development of natural carbon sinks, along with others. We warmly thank the Republic of the Congo, whose support for the operation is essential, for its commitment to the preservation of forests and the promotion of afforestation activities," **said Nicolas Terraz, President Exploration & Production at TotalEnergies**. "TotalEnergies' climate ambition is based on a panel of concrete actions, aiming first to prevent and then to reduce our greenhouse gas emissions, and finally to offset residual emissions. The planting of a new forest on the Batéké Plateaux is a concrete illustration of this approach, complementing all the other priority measures for preventing and reducing TotalEnergies' emissions."

The 40,000 hectares planted will create a carbon sink that will sequester an average of 500,000 tons of CO2 per year over twenty years, equivalent to the annual CO2 emissions of an average European city of 70,000 inhabitants. The carbon credits will be certified in accordance with the Verified Carbon Standard (VCS).

The project, financed by TotalEnergies, includes agroforestry practices developed with the local communities for agricultural production and sustainable wood energy. It will create employment opportunities, with a positive impact on several thousand people. In addition, a local development fund will support health, nutritional and educational initiatives to benefit neighboring villages.

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About TotalEnergies Nature Based Solutions
As part of its climate ambition, and in addition to its priority actions to avoid and reduce emissions,

TotalEnergies works with many local partners around the world to develop and conserve natural carbon sinks, while helping to preserve their biodiversity. These operations follow a long-term approach of sustainable and integrated economic development of areas with local communities. TotalEnergies plans to spend $100 million per year to build a portfolio of projects capable of generating at least 5 million metric tons of CO2e of carbon credits per year by 2030. These carbon credits will be used after 2030 to offset the Company's scope 1 & 2 emissions.

About TotalEnergies

TotalEnergies is a global multi-energy company that produces and markets energies on a global scale: oil and biofuels, natural gas and green gases, renewables and electricity. Our 105,000 employees are committed to energy that is ever more affordable, cleaner, more reliable and accessible to as many people as possible. Active in more than 130 countries, TotalEnergies puts sustainable development in all its dimensions at the heart of its projects and operations to contribute to the well-being of people.

https://www.swamedia.com/releases/release-6fa137b626d66e44c10f2d1ad0a93b6e-southwest-airlines-announces-15-year-agreement-with-velocys-for-219-million-gallons-of-sustainable-aviation-fuel

Southwest airlines announces 15-year agreement with velocys For 219 million gallons of sustainable aviation fuel

MEDIA RELEASE

Volume sufficient to produce more than half a billion gallons of blended net zero fuel, enabled by sustainable aviation fuel with the lowest carbon intensity announced to date

Nov 10, 2021

DALLAS — **Southwest Airlines Co.** (NYSE: LUV) today announced a 15-year offtake agreement with Velocys Renewables LLC ("Velocys") for 219 million gallons of sustainable aviation fuel (SAF). As announced by Velocys today, once blended with conventional jet fuel, the SAF could produce the equivalent of 575 million gallons of net-zero[1] fuel and avoid 6.5 million metric tons of CO2 over the term of the agreement. Southwest® plans to begin purchasing SAF from the Velocys Bayou Fuels facility in Natchez, Mississippi, as early as 2026. Additionally, as part of the offtake agreement, Southwest and Velocys have established a long-term strategic relationship, offering Southwest the opportunity to purchase significant volumes of SAF from future Velocys facilities.

"This agreement is a major advancement in our environmental sustainability strategy, furthering our goal to replace 10 percent of our total jet fuel consumption with sustainable aviation fuel by 2030," said Michael AuBuchon, Senior Director Fuel Supply Chain Management at Southwest Airlines. "This new strategic relationship with Velocys could ultimately provide Southwest access to additional significant quantities of sustainable aviation fuel."

"Our 15-year offtake agreement with Southwest Airlines will enable them to utilize the lowest carbon intensity sustainable aviation fuel announced to date," said Henrik Wareborn, CEO of Velocys. "The SAF produced at the Bayou Fuels facility plans to utilize a sustainable feedstock (forestry residues from plantation forests) and renewable power from a neighboring solar facility, as well as contract for carbon capture that will sequester more than 500,000 tons of carbon dioxide per year. It also is expected to have a greater than 99 percent reduction in sulfur as compared to conventional jet fuel, reducing the emissions of this conventional pollutant."

Southwest recognizes the critical role that commercially viable SAF will play in the carrier's strategy to achieve carbon neutrality by 2050. Southwest is one of the most honored airlines in the world and strives to maintain a steadfast focus on a triple bottom line: People, Performance, and Planet. Learn about Southwest's citizenship efforts and how the carrier gives back to communities across the world by visiting **Southwestonereport.com**.

ABOUT VELOCYS

Velocys is an LSE-listed, international sustainable fuels technology company, traded on the AIM, providing clients with a technology solution to enable the production of negative Carbon Intensity synthetic, drop-in fuels from a variety of waste materials. SAF ('Sustainable Aviation Fuel') is the only commercially available, permanent alternative to fossil aviation fuels.

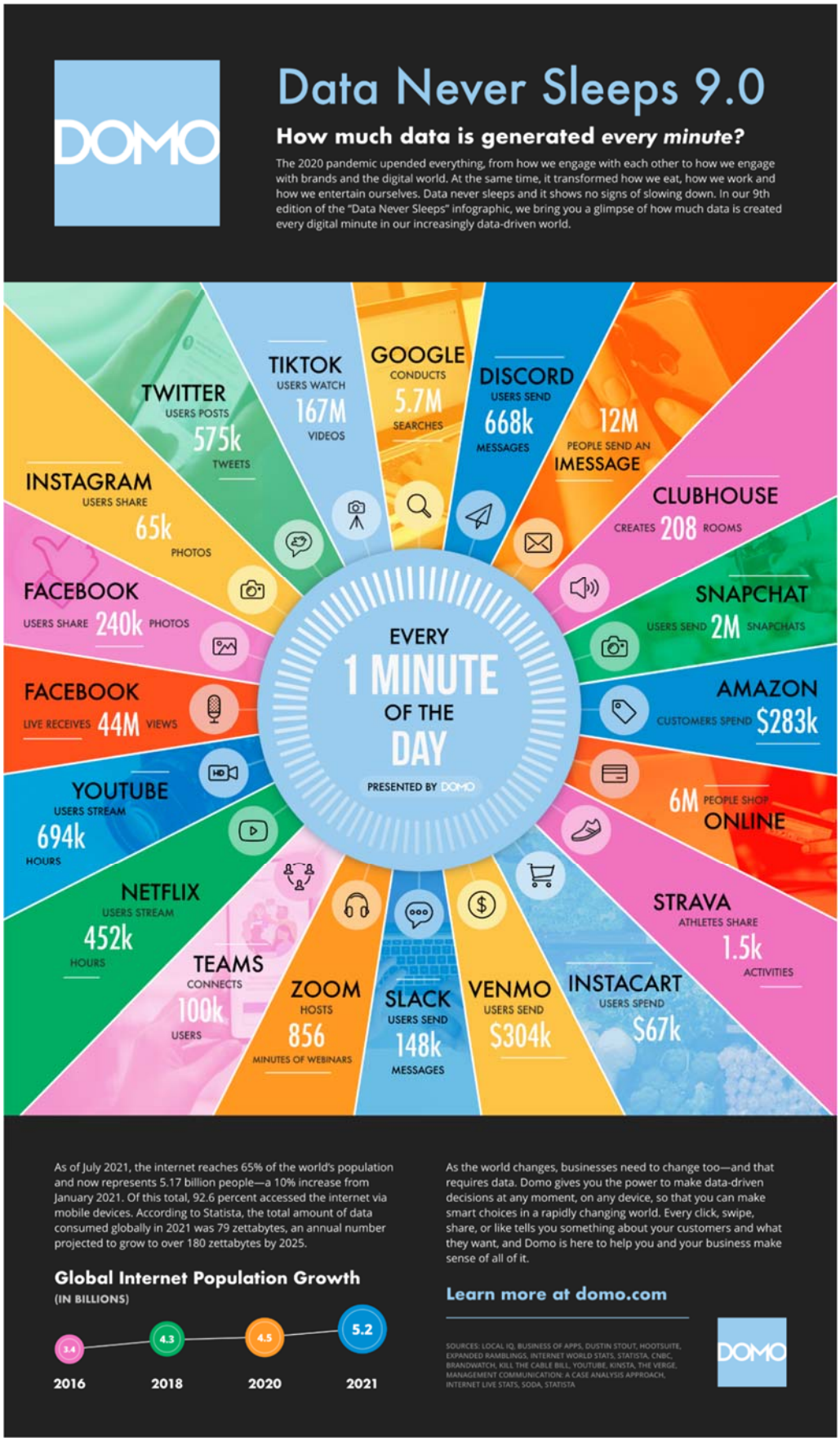
The technology is IP-protected in all major jurisdictions.

Two reference projects in the US and UK (Bayou Fuels and Altalto) are designed to accelerate the adoption and standardize the Velocys proprietary Fischer Tropsch (FT) technology and Bio Energy with CCS solution,

BECCS. Velocys is investing in increased capability to deliver its technology to clients, enabling commercial scale SAF production in response to the mandated fuel transition.

