Energy Tidbits

Warren Buffett: World will Still Need 100 mmb/d of Oil in 5 Years Even If Trillions are Spent Every Year on Energy Transition

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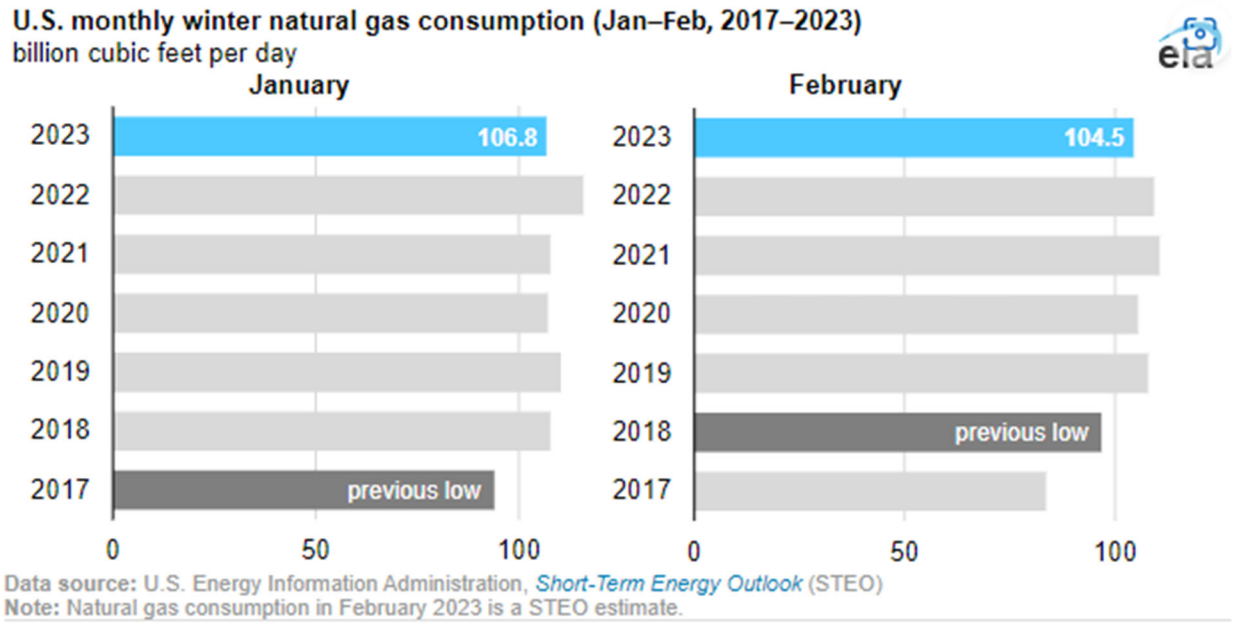
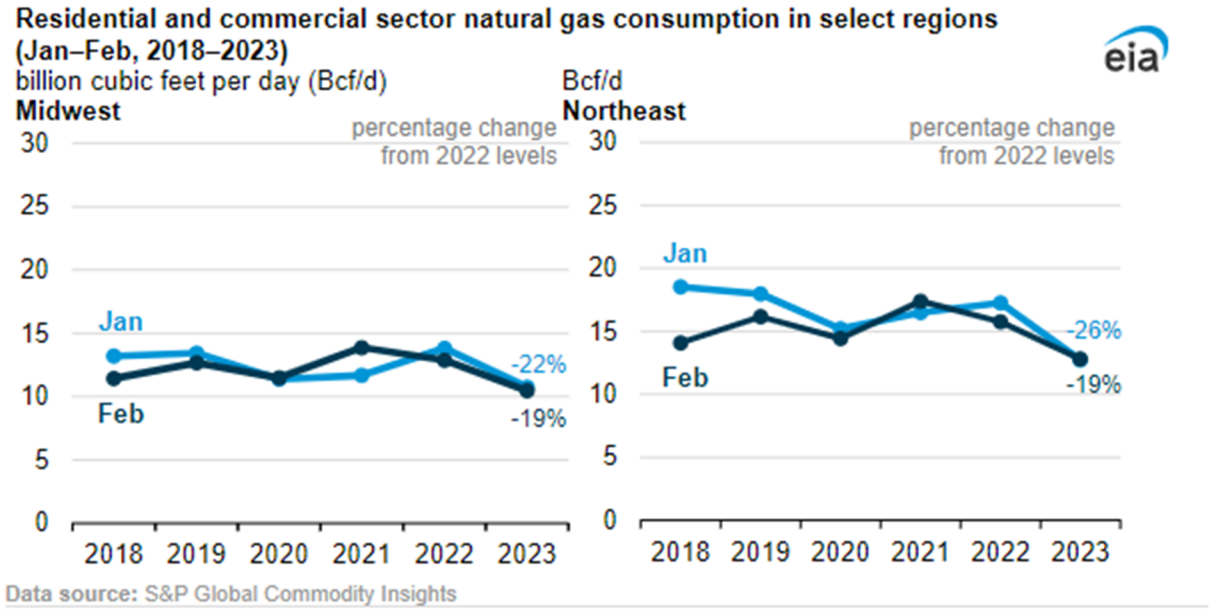
APRIL 12, 2023

U.S. natural gas consumption reached multiyear lows this past January and February



Mild winter temperatures and reduced natural gas consumption in the residential and commercial sectors drove down overall U.S. natural gas consumption this past January and February, according to our *Short-Term Energy Outlook* (STEO). In January 2023, U.S. natural gas consumption averaged 106.8 billion cubic feet per day (Bcf/d), its lowest January volume since 2017. February 2023 natural gas consumption averaged 104.5 Bcf/d, its lowest February volume since 2018.

U.S. natural gas consumption in January was 8% less than year-ago levels and 3% less than the five-year average (2018–22) for January. February natural gas consumption was 4% less than year-ago levels and 1% less than the five-year February average. Natural gas consumption in the residential and commercial sectors, which was down 16% in January and 12% in February from the same months in 2022, was low because above-average winter temperatures reduced seasonal heating demand.



Natural gas accounts for 70% of space-heating fuel in the Midwest Census Region and 52% in the Northeast Census Region, according to our *Residential Energy Consumption Survey* (RECS). In the Midwest, 20% less natural gas was consumed in the residential and commercial sectors during the first two months of 2023 compared with the first two months of 2022, and 16% less natural gas was consumed than the five-year average for the two months combined.

Similarly, in the Northeast, 23% less natural gas was consumed in the residential and commercial sectors during the first two months of 2023 compared with the same period in 2022, and 22% less natural gas was consumed than the five-year average for the two months combined.

In the West Census Region, temperature anomalies that influence heating demand affect natural gas consumption in the electric power sector more than in the residential and commercial sectors. The West experienced one of the coldest winters in years, with 23% more natural gas consumed in the electric power sector during the first two months of this year than in January and February 2022, and 33% more than the five-year average for the two months combined.

Principal contributor: Katy Fleury

Short-Term Energy Outlook

Overview

U.S. energy market indicators	2022	2023	2024
Brent crude oil spot price (dollars per barrel)	**$101**	**$85**	**$81**
Retail gasoline price (dollars per gallon)	**$3.97**	**$3.42**	**$3.18**
U.S. crude oil production (million barrels per day)	**11.88**	**12.54**	**12.75**
Natural gas price at Henry Hub (dollars per million British thermal units)	**$6.42**	**$2.94**	**$3.71**
U.S. liquefied natural gas gross exports (billion cubic feet per day)	**10.6**	**12.1**	**12.7**
Shares of U.S. electricity generation			
Natural gas	39%	39%	37%
Coal	20%	17%	17%
Renewables	22%	24%	26%
Nuclear	19%	20%	20%
U.S. GDP (percentage change)	**2.1%**	**1.1%**	**1.8%**
U.S. CO_2 emissions (billion metric tons)	**4.96**	**4.79**	**4.82**

Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook,* April 2023

- **Global liquid fuels production**. On April 3, OPEC and partner countries announced they would cut crude oil production by 1.2 million barrels per day (b/d) through the end of 2023. Our March STEO accounted for some declines in OPEC production in the coming months. However, as a result of the announcement, we reduced our forecast of OPEC production by 0.5 million b/d for the rest of 2023. Overall, we expect less global liquid fuels production this year than in last month's STEO. However, less production from OPEC was partly offset by a 0.3 million b/d increase in our forecast for Russia's liquid fuels production over the rest of this year.

- **Crude oil prices.** The Brent crude oil spot price in our forecast averages $85 per barrel (b) in 2023, up $2/b from last month's forecast. The higher price forecast reflects a forecast for less global production in 2023 and a relatively unchanged outlook for global oil consumption. Despite our higher price forecast, recent issues in the banking sector raise the potential that economic and oil demand growth will be lower than our forecast, which has the potential to result in lower oil prices.

- **U.S. gasoline prices.** We forecast retail gasoline prices will peak between $3.50 per gallon (gal) and $3.60/gal in June and average about $3.50/gal throughout the summer season (April through September). This month we will release our inaugural *Perspectives* supplement, which discusses alternative scenarios for summer gasoline prices and how they affect our estimates of consumer spending.

- **Natural gas storage.** Mild winter weather in the first quarter of 2023 (1Q23) resulted in natural gas inventories ending the withdrawal season (November–March) 19% higher than the five-year (2018–2022) average. We forecast natural gas inventories will end the injection season (April–October) at 3.8 trillion cubic feet, 6% above the five-year average.

- **Natural gas prices.** We forecast that the Henry Hub natural gas spot price will average about $2.65 per million British thermal units (MMBtu) in 2Q23 as natural gas inventories begin to rise. With inventories remaining above the five-year average in 2023, we expect natural gas prices to average less than $3.00/MMBtu for 2023, a more than 50% decrease from last year.

- **Electricity**. U.S. electricity demand in 2Q23 in our forecast is down about 1% from the same period last year. The drop in demand largely reflects our expectation for milder temperatures than last year. Less demand, along with growing generation from renewable energy sources and lower natural gas prices significantly lower electric power prices in our forecast for 2Q23 and 3Q23 compared with the same periods in 2022.

Notable forecast changes

current forecast: April 11, 2023; previous forecast: March 7, 2023	**2023**	**2024**
Brent spot average (current forecast) (dollars per barrel)	**$85.01**	**$81.21**
Previous forecast	$82.95	$77.57
Percentage change	2.5%	4.7%
OPEC crude oil production (current forecast) (million barrels per day)	**33.7**	**34.6**
Previous forecast	34.1	34.7
Percentage change	-1.1%	-0.3%
U.S. secondary coal inventories (current forecast) (million short tons)	**129.8**	**100.2**
Previous forecast	123.6	98.4
Percentage change	5.0%	1.9%

Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook,* April 2023

Global Oil Markets

Global oil supply

On April 3, OPEC and partner countries (OPEC+) announced plans to cut crude oil production by 1.2 million barrels per day (b/d) through the end of 2023. In March, OPEC produced less than its previous targets, and in our March STEO, we had assumed that OPEC production would fall further below the prior production targets in the coming month. Because we had already accounted for some of the reduction in crude oil output from OPEC countries subject to the cuts, we have reduced our forecast for OPEC's crude oil production from the second quarter of 2023 (2Q23) through 4Q23 by around 0.5 million b/d. We now expect OPEC's crude oil production will fall by an average 0.4 million b/d this year compared with last year.

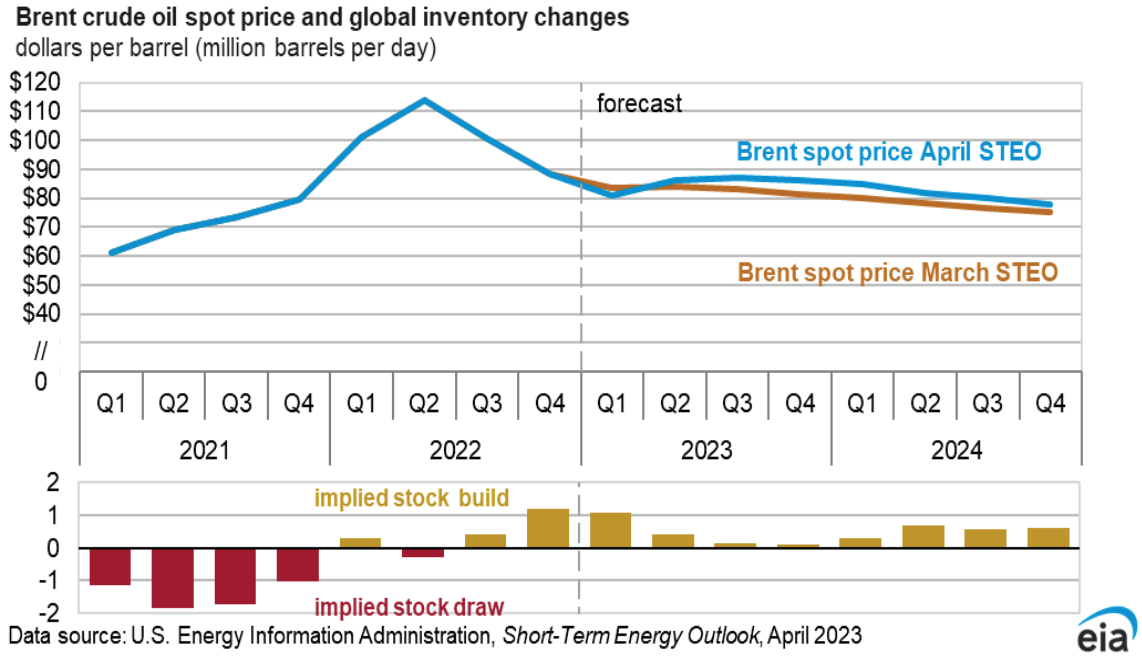
These production cuts were in addition to Russia's 0.5 million b/d cut that it previously announced would begin in March. Despite this announcement, the observable impact on Russia's liquids production and exports in the latest available data has been less significant than expected. Although we still expect Russia's production to fall this year, Russia's production outpaced our earlier expectations because its exports have continued to find buyers in markets outside of Europe. We forecast Russia's petroleum and other liquids production will decline from 10.9 million b/d in 2022 to 10.6 million b/d in 2023 and to 10.4 million b/d in 2024, which are both about 0.3 million b/d more than we forecast in last month's STEO.

Although our forecast includes declining production in OPEC and Russia, we expect global liquids fuel production will increase by 1.5 million b/d in 2023 because of strong growth from non-OPEC countries, which (excluding Russia) increase by 2.3 million b/d in our forecast. Non-OPEC production growth is largely driven by countries in North and South America, as highlighted in our latest *STEO Between the Lines*.

Global liquids production rises by an additional 2.0 million b/d in 2024 in the forecast, driven by non-OPEC production growth of 1.0 million b/d and by OPEC crude oil production, which we expect to increase by 0.9 million b/d when current production cuts expire at the end of 2023.

Global oil demand and prices

We forecast that global liquid fuels consumption will rise by 1.4 million b/d in 2023 and by 1.8 million b/d in 2024. Our forecast for global liquid fuels consumption is unchanged from last month's outlook. However, increasing risks in the U.S. and global banking sectors increases uncertainty about macroeconomic conditions and their potential effects on liquid fuels consumption, which increases the possibility of liquid fuels consumption being lower than our current forecast.



We expect global oil markets will be in relative balance over the coming year. Global oil inventories, which increased by 0.4 million b/d in 2022 and by 1.1 million b/d in 1Q23, will be mostly unchanged during the second half of 2023 (2H23) . We expect builds will average about 0.5 million b/d beginning in 2024. This forecast assumes the recent OPEC cuts expire at the beginning of 2024.

Given our forecast of relatively balanced oil markets in 2H23, we expect prices will average $86 per barrel (b) for the rest of 2023. That price is similar to the April 6 closing spot price for Brent, which was almost $87/b, as reported by Refinitiv. In 2023, we assess that the most uncertainty in our oil price forecast comes from less-than-forecast economic and oil demand growth.

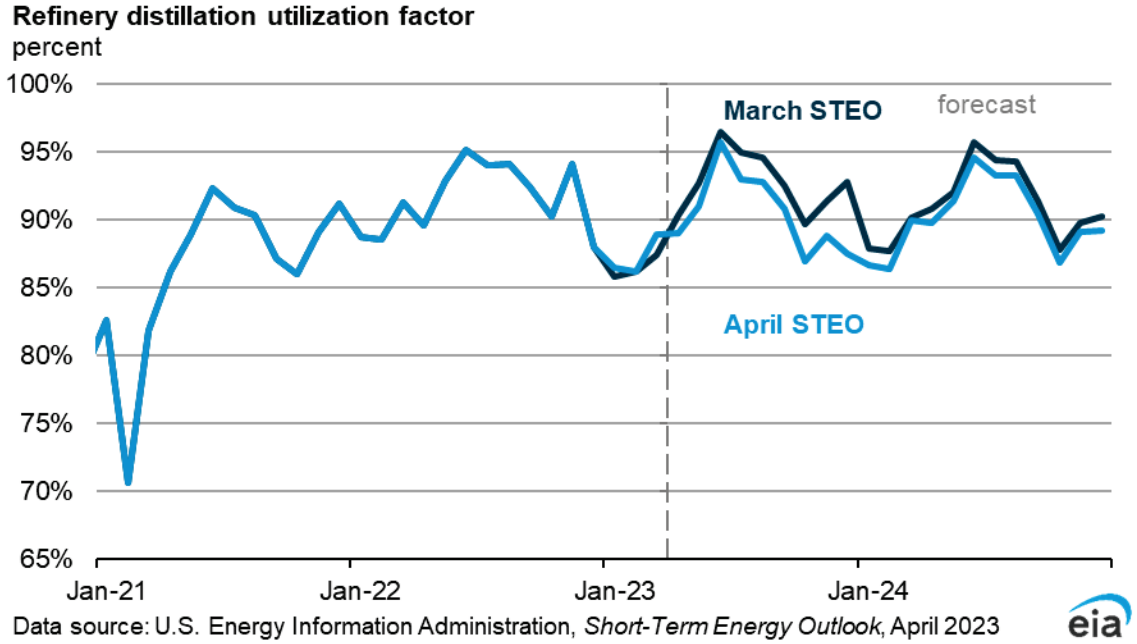
We forecast Brent prices will average $81/b in 2024 with downward price pressures emerging in 2Q24, when we expect global oil inventories will begin to build more significantly. However, because these builds depend on OPEC increasing its crude oil production, uncertainty in the forecast for this period comes from less oil production than we forecast, which could result in higher prices than in our forecast.

Petroleum Products

U.S. refinery utilization

We updated our U.S. refinery capacity forecast in the April STEO. In mid-March, ExxonMobil announced that it had completed expansion of capacity at its Beaumont refinery. In last month's STEO forecast we expected that this expanded capacity would come online by the end of May. In the April STEO, we also incorporated smaller capacity additions, including additional processing capacity at Marathon Petroleum's Galveston Bay refinery, which we expect to be operational by the second half of 2023 (2H23), and additional capacity at Chevron's Pasadena refinery in 2024. LyondellBasel has also announced the closure of its Houston refinery at the end of 2023, and we had already included this closure in our previous forecast.

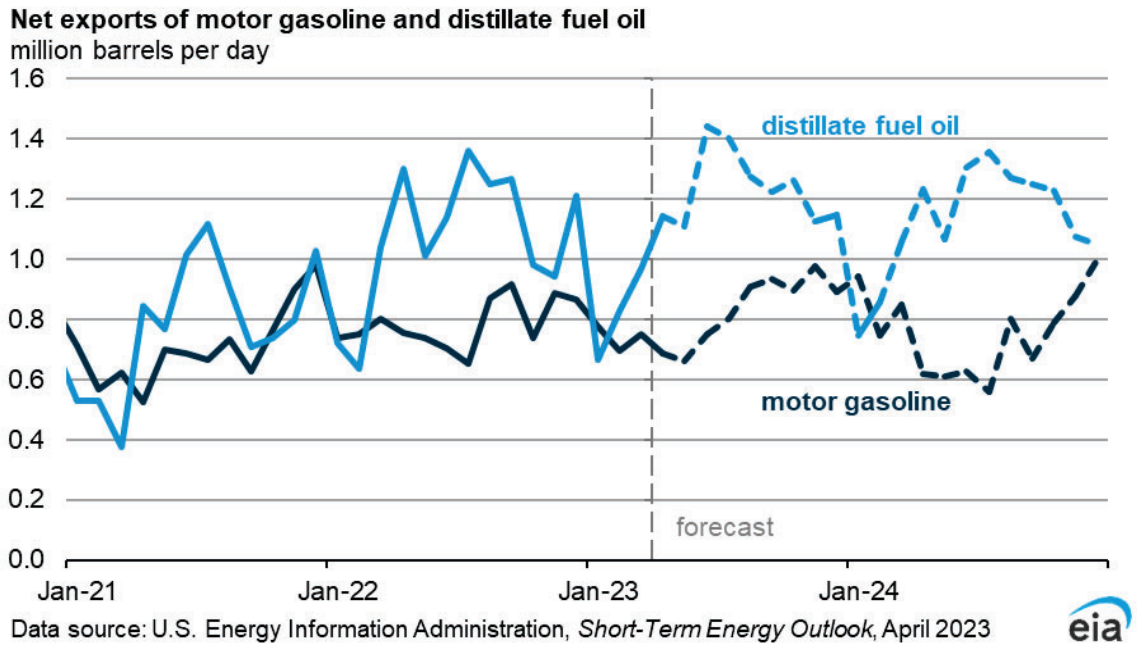
Although we increased refining capacity in the April STEO, we reduced our outlook for refinery throughput for the rest of the forecast compared with the March STEO. The reduced throughput forecast was the result of higher crude oil prices in our April STEO, in response to OPEC production cuts, which reduce refinery margins and lower runs, along with a reduced outlook for net exports. We expect U.S. refinery utilization to average 90% this year and in 2024, when we expect less net U.S. petroleum product exports will be offset by more domestic petroleum consumption.



