

Energy Tidbits

April 18, 2021

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Supplemental Documents

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Year-over-year summary

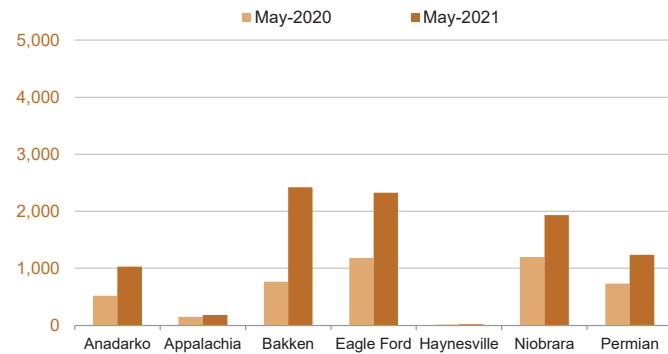
April 2021

Drilling Productivity Report

drilling data through March
projected production through May

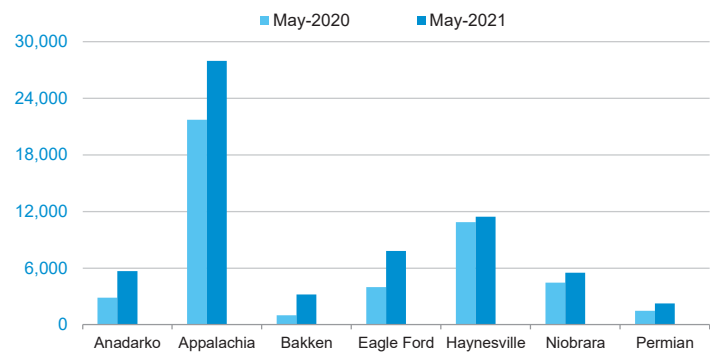
New-well oil production per rig

barrels/day



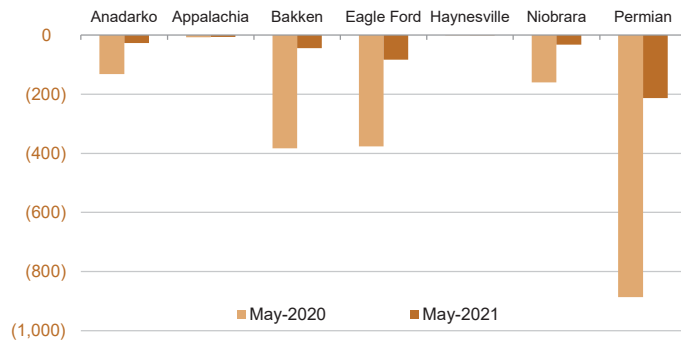
New-well gas production per rig

thousand cubic feet/day



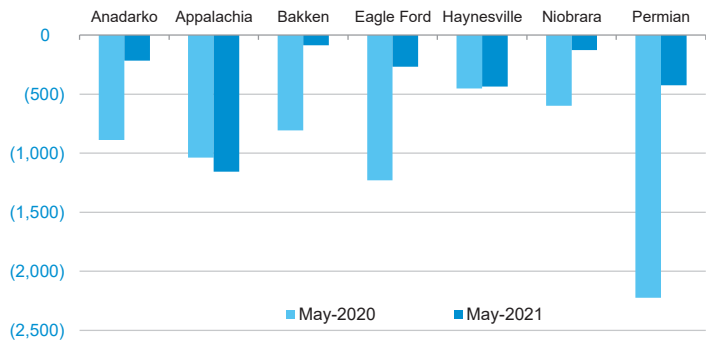
Legacy oil production change

thousand barrels/day



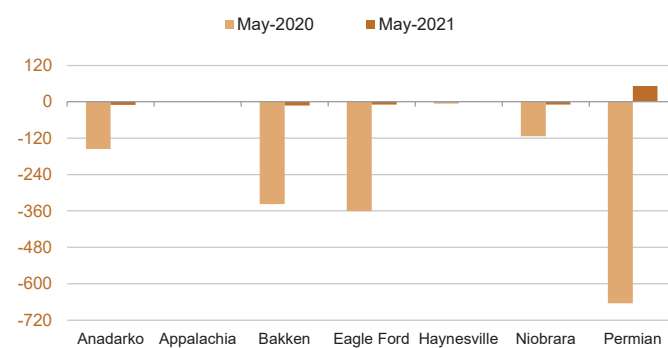
Legacy gas production change

million cubic feet/day



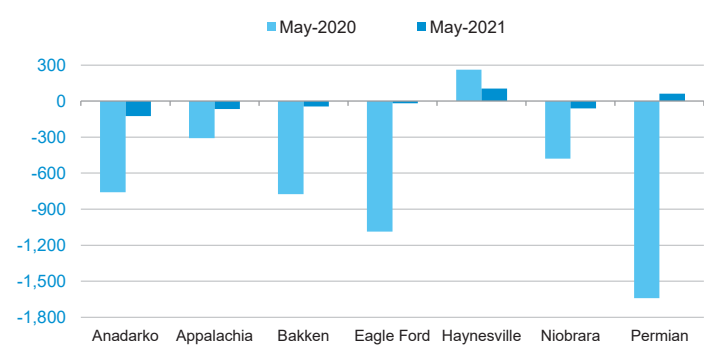
Indicated monthly change in oil production (May vs. Apr)

thousand barrels/day



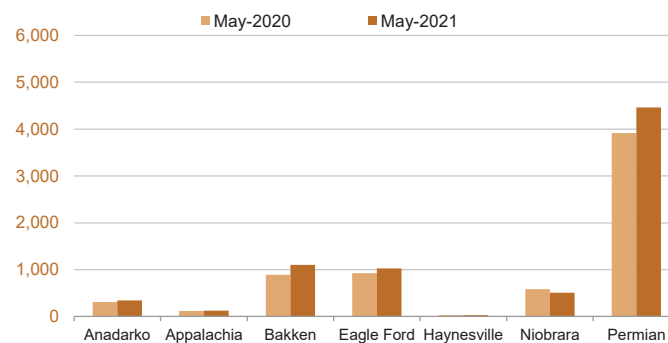
Indicated monthly change in gas production (May vs. Apr)

million cubic feet/day



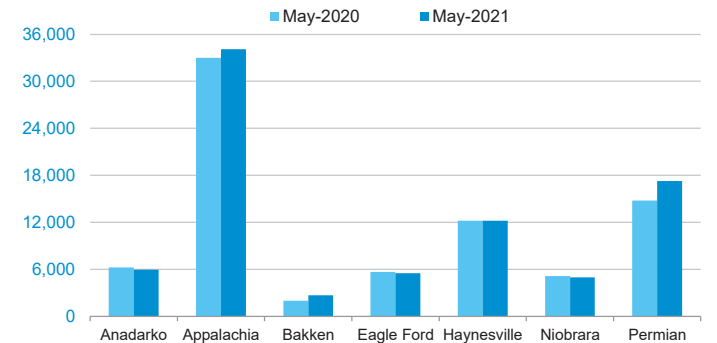
Oil production

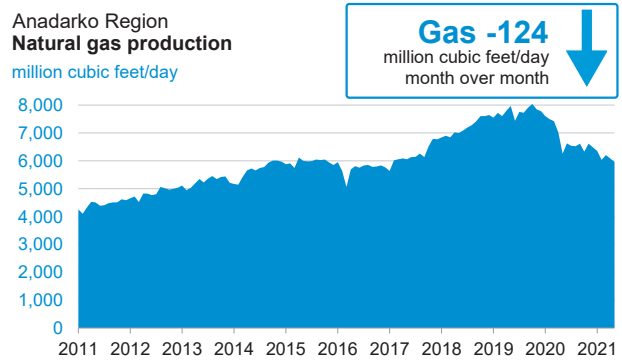
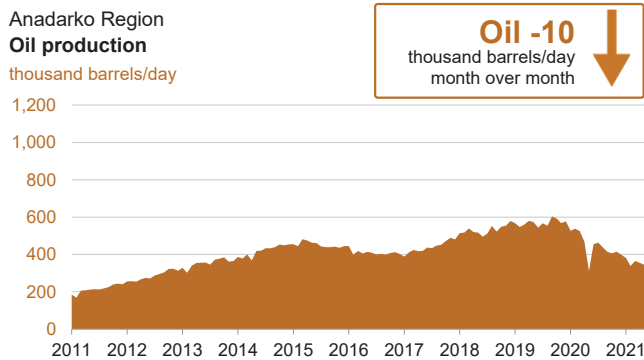
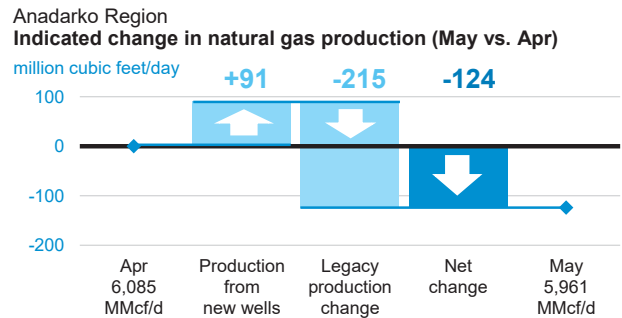
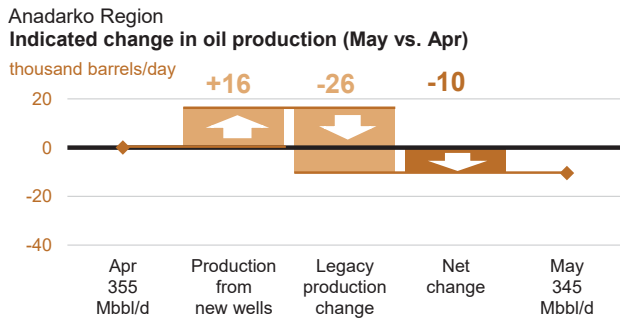
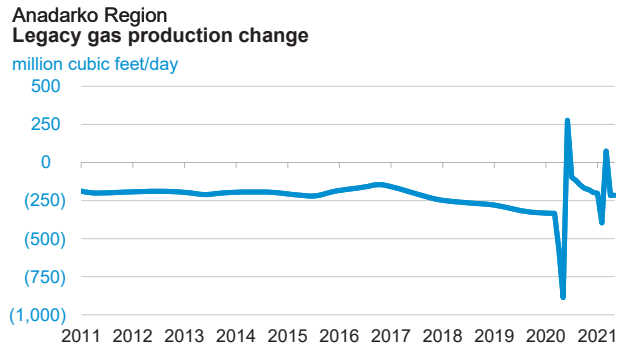
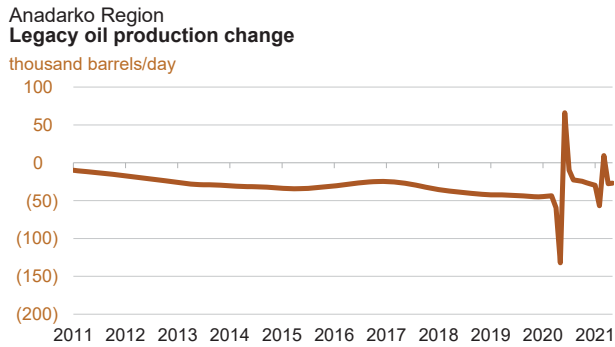
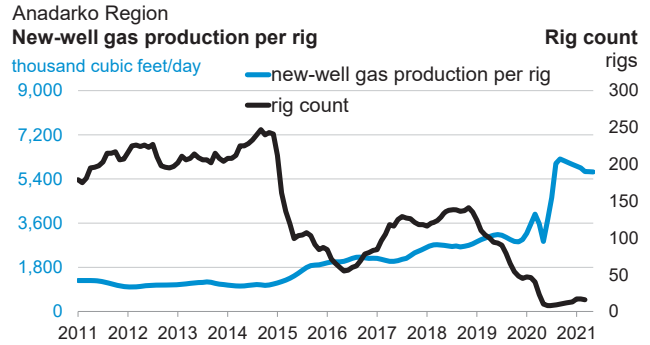
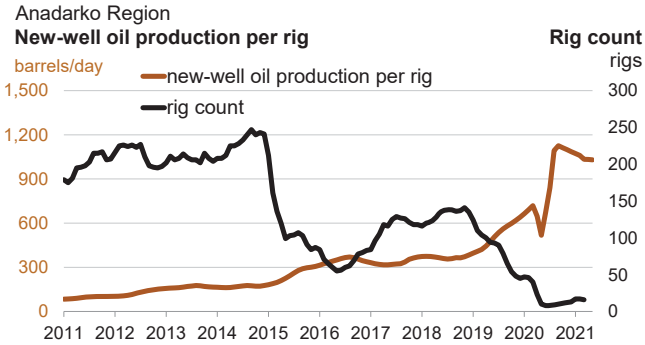
thousand barrels/day

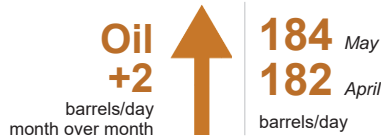


Natural gas production

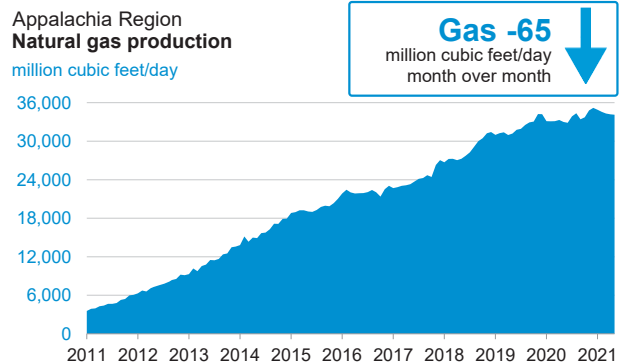
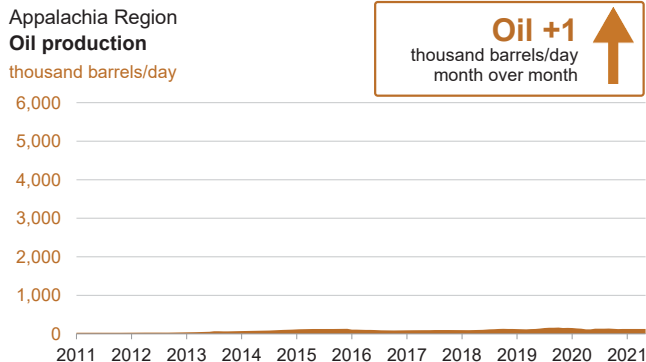
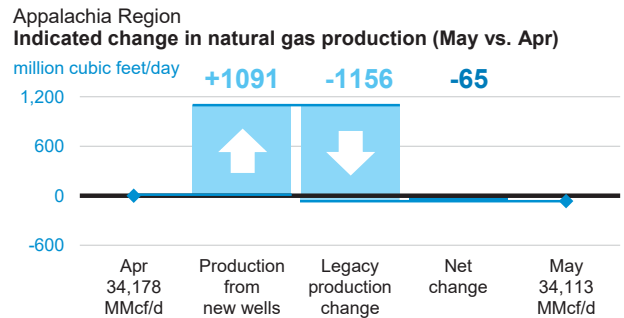
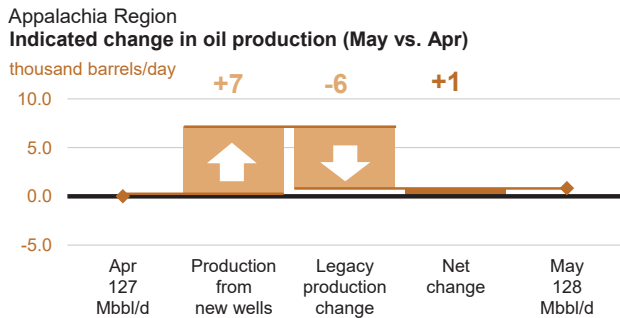
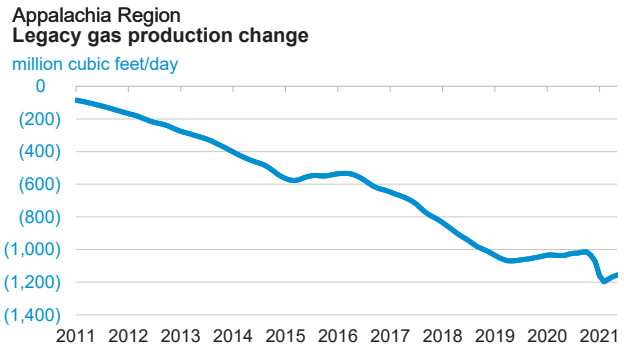
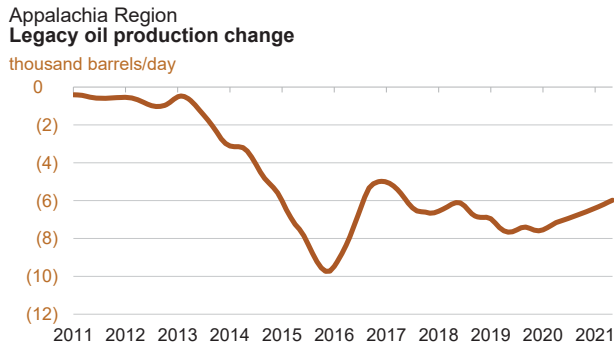
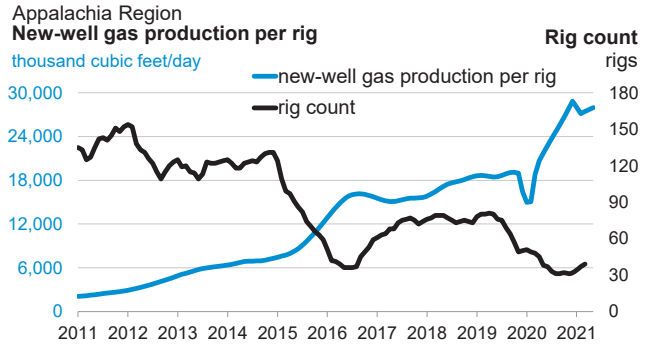
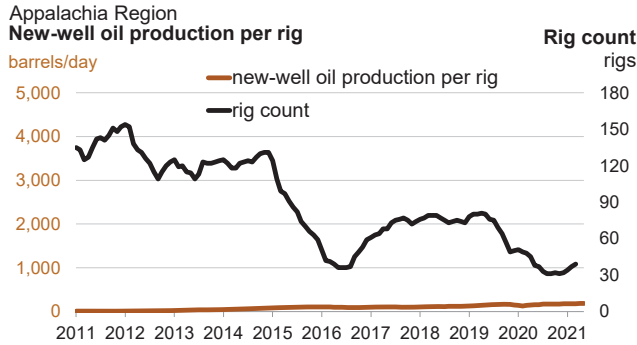
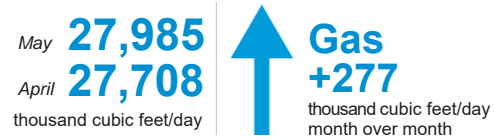
million cubic feet/day

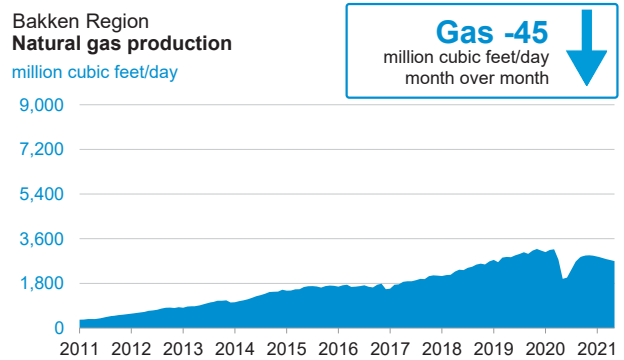
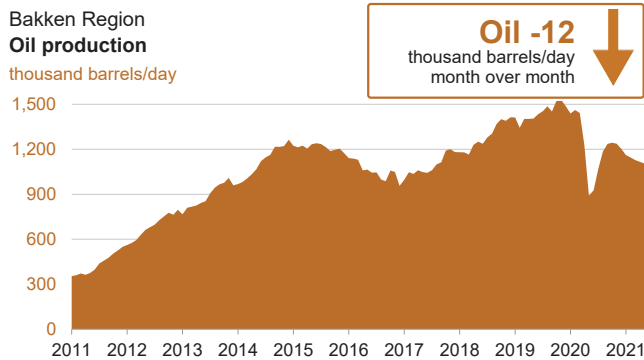
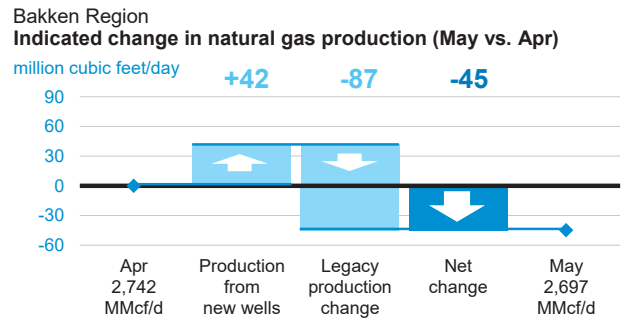
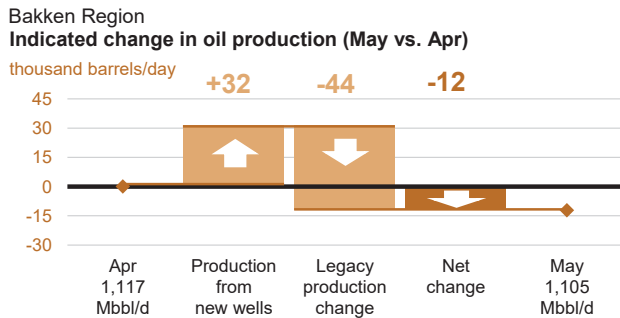
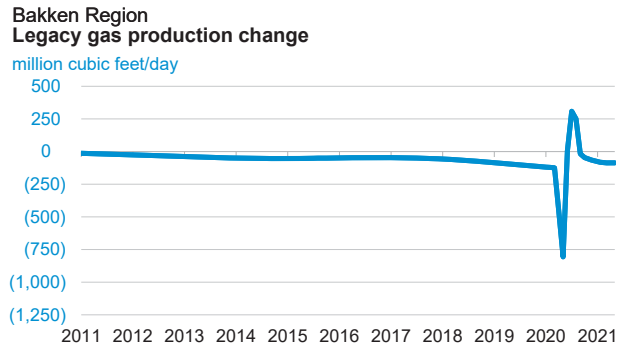
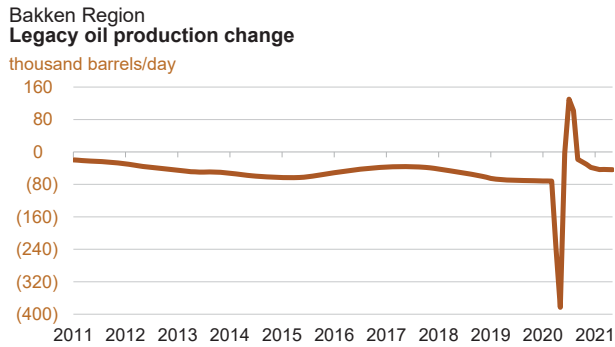
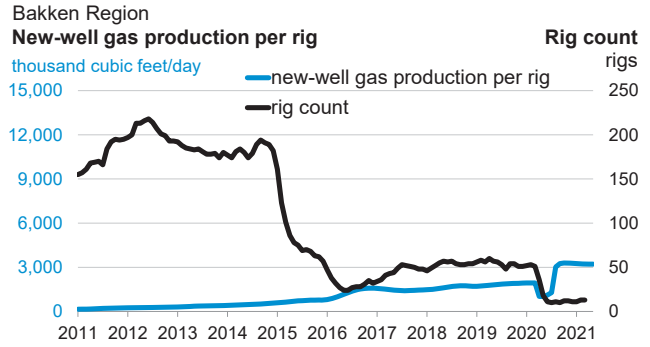
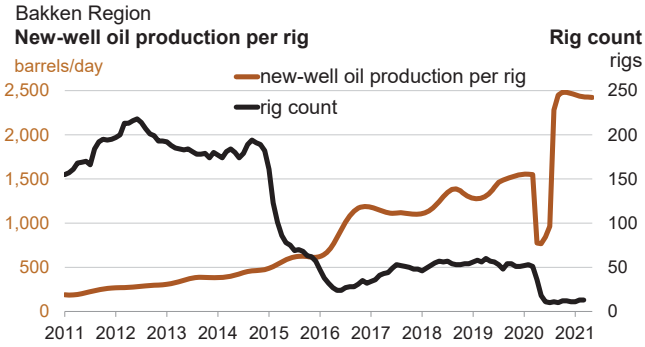






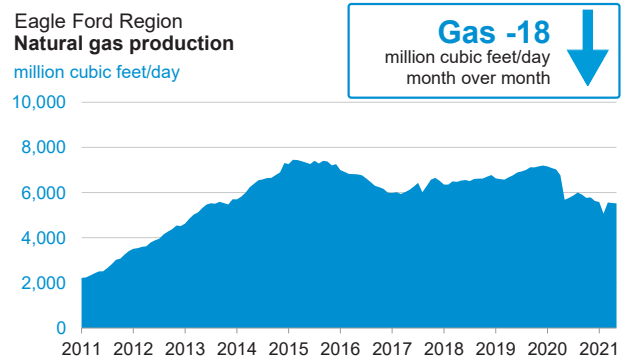
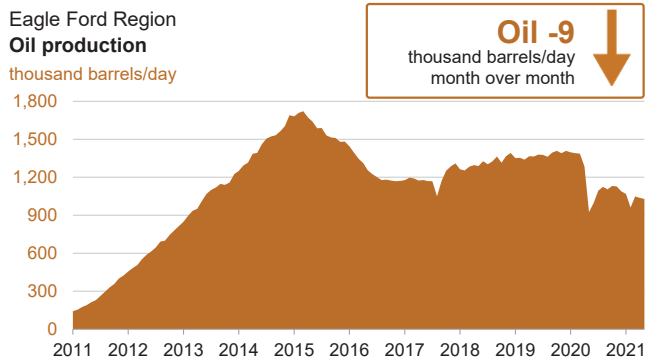
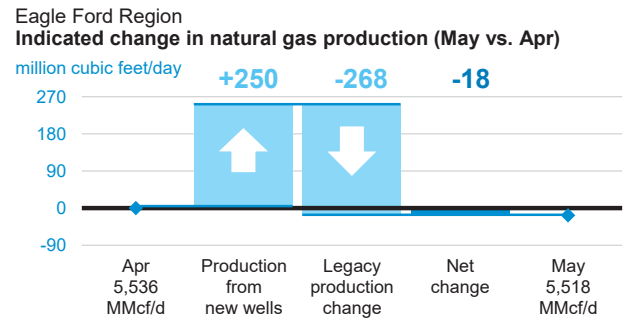
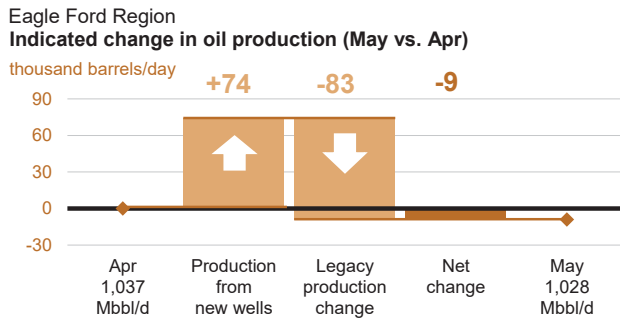
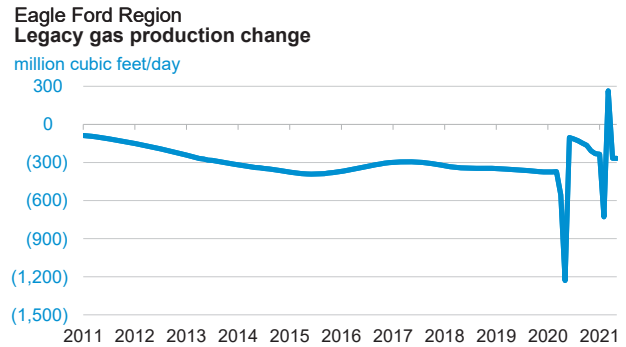
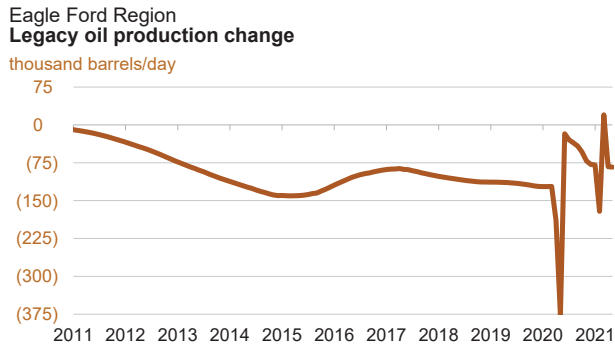
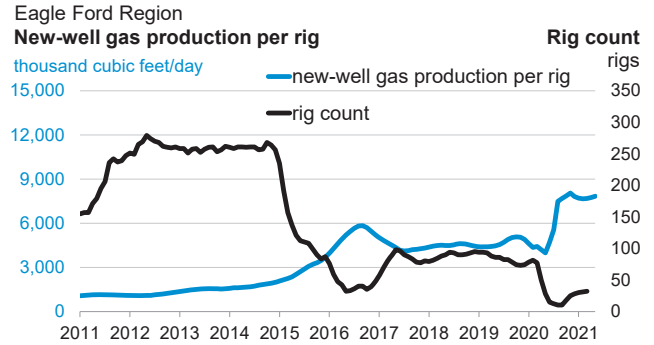
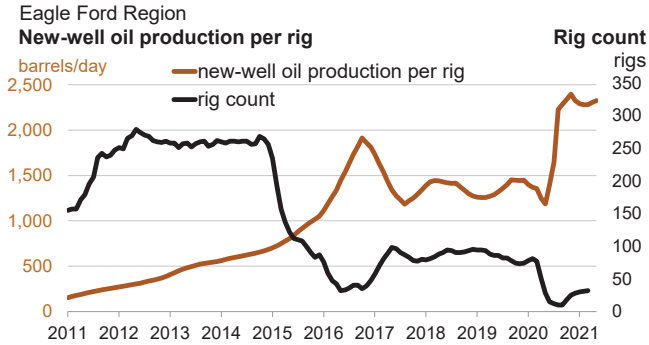
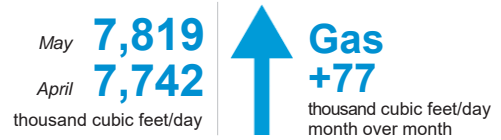
Monthly additions from one average rig







Monthly
additions
from one
average rig



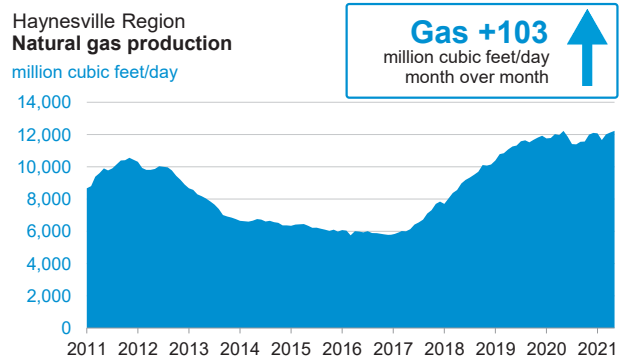
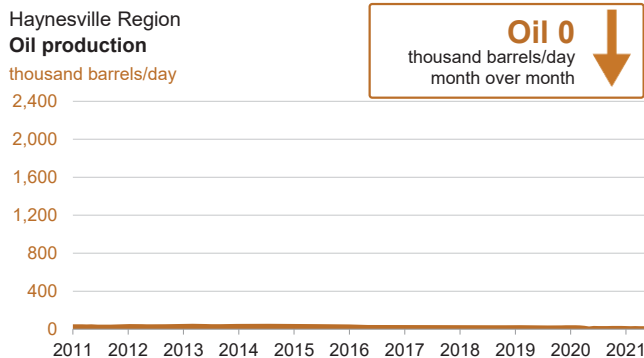
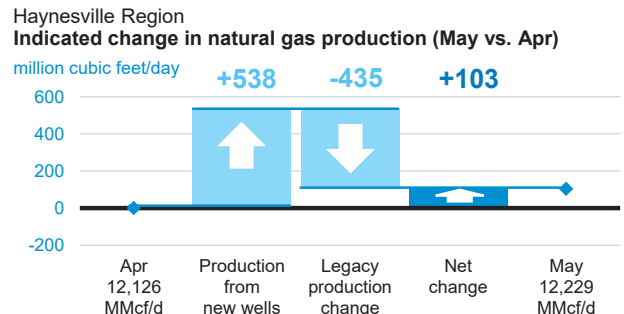
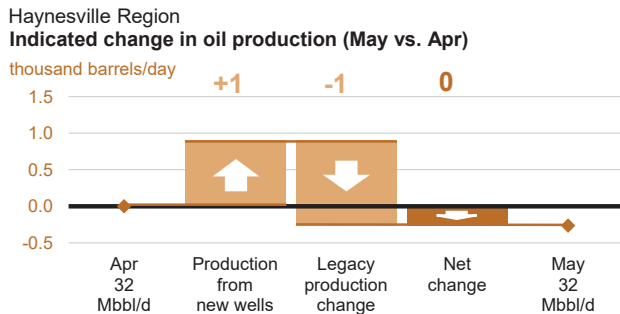
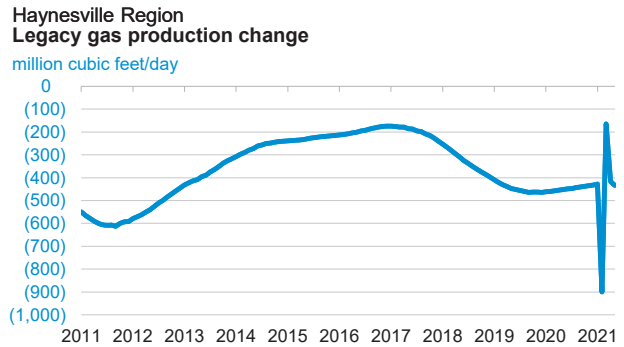
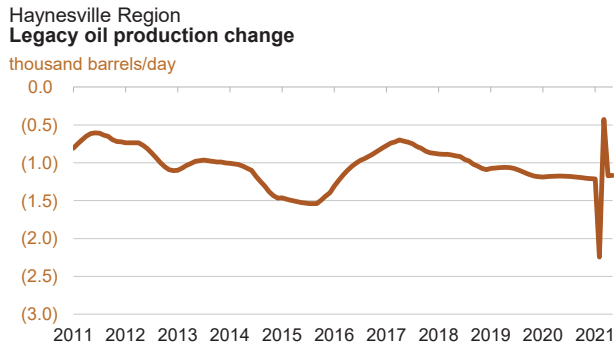
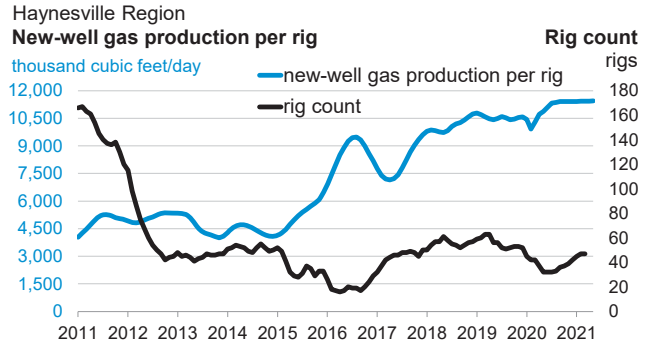
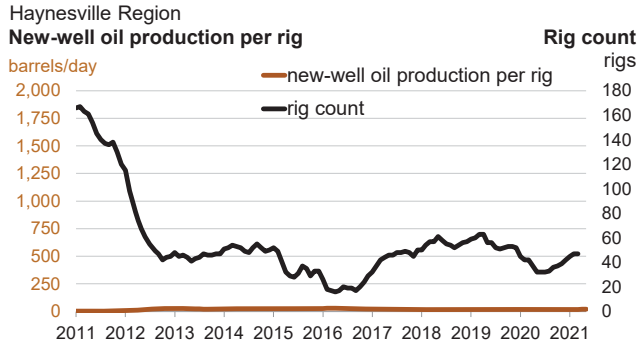
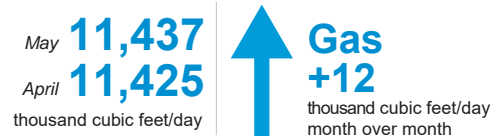
Haynesville Region

Drilling Productivity Report

April 2021
drilling data through March
projected production through May

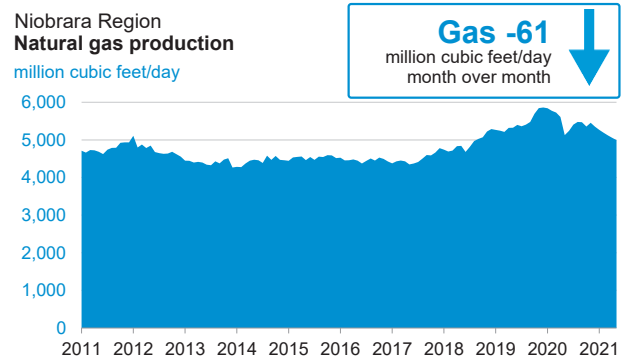
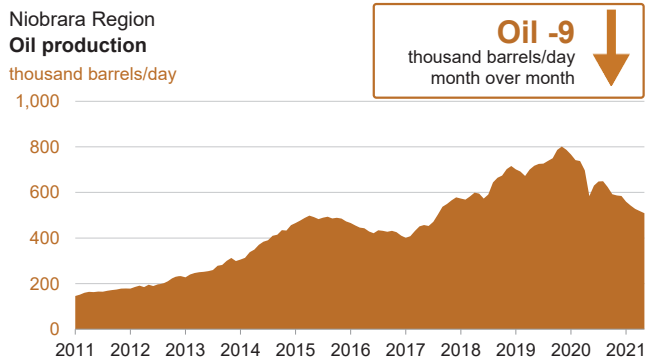
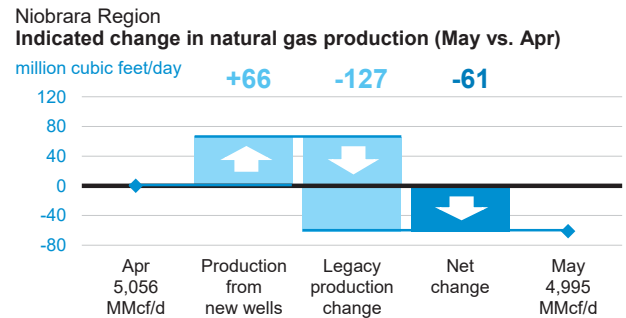
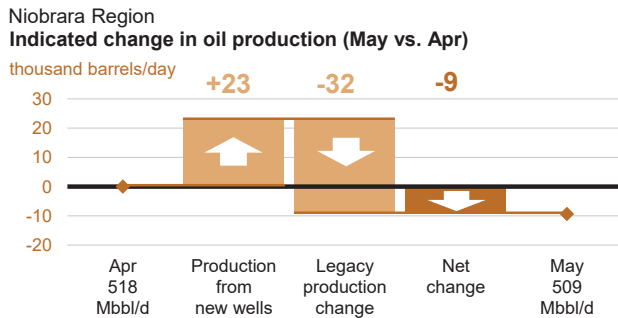
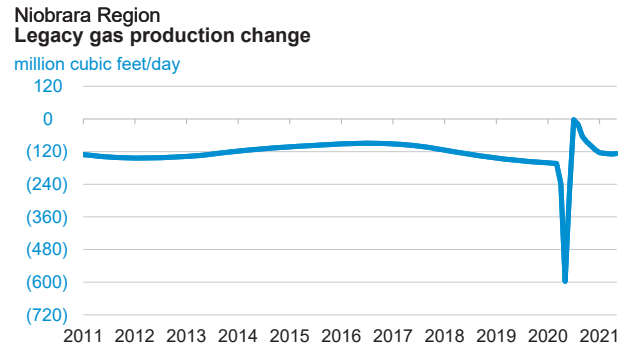
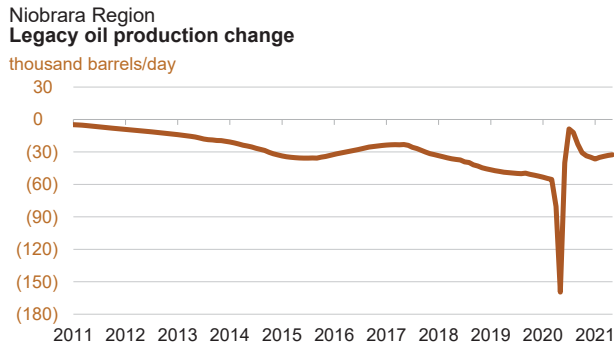
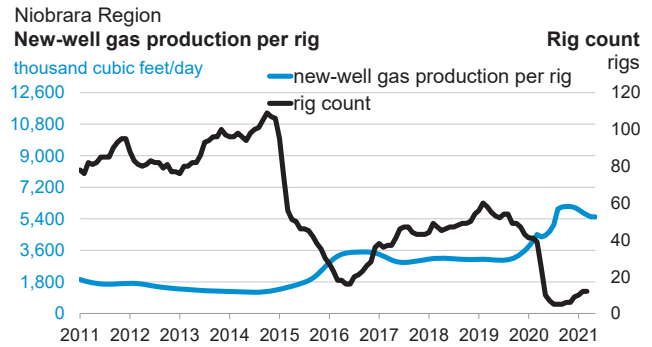
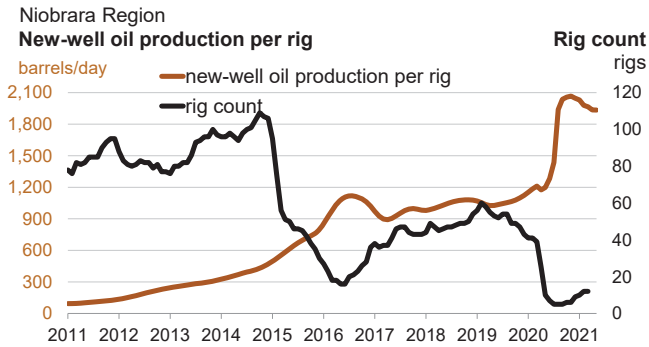


Monthly additions from one average rig



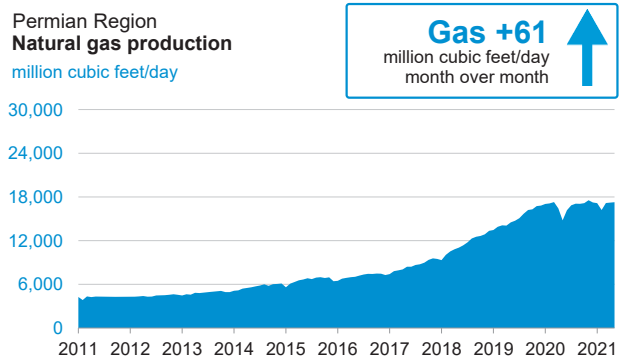
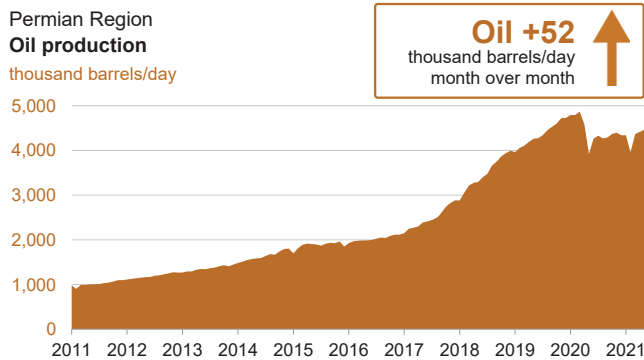
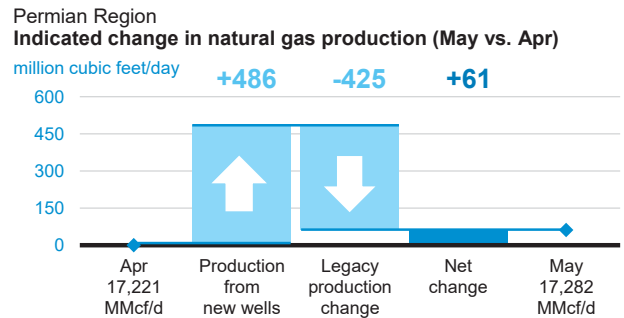
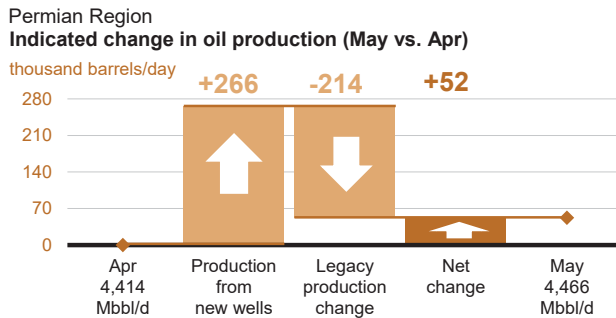
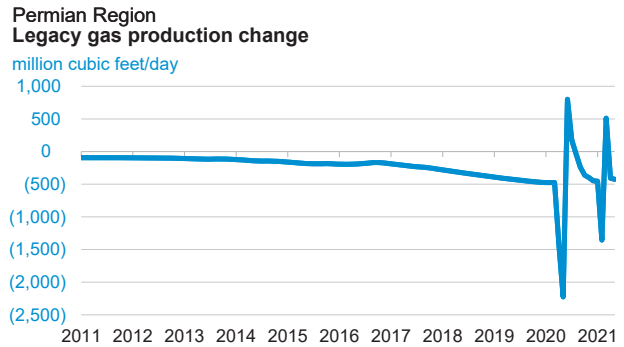
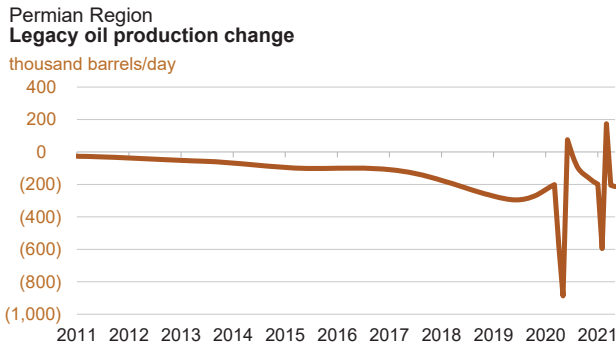
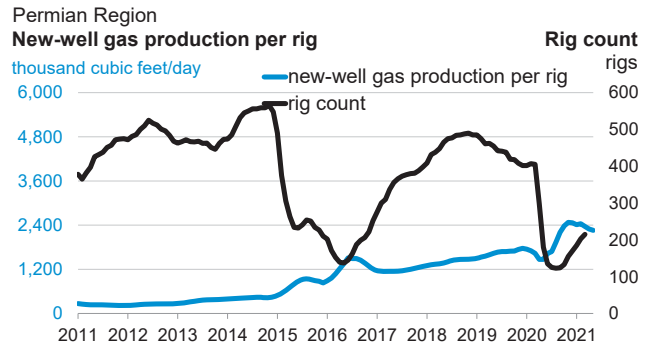
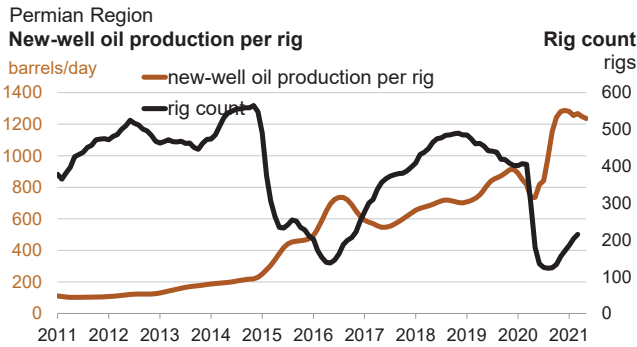
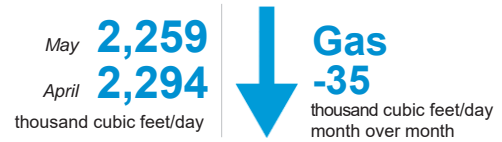


Monthly
additions
from one
average rig





Monthly
additions
from one
average rig





The Drilling Productivity Report uses recent data on the total number of drilling rigs in operation along with estimates of drilling productivity and estimated changes in production from existing oil and natural gas wells to provide estimated changes in oil¹ and natural gas² production for seven key regions. EIA's approach does not distinguish between oil-directed rigs and gas-directed rigs because once a well is completed it may produce both oil and gas; more than half of the wells do that.

Monthly additions from one average rig

Monthly additions from one average rig represent EIA's estimate of an average rig's³ contribution to production of oil and natural gas from new wells.⁴ The estimation of new-well production per rig uses several months of recent historical data on total production from new wells for each field divided by the region's monthly rig count, lagged by two months.⁵ Current- and next-month values are listed on the top header. The month-over-month change is listed alongside, with +/- signs and color-coded arrows to highlight the growth or decline in oil (brown) or natural gas (blue).

New-well oil/gas production per rig

Charts present historical estimated monthly additions from one average rig coupled with the number of total drilling rigs as reported by Baker Hughes.

Legacy oil and natural gas production change

Charts present EIA's estimates of total oil and gas production changes from all the wells other than the new wells. The trend is dominated by the well depletion rates, but other circumstances can influence the direction of the change. For example, well freeze-offs or hurricanes can cause production to significantly decline in any given month, resulting in a production increase the next month when production simply returns to normal levels.

Projected change in monthly oil/gas production

Charts present the combined effects of new-well production and changes to legacy production. Total new-well production is offset by the anticipated change in legacy production to derive the net change in production. The estimated change in production does not reflect external circumstances that can affect the actual rates, such as infrastructure constraints, bad weather, or shut-ins based on environmental or economic issues.

Oil/gas production

Charts present all oil and natural gas production from both new and legacy wells since 2007. This production is based on all wells reported to the state oil and gas agencies. Where state data are not immediately available, EIA estimates the production based on estimated changes in new-well oil/gas production and the corresponding legacy change.

Footnotes:

1. Oil production represents both crude and condensate production from all formations in the region. Production is not limited to tight formations. The regions are defined by all selected counties, which include areas outside of tight oil formations.
2. Gas production represents gross (before processing) gas production from all formations in the region. Production is not limited to shale formations. The regions are defined by all selected counties, which include areas outside of shale formations.
3. The monthly average rig count used in this report is calculated from weekly data on total oil and gas rigs reported by Baker Hughes.
4. A new well is defined as one that began producing for the first time in the previous month. Each well belongs to the new-well category for only one month. Reworked and recompleted wells are excluded from the calculation.
5. Rig count data lag production data because EIA has observed that the best predictor of the number of new wells beginning production in a given month is the count of rigs in operation two months earlier.



The data used in the preparation of this report come from the following sources. EIA is solely responsible for the analysis, calculations, and conclusions.

Drilling Info (<http://www.drillinginfo.com>) Source of production, permit, and spud data for counties associated with this report. Source of real-time rig location to estimate new wells spudded and completed throughout the United States.

Baker Hughes (<http://www.bakerhughes.com>) Source of rig and well counts by county, state, and basin.

North Dakota Oil and Gas Division (<https://www.dmr.nd.gov/oilgas>) Source of well production, permit, and completion data in the counties associated with this report in North Dakota

Railroad Commission of Texas (<http://www.rrc.state.tx.us>) Source of well production, permit, and completion data in the counties associated with this report in Texas

Pennsylvania Department of Environmental Protection

(<https://www.paoilandgasreporting.state.pa.us/publicreports/Modules/Welcome/Welcome.aspx>) Source of well production, permit, and completion data in the counties associated with this report in Pennsylvania

West Virginia Department of Environmental Protection (<http://www.dep.wv.gov/oil-and-gas/Pages/default.aspx>) Source of well production, permit, and completion data in the counties associated with this report in West Virginia

Colorado Oil and Gas Conservation Commission (<http://cogcc.state.co.us>) Source of well production, permit, and completion data in the counties associated with this report in Colorado

Wyoming Oil and Conservation Commission (<http://wogcc.state.wy.us>) Source of well production, permit, and completion data in the counties associated with this report in Wyoming

Louisiana Department of Natural Resources (<http://dnr.louisiana.gov>) Source of well production, permit, and completion data in the counties associated with this report in Louisiana

Ohio Department of Natural Resources (<http://oilandgas.ohiodnr.gov>) Source of well production, permit, and completion data in the counties associated with this report in Ohio

Oklahoma Corporation Commission (<http://www.occeweb.com/og/oghome.htm>) Source of well production, permit, and completion data in the counties associated with this report in Oklahoma

All Summer Long - Less Gas Available For Canadian Gas Storage Injection This Summer

Tuesday, 04/13/2021

Published by: [Martin King](#)

Every gas storage injection season gives us a chance to size up how supply and demand components might influence how much gas can be stuffed away in underground reservoirs prior to the next heating season. For the Canadian storage injection season that is just getting underway, a number of factors have shifted that balance, resulting in a slowing rate of gas storage builds this year. A slower build, and subsequently lower storage levels by the end of the injection season than last year, seems likely to provide solid support for Canadian gas prices. Today, we review the latest developments and outlook for gas fundamentals in Canada.

The arrival of spring in North America brings with it more temperate weather, prompting people to get outside, do some spring cleaning, and shake off the winter cobwebs. This year, even more than most, we're looking forward to coming out of our winter burrows (or pandemic bunkers), the beginning of baseball season, and, of course, the gas storage injection season. This period, traditionally running from April 1 to October 31, takes advantage of the lower space heating demand of the spring, summer, and early fall to replenish underground storage reservoirs across North America. It is also a time when market pundits develop forecasts of how much gas will be injected, and to what level storage reservoirs will fill, by the end of October and before the kick-off of the next heating season and another round of storage withdrawals.

It's our turn at RBN to wade in and again develop an outlook for Canadian gas storage injections this year, similar to what we did last year in [Got Me Under Pressure](#). That blog was followed by our Canadian [winter storage withdrawal outlook](#), which we posted late in 2020, a time well before the Deep Freeze of February 2021 and the [record activity that swamped the Canadian gas market](#) in terms of demand, storage withdrawals, and exports to the U.S. Those February extremes clearly accelerated the overall drawdown of Canadian gas storage in the heating season that just ended.

Before delving into our outlook for this year's injection season, let's take a look at how Canadian gas storage finished up on March 31 and how our forecasts compared to the actual outcomes. As with most of our analysis of the Canadian natural gas market, we draw on data published every week in our [Canadian NATGAS Billboard](#), RBN's weekly guide for all things related to Canadian natural gas.

In producing our prior winter storage outlook, we considered the structural changes that have been afoot in the Canadian market and that are still developing this year, resulting in increased demand for natural gas in Alberta, Canada's largest gas producing and consuming province. The demand for gas in [Alberta's power generation sector](#) and the province's oil sands has been steadily increasing in the past few years and is expected to continue this trend in 2021. In addition, a slow but [steady expansion in pipeline export capacity from Alberta](#) is resolving some long-standing pipeline bottlenecks, allowing rising gas supplies to reach other parts of Canada and the U.S. These two major developments — which, as we said, are still ongoing — guided our view for how winter storage withdrawals would shape up in the most recent heating season.

So how did we do? Well, we predicted above-average storage withdrawals and ended up getting those and more. As a result, storage levels and withdrawals in both halves of the Canadian market (east and west) finished well under our forecast outcomes. Figure 1, below, shows our estimates versus what actually happened for the average withdrawal rates (right graph) and the end-of-season storage levels (left graph). For Eastern Canada storage, the end of March 2021 finale was 73 Bcf (red bar in left graph Figure 1), almost 40 Bcf, or 35%, lower than our outlook (pink bar); the average withdrawal rate for the region was 1.35 Bcf/d (black bar in right graph) versus our forecast of 1.09 Bcf/d (gray bar). For Western Canada, storage concluded March 2021 at 286 Bcf (medium blue bar in left chart), 30 Bcf, or 9%, lower than our forecast (light blue bar); the average withdrawal rate landed at 1.89 Bcf/d (medium brown bar in right chart) versus our outlook of 1.69 Bcf/d (light brown bar). Combining the two halves of the nation yielded an overall finish for storage for the end of March at 359 Bcf (medium green bar in left chart), a full 68 Bcf, or 16%, lower than our prior estimate (light green bar); the average storage withdrawal rate for Canada as a whole ended up being 3.24 Bcf/d (medium purple bar in right chart), ahead of our forecast of 2.78 Bcf/d (light purple bar).

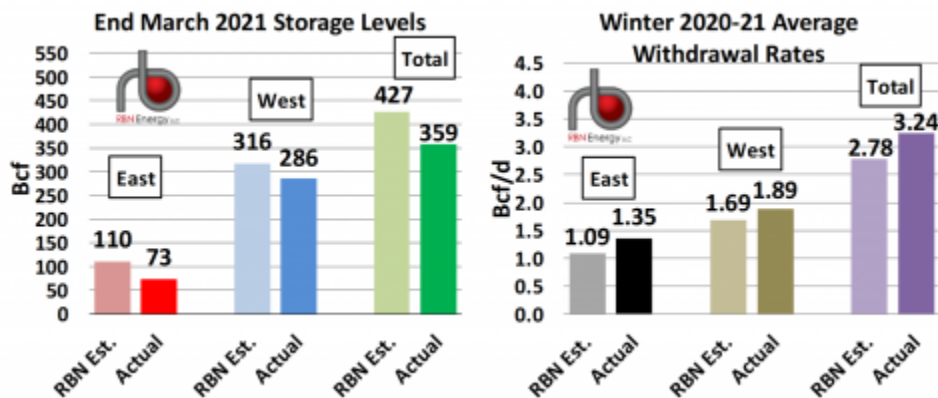


Figure 1. Canada End of March 2021 Storage Levels and Average Winter Withdrawal Rates. Source: RBN's [Canadian NATGAS Billboard](#)

Though we somewhat underestimated the rate of withdrawals in both East and West, the problem was more severe in the eastern half of Canada. This is where we think the February cold blast was the real kicker, with eastern storage levels drawing down 85 Bcf in that month, the largest storage withdrawal for any month in the region since 92 Bcf was withdrawn in January 2004. For comparison, the February 2021 withdrawal in Western Canada of 89 Bcf was the largest since February 2014's 108 Bcf pull, which is still the all-time high for a single month's withdrawal in Western Canada. We estimate that of the 68 Bcf miss on total storage for the entire heating season, about 35 to 40 Bcf was concentrated in February because of the extreme weather in that month.

Understandably, those selling natural gas tend to be more positive (bullish) when storage withdrawals are larger than expected during the course of a heating season. That's in part because more space in storage reservoirs is available for gas supplies to be injected over the course of the summer, and there is a reduced likelihood of lower prices as there is a stronger demand for storage injections. The drawdowns during the most recent heating season should have Canadian gas producers feeling somewhat more price-optimistic for the upcoming injection season than in prior ones.

With that lookback complete, let's consider our outlook for gas storage injections this year. Recall that the injection season typically starts around April Fool's Day and ends on Halloween, a seven-month time span (215 days). Given the dynamic nature of the gas market, a lot can happen in this time. However, by combining some of the structural factors we mentioned earlier, such as rising gas demand growth in Alberta, better pipeline capacity for exports, and our expectations for natural gas supply, we think we can build a reasonable outlook for storage injections and end-of-season storage levels for this summer.

We draw on the same seasonal methodology that we used in [Got Me Under Pressure](#) and [Why Worry?](#) by comparing changes in the components of supply and demand this summer versus last summer. By netting out the changes that we expect for these two categories on a year-over-year basis, we come up with an estimate of the amount of gas that will be available for gas storage. Adding that net availability to last year's storage injection rate yields an estimated rate of storage injection for this summer and a means to compute how high storage levels might reach by the end of October.

Let's start with total supplies (lower group of bars in Figure 2). These consist of domestic supplies (green bar), imports from the U.S. (yellow bar), and a small amount of LNG that is imported through the Canaport LNG terminal just outside of Saint John, NB (blue bar). We currently expect very slight gains for LNG imports and for imports from the U.S., especially given what has been [near-full utilization of import pipelines from the U.S.](#) the past few summers — both of these are small positives, but round off to less than 0.1 Bcf/d. Where we do expect a gain is in total domestic (Canadian) production of about 0.2 Bcf/d, as the higher gas drilling rates of the past winter should yield stronger gas output, especially in comparison to 2020 when supplies were in a COVID-driven downward slide as drilling activity collapsed during the pandemic. When adding together these three components (and allowing for rounding), the total gain we expect for available supplies this summer comes in at 0.3 Bcf/d versus the summer of 2020 (orange bar).

Switching over to the demand side, we'll consider the broad categories of domestic demand (teal bar in upper group) and exports to the U.S. (purple bar). We mentioned earlier that for domestic demand, the primary driver is expected growth in gas use in Alberta's oil sands and for power generation — these may be the only components of Canadian gas demand that exhibit any growth this year. We anticipate that this gain in demand will be partly offset

by modest losses elsewhere in the Canadian market given a yet-uncertain economic outlook for 2021 as we continue to recover from the pandemic. In total, the increase in domestic demand sums to 0.1 Bcf/d.

The big upside for demand comes from Canadian gas exports to the U.S., which have increased by nearly 1 Bcf/d, year-over-year, for the first three months of this year — though they could begin to ease off that level through the summer. Regardless, we do expect that the U.S. storage refill and a need to partly offset lower U.S. domestic gas supplies will result in a gain for Canadian gas exports this summer of 0.5 Bcf/d. Adding together the increase in Canadian demand with exports, the overall demand increase for Canadian gas this summer comes in at 0.6 Bcf/d (red bar).

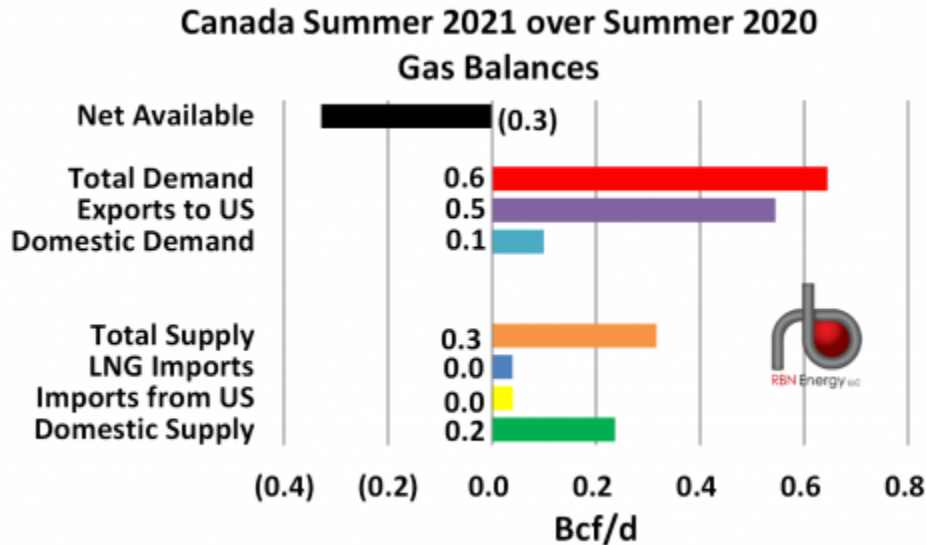


Figure 2. Canada Summer 2021 over Summer 2020 Gas Balances. Source: RBN's [Canadian NATGAS Billboard](#).

Next, if we net out the increase in demand of 0.6 Bcf/d versus the increase in supplies of 0.3 Bcf/d, the result is a net *decrease* in available gas supplies of 0.3 Bcf/d versus last summer (black bar at top of Figure 2). For comparison, if we back up one year further, the net change in available gas in the summer of 2020 versus summer 2019 was an *increase* of 1 Bcf/d.

We now have all of the necessary information we need to generate our outlook for Canadian gas storage levels for the end of October 2021. Last summer, the total amount of gas injected into Canada's gas storage sites totaled 469 Bcf, or 2.19 Bcf/d (469 divided by 215 days). Given the net decrease in available gas that we expect this summer of 0.33 Bcf/d (0.31 Bcf/d supply increase less 0.64 Bcf/d demand increase), this yields our estimate for this year's average injection rate of 1.86 Bcf/d (2.19 - 0.33).

When multiplying that average rate by the 215 days in the storage injection season, the result is 400 Bcf of gas to be injected into storage. By applying this 400 Bcf to the end of March 2021 storage level that we mentioned earlier (359 Bcf), the sum of these two yields an end of October estimate for total Canadian gas storage of 759 Bcf (green bar in Figure 3). This would be 86 Bcf, or 10%, less than the 845-Bcf storage level at the end of October 2020 (yellow bar) and modestly below the five-year average of 784 Bcf (orange bar).

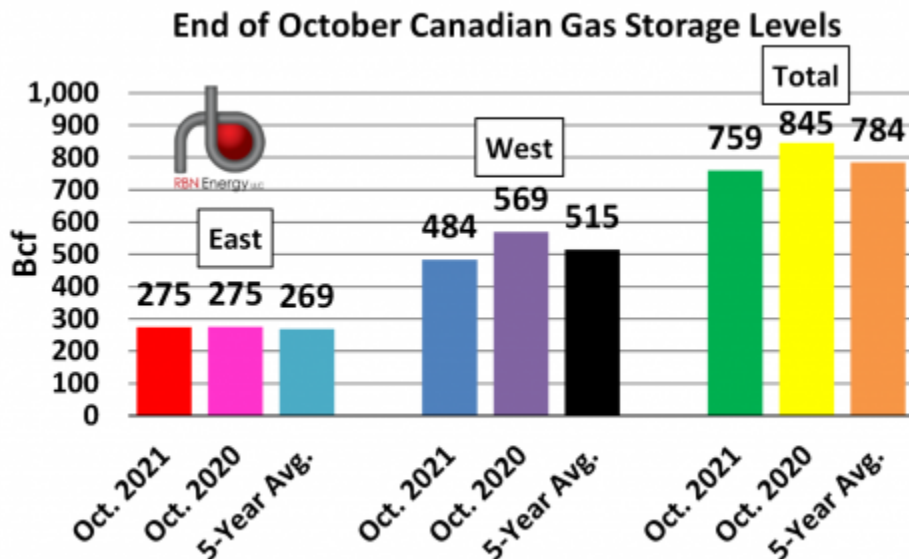


Figure 3. End of October Canadian Gas Storage Levels. Source: RBN's [Canadian NATGAS Billboard](#).