Velocys technology pathway is enabling the next generation of low carbon sustainable fuels with significant additional positive air quality impacts.

www.velocys.com



https://www.visualcapitalist.com/from-amazon-to-zoom-what-happens-in-an-internet-minute-in-2021/

Dan Tsubouchi @Energy_Tidbits · 3h

1/4. "we are witnessing the pendulum effect" view corps have done what they have wanted for yrs, "so concluded that in order to be able to block emissions, corps must be blocked" says @c_descalzi. Supermajors like @eni reallocate substantial capital to #RenewableEnergy.. #OOTT

1 5 2

Show this thread


Dan Tsubouchi @Energy_Tidbits · 3h
3/4. Energy costs have to keep going higher as #Biofuels costs more than #Gasoline, green/blue #Hydrogen costs more than simple transformaton of methane #NatGas so wil "need to compensate for the difference in production costs" .... #OOTT
1
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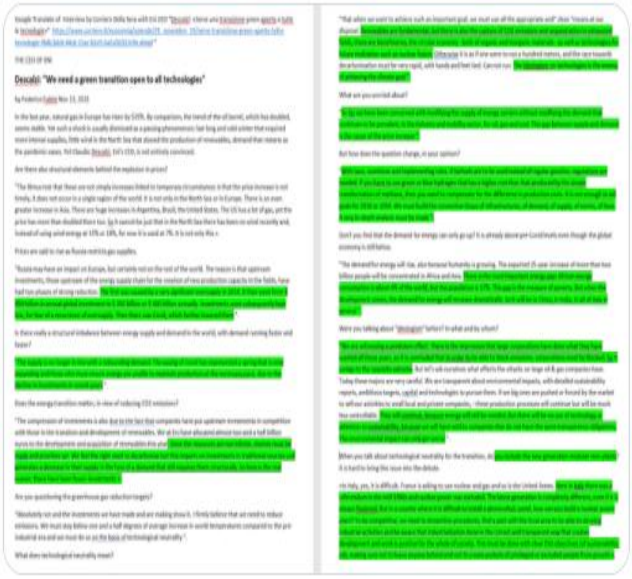
Dan Tsubouchi @Energy_Tidbits · 3h

4/4. "there is the most important energy gap. African energy consumption is about 4% of the world, but the population is 17%" "when development comes, the demand for energy will increase dramatically". #EnergyTransition will cost big $$$. Great interview @federicofubini. #OOTT



Descalzi: "We need a green transition open to all technologies"

2 6

Dan Tsubouchi @Energy_Tidbits · 15h

#Vortexa crude oil floating storage for 11/12 est 83.48 mmb. Down WoW vs revised up 11/05 of 98.43 mmb (was original 91.53). 11/12 is +6.26 mmb vs recent 06/25 trough of 77.22 mmb. But -140.88 mmb vs 06/26/2020 peak of 222.26 mmb. Thx @Vortexa @TheTerminal #OOTT

2 2 7

Dan Tsubouchi @Energy_Tidbits · Nov 13

#Putin "will, of course talk to him on this topic", BY cutting off RU #NatGas "would be a violation of our transit contract & I hope it will not come to that" "not contribute to development of our relations with BY as a transit country". recalled Ukraine did same, hmm! #OOTT

https://tass.ru/obschestvo/12914431
NOV 13, 11:15Updated Nov 13, 02:05

Putin hopes that it will not come to the blocking of the transit of Russian gas by Belarus

The Russian President is going to discuss with his Belarusian counterpart his words about the possibility of blocking gas transit to EU countries

MOSCOW, November 13. / TASS /. Russian President Vladimir Putin hopes that Belarus will not block the transit of Russian gas to the EU.

"In theory, of course, [President of Belarus Alexander] Lukashenko, as the president of a transit country, can probably give an order to cut off our supplies to Europe. Although this would be a violation of our transit contract, and I hope it will not come to that," said the head of the Russian state in an interview with the journalist of the program "Moscow. Kremlin. Putin" Pavel Zarubin. At the same time, the Russian leader drew attention to the fact that against Lukashenko "they always apply and threaten to apply new sanctions."

"But this [blocking gas transit] would cause great damage to the energy sector of Europe, the energy sector of Europe and would not contribute to the development of our relations with Belarus as a transit country," Putin said.

He said that he was going to discuss with his Belarusian counterpart his words about the possibility of cutting off gas transit to the EU countries. "To be honest, this is the first time I hear about this, because I have twice talked with Alexander Grigorievich recently, he never told me about it, did not even hint," the head of state admitted in response to a question about Lukashenka's statement about the possibility block the transit of gas.

"But he can, probably," Putin suggested. At the same time, the President of the Russian Federation stressed that "there is nothing good in this." "I will, of course, talk to him on this topic, if he just said it out in his hearts," the Russian leader assured.

The President of the Russian Federation recalled a similar situation. "But we already have such a practice - with Ukraine. In 2006, God forbid, we were faced with this crisis, when, due to endless disputes over the price of gas and the price of transit, we did not agree with our Ukrainian friends. We were able to agree on the main parameters of these contracts. Everything went so far that Ukraine has blocked our gas, which is intended for consumers in Europe, "- stated Putin. "It's just, as experts say, relatively speaking, the valve was turned on, they simply cut off Russian gas to Europe. It was the same," he said.

Dan Tsubouchi @Energy_Tidbits · Nov 11

"We are heating Europe, they still threaten us that they will close the border. And if we cut off natural gas there?" says Belarus Pres. #Gazprom Yamal-EU has 3.2 bcf/d #NatGas capacity. #OOTT

...

1

Dan Tsubouchi @Energy_Tidbits · Nov 12

"We will surpass our obligations under the transit contract with Ukraine this year. So said so done." says #Gazprom Chairman Miller. wonder by how much? #OOTT #NatGas #LNG

gazprom.com

Alexey Miller, Chairman of the Gazprom Management Committee:

...

3 2

Dan Tsubouchi @Energy_Tidbits · Nov 12

What doesn't belong on this list @AAAnews Big Cities & Beaches for Americans travel during Thanksgiving? #Calgary is only cold place to crack the list. We don't have warm weather/beaches, but it's a great city & #Canmore #Banff in Cdn Rockies are close newsroom.aaa.com/2021/11/buckle...

Excerpt from https://newsroom.aaa.com/2021/11/buckle-up-aaa-predicts-thanksgiving-travel-to-rebound-almost-to-pre-pandemic-levels/

Buckle Up: Thanksgiving Travel to Rebound Almost to Pre-Pandemic Levels

AAA predicts more than 53.4 million people expected to travel, the highest single-year increase since 2005

Ellen EdmondsManager, AAA Public Relations eedmonds@national.aaa.com407-444-8011

11/9/2021

Travelers Headed to Big Cities and Beaches This Thanksgiving

AAA Travel continues to see a strong recovery that began over the summer and will continue into the holiday season. AAA booking data reveals that big cities and tropical destinations are topping travelers' list this Thanksgiving both domestically and abroad:

2021 Top Thanksgiving Destinations

U.S Destinations	International Destinations
Orlando, FL	Cancun, Mexico
Anaheim, CA	Montego Bay, Jamaica
Dallas/Ft. Worth, TX	Aruba
Phoenix, AZ	Los Cabos, Mexico
Honolulu, HI	Nassau, Bahamas
Kahului, Maui, HI	St. Lucia, West Indies
Atlanta, GA	Dublin, Ireland
Tampa, FL	(tie) Tel Aviv, Israel and Calgary, Canada
Ft. Lauderdale, FL	Paris, France

1

Dan Tsubouchi @Energy_Tidbits · Nov 12

Most believe #Oil, #NatGas & #LNG prices will be stronger for longer for 2020s or, like #Rosneft, a supercyle. But only OPEC, RUS, etc can/will spend to grow #Oil production. At least western co's are still investing in #LNG supply. #OOTT

> **Dan Tsubouchi** @Energy_Tidbits · Nov 12
>
> "As structural discrepancies between supply and demand on global energy markets are further revealed, we may witness a new super cycle on the #Oil and #NatGas markets" #Rosneft Sechin. Plan to win in supercycle, increasing capex/supply & still lower debt/up dividends. #OOTT
>
> Excerpt Rosneft Q3 release https://www.rosneft.com/press/releases/item/208379/
>
> Commenting on 9M 2021 financial results Rosneft's Chairman of the Management Board and Chief Executive Officer Igor Sechin said:
>
> *"In the third quarter of 2021 the Company demonstrated a strong financial performance. In the reporting period, we reached a new historic record in terms of EBITDA/boe, while the absolute levels of EBITDA and Free cash flow hit the highest level in the last twelve quarters. Net income in the first nine months of the current year exceeded its level for the entire 2020 by almost five-fold providing a significant potential for an increase in the shareholder distribution. Taking into account the current favorable macroeconomic environment, the growth of the Company's production and sales volumes, as well as the high level of operational and investment efficiency, Rosneft is in a position to demonstrate a further expansion in its profits and cash flow.*
>
> *Despite the uncertainty in the global economy due to the difficult epidemiological situation, we observe a rapid growth in demand for traditional energy resources. As structural discrepancies between supply and demand on global energy markets are further revealed, we may witness a new super cycle on the oil and gas markets. Under these conditions, the Company holds responsible to the consumers of our energy products and increases investments into the new projects. At the same time, the structural growth of capex in the current macroeconomic environment, allows us to both increase the income of shareholders in accordance with the dividend policy and to continue the debt reduction. In November, the Company completed the payment of record interim dividends in its history. At the end of 3Q 2021 Net debt/EBITDA ratio stood at 1.3x compared to 2.3x at the end of 2020, while in the first nine months of 2021 the absolute amount of Net financial debt and trading liabilities decreased by USD 8.4 bln."*

1 1

Dan Tsubouchi @Energy_Tidbits · Nov 12

"As structural discrepancies between supply and demand on global energy markets are further revealed, we may witness a new super cycle on the #Oil and #NatGas markets" #Rosneft Sechin. Plan to win in supercycle, increasing capex/supply & still lower debt/up dividends. #OOTT

Excerpt Rosneft Q3 release https://www.rosneft.com/press/releases/item/208379/

Commenting on 9M 2021 financial results Rosneft's Chairman of the Management Board and Chief Executive Officer Igor Sechin said:

"In the third quarter of 2021 the Company demonstrated a strong financial performance. In the reporting period, we reached a new historic record in terms of EBITDA/boe, while the absolute levels of EBITDA and Free cash flow hit the highest level in the last twelve quarters. Net income in the first nine months of the current year exceeded its level for the entire 2020 by almost five-fold providing a significant potential for an increase in the shareholder distribution. Taking into account the current favorable macroeconomic environment, the growth of the Company's production and sales volumes, as well as the high level of operational and investment efficiency, Rosneft is in a position to demonstrate a further expansion in its profits and cash flow.