Petroleum product net exports

U.S. exports of petroleum products set a new record in 2022. The record exports were the result of higher demand for U.S. exports amid shifting international trade as a result of policy initiatives associated with Russia's invasion of Ukraine. Russia had been a major supplier of diesel to Europe. Following Europe's ban on seaborne imports of petroleum from Russia, Europe struggled to find new sources of diesel, which raised demand for U.S. diesel exports. Less petroleum exported from China also increased demand for U.S. exports to meet global demand for gasoline and diesel.

In 2023, we estimate refinery production of gasoline will increase by more than U.S. consumption, raising stocks, lowering prices, and increasing net exports compared with 2022. In the forecast, net exports of gasoline average 810,000 b/d in 2023, up from 780,000 b/d in 2022, in response to increased U.S. gasoline production and more consumption globally. We expect similar trends for distillate, with net exports averaging 1.1 million b/d in both 2023 and 2024. Calls on U.S. distillate exports to replace sanctioned volumes in Europe are likely to increase U.S. distillate exports in 2023.



Many refiners have already switched to producing more expensive summer-grade gasoline to comply with seasonal Reid vapor pressure (RVP) requirements on gasoline. We expect regular-grade retail gasoline prices in the summer (April through September) to average about $3.50 per gallon, almost 20% lower than retail gasoline prices last summer. The *Perspectives* supplement, released alongside our April STEO, discusses our forecast for gasoline expenditures and alternative scenarios for gasoline prices this summer.

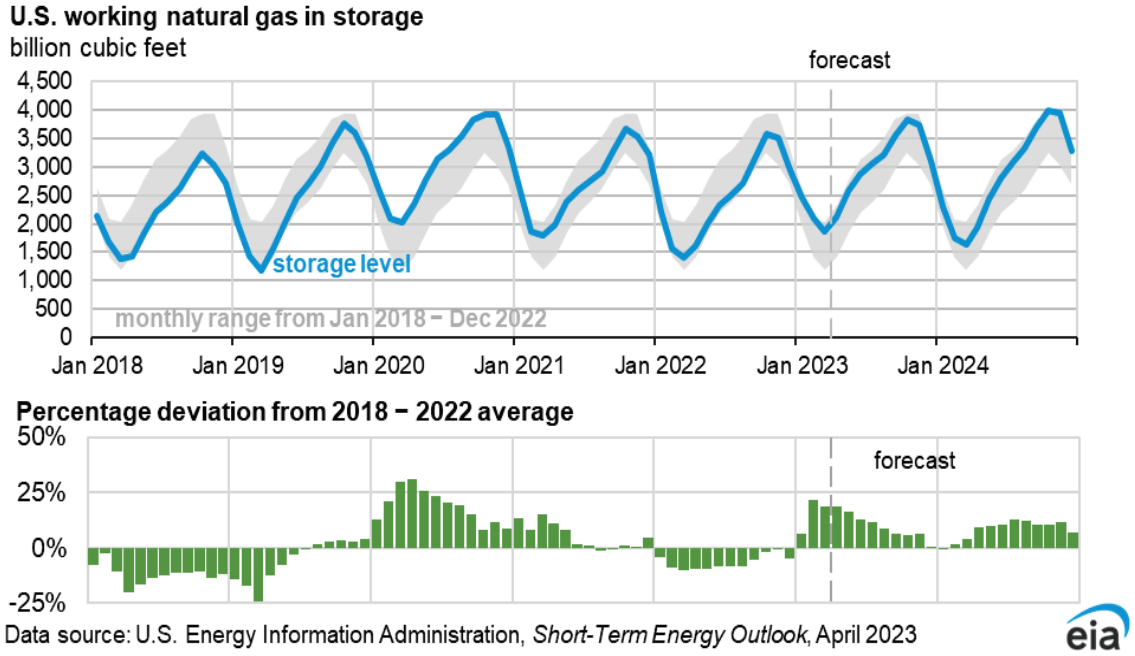
Natural Gas

Natural gas storage

At the end of March, typically considered the end of the U.S. storage withdrawal season (November–March), we estimate working natural gas in U.S. storage reached 1,856 billion cubic feet (Bcf), 19% more than the five-year (2018–2022) average. Lower-than-average withdrawals of natural gas from storage in the first quarter of 2023 (1Q23) resulted in natural gas inventories rising above the five-year average and contributed to falling natural gas prices. The natural gas spot price at Henry Hub averaged $5.45 per million British thermal units (MMBtu) in November 2022 and declined to average $2.31/MMBtu in March.

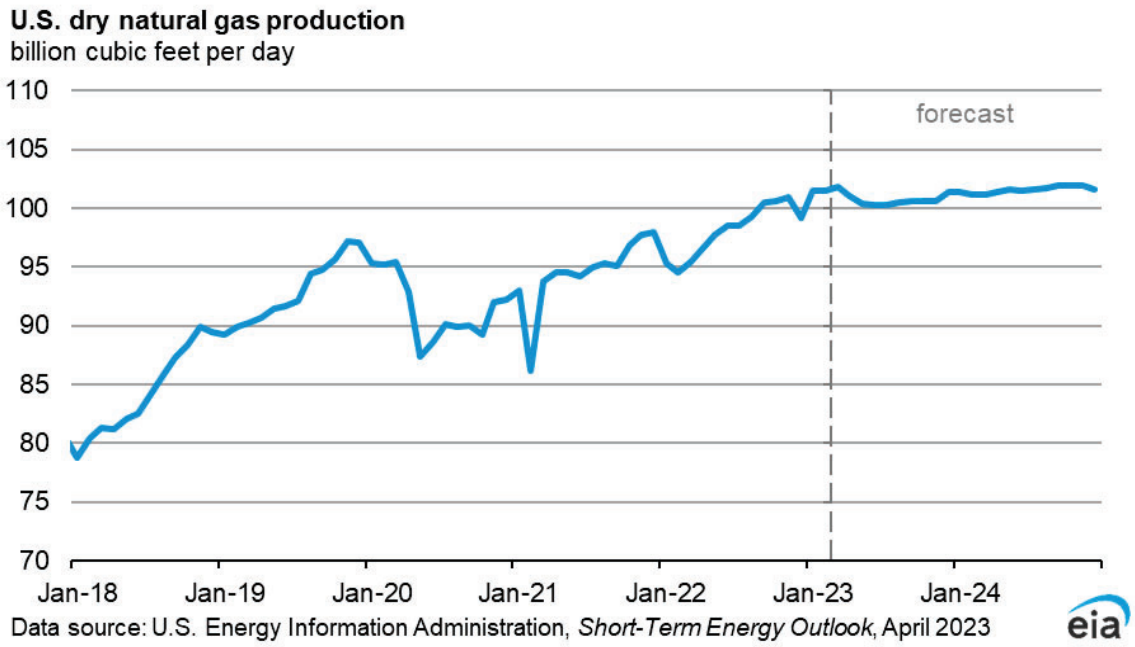
We expect U.S. natural gas inventories to increase by 1,985 Bcf during this year's injection season (April–October), similar to the five-year average for summer injections, which would result in 8% higher inventories than last year's end-of-October stocks. Natural gas inventories in our forecast total 3,842 Bcf at the end of October, 6% above the five-year average. Ultimately, natural gas inventories at the end of October will depend on temperatures throughout the summer. Other factors equal, a warmer summer than we forecast would result in more demand for cooling, leading to more natural gas consumption in the electric power sector and less natural gas in storage, putting upward pressure on natural gas prices.

Cooler summer weather than we forecast would reduce consumption, increase storage, and put downward pressure on prices.



Natural gas production

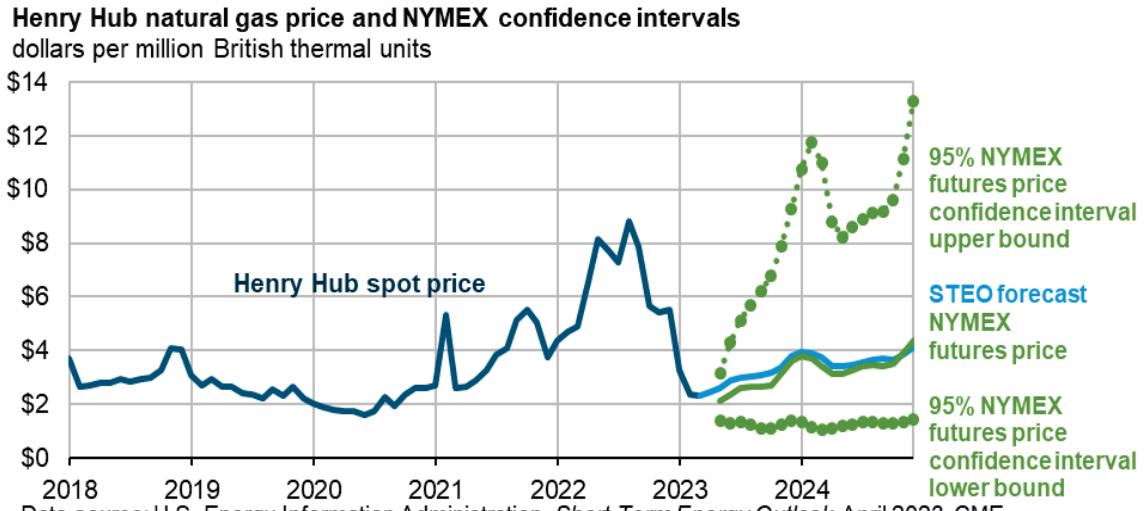
Dry natural gas production averaged 101.6 billion cubic feet per day (Bcf/d) in the United States during 1Q23, up 1.4% from 4Q22. Moderate weather in 1Q23 created no major production disruptions due to freeze-offs. Associated natural gas production from the Permian Basin and production from the Haynesville region, which established new records in early 2023, contributed to rising U.S. natural gas production in 1Q23. We forecast slight declines in U.S. natural gas production in April and May because of pipeline maintenance in West Texas and the Northeast, with U.S. production averaging 100.6 Bcf/d in our forecast for the remainder of 2023. In our forecast, U.S. natural gas production averages 100.9 Bcf/d for 2023, 3% more than in 2022. However, if production were to increase by more than our forecast, it could put downward pressure on natural gas prices. Alternatively, if declines are more than in our forecast, it would likely lead to higher prices, other factors equal.



Natural gas prices

We expect the U.S. benchmark Henry Hub natural gas spot price to average $2.65/MMBtu for 2Q23, unchanged from the 1Q23 average. Natural gas prices typically decrease in the spring as more moderate temperatures reduce demand for natural gas for space heating. However, a spring-like pattern emerged early this year, reducing natural gas consumption in the first two months of the year compared with both year-ago levels and the five-year average, reducing natural gas prices.

We expect relatively flat U.S. natural gas production, rising demand for feed gas from Freeport LNG as the export terminal returns to full operations, and increased natural gas consumption in the electric power sector to raise natural gas prices through the summer. We forecast the Henry Hub price to average slightly more than $3.00/MMBtu in 3Q23.



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, April 2023, CME Group, and Refinitiv an LSEG Business

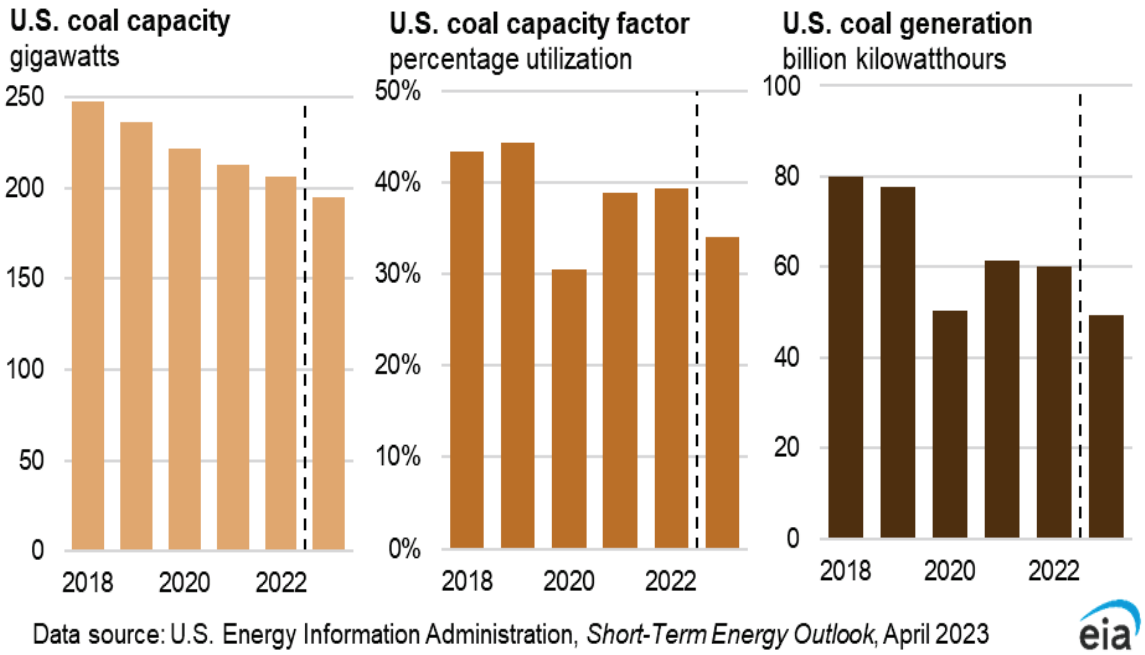
Note: Confidence interval derived from options market information for the five trading days ending April 6, 2023. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Electricity, Coal, and Renewables

Electricity markets

During the spring months (March–May), U.S. electricity demand is usually at its lowest because the need for both air conditioning and space heating declines. Power plant operators take advantage of this lull in consumption to perform necessary maintenance on their generating units, especially for thermal plants—both coal and gas-fired—and nuclear generators. In contrast, output from renewable sources, especially wind, usually increases in the spring due to stronger winds.

Even with normally low seasonal generation, we expect that coal-fired power plants will provide significantly less generation this spring than in past years. We forecast 17% less U.S. coal-fired generation in the spring of 2023 than in the spring of 2022. Coal plants that retired in the past year will reduce coal-fired generating capacity by about 11 gigawatts (5%) compared with the spring of 2022. In addition, we expect existing coal generators to operate at lower utilization rates this spring in response to lower natural gas prices.



Nuclear reactors are taken offline every 18 or 24 months for refueling and general maintenance. The timing of the cycles means that fewer reactors will need to refuel in the United States this spring than last spring. As a result, we forecast about the same amount of nuclear generation in spring 2023, 1% more than during the same months last year. This fairly stable amount of generation should occur despite the Palisades nuclear plant's retirement in Michigan last summer. A new reactor is scheduled to come online at the Vogtle plant in Georgia by July 2023, which will be the first addition to the U.S. nuclear generating fleet since 2016.

We expect coal will provide an average of 17% of total U.S. generation this year, down from 20% last year. The share of total generation supplied by natural gas remains about the same this year at 39%. The nuclear share of generation rises slightly from 19% in 2022 to 20% this year. Generation from renewable energy sources grows the most in the forecast, increasing from a share of 22% last year to 24% this year. Much of the growth in renewables generation comes from an additional 27 gigawatts of new solar capacity this year, up 38% from last year.

Lower natural gas costs are major driver of our forecast that wholesale power prices in 2023 will fall from last year. For example, we expect the on-peak wholesale price at the North hub in Texas's ERCOT power market will average about $35 per megawatthour (MWh) this year compared with an average of nearly $80/MWh last year.

Coal markets

U.S. coal production increased 9%, from more than 46 million short tons (MMst) in February to almost 51 MMst in March. However, we expect increases will be temporary, and annual U.S. coal production declines by 6% from last year in our forecast to less than 560 MMst this year, with a further 9% decline next year. Among the drivers of the steady decline is the ongoing retirement of coal-fired generating plants, low natural gas prices, and growing renewable generation. We expect 11 GW of coal-fired

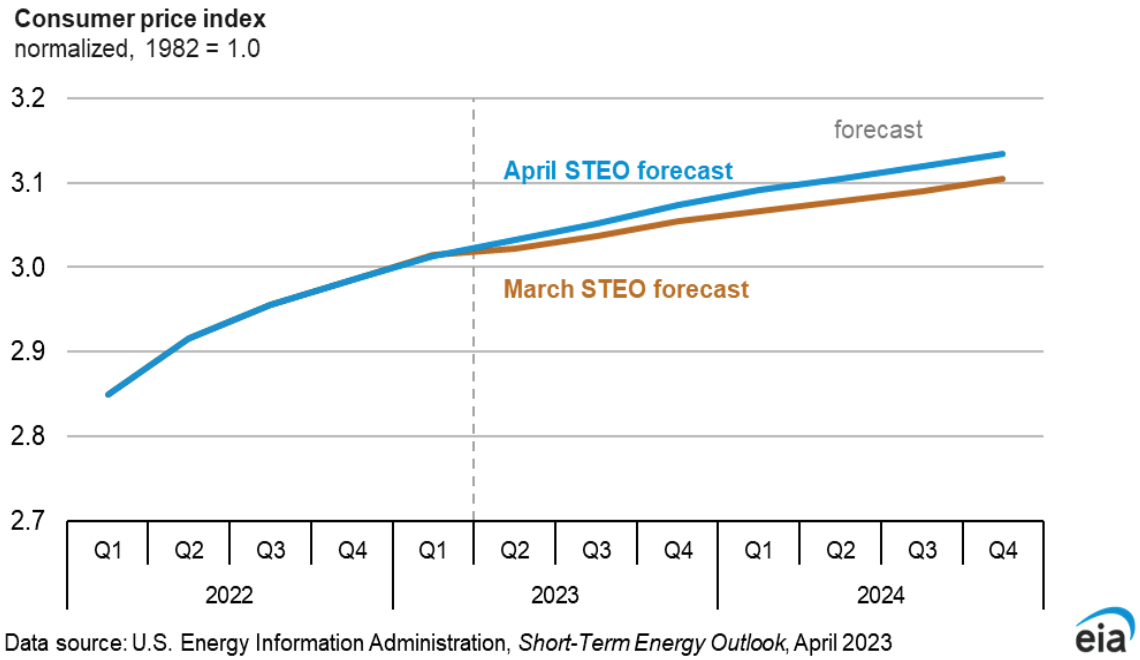
capacity will retire and 77 GW of new wind and solar capacity will come online from the end of 2022 to the end of 2024. Low natural gas prices decrease coal's competitiveness compared with natural gas for electricity generation. We expect the declines in coal consumption by the power sector will increase coal inventories at power plants in the coming months, because some power plants will continue to take delivery of coal purchased under contract for future delivery. However, we expect high inventory levels heading into 2024 to contribute to the accelerating declines in coal production next year.

Economy, Weather, and CO_2

U.S. macroeconomics

Our U.S. macroeconomic forecasts are based on S&P Global's macroeconomic model. We incorporate STEO energy price forecasts into the model to obtain the final macroeconomic assumptions we use in the STEO.

S&P Global estimates that U.S. GDP contracted in the first quarter of 2023 (1Q23), but it expects a return to growth in 2Q23. Our forecast assumes the annual growth rate of real GDP for 2023 will be 1.1%. Residential fixed investment, private business inventories of goods, and industrial production continue to limit overall economic growth.



U.S. consumer spending is shifting away from goods toward services, reallocating economic activity away from manufacturing. In addition to upward revisions to the forecast of real U.S. GDP, inflation was revised upward in the April STEO compared with the March STEO. High inflation in fuel prices observed in early to mid-2022 has eased, but the CPI forecast was revised upward because inflation in the service sector has remained persistent.

Emissions

Energy-related U.S. carbon dioxide (CO_2) emissions in our forecast decline by 3% in 2023 and then rise slightly in 2024. In percentage terms in 2023, CO_2 emissions from coal fall the most, 14%, followed by CO_2 emissions from natural gas which fall by 2%. Petroleum emissions fall by 1%. Reduced coal CO_2 emissions are due to less coal-fired electricity generation, which falls by about 17% in 2023. Natural gas CO_2 emissions decline mostly because of less-than-expected space heating demand in residential and commercial buildings.