We can go one step further in this analysis and consider a break-out in storage between the eastern and western halves of the country. Eastern Canada storage usually operates more along the lines of a utility model, meaning that storage is typically refilled as close to full as possible each injection season. On this basis, we expect Eastern Canada storage will refill to 275 Bcf by the end of October (red bar), on par with where it finished the 2020 injection season (pink bar) and just slightly ahead of the five-year average of 269 Bcf (teal bar).

Deducting the 275 Bcf of storage in Eastern Canada from the total of 759 Bcf, yields an estimate for Western Canada storage of 484 Bcf at the end of October 2021 (blue bar). This would be 85 Bcf below the October 2020 level (purple bar) and 31 Bcf below the five-year average (black column).

That's a lot of numbers. It really comes down to this: Given what appears to be less gas available for injection in Canada this year, we think it is more likely there will be a price-supportive environment for Canadian gas price benchmarks such as [AECO](#) over the next several months — good news for Western Canadian producers.

"All Summer Long" was written by Brian Wilson and Mike Love, and appears as the second song on side one of The Beach Boys' sixth studio album of the same name. The song was recorded in May 1964 at United Western Recorders in Los Angeles, with Brian Wilson producing. It was released as a single in the UK, but not in the U.S. Personnel on the record were: Brian Wilson (lead and backing vocals, keyboards, xylophone, marimba), Al Jardine (bass, rhythm guitar), Mike Love (lead and backing vocals), Carl Wilson (backing vocals, lead and rhythm guitar), and Dennis Wilson (backing vocals, drums, percussion).

The album, All Summer Long, was recorded between October 1963 and May 1964 at United Western Recorders in Los Angeles. Released in July 1964, it went to #4 on the Billboard Top 200 Albums chart and has been certified Gold by the Recording Industry Association of America. Three singles were released from the LP. "I Get Around" went to #1 on the Billboard Hot 100 Singles chart, making it the first chart-topper for The Beach Boys.

The Beach Boys are an American rock band formed in Hawthorne, CA, in 1961. They have released 29 studio albums, eight live albums, 55 compilation albums, 23 EPs, and 71 singles. The main lineup of the band, with Brian, Carl, and Dennis Wilson, along with Mike Love and Al Jardine, made many hit records in the 1960s. The Beach Boys still occasionally tour, as does Brian Wilson as a solo artist. Dennis Wilson died in 1983, and Carl Wilson in 1998.

Mozambique Estimates Cost of Rebuilding LNG Town at \$125 Million
2021-04-13 07:30:35.948 GMT

By Matthew Hill

(Bloomberg) -- Mozambique requires about 7 billion meticaís (\$125 million) to rebuild government and social infrastructure in Palma, state radio reported, citing State Administration and Public Service Minister Ana Comoana.

Comoana commented Monday on the damage after touring Palma, Radio Mocambique reported on its website. Islamic State-linked insurgents on March 24 attacked the town that's near a \$20 billion liquefied natural gas export project being built by Total SE.

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Japan sees more carbon neutral LNG changing hands

Japan's Toho gas is the latest Japanese company to receive a liquefied natural gas (LNG) cargo that has had its emissions offset by carbon dioxide (CO₂) credits. Significantly, the Nagoya-based gas company has pledged to buy more carbon neutral LNG after receiving its first shipment on 8 April.

by **Damon Evans**

12/04/2021, 11:49 pm



An LNG tanker: the latest craze is offsetting emissions from LNG

Japan's Toho gas is the latest Japanese company to receive a liquefied natural gas (LNG) cargo that has had its emissions offset by carbon dioxide (CO₂) credits. Significantly, the Nagoya-based gas company has pledged to buy more carbon neutral LNG after receiving its first shipment on 8 April.

Diamond Gas International, a subsidiary of Mitsubishi Corporation, supplied the shipment to Toho and bought the credits.

The latest move underscores a trend among key backers of LNG in Japan, the world's biggest buyer of the fuel, to offset the emissions from LNG in an effort to future-proof their investments.

In early March, Tokyo Gas established a Carbon Neutral LNG Buyers Alliance to promote the development of the carbon neutral LNG sector.

The 15 participants of the alliance include Tokyo Gas, Asahi Group Holdings, Isuzu Motors, Olympus Corporation, Sakai Chemical Industry, Duskin, Tamagawa Academy & University, Toshiba

Corporation, Toho Titanium, New Otani, Marunouchi Heat Supply, Sumitomo Mitsui Trust Bank, Mitsubishi Estate, Yakult Honsha and Lumine.

Tokyo Gas procures and supplies the alliance with carbon neutral gas.

The companies participating in the alliance said on 9 March that they will work to boost the recognition of carbon neutral gas in society and carry out initiatives to improve its evaluation by investment institutions and establish its position within the various systems in Japan with the aim of contributing toward Japan's target of a carbon neutral society by 2050.

Pavilion Energy Imports Singapore's First Carbon Neutral LNG Cargo

15 April 2021

SINGAPORE

Pavilion Energy has imported Singapore's first carbon neutral LNG cargo. Carbon emissions associated with the LNG cargo from well-to-tank including the extraction, production, transportation, and regasification will be offset.

Pavilion Energy Singapore Pte. Ltd. (“Pavilion Energy”) has imported a carbon neutral LNG cargo into Singapore – the first for Singapore and Pavilion Energy.

Carbon emissions associated with the LNG cargo from well-to-tank¹ including the extraction, production, transportation, and regasification will be offset by retiring a corresponding amount of high-quality carbon credits sourced from its portfolio of carbon offset projects.

The carbon credits used for the offset are from Natural Climate Solutions projects certified under the Verified Carbon Standard (VCS) and Climate, Community and Biodiversity Standard (CCB) - Evio Kuinaji Ese'Eja Cuana in Peru and Liangdu Afforestation in China. Both projects are designed for the protection and restoration of forests, and promote co-benefits through supporting local communities and protecting biodiversity.

Mr Frédéric H. Barnaud, Group CEO of Pavilion Energy, said, “This carbon neutral cargo is another important milestone for Pavilion Energy in our ambition to provide cleaner energy and develop our carbon trading activities. Our aim is to support our customers in their transition towards a lower carbon future with solutions to meet their climate targets and potential regulatory requirements.”

¹*Assuming an average LNG cargo size of 70,000 tonnes, the ‘well-to-tank’ emissions is approximately 60,000 tonnes of carbon dioxide equivalent (CO₂e).*

About Evio Kuinaji Ese'Eja Cuana Project

The Evio Kuinaji Ese'Eja Cuana (Infierno) project works to protect 7,750 hectares of forest in the Peruvian Amazon through engagement with the local indigenous community of Infierno. This project not only contributes to the well-being of the Infierno Native Community, it also protects critical habitat for hundreds of unique species including those of high conservation value and endangered species, such as the Black Caiman, Giant Otter and Harpy Eagle.

Potential Sustainable Development Goals include: 1 (No Poverty), 2 (Zero Hunger), 5 (Gender Equality), 8 (Decent Work and Economic Growth), 9 (Industry, Innovation and Infrastructure), 10 (Reduced Inequalities), 12 (Responsible Consumption and Production), 13 (Climate Action), 15 (Life on Land), 16 (Peace, Justice and Strong Institutions), 17 (Partnerships for the Goals).

About Liangdu Afforestation Project

The Liangdu Afforestation project is located in Guizhou Province of China and involves the planting of native species on barren land, covering 23,720 hectares. This project not only provides employment for the local communities, it also protects endangered or vulnerable species, such as the Francois' Leaf Monkey.

Potential Sustainable Development Goals include: 5 (Gender Equality), 8 (Decent Work and Economic Growth), 13 (Climate Action), 15 (Life on Land).

**Director's Cut
February 2021 Production**

Oil Production

January 35,568,679 barrels = 1,147,377 barrels/day (final)
February 30,324,555 barrels = 1,083,020 barrels/day (all-time high 1,519,037 BOPD Nov 2019)
 1,041,444 barrels/day or 96% from Bakken and Three Forks
 41,576 barrels/day or 4% from legacy pools

**Revised
Revenue
Forecast** = 1,200,000 → 1,100,000 → 1,000,000 barrels/day

Crude Price¹ (\$/barrel)

	North Dakota Light Sweet	WTI	ND Market estimate
January	41.77	52.10	45.21
February	49.13	56.98	52.02
March	54.38	59.05	56.71
Today	56.75	63.15	59.95
All-time high (6/2008)	\$125.62	\$134.02	\$126.75

**Revised
Revenue
Forecast** = **\$50.00**

Gas Production & Capture

January Production 88,327,784 MCF = 2,849,283 MCF/day
 Gas Captured: 94% 82,883,788 MCF = 2,673,671 MCF/day

February Production 75,710,555 MCF = 2,703,948 MCF/day (all-time high 3,145,172 MCFD Nov 2019)
 Gas Captured: 92% 69,898,041 MCF = 2,496,359 MCF/day (all-time high 2,899,998 MCFD Mar 2020)

Rig Count

January	12
February	15
March	15
Today	17
Federal Surface	1
All-time high	218 (5/29/2012)

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

Wells

	December	January	February	March	Revised Revenue Forecast
Permitted	-	66 drilling 0 seismic	72 drilling 0 seismic	55 drilling 0 seismic <small>(All-time high was 370 – Oct. 2012)</small>	-
Completed	-	59 (Final)	32 (Revised)	43 (Preliminary)	30→40→ 50→60
Inactive²	-	2,597	2,568	-	-
Waiting on Completion³	-	661	662	-	-
Producing	-	15,861	15,773 (Preliminary) <small>13,711 (87%) from unconventional Bakken – Three Forks 1,782 (13%) from legacy conventional pools (All-time high was March 2020 – 16,280)</small>	-	-

Fort Berthold Reservation Activity

	Total	Fee Land	Trust Land
Oil Production (barrels/day)	271,532	101,143	170,160
Drilling Rigs	3	1	2
Active Wells	2,532	631	1,901
Waiting on completion	86		
Approved Drilling Permits	264	31	233
Potential Future Wells	4,020	1,133	2,887

Gas Capture

US natural gas storage is now 1% below the five-year average due to the severe winter weather in February. Crude oil inventories rose sharply for the same reason.

The price of natural gas delivered to Northern Border at Watford City increased to \$23.42/MCF February 17 and then fell back to \$2.06/MCF today. This results in a current oil to gas price ratio of 29 to 1. The state wide gas flared volume from January to February increased 31,976 MCFD to 207,590 MCF per day, and the percent flared increased to 7.7% while Bakken capture percentage decreased to 93%.

The historical high flared percent was 36% in 09/2011.

Gas Capture Details:

Statewide.....	92%
Statewide Bakken.....	93%
Non-FBIR Bakken.....	93%
FBIR Bakken.....	91%
Trust FBIR Bakken...	91%
Fee FBIR.....	89%

The Commission established the following gas capture goals:

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

² Includes all well types on IA and AB statuses: **IA** = Inactive shut in >3 months and <12 months;

AB = Abandoned (Shut in >12 months)

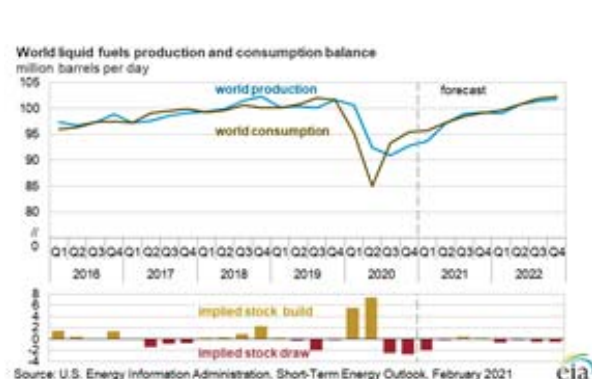
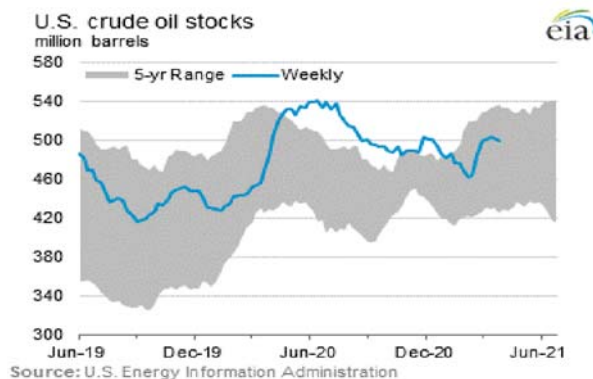
³ The number of wells waiting on completions is an estimate on the part of the director based on idle well count and a typical five-year average. Neither the State of North Dakota, nor any agency officer, or employee of the State of North Dakota warrants the accuracy or reliability of this product and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

Drilling and Completions Activity & Crude Oil Markets

The drilling rig count was stable in the mid 50's second half of 2019 through March 2020. Drilling rig count fell 78% from January 2020 to February 2021.

The number of well completions has been low and volatile since March 2020 as the number of active completion crews dropped from 25 to 1 then increased to 2 in February and to 8 today.

At their April 2021 meeting OPEC+ reached a general consensus to maintain \$50-\$60 WTI by raising output 350,000 barrels per day in May, another 350,000 barrels day in June, and then 440,000 barrels per day in July. Liquid fuel demand bottomed out in August, and is recovering slowly and unevenly (gasoline +15%, distillate -1%, jet fuel -12%), and is expected to return to 2019 levels until second half 2022.



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

- US Appeals Court for the ninth circuit upholding of a lower court ruling protecting the Swinomish Indian Tribal Community's right to sue to enforce an agreement that restricts the number of trains that can cross its reservation in northwest Washington state.
- A possible shut down of DAPL in Civil Action No. 16-1534 Note 4/9/21 hearing and 4/19/21 deadline for updated declarations.

Drilling permit activity is slowly increasing but remains volatile due to oil price uncertainty. Operators continue to maintain a permit inventory of approximately 12 months.

Seismic

Seismic activity has decreased.

Active Surveys	Recording	NDIC Reclamation Projects	Remediating	Suspended	Permitted
3	0	0	1	1	0

Rolling blackouts hurt North Dakota oil production

Photo by: Q2 News photo

Bakken oil drill

By: [Jay Kohn](#)

Posted at 10:48 PM, Apr 15, 2021

and last updated 10:47 PM, Apr 15, 2021

Rolling blackouts that cut power to the Bakken oil fields during February's deep freeze also cut North Dakota's oil production by as much as six percent.

The North Dakota Department of Mineral Resources reported recently that the power problems slashed the state's oil production by more than a million barrels in February. Agency Director Lynn Helms says that decrease in production was twice what his agency anticipated.

The February deep freeze forced the Western Area Power Administration (WAPA) to conduct rolling blackouts across its system. Helms said those outages affected Mckenzie, Williams and Dunn counties, three of North Dakota's top oil-producing areas. Helms said the blackouts came with little warning over two days in mid-February, forcing several North Dakota natural gas plants offline for hours.

On a warmer note, oil prices remain favorable this month. Thursday's price for North Dakota sweet crude at \$56.75 barrel, its highest point since October of 2018. Helms noted that this month's oil prices are tracking 20 percent higher than his department's forecast.

As of Thursday, 17 oil rigs were operating in the Bakken along with eight completion crews. Helms said each fracking crew can complete up to six wells per month. That combination of rigs and crews according to Helms, is the break even point for North Dakota to maintain oil production at one million barrels per month.

February's blackouts caused North Dakota oil output to fall

[AMY R. SISK](#)

North Dakota's oil production dropped in February beyond what state officials had anticipated due to cold weather that forced rolling blackouts in the Bakken.

The state's daily oil output fell 6% to 1.083 million barrels per day that month, according to data released Thursday. Natural gas production fell 5% to 2.703 billion cubic feet per day. Official state oil and gas figures lag several months as officials gather data.

The blackouts came about when a blast of cold weather hit the southern United States, stressing the Southwest Power Pool grid, which delivers electricity up the middle of the country all the way to North Dakota. The grid operator ordered rolling blackouts in North Dakota and other states to avoid bigger problems elsewhere on its system.

State Mineral Resources Director Lynn Helms said that caused gas plants and related infrastructure to go offline for hours at a time. Some oil wells also stopped operating.

"People got very little warning," he said.

More recently, wildfires have plagued western North Dakota amid dry weather. Helms said they have not caused any problems for the oil and gas industry, though flares at oil wells started a few fires. That can happen in high wind, which causes the flame to touch down on grass. None of those fires caused any major damage, and they were put out quickly before growing very large, Helms said.

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North Dakota continues to meet its flaring target, though the percentage rose slightly in February. Statewide, 8% of all gas produced was wastefully flared that month. The target set by state regulators aims to keep flaring within 9%. Flaring occurs when an oil well is not connected to pipelines and processing plants, or when that infrastructure is down or already at capacity.

MONTHLY UPDATE

FEBRUARY 2021 PRODUCTION & TRANSPORTATION

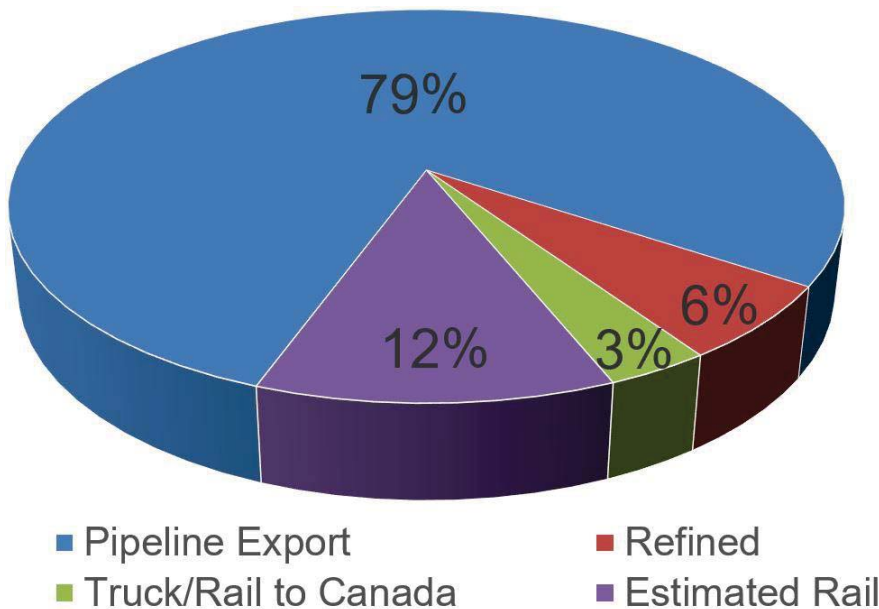
North Dakota Oil Production

Month	Monthly Total, BBL	Average, BOPD
Jan. 2021 - Final	35,568,679	1,147,377
Feb. 2021 - Prelim.	30,324,555	1,083,020

North Dakota Natural Gas Production

Month	Monthly Total, MCF	Average, MCFD
Jan. 2021 - Final	88,327,784	2,849,283
Feb. 2021 - Prelim.	75,710,555	2,703,948

Estimated Williston Basin Oil Transportation, Feb. 2021



CURRENT DRILLING ACTIVITY:

NORTH DAKOTA¹

17 Rigs

EASTERN MONTANA²

0 Rigs

SOUTH DAKOTA²

0 Rigs

SOURCE (APR 15, 2021):

1. ND Oil & Gas Division
2. Baker Hughes

PRICES:

Crude (WTI): \$63.33

Crude (Brent): \$66.86

NYMEX Gas: \$2.67

**SOURCE: BLOOMBERG
(APR 15, 2021)**

GAS STATS*

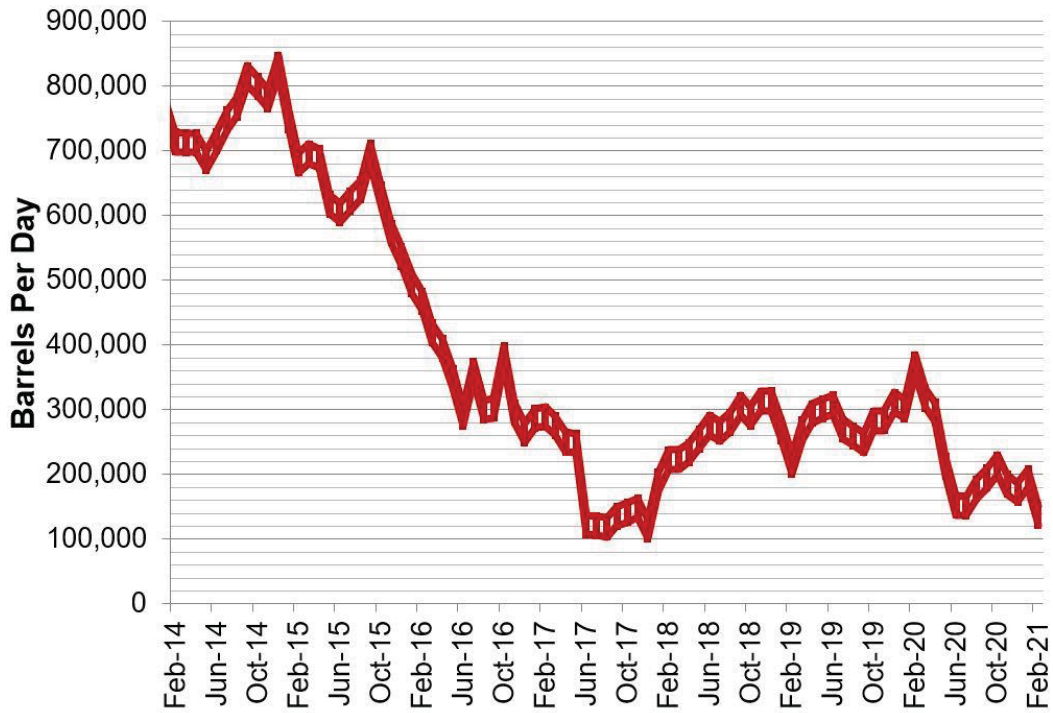
92% CAPTURED & SOLD

6% FLARED DUE TO
CHALLENGES OR
CONSTRAINTS ON EXISTING
GATHERING SYSTEMS

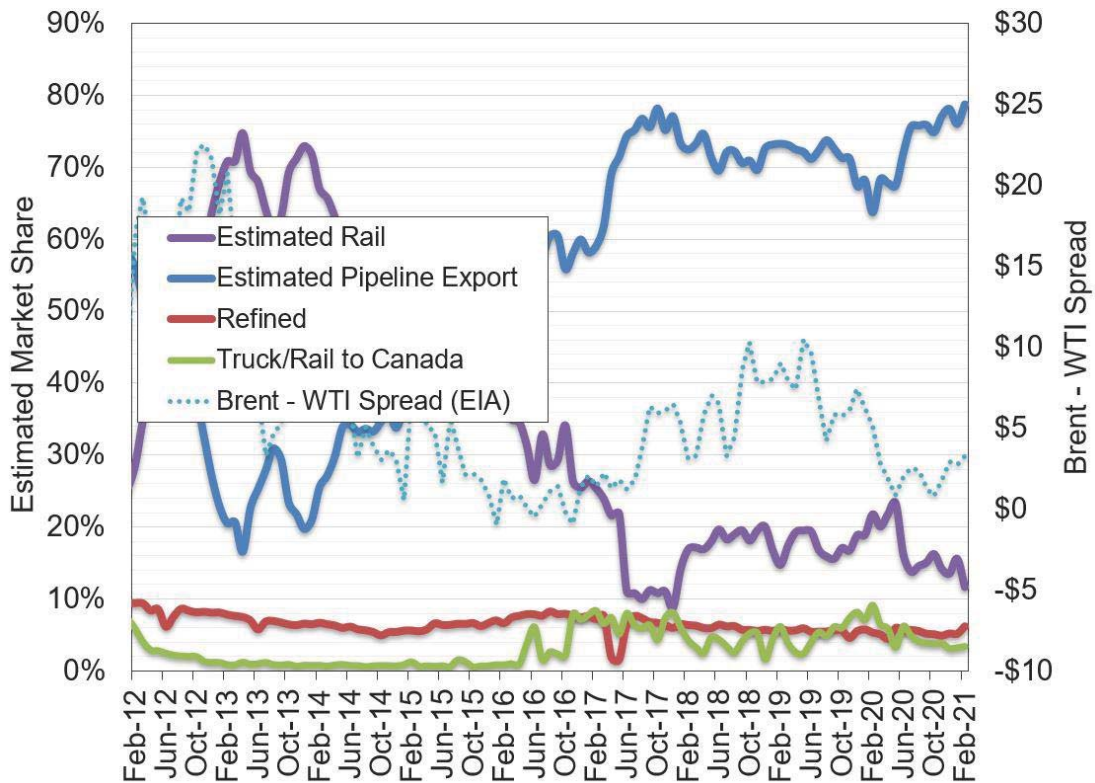
2% FLARED FROM WELL
WITH ZERO SALES

*FEBRUARY 2021 NON-CONF
DATA

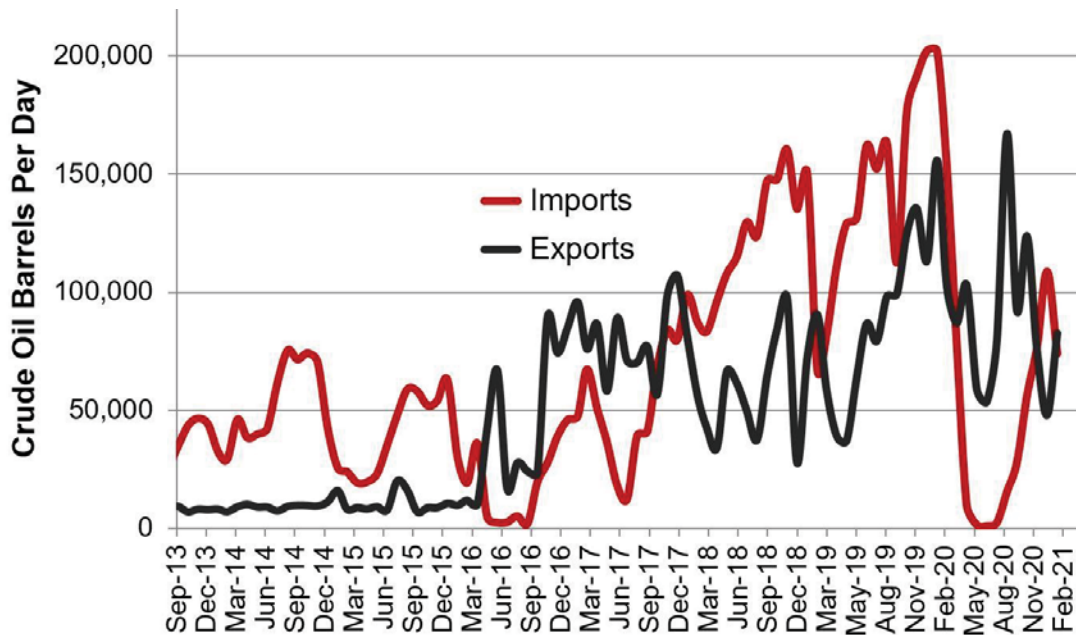
Estimated North Dakota Rail Export Volumes



Estimated Williston Basin Oil Transportation

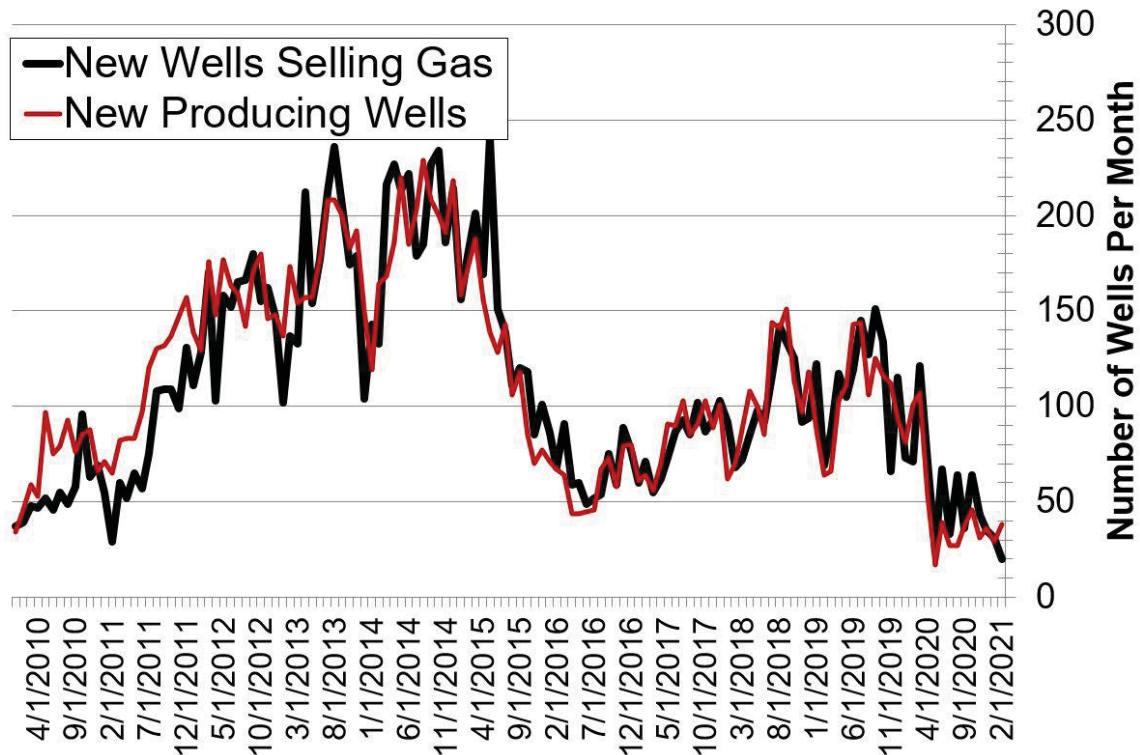


Williston Basin Truck/Rail Imports and Exports with Canada



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

New Gas Sales Wells per Month



US Williston Basin Oil Production, BOPD

2020

MONTH	ND	EASTERN MT*	SD	TOTAL
January	1,431,679	57,435	3,091	1,492,205
February	1,507,069	55,413	3,070	1,565,552
March	1,435,200	57,699	2,946	1,495,845
April	1,225,476	49,025	2,610	1,277,111
May	862,254	37,066	2,466	901,786
June	895,208	42,807	2,680	940,695
July	1,043,089	48,374	3,435	1,094,898
August	1,166,242	46,910	2,807	1,215,959
September	1,224,008	47,086	2,837	1,273,931
October	1,244,056	46,445	2,749	1,293,250
November	1,226,409	45,094	2,798	1,274,301
December	1,191,429	44,048	2,827	1,238,304

2021

MONTH	ND	EASTERN MT*	SD	TOTAL
January	1,147,377	39,390	2,888	1,189,654
February	1,083,020			
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

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

Agency Updates

Bureau of Indian Affairs

BIA has published a new final rule to update the process for obtaining rights of way on Indian land. The rule was published 11/19/15 and became effective 12/21/15. The final rule can be found at <https://www.federalregister.gov/articles/2015/11/19/2015-28548/rights-of-way-on-indian-land>. On 3/11/16, the Western Energy Alliance filed a complaint and motion for a temporary restraining order and/or a preliminary injunction. On 04/19/16, the US District court for the District of North Dakota issued an order denying the motion for a preliminary injunction. The new valuation requirements were resulting in increased delays so BIA provided a waiver that expires 04/05/2020. On 03/09/2020 the NDIC submitted comments supporting an extension of that waiver through 04/05/2021 to allow infrastructure development to continue while BIA develops and implements the new process. NDIC comments can be found at <http://www.nd.gov/ndic/ic-press/Sweeney%20letter%20200309.pdf>

Bureau of Land Management

BLM on 1/20/21 DOI issued order 3395 implementing a 60 day suspension of Federal Register publications; issuing, revising, or amending Resource Management Plans; granting rights of way and easements; approving or amending plans of operation; appointing, hiring or promoting personnel; leasing; and permits to drill. On 1/27/21 President Biden issued an executive order that mandates a “pause” on new oil and gas leasing on federal lands, onshore and offshore, “to the extent consistent with applicable law,” while a comprehensive review of oil and gas permitting and leasing is conducted by the Interior Department. There is no time limit on the review, which means the president’s moratorium on new leasing is indefinite. The order does not restrict energy activities on lands the government holds in trust for Native American tribes.

What is the percentage of federal lands in ND?

Mineral ownership in ND is 85% private, 9% federal (\$ Indian lands and 5% federal public lands), and 6% state. 66% of ND spacing units contain no federal public or Indian minerals, 24% contain federal public minerals, 9% contain Indian minerals, 1% contain both

How many potential wells could be delayed or not drilled by a Biden administration ban on drilling permits and hydraulic fracturing on federal lands?

A spatial query found 3,443 undrilled wells in spacing units that would penetrate federal minerals, 2,902 undrilled wells in spacing units would penetrate BIA Trust minerals (700 tribal minerals and 2,202 allotted minerals), and the total number of wells potentially impacted is 6,345. The minimum number of future Bakken wells is 24,000 so the 3,443 wells on federal public lands = 14%, and the 2,902 wells on trust lands = 12%.

What is the potential federal royalty loss from a Biden administration ban on drilling permits and hydraulic fracturing on federal lands?

A recent study from University of Wyoming estimated the ND loss as follows: 2021-2025 \$76 million, 2026-2030 \$113 million, 2031-2035 \$160 million, and 2036-2040 \$221 million for a total of \$570 million over 15 years. Please note that 50% of the royalties on federal public lands go to the state and 50% of the state share goes to the county where the oil was produced.

The U.S. Interior Department announced 3/9/21 it will launch its review of the federal oil and gas leasing program on 3/25/21, a key step that will determine whether the Biden administration will permanently halt new leases on federal land and water. The review will kick off with a public forum on oil and gas leasing on federal land and water, with participants representing industry, environmental conservation and justice groups, labor and others, and commence an online comment period. This input would inform an interim report to be released in early summer outlining next steps and recommendations on the future of the program and what can be done to reform how leases are managed, how much revenue should go to taxpayers and other issues.

BLM published a new final rule 43 CFR Parts 3100, 3160 and 3170 to update and replace its regulations on venting and flaring of natural gas effective 1/17/16. The final rule can be viewed online at <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/methane-and-waste-prevention-rule>. North Dakota, Wyoming, Montana, Western Energy Alliance, and IPAA filed for a preliminary injunction to prevent the rule going into effect until the case is settled. A hearing in Casper, Wyoming was held 1/6/17. On 1/16/17 the court denied all of the petitioners’ motions for preliminary injunctions. **On 2/3/17 the US House of Representatives voted 221-191 to approve a Congressional Review Act resolution against the rule.** On 3/28/17 President Trump issued an executive order which in part

Bloomberg @TheTerminal

BP Whiting Refinery Shuts Largest Coker for Heater Repairs (1)

2021-04-16 23:30:38.141 GMT

By Barbara Powell

(Bloomberg) -- (Updates to say co. didn't immediately comment in fourth bullet)

* BP's Whiting, Indiana, refinery had to shut its largest coker Friday for emergency heater repairs, people familiar with plant operations say.

* Work on the 102k b/d coker have not begun and there's no timeframe for repairing the heater and returning the unit to normal operations

* Earlier: Whiting expects to complete a turnaround on a naphtha hydrotreater late next week that began in late March

** Refinery also has the 70k b/d Pipestill 11-A crude shut at reduced rates since April 9: Genscape data

* Co. didn't immediately respond to request for comment

* Whiting, the largest inland refinery in the U.S., has a total crude processing capacity of 435k b/d: data from EIA

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To view this story in Bloomberg click here:

<https://blinks.bloomberg.com/news/stories/QROJUPDWRGG1>

Pemex's Minatitlan Refinery Will Be Offline for 90 Days

2021-04-12 17:54:47.392 GMT

By Amy Stillman

(Bloomberg) -- Pemex's Minatitlan refinery in Veracruz will be offline for about 90 days after an explosion last week, according to a person with knowledge of the situation.

* A Pemex representative didn't immediately respond to a request for comment

* NOTE: Explosion on April 7 occurred at gasoline transfer area and affected a storage tank

* NOTE: Minatitlan refinery in Veracruz has crude processing capacity of 285k b/d: Bloomberg data

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<https://www.themoscowtimes.com/2021/04/12/russia-may-have-passed-peak-oil-output-government-a73558>

Russia May Have Passed Peak Oil Output – Government

Russia's oil production is unlikely to recover to pre-coronavirus levels, according to a government strategy document cited by Kommersant.

11 hours ago

Russia might never hit the record oil production levels seen in 2019, a government paper cited by Kommersant outlines. Maxim Slutsky / TASS

Russian oil production might never recover to pre-coronavirus levels, the country's Energy Ministry has forecast, according to the [Kommersant](#) business paper.

In a strategy document outlining prospects for Russia's critical oil and gas industry, the government said its "base case" — or most likely — scenario, is that Russia's oil production will never again hit the record levels recorded in 2019.

In the last full year before the pandemic, Russia produced 560 million tons of oil — equivalent to 11.3 million barrels a day. But output dropped for the first time in more than a decade in 2020 as Russia agreed significant production cuts with Saudi Arabia and other members of the OPEC cartel in a bid to support oil prices at the start of the pandemic — pushing production down 9% to 10.3 million barrels per day.

In the scenario labelled most probable, the Energy Ministry predicts Russia's oil output will grow over the rest of the decade — but fail to hit the record output of 2019, with production hitting a post-coronavirus peak of 11.1 million barrels a day in 2029 before decreasing to 9.4 million barrels a day by 2035.

Russia vies with Saudi Arabia to be the world's second-largest oil producer, behind the world-leading U.S. The Russian economy remains heavily dependent on energy exports, with revenues in pre-pandemic years accounting for more than a third of the government's total budget and all extractive industries — covering oil, gas and other commodities — accounting for [almost 40%](#) of Russian GDP, according to the country's statistics agency Rosstat.

In its most optimistic scenario, the Energy Ministry expects production to pass pre-coronavirus levels, peaking in 2030 at 12.8 million barrels a day before starting to decline. In every scenario presented, the Energy Ministry said Russian oil production had either already peaked, or would hit its maximum level within the next decade, Kommersant reported.

Russia remains poorly positioned to take advantage of the global energy transition to cleaner and renewable sources of energy, experts say. While countries in Europe and the U.S. have put clean energy at the center of their post-coronavirus economic stimulus and investment packages, Russia is reportedly planning to [cut state spending](#) on green energy. Analysts estimate that if every project currently in development is completed in time, Russia's electricity generation from renewable sources, excluding hydro power, will be [just 1%](#) by 2024.

"While international oil [majors] are falling over themselves in their business transformation potential to become 'clean,' Russians are unlikely to compete with them in this renewables drive," VTB Capital's deputy head of oil and gas research Dmitry Loukashov said in a research note last week.

He does believe, however, that the Russian oil and gas industry could capitalize on so-called transition fuels, like hydrogen or ammonia, as well as take a leading role in investment and research into carbon capture technology.

The Energy Ministry strategy outlines that government tax cuts to high-potential oil fields, such as those in the Arctic region, will be crucial in helping the country maximize the potential of the vast energy resources it still sits on.

If oil prices lag, it estimates that only a third of Russia's proven reserves will be profitable to extract, while even in the most optimistic scenario, with higher global oil prices, only two-thirds of Russia's recoverable reserves will be taken out of the ground.

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Google Translate of TASS Russian story “В Минэнерго сообщили, что рентабельными в России являются только 36% запасов нефти” <https://tass.ru/ekonomika/10559021>

27 JAN, 04:40

The Ministry of Energy said that only 36% of oil reserves in Russia are profitable

Deputy head of the department Pavel Sorokin noted that the development of deep horizons of Western Siberia will require investments comparable to the cost of drilling in the Arctic

MOSCOW, January 27. / TASS /. Only 36% of 30 billion tons of oil reserves in Russia are profitable, which is associated with the deterioration of development conditions and a drop in the quality of reserves, writes the Deputy Minister of Energy of the Russian Federation Pavel Sorokin in an article for the Energy Policy magazine.

"According to the data of the inventory of the economics of field development, carried out on behalf of the Russian government, out of 30 billion tons of recoverable oil reserves in Russia, only 36% is profitable in the current macroeconomic conditions. This is due to the deterioration of development opportunities: an increase in water cut, the need to permeability and compartmentalization of reservoirs, withdrawal into marginal zones and strata with small thicknesses, and so on, "Sorokin explained.

"All this not only increases the cost of production, but also increases the risks of not confirming the planned development indicators due to the complexity of modeling processes and errors during drilling, for example, the exit from the productive formation during horizontal drilling. As a result, for some assets, the actual profitability of drilling may differ significantly from plans, and reserves are not confirmed, "the deputy minister stressed.

According to him, the quality of reproduction of the resource base is also deteriorating. The average size of new field discoveries in 2015-2019 amounted to 9-14 million tons (excluding several large ones on the shelf and the Payakhskoye field). The increase in reserves in recent years is provided by additional exploration in the operating regions of production, as well as by revaluation of reserves. Basically, in traditional regions, the growth is due to the search for missed deposits or drilling into deep horizons. At the same time, the technological complexity of geological exploration increases significantly.

"It is important to understand that the omission of promising formations when using traditional methods of data interpretation is associated with their small size and complexity. Therefore, it is necessary to apply completely new technologies for exploration and modeling of assets," Sorokin said.

Thus, the question of the future of the Russian oil industry is associated with advanced technological development and increased efficiency. "Only this will allow maintaining the position of one of the lowest producers in terms of cost on the world oil supply curve," the deputy minister sums up.

Investments in the further development of Western Siberia

The development of the deep horizons of Western Siberia will require investments comparable to the costs of drilling in the Arctic, which are traditionally very high, Sorokin also noted.

"The development of deep horizons requires increased investment. For example, for the pre-Jurassic complex of Western Siberia, capital expenditures for exploratory drilling are comparable to the Arctic - from 500 million rubles or more per well. In terms of major discoveries, the most promising region is the Arctic and the shelf. Here Several major discoveries have already been made in recent years - Neptune, Triton, Payakha with total reserves of more than 1.3 billion tons of oil However, these basins are poorly studied and, given the high cost of exploratory drilling, it is necessary to use completely new modeling technologies for effective localization hydrocarbon deposits, "Sorokin noted.

"Thus, the question of the future of the Russian oil industry is associated with advanced technological development and efficiency gains. Only this will allow us to maintain the position of one of the lowest producers in terms of cost on the world oil supply curve," the deputy minister added.

According to him, the oil and gas industry is currently facing a number of problems that reduce its competitiveness in the world market.

A common problem is the gradual depletion of reserves in developed fields and a drop in oil production in traditional oil-producing regions. The highest rates are observed in the key oil-producing region of Russia - Western Siberia, where production has decreased by 10% over the past ten years - to 288 million tons, Sorokin concludes.

TASS English Posted Story <https://tass.com/economy/1249505>

27 JAN, 04:26

Only 36% of oil reserves profitable in Russia, energy minister says

This is related to worsening of development opportunities, according to the minister

MOSCOW, January 27. /TASS/. Just 36% of 30 bln tonnes of oil reserves are profitable, Deputy Energy Minister of Russia Pavel Sorokin wrote in his article for the Energy Policy magazine.

"According to data of fields' development economics inventory completed on the instruction of the Russian government, just 36% out of 30 bln tonnes of recoverable reserves of Russian oil are profitable in current macroeconomic environment. This is related to worsening of development opportunities: growing water cut, the need to build costly wells of complex design, low permeability and compartmentalization of reservoirs, the move to marginal areas and beds with low thickness, and so on," the official said.

"All that does not merely increase the lifting costs but also moves upward risks of failure to confirm target development figures because of the complexity of processes modeling and drilling errors, for example, leaving the pay bed in horizontal drilling. The result is the actual profitability of drilling may considerably differ from plans for certain assets and reserves will not be confirmed," Sorokin said.

Oil – Russia says 64% of its oil reserves are not profitable under current conditions

Imagine what markets would say if Exxon were to come out in their year end reporting and say that 64% of its existing oil reserves are not profitable at >\$50 oil. The stock would be creamed as markets would think Exxon wouldn't have oil growth potential and its oil production had likely peaked. This is what Russia said this week for their oil reserves. We were surprised by a TASS Russian news story on Wed morning and would have thought it was a fake if it wasn't on TASS as we would never have thought Russia's #2 oil official (after Novak) would be saying what he did. We tweeted [LINK](#) "1/2. must read, bullish for oil @tass_agency story "only 36% of oil reserves in Russia are profitable". multiple indicators of maturing oil supply ie. deeper, smaller pools, etc. Effectively says RUS has more or less reached peak oil supply unless #Oil prices are higher #OOTT .." and [LINK](#) "2/2. surprising RUS lays this out, but fits to Novak's Dec comments and why they would want higher oil prices for 2020s sooner. see SAF Group blog Russia Says its a Price Taker at \$45 in 2021, May Be the New Strategy Needed for OPEC+ to Fix Post Covid Oil Prices For 2020s. #OOTT". TASS wrote "Only 36% of 30 billion tons of oil reserves in Russia are profitable, which is associated with the deterioration of development conditions and a drop in the quality of reserves, writes the Deputy Minister of Energy of the Russian Federation Pavel Sorokin in an article for the Energy Policy magazine. "According to the data of the inventory of the economics of field development, carried out on behalf of the Russian government, out of 30 billion tons of recoverable oil reserves in Russia, only 36% is profitable in the current macroeconomic conditions. This is due to the deterioration of development opportunities: an increase in water cut, the need to permeability and compartmentalization of reservoirs, withdrawal into marginal zones and strata with small thicknesses, and so on, "Sorokin explained." This is significant, Sorokin is basically saying Russia has more or less reached peak oil supply, or at least peak oil supply unless prices are going higher. Maybe there is some growth but Russia has to first arrest declines. This is very different than what we see in the Middle East. Russia is saying its maturing oil production/reserves base needs higher oil prices as its oil base is maturing and they are going after smaller pools (higher cost per barrel), deeper zones (higher costs per barrel) and need new technology (we wonder if this means shale, although Putin has been negative). And also very different than Saudi Arabia. Their costs are going up to, but they aren't saying their oil production/reserves needs higher oil prices to be economic. Rather they and others like we saw with Kuwait this week need higher oil prices to balance their govt budget. They don't say they need higher oil prices to develop its oil reserves. One reminder, producing oil reserves isn't like drinking a glass of water, where you turn the cup down and the water flows out at the same rate until the glass is empty. As oil reserves produce more from a reservoir that is economic today, the oil recovery rate declines over time and the future barrels become more expensive to produce. This is more than food for thought. If peak oil demand isn't here until 2030, then its bullish for oil post Covid. Even if oil demand only recovers to pre Covid, its bullish or at least supportive of higher prices. Our Supplemental Documents package includes the Google Translate version of the TASS Russian story.

Also reminds that TASS Russian stories give more color than its English ones

We remind that the TASS Russian version of any story always have better info than the English versions. Its why we look at its Russian news site thanks to Google Translate. For the TASS Sorokin story, we attached both the Russian and English versions to illustrate. Also in the Dec 29 blog (noted below), we noted that one of the key Novak stories was only in TASS Russian news and not in TASS English news. And, in the case of the Dec 29 blog, it was the key story and we believe that is why most never noted the Novak quotes.

It fits to why Russia needs to focus on monetization of its oil reserves

We are still surprised that markets have more or less overlooked Sorokin's comments. We recommend going back over Novak's series of late Dec comments that make sense of Sorokin's comments this week. We detailed Novak's comments in our Dec 29 blog "Russia Says Its a Price Taker at \$45 in 2021, May Be the New Strategy Needed For OPEC+ To Fix Post-Covid Oil Prices For the 2020s" [LINK](#). One of Novak's key comments that week was that Russia needs to focus on monetization of its oil and gas reserves. This was perhaps the most significant new comment by Russia and points to Russia being serious that peak oil demand is coming sooner. And because they believe peak oil demand is coming sooner, it means they have to focus on monetizing their oil and gas assets. Its also a great example of trying to go to original Russian reporting and not reporting on original Russian reporting. And luckily we have Google Translate as its easy to search for stories in Russia on *новак* (Novak in English) and find stories. Also important to remember TASS original stories are on their Russian news site, and either shortened or not included on their English news site. On Dec 21, TASS had a Russia news story [LINK](#) that did not appear on the English news site. "In the coming decades, Russia needs to pay special attention to the monetization of energy resources: oil, gas and coal, as demand in developed countries may decrease. This opinion was expressed by Deputy Prime Minister Alexander Novak at the session of the "Russia and the World" project. "My opinion is that in the coming decades [Russia] needs to pay more attention to the monetization". And when we see Sorokin's comments this week on Russia's reserves, it makes sense why Russia needs higher prices and wants to focus on monetizing its oil reserves. Our Supplemental Documents package includes our Dec 29 blog.

Oil Market Highlights

Crude Oil Price Movements

Spot crude prices rose for the fifth-consecutive month in March on the back of continuing supportive oil market fundamentals. The OPEC Reference Basket (ORB) increased \$3.51 or 5.7% m-o-m to average \$64.56/b, the highest on monthly terms since January 2020. In the first three months of 2021, the ORB was up by \$8.82, or 17.2% to average \$60.22/b. Crude oil futures prices were higher in March extending previous monthly gains. The ICE Brent front month rose by \$3.42 in March, or 5.5%, to average \$65.70/b, and NYMEX WTI increased by \$3.30, or 5.6%, to average \$62.36/b. Consequently, the Brent-WTI spread widened to \$3.34/b on a monthly average. The backwardation structure of Brent and WTI markets eased over the month, specifically in the front of the forward curve. In contrast, backwardation strengthened for DME Oman and Dubai. Hedge funds and other money managers liquidated part of their bullish positions in the second half of March after market sentiment softened.

World Economy

The global economic contraction estimate in 2020 is reduced after a better-than-expected actual performance by a number of economies in 2H20. As a result, global economic growth now shows a decline of 3.5% y-o-y in 2020. For 2021, additional US stimulus measures and an accelerating recovery in Asian economies are expected to continue supporting the global economic growth forecast, which is now revised up to 5.4%. However, this forecast remains clouded by uncertainties, including, but not limited to, the spread of COVID-19 variants and the speed of the vaccine rollout. In addition, sovereign debt levels in many regions, inflationary pressures, and central bank responses are key factors to monitor. After a contraction of 3.5% in 2020, US economic growth in 2021 is now expected to reach 5.7%. The GDP growth forecast for the Euro-zone in 2021 remains at 4.3%, which follows a contraction of 6.8% last year. Japan's GDP growth forecast remains at 3.1% for 2021, after a contraction of 4.9% in 2020. Following growth of 2.3% in 2020, China's GDP is forecast to increase by 8.4% in 2021. India's 2021 GDP growth forecast is revised up to 9.8%, compared to a contraction of 7% in 2020. Brazil's growth forecast remains unchanged at 3.0%, with government estimates showing Brazil's economy contracted by 4.1% in 2020. Russia's growth forecast for 2021 remains at 3%, after contracting by 3.1% in 2020.

World Oil Demand

The global oil demand contraction in 2020 is revised lower by about 0.1 mb/d compared to last month's MOMR, now showing a contraction of about 9.5 mb/d y-o-y, with total world oil demand at 90.5 mb/d. In 2021, world oil demand growth is expected to increase by about 6.0 mb/d y-o-y, representing an upward revision of about 0.1 mb/d from last month's report. Indeed, oil demand in the 2H21 is projected to be positively impacted by a stronger economic rebound than assumed last month, supported by stimulus programmes and a further easing of COVID-19 lockdown measures, amid an acceleration in the vaccination rollout, largely in the OECD region. Nevertheless, oil demand was adjusted lower in 1H21, mainly taking into account the recent developments related to COVID-19 measures in OECD Europe and sluggish 1Q21 oil demand data from the non-OECD region. As a result, global oil demand is expected to average about 96.5 mb/d in 2021.

World Oil Supply

Non-OPEC liquids supply in 2020 is estimated to average 62.9 mb/d, showing a contraction of 2.5 mb/d y-o-y, which is an upward revision of 0.04 mb/d m-o-m. The majority of the decline came from Russia and the US. Non-OPEC liquids supply for 2021 is revised down by 0.03 mb/d from last month and is now forecast to grow by 0.9 mb/d to an average of 63.8 mb/d. In the US, higher prices could potentially translate into a higher level of production in 2021, with the drilling and completion trend indicating possible future robust monthly growth. However, the US liquids supply forecast in 2021 is expected to remain unchanged at growth of 0.16 mb/d y-o-y. The other main drivers for supply growth in 2021 are expected to be Canada, Norway and Brazil. OPEC NGLs are forecast to grow by around 0.1 mb/d y-o-y in 2021 to average 5.2 mb/d, following an estimated contraction of 0.1 mb/d in 2020. OPEC crude oil production in March increased by 0.20 mb/d, m-o-m, to average 25.04 mb/d, according to secondary sources.

Product Markets and Refining Operations

Refining margins showed diverging trends in March. In the USGC margins jumped, as product markets continued to benefit from the recent rise in unplanned outages, as well as low refinery output levels due to heavy maintenance. This led to a tighter overall product balance and bullish product market sentiment, which helped keep fuel prices sustained. In Europe, refinery margins also rose, but rather moderately. On the other hand, margins in Asia performed negatively as refining economics saw losses as pressure came mainly from the middle of the barrel as the market remained well supplied.

Tanker Market

Dirty tanker spot freight rates picked up in March, as gains in Suezmax and Aframax outpaced a further slight decline in VLCCs. Increases in these vessel classes were driven by tighter tanker supply as the blockage of the Suez Canal kept ships waiting on both sides of the waterway amid uncertainties regarding when the disruption would be resolved. After the container ship 'Ever Given' was dislodged at the end of the month, rates fell back toward the lower levels seen at the start of the year. The impending emergence of 2Q refinery maintenance in Asia also reduced support by the end of the month. Clean tanker rates in March saw an improved performance East of Suez, while West of Suez routes around the Med eased from the higher levels seen last month.

Crude and Refined Products Trade

Preliminary data shows that US crude imports were flat in March at around 5.7 mb/d for the fourth month in a row, while US crude exports declined for the third month in a row, averaging 2.7 mb/d, the lowest since July 2019. US product imports surged in March to average 2.5 mb/d, the highest since July 2019, as weather disruptions supported inflows. Japan's crude imports were broadly stable at the stronger levels seen over the past two months, averaging 2.6 mb/d in February. Product imports were the highest in over three years, averaging 1.3 mb/d in February. China's crude imports achieved a four-month high in February, averaging 11.8 mb/d, impacted by the Lunar New Year Holidays and stronger buying by independent refiners. Product exports edged up 3% to average 1.5 mb/d, the highest since April 2020, driven by gasoil and jet fuel. India's crude imports declined sharply in February, averaging just under 4 mb/d, the lowest in four months, as COVID-19 impacts and higher prices weighed on demand. Product imports rebounded in February, to average 1.2 mb/d, the highest in 13 months, driven by LPG inflows, part of a government programme to promote clean cooking.

Commercial Stock Movements

Preliminary data shows that total OECD commercial oil stocks fell by 44.9 mb m-o-m in February. At 2,978 mb, inventories were 94.1 mb higher than the same month a year ago, 29 mb above the latest five-year average, and around 57 mb above the 2015-2019 average. Within the components, crude stocks rose by 6.1 mb, m-o-m, while product stocks fell by 51.0 mb. OECD crude stocks were 30.8 mb above the latest five-year average and 42.0 mb above the 2015-2019 average, while product stocks exhibited a deficit of 1.7 mb to the latest five-year average, but were 15.5 mb above the 2015-2019 average. In terms of days of forward cover, OECD commercial inventories declined m-o-m by 1.1 days in February to stand at 68.0 days. This is 6.7 days lower than the year-ago level, 2.6 days above the latest five-year average, and 5.6 days above the 2015-2019 average.

Balance of Supply and Demand

Demand for OPEC crude in 2020 is revised up by 0.1 mb/d from the previous month to stand at 22.5 mb/d. This is around 6.8 mb/d lower than in 2019. For 2021, demand for OPEC crude is revised up by 0.2 mb/d from the previous month to stand at 27.4 mb/d. This is 4.9 mb/d higher than in 2020.

Feature Article

Summer oil market outlook

Global oil demand in 2021 is forecast to grow by around 6.0 mb/d y-o-y. The year started with new waves of COVID-19 infections, necessitating renewed lockdown measures in many OECD economies. Therefore, the bulk of consumption growth is expected to take place in 2Q21 and 3Q21, with global demand y-o-y growth projected at 12.0 mb/d and 6.5 mb/d, respectively. Gasoline is projected to be the key driver for oil demand recovery beginning with the onset of the summer driving season. Diesel will also provide support, mostly based on economic improvements stemming from the implementation of fiscal stimulus programmes.

As the spread and intensity of the COVID-19 pandemic are expected to subside with the ongoing rollout of vaccination programmes, social distancing requirements and travel limitations are likely to be scaled back, offering increased mobility in various parts of the world, especially in OECD regions. In the US, data for 1Q21 showed that total gasoline consumption losses are smaller compared to previous months, implying that the impact of COVID-19 on gasoline demand is starting to fade, while data for jet fuel consumption remains far below normal levels. Moreover, the easing of restrictions and increased demand expected in the traditional summer driving season should lift global gasoline requirements even further. Despite projections

showing a marked improvement in gasoline demand compared to 2020, consumption in the summer months is still not expected to surpass 2019 levels due to COVID-19 related challenges. Global gasoline demand is estimated at 24.0 mb/d in 1Q21, forecast at 25.6 mb/d in 2Q21, 26.7 mb/d in 3Q21 and 25.4 mb/d in 4Q21.

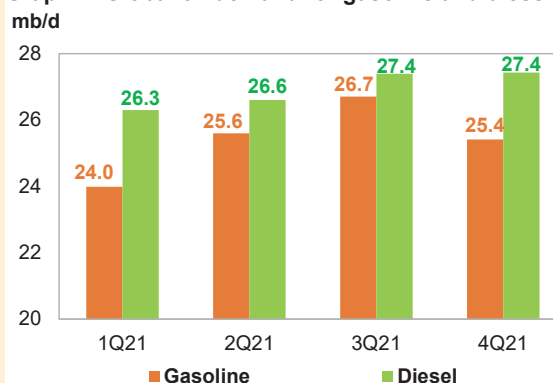
On the other hand, diesel consumption is projected to be driven by positive developments supported by sizeable stimulus programmes in many economies, most notably the US. These programmes are expected to encourage growth in industry and infrastructure, particularly in Asian economies, including construction of buildings and roads along with increased demand for agricultural products. The demand for diesel is estimated at 26.3 mb/d in 1Q21 and projected at 26.6 mb/d in 2Q21, 27.4 mb/d in both 3Q21 and 4Q21 (**Graph 1**). Nonetheless, diesel consumption is also expected to remain below pre-COVID-19 levels for the entire year.

On the refining side, the recent crude run cuts due to cold weather and maintenance have supported refining margins, mainly in the US, while remaining more or less sustained in Europe (**Graph 2**). Following refinery turnarounds scheduled for April, transport fuel demand, particularly gasoline and on-road diesel, is expected to rise steadily over the summer months, causing refinery intakes to show significant improvement and move closer to pre-COVID-19 levels. Nevertheless, refining capacity continues to exceed demand and is expected to exert pressure on margins going forward.

With regard to global inventory levels, there have been sizeable drawdowns since the middle of 2020 and these are expected to continue in the coming months, mainly due to the successful efforts undertaken by the OPEC and non-OPEC countries participating in the Declaration of Cooperation (DoC) to voluntarily adjust production in response to the unprecedented demand contraction witnessed since 1Q20. These reductions in surplus inventories as well as an expected pick up in product demand will pave the way for a cautious recovery of oil market balance in the summer months, supporting refining margins and throughputs.

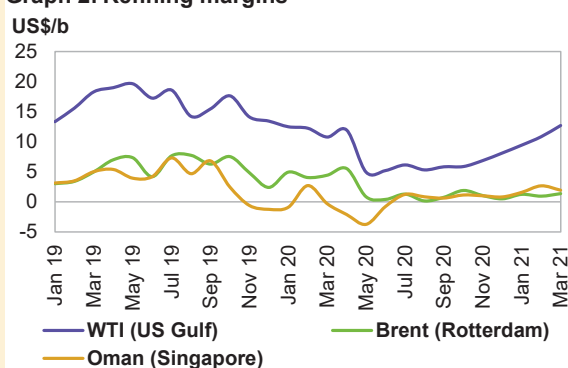
Nevertheless, the large uncertainty surrounding the fragile recovery from the unprecedented impact of COVID-19 continues to require vigilant monitoring of market developments, despite the wide-ranging stimulus measures and early signs of a return to normalcy as progress continues on vaccination programmes in many major economies. The joint efforts of the OPEC and non-OPEC countries participating in the DoC continue to contribute to market stability to ensure efficient, economic and secure supplies of oil to consumers, with a fair return on invested capital.

Graph 1: Global oil demand for gasoline and diesel



Source: OPEC.

Graph 2: Refining margins



Source: Argus and OPEC.

World Oil Demand

The contraction in global oil demand in 2020 is revised lower by about 0.1 mb/d to now show a decline of about 9.5 mb/d. Total global oil demand is now estimated to have averaged 90.5 mb/d.

In the OECD, the contraction in demand is revised marginally lower with most of the improvement occurring in the 4Q20. Oil demand is estimated to have declined by 5.6 mb/d in 2020. Lower than expected declines in OECD Americas and Europe, supported by healthier demand from the petrochemical sector were the factors behind the revisions.

In the non-OECD, contraction is revised lower by 0.1 mb/d compared with last month, to now show a decline of around 3.9 mb/d in 2020. The latest available data for China indicates better demand than originally estimated.

In 2021, oil demand growth is revised higher by 0.1 mb/d compared with the previous month's estimates. Global demand is now anticipated to increase by about 6.0 mb/d, reaching the level of 96.5 mb/d. The upward revision mainly takes into account a stronger economic rebound than assumed last month, impacting primarily OECD oil demand in the 2H21, supported by stimulus programmes and a further relaxation in COVID-19 measures, amid an accelerated vaccination rollout. Oil demand is adjusted lower in 1H21 mainly to take into account recent developments related to COVID-19 measures in OECD Europe and sluggish 1Q21 oil demand data from the non-OECD region.

Gasoline is anticipated to record the highest gains y-o-y, as economic activity recovers globally and unemployment rates improved in the US. Diesel is anticipated to have the second largest growth y-o-y, amid an improved economic outlook for 2021. Furthermore, light distillates will be largely supported by strong petrochemical demand in countries such as China, the US and India. The reduction in international and domestic flight traffic due to uncertainty around COVID-19 pandemic developments will continue to cap jet fuel growth in 2021. In terms of the regions, OECD Americas is anticipated to be the main contributor to oil demand growth as transportation fuel demand recovers. In the non-OECD region, transportation and industrial fuels are anticipated to be the drivers for demand growth, along with petrochemical feedstock, with growth concentrated in China and India.

Risks will remain high during 2021, subject to COVID-19 developments, and the pace of reaching herd immunity targets. Developments in labour markets, the structural impact of the pandemic on demand, new energy policies and the effectiveness of the large scale monetary and fiscal stimulus measures are factors that will further impact oil demand in the short term.

World oil demand in 2020 and 2021

Table 4 - 1: World oil demand in 2020*, mb/d

	2019	1Q20	2Q20	3Q20	4Q20	2020	Change 2020/19	
							Growth	%
World oil demand								
Americas	25.65	24.35	20.01	22.72	23.15	22.56	-3.09	-12.06
of which US	20.86	19.67	16.38	18.67	19.04	18.44	-2.42	-11.60
Europe	14.25	13.34	11.03	12.85	12.56	12.45	-1.80	-12.64
Asia Pacific	7.79	7.75	6.54	6.69	7.34	7.08	-0.71	-9.11
Total OECD	47.69	45.44	37.58	42.27	43.05	42.09	-5.61	-11.75
China	13.48	11.34	13.25	13.87	14.28	13.19	-0.29	-2.18
India	4.91	4.84	3.58	4.01	5.15	4.40	-0.52	-10.54
Other Asia	9.04	8.30	7.79	8.11	8.33	8.13	-0.91	-10.06
Latin America	6.59	6.11	5.61	6.20	6.12	6.01	-0.58	-8.83
Middle East	8.20	7.88	6.91	7.94	7.65	7.60	-0.60	-7.37
Africa	4.45	4.37	3.77	3.95	4.28	4.09	-0.35	-7.94
Russia	3.61	3.44	3.04	3.20	3.43	3.28	-0.33	-9.20
Other Eurasia	1.24	1.07	0.99	1.01	1.23	1.07	-0.16	-13.04
Other Europe	0.76	0.71	0.55	0.64	0.69	0.65	-0.12	-15.33
Total Non-OECD	52.29	48.05	45.49	48.94	51.16	48.42	-3.87	-7.40
Total World	99.98	93.49	83.07	91.21	94.21	90.51	-9.48	-9.48
Previous Estimate	99.98	93.10	83.07	91.20	94.13	90.39	-9.60	-9.60
Revision	0.00	0.40	0.00	0.00	0.08	0.12	0.12	0.12

Note: * 2020 = Estimate. Totals may not add up due to independent rounding. Source: OPEC.