Despite the uncertainty in the global economy due to the difficult epidemiological situation, we observe a rapid growth in demand for traditional energy resources. As structural discrepancies between supply and demand on global energy markets are further revealed, we may witness a new super cycle on the oil and gas markets. Under these conditions, the Company holds responsible to the consumers of our energy products and increases investments into the new projects. At the same time, the structural growth of capex in the current macroeconomic environment, allows us to both increase the income of shareholders in accordance with the dividend policy and to continue the debt reduction. In November, the Company completed the payment of record interim dividends in its history. At the end of 3Q 2021 Net debt/EBITDA ratio stood at 1.3x compared to 2.3x at the end of 2020, while in the first nine months of 2021 the absolute amount of Net financial debt and trading liabilities decreased by USD 8.4 bln."

2 6 12

Dan Tsubouchi @Energy_Tidbits · Nov 11

Great to see a top 🇨🇦 footballer, Olympic gold medalist @janinebeckie, featured in UK media. She plays for one of the big clubs @ManCity. Reminds to give shout out to last Cdn to play for @ManCity in @premierleague - @terry_dunfield in 2000-02.

theguardian.com

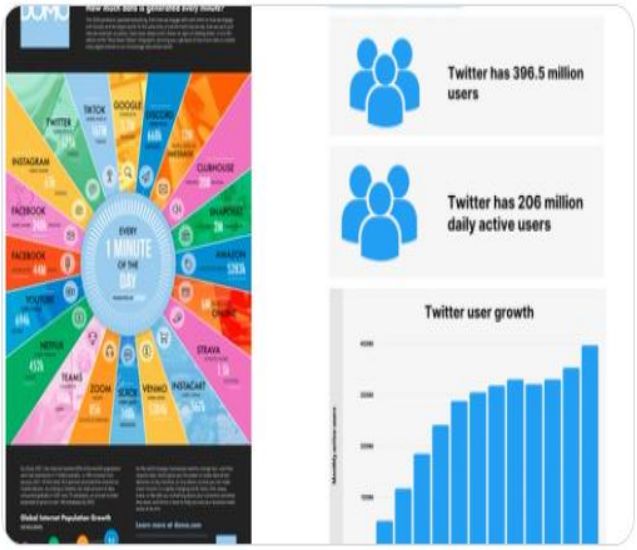
Manchester City's Janine Beckie: 'I've needed thicker skin living over ...

Olympic gold-winning forward on feeling both Canadian and American, her faith and why she is sure City's fortunes will turn

2

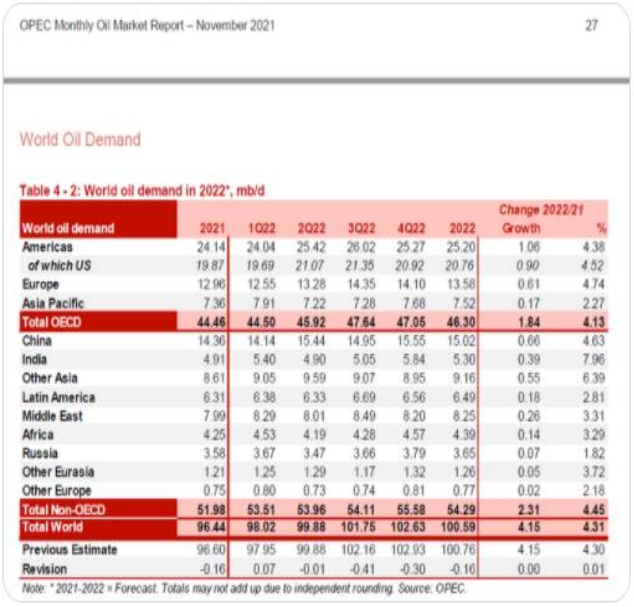
Dan Tsubouchi @Energy_Tidbits · Nov 11

Here is why #AI is essential to market followers. 5.2b people now internet connected, @Twitter has 206 million daily active users & 575,000 tweets/minute. if 1/10th of 1% were noteable for some reason to markets, that is 575 tweets/minute. #OOTT Thx @@VisualCap @backlinko



Dan Tsubouchi @Energy_Tidbits · Nov 11

Overlooked positive for #OilDemand from #OPEC MOMR. Yes, OPEC fcasts 2022 demand average 100.59 mmb/d, up 0.83 mmb/d vs pre-Covid 2019 99.76 mmb/d. But even bigger relative increase to exit 2022, OPEC fcasts Q4/22 at 102.63 mmb/d, +~1.8 mmb/d vs Q4/19 of ~100.8 mmb/d. #OOTT



OPEC Monthly Oil Market Report – November 2021 27

World Oil Demand

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

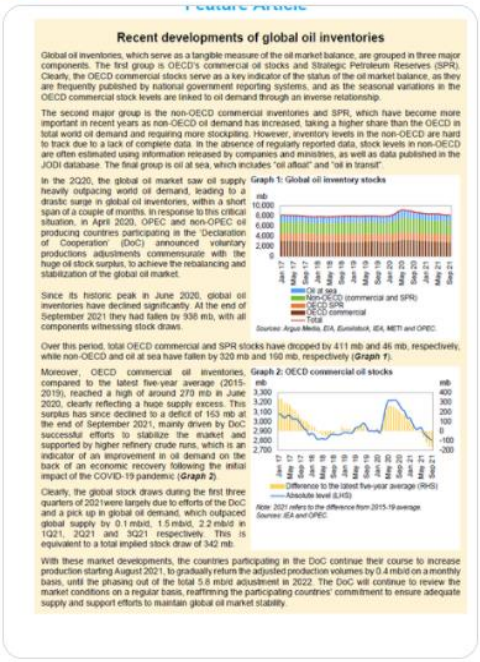
World oil demand	2021	1Q22	2Q22	3Q22	4Q22	2022	Change 2022/21 Growth	%
Americas	24.14	24.04	25.42	26.02	25.27	25.20	1.06	4.38
of which US	*19.87*	*19.69*	*21.07*	*21.35*	*20.92*	*20.76*	*0.90*	*4.52*
Europe	12.96	12.55	13.28	14.35	14.10	13.58	0.61	4.74
Asia Pacific	7.36	7.91	7.22	7.28	7.68	7.52	0.17	2.27
Total OECD	**44.46**	**44.50**	**45.92**	**47.64**	**47.05**	**46.30**	**1.84**	**4.13**
China	14.36	14.14	15.44	14.95	15.55	15.02	0.66	4.63
India	4.91	5.40	4.90	5.05	5.84	5.30	0.39	7.96
Other Asia	8.61	9.05	9.59	9.07	8.95	9.16	0.55	6.39
Latin America	6.31	6.38	6.33	6.69	6.56	6.49	0.18	2.81
Middle East	7.99	8.29	8.01	8.49	8.20	8.25	0.26	3.31
Africa	4.25	4.53	4.19	4.28	4.57	4.39	0.14	3.29
Russia	3.58	3.67	3.47	3.66	3.79	3.65	0.07	1.82
Other Eurasia	1.21	1.25	1.29	1.17	1.32	1.26	0.05	3.72
Other Europe	0.75	0.80	0.73	0.74	0.81	0.77	0.02	2.18
Total Non-OECD	**51.98**	**53.51**	**53.96**	**54.11**	**55.58**	**54.29**	**2.31**	**4.45**
Total World	**96.44**	**98.02**	**99.88**	**101.75**	**102.63**	**100.59**	**4.15**	**4.31**
Previous Estimate	96.60	97.95	99.88	102.16	102.93	100.76	4.15	4.30
Revision	-0.16	0.07	-0.01	-0.41	-0.30	-0.16	0.00	0.01

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

2 9

Dan Tsubouchi @Energy_Tidbits · Nov 11

#Saudi Energy Minister Abdulaziz is The Man, led #OPEC+ to a stronger #Oil market vs pre-Covid. Since historic peak Jun 20 peak, global #Oil stocks down 938 million bbl incl OECD commerical -411 mmb, OECD SPR -46 mmb, non-OECD -320 mmb & oil at sea -160 mmb says #OPEC MOMR. #OOTT



Feature Article

Recent developments of global oil inventories

Global oil inventories, which serve as a tangible measure of the oil market balance, are grouped in three major components. The first group is OECD's commercial oil stocks and Strategic Petroleum Reserves (SPR). Clearly, the OECD commercial stocks serve as a key indicator of the status of the oil market balance, as they are frequently published by national government reporting systems, and as the seasonal variations in the OECD commercial stock levels are linked to oil demand through an inverse relationship.