Weather

The United States ended a mild winter season in 1Q23 with 10% fewer HDDs than in 1Q22. Based on forecasts from the National Oceanic and Atmospheric Administration, we expect 8% fewer CDDs in 2023 compared with 2022 and 2% fewer than the 10-year average. Realized weather patterns over the summer months will affect overall cooling demand and so introduce some uncertainty in our CDD forecast.

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

U.S. Energy Information Administration | Short-Term Energy Outlook - April 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Production (million barrels per day) (a)															
OECD	**31.62**	**31.88**	**32.54**	**32.88**	**33.40**	*33.78*	*33.93*	*34.45*	*34.65*	*34.49*	*34.64*	*35.16*	**32.23**	*33.89*	*34.74*
U.S. (50 States)	**19.44**	**20.12**	**20.60**	**20.66**	**20.90**	*21.19*	*21.17*	*21.32*	*21.38*	*21.62*	*21.69*	*21.78*	**20.21**	*21.15*	*21.62*
Canada	**5.66**	**5.51**	**5.72**	**5.83**	**5.89**	*5.70*	*5.93*	*6.14*	*6.22*	*5.93*	*6.13*	*6.35*	**5.68**	*5.92*	*6.16*
Mexico	**1.91**	**1.89**	**1.90**	**1.90**	**1.97**	*1.97*	*1.97*	*1.95*	*1.97*	*1.96*	*1.93*	*1.89*	**1.90**	*1.96*	*1.94*
Other OECD	**4.61**	**4.35**	**4.32**	**4.49**	**4.64**	*4.92*	*4.86*	*5.04*	*5.08*	*4.99*	*4.89*	*5.15*	**4.44**	*4.87*	*5.03*
Non-OECD	**67.21**	**66.87**	**68.26**	**68.07**	**67.64**	*67.34*	*67.57*	*67.08*	*67.90*	*68.57*	*69.02*	*68.56*	**67.61**	*67.41*	*68.51*
OPEC	**33.75**	**33.76**	**34.71**	**34.43**	**33.94**	*33.66*	*33.67*	*33.48*	*34.65*	*34.68*	*34.76*	*34.50*	**34.17**	*33.69*	*34.65*
Crude Oil Portion	**28.19**	**28.33**	**29.23**	**28.92**	**28.45**	*28.30*	*28.27*	*28.04*	*29.12*	*29.27*	*29.32*	*29.02*	**28.67**	*28.26*	*29.19*
Other Liquids (b)	**5.56**	**5.43**	**5.48**	**5.52**	**5.49**	*5.36*	*5.40*	*5.44*	*5.53*	*5.40*	*5.44*	*5.48*	**5.50**	*5.42*	*5.46*
Eurasia	**14.39**	**13.39**	**13.56**	**13.91**	**14.05**	*13.44*	*13.39*	*13.45*	*13.51*	*13.50*	*13.48*	*13.56*	**13.81**	*13.58*	*13.51*
China	**5.18**	**5.18**	**5.05**	**5.07**	**5.28**	*5.24*	*5.23*	*5.28*	*5.21*	*5.24*	*5.23*	*5.27*	**5.12**	*5.26*	*5.24*
Other Non-OECD	**13.90**	**14.54**	**14.95**	**14.65**	**14.36**	*15.01*	*15.27*	*14.88*	*14.53*	*15.16*	*15.56*	*15.23*	**14.51**	*14.88*	*15.12*
Total World Production	**98.83**	**98.75**	**100.80**	**100.94**	**101.04**	*101.12*	*101.50*	*101.54*	*102.55*	*103.06*	*103.67*	*103.72*	**99.84**	*101.30*	*103.25*
Non-OPEC Production	**65.09**	**64.99**	**66.10**	**66.51**	**67.10**	*67.46*	*67.83*	*68.06*	*67.89*	*68.38*	*68.90*	*69.22*	**65.68**	*67.61*	*68.60*
Consumption (million barrels per day) (c)															
OECD	**45.76**	**45.37**	**46.63**	**45.98**	**45.59**	*45.55*	*46.26*	*46.38*	*46.15*	*45.75*	*46.56*	*46.59*	**45.94**	*45.95*	*46.26*
U.S. (50 States)	**20.22**	**20.27**	**20.47**	**20.16**	**19.87**	*20.51*	*20.58*	*20.48*	*20.45*	*20.72*	*20.88*	*20.71*	**20.28**	*20.36*	*20.69*
U.S. Territories	**0.11**	**0.12**	**0.13**	**0.12**	**0.12**	*0.12*	*0.12*	*0.12*	*0.12*	*0.12*	*0.12*	*0.12*	**0.12**	*0.12*	*0.12*
Canada	**2.24**	**2.21**	**2.38**	**2.35**	**2.28**	*2.23*	*2.33*	*2.31*	*2.30*	*2.25*	*2.35*	*2.33*	**2.29**	*2.29*	*2.31*
Europe	**13.19**	**13.42**	**14.09**	**13.34**	**13.27**	*13.42*	*13.83*	*13.60*	*13.26*	*13.41*	*13.83*	*13.59*	**13.51**	*13.53*	*13.52*
Japan	**3.70**	**3.03**	**3.19**	**3.56**	**3.62**	*3.00*	*3.10*	*3.44*	*3.56*	*2.95*	*3.05*	*3.38*	**3.37**	*3.29*	*3.24*
Other OECD	**6.30**	**6.33**	**6.37**	**6.45**	**6.43**	*6.27*	*6.30*	*6.44*	*6.46*	*6.30*	*6.32*	*6.47*	**6.36**	*6.36*	*6.39*
Non-OECD	**52.77**	**53.65**	**53.77**	**53.76**	**54.38**	*55.15*	*55.10*	*55.05*	*56.11*	*56.62*	*56.55*	*56.53*	**53.49**	*54.92*	*56.45*
Eurasia	**4.28**	**4.43**	**4.73**	**4.65**	**4.27**	*4.42*	*4.73*	*4.64*	*4.42*	*4.57*	*4.89*	*4.80*	**4.53**	*4.52*	*4.67*
Europe	**0.74**	**0.76**	**0.76**	**0.77**	**0.74**	*0.76*	*0.77*	*0.77*	*0.75*	*0.77*	*0.77*	*0.78*	**0.76**	*0.76*	*0.77*
China	**15.11**	**15.30**	**14.99**	**15.19**	**15.83**	*16.02*	*15.70*	*15.91*	*16.21*	*16.41*	*16.08*	*16.30*	**15.15**	*15.86*	*16.25*
Other Asia	**13.75**	**13.76**	**13.42**	**13.85**	**14.23**	*14.29*	*13.71*	*14.01*	*14.88*	*14.86*	*14.25*	*14.57*	**13.70**	*14.06*	*14.64*
Other Non-OECD	**18.88**	**19.39**	**19.86**	**19.30**	**19.30**	*19.65*	*20.19*	*19.72*	*19.85*	*20.02*	*20.56*	*20.09*	**19.36**	*19.72*	*20.13*
Total World Consumption	**98.53**	**99.01**	**100.40**	**99.74**	**99.97**	*100.70*	*101.36*	*101.43*	*102.26*	*102.38*	*103.11*	*103.11*	**99.43**	*100.87*	*102.72*
Total Crude Oil and Other Liquids Inventory Net Withdrawals (million barrels per day)															
U.S. (50 States)	**0.81**	**0.51**	**0.45**	**0.41**	**0.14**	*-0.30*	*-0.26*	*0.35*	*-0.06*	*-0.44*	*-0.02*	*0.37*	**0.54**	*-0.02*	*-0.03*
Other OECD	**-0.09**	**-0.29**	**-0.48**	**-0.29**	**-0.38**	*-0.04*	*0.04*	*-0.15*	*-0.07*	*-0.08*	*-0.17*	*-0.31*	**-0.29**	*-0.13*	*-0.16*
Other Stock Draws and Balance	**-1.02**	**0.04**	**-0.38**	**-1.32**	**-0.82**	*-0.08*	*0.08*	*-0.31*	*-0.16*	*-0.17*	*-0.37*	*-0.67*	**-0.67**	*-0.28*	*-0.34*
Total Stock Draw	**-0.31**	**0.27**	**-0.41**	**-1.20**	**-1.07**	*-0.42*	*-0.14*	*-0.11*	*-0.29*	*-0.68*	*-0.56*	*-0.60*	**-0.42**	*-0.43*	*-0.53*
End-of-period Commercial Crude Oil and Other Liquids Inventories (million barrels)															
U.S. Commercial Inventory	**1,154**	**1,180**	**1,215**	**1,222**	**1,210**	*1,264*	*1,287*	*1,255*	*1,260*	*1,300*	*1,302*	*1,268*	**1,222**	*1,255*	*1,268*
OECD Commercial Inventory	**2,604**	**2,656**	**2,735**	**2,769**	**2,792**	*2,849*	*2,869*	*2,850*	*2,862*	*2,909*	*2,926*	*2,920*	**2,769**	*2,850*	*2,920*

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

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

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

- = no data available

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

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

Notes: EIA completed modeling and analysis for this report on April 6, 2022.

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

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

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

Forecasts: EIA Short-Term Integrated Forecasting System.

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

U.S. Energy Information Administration | Short-Term Energy Outlook - April 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Supply (million barrels per day)															
Crude Oil Supply															
Domestic Production (a)	**11.47**	**11.70**	**12.06**	**12.30**	**12.54**	*12.50*	*12.50*	*12.61*	*12.69*	*12.71*	*12.77*	*12.83*	**11.88**	*12.54*	*12.75*
Alaska	**0.45**	**0.44**	**0.42**	**0.44**	**0.45**	*0.39*	*0.41*	*0.43*	*0.43*	*0.36*	*0.39*	*0.40*	**0.44**	*0.42*	*0.40*
Federal Gulf of Mexico (b)	**1.67**	**1.70**	**1.80**	**1.80**	**1.92**	*1.94*	*1.83*	*1.82*	*1.87*	*1.84*	*1.77*	*1.78*	**1.74**	*1.88*	*1.81*
Lower 48 States (excl GOM)	**9.35**	**9.56**	**9.84**	**10.06**	**10.18**	*10.17*	*10.27*	*10.36*	*10.40*	*10.51*	*10.61*	*10.64*	**9.70**	*10.25*	*10.54*
Crude Oil Net Imports (c)	**3.00**	**2.81**	**2.75**	**2.14**	**2.12**	*3.13*	*3.39*	*2.76*	*2.55*	*2.93*	*2.90*	*2.42*	**2.67**	*2.85*	*2.70*
SPR Net Withdrawals	**0.31**	**0.80**	**0.84**	**0.48**	**0.01**	*0.29*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	**0.61**	*0.07*	*0.00*
Commercial Inventory Net Withdrawals	**0.08**	**-0.03**	**-0.12**	**-0.01**	**-0.45**	*0.14*	*0.17*	*-0.12*	*-0.28*	*0.07*	*0.15*	*-0.12*	**-0.02**	*-0.07*	*-0.04*
Crude Oil Adjustment (d)	**0.71**	**0.81**	**0.74**	**0.88**	**0.98**	*0.47*	*0.48*	*0.43*	*0.54*	*0.59*	*0.49*	*0.44*	**0.79**	*0.59*	*0.51*
Total Crude Oil Input to Refineries	**15.56**	**16.09**	**16.26**	**15.80**	**15.20**	*16.53*	*16.54*	*15.68*	*15.50*	*16.30*	*16.31*	*15.56*	**15.93**	*15.99*	*15.92*
Other Supply															
Refinery Processing Gain	**0.95**	**1.07**	**1.05**	**1.01**	**0.97**	*1.03*	*1.03*	*1.01*	*0.98*	*1.01*	*1.01*	*1.00*	**1.02**	*1.01*	*1.00*
Natural Gas Plant Liquids Production	**5.61**	**5.92**	**6.09**	**5.90**	**5.93**	*6.20*	*6.19*	*6.22*	*6.24*	*6.36*	*6.37*	*6.36*	**5.88**	*6.14*	*6.33*
Renewables and Oxygenate Production (e)	**1.20**	**1.20**	**1.18**	**1.23**	**1.25**	*1.25*	*1.23*	*1.27*	*1.27*	*1.32*	*1.33*	*1.38*	**1.20**	*1.25*	*1.32*
Fuel Ethanol Production	**1.02**	**1.01**	**0.97**	**1.01**	**1.01**	*1.00*	*0.98*	*1.01*	*1.01*	*1.01*	*1.00*	*1.03*	**1.00**	*1.00*	*1.01*
Petroleum Products Adjustment (f)	**0.21**	**0.23**	**0.22**	**0.22**	**0.21**	*0.22*	*0.22*	*0.22*	*0.21*	*0.22*	*0.22*	*0.22*	**0.22**	*0.22*	*0.22*
Product Net Imports (c)	**-3.74**	**-3.99**	**-4.07**	**-3.93**	**-4.25**	*-3.99*	*-4.21*	*-4.38*	*-3.96*	*-3.97*	*-4.17*	*-4.30*	**-3.93**	*-4.21*	*-4.10*
Hydrocarbon Gas Liquids	**-2.14**	**-2.31**	**-2.16**	**-2.26**	**-2.53**	*-2.54*	*-2.51*	*-2.54*	*-2.52*	*-2.65*	*-2.59*	*-2.63*	**-2.22**	*-2.53*	*-2.59*
Unfinished Oils	**0.09**	**0.25**	**0.28**	**0.30**	**0.19**	*0.27*	*0.38*	*0.20*	*0.19*	*0.25*	*0.30*	*0.19*	**0.23**	*0.26*	*0.23*
Other HC/Oxygenates	**-0.09**	**-0.10**	**-0.07**	**-0.02**	**-0.07**	*-0.05*	*-0.03*	*-0.04*	*-0.06*	*-0.05*	*-0.04*	*-0.05*	**-0.07**	*-0.05*	*-0.05*
Motor Gasoline Blend Comp.	**0.40**	**0.60**	**0.48**	**0.40**	**0.46**	*0.72*	*0.49*	*0.38*	*0.44*	*0.58*	*0.35*	*0.38*	**0.47**	*0.51*	*0.43*
Finished Motor Gasoline	**-0.76**	**-0.73**	**-0.81**	**-0.83**	**-0.74**	*-0.70*	*-0.88*	*-0.92*	*-0.85*	*-0.62*	*-0.68*	*-0.89*	**-0.78**	*-0.81*	*-0.76*
Jet Fuel	**-0.04**	**-0.06**	**-0.11**	**-0.03**	**-0.05**	*0.07*	*0.07*	*0.06*	*0.14*	*0.15*	*0.15*	*0.13*	**-0.06**	*0.04*	*0.14*
Distillate Fuel Oil	**-0.81**	**-1.15**	**-1.29**	**-1.05**	**-0.82**	*-1.23*	*-1.30*	*-1.18*	*-0.89*	*-1.20*	*-1.29*	*-1.12*	**-1.07**	*-1.13*	*-1.13*
Residual Fuel Oil	**0.14**	**0.10**	**0.10**	**0.09**	**0.00**	*0.07*	*0.05*	*0.07*	*0.05*	*0.10*	*0.08*	*0.15*	**0.11**	*0.05*	*0.10*
Other Oils (g)	**-0.54**	**-0.59**	**-0.49**	**-0.53**	**-0.69**	*-0.60*	*-0.48*	*-0.41*	*-0.46*	*-0.53*	*-0.45*	*-0.46*	**-0.54**	*-0.54*	*-0.47*
Product Inventory Net Withdrawals	**0.42**	**-0.25**	**-0.26**	**-0.06**	**0.58**	*-0.73*	*-0.42*	*0.47*	*0.22*	*-0.51*	*-0.17*	*0.50*	**-0.04**	*-0.03*	*0.01*
Total Supply	**20.22**	**20.27**	**20.47**	**20.16**	**19.88**	*20.51*	*20.58*	*20.48*	*20.45*	*20.72*	*20.88*	*20.71*	**20.28**	*20.36*	*20.69*
Consumption (million barrels per day)															
Hydrocarbon Gas Liquids	**3.87**	**3.43**	**3.48**	**3.57**	**3.74**	*3.44*	*3.50*	*3.80*	*3.99*	*3.51*	*3.62*	*3.83*	**3.59**	*3.62*	*3.74*
Other HC/Oxygenates	**0.13**	**0.17**	**0.17**	**0.19**	**0.21**	*0.20*	*0.20*	*0.22*	*0.21*	*0.25*	*0.27*	*0.30*	**0.16**	*0.21*	*0.26*
Unfinished Oils	**0.13**	**0.04**	**0.11**	**0.10**	**0.03**	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	**0.09**	*0.01*	*0.00*
Motor Gasoline	**8.47**	**9.00**	**8.88**	**8.75**	**8.67**	*9.09*	*8.93*	*8.74*	*8.61*	*9.07*	*8.99*	*8.76*	**8.78**	*8.86*	*8.86*
Fuel Ethanol blended into Motor Gasoline	**0.87**	**0.93**	**0.92**	**0.93**	**0.91**	*0.94*	*0.92*	*0.93*	*0.90*	*0.95*	*0.94*	*0.94*	**0.91**	*0.93*	*0.93*
Jet Fuel	**1.45**	**1.61**	**1.60**	**1.58**	**1.53**	*1.73*	*1.76*	*1.67*	*1.65*	*1.76*	*1.80*	*1.74*	**1.56**	*1.67*	*1.74*
Distillate Fuel Oil	**4.14**	**3.89**	**3.86**	**3.96**	**3.89**	*3.87*	*3.85*	*3.97*	*4.06*	*3.95*	*3.85*	*3.98*	**3.96**	*3.89*	*3.96*
Residual Fuel Oil	**0.38**	**0.31**	**0.39**	**0.30**	**0.27**	*0.33*	*0.35*	*0.36*	*0.29*	*0.34*	*0.37*	*0.37*	**0.34**	*0.33*	*0.34*
Other Oils (g)	**1.65**	**1.82**	**1.99**	**1.71**	**1.53**	*1.85*	*1.99*	*1.72*	*1.63*	*1.85*	*1.99*	*1.72*	**1.79**	*1.78*	*1.80*
Total Consumption	**20.22**	**20.27**	**20.47**	**20.16**	**19.87**	*20.51*	*20.58*	*20.48*	*20.45*	*20.72*	*20.88*	*20.71*	**20.28**	*20.36*	*20.69*
Total Petroleum and Other Liquids Net Imports	**-0.74**	**-1.18**	**-1.32**	**-1.79**	**-2.13**	*-0.86*	*-0.82*	*-1.62*	*-1.42*	*-1.05*	*-1.27*	*-1.88*	**-1.26**	*-1.36*	*-1.40*
End-of-period Inventories (million barrels)															
Commercial Inventory															
Crude Oil (excluding SPR)	**414.4**	**417.5**	**428.8**	**429.6**	**470.3**	*457.3*	*442.1*	*453.5*	*478.6*	*472.3*	*458.2*	*469.5*	**429.6**	*453.5*	*469.5*
Hydrocarbon Gas Liquids	**142.0**	**186.7**	**243.6**	**211.1**	**160.9**	*211.8*	*251.3*	*208.3*	*170.9*	*222.0*	*258.4*	*214.8*	**211.1**	*208.3*	*214.8*
Unfinished Oils	**87.9**	**88.8**	**82.3**	**86.1**	**89.7**	*88.9*	*88.8*	*81.2*	*91.2*	*88.2*	*87.2*	*79.5*	**86.1**	*81.2*	*79.5*
Other HC/Oxygenates	**34.1**	**29.4**	**27.3**	**31.7**	**32.3**	*31.0*	*30.7*	*31.0*	*33.1*	*31.8*	*31.6*	*31.8*	**31.7**	*31.0*	*31.8*
Total Motor Gasoline	**238.5**	**221.0**	**209.6**	**224.3**	**222.3**	*233.0*	*236.3*	*245.6*	*243.9*	*240.8*	*229.3*	*238.3*	**224.3**	*245.6*	*238.3*
Finished Motor Gasoline	**17.3**	**17.1**	**17.6**	**17.4**	**13.8**	*15.7*	*18.6*	*21.1*	*18.4*	*19.0*	*20.3*	*22.5*	**17.4**	*21.1*	*22.5*
Motor Gasoline Blend Comp.	**221.2**	**203.8**	**192.0**	**206.9**	**208.5**	*217.2*	*217.7*	*224.5*	*225.5*	*221.9*	*209.0*	*215.8*	**206.9**	*224.5*	*215.8*
Jet Fuel	**35.6**	**39.3**	**36.2**	**35.0**	**38.0**	*41.6*	*42.8*	*40.7*	*41.2*	*42.7*	*43.6*	*40.6*	**35.0**	*40.7*	*40.6*
Distillate Fuel Oil	**114.6**	**111.4**	**110.5**	**118.8**	**112.9**	*118.6*	*124.4*	*122.6*	*118.0*	*121.3*	*123.2*	*121.7*	**118.8**	*122.6*	*121.7*
Residual Fuel Oil	**27.9**	**29.2**	**27.3**	**30.7**	**29.5**	*28.5*	*26.8*	*26.4*	*27.9*	*27.2*	*25.6*	*25.1*	**30.7**	*26.4*	*25.1*
Other Oils (g)	**58.5**	**56.4**	**49.5**	**54.2**	**54.6**	*53.0*	*44.2*	*46.0*	*55.6*	*53.7*	*44.7*	*46.3*	**54.2**	*46.0*	*46.3*
Total Commercial Inventory	**1153.6**	**1179.7**	**1215.1**	**1221.6**	**1210.3**	*1263.6*	*1287.2*	*1255.2*	*1260.4*	*1300.1*	*1301.9*	*1267.6*	**1221.6**	*1255.2*	*1267.6*
Crude Oil in SPR	**566.1**	**493.3**	**416.4**	**372.0**	**371.2**	*345.2*	*345.2*	*345.2*	*345.2*	*345.2*	*345.2*	*345.2*	**372.0**	*345.2*	*345.2*

(a) Includes lease condensate.