Table 4 - 2: World oil demand in 2021*, mb/d

	2020	1Q21	2Q21	3Q21	4Q21	2021	Change 2021/20	
							Growth	%
World oil demand								
Americas	22.56	23.84	24.45	24.54	24.58	24.36	1.80	7.98
of which US	18.44	19.38	19.86	20.09	20.28	19.91	1.47	7.95
Europe	12.45	12.12	12.71	13.59	13.74	13.05	0.60	4.81
Asia Pacific	7.08	7.39	7.18	7.17	7.55	7.32	0.24	3.45
Total OECD	42.09	43.34	44.34	45.30	45.87	44.73	2.64	6.28
China	13.19	12.95	14.27	14.93	15.05	14.30	1.11	8.43
India	4.40	4.94	4.56	4.83	5.61	4.99	0.59	13.48
Other Asia	8.13	8.33	8.96	8.57	8.47	8.58	0.45	5.54
Latin America	6.01	6.15	6.19	6.46	6.40	6.30	0.29	4.79
Middle East	7.60	7.87	7.62	8.30	7.97	7.94	0.35	4.57
Africa	4.09	4.41	3.97	4.18	4.49	4.26	0.17	4.10
Russia	3.28	3.57	3.37	3.37	3.58	3.47	0.19	5.93
Other Eurasia	1.07	1.18	1.19	1.14	1.28	1.20	0.12	11.31
Other Europe	0.65	0.69	0.62	0.68	0.74	0.68	0.04	5.44
Total Non-OECD	48.42	50.09	50.75	52.45	53.58	51.73	3.31	6.83
Total World	90.51	93.43	95.09	97.75	99.45	96.46	5.95	6.58
Previous Estimate	90.39	93.04	95.61	97.43	98.91	96.27	5.89	6.51
Revision	0.12	0.40	-0.52	0.32	0.54	0.19	0.07	0.06

Note: * 2020 = Estimate and 2021 = Forecast. Totals may not add up due to independent rounding. Source: OPEC.

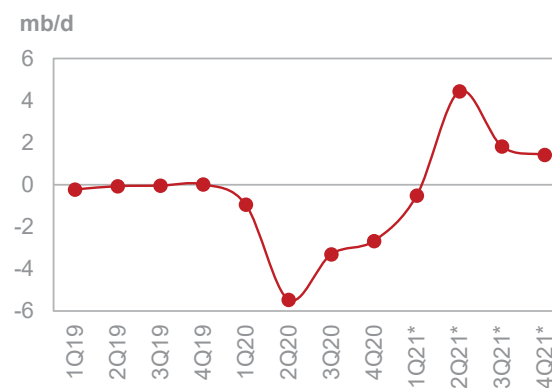
OECD

OECD Americas

Update on the latest developments

In **OECD Americas**, most available data imply a decline in requirements of 1.9 mb/d, y-o-y, in **January**, on top of a 2.6 mb/d, y-o-y, drop in December. The patterns observed in oil demand in recent months continued into the first month of this year. Light distillates and diesel remained in a positive trajectory y-o-y in January, primarily in the US and Canada, while demand for all other products declined, particularly for gasoline and jet/kerosene in line with mobility limitations amid the COVID-19 pandemic. Requirements for both fuels declined by 2.2 mb/d, y-o-y, in January, remaining close to the losses recorded in December. Demand in the US seems to have improved slightly, declining by 1.3 mb/d y-o-y. These improvements were mainly due to rising demand for light distillates, in line with the y-o-y increase in manufacturing activities during the same month.

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



Note: * 1Q21-4Q21 = Forecast. Source: OPEC.

The industrial production index, as reported by the Federal Reserve Board, posted 107.0 in January, higher than the 104.2 recorded in December and substantially higher during the historical low of 93 index points during 2Q20.

In **Mexico**, oil demand in January was down by more than 0.3 mb/d y-o-y, with gasoline, jet/kerosene and diesel accounting for the bulk of the decline.

Canadian oil demand in January shrank by approximately 0.3 mb/d, as a result of bearish gasoline and jet/kerosene requirements. Heating fuels demand was also weak due to warmer weather conditions.

Oil demand in the **US** fell by 1.3 mb/d y-o-y in January, after sharply declining by 1.6 mb/d, y-o-y, in December. Declines were due to large losses in the demand for transportation fuels, as a result of the COVID-19 pandemic, partly offset by higher requirements for lighter distillates. The COVID-19 pandemic reduced tourist arrivals by almost 82% y-o-y and miles travelled by more than 9%, according to the National Travel and Tourism Offices and the Federal Highway Administration, respectively. Vehicle sales declined slightly, by just over 1% y-o-y according to Autodata. Lockdowns and restriction measures across the majority of states during January 2021 impacted economic developments, mobility and consequently oil demand.

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

By product	Jan 21	Jan 20	Change 2021/20	
			mb/d	%
LPG	3.64	3.31	0.33	10.0
Naphtha	0.18	0.22	-0.04	-18.3
Gasoline	7.67	8.76	-1.10	-12.5
Jet/kerosene	1.14	1.70	-0.56	-32.8
Diesel	3.93	4.00	-0.06	-1.6
Fuel oil	0.24	0.26	-0.02	-6.2
Other products	2.08	1.95	0.13	6.8
Total	18.89	20.20	-1.31	-6.5

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

Sources: EIA and OPEC.

Near-term expectations

Uncertainty regarding the COVID-19 pandemic remains the fundamental underlying factor for the 2021 oil demand outlook in OECD Americas, impacting the general economy and, particularly, the transportation and industrial sectors. Current signals for the short term point at risks skewed to the upside. A comprehensive

stimulus package in the US is anticipated to provide strong support for oil the demand recovery, primarily in 2H21, while the fast vaccine rollout is already showing significant results in containing the COVID-19 pandemic. Additional support is anticipated from a recovery in vehicle miles travel, in combination with improving unemployment figures and the healthy petrochemical industry. However, oil demand is not projected to reach 2019 levels during the course of the year, as the recovery in jet/kerosene demand depends on increased international travel and the pace of vaccination rollouts in other regions. Consequently, while the transportation sector is foreseen to gain the most over the year, demand will remain below pre-COVID-19 levels.

OECD Europe

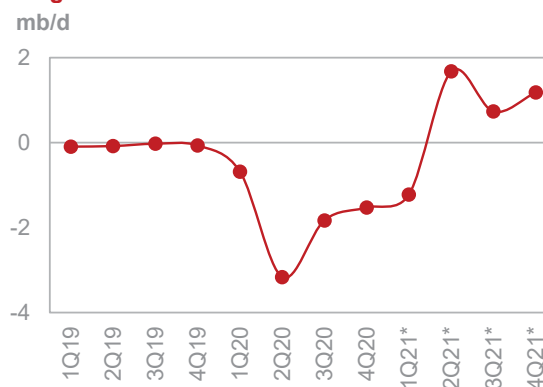
Update on the latest developments

Oil demand in OECD Europe fell strongly by 2.4 mb/d, y-o-y, in January, following a decline of more than 1.4 mb/d, y-o-y, in December 2020. Demand for most petroleum product categories posted large y-o-y losses, as a result of renewed restrictions in almost all countries in the region aimed at controlling a further increase in COVID-19 infections. Demand for naphtha remained higher y-o-y, and recorded healthy growth of more than 0.2 mb/d.

Naphtha demand in Europe has been strong since 4Q20 and supported the region's petrochemical industry, which experienced a revival during the COVID-19 pandemic, in line with the increasing use of plastics as well as healthy petrochemical margins. In contrast, demand for transportation fuels lagged diesel, gasoline and jet/kerosene demand, registering a decline similar to December, falling in total by an astonishing 2.3 mb/d, y-o-y. Increases in COVID-19 infection cases, in combination with substantial challenges in vaccine rollouts forced governments to re-introduce strict measures and policies to contain the spread of the virus.

Demand in Germany fell the most, dropping by 0.6 mb/d y-o-y, followed by the UK with 0.4 mb/d and Italy and France with 0.2 mb/d each. Substantial oil demand declines were also observed in all other countries of the region, coupled with strong increases in related stringency indexes. Travelling across country borders and within the region became restrictive both on road as well as in the air, sharply reducing leisure activities. Colder weather in large parts of the region prevented even larger oil demand declines. The industrial production index, which excludes construction, fell slightly as compared to the same month in 2020, as reported by Eurostat and Haver Analytics. New passenger car registrations declined by almost 25% y-o-y, while unemployment rates rose.

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



Note: * 1Q21-4Q21 = Forecast. Source: OPEC.

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

By product	Jan 21	Jan 20	Change 2021/20	
			mb/d	%
LPG	0.39	0.47	-0.08	-16.9
Naphtha	0.65	0.55	0.10	18.1
Gasoline	0.76	1.12	-0.36	-32.4
Jet/kerosene	0.36	0.78	-0.42	-54.3
Diesel	2.54	3.06	-0.52	-17.1
Fuel oil	0.14	0.14	0.01	5.2
Other products	0.35	0.47	-0.12	-24.8
Total	5.19	6.58	-1.40	-21.2

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 outlook for the region's oil demand in 2021 was adjusted lower in 1H21, taking into consideration the latest gloomy COVID-19 related containment efforts in the region. The slow pace of vaccination rollouts and lack of sufficient vaccine counts in several countries inevitably implied the re-introduction of stringent measures in an effort to control increasing cases. These developments and continued increases in infection cases pose a downside risk in the region's 2021 oil demand outlook. Any short term 2021 oil demand improvements would result from growing economic activity and consequently a successful COVID-19 containment. The current outlook assumes that herd immunity will most likely not be achieved before the 4Q21. In addition, fuel efficiency gains, reduced international travel, teleworking enhancements, and limitations in petroleum product demand will partly remain, capping oil demand going forward.

OECD Asia Pacific

Update on the latest developments

OECD Asia Pacific oil demand improved y-o-y although still showed a decline in **January**, contracting by 0.4 mb/d, less than the corresponding decline of 0.9 mb/d recorded in December. Losses were largely attributed to less light distillate requirements in South Korea and Japan, mainly due to extended naphtha cracker shutdowns. More recent data shows that the recovery may have started in February as naphtha crackers returned to normal operation, in line with preliminary data. Demand for light distillates in Asia Pacific during January fell by almost 0.4 mb/d, y-o-y, after declining by 0.5 mb/d in December 2020.

Transportation fuels in OECD Asia Pacific declined by 0.2 mb/d, y-o-y, in January, slightly improving from December's losses. Oil demand in Japan grew marginally, y-o-y, while South Korean oil demand fell by almost 0.2 mb/d. Following the re-introduction of restrictive measures in Japan, infection cases are on a downward trend. Preliminary data from by Japan's Ministry of Economy, Trade and Industry (METI), indicate a y-o-y decline of more than 0.2 mb/d in February 2021.

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

By product	Feb 21	Feb 20	Change 2021/20	
			mb/d	%
LPG	0.41	0.42	-0.01	-2.6
Naphtha	0.71	0.76	-0.05	-6.5
Gasoline	0.75	0.82	-0.07	-8.2
Jet/kerosene	0.66	0.68	-0.02	-2.9
Diesel	0.79	0.82	-0.03	-3.1
Fuel oil	0.23	0.24	-0.01	-2.7
Other products	0.14	0.20	-0.06	-29.4
Total	3.70	3.94	-0.24	-6.1

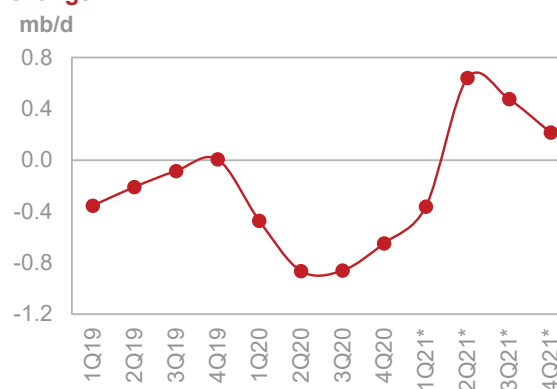
Note: Totals may not add up due to independent rounding.

Sources: JODI, METI and OPEC.

Near-term expectations

Efficient containment measures in Japan and South Korea seemed to have curbed the further increase in COVID-19 cases. Consequently, transportation fuel demand in 2021 is expected to recover in addition to rising requirements for industrial fuels and petrochemical feedstock. Overall demand in 2021 is projected to rebound strongly in the region, mainly in 2H21, on the back of historically-low consumption in 2020 as well as a recovery in economic activities which would support industrial fuels. Risks are currently seen to be skewed to the upside, as a result of successful measures to tackle the COVID-19 pandemic on the one hand and the healthy

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



Note: * 1Q21-4Q21 = Forecast. Source: OPEC.

economic outlook on the other. Petrochemical feedstock consumption remains one of the main contributors to oil demand growth in 2021 while jet/kerosene demand is projected to continue lagging 2019 levels, as international business and leisure travel is anticipated to remain under pressure.

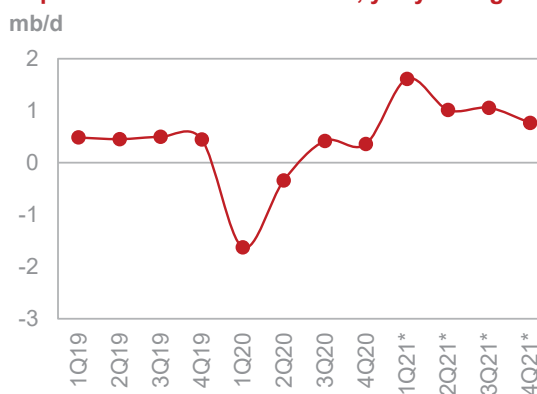
Non-OECD

China

Update on the latest developments

China oil demand has been recovering since April 2020 posting y-o-y monthly increases ever since. **February** demand showed a strong increase of more than 2.5 mb/d y-o-y, after rising by around 0.5 mb/d y-o-y in January. February increases are mainly related to the historically-low base line of February 2020 and steady development in the main economic sectors. Light distillates continued to record steady growth. LPG and naphtha added more than 0.5 mb/d y-o-y collectively, after increasing by around 0.4 mb/d y-o-y in January. Demand for LPG was supported by strong residential demand and firm propylene dehydrogenation (PDH) margins and utilization rates. PDH plant utilization rates hovered around 93% in February, following 95% in January and 88% in December.

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



Note: * 1Q21-4Q21 = Forecast. Source: OPEC.

Healthy plastic demand as well as new capacity additions are projected to further support demand going forward. Transportation fuel has also increased sharply in February despite some restrictions on travel during the Lunar New Year holidays. Demand for gasoline and jet fuel turned into growth after recording declines in January. February data indicate an increase of around 1.0 mb/d y-o-y from gasoline and jet fuel demand. The substantial decrease in transportation requirements due to the onset of COVID-19 pandemic during February 2020 and the steady increase in mobility supported demand growth. Furthermore, diesel rose solidly by 0.8 mb/d y-o-y in February, after posting growth of around 0.2 mb/d y-o-y in January. Gains are in line with expanding manufacturing activity, as reflected in the manufacturing PMI, which registered 50.6 in February and 51.3 in January.

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

By product	Feb 21	Feb 20	Change 2021/20	
			mb/d	%
LPG	1.89	1.50	0.39	26.1
Naphtha	1.25	1.10	0.15	13.6
Gasoline	3.03	2.34	0.69	29.4
Jet/kerosene	0.72	0.40	0.33	82.0
Diesel	3.52	2.73	0.79	28.8
Fuel oil	0.62	0.62	0.00	0.8
Other products	1.10	0.90	0.20	22.2
Total	12.13	9.58	2.54	26.6

Note: * Apparent oil demand. Totals may not add up due to independent rounding.

Sources: Argus Global Markets, China OGP (Xinhua News Agency), Facts Global Energy, JODI, National Bureau of Statistics China and OPEC.

Near-term expectations

Risks to China oil demand growth are currently balanced over the short term. Uncertainties around global COVID-19 developments remain high. The economic recovery of international trading partners, particularly the US, as well as that country's future policy towards China, are providing some downside momentum to the other forecast. On the other hand, as economic momentum continued, supported by healthy exports and China's strict policies in controlling domestic COVID-19 cases, downside risks were offset. Overall oil demand in China is projected to record solid y-o-y gains in 2021. Solid GDP projections and progressing industrial demand

remain the main contributing assumptions to the current year's forecast. Petrochemical demand is anticipated to drive growth as was the case in the first two months of 2021. Transportation fuels are projected to show respectable gains as well. Jet fuel is estimated to remain impacted by sluggish international air traffic and lag pre-crisis levels, mainly due to a slow recovery in leisure and business travel.

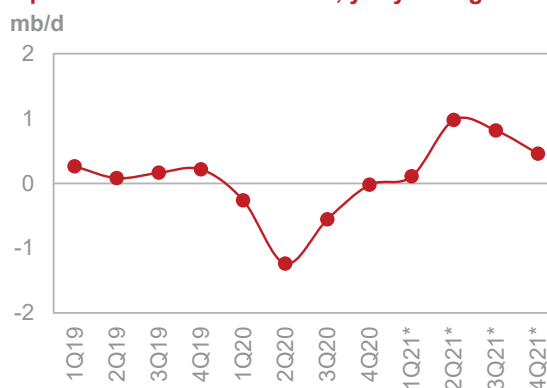
India

Update on the latest developments

Indian oil demand continued to decline in **February**. Data showed a drop of more than 0.2 mb/d y-o-y, similar to the decline recorded in January. Lower demand was seen mainly for diesel, gasoline and jet/kerosene, while light distillates increased y-o-y. Diesel suffered the most, declining by around 0.2 mb/d y-o-y on the back of limited demand for on-road diesel, despite improvements in economic conditions due to an ease in COVID-19 restrictions as the vaccination programme expands.

The India's composite PMI increased to 57.30 points in February compared to 55.80 points in January, while manufacturing PMI dropped marginally from 57.7 in January to 57.5 in February.

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



Note: * 1Q21-4Q21 = Forecast. Source: OPEC.

Furthermore, India's services PMI increased to 55.3 in February 2021 from 52.8 in the previous month. Gasoline demand flipped into negative territory for the first time since August on the back of higher retail prices, curbing demand and high base line demand during the same month in 2020. Jet/kerosene consumption has been negatively impacted from the reduction in international flights for jet fuel as well as the substitution with LPG for kerosene in residential sector. On the other hand, LPG demand increased y-o-y amid higher demand for cooking fuel, while naphtha demand also inched up in February due to healthy petrochemical margins.

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

By product	Feb 21	Feb 20	Change 2021/20	
			mb/d	%
LPG	0.87	0.80	0.07	8.4
Naphtha	0.39	0.39	0.00	0.3
Gasoline	0.75	0.77	-0.02	-3.0
Jet/kerosene	0.20	0.27	-0.08	-28.5
Diesel	1.88	2.03	-0.15	-7.5
Fuel oil	0.29	0.30	-0.01	-4.9
Other products	0.45	0.46	-0.01	-1.8
Total	4.82	5.03	-0.21	-4.1

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

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

Near-term expectations

Uncertainty remains high mainly due to a renewed COVID-19 wave – which has been increasing in recent days – as well as the pace of the vaccination rollout. Additionally, the high retail prices and the government policy towards excise tax are also additional to the uncertainty factors going forward. Oil demand growth is anticipated to pick up in the coming months supported by a low baseline and an uptick in diesel demand in various sectors such as construction and agriculture. The recovery in transportation fuel demand is projected to be largely dependent on developments in the COVID-19 front as well as from counter measures that the government is expected to put in place. Oil demand is anticipated to gain momentum in light of positive policy measures encouraging private consumption and investment. Supported by the low 2020 baseline decline, oil demand is foreseen to record respectable growth in 2021. Demand for transportation fuels will lead product demand followed by middle distillates, with most of the gains appearing the 2H21.

Latin America

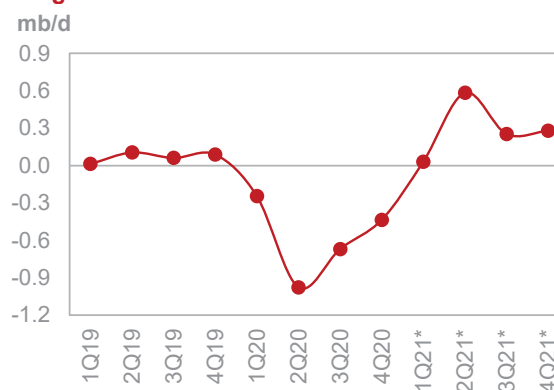
Update on the latest developments

January's oil demand in Latin America showed a decrease of around 0.1 mb/d y-o-y, similar to the decline levels witnessed in December 2020. Most of the declines occurred in Brazil and Argentina, which dropped by around 0.1 mb/d y-o-y cumulatively, following relatively flat growth in December in both countries.

Demand in the transportation sector softened as jet fuel declined. Jet fuel in the region remained in the negative zone, dropping by around 0.1 mb/d y-o-y, similar to the decline levels in the previous months. The aviation sector in Latin America remains nearly 50% below pre-crisis levels. The road transportation fuels, gasoline and ethanol, have continued to post y-o-y monthly declines since early 2020, declining by a cumulative 0.1 mb/d y-o-y. Diesel demand flipped back to the negative in response to slower manufacturing activity. PMI indices have increased, reflecting improvements in major economic activities. According to IHS Markit and Haver analytics, manufacturing PMI recorded 56.5 in January, following a strong 61.5 reading in December.

The latest available monthly oil demand data for Brazil shows a decline of around 0.1 mb/d in February. Most of the decline can be attributed to slower transportation requirements as both gasoline and jet fuel fell y-o-y. Government decision to delay this year's carnival festivities together with COVID-19 containment measures in certain parts of the country have contributed to the decline. Consequently, both fuels dropped by a combined 0.1 mb/d y-o-y in February, following a decline of around 0.05 mb/d, in January.

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



Note: * 1Q21-4Q21 = Forecast. Source: OPEC.

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

By product	Feb 21	Feb 20	Change 2021/20	
			mb/d	%
LPG	0.23	0.22	0.01	3.0
Naphtha	0.14	0.15	0.00	-2.0
Gasoline	0.62	0.67	-0.05	-7.1
Jet/kerosene	0.07	0.12	-0.05	-43.0
Diesel	0.99	0.98	0.01	1.0
Fuel oil	0.10	0.09	0.01	14.3
Other products	0.59	0.60	-0.01	-2.2
Total	2.73	2.82	-0.09	-3.1

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

Looking ahead, the oil demand forecast for 2Q21 remains dependent on developments in the current wave of COVID-19 infections and its impact on mobility and the overall economic performance. Latin America's 2021 oil demand estimates remain largely unchanged from last month's MOMR, with marginal revisions to the 2020 and 2021 oil demand estimations, despite rising COVID-19 infection cases in various countries in the region. Risks appear to be slightly tilted to the downside in light of development on the COVID-19 front and the vaccinations rollout. Positive economic developments supported by fiscal stimulus programs are anticipated to offset most of the negative risks.

Transportation fuels are estimated to lead the recovery in 2021 followed by industrial fuel demand, including diesel and fuel oil. Oil demand is projected to record steady growth supported by recovering economic activities and a low base line of consumption last year. As the Brazilian economy continues its recovery trajectory, oil demand in Brazil is projected to lead oil demand growth in the region supported by fiscal stimulus programmes.

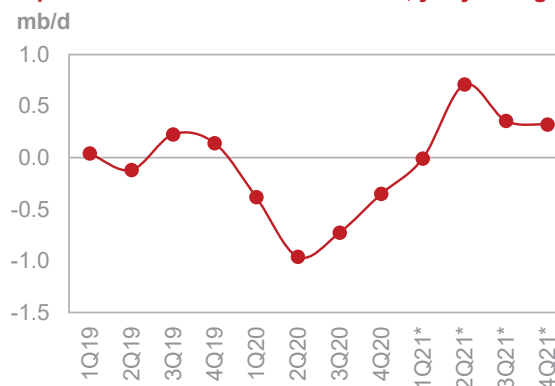
Middle East

Update on the latest developments

According to complete data for the month of **January**, **oil demand in the Middle East** shrunk by around 0.6 mb/d y-o-y, compared to a drop of around 0.1 mb/d y-o-y in December. Oil demand fell sharply in Saudi Arabia and Iraq during January 2021. In Saudi Arabia, oil demand fell by 0.4 mb/d y-o-y with transportation fuels accounting for most of the declines. A continuation of home learning in addition to moderate development in mobility negatively impacted gasoline demand. Industrial fuels, diesel and fuel oil, also showed declines of around 0.2 mb/d y-o-y collectively. Cement deliveries – an indicator of construction activity in the Kingdom – rose by 5.6% y-o-y in January, the lowest increase since June 2020, according to Yamama Cement Company and Haver Analytics. In Iraq, January oil demand data also posted a drop of around 0.2 mb/d, after exhibiting a flat performance in December.

In **February**, oil demand fell by 0.3 mb/d y-o-y in Saudi Arabia, and by around 0.2 mb/d y-o-y in Iraq, indicating a continuation of lower y-o-y oil demand requirements in the whole region. Data from other countries are not yet available. Transportation fuel remains the most affected, as gasoline and jet fuel accounted for most of the declines in Saudi Arabia while lower fuel oil demand accounted for most of the decrease in Iraq. Gasoline and jet fuel shed a combined 0.1 mb/d y-o-y in Saudi Arabia amid reduced mobility compared to previous year levels and limitations in international flights. Looking at industrial fuel demand, the picture remains similar to January with marginal improvements. Diesel and fuel oil showed a combined drop of around 0.2 mb/d y-o-y, following a similar decrease in January. Seasonally lower air-conditioning requirements as well as moderate development in construction impacted demand negatively.

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



Note: * 1Q21-4Q21 = Forecast. Source: OPEC.

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

By product	Feb 21	Feb 20	Change 2021/20	
			mb/d	%
LPG	0.05	0.05	0.00	1.7
Gasoline	0.47	0.56	-0.09	-16.8
Jet/kerosene	0.05	0.10	-0.04	-46.1
Diesel	0.49	0.52	-0.04	-7.0
Fuel oil	0.40	0.53	-0.12	-23.0
Other products	0.43	0.40	0.02	6.1
Total	1.89	2.16	-0.27	-12.5

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

Sources: JODI and OPEC.

Near-term expectations

With the lower-than-expected oil demand data for the first two months of the year, the 1Q21 performance is now projected to be lower than initially anticipated, with some possible spill over into the 2Q21. However, further easing of restriction measures are projected to lend support to overall oil demand especially when buoyed by an expected improvement in the overall health of the economy in 2H21. The effective rollout of COVID-19 vaccination programs and a recovery in oil prices are expected to provide an upside potential to oil demand going forward. On the other hand, any additional measures in response to increases in COVID-19 infection cases, together with slower vaccination rates, will provide a downside risk to oil demand in the near term. Transportation fuels are projected to recover as restriction measures ease. In terms of products, middle distillates are projected to return to solid growth during the current year, supported by an uptick in industrial fuel demand.

World Oil Supply

Non-OPEC liquids supply for 2020 is revised up by 42 tb/d and estimated to have declined by 2.52 mb/d y-o-y to average 62.89 mb/d. US crude and condensate output declined by 0.94 mb/d y-o-y to average 11.3 mb/d, while liquids production dropped by 0.8 mb/d y-o-y to average 17.62 mb/d. Oil supply also declined in Russia by 1.0 mb/d, to average 10.59 mb/d. Moreover, production declined in Canada, Colombia, Kazakhstan, Malaysia, the UK and Azerbaijan, while oil supply is estimated to have increased in Norway, Brazil, China and Guyana.

Non-OPEC liquids supply for 2021 is also revised up by 24 tb/d to average 63.83 mb/d, but in terms of growth, it was revised down by a slight 18 tb/d and is now forecast to grow by 0.93 mb/d y-o-y. The pandemic-driven crash in oil prices in 2020 caused investors to shy away from the shale industry, forcing companies to look at asset sales and mergers for survival. However, while most drillers continue to focus on paying off debt and returning capital to shareholders instead of pursuing growth, higher prices could translate into higher production levels. The drilling and completion trend indicates upcoming robust monthly growth. Active drilling rigs in the US climbed by 13 rigs, reaching 430 rigs for the 17th increase in the past 19 weeks. The US liquids supply growth forecast remained unchanged at 0.16 mb/d, however, tight crude output is forecast to decline y-o-y by 0.1 mb/d, while uncertainties persist. Activity and spending in US oil fields is rising this year as the industry recovers from last year's pandemic-driven price crash, according to energy company executives polled by the Federal Reserve Bank of Dallas in a recent survey. Nevertheless, following a drop of \$144 billion y-o-y in capital expenditure in oil and gas upstream (E&P) sectors in non-OPEC countries, upstream capital spending in 2021 is expected to remain well below 2019 levels. The main drivers for supply growth for 2021 are expected to be Canada, the US, Norway and Brazil.

OPEC NGLs and non-conventional liquids production in 2020 is estimated to have declined by 0.13 mb/d y-o-y at 5.13 mb/d. For 2021, OPEC NGLs are forecast to grow by 0.08 mb/d y-o-y to average 5.21 mb/d.

OPEC crude oil production in March was up by 0.20 mb/d m-o-m to average 25.04 mb/d, according to secondary sources. Preliminary non-OPEC liquids output in March, including OPEC NGLs, is estimated to have increased by 0.93 mb/d m-o-m, mainly in the US, due to production recovery after heavy declines in February. As a result, preliminary data indicates that global oil supply increased in March by 1.22 mb/d m-o-m to average 93.23 mb/d, down by 7.22 mb/d y-o-y.

Table 5 - 1: Non-OPEC liquids production forecast comparison in 2020–2021*, mb/d

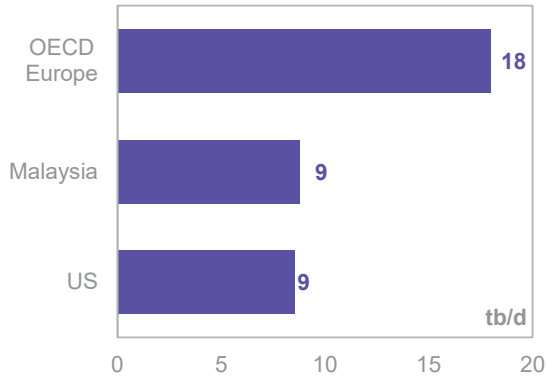
Non-OPEC liquids production	2020	Change		
		2020/19	2021	2021/20
Americas	24.72	-1.05	25.19	0.47
<i>of which US</i>	17.62	-0.80	17.78	0.16
Europe	3.91	0.20	4.03	0.12
Asia Pacific	0.53	0.01	0.55	0.02
Total OECD	29.16	-0.84	29.77	0.61
China	4.12	0.07	4.16	0.04
India	0.77	-0.06	0.75	-0.02
Other Asia	2.51	-0.18	2.46	-0.05
Latin America	6.06	-0.03	6.29	0.23
Middle East	3.17	-0.03	3.21	0.04
Africa	1.41	-0.08	1.34	-0.07
Russia	10.59	-1.02	10.60	0.01
Other Eurasia	2.91	-0.16	2.94	0.02
Other Europe	0.12	0.00	0.11	-0.01
Total Non-OECD	31.66	-1.49	31.86	0.20
Total Non-OPEC production	60.82	-2.33	61.63	0.81
Processing gains	2.07	-0.19	2.20	0.13
Total Non-OPEC liquids production	62.89	-2.52	63.83	0.93

Note: * 2020 = Estimate and 2021 = Forecast. Source: OPEC.

Main monthly revisions

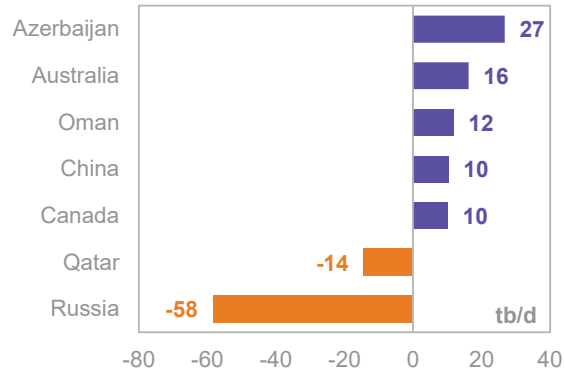
Non-OPEC liquids supply in 2020 was revised up by 42 tb/d m-o-m, due to higher-than-expected production in 4Q20 in the US, other OECD Europe, and Malaysia, and is now forecast to contract by 2.52 mb/d (including processing gains) to average 62.89 mb/d.

Graph 5 - 1: Revisions to annual supply growth forecast in 2020*, MOMR Mar 21/Feb 21



Note: * 2020 = Estimate. Source: OPEC.

Graph 5 - 2: Revisions to annual supply growth forecast in 2021*, MOMR Mar 21/Feb 21



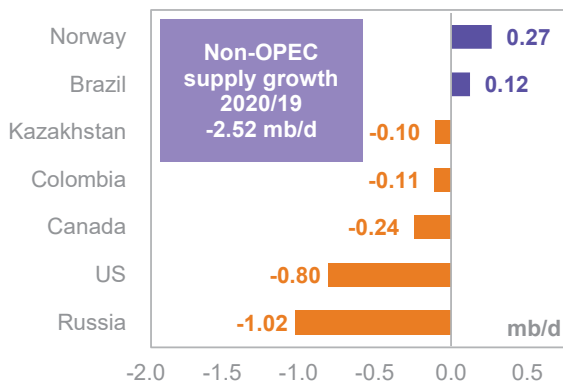
Note: * 2021 = Forecast. Source: OPEC.

Non-OPEC liquids absolute supply in 2021 was also revised up, by 24 tb/d, to average 63.83 mb/d, but in terms of growth, it was revised down by 18 tb/d, and is now forecast to grow by 0.93 mb/d (including processing gains). While the oil supply growth forecasts were revised up in Canada, the UK, Australia, China, Oman, Azerbaijan and Kazakhstan, the forecasts in Qatar, Malaysia, other OECD Europe and Norway were revised down. With regard to the oil supply forecast in non-OPEC countries participated in the Declaration of Cooperation (DoC), the total supply of non-OPEC-10 (including Mexico) will see a contraction of 0.03 mb/d to average 17.16 mb/d, following implementation of the new required voluntary adjustment that was decided at the 15th OPEC-non-OPEC Ministerial Meeting.

Key drivers of growth and decline

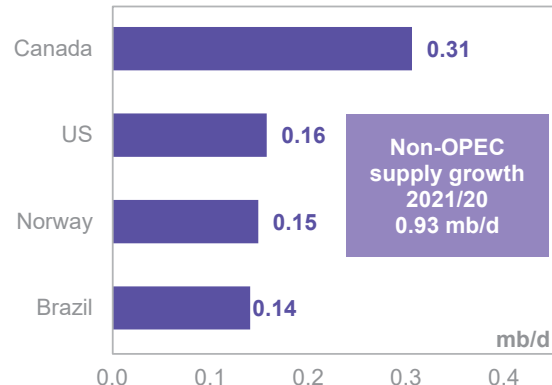
The **non-OPEC countries** showing the largest liquids supply declines in 2020 were Russia, the US, Canada, Colombia, Kazakhstan, the UK, Malaysia, Azerbaijan, India and Ecuador, while oil production increases were forecast mainly in Norway, Brazil, China and Guyana.

Graph 5 - 3: Annual liquids production changes for selected countries in 2020*



Note: * 2020 = Estimate. Source: OPEC.

Graph 5 - 4: Annual liquids production changes for selected countries in 2021*



Note: * 2021 = Forecast. Source: OPEC.

For **2021**, the key drivers for non-OPEC supply growth are forecast to be Canada, the US, Norway, Brazil, Ecuador, China, Azerbaijan, Qatar, Guyana and other OECD Europe, while oil production mainly in the UK, Sudans and Malaysia is forecast to decline.

Non-OPEC liquids production in 2020 and 2021

Table 5 - 2: Non-OPEC liquids production in 2020*, mb/d

Non-OPEC liquids production	2019	1Q20	2Q20	3Q20	4Q20	2020	Change 2020/19	
							Growth	%
Americas	25.77	26.59	23.55	24.10	24.65	24.72	-1.05	-4.08
<i>of which US</i>	18.43	19.05	16.81	17.34	17.30	17.62	-0.80	-4.35
Europe	3.71	4.05	3.90	3.80	3.89	3.91	0.20	5.32
Asia Pacific	0.52	0.53	0.54	0.54	0.52	0.53	0.01	1.61
Total OECD	30.01	31.17	27.99	28.43	29.06	29.16	-0.84	-2.82
China	4.04	4.13	4.12	4.13	4.08	4.12	0.07	1.76
India	0.82	0.79	0.76	0.76	0.76	0.77	-0.06	-6.74
Other Asia	2.69	2.61	2.47	2.46	2.50	2.51	-0.18	-6.70
Latin America	6.09	6.35	5.83	6.14	5.91	6.06	-0.03	-0.51
Middle East	3.20	3.19	3.20	3.15	3.17	3.17	-0.03	-0.83
Africa	1.50	1.44	1.44	1.40	1.37	1.41	-0.08	-5.51
Russia	11.61	11.68	10.38	10.01	10.31	10.59	-1.02	-8.78
Other Eurasia	3.07	3.16	2.92	2.73	2.85	2.91	-0.16	-5.13
Other Europe	0.12	0.12	0.12	0.11	0.11	0.12	0.00	-3.27
Total Non-OECD	33.14	33.46	31.23	30.90	31.06	31.66	-1.49	-4.48
Total Non-OPEC production	63.15	64.63	59.22	59.34	60.12	60.82	-2.33	-3.69
Processing gains	2.26	2.15	1.85	2.15	2.15	2.07	-0.19	-8.47
Total Non-OPEC liquids production	65.42	66.77	61.07	61.48	62.27	62.89	-2.52	-3.86
Previous estimate	65.41	66.76	61.05	61.45	62.17	62.85	-2.56	-3.92
Revision	0.00	0.02	0.02	0.03	0.10	0.04	0.04	0.06

Note: *2020 = Estimate. Totals may not add up due to independent rounding. Source: OPEC.

Table 5 - 3: Non-OPEC liquids production in 2021*, mb/d

Non-OPEC liquids production	2020	1Q21	2Q21	3Q21	4Q21	2021	Change 2021/20	
							Growth	%
Americas	24.72	24.58	24.52	25.51	26.15	25.19	0.47	1.90
<i>of which US</i>	17.62	17.15	17.50	17.94	18.52	17.78	0.16	0.90
Europe	3.91	4.02	3.95	3.97	4.17	4.03	0.12	3.13
Asia Pacific	0.53	0.54	0.56	0.55	0.55	0.55	0.02	3.12
Total OECD	29.16	29.14	29.02	30.04	30.87	29.77	0.61	2.09
China	4.12	4.21	4.13	4.13	4.18	4.16	0.04	1.07
India	0.77	0.76	0.75	0.74	0.73	0.75	-0.02	-2.62
Other Asia	2.51	2.45	2.46	2.47	2.46	2.46	-0.05	-2.00
Latin America	6.06	6.01	6.31	6.32	6.51	6.29	0.23	3.87
Middle East	3.17	3.18	3.21	3.23	3.24	3.21	0.04	1.24
Africa	1.41	1.36	1.35	1.34	1.32	1.34	-0.07	-5.14
Russia	10.59	10.47	10.59	10.67	10.67	10.60	0.01	0.09
Other Eurasia	2.91	2.91	2.93	2.95	2.95	2.94	0.02	0.71
Other Europe	0.12	0.11	0.11	0.11	0.11	0.11	-0.01	-6.92
Total Non-OECD	31.66	31.46	31.83	31.96	32.17	31.86	0.20	0.62
Total Non-OPEC production	60.82	60.59	60.86	61.99	63.03	61.63	0.81	1.32
Processing gains	2.07	2.20	2.20	2.20	2.20	2.20	0.13	6.17
Total Non-OPEC liquids production	62.89	62.79	63.06	64.19	65.23	63.83	0.93	1.48
Previous estimate	62.85	62.62	63.02	64.21	65.33	63.80	0.95	1.51
Revision	0.04	0.17	0.04	-0.01	-0.10	0.02	-0.02	-0.03

Note: *2020 = Estimate and 2021 = Forecast. Totals may not add up due to independent rounding. Source: OPEC.

OECD

OECD liquids production in 2020 is estimated to have declined by 0.84 mb/d y-o-y to average 29.16 mb/d. While OECD Americas production is estimated to have declined by 1.05 mb/d to average 24.72 mb/d, oil supply in OECD Europe and OECD Asia Pacific is estimated to have risen by 0.20 mb/d to average 3.91 mb/d and by 0.01 mb/d to average 0.53 mb/d, respectively.

For **2021**, OECD liquids production growth is forecast at 0.61 mb/d to average 29.77 mb/d, revised up by 0.02 mb/d m-o-m. Fracking activity in the US and Canada has recovered almost completely from the temporary disruption caused by extreme weather in Texas and the Mid-Century region in February, FracFocus filings and Rystad Energy analysis of high-frequency satellite data reveal. OECD Americas is expected to grow by 0.47 mb/d to average 25.19 mb/d, an upward revision of 0.02 mb/d m-o-m. Oil supply in OECD Europe is anticipated to grow by 0.12 mb/d y-o-y to average 4.03 mb/d, and OECD Asia Pacific is forecast to grow by 0.02 mb/d to average 0.55 mb/d, mainly due to the upward revision in Australia's production.

OECD Americas

US

US liquids production in 2020 is estimated to have declined by 0.80 mb/d to average 17.62 mb/d, revised up from last month's assessment.

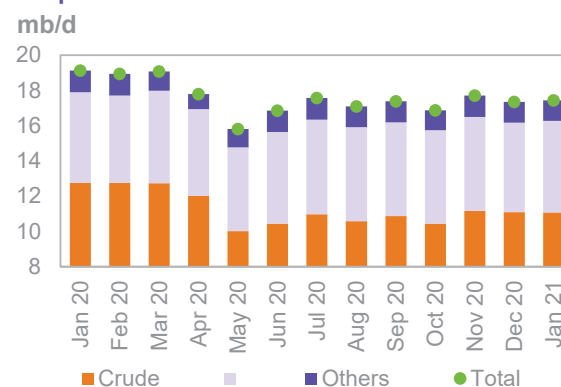
US liquids production in January 2021 was higher by 0.09 mb/d m-o-m to average 17.44 mb/d, mainly due to higher NGL production by 0.13 mb/d to average 5.19 mb/d. Liquids output in January was down by 1.69 mb/d compared to a year earlier.

Crude oil and condensate production in January 2021 fell by 21 tb/d m-o-m to average 11.08 mb/d, which is 1.68 mb/d lower than a year ago.

Non-conventional liquids, particularly ethanol, dropped by 22 tb/d m-o-m in December to average 1.19 mb/d, according to official data. Preliminary data for **January** is expected to see a decrease of 19 tb/d m-o-m to average 1.17 mb/d, lower by 59 tb/d compared to a year ago.

In terms of regions (PADDs), the main decline was in the Midwest, by 60 tb/d – mainly in North Dakota by 45 tb/d, to average 1,109 tb/d, down by 0.29 mb/d, y-o-y. Oil production in the USGC (PADD 3), increased by 35 tb/d to average 7.69 mb/d. While oil output increased in Texas and New Mexico by 25 tb/d and 21 tb/d, respectively, production in the GoM dropped by 11 tb/d to average 1.78 mb/d, down by 0.2 mb/d y-o-y. In the Rocky Mountains (PADD 4), oil output in Colorado, home of the Niobrara shale, dropped by 8 tb/d to 0.37 mb/d.

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



Source: OPEC.

Table 5 - 4: US crude oil production by state, tb/d

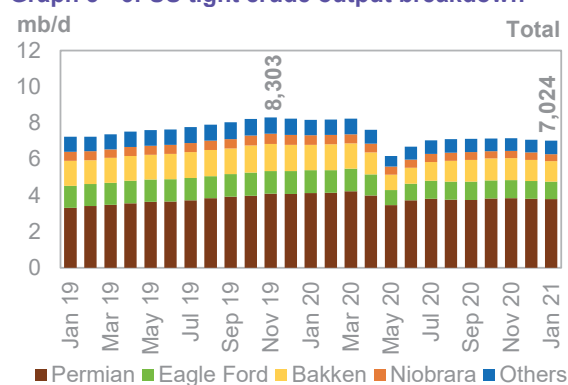
State	Production (tb/d)		Change (Jan 21/Dec 20)
	Dec 20	Jan 21	
Colorado	381	373	-8
Oklahoma	437	426	-11
Alaska	463	464	1
New Mexico	1,069	1,090	21
North Dakota	1,154	1,109	-45
Gulf of Mexico (GoM)	1,795	1,784	-11
Texas	4,638	4,663	25
Total	11,101	11,080	-21

Sources: EIA and OPEC.

US tight crude production in January 2021

declined by 110 tb/d to average 6.96 mb/d, down by 1.22 mb/d y-o-y.

Declines were seen in the main four key plays. In the Permian, production declined by 12 tb/d m-o-m to average 3.79 mb/d, down by 355 tb/d y-o-y. In the Eagle Ford, oil output declined by 25 tb/d to average 0.96 mb/d (down by 0.3 mb/d y-o-y) and in the Bakken declined by 42 tb/d to average 1.13 mb/d (down by 0.28 mb/d y-o-y). Tight crude output in the Niobrara dropped by 15 tb/d to average 0.39 mb/d (down by 0.14 mb/d y-o-y) and in other shale regions by 16 tb/d to average 0.68 mb/d, respectively.

Graph 5 - 6: US tight crude output breakdown

Sources: EIA, Rystad Energy and OPEC.

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

US tight oil	Change		Change		Change	
	2019	2019/18	2020*	2020/19	2021*	2021/20
Permian tight	3.73	0.88	3.87	0.14	4.10	0.23
Bakken shale	1.42	0.16	1.18	-0.24	1.25	0.07
Eagle Ford shale	1.23	0.05	1.06	-0.18	1.02	-0.04
Niobrara shale	0.51	0.07	0.46	-0.06	0.35	-0.11
Other tight plays	0.87	0.08	0.74	-0.12	0.48	-0.27
Total	7.76	1.24	7.31	-0.45	7.20	-0.11

Note: * 2020 = Estimate and 2021 = Forecast. Source: OPEC.

Following a decline of 0.94 mb/d y-o-y in 2020, **US crude oil production in 2021** is forecast to decline by 0.07 mb/d y-o-y to average 11.24 mb/d. Production from the GoM is expected to grow by 0.12 mb/d to average 1.77 mb/d, while onshore conventional crude is estimated to decline by 0.08 mb/d to average 2.27 mb/d, largely due to mature oil fields. The latest forecast for tight crude production in 2021 shows a contraction by 0.11 mb/d y-o-y to average 7.20 mb/d.

Table 5 - 6: US liquids production breakdown, mb/d

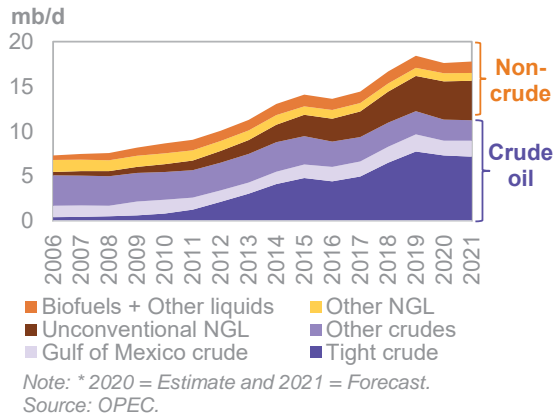
US liquids	Change		Change		Change	
	2019	2019/18	2020*	2020/19	2021*	2021/20
Tight crude	7.76	1.24	7.31	-0.45	7.20	-0.11
Gulf of Mexico crude	1.90	0.14	1.66	-0.24	1.77	0.12
Conventional crude oil	2.59	-0.10	2.35	-0.25	2.27	-0.08
Unconventional NGLs	3.92	0.46	4.26	0.33	4.40	0.14
Conventional NGLs	0.90	-0.01	0.90	0.00	0.86	-0.04
Biofuels + Other liquids	1.35	0.00	1.15	-0.20	1.28	0.13
US total supply	18.43	1.74	17.62	-0.80	17.78	0.16

Note: * 2020 = Estimate and 2021 = Forecast. Sources: EIA, OPEC and Rystad Energy.

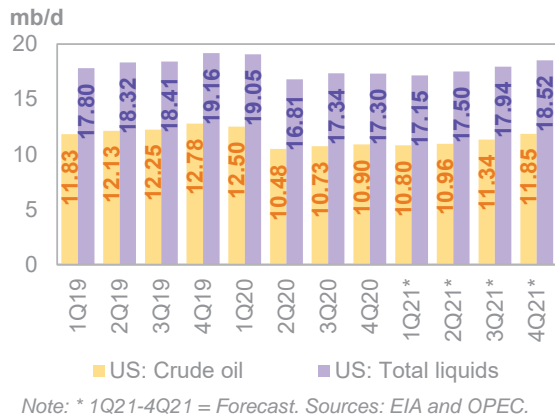
US NGL production in 2020 showed growth of 0.34 mb/d y-o-y to average 5.16 mb/d, of which 4.26 mb/d refers to unconventional NGLs.

For **2021**, production growth is forecast at 0.10 mb/d to average 5.26 mb/d.

Graph 5 - 7: US liquids supply developments by component and forecast of 2020 and 2021

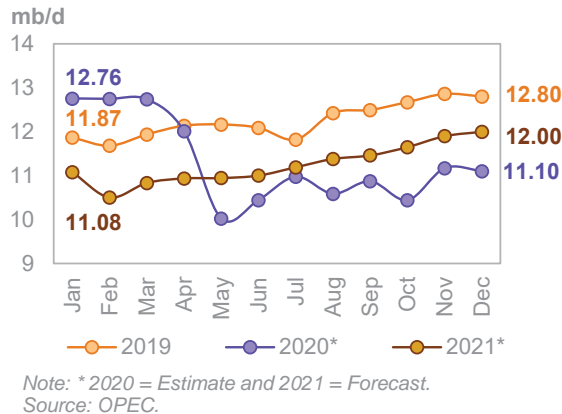


Graph 5 - 8: US crude and total liquids quarterly supply

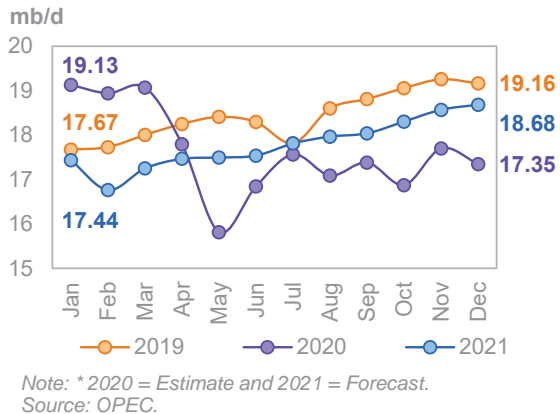


Biofuels and other non-conventional liquids are forecast to increase by 0.13 mb/d to average 1.28 mb/d. **US liquids production** is projected to grow by 0.16 mb/d y-o-y in 2021 to average 17.78 mb/d, but in terms of absolute supply levels, remains 0.66 mb/d below the 2019 level.

Graph 5 - 9: US crude oil production forecast



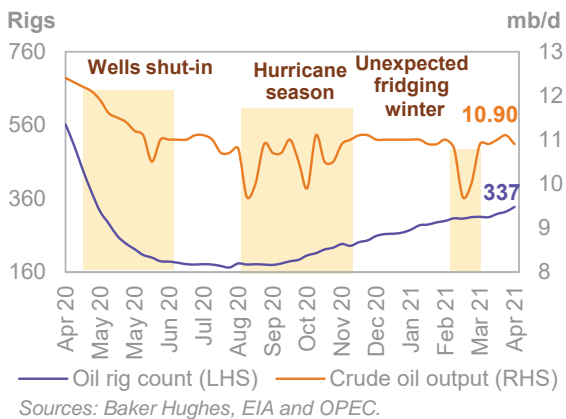
Graph 5 - 10: US liquids supply forecast



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

Since mid-September 2020, the **US oil rig count** has increased every month by an average of 24 rigs to 337 oil rigs, still lower by 225 y-o-y, while gas rigs fell by 1 rig per month to 91 gas rigs in the same period. The US total rig count increased by 13 rigs w-o-w to 430 rigs according to the Baker Hughes report for the week ending 1 April 2021. This has led to an increase of the total US rig count to 430 rigs, consisting of around 78% oil rigs and 22% of gas rigs. This represents the highest number of total rigs since April 2020. In terms of trajectory, active rigs in drilling of horizontal wells for both oil and gas were up from 214 to 391 since mid-September 2020, an addition of 177 horizontal rigs. It seems that operators are able to profitably drill a new well across major US onshore basins at current oil prices.

Graph 5 - 11: US weekly rig count vs US weekly crude oil output



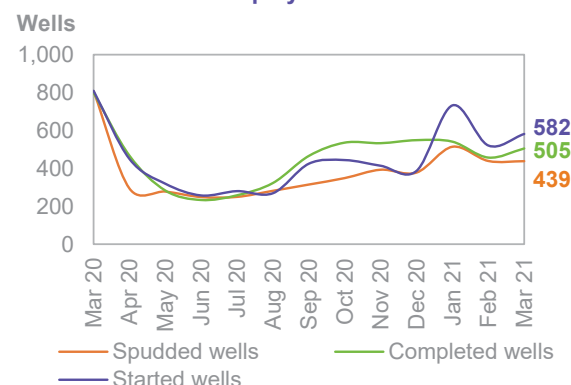
In this regard, Respondents in a quarterly survey by the Federal Reserve Bank of Dallas said the average price they need was \$52/b, a level much lower than the current WTI level despite some recent weakness. According to Rystad Energy, across regions, average prices to profitably drill a new well range between \$46/b and \$58/b. The Permian Midland and south Texas' Eagle Ford are at the lower end of the range, followed by

Permian Delaware at \$49/b, whereas the average for other US shale regions was \$58/b. The Permian Midland has been the lowest-cost region for the past five years.

In terms of the **major basins**, in the week ended 1 April, 223 oil rigs were active in the Permian Basin, with 2 rigs added w-o-w, albeit still lower by 128 rigs, or 36%, y-o-y. At the same time, the number of active oil rigs in the Eagle Ford Basin was 31, down by 44% y-o-y. The Williston Basin reported 14 active oil rigs, down by 67% y-o-y, and finally 7 units were reported in the DJ-Niobrara Basin, down by 61% y-o-y.

With regard to **spudding, completion and started wells** in all US shale plays, as reported by Rystad Energy, 439 horizontal wells were spudded in March (as per preliminary information), down from 808 wells a year earlier. The preliminary number of completed wells is estimated at 505 in March, lower by 295 wells y-o-y. At the same time, the number of started wells was pegged at 582 units, compared to 810 wells y-o-y.

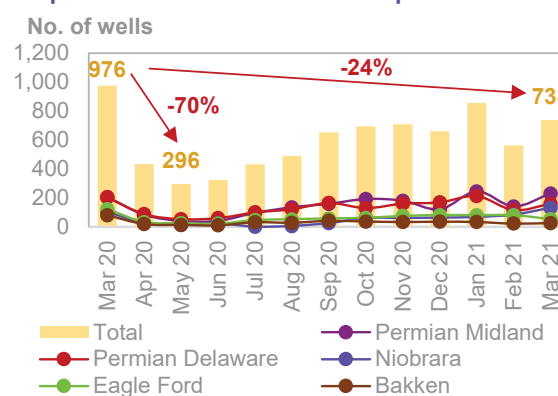
Graph 5 - 12: Spudded, completed and started wells in the US shale plays



Sources: Rystad Energy and OPEC.

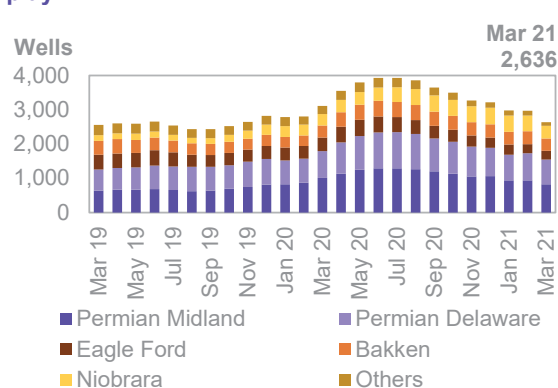
Regarding the **US core oil identified fracking operations** by region as of 31 March, Rystad Energy has already identified 738 started fracking operations in the US for March, up by 174 m-o-m (preliminary) of which around 97% is based exclusively on analysis of high-frequency satellite data. The final number of started fracking jobs per month in March is expected to be higher by about 8% than the January level at 856 fracked wells. In comparison, the number of wells being fracked was 231 in the Permian Midland tight compared to 141 wells in February, while the Permian Delaware tight rose by 44 to 160. In the DJ Basin, in the Niobrara shale, fracking operations rose by 21, yet dropped in the Eagle Ford shale by 27, to only 53 fracking jobs in March. Only 4 wells were fracked m-o-m in the Bakken shale to reach 27 in March.

Graph 5 - 13: Fracked wells count per month



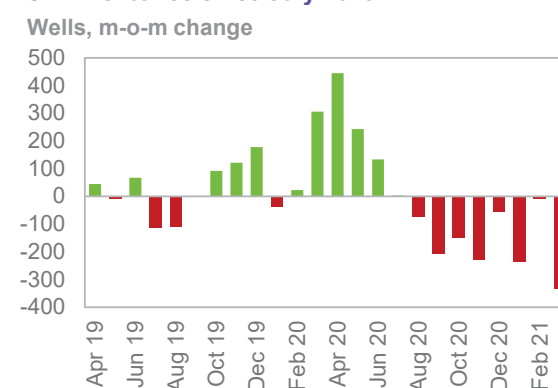
Sources: Rystad Energy Shale Well Cube and OPEC.

Graph 5 - 14: US horizontal DUC count by shale play



Sources: Rystad Energy and OPEC.

Graph 5 - 15: Withdrawal of uncompleted wells from DUC inventories since July 2020



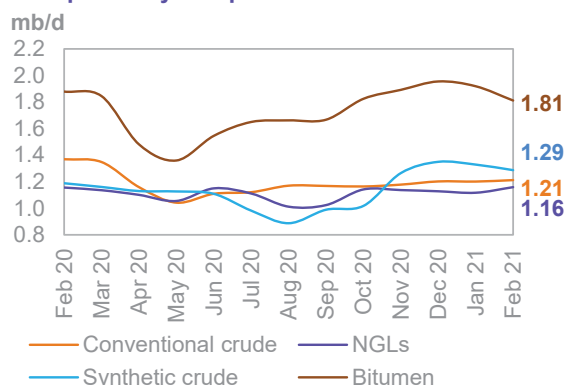
Sources: Rystad Energy and OPEC.

Increased fracking would likely help sustain US onshore production as operators bring online their **drilled, but uncompleted (DUC) wells**. There has been a m-o-m drop in the number of DUCs in US shale plays since July 2020. This continued in March with a drop of 333 wells m-o-m to 2,636 live wells. Since July 2020, 1,297 DUCs have been completed and put on production so far.

Canada

Canada’s liquids production in February – despite the provincial government of Alberta’s announcement that it would lift production curtailments starting from January 2021 – declined by 0.09 mb/d m-o-m to average 5.51 mb/d. According to the Alberta Energy Regulator, the production of crude bitumen and synthetic crude shows a drop of 0.15 mb/d m-o-m to average 3.10 mb/d, albeit being up by 32 tb/d y-o-y. With regard to the breakdown, the output of crude bitumen and synthetic crude declined by 107 tb/d and 42 tb/d to average 1.81 mb/d and 1.29 mb/d, respectively. The production of conventional crude oil is likely to continue at 1.21 mb/d in 1Q21 (preliminary), while the NGL output trend indicates a decline in January to average 1.12 mb/d and 1.16 mb/d in February (preliminary).

Graph 5 - 16: Canada monthly liquids production development by component



Sources: National Energy Board and OPEC.

Reuters reported that “Mergers and acquisitions in Canada’s oil and gas sector had a record start to the year in 2021 as companies took advantage of improved oil price expectations amid the pandemic recovery, and many industry participants expect the trend to continue.”

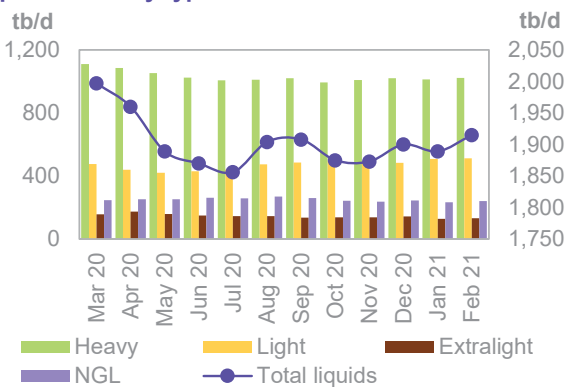
In line with the usual seasonal maintenance, Canadian oil production is expected to be shuttered temporarily as of March by around 0.4 mb/d in 2Q21 compared to 1Q21.

Following heavy declines in Canada’s oil production in 2020 due to shut-in wells by 0.24 mb/d y-o-y to average 5.17 mb/d, supply is forecast to grow by 0.31 mb/d y-o-y in **2021** to average 5.48 mb/d.

Mexico

Mexico’s liquids output in February was up by 0.03 mb/d m-o-m to average 1.92 mb/d. Crude oil output rose by 18 tb/d to average 1.67 mb/d, while NGL production was up by 8 tb/d m-o-m to average 242 tb/d, according to Pemex.

Graph 5 - 17: Mexico’s monthly liquids and crude production by type



Sources: PEMEX and OPEC.

Mexico’s liquids production in 2H21 is forecast to increase by 0.04 mb/d over 1H21 to average 1.94 mb/d, due to the start-up of the first phase of the Pokoch-Ichalkil fields with peak capacity of 0.10 mb/d. Therefore, Mexico’s oil supply is forecast to grow by 0.01 mb/d in **2021** and average 1.92 mb/d.

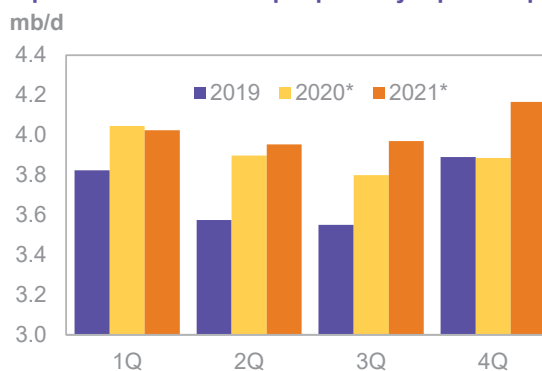
OECD Europe

OECD Europe's liquids production in 2020 is estimated to have grown by 0.20 mb/d to average 3.91 mb/d, revised up by 0.02 mb/d m-o-m. Higher oil production in Norway was the main reason for growth in the last year.

The 2021 OECD Europe supply forecast is expected to show y-o-y growth of 0.12 mb/d to average 4.03 mb/d due mainly to expected growth in Norway.

However, planned maintenance on a major pipeline in the North Sea is expected to have a substantial impact on exports of North Sea benchmark crudes for May, Bloomberg reported. The combined loadings of Brent, Forties, Oseberg, Ekofisk and Troll crudes, which are used to set benchmark Dated Brent, are anticipated to drop to 639,000 b/d, the lowest level since at least August 2007.

Graph 5 - 18: OECD Europe quarterly liquids supply

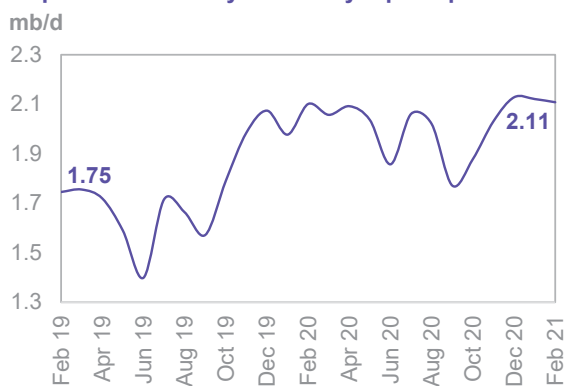


Note: * 2020 = Estimate and 2021 = Forecast.
Source: OPEC.

Norway

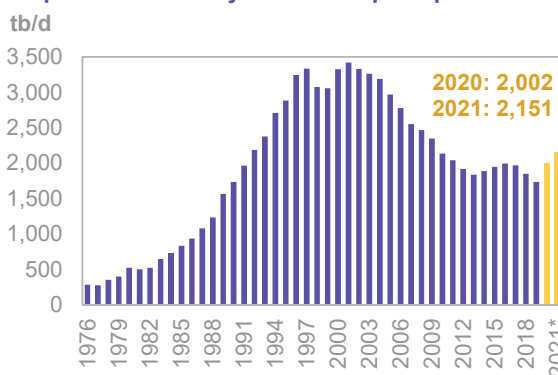
Norwegian liquids production in February decreased by a minor 0.01 mb/d m-o-m to average 2.11 mb/d. Crude oil production declined by 10 tb/d m-o-m to average 1.79 mb/d, but was higher by 0.03 mb/d y-o-y. Production of condensates and NGLs decreased by a minor 3 tb/d m-o-m to average 316 tb/d, lower by 25 tb/d y-o-y, according to official data from the Norwegian Petroleum Directorate (NPD).

Graph 5 - 19: Norway's monthly liquids production



Sources: NPD and OPEC.

Graph 5 - 20: Norway's annual liquids production



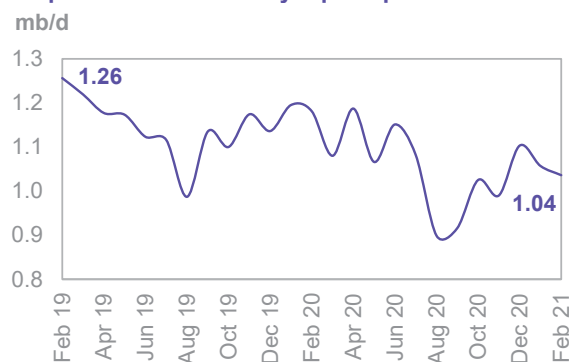
Note: * 2020 = Estimate and 2021 = Forecast.
Source: OPEC.