The second major group is the non-OECD commercial inventories and SPR, which have become more important in recent years as non-OECD oil demand has increased, taking a higher share than the OECD in total world oil demand and requiring more stockpiling. However, inventory levels in the non-OECD are hard to track due to a lack of complete data. In the absence of regularly reported data, stock levels in non-OECD are often estimated using information released by companies and ministries, as well as data published in the JODI database. The final group is oil at sea, which includes "oil afloat" and "oil in transit".

In the 2Q20, the global oil market saw oil supply heavily outpacing world oil demand, leading to a drastic surge in global oil inventories, within a short span of a couple of months. In response to this critical situation, in April 2020, OPEC and non-OPEC oil producing countries participating in the 'Declaration of Cooperation' (DoC) announced voluntary productions adjustments commensurate with the huge oil stock surplus, to achieve the rebalancing and stabilization of the global oil market.

Graph 1: Global oil inventory stocks

Sources: Argus Media, EIA, Eurostock, IEA, METI and OPEC.

Since its historic peak in June 2020, global oil inventories have declined significantly. At the end of September 2021 they had fallen by 938 mb, with all components witnessing stock draws.

Over this period, total OECD commercial and SPR stocks have dropped by 411 mb and 46 mb, respectively, while non-OECD and oil at sea have fallen by 320 mb and 160 mb, respectively (**Graph 1**).

Moreover, OECD commercial oil inventories, compared to the latest five-year average (2015-2019), reached a high of around 270 mb in June 2020, clearly reflecting a huge supply excess. This surplus has since declined to a deficit of 153 mb at the end of September 2021, mainly driven by DoC successful efforts to stabilize the market and supported by higher refinery crude runs, which is an indicator of an improvement in oil demand on the back of an economic recovery following the initial impact of the COVID-19 pandemic (**Graph 2**).

Graph 2: OECD commercial oil stocks

Note: 2021 refers to the difference from 2015-19 average.
Sources: IEA and OPEC.

Clearly, the global stock draws during the first three quarters of 2021 were largely due to efforts of the DoC and a pick up in global oil demand, which outpaced global supply by 0.1 mb/d, 1.5 mb/d, 2.2 mb/d in 1Q21, 2Q21 and 3Q21 respectively. This is equivalent to a total implied stock draw of 342 mb.

With these market developments, the countries participating in the DoC continue their course to increase production starting August 2021, to gradually return the adjusted production volumes by 0.4 mb/d on a monthly basis, until the phasing out of the total 5.8 mb/d adjustment in 2022. The DoC will continue to review the market conditions on a regular basis, reaffirming the participating countries' commitment to ensure adequate supply and support efforts to maintain global oil market stability.

1 6 7

Dan Tsubouchi @Energy_Tidbits · Nov 11

"We are heating Europe, they still threaten us that they will close the border. And if we cut off natural gas there?" says Belarus Pres. #Gazprom Yamal-EU has 3.2 bcf/d #NatGas capacity. #OOTT

tass.ru/mezhdunarodnay...

https://www.gazprom.com/projects/yamal-europe/

Yamal – Europe

Facts and figures

The gas pipeline construction started in 1994 and in 2006 the Yamal – Europe gas pipeline reached its design capacity of 32.9 billion cubic meters after the last compressor station commissioning. The number of compressor stations at the gas pipeline – 14, the pipe diameter – 1,420 millimeters, the total length – over 2,000 kilometers.

Russian section

The trunkline runs from the Torzhok gas transmission hub in the Tver Oblast where it receives gas from the Northern Tyumen Regions (SRTO) – Torzhok gas pipeline. The Russian section is 402 kilometers long and has three compressor stations: Rzhevskaya, Kholm-Zhirkovskaya and Smolenskaya.

Belarusian section

The 575-kilometer-long pipeline runs across Belarus with 5 compressor stations operational: Nesvizhskaya, Krupskaya, Slonimskaya, Minskaya and Orshanskaya. Gazprom is the sole owner of the Belarusian gas pipeline section.

Polish section

The Polish section consists of a 683-kilometer-long linear part and 5 compressor stations: Ciechanow, Szamotuly, Zambrow, Wloclawek, and Kondratki. This section of the gas pipeline is owned by EuRoPol Gaz.

German section

The westernmost point of the gas pipeline is the Mallnow compressor station near Frankfurt an der Oder in the vicinity of the German-Polish border where the gas pipeline links up with the YAGAL-Nord gas transmission system, which is, in turn, connected to the STEGAL – MIDAL – Rehden UGS gas

4 3

Dan Tsubouchi @Energy_Tidbits · Nov 10

Best sign for #LNGSupplyGap in 2020s. Another Asian LNG buyer wants to lock up long term supply. @SStapczynski says Japan's Hokkaido Gas seeks long term supply for 5-10 yrs from 2025. Since SAF Group 07/14 blog, 5 more Asian long term LNG supply deals totalling 2.19 bcf/d #OOTT

LNG TENDER: Japan's Hokkaido Gas Seeks Long-Term Deal From 2025
2021-11-11 01:20:22.498 GMT

By Stephen Stapczynski
(Bloomberg) -- Hokkaido Gas seeks roughly two cargoes/year for five-10 years from 2025, according to traders with knowledge of the tender.
* Offers due Nov. 19

To contact the reporter on this story:
Stephen Stapczynski in Singapore at sstapczynsk1@bloomberg.net
To contact the editors responsible for this story:
David Stringer at dstringer3@bloomberg.net
Jeff Sutherland

To view this story in Bloomberg click here:
https://blinks.bloomberg.com/news/stories/R2DVDBT0G1KW

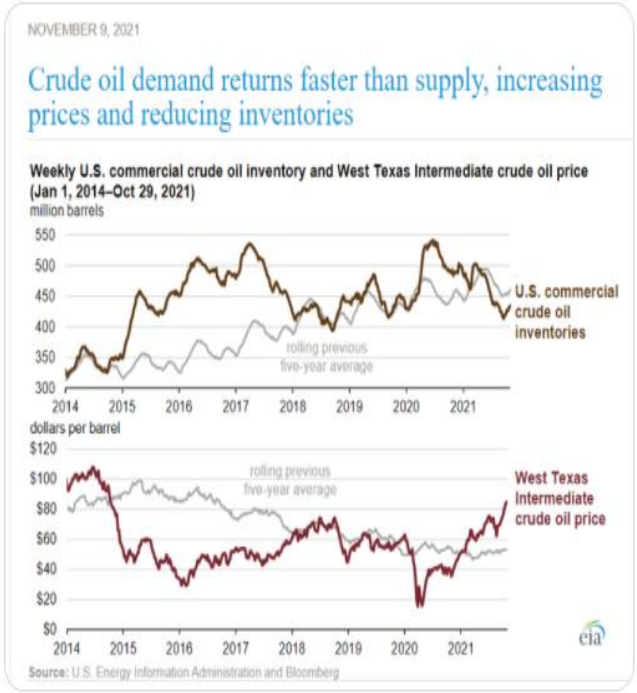
Dan Tsubouchi @Energy_Tidbits · Jul 14

SAF Group blog "Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs" just posted. Hope it helps in your #LNG #NatGas #LNGSupplyGap #OOTT perspective. ...

3 5

Dan Tsubouchi @Energy_Tidbits · Nov 10

A picture is worth a thousand words. US commerical crude oil inventories go down = WTI oil prices go up. And vice versa. Thx @EIAgov #Oil #OOTT



8

Dan Tsubouchi @Energy_Tidbits · Nov 10

"maybe not so good planning by some of the countries for what their energy needs were going to be" is part of why #LNG supply/demand imbalance now says @Cheniere CEO Fusco to @SullyCNBC. #EnergyTransition wasn't thought thru very well so #NatGas will be needed for longer, #OOTT

SAF Group created transcript of excerpt from CNBC Brian Sullivan interview with Cheniere CEO Jack Fusco. https://www.cnbc.com/video/2021/11/10/cheniere-ceo-jack-fusco-on-the-global-energy-crisis.html

Items in "*italics*" are SAF Group created transcript

Brian Sullivan: "...in your career, Jack, have you seen a period where demand was this strong, suddenly?"