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

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

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

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

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

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

- = no data available

SPR: Strategic Petroleum Reserve

HC: Hydrocarbons

Notes: EIA completed modeling and analysis for this report on April 6, 2022.

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

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

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

Forecasts: EIA Short-Term Integrated Forecasting System.

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

U.S. Energy Information Administration | Short-Term Energy Outlook - April 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Supply (billion cubic feet per day)															
Total Marketed Production	**103.27**	**106.18**	**108.27**	**108.84**	**110.20**	*109.06*	*108.99*	*109.42*	*109.80*	*110.08*	*110.40*	*110.46*	**106.66**	*109.42*	*110.19*
Alaska	**1.06**	**1.00**	**0.96**	**1.07**	**1.05**	*0.94*	*0.85*	*0.98*	*1.00*	*0.92*	*0.84*	*0.97*	**1.02**	*0.95*	*0.93*
Federal GOM (a)	**2.05**	**2.11**	**2.19**	**2.12**	**2.28**	*2.30*	*2.17*	*2.13*	*2.18*	*2.13*	*2.03*	*2.02*	**2.12**	*2.22*	*2.09*
Lower 48 States (excl GOM)	**100.16**	**103.07**	**105.12**	**105.65**	**106.87**	*105.82*	*105.97*	*106.32*	*106.63*	*107.04*	*107.53*	*107.46*	**103.52**	*106.24*	*107.16*
Total Dry Gas Production	**95.09**	**97.59**	**99.46**	**100.22**	**101.60**	*100.54*	*100.47*	*100.88*	*101.23*	*101.49*	*101.77*	*101.83*	**98.11**	*100.87*	*101.58*
LNG Gross Imports	**0.15**	**0.01**	**0.06**	**0.04**	**0.07**	*0.04*	*0.04*	*0.06*	*0.10*	*0.04*	*0.04*	*0.06*	**0.06**	*0.05*	*0.06*
LNG Gross Exports	**11.50**	**10.80**	**9.74**	**10.35**	**11.62**	*12.20*	*12.17*	*12.33*	*12.70*	*12.60*	*12.31*	*13.30*	**10.59**	*12.08*	*12.73*
Pipeline Gross Imports	**8.89**	**7.73**	**7.84**	**8.41**	**8.20**	*6.84*	*7.05*	*7.52*	*8.27*	*6.85*	*7.06*	*7.52*	**8.22**	*7.40*	*7.42*
Pipeline Gross Exports	**8.46**	**8.50**	**8.10**	**8.19**	**8.83**	*8.43*	*8.78*	*9.20*	*9.49*	*8.88*	*9.21*	*9.64*	**8.31**	*8.81*	*9.31*
Supplemental Gaseous Fuels	**0.21**	**0.17**	**0.18**	**0.16**	**0.19**	*0.18*	*0.18*	*0.18*	*0.18*	*0.18*	*0.18*	*0.18*	**0.18**	*0.18*	*0.18*
Net Inventory Withdrawals	**20.14**	**-10.25**	**-8.94**	**2.35**	**11.83**	*-11.15*	*-7.32*	*4.89*	*16.15*	*-13.03*	*-9.49*	*4.33*	**0.75**	*-0.48*	*-0.52*
Total Supply	**104.52**	**75.95**	**80.75**	**92.66**	**101.44**	*75.82*	*79.47*	*92.00*	*103.74*	*74.06*	*78.05*	*90.98*	**88.42**	*87.14*	*86.70*
Balancing Item (b)	**0.31**	**0.18**	**0.02**	**-0.05**	**0.15**	*-0.68*	*0.74*	*0.72*	*-0.72*	*-1.14*	*-0.57*	*0.11*	**0.11**	*0.24*	*-0.58*
Total Primary Supply	**104.83**	**76.13**	**80.77**	**92.61**	**101.59**	*75.14*	*80.21*	*92.72*	*103.02*	*72.92*	*77.47*	*91.09*	**88.53**	*87.37*	*86.12*
Consumption (billion cubic feet per day)															
Residential	**26.09**	**7.86**	**3.57**	**17.37**	**23.62**	*8.08*	*4.27*	*17.42*	*25.80*	*8.17*	*4.32*	*17.46*	**13.67**	*13.30*	*13.92*
Commercial	**15.61**	**6.67**	**4.74**	**11.69**	**14.43**	*7.18*	*5.39*	*11.57*	*15.21*	*7.13*	*5.35*	*11.49*	**9.66**	*9.62*	*9.79*
Industrial	**25.46**	**22.25**	**21.47**	**23.51**	**23.91**	*21.67*	*21.74*	*24.13*	*24.49*	*21.03*	*20.60*	*22.85*	**23.16**	*22.86*	*22.24*
Electric Power (c)	**28.39**	**30.99**	**42.36**	**30.94**	**30.13**	*29.78*	*40.19*	*30.49*	*27.98*	*28.18*	*38.62*	*30.17*	**33.20**	*32.67*	*31.26*
Lease and Plant Fuel	**5.26**	**5.41**	**5.51**	**5.54**	**5.61**	*5.55*	*5.55*	*5.57*	*5.59*	*5.61*	*5.62*	*5.63*	**5.43**	*5.57*	*5.61*
Pipeline and Distribution Use	**3.86**	**2.80**	**2.98**	**3.41**	**3.74**	*2.74*	*2.93*	*3.41*	*3.80*	*2.65*	*2.82*	*3.35*	**3.26**	*3.20*	*3.16*
Vehicle Use	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	*0.15*	**0.15**	*0.15*	*0.15*
Total Consumption	**104.83**	**76.13**	**80.77**	**92.61**	**101.59**	*75.14*	*80.21*	*92.72*	*103.02*	*72.92*	*77.47*	*91.09*	**88.53**	*87.37*	*86.12*
End-of-period Inventories (billion cubic feet)															
Working Gas Inventory	**1,401**	**2,325**	**3,146**	**2,927**	**1,856**	*2,871*	*3,545*	*3,095*	*1,625*	*2,810*	*3,684*	*3,285*	**2,927**	*3,095*	*3,285*
East Region (d)	**242**	**482**	**759**	**698**	**335**	*627*	*862*	*706*	*275*	*601*	*885*	*750*	**698**	*706*	*750*
Midwest Region (d)	**296**	**557**	**917**	**831**	**421**	*692*	*999*	*831*	*338*	*672*	*1,036*	*881*	**831**	*831*	*881*
South Central Region (d)	**587**	**885**	**1,006**	**1,042**	**921**	*1,209*	*1,209*	*1,132*	*724*	*1,085*	*1,195*	*1,146*	**1,042**	*1,132*	*1,146*
Mountain Region (d)	**90**	**137**	**184**	**158**	**80**	*121*	*190*	*164*	*105*	*152*	*217*	*187*	**158**	*164*	*187*
Pacific Region (d)	**165**	**240**	**247**	**169**	**73**	*196*	*258*	*236*	*157*	*274*	*324*	*294*	**169**	*236*	*294*
Alaska	**21**	**25**	**32**	**30**	**26**	*26*	*26*	*26*	*26*	*26*	*26*	*26*	**30**	*26*	*26*

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

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

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

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

- = no data available

LNG: liquefied natural gas.

Notes: EIA completed modeling and analysis for this report on April 6, 2022.

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

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

Forecasts: EIA Short-Term Integrated Forecasting System.

https://www.qatarenergy.qa/en/MediaCenter/Pages/newsdetails.aspx?ItemId=3754

QATARENERGY SELECTS SINOPEC AS NORTH FIELD EAST (NFE) EXPANSION PARTNER -

DOHA, Qatar • 12 April 2023 – QatarEnergy has announced the signing of a definitive partnership agreement with China Petrochemical Corporation (Sinopec) for the North Field East (NFE) expansion project, the largest project in the history of the LNG industry.

The agreement was signed by His Excellency Mr. Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs, the President and CEO of QatarEnergy, and Dr. MA Yong-sheng, the Chairman of Sinopec in a special signing ceremony held today at QatarEnergy's headquarters and attended by senior executives from both companies.

The agreement marks the entry of Sinopec as a shareholder in one of the NFE joint venture companies that own the NFE project, one of the most critical projects in the global LNG industry. Pursuant to the terms of the agreement, QatarEnergy will transfer to Sinopec a 5% interest in the equivalent of one NFE train with a capacity of 8 million tons per annum (MTPA). This agreement will not affect the participating interests of any of the other shareholders.

Speaking at the signing ceremony, His Excellency Al-Kaabi said: "The People's Republic of China is a major driver of the global energy markets as well as being one of the most important gas markets in the world and is a key market for Qatari energy products. Today's event underscores QatarEnergy's commitment to deepening its relationships with key LNG consumers, while prioritizing long-term strategic partnerships and alignment with world class partners from China, represented by Sinopec here today."

Noting the November 2022 agreement to supply Sinopec with 4 MTPA of LNG from the NFE project, His Excellency Minister Al-Kaabi said: "That agreement was not only the first NFE LNG supply agreement to be announced, but also the longest LNG supply agreement in the history of the industry. Today, Sinopec will join Qatar's LNG family becoming the first Asian shareholder in the NFE project."

Minister Al-Kaabi concluded his remarks by saying: "We are pleased to enter into this milestone agreement with Sinopec, marking yet another landmark in the excellent bilateral relations between the People's Republic of China and the State of Qatar. I would like to thank the working teams in QatarEnergy and Sinopec for their dedicated work to reach this important agreement. We are always indebted to the wise leadership of His Highness the Amir Sheikh Tamim bin Hamad Al Thani, and to his continued guidance and support of the energy sector."

On his part, Dr. Ma Yongsheng, the Chairman of Sinopec, congratulated both parties on signing the NFE project partnership agreement and said: “The meeting between Chinese President Xi Jinping and Qatar’s Amir His Highness Sheikh Tamim bin Hamad Al Thani during the first China-Arab Summit and China-GCC Summit in 2022, comprehensively outlined the development blueprint of the strategic partnership between the two countries and guided the China-Qatar energy cooperation. The signing of this agreement today is a concrete move to carry forward what has been agreed between the two heads of state and deepen the partnership between Sinopec and QatarEnergy. It is another milestone after the signing of the long-term LNG SPA from the NFE project in November 2022, marking the integrated cooperation achieved by both companies on the NFE project.”

Dr. Ma further added that “China-Qatar energy cooperation features a natural complementarity. QatarEnergy is a leading LNG producer in the world and one of the most important partners of Sinopec. The cooperation with QatarEnergy will help Sinopec further optimize China's energy consumption structure and enhance the security, stability, and reliability of clean energy supply. I hope that the two companies will continue to explore new LNG cooperation opportunities based on the solid foundation we have laid together and will further expand cooperation areas to achieve mutual benefit and win-win results.”

This agreement is the first of its kind after last year’s series of partnership announcements in the $28.75 billion NFE project, which will raise Qatar’s LNG export capacity from the current 77 MTPA to 110 MTPA.

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https://www.qatarenergy.qa/en/MediaCenter/Pages/newsdetails.aspx?ItemId=3737

QATARENERGY AND SINOPEC SIGN A 27-YEAR 4 MILLION TONS PER ANNUM LNG SUPPLY AGREEMENT TO CHINA -

DOHA, Qatar • 21 November 2022 – QatarEnergy entered into a 27-year Sale and Purchase Agreement (SPA) with China Petroleum & Chemical Corporation (Sinopec) for the supply of 4 million tons per annum (MTPA) of LNG to the People's Republic of China.
Under the terms of the SPA, the contracted LNG volumes will be supplied from QatarEnergy's North Filed East (NFE) LNG expansion project and will be delivered to Sinopec's receiving terminals in China.

His Excellency Mr. Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs, the President and CEO of QatarEnergy, and Dr. MA Yongsheng, the Chairman of Sinopec, signed the agreement today during a hybrid virtual / physical ceremony. Joining H.E. Minister Al-Kaabi at QatarEnergy's headquarters in Doha were senior executives from both companies, while Dr. MA and other high level Sinopec executives participated virtually from Beijing.

In his remarks at the signing ceremony, His Excellency Minister Al-Kaabi said: "We are pleased to enter into this agreement, which will further solidify the excellent bilateral relations between the People's Republic of China and the State of Qatar and help meet China's growing energy needs. In addition, it opens a new and exciting chapter in our relationship with Sinopec, one that is very special and spans a number of different areas, and which we are excited about further growing and expanding into the 2050s."

His Excellency Minister Al-Kaabi added: "This is the first long-term SPA from the NFE project to be announced, and marks the longest gas supply agreement in the history of the LNG industry."
H.E. Minister Al-Kaabi concluded his remarks by expressing his thanks and appreciation to the working teams from Sinopec, QatarEnergy and Qatargas, for their dedication and sincere efforts to conclude the SPA, and gratitude to the leadership of His Highness the Amir Sheikh Tamim bin Hamad Al Thani, for his unwavering support to Qatar's energy sector.

On his part, Dr. MA Yongsheng, the Chairman of Sinopec, said: "The signing of the long-term LNG SPA with QatarEnergy is a milestone and an important part of the integrated cooperation between the two sides on the NFE project. Qatar is the world's largest LNG supplier, and China is the world's largest LNG importer. The two countries share inherent complementarities and a good foundation for energy cooperation. The friendly and close ties between the two countries have created a good environment for us to constantly deepen cooperation. Sinopec attaches great importance to the cooperation with QatarEnergy, who we regard as a strategic, long-term and all-round partner, and we are expecting more cooperation fruits to come. Sinopec has been always committed to the development of green and clean energy. Our integrated cooperation with QatarEnergy on the NFE project could not only meet the needs of the Chinese market, but also reflect Sinopec's commitment to a low-carbon, green, safe, responsible and sustainable development path."

The agreement is the second LNG SPA between QatarEnergy and Sinopec, following the 10-year SPA signed in March 2021 for the supply of 2 MTPA to China.

The SPA is also the first long term LNG offtake agreement from the NFE Expansion project, and comes on the heels of QatarEnergy's conclusion of the formation of eight international partnership

agreements for the North Field East and North Field South (NFS) projects, which are expected to come online in 2026 and 2027, respectively.

QatarEnergy has also concluded construction contracts and long-term time charter agreements for 60 LNG carriers as part of its historic LNG shipbuilding program in support of both the NFE and NFS expansion projects, with the number expected to grow to almost 100 in the future.

https://www.ft.com/content/3cc7ced1-70db-4854-bd61-d9c92a9c7710?shareType=nongift

Oil price surges after Opec+ nations make surprise output cut

Saudi-led reduction of more than 1mn barrels per day puts Riyadh on collision course with US

The Saudi-led initiative is unusual in being announced outside a formal Opec+ meeting © Simon Dawson/Bloomberg

Derek Brower in New York and David Sheppard and Tom Wilson in London APRIL 2 2023

Crude prices surged after Saudi Arabia and other members of the Opec+ group announced surprise oil production cuts of more than 1mn barrels a day on Sunday, putting Riyadh on a collision course with the US.

Oil prices leapt by 8 per cent when trading opened in Asia on Monday morning following news of the cut, with international benchmark Brent trading at over $86 a barrel and West Texas Intermediate, the US marker, rising to almost $81.

Saudi Arabia will implement a “voluntary cut” of 500,000 b/d, or just under 5 per cent of its output, in “co-ordination with some other Opec and non-Opec countries”, it said on Sunday. The kingdom is attempting to boost prices amid fears of weaker demand.

Russia, a member of Opec+, said it would extend its existing 500,000 b/d production cut until the end of the year. Moscow’s reduction was first announced in March in retaliation for western countries’ moves to impose a price cap on its seaborne oil exports.

The Saudi-led initiative is unusual as it has been announced outside a formal Opec+ meeting, suggesting an element of urgency by the members taking part in the cuts.

The cuts follow a sharp fall in oil prices last month after the collapse of the US’s Silicon Valley Bank and the forced takeover of Credit Suisse by UBS, which sparked fears of contagion in global financial markets and a significant drop-off in demand for crude.

“Opec+ have made a pre-emptive cut to get ahead of any possible demand weakness from the banking crisis that has emerged,” said Amrita Sen, director of research at Energy Aspects.

The surprise cuts risk reigniting disputes between Riyadh and the US, which last year pushed for the kingdom to pump more oil in a bid to tame rampant inflation amid a surge in energy costs.

The White House in October accused Saudi Arabia of effectively siding with Russia, despite Moscow’s full-scale invasion of Ukraine and its attempt to create an energy crisis by slashing gas supplies to Europe, when Opec+ last announced a formal production cut of 2mn b/d.

People familiar with Saudi Arabia’s thinking say Riyadh was irritated last week that the Biden administration publicly ruled out new crude purchases to replenish a strategic stockpile that had been drained last year as the White House battled to tame inflation.

Energy secretary Jennifer Granholm’s statement that it could take “years” to refill the reserve sent oil prices briefly lower. The White House had previously offered reassurance to Saudi Arabia that it would step in to make purchases for its strategic reserve if prices fell.

“We don’t think cuts are advisable at this moment given market uncertainty — and we’ve made that clear,” said a spokesperson for the National Security Council on Sunday. “[But] we will continue to work with all producers to ensure energy markets support economic growth and lower prices for American consumers.”

Helima Croft, head of commodity strategy at RBC Capital Markets, said Saudi Arabia was staking out an economic strategy independent of the US, after a deterioration in relations between Riyadh and Washington during the Biden administration.

“It’s a Saudi-first policy. They’re making new friends, as we saw with China,” Croft said, referring to a recent Beijing-brokered diplomatic deal between Saudi Arabia and Iran. The kingdom was sending a message to the US that “it’s no longer a unipolar world”.

The voluntary cuts from Opec+ members will begin in May and last until the end of 2023, the Saudi statement said. Iraq will reduce crude production by 211,000 b/d, the United Arab Emirates by 144,000 b/d, Kuwait by 128,000 b/d, Kazakhstan by 78,000 b/d, Algeria by 48,000 b/d and Oman by 40,000 b/d, according to statements from their respective governments.

Brent, the crude benchmark, fell to a low near $70 a barrel late last month but had stabilised in the past week to recover to just below $80. Brent has traded in a relatively narrow band between $75 and $90 a barrel for much of the past six months.

Despite last month’s sell-off many traders were predicting higher prices later this year when supplies are expected to fall short of demand as China’s economy fully reopens from its Covid-related restrictions.

Saudi Arabia’s energy minister, Prince Abdulaziz bin Salman, the half- brother of prime minister and crown prince Mohammed bin Salman, has argued the world is underinvesting in oil supplies. The kingdom is reliant on oil revenues to fund the Prince Mohammed’s ambitious economic reform programme.

Additional reporting by Felicia Schwartz in Washington

Oil Market Highlights

Crude Oil Price Movements

The OPEC Reference Basket (ORB) declined in March by $3.43, or 4.2%, m-o-m to average $78.45/b. The ICE Brent first-month contract fell by $4.33, or 5.2%, m-o-m to $79.21/b, while the NYMEX WTI first-month contract fell by $3.49, or 4.5%, m-o-m to average $73.37/b. The DME Oman first-month contract fell by $3.63, or 4.4%, m-o-m to settle at $78.34/b. The front-month ICE Brent/NYMEX WTI spread narrowed in March by 84¢ m-o-m to average $5.84/b. The futures forward curves of ICE Brent and DME Oman flattened slightly in March, but remained in backwardation. However, the NYMEX WTI price structure remained in contango, although the nearest time spread contracted m-o-m. Hedge funds and other money managers heavily cut bullish positions in ICE Brent and NYMEX WTI last month.