Norway's oil supply in 2020 is now estimated to have grown by 0.27 mb/d to average 2.00 mb/d, while in 2021, growth is forecast to slow to 0.15 mb/d y-o-y for an average of 2.15 mb/d, revised down by a minor 0.01 mb/d m-o-m in absolute supply. This forecast also has some upside, with new projects having incremental potential, particularly if global oil demand rises more than currently anticipated. Norwegian oil production is forecast to rise in 2H21 through the ramp-up of the Njord field in the Norwegian Sea, the Fenja project, the Gjøa P1 tie-in project in the North Sea and the Wintershall Dea's Duva tieback to the Neptune-operated Gjøa platform, which is expected to be delayed by up to six months to 3Q21.

UK

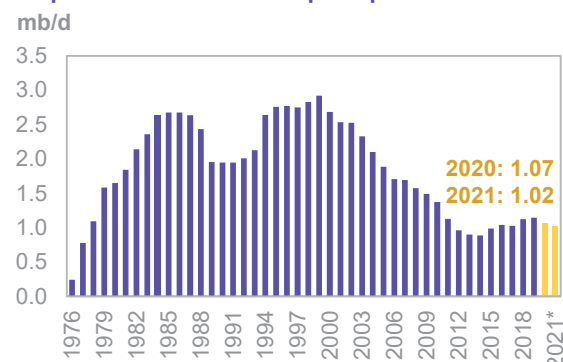
Following a drop of 0.04 mb/d in January m-o-m, UK liquids production in February fell by another 0.02 mb/d m-o-m to average 1.04 mb/d, owing to a decline of 22 tb/d in crude oil production m-o-m to average 895 tb/d, according to national source. Output of NGLs was almost flat m-o-m at an average of 94 tb/d.

Graph 5 - 21: UK monthly liquids production



Sources: Department of Energy & Climate Change and OPEC.

Graph 5 - 22: UK annual liquids production



Note: * 2020 = Estimate and 2021 = Forecast. Source: OPEC.

UK oil supply in **2020** is estimated to have declined by 0.07mb/d to average 1.07 mb/d.

In **2021**, the UK’s oil and gas industry is anticipated to struggle to recover from an investment crunch due to the COVID-19 pandemic and, in the longer term, will have to manage a prolonged decline in output. Hence, some projects have reportedly been deferred, such as the Seagull project, which was deferred to late 2022. According to the CEO of Oil & Gas UK (OGUK), “Production may decline further this year and next, following a 5% decrease in 2020, that follows a plunge in development and operations spending in the sector, which slumped 23% year-on-year to 11.6 billion pounds (about \$16 billion), the lowest since 2004 in real terms. 2021 is likely to remain highly challenging as companies continue to navigate the operational issues associated with the pandemic along with repairing finances.” Hence, UK oil supply is expected to decline by 0.05 mb/d y-o-y to average 1.02 mb/d.

Non-OECD

Non-OECD liquids production for 2020 was revised up by 0.02 mb/d and is now estimated to have declined by 1.49 mb/d y-o-y to average 31.66 mb/d.

China’s liquids supply is estimated to have grown by 0.07 mb/d y-o-y to average 4.12 mb/d. The impact of COVID-19 lockdowns and the consequent lower demand dampened India’s crude oil production in 2020, with output estimated to have contracted by 0.06 mb/d y-o-y to average 0.77 mb/d. Oil production in Other Asia was also revised up by 0.01 mb/d to average 2.51 mb/d and is now estimated to have declined by 0.18 mb/d, y-o-y. Malaysia recorded the deepest yearly decline of 0.07mb/d in the region, followed by Thailand (-0.05 mb/d) and Vietnam (-0.03 mb/d). Meanwhile, Latin America is estimated to have declined by 0.03 mb/d y-o-y to average 6.06 mb/d, with growth in Brazil and Guyana offset by heavy declines in Colombia by 0.11 mb/d, in Ecuador by 0.05 mb/d and in Argentina by 0.04 mb/d, mainly due to the shutting of wells in costly oil fields. Oil production in the Middle East is estimated to have declined by 0.03 mb/d y-o-y to average 3.17 mb/d, while Africa is estimated to have declined by 0.08 mb/d y-o-y to average 1.41 mb/d. Oil production in Russia is estimated to have declined by 1.02 mb/d y-o-y to average 10.59 mb/d, while liquids production in other Eurasia declined by 0.16 mb/d to average 2.91 mb/d.

For **2021**, liquids production in non-OECD countries is forecast to grow by 0.20 mb/d y-o-y to average 31.86 mb/d, revised down by 0.02 mb/d m-o-m.

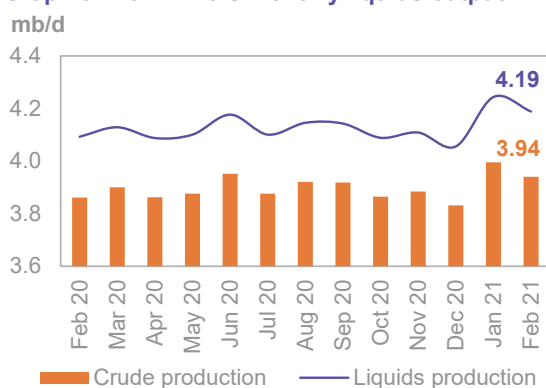
China is forecast to grow by 0.04 mb/d y-o-y to average 4.16 mb/d, while India is projected to decline by 0.02 mb/d y-o-y to average 0.75 mb/d. Oil supply is projected to decline in Other Asia by 0.05 mb/d y-o-y to average 2.46 mb/d. Latin America remains the key driver in non-OECD with y-o-y growth forecast of 0.23 mb/d to average 6.29 mb/d. In the Middle East, oil production is forecast to grow by 0.04 mb/d y-o-y to average 3.21 mb/d, mainly in Qatar. Production in Africa is forecast to decline by 0.07 mb/d y-o-y, to average 1.34 mb/d. Oil production in Russia is expected to inch up by 0.01 mb/d to average 10.60 mb/d, while other Eurasia is projected to show an increase of 0.02 mb/d y-o-y to average 2.94 mb/d.

China

China’s crude oil production in February fell by 45 tb/d m-o-m to average 3.94 mb/d, which was up by 0.08 mb/d y-o-y, according to official data. Hence, liquids output decreased by 0.05 mb/d m-o-m to average 4.19 mb/d, up by 0.1 mb/d y-o-y.

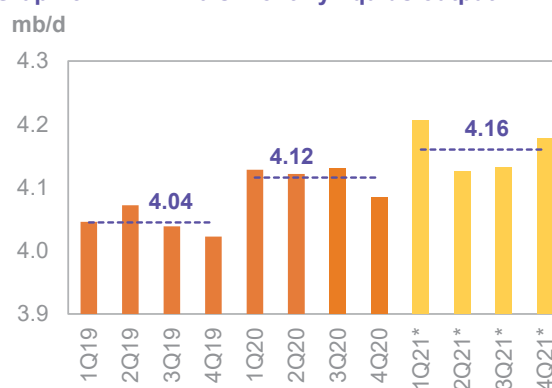
According to Offshore magazine, CNOOC has produced first oil from the Caofeidian 6-4 field in shallow offshore eastern China, as reported on 15 March 2021. Production is planned to reach the plateau at around 15 tb/d of crude in 2023, and CNOOC plans to drill 42 development wells comprising 30 producing wells and 12 water injector and water source wells.

Graph 5 - 23: China's monthly liquids output



Sources: CNPC and OPEC.

Graph 5 - 24: China's monthly liquids output



Note: * 1Q21-4Q21 = Forecast. Sources: CNPC and OPEC.

In **2020**, China was one of the few countries that showed oil supply growth by 0.07 mb/d y-o-y despite the COVID-19 pandemic.

For **2021**, with lower expected spending in the upstream E&P sector and more allocated capex in natural gas production, oil supply growth is forecast to slow to 0.04 mb/d y-o-y to average 4.16 mb/d, revised up by 0.01 mb/d compared to the previous forecast.

Latin America

Latin America's total liquids supply in February fell by 0.04 mb/d m-o-m to average 5.94 mb/d, down by 0.36 mb/d y-o-y.

Total liquids supply in the region for **2020** is estimated to have declined by 0.03 mb/d to average 6.06 mb/d. This is mainly due to lower-than-expected oil output in all countries of the region following the shut in of wells on the back of COVID-19 and a slowdown in drilling and operations, as well as prolonged maintenance in Brazil. Liquids production in 2020 is estimated to have grown in Brazil by 0.12 mb/d to average 3.68 mb/d and in Guyana by 0.07 mb/d to average 0.07 mb/d. Meanwhile, oil production in other countries in the region has declined.

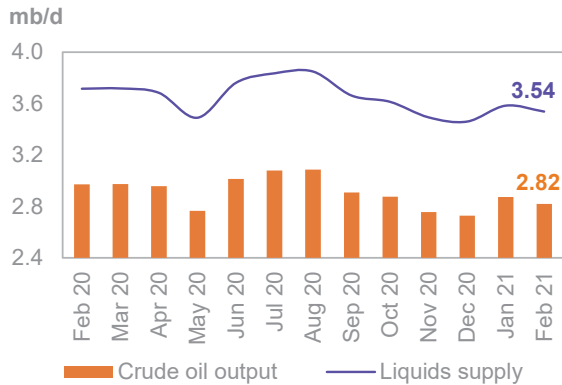
For **2021**, oil production is projected to grow by 0.23 mb/d y-o-y to average 6.30 mb/d, revised down by 0.01 mb/d m-o-m. Oil production in Brazil, Ecuador, Guyana, Argentina and Peru is forecast to increase, owing to production ramp-ups in fields that started in 2019 and 2020. Production in Ecuador is projected to recover by 0.06 mb/d from outages seen in 2020 to average 0.55 mb/d. Oil production is likely to decline in Colombia by a minor 0.01 mb/d.

Brazil

Brazil's crude oil production in February was down by 54 tb/d m-o-m to average 2.82 mb/d due to a decision by Petrobras to temporarily reduce production at the Marlim Sul offshore field due to COVID-19-related safety measures. However, production from late March began to increase, and crude oil output is expected to reach 2.99 mb/d in April, although maintenance is still continuing at the Peregrino field. Production of NGLs increased m-o-m in February by 8 tb/d to average 104 tb/d and is expected to have remained flat in March. According to official data, biofuels production was down by 23 tb/d to average 614 tb/d in January, and preliminary data shows that it remained flat in February and March.

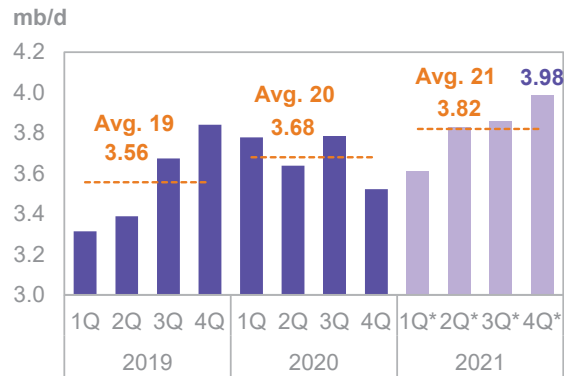
In February, Brazil liquids production, including biofuels, fell by 0.04 mb/d, m-o-m, to average 3.54 mb/d.

Graph 5 - 25: Brazil's crude oil and liquids output



Sources: ANP, Petrobras and OPEC.

Graph 5 - 26: Brazil's quarterly and annual liquids output



Note: * 1Q21-4Q21 = Forecast. Sources: ANP and OPEC.

In **2020**, liquids supply is estimated to have grown by 0.12 mb/d y-o-y to average 3.68 mb/d.

For **2021**, despite weaker-than-expected production performance in 1Q21, higher growth of 0.2 mb/d in 2H21 is anticipated in Brazil compared to 1H21. Crude oil production from two large projects – Sepia and Mero I – each having a 180 tb/d peak capacity are both scheduled to start in 2H21. The Sepia field is an ultra-deep water offshore oil field located at water depths of up to 2,200 m in the pre-salt Santos Basin. The Mero offshore field is said to be Brazil’s third largest pre-salt discovery and has been undergoing test production since 2017. Liquids supply in 2021 is forecast to grow by 0.14 mb/d to average 3.82 mb/d, unchanged from last month’s assessment.

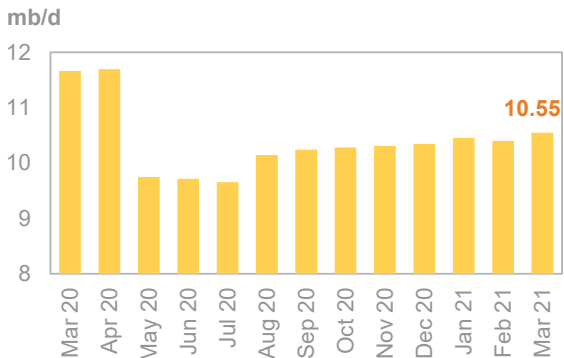
Russia

Russia’s liquids production in March increased m-o-m to average 10.55 mb/d, as per preliminary data, but was lower by 1.11 mb/d y-o-y. With this, Russia’s liquids production in 1Q21 is estimated to have increased by 0.16 mb/d q-o-q to average 10.47 mb/d.

Annual liquids production in **2020** is estimated to have declined by 1.02 mb/d y-o-y to average 10.59 mb/d.

For **2021**, Russian total liquids production is forecast to grow by 0.01 mb/d y-o-y to average 10.60 mb/d.

Graph 5 - 27: Russia's monthly liquids production



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

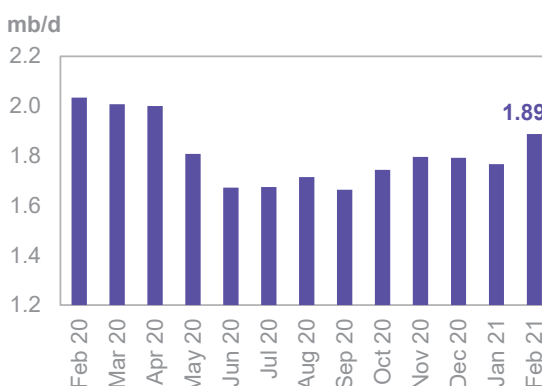
Caspian

Kazakhstan

Kazakhstan's liquids production in February increased by around 120 tb/d m-o-m to reach 1.89 mb/d. In March, preliminary data indicates a drop of around 0.13 mb/d to average 1.75 mb/d.

Kazakhstan's liquids production in **2020** is estimated to have declined by 0.10 mb/d to average 1.83 mb/d, while for **2021**, production is forecast to grow by a minor 0.01 mb/d.

Graph 5 - 28: Kazakhstan monthly crude and total liquids output



Sources: Nefte Compass and OPEC.

Azerbaijan

Azerbaijan's liquids supply in February declined slightly m-o-m to 0.74 mb/d and is expected to continue at the same level in March.

Condensate and NGL output from gas-condensate offshore fields saw a record high in January at 193 tb/d, mainly from the Shah-Deniz field in the Caspian. However, preliminary average production data in February and March shows a decline of 45 tb/d to average 148 tb/d.

Following a decline of 0.06 mb/d in Azeri liquids output in **2020**, liquids supply is forecast to grow by 0.03 mb/d to average 0.76 mb/d in **2021**.

Graph 5 - 29: Azerbaijan monthly crude and total liquids output



Sources: Nefte Compass and OPEC.

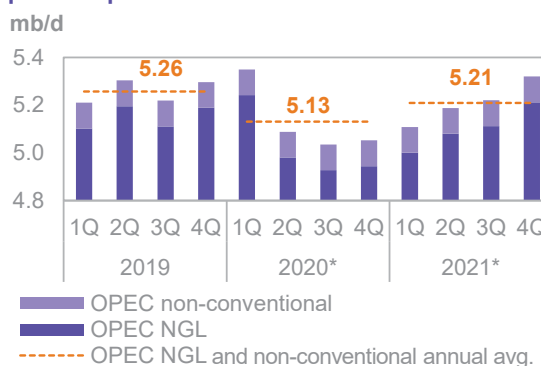
OPEC NGL and non-conventional oils

OPEC NGLs and non-conventional liquids are estimated to increase in 1Q21 by 0.06 mb/d q-o-q to average 5.11 mb/d, down by 0.24 mb/d y-o-y. Production of OPEC NGLs and non-conventional liquids has been in decline since 1Q21, from 5.35 mb/d to 5.05 mb/d in 4Q20. Preliminary output of NGLs in the first quarter of the year is estimated to be flat at 5.00 mb/d, while production of non-conventional liquids was steady at 0.11 mb/d.

In **2020**, OPEC NGL production are estimated to have contracted by 0.13 mb/d to average 5.13 mb/d.

For **2021**, OPEC NGLs and non-conventional liquids are expected to grow by 0.08 mb/d y-o-y to average 5.21 mb/d.

Graph 5 - 30: OPEC NGLs and non-conventional liquids output



Legend:
 ■ OPEC non-conventional
 ■ OPEC NGL
 - - - OPEC NGL and non-conventional annual avg.

Note: * 2020 = Estimate and 2021 = Forecast.
 Source: OPEC.

Table 5 - 7: OPEC NGL + non-conventional oils, mb/d

OPEC NGL and non-conventional oils	Change		Change		1Q21	2Q21	3Q21	4Q21	Change	
	2019	19/18	2020	20/19					2021	21/20
OPEC NGL	5.15	-0.08	5.02	-0.13	5.00	5.08	5.11	5.21	5.10	0.08
OPEC non-conventional	0.11	0.00	0.11	0.00	0.11	0.11	0.11	0.11	0.11	0.00
Total	5.26	-0.08	5.13	-0.13	5.11	5.19	5.22	5.32	5.21	0.08

Note: 2020 = Estimate and 2021 = Forecast. Source: OPEC.

OPEC crude oil production

According to secondary sources, total **OPEC-13 crude oil production** averaged 25.04 mb/d in March 2021, up by 0.20 mb/d m-o-m. Crude oil output increased mainly in IR Iran, Angola, Libya and Iraq, while production decreased primarily in Saudi Arabia.

OPEC crude oil production based on direct communication is shown in **Table 5 – 9**.

Table 5 - 8: OPEC crude oil production based on secondary sources, tb/d

Secondary sources	2019	2020	3Q20	4Q20	1Q21	Jan 21	Feb 21	Mar 21	Change Mar/Feb
Algeria	1,022	897	840	857	871	866	875	873	-2
Angola	1,401	1,247	1,205	1,164	1,150	1,161	1,123	1,163	40
Congo	324	289	287	273	269	267	270	271	1
Equatorial Guinea	117	112	109	109	108	115	103	107	4
Gabon	208	195	191	191	180	180	180	182	2
Iran, I.R.	2,356	1,985	1,948	1,993	2,190	2,098	2,167	2,304	137
Iraq	4,678	4,049	3,697	3,817	3,881	3,837	3,892	3,914	23
Kuwait	2,687	2,434	2,245	2,293	2,327	2,322	2,333	2,327	-6
Libya	1,097	368	121	916	1,172	1,150	1,170	1,196	26
Nigeria	1,786	1,585	1,468	1,444	1,426	1,328	1,474	1,481	8
Saudi Arabia	9,771	9,182	8,766	8,962	8,440	9,077	8,123	8,090	-33
UAE	3,094	2,802	2,617	2,515	2,611	2,611	2,611	2,610	-1
Venezuela	796	500	362	408	513	490	524	525	1
Total OPEC	29,337	25,645	23,858	24,941	25,138	25,503	24,842	25,042	201

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

Table 5 - 9: OPEC crude oil production based on direct communication, tb/d

Direct communication	2019	2020	3Q20	4Q20	1Q21	Jan 21	Feb 21	Mar 21	Change Mar/Feb
Algeria	1,023	899	843	862	874	874	878	870	-8
Angola	1,373	1,277	1,253	1,186	1,136	1,133	1,137	1,138	1
Congo	329	300	296	285	280	278	279	283	3
Equatorial Guinea	110	114	115	106	104	105	103	103	0
Gabon	218	207	201	178	183	184	183	183	0
Iran, I.R.	..	..	..	..	..	..	..	..	..
Iraq	4,576	3,998	3,625	3,796	3,846	3,807	3,867	3,865	-2
Kuwait	2,678	2,438	2,245	2,293	2,327	2,325	2,329	2,327	-2
Libya	..	..	..	..	1,214	1,172	1,183	1,283	100
Nigeria	1,737	1,477	1,351	1,283	1,404	1,361	1,424	1,429	5
Saudi Arabia	9,808	9,213	8,813	8,975	8,473	9,103	8,147	8,138	-9
UAE	3,058	2,779	2,525	2,501	2,610	2,609	2,612	2,608	-4
Venezuela	1,013	557	395	450	533	484	538	578	40
Total OPEC	..	..	..	..	..	..	..	..	..

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

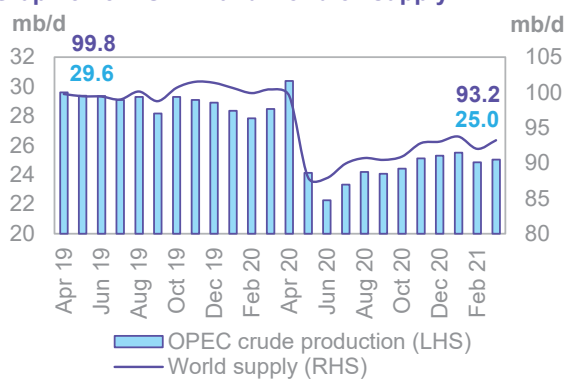
World oil supply

Preliminary data indicates that **global liquids production in March** increased by 1.22 mb/d to average 93.23 mb/d compared with the previous month, but was lower by 7.22 mb/d y-o-y.

Non-OPEC liquids production (including OPEC NGLs) increased in March by 1.02 mb/d compared with the previous month to average 68.19 mb/d, lower by 3.79 mb/d y-o-y. The preliminary estimated increase in production in March 2020 came mainly from the US by 0.93 mb/d, due to a return of drilling and completion operations following the extreme cold temperatures experienced particularly in Texas a month earlier.

The **share of OPEC crude oil in total global production** was down by 0.1% in March to 26.9% compared with the previous month. Estimates are based on preliminary data from direct communication for non-OPEC supply, OPEC NGLs and non-conventional oil, while estimates for OPEC crude production are based on secondary sources.

Graph 5 - 31: OPEC and world oil supply



Source: OPEC.

Commercial Stock Movements

Preliminary data shows that total OECD commercial oil stocks fell m-o-m by 44.9 mb in February. At 2,978 mb, inventories were 94.1 mb higher than the same month a year ago, 29.0 mb above the latest five-year average and around 57 mb above the 2015-2019 average. Within the components, crude stocks rose m-o-m by 6.1 mb, while product stocks fell by 51.0 mb. OECD crude stocks stood at 30.8 mb above the latest five-year average, and 42.0 mb above the 2015-2019 average, while product stocks exhibited a deficit of 1.7 mb above the latest five-year average, but were 15.5 mb above the 2015-2019 average.

In terms of days of forward cover, OECD commercial inventories declined m-o-m by 1.1 days in February to stand at 68.0 days. This is 6.7 days lower than the year-ago level, 2.6 days above the latest five-year average and 5.6 days above the 2015-2019 average.

Preliminary data for March showed that total US commercial oil stocks rose m-o-m by 8.3 mb to stand at 1,290 mb. This is 30.4 mb, or 2.3%, lower than the same month a year ago, but 5.5 mb, or 0.4%, higher than the latest five-year average. Crude stocks rose by 17.2 mb, while product stocks fell by 8.9 mb.

OECD

Preliminary February data sees **total OECD commercial oil stocks** dropping by 44.9 mb m-o-m. At 2,978 mb, they were 94.1 mb higher than the same time one year ago and 29 mb above the latest five-year average.

Within the components, crude stocks rose m-o-m by 6.1 mb, while product stocks fell by 51 mb. Total commercial oil stocks in February fell m-o-m in all three OECD regions.

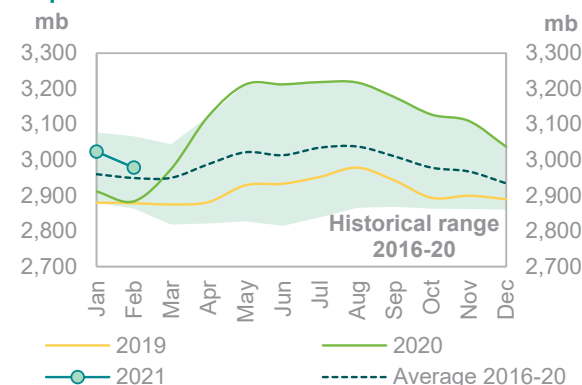
OECD **commercial crude stocks** rose in February by 6.1 mb to stand at 1,498 mb. This is 88.4 mb higher than the same time a year ago and 30.8 mb above the latest five-year average. Compared with the previous month, OECD America and OECD Asia Pacific registered stock builds, while OECD Europe witnessed a stock draw.

In contrast, **total product inventories** fell sharply by 51.0 mb m-o-m in February to stand at 1,479 mb. This is 5.6 mb above the same time a year ago, but 1.7 mb lower than the latest five-year average.

Within the OECD regions, product stocks in OECD Americas fell by 45.8 mb, while OECD Europe and OECD Pacific dropped by 2.5 mb and 2.7 mb, respectively.

In terms of **days of forward cover**, OECD commercial stocks fell m-o-m by 1.1 days in February to stand at 68.0 days. This is 6.7 days below February 2020 levels, but 2.6 days above the latest five-year average. OECD America and OECD Europe were above the latest five-year averages: the Americas by 0.3 days at 64.5 days and Europe by 9.1 days at 84.2 days. Asia Pacific, however, is in deficit of 0.4 days at 51.6 days.

Graph 9 - 1: OECD commercial oil stocks



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

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

	Feb 20	Dec 20	Jan 21	Feb 21	Change Feb 21/Jan 21
OECD stocks					
Crude oil	1,410	1,507	1,492	1,498	6.1
Products	1,474	1,530	1,530	1,479	-51.0
Total	2,884	3,037	3,023	2,978	-44.9
Days of forward cover	74.7	70.1	69.1	68.0	-1.1

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

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

OECD Americas

OECD Americas total commercial stocks fell by 37.1 mb m-o-m in February to settle at 1,554 mb. This is 30.2 mb above the same month last year and 12.4 mb higher than the latest five-year average.

Commercial crude oil stocks in OECD Americas rose by 8.8 mb m-o-m in February to stand at 850 mb, which is 51.1 mb higher than in February 2020 and 45.2 mb above the latest five-year average. The build came on the back of lower crude runs, which fell m-o-m by around 1.9 mb/d to stand at 13.2 mb/d.

In contrast, **total product stocks** in OECD Americas fell sharply m-o-m by 45.8 mb in February, the third consecutive monthly drop, to stand at 704 mb. This was 20.9 mb lower than the same month one year ago and 32.8 mb below the latest five-year average. Lower refinery throughput was behind the stock draw.

OECD Europe

OECD Europe total commercial stocks fell by 6.2 mb m-o-m in February to settle at 1,052 mb. This is 52.2 mb above the same month last year and 43.3 mb higher than the latest five-year average.

OECD Europe's **commercial crude stocks** fell m-o-m by 3.7 mb in February to end the month at 444 mb, which is 19.2 mb higher than one year ago and 12.7 mb above the latest five-year average. The drop in February crude oil inventories came on the back of higher m-o-m refinery throughputs in the EU-14 plus UK and Norway, which increased by around 100 tb/d to 8.70 mb/d

OECD Europe's **commercial product stocks** fell m-o-m by 2.5 mb to end February at 608 mb. This is 33.0 mb higher than a year ago and 30.6 mb above the latest five-year average.

OECD Asia Pacific

OECD Asia Pacific's total commercial oil stocks fell m-o-m by 1.7 mb in February to stand at 372 mb. This is 11.7 mb higher than a year ago, but 26.7 mb below the latest five-year average.

OECD Asia Pacific's **crude inventories** rose by 1.1 mb m-o-m to end February at 204 mb, which is 18.2 mb higher than one year ago, but 27.2 mb below the latest five-year average.

In contrast, OECD Asia Pacific's **total product inventories** fell by 2.7 mb m-o-m to end February at 167 mb. This is 6.4 mb lower than the same time a year ago, but 0.5 mb above than the latest five-year average.

US

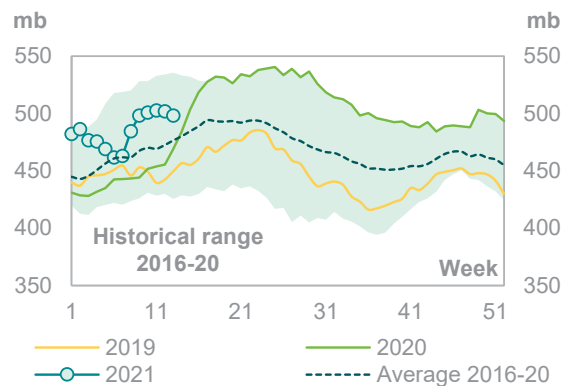
Preliminary data for March showed that **total US commercial oil stocks** rose m-o-m by 8.3 mb to stand at 1,290 mb. This is 30.4 mb, or 2.3%, lower than the same month a year ago, but 5.5 mb, or 0.4%, higher than the latest five-year average. Crude stocks rose by 17.2 mb, while product stocks fell by 8.9 mb

US commercial crude stocks rose by 17.2 mb m-o-m in March to stand at 502 mb. This is 19.4 mb, or 4.0%, higher than the same month last year, and 19.9 mb, or 4.1%, above the latest five-year average. The stock build came despite higher March crude runs, which increased by 1.4 mb/d to stand at 14.6 mb/d.

Total product stocks in March fell m-o-m, dropping by 8.9 mb to stand at 788 mb. This is 49.8 mb, or 5.9%, below March 2020 levels, and 14.4 mb, or 1.8%, below the latest five-year average. The drop was mainly driven by higher consumption.

Gasoline stocks fell by 12.9 mb m-o-m in March to settle at 231 mb. This is 30.3 mb, or 11.6%, below the same month last year, and 13.5 mb, or 5.5%, lower than the latest five-year average. The monthly stock draw came mainly on the back of lower gasoline production combined with improvements in gasoline demand.

Graph 9 - 2: US weekly commercial crude oil inventories



Sources: EIA and OPEC.

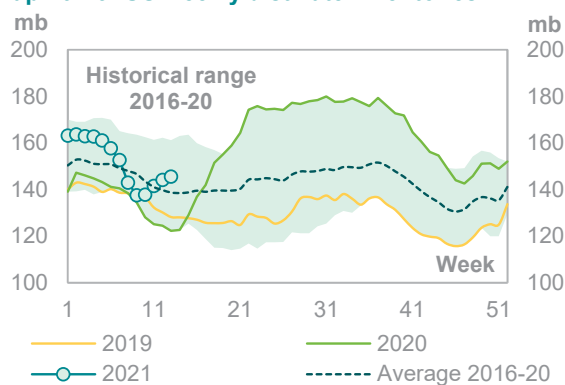
Commercial Stock Movements

In contrast, **distillate stocks** rose by 1.1 mb m-o-m in March to stand at 144 mb. This is 17.4 mb, or 13.7%, higher than a year ago, and 3.8 mb, or 2.7%, lower than the latest five-year average.

Residual fuel oil stocks also rose m-o-m in March, increasing by 0.6 mb. At 32.3 mb, this was 2.1 mb, or 6.2%, lower than a year ago, and 3.9 mb, or 10.7%, below the latest five-year average.

Jet fuel rose m-o-m by 0.3 mb, ending March at 39.0 mb. This is 0.8 mb, or 2.1%, lower than the same month last year, and 2.7 mb, or 6.5%, below the latest five-year average.

Graph 9 - 3: US weekly distillate inventories



Sources: EIA and OPEC.

Table 9 - 2: US commercial petroleum stocks, mb

	Mar 20	Jan 21	Feb 21	Mar 21	Change Mar 21/Feb 21
US stocks					
Crude oil	482.5	475.9	484.6	501.8	17.2
Gasoline	260.8	255.1	243.5	230.5	-12.9
Distillate fuel	126.7	162.8	143.0	144.1	1.1
Residual fuel oil	34.4	32.0	31.6	32.3	0.6
Jet fuel	39.9	42.6	38.7	39.0	0.3
Total products	838.3	854.2	797.4	788.5	-8.9
Total	1,320.8	1,330.1	1,282.0	1,290.3	8.3
SPR	635.0	638.1	637.8	637.8	0.0

Sources: EIA and OPEC.

Japan

In Japan, **total commercial oil stocks** in February fell by 1.7 mb m-o-m to settle at 123.2 mb. This is 1.0 mb, or 0.8 %, lower than the same month last year and 11.8 mb, or 8.7 %, below the latest five-year average. Crude stocks rose m-o-m by 1.1 mb, while products stocks fell m-o-m by 2.7 mb.

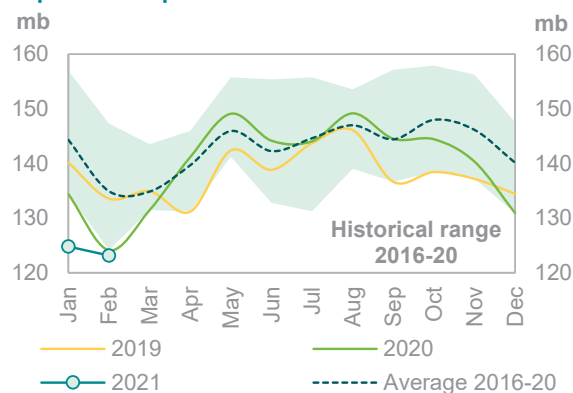
Japanese **commercial crude oil stocks** rose in February to stand at 63.3 mb. This is 4.9 mb, or 7.1%, below the same month a year ago, and 15.5 mb, or 19.7%, lower than the latest five-year average. The build came on the back of lower crude throughput, which fell m-o-m by 185 tb/d, or 6.8%, to stand at 2.54 mb/d.

In contrast, Japan's **total product inventories** fell m-o-m by 2.7 mb to end February at 59.9 mb. This is 3.9 mb, or 6.9% lower than the same month last year, and 3.8 mb, or 6.8%, higher than the latest five-year average.

Gasoline stocks in February fell m-o-m by 0.5 mb to stand at 13.1 mb. This was 1.8 mb, or 16.0%, higher than a year ago, and 2.3 mb, or 21.2%, above the latest five-year average. Lower domestic gasoline sales were behind the build in gasoline stocks.

Distillate stocks fell by 3.0 mb m-o-m to end February at 25.7 mb. This is 1.7 mb, or 7.3%, higher than the same month a year ago, and 2.5 mb, or 11.0%, above the latest five-year average. Within distillate components, **kerosene and gasoil stocks** fell m-o-m by 16.3% and 10.7%, respectively, while jet fuel stocks rose by 7.8%.

Graph 9 - 4: Japan's commercial oil stocks



Sources: METI and OPEC.

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

	Feb 20	Dec 20	Jan 21	Feb 21	Change Feb 21/Jan 21
Japan's stocks					
Crude oil	68.2	66.4	62.2	63.3	1.1
Gasoline	11.3	12.6	13.6	13.1	-0.5
Naphtha	8.5	10.4	8.3	9.2	0.9
Middle distillates	24.0	29.8	28.7	25.7	-3.0
Residual fuel oil	12.2	11.7	12.0	11.9	-0.2
Total products	56.0	64.5	62.6	59.9	-2.7
Total**	124.2	130.9	124.8	123.2	-1.7

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 February showed that **total European commercial oil stocks** fell m-o-m by 6.2 mb to stand at 1,154.2 mb. At this level, they were 48.3 mb, or 4.4%, above the same month a year ago, and 20.9 mb, or 1.8%, higher than the latest five-year average. Crude and products stocks fell by 3.7 mb and 2.5 mb, respectively.

European **crude inventories** fell in February to stand at 481.9 mb. This is 16.1 mb, or 3.4%, higher than the same month a year ago, and 0.8 mb, or 0.2%, above the latest five-year average. The fall in February crude oil inventories came on the back of higher m-o-m refinery throughputs in the EU-14 plus UK and Norway, which increased by around 100 tb/d to 8.70 mb/d.

European **total product stocks** fell m-o-m by 2.5 mb to end February at 672.3 mb. This is 32.2 mb, or 5.0%, higher than the same month a year ago, and 20.2 mb, or 3.1%, above the latest five-year average.

Gasoline stocks rose m-o-m by 0.8 mb in February to stand at 121.2 mb. This is 1.6 mb, or 1.3 %, higher than the level registered the same time a year ago, but 4.6 mb, or 3.7 %, below the latest five-year average.

Residual fuel stocks rose m-o-m by 0.6 mb in February to 66.0 mb. This is 2.3 mb, or 3.4 %, lower than the same month one year ago, and 5.0 mb, or 7.0%, below the latest five-year average.

In contrast, **distillate stocks** fell m-o-m by 2.9 mb in February to stand at 456.2 mb. This is 34.3 mb, or 8.1%, higher than the same month last year, and 29.4 mb, or 6.9%, higher than the latest five-year average.

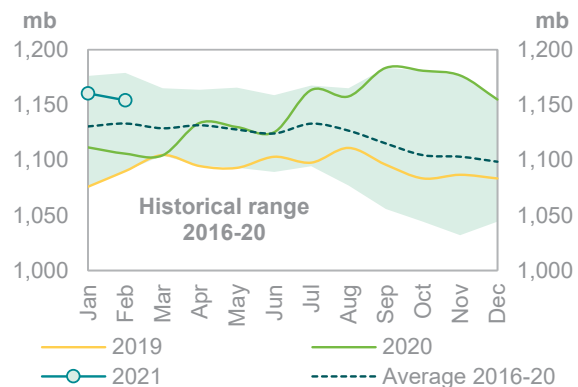
Naphtha stocks fell by 1.0 mb m-o-m in February, ending the month at 29.0 mb. This is 1.4 mb, or 4.6%, below February 2020 levels, and 0.3 mb, or 1.2%, higher than the latest five-year average.

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

	Feb 20	Dec 20	Jan 21	Feb 21	Change Feb 21/Jan 21
EU stocks					
Crude oil	465.8	487.3	485.6	481.9	-3.7
Gasoline	119.6	117.0	120.4	121.2	0.8
Naphtha	30.4	31.2	29.9	29.0	-1.0
Middle distillates	421.8	454.6	459.1	456.2	-2.9
Fuel oils	68.3	64.9	65.4	66.0	0.6
Total products	640.1	667.7	674.8	672.3	-2.5
Total	1,105.9	1,154.9	1,160.4	1,154.2	-6.2

Sources: Argus, Euroilstock and OPEC.

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



Sources: Argus, Euroilstock and OPEC.

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

Singapore

At the end of February, **total product stocks in Singapore** had risen by 1.6 mb m-o-m, reversing the fall registered a month earlier to stand at 51.9 mb. This is 1.4 mb, or 2.8%, higher than the same month a year ago.

Light distillate stocks rose m-o-m by 0.6 mb in February to stand at 15.7 mb. This is 2.3 mb, or 17.0%, higher than the same month one year ago.

Middle distillate stocks a rose by 0.8 mb in February to stand at 14.9 mb. This is 3.3 mb, or 28.7%, higher than a year ago.

Residual fuel oil stocks rose by 0.1 mb, ending February at 21.3 mb, which is 4.2 mb, or 16.5 %, lower than in February 2020.

ARA

Total product stocks in ARA rose m-o-m by 1.2 mb in February, reversing the drop witnessed last month. They now stand at 51.7 mb, which is 13.4 mb, or 35.1%, higher than the same month a year ago.

Gasoline stocks in February rose m-o-m by 0.3 mb to stand at 11.1 mb, which is 1.2 mb, or 12.6 %, above the same month one year ago.

Residual fuel stocks also rose m-o-m by 1.4 mb to end February at 10.7 mb. This is 3.5 mb, or 49.3%, above the level registered one year ago.

Jet oil stocks rose m-o-m by 0.5 mb to end February at 7.7mb. This is 4.4 mb, or 131%, above the level seen one year ago.

In contrast, **gasoil stocks** fell by 0.3 mb m-o-m in February to stand at 19.2 mb, which is 3.3 mb, or 21.1%, higher than in February 2020.

Fujairah

During the week ending 5 April, **total oil product stocks in Fujairah** rose by 1.5 mb w-o-w to stand at 20.77 mb, according to data from FEDCom and S&P Global Platts. At this level, total oil stocks were 2.93 mb lower than the same time a year ago. Within products, light and middle distillate stocks declined, while heavy distillates saw a stock build.

Light distillate stocks declined by 1.32 mb w-o-w to stand at 6.21 mb, which is 0.49 mb higher than the same period a year ago. In contrast, **middle distillate stocks** fell by 0.18 mb to stand at 3.35 mb, which is 0.82 mb higher than a year ago. **Heavy distillate stocks** rose by 2.98 mb to stand at 11.21 mb, which is 4.23 mb lower than the same time last year.

Balance of Supply and Demand

Demand for OPEC crude in 2020 has been revised up by 0.1 mb/d from the previous month to stand at 22.5 mb/d. This is around 6.8 mb/d lower than in 2019.

According to secondary sources, OPEC crude production averaged 28.2 mb/d in 1Q20, which was 6.9 mb/d higher than demand for OPEC crude. In 2Q20, OPEC crude production averaged 25.6 mb/d, which was 8.7 mb/d higher than demand. In 3Q20, OPEC crude production averaged 23.9 mb/d, which was 0.8 mb/d lower than demand, while in 4Q20 it averaged 24.9 mb/d, around 1.9 mb/d below demand. For the full year 2020, OPEC crude production averaged 25.6 mb/d, around 3.2 mb/d higher than demand.

Demand for OPEC crude in 2021 has been revised up by 0.2 mb/d from the previous month to stand at 27.4 mb/d. This is 4.9 mb/d higher than in 2020.

According to secondary sources, OPEC crude production averaged 25.1 mb/d in 1Q21, which was 0.4 mb/d lower than demand for OPEC crude.

Balance of supply and demand in 2020

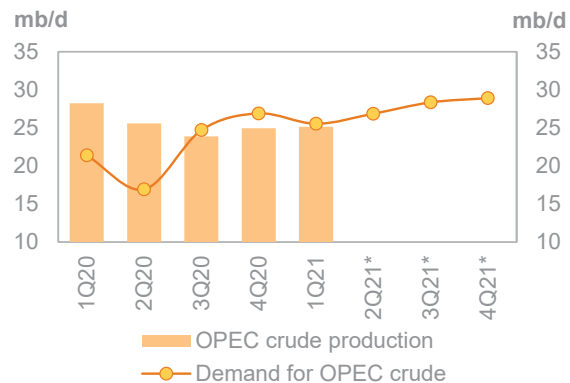
Demand for OPEC crude in 2020 has been revised up by 0.1 mb/d from the previous month to stand at 22.5 mb/d. This is around 6.8 mb/d lower than in 2019.

Demand for OPEC crude in 1Q20 has been revised up 0.4 mb/d, while 2Q20, 3Q20 and 4Q20 remained unchanged from the previous monthly assessment.

Compared with the same quarters in 2019, demand for OPEC crude in 1Q20 and 2Q20 indicates a decline of 7.7 mb/d and 12.0 mb/d, respectively. Demand in 3Q20 showed a decline of 5.8 mb/d, while 4Q20 saw a drop of 1.9 mb/d.

According to secondary sources, OPEC crude production averaged 28.2 mb/d in 1Q20, which was 6.9 mb/d higher than demand for OPEC crude. In 2Q20, OPEC crude production averaged 25.6 mb/d, which was 8.7 mb/d higher than demand. In 3Q20, OPEC crude production averaged 23.9 mb/d, which was 0.8 mb/d lower than demand, while in 4Q20 it averaged 24.9 mb/d, around 1.9 mb/d below demand. For the full year 2020, OPEC crude production averaged 25.6 mb/d, around 3.2 mb/d higher than demand.

Graph 10 - 1: Balance of supply and demand, 2020–2021*



Note: * 2Q21-4Q21 = Forecast. Source: OPEC.

Table 10 - 1: Supply/demand balance for 2020*, mb/d

	2019	1Q20	2Q20	3Q20	4Q20	2020	Change 2020/19
(a) World oil demand	99.98	93.49	83.07	91.21	94.21	90.51	-9.48
Non-OPEC liquids production	65.42	66.77	61.07	61.48	62.27	62.89	-2.52
OPEC NGL and non-conventionals	5.26	5.35	5.09	5.04	5.05	5.13	-0.13
(b) Total non-OPEC liquids production and OPEC NGLs	70.67	72.12	66.16	66.52	67.32	68.02	-2.65
Difference (a-b)	29.31	21.37	16.91	24.69	26.89	22.48	-6.83
OPEC crude oil production	29.34	28.23	25.57	23.86	24.94	25.64	-3.69
Balance	0.03	6.86	8.66	-0.83	-1.95	3.16	3.14

Note: * 2020 = Estimate. Totals may not add up due to independent rounding. Source: OPEC.

Oil Market Report - April 2021

Part of [Oil Market Report](#)

Flagship report — April 2021

About this report

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

Highlights

- Oil demand in 2021 is forecast to reach 96.7 mb/d, an increase of 5.7 mb/d from 2020. Despite weaker-than-expected data for 1Q21, annual growth has been revised up by 230 kb/d on average to take account of better economic forecasts and robust prompt indicators. The recovery remains fragile, however, with the number of Covid cases surging in some major consuming countries.
- World oil supply rose 1.7 mb/d in March to 92.9 mb/d after shut-in US output recovered from a cold snap. Further gains from the US, Brazil and biofuels are set to lift global supply in April, while producers taking part in OPEC+ cuts continue to limit flows. Non-OPEC+ will see gains of 610 kb/d in 2021 after a 1.3 mb/d drop in 2020. US supply is set to fall 100 kb/d after a 600 kb/d loss in 2020.
- Global refinery throughput caught up with year earlier levels in March for the first time since 2019, rising by 1 mb/d m-o-m on a strong recovery in the US following February's freeze. At 75.9 mb/d, global refinery runs were nevertheless 4.4 mb/d below March 2019. Crude throughput is forecast to rise by 6.8 mb/d from April to August, resulting in average annual growth of 4.5 mb/d.
- OECD industry stocks fell for the seventh consecutive month in February, by 55.8 mb or 2 mb/d, led by a sharp draw in product inventories (-66.8 mb). At end-February, total oil stocks stood at 2 977 mb, reducing the overhang versus the 2016-2020 average to 28.3 mb. March data for the US, Europe and Japan show that industry stocks built by a combined 15.3 mb in total.
- Crude prices rose ~\$3.35/bbl m-o-m in March and were up a steep \$32/bbl on year-ago levels. Stronger economic prospects have steadily boosted prices from November. They hit a 22-month high in mid-March, before easing on plentiful supplies. Brent currently trades around \$63/bbl and WTI \$60/bbl. Ample supply has also weighed on physical crude price differentials for many grades.

One year on

A year on from what the IEA called "Black April", one of the darkest months ever for world oil markets, fundamentals look decidedly stronger. The massive overhang in global oil inventories that built up during last year's Covid-19 demand shock is being worked off, vaccine campaigns are gathering pace and the global economy appears to be on a better footing.

In its April update of the World Economic Outlook, the IMF raised its forecasts for 2021 and 2022 global GDP growth to +6% and +4.4%, respectively, but noted divergent recoveries and a high degree of uncertainty. Not surprisingly, the biggest upgrade was for the United States, given its swift vaccine rollout and hefty stimulus packages on the way. China was also revised slightly higher. This improved outlook, along with stronger prompt indicators, has led us to revise up our 2021 global oil demand growth forecast by 230 kb/d. Following a decline of 8.7 mb/d last year, world oil demand is now expected to expand by 5.7 mb/d in 2021 to 96.7 mb/d.

There are still lingering concerns over the strength of the recovery in demand growth, however, with the number of Covid cases surging in Europe and some major oil consuming countries such as India and Brazil. Preliminary data suggest OECD oil stocks held largely steady in March, following seven consecutive months of draws. In February, OECD oil inventories fell by 55.8 mb, or 2 mb/d. At 2 977 mb, total oil stocks were 28 mb above the 2016-2020 average, but 94 mb higher than a year ago. Crude oil benchmarks retreated from their 22-month highs of mid-March, with Brent and WTI last trading at around \$63/bbl and \$60/bbl, respectively.

Prices could yet come under renewed pressure in the coming months with world oil supply set to ramp up and shift the market from deficit towards balance. Global production was already on the rise in March, increasing by 1.7 mb/d as US output recovered from a sharp drop in February and OPEC+ supply edged higher. Iran has been opening up the taps since late last year, defying US sanctions, with its crude production now at the highest in nearly two years. More oil is on the way after OPEC+ ministers agreed on 1 April to gradually ease output cuts by more than 2 mb/d from May through July.

The market changes dramatically in the latter half of this year as nearly 2 mb/d of extra supply may be required to meet expected demand growth - even after factoring in the announced ramp-up of OPEC+ production. Global refinery runs are forecast to rise by 6.8 mb/d from April to August, just as crude oil-fired power generation rises seasonally.

Yet, the market does not face an impending supply crunch. By July, OPEC+ will still have close to 6 mb/d of effective spare production capacity, excluding some 1.5 mb/d of Iranian crude now shut in by sanctions. The bloc's monthly calibration of supply may give it the flexibility to meet incremental demand by ramping up swiftly or adjusting output lower should the demand recovery fail to keep pace.

IEA World Oil Supply and Demand Forecasts: Summary (Table)

2021-04-14 08:00:00.3 GMT

By Kristian Siedenburg

(Bloomberg) -- Following is a summary of world oil supply and demand forecasts from the International Energy Agency in Paris:

	4Q	3Q	2Q	1Q	4Q	3Q	2Q	1Q		
	2021	2021	2021	2021	2020	2020	2020	2020	2021	2020
Demand										
Total Demand	99.5	98.3	95.1	93.7	94.7	92.6	82.9	93.7	96.7	91.0
Total OECD	46.6	45.7	44.1	42.9	43.0	42.3	37.6	45.5	44.8	42.1
Americas	25.3	25.1	24.0	23.0	23.2	22.7	20.0	24.3	24.4	22.6
Europe	13.6	13.6	13.1	12.3	12.5	12.9	11.0	13.3	13.1	12.4
Asia Oceania	7.7	7.1	6.9	7.6	7.3	6.7	6.5	7.8	7.3	7.1
Non-OECD countries	53.0	52.5	51.1	50.8	51.7	50.3	45.3	48.3	51.9	48.9
FSU	4.9	4.9	4.5	4.6	4.8	4.8	4.0	4.6	4.7	4.6
Europe	0.8	0.8	0.7	0.8	0.8	0.8	0.6	0.7	0.8	0.7
China	15.3	15.1	14.9	14.5	14.9	14.7	14.2	11.8	14.9	13.9
Other Asia	14.0	13.3	13.5	13.6	13.5	12.4	11.2	13.4	13.6	12.6
Americas	6.1	6.1	5.8	5.8	5.9	5.8	4.9	5.8	5.9	5.6
Middle East	7.8	8.4	7.7	7.5	7.7	8.1	7.0	7.8	7.8	7.7
Africa	4.1	4.0	4.0	4.1	4.0	3.8	3.3	4.2	4.0	3.8
Supply										
Total Supply	n/a	n/a	n/a	92.6	92.4	91.1	92.1	100.2	n/a	93.9
Non-OPEC	64.7	64.6	63.7	62.3	62.4	61.9	61.3	66.7	63.8	63.1
Total OECD	28.8	28.3	27.9	27.7	27.8	27.1	26.9	29.9	28.2	27.9
Americas	24.5	24.2	24.0	23.5	23.7	23.1	22.8	25.7	24.1	23.8
Europe	3.7	3.6	3.4	3.6	3.5	3.4	3.6	3.7	3.6	3.5
Asia Oceania	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.5
Non-OECD	30.7	30.7	30.7	30.3	29.9	29.7	30.0	32.3	30.6	30.5
FSU	13.7	13.7	13.6	13.4	13.2	12.8	13.2	14.8	13.6	13.5
Europe	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
China	3.9	4.0	4.0	4.0	3.9	4.0	4.0	4.0	4.0	4.0
Other Asia	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.2	3.0	3.0
Americas	5.6	5.6	5.6	5.3	5.2	5.4	5.1	5.6	5.5	5.3
Middle East	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	3.1
Africa	1.2	1.2	1.3	1.4	1.3	1.4	1.4	1.4	1.3	1.4
Processing Gains	2.3	2.3	2.2	2.1	2.1	2.1	2.0	2.3	2.2	2.1
Total OPEC	n/a	n/a	n/a	30.3	30.0	29.1	30.7	33.5	n/a	30.9
Crude	n/a	n/a	n/a	25.2	24.9	24.1	25.6	28.2	n/a	25.7
Natural gas										
liquids NGLs	5.3	5.3	5.2	5.2	5.1	5.0	5.1	5.4	5.2	5.2
Call on OPEC crude and stock change *	29.6	28.4	26.2	26.3	27.2	25.6	16.4	21.7	27.6	22.8

NOTE: Figures are in million of barrels per day. (*) equals total demand minus non-OPEC supply and OPEC natural gas liquids.

IEA changed the way it measures OPEC supply, adopting the industry-standard approach of counting most of Venezuela's Orinoco heavy oil as "crude oil."

SOURCE: International Energy Agency

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IEA: March Crude Oil Production in OPEC Countries (Table)

2021-04-14 08:00:00.1 GMT

By Kristian Siedenburg

(Bloomberg) -- Following is a summary of oil production in OPEC countries from the International Energy Agency in Paris:

	March	Feb.	March
	2021	2021	MoM
Total OPEC	25.05	24.84	0.21
Total OPEC 10	21.02	20.99	0.03
Algeria	0.88	0.88	0.00
Angola	1.14	1.14	0.00
Congo	0.28	0.28	0.00
Equatorial Guinea	0.11	0.10	0.01
Gabon	0.19	0.18	0.01
Iraq	3.93	3.89	0.04
Kuwait	2.33	2.35	-0.02
Nigeria	1.43	1.42	0.01
Saudi Arabia	8.12	8.14	-0.02
UAE	2.61	2.61	0.00
Iran	2.30	2.19	0.11
Libya	1.20	1.13	0.07
Venezuela	0.53	0.53	0.00

NOTE: Figures are in million of barrels per day. Monthly level change calculated by Bloomberg.

OPEC10 excludes Iran, Libya and Venezuela.

SOURCE: International Energy Agency

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IEA REPORT WRAP: 2021 Oil Demand Bolstered by Economic Recovery

2021-04-14 08:43:25.688 GMT

By Fred Pals

(Bloomberg) -- Summary including stories from IEA's monthly

Oil Market Report on Wednesday:

*** IEA boosts oil demand forecast as U.S. recovery helps clear glut**

** World oil demand 2021 forecast revised to 96.7m b/d from 96.5m b/d

** 2020 world demand was unrevised at 91m b/d

**** Non-OPEC supply 2021 was revised to 63.8m b/d from 63.9m b/d**

**** Call on OPEC crude 2021 was revised to 27.6m b/d from 27.3m b/d**

** Click here for summary of key IEA supply/demand forecasts

* OPEC supply edges up with Iran, Libya countering Saudi cuts:

IEA

** See full table:

** Compliance with pledged cutbacks in March:

- *** OPEC 124%; non-OPEC 93%; combined OPEC 113%
- ** Russia's compliance with OPEC+ deal was 95% in March
- ** Murban oil futures could be used to hedge other crudes
- ** Norway's liquids output to rise to 10-year high by end-2021
- ** Brazil oil recovery shows promise but Covid still a threat
- ** Jet fuel, kerosene demand to lag 2019 by 30% this year
- ** U.S. oil demand revised higher on Covid-19 vaccine roll-out:
IEA
- ** Global refining sector shows first signs of Y/y growth: IEA
- ** Norway's liquids output to rise to 10-year high by end-2021
- ** West Africa crude differentials weaken as demand falters
- ** NOTE: The OPEC+ alliance, including OPEC and non-members such as Russia, surprised traders on April 1 by announcing it would restore some of the supplies that were idled when demand collapsed due to the pandemic. OPEC and its allies will add more than 2m b/d to world oil supplies from May to July

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Brian Wingfield

IEA Boosts Oil Demand Forecast as U.S. Recovery Helps Clear Glut

2021-04-14 08:00:00.28 GMT

By Grant Smith

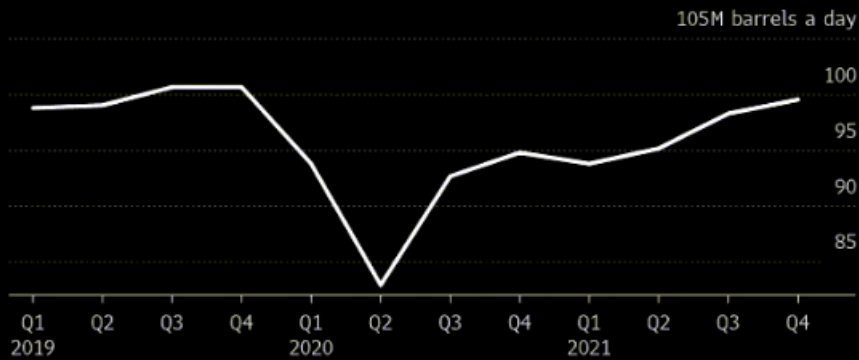
(Bloomberg) -- The International Energy Agency bolstered forecasts for global oil demand this year as the economy recovers from the pandemic, and said that a lingering glut in supplies is clearing.

"The massive overhang in global oil inventories that built up during last year's Covid-19 demand shock is being worked off, vaccine campaigns are gathering pace and the global economy appears to be on a better footing," the agency said in a monthly report.

The IEA boosted estimates for this year's growth in oil consumption by 230,000 barrels a day to 5.7 million a day amid a stronger outlook for the U.S. and China. That puts the world on track to recover about two-thirds of the demand lost last year. Still, crude markets may face a temporary lull as renewed virus outbreaks in India and Brazil erode fuel demand, while OPEC and its allies revive some of the output they halted during the slump. Supplies are also swelling as Iran pushes production near a two-year high in defiance of U.S. sanctions.

Right Direction

The IEA sees global oil demand continuing its recovery in 2021



Bloomberg

“Prices could yet come under renewed pressure in the coming months with world oil supply set to ramp up and shift the market from deficit toward balance,” said the Paris-based agency, which advises most major economies.

The 23-nation OPEC+ alliance led by Saudi Arabia and Russia surprised traders earlier this month by announcing it would return about 2 million barrels a day of shuttered output over the next three months.

Prices have held in a \$5 range since mid-March, hemmed in by vaccine roll-outs on the one hand, and rising oil supply and increasing virus cases in some major consumers on the other. Benchmark Brent was 1.2% higher at \$64.40 a barrel on Wednesday.

Iran Sales

Supplies within the Organization of Petroleum Exporting Countries are climbing as member nation Iran increases sales to China, despite ongoing U.S. sanctions. Buyers have been emboldened since President Joe Biden took office and sought to repair diplomatic relations with the Islamic Republic. Iran produced 2.3 million barrels of crude a day in March, and could add a further 1.5 million if Washington and Tehran -- haggling over Iran's nuclear activity -- reach an accord that lifts the restrictions, the IEA said.

Any weakness in oil prices may prove fleeting, the agency indicated. The excess of inventories that amassed when demand crashed last year is dissipating, and should diminish further later in the year.

At the end of February, oil stockpiles in developed nations were just 28.3 million barrels above their five-year average for the 2016-2020 period, the IEA said.

Even with the OPEC+'s return of supply over the next few months, global inventories are on track to decline sharply in the second half of the year. The group may need to revive a further 2 million barrels a day -- roughly a third of the amount

they would still have offline -- in order to satisfy demand growth, the IEA said.

The agency ramped up forecasts for U.S. demand by 360,000 barrels a day in the second quarter, and 370,000 a day in the third. It lifted this year's projection for China by 160,000 a day.

"U.S. road fuel deliveries are on the rise as vaccinations progress and Covid-19 infection rates fall," the IEA said.

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OPEC Supply Edges Up With Iran, Libya Countering Saudi Cuts: IEA

2021-04-14 08:00:00.9 GMT

By Christopher Sell

(Bloomberg) -- OPEC's output rose 210k b/d in March to 25.05m b/d, as Saudi Arabia maintained its extra production cut for a second month but Iran and Libya reached multi-year highs, according to the IEA monthly report.

* Saudi Arabia's production dropped to 8.12m b/d from 8.14m b/d, with the kingdom keeping its pledge to maintain an additional 1m b/d unilateral cut. Output was down 1.72m b/d y/y

* Iraq's output edged up to 3.93m b/d from 3.89m b/d the previous month

* UAE held steady at 2.61m b/d, just below its OPEC+ target, while Kuwait's production dipped to 2.33m

* In Africa, Nigeria inched up to 1.43m b/d, while Angola held steady at 1.14m b/d

* Iran -- currently exempted from OPEC+ quotas but subject to U.S. sanctions -- reached 2.3m b/d, the highest in nearly two years as China stepped up buying

** Exports to China were estimated at 600k b/d in March, up from an average of 150k b/d in the first nine months of 2020

* Libya -- also exempt -- rose by 70k b/d to an eight-year high of 1.2m b/d as its recovery from political unrest continued

* Overall compliance among OPEC+ members with their cuts was a "robust" 113% in March

** Of the 19 OPEC+ countries taking part in supply curbs, Russia raised output the most in March, by 140k b/d to 9.3m b/d. That's 80k b/d above its increased target of 9.25m b/d

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Russia's Compliance With OPEC+ Deal Was 95% in March, IEA Says

2021-04-14 08:00:00.11 GMT

By Olga Tanas

(Bloomberg) -- **Russia's compliance with the OPEC+ agreement in March was 95%** after "almost 100%" the previous month, the IEA said in its monthly market report.

* Nation's average compliance level is 95% since the start of the deal

* **IEA estimates Russia's crude-only production in March was 9.33m b/d vs the nation's March production quota of 9.25m b/d**

* NOTE: In March, Russia pumped 10.249m b/d of crude and condensate combined, according to preliminary data from the Energy Ministry's CDU-TEK unit, which doesn't provide a breakdown between the two types of oil

* **In February, Russia's crude-only output was 9.19m b/d vs its February production quota of 9.18m b/d, the IEA said**

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Murban Oil Futures Could Be Used to Hedge Other Crudes: IEA

2021-04-14 08:00:00.7 GMT

By Alex Longley

(Bloomberg) -- **As liquidity develops the ICE Futures Abu Dhabi Murban contract could be used to hedge deals for other crude grades, the IEA said in its monthly oil market report.**

* **That could include WTI-linked U.S. grades and Brent-linked West African and North Sea grades**

* Still, previous attempts to create new futures benchmarks were slow to develop, meaning wider changes -- including those to Gulf pricing formulas -- could take some time

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Norway's Liquids Output to Rise to 10-Year High by End-2021: IEA

2021-04-14 08:00:00.10 GMT

By Sherry Su

(Bloomberg) -- Rising oil production from the giant Johan Sverdrup field will help push Norway's liquids supply to the highest in more than 10 years, the IEA said in its monthly Oil Market Report.

* Nation's liquids output forecast at 2.3m b/d by end of 2021

** Johan Sverdrup is expected to produce 535k b/d by mid-year, 85k b/d above original expectations

** Partner Lundin Petroleum expects "even more upside from the mega-field in coming years"

* U.K. production forecast to drop by 85k b/d in 2021, following a similar decline in 2020, mainly due to weak investment in recent years and heavier-than-usual maintenance

* In the past two years, output from fields located west of the Shetlands has repeatedly failed to provide the expected boost to U.K. production

** The gains from the Schiehallion redevelopment were short-lived with output slumping to about 60k b/d currently, from almost 100k b/d in early 2019

** Clair Ridge has consistently underperformed with production hovering around 35k b/d, well below BP's original 120k b/d target

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Brazil Oil Recovery Shows Promise But Covid Still a Threat: IEA

2021-04-14 08:00:00.25 GMT

By Brian Wingfield

(Bloomberg) -- Brazil is on track to make up last year's oil output losses, but Covid outbreaks may frustrate this effort, IEA says in its monthly report.

* Data for early April show production up 200k b/d from an estimated 2.8m b/d in March

* "If this trend continues, Brazil will remain one of the few producers to make up its 2020 losses by year-end"; however, Covid outbreaks could cause the recovery to stumble

* Supply growth downgraded to 120k b/d this year, vs 150k b/d in 2020

* Political risk to build ahead of next year's presidential elections, but international oil companies are still attracted to the country's resources

* For 2021 on the whole, the offshore Santos basin is "the source of nearly all of Brazil's growth"

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Jet Fuel, Kerosene Demand to Lag 2019 by 30% This Year: IEA

2021-04-14 08:00:00.21 GMT

By Jack Wittels

(Bloomberg) -- Demand for jet fuel and kerosene is set to improve this year, but the recovery will still fall well short of 2019 demand, the IEA said in its monthly oil market report.

* Demand for jet fuel and kerosene to rise by 802k b/d this year to 5.5m b/d

** Still well down vs 2019 demand of 7.9m b/d

* Demand for motor gasoline and gas/diesel oil will also be lower this year than in 2019

** Demand for naphtha, along with LPG and ethane, to exceed 2019 level this year

* Demand in 2021 vs 2019, in million b/d:

** Motor gasoline: 25.4 vs 26.6

** Gas/diesel oil: 28.5 vs 28.8

** LPG and ethane: 13.4 vs 12.9

** Naphtha: 6.6 vs 6.3

** Residual fuel oil: 6.1 vs 6.4

** Total products: 96.7 vs 99.7

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U.S. Oil Demand Revised Higher on Covid-19 Vaccine Roll-Out: IEA

2021-04-14 08:00:00.6 GMT

By Julian Lee

(Bloomberg) -- Faster than expected vaccine roll-out in the U.S. and a significant drop in new Covid-19 cases has led to “a sharp jump in social interactions and mobility,” the IEA says in its monthly report.