Jack Fusco: "*No, this is the first time we've seen this type of demand pull, which is why prices in Asia and in Europe are 300% more than they were a year before. So we, we always knew that the energy transition was going to be a long road. That it was going to take everything to make it happen. it's going to take natural gas, wind, solar, eventually hydrogen or some other technology that we just don't even know about, yet. So we were expecting demand growth in liquefied natural gas. Our estimates were that we would see this type of supply and demand imbalance sometime in 2023, and its actually happened now, I think a lot of that is just pure economic recovery, some weather, and maybe not so good planning by some of the countries for what their energy needs were going to be.*"

Prepared by SAF Group https://safgroup.ca/news-insights/

Dan Tsubouchi @Energy_Tidbits · Nov 10

#LNGSupplyGap. Originally thought the LNG supply/demand imbalance would be in 2023 but its happening now says @Cheniere CEO Fusco to @SullyCNBC a few minutes ago. Not the exact quote but close enough. #OOTT #NatGas

2 3 6

Dan Tsubouchi @Energy_Tidbits · Nov 10

For those not near their laptop, @EIAgov weekly #Oil #Gasoline #Distillates inventory data as of Nov 5 just released. Prior to release, WTI was US$83.75. #OOTT

ir.eia.gov/wpsr/overview....

s Inventory Nov 5: EIA, Bloomberg Survey Expectations			
ls)	EIA	Expectations	
	1.00	1.60	
	-1.56	-1.25	
	-2.61	-1.00	
	-3.17	-0.65	
cluded in the above was 3.1 mmb draw from SPR for Nov 5			
d in the data, Cushing had a draw of 34,000 barrels Nov 5			
Bloomberg			
SAF Group			

1

Dan Tsubouchi @Energy_Tidbits · Nov 10

Will this be "clarified" today? If not, reduces risk to $ENB #Line5. US/Can discussions on #Line5 "shouldn't be viewed as anything more than that & certainly not an indicator that the US govt is considering shutdown. That is something that we're not going to do" @KJP46 #OOTT

Excerpts from https://www.whitehouse.gov/briefing-room/press-briefings/2021/11/09/press-briefing-by-principal-deputy-press-secretary-karine-jean-pierre-and-commerce-secretary-gina-raimondo/

Press Briefing by Principal Deputy Press Secretary Karine Jean-Pierre and Commerce Secretary Gina Raimondo

NOVEMBER 09, 2021 PRESS BRIEFINGS

Q Okay. Thank you.
MS. JEAN-PIERRE: Yeah, no problem.
Go ahead.
Q Thanks, Karine. With respect to the Line 5 pipeline replacement, is one of the possible outcomes from whatever happens after the study a reduced output?
MS. JEAN-PIERRE: So, let me — I — I'm going to use this opportunity to have some clarification here. So, I think there was some confusion yesterday about the Line 5, so I just want to clarify again.
So, Peter's question yesterday was about the current Line 5 — your colleague. And on the current pipeline, as you know, the State of Michigan is objecting to the continued use of its easement for the current pipeline. Additionally, Canada has decided to invoke the dispute resolution provision of the 1977 Transit Pipelines Treaty on the current pipeline.
We expect that both the U.S. and Canada will engage constructively in those negotiations. Canada is a close ally — a key partner in energy trade as well as efforts to address the climate crisis and protect the environment. These negotiations and discussions between the two countries shouldn't be viewed as anything more than that and certainly not an indicator that the U.S. government is considering shutdown. That is something that we're not going to do.
As it relates to the current pipeline: In addition to those negotiations, the current pipeline is subject to litigation between Enbridge and the State of Michigan. And those parties can speak more to the process.
So, what I — what I think confused some folks here is that there are — there are, as a result, a consent decree — as a result, there is a suggested potential replacement for a portion of the Line 5.
The Army Corps of Engineers announced an environmental impact study of that potential replacement in June, which is what I was talking about yesterday. And that's the study I mentioned.
And so, that was announced in June and is about the potential replacement, not the current line — which is what Peter had asked yesterday.
So, again, nothing new to share on the current line. We expect the U.S. and Canada to engage constructively on it.
I don't have anything else to share about that.
Q But — but knowing that the current pipeline needs to be replaced and that there is this study ongoing, would a possible outcome from that study be a choice that limits output?
And also, what's the timeline for that study? I had seen some reporting that a decision could come after the reconciliation vote, and that could be as soon as next week.
MS. JEAN-PIERRE: I don't have a timeline on the study. Again, this is the Army Corps of Engineers who are taking this under. I don't have anything more to share.

1 2

Dan Tsubouchi @Energy_Tidbits · Nov 10

#LNGSupplyGap. Originally thought the LNG supply/demand imbalance would be in 2023 but its happening now says @Cheniere CEO Fusco to @SullyCNBC a few minutes ago. Not the exact quote but close enough. #OOTT #NatGas

3 4

Dan Tsubouchi @Energy_Tidbits · Nov 9

Support for #LNG #NatGas prices in Nov/Dec. 1st snowfall in Seoul, 30 days earlier than 2020, 10 days earlier than 30-yr ave. @KMA_Skylove_eng forecasts normal to below normal temp for next 30 days. #OOTT

https://www.koreatimes.co.kr/www/nation/2021/11/281_319510.html

Seoulites wake up to first snow of season, one month earlier than last year

Posted : 2021-11-10 09:38 Updated : 2021-11-10 09:38

Seoul received the first snowfall of the season Wednesday morning, about a month earlier than last year, the state weather agency said.

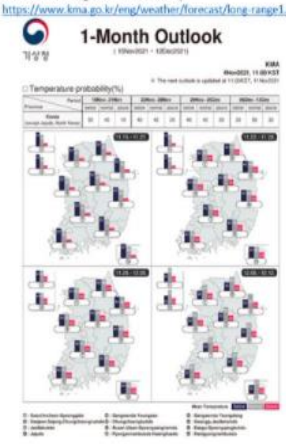
The Korea Meteorological Administration (KMA) said light snow was observed at the Songpa-dong weather observation station in central Seoul at 6:10 a.m. The KMA records the first snow seen at the Songpa-dong observatory as Seoul's first snow of the season every year.

This year's first snow came in Seoul 30 days earlier than last year, when it fell on Dec. 10, and 10 days earlier than the average of the capital's first snow days from 1991-2020, which is Nov. 20.

The broad capital area also saw light snowfall this morning. (Yonhap)

Korea Meteorological Administration

https://www.kma.go.kr/eng/weather/forecast/long-range1.jsp



1 4 7

Dan Tsubouchi @Energy_Tidbits · Nov 9

2020s should be good for #Oil #NatGas. 🇯🇵 need to have "measures with pragmatic time frame" on acceleration of decarbonization efforts. @fbirol says need more investment to meet future #Oil #NatGas demand that won't "dramatically decrease", wonder if he sees it increasing? #OOTT

https://www.mofa.go.jp/press/release/press1e_000227.html

Video conference between Ms. Ono, Director General of Economic Affairs Bureau, Ministry of Foreign Affairs of Japan, and Dr. Birol, Executive Director of the International Energy Agency (IEA)

e-mail

November 9, 2021

Japanese

On November 9, Ms. ONO Hikariko, Director General of Economic Affairs Bureau, held a videoconference with Dr. Fatih Birol, Executive Director of the IEA.

1. At the outset, Ms. Ono expressed concern over the rapid surge in crude oil prices, which could hamper the global economic recovery from COVID-19. She stated that Japan is engaged in dialogues with oil-producing countries and would like to work closely with the IEA, which plays a central role in stabilizing the energy market.
2. In his response, Dr. Birol mentioned that he is closely watching the energy market including oil, and expressed the IEA's willingness to cooperate with member countries and oil-producing countries to work for stabilization of market. He also shared with Ms. Ono the IEA's analysis of the future energy market following the results of the OPEC Plus Ministerial Meeting held on November 4, 2021. He pointed out that the gap between supply and demand will continue to be tight in the short term, however, the supply and demand balance will improve around the turn of the year and the market will gradually regain stability.
   Furthermore, he underscored the need for additional investment to meet future demand, explaining that the demand for oil and natural gas will not drastically decrease even through our path towards transition to renewable energy. The two sides agreed to further strengthen cooperation to enhance energy security, including that of oil. Dr. Birol expressed his wish to visit Japan to exchange views with Japanese counterparts.
3. The two sides also exchanged views on acceleration of decarbonization efforts following COP26, and shared the importance on measures with pragmatic time frame based on individual circumstances that each countries face including its renewable energy potentials, while it is important to expand investment on renewable energy to achieve carbon neutral. In addition, the two sides frankly exchanged their views on Japan's funded initiative with the IEA for clean energy transition in resource producing countries, as well as on the Ministerial meeting scheduled to be held in February 2022.

3 2

Dan Tsubouchi @Energy_Tidbits · Nov 9

Does #Macron hope can avoid yrs of energy crisis/high prices if a realistic #EnergyTransition. "We will be able to build a credible strategy for reducing our CO2 emissions, compatible with our industrial & technological sovereignty" @EmmanuelMacron #OOTT elysee.fr/emmanuel-macro...

> **Dan Tsubouchi** @Energy_Tidbits · Oct 30
>
> Oops, #Macron on #EnergyTransition "ironic, because we are building a system where in the medium & long term fossil energy will cost more & more, that's what we want to [to fight climate change]". 2020s will be very good for #Oil #NatGas prices. Great report @labboudles #OOTT twitter.com/labboudles/sta...