World Economy

The world economic growth forecast for 2022 is revised up slightly to 3.3%, given better-than-anticipated economic performance in 2H22 in various key economies. The 2023 global economic growth forecast remains unchanged at 2.6%. For the US, the economic growth forecast is unchanged at 2.1% for 2022 and 1.2% for 2023. Similarly, the Euro-zone's economic growth forecast remains at 3.5% for 2022 and 0.8% for 2023. Japan's economic growth forecast for 2022 remains at 1%, while growth for 2023 is revised down to 1% from 1.2%. China's economic growth forecast remains at 3% for 2022 and 5.2% for 2023. India's 2022 economic growth estimate remains at 6.7%, with the forecast for 2023 at 5.6%. Brazil's economic growth estimate remains at 2.9% for 2022 and is also unchanged at 1% for 2023. Russia's contraction estimate is unchanged at 2.1% in 2022 and is expected to be followed by a smaller contraction of 0.5% in 2023, unchanged from last month. Although some growth momentum from 2H22 is expected to carry over into 1H23, the global economy will continue to navigate through challenges including high inflation, higher interest rates particularly in the Euro-zone and the US, and high debt levels in many regions.

World Oil Demand

The world oil demand growth estimate for 2022 remains at 2.5 mb/d, broadly unchanged from last month's assessment. For 2023, it is also unchanged from the last month's assessment at 2.3 mb/d. There are minor downward adjustments reflecting the latest developments in the OECD region, primarily in OECD Americas and OECD Europe. However, the stronger-than-expected demand seen in non-OECD in January and February necessitated some upward revisions. Oil demand in the OECD is forecast to increase by 0.1 mb/d in 2023, while the non-OECD is forecast to grow by 2.2 mb/d

World Oil Supply

The non-OPEC liquids supply growth estimate for 2022 remains at 1.9 mb/d, broadly unchanged from the previous month's assessment. The main drivers of liquids supply growth for 2022 were US, Russia, Canada, Guyana, China and Brazil, while the largest declines were from Norway and Thailand. For 2023, non-OPEC liquids supply growth remains broadly unchanged from last month and is forecast to grow by 1.4 mb/d. The main drivers of liquids supply growth are expected to be the US, Brazil, Norway, Canada, Kazakhstan and Guyana, while the decline is expected primarily in Russia. Large uncertainties remain over the impact of the output prospective for US shale in 2023. OPEC NGLs and non-conventional liquids are forecast to grow by 0.1 mb/d in 2022 to average 5.4 mb/d and by 50 tb/d to average 5.4 mb/d in 2023. OPEC-13 crude oil production in March dropped by 86 tb/d m-o-m to average 28.80 mb/d, according to available secondary sources.

Product Markets and Refining Operations

In March, refinery margins regained limited ground, following sharp losses seen the previous month. A contraction in product balances in the Atlantic Basin, due to the onset of heavy refinery maintenance along with product output declines in France due to a nationwide energy workers strike action, led to pressure on product inventories over the month and provided support for product crack spreads. In addition, a decline in feedstock prices further contributed to stronger refinery margins across all main regions. Global refinery processing rates fell further in March, losing nearly 259 tb/d, according to preliminary estimates. In the coming month, refinery intakes are expected to remain under pressure on strong offline capacity, which is projected to peak in the coming month.

Tanker Market

Dirty spot freight rates continued to improve in March, with m-o-m gains across most monitored routes. VLCCs saw the sharpest increase, rising by 45% on the Middle East-to-East route, as renewed buying from China strengthened rates. Suezmax spot freight rates remained at high levels, up 20% m-o-m on the US Gulf-to-Europe route. Aframax rates rebounded from the previous month's decline, with spot freight rates on the intra-Med route up 23% m-o-m. In the clean tanker market, West of Suez spot freight rates were at 29%, supported by strong performance in the Mediterranean. East of Suez rates fell 10% on average m-o-m, amid a winding down of winter product demand in the Far East.

Crude and Refined Products Trade

Preliminary data shows US crude exports set a fresh record high of 4.8 mb/d in March, while US product exports rebounded to average 6.3 mb/d. China's crude imports in February partially recovered from the decline at the start of the year to average around 10.7 mb/d. China's product exports also picked up, averaging a robust 1.7 mb/d. India's crude imports were at their strongest in over 10 months, averaging just shy of 5.0 mb/d in February. India's product exports also returned to relatively robust levels, averaging 1.4 mb/d. Japan's crude imports were broadly unchanged m-o-m at 2.7 mb/d in February. Japan's product exports, including LPG, hit a five-month high in February. Preliminary estimates for March show crude and refined product imports into OECD Europe declining as a workers' strike in France disrupted port activities and refinery operations, curtailing trade flows.

Commercial Stock Movements

Preliminary February 2023 data shows total OECD commercial oil stocks increase by 14.1 mb m-o-m. At 2,865 mb, they were 237 mb higher than the same time one year ago and 18 mb higher than the latest five-year average, but 54 mb below the 2015–2019 average. Within components, crude stocks increased m-o-m by 20.9 mb, while product stocks fell by 6.8 mb m-o-m. At 1,434 mb, OECD crude stocks were 172 mb higher than the same time a year ago, and 49 mb higher than the latest five-year average, but 14 mb lower than the 2015–2019 average. OECD product stocks stood at 1,432 mb, representing a surplus of 65 mb from the same time a year ago, though they were 30 mb lower than the latest five-year average and 40 mb below the 2015–2019 average. In terms of days of forward cover, OECD commercial stocks rose m-o-m by 1.0 day in February to stand at 62.9 days. This is 4.9 days above the February 2022 level, but 1.8 days less than the latest five-year average and 0.3 days higher than the 2015–2019 average.

Balance of Supply and Demand

Demand for OPEC crude in 2022 remained unchanged from last month's assessment to stand at 28.4 mb/d. This is around 0.5 mb/d higher than in 2021. Demand for OPEC crude in 2023 also remained unchanged from the previous assessment to stand at 29.3 mb/d. This is around 0.8 mb/d higher than in 2022.

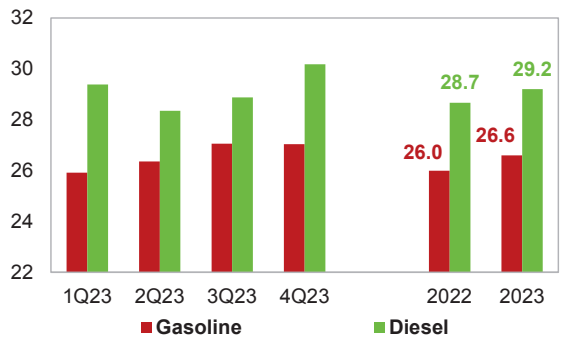
Feature Article

Summer oil market outlook

In 1Q23, world oil demand is estimated to have grown by a healthy 2.1 mb/d y-o-y, on the back of a strong rebound in China's oil demand, as well as solid oil demand data in other non-OECD regions, particularly the Middle East and Asia. Looking ahead, world oil demand is expected to grow by around 2.4 mb/d y-o-y in 2Q23, 2.5 mb/d y-o-y in 3Q23 and 2.3 mb/d y-o-y in 4Q23.

In terms of products, global demand for gasoline and diesel is forecast to increase by 0.6 mb/d and 0.5 mb/d, y-o-y, respectively, in 2Q23. In 3Q23, demand for these two products is forecast to improve further, with global gasoline demand growth forecast at 0.7 mb/d and diesel at 0.6 mb/d, y-o-y (***Graph 1***).

Graph 1: Global demand for gasoline and diesel



Source: OPEC.

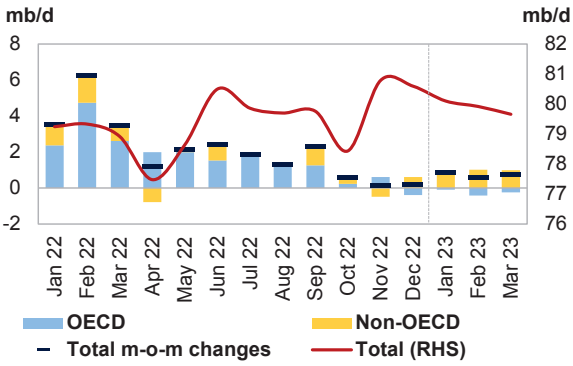
In the OECD, heightened mobility in the upcoming driving season in the US is expected to provide the usual additional demand for transportation fuels. However, any weakening in the economy on the back of ongoing monetary tightening measures by the US Fed may offset some of this seasonal dynamic. Overall, OECD Americas is forecast to lead demand growth in the region at an average of around 160 tb/d y-o-y in 2Q23 and 3Q23. The demand in OECD Europe is likely to continue to be challenged, amid slowing economic activity, leading to a slight projected y-o-y decline in 2Q23 and 3Q23 on average. OECD Asia Pacific is expected to show y-o-y growth of around 50 tb/d on average over 2Q23 and 3Q23.

In the non-OECD countries, China is projected to drive oil demand, supported by a pickup in mobility and industrial activity, growing by almost 1.0 mb/d y-o-y in 2Q23 and 0.8 mb/d y-o-y in 3Q23. Similarly, India oil demand is forecast to grow by 0.3 mb/d y-o-y, on average over 2Q23 and 3Q23. Other Asia and the Middle East are also expected to see healthy growth of between 0.3 mb/d-0.4 mb/d on average over 2Q23-3Q23, with requirements for air-conditioning in the summer months adding additional support.

It should be noted that potential challenges to global economic development include high inflation, monetary tightening, stability of financial markets and high sovereign, corporate and private debt levels.

On the refining side, intakes have been on a declining trend since the post pandemic high level seen in November 2022 at 80.8 mb/d, (***Graph 2***). In addition, the start of heavy refinery maintenance around February further weighed on intakes in recent months with some 2.1 mb/d of capacity offline in February and 400 tb/d in March. Although US refiners have recently started returning online, ongoing strikes in France, and impending peak refinery maintenance in Asia are likely to keep intakes suppressed in the weeks ahead. Moreover, the impact of the recent reopening of China has still not been sufficient to reverse the declining trend in global refinery intakes.

Graph 2: Global refinery crude intake by region, y-o-y changes



Sources: Argus and OPEC.

On inventories, OECD commercial inventories have been building in recent months, and product balances are less tight than seen at the same time a year ago.

Given these uncertainties surrounding current oil market dynamics, several countries in the Declaration of Cooperation (DoC) have announced additional voluntary adjustments as of May 2023 and until the end of the year, and this was in support of the ongoing relentless and determined DoC effort to support the stability of the oil market.

World Oil Demand

World oil demand growth in 2022 is estimated at 2.5 mb/d y-o-y, broadly unchanged from the previous month's assessment. However, in order to reflect historical data, oil demand in 4Q22 was adjusted slightly down in all OECD countries. At the same time, oil demand in non-OECD countries was revised higher, reflecting improvements in Latin America, the Middle East and Russia. Total world oil demand is estimated to have averaged 99.6 mb/d in 2022.

The forecast for 2023 world oil demand growth remains at 2.3 mb/d, also broadly unchanged from last month's assessment. Within the OECD regions, oil demand growth was adjusted lower in all four quarters of 2023, to reflect the most recently received data for 1Q23 and account for an anticipated decline in economic activity in OECD Americas and OECD Europe. On the other hand, oil demand in the non-OECD countries was revised higher due to better-than-expected improvements in economic activity in China after its zero-COVID-19 policy was discontinued, as well as expected further improvements in the Middle East, Latin America and Other Europe. Accordingly, in the non-OECD region, oil demand is projected to grow by 2.2 mb/d, while the OECD is anticipated to increase only slightly to above 0.1 mb/d y-o-y. For 2023, world oil demand is forecast to average 101.9 mb/d. However, this is subject to many uncertainties, including the trend and pace of economic activity in both OECD and non-OECD countries.

Table 4 - 1: World oil demand in 2022, mb/d

							Change 2022/21	
World oil demand	**2021**	**1Q22**	**2Q22**	**3Q22**	**4Q22**	**2022**	**Growth**	**%**
Americas	24.32	24.77	24.98	25.33	24.97	25.02	0.70	2.88
of which US	*20.03*	*20.38*	*20.41*	*20.62*	*20.32*	*20.43*	*0.40*	*1.98*
Europe	13.13	13.19	13.43	14.07	13.34	13.51	0.38	2.90
Asia Pacific	7.38	7.85	6.99	7.22	7.68	7.43	0.05	0.70
Total OECD	**44.82**	**45.81**	**45.39**	**46.62**	**45.99**	**45.96**	**1.13**	**2.53**
China	15.00	14.77	14.45	14.67	15.51	14.85	-0.15	-0.98
India	4.77	5.18	5.16	4.95	5.26	5.14	0.37	7.66
Other Asia	8.67	9.13	9.31	8.77	8.89	9.02	0.36	4.11
Latin America	6.23	6.32	6.36	6.55	6.52	6.44	0.21	3.38
Middle East	7.79	8.06	8.15	8.53	8.44	8.29	0.50	6.45
Africa	4.22	4.51	4.15	4.25	4.69	4.40	0.18	4.21
Russia	3.61	3.67	3.42	3.45	3.71	3.56	-0.05	-1.48
Other Eurasia	1.21	1.22	1.16	1.00	1.21	1.15	-0.06	-5.07
Other Europe	0.75	0.79	0.75	0.73	0.80	0.77	0.01	1.75
Total Non-OECD	**52.25**	**53.65**	**52.90**	**52.89**	**55.03**	**53.62**	**1.36**	**2.61**
Total World	**97.08**	**99.45**	**98.29**	**99.51**	**101.02**	**99.57**	**2.50**	**2.57**
Previous Estimate	97.08	99.45	98.28	99.49	101.10	99.58	2.50	2.58
Revision	0.00	0.00	0.02	0.02	-0.08	-0.01	-0.01	-0.01

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

Table 4 - 2: World oil demand in 2023*, mb/d

World oil demand	2022	1Q23	2Q23	3Q23	4Q23	2023	Change 2023/22 Growth	Change 2023/22 %
Americas	25.02	24.86	25.14	25.51	25.11	25.16	0.14	0.56
of which US	*20.43*	*20.41*	*20.43*	*20.75*	*20.37*	*20.49*	*0.06*	*0.29*
Europe	13.51	13.02	13.36	14.10	13.37	13.46	-0.04	-0.31
Asia Pacific	7.43	7.89	7.05	7.27	7.70	7.47	0.04	0.55
Total OECD	**45.96**	**45.78**	**45.55**	**46.87**	**46.17**	**46.10**	**0.14**	**0.30**
China	14.85	15.43	15.40	15.43	16.16	15.61	0.76	5.09
India	5.14	5.41	5.44	5.21	5.50	5.39	0.25	4.96
Other Asia	9.02	9.46	9.65	9.14	9.24	9.37	0.35	3.83
Latin America	6.44	6.50	6.49	6.71	6.68	6.60	0.16	2.52
Middle East	8.29	8.52	8.47	8.86	8.73	8.65	0.35	4.23
Africa	4.40	4.71	4.34	4.43	4.88	4.59	0.19	4.32
Russia	3.56	3.68	3.45	3.59	3.87	3.65	0.09	2.49
Other Eurasia	1.15	1.21	1.16	1.02	1.22	1.15	0.01	0.51
Other Europe	0.77	0.84	0.76	0.75	0.83	0.80	0.03	3.61
Total Non-OECD	**53.62**	**55.77**	**55.16**	**55.16**	**57.10**	**55.80**	**2.18**	**4.07**
Total World	**99.57**	**101.55**	**100.70**	**102.03**	**103.27**	**101.89**	**2.32**	**2.33**
Previous Estimate	99.58	101.28	100.77	102.14	103.39	101.90	2.32	2.33
Revision	-0.01	0.27	-0.06	-0.11	-0.12	-0.01	0.00	0.00

*Note: * 2023 = Forecast. Totals may not add up due to independent rounding. Source: OPEC.*

OECD

OECD Americas

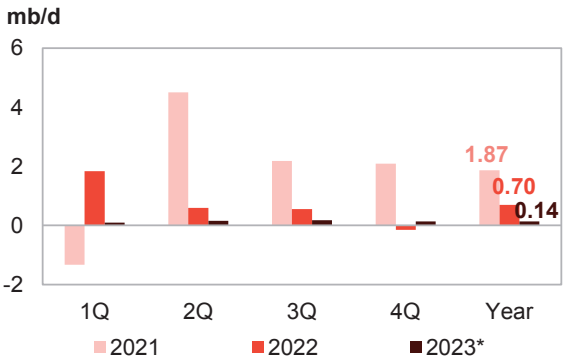
Update on the latest developments

Oil demand in **OECD Americas** increased by 0.2 mb/d y-o-y in January, an improvement from the 0.9 mb/d y-o-y decline seen in December. Oil demand in the region was supported by increased demand for gasoline and jet kerosene in all countries.

January data for the **US** indicates an overall y-o-y decline in oil demand by 0.2 mb/d, which nevertheless constitutes a significant improvement from the annual decline of 1.2 mb/d seen in December.

The services PMI, representing around 70% of the US economy, rose to 55.5 in January from 49.2 in December. Similarly, the US Federal Highway Administration reported that the seasonally adjusted vehicle miles traveled for January 2023 stood 4.5% above January 2022, and showed a 3.1% increase

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



*Note: * 2023 = Forecast.*
Source: OPEC.

over December 2022. The International Air Transport Association's (IATA) Air Passenger Market Analysis reported that US airline activity was strong, with the domestic market continuing its robust recovery in January. Domestic revenue passenger kilometres (RPKs) climbed by 26.8% y-o-y and stood 3.1% above January 2019.

However, the manufacturing PMI in the US was still in contraction territory in January. Demand for LPG weakened by 0.3 mb/d y-o-y, albeit showing an improvement from a 0.5 mb/d y-o-y decline seen in December. Similarly, naphtha remained in negative territory, due to low demand from the petrochemical sector, posting a decline of 23 tb/d y-o-y. Diesel demand in the US dropped y-o-y by 0.2 mb/d, but showed a slight improvement from the decline seen in December. Residual fuels also recorded a y-o-y decline of 55 tb/d, an improvement from the y-o-y decline of 170 tb/d seen in December.

On a positive note, gasoline posted strong y-o-y growth of 0.3 mb/d, up from an annual decline of 0.3 mb/d recorded in December due to improved mobility. Jet/kerosene also increased by just above 0.1 mb/d, y-o-y from growth of 90 tb/d in December.

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

By product	Jan 22	Jan 23	Change Growth	Jan 23/Jan 22 %
LPG	4.08	3.79	-0.29	-7.2
Naphtha	0.17	0.14	-0.02	-13.9
Gasoline	7.98	8.28	0.30	3.8
Jet/kerosene	1.44	1.55	0.11	7.5
Diesel	4.08	3.90	-0.18	-4.4
Fuel oil	0.33	0.28	-0.06	-16.5
Other products	1.94	1.89	-0.05	-2.6
Total	**20.02**	**19.83**	**-0.19**	**-1.0**

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

Near-term expectations

In 2Q23, the US GDP is set to improve marginally from the first quarter. However, high interest rates and elevated core inflation are likely to decelerate consumption and weigh on spending, particularly in the services sector. Furthermore, continued weakening manufacturing activity is likely to impact demand for industrial fuels. In this quarter, US oil demand is projected to grow marginally by 20 tb/d y-o-y. Jet fuel is expected to be the major driver of oil demand growth and gasoline demand is expected to accelerate towards the end of the quarter with the start of the driving season in May. At the same time, diesel is predicted to remain relatively weak due to anticipated softer manufacturing sector activity.

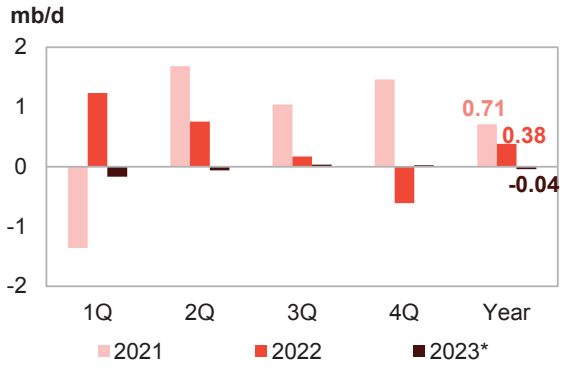
In 3Q23, the driving season in the US is expected to lend support to the consumption of transportation fuels. Similarly, airline activity is approaching pre-pandemic levels, providing further support. Consequently, oil demand in the US is projected to improve and grow by more than 0.1 mb/d y-o-y in 3Q23. Transportation fuels – jet/kerosene and gasoline – are expected to drive oil demand growth. However, risks are still skewed to the downside, with a focus on the macroeconomic performance of the US economy.

OECD Europe

Update on the latest developments

Oil demand in OECD Europe has seen y-o-y contractions for five consecutive months. In January, it declined y-o-y by 0.15 mb/d, albeit showing an improvement compared with the 0.5 mb/d y-o-y decline seen in December.

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



*Note: * 2023 = Forecast.*
Source: OPEC.