* 2021 oil demand forecasts revised up by 360k b/d in 2Q and 370k b/d in 3Q

* Preliminary March data show an increase in fuel deliveries of 110k b/d m/m, with gasoline up by 535k b/d, indicating “the beginning of a return to normalcy”

* 2021 average demand raised by 180k b/d, with 4Q lifted by 110k b/d and 1Q cut by 120k b/d from previous report

* Herd immunity will take many more months to achieve and local spikes in Covid-19 cases could hit fuel demand if social interactions increase too quickly

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Global Refining Sector Shows First Signs of Y/y Growth: IEA

2021-04-14 08:00:00.8 GMT

By Rachel Graham

(Bloomberg) -- Global refinery throughput caught up with year earlier levels in March for the first time since 2019, because of a strong recovery in the U.S. following February's freeze, the IEA said in its monthly report.

* China and the Middle East boosted throughput in 1Q from year earlier, while Europe remains under pressure

* "The gap with pre-pandemic levels will narrow sharply from April onwards"

* Global crude throughput forecast at 77.7m b/d in 2Q

** Compares with 75.6m b/d in 1Q

** Crude runs in Americas and Europe will rise q/q in 2Q while Asian throughput is forecast to fall

** Chinese runs will decline m/m in April

* Still, IEA notes that the peak in refined product demand was 2018 and refinery throughput won't return to the pre-pandemic peak before 2023

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West Africa Crude Differentials Weaken as Demand Falter: IEA

2021-04-14 08:00:00.27 GMT

By Bill Lehane

(Bloomberg) -- West African crude differentials to North Sea Dated have "deteriorated steadily" since February as European and Asian buying faltered, IEA says in monthly oil market report.

* Nigeria's Bonny light crude fell from -\$0.25/bbl in February to -\$0.55/bbl in March, and to -\$0.85/bbl in the first week of April

* Angola's heavy-sweet Cabinda grade fell from \$0.62/bbl in January to \$0.35/bbl in February, -\$0.13/bbl in March, and to -\$0.55/bbl in the first week of April

* Chinese refiners conducting maintenance in April and May "sharply reduced purchases of West African grades, notably from Angola," the IEA said

** Other Asian refiners, including from India, eased purchases of light sweet Nigerian crude; Europe also saw a rebound of

crude flows from the U.S., where freezing weather had cut production

* Asian demand for Brent-indexed Atlantic barrels also suffered from the strong backwardation that widened the North Sea Dated spread to Dubai

** READ: A Key Oil Spread Heralds Rising Competition Among Suppliers

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<https://www.wsj.com/articles/aramco-looks-to-supply-chain-finance-to-free-up-cash-11618577732>

Saudi Aramco Looks to Supply-Chain Finance to Free Up Cash

Saudi oil giant approached banks to set up a type of corporate cash advance program that could cover up to \$2 billion in payments each month

By

Julie Steinberg *in London* and Summer Said
in Dubai

April 16, 2021 8:55 am ET

Saudi Aramco wants to finance billions of dollars in payments to its suppliers, the latest in a series of moves by the crude giant to generate cash in a low-oil price world, according to people familiar with the proposal.

Saudi Arabian Oil Co. , as it is officially known, sent out a request to banks and financial technology companies in recent weeks to set up a type of corporate cash advance program known as supply-chain finance, according to the requests and the people. Aramco is the third-most profitable company in the world after Apple Inc. and Microsoft Corp.

A spokesperson for Aramco confirmed it is exploring a supply-chain finance initiative, saying it wants to improve the experience of its vendors. The process is at an early stage and the company hasn't selected banks, the spokesperson said.

Aramco estimates it would pay between \$500 million and \$2 billion in supplier invoices a month, according to documents Aramco sent to banks and reviewed by The Wall Street Journal. It couldn't be learned who is bidding for the business. Large players in the space include Citigroup Inc. and JPMorgan Chase & Co.

The request comes as Aramco, despite its hefty position in oil markets and rising crude prices, has struggled to generate sufficient cash. Last month, Aramco said free cash flow for last year totaled \$49 billion, lower than the \$75 billion annual dividend it pledged to shareholders when it launched its initial public offering in 2019.

Aramco this month struck a \$12.4 billion deal to sell a 49% stake in a newly formed oil pipeline business to an international consortium.

It has also turned to bond markets, raising \$8 billion last November. The company's leverage, or ratio of net debt to the total of net debt and equity, increased to 21.8% in the third quarter from 4.9% in the first quarter of last year.

Supply-chain finance attracted attention last month when specialty-finance firm Greensill Capital declared bankruptcy. The firm ran four supply-chain finance funds with Credit Suisse Group AG that packaged the financing obligations into notes and sold them to investors. Greensill problems have been linked to its riskier, longer-term loans.

Lex Greensill, the company's founder, and former British Prime Minister David Cameron, a Greensill adviser, visited Saudi Arabia in January 2020. Greensill had business in the region and was looking to expand its operations in the country.

In a typical supply-chain finance deal, a bank or other financial institution will pay a company's supplier faster than the normal payment terms, which can range from 60 to 120 days. The supplier agrees to receive slightly less than it would get by waiting and pays the bank a fee.

The company pays back the bank the full amount down the road, improving its working capital by padding out the time it gets to hold on to its cash.

Supply-chain finance has stirred controversy in the accounting world because the borrowings aren't strictly classified as debt on a company's balance sheet. The Financial Accounting Standards Board, the private organization that sets accounting standards in the U.S., is exploring possible requirements around disclosure. And the Securities and Exchange Commission has asked companies about their use of the tool.

The Saudi government, which owns almost all of Aramco's shares, wants small companies that do businesses to get paid more quickly, as a form of economic stimulus. Last year, it pledged \$13 billion to expedite payments for government contractors.

There is often a long delay in payments to Aramco's suppliers, some of the people said. Aramco has more than 10,000 suppliers in Saudi Arabia, according to people familiar with the company and one of the documents reviewed by the Journal.

Aramco is looking to hire a group of local, Western and Asian banks, some of the people said. The company in the future might expand the program outside the country, according to one of the documents.

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Excerpt from <https://www.whitehouse.gov/briefing-room/speeches-remarks/2021/04/16/remarks-by-president-biden-and-prime-minister-suga-of-japan-at-press-conference/>

Remarks by President Biden and Prime Minister Suga of Japan at Press Conference

APRIL 16, 2021 • [SPEECHES AND REMARKS](#)

PRESIDENT BIDEN: Next question is — goes to Trevor of Reuters.

Q Thank you. Mr. President, it's been a while since we've heard an update from you on how the talks are going with Iran. How are they going? And do you regard their decision to enrich to 60 percent as a step backwards — as a sign that they aren't serious about those negotiations?

And, for the Prime Minister, just a question on whether it's irresponsible to move forward with the Olympics when you have public health experts telling you that Japan is not ready to do so. Thank you.

PRESIDENT BIDEN: Let me respond to the Iran question. We do not support and do not think it's at all helpful that Iran is saying it's going to move to enrich to 60 percent. It is contrary to the agreement. We are, though, nonetheless pleased that Iran has continued to agree to engage in discussions — in direct [*Note: in listening to replay of the press conference, we think this is a typo and "in direct" should have been "indirect" ie. Iran continuing to have indirect discussions with the US*] discussions with us and with our — our partners on how we move forward and what is needed to allow us to move back into the ~~JOPCA~~ [JCPOA], and so that we are a part of it again — that we should have never gotten out of, in my view — without us making concessions that I'm — we're just not willing to make.

And so the discussions are underway. I think it's premature to make a judgement as to what the outcome will be, but we're still talking.

Saudi and Iranian officials hold talks to patch up relations

Senior officials from the regional rivals met earlier this month in Baghdad

Mustafa Al-Kadhimi in Mecca, earlier this month. He is facilitating talks between Iranian and Saudi officials © VIA REUTERS

Andrew England, Middle East editor APRIL 17 2021

Senior Saudi and Iranian officials have been holding direct talks in a bid to repair relations between the two regional rivals, five years after they cut off diplomatic ties, according to three officials briefed on the discussions.

The negotiations, which took place in Baghdad this month, are thought to be the first significant political discussions between the two nations since 2016 and come as Joe Biden seeks to revive the nuclear deal Iran signed with world powers in 2015 and de-escalate regional tension.

Saudi Arabia is keen to end its war in Yemen against Iranian-aligned Houthi rebels, who have stepped up their attacks against Saudi cities and oil infrastructure. The Houthis have launched dozens of missiles and explosive-laden drones into the kingdom this year.

Crown Prince Mohammed bin Salman has also taken steps that appear to lean towards gaining favour with the Biden administration, which has pledged to reassess relations with the kingdom and end the six-year war in Yemen.

The first round of Saudi-Iranian talks took place in Baghdad on April 9. They included discussions about the Houthi attacks and were positive, one of the officials said.

The official said the Saudi delegation was led by Khalid bin Ali al-Humaidan, the intelligence chief, adding that another round of talks had been scheduled for next week.

The process is being facilitated by Iraqi prime minister Mustafa al-Kadhimi, who held talks with Prince Mohammed in Riyadh last month.

“It’s moving faster because the US talks [related to the nuclear deal] are moving faster and [because of] the Houthi attacks,” the official said.

A senior Saudi official denied that any talks with Iran had taken place. The Iraqi and Iranian governments did not comment.

But a senior Iraqi official and a foreign diplomat confirmed the talks. The Iraqi official added that Baghdad has also facilitated “communication channels” between Iran and Egypt, and Iran and Jordan.

“The prime minister is very keen to personally play a role in turning Iraq into a bridge between these antagonistic powers in the region,” the official said.

“It’s in Iraq’s interest that it can play this role. The more confrontation you have in the region, the more they play out here . . . and these talks have been taking place.”

Relations between Saudi Arabia, which considers itself the leader of the Sunni Muslim world, and Iran, the region’s top Shia power, hit a low in January 2016 after the kingdom’s embassy in Tehran was ransacked.

Relations hit a low in 2016 when Iranian protesters stormed the Saudi Embassy in Tehran © Reuters

The embassy was set ablaze after Saudi Arabia executed Sheikh Nimr al-Nimr, a senior Shia cleric. The rivals, which accuse each other of destabilising the region, then severed diplomatic relations.

Tension escalated further in 2018, after former president Donald Trump unilaterally withdrew the US from the Iran nuclear deal and imposed crippling sanctions on the Islamic republic.

Prince Mohammed was a staunch backer of Trump's maximum pressure campaign against Tehran. But Saudi Arabia's vulnerability to attack was exposed after a missile and drone assault in September 2019 temporarily knocked out half of the kingdom's crude oil output.

The Houthis claimed responsibility for the attack, but US and Saudi officials blamed Iran.

Washington and Riyadh accuse Iran of smuggling missiles and drones to the Houthis, a battle hardened Islamist movement that has controlled Sana'a, the Yemeni capital, and northern Yemen since early 2015.

Iraq, which is home to powerful Iranian-backed militant movements, was also caught up in the regional tension, notably when Trump ordered the assassination of Qassem Soleimani, the commander of the Quds expeditionary force of Iran's Revolutionary Guard, in Baghdad in January 2020.

That pushed the US and the Islamic republic to the brink of war, with Iraq, which hosts about 2,500 American troops, a likely battlefield as Baghdad was squeezed between Washington and Tehran.

Iran has forged strong security, political and trade ties with its neighbour since the US-led invasion toppled Saddam Hussein in 2003.

The Saudi-Iranian talks are a sign that the election of Biden, who has said he will rejoin the 2015 nuclear deal and lift many of the sanctions on Iran if Tehran falls back into compliance with the accord, has begun to shift regional dynamics.

The nuclear agreement's remaining signatories — Iran, the EU, Germany, France, the UK, Russia and China — have been holding talks in Vienna to pave the way for the US to rejoin.

In January, Riyadh ended a more-than-three-year regional embargo on Qatar, imposed in part because of Doha's links to Tehran. The move was widely viewed as part of Prince Mohammed's efforts to gain credibility with the Biden administration.

Riyadh, which opposed the atomic accord, has said it will not hinder the nuclear talks. But it wants regional powers to be involved in any discussions related to any new agreement and insists Iran's missile programme and regional activities should be addressed.

"Kadhimi has good links into the Iranian system. The new thing is Kadhimi playing this role with Saudi Arabia," said another official briefed on the talks. "It's a good thing Iraq is playing this role, but it's very early days."

Iranian President Hassan Rouhani, whose final term ends in August, has previously indicated that he has wanted to cool hostilities with Arab rivals.

Additional reporting Najmeh Bozorgmehr



Crude Oil in Floating Storage 28% Higher Than Year Ago (Correct)

2021-04-12 08:05:10.29 GMT

By Bloomberg Automation

(Bloomberg) -- The amount of crude oil held around the world on tankers that have been stationary for at least 7 days fell to 105.81m bbl as of April 9, Vortexa data show.

- * That's down 1% from 106.90m bbl on April 2
- * Asia Pacific up 1.8% w/w to 75.59m bbl
- * Middle East up 40% w/w to 8.63m bbl
- * Europe up 41% w/w to 8.46m bbl
- * North Sea up 45% w/w to 3.82m bbl
- * U.S. Gulf Coast down 52% w/w to 2.36m bbl
- * West Africa down 5.6% w/w to 2.32m bbl

* Company Exposure:

- ** Asia: Cosco Shipping Energy Transportation Co., HMM Co. Ltd., Mitsui O.S.K. Lines Ltd., Nippon Yusen KK
- ** Europe: Euronav NV, Frontline, Vopak
- ** U.S.: DHT Holdings, International Seaways, Nordic American Tankers, Teekay Tankers, Tsakos Energy Navigation

* NOTE:

- ** Vortexa data exclude FPSO units, oil products and Iranian condensate
- ** Crude oil transferred by STS isn't included until that volume has been stationary on receiving vessel for 7 days
- ** Data don't include vessels booked for floating storage until they are actually stationary for the minimum period
- ** See VTXA or DATA FLOAT for more data, which is subject to revisions, and see NI TANTRA for all tanker-tracking stories
- ** See SPOT FREIGHT for freight rate assessments using shipbroker data

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OIL DEMAND MONITOR: India Faces Headwinds; U.S. Roads Get Busier

2021-04-13 14:46:38.810 GMT

By Julian Lee

(Bloomberg) -- Gasoline demand in India, the world's third-largest oil consumer, rose to a four-month high in March as millions of people favored cars over public transport. But the recovery faces headwinds, with energy consumption set to drop in April as the nation sees a resurgence in virus cases.

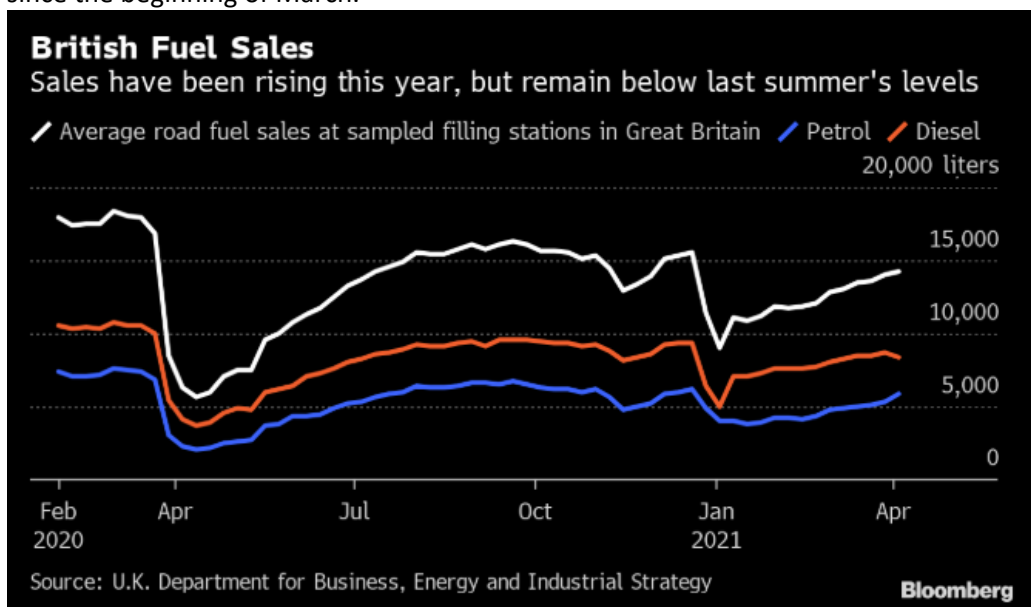
Maharashtra state, home to India's commercial capital of Mumbai, is imposing a strict lockdown from late Friday until Monday morning this month and a curfew every night to curb a surge in Covid-19 cases in India's biggest city.

Elsewhere in Asia, the slow pace of the vaccine roll-out in Japan is delaying an economic recovery, as the government imposes new restrictions in Tokyo, Kyoto and Okinawa aimed at reining in a rapid spread of the coronavirus in those areas. The measures will run from April 12 until May 11 in Tokyo and May 5 in Kyoto and Okinawa. Three other areas -- Osaka, Hyogo and Miyagi -- are already under similar restrictions.

Congestion on Chinese city streets rose again this week, according to location technology company TomTom NV. Journey times in Shanghai were up by 22% compared with a month ago and were 42% higher than they were on average in 2019. The increased delays in Beijing were less pronounced, but still up by 18% compared with average 2019 levels.

The picture in Europe remains mixed. Fuel sales in Great Britain are continuing the recovery that began at the start of the year, but are still below the levels reached last summer. That may not be a surprise, with travel restrictions for leisure and holidays remaining in place until the start of this week.

While sales of gasoline (petrol) have accelerated, weekly-average diesel purchases slipped back to their lowest level since the beginning of March.

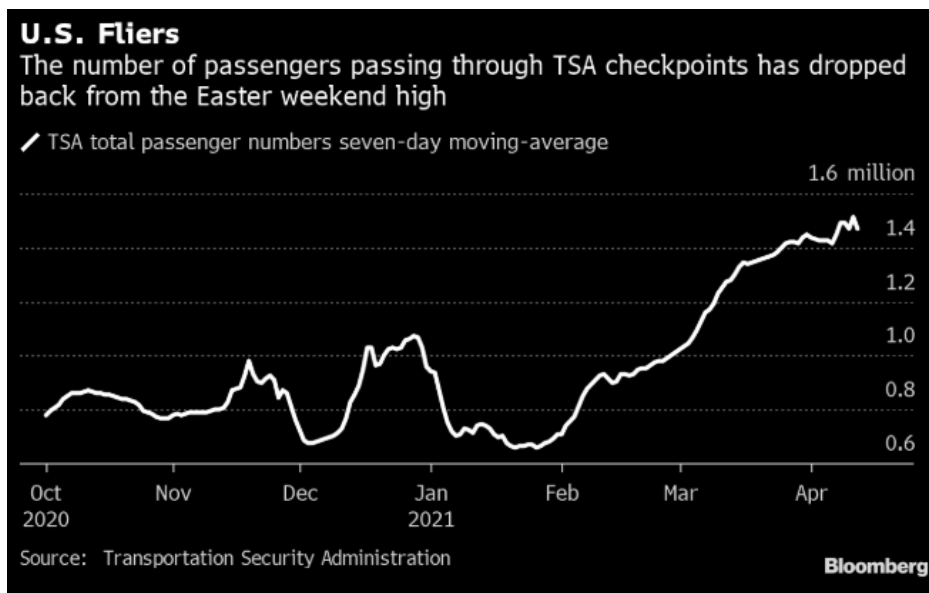


Poland showed a similar pattern to that suggested by the British fuel sales, with private car traffic in the week to April 11 up by 7% week on week and heavy traffic down by 4% over the same period, according to the country's General Directorate for National Roads and Motorways. Both were up significantly against year-earlier levels, compared with the comparable Easter-Monday week, with heavy truck movements up by 31% and private car journeys up by 84%. But passenger car journeys were still 20% below 2019 levels for the comparable week.

In Germany, the seven-day average truck mileage index from toll data, published by the Federal Statistical Office, was near the highest level since January 2017 during the week to April 3, although it had fallen back by the end of the week, reflecting the inclusion of the start of the Easter holiday in the most recent number.

Restrictions are being eased in eastern European countries, even as the region remains the world's most deadly area for the coronavirus pandemic. While that may provide a short-term boost to activity, it could also lead to future restrictions, if the easing isn't handled carefully.

In the U.S., the number of passengers boarding planes through TSA checkpoints is down from the highs reached over the Easter weekend, but remains close to 1.5 million, while data from the Energy Information Administration shows jet fuel deliveries in the week to April 2, a proxy for demand, up by 49% month on month and 67% compared with the same week last year. But it remains 13% below 2019 levels, with passenger numbers still down by 37% from the comparable pre-pandemic week.



On U.S. interstate highways, total vehicle miles traveled was just 2% below the comparable week in 2019, according to the Department of Transportation. Within that total, passenger vehicle miles traveled were 3% below their pre-pandemic level, while truck miles were up by 4%, as economic activity continues to recover. The timing of the Easter holiday weekend may have given a boost to driving this year, compared with 2019.

However, city traffic remains well below 2019 levels, with delays on New York streets down by 42% and in Los Angeles down by 56% on Monday compared with average 2019 levels, according to TomTom NV data.

By this time last year, most parts of the world were already under some form of national lockdown, according to tracking of government responses to the coronavirus pandemic by Oxford University. Restrictions were applied much earlier in China, in late January 2020. Consequently, year-over-year calculations are heavily skewed and it's more useful to compare mobility data in 2021 versus the same period of 2019.

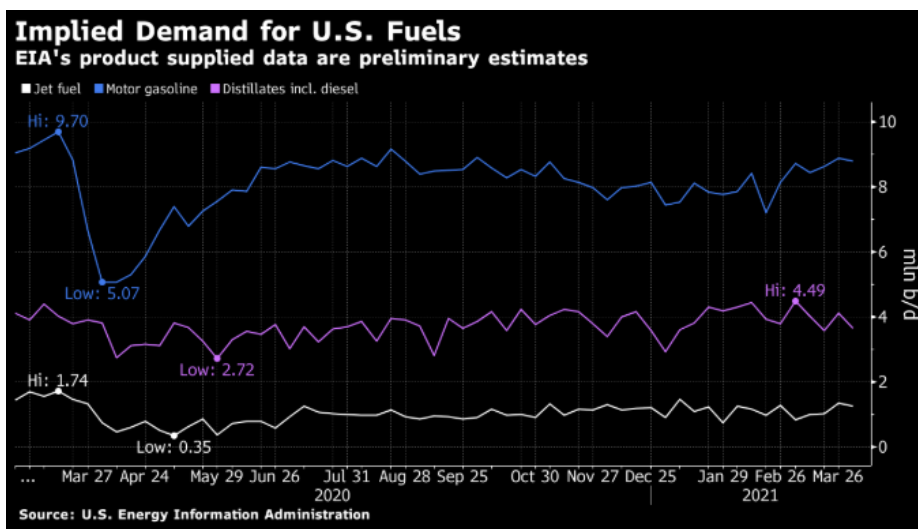
The Bloomberg weekly oil-demand monitor uses a range of high-frequency data series to help identify trends that may become clearer later in more comprehensive monthly figures.

Following are the latest indicators, in the four tables below. The first two show fuel demand and mobility, the next shows air travel globally and the last is refinery activity:

Measure	Location	% y/y	% vs 2019	% m/m	Freq.	Latest as of Date	Latest Value	Source
Gasoline demand	U.S.	+73	-10	+0.6	w	April 2	8.78m b/d	EIA
Distillates demand	U.S.	-3.8	-3	-18	w	April 2	3.66m b/d	EIA
Jet fuel demand	U.S.	+67	-13	+49	weekly	April 2	1.26m b/d	EIA
Total oil products demand	U.S.	+33	-5.3	+3	w	April 2	19.2m b/d	EIA
All vehicles miles traveled	U.S.		-2		w	April 4	16.2b miles	DoT
Passenger car VMT	U.S.		-3		w	April 4	n/a	DoT
Truck VMT	U.S.		+4		w	April 4	n/a	DoT
All motor vehicle use index	U.K.	+62		-22	d	April 5	60	DfT
Car use	U.K.	+85		-10	d	April 5	63	DfT
Heavy goods vehicle use	U.K.	-39		-65	d	April 5	37	DfT
Gasoline (petrol) avg sales per filling station	U.K.	+158		+20.1	w	April 4	5,831 liters/d	BEIS
Diesel avg sales per station	U.K.	+106		+2.2	w	April 4	8,394 liters/d	BEIS
Total road fuels sales per station	U.K.	+124		+8.8		April 4	14,226 liters/d	BEIS
7-day average truck toll mileage index (2015 = 100)	Germany	+24	+6	+2	d	April 2	120.5	Destatis
Light vehicle traffic	France	-19	-12		m	February	n/a	Vinci
Heavy vehicle traffic	France	-2.8	+1.5		m	February	n/a	Vinci
Gasoline	India	+27	+6	+0.4	2/m	March 1-31	88.4k tons/day	Bberg
Diesel	India	+28	-3	-0.5	2/m	March 1-31	233k tons/day	Bberg

Jet fuel	India	-2	-34	-0.9	2/m	March 1-31	15.3k tons/day	Bberg
Passenger car traffic	Poland	+84	-20	-4	w	April 11	18,343	GDDKiA
Heavy goods traffic	Poland	+31	+8	-13	w	April 11	4,109	GDDKiA
Road fuels	Spain	-19		+6.8	m	February	1.83m tons	CORES
Gasoline (road)	Spain	-28		+2	m	February	299k tons	CORES
Diesel (road)	Spain	-16		+7.8	m	February	1.53m tons	CORES
Jet fuel	Spain	-77		-19	m	February	104k tons	CORES
All vehicles traffic	Italy	+48		-11	m	March	n/a	Anas
Heavy vehicle traffic	Italy	+34		+4	m	March	n/a	Anas
Gasoline	Portugal	-40	-37	-17	m	February	48k tons	ENSE
Diesel	Portugal	-23	-23	-7.5	m	February	292k tons	ENSE
Jet fuel	Portugal	-83	-80	-49	m	February	18k tons	ENSE
Gasoline	Colombia	+29		+4	m	March	5.8m gal/d	Ministry
Diesel	Colombia	+6		-7	m	March	5.1 m gal/d	Ministry
Jet fuel	Colombia	-50		-39	m	February	390k gal/d	Ministry

The frequency column shows d for data updated daily, w for weekly, 2/m for twice a month and m for monthly. BEIS comparison is now y/y, not versus pre-lockdown as in some previous monitors.

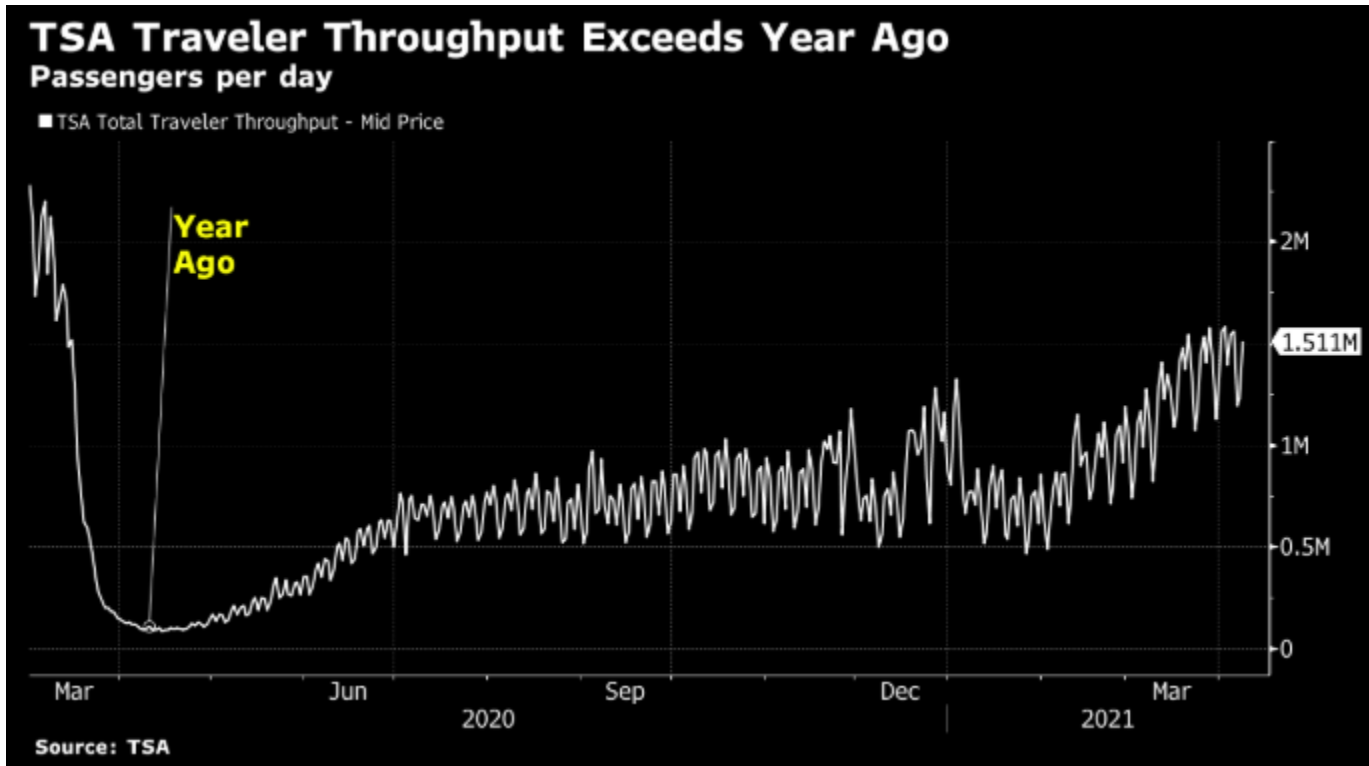


Measure	Location	% chg vs 2019	% chg m/m	April 12	April 5	Mar. 29	Mar. 22	Mar. 15	Mar. 8	Mar. 1	Feb. 22	Feb. 15
		(for Apr. 12)		Minutes of congestion at 8am local time								
Congestion	Shanghai	+42	+22	57	n/a	47	47	47	44	50	34	0
Congestion	Beijing	+18	+2	50	n/a	48	47	49	43	51	27	0
Congestion	Tokyo	-24	-18	28	25	31	32	34	37	31	33	29
Congestion	Mumbai	-95	-70	2	5	0	7	6	7	8	8	9
Congestion	New York	-42	+7	18	17	11	18	17	16	19	16	4
Congestion	Los Angeles	-56	-19	16	14	16	16	19	15	16	17	5
Congestion	London	-33	-36	25	2	30	40	40	32	20	19	23
Congestion	Rome	-16	+209	41	0	16	19	13	53	38	32	36
Congestion	Madrid	-36	+3	23	7	5	20	22	19	19	8	16
Congestion	Paris	-58	-53	19	1	22	26	40	34	32	21	25
Congestion	Berlin	-30	unch	23	3	16	23	23	4	22	20	18
Congestion	Mexico City	-59	+1600	20	18	19	20	1	19	19	17	14
Congestion	Sao Paulo	-56	+33	19	17	10	15	14	17	23	25	11

Source: TomTom. Note: M/m comparison is Apr 12 vs March 15. Chinese data for April 5 currently unavailable.

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.	+1,338	-37	+16	d	April 12	1,469m people	TSA
Commercial flights	Worldwide	+169	-29	+9	d	April 12	79,340	FlightRadar24
Air traffic (flights)	Europe		-64	+15	d	April 12	11,280	Eurocontrol
Scheduled flights	Worldwide	+70			w	April 12	431,000	OAG
Seat capacity	Worldwide	+91	-43		w	April 12	62.3m	OAG
Seat cap.	Asia-Pac	+78	-26		w	April 12	30.95m	OAG
Seat cap.	North America	+86	-36		w	April 12	15.36m	OAG
Seat cap.	Europe	+148	-73		w	April 12	7.47m	OAG
Seat cap.	Latin America	+178	-46		w	April 12	4.51m	OAG
Seat cap.	Middle East	+46	-50		w	April 12	2.39m	OAG
Seat cap.	Africa	+103	-47		w	April 12	1.67m	OAG
Seat cap.	China	+92	+5		w	April 12	16.65m	OAG
Seat cap.	U.S.	+82	-32		w	April 12	15.00m	OAG
Seat cap.	India	+92	-16		w	April 12	3.22m	OAG



Refineries:

Measure	Location	y/y chg	m/m chg	Latest as of Date	Latest Value	Source
Crude intake	U.S.	+10%	+22%	April 2	15m b/d	EIA
Utilization	U.S.	+8.4ppt	+15ppt	April 2	84.0 %	EIA
Utilization	Gulf Coast U.S.	-1.2ppt	+22ppt	April 2	83.1 %	EIA
Utilization	East Coast U.S.	+35 ppt	+9.7ppt	April 2	81.2 %	EIA
Utilization	Midwest U.S.	+15ppt	+8.8ppt	April 2	88.7 %	EIA
Apparent Oil Demand	China	+17%		Jan.-Feb. 2021	13.33m b/d	NBS
Indep. refs run rate	Shandong province, China	-0.7ppt	-1.9ppt	April 9	71.2 %	SCI99
State refs run rate	East China	+11ppt	-6.4ppt	March 31	70.3 %	SCI99
State refs run rate	South China	+14ppt	-13ppt	March 31	73.9 %	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.

--With assistance from Stephen Voss.

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John Deane

End Polluter Welfare Act Section by Section

Sec. 1. Short title.

Sec. 2. Table of contents.

Sec. 3. Definition of fossil fuel.

- Defines “fossil fuel” as coal, petroleum, natural gas, or any derivative of coal, petroleum, or natural gas that is used for fuel.

Sec. 4. Royalty Relief.

- Repeals the Department of Interior’s authority to provide discretionary royalty relief, and also repeals special royalty relief for deep water drilling.

Sec. 5. Royalties under Mineral Leasing Act.

- Increases onshore royalty rates to 18.75 percent to bring them in line with offshore royalty rates.

Sec. 6. Elimination of interest payments for royalty overpayments.

- Eliminates any interest payments for royalty overpayments.

Sec. 7. Removal of limits on liability for offshore facilities and pipeline operators.

- Makes liability unlimited so that corporations are fully responsible for the damage they cause from offshore oil spills; under current law, corporations will not pay more than \$75 million in damages. Also removes the liability cap for spill damages on tar sands pipeline operators, currently limited to \$350 million.

Sec. 8. Restrictions on use of appropriated funds by international financial institutions for projects that support fossil fuel.

- Rescinds existing funding for, and imposes a future prohibition on, using U.S. taxpayer funds to finance fossil fuel projects through the World Bank.

Sec. 9. Fossil Energy Research and Development Program.

- Eliminates taxpayer-backed Department of Energy research and development programs for the fossil fuel industry.

Sec. 10. Advanced Research Projects Agency—Energy.

- Eliminates taxpayer-backed Advanced Research Projects Agency research and development programs for the fossil fuel industry.

Sec. 11. Incentives for innovative technologies.

- Eliminates Department of Energy loan guarantees for advanced coal projects.

Sec. 12. Rural Utility Service loan guarantees.

- Eliminates USDA loans or loan guarantees for coal plants, as well as other fossil fuel plants or projects.

Sec. 13. Prohibition on use of funds by the United States International Development Finance Corporation or the Export-Import Bank of the United States for financing projects, transactions, or other activities that support fossil fuel.

- Rescinds existing funds which use, and imposes a future prohibition on using, U.S. taxpayer funds to finance fossil fuel projects through the United States International Development Finance Corporation and Export-Import Bank.

Sec. 14. Transportation funds for grants, loans, loan guarantees, and other direct assistance.

- Prohibits using federal transportation funds for rail or port projects designed to transport and/or export fossil fuels.

Sec. 15. Elimination of exclusion of certain lenders as owners or operators under CERCLA.

- Eliminates the liability loophole in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which allows large financial institutions or major investors to avoid liability for the environmental damage caused by their investments.

Sec. 16. Termination of various tax expenditures relating to fossil fuels.

- Section 43 (relating to enhanced oil recovery credit).
 - Eliminates the 15 percent income tax credit for advanced oil recovery investments.
- Section 45I (relating to credit for producing oil and natural gas from marginal wells).
 - Eliminates the tax credit for production from marginal and inefficient wells.
- Section 461(i)(2) (relating to special rule for spudding of oil or natural gas wells).
 - Eliminates the special rule for oil and gas wells that allows oil and gas corporations to accelerate deductions on expenses related to wells.
- Section 469(c)(3) (relating to working interests in oil and natural gas property).
 - Eliminates the ability of oil and gas company owners and investors to use losses from fossil fuel investments to shelter other income.
- Section 613A (relating to limitations on percentage depletion in case of oil and natural gas wells).

- Eliminates the ability of oil and gas companies to deduct 15 percent of their sales revenues to reflect declining value of their investment without regard to the actual decline in value of their investment.
- Section 168(e)(3)(C)(iii) (relating to classification of certain property).
 - Eliminates the special depreciation provision that allows a 7-year depreciation period for Alaskan natural gas pipelines instead of the standard 15-year depreciation period.
- Section 169 (relating to amortization of pollution control facilities) with respect to any atmospheric pollution control facility.
 - Eliminates the set of special 5-year amortization rules for pollution control facilities.
- Section 179B (relating to deduction for capital costs incurred in complying with Environmental Protection Agency sulfur regulations).
 - Eliminates special deductions related to cost of compliance with EPA low-sulfur pollution rules for certain oil refineries
- Section 468 (relating to special rules for mining and solid waste reclamation and closing costs).
 - Eliminates the tax deduction for certain costs related to mining and waste site reclamation and closure.
- Section 48A (relating to qualifying advanced coal project credit) and Section 48B (relating to qualifying gasification project credit).
 - Eliminate tax credits for construction of advanced coal plants.
- Section 148(b)(4) (relating to safe harbor for prepaid natural gas).
 - Eliminates the oil and gas arbitrage bonds exemption.

Sec. 17. Termination of certain deductions and credits related to fossil fuels.

- Removes the eligibility of companies to receive 100 percent bonus depreciation, research credit, 20 percent deduction on pass-through income, tax break on foreign derived intangible income, or like-kind exchange treatment on fossil fuel activities.

Sec. 18. Uniform seven-year amortization for geological and geophysical expenditures.

- A tax break created in 2005 currently allows certain oil and gas corporations to amortize more quickly incidental drilling costs, which reduces taxes paid. This section extends the current 2-year amortization to 7 years.

Sec. 19. Natural gas gathering lines treated as 15-year property.

- Eliminates the special provision allowing for 7-year depreciation for natural gas pipelines and returns it to a 15-year depreciation period.

Sec. 20. Termination of last-in, first-out method of inventory for oil, natural gas, and coal companies.

- Eliminates a provision that allows oil and gas companies to minimize the value of their inventories for tax purposes.

Sec. 21. Repeal of percentage depletion for coal and hard mineral fossil fuels.

- Eliminates the ability of coal companies to deduct 10 percent of their sales revenue to reflect declining value of their investment, regardless of actual value of their investment.

Sec. 22. Termination of capital gains treatment for royalties from coal.

- Eliminates a 1951 rule that allows coal companies to treat income from coal mines as a capital gain, taxed at 15 percent maximum, instead of regular income taxed at the standard, higher rate for income.

Sec. 23. Modifications of foreign tax credit rules applicable to oil and gas industry taxpayers receiving specific economic benefits.

- Eliminates the ability of oil and gas companies operating overseas to classify royalty payments to foreign governments as taxes (which are creditable against US taxes due), more accurately reflecting the payments as deductible expenses instead.

Sec. 24. Increase in oil spill liability trust fund financing rate.

- Increases and makes permanent a rate of 10 cents a barrel to finance the Oil Spill Liability Trust Fund.

Sec. 25. Application of certain environmental taxes to synthetic crude oil.

- Extends the oil spill liability trust fund tax to tar sands oils, which are currently exempt from it though also transported through the pipelines.

Sec. 26. Denial of deduction for removal costs and damages for certain oil spills.

- Ensures corporations responsible for oil spill damages and clean up do not receive tax breaks for these expenses by denying them deductions for said expenses.

Sec. 27. Tax on crude oil and natural gas produced from the outer Continental Shelf in the Gulf of Mexico.

- Imposes a 13 percent excise tax to ensure corporations not already paying royalties pay their fair share. In the 1990s, certain offshore leases were provided without requiring royalty payments from industry as a means of encouraging drilling when prices were very low. These leases did not have a provision to institute royalties when

prices increased, causing a significant loss of tens of billions of dollars to the taxpayer over the life of the leases.

Sec. 28. Repeal of corporate income tax exemption for publicly traded partnerships with qualifying income and gains from activities relating to fossil fuels.

- Eliminates the special partnership option for fossil fuel corporations and investors, which is currently not available for clean energy companies.

Sec. 29. Amortization of qualified tertiary injectant expenses.

- Eliminates the immediate expensing of tertiary injectants and requires that they be amortized over a 7-year period.

Sec. 30. Amortization of development expenditures.

- Eliminates the immediate expensing of certain mine development expenditures and requires they be amortized over a 7-year period.

Sec. 31. Amortization of certain mining exploration expenditures.

- Eliminates the immediate expensing of certain mining exploration expenditures and requires they be amortized over a 7-year period.

Sec. 32. Amortization of intangible drilling and development costs in the case of oil and gas wells and geothermal wells.

- Eliminates the immediate expensing of intangible and development costs of oil and gas wells and geothermal wells, and requires these expenses be amortized over a 7-year period.

Sec. 33. Permanent excise tax rate for funding of Black Lung Disability Trust Fund.

- Permanently increases the excise tax rate on coal (used to fund the Black Lung Disability Trust Fund) to \$1.38 per ton for underground-mined and \$0.69 per ton for surface-mined coal. According to a GAO study of the Trust Fund, these higher permanent rates would make the fund solvent until 2050.

Sec. 34. Termination of renewable electricity production credit eligibility for refined coal.

- Eliminates refined coal's eligibility for the Renewable Electricity Production Credit.

Sec. 35. Treatment of foreign oil related income as subpart F income.

- Reverses a Tax Cuts and Jobs Act change by restoring foreign base company oil related income as a category of foreign base company income.

Sec. 36. Repeal of exclusion of foreign oil and gas extraction income from the determination of tested income.

- Repeals the exclusion of foreign oil and gas extraction income from the global minimum tax placed on offshore income known as the tax on global intangible low-taxed income or GILTI.

Sec. 37. Termination of credit for carbon oxide sequestration.

- Eliminates the tax credit of between \$10 and \$20 per metric ton of carbon sequestered available to industrial facilities such as coal plants. Also requires that Treasury produce a public study on the current and past recipients of the tax credit.

Sec. 38. Powder River Basin.

- Requires BLM to designate Powder River Basin a “coal-producing region” giving federal government more impetus and authority to get a fair return on leases, and not to provide leases simply based on industry needs. Also requires BLM to do a fair market value study of Powder River Basin to determine if taxpayers are getting a fair return for leases.

Sec. 39. Study and Elimination of Additional Fossil Fuel Subsidies.

- Requires the Treasury Department identify any additional fossil fuel production subsidies not already eliminated in this bill, and issue a report to Congress quantifying their cost to the taxpayer.

For more information on the bill’s energy policy, please contact Ethan Hinch (Ethan_Hinch@sanders.senate.gov; 202-407-2264) in Senator Sanders’ office, or Maria Martirosyan (Maria.Martirosyan@mail.house.gov; 5-4755) in Congresswoman Omar’s office.

For more information on the bill’s tax policy, please contact Richard Phillips (Richard_Phillips@budget.senate.gov; 4-2775) on the Senate Budget Committee.

NEWS: Sanders, Omar and Colleagues Introduce the End Polluter Welfare Act

- April 15, 2021

WASHINGTON, April 15 – Ahead of today’s Senate Budget Committee hearing on “The Cost of Inaction on Climate Change,” Sen. Bernie Sanders (I-Vt.) and Rep. Ilhan Omar (D-Minn.) introduced the End Polluter Welfare Act to close tax loopholes and eliminate federal subsidies for the oil, gas, and coal industries.

While the 20 largest fossil fuel companies account for more than a third of global greenhouse gas emissions in the modern era, all while raking in absurd profits, American taxpayers today pay \$15 billion per year in direct federal subsidies to the fossil fuel industry. In 2020, the oil, gas, and coal industry spent more than \$115 million lobbying Congress in defense of these giveaways for an over 13,000% return on investment.

The End Polluter Welfare Act, cosponsored by Sens. Jeff Merkley (D-Ore.), Ed Markey (D-Mass.), Cory Booker (D-N.J.), Chris Van Hollen (D-Md.), and Elizabeth Warren (D-Mass.), and Rep. Nanette Diaz Barragán (D-Calif.), would eliminate these absurd corporate handouts and save American taxpayers up to \$150 billion over the next ten years.

“The conduct of oil and gas companies, toward American taxpayers and the distortion of the truth about climate change, is one of the biggest scandals of our lifetime,” **said Sen. Sanders**. “At a time when scientists tell us we need to reduce carbon pollution to prevent catastrophic climate change, and when fossil fuel companies are making billions of dollars in profit every year, we have a fiscal and moral responsibility to stop forcing working families to pad the profits of an industry that is destroying our planet.”

“Providing corporate giveaways during a time of widespread suffering to fossil-fuel companies is unconscionable,” **said Rep. Omar**. “Our resources should go to helping the American people get through this crisis—not providing giveaways to the very people responsible for polluting our water and lands. We should be fighting for a greener, more equitable future for all instead of making the fossil fuel industry more profitable. I’m proud to be in this fight to end the welfare system for fossil fuel companies and invest those resources back to the American people.”

“It is ridiculous that the federal government continues to hand out massive giveaways to antiquated fossil fuel industries that are not only financially risky, but are also a

driving force for climate chaos' devastating wildfires, hurricanes, droughts, floods, and extreme winter storms," **said Sen. Merkley**. "Those giveaways are even more egregious at a time when working families and small businesses across America – who pay their fair share in taxes – are fighting to get through this pandemic. Enough. It's time to put the health of the American people and our economy above the wish lists of powerful special interests, close these loopholes, and put an end to taxpayer subsidies for fossil fuels."

"Our workers, families and children are more in need than ever before, and the polluters that have contributed to these dire circumstances should not receive a single handout from our government," **said Sen. Markey**. "For too long, companies that polluted our planet turned massive profits, while people have been left to face the health, climate, and economic consequences. That time must come to an end. From closing the 'tar sands loophole' to ensuring companies pay their fair share of taxes, this bill takes significant steps to ending fossil fuel welfare and saving our planet."

"As we work to tackle the climate crisis, our nation must invest its resources in creating jobs through clean energy and infrastructure modernization —not providing public handouts to Big Oil, gas, and coal corporations," **said Sen. Van Hollen**. "This legislation will stop these backwards, taxpayer-funded giveaways to large corporations so we can invest these dollars in initiatives to promote prosperity for everyday Americans."

"Our government is by and for the people, not by and for big polluters," **said Congresswoman Nanette Diaz Barragán**. "It's unconscionable that the federal government continues to offer tax loopholes, subsidies and handouts to big oil and gas corporations while American families, workers and small businesses struggle to survive this global pandemic and widespread economic challenges. We need to end fossil fuel giveaways. Legislation like the End Polluter Welfare Act will refocus government priorities on people not polluters and make bold investments in the fight against climate change."

While the country is facing an unprecedented health and economic crisis, corporate handouts to the fossil fuel industry are helping to drive the unprecedented expansion of fossil fuel development in the United States. Left unchecked, the U.S. is on track to be responsible for 60% of global growth in oil and gas production over the next 10 years.

President Biden recently called for the elimination of tax preferences and loopholes for the fossil fuel industry in his newly released American Jobs Plan.

The End Polluter Welfare Act would do just that by abolishing dozens of tax loopholes, subsidies, and other special interest giveaways littered throughout the federal tax code – eliminating absurd corporate handouts and saving American taxpayers up to \$150 billion over the next ten years.

This legislation would prohibit taxpayer-funded fossil fuel research and development; update below-market royalty rates for oil and gas production on federal lands; recoup royalties from offshore drilling in public waters; and ensure competitive bidding and leasing practices for coal development on federal lands.

In addition to ending domestic polluter welfare, this bill would end federal support for international oil, gas, and coal projects as a step toward fulfilling our responsibility to help the international community move away from dirty fossil fuels to clean sources of power.

This bill also guarantees the solvency of the Black Lung Disability Fund, ensuring continued medical care for tens of thousands of working-class Americans who have worked for decades to provide energy to this nation.

The top 20 fossil fuel companies are responsible for more than a third of all greenhouse gas emissions since 1965. Exxon Mobile, BP, Chevron, and Shell have accounted for nearly a tenth of global emissions in that same period.

Additionally, 2019 set the record for global carbon pollution, and from 2000 to 2019, global emissions have increased by 45%, with more than 20% of humanity's total emissions occurring over the past 10 years.

Inaction leaves the burdens of the fossil fuel industry on American taxpayers as well as future generations living with the effects of climate change. Without concerted action, climate change will eventually cost the U.S. \$34.5 trillion in economic activity by the end of the century, up to 295,000 avoidable deaths by 2030, and 1 million avoidable deaths by 2050.

The End Polluter Welfare Act is endorsed by 85 organizations, including Oxfam, Sierra Club, Greenpeace, Friends of the Earth, Earthjustice, Indivisible, Sunrise Movement, Interfaith Power & Light, Environment America, Clean Water Action, Our Revolution, Center for Popular Democracy, Oil Change International, 350.org, Public Citizen, Americans for Tax Fairness, and the National Parks Conservation Association.

“Oxfam is proud to endorse the bicameral End Polluter Welfare Act as it is long past time to eliminate the tax giveaways and public support that prop up oil, gas and coal companies on the public’s dime,” **said Daniel Mulé, Policy Lead for Extractive Industries Tax and Transparency at Oxfam America.** “As Congress considers large infrastructure investments and significant reforms to the tax code to ‘build back better,’ ending fossil fuel subsidies is an essential component, critical to tackling the climate crisis, funding a just economic transition, and protecting marginalized communities, including those impacted by extraction.”

“We applaud Senator Sanders and Representative Omar for reintroducing this legislation, which works to put an end to taxpayer-funded handouts for corporate polluters,” **said Kelly Sheehan Martin, Director of the Sierra Club’s Beyond Dirty**

Fuels campaign. “We don’t need to be lining industry pockets with billions of taxpayer subsidies – we need to be holding the industry accountable for the damage they’ve done to our climate and communities. This proposed legislation works to do just that.” “We applaud Chairman Sanders and Representative Omar for their leadership,” **said Lukas Ross, Program Manager at Friends of the Earth.** “It is high time Congress puts an end to Big Oil subsidies and giveaways, and instead finances the infrastructure our country desperately needs. We can no longer wait, 2021 is the year to do it.”

“Thank you, Senator Sanders and Representative Omar for seizing this political moment,” **said John Noël, Senior Climate Campaigner, Greenpeace USA.** “A bill to end giveaways for the fossil fuel industry – which is saddled with debt and recklessly polluting Black, Brown, and Indigenous, and poor communities – is long overdue and this year we have a narrow window to turn it into law. It’s time to shift our investments to protect people on the frontlines of the climate crisis and support fossil fuel workers in the transition to a world beyond fossil fuels.”

Read the bill summary [here.](#)

Read a section-by-section summary [here.](#)

Read the legislative text [here.](#)

Read the letter of support signed by 85 organizations [here.](#)

Readout: Minister Wilkinson and John Kerry, U.S. Special Presidential Envoy for Climate, Reaffirm Shared Ambition on Climate Alignment and Cooperation [Français](#)

NEWS PROVIDED BY

Environment and Climate Change Canada

Apr 12, 2021, 22:03 ET

GATINEAU, QC, April 12, 2021 /CNW/ - Today, Minister of Environment and Climate Change, the Honourable Jonathan Wilkinson, spoke with U.S. Special Presidential Envoy for Climate, John Kerry, during the second meeting of the High-Level Ministerial Dialogue on Climate Ambition.

During the meeting, Minister Wilkinson and Secretary Kerry took stock of each country's progress toward increasing the scope and scale of climate action at home, their efforts to encourage other countries to do the same, as well as their shared progress in identifying and implementing bilateral climate cooperation opportunities over the last few months. In this context, both countries welcomed early progress made to date under the High-Level Ministerial Dialogue on Climate Ambition, reiterating their commitment to enhance their Nationally Determined Contribution (NDC) under the Paris Agreement by the U.S.-led Climate Summit that will take place on April 22, 2021.

Minister Wilkinson underscored the importance of an aligned, enhanced ambition on methane reduction standards and transportation standards relating to fuel efficiency and the deployment of zero emission vehicles (ZEVs), recognizing that this will enable both countries to increase their respective NDC ambitions. Minister Wilkinson reaffirmed Canada's interest in taking a continental approach to addressing methane emission reductions from the oil and gas sector. The Minister proposed to build on the objective to reduce North American emissions by 40% by 2025—which Canada has continued to pursue over the last four years—toward the potential for a more aggressive 2030 policy reflecting recent statements by the International Energy Agency that countries should target a 75% emission reduction against forecast emissions. He also noted Canada and the United States' commitment to achieve net-zero emissions no later than 2050 and the importance of aligned LDV and HDV standards – building on the progress that Canada has made with California in recent years in this area – and to implement a 100% ZEV sales target as soon as possible.

Both countries reaffirmed that climate action and job creation go hand-in-hand, and agreed that Canada and the U.S. are more aligned in this view and in their climate objectives than ever before. Recognizing that major economies around the world are aggressively embracing low-carbon solutions to attract more investment and

create more good jobs for their citizens, the two countries agreed that continued bilateral collaboration will ensure North American workers and industries can attract their fair share of global investment in the increasingly competitive low-carbon world.

Minister Wilkinson and Secretary Kerry also reiterated the importance of other areas of work under the Climate Dialogue, including on adaptation, sustainable finance, nature-based solutions, and smart agriculture. Minister Wilkinson identified the potential to align a Canadian and US Buy Clean approach to greening government, as a means to enhance climate change ambitions and trade opportunities.

Minister Wilkinson and Special Envoy Kerry emphasized that the Dialogue serves to align policies and approaches to create jobs, while tackling climate change and inequality, and enhancing adaptation and resilience to climate impacts. They agreed to continue working together with a view to concrete policy outcomes in advance of COP 26 following this month's Earth Day Summit.

Associated Links

- [Readout: Minister Wilkinson's meeting with U.S. Climate Envoy John Kerry](#)
- [U.S. Canada High Level Ministerial Dialogue on Climate Ambition](#)
- [Roadmap for a Renewed U.S.-Canada Partnership](#)
- [Canada's strengthened climate plan, A Healthy Environment and a Healthy Economy](#)
- [Government of Canada review of fuel efficiency standards confirms the economic and environmental benefits of ambitious action](#)
- [U.S.-Canada Joint Statement on Climate, Energy, and Arctic Leadership](#)

SOURCE Environment and Climate Change Canada

For further information: Moira Kelly, Press Secretary, Office of the Minister of Environment and Climate Change, 819-271-6218, moira.kelly@canada.ca

Related Links

<http://www.ec.gc.ca>

China's fuel exports to surge as throughputs rise: CNPC

Published date: 16 April 2021

Share:

China's crude demand, imports and refinery throughputs are likely to increase by 2.8-4.5pc this year, leading to a big increase in oil product exports, the research unit of state-owned energy firm CNPC said.

China's apparent crude consumption is likely to hit 756mn t (15.18mn b/d) this year, up by 2.8pc from 2020, CNPC's Economics and Technology Research Institute (ETRI) said in its annual report published today.

Net crude imports are likely to rise to 559mn t (11.23mn b/d), up by 3.7pc, with total crude throughputs rising by 4.5pc to 705mn t or 14.15mn b/d, ETRI said.

The projected rise in throughputs is mainly the result of ramp-ups at private-sector ZPC's 800,000 b/d Zhoushan refinery, state-controlled Sinopec's 200,000 b/d Zhanjiang refinery and the new 320,000 b/d Lianyungang refinery operated by private-sector Shenghong Petrochemical, which is due on line by the end of this year.

China's net crude imports hit a record high of 10.8mn b/d last year as independent refineries boosted purchase of cheaper feedstocks during the price collapse in March-April 2020. Independents imported 145mn t (2.9mn b/d) of crude last year, up by 41.7pc from 2019, ETRI said.

ETRI expects China to export more oil products this year to balance rising refinery output and domestic demand. Net exports of gasoline, diesel and kerosine are forecast to rise by 31.7pc from 2020 to 54.7mn t. Diesel is seen making up the single-largest share of exports at around 42pc or 470,000 b/d this year.

China's apparent oil demand — crude and products — will peak at around 730mn-750mn t by the end of the 14th five-year-plan, which covers 2021-2025, with average growth of 2pc/yr over the period.

China crude demand forecast	mn b/d		
	2019	2020	2021e
Domestic output	3.84	3.90	3.96
Net imports	10.12	10.83	11.23
Apparent consumption	13.96	14.73	15.18
Source: CNPC ETRI			

ECONOMIC SUPPORT IN 2021-22

Last year, Government announced \$2 billion in incremental infrastructure funding, a stimulus booster to help the province's economy recover and create jobs in the years ahead. In the 2021-22 Budget, \$488.1 million in stimulus spending is targeted to infrastructure investment on needed maintenance and on major projects, described in the 2021-22 Capital Plan, following \$405.4 million in 2020-21.

Saskatchewan drivers will receive a one-time rebate of \$285, on average, calculated on a proportion of vehicle premiums paid in the previous three years. The full rebate from the Auto Fund is \$285 million, announced in February, and is to be provided to Saskatchewan drivers in May.

All SaskPower customers will receive a one-year, 10 per cent rebate on electricity charges on power bills, to support Saskatchewan's economic recovery from COVID-19. In total, the rebate is \$174.8 million in 2021-22, after \$85.2 million last year.

With these rebates factored in, Saskatchewan people will pay the lowest rates in the country on their bundle of utilities.

The three-year, \$400 million federal Accelerated Site Closure Program sees \$200 million budgeted in 2021-22 to help oilfield service companies through the pandemic, with work on site abandonment and reclamation work in the oil patch, helping the environment and providing economic stimulus.

The small business tax rate reduction will protect Saskatchewan small businesses through the pandemic. At a cost of \$64.6 million in forgone tax revenue in 2021-22, the rate was reduced from 2.0 to 0.0 per cent, effective October 1, 2020. The rate will increase to 1.0 per cent July 1, 2022 and return to 2.0 per cent on July 1, 2023 as Saskatchewan recovers from the pandemic.

The new Saskatchewan Home Renovation Tax Credit will provide a 10.5 per cent tax credit on up to \$20,000 of eligible home renovations done between October 1, 2020 and December 31, 2022, beginning with the 2021 tax year. The tax credit is forecast to save taxpayers \$124 million over the life of the program, including \$66.4 million in 2021-22.

In recognition of lost gaming transfer revenue as a result of casino closures, \$39 million in emergency pandemic response gaming partner grants in 2021-22 are providing pandemic support for First Nations and Métis organizations, and the Community Initiatives Fund. The emergency grants totaled \$50 million in 2021-22.

The 2021-22 Budget has \$30 million as part of a \$60 million COVID-19 response package and multi-year funding plan for post-secondary institutions, through the Ministry of Advance Education. In 2020-21, \$7.0 million in COVID-19 response was provided.

This Budget has \$27.3 million in increased funding for Workforce Development, Employability Assistance for Persons with Disabilities top-up, the Canada-Saskatchewan Job grant, and the Newcomer and Settlement program, to help people seeking to immigrate to Saskatchewan and address the backlog due to border closures, and to help those disadvantaged by the pandemic with training support and financial supports for employers through the Ministry of Immigration and Career Training.

There is \$5.0 million for the Saskatchewan Tourism Sector Support Program to help tourism-related businesses who have experienced a loss of sales revenue of at least 30 per cent, following \$35.0 million in support through the program last year. There is also \$6.4 million in other supports, including an estimated \$5.6 million for increased VLT site commissions, \$754,000 in reduced revenue, to help outfitters by putting a moratorium on their fees, and \$77,000 for increased capital grants to regional parks.

\$2 Billion Stimulus Fund

In 2020-21, Government announced an additional \$2 billion in infrastructure investments to stimulate economic recovery and encourage local job creation. The stimulus funding has been fully allocated to the following project streams.

- Approximately \$1.4 billion for large infrastructure projects. Most of these projects are in advanced planning and designing stages, and are scheduled to be completed over multiple years but will support growth over the long term.
- More than \$300 million for highway projects for thin membrane surface upgrades, passing lanes, upgrades to municipal roads and airports. These projects are scheduled to be completed by the end of 2022-23, and the majority of spending will occur in 2021-22.
- Nearly \$170 million for renewal projects to reduce deferred maintenance on provincial and third-party assets and reduce operating costs through energy efficiency. Renewal projects are scheduled to be completed by the end of 2021-22.
- \$150 million in per capita payments through the Municipal Economic Enhancement Program to support infrastructure projects in communities across the province. Funds have been transferred to municipalities for shovel-ready projects that must be completed by the end of 2021-22.

The delivery and completion of the stimulus projects vary for each stream, and funding requirements have been included in the Capital Plan.

CAPITAL PLAN DETAILS

Transportation Infrastructure

The four-year plan projects approximately \$1.7 billion in capital investments for transportation infrastructure across the province, including a total of \$553.2 million in the 2021-22 Budget. The amount represents an increase of nearly \$109 million or 24 per cent over the prior year, and 1,350 km of provincial highways will be improved in 2021-22.

The 2021-22 Budget provides for major projects that allow the province to continue designing and constructing several passing lanes and twinning projects. This includes passing lanes on Highway 7 – Kindersley to the Saskatchewan-Alberta border, Highway 39 – Corrine to Estevan, Highway 5 – Saskatoon to Highway 2, as well as beginning work on twinning Highway 3 west of Prince Albert.

Budget 2021-22 includes a record level of investment in rural provincial highways by providing over \$180 million to deliver 280 km of upgrades. These upgrades include Highway 4, U.S. border to Grasslands National Park; Highway 18, west of Lake Alma; Highway 43, Gravelbourg to east of Highway 19; and Highway 322, Glen Harbour to Rowan's Ravine.

Protecting drivers with safe highways continues to be one of Government's highest priorities. The 2021-22 Budget includes funding for the third year of the five-year \$100 million commitment to improving intersection and road safety.

The 2021-22 Budget also includes approximately \$52 million for a remand expansion at the Saskatoon Correctional Centre. The remand centre will offer a modern facility to hold remand accused persons taken into custody securely. It will consist of two units collectively containing 216 cells capable of holding 427 people.

Commercial Crowns

Substantial investments in Saskatchewan's public utility infrastructure are planned to ensure the safety and integrity of aging infrastructure. Saskatchewan's Crown sector will invest approximately \$1.6 billion in 2021-22 to maintain and enhance utility infrastructure while supporting economic recovery.

Over the next four years, Government will invest over \$6 billion to ensure safe, reliable and high-quality services are available for the people of Saskatchewan.

Through SaskPower, the Government will invest \$937.6 million in improvements to the province's electricity system to meet growing customer demand, maintain reliability and advance environmental mandates. Planned investments include constructing a new 350 MW natural gas-fired electrical plant at Moose Jaw, unit extensions at the EB Campbell hydroelectric station, and rebuilding transmission power lines.

The 2021-22 Budget invests \$276.8 million in the province's natural gas distribution system through SaskEnergy. These investments will ensure the integrity, reliability, and regulatory compliance of infrastructure; and expand the transmission system. Notable transmission capacity projects include Rosetown to Vanscoy gas line expansion, the Southwest Saskatchewan expansion and the Pierceland supply expansion.

The 2021-22 Budget supports SaskTel's vision to be the best at connecting people to their world by investing \$323.2 million in the province's information and communications technology infrastructure. Capital investments will include sustainment projects that support quality networks and meet the wireless growth demand, upgrades to broadband facilities and fibre optic networks, and completion of the Wireless Saskatchewan program.

Since 2008-09, Government has invested approximately \$20.4 billion through the Crown sector in public utility and infrastructure services. The projects completed during this period include replacing the ultrafiltration modules at the Gravelbourg water treatment plant, a new natural gas-fired power station located near Swift Current, and improving digital communications between rural and major centres through the Regional Ethernet Transport Strategy.

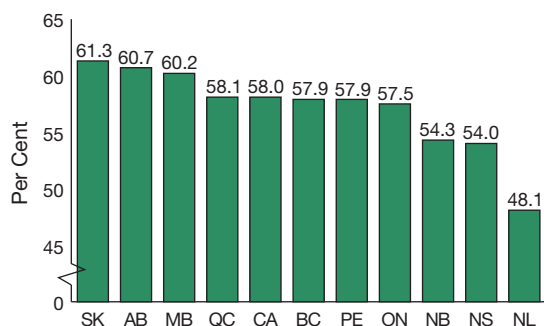
Capital Plan Financing

The Capital Plan balances the need for infrastructure investments to support a growing province and stimulate economic recovery while preserving the province's long-term fiscal health.

Capital expenditures will continue to be funded through a disciplined financing strategy to ensure that Saskatchewan's Growth Plan goal of investing over \$30 billion in infrastructure by 2030 is fiscally sustainable and matches the benefits of the assets with the term of payments.

Low interest rates, combined with the Province's excellent credit rating, continue to make this a cost-effective time to finance capital.

EMPLOYMENT RATES IN 2020



Source: Statistics Canada (March 2021)

employment rate averaged 61.3 per cent, well above the Canadian average of 58.0 per cent.

Since the onset of the pandemic in March 2020, some provincial economic indicators have in fact performed well during 2020 and experienced year-to-date positive growth when compared with the same period in 2019.

For example, compared to the national average Saskatchewan had the highest growth in new housing starts (24.2 per cent increase), the highest growth in wholesale trade (4.4 per cent increase), and the highest growth in international exports (2.2 per cent increase).

Average weekly earnings grew by 5.4 per cent, the seventh-highest growth in Canada.

Saskatchewan's performance in manufacturing sales and investment in building construction, however, remained weak and below the national average.

Some economic indicators were significantly and negatively impacted by COVID-19, but overall, the impacts were smaller than those in other provinces.