Excerpt https://www.ft.com/content/8385f5d8-b045-46a7-a822-47a9ba09e219

Macron warns of threat to global economy from energy crisis

French president urges world leaders to act on climate change with more financial pledges ahead of COP26 summit

President Macron at the Elysée Palace on Friday © Miquel Dalmau/EPT

Leila Abboud in Paris and **Leslie Hook** in London YESTERDAY

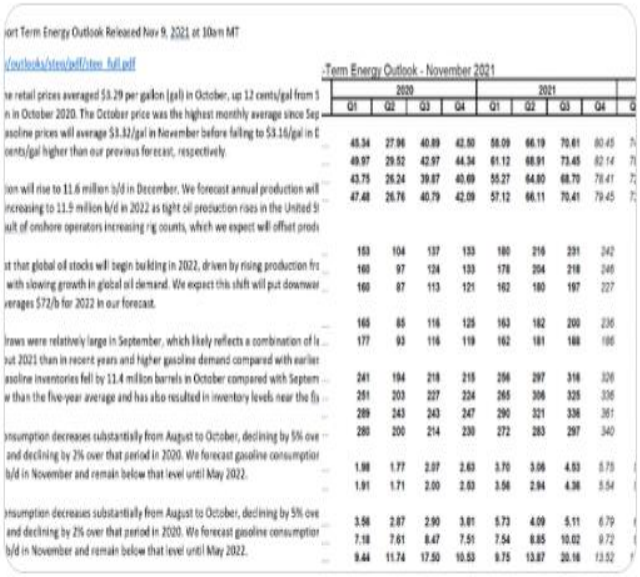
Macron called for Europe to develop a more diverse gas supply but also to speed up a transition away from fossil fuels, which will be necessary to slow rising temperatures and tame the climate disruptions caused by global warming.

"What is happening now is ironic, because we are building a system where in the medium and long term fossil energy will cost more and more, that's what we want [to fight climate change]," he said. "The problem is that industries and households will need to be accompanied in this transition . . . or it won't be sustainable."

1 2 3

Dan Tsubouchi @Energy_Tidbits · Nov 9

If @EIAgov Short Term Energy Outlook is the guide for @SecGranholm @POTUS, then don't have to release #SPR unless they want a faster impact on #Oil #Gasoline prices as STEO seems to call Nov (right now) the peak. See below excerpts #OOTT eia.gov/outlooks/steo/...



ort Term Energy Outlook Released Nov 9, 2021 at 10am MT

/outlooks/steo/pdf/steo_full.pdf

e retail prices averaged $3.29 per gallon (gal) in October, up 12 cents/gal from S
n in October 2020. The October price was the highest monthly average since Sep
asoline prices will average $3.32/gal in November before falling to $3.16/gal in D
ents/gal higher than our previous forecast, respectively.

ion will rise to 11.6 million b/d in December. We forecast annual production will
increasing to 11.9 million b/d in 2022 as tight oil production rises in the United St
ult of onshore operators increasing rig counts, which we expect will offset produ

t that global oil stocks will begin building in 2022, driven by rising production fro
with slowing growth in global oil demand. We expect this shift will put downwar
verages $72/b for 2022 in our forecast.

raws were relatively large in September, which likely reflects a combination of lo
ut 2021 than in recent years and higher gasoline demand compared with earlier
asoline inventories fell by 11.4 million barrels in October compared with Septem
w than the five-year average and has also resulted in inventory levels near the fiv

nsumption decreases substantially from August to October, declining by 5% ove
and declining by 2% over that period in 2020. We forecast gasoline consumption
b/d in November and remain below that level until May 2022.

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and declining by 2% over that period in 2020. We forecast gasoline consumption
b/d in November and remain below that level until May 2022.

-Term Energy Outlook - November 2021

	2020				2021				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q
	45.34	27.96	40.89	42.50	56.09	66.19	70.61	80.45	7
	49.97	29.52	42.97	44.34	61.12	68.91	73.45	82.14	7
	43.75	26.24	39.87	40.69	55.27	64.80	68.70	78.41	7
	47.48	26.76	40.79	42.09	57.12	66.11	70.41	79.45	7
	153	104	137	133	180	216	231	242	
	160	97	124	133	178	204	218	246	
	160	87	113	121	162	180	197	227	
	165	85	116	125	163	182	200	236	
	177	93	116	119	162	181	188	186	
	241	194	218	215	256	297	316	326	
	251	203	227	224	265	306	325	336	
	259	243	243	247	290	321	336	361	
	280	200	214	230	272	283	297	340	
	1.98	1.77	2.07	2.63	3.70	3.06	4.53	5.75	
	1.91	1.71	2.00	2.53	3.56	2.94	4.36	5.54	
	3.56	2.87	2.90	3.81	5.73	4.09	5.11	6.79	
	7.18	7.61	8.47	7.51	7.54	8.85	10.02	9.72	
	9.44	11.74	17.50	10.53	9.75	13.87	20.16	13.52	

2

Dan Tsubouchi @Energy_Tidbits · Nov 9

Just out, @EIAgov Short Term Energy Outlook for Nov. here is what they forecast on US #Gasoline prices and US #Oil production. #OOTT

eia.gov/outlooks/steo/...

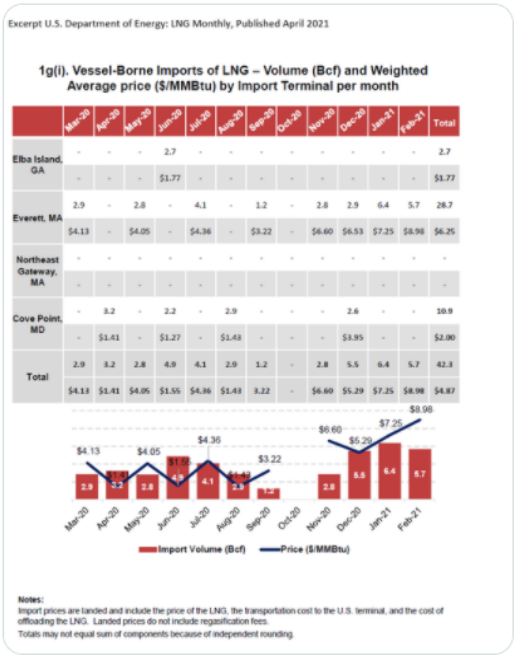
- U.S. regular gasoline retail prices averaged $3.29 per gallon (gal) in October, up 12 cents/gal from September, and $1.13/gal higher than in October 2020. The October price was the highest monthly average since September 2014. We forecast that retail gasoline prices will average $3.32/gal in November before falling to $3.16/gal in December, which are 16 cents/gal and 11 cents/gal higher than our previous forecast, respectively.

- U.S. crude oil production averaged an estimated 11.4 million b/d in October, up from 10.7 million b/d in September as a result of production increases following disruptions from Hurricane Ida. We forecast production will rise to 11.6 million b/d in December. We forecast annual production will average 11.1 million b/d in 2021, increasing to 11.9 million b/d in 2022 as tight oil production rises in the United States. Growth will come largely as a result of onshore operators increasing rig counts, which we expect will offset production decline rates.

2

Dan Tsubouchi @Energy_Tidbits · Nov 9

if @POTUS @SecGranholm want to help on winter #NatGas home heating costs, how about waiving #JonesAct so NE US aren't forced to import #LNG at high spot LNG prices & can try for US LNG from Gulf Coast. @BrynneKKelly recaps NE US LNG imports at cornerstoneglobalcommodities.com/post/energy-ma... #OOTT



Excerpt U.S. Department of Energy: LNG Monthly, Published April 2021

1g(i). Vessel-Borne Imports of LNG – Volume (Bcf) and Weighted Average price ($/MMBtu) by Import Terminal per month

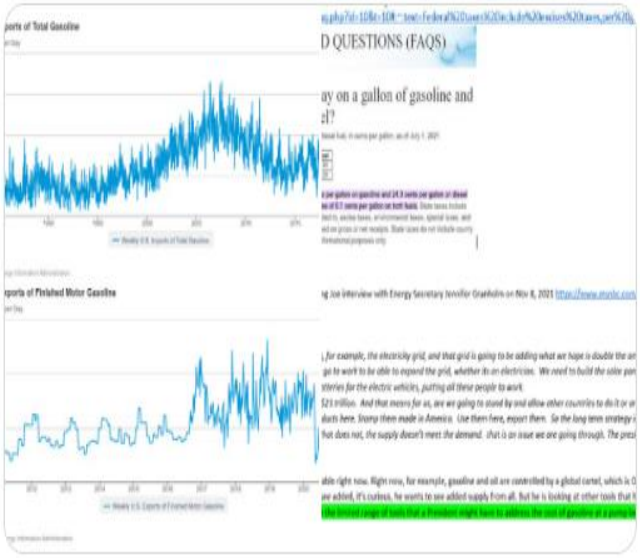
	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Total
Elba Island, GA	-	-	-	2.7	-	-	-	-	-	-	-	-	2.7
	-	-	-	$1.77	-	-	-	-	-	-	-	-	$1.77
Everett, MA	2.9	-	2.8	-	4.1	-	1.2	-	2.8	2.9	6.4	5.7	28.7
	$4.13	-	$4.05	-	$4.36	-	$3.22	-	$6.60	$6.53	$7.25	$8.98	$6.25
Northeast Gateway, MA	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
Cove Point, MD	-	3.2	-	2.2	-	2.9	-	-	-	2.6	-	-	10.9
	-	$1.41	-	$1.27	-	$1.43	-	-	-	$3.95	-	-	$2.00
Total	2.9	3.2	2.8	4.9	4.1	2.9	1.2	-	2.8	5.5	6.4	5.7	42.3
	$4.13	$1.41	$4.05	$1.55	$4.36	$1.43	3.22	-	$6.60	$5.29	$7.25	$8.98	$4.87

Notes:
Import prices are landed and include the price of the LNG, the transportation cost to the U.S. terminal, and the cost of offloading the LNG. Landed prices do not include regasification fees.
Totals may not equal sum of components because of independent rounding.