Weak macroeconomic performance and ongoing tensions continue to impact economic and manufacturing activity in the region. Inflation stood at 8.5% in January, from 9.2% in December, far above the 2% target set by the ECB.

The Euro-zone's January PMI pointed to some improvement, particularly in the services sector, while manufacturing remained in contraction. The PMI for services was at 50.8 points in January from 49.8 recorded in December and the manufacturing PMI, although in contractionary territory with 48.8 in January, saw a slight improvement from 47.8 points in December. Industrial production in the Euro-zone in January increased by 0.7% m-o-m compared with a decline of 1.3% m-o-m the previous month. At the same time, the IATA reported that RPKs in Europe continued to rise above pre-pandemic levels. Compared with January 2019, domestic traffic transported by European airlines rose 15.4%, while growing 19.2% over January 2022 levels.

Naphtha recorded the highest contraction with 0.3 mb/d y-o-y, amid pressure on ethylene market due to weak demand, thin margins and volatile energy costs. However, LPG recorded improvement from a y-o-y decline of 63 tb/d in December to an increase of 10 tb/d y-o-y in January. Diesel showed a y-o-y decline of 175 tb/d in January, slightly up from a y-o-y drop of 241 tb/d y-o-y in December.

On the positive side, an ongoing improvement in airline activity supported jet/ kerosene growth, which rose by 0.2 mb/d y-o-y, compared with y-o-y growth of 0.1 mb/d posted in December. Similarly, gasoline saw y-o-y growth of 0.1 mb/d, an improvement from the 50 tb/d y-o-y growth seen in December. Finally, residual fuels increased y-o-y by 30 tb/d.

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

By product	Jan 22	Jan 23	Change Growth	Jan 23/Jan 22 %
LPG	0.45	0.38	-0.07	-16.2
Naphtha	0.62	0.43	-0.18	-29.9
Gasoline	1.03	1.07	0.05	4.7
Jet/kerosene	0.53	0.68	0.15	28.6
Diesel	2.81	2.70	-0.11	-3.9
Fuel oil	0.17	0.20	0.02	14.0
Other products	0.37	0.36	-0.01	-3.2
Total	**5.98**	**5.82**	**-0.15**	**-2.6**

*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 region's GDP is forecast to remain positive, though expanding at a low level in 2Q23. In addition, ongoing tensions have induced supply chain bottlenecks in the region, which will likely continue causing manufacturing activity to remain in contraction territory. In January, the manufacturing PMI stood at 48.8, decreasing further to 48.5 in February. Furthermore, the European Central Bank is expected to deliver additional interest rate increases in 2Q23 in an effort to rein in inflation, which could lead to weaker economic activity and, hence, lower oil demand. Nevertheless, the services PMIs has been in expansion territory since January. Oil demand growth in the quarter is anticipated to contract slightly by 60 tb/d y-o-y, albeit showing a marginal improvement from 1Q23 y-o-y growth. Transportation fuels, most notably jet fuel, are set to support oil demand improvements in 2Q23.

In 3Q23, oil demand in the region is expected to grow by 30 tb/d y-o-y, mainly supported by jet fuel and gasoline. Risks, however, are skewed to the downside, hinging on tensions and the lingering possibility of a recession in the region.

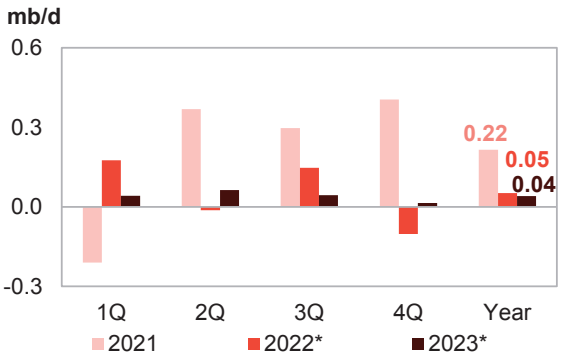
OECD Asia Pacific

Update on the latest developments

Oil demand in **OECD Asia Pacific** contracted in January by 0.1 mb/d y-o-y, following two months of y-o-y growth. The two largest oil-consuming countries in the region, Japan and Korea, have been under pressure, showing relatively slow macroeconomic activity. In Japan, inflation came in at 4.4% in January, up from 4.0% in December. Similarly, in South Korea, the consumer price index stood at 5.2% in January, up from the 5.0% seen in December. Furthermore, the manufacturing PMI in Japan stood at 48.9 points in January and at 48.5 in South Korea.

Nevertheless, the services sector PMI, which constitutes around two-thirds of the Japanese economy, is in expansion territory, and improved further to 52.33 in January.

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



*Note: * 2023 = Forecast.*
Source: OPEC.

Airline activity in the region remains healthy, according to a report from IATA. The Asia Pacific region continued to recover in January, approaching pre-pandemic domestic traffic levels. Overall, domestic RPKs grew by 47.8% y-o-y in January, and currently sit 11.0% under 2019 levels.

Looking at demand for oil products in OECD Asia Pacific, most saw a y-o-y consumption decline, except for the 'other products' category and jet kerosene. Naphtha recorded a y-o-y decline of 75 tb/d, albeit showing an improvement from a y-o-y decline of well over 0.2 mb/d in December. Demand for naphtha has been unstable since February 2022, as average run rates at major naphtha cracking centers have been declining due to a slowdown in the manufacturing and construction sectors. which typically drive demand for various petrochemical products. LPG demand also declined by 16 tb/d, down from a y-o-y increase of 94 tb/d in December. Diesel demand has been hit hard by tepid economic activity in the region, showing a contraction of 75 tb/d y-o-y due to weak manufacturing activity weighing on industrial diesel consumption. Gasoline demand also contracted by 37 tb/d y-o-y. Slow gasoline demand was partly due to cold temperatures weighing on domestic mobility in some countries of the region.

On the positive side, the other products category saw a y-o-y increase by 0.1 mb/d, up from a contraction of 25 tb/d y-o-y recorded in December. Furthermore, on the back of some improvement in air travel activity in the region, jet kerosene saw slight y-o-y growth of 17 tb/d in January.

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

By product	Feb 22	Feb 23	Change Growth	Feb 23/Feb 22 %
LPG	0.52	0.36	-0.16	-31.1
Naphtha	0.64	0.62	-0.01	-2.1
Gasoline	0.66	0.69	0.03	4.3
Jet/kerosene	0.64	0.60	-0.04	-5.6
Diesel	0.84	0.82	-0.02	-2.0
Fuel oil	0.28	0.34	0.06	22.1
Other products	0.26	0.41	0.15	55.8
Total	**3.83**	**3.84**	**0.01**	**0.2**

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

Near-term expectations

The region's GDP is projected to remain positive in 2023; services activity in the region is likely to get further support from a pick-up in Chinese tourist numbers in the Asia Pacific region following China's scrapping of its zero-COVID policy. Specifically, firmer demand is anticipated to be backed by ongoing growth in Japan's retail and services sectors, as well as a rebounding number of overseas tourists to Japan. Furthermore, the opening of the Chinese economy will boost the region's petrochemical industry.

The region's oil demand is projected to grow y-o-y by 60 tb/d in 2Q23. In 3Q23, it is projected to grow by 40 tb/d y-o-y, mainly driven by jet fuel, with some additional support from gasoline and petrochemical feedstock.

Non-OECD

China

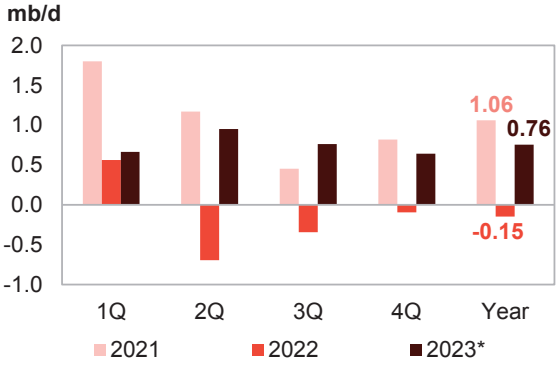
Update on the latest developments

Oil product demand rebounded further in **China** by 0.9 mb/d y-o-y growth in February, up from growth of 0.8 mb/d in January. These improvements in oil demand came on the back of an ongoing recovery in economic and social activity combined with firm petrochemical sector requirements, with all oil product categories showing healthy demand in February.

The February PMI shows that the manufacturing sector is now stronger, as the index for the sector was at 51.56 points, compared with just 49 points in January. Similarly, the February services PMI shows a strong positive trend, reflecting the reopening of the country, moving up to 55 in February from 52.9 in January.

According to the Civil Aviation Administration of China, the airline industry's total passenger volume for domestic routes increased by 36% y-o-y in February compared with a 33.7% y-o-y increase in January. Similarly, passenger volumes for international routes rose by over 760%, compared with about 380% in January. Similarly, the China Tourism Academy (CTA) reported that during the 40-day Spring Festival travel rush, which lasted from early January until the middle of February, a total of 4.73 billion passenger trips were made in China.

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



*Note: * 2023 = Forecast.*
Source: OPEC.

In terms of oil product demand, February oil demand was led by jet/kerosene which increased y-o-y by 0.3 mb/d due to a strong air activity recovery, compared with annual growth of 0.2 mb/d in January. With regard to petrochemical feedstock, naphtha saw y-o-y growth of 0.25 mb/d, up from 0.2 mb/d y-o-y growth seen in January. Gasoline saw y-o-y growth of 0.2 mb/d, compared with 30 tb/d y-o-y growth reported in January because of a strong recovery in mobility. LPG increased by 80 tb/d y-o-y, a slight decline compared with the 0.1 mb/d y-o-y reported in January. The 'residual fuels' and 'other products' categories grew by 60 tb/d and 50 tb/d y-o-y. Finally, diesel posted a marginal increase of 10 tb/d y-o-y, affected by a high baseline comparison. However, in terms of level, diesel consumption in February surpassed pre-pandemic levels by more than 0.3 mb/d.

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

			Change	Feb 23/Feb 22
By product	Feb 22	Feb 23	Growth	%
LPG	2.36	2.44	0.08	3.6
Naphtha	1.75	2.00	0.25	14.0
Gasoline	3.33	3.51	0.18	5.4
Jet/kerosene	0.60	0.90	0.30	50.3
Diesel	4.10	4.11	0.01	0.3
Fuel oil	0.73	0.79	0.06	8.6
Other products	2.39	2.44	0.05	2.1
Total	**15.26**	**16.20**	**0.94**	**6.1**

*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

Looking ahead, oil demand for most products has been on a strong rebound since abandonment of the country's restrictive zero-COVID-19 policy. Domestic mobility and air travel in China are at close to 80% of pre-pandemic levels. Meanwhile, February PMI readings show that the manufacturing sector continued responding positively to the opening, as the index increased into expansion territory in February. The services PMI also shows a strong positive trend, moving up to 57.81 in March from an already strong 55 points in February. China's GDP is forecast to show healthy growth in 2023, supporting oil demand growth of 0.8 mb/d y-o-y.

Demand for transportation fuels is anticipated to increase further from March onwards amid increased mobility and air travel in early spring, as people travel freely following the easing of pandemic-led restrictions. Demand for gasoil for construction projects and agriculture will increase further in March, with operations resuming. This, combined with requirements from a vibrant petrochemical sector, will boost oil demand in China.

In 2Q23, oil demand is set to see y-o-y growth of 1.0 mb/d. Domestic and international airline activity is expected to rise as international business and tourism rebounds, combined with pent-up demand for travel. Consequently, jet fuel requirements are expected to lead oil demand growth. Gasoline demand will also improve significantly, driven by a strong rebound in mobility. Similarly, the petrochemical industry has continued to operate at around full capacity, with stable demand expected to boost feedstock demand for light

distillates. Finally, economic stimulus, along with a planned infrastructure expansion in 2023, will set the stage for a robust diesel consumption recovery.

In 3Q23, oil demand is expected to increase y-o-y by a solid 0.8 mb/d. Jet fuel will again drive oil demand growth in this quarter, with millions of air passengers expected to support air travel activity for local and business travelers to and from China. Light distillates are also expected to continue rising, with continued expansion of the petrochemical industry. Increased mobility and rising construction activity will boost demand for gasoline and diesel.

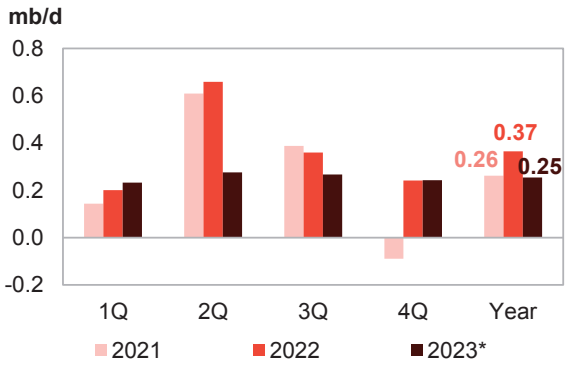
India

Update on the latest developments

India's oil demand improved further from y-o-y growth of 0.2 mb/d in January to 0.3 mb/d in February. The country's oil demand was supported by strong industrial activity, as the manufacturing PMI remained up at 55.3 points in February. Equally, the services PMI grew from 57.2 points in January to 59.4 points in February. Annual consumer price inflation in India slowed slightly to 6.4% in February from 6.5% in January.

In terms of products, diesel was the main driver of oil demand in February as there was a pick up in the agriculture sector, as well as requirements for power generation and industry. Use of the fuel in irrigation pumps and trucking supported diesel, which showed y-o-y growth of 0.1 mb/d.

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



*Note: * 2023 = Forecast.*
Source: OPEC.

In addition, vehicle sales in February remained strong, as data from the Federation of Automobile Dealers Associations showed that passenger vehicle sales increased by over 10% compared with February last year. Accordingly, gasoline grew by 70 tb/d y-o-y.

With the continued opening of the aviation sector, India's overall passenger traffic at airports inched closer to pre-COVID-19 levels. According to the IATA, India saw domestic RPKs at 1.3% below January 2019 levels, showing growth of 92% y-o-y. Demand for jet/kerosene in February stood at 30 tb/d y-o-y, the same as growth seen in January.

However, demand for petrochemical feedstock remained weak, as LPG demand was flat y-o-y, and naphtha again showed a decline in February. Naphtha has yet to recover from weak feedstock demand from naphtha-fed steam crackers in the wake of poor production margins. The 'other products' category and residual fuel oil demand showed increases, by 60 tb/d and 10 tb/d y-o-y, respectively.

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

By product	Feb 22	Feb 23	Change Growth	Feb 23/Feb 22 %
LPG	1.02	1.02	0.00	-0.1
Naphtha	0.35	0.34	-0.01	-3.9
Gasoline	0.79	0.86	0.07	8.7
Jet/kerosene	0.18	0.21	0.03	16.2
Diesel	1.77	1.88	0.12	6.7
Fuel oil	0.17	0.18	0.01	5.4
Other products	1.00	1.06	0.06	5.6
Total	**5.28**	**5.54**	**0.27**	**5.0**

Note: Totals may not add up due to independent rounding.
Sources: JODI, Petroleum Planning and Analysis Cell of India and OPEC.

Near-term expectations

Looking forward, India's demand for refined oil products is expected to remain strong in 2023. Oil demand will be driven by the air travel recovery, supported by healthy mobility and steady industrial activity. Thereby, jet fuel is expected to lead demand growth, followed by gasoline and diesel/gas oil.

In 2Q23, the country's manufacturing and service sectors combined with healthy GDP growth are expected to continue to provide support for oil demand to rise by 0.3 mb/d y-o-y. The government's proposed increase in capital spending is expected to boost the momentum of economic activity, supporting construction and manufacturing activity. These factors, combined with a steady rise in airline activity, will support healthy oil demand growth in 2Q23.

In 3Q23, oil demand is expected to remain solid at 0.3 mb/d, with transportation fuels – gasoline, diesel and jet/kerosene – expected to drive growth. Agricultural and construction activity are projected to add further support.

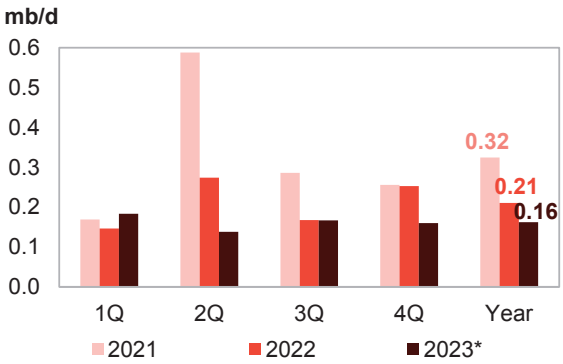
Latin America

Update on the latest developments

Latin America's oil demand saw a y-o-y increase of 0.3 mb/d in January, supported by a recovery in mobility and low y-o-y baseline, and despite slow economic activity in the region due to high inflation. Accordingly, Brazil's manufacturing PMI indices in January were below the growth-indicating level of 50 for the third month in a row, standing at 47.5 points in January, albeit showing a slight improvement compared with the 44.2 points seen in December. Nevertheless, the services PMI in the country improved to stand at 50.7 points, compared with 49.85 in December.

Furthermore, airline activity in the region continued to improve. According to the IATA's Monthly Statistics, airlines from Latin America grew their January international RPKs by 46.8% y-o-y, with traffic levels sitting 19.3% below pre-pandemic levels.

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



*Note: * 2023 = Forecast.*
Source: OPEC.

Latin America's oil demand in January was mainly driven by gasoline, which increased by 0.1 mb/d y-o-y from growth of 61 tb/d y-o-y in December. On the back of steady growth in air travel activity, jet kerosene saw y-o-y growth of 45 tb/d, following a 35 tb/d y-o-y increase in December. Residual fuels and the 'other products' category recorded y-o-y growth of 45 tb/d and 56 tb/d, respectively. However, diesel demand saw a decline of 10 tb/d y-o-y. In terms of petrochemical feedstock, LPG saw a slight y-o-y increase of 30 tb/d, while weak petrochemical activity continued to weigh on naphtha, which showed no y-o-y growth, after 12 consecutive months of decline.

Near-term expectations

GDP for the region is anticipated to show growth in 2023. Oil demand is projected to grow y-o-y by 0.1 mb/d in 2Q23. Ongoing requirements for air travel, along with mobility and manufacturing activity improvements, should support demand for jet fuel, gasoline and distillates.

In 3Q23, oil demand is projected to continue to grow further by almost 0.2 mb/d y-o-y. The outlook for oil demand growth in this quarter sees transportation fuels expand the most, supported by an ongoing recovery in mobility and air travel.

Middle East

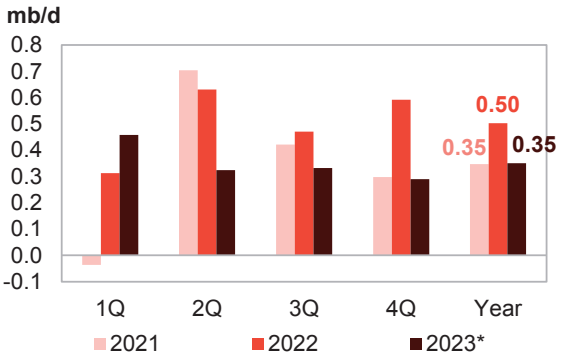
Update on the latest developments

Oil demand growth in the **Middle East** rose by 0.6 mb/d, or 8%, y-o-y in January, the same y-o-y growth as seen in December. Oil demand was supported by healthy economic and social activity in major oil-consuming countries of the region. Saudi Arabia's composite PMI stood at 58.2 points in January and the UAE posted a strong composite PMI of 54.1 in the same month. In terms of air travel, the IATA reported that Middle Eastern carriers recorded growth of 69.8% y-o-y in December, and domestic RPKs stood at 92.2% of their pre-pandemic levels.

January oil demand was driven by diesel, which posted y-o-y growth of 0.2 mb/d, at broadly the same rate for the fourth consecutive month. On the back of demand for electricity generation and the manufacturing sector, the 'other products' category saw y-o-y growth of 0.14 mb/d.

Steady airline activity increases in the Middle East region boosted jet kerosene, which grew by 0.1 mb/d y-o-y in January, up from growth of 40 tb/d y-o-y in December. Gasoline grew by 60 tb/d, y-o-y, up from the 10 tb/d seen in December, due to improved mobility. Residual fuels also increased by 80 tb/d y-o-y, compared with a 50 tb/d y-o-y increase in December. Furthermore, petrochemical feedstock – LPG and naphtha – saw y-o-y growth of 40 tb/d and 10 tb/d, respectively.

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



*Note: * 2023 = Forecast.*
Source: OPEC.