Sales at food services and drinking places declined by 21.3 per cent, the smallest decline in Canada. The Canadian average decline for these sales was 31.5 per cent.

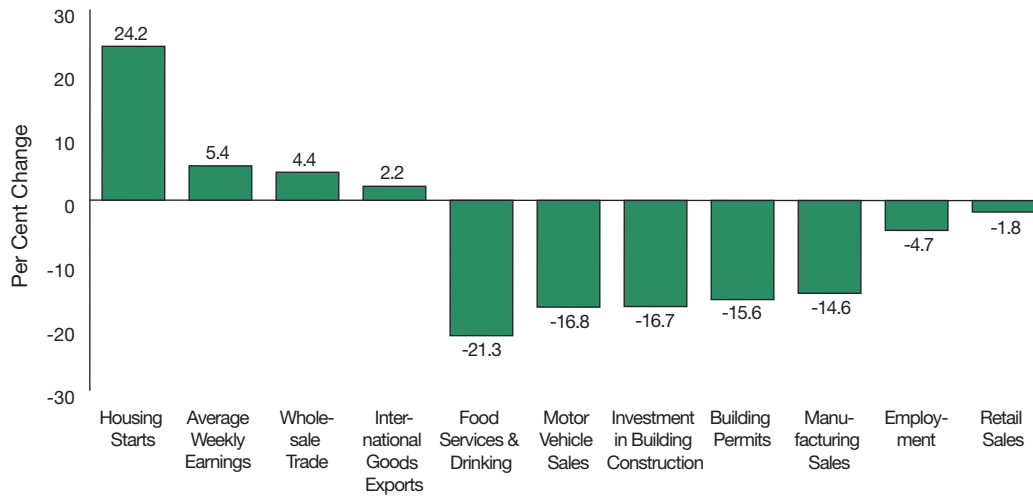
SASKATCHEWAN ECONOMIC INDICATORS IN 2020

	Level	Saskatchewan Per Cent Change	Rank	Canada Per Cent Change
Population at Jan. 1 (000s)	1,178.8	(0.0)	9	0.4
Employment (000s)	544.1	(4.7)	5	(5.2)
Unemployment Rate (%)	8.4	8.4	2nd lowest	9.6
Employment Rate (%)	61.3	61.3	1	58.0
Consumer Price Index (2002=100)	141.9	0.6	5	0.7
Average Weekly Earnings (\$)	1,092.5	5.0	7	6.7
Retail Sales (\$B)	19.3	(1.0)	7	(1.4)
Wholesale Trade (\$B)	27.1	3.0	1	(1.0)
New Motor Vehicle Sales (# of units)	38,719	(15.1)	3	(20.9)
Food Services and Drinking Places Sales (\$M)	1.6	(17.8)	1	(28.2)
Manufacturing Sales (\$B)	13.4	(14.0)	7	(11.4)
International Goods Exports (\$B)	30.4	2.5	1	(12.2)
Building Permits (\$B)	1.4	(12.9)	9	(2.3)
Housing Starts (# of units)	3,087	27.2	1	4.4
Investment in Building Construction (\$B)	3.1	(18.1)	10	(2.0)
Residential (\$B)	1.9	(15.5)	10	(1.8)
Non-Residential (\$B)	1.2	(21.9)	9	(2.3)

Source: Statistics Canada (March 2021)

ECONOMIC PERFORMANCE DURING THE PANDEMIC

(March to December 2020 versus March to December 2019)



Source: Statistics Canada (March 2021)

Saskatchewan had the fourth-lowest decline in new motor vehicle sales at 16.8 per cent while these sales declined by 22.9 per cent nationally.

Total crop production is expected to rise to 41.5 million tonnes by 2025.

COMMODITIES PERFORMANCE AND OUTLOOK

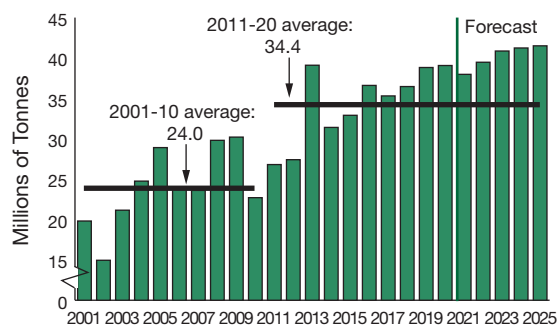
Saskatchewan's economy is expected to continue a path of recovery in 2021 supported by both an increase in consumer and business confidence, and improvements in commodity markets.

In 2020, Saskatchewan recognized its second-largest crop on record. Total crop production is estimated at 39.1 million tonnes, an increase of 0.6 per cent from 2019.

On a 10-year average basis, total crop production in Saskatchewan increased by 43.3 per cent from an average 24.0 million tonnes during the 2001-10 period to 34.4 million tonnes during the 2011-20 period.

SASKATCHEWAN CROP PRODUCTION

(Second-highest production in 2020 at 39.01 million tonnes)



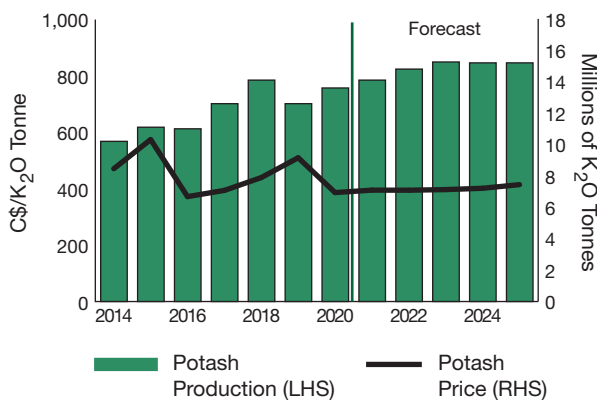
Sources: Statistics Canada (November 2020), Ministry of Agriculture (January 2021)

Despite a weakening of potash prices, from \$511.03 per K₂O tonne in 2019 to \$387.85 per K₂O tonne in 2020, Saskatchewan's potash production recorded the second-highest level at 13.6 million tonnes.

The price of potash is expected to improve slightly to \$396.48 per K₂O tonne in 2021 and strong global demand for potash is expected to continue over the forecast period. As such, total potash production is anticipated to reach 15.2 million K₂O tonnes by 2025.

SASKATCHEWAN POTASH PRICE AND PRODUCTION

(Second-highest production in 2020 at 13.6 million tonnes)



Source: Ministry of Energy and Resources (February 2021)

Due to the temporary shutdowns at the Cigar Lake mine, uranium production dropped significantly in 2020. Uranium production is expected to return to a nominal pace when operations are resumed.

Uranium does not trade on an open market like other commodities; buyers and sellers negotiate contracts privately. Prices are published by independent market consultants and are expected to remain relatively flat over the medium term.

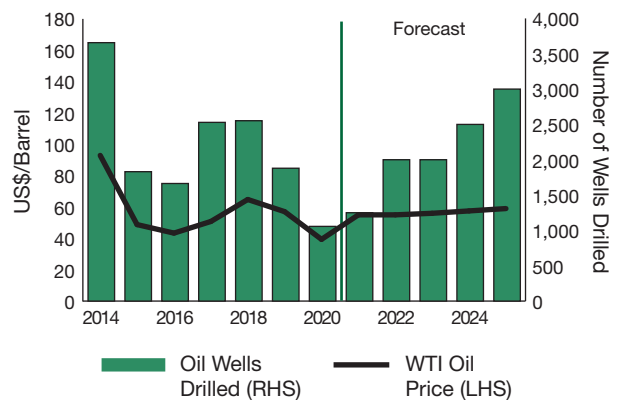
The sudden drop in global demand for oil resulted in an oil price crash in April of 2020. The WTI oil price dropped from an average high of US\$57.50 per barrel in January to an average of US\$16.70 per barrel in April.

Since then, the WTI oil price gradually increased to an average of US\$47.10 per barrel in December.

The WTI oil price is expected to average US\$55.00 per barrel in both 2021 and 2022, up from US\$39.40 per barrel in 2020.

Impacted by weak oil prices, drilling activity declined significantly from 1,880 wells in 2019 to 1,057 wells in 2020. With the expected improvement to oil prices over the forecast period, the total number of wells drilled is likewise forecast to improve, with a modest increase to 1,250 in 2021 and up to a total of 3,000 by 2025.

WTI OIL PRICE AND OIL WELLS DRILLED



Source: Ministry of Energy and Resources (March 2021)

Historically, oil prices have significantly affected Saskatchewan's economic performance. For example, when the WTI price dropped from an average of US\$99.60 per barrel in 2008 to an average of US\$61.80 per barrel in 2009, Saskatchewan's real GDP subsequently declined by 5.3 per cent.

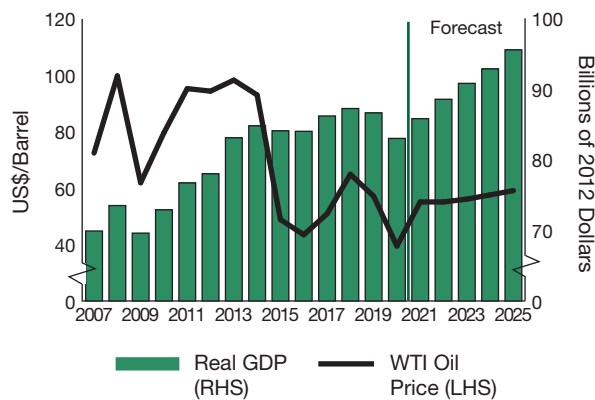
COMMODITY PRICE ASSUMPTIONS – CALENDAR YEAR

	2020	2021	2022	2023	2024	2025
WTI Oil (US\$/barrel)	39.4	55.0	55.0	56.0	57.5	59.0
Well-head Oil (C\$/barrel)	34.8	50.0	49.3	49.6	50.2	52.2
Natural Gas (C\$/GJ)	2.3	2.8	2.8	2.8	2.8	2.9
Potash (C\$/K ₂ O tonne) ¹	387.9	396.5	396.2	398.3	403.1	415.9
Potash (US\$/KCl tonne) ¹	176.5	190.6	193.4	197.3	202.4	207.0
Wheat (C\$/tonne)	224.2	234.0	232.1	232.4	235.2	235.6
Canola (C\$/tonne)	468.7	477.4	470.4	476.9	479.7	480.4

¹ The potash industry quotes prices in US dollars per KCl tonne. Provincial royalty calculations, however, are based on the Canadian dollar price per K₂O tonne.

Sources: Ministry of Energy and Resources (March 2021), Ministry of Agriculture (January 2021)

REAL GDP AND WTI OIL PRICES



Sources: Statistics Canada (November 2020),
Ministry of Energy and Resources (March 2021)

Conversely, when the WTI price recovered, to US\$72.90 per barrel in 2010 and to US\$76.70 per barrel in 2011, Saskatchewan's real GDP displayed growth of 4.7 per cent and 5.3 per cent, respectively, in each of those years.

Impacted by the pandemic and weak oil prices, Saskatchewan's real GDP and nominal GDP are expected to decline by 4.2 per cent and 7.8 per cent in 2020, respectively.

With the rollout of vaccinations, global economic recovery, improving oil prices and demand and an increase in consumer and business confidence, Saskatchewan's real GDP is expected to improve and rise by 3.4 per cent in 2021 and 3.2 per cent in 2022.

Nominal GDP is forecast to increase by 5.9 per cent and 4.1 per cent, respectively, in 2021 and 2022.

Continued economic recovery is expected throughout the forecast period.

NON-RENEWABLE RESOURCE REVENUE – 2018-19 TO 2021-22

(millions of dollars)	2018-19 Actual	2019-20 Actual	2020-21 Forecast	2021-22 Budget	Change from 2020-21 Forecast	
					Dollars	Per Cent
Crown Land Sales	58.1	17.1	6.7	9.2	2.5	37.3
Oil and Natural Gas	681.6	667.8	362.3	505.1	142.8	39.4
Potash	536.0	554.4	404.5	431.8	27.3	6.7
Resource Surcharge	393.8	413.3	265.8	302.6	36.8	13.8
Other	65.6	97.6	56.9	79.8	22.9	40.2
Total	1,735.1	1,750.3	1,096.2	1,328.5	232.3	21.2

economy, including growth in population, household spending and business investment. However, the 2021-22 Budget includes a \$52 million reduction in PST revenue compared to last year's budget as a result of a new accounting treatment that eliminates the PST paid on capital purchases by ministries and certain GSOs in the summary budget.

All remaining taxes are budgeted to increase by a combined \$67 million, including a \$34 million increase in Fuel Tax revenue as a result of the rebound in economic activity, a \$21 million increase in other taxes, mainly comprised of a return to normal collection levels of Corporation Capital Tax and Liquor Consumption Tax, and a \$12 million

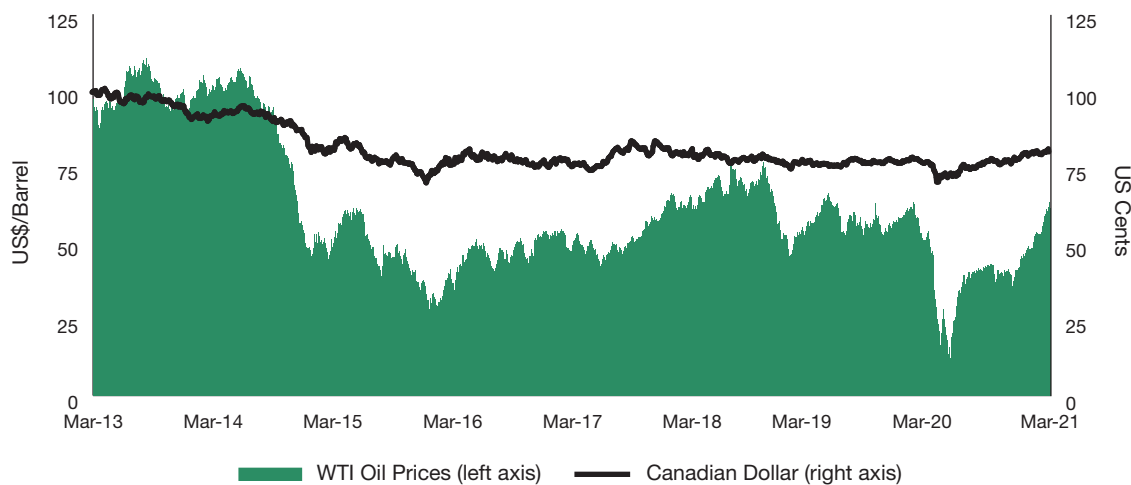
increase in Property Tax revenue, reflecting changes to Education Property Tax mill rates in line with year-over-year inflation.

Non-Renewable Resource Revenue

Non-renewable resource revenue is budgeted at \$1.3 billion, or 9 per cent of total revenue, in 2021-22. This is a \$232 million, or 21.2 per cent, increase from the 2020-21 forecast.

Oil and natural gas royalties are budgeted at \$505 million in 2021-22, an increase of \$143 million from the 2020-21 forecast. The increase is primarily due to an increase in West Texas Intermediate (WTI)

WTI OIL PRICES AND THE CANADIAN DOLLAR



In 2021-22, average realized prices are forecast at US\$191 per KCl tonne (C\$396 per K₂O tonne), up from US\$180 (C\$390) in 2020-21. The potash forecast incorporates a small increase in sales in 2021-22, from 14.0 million K₂O tonnes in 2020-21 to 14.3 million K₂O tonnes.

Revenue from Crown land sales and all other non-renewable resources (including uranium, coal and other minerals) is forecast to increase by \$25 million, mainly due to higher uranium revenue, reflecting the expected resumption of production at the Cigar Lake mine.

The economic and fiscal forecasts in the 2021-22 Budget rely on a set of assumptions regarding Canadian, U.S. and global economic growth, commodity prices and the value of the Canadian dollar. These factors are beyond government's control, yet they heavily influence Saskatchewan's fiscal performance, particularly non-renewable resource revenue.

The ongoing COVID-19 pandemic, along with OPEC decisions, transportation disruptions and exchange rate volatility have the potential to impact resource revenue this year. In an attempt to minimize risk to the fiscal plan, the assumptions used to develop the

non-renewable resource forecast are prudent and incorporate a number of private sector forecasts. But because of the volatile nature of these key external factors, the non-renewable resource revenue forecast will always be subject to risk. This risk is quantified throughout the year.

For 2021-22, the following sensitivities are estimated:

- a US\$1 per barrel change in the fiscal-year average WTI oil price results in an estimated \$14 million change in oil royalties;
- a US\$10 per KCl tonne (C\$21 per K₂O tonne) change in the fiscal-year average realized potash price results in an estimated \$43 million change in potash royalties; and,
- a 1 U.S. cent change in the fiscal-year average exchange rate results in an estimated \$20 million change in non-renewable resource revenue.

Net Income from Government Business Enterprises

Government Business Enterprise (GBE) net income is forecast at \$899 million in 2021-22 and accounts for 6 per cent of budgeted revenue. This is a \$206 million decrease from the current 2020-21

NET INCOME FROM GOVERNMENT BUSINESS ENTERPRISES – 2018-19 TO 2021-22

(millions of dollars)	2018-19 Actual	2019-20 Actual	2020-21 Forecast	2021-22 Budget	Change from 2020-21 Forecast	
					Dollars	Per Cent
Saskatchewan Auto Fund	77.5	(46.7)	213.0	192.1	(20.9)	(9.8)
Saskatchewan Gaming Corporation	22.5	20.1	(7.1)	11.5	18.6	(262.0)
Saskatchewan Government Insurance	48.0	49.9	135.8	40.0	(95.8)	(70.5)
Saskatchewan Liquor and Gaming Authority	485.1	470.3	326.6	423.4	96.8	29.6
SaskPower	231.2	204.8	136.4	16.7	(119.7)	(87.8)
SaskTel	123.1	115.4	126.0	100.0	(26.0)	(20.6)
SaskEnergy	165.7	43.5	58.9	49.7	(9.2)	(15.6)
Workers' Compensation Board	(153.6)	(12.3)	111.1	(1.3)	(112.4)	(101.2)
Other	11.7	10.4	4.2	67.1	62.9	1,497.6
Total	1,011.2	855.4	1,104.9	899.2	(205.7)	(18.6)

- \$64 million increase provided to SaskPower (offset by higher GBE net income) to invest in multiple projects, including infrastructure in rural communities, a battery energy storage system and distributed energy resource enablement;
- \$15 million increase for VIDO to construct a Centre for Pandemic Research; and,
- \$5 million increase for the Saskatchewan Tourism Sector Support Program;

partially offset by,

- \$121 million decrease due to the fall-off of the one-time emergency COVID-19 support programs in the 2020-21 Budget.

Environment and Natural Resources is budgeted at \$415 million, or 2.4 per cent of total expense.

This theme is comprised of portions of the Ministries of Environment and Parks, Culture and Sport. As well, the theme includes the Commercial Revolving Fund, the Water Security Agency and a portion of the Saskatchewan Research Council.

Environment and Natural Resources expense is up \$53 million (14.5 per cent), primarily reflecting a \$50 million increase in federal flow-through funding for the Accelerated Site Closure Program for the reclamation of inactive oil and gas wells and facilities.

General Government (formerly Other) expense is budgeted at \$525 million, or 3.1 per cent of total expense. This is an increase of \$103 million (24.3 per cent) from the 2020-21 Budget, primarily reflecting a \$112 million increase in pension expense, as previously noted, partially offset by a \$20 million reduction for the Chief Electoral Officer due to the fall-off of funding related to the 2020 provincial election.

Finally, this year's budget does not include a Health and Public Safety Contingency, resulting in a \$200 million decrease in expense when compared to last year's budget.

MEDIUM-TERM OUTLOOK

The impact to the Saskatchewan economy in 2020 from COVID-19 appears to have been less than initially forecast. However, several sectors of the economy and the labour market experienced an unprecedented shock last year. Significant economic challenges remain as public health measures remain in place and COVID-19 variants spread.

While the approval of vaccines in recent months and the beginning of mass vaccination efforts offer hope that the virus will soon be contained, it is clear that full recovery will take longer than originally assumed. Economic growth is forecast for 2021 and beyond, but the ongoing pandemic has altered the previous path for a return to fiscal balance.

In the near term, the 2021-22 Budget faces a revenue shortfall compared to the previous outlook, largely as a result of a delayed economic recovery. In addition, another year of COVID-related spending will be required to support the provincial economy and health care system, and to set the stage for economic recovery.

Beyond 2021-22, deficits are now forecast across the planning horizon, including a deficit of \$770 million in 2024-25. While this is a deterioration in the fiscal outlook since the 2020-21 First Quarter Report, Saskatchewan is well positioned to withstand a longer return to balance due to its low debt burden.

The medium-term fiscal outlook is consistent with the provincial economic forecast and its underlying assumptions. In particular, the outlook assumes that public health measures and vaccination efforts are successful in ending the pandemic this year and that there are no negative structural changes to the economy that further delay recovery.

KEY MEDIUM-TERM NON-RENEWABLE RESOURCE FORECAST ASSUMPTIONS

	2019-20 Actual	2020-21 Forecast	2021-22 Budget	2022-23 Outlook	2023-24 Outlook	2024-25 Outlook
WTI Oil Price (US\$/barrel)	54.80	42.27	54.33	55.25	56.38	57.88
Light-Heavy Differential (% of WTI)	20.9	18.1	19.7	19.4	19.0	19.0
Well-head Oil Price (C\$/barrel) ¹	52.54	39.05	49.31	49.41	49.73	50.69
Oil Production (million barrels)	178.9	154.0	160.0	162.1	163.5	166.7
Potash Price (mine netback, US\$/KCl tonne) ²	223	180	191	194	199	204
Potash Price (mine netback, C\$/K ₂ O tonne) ²	490	390	396	397	400	406
Potash Sales (million K ₂ O tonnes) ²	12.7	14.0	14.3	14.9	15.2	15.2
Canadian Dollar (US cents)	75.19	75.70	79.12	80.30	81.48	82.13

¹ The average price per barrel of Saskatchewan light, medium and heavy oil.

² Ministry of Finance calculations derived from calendar-year forecasts.

After growth of 2.7 per cent in 2021-22, total revenue is forecast to grow by 4.2 per cent per year, on average, over the medium term. This is higher than average nominal GDP growth of 3.6 per cent over the same time frame and results in own-source revenue returning to its pre-crisis share of GDP (14.9 per cent) in 2024-25.

Total revenue is not forecast to return to pre-crisis levels until 2022-23. In the 2019-20 Budget, revenue was forecast to reach \$16.0 billion in 2022-23. In the current outlook, revenue does not surpass \$16.0 billion until 2024-25, two years later than anticipated prior to the onset of the COVID-19 pandemic.

Tax revenue is forecast to grow by 4.9 per cent per year, on average, over the forecast period. Revenue growth is supported by continued recovery in the Saskatchewan economy over the medium term. In addition, the wind-down of the Home Renovation Tax Credit and the small business income tax rate reduction by the end of the forecast period contributes to the robust growth outlook over the period.

Non-renewable revenue growth is forecast to increase 7.5 per cent per year, on average, between 2021-22 and 2024-25. Despite this relatively high rate of

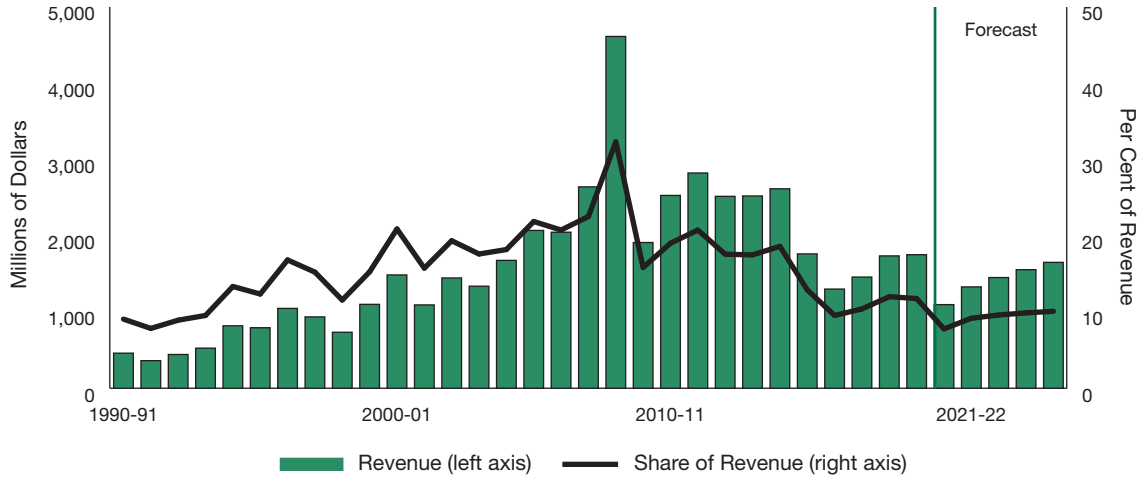
growth, revenue does not return to its 2019-20 level over the forecast horizon.

WTI oil prices are forecast to gradually increase over the forecast period and average nearly US\$58 in 2024-25. A decrease in the light-heavy oil price differential over the same time period provides another boost to well-head oil prices in Saskatchewan. However, a strengthening Canadian dollar outlook over the next four years offsets these price gains. As a result, well-head prices, in Canadian dollars, are not expected to surpass 2019-20 prices by 2024-25. Finally, oil production in 2024-25 is forecast at 166.7 million barrels, nearly 7 per cent lower than 2019-20 levels.

Potash prices, in U.S. dollars, are forecast to modestly increase over the forecast horizon, as are sales. Similar to oil, a stronger Canadian dollar over the forecast horizon offsets US-dollar price improvements and mutes the overall price increase in Canadian dollars.

In total, non-renewable resource revenue is projected to account for 10 per cent of total revenue by 2024-25. This is an increase from a forecasted 8 per cent share in 2020-21, but lower than its 12 per cent share of revenue over the 2018-19 and 2019-20 period.

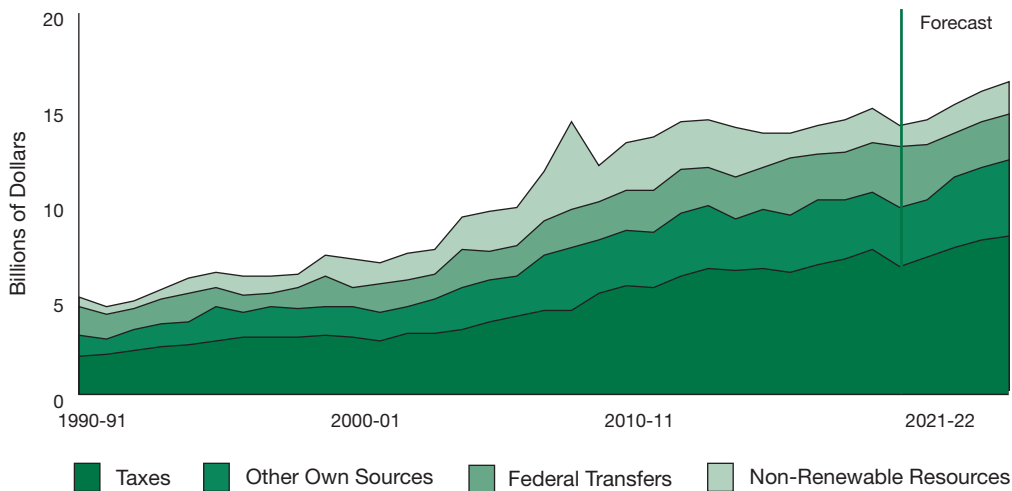
NON-RENEWABLE RESOURCE REVENUE – 1990-91 TO 2024-25



GBE net income and other own-source revenue are projected to increase at a combined annual average rate of 4.5 per cent. In the fiscal plan, GBE net income is assumed to not return to pre-crisis levels until 2024-25. Other own-source revenue is forecast to surpass its pre-crisis level in 2022-23 and then grow at a more normal rate of 3.4 per cent per year, on average, in the subsequent two years.

Finally, federal transfers are projected to remain flat over the four-year horizon. The 2021-22 Budget includes \$200M of federal funding for the Accelerated Site Closure Program that will wind down by 2023-24. This decline is offset by increases in the Canada Health Transfer and the Canada Social Transfer in the outlook, while all other federal cost-sharing programs are projected to remain relatively flat.

COMPOSITION OF REVENUE – 1990-91 TO 2024-25



2021-22 REVENUE INITIATIVES

In response to the challenges posed by the pandemic, the Government introduced initiatives in the fall of 2020 to support Saskatchewan's economic recovery. This included helping with the cost of home renovations and reducing taxes on small businesses.

The 2021-22 Budget introduces further revenue initiatives to improve affordability, drive sustained growth and ensure the consistent and fair application of taxes in Saskatchewan.

This paper describes in more detail the tax measures announced in the Budget. However, it is only a summary and the reader is advised to contact the responsible ministry or authority and consult the enacting legislation or regulation for specific details.

MAKING LIFE MORE AFFORDABLE

Saskatchewan Home Renovation Tax Credit

Last fall, the Government introduced a new Saskatchewan Home Renovation Tax Credit to help stimulate residential construction activity and improve housing affordability. Saskatchewan homeowners may save up to \$1,155 in provincial income tax in 2021 by claiming a tax credit on eligible home renovation expenses incurred between October 1, 2020 and December 31, 2021. A further \$945 in savings may be claimed in 2022 in respect of eligible expenses incurred between January 1, 2022 and December 31, 2022.

Further information on this initiative can be found at www.saskatchewan.ca/residents/taxes-and-investments/tax-credits.

Active Families Benefit

Making children's activities more affordable for low and moderate income families is a key priority for the Government. As a result, the Active Families Benefit (AFB) is being reinstated to provide a refundable income tax credit to assist families with the cost of registering children in cultural, recreational and sports activities.

Eligible programs are those that are suitable for children and require children to actively participate; are offered by a service provider located in Saskatchewan; involve instruction and supervision; and require registration and payment of a fee.

- The benefit will provide a refundable tax credit of up to \$150 per year per child to eligible families.
- Families of children with a disability can claim an additional \$50, for a total tax credit of up to \$200 per year per child.
- The AFB will be an income-tested tax credit. In order to be eligible, families must have a combined net income of \$60,000 or less.

As the AFB will be retroactive to January 1, 2021, eligible families who enroll their children in qualifying sports, arts and cultural activities in 2021 are reminded to keep their receipts so they may claim the benefit with their 2021 income tax filings.

For further information on this initiative, please contact the Ministry of Parks, Culture and Sport at 306-787-3828.

GROWING THE ECONOMY

The purpose of economic growth is to improve the quality of life for the people of Saskatchewan. Growth is a shared mission that engages all Saskatchewan residents – it creates new jobs and opportunities for people to realize their future in the province, and correspondingly lowers unemployment; it allows for increased investment in and improvements to public services; and growth provides for a resilient economy that results in a stronger Saskatchewan now and for years to come. A competitive tax environment is one of the ways to drive and sustain economic growth.

Saskatchewan's tax system includes several incentives that cover a broad range of economic sectors, including manufacturing, agriculture, non-renewable resources, and innovation and technology. These initiatives support competitiveness and encourage new investment in the provincial economy. As part of the commitment to a strong economic recovery and a strong Saskatchewan, existing incentives will remain in place and the 2021-22 Budget announces additional incentives that will drive growth for the benefit of all residents.

For further information on initiatives that improve Saskatchewan's competitive business environment and encourage investment in the province, please visit www.saskatchewan.ca/business/investment-and-economic-development/business-incentives-and-tax-credits.

Reduction to the Small Business Tax Rate

Last fall, to support Saskatchewan small businesses through the pandemic and to help them recover, the Government temporarily eliminated its small business corporate income tax rate, effective October 1, 2020. The tax rate will return to 1 per cent on July 1, 2022 and to 2 per cent on July 1, 2023. The amount which small businesses can earn at the small business tax rate will remain at \$600,000 – the highest threshold

in Canada. Lowering taxes for Saskatchewan small businesses over the next three years will help them to bolster employment and keep Saskatchewan on the path to economic recovery.

Saskatchewan Technology Start-up Incentive

With the goal of growing Saskatchewan's technology sector, the Saskatchewan Technology Start-up Incentive (STSI) program is being extended for an additional five years, through to 2025-26.

The 2018-19 Budget originally announced the introduction of the STSI as a pilot program, ending in 2020-21, to encourage business investment in early stage technology start-ups.

The program provides for a non-refundable 45 per cent income tax credit for individual, corporate or venture capital corporation investments in Eligible Start-up Businesses (ESBs) that are developing new technologies, or applying existing technologies in a new way, to create new proprietary products, services or processes that are repeatable and scalable.

In addition to extending the program for five years, and in response to feedback received from the sector and with the intent of making the program more effective, the following changes will be made:

- the amount that an ESB can raise under the program will double, from \$1 million to \$2 million;
- the carry-forward period to claim unused tax credits increases from four years to seven years; and,
- an annual cap of \$2.5 million per year is established on the maximum value of tax credits that can be issued.

For further information on the STSI program, contact Innovation Saskatchewan at 306-933-7222.

Associated Natural Gas Royalty Moratorium

The *Saskatchewan Growth Plan* committed to introducing a moratorium on associated natural gas royalties. With the 2021-22 Budget, the Province is meeting this commitment by implementing a royalty rate of 0 per cent for a period of five years on all natural gas produced in association with oil. This will provide oil producers with approximately \$3.8 million in annual royalty relief.

This initiative is part of Saskatchewan's *Methane Action Plan*, which in turn is part of the Province's overall climate change strategy. It is designed to encourage oil producers to invest in new methane emission reduction projects and further reduce venting and flaring of natural gas.

The royalty moratorium begins April 1, 2021 and will remain in place for five years, with a sunset date of March 31, 2026.

For further information on this initiative, please contact the Ministry of Energy and Resources at 306-787-4765.

High Water-Cut Oil Royalty Incentive

The 2021-22 Budget introduces a modernized and expanded High Water-Cut Program (HWCP), to encourage capital investment and increase oil production rates from wells that produce high volumes of water.

The modernized program provides a new royalty benefit where substantial investments in water handling capacity are made.

- Eligible active oil wells must have produced at least 90 per cent water-cut for the previous three consecutive calendar months.
- Eligible shut-in/suspended wells must have been shut-in/suspended for the previous six consecutive calendar months, with the previous three producing months having a minimum 90 per cent water-cut.
- An average minimum capital investment of \$20,000 per well must be incurred to directly improve water handling capabilities and extend the producing life of the well, excluding standard repair and maintenance activities.

Eligible Old, New, and 3rd Tier HWCP oil wells will be assigned 4th Tier royalty status only on their incremental oil production. Eligible 4th Tier HWCP oil wells will receive a two percentage point royalty rate reduction on all their production.

This update to the existing HWCP is designed to increase program participation and encourage new capital investments and increased oil production that would otherwise not occur.

The new HWCP begins April 1, 2021 and will remain in place for five years, with a sunset date of March 31, 2026.

For further information on this initiative, please contact the Ministry of Energy and Resources at 306-787-4765.

Sodium Sulphate Royalty Incentive

The 2021-22 Budget introduces a new sodium sulphate royalty system which simplifies the existing royalty calculation and provides a modernized investment incentive.

Retroactive to April 6, 2020, the sodium sulphate royalty changes will have two components.

- Replacement of the scaled production-based royalty with a flat royalty rate of 3 per cent on all sodium sulphate production.
- A credit of 10 per cent of qualifying capital expenditures that will be eligible for use against current year royalties otherwise payable. This capital investment credit will be for approved capital projects that diversify products or improve operating efficiency.

These sodium sulphate royalty changes are designed to help the industry through its current market challenges and create new diversification investment opportunities.

For further information on this initiative, please contact the Ministry of Energy and Resources at 306-787-4765.

IMPROVING TAX FAIRNESS

The 2021-22 Budget also introduces several measures to improve the fair application of Saskatchewan's taxes, including the taxation of vapour products, heat-not-burn tobacco products and electric vehicles; as well as the application of Education Property Tax.

Taxation of Vapour Products

The Government has made a number of changes in recent years to bring the marketing of vapour products in line with existing tobacco legislation. To help prevent vapour products from being attractive to youth and non-smokers, the 2021-22 Budget introduces a new Vapour Products Tax (VPT) with a rate of 20 per cent on the retail price of all vapour liquids, products and devices, effective September 1, 2021.

Retailers selling vapour products will be required to obtain a VPT license and to submit a VPT return.

For further information on the VPT, please refer to the Ministry of Finance website at www.sets.saskatchewan.ca/taxinfo or contact the Ministry at sasktaxinfo@gov.sk.ca.

Taxation of Heat-Not-Burn Tobacco Products

To help maintain tax equity between different types of tobacco products and to bring heat-not-burn (HNB) tobacco sticks in line with existing tobacco legislation, the 2021-22 Budget adds HNB tobacco sticks as a separate category under *The Tobacco Tax Act* at a rate of approximately 75 per cent of the tax rate on tobacco cigarettes, effective June 1, 2021. The current tax rate on cigarettes is 27.0¢ per stick, resulting in a HNB tax rate of 20.5¢ per stick.

For further information on the taxation of HNB tobacco sticks, please refer to the Ministry of Finance website at www.sets.saskatchewan.ca/taxinfo or contact the Ministry at sasktaxinfo@gov.sk.ca.

Taxation of Electric Vehicles

The Fuel Tax Accountability Act ensures that the Fuel Tax applicable to on-road travel in Saskatchewan is directed at preserving and improving the provincial highway system. For the Government's 2019-20 fiscal year, road-use Fuel Tax revenues totaled almost \$454 million, while road maintenance expenditures totaled almost \$616 million.

Electric vehicles (EVs) are being purchased in ever increasing numbers across Canada and around the world. While the number of these vehicles in Saskatchewan is currently relatively low, they are increasing in number every year. These vehicles contribute to wear and tear on provincial roadways, but because they do not consume traditional fuels they are not contributing to highway maintenance through the provincial Fuel Tax.

The 2021-22 Budget therefore introduces a new annual tax of \$150 for each passenger EV registered in Saskatchewan, effective October 1, 2021. Revenue from this tax will be included in the calculations under *The Fuel Tax Accountability Act*, ensuring that this and all other road-use Fuel Tax revenues are dedicated to provincial highway maintenance.

The tax will be collected by Saskatchewan Government Insurance when the EV is registered.

While this tax will only apply to passenger vehicles, the Government will continue to examine the future potential for expanding the tax to commercial vehicles and interjurisdictional trucking. The Government will also consider options to apply a tax at charging stations.

For further information regarding the tax on EVs, please refer to the Ministry of Finance website at www.sets.saskatchewan.ca/taxinfo or contact the Ministry at sasktaxinfo@gov.sk.ca.

Education Property Tax Mill Rates

Provincial legislation requires all Saskatchewan properties to be revalued every four years, since their values change over time. The 2021 revaluation follows the recent decision by the Government to reduce the percentage of value taxable assessment rate for commercial/industrial and resource properties from 100 per cent to 85 per cent.

Since the 2017 revaluation, taxable assessments of agricultural properties have increased, while taxable assessments of residential, commercial/industrial and resource properties have declined.

In this context, the 2021-22 Budget is introducing changes to Education Property Tax (EPT) mill rates to slightly increase overall revenues to the Province in line with year-over-year inflation. The 2021 EPT mill rates for the various property classes will be: agricultural 1.36; residential 4.46; commercial/industrial 6.75; and resource 9.79.

For further information on Saskatchewan's EPT mill rates, please visit www.saskatchewan.ca/residents/taxes-and-investments/property-taxes/education-property-tax-system.

SASKATCHEWAN'S TAX EXPENDITURES

INTRODUCTION

Although the primary purpose of taxation is to raise revenue, governments also attain some of their social and economic goals by reducing the taxes paid by certain taxpayers. These reductions are commonly called “tax expenditures” and may include exemptions, deductions, credits, preferential rates or deferrals. Taken together, they provide assistance to a variety of individuals and businesses, including families, farmers, senior citizens and small businesses.

While tax expenditures are usually absorbed in the overall revenue estimates and are not presented in the same way as direct spending programs, they reduce the amount of revenue generated by a government and they affect the fiscal position in the same way as direct expenditures. This paper provides estimates of the revenue impacts of several of Saskatchewan's tax expenditures.

RATIONALE FOR TAX EXPENDITURES

Tax expenditures can achieve a number of objectives, such as enhancing the fairness of the tax system or promoting certain types of economic activity. In pursuing these objectives, some tax expenditures have become fundamental elements of the tax system.

Saskatchewan's Provincial Sales Tax (PST) does not apply to certain essential items such as basic groceries, residential natural gas and electricity and reading materials, thereby reducing the taxes paid by families consuming these items.

Other exemptions from the PST are intended to support particular key sectors of the provincial economy, including manufacturing and farming.

To provide tax relief to key economic sectors and ensure tax competitiveness with other jurisdictions, Saskatchewan provides reduced Fuel Tax rates to farmers and primary producers. Saskatchewan also exempts heating fuels from the Fuel Tax to ensure consistent tax treatment with the PST exemption for natural gas used for heating.

Saskatchewan's personal income tax system applies provincial marginal tax rates directly to taxable income as defined for federal income tax purposes. As a result, deductions that contribute to the federal determination of taxable income can be considered fundamental aspects of the provincial income tax system that reduce Saskatchewan income tax revenue.

In addition, Saskatchewan's personal income tax system has distinct provincial non-refundable tax credits that recognize the personal circumstances of the taxpayer, including family-based credits and disability-related credits.

Saskatchewan's income tax system also delivers several programs designed to encourage specific taxpayer behaviours, including investment incentives and retention incentives.

2021 INTERCITY COMPARISON OF TAXES AND UTILITIES

INTRODUCTION

A number of factors contribute to the quality of life enjoyed by individuals and families in Saskatchewan and across Canada. For example, access to excellent health care, education and social services is a key part of overall quality of life.

Other important factors that affect quality of life are the level of taxation and the cost of utilities and auto insurance. Calculating the combined cost of provincial taxes and utilities is a reliable way to compare the attractiveness of living in different parts of Canada.

For the purposes of such a comparison, the total cost of these taxes and utilities for representative families living in Regina has been compared with the costs those families would face in other major cities across the country.

The provincial taxes and utilities costs associated with the following family characteristics and income levels have been calculated to provide a representative comparison:

- a single person, living in rental accommodation, with an annual income of \$40,000;
- a family of two adults and two dependent children, owning its own home, with an annual family income of \$75,000;
- a family of two adults and two dependent children, owning its own home, with an annual family income of \$100,000; and,
- a family of two adults and two dependent children, owning its own home, with an annual family income of \$125,000.

SASKATCHEWAN'S RANKING FOR 2021

In 2021, Saskatchewan individuals and families will pay total provincial taxes that are very competitive with those paid in other Canadian cities, with a ranking among the lowest in Canada for all four representative family situations.

- A single person earning \$40,000 will pay \$3,094 in total provincial taxes.
- A two-income family earning \$75,000 will pay \$4,552 in total provincial taxes.
- A two-income family earning \$100,000 will pay \$7,581 in total provincial taxes.
- A two-income family earning \$125,000 will pay \$10,779 in total provincial taxes.

Regina also ranks favourably with other cities in Canada when comparing provincial taxes and utilities. For the representative family situations, Regina again ranks among the lowest overall for combined taxes and utilities of the 10 cities surveyed.

As described in the Notes section of this paper, the following tables reflect actual utility rates for the 2020 calendar year. They therefore do not incorporate the full impact of the SaskPower and Auto Fund rebates in 2021. If the tables were based on 2021 utility rates and rebates known as of publication for all jurisdictions then Saskatchewan's bundle of utility costs would be the lowest in the country.

2021 Intercity Comparison of Taxes and Utilities
Single Person at \$40,000 Total Income
(Values in Dollars)

	Vancouver	Calgary	Regina	Winnipeg	Toronto	Montréal	Saint John	Halifax	Charlotte-town	St. John's
<i>Provincial Taxes</i>										
<i>Provincial</i>										
Income Tax	1,331	1,801	2,221	3,086	1,338	2,737	2,583	3,181	2,955	2,534
Tax Credits and Rebates	(89)	0	(150)	0	(329)	(759)	(200)	0	(160)	(450)
Health Premiums	0	0	0	0	450	662	0	0	0	0
Sales Tax	746	0	873	893	1,192	1,487	1,490	1,490	1,490	1,490
Gasoline Tax	359	130	150	140	147	222	155	155	145	205
Total Provincial Taxes	2,347	1,931	3,094	4,119	2,798	4,349	4,028	4,826	4,430	3,779
<i>Household Utility Costs</i>										
Electricity	502	971	914	505	743	428	678	855	1,039	751
Telephone	362	361	258	394	388	388	391	392	394	389
Auto Insurance	2,850	3,256	1,231	1,355	5,312	1,899	1,621	1,992	1,754	2,991
Total Household Utility Costs	3,714	4,588	2,403	2,254	6,443	2,715	2,690	3,239	3,187	4,131
Total Taxes and Utilities	6,061	6,519	5,497	6,373	9,241	7,064	6,718	8,065	7,617	7,910

2021 Intercity Comparison of Taxes and Utilities
Family at \$75,000 Total Income
(Values in Dollars)

	Vancouver	Calgary	Regina	Winnipeg	Toronto	Montréal	Saint John	Halifax	Charlotte-town	St. John's
<i>Provincial Taxes</i>										
<i>Provincial</i>										
Income Tax	2,067	2,837	2,347	4,942	1,505	4,425	4,511	5,357	5,039	4,581
Tax Credits and Rebates	(1,380)	0	0	0	(1,290)	(4,324)	(60)	0	0	0
Health Premiums	0	0	0	0	750	1,324	0	0	0	0
Sales Tax	1,755	0	1,905	2,003	2,808	3,502	3,511	3,511	3,511	3,511
Gasoline Tax	718	260	300	280	294	444	310	310	302	410
Total Provincial Taxes	3,160	3,097	4,552	7,225	4,067	5,371	8,272	9,178	8,852	8,502
<i>Household Utility Costs</i>										
Home Heating	987	851	836	747	933	1,857	2,279	2,119	1,837	1,747
Electricity	830	1,730	1,414	813	1,086	641	1,039	1,410	1,342	1,180
Telephone	362	361	258	394	388	388	391	392	394	389
Auto Insurance	2,850	3,256	1,231	1,355	5,312	1,899	1,621	1,992	1,754	2,991
Total Household Utility Costs	5,029	6,198	3,739	3,309	7,719	4,785	5,330	5,913	5,327	6,307
Total Taxes and Utilities	8,189	9,295	8,291	10,534	11,786	10,156	13,602	15,091	14,179	14,809

2021 Intercity Comparison of Taxes and Utilities
Family at \$100,000 Total Income
(Values in Dollars)

	Vancouver	Calgary	Regina	Winnipeg	Toronto	Montréal	Saint John	Halifax	Charlotte-town	St. John's
<i>Provincial Taxes</i>										
Provincial										
Income Tax	3,925	5,167	5,080	7,961	4,076	8,245	7,537	8,800	8,123	7,478
Tax Credits and Rebates	(700)	0	0	0	(870)	(3,325)	0	0	0	0
Health Premiums	0	0	0	0	960	1,324	0	0	0	0
Sales Tax	2,025	0	2,201	2,326	3,274	4,082	4,092	4,092	4,092	4,092
Gasoline Tax	718	260	300	280	294	444	310	310	302	410
Total Provincial Taxes	5,968	5,427	7,581	10,567	7,734	10,770	11,939	13,202	12,517	11,980
<i>Household Utility Costs</i>										
Home Heating	987	851	836	747	933	1,857	2,279	2,119	1,837	1,747
Electricity	830	1,730	1,414	813	1,086	641	1,039	1,410	1,342	1,180
Telephone	362	361	258	394	388	388	391	392	394	389
Auto Insurance	2,850	3,256	1,231	1,355	5,312	1,899	1,621	1,992	1,754	2,991
Total Household Utility Costs	5,029	6,198	3,739	3,309	7,719	4,785	5,330	5,913	5,327	6,307
Total Taxes and Utilities	10,997	11,625	11,320	13,876	15,453	15,555	17,269	19,115	17,844	18,287

2021 Intercity Comparison of Taxes and Utilities
Family at \$125,000 Total Income
(Values in Dollars)

	Vancouver	Calgary	Regina	Winnipeg	Toronto	Montréal	Saint John	Halifax	Charlotte-town	St. John's
<i>Provincial Taxes</i>										
Provincial										
Income Tax	5,673	7,588	7,948	11,307	5,990	12,196	10,815	12,726	11,816	10,971
Tax Credits and Rebates	0	0	0	0	(450)	(2,325)	0	0	0	0
Health Premiums	0	0	0	0	1,200	1,324	0	0	0	0
Sales Tax	2,329	0	2,531	2,675	3,765	4,694	4,706	4,706	4,706	4,706
Gasoline Tax	718	260	300	280	294	444	310	310	302	410
Total Provincial Taxes	8,720	7,848	10,779	14,262	10,799	16,333	15,831	17,742	16,824	16,087
<i>Household Utility Costs</i>										
Home Heating	987	851	836	747	933	1,857	2,279	2,119	1,837	1,747
Electricity	830	1,730	1,414	813	1,086	641	1,039	1,410	1,342	1,180
Telephone	362	361	258	394	388	388	391	392	394	389
Auto Insurance	2,850	3,256	1,231	1,355	5,312	1,899	1,621	1,992	1,754	2,991
Total Household Utility Costs	5,029	6,198	3,739	3,309	7,719	4,785	5,330	5,913	5,327	6,307
Total Taxes and Utilities	13,749	14,046	14,518	17,571	18,518	21,118	21,161	23,655	22,151	22,394

TAXES AND UTILITIES – NOTES

Tax estimates are calculated for the 2021 calendar year using known changes as of March 5, 2021. Household charges for the basic utility services (electricity, home heating, telephone and auto insurance) represent a cost comparison of the actual utility rates for the 2020 calendar year. This methodology has been chosen for the sake of certainty in citing utility costs. The utility figures exclude federal Goods and Services Tax, provincial sales taxes and municipal taxes and surcharges.

Provincial Income Tax is calculated based on the income level for each representative family situation. It is assumed that family income is earned by both spouses at a 60 per cent to 40 per cent ratio and that the families each claim \$3,000 in child care expenses for two dependent children (ages 6 and 12). Personal non-refundable credits used include the Canada Pension Plan/Québec Pension Plan and Employment Insurance contribution credits. Gross Québec personal income tax has been reduced by the Québec Child Care Expense Tax Credit and by the 16.5 per cent abatement from federal income tax.

Tax Credits and Rebates refer to refundable provincial income tax credits and rebates designed to reduce the impact of sales taxes.

Health Premiums are annual premiums for hospital insurance and medical services.

Sales Tax is based upon average family expenditure baskets at the total income levels from Statistics Canada's 2019 *Survey of Household Spending*. The sales tax base in each province was identified from the enacting legislation, with total expenditures

adjusted to reflect Saskatchewan consumption patterns. The sales tax in each province was then estimated based on taxable expenditures.

Gasoline Tax is based on annual consumption of 1,000 litres by a single person, and 2,000 litres for families. Figures include charges levied by transit commissions as well as provincial carbon taxes applied to the purchase of gasoline.

Home Heating charges are based on an annual consumption level of 2,800 m³ of natural gas. For Charlottetown and St. John's, the figures represent the BTU equivalent consumption of fuel oil.

Electricity charges are based on an annual consumption level of 4,584 kWh for renters and 8,100 kWh for homeowners.

Telephone charges are the basic service rates for individual residences.

Auto Insurance is based on a composite index developed by SGI modelled after the index developed by the Consumers' Association of Canada. The index is based on the actual insurance rates quoted for what drivers would pay in each jurisdiction if they had the same car, coverage, claims history and driving record at a consistent point in time. The Consumers' Association of Canada developed 34 profiles to create this index. The impacts of "Good Driver" discounts/rebates have been factored in for all applicable jurisdictions. Auto insurance rates for Montréal, Saint John, Halifax, Charlottetown and St. John's are unchanged from last year's comparison, as SGI no longer has access to rate information in these jurisdictions.

Düsseldorf,

14

April

2021

Uniper Plans to Make Wilhelmshaven a Hub for Climate friendly Hydrogen

- "Green Wilhelmshaven" to act as a central hub for climate friendly hydrogen
- Import terminal to bring hydrogen to Germany
- In combination with electrolysis, around 10% of hydrogen demand in Germany could be met

Under the name "Green Wilhelmshaven," Uniper plans to establish a German national hub for hydrogen in Wilhelmshaven and is working on a corresponding feasibility study. An import terminal for green ammonia is planned. The terminal is planned to be equipped with an "ammonia cracker" for producing green hydrogen and will also be connected to the planned hydrogen network. A 410-megawatt electrolysis plant is also planned, which – in combination with the import terminal - would be capable of supplying around 295,000 metric tons or 10% of the demand expected for the whole of Germany in 2030. The generated climate friendly hydrogen will primarily be used to supply local industry, but it will also be possible to feed it into the national hydrogen network. This approach will help to solve one of the key problems of energy transition: security of supply. The NH₃ splitting plant for producing green hydrogen would be the first scaled plant of its kind.

David Bryson, COO Uniper: "It is essential that Germany and Europe remain industrial powerhouses: If we want to achieve this and still hit our ambitious climate protection targets, we need hydrogen to power sectors such as steel production, the chemicals industry or in freight, shipping and air transport. In other words: We need 'green molecules' as well as 'green electrons'. We need to get hydrogen out of the laboratory and start using it in large-scale applications and marketable industrial solutions — we should make it into a commodity and exploit its wide variety of uses. One way of achieving this is to import green ammonia and convert it into hydrogen, which is something we are looking at for Wilhelmshaven. Currently, Germany plans to generate 14 TWh of green hydrogen in 2030, but the demand for that year is forecast to be 90–100 TWh — the discrepancy between these two figures is abundantly clear. We will be heavily dependent on imports if we want to use hydrogen to help us achieve our climate goals."

Commissioning of the new terminal is planned for the second half of this decade, depending on national import demand and export opportunities.

"Green Wilhelmshaven" with its combination of hydrogen import and production is one of the projects Uniper is proposing to create a common European hydrogen market and submitted to the German Federal Ministry of Economics a few weeks ago as an "Important Project of Common European Interest" (IPCEI). IPCEIs are intended to promote integrated projects along the entire hydrogen value chain. In addition Uniper is working with its

partners on a project to ascertain whether it would be feasible to build a direct reduction plant with upstream hydrogen electrolysis on the site of the existing power plant in Wilhelmshaven, as well as the required infrastructure for supplying raw materials. The aim is to produce around 2 million metric tons of "green" crude iron using hydrogen generated via wind power. Uniper is working with Salzgitter and Rhenus Logistics, the city of Wilhelmshaven and the state of Lower Saxony on this project.

Dr. Axel Wietfeld, CEO Uniper Hydrogen: "One sector in which hydrogen can play a crucial role in reducing CO₂ emissions is steel production. Currently, each metric ton of crude steel produced releases approximately one metric ton of CO₂ emissions. Hydrogen is the only realistic option for decarbonizing this industry."

Originally, Uniper explored the idea of constructing a floating import terminal for liquefied natural gas (LNG) at the Wilhelmshaven site. In October 2020, a market test to show binding interest proved that there is currently not enough interest in the LNG sector in terms of booking large, long-term capacities for LNG regasification in Germany.

About Uniper

Uniper is an international energy company with around 12,000 employees in more than 40 countries. The company plans to make its power generation CO₂-neutral in Europe by 2035. With about 35 GW of installed generation capacity, Uniper is among the largest global power generators. Its main activities include power generation in Europe and Russia as well as global energy trading, including a diversified gas portfolio that makes Uniper one of Europe's leading gas companies. In 2020, Uniper had a gas turnover of more than 220 bcm. Uniper is also a reliable partner for municipalities, public utilities, and industrial companies for developing and implementing innovative, CO₂-reducing solutions on their way to decarbonizing their activities. As a pioneer in the field of hydrogen, Uniper is active worldwide along the entire value chain and is implementing projects to make hydrogen usable as a mainstay of energy supply.

The company is headquartered in Düsseldorf and currently the third-largest listed German utility. Together with its main shareholder Fortum, Uniper is also the third-largest producer of CO₂-free energy in Europe.

India pledges to speed up building hydrogen infrastructure in push towards clean fuels

15 Apr 2021 | 09:55 UTC Singapore

Author Sambit Mohanty

HIGHLIGHTS

Hydrogen to play a key role in a wide range of sectors, applications

Blending hydrogen with CNG for use as transport fuel

Efforts underway to leverage gas pipeline network to transport hydrogen

Singapore — India aims to accelerate setting up hydrogen supply chain infrastructure as the government strongly believes that the carbon-free fuel can play a key role in meeting the energy demand in a wide range of sectors in coming years, petroleum and steel minister Dharmendra Pradhan said April 15.

Speaking at the inaugural session of the conference held virtually and titled "Hydrogen Economy: New Delhi Dialogue - 2021," Pradhan said that India would not only be pushing hydrogen in the transport sector, but would also expand its use to a range of sectors such as chemicals, iron and steel, heating and power.

"My ministry is committed to augmenting the hydrogen supply chain infrastructure in the country. Presently, as in the case of other countries, our petroleum sector is the largest producer of hydrogen for various refinery process operations. Hence, we realize the petroleum sector's capability to produce hydrogen molecules, stored and traded as gas, making it a natural votary of this new energy form," Pradhan said.

India in this year's federal budget also unveiled a national hydrogen mission to accelerate plans to generate the carbon-free fuel from renewables, a strong sign the country that imports 80% of its crude oil requirements is keen to speed up the process of embracing hydrogen as a fuel source.

Landscape changing fast

"The contours of India's energy transition are changing fast. Surely, hydrogen has great potential to emerge as a future source of energy," Pradhan said.

He said efforts were underway to devise ways to harness it in a reliable, cost-effective and safe manner. Efforts were also underway to leverage the vast pipeline infrastructure for compressed natural gas to reduce the transportation cost of hydrogen.

"By establishing synergies with natural gas, hydrogen can be easily adopted in the energy mix without seeking major infrastructural overhauling. We are looking forward to introducing H-CNG as an intermittent technology in a big way for both automotive and domestic cooking applications," Pradhan said.

State-run Indian Oil Corp. is working on a technology to develop hydrogen-spiked CNG, or H-CNG, which would involve partly reforming methane and CNG.

Under this process, the entire CNG of a pump station passes through a new reforming unit and part of the methane gets converted into hydrogen, with the outlet product having 17%-18% hydrogen.

IOC has set up a unit at a bus station in the Indian capital and there are plans to expand to other cities in the future.

"We are blending hydrogen with CNG for use as transportation fuel as well as an industrial input to refineries. Fifty buses in Delhi are plying on hydrogen blended with compressed natural gas on a pilot basis. We plan to scale it up in the coming months across the major cities of India," Pradhan said.

The renewables footprint

India remains committed to environmental and climate causes with a massive thrust on deployment of renewable energy, Pradhan said. In the past six years, India has increased its renewable power portfolio from 32 GW to almost 100 GW, and the country was on track to achieve its target of 450 GW of renewable energy generating capacity by 2030, he added.

"Inclusion of hydrogen as an energy carrier in the future energy portfolio presents a unique opportunity to address emerging energy vectors, including power to gas, power to power, power to mobility, and even vehicle to grid applications," Pradhan said.

"India, with its steadfast efforts towards leading the energy transition, backed by robust political will, is committed to engage with partners for ushering-in the hydrogen economy," he added.

Shreerupa Mitra, executive director of The Energy Forum, told the conference in her welcome address that hydrogen as an energy carrier was again finding itself at the center of political and business parleys and had garnered unprecedented levels of attention in 2020.

"Although over the past two decades hydrogen has had some false starts, its potential utility in the decarbonization toolkit is consequential to achieve a net-zero future," she said.

CHAIR'S MESSAGE



This publication describes Shell's energy transition strategy as we work to become a net-zero emissions energy business by 2050, in step with society's progress towards the goal of the UN Paris Agreement on climate change.

It aims to help investors and wider society gain a better understanding of how Shell is addressing the risks and opportunities of the energy transition. It shows how we will navigate the transition profitably and in line with our purpose – to power progress together with more and cleaner energy solutions.

We have prepared this Energy Transition Strategy publication for submission to a shareholder advisory vote at the Annual General Meeting of Royal Dutch Shell, on May 18, 2021. It follows detailed conversations with shareholders and describes Shell's energy transition strategy, including our emissions targets.

Your Directors recognise their responsibility to set the company's strategy. This is unchanged. We consider this publication, and the strategy it summarises, to be aligned with the more ambitious goal of the Paris Agreement, to limit the increase in the average global temperature to 1.5 degrees Celsius above pre-industrial levels.

Shell is the first energy company to submit its energy transition strategy to shareholders for an advisory vote. We will publish an update every three years until 2050. Every year, starting in 2022, we will also seek an advisory vote on our progress towards our plans and targets.

The vote is purely advisory and will not be binding on shareholders. We are not asking shareholders to take responsibility for formally approving or objecting to Shell's energy transition strategy. That legal responsibility lies with the Board and Executive Committee.

While the energy transition brings risks to the company, it also brings opportunities for us to prosper and to build on our positive contribution to society. Our strategy, as outlined in this report, is designed to minimise those risks while enhancing our ability to profitably lead as the world transitions to an energy system that is aligned with the goal of the Paris Agreement.

It is important for shareholders to have a clear understanding of the company's strategy as we work together to meet the goal of Paris. The Board and management also believe it is important for all shareholders to have a vehicle to express their views on whether our strategy is reasonable in the current environment. This advisory vote is designed to be that vehicle. It does not shield or abdicate the Board's or management's legal obligations under the UK Companies Act.

The support of our shareholders is critical for us to achieve our target to become a net-zero emissions energy business by 2050, in step with society. We hope to gain your support for the approach described in this publication. In addition to your vote, we invite your continued feedback ahead of the publication of our next Energy Transition Strategy which will be presented to shareholders before the Annual General Meeting in 2024.

The Board recommends that you vote in favour of resolution 20, in support of the energy transition strategy described in this publication.

CHAD HOLLIDAY
Chair

CHIEF EXECUTIVE OFFICER'S INTRODUCTION



Tackling climate change is the biggest challenge the world faces today. Our Powering Progress strategy, which we launched in February 2021, sets out how Shell can and must play a leading role in helping society to meet that challenge.

As we transform our business, it is more important than ever for our shareholders to understand and support our approach. That is why we are publishing details of our energy transition strategy and, for the first time, submitting it to shareholders for an advisory vote at our Annual General Meeting this year.

Our target to become a net-zero emissions energy business by 2050, in step with society's progress towards the goal of the Paris Agreement on climate change, is at the heart of our energy transition strategy. That means continuing to reduce our total absolute emissions to net zero by 2050.

We have set our net-zero target, and our short- and medium-term carbon intensity targets, so that they are fully consistent with the more ambitious goal of the Paris Agreement: to limit the increase in the average global temperature to 1.5°C above pre-industrial levels. And our targets cover the full range of our emissions, Scopes 1, 2 and 3 of all the energy we sell, not just the energy we produce.

We are asking our shareholders to vote for an energy transition strategy that is designed to bring our energy products, our services, and our investments in line with the temperature goal of the Paris Agreement and the global drive to combat climate change. It is a strategy that we believe creates value for our shareholders, our customers and wider society.

WORKING WITH OUR CUSTOMERS

Most of our emissions come from the use of our fuels and the other energy products we sell. So it makes sense to place our customers at the centre of our energy transition strategy. It is where we can make the biggest difference. We will work with our customers to change and grow demand for low-carbon energy products and services, sector by sector, using the strength of our business relationships, knowledge and expertise.

We will increasingly offer low-carbon products and solutions, such as biofuels, charging for electric vehicles, hydrogen and renewable power, as well as carbon capture and storage and nature-based offsets. In this way, we expect to build low-carbon businesses of significant scale over the coming decade. In addition, we will drive down emissions from our own operations as we continue to provide the oil and gas products our customers need today, while at the same time helping them move to a low- and zero-carbon future.

To be clear, the best way for Shell to contribute to the energy transition is to work with our customers to help shape demand for low-carbon energy products and services. In turn, the increasing need to supply low-carbon energy products and services will accelerate Shell's transition to net zero. Ending our activities in oil and gas too early when they are vital to meeting today's energy demand would not help our customers, or our shareholders.

SEEKING SHAREHOLDER SUPPORT

The decision to seek an advisory vote on our energy transition strategy follows our continuing engagement with shareholders, including with Climate Action 100+, which represents investors with assets of around \$54 trillion. This vote does not replace the responsibilities of our Directors in setting the company's strategy. We have based the structure of this publication around the net-zero disclosure standard developed by Climate Action 100+ for the oil and gas industry.

In the following pages we set out our short-, medium- and long-term targets, our decarbonisation strategy and how we intend to allocate capital across our three business pillars of Growth, Transition and Upstream in the years ahead. We also explain our approach to climate-related policy and advocacy, an important part of how we are working with governments and others to accelerate the transition to low- and zero-carbon energy.

As the world continues to grapple with the impact of COVID-19, companies also play an important role in powering lives. In this publication, we describe how we will support livelihoods and communities as we transform our business.

We also outline our strong governance and a commitment to transparency. As we continue to implement the recommendations of the Task Force on Climate-related Financial Disclosures, we show how we are managing the risks and opportunities of climate change.

I would like to thank the investor groups we have worked with as we have developed our energy transition strategy, including the Institutional Investors Group on Climate Change (IIGCC) and Climate Action 100+. We must continue our dialogue with investors as Shell continues to evolve. We will be transparent so that investors can continue to assess our climate strategy and compare our progress to that of other companies.

This is a critical time in the world's efforts to tackle climate change. It is also a time of tremendous opportunity for Shell. By transforming our business in line with our energy transition strategy, we will contribute to achieving a net-zero emissions energy system, help society reach its climate goals and create a compelling investment case for our shareholders, today and in the future. We ask our shareholders to vote for resolution 20 and support the execution of our energy transition strategy.