5 8

Dan Tsubouchi @Energy_Tidbits · Nov 9

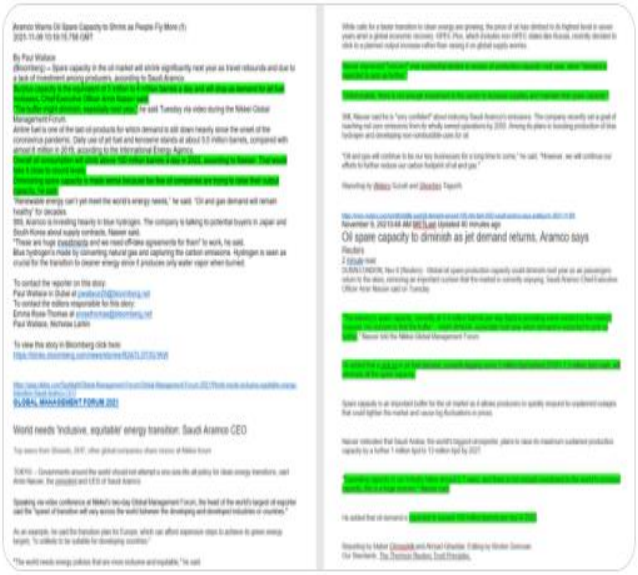
#Biden has "limited range of tools" to address the cost of #Gasoline says @SecGranholm. Why not #JonesAct waivers so any tanker can "export" US gasoline, distillates, etc to US ports & replace higher cost imports of gasoline? also how about federal excise tax reduction? #OOTT



1 6

Dan Tsubouchi @Energy_Tidbits · Nov 9

#SaudiAramco CEO Nasser reminds why bullish & volatile #Oil price set up for 2020s even if demand doesn't increase. Hasn't been enough capex to maintain/increase global surplus capacity and that buffer will be going. Thx @PaulWallace123 @MaherChmaytelli @aghaddar @watarsuzu #OOTT



Aramco Warns Oil Spare Capacity to Shrink as People Fly More (1)
2021-11-09 10:16:15.758 GMT

By Paul Wallace
(Bloomberg) -- Spare capacity in the oil market will shrink significantly next year as travel rebounds and due to a lack of investment among producers, according to Saudi Aramco.

Aramco Warns Oil Spare Capacity to Shrink as People Fly More (2)

GLOBAL MANAGEMENT FORUM 2021

World needs 'inclusive, equitable' energy transition: Saudi Aramco CEO

Oil spare capacity to diminish as jet demand returns, Aramco says

Reuters
2 minute read

7

20

Dan Tsubouchi @Energy_Tidbits · Nov 8

Here are the excerpts from the White House transcript of @KJP46 comments on Enbridge #Line5 #OOTT

Excerpts from https://www.whitehouse.gov/briefing-room/press-briefings/2021/11/08/press-briefing-by-principal-deputy-press-secretary-karine-jean-pierre-and-secretary-of-transportation-pete-buttigieg/

Press Briefing by Principal Deputy Press Secretary Karine Jean-Pierre and Secretary of Transportation Pete Buttigieg

NOVEMBER 08, 2021 • PRESS BRIEFINGS

Q Thank you. The Energy Secretary says, about the cost of Americans heating their homes in the winter, "It will be more expensive this year than last year." So, why is the administration now considering shutting down the Line 5 pipeline from Canada to Michigan?
MS. JEAN-PIERRE: So, Peter, that is inaccurate. That is not com- — that is not right. So, any reporting indicating that some decision has been made, again, is not accurate.
But what I will say is — I'll lay this out for you for a little bit here: Where we are at — where we are is — with this is that Canada has decided to invoke, dispute resolution provisions of the 1977 Transit Pipelines treaty.

We expect that both the U.S. and Canada will engage constructively in those negotiations. In addition to being one of the closest allies, Canada remains a key U.S. partner in energy trade, as well as efforts to address climate change and protect the environment.

I will also add this, too: is that the current — the current Line 5 pipeline is subject to litigation between Enbridge and the state of Michigan.

So, again, I would — it is inaccurate what you just stated, but —
Q What's inaccurate?
MS. JEAN-PIERRE: The reporting. The reporting about us wanting to shut down the Line 5.
Q I didn't say "wanting." I said, is it being studied right now? Is the administration studying the impact of shutting down —
MS. JEAN-PIERRE: Yeah.

Q — the Line 5?
MS. JEAN-PIERRE: Yes, we are. We are. That —
Q So then what's inaccurate?
MS. JEAN-PIERRE: Well, I thought you were saying that we were going to shut it down.
Q No.
MS. JEAN-PIERRE: But that is — that is not inaccurate.
Q Just asking.
MS. JEAN-PIERRE: Okay. Great. Great, great, great. But the Army Corps of Engineers is preparing an environmental impact to look through this.

Q — clarify what you said.

MS. JEAN-PIERRE: No, no, happy to.

So, the Army Corps of Engineers is preparing an environmental impact statement on Line Five and the construction of that replacement line.

Q Right.

MS. JEAN-PIERRE: So that is at issue here.

The EIS will help inform any additional action or position the U.S. will be taking on the replacement of Line Five. This is a — consistent with the President Biden's commitment that every infrastructure project — potential pipelines very much include — included must undergo a full and fair review that considers the environmental impact that those projects would have.

And so, you know, any other further information on that, I would refer you to the Army Corps of Engineers.

Q Is it fair to say the administration is waiting on the result of —

MS. JEAN-PIERRE: We're waiting, right?

Q — the review?

MS. JEAN-PIERRE: There is a review, and we're waiting.

> **Dan Tsubouchi** @Energy_Tidbits · Nov 8
>
> "Canada has decided to invoke, dispute resolution provisions of the 1977 Transit Pipelines Treaty. We expect that both the U.S. and Canada will engage
> constructively in those negotiations" on #Line5 says @KJP46. Is this 1st confirmation by US that they will be negotiating? #OOTT

2 2 4

Dan Tsubouchi @Energy_Tidbits · Nov 8

"Canada has decided to invoke, dispute resolution provisions of the 1977 Transit Pipelines Treaty. We expect that both the U.S. and Canada will engage

constructively in those negotiations" on #Line5 says @KJP46. Is this 1st confirmation by US that they will be negotiating? #OOTT

1 2 10

Dan Tsubouchi @Energy_Tidbits · Nov 8

"yes we have a short term cost issue because the economy is still coming back on ...the supply doesn't meet the demand" says @SecGranholm. 🇺🇸 🇨🇦 voters weren't warned #EnergyTransition will happen but will lead to higher #Oil #NatGas #Electricity prices for yrs to come #OOTT

SAF Group created transcript of excerpts from MSNBC Morning Joe interview with Energy Secretary Jennifer Granholm on Nov 8, 2021 https://www.msnbc.com/morning-joe

Items in *"italics"* are SAF Group created transcript

At 0:50 min mark. Granholm *"... we are going to be expanding, for example, the electricity grid, and that grid is going to be adding what we hope is double the amount of renewable energy in order to meet the President's goal. What does that mean? That means that people have to go to work to be able to expand the grid, whether its an electrician. We need to build the solar panels and not just rely upon China in supplying them. That means we got to build those solar panels here. We got to build the batteries for the electric vehicles, putting all these people to work.*

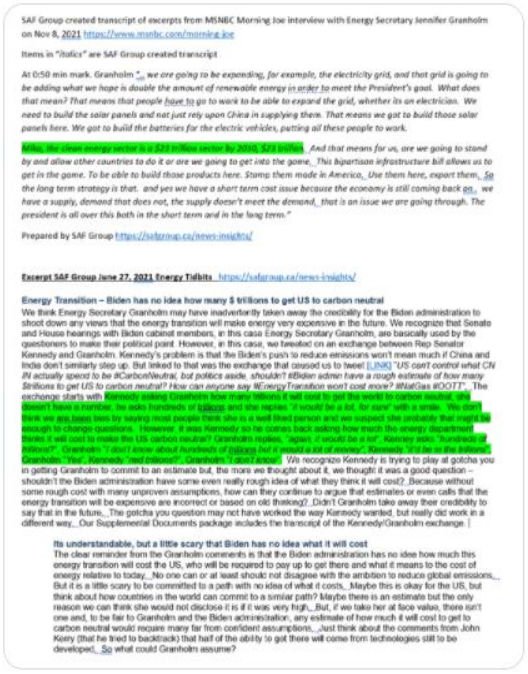
Mika, the clean energy sector is a $23 trillion sector by 2030, $23 trillion. And that means for us, are we going to stand by and allow other countries to do it or are we going to get into the game... This bipartisan infrastructure bill allows us to get in the game. To be able to build those products here. Stamp them made in America... Use them here, export them. So the long term strategy is that. and yes we have a short term cost issue because the economy is still coming back on... we have a supply, demand that does not, the supply doesn't meet the demand. that is an issue we are going through. The president is all over this both in the short term and in the long term."