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

By product	Feb 22	Feb 23	Change Growth	Feb 23/Feb 22 %
LPG	0.05	0.06	0.01	17.0
Gasoline	0.48	0.50	0.02	4.6
Jet/kerosene	0.05	0.11	0.06	111.2
Diesel	0.50	0.60	0.10	20.6
Fuel oil	0.47	0.52	0.04	9.4
Other products	0.36	0.41	0.05	13.5
Total	**1.91**	**2.20**	**0.29**	**15.0**

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

Near-term expectations

Oil demand in the Middle East is forecast to remain robust into 2Q23 and 3Q23, on the back of healthy economic activity in the region. Preliminary data for Saudi Arabia shows y-o-y oil demand growth of over 0.3 mb/d in February. Moreover, the composite PMI in both Saudi Arabia and the UAE indicate ongoing strong momentum in February. Furthermore, airline activity is expected to continue to strongly expand. Accordingly, oil demand is projected to increase by 0.3 mb/d y-o-y in both 2Q23 and 3Q23. This will be led by fuel oil for electricity generation in Iraq and Saudi Arabia. In addition, gasoline, transportation diesel and jet/kerosene are expected to further support growth.

World Oil Supply

Non-OPEC liquids supply in 2022 (including processing gains) is estimated to have grown by 1.9 mb/d y-o-y to average 65.8 mb/d, broadly unchanged from the previous month's assessment. Total US liquids production is estimated to have increased by 1.2 mb/d y-o-y to average 19.2 mb/d in 2022. The largest increases for the year were in the US followed by Russia, Canada, Guyana and China, which are estimated to each have grown by around 0.2 mb/d y-o-y. At the same time, production is estimated to see the largest declines in Norway and Thailand.

Non-OPEC liquids production in 2023 is forecast to grow by 1.4 mb/d y-o-y to average 67.2 mb/d, broadly unchanged from last month. Minor downward revisions to OECD Europe and the Other Eurasia were largely offset by upward revisions to liquids production in the Latin America and China.

US liquids production is expected to recover gradually after the considerable drop in December 2022. However, the supply growth forecast for 2023 is revised down slightly to an average of 1.0 mb/d, taking into account lower-than-expected drilling and completion activities in 1Q23. Output growth in the North Sea region is revised down due to continued underperformance, leading to expectations of lower production for Norway in 1Q23. On a positive note, liquids output in Latin America and China is revised up due to strong production in recent months. The main growth drivers for 2023 are anticipated to be the US, Brazil, Norway, Canada, Kazakhstan and Guyana, whereas oil production is forecast to decline primarily in Russia. Nevertheless, there are still substantial uncertainties related to the impact of US shale output assessments in 2023.

OPEC NGLs and non-conventional liquids production in 2022 is forecast to have grown by 0.1 mb/d to average 5.4 mb/d, and is expected to increase by 50 tb/d to average 5.4 mb/d in 2023. OPEC-13 crude oil production in March decreased by 86 tb/d m-o-m to average 28.80 mb/d, according to available secondary sources.

Non-OPEC liquids production in March, including OPEC NGLs, is estimated to have declined m-o-m by 0.1 mb/d to average 73.2 mb/d, but is up by 1.6 mb/d y-o-y. As a result, preliminary data indicates that March's global oil supply decreased by 0.2 mb/d m-o-m to average 101.9 mb/d, up by 1.9 mb/d y-o-y.

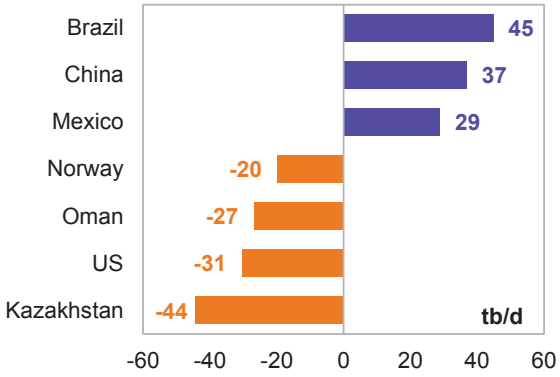
The **non-OPEC liquids supply estimation for 2022** remained broadly unchanged at an average of 65.8 mb/d, showing a y-o-y growth of 1.9 mb/d.

Non-OPEC liquids production in 2023 is forecast to grow by 1.4 mb/d, remained largely unchanged compared with the previous month's assessment, following some up and down revisions in some countries.

The overall OECD supply growth expectation for 2023 has fallen slightly. While OECD Europe saw minor downward revisions, OECD Americas and OECD Asia Pacific were broadly unchanged from the previous month's assessment.

On the other side, the non-OECD supply growth projection for 2023 is revised up marginally, mainly due to upward revision in Latin America, and is expected to grow y-o-y by 0.4 mb/d in 2023.

Graph 5 - 1:Major revisions to annual supply change forecast in 2023*, MOMR Apr 23/Mar 23

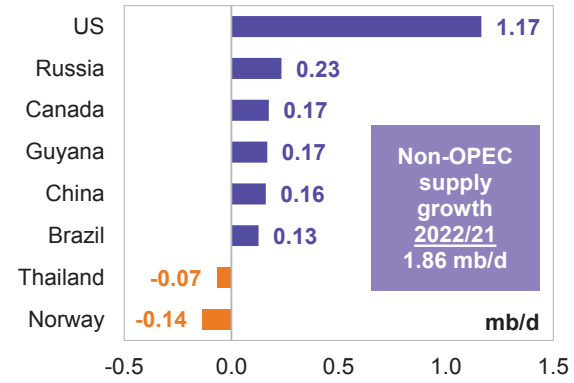


*Note: * 2023 = Forecast. Source: OPEC.*

Key drivers of growth and decline

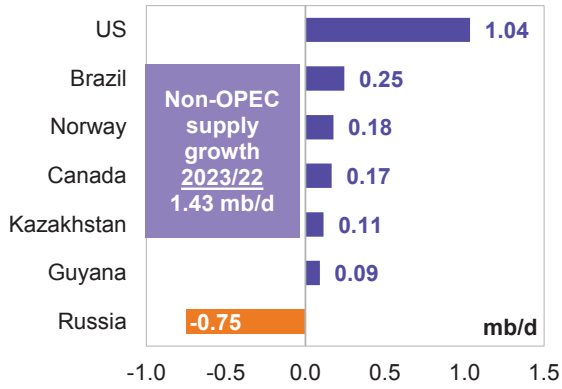
The **key drivers of non-OPEC liquids supply growth in 2022** are estimated to be the US, Russia, Canada, Guyana, China and Brazil, while oil production is expected to see the largest declines in Norway and Thailand.

Graph 5 - 2: Annual liquids production changes y-o-y for selected countries in 2022



Source: OPEC.

Graph 5 - 3: Annual liquids production changes y-o-y for selected countries in 2023*



*Note: * 2023 = Forecast. Source: OPEC.*

For **2023**, the key drivers of non-OPEC supply growth are forecast to be the US, Brazil, Norway, Canada, Kazakhstan and Guyana, while oil production is projected to see the largest decline in Russia.

Non-OPEC liquids production in 2022 and 2023

Table 5 - 1: Non-OPEC liquids production in 2022, mb/d

Non-OPEC liquids production	2021	1Q22	2Q22	3Q22	4Q22	2022	Change 2022/21 Growth	Change 2022/21 %
Americas	25.45	26.11	26.51	27.26	27.47	26.84	1.39	5.47
of which US	*18.04*	*18.51*	*19.07*	*19.57*	*19.67*	*19.21*	*1.17*	*6.46*
Europe	3.79	3.72	3.46	3.51	3.59	3.57	-0.22	-5.79
Asia Pacific	0.51	0.49	0.51	0.43	0.49	0.48	-0.03	-6.23
Total OECD	**29.75**	**30.32**	**30.49**	**31.20**	**31.54**	**30.89**	**1.14**	**3.84**
China	4.32	4.54	4.54	4.42	4.42	4.48	0.16	3.70
India	0.78	0.79	0.78	0.76	0.76	0.77	-0.01	-0.80
Other Asia	2.42	2.37	2.32	2.24	2.31	2.31	-0.11	-4.74
Latin America	5.96	6.11	6.18	6.46	6.59	6.34	0.38	6.35
Middle East	3.20	3.25	3.29	3.32	3.30	3.29	0.09	2.85
Africa	1.35	1.33	1.31	1.32	1.29	1.31	-0.03	-2.49
Russia	10.80	11.33	10.63	11.01	11.17	11.03	0.23	2.15
Other Eurasia	2.93	3.04	2.76	2.59	2.92	2.83	-0.10	-3.34
Other Europe	0.11	0.11	0.11	0.10	0.10	0.11	-0.01	-6.36
Total Non-OECD	**31.87**	**32.85**	**31.92**	**32.23**	**32.87**	**32.47**	**0.60**	**1.89**
Total Non-OPEC production	61.62	63.17	62.41	63.44	64.42	63.36	1.74	2.83
Processing gains	2.29	2.40	2.40	2.40	2.40	2.40	0.11	4.90
Total Non-OPEC liquids production	**63.90**	**65.57**	**64.81**	**65.83**	**66.82**	**65.76**	**1.86**	**2.90**
Previous estimate	63.90	65.57	64.81	65.82	66.84	65.76	1.86	2.91
Revision	0.00	0.00	0.00	0.02	-0.03	0.00	0.00	0.00

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

Table 5 - 2: Non-OPEC liquids production in 2023*, mb/d

Non-OPEC liquids production	2022	1Q23	2Q23	3Q23	4Q23	2023	Change 2023/22 Growth	Change 2023/22 %
Americas	26.84	27.59	27.84	28.20	28.57	28.05	1.21	4.52
of which US	*19.21*	*19.76*	*20.19*	*20.38*	*20.61*	*20.24*	*1.04*	*5.39*
Europe	3.57	3.68	3.74	3.79	3.92	3.78	0.21	5.88
Asia Pacific	0.48	0.48	0.49	0.49	0.48	0.48	0.00	0.66
Total OECD	**30.89**	**31.74**	**32.07**	**32.48**	**32.97**	**32.32**	**1.43**	**4.62**
China	4.48	4.61	4.60	4.50	4.48	4.54	0.07	1.47
India	0.77	0.77	0.79	0.78	0.78	0.78	0.01	1.04
Other Asia	2.31	2.37	2.39	2.34	2.37	2.37	0.06	2.52
Latin America	6.34	6.71	6.67	6.70	6.79	6.72	0.38	5.97
Middle East	3.29	3.26	3.29	3.30	3.31	3.29	0.00	0.02
Africa	1.31	1.31	1.33	1.34	1.33	1.33	0.01	1.01
Russia	11.03	11.22	10.00	9.94	9.99	10.28	-0.75	-6.81
Other Eurasia	2.83	3.04	3.00	2.94	2.98	2.99	0.16	5.69
Other Europe	0.11	0.10	0.10	0.10	0.10	0.10	0.00	-2.83
Total Non-OECD	**32.47**	**33.37**	**32.17**	**31.95**	**32.13**	**32.40**	**-0.07**	**-0.21**
Total Non-OPEC production	63.36	65.11	64.24	64.43	65.10	64.72	1.36	2.14
Processing gains	2.40	2.47	2.47	2.47	2.47	2.47	0.07	2.96
Total Non-OPEC liquids production	**65.76**	**67.58**	**66.71**	**66.90**	**67.57**	**67.19**	**1.43**	**2.17**
Previous estimate	65.76	67.07	66.68	67.19	67.86	67.20	1.44	2.19
Revision	0.00	0.51	0.03	-0.29	-0.30	-0.01	-0.01	-0.02

*Note: * 2023 = Forecast. Totals may not add up due to independent rounding. Source: OPEC.*

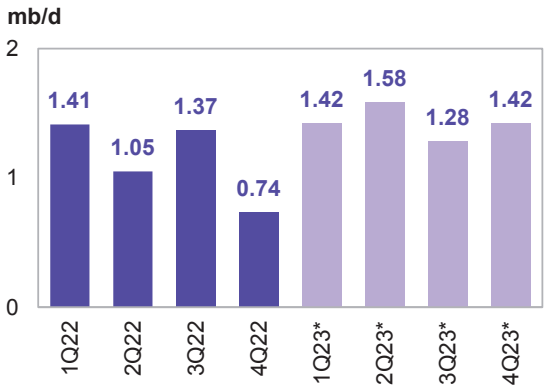
OECD

OECD liquids production in 2022 is estimated to have increased y-o-y by 1.1 mb/d to average 30.9 mb/d. This is primarily unchanged compared with a month earlier.

For **2023**, oil production in the OECD region is forecast to grow by 1.4 mb/d to average 32.3 mb/d. This was revised down by 20 tb/d mainly due to OECD Europe changes.

Growth is led by OECD Americas with 1.2 mb/d to average 28.1 mb/d. This was broadly stable compared with last month's assessment, while the lower growth forecast for the US offset higher expected growth in Mexico. Yearly liquids production in OECD Europe is anticipated to grow by 0.2 mb/d to average 3.8 mb/d, which is lower by 19 tb/d compared with the previous month. OECD Asia Pacific is expected to remain broadly unchanged to average 0.5 mb/d.

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



*Note: * 1Q23-4Q23 = Forecast. Source: OPEC.*

OECD Americas

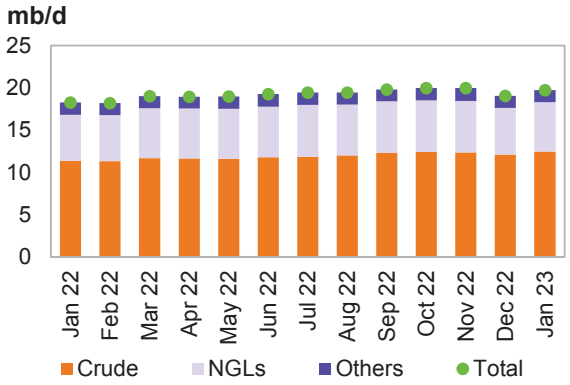
US

US liquids production in **January** jumped sharply m-o-m by 678 tb/d to average 19.7 mb/d, primarily due to the recovery from disruptions in December 2022. This was up by 1.5 tb/d compared with January 2022.

Crude oil and condensate production rose m-o-m by 347 tb/d in **January 2023** to average 12.5 mb/d, up by 1.1 mb/d y-o-y.

In terms of **crude and condensate production breakdown by region (PADDs)**, production increased mainly in the US Gulf Coast (USGC) regions, rising by 229 tb/d to average 9.1 mb/d. At the same time, production in the Midwest rose by 128 tb/d. While the Rocky Mountain and East Coast remained broadly unchanged m-o-m, output in the West Coast declined by 12 tb/d. Onshore production growth in the main regions were primarily driven by a partial recovery after weather-related issues in December 2022, mainly in the North Dakota and Texas oil and gas fields.

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



Sources: EIA and OPEC.

NGLs production was up by 336 tb/d m-o-m to average 5.9 mb/d in January. This was higher y-o-y by 0.4 mb/d. Production of **non-conventional liquids** (mainly ethanol) remained chiefly unchanged m-o-m at an average 1.4 mb/d, according to the US Department of Energy (DoE). Preliminary estimates see non-conventional liquids averaging around 1.4 mb/d in February, up by 32 tb/d compared with the previous month.

GoM production jumped m-o-m by 125 tb/d in January to average 1.9 mb/d, with higher-than-expected production in most of the Gulf Coast offshore platforms, specially by BP's Thunder Horse expansion. In the **onshore Lower 48**, crude and condensate production increased m-o-m by 221 tb/d to average 10.1 mb/d in January.

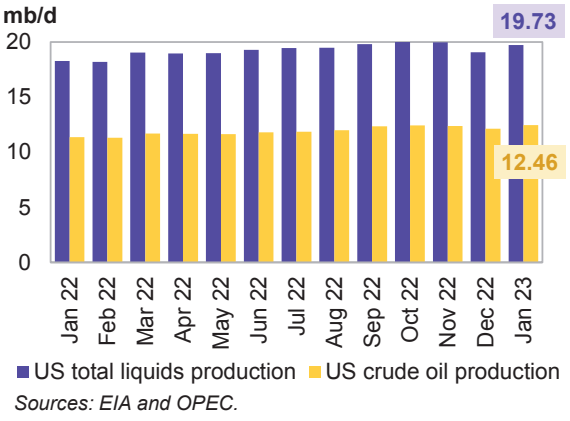
Table 5 - 3: US crude oil production by selected state and region, tb/d

State	Jan 22	Dec 22	Jan 23	Change m-o-m	Change y-o-y
Texas	4,853	5,161	5,237	*76*	*384*
Gulf of Mexico (GOM)	1,708	1,789	1,914	*125*	*206*
New Mexico	1,343	1,773	1,792	*19*	*449*
North Dakota	1,094	949	1,046	*97*	*-48*
Alaska	450	447	448	*1*	*-2*
Oklahoma	400	414	432	*18*	*32*
Colorado	408	408	406	*-2*	*-2*
Total	**11,369**	**12,115**	**12,462**	***347***	***1,093***

Sources: EIA and OPEC.

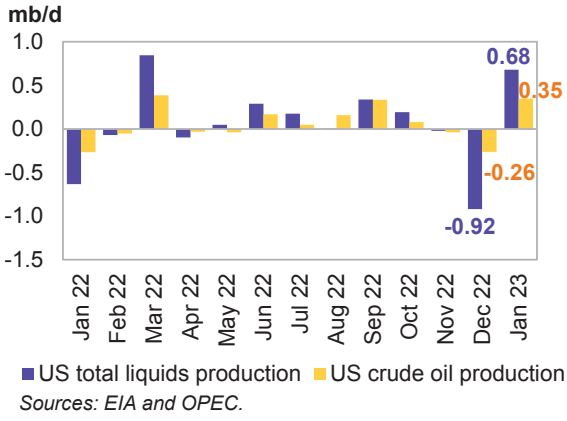
Looking at **individual states**, New Mexico's oil production rose by 19 tb/d to average 1.8 mb/d, which is 449 tb/d higher than a year ago. Texas production was up by 76 tb/d to average 5.2 mb/d, which is 384 tb/d higher than a year ago. In the Midwest, North Dakota's production jumped m-o-m by 97 tb/d to average 1.0 mb/d, down by 48 tb/d y-o-y, and Oklahoma's production was up m-o-m by 18 tb/d to average of 0.4 mb/d. Production in Alaska and Colorado remained broadly stable m-o-m.

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



Sources: EIA and OPEC.

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



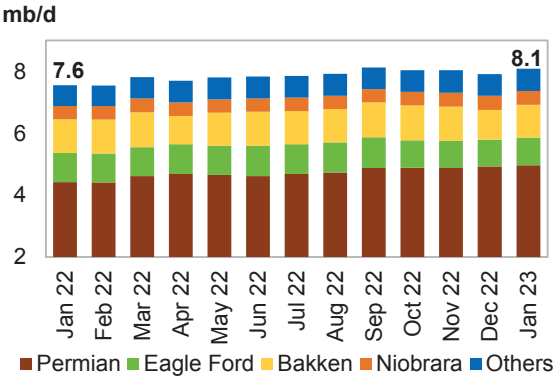
Sources: EIA and OPEC.

US tight crude output in **January 2023** is estimated to have risen by 179 tb/d m-o-m to average 8.1 mb/d, according to the latest estimation by the US Energy Information Administration (EIA). This was 0.5 mb/d higher than in the same month of the previous year.

The m-o-m increase from shale and tight formations using horizontal wells came mainly from the Bakken, where output rebounded by 97 tb/d to average 1.1 mb/d. This was down by 30 tb/d y-o-y.

In Texas and New Mexico, Permian shale production rose by 46 tb/d, averaging 5.0 mb/d. This is up by 548 tb/d y-o-y. Tight crude output at Eagle Ford in Texas increased by 20 tb/d to an average 0.9 mb/d. This is down by 53 tb/d y-o-y. Production in Niobrara-Codell in Colorado and Wyoming was also unchanged at an average of 0.4 mb/d.

Graph 5 - 8: US tight crude output breakdown



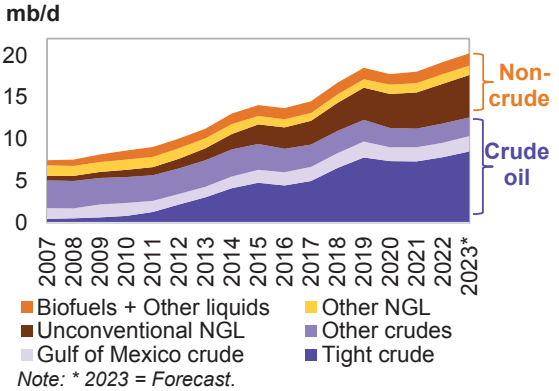
Sources: EIA and OPEC.

US liquids production in 2022, excluding processing gains, is estimated to have expanded y-o-y by 1.2 mb/d to average 19.2 mb/d. This is broadly unchanged compared with the previous assessment. Tight crude is assessed to have grown by 0.5 mb/d in 2022 to average 7.8 mb/d. In addition, NGLs (mainly from unconventional basins) are estimated to have grown by 0.5 mb/d to average 5.9 mb/d, and production in the GoM is estimated to have increased by a minor 36 tb/d. Non-conventional liquids and the crude from conventional reservoirs are assessed to have expanded by 76 tb/d to average 1.4 mb/d and by 0.1 mb/d to average 2.3 mb/d, respectively.