BEN VAN BEURDEN

CEO

SHELL'S PATH TO NET-ZERO EMISSIONS

This is the first time that Shell has offered investors an advisory vote on our energy transition strategy. This vote represents the next step in our continuing dialogue with our investors. It is also one of many firsts on our path to becoming a net-zero emissions energy business.

2021

- Launched Powering Progress strategy to accelerate the transition of our business to net-zero emissions, including targets to reduce the carbon intensity of energy products we sell: by 6-8% by 2023, 20% by 2030, 45% by 2035 and 100% by 2050.
- Published the 2021 Industry Associations Climate Review, extending our coverage to 36 industry associations.
- Offered advisory vote on Shell's energy transition strategy.
- Increasing the weighting of the Energy Transition performance metric in the Long-term Incentive Plan (LTIP) from 10% to 20%.
- Introduced an absolute greenhouse gas (GHG) abatement target to the annual bonus scorecard, and the total weighting of measures connected to GHG emissions is increasing from 10% to 15%.

2020

- Announced target to become a net-zero emissions energy business by 2050, in step with society's progress as it works towards the Paris Agreement goal of limiting the increase in the average global temperature to 1.5°C.
- Published the Industry Associations Climate Review Update, including Shell's updated climate-related policy positions and our payments to key industry associations.
- Energy Transition performance metric extended to around 16,500 employees through the performance share plan (PSP).

2019

- Published the first Industry Associations Climate Review, which reviewed the alignment between our climate-related policy positions and those of 19 key industry associations of which we are a member.
- Announced a programme to invest in natural ecosystems as part of our strategy to act on global climate change, including addressing carbon dioxide (CO₂) emissions generated by customers when using our products. This programme contributes to Shell's three-year target, beginning in 2019, to reduce our Net Carbon Footprint by 2-3% by 2021.
- Introduced the Energy Transition performance metric into the LTIP. The LTIP includes short-term targets linked to our Net Carbon Footprint target, as well as a number of other strategic business transformation targets that measure progress towards achieving our longer-term ambitions. We were the first major energy company to connect executive pay to the energy transition in this way.

2018

- Published the Shell Energy Transition Report, describing how we manage climate-related risks and opportunities, as part of our response to the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).
- Promoted the implementation of the TCFD recommendations and worked with the Oil and Gas Preparers Forum and the World Business Council for Sustainable Development (WBCSD) to strengthen our sector's response to these recommendations.
- Signed a joint statement with leading institutional investors on behalf of Climate Action 100+ announcing steps that Shell had decided to take to demonstrate alignment with the goals of the Paris Agreement on climate change [A].

2017

- Announced ambition to reduce the carbon intensity of the energy products we sell by around half by 2050 and by around 20% by 2035, measured by our Net Carbon Footprint, including the full life-cycle emissions from the use of our energy products by customers.
- Initiated the Methane Guiding Principles coalition, announcing a methane emissions intensity target.
- Introduced GHG intensity measures to our annual bonus scorecard.

[A] <https://www.shell.com/media/news-and-media-releases/2018/joint-statement-between-institutional-investors-on-behalf-of-climate-action-and-shell.html>

OUR ENERGY TRANSITION STRATEGY

OUR GOAL to become a **NET-ZERO ENERGY BUSINESS BY 2050**

Aligned with Paris

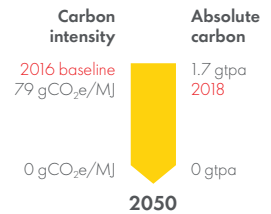
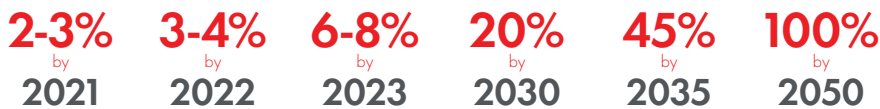


In step with society

OUR CARBON TARGETS for **ALL ENERGY WE SELL, SCOPES 1, 2 & 3**

REDUCING NET CARBON INTENSITY gCO_2e/MJ

2016 baseline



REDUCING ABSOLUTE CARBON EMISSIONS: FROM 1.7 GTPA TO NET ZERO BY 2050

We believe total carbon emissions from energy sold peaked in 2018 at around 1.7 gigatonnes CO_2e per annum (gtpa) and will be brought down to net zero by 2050

WORKING WITH OUR CUSTOMERS ACROSS SECTORS



TO ACCELERATE THE TRANSITION TO NET-ZERO EMISSIONS

OUR ACTIONS

AVOID

By providing, investing in and scaling up low-carbon energy solutions for our customers

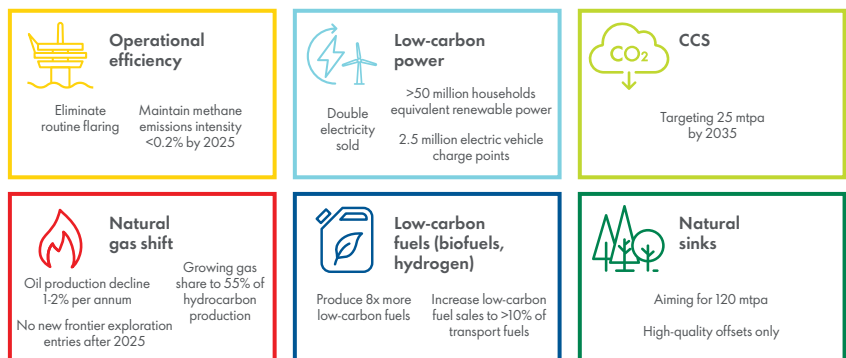
REDUCE

By limiting emissions as much as possible today

MITIGATE

By capturing and offsetting any residual emissions

OUR 2030 MILESTONES



BECOMING NET ZERO BY 2050

Tackling climate change is an urgent challenge. It requires a fundamental transformation of the global economy, and the energy system, so that society stops adding to the total amount of greenhouse gases in the atmosphere, achieving what is known as net-zero emissions.

That is why Shell has set a target to become a net-zero emissions energy business by 2050, in step with society's progress in achieving the goal of the Paris Agreement on climate change. We believe our target supports the more ambitious goal of the Paris Agreement: to limit the increase in the average global temperature to 1.5°C above pre-industrial levels.

It is aligned with the findings of the Intergovernmental Panel on Climate Change (IPCC) which concluded that the world must reach net-zero carbon emissions by around 2050 to limit global warming to 1.5°C and avoid the worst effects of climate change.

Becoming a net-zero emissions energy business means that we are reducing emissions from our operations, and from the fuels and other energy products such as electricity that we sell to our customers. It also means capturing and storing any remaining emissions using technology or balancing them with offsets.

COLLABORATION

Increasing numbers of countries and companies have announced targets to achieve net-zero emissions by the middle of the century, and we are starting to see some changes in the demand and supply of energy.

Achieving the 1.5°C goal will be challenging but it is technically possible. The extent of global collaboration required will be unprecedented. The pace of change will also be different around the world. The wealthier, more developed countries and regions must move faster. If they do not, then those countries and regions that cannot move so quickly will not have the time they need. The European Union (EU), for example, must achieve net-zero emissions by no later than 2050 if the world is to succeed in limiting global warming to 1.5°C.

Shell has built a scenario looking at what the EU might need to do to decarbonise which gives some insight into the scale of the significant challenge involved. The scenario identified nine areas for action.

THE SCALE OF THE CHALLENGE

As an illustration, achieving net-zero emissions in the EU in the next 30 years could mean:

Accelerating clean technologies

- Double the generation of electricity, triple its share of final energy
- Shift the electricity mix to 75% renewables, no coal
- Target 10% hydrogen in final energy, including as a fuel for heating, industry and heavy transport
- Triple the use of biofuels, with a shift to advanced forms

Targeting behavioural incentives

- Invest in infrastructure to improve energy efficiency per unit of GDP by almost 45%
- Incentivise green consumer and business choices in support of the green economy
- Progressively raise the government-led carbon price in the EU to more than €200/tonne of CO₂ equivalent in 2050

Removing emissions

- Build at least two major carbon capture and utilisation facilities every month (more than 1 million tonnes each)
- Reforest at least 220,000 square kilometres in the EU (about half the area of Spain) to remove the remaining 300 million tonnes of CO₂ in 2050

Source: Shell Scenarios Sketch: A climate-neutral EU by 2050



Achieving the goal of the Paris Agreement will require simultaneous growth in supply and demand for low-carbon energy. Crucially, it will also require significant changes to the way our customers use energy, whether they are motorists, households or businesses.

All parts of society including energy producers, consumers and policymakers will need to take action. That is why our strategy is based on working with our customers and others to accelerate the transition of the energy system. This includes supporting government policies that will help the world achieve net-zero emissions by 2050.

We will build on our strengths, our global scale and deep knowledge of energy markets to help grow demand for low-carbon energy. In this way, we will continue to build a strong business while playing an important role in the transition to low-carbon energy.

NET ZERO FROM OUR OPERATIONS AND PRODUCTS

Our net-zero target includes emissions from our operations, our Scope 1 and 2 emissions, and the life-cycle emissions, including from the end use, from all the energy products we sell, our Scope 3 emissions.

We will reduce emissions from our own operations, including the production of oil and gas, by increasing energy efficiency and capturing or offsetting any remaining emissions.

More than 90% of our emissions come from the use of the fuels and other energy products we sell, so we must also work with our customers to reduce their emissions when that energy is used [B]. That means offering them the low-carbon products and services they need such as renewable electricity, biofuels, hydrogen, carbon capture and storage and nature-based offsets.

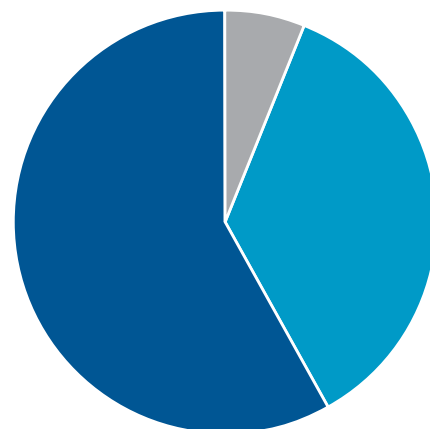
Importantly, our target includes emissions not only from the energy we produce and process ourselves, including oil and gas, but also from all the energy products that other companies produce and we sell [C]. This is significant because we sell more than three times the energy we produce ourselves.

In summary, our targets include all emissions from the energy we sell, and the majority of the emissions we include in our targets are not related to our own oil and gas production.

[B] This includes emissions from the use of energy produced and sold by Shell as well as full life-cycle emissions from energy produced by others and sold by Shell. Combined, these are reported under relevant categories of Scope 3 emissions (<https://reports.shell.com/annual-report/2020/>).

[C] Sales from retail stations that use the Shell brand but are not operated or supplied by Shell are excluded.

WE ADDRESS THE EMISSIONS FROM ALL THE ENERGY WE SELL



■ Scope 1 & 2 =
Our operational
emissions

■ Scope 3 =
Emissions from use of
energy sold by Shell
(own production)

■ Scope 3 =
Full life-cycle
emissions from
energy sold by Shell
(produced by others)

OUR TARGETS: SHORT, MEDIUM AND LONG TERM

We believe our total absolute emissions peaked in 2018 at 1.7 gigatonnes and our climate target means we will have to bring that down to absolute net-zero emissions by 2050.

As we work to achieve that target, and to measure our progress over the next three decades, we have set short-, medium- and long-term targets to reduce the carbon intensity [D] of the energy products we sell. Carbon intensity is the total amount of greenhouse gas emissions associated with each unit of energy that we sell, and that is used by our customers.

We use carbon intensity targets to measure our progress because we think they are the clearest way to demonstrate changes to our mix of energy products over time, as we add and then shift to low-carbon energy products and services.

We have set specific carbon intensity reduction targets for the following years. These targets are compared with 2016 and linked to the remuneration of around 16,500 Shell employees:

2-3% by 2021

3-4% by 2022

6-8% by 2023

We also have medium- and long-term carbon intensity targets, in step with society:

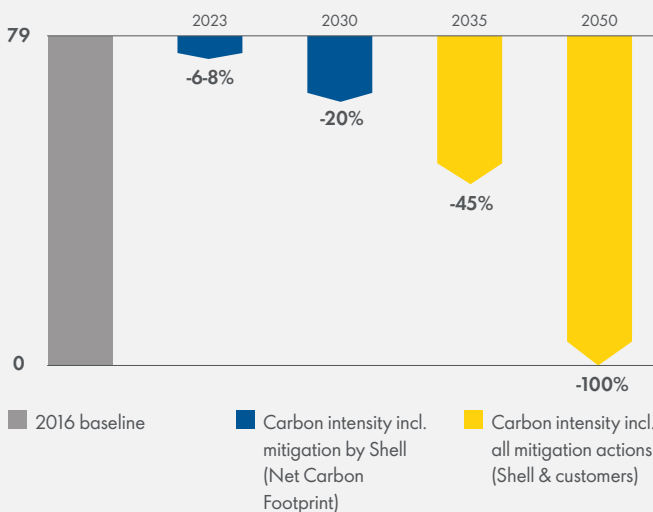
20% by 2030

45% by 2035*

100% by 2050*

REDUCING THE CARBON INTENSITY OF ALL ENERGY SOLD

gCO₂e/MJ



We measure our carbon intensity with our Net Carbon Footprint methodology [E] which calculates the carbon intensity of the portfolio of energy products sold by Shell expressed as grams of CO₂ equivalent (gCO₂e) per megajoule (MJ) of energy delivered to, and consumed by, our customers.

* These targets include mitigation actions by our customers such as carbon capture and storage and nature-based offsets.

[D] Carbon intensity as used in this report refers to net carbon intensity, which includes offsets and is measured by our Net Carbon Footprint methodology.

[E] <https://www.shell.com/ncfmethodology>

Petrochemicals and other products such as lubricants are not included in our short- and medium-term targets because they are not burnt and do not produce Scope 3 emissions. Their production and processing produce emissions, and we include these within our target to achieve net-zero emissions (Scope 1 and 2) from our operations by 2050.

ALIGNING OUR TARGETS WITH PARIS

Shell's target is to become a net-zero emissions energy business by 2050, in step with society. We also have short-, medium- and long-term targets to reduce our carbon intensity, measured by our Net Carbon Footprint methodology. We believe these targets are aligned with the 1.5°C scenarios used in the IPCC Special Report on Global Warming of 1.5°C (SR 1.5), most of which show the global energy system reaching net zero between 2040 and 2060.

There is no established standard for aligning an energy supplier's decarbonisation targets with the temperature limit goal of the Paris Agreement. In the absence of a broadly accepted standard, we developed our own approach to demonstrate Paris alignment by setting carbon intensity targets using a pathway derived from the IPCC scenarios aligned with the Paris goal.

We determined our targets using scenarios taken from a database developed for the IPCC SR 1.5 [F]. We filtered out certain outlying IPCC scenarios to ensure that Shell's targets are aligned with earlier action, and low-overshoot scenarios. Overshoot refers to the extent to which a scenario exceeds an emissions budget and subsequently relies on sinks to compensate for the excess emissions.

We then take the following steps:

1. The total energy in each of the scenarios is calculated at the point of delivered energy (energy that is processed by refining or liquefaction, for example, but before it is used for electricity generation) using a fossil fuel equivalence approach for electricity. This more accurately reflects the energy delivered by an energy supplier like Shell to the market.
2. The total net emissions of each scenario are calculated taking into account emissions stored using carbon capture and storage and offset using natural sinks.
3. The carbon intensity for each scenario is calculated by dividing the net emissions by the total delivered energy. The range of carbon intensities of the scenarios allows for the construction of a benchmark range after removing any outliers.

By using the benchmark range produced by this approach to set our targets, we aligned them with the necessary reduction in carbon intensity shown in the 1.5°C scenarios. This is illustrated in the graphic on the right that demonstrates how Shell's targets are positioned within the range of 1.5°C pathways. The upper and lower lines represent the upper and lower boundaries of the benchmark range derived from the IPCC scenarios.

Until 2035, our calculation of the total net emissions of each scenario includes only the expected mitigation actions by Shell such as carbon capture and storage and offsetting using natural sinks, including any use of offsets included in the carbon-neutral energy products we offer our customers. After that date, we also include mitigation actions taken separately by our customers.

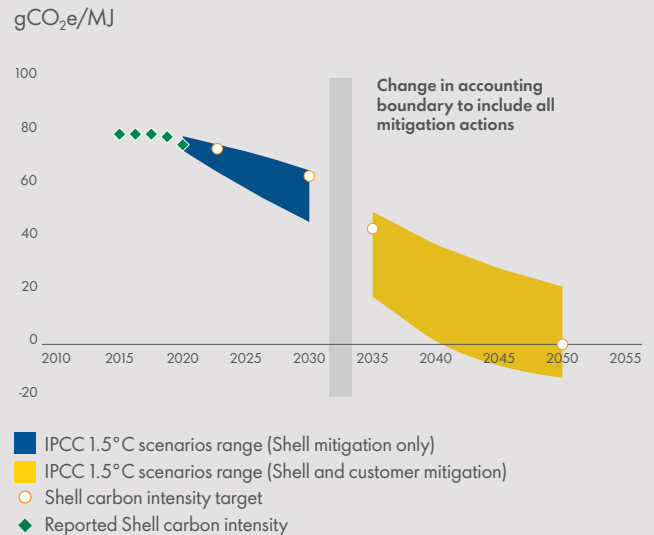
Today, we do not include any mitigation steps taken separately by our customers. That is because the accounting standards to include those actions do not exist. Under existing protocols, energy suppliers report the Scope 3 emissions from the use of their products, which are equivalent to the Scope 1 emissions reported by the users of those products.

However, when users of energy mitigate their Scope 1 emissions by use of carbon capture and storage or offsets, there is no accounting protocol for reflecting the corresponding reduction in the Scope 3 emissions reporting by the energy supplier.

To account for reductions in emissions across full energy value chains it is necessary to build on the existing greenhouse gas reporting and accounting protocols to include mitigation actions by both energy suppliers and users. Shell is in discussions with standard-setting bodies such as Greenhouse Gas Protocol, the World Resources Institute and CDP to develop the accounting protocols and frameworks to include mitigation actions by energy suppliers and energy users.

Reporting and accounting for mitigations in this way will also need new systems for the exchange of data between suppliers and users of energy. We expect these developments will take three to five years. Our carbon intensity targets for 2035 and 2050 reflect this expected change in accounting approach.

SHELL'S CARBON INTENSITY TARGETS



[F] These scenarios do not include Shell's Sky 1.5 scenario.

OUR APPROACH

We have set our targets to be in line with climate science and in step with society's progress as it works towards the Paris Agreement goal of limiting the increase in the average global temperature to 1.5°C.

This progress will depend on whether governments and businesses, including Shell, provide the right conditions and incentives for low- and zero-carbon choices, and on whether consumers embrace these changes.

We must work towards our long-term target of net-zero emissions immediately. That is why we have set a series of short-term targets that are reflected in the remuneration of 16,500 employees. These short-term targets are not conditional on whether society progresses towards the goal of net-zero emissions; and while extremely challenging, they are aligned with our current operating plans.

If we moved too far ahead of society, it is likely that we would be making products that our customers are unable or unwilling to buy. That is why we wish to work together with customers, governments and across sectors to accelerate the transition to net-zero emissions. Shell cannot get to net zero without society also being net zero.

For example, if we invested in producing sustainable aviation fuel, and made it available on commercial terms at all the airports Shell serves today, the investment would not significantly lower our or society's carbon emissions. Most aircraft are not yet certified to fly on 100% sustainable aviation fuel and the cost of the fuel is considerably more than traditional jet fuel, making it an uncompetitive choice for the airlines.

Our strategy instead is to work with partners – including aircraft manufacturers, airlines, airports, major airline users and governments – to stimulate and accelerate demand for sustainable aviation fuel. As demand grows, we will increase our investments.

WORKING TO MEET OUR TARGETS

The transport sector is a good illustration of how the energy transition is likely to unfold. As in other sectors, the reductions in carbon intensity will be slow at first, reflecting the challenge of switching today's forms of transport to new technologies. The IPCC Special Report shows that the energy intensity of fuels in the transport sector has fallen only slightly in the past 10 years, through the blending of biofuels with traditional fuels, the increased use of liquefied natural gas as a transport fuel, and the growth in electric vehicles. But as the cost of low-carbon vehicles comes down, for example, they will replace vehicles powered by internal combustion engines. The IPCC scenarios show the tipping point to be somewhere between now and 2030, leading to net-zero transport after 2050.

Shell will reduce the carbon intensity of our energy products by working with our customers, sector by sector, to help them navigate the energy transition. As we do so, we intend to build even deeper relationships with our customers and meet more of their energy needs. We will start by adding more low-carbon products, such as biofuels and electricity, to the mix of energy products we sell. Eventually, low-carbon products will replace the higher carbon products that we sell today. This transformation of our business will require a fundamental change to energy-related infrastructure and assets across economies (see box Structural change on page 14).

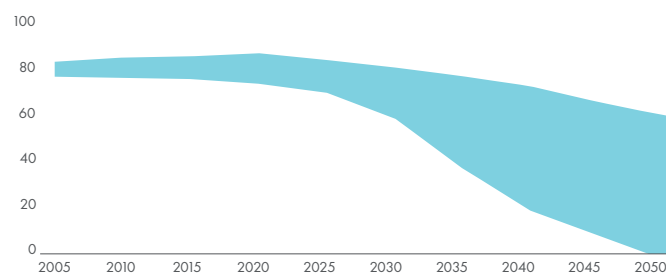


We are working with partners – including aircraft manufacturers, airlines, airports, major airline users and governments – to stimulate and accelerate demand for sustainable aviation fuel. As demand grows, we will increase our investments.

For example, in the road freight sector, we are working with transport companies, truck manufacturers and policymakers to identify pathways to decarbonisation. In the near term, we will continue to increase production of low-carbon biofuels. And we will offer biogas and LNG for trucks to customers in Europe, China and the USA. In the longer term, we intend to increase our sales of hydrogen for transport. We are also part of the H2Accelerate consortium, which looks at ways to create infrastructure for generating and supplying clean hydrogen to hydrogen trucks as they become available across Europe.

CARBON INTENSITY RANGE FOR THE TRANSPORT SECTOR IN THE IPCC 1.5°C SCENARIOS

gCO₂e/MJ



■ Transport intensity range based on IPCC scenarios

Method: Shell methodology
Source data: IPCC 1.5°C scenarios

OUR PLANS

Shell's operating plans, outlooks and budgets are forecasted for a 10-year period and are updated every year. They reflect the current economic environment and how we can reasonably expect our business to develop over the next 10 years. Our short-term targets are aligned with our current operating plans.

However, our operating plans do not yet reflect our long-term 2050 net-zero emissions target, as it is not feasible to make a 30-year detailed operating plan. In the future, as society moves towards net-zero emissions, we expect Shell's operating plans, outlooks, budgets and pricing assumptions to reflect this movement and continue to be in step with society. This movement will also be reflected over time in our energy transition strategy that we are offering for an advisory vote.

OUR SHORT-TERM PERFORMANCE

Shell's carbon intensity in 2020 was 75 gCO₂e/MJ, a 4% reduction from the previous year and a 5% reduction from the 2016 reference year. In 2020, one of the major causes of this reduction was lower demand for energy. Demand for oil products experienced the most significant reduction, followed by natural gas and LNG. Another important factor contributing to the reduction of our carbon intensity was the increase in our power sales in absolute terms as well as in their share of the energy mix sold by Shell. The power we sold also had a lower average emissions intensity than in previous years, which further contributed to the overall reduction.

OUR DECARBONISATION STRATEGY

As a leading energy company, we serve the transport, industry, built environment and power generation sectors. Each has different needs. Some sectors are global while others are highly centralised and local. Some have assets that are designed to last more than 50 years, others less than 10 years. Our deep understanding of these sectors and our customers, and of the opportunities and challenges they face, will help us transform demand for our products.

Transforming energy demand is the focus of our decarbonisation strategy. To transform demand, we will work sector by sector across the energy system. We will change the mix of energy products we sell to our customers as their needs for energy change.

This is where we can make the greatest contribution to the energy transition, by increasing sales of low-carbon energy products and services. Today, we sell around 4.6% of final energy consumed in the world and produce around 1.4% of total primary energy. Our share of energy production may decline over the coming decades, but we intend to grow our share of low-carbon energy sales.

We are restructuring our company so that we can better identify opportunities and the role that we can play in each sector to help transform demand. We are moving from an approach focused on types of products to one where our customer and account management is focused on sectors.

We are introducing sector-based businesses accountable for driving the decarbonisation of the sectors they cover such as aviation, commercial road transport, passenger transport, shipping, technology and industry. We will build on our existing relationships across each sector, with consumers, infrastructure owners, other suppliers and policymakers to help to accelerate change.

TRANSFORMATION OF THE ENERGY SYSTEM

The transformation of the energy system to net-zero emissions will require simultaneous action in three areas – an unprecedented improvement in the efficiency with which energy is used, a sharp reduction in the carbon intensity of the energy mix and the mitigation of residual emissions using technology and natural sinks. While it is difficult to predict the exact combination of actions that will deliver the net-zero goal, scenarios help us to understand the direction and pace of the transition needed.

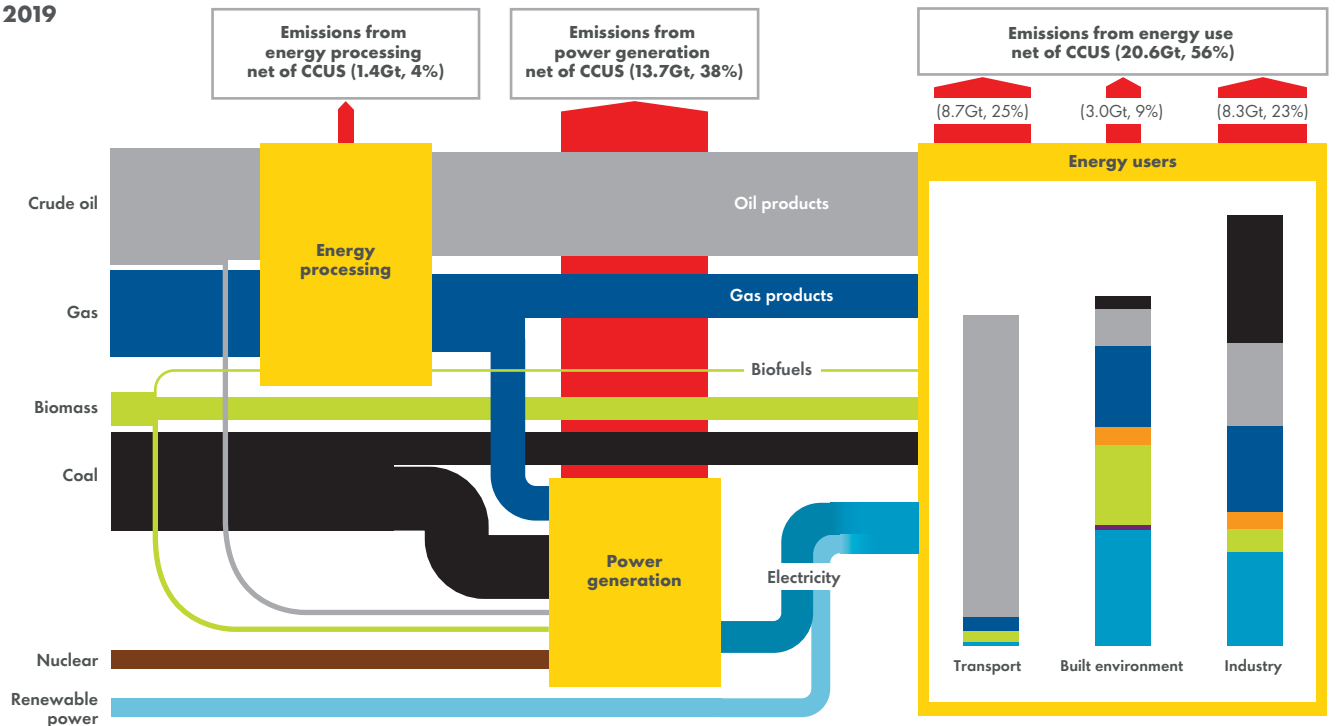
The diagrams on the next page use data from the International Energy Agency's Sustainable Development Scenario (IEA ETP 2020). They show how the energy mix and carbon dioxide emissions could change between 2019 and 2050.

A fundamental shift is needed in the way energy is used and produced. For example, it will require a deep electrification of most energy end-uses and decarbonisation of that electricity. By 2050, most of the residual emissions come from energy use, while in comparison energy supply is far more decarbonised. Low- and zero-carbon energy, including hydrogen and biofuels as well as CCUS, will be needed to mitigate most emissions in hard-to-abate sectors, such as parts of transport and industry.

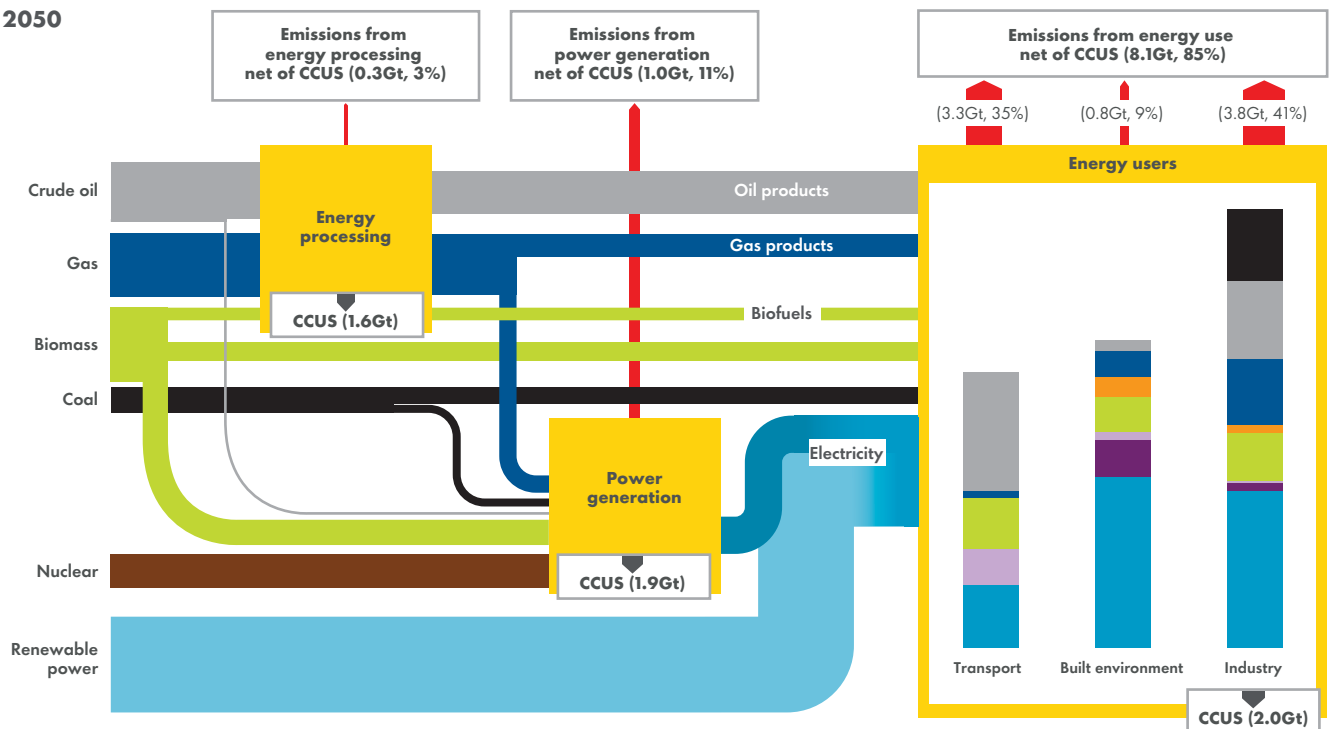
While the Sustainable Development Scenario is a well-below 2°C scenario reaching net-zero emissions by 2070, it helps to show the scale of the transformation of the energy system needed. The IEA's Faster Innovation Case, which builds on the Sustainable Development Scenario, demonstrates how the transformation can be accelerated to achieve net-zero emissions by 2050. For example, compared to the Sustainable Development Scenario, it would need a 55% increase in hydrogen use, 25% more energy from electricity and 20% more bio-energy use. The use of CCUS will also need to be 50% higher, reaching 8 gigatonnes a year by 2050.

GLOBAL ENERGY EMISSIONS: 2019-2050

2019



2050



Note: Flows in the diagrams are representative and are not to scale, with percentages totals rounded. Data shown are taken from the IEA ETP 2020 Sustainable Development Scenario

Key: Energy users



STRUCTURAL CHANGE

As well as changes to the supply of energy products, decarbonising the energy system requires structural change in the end use of energy as well. It requires energy users to improve, update or replace equipment so that they can use carbon-based energy more efficiently, or switch to low- and zero-carbon energy. For example, in the transport sector, decarbonisation includes replacing internal combustion engine vehicles with electric and hydrogen vehicles.

In industry, replacing oil- and coal-fired furnaces with electrical furnaces would be one solution, carbon capture and storage is another. And in buildings, replacing gas heating systems with electric heating systems would also contribute to decarbonisation.

Such structural changes will help to trigger transitions along the supply chain of individual sectors and across sectors, including the production of energy and emissions over time. The International Energy Agency suggests that these changes in the end use of energy will require substantial investment. Of the more than \$1.5 trillion extra annual spending on energy-sector investment which is required under the IEA's Paris-aligned Sustainable Development Scenario, 55% will need to be spent on end use or what is more commonly known as demand-side investment.

RENEWABLE POWER

Our sector-based business model reinforces the place of customers at the heart of our strategy. It allows us to work together to identify opportunities for immediate carbon reductions, including low-carbon fuels, as well as for longer-term solutions that will help customers get to net zero. For example, in the Netherlands we have entered into an agreement to provide renewable power to Amazon from an offshore wind farm being constructed off the coast of the Netherlands, enabling Amazon to power more of its business with clean energy.

The guaranteed demand from Amazon helps us to invest further in the production of green hydrogen and CCS through the creation of a green energy hub in the port of Rotterdam. Shell aims to produce green hydrogen there using electricity generated by wind power, hydrogen that will be used at the Shell refinery in Pernis to decarbonise the production of fuels.

Through its air cargo fleet, Amazon also has a growing interest in aviation. Shell has one of the world's most extensive aircraft refuelling networks. We have agreed to supply Amazon with up to six million gallons of blended sustainable aviation fuel for its cargo aircraft. This biofuel, produced by the company World Energy using agricultural waste fats and oils, has lower life-cycle carbon emissions than conventional jet fuel. In December 2020, Shell and Amazon also announced minority investments in ZeroAvia, a company in the USA with ambitions to decarbonise aviation with hydrogen-powered planes.

OUR PARTNERSHIPS WITH OTHER COMPANIES

STRATEGIC ALLIANCE WITH MICROSOFT

We have formed a strategic alliance with Microsoft which includes us working together on digital technologies that help Shell and our customers manage and reduce our carbon footprints. Shell is also supplying Microsoft with low-carbon energy products and services, including renewable energy.

ROLLS-ROYCE

Rolls-Royce and Shell have collaborated for more than 100 years, pioneering technology, fuels and infrastructure that have shaped commercial aviation. Today, Shell and Rolls-Royce are working together to test Rolls-Royce engines to show they can run on 100% sustainable aviation fuel.

CLEAN SKIES FOR TOMORROW

In the aviation sector, Shell is a founding partner of the Clean Skies for Tomorrow Coalition, an initiative with the Mission Possible Platform. This platform was launched by the World Economic Forum and the Energy Transitions Commission to achieve net-zero carbon emissions by the middle of the century from a group of traditionally hard-to-abate industry sectors.

The Clean Skies for Tomorrow Coalition consists of airlines, airports, fuel providers and engine manufacturers. It is working to reduce emissions from the aviation sector by making sustainable aviation fuel more widely used and available. The Clean Skies for Tomorrow Coalition has jointly developed and published policy proposals which it has put to the European Union to promote debate on how to accelerate the transition to climate neutrality and increase the uptake of sustainable aviation fuels [G].



[G] <https://www.weforum.org/reports/joint-policy-proposal-to-accelerate-the-deployment-of-sustainable-aviation-fuels-in-europe-a-clean-skies-for-tomorrow-publication>

SHARING INSIGHTS INTO THE TRANSITION

Our strategy includes participating in coalitions of companies and organisations to accelerate the transition to net-zero emissions. We will help to develop paths to low-carbon energy in different sectors, identify opportunities for low-carbon solutions, and advocate government policies and financial market regulations that support the transition.

In the shipping and road freight sectors, for example, we have partnered with Deloitte to explore paths to reducing emissions [H].

SIX LEVERS TO HELP DECARBONISE ENERGY

As Shell works with our customers to identify the best paths to decarbonisation, we seek to avoid, reduce and only then mitigate any remaining emissions.

We have six levers to help Shell and our customers decarbonise energy in the short, medium and long term:

- Pursuing operational efficiency in our assets;
- Shifting to natural gas;
- Growing our low-carbon power business;
- Providing low-carbon fuels such as biofuels and hydrogen;
- Developing carbon capture and storage; and
- Using natural sinks.

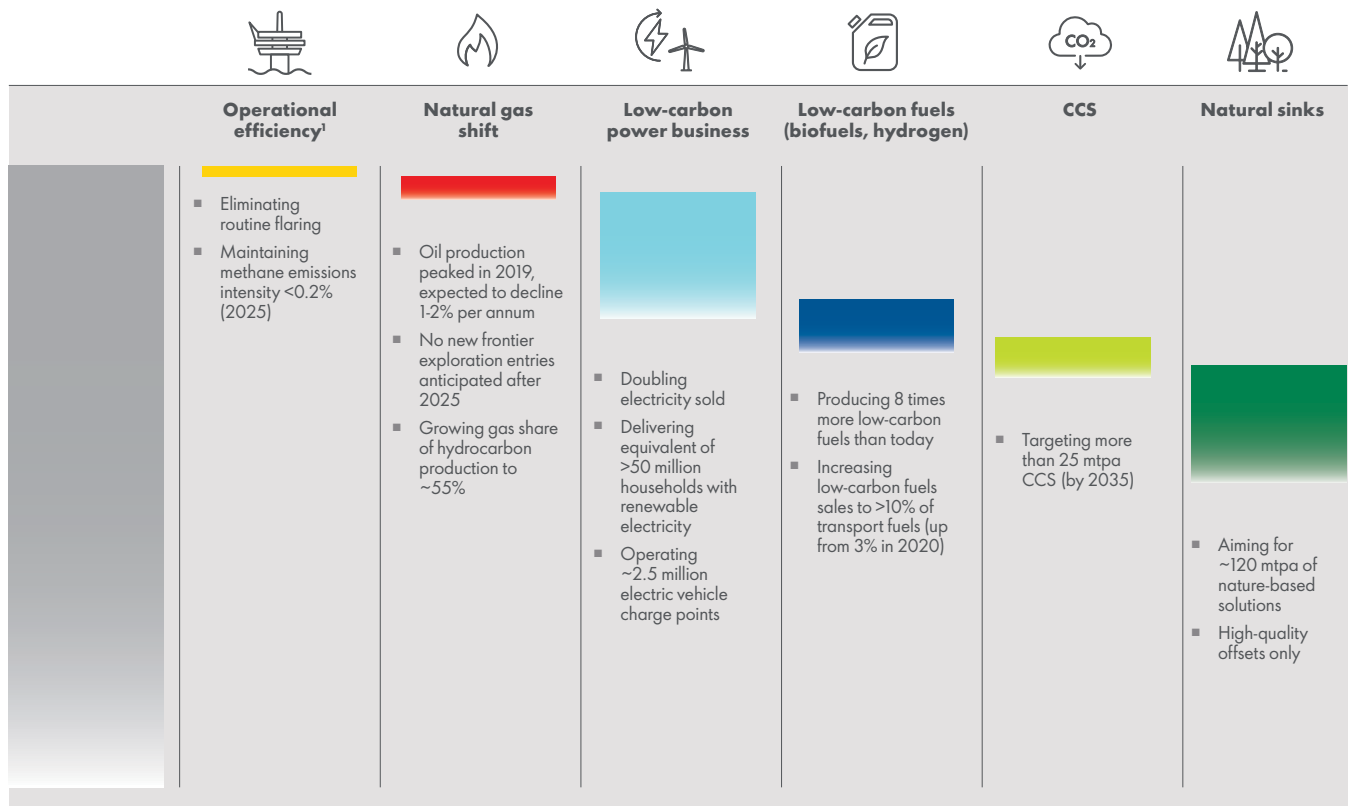
ENERGY EFFICIENCY IN OUR OPERATIONS

Our production sites are increasingly using lower-carbon energy sources. For example, we are installing eight new cracker furnaces at our Moerdijk petrochemicals complex in the Netherlands, replacing 16 older units. This is expected to reduce the site's energy consumption, and to lower greenhouse gas emissions by around 10% compared with 2019.

In the USA, we are building a 250 MW co-generation plant at our Pennsylvania chemicals facility that will also supply electricity to local homes. The chemicals plant has been designed with an energy-efficient gas cracker that will also use hydrogen as a fuel source.

As we implement our strategy, we are aiming for milestones which are supported by our business plans and planned capital investment.

EXAMPLES OF ENERGY TRANSITION MILESTONES BY 2030



Milestones for 2030 unless otherwise stated. This chart is illustrative of the potential impact across these levers.

¹ For assets we operate

EV charge points include charge points at Shell forecourts and new locations as well as operated charge points owned by customers and third parties.

[H] <https://www.shell.com/energy-and-innovation/the-energy-future/decarbonising-shipping.html>; <https://www.shell.com/energy-and-innovation/the-energy-future/decarbonising-road-freight.html>

OUR DECARBONISATION STRATEGY continued

INVESTING IN NATURE

The protection and restoration of natural ecosystems could play an important role in limiting global warming to below 1.5°C, while bringing additional environmental and social benefits, according to the IPCC [I].

Nature-based solutions, or natural climate solutions, are projects that protect, transform or restore land. In this way, CO₂ emissions from the natural environment are reduced and more CO₂ emissions from the atmosphere are absorbed. These projects can lead to the marketing, trading and sale of carbon credits. Each carbon credit represents the avoidance or removal of 1 tonne of CO₂.

The market for nature-based solutions and the number and type of projects which are being developed to meet this market demand is growing rapidly. McKinsey Nature Analytics estimates that there is the potential for nature-based projects to store an additional 6.7 gigatonnes of CO₂ every year by 2030. Based on current net-zero commitments from more than 700 of the world's largest companies, there have already been commitments of carbon credits of around 0.2 gigatonnes of CO₂ by 2030 [J].

The Taskforce on Scaling Voluntary Carbon Markets (TSVCM), sponsored by the Institute of International Finance (IIF), estimates that the market for carbon credits could be worth more than \$50 billion in 2030 [K].

High-quality credits

Nature-based solutions have a role to play in reducing the impact of the CO₂ emissions from the energy products that we sell.

Shell will use high-quality nature-based solutions, independently verified to determine their carbon impact and their social and biodiversity benefits. In line with our approach of avoid, reduce and only then mitigate, we expect to offer our customers nature-based solutions to offset around 120 million tonnes per annum of our Scope 3 emissions by 2030.

Today, for example, we offer customers carbon-neutral driving using nature-based carbon offsets in seven countries. We also offer carbon-neutral liquefied natural gas cargoes, which use nature-based carbon credits to offset full life-cycle emissions, including methane.

Building our portfolio

In 2020, we invested around \$90 million in the future development and purchase of nature-based offsets, and we expect to invest around \$100 million a year.

In 2020, we acquired Select Carbon in Australia, which runs more than 70 carbon farming projects that span an area of around 10 million hectares. We are also working with project developers to invest in and develop new projects based on reforestation, agroforestry and mangroves.

In 2030, we expect our own portfolio of nature-based projects to supply most of the credits for our customers. Our trading business will purchase the rest from project developers that we screen to ensure the credits meet the same independently verified high standards. In 2020, we purchased more than 4 million tonnes of credits on behalf of our customers sourced from projects around the world.



CAPTURING CARBON

Most climate scientists are clear that using technology to store carbon plays an important role in the transition of the energy system. The IPCC 1.5°C scenarios show that even when the energy system reaches net-zero emissions, there will be residual emissions because some sectors and end users will not be able to eliminate the use of hydrocarbons. Some of these residual emissions will need to be stored.

Today, carbon capture and storage (CCS) facilities around the world can capture and store around 40 million tonnes per annum (mtpa) of CO₂. Accelerating the pace of CCS deployment requires continued collaboration between governments, industry and investors, among others, to help unlock financing capacity, accelerate technology development and encourage public support. We recognise the scale of the challenge in developing CCS globally as quickly and as widely as needed.

Today, Shell is involved in seven of the 51 large-scale CCS projects globally, listed in 2019 by the Global CCS Institute. These seven projects store around 5 mtpa of CO₂, or around 12.5% of global CCS capacity. By the end of 2020, for example, our Quest CCS project in Canada (Shell interest 10%) had captured and safely stored more than 5.5 million tonnes of CO₂ since it began operating in 2015.

In Norway, Shell, our project partners and the Norwegian government have taken the final investment decision on the Northern Lights CCS project. This transformative project aims to become the first carbon storage facility with capacity to transport and store CO₂ from industrial facilities in Norway and potentially from across Europe.

In 2020, Shell invested around \$70 million in CCS. This included progressing opportunities and operating costs for CCS assets in which Shell has an interest. We seek to have access to 25 mtpa of CCS capacity by 2035 – equal to 25 CCS facilities the size of our Quest project, or around 20% of the capacity of all CCS projects being studied around the world today.

[I] IPCC, 2019: Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems

[J] <https://www.mckinsey.com/-/media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/Why%20investing%20in%20nature%20is%20key%20to%20climate%20mitigation/Nature-and-net-zero-vf.pdf>

[K] <https://www.iif.com/tsvcm>

STRUCTURING OUR BUSINESS TO MEET DEMAND

Our business has three pillars: Growth, Transition and Upstream. Within each pillar, we expect the underlying businesses to evolve and transform as demand for our products changes, driven through our sector-based businesses.

Our Upstream pillar delivers the cash and returns needed to fund our shareholder distributions and the transformation of our company, and provides vital supplies of oil and natural gas which the world needs today.

Our Transition pillar comprises Integrated Gas, and our Chemicals and Products business, and it makes the products needed to enable the energy transition. It produces sustainable cash flow and gives us the asset infrastructure to support our investments in our Growth business.

Our Growth pillar includes our service stations, fuels for business customers, power, hydrogen, biofuels, charging for electric vehicles, nature-based solutions, and carbon capture and storage. It focuses on working with our customers to accelerate the transition to net zero and is the foundation for the future businesses in Shell.

In our Upstream pillar:

We will focus our portfolio on nine core positions that generate more than 80% of Upstream's cash flow from operations. These core positions will attract around 80% of Upstream's capital spending. They are positions where we have superior capabilities, the potential for growth and access to strong integration with our Integrated Gas and Trading activities.

The rest of our positions will be run on a leaner operating model. They will be tasked with either maximising cash generation or becoming core positions. In some cases, such as onshore Egypt and the Philippines, we will simply divest. We will reduce annual spending on exploration from around \$2.2 billion in 2015 to around \$1.5 billion between 2021 and 2025. We have attractive exploration opportunities in the first half of this decade. But after 2025, we do not anticipate entries into new frontier exploration positions.

In our Transition pillar:

We intend to extend our leadership in LNG volumes and markets, with selective investments in competitive LNG assets to deliver more than 7 million tonnes per annum (mtpa) of new capacity on-stream by the middle of the decade. We will continue to support customers with their own net-zero ambitions, with offers such as carbon-neutral LNG, which uses nature-based carbon credits to offset full life-cycle emissions, including methane. Our petrochemical business will continue to grow and provide products that enhance the efficiency of energy use.

We intend to reduce the number of refineries from 13 sites today to six high-value chemicals and energy parks, and reduce production of traditional fuels by 55% by 2030, from around 100 mtpa to 45 mtpa. We intend to grow volumes from our chemicals portfolio and increase cash generation from Chemicals by \$1-2 billion a year by 2030. We will produce chemicals from recycled waste, and by 2025 aim to process 1 million tonnes a year of plastic waste.

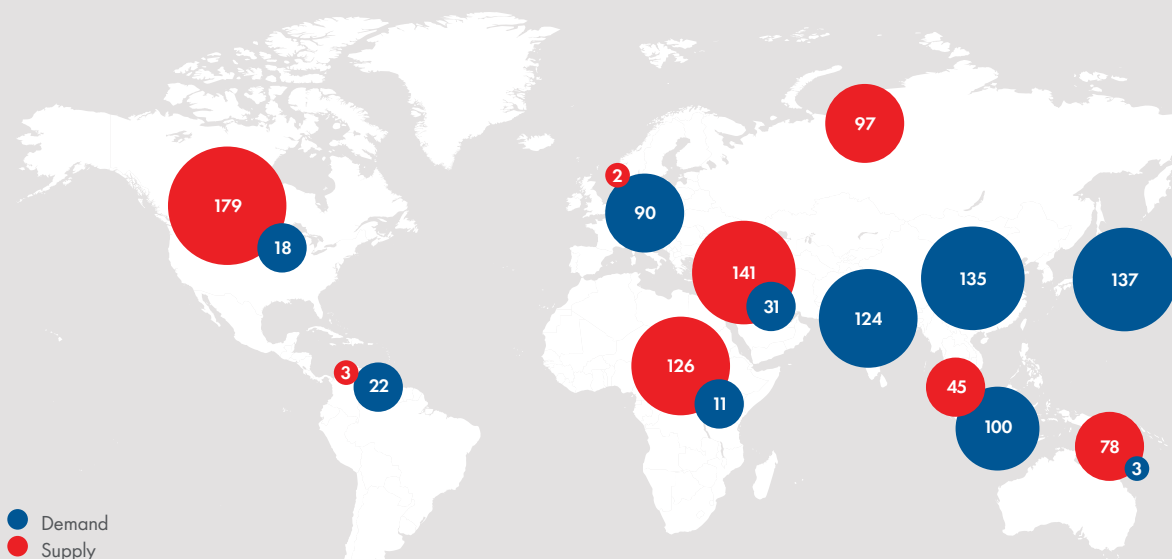
LNG DEMAND TO GROW AS GAS PROVIDES MORE AND CLEANER ENERGY

Reduce CO₂ and improve air quality

- Natural gas emits between 45% and 55% less GHG than coal when used to generate electricity and less than one-tenth of the air pollutants
- More than 750 million tonnes of CO₂ savings as a result of coal-to-gas switching over the last decade
- In 2020, for the first time on record, the number of coal-fired power stations decreased

LNG NEEDED TO CONNECT NATURAL GAS SUPPLY AND DEMAND GROWTH

Estimated LNG trade volume in 2040, million tonnes



Source: Global Energy Monitor, International Energy Agency, Shell interpretation of IHS Markit data

OUR DECARBONISATION STRATEGY continued

In our Growth pillar:

Our Marketing business is our single largest customer-facing business. In 2020, Marketing delivered more than \$4.5 billion in net earnings and, by 2025, we expect it to generate more than \$6 billion. We will achieve this by improving the market-leading position of our lubricants business, and by increasing the number of retail sites and daily customers we serve from 46,000 and 30 million respectively today, to 55,000 and 40 million by 2025. We will also achieve this by growing non-fuel sales at our retail sites and sales of electricity.

This growing number of customers, made up of large and small businesses as well as individual consumers, will be looking to decarbonise their energy consumption over the coming decades. We intend to provide them with the options to do this, from low-carbon solutions such as clean electricity, hydrogen and biofuels, to carbon sinks or offsets for any remaining carbon emissions.

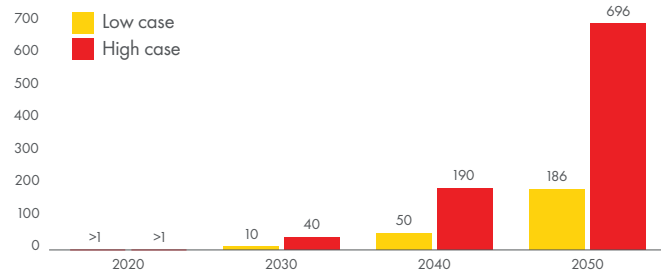
Shell is increasing the number of electric vehicle charging points globally – for homeowners and businesses and for use on our forecourts – from more than 60,000 today to more than 500,000 by 2025 and to 2.5 million by 2030. By comparison, that is around 7% of the total number of public and private charge points expected in Europe alone by 2030, according to research by Bloomberg.

As the need for biofuels grows, in line with customer demand and policies to reduce transport-related emissions, we expect to extend our leading biofuels production and distribution business, which in 2020 sold 9.5 billion litres of biofuels. Our joint venture Raízen, which produces low-carbon biofuels from sugar cane in Brazil, recently announced the acquisition of Biosev. This is set to increase Raízen's bioethanol production capacity by 50%, to 3.75 billion litres a year, around 3% of global production.

We aim for our power business to sell around 560 terawatt hours of electricity a year by 2030, which is twice as much electricity as we sell today, and for the electricity we sell to have lower carbon intensity than

CLEAN HYDROGEN GLOBAL DEMAND PROJECTIONS

Million tonnes per annum



Source: Bloomberg NEF Hydrogen Economy Outlook (2020), IEA low-carbon hydrogen production data, IEA Sustainable development scenario 2030, Shell analysis

the grid average within the markets where we operate. We are growing our power businesses with a focus on Europe, the USA, Australia and Asia.

Building clean hydrogen

We intend to build on Shell's leading position in hydrogen by developing integrated hydrogen hubs initially to serve industry and heavy-duty transport. We will begin by producing and supplying hydrogen for our own manufacturing sites, especially refineries. For example, we are developing a hydrogen electrolyser at our refinery in Rheinland, Germany, which produces hydrogen from renewable sources. We will also continue to extend our network of hydrogen retail stations, with an increasing focus on heavy-duty transport.

The clean hydrogen market is still in the early stages and the volumes are still modest [1]. But we see strong potential for growth especially in hard-to-abate sectors of the economy. We aim to achieve a double-digit market share of global clean hydrogen sales by 2030.

RENEWABLES AND ENERGY SOLUTIONS: INTEGRATED POWER STRATEGY FOCUSED ON REGIONAL LEADERSHIP

Europe

- In top three electric vehicle charging operators by volume

Energy solutions

- Around 1 million customers of integrated home energy solutions (Shell Energy Retail)
- More than 80,000 operated electric vehicle charge points (primarily through NewMotion)
- Intelligent home battery energy storage (60,000 Sonnen battery customers worldwide)
- Sustained growth of the commercial and industrial portfolio with more than 10,000 customers across key markets

Trading and optimisation

- Growing power trading business across Europe
- A leading player in the UK distributed energy market (Limejump)

* Renewable generation capacity figures are gross.
Source: Shell

Renewable assets

- The Netherlands: 160 MW of renewable generation capacity in operation and 1.6 GW in development across solar and wind*
- Germany: 10 MW hydrogen electrolyser (ReffHyne) expected to start production in the summer of 2021
- Ireland: 300 MW floating wind farm (Emerald) in early-stage development, Shell share 51%



Shell is increasing the number of electric vehicle charging points globally for homeowners and businesses.

[1] Shell's definition of clean hydrogen includes hydrogen made from renewable sources (usually referred to as green hydrogen) and hydrogen made from natural gas with carbon capture and storage (usually referred to as blue hydrogen).

RENEWABLES AND ENERGY SOLUTIONS

a selection of investments, acquisitions and ventures

KEY	
	Energy solutions
	Energy access
	Wind
	Solar
	Mobility
	Nature-based solutions
	Trading
	Hydrogen
	* Minority investments

YEAR	BUSINESS FOUNDED
2016	<ul style="list-style-type: none"> Blauwwind*, NL 
2017	<ul style="list-style-type: none"> Acquired NewMotion, NL  Connected Freight*, Philippines  Shell Energy Retail, UK (acquired as First Utility)  Innowatts*, USA  SolarNow*, Uganda  Steamaco*, Kenya  Sunseap*, Singapore 
	<ul style="list-style-type: none"> Acquired MP2 Energy, USA  Opened hydrogen stations in the UK and USA 
2018	<ul style="list-style-type: none"> Silicon Ranch*, USA  Cleantech Solar*, Asia  Opened Moerdijk solar farm, NL  Atlantic Shores Offshore Wind*, USA  Mayflower Wind Energy*, USA  TetraSpar*, Norway  Shell Energy Inside, USA 
	<ul style="list-style-type: none"> Opened hydrogen stations in California, USA  HyET Hydrogen*, NL  Husk Power*, India  SunFunder*, Kenya  Ample*, USA 
2019	<ul style="list-style-type: none"> Acquired Greenlots, USA  Ravin.ai*, UK  Revel*, USA  Aurora*, USA  Nordsol*, NL  Acquired EOLFI, France  CoensHexicon*, South Korea  Acquired sonnen, Germany  Acquired Hudson Energy UK (rebranded to Shell Energy Retail in 2020)  LO3 Energy*, USA  Corvus Energy*, Norway 
	<ul style="list-style-type: none"> Nature-based solutions projects under way in Australia, Malaysia, Netherlands, Spain and UK  Orb Energy*, India  PowerGen*, Kenya  d.light*, Kenya  Acquired ERM Power (rebranded to Shell Energy in 2020), Australia  Acquired Limejump, UK 
	<ul style="list-style-type: none"> ESCO Pacific*, Australia  Announced plans to build Rheinland Hydrogen Electrolyser, Germany 
2020	<ul style="list-style-type: none"> Final investment decision to build Gangarri solar farm, Australia  Masabi*, UK  InstaFreight*, Germany  Spiffy*, USA  Shell and Eneco awarded tender to build 759 MW Hollandse Kust (noord) offshore wind farm, NL 
	<ul style="list-style-type: none"> Select Carbon, Australia  Climate Bridge*, China  Announced plans to build 20 MW green hydrogen electrolyser and refuelling stations, China  ZeroAvia*, USA  Palmetto*, USA  GreenCom*, Germany 

CAPITAL ALLOCATION

Shell's financial strength and access to capital give us the ability to reshape our portfolio as the energy system transforms and demand changes. They also allow us to withstand volatility in oil and gas markets. This strong financial framework is based on sector-leading cash flow, continued capital discipline, capital flexibility and a strong balance sheet.

THE FINANCIAL FRAMEWORK THAT SUPPORTS OUR STRATEGY

We look to achieve the right balance between shareholder distributions and investing for the future, laying the foundation for both increased distributions and share price appreciation.

While our net debt is above the level of \$65 billion, we plan to invest \$19-22 billion a year across our portfolio. This will sustain our core businesses while funding moderate growth.

Once we have reduced net debt to \$65 billion, we will look to further increase total shareholder distributions. Through progressive dividend and share buybacks, we are targeting total distributions to shareholders of 20-30% of our cash flow from operations. We will also seek to increase capital spending in a disciplined way. With this approach we expect that we will:

- 1) Limit our investments in Upstream. Our oil production peaked in 2019 and we expect that it will gradually decline by 1-2% a year through to 2030.
- 2) Maintain our investments in our Transition businesses. We expect to see the share of gas rise to 55% of our hydrocarbon production in 2030.
- 3) Increase investments in our Growth businesses to build material low-carbon businesses of significant scale by the early 2030s.

As Shell progresses towards being a net-zero emissions energy business our cash flows will increasingly come from our Growth pillar, becoming less exposed to oil and gas prices with a stronger link to broader economic growth. As one of the largest commodity traders in the world, we expect additional opportunities to enhance cash delivery through integration and optimisation.

The characteristics of our Growth pillar mean that levels of capital investment are likely to be a poor proxy for the scale of the transformation of our business. Instead, we believe the best way to measure our progress towards our targets is through the carbon intensity of the energy products we sell, and the cash flows delivered by our business pillars. This is because our Growth pillar is likely to be less capital intensive than our Upstream and Integrated Gas businesses.

OUR CARBON FRAMEWORK

We will take the same approach to managing and reducing our emissions as we have done for managing our financial framework, that is by setting constraints, or budgets.

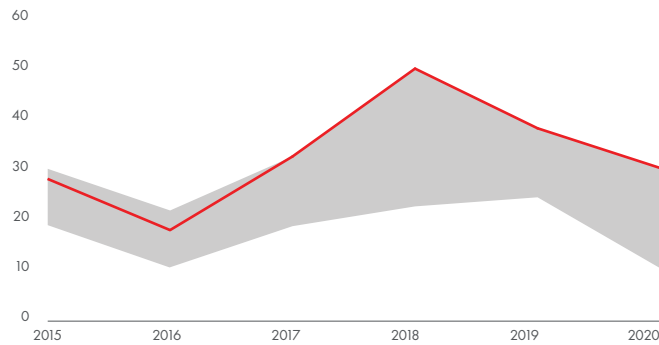
We will be setting carbon budgets for all our businesses and these will help to drive investment decisions which will in turn drive down our emissions. In this way, we will decouple our business growth from carbon, transforming what we sell and what we produce.

By assessing our investments and resources on the basis of our financial performance, and on the carbon intensity of our revenues, we will decide what changes to make to our business portfolio.

The carbon emissions constraints we place on our businesses will tighten over time in line with our carbon intensity targets and as demand for low-carbon products increases.

We are setting carbon budgets for all our businesses and these will help to drive investment decisions which will in turn drive down our emissions.

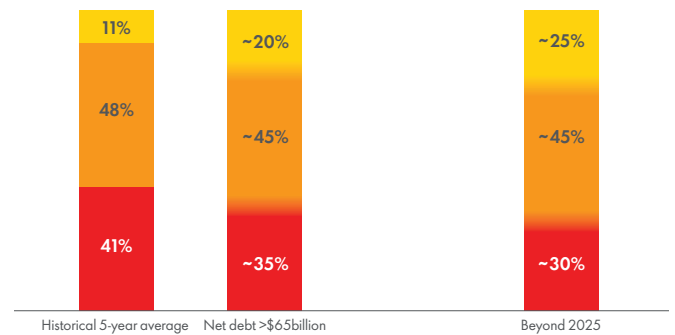
TRACK RECORD OF SECTOR-LEADING CFFO
\$ billion



— Shell
■ Peer range

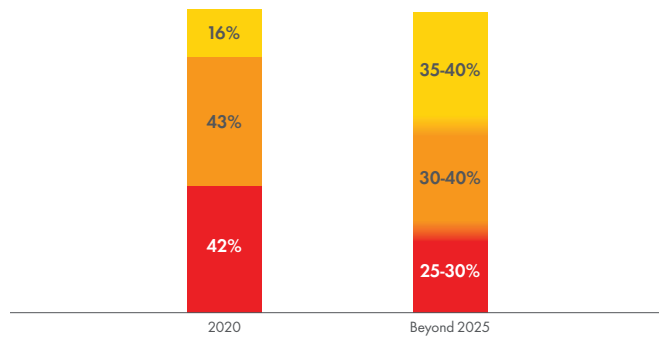
Peer range comprises ExxonMobil, Chevron, BP and Total, CFFO for Shell corrected for interest received (in CFFI) and interest paid (CFFF).

FUTURE-PROOFING OUR CASH FLOWS
%



■ Growth
■ Transition
■ Upstream

CASH CAPEX EVOLUTION



■ Growth
■ Transition
■ Upstream



CAPITAL ALLOCATION THROUGH THE ENERGY TRANSITION

We are shifting capital from our Upstream business to our Transition and Growth businesses as the energy transition accelerates and we sell more low-carbon energy products.

We aim to find the right balance between managing our Upstream assets – which will produce the returns needed to help us fund the transition – and investing in our Transition and Growth businesses. These businesses are essential to identify, build and scale up profitable projects that offer low-carbon energy solutions for our customers. Our investments in our three business pillars are characterised by several factors including:

GROWTH:

- Compared with our conventional Upstream assets, investments in low- and zero-carbon solutions can require lower amounts of capital.
- The levels of capital investment needed to maintain a renewable energy business are also likely to be lower than in capital-intensive complex engineering projects common in the oil and gas industry, with their ongoing need for asset renewal and resource replenishment.
- We can grow our sales of low-carbon energy without necessarily investing in producing it ourselves by buying it from third parties and selling it to our customers. This model is part of our business today, we sell more than three times the energy we produce ourselves.
- We can enter into different types of financial arrangements that enable renewable generation capacity to be built, without bearing the full capital cost of the project. For example, developing renewable production as part of joint ventures allows us to reduce the capital investment needed, while giving us access to valuable expertise from other partners. It also gives us the opportunity to secure a substantial portion of the energy produced, allowing us to grow customer sales (See box Offshore wind).
- Our investments in our Marketing business will help decarbonise the energy system by increasing the provision of charging for electric vehicles and increasing the use of biofuels and low- and zero-carbon lubricants.

TRANSITION:

- Our investments in natural gas can help to decarbonise energy use when it replaces energy with a higher carbon intensity such as coal and fuel for shipping.
- Restructuring our refinery business into energy parks will transform our business away from our traditional oil-based energy products.

UPSTREAM:

- Most of our investments in our Upstream business are in maintaining assets and sustaining the value of the portfolio.
- Our existing Upstream assets are critical to delivering near-term cash flow and to enabling moderate growth.
- Our investments to improve the efficiency of our oil and gas facilities can help reduce our operational emissions.

Image below:
A sonnen battery system powers a home.



INVESTING IN OIL AND GAS

A natural decline in production happens in oil and gas reservoirs at a rate of around 5% a year across the oil and gas industry. It takes constant reinvestment to sustain production and extract resources.

Our planned capital investment of \$8 billion in our Upstream business in the near term is well below the investment level required to offset the natural decline in production of our oil and gas reservoirs, and will not sustain current levels of production.

As a result of this planned level of capital investment, we expect a gradual decline of about 1-2% a year in total oil production through to 2030, including divestments.



Powering lives by providing energy to homes.