Prepared by SAF Group https://safgroup.ca/news-insights/

1 2

Dan Tsubouchi @Energy_Tidbits · Nov 8

#CleanEnergy sector is a $23T sector by 2030 says @SecGranholm to @morningmika. Is $23T the #Biden cost estimate for US to be carbon neutral that she wouldn't say in June to @SenJohnKennedy? See SAF June 27 Energy Tidbits. #EnergyTransition will cost big big money. #OOTT



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Mika, the clean energy sector is a $23 trillion sector by 2030, $23 trillion. And that means for us, are we going to stand by and allow other countries to do it or are we going to get into the game. This bipartisan infrastructure bill allows us to get in the game. To be able to build those products here. Stamp them made in America. Use them here, export them. So the long term strategy is that. and yes we have a short term cost issue because the economy is still coming back on. we have a supply, demand that does not, the supply doesn't meet the demand, that is an issue we are going through. The president is all over this both in the short term and in the long term."

Prepared by SAF Group https://safgroup.ca/news-insights/

Excerpt SAF Group June 27, 2021 Energy Tidbits https://safgroup.ca/news-insights/

Energy Transition – Biden has no idea how many $ trillions to get US to carbon neutral

We think Energy Secretary Granholm may have inadvertently taken away the credibility for the Biden administration to shoot down any views that the energy transition will make energy very expensive in the future. We recognize that Senate and House hearings with Biden cabinet members, in this case Energy Secretary Granholm, are basically used by the questioners to make their political point. However, in this case, we tweeted on an exchange between Rep Senator Kennedy and Granholm. Kennedy's problem is that the Biden's push to reduce emissions won't mean much if China and India don't similarly step up. But linked to that was the exchange that caused us to tweet (LINK) "*US can't control what CN IN actually spend to be #CarbonNeutral, but politics aside, shouldn't #Biden admin have a rough estimate of how many $trillions to get US to carbon neutral? How can anyone say #EnergyTransition won't cost more? #NatGas #OOTT*". The exchange starts with Kennedy asking Granholm how many billions it will cost to get the world to carbon neutral, she doesn't have a number, he asks hundreds or trillions and she replies "*it would be a lot, for sure*" with a smile. We don't think we are being too by saying most people think she is a well liked person and we suspect she probably that might be enough to change questions. However, it was Kennedy so he comes back asking how much the energy department thinks it will cost to make the US carbon neutral? Granholm replies, "*again, it would be a lot*". Kennedy asks "*hundreds of billions?*", Granholm "*I don't know about hundreds of trillions but it would a lot of money*". Kennedy "*Will be in the trillions*" Granholm "*Yes*". Kennedy "*next trillions?*". Granholm "*I don't know*". We recognize Kennedy is trying to play at gotcha you in getting Granholm to commit to an estimate but, the more we thought about it, we thought it was a good question – shouldn't the Biden administration have some even really rough idea of what they think it will cost? Because without some rough cost with many unproven assumptions, how can they continue to argue that estimates or even calls that the energy transition will be expensive are incorrect or based on old thinking?. Didn't Granholm take away their credibility to say that in the future. The gotcha you question may not have worked the way Kennedy wanted, but really did work in a different way. Our Supplemental Documents package includes the transcript of the Kennedy/Granholm exchange.

Its understandable, but a little scary that Biden has no idea what it will cost

The clear reminder from the Granholm comments is that the Biden administration has no idea how much this energy transition will cost the US, who will be required to pay up to get there and what it means to the cost of energy relative to today. No one can or at least should not disagree with the ambition to reduce global emissions. But it is a little scary to be committed to a path with no idea of what it costs. Maybe this is okay for the US, but think about how countries in the world can commit to a similar path? Maybe there is an estimate but the only reason we can think she would not disclose it is if it was very high. But, if we take her at face value, there isn't one and, to be fair to Granholm and the Biden administration, any estimate of how much it will cost to get to carbon neutral would require many far from confident assumptions. Just think about the comments from John Kerry (that he tried to backtrack) that half of the ability to get there will come from technologies still to be developed. So what could Granholm assume?

4

Dan Tsubouchi @Energy_Tidbits · Nov 8

reports china oil imports hit 3yr low in oct but, even though oil is up $1 or $2, china will buy in jan #Oil trading cycle because they need to @vitolnews Asia head mike muller said to @sean_evers on sunday. see below transcript #OOTT

> **Dan Tsubouchi** @Energy_Tidbits · Nov 7
>
> 2/2 China is very much in inventory building mode, its buyers haven't come to table yet to Jan Oil trading cycle, offers now $1/2 higher & "view on the street is they will buy because they need to". See SAF transcript of Muller's comment. Thx @sean_evers. Positive for #Oil. #OOTT
>
> Show this thread

SAF Group created transcript of excerpt from Gulf Intelligence PODCAST: Daily Energy Markets Forum – New Silk Road Nov 7th https://soundcloud.com/user-846530307/podcast-daily-energy-markets-3

Items in *"italics"* are SAF Group created transcript

Sean Evers, Managing Partner Gulf Intelligence

Mike Muller, Head, Vitol Asia

At 20:00 min mark, Evers. *"Just sticking with China for a second on that point of view, a shortage. Clearly they still have a huge, still have a significant amount of oil in storage from stockpiling last year, is there an ability to bring that to for crossing over to power generation? Is there enough coal? What sort of winter does China face from a shortage point of view do you think?*

Muller: *There's a few things there, Sean. Number one, China is a major part of the switching from gas to oil where that is possible. So there's a fleet of LNG trucks that don't make sense to run at spot marginal prices and therefore should be seeing themselves replaced by diesel fleets and so forth. There is coal to gas liquids manufacturing processes, which have been halted as well. China is pretty well the only place in the world that does it. China has gone through a cycle in the last few weeks where there have been shortages and embarrassments in terms of brownouts, traffic lights not working in some of the northern cities to edicts from the central government not to run out. to a depletion of the Australian coal that is still not open for trade but there were stockpiles in China and ships sitting off of China, which have all been sucked in to the tune of one million tons. And a clear build up in LNG stocks. And then there is the oil you refer to. China was going to release about 27 million barrels of oil in three phases. In three chunks of 7 million barrels each, in the months of October, November and December. And we saw the first cycle where only four and bit million barrels of the seven million barrels were awarded. only domestic companies can partake in this of course. And there is no sign of the second release, at present. And there always tends to be a bit of an overtone on price on this, but, if China had a conviction of sticking to what they were going to do , we would have seen the second tender by now. And we have not yet seen it. so my personal view is that China is very much in an inventory building mode because they don't want to be caught short in a colder winter. And they have had extremely high domestic prices. I mean for a couple of weeks in October, China had the world's highest LNG, coal, diesel and gasoline prices. And they very successfully talked this down by policy and by edict a couple weeks back such that the steam got taken out of the whole thing. But you cannot move markets by words, in the end its all about inventories and about behaviour at the spot end of the market. But yes. watch this space. China is very much in a state of flux on NDRC rhetoric and directives versus real demand. And as I said a few minutes ago, there is a bit of a standoff in crude markets where the Chinese buyers for the January trading cycle haven't come to the table yet and are now faced with offers that are $1 or $2 a barrel higher at differentials vs Brent and Dubai than they were a month ago. And the view on the street is they will buy it because they need to."*

Evers: *"They will buy it because they need to. That's not a good position to be in if you are a buyer".*

Prepared by SAF Group https://safgroup.ca/news-insights/

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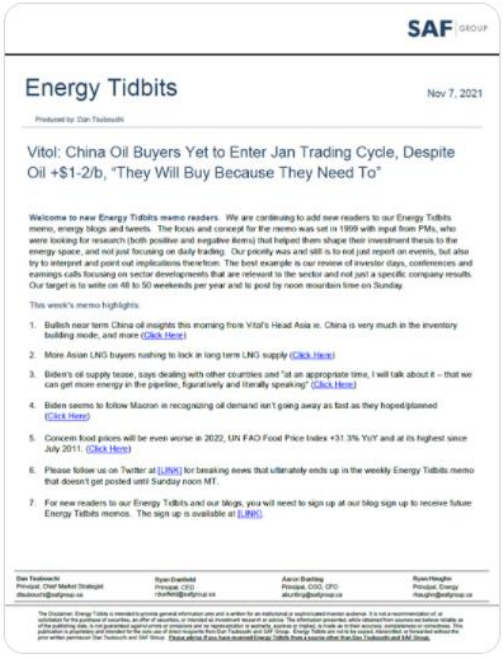
Dan Tsubouchi @Energy_Tidbits · Nov 7

Our weekly SAF Nov 7, 2021 Energy Tidbits memo is posted on our SAF Group website. This 46-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

Nov 7, 2021

Produced by: Dan Tsubouchi

Vitol: China Oil Buyers Yet to Enter Jan Trading Cycle, Despite Oil +$1-2/b, "They Will Buy Because They Need To"

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. Bullish near term China oil insights this morning from Vitol's Head Asia re. China is very much in the inventory building mode, and more (Click Here)
2. More Asian LNG buyers rushing to lock in long term LNG supply (Click Here)
3. Biden's oil supply tease, says dealing with other countries and "at an appropriate time, I will talk about it – that we can get more energy in the pipeline, figuratively and literally speaking" (Click Here)
4. Biden seems to follow Macron in recognizing oil demand isn't going away as fast as they hoped/planned (Click Here)
5. Concern food prices will be even worse in 2022, UN FAO Food Price Index +31.3% YoY and at its highest since July 2011. (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].

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