OFFSHORE WIND

Shell is part of the Blauwwind Consortium that was awarded the right to develop, construct and operate the Borssele III and IV wind farm off the Dutch coast. Shell entered with a 40% share in 2016 and Shell Energy Europe Limited secured a contract to sell 50% of the power produced. We sold half of our joint venture partnership in 2018 when we brought on board an additional partner. The wind farm is now fully operational and has a total installed capacity of 731.5 MW, equivalent to powering 825,000 Dutch households. We still sell 50% of the power produced.



Shell is part of a consortium that has developed a wind farm off the Dutch coast. We sell 50% of the power produced.

CLIMATE POLICY ENGAGEMENT

Robust and sustainable government policies will be critical to help the world achieve the goal of the Paris Agreement and net-zero emissions by 2050. These must include policies that accelerate the move to low-carbon energy in industries that are hard to decarbonise, sector by sector.

Shell's Powering Progress strategy includes working with governments to support the policies and regulatory frameworks to accelerate the transition to net zero.

We are seeing a growing number of countries aiming for net-zero emissions and enhancing their nationally determined contributions (NDCs). The USA has recently rejoined the Paris Agreement, for example, China has set out its plans to reach net zero by 2060, and the European Union (EU) has committed to climate neutrality, or net-zero emissions, in 2050.

ENGAGING WITH GOVERNMENTS

Our expertise in providing energy can help to shape effective policy, legislation and regulation, and we engage with governments, regulators and policymakers directly and indirectly, including through industry associations. We are also working with other companies, governments and investors through coalitions to identify the policies needed in sectors such as aviation, shipping and road freight to help change demand and enable faster decarbonisation.

We are members of the Mission Possible Partnership sectoral coalitions for aviation, shipping, road freight and steel. Each of these coalitions works to help accelerate decarbonisation pathways, including through policy engagement. For example, we are a member of the Clean Skies for Tomorrow initiative, which has developed a joint policy proposal for a sustainable aviation fuel mandate in the EU which would require airlines to use an increasing ratio of sustainable aviation fuel.

Shell is also a member of the Jet Zero Council (JZC) in the UK, a partnership between industry and government. JZC aims to deliver zero-emission transatlantic flight within a generation, and to drive new technologies and innovative ways to cut aviation emissions. Shell is also a member of the European Round Table for Industry (ERT) which has called on the EU institutions to introduce sectoral roadmaps to net-zero emissions [M].

GREATER TRANSPARENCY

We aim to be at the forefront of the drive for greater transparency around political engagement. We set out our approach, including our principles for responsible lobbying, in our statement on corporate political engagement which is published on our website [N].

Our principles for participation in industry associations govern how we manage our relationships with industry associations on climate-related policy. They build on the Shell General Business Principles and the Shell Code of Conduct, and have been incorporated in the Shell Control Framework, which sets the requirements for how all Shell entities operate. The principles aim to ensure our memberships of industry associations do not undermine our support for the Paris Agreement and that they support the development of government policies that could help the world achieve net-zero emissions by 2050.

In 2019, we published our first Industry Associations Climate Review, and were one of the first companies to report this information [O]. The review assessed our climate-related policy alignment with 19 industry associations against our 2019 climate-related policy positions. The following year we published an update to our review.

In 2020, we updated Shell's climate-related policy positions and published them on our website [P]. These positions include support for the goal of the Paris Agreement and for the development of policies to help the world to achieve net-zero emissions by 2050. They also include support for carbon pricing, carbon capture utilisation and storage and nature-based offsets.

In the newly published 2021 Industry Associations Climate Review, we have reviewed 36 associations. We plan to publish our next update in 2022.

We will continue to work with governments, other companies, investors, non-governmental organisations, coalitions and industry associations to help society achieve the goal of the Paris Agreement and net-zero emissions. We will also continue to work towards greater transparency around climate lobbying and reporting.

[M] <https://ert.eu/wp-content/uploads/2021/02/2021-02-25-Statement-on-Sectoral-Approaches.pdf>

[N] www.shell.com/advocacy

[O] 2019 Industry Associations Climate Review www.shell.com/advocacy

[P] <https://www.shell.com/sustainability/transparency/advocacy-and-political-activity.html>

SENSITIVITY TO GOVERNMENT-LED CO₂ PRICES

Shell views carbon pricing as a key policy tool for meeting the temperature goal of the Paris Agreement as it helps to increase demand for low-carbon energy and creates incentives for investment in low-carbon technologies and infrastructure.

Shell's annual carbon cost exposure is expected to increase over the next decade because of evolving carbon regulations. This expected increase is based on forecasts of Shell's equity share of emissions from operated and non-operated assets, and real-terms carbon cost estimates which range from \$5 to \$110 per tonne of GHG emissions in 2030. This exposure also takes into account the estimated impact of free allowances as relevant to assets based on their location. The regulatory carbon cost estimate is refreshed on an annual basis as part of the development of our business plan.

RISK OF STRANDED ASSETS

Every year we test our portfolio under different scenarios, including prolonged low oil prices. In addition, we rank the break-even prices of our assets in the Upstream business to assess their resilience against low oil and gas prices. At December 31, 2020, we estimate that around 75% of our current proved oil and gas reserves will be produced by 2030 and only around 3% after 2040. We also estimate that around 70% of our proved plus probable oil and gas reserves, known as 2P, will be produced by 2030, and only 5% after 2040.

EVOLVING REGULATORY DISCLOSURE REQUIREMENTS

Disclosure requirements related to climate-related risks and opportunities are evolving and may result in more stringent disclosure mandates. Several regulatory bodies, including in the EU, the UK and the USA, are exploring frameworks and guidance for increased disclosure and creating uniform criteria for how economic activities score on environmental sustainability. Shell continues to monitor regulatory developments in this area, including progress on the EU Taxonomy and the adoption of the EU Delegated Acts for the technical screening criteria and disclosure methodology. We will develop responses as appropriate.

INCREASING TRANSPARENCY

We are implementing the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in our reporting. We are also engaging with others including the investor group Climate Action 100+ and the Science Based Targets initiative as they develop new reporting, accounting and target-setting frameworks for the oil and gas industry. The Science Based Targets initiative is a partnership between CDP, the United Nations Global Compact, the World Resources Institute and the World Wide Fund for Nature.

The structure of this report outlining our energy transition strategy is based on our continued engagement with Climate Action 100+ and on the net-zero disclosure standard developed by that group for the oil and gas industry.



OUR STRATEGY TO ACCELERATE THE TRANSITION TO A NET-ZERO ENERGY BUSINESS

OUR GOAL: Net zero by 2050, in step with society, aligned with Paris

OUR CLIMATE TARGETS:

ALL ENERGY SOLD SCOPES 1, 2 & 3

REDUCING NET CARBON INTENSITY

ABSOLUTE EMISSIONS REDUCTION FROM 1.7 GTPA TO NET ZERO

ALIGNING OUR BUSINESS WITH PARIS:

CHANGING HOW WE WORK



WHAT WE OFFER OUR CUSTOMERS

- Low- and zero-carbon products and solutions to avoid, reduce and mitigate emissions from energy use
- Introducing sector-based businesses accountable for driving decarbonisation



HOW WE OPERATE

- Reducing Scope 1 & 2 emissions to net zero by 2050
- Operational efficiency: methane intensity target and eliminating routine flaring



HOW WE INVEST

- Limit investment in Upstream, maintain investment in Transition, increase investment in Growth
- Build material low-carbon businesses of significant scale by the early 2030s



HOW WE MAKE DECISIONS

- Carbon budgets to steer business decisions
- Carbon targets tied to staff and executive incentive structures
- The Board and Executive Committee have accountability for energy transition strategy

& IN STEP WITH SOCIETY



CUSTOMERS AND PARTNERS ACROSS SECTORS

- Partner with customers to identify and pilot decarbonisation solutions
- Participate in sectoral coalitions to accelerate decarbonisation pathways



INDUSTRY PEERS

- Working with Science Based Target initiative, Climate Action 100+ and Transition Pathways Initiative on industry standards
- Transition Principles developed with other energy companies



GOVERNMENTS & POLICYMAKERS

- Responsible lobbying
- Disclose climate-related policy positions
- Industry Associations Climate Review



INVESTORS

- Support consistency in disclosures including TCFD and WEF standards
- Transparency through Annual Report, Sustainability Report and advisory vote on energy transition strategy and progress

POWERING LIVES

RESPECTING NATURE

GENERATING SHAREHOLDER VALUE

Excerpt from

<https://www.foxnews.com/transcript/pete-buttigieg-on-opposition-to-bidens-massive-infrastructure-plan>

This is a rush transcript from "Fox News Sunday," April 11, 2020. This copy may not be in its final form and may be updated.

CHRIS WALLACE, FOX NEWS ANCHOR: I'm Chris Wallace.

WALLACE: President Biden's \$2 trillion infrastructure package has run into a buzzsaw of opposition not only from Republicans but even from some Democrats. And the White House is already talking about negotiation and compromise.

Joining us now, Transportation Secretary Pete Buttigieg.

Mr. Secretary, welcome back.

PETE BUTTIGIEG, SECRETARY OF TRANSPORTATION: Good to be back with you.

WALLACE: I want to start with a fact check of how the Biden administration is selling this plan.

You all like to say that U.S. infrastructure is ranked 13th in the world, but our colleague Chuck Lane of "The Washington Post" did some interesting research. Three of the nations ahead of us on that list are Singapore, Hong Kong, and the United Arab Emirates, which are tiny states and hardly comparable. Of the 10 largest countries geographically, including China and Russia, the U.S. actually ranks first.

So, Secretary, not to say that everything is fine, but why not be straight about the actual conditions here in the U.S. to the American people?

BUTTIGIEG: Well, the American people already know that our infrastructure needs a lot of work. That's one of the reasons why there's such strong support for the president's American Jobs Plan.

Look, the American Society of Civil Engineers rates our infrastructure, we've been getting a lot of Cs and Ds. But you know don't need an engineering report to know that driving on American roads, they're not the way they should be. Our bridges need work. We've got thousands upon thousands that are either in poor condition or even structurally deficient.

If you go to U.S. airports and you compare them to airports in other countries, other developed countries, you know that the U.S. is not at a high standard. We don't have a lot of work to do to persuade the American people that U.S. infrastructure needs major improvement. The American

people already know it.

And that's one of the reasons why there's such extraordinary Republican and independent and Democratic support for this package among the American people.

WALLACE: Not necessarily in Congress, however.

I want to give you another fact check. All of you in the Biden administration have been selling this plan as a huge jobs creator. Here you are just last Sunday.

(BEGIN VIDEO CLIP)

BUTTIGIEG: The American Jobs Plan is about a generational investment. It's going to create 19 million jobs. And we're talking about economic growth that's going to go on for years and years.

(END VIDEO CLIP)

WALLACE: But it turns out the study you're citing from Moody's Analytics says the economy will add 16.3 million jobs without the infrastructure bill, and 2.7 million more with it. So it doesn't, as you said last Sunday, create 19 million jobs.

Again, Secretary Buttigieg, why misled folks?

BUTTIGIEG: Well, you're right, I should have been more precise. The 19 million jobs that will be created are more than the jobs that will be created if we don't do the plan. And it's very important to make this point, as you've just showed us.

WALLACE: Right, but 2 million -- 2 million is not 19 million.

(CROSSTALK)

BUTTIGIEG: Now Moody's is saying that we will create 2.7 million -- yes, exactly, it will create 2.7 million more jobs than if we don't do it. And that's very important, because there are people on this network and others saying with a straight face that this would somehow reduce the number of jobs.

In fact, at least according to that Moody's analysis, 2.7 million additional jobs if we pass this package, just further proof that it's good for the economy, and taken as a whole, it's going to add jobs compared to doing nothing.

WALLACE: But would you agree that you and the president and Brian Deese, the economic adviser on this program last week, you all exaggerated the jobs impact?

BUTTIGIEG: Look, there are a lot of different analyses about just how many million jobs this is going to create. I saw a Georgetown study, I think it said an investment of this type will create or save 10 to 15 million --

(CROSSTALK)

WALLACE: But, Secretary, you're the one who recited Moody's --

BUTTIGIEG: The point is it's going to create millions of jobs.

WALLACE: -- Analytics as 19 million, and it's actually 2.7 million, which is a bunch but it's not what you said.

BUTTIGIEG: It's part of a scenario that Moody's says will create 19 million jobs.

But the bottom line is, it's going to add jobs. And this is a direct refutation of people who are saying otherwise. So, yes, you're right, I should be very precise. The difference in jobs that that particular analysis suggests is 2.7 million more. That is a great place to be, why wouldn't we want America to create 2.7 million more jobs?

And I want to say something else about the jobs that's very important. The majority of them, according to a lot of the studies we've seen, will be for people who don't necessarily have college degrees. So there's a time when you've got a blue collar communities that are hurting, a lot of questions about the future of union jobs, construction jobs, manufacturing jobs. These are exactly the kind of jobs we need to be creating.

And it's part of why, again, the American Jobs Plan has such remarkable support among Republicans, independents, and Democrats across the country, maybe not yet in the Republican establishment here in Washington, but around the country, this bill is already enormously popular.

WALLACE: All right. But as you said, it's not enormously popular in Washington among Republicans or even among some Democrats. I'm going to get to that in a moment.

But the president seems to recognize that. He has said that he's going to meet tomorrow with a number of members of Congress, both parties, both houses in the Oval Office.

Question, are the size of the package, \$2.25 trillion, or the way to pay for it, raise the corporate tax rate from 21 percent to 28 percent to raise \$2 trillion in taxes over 15 years, are all of those negotiable?

BUTTIGIEG: Well, I think the president will have an open mind and be interested to hear other ideas on every dimension of the package. But as he said, doing nothing is not an option. And we also can't wait too long. So he's got an expectation of major progress in Congress by Memorial Day.

But, of course, a plan gets better when you take input on board from our party, from the other party, from both Houses, and that's the process that's underway right now.

WALLACE: Well, but let's talk about that because you do have defections already from the Democratic side. Democratic Senator Joe Manchin says he's not willing to go to 28 percent tax increase. He wants to go to only 25 percent, which means you wouldn't raise nearly as much money. He also says he opposes the idea of reconciliation, jamming this through on a straight party line vote.

DiNapoli Moves State Pension Fund Toward Net Zero Target, Restricts Investments in Oil Sands Companies

Corporations Face Significant Environmental, Legal and Economic Risks

April 12, 2021

The New York State Common Retirement Fund (Fund) will restrict investments in oil sands companies that have not demonstrated that they are prepared for the transition to a low-carbon economy, New York State Comptroller Thomas P. DiNapoli, trustee of the third largest public pension plan in the country, announced today.

This action is tied to DiNapoli's comprehensive [Climate Action Plan](#) to lower investment risks from climate change and transition the Fund's investment portfolio to [net zero greenhouse gas emissions by 2040](#).

"As nations around the world become increasingly serious about addressing the threat of climate change and as market forces drive a low-carbon economic transition, we need to make sure our investments line up with this reality," said DiNapoli. "We have carefully reviewed companies in the oil sands industry and are restricting investments in those that do not have viable plans to adapt to the low-carbon future. Companies responsible for large greenhouse gas emissions like those in this industry, pose significant risks for investors."

Oil sands companies produce a heavy type of crude oil from oil sands which are a mixture of sand, water, clay and bitumen. Oil sands production is more costly and carbon-intensive than other forms of crude production.

Today's announcement follows the Fund's detailed assessment that evaluated each company's transition strategies, capital expenditures, and greenhouse gas reduction targets, among other factors.

The Fund determined the following seven companies failed to show they are transitioning out of oil sands production:

- Imperial Oil Ltd.
- Canadian Natural Resources Ltd.
- Husky Energy Inc.
- MEG Energy Corp.
- Athabasca Oil Corp.
- Cenovus Energy Inc.
- Japan Petroleum Exploration Ltd.

The Fund will not directly purchase or directly hold debt or equity securities, or invest through an actively managed account or vehicle, in these companies, and more than \$7 million in such securities currently held by the Fund will be sold in a prudent manner and timeframe.

The evaluation of the Fund's oil sands holdings are part of DiNapoli's broader review of the transition readiness of energy sector investments that face significant climate risk. Last year, DiNapoli's review of coal companies led to the Fund's divestment from 22 firms that failed to demonstrate transition readiness. The Fund will next evaluate shale oil and gas companies.

Background on Climate Investment Actions

Since taking office in 2007, DiNapoli has been recognized as a global leader for his efforts to protect the Fund's investments, address material risks from climate change and pursue sustainable investment opportunities for the Fund. In 2019, DiNapoli released a [Climate Action Plan](#), a multi-faceted strategy that includes a goal of committing [\\$20 billion to sustainable investments](#), dedicated staff to pursue climate solution investments, and minimum standards for portfolio companies that will inform engagements, investments and potential divestment decisions. Building on the Climate Action Plan's solid foundation, in December 2020, DiNapoli announced the Fund has adopted a goal to transition its portfolio to [net zero greenhouse gas emissions by 2040](#).

Background on New York State Common Retirement Fund

The New York State Common Retirement Fund is the third largest public pension fund in the United States with assets of approximately \$247.7 billion as of Dec. 31, 2020. The Fund holds and invests the assets of the New York State and Local Retirement System on behalf of more than one million state and local government employees and retirees and their beneficiaries. It has consistently been ranked as one of the best managed and best funded plans in the nation.

Weekly commentary

April 12, 2021



Commodities rewired

- The economic restart has lifted commodity prices. Beyond that, we see structural trends leading to a divergence of fortunes in different commodities.
- The International Monetary Fund has raised its global growth forecast to 6% in 2021. U.S. stocks hit record highs and yields traded below 14-month peaks.
- U.S. retail and consumer sentiment data will be in focus. Retail sales are expected to rebound from a cold weather-induced decline in February.

Oil and industrial metals have rallied since late-2020 on expectations for a swift economic restart, sparking talk of a new commodity “supercycle.” We see a more nuanced outlook – with a divergence across different commodities. The lift for oil from the economic restart is likely to be transitory, while some metals may benefit from structural trends such as the “green” transition for years to come, in our view.



Wei Li
Global Chief Investment Strategist – BlackRock Investment Institute



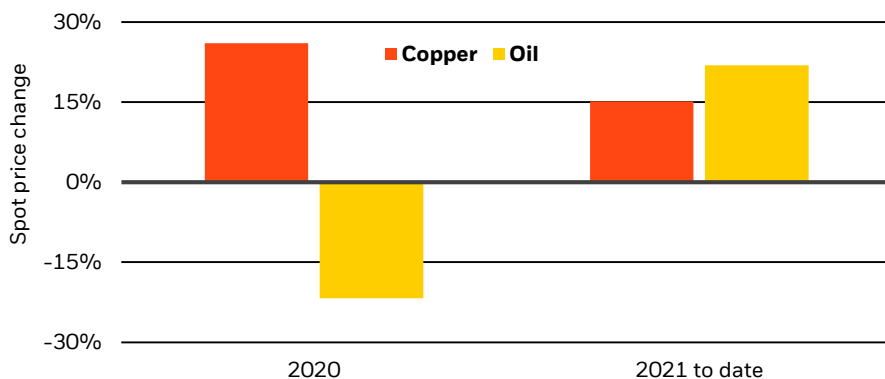
Ben Powell
Chief Investment Strategist for APAC – BlackRock Investment Institute



Axel Christensen
Chief Investment Strategist for LatAm & Iberia – BlackRock Investment Institute

Chart of the week

Changes in crude oil and copper prices, 2020 and 2021 to date



Sources: BlackRock Investment Institute, with data Refinitiv, April 2021. Notes: Crude oil prices are represented by the spot Brent crude oil prices, and copper prices are represented by the London Metal Exchange spot copper prices.

Oil and copper are among the best-performing assets so far this year – after divergent performance last year. See the chart above. The post-pandemic restart – not a typical business cycle recovery – suggests the economy’s snapback from the Covid shock will likely be much swifter than the recoveries in the past, in our view. Growth in China – the world’s top commodity consumer – is already back to its pre-Covid trend, and the U.S. is close behind. This dynamic has buoyed commodities in recent months, yet we expect the support to fade once the economy returns to a modest growth trend. We see long-term dynamics at play too. The strength in copper (see the orange bars) partly stems from a supply crunch that is the result of years of underinvestment and increased capital discipline among major miners – and exacerbated by production disruptions caused by the pandemic. In addition, a transition to a low-carbon economy has provided long-term support for copper. In contrast, oil suffered a collapse in demand last year as travel demand dried up. Near-term demand may well return – but peak oil demand looms large.

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BlackRock Investment Institute

We see structural dynamics potentially leading to long-lasting – and divergent – impact on two groups of commodities. The first is oil and other fossil fuels. A strong economic restart may still support prices of oil and related assets in the near term. Yet the prospect of peak oil demand is now well accepted, and we see the “green” transition likely to erode oil demand over the long run. The second group – certain industrial metals including copper, nickel and lithium – looks set to enjoy structural demand from that very transition for years to come. Decarbonization of the power system and electrification of the transport sector, for example, will be massive endeavors requiring a large-scale buildout of new infrastructure. At the same time, the increased focus on sustainability could make new mining projects more expensive and time-consuming to build, potentially aggravating the supply shortage and driving prices higher to incentivize greater production.

China’s commodity consumption was the key driver of the last commodities “supercycle” in the early 2000s – but this time may be different. We see more broad-based demand for industrial metals across developed and emerging markets (EM), thanks to a global policy revolution in response to the Covid shock and structural demand due to massive government spending on renewable energy and infrastructure. A remapping of global supply chains could also boost demand for raw materials as companies build facilities in new locations to increase their resilience to disruptions.

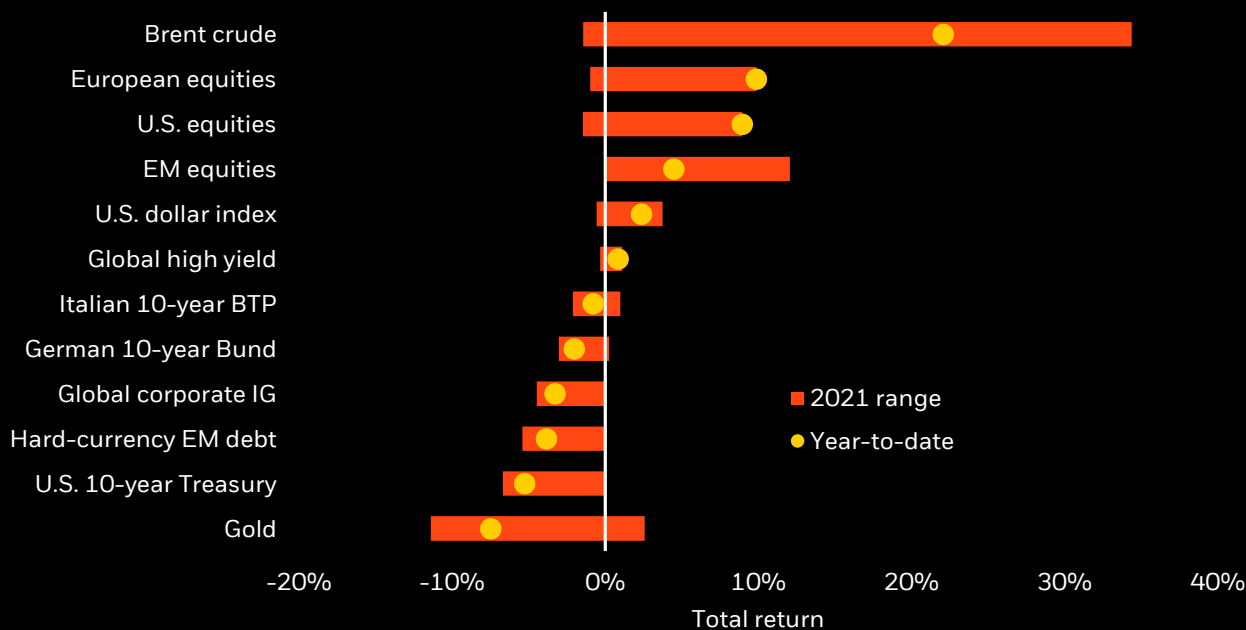
The bottom line: The powerful economic restart is likely to support many commodities in the near term, including oil. This should benefit the assets of commodity exporters, including some EMs. But the support from the powerful restart will be transitory, and we do not see a broad-based rise in global demand that buoys *all* commodities. Instead, we see a divergence story: The “green” transition will eventually erode demand for fossil fuels, potentially cutting short the duration of any price upswing. At the same time it looks likely to create structural demand for many industrial metals that may last for decades to come. Investing in commodities isn’t straightforward for most individual investors. Commodity-related equities is an option, yet there are risks specific to equity markets. Overall, our climate-aware return assumptions place energy and utilities sectors as laggards in long-term performance and expect technology and healthcare to benefit the most from the “green” transition, judging by their exposure to climate risks and opportunities. Over the tactical horizon, we tilt toward cyclicity and maintain a bias for quality. We are overweight U.S., emerging market and UK equities, as well as global high yield credit.

Market backdrop

U.S. stocks hit new record highs and 10-year Treasury yields traded below the 14-month peak. The International Monetary Fund (IMF) raised its forecast for global growth to 6% for this year – the highest since the 1970s – citing unprecedented public spending especially in the U.S. We expect equities and other risk assets to be supported by the *new nominal* – a more muted response of government yields to stronger growth and higher inflation than in the past as central banks lean against any sharp yield rises.

Assets in review

Selected asset performance, 2021 year-to-date and range



Past performance is not a reliable indicator of current or future results. Indexes are unmanaged and do not account for fees. It is not possible to invest directly in an index.

Sources: BlackRock Investment Institute, with data from Refinitiv Datastream as of April 8, 2021. Notes: The two ends of the bars show the lowest and highest returns at any point this year to date, and the dots represent current year-to-date returns. Emerging market (EM), high yield and global corporate investment grade (IG) returns are denominated in U.S. dollars, and the rest in local currencies. Indexes or prices used are, in descending order: spot Brent crude, MSCI Europe Index, MSCI USA Index, MSCI Emerging Markets Index, the ICE U.S. Dollar Index (DXY), Bank of America Merrill Lynch Global High Yield Index, Refinitiv Datastream Italy 10-year benchmark government bond index, Refinitiv Datastream Germany 10-year benchmark government bond index, Bank of America Merrill Lynch Global Broad Corporate Index, J.P. Morgan EMBI index, Refinitiv Datastream U.S. 10-year benchmark government bond index and spot gold.

Macro insights

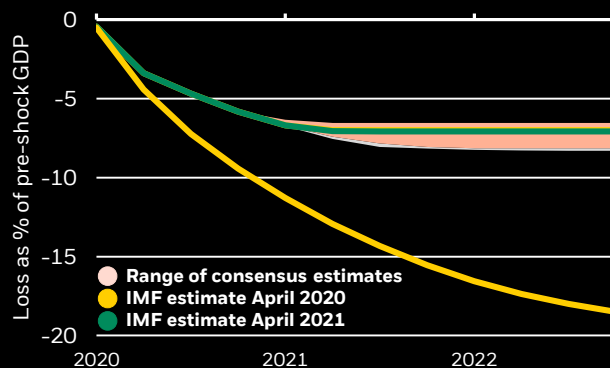
The IMF turned more bullish on global growth in its April update to its World Economic Outlook. Its U.S. forecast now implies a cumulative GDP loss – what matters to financial markets – at just over 7% for the U.S. This is less than half the loss it expected a year ago, as the chart shows.

The updated estimates once again underscore why risk assets have done so well over the past year. The Covid shock is more akin to a natural disaster than a regular business cycle recession, in our view. We see this distinct nature and unprecedented policy support leading to a much smaller activity shortfall, especially compared with that after the global financial crisis. Permanent scarring of productive capacities was likely avoided due to the comprehensive policy response, in our view. Consensus estimates now call for U.S. growth to return to its pre-Covid trend by the end of the year.

The IMF outlook is less optimistic on emerging markets, where slower rollout of vaccines, more limited policy space and greater reliance of tourism could weigh on activity in the longer term. See our [macro insights hub](#) for more.

A smaller shortfall

Estimated U.S. GDP shortfall from Covid shock, 2020-2022



Sources: BlackRock Investment Institute, IMF, with data from the IMF and Reuters News, April 2021. Notes: The green line shows an estimate for the cumulative U.S. GDP shortfall compared with the pre-Covid trend, based on the IMF forecast of April 2021. The yellow line shows an estimate based on the IMF forecast of April 2020. The shaded orange area shows the range of cumulative losses per the latest Reuters consensus. There is no guarantee that any forecasts made will come to pass.

Investment themes

1 The new nominal

- Our *new nominal* theme – that nominal yields will be less sensitive to expectations for higher inflation – has been confirmed by the Fed’s March policy meeting. The Fed made it clear that the bar for reassessing its policy rate path was not met and that it was too soon to talk about tapering bond purchases, while embracing a material improvement in its outlook. We believe this clear reaffirmation of its commitment to be well “behind the curve” on inflation and to wait to see it move above target has helped the Fed regain control of the narrative – for now.
- We believe the recent rise in nominal government bond yields, led by real yields, is justified and reflects markets awakening to positive developments on the faster-than-expected activity restart combined with historically large fiscal stimulus – all helped by a ramp-up in vaccinations in the U.S.
- We expect short-term rates will stay anchored near zero, supporting equity valuations. The Fed could be more willing to lean against rising long-term yields than the past, yet the direction of travel over the next few years is clearly towards higher long-term yields. We see important limits on the level of yields the global economy can withstand.
- **Market implication:** We favor inflation-linked bonds amid inflationary pressures in the medium term. Tactically we prefer to take risk in equities over credit amid low rates and tight spreads.

2 Globalization rewired

- Covid-19 has accelerated geopolitical transformations such as a bipolar U.S.-China world order and a rewiring of global supply chains, placing greater weight on resilience.
- The Biden administration is engaging in strategic competition with China, particularly on technology, and has criticized Beijing on human rights issues. The tensions were on display in a bilateral diplomatic meeting in Alaska.
- We see assets exposed to Chinese growth as core strategic holdings that are distinct from EM exposures. There is a case for greater exposure to China-exposed assets for potential returns and diversification, in our view.
- We expect persistent inflows to Asian assets as we believe many global investors remain underinvested and China’s weight in global indexes grows. Risks to China-exposed assets include China’s high debt levels and U.S.-China conflicts, but we believe investors are compensated for these risks.
- **Market implication:** Strategically we favor deliberate country diversification and above-benchmark China exposures. Tactically we like Asia ex-Japan equities, and see UK equities as an inexpensive, cyclical exposure.

3 Turbocharged transformations

- The pandemic has added fuel to pre-existing structural trends such as an increased focus on sustainability, rising inequality within and across nations, and the dominance of e-commerce at the expense of traditional retail.
- The pandemic has focused attention on underappreciated sustainability-related factors and supply chain resilience.
- It has also accelerated “winner takes all” dynamics that have led to the strong performance of a handful of tech giants in recent years. We see tech as having long-term structural tailwinds despite its increased valuations, yet it could face challenges from higher corporate taxes and tighter regulation under a united Democratic government.
- The pandemic has heightened the focus on inequalities within and across countries due to the varying quality of public health infrastructure – particularly across EMs – and access to healthcare.
- **Market implication:** Strategically we see returns being driven by climate change impacts, and view developed market equities as an asset class positioned to capture the opportunities from the climate transition. Tactically we favor tech and healthcare as well as selected cyclical exposures.

Week ahead

April 12-19

China total social financing and new yuan loans

April 15

U.S. Philly Fed business survey, retail sales, industrial production

April 13

Germany ZEW Indicator of Economic Sentiment


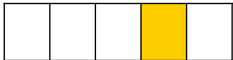

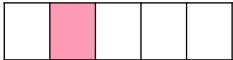

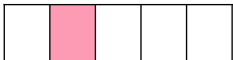
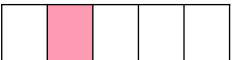


April 16

University of Michigan Surveys of Consumers; China industrial output

U.S. retail and consumer sentiment data will be in focus. Retail sales were expected to rise 4.7% in March after falling in the previous month, partly due to cold weather, according to a Reuters poll. The University of Michigan survey could shed light on consumer sentiment, after the lifting of restriction in some states and additional relief payment from the government.

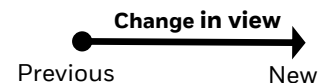
Directional views

Strategic (long-term) and tactical (6-12 month) views on broad asset classes, April 2021

Asset	Strategic view	Tactical view	Change in view 
Equities	 <p>+1</p>	 <p>+1</p> <p>We are overweight equities on a strategic horizon. We see a better outlook for earnings amid moderate valuations. Incorporating climate change in our expected returns brightens the appeal of developed market equities given the large weights of sectors such as tech and healthcare in benchmark indexes. Tactically, we stay overweight equities as we expect the restart to re-accelerate and interest rates to stay low. We tilt toward cyclical and maintain a bias for quality.</p>	Previous → New
Credit	 <p>-1</p>	 <p>Neutral</p> <p>We are underweight credit on a strategic basis as valuations are rich and we prefer to take risk in equities. On a tactical horizon, credit, especially investment grade, has come under pressure from tightening spreads, but we still like high yield for income.</p>	
Govt bonds	 <p>-1</p>	 <p>-1</p> <p>We are strategically underweight nominal government bonds as their ability to act as portfolio ballasts are diminished with yields near lower bounds and rising debt levels may eventually pose risks to the low-rate regime. This is part of why we underweight government debt strategically. We prefer inflation-linked bonds as we see risks of higher inflation in the medium term. We are underweight duration on a tactical basis as we anticipate gradual increases in nominal yields supported by the economic restart.</p>	
Cash		 <p>Neutral</p> <p>We use cash to fund overweight in equities. Holding some cash makes sense, in our view, as a buffer against supply shocks driving both stocks and bonds lower.</p>	
Private markets	 <p>Neutral</p>	<p>We believe non-traditional return streams, including private credit, have the potential to add value and diversification. Our neutral view is based on a starting allocation that is much larger than what most qualified investors hold. Many institutional investors remain underinvested in private markets as they overestimate liquidity risks, in our view. Private markets are a complex asset class not suitable for all investors.</p>	

Notes: Views are from a U.S. dollar perspective, April 2021. This material represents an assessment of the market environment at a specific time and is not intended to be a forecast of future events or a guarantee of future results. This information should not be relied upon by the reader as research or investment advice regarding any particular funds, strategy or security.

Granular views



Six to 12-month tactical views on selected assets vs. broad global asset classes by level of conviction, April 2021

Asset	Underweight	Overweight		
Equities			We are overweight U.S. equities. We see the tech and healthcare sectors offering exposure to structural growth trends, and U.S. small caps geared to an expected cyclical upswing in 2021.	
			We are neutral European equities. We believe the broad economic restart later in the year will help narrow the performance gap between this market and the rest of the world.	
			We are underweight Japanese equities. Other Asian economies may be greater beneficiaries of a more predictable U.S. trade policy under a Biden administration. A stronger yen amid potential U.S. dollar weakness may weigh on Japanese exporters.	
			We are overweight EM equities. We see them as principal beneficiaries of a vaccine-led global economic upswing in 2021. Other positives: our expectation of a flat to weaker U.S. dollar and more stable trade policy under a Biden administration.	
			We are overweight Asia ex-Japan equities. Many Asian countries have effectively contained the virus – and are further ahead in the economic restart. We see the region’s tech orientation allowing it to benefit from structural growth trends.	
			We are overweight UK equities. The removal of uncertainty over a Brexit deal should see the risk premium on UK assets attached to that outcome erode. We also see UK large-caps as a relatively attractive play on the global cyclical recovery as it has lagged peers.	
			We keep momentum at neutral. The factor has become more exposed to cyclicity, could face challenges in the near term as a resurgence in Covid-19 cases and a slow start to the vaccination efforts create potential for choppy markets.	
			We are neutral on value despite recent underperformance. The factor could benefit from an accelerated restart, but we believe that many of the cheapest companies – across a range of sectors – face structural challenges.	
			We are underweight min vol. We expect a cyclical upswing over the next six to 12 months, and min vol has historically lagged in such an environment.	
				We are overweight quality. We like tech companies with structural tailwinds and see companies with strong balance sheets and cash flows as resilient against a range of outcomes in the pandemic and economy.
				We are overweight the U.S. size factor. We see small- and mid-cap U.S. companies as a key place where exposure to cyclicity may be rewarded amid a vaccine-led recovery.
	Fixed Income			We are underweight U.S. Treasuries. We see nominal U.S. yields rising but largely due to a repricing higher of inflation expectations. This leads us to prefer inflation-linked over nominal government bonds.
			We are overweight TIPS. We see potential for higher inflation expectations to get increasingly priced in on the back of structurally accommodative monetary policy and increasing production costs.	
			We are neutral on bunds. We see the balance of risks shifting back in favor of more monetary policy easing from the European Central Bank as the regional economic rebound shows signs of flagging.	
			We are neutral euro peripheral bond markets. Yields have rallied to near record lows and spreads have narrowed. The ECB supports the market but it is not price-agnostic - its purchases have eased as spreads have narrowed.	
			We are underweight investment grade credit. We see little room for further yield spread compression and favor more cyclical exposures such as high yield and Asia fixed income.	
			We are moderately overweight global high yield. Spreads have narrowed significantly, but we believe the asset class remains an attractive source of income in a yield-starved world.	
			We are neutral hard-currency EM debt. We expect it to gain support from the vaccine-led global restart and more predictable U.S. trade policies.	
			We are neutral local-currency EM debt. We see catch-up potential as the asset class has lagged the risk asset recovery. Easy global monetary policy and a stable-to-weaker U.S. dollar should also underpin EM.	
			We are overweight Asia fixed income. We see the asset class as attractively valued. Asian countries have done better in containing the virus and are further ahead in the economic restart.	

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How High Are State and Local Tax Collections in Your State?

April 14, 2021

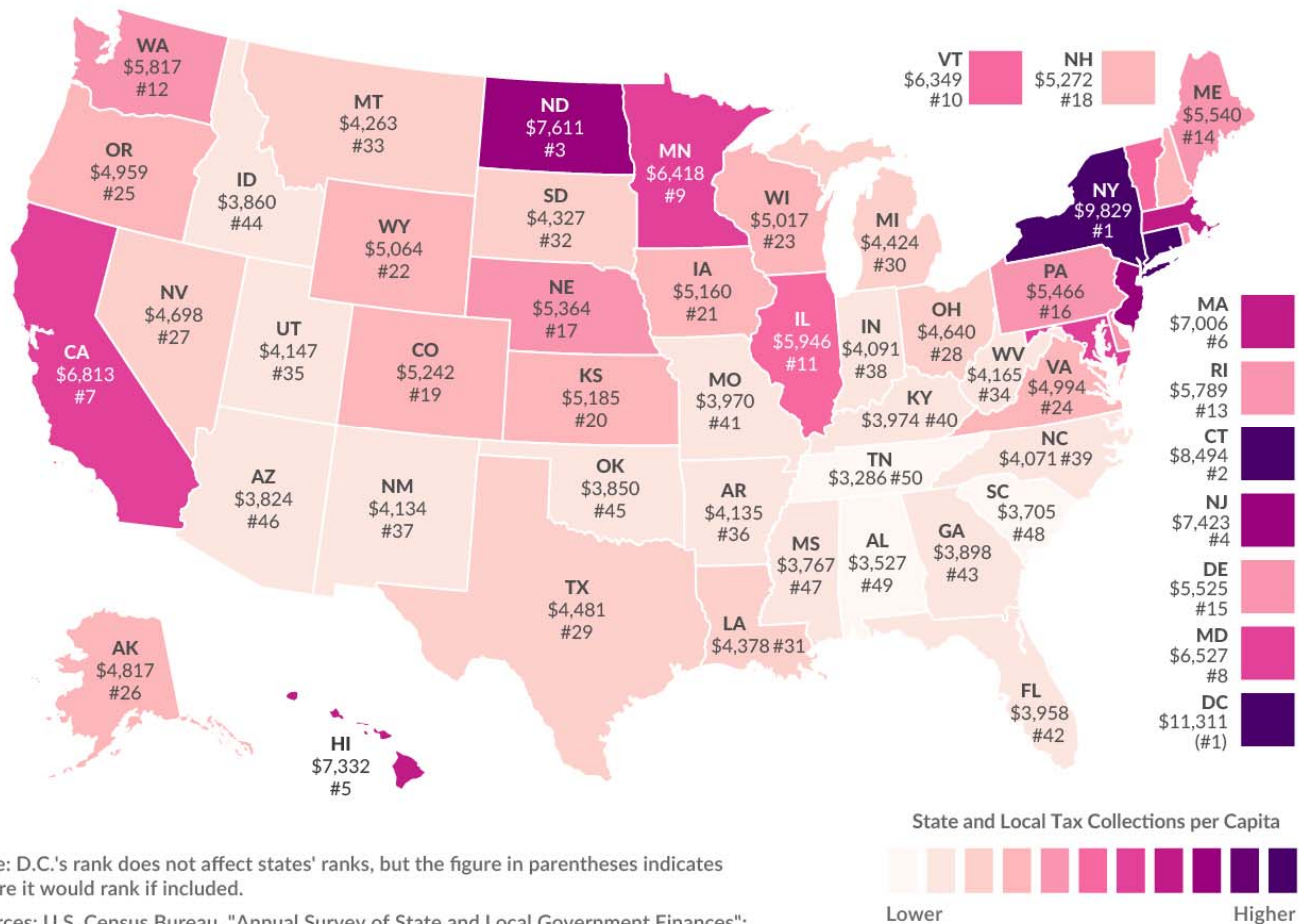
Janelle Cammenga

Although Tax Day has been pushed back this year, mid-April is still a good occasion to take a look at tax collections in the United States. Because differing state populations can make overall comparisons difficult, today's state tax map shows state and local tax collections per capita in each of the 50 states and the District of Columbia as of fiscal year 2018 (the most recent data available).

Tax collections of \$11,311 per capita in the District of Columbia surpass those in any state. The five states with the highest tax collections per capita are New York (\$9,829), Connecticut (\$8,494), North Dakota (\$7,611), New Jersey (\$7,423), and Hawaii (\$7,332). The five states with the lowest tax collections per capita are Tennessee (\$3,286), Alabama (\$3,527), South Carolina (\$3,705), Mississippi (\$3,767), and Arizona (\$3,824).

How High are State and Local Tax Collections in Your State?

State and Local Tax Collections per Capita, Fiscal Year 2018



Note: D.C.'s rank does not affect states' ranks, but the figure in parentheses indicates where it would rank if included.

Sources: U.S. Census Bureau, "Annual Survey of State and Local Government Finances"; Tax Foundation calculations.

Some of these results are less intuitive than others. For example, even though North Dakota ranks third for state and local tax collections, the resource-rich state generates a substantial part of its tax revenue from severance taxes on oil and natural gas, which are borne mainly by consumers outside North Dakota. As a result, North Dakota joins the ranks of high-tax states in terms of per capita collections even though the tax burden on North Dakotans is comparatively low.

It's worth noting that severance taxes are only one of many examples of the "tax exporting" that states engage in. Travel taxes—such as hotel, car rental, and meal taxes—also disproportionately impact nonvoting nonresidents who have few means of redress. As a result, states that generate substantial amounts of tax revenue from tourism may also show tax collections per capita that are significantly higher than the actual tax burden that falls on the in-state population. Taxes on businesses may also be exported, at least in part, to investors across the country, and to employees wherever they are located. It is important to keep both legal incidence and economic incidence in mind when evaluating the true costs of any tax.

SAF Dan Tsubouchi @Energy_Tidbits · 25m ...
snowing today in #Calgary. canada geese on one of their favorite places - on top of the gazebo. just wish they wouldn't poop there. last night it was beautiful so we had dinner in the gazebo and couldn't help notice what they leave on the glass top roof



🗨️ ↻ 4 📌 📊

SAF Dan Tsubouchi @Energy_Tidbits · 20h ...
Cdn heavy/medium #Oil producers should note @barbarajpowell8 reported late Fri, BP shut in largest coker 102 kb/d for emergency heater repairs, no timeframe yet for unit back to normal operations. In 2020, @EIAgov estimates Whiting imported ~287,000 of Cdn oil. #OOTT

* BP's Whiting, Indiana, refinery had to shut its largest coker Friday for emergency heater repairs, people familiar with plant operations say

* Work on the 102k b/d coker have not begun and there's no timeframe for repairing the heater and returning the unit to normal operations

* Earlier: Whiting expects to complete a turnaround on a naphtha hydrotreater late next week that began in late March

** Refinery also has the 70k b/d Pipestill 11-A crude shut at reduced rates since April 9: Genscape data

* Co. didn't immediately respond to request for comment

* Whiting, the largest inland refinery in the U.S., has a total crude processing capacity of 435k b/d: data from EIA

🗨️ ↻ 5 📌 7 📊

SAF Dan Tsubouchi @Energy_Tidbits · 22h ...
pent up desire to go places. been a steady stream of cars along transcanada highway on way to #Banff and #Canmore in cdn rockies. how can #Gasoline demand this summer not be stronger than pre covid. #OOTT



🗨️ 3 ↻ 1 📌 25 📊

SAF Dan Tsubouchi @Energy_Tidbits · Apr 17 ...
was expecting #Aramco increasing use of Other People's Money to be more equity/debt issues and infrastructure deals but didn't expect supply chain finance deals. reinforce more OPM deals ahead. great reporting @JBSteins @summer_said #OOTT

Julie Steinberg @JBSteins · Apr 16
.@WSJ scoop: Saudi Aramco is trying to get a supply-chain finance program up and running. It could cover billions in supplier invoices. The company is moving ahead despite *gestures to everything in supply-chain finance currently* w/ @summer_said
wsj.com/articles/aramc...

1 2

SAF Dan Tsubouchi @Energy_Tidbits · Apr 17 ...
#JCPOA. experts been working (and still working) on details last couple days. Now an official meeting, feels like its to tick the box on at least some of less contentious items to show progress. Likely why @POTUS was positive yesterday. #OOTT

twitter.com/Energy_Tidbits...

Mikhail Ulyanov @Amb_Ulyanov · Apr 17
Slow but steady progress in the negotiations on restoration of the nuclear deal. Today in addition to the earlier planned activities at expert level the participants decided to reconvene the official meeting of the Joint Commission of #JCPOA. It will start in a few hours.

2 2

SAF Dan Tsubouchi @Energy_Tidbits · Apr 16 ...
1/2 @POTUS moon shot of return to #JCPOA still alive "pleased that Iran has continued to agree to engage in discussions — in direct discussions with us and with our — our partners on how we move forward and what is needed to allow us to move back into the JOPCA [JCPOA]... #OOTT

1 1 4

SAF Dan Tsubouchi @Energy_Tidbits · Apr 16 ...
2/2. ... and so that we are a part of it again — that we should have never gotten out of, in my view — without us making concessions that I'm — we're just not willing to make." premature for outcome but "still talking" #OOTT #JCPOA



THE WHITE HOUSE
WASHINGTON

Remarks by President Biden and Prime Minister Suga of Japan at Press...
5:05 P.M. EDTPRESIDENT BIDEN: Well, good afternoon. The Prime Minister has brought the sun out, so he can do about anything.Mr. ...
whitehouse.gov

1 1 1 1



Dan Tsubouchi @Energy_Tidbits · Apr 16



#Bakken

📄 Dan Tsubouchi @Energy_Tidbits · Apr 16

ND rule of thumb, can hold #Oil production at 1 mmb/d with current levels of 17 rigs and 8 completion crews with each crew completing 6 wells/mth. Feb was 1.083 mmb/d. always get good Bakken insights from ND media, thx @KTVQ Jay Kohn. #OOTT

ktvq.com/news/local-new...

	2017	2018	2019	2020	2020/2019	2021	2021/2020
81,380	1,179,564	1,403,808	1,430,511	1.9%	1,147,377	-19.8%	
34,248	1,175,316	1,335,591	1,451,681	8.7%	1,083,020	-25.4%	
25,690	1,162,134	1,391,760	1,430,107	2.8%			
50,476	1,225,391	1,392,485	1,221,019	-12.3%			
40,995	1,246,355	1,394,648	859,362	-38.4%			
32,873	1,227,320	1,425,230	893,591	-37.3%			
48,099	1,269,290	1,445,934	1,042,081	-27.9%			
89,318	1,292,505	1,480,475	1,165,371	-21.3%			
07,345	1,359,282	1,443,980	1,223,107	-15.3%			
83,810	1,392,369	1,517,936	1,231,048	-18.9%			
94,920	1,375,803	1,519,037	1,227,138	-19.2%			
82,836	1,402,741	1,476,777	1,191,429	-19.3%			

ommission, North Dakota Pipeline Authority

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Dan Tsubouchi @Energy_Tidbits · Apr 16



ND rule of thumb, can hold #Oil production at 1 mmb/d with current levels of 17 rigs and 8 completion crews with each crew completing 6 wells/mth. Feb was 1.083 mmb/d. always get good Bakken insights from ND media, thx @KTVQ Jay Kohn. #OOTT

ktvq.com/news/local-new...

North Dakota Oil Production (b/d)	2016	2017	2018	2019	2020	2020/2019	2021	2021/2020
Jan	1,122,462	981,380	1,179,564	1,403,808	1,430,511	1.9%	1,147,377	-19.8%
Feb	1,119,092	1,034,248	1,175,316	1,335,591	1,451,681	8.7%	1,083,020	-25.4%
Mar	1,111,421	1,025,890	1,162,134	1,391,760	1,430,107	2.8%		
Apr	1,041,981	1,050,476	1,225,391	1,392,485	1,221,019	-12.3%		
May	1,047,003	1,040,995	1,246,355	1,394,648	859,362	-38.4%		
June	1,027,131	1,032,873	1,227,320	1,425,230	893,591	-37.3%		
July	1,029,734	1,048,099	1,269,290	1,445,934	1,042,081	-27.9%		
Aug	982,011	1,089,318	1,282,505	1,480,475	1,165,371	-21.3%		
Sept	971,760	1,107,345	1,359,282	1,443,980	1,223,107	-15.3%		
Oct	1,043,693	1,183,810	1,392,369	1,517,936	1,231,048	-18.9%		
Nov	1,034,484	1,194,920	1,375,803	1,519,037	1,227,138	-19.2%		
Dec	942,322	1,182,836	1,402,741	1,476,777	1,191,429	-19.3%		

Source: North Dakota Industrial Commission, North Dakota Pipeline Authority

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Dan Tsubouchi @Energy_Tidbits · Apr 16



beautiful morning in the canadian rockies and always great when you peek over your monitor and see the local #Canmore deer walking up the hill. should be lots of visitors in town today



🗨️ 1 ↻️ ❤️ 5 ⬆️ 📊



Dan Tsubouchi @Energy_Tidbits · Apr 15



Must read. Summary of Dems End Polluter Welfare Act follows Biden's want to end subsidies for fossil fuels. #Oil #Gas #Coal will hope @Sen_JoeManchin can take a hatchet to the bill. Be a crippling blow but a big positive to #Oil #NatGas prices. #OOTT

sanders.senate.gov/wp-content/upl...



3



Dan Tsubouchi @Energy_Tidbits · Apr 15



#NetZero. reminder dispositions will be key to how big #Oil makes immediate reductions to emissions. SRDSA provides detailed carbon intensity reduction targets to measured vs baseline of 2016. Shell sold its Cdn #OilSands to \$CNQ in 2017. #OOTT #EnergyTransition



Dan Tsubouchi @Energy_Tidbits · Apr 15



. @andrewsorkin ask on institutional money desperate to get into #Crypto. Fink says not so far with them. also "i do believe this could become a great asset class". Is it inevitable @blackrock eventually comes in to institutionalize space via funds/ETFs?



BlackRock's Larry Fink: Institutional clients fascinated by crypto but not... BlackRock CEO Larry Fink joined "Squawk Box" on Thursday to discuss the crypto market following Coinbase's direct listing on the Nasdaq. "I ... cnbc.com





Dan Tsubouchi @Energy_Tidbits · Apr 15



just to be clear meant oil will be strong in 2020s and not 2020

👤 Dan Tsubouchi @Energy_Tidbits · Apr 15

Positive for #Oil. Must read report on how \$RDSA will reach #NetZero. Sets bar for other board/mgmt. Reminds until #PeakOil demand happens, #Oil will be strong in 2020 given natural decline in oil reservoirs is 5% and others will be like Shell with declining oil production #OOTT twitter.com/Shell/status/1...



Dan Tsubouchi @Energy_Tidbits · Apr 15



Positive for #Oil. Must read report on how \$RDSA will reach #NetZero. Sets bar for other board/mgmt. Reminds until #PeakOil demand happens, #Oil will be strong in 2020 given natural decline in oil reservoirs is 5% and others will be like Shell with declining oil production #OOTT



👤 Shell @Shell · Apr 15

The Shell Energy Transition Strategy publication out now.

In an industry first, it will be put to a shareholder vote, as we transform into an energy company for the future. #PoweringProgress





Dan Tsubouchi @Energy_Tidbits · Apr 14

...

Sask @PremierScottMoe steps up support #Oil #NatGas sector. Budget 5 yr moratorium on associated natural gas royalties ie. on Bakken oil wells. 5 yr high 2% reduction on eligible 4th tier high water cut >90% wells ie. a lot of sask convention oil. #OOTT

saskatchewan.ca/government/bud...

<p>emission reduction projects and further reduce venting and flaring of natural gas.</p> <p>The royalty moratorium begins April 1, 2021 and will remain in place for five years, with a sunset date of March 31, 2026.</p> <p>For further information on this initiative, please contact the Ministry of Energy and Resources at 306-787-4765.</p> <p>High Water-Cut Oil Royalty Incentive</p> <p>The 2021-22 Budget introduces a modernized and expanded High Water-Cut Program (HWCP), to encourage capital investment and increase oil production rates from wells that produce high volumes of water.</p> <p>The modernized program provides a new royalty benefit where substantial investments in water handling capacity are made.</p>	<p>incremental oil production. Eligible 4th tier HWCP oil wells will receive a two percentage point royalty rate reduction on all their production.</p> <p>This update to the existing HWCP is designed to increase program participation and encourage new capital investments and increased oil production that would otherwise not occur.</p> <p>The new HWCP begins April 1, 2021 and will remain in place for five years, with a sunset date of March 31, 2026.</p> <p>For further information on this initiative, please contact the Ministry of Energy and Resources at 306-787-4765.</p> <p>Sodium Sulphate Royalty Incentive</p> <p>The 2021-22 Budget introduces a new sodium sulphate royalty system which simplifies the existing royalty calculation and provides a modernized investment incentive.</p>
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Dan Tsubouchi @Energy_Tidbits · Apr 14

...

Positive to #Oil. @IEA Apr OMR 2021 demand forecast +230 kb/d vs Mar OMR. IEA "market changes dramatically in latter half of this year as nearly 2 mmb/d of extra supply may be required" even after OPEC+ announced increases #OOTT Thx @business
ksiedenisburg@bloomberg.net for data

SAP Group - Comparison of IEA Oil Market Report Forecasts By Month
IEA Estimated Global Oil Demand Forecasts
IEA OMR Forecast Month

mmb/d	2019	Q1/20	Q2/20	Q3/20	Q4/20	2020	20-19	Q1/21	Q2/21	Q3/21	Q4/21	2021	21-20
Apr 21	99.7	93.7	82.9	82.6	94.7	91.0	-8.7	93.7	95.1	98.3	99.5	96.7	5.7
Mar 21	99.7	93.8	82.9	82.7	94.7	91.0	-8.7	93.9	95.0	97.8	99.2	96.5	5.5
Feb 21	99.6	93.8	82.9	82.7	94.7	91.0	-8.6	93.7	94.9	97.9	99.2	96.4	5.4
Jan 21	99.9	94.1	83.1	83.0	94.5	91.2	-8.7	94.1	95.2	98.1	99.0	96.8	5.4
Dec 20	99.9	94.1	83.1	83.0	94.7	91.2	-8.7	94.7	95.4	98.0	99.2	96.9	5.7
Nov 20	99.9	94.0	83.0	83.2	94.9	91.3	-8.6	94.9	95.6	98.4	99.1	97.1	5.8
Oct 20	99.9	94.1	83.0	83.0	95.1	91.7	-8.2	95.0	96.1	98.2	98.8	97.2	5.5
Sept 20	99.9	93.9	83.0	83.7	95.0	91.7	-8.2	95.0	95.8	98.2	98.9	97.1	5.4
Aug 20	99.9	94.1	83.2	83.8	95.7	91.9	-8.0	95.4	95.8	98.8	98.7	97.1	5.2
July 20	99.9	94.0	82.9	84.3	97.1	92.1	-7.8	95.5	96.2	99.0	98.9	97.4	5.3
June 20	99.9	93.9	81.4	84.0	95.9	91.7	-8.2	95.0	95.8	98.7	98.7	97.4	5.7
May 20	99.9	93.5	79.3	85.1	95.9	91.2	-8.7	-	-	-	-	-	-
Apr 20	99.8	93.3	78.1	86.0	97.8	90.8	-9.0	-	-	-	-	-	-

Source: IEA, Bloomberg, Updated April 14, 2021



Dan Tsubouchi @Energy_Tidbits · Apr 13

...

#OPEC MOMR, one surprise, no change to India #Oil demand of 4.99 mmb/d for 2021. Only raised uncertainty on near term expectations from "renewed COVID-19 wave" and didn't reflect Covid cases hitting record highs. #OOTT

World oil demand in 2020 and 2021

Table 4 - 1: World oil demand in 2020*, mmb/d

	2019	1Q20	2Q20	3Q20	4Q20	2020	Change 2020/19	%
World oil demand								
Americas	26.65	24.36	20.01	22.72	23.15	22.54	-3.09	-12.06
of which US	20.66	19.67	16.38	18.67	19.04	18.44	-2.22	-11.60
Europe	14.25	13.34	11.03	12.05	12.56	12.45	-1.80	-12.64
Asia Pacific	7.79	7.75	6.54	6.69	7.34	7.08	-0.71	-9.11
TOP OPEC	47.69	45.44	37.58	42.27	43.95	42.99	-5.61	-11.76
China	13.49	11.34	13.25	13.07	14.28	13.19	-0.29	-2.18
India	4.91	4.84	3.58	4.01	5.15	4.40	-0.52	-10.54
Other Asia	9.04	8.30	7.79	8.11	8.33	8.13	-0.91	-10.06
Latin America	6.59	6.11	5.61	6.20	6.12	6.01	-0.58	-8.83
Middle East	8.20	7.88	6.91	7.94	7.65	7.60	-0.60	-7.37
Africa	4.45	4.37	3.77	3.95	4.28	4.09	-0.35	-7.94
Russia	3.61	3.44	3.04	3.20	3.43	3.29	-0.33	-9.20
Other Eurasia	1.24	1.07	0.99	1.01	1.23	1.07	-0.16	-13.64
Other Europe	0.76	0.71	0.55	0.64	0.69	0.65	-0.12	-15.33
Total Non-OPEC	52.29	48.95	45.49	48.94	51.94	48.42	-3.87	-7.40
Total World	100.00	94.39	83.07	91.21	94.21	91.41	-8.59	-8.59
Previous Estimate	99.98	93.10	83.07	91.20	94.13	90.38	-9.60	-9.60
Revision	0.02	0.40	0.00	0.00	0.08	0.12	0.12	0.12

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





Dan Tsubouchi @Energy_Tidbits · Apr 12

RUS peak oil story f/ @MoscowTimes. See below SAF Jan 31 Energy Tidbits on Sorokin Jan 27 said only 36% of #Oil reserves profitable due to lesser development quality, increase in water cut, low perm, marginal zones with skinny pay thickness and so on. Bullish for 2020s oil. #OOTT



MT The Moscow Times @MoscowTimes · Apr 12
 Russian oil production might never recover to pre-coronavirus levels, the country's Energy Ministry has forecast, Russian media reported themoscowtimes.com/2021/04/12/rus...

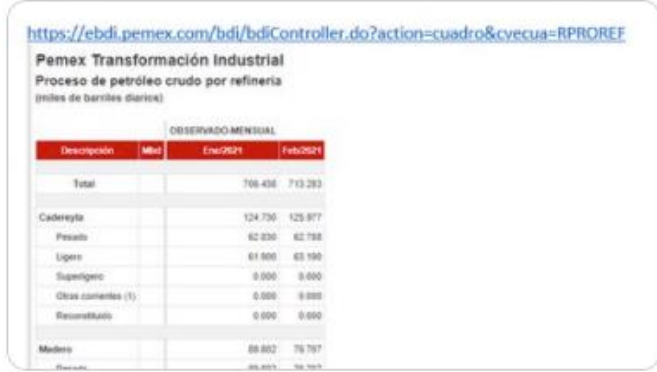
1 comment, 5 retweets, 15 likes



Dan Tsubouchi @Energy_Tidbits · Apr 12

Another 80,000 b/d of MEX crude available for export. @amystillman reports @Pemex Minatitlan refinery expected down 90 days post Apr 7 explosion/fire. Processed ~80 kbd in Jan/Feb, mostly heavy. Logical market is US Gulf Coast. #OOTT

ebdi.pemex.com/bdi/bdiControl...



1 retweet



Dan Tsubouchi @Energy_Tidbits · Apr 12

apologies for putting \$7b and not the \$7 million they "currently" hold in the release. having said that, i can't recall ever seeing a \$247.7 billion fund hold only \$7 million in 7 oil sands stocks so the question is how much have they sold so far to only currently hold \$7 million

Dan Tsubouchi @Energy_Tidbits · Apr 12
 #OilSands. NY pension fund selling \$7b in oil sands stocks in transition portfolio to net zero emissions by 2040. Reality, the bar keeps getting raised for #Oil #NatGas Co's, will need to be showing plans for #NetZero not just Paris +2C. #OOTT

osc.state.ny.us/press/releases...

2 comments, 3 retweets, 10 likes



Dan Tsubouchi @Energy_Tidbits · Apr 12



#OilSands. NY pension fund selling \$7b in oil sands stocks in transition portfolio to net zero emissions by 2040. Reality, the bar keeps getting raised for #Oil #NatGas Co's, will need to be showing plans for #NetZero not just Paris +2C. #OOTT



DiNapoli Moves State Pension Fund Toward Net Zero Target, Restricts I...
The New York State Common Retirement Fund (Fund) will restrict investments in oil sands companies that have not demonstrated that ...
osc.state.ny.us

6 1 1



Dan Tsubouchi @Energy_Tidbits · Apr 12



KSA says Houthis launched 2 ballistic missiles and bomb laden UAVs towards kingdom that the Coalition "managed to intercept and destroy". Reminder, doesn't mean all of 17 claimed drones were intercepted. #OOTT

spa.gov.sa/viewfullstory...

Posted 14:01 local time on 5:01am MT

<https://www.spa.gov.sa/viewfullstory.php?lang=en&newsid=2214867#2214867>

Arab Parliament Condemns Houthi Militia's Continuing Attacks on Saudi Arabia with Ballistic Missiles and Bomb-laden UAVs

Monday 1442/8/30 - 2021/04/12

Cairo, April 12, 2021, SPA – The Arab Parliament has condemned the terrorist Houthi militia's launching of two ballistic missiles and bomb-laden UAVs towards the Kingdom of Saudi Arabia that the Forces of the Coalition to Restore Legitimacy in Yemen managed to intercept and destroy.

In a statement issued today, the Arab Parliament affirmed that continued systematic attempts to target civilians and civilian objects by the Houthi militia and its continuous escalation reflect its blatant challenge to the international law and its rejection of all political efforts aimed to end the Yemeni crisis, noting that these repeated Iran-backed attacks reflect the Iranian guardianship and its use of the



Dan Tsubouchi @Energy_Tidbits · Apr 12

Reuters: Houthis claim 17 drones and 2 ballistic missiles at Saudi targets incl towards #Aramco refineries in Jubail and Jeddah. No immediate Saudi confirmation. #OOTT

reuters.com/article/us-sau...

2



Dan Tsubouchi @Energy_Tidbits · Apr 12



Reuters: Houthis claim 17 drones and 2 ballistic missiles at Saudi targets incl towards #Aramco refineries in Jubail and Jeddah. No immediate Saudi confirmation. #OOTT



Yemen's Houthis say attacked Saudi Aramco refineries in Jeddah and J...
Yemen's Houthi movement said on Monday it had fired 17 drones at Saudi targets, including 10 launched towards Saudi Aramco refineries i...
reuters.com



Dan Tsubouchi @Energy_Tidbits · Apr 11



he didn't win today, but once again @coreconn does 🇨🇦 proud, and continues his record of doing better every time he tees it up at @TheMasters. T73 in 2015, T46 in 2019, T10 in 2020, and T8 this year. can't wait to see what he does next year.



Dan Tsubouchi @Energy_Tidbits · Apr 10

the @TheMasters weather delay is ruining a great afternoon of watching @coreconn light it up. Corey has gotten better every time he is in the Masters. This is 4th start, T73 in 2015, T46 in 2019, but last year T10 in 2020. Currently T3 in the rain delay! twitter.com/TheMasters/sta...



Dan Tsubouchi @Energy_Tidbits · Apr 11



Breaking. @TimesofIsrael reports "Israeli data shows South African variant able to 'break through' Pfizer vaccine". Likely to be the market story tomorrow. not a huge number in the study, but the conclusions will get market attention. #OOTT #Oil



Israeli data shows South African variant able to 'break through' Pfizer v...
Strain is more effective than original COVID and the British variant at bypassing the shot, Israeli scientists find, in first-of-its-kind, real-world ...
timesofisrael.com





Dan Tsubouchi @Energy_Tidbits · Apr 11

...

it's a good cause but we won't be able to use our patio for a few weeks. the mama canada goose laid one egg. it's good for the chick as the water trough is only few feet high so not too far of a drop when the chick leaves for the #Calgary Elbow River



0:04 506 views

2 6



Dan Tsubouchi @Energy_Tidbits · Apr 11

...

Our weekly SAF April 11, 2021 Energy Tidbits memo was just posted to our SAF Group website. This 39-pg energy research piece expands upon and covers many more items than tweeted this week. See the research section of the SAF website. #Oil #OOTT #OPEC #LNG safgroup.ca/insights/trend...

SAF GROUP

Energy Tidbits

Produced by Dan Tsubouchi

April 11, 2021

If Real Progress Is Made At JCPOA Apr 14, Will Blinken Leave Brussels to Meet With Zarif?

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.

2 4