US crude oil and condensate production is estimated to grow by 0.6 mb/d y-o-y to average 11.9 mb/d in 2022.

US liquids production in 2023, excluding processing gains, is forecast to expand y-o-y by 1.0 mb/d to average 20.2 mb/d, revised down by 31 tb/d from the previous assessment. The lower output anticipation for the rest of the year is mainly due to lower-than-expected upstream activities in 1Q23. Better drilling activity and fewer supply chain/logistical issues in the prolific Permian, Eagle Ford and Bakken shale sites are still assumed for the rest of 2023. Given a sound level of oil field drilling and well completions, crude oil output is anticipated to increase by 0.7 mb/d y-o-y to average 12.6 mb/d. Average tight crude output in 2023 is forecast at 8.5 mb/d, up by 0.7 mb/d y-o-y.

Graph 5 - 9: US liquids supply developments by component



*Note: * 2023 = Forecast.*
Source: OPEC.

At the same time, NGLs production and non-conventional liquids, particularly ethanol, are forecast to increase y-o-y by 0.3 mb/d and 40 tb/d, to average 6.2 mb/d and 1.5 mb/d, respectively.

The 2023 forecast assumes continuing capital discipline, lower inflationary pressures, as well as moderate supply chain issues and oil field service constraints (labour and equipment). Tightness in the hydraulic fracking and professional labour market is expected to remain a challenge for US upstream producers in this year.

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

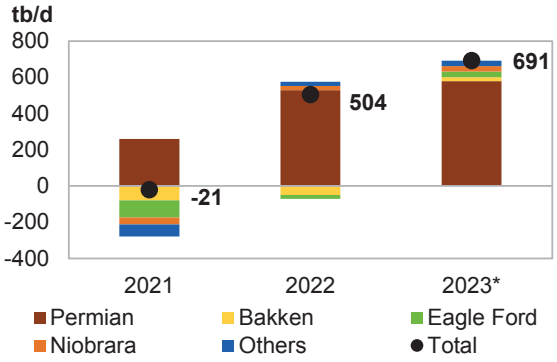
US liquids	2021	Change 2021/20	2022	Change 2022/21	2023*	Change 2023/22
Tight crude	7.34	-0.02	7.84	0.50	8.53	0.69
Gulf of Mexico crude	1.71	0.04	1.74	0.04	1.83	0.09
Conventional crude oil	2.21	-0.08	2.30	0.09	2.21	-0.09
Total crude	**11.25**	**-0.06**	**11.88**	**0.63**	**12.57**	**0.69**
Unconventional NGLs	4.31	0.23	4.74	0.43	5.10	0.36
Conventional NGLs	1.12	0.02	1.14	0.02	1.09	-0.05
Total NGLs	**5.42**	**0.25**	**5.88**	**0.46**	**6.19**	**0.30**
Biofuels + Other liquids	1.36	0.10	1.44	0.08	1.48	0.04
US total supply	**18.04**	**0.28**	**19.21**	**1.16**	**20.24**	**1.04**

*Note: * 2023 = Forecast. Sources: EIA, OPEC and Rystad Energy.*

US tight crude production in the **Permian** in 2022 is estimated to have increased y-o-y by 0.5 mb/d to 4.7 mb/d. It is forecast to grow by 0.6 mb/d y-o-y to average 5.3 mb/d in 2023.

The **Bakken** shale production decline that occurred in 2020 and 2021 continued in 2022. Tight crude production in the Bakken is estimated to have dropped by 50 tb/d in 2022 to average 1.1 mb/d. This is much lower than the pre-pandemic average output of 1.4 mb/d. In addition to several weather-related outages, drilling activity in North Dakota and available DUC wells were lower than the levels required to substantially revive output. In 2023, growth is forecast to resume at 21 tb/d to average 1.1 mb/d.

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



*Note: * 2023 = Forecast.*
Sources: EIA and OPEC.

The **Eagle Ford** in Texas saw output of 1.2 mb/d in 2019, followed by declines in 2020, 2021 and 2022, when it fell by an estimated 21 tb/d to average 0.94 mb/d. Growth of around 30 tb/d is forecast for 2023, to average just under 1.0 mb/d.

Niobrara production is estimated to have grown y-o-y by 24 tb/d in 2022 and is forecast to increase by 30 tb/d in 2023 to average 437 tb/d and 466 tb/d, respectively. Other shale plays are expected to show marginal increases of 22 tb/d and 30 tb/d in 2022 and 2023, respectively, given current drilling and completion activities.

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

US tight oil	2021	Change 2021/20	2022	Change 2022/21	2023*	Change 2023/22
Permian tight	4.17	0.26	4.70	0.53	5.28	0.58
Bakken shale	1.12	-0.08	1.07	-0.05	1.09	0.02
Eagle Ford shale	0.96	-0.09	0.94	-0.02	0.97	0.03
Niobrara shale	0.41	-0.04	0.44	0.02	0.47	0.03
Other tight plays	0.67	-0.07	0.70	0.02	0.73	0.03
Total	**7.34**	**-0.02**	**7.84**	**0.50**	**8.53**	**0.69**

*Note: * 2023 = Forecast. Source: OPEC.*

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

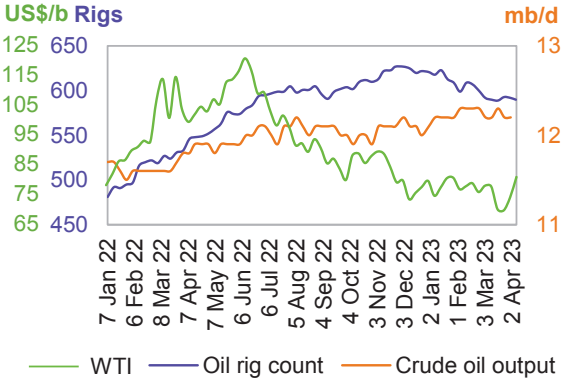
Total **active US drilling rigs** fell by three to 755 in the week ending 31 March 2023, according to Baker Hughes. This was up by 82 rigs compared with a year ago. The number of active offshore rigs remained steady w-o-w at 18. This is higher by four compared with the same month a year earlier. Onshore oil and gas rigs were lower by three w-o-w to stand at 736 rigs, up by 79 rigs y-o-y, with one rig in inland waters.

The **US horizontal rig count** fell by one w-o-w to 691, compared with 613 horizontal rigs a year ago. The number of drilling rigs for oil fell by one w-o-w to 592. At the same time, gas-drilling rig counts were down by two to 160.

The Permian's rig count fell by one w-o-w to 352 rigs. However, rig counts remained steady in Eagle Ford, Williston and DJ-Niobrara at 70, 42 and 18, respectively. The rig count fell by one w-o-w in Cana Woodford to 31.

One operating oil rig remained in the Barnett basin, unchanged w-o-w, but down from two in January 2023.

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



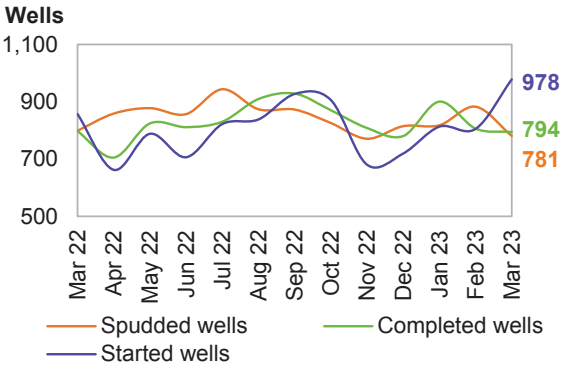
Sources: Baker Hughes, EIA and OPEC.

Drilling and completion (D&C) activities for spudded, completed and started oil-producing wells in all US shale plays, based on EIA-DPR regions, included 883 horizontal wells spudded in February (as per preliminary data). This is up by 65 m-o-m, and 19% higher than in February 2022.

February preliminary data indicates a lower number of completed wells at 806, which is up 30% y-o-y. Moreover, the number of started wells was estimated at 805, which is 30% higher than a year earlier.

Preliminary data for March 2023 estimates 781 spudded, 794 completed and 978 started wells, according to Rystad Energy.

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

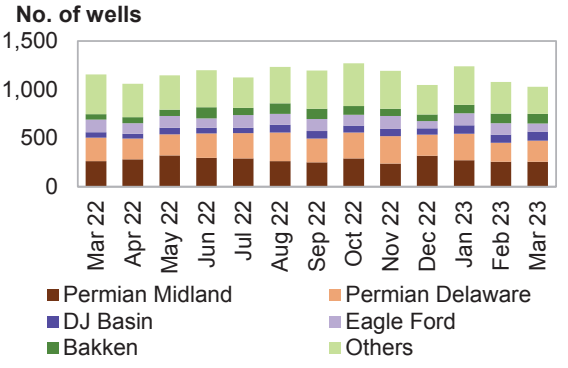


Note: Feb 23-Mar 23 = Preliminary data.
Sources: Rystad Energy and OPEC.

In terms of identified **US oil and gas fracking operations by region**, Rystad Energy reported that 1,238 wells were fracked in January 2023. In February and March, it stated that 1,079 and 1,029 wells began fracking, respectively. Preliminary numbers are based on analysis of high-frequency satellite data.

Preliminary February data showed that 257 and 196 wells were fracked in the Permian Midland and Permian Delaware, respectively. Compared with January, there was a decline of 15 in the Midland and a drop of 79 in the Delaware. Data also indicated that 84 wells were fracked in the DJ Basin, 116 in Eagle Ford and 100 in Bakken during February.

Graph 5 - 13: Fracked wells count per month



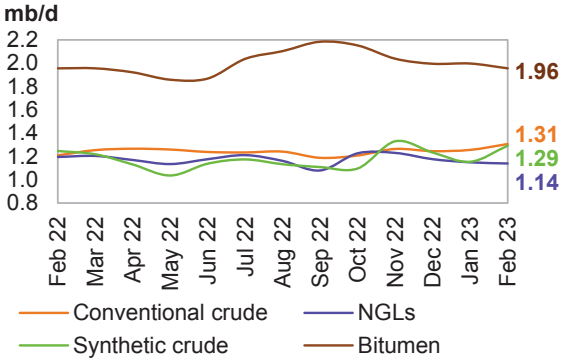
Note: Feb 23-Mar 23 = Preliminary data.
Sources: Rystad Energy Shale Well Cube and OPEC.

Canada

Canada's liquids production in **February** is estimated to have risen m-o-m by 136 tb/d to average 5.7 mb/d. It shows a recovery from the January numbers, as the mining activities improved.

Conventional crude production increased m-o-m by 50 tb/d to average 1.3 mb/d, while NGLs output decreased marginally by 10 tb/d and averaged 1.1 mb/d. Crude bitumen production output fell m-o-m by 41 tb/d in February, while synthetic crude jumped by 137 tb/d. Taken together, crude bitumen and synthetic crude production increased by 96 tb/d to 3.2 mb/d.

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



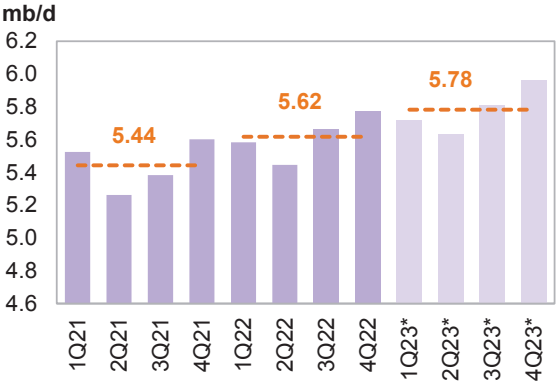
Sources: Statistics Canada, Alberta Energy Regulator and OPEC.

Canada's liquids supply in **2022** is estimated to have expanded by 0.2 mb/d to average 5.6 mb/d, broadly unchanged from the previous assessment. Oil sands output, mainly from Alberta, saw a growth of 60 tb/d y-o-y to an average of 3.2 mb/d in 2022.

Canada's production in 1Q23 was under pressure due to weather-related issues and lower synthetic crude oil production.

For **2023**, Canada's liquids production is forecast to increase at a pace similar to 2022, rising by 0.2 mb/d to average 5.8 mb/d. This is broadly unchanged compared with the previous assessment. Incremental production will come through oil sand project ramp-ups and debottlenecks alongside conventional growth.

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



*Note: * 1Q23-4Q23 = Forecast. Source: OPEC.*

Upgrader maintenance is expected to follow a seasonal pattern, with lower utilization rates during spring and fall. But unplanned outages combined with an expected heavy turnaround schedule could lead to lower production of upgraded synthetic crude oil.

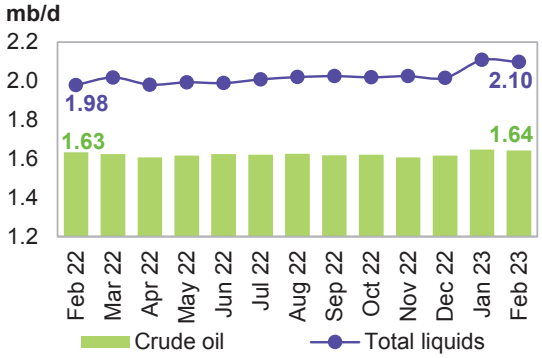
Mexico

Mexico's crude output decreased by a minor 5 tb/d m-o-m in **February** to average 1.6 mb/d and NGLs output remained broadly stable. Mexico's total February liquids m-o-m output fell by a slight 10 tb/d to average 2.1 mb/d, according to the Comisión Nacional de Hidrocarburos (CNH). This was higher than expected mainly due to the quick ramp-up of the Quesqui and Tupilco Profundo fields.

For **2022**, Mexico's liquids production is estimated to have averaged 2.0 mb/d, broadly unchanged from the previous month's assessment. Growth of 50 tb/d is estimated for 2022.

For **2023**, liquids production is now forecast to rise by 15 tb/d to average 2.0 mb/d, which is up by 29 tb/d from the previous assessment, due to higher output in recent months and better expectation for the rest of the year.

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



Sources: Mexico Comision Nacional de Hidrocarburos (CNH) and OPEC

The faster-than-expected ramp-up of Pemex's priority fields has continued to offset declines at mature assets in recent months. In its latest investor presentation, Pemex highlighted the importance of its priority fields (mainly condensate and light crude) to achieving its production goal. However, it is expected that declines from mature fields could start offsetting monthly gains from new fields again from 2Q23.

OECD Europe

Norway

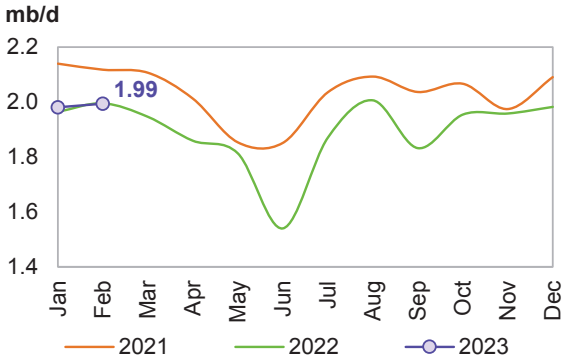
Norwegian liquids production in **February** increased by 13 tb/d m-o-m to average 2.0 mb/d, which was lower than expected after Johan Sverdrup phase-2 came online in December 2022.

Norway's crude production rose by a minor 7 tb/d m-o-m in February to average 1.8 mb/d, and remained steady y-o-y. Monthly oil production was 2.8% lower than the Norwegian Petroleum Directorate's (NPD) forecast.

At the same time, production of NGLs and condensates rose by 6 tb/d m-o-m, averaging 0.2 mb/d, according to NPD data.

For **2022**, production in the Norwegian Continental Shelf is estimated to have declined by around 140 tb/d y-o-y, to average 1.9 mb/d, reflecting poor performance in Norwegian fields.

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



Sources: The Norwegian Petroleum Directorate (NPD) and OPEC.

For **2023**, Norwegian liquids production is forecast to expand by 0.2 mb/d, revised down by 20 tb/d compared with the previous month, to average 2.1 mb/d. This was mainly due to lower-than-expected output in 1Q23.

A number of small-to-large projects are scheduled to ramp up in 2023. The Johan Sverdrup ramp-up is projected to be the main source of growth following the Phase 2 start-up in December 2022. However, it seems that field underperformance remains an issue throughout this year. Besides, Aker BP has started production from the Frosk field, which has an estimated recoverable reserve of around 10 million barrels of oil equivalent. The field is tied back to the Alvheim FPSO located about 24km away. Frosk is to be the first of three tie-backs to the Alvheim field, including Kobra East & Gekko and Tyrving.

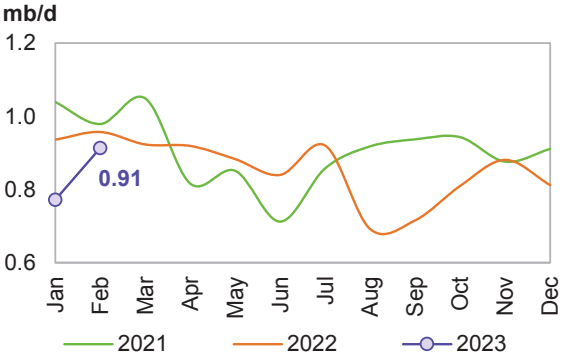
UK

UK liquids production rose m-o-m in **February** by 141 tb/d to average 0.9 mb/d. Crude oil output increased by 138 tb/d m-o-m to average 0.8 mb/d, which was lower by 40 tb/d y-o-y, according to official data. NGLs output remained broadly unchanged at an average of 87 tb/d. UK liquids output in February was down by 4.6% from the same month a year earlier, mainly due to natural declines and other outages.

For **2022**, UK liquids production is estimated to have dropped by 51 tb/d to average 0.9 mb/d. This is chiefly unchanged from the previous assessment.

For **2023**, UK liquids production is forecast to increase by 28 tb/d to average 0.9 mb/d. This is broadly unchanged from the previous assessment.

Graph 5 - 18: UK monthly liquids production development

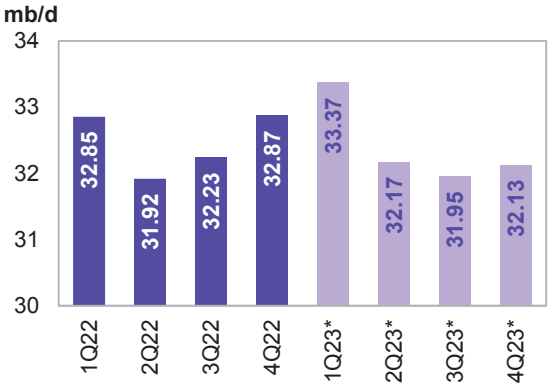


Sources: UK Department for Business, Energy and Industrial Strategy and OPEC.

A number of new fields, including Seagull, the Penguins Redevelopment, Captain EOR and Saturn Banks phase 1 will help offset base declines in 2023. However, project sanctioning will be essential to maintain future oil and gas output, as UK production has been in long-term decline. In addition, UK offshore workers demanding better pay and conditions have voted in favour of a series of short strikes over the coming months that might bring parts of the UK's oil and gas platforms to a standstill – if the labour issues are not resolved.

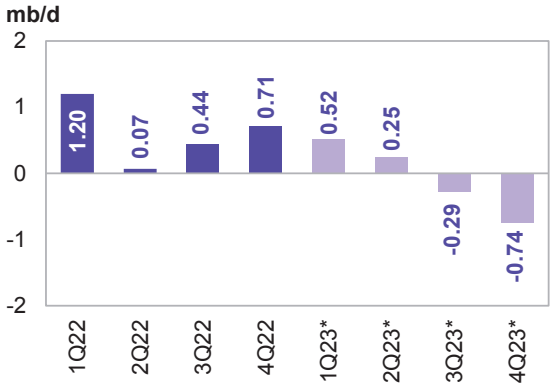
Non-OECD

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



*Note: * 1Q23-4Q23 = Forecast. Source: OPEC.*

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

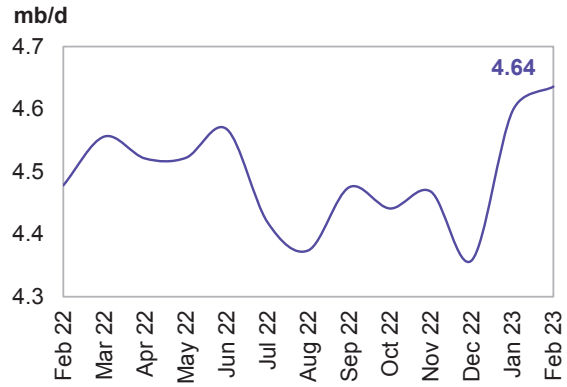


*Note: * 1Q23-4Q23 = Forecast. Source: OPEC.*

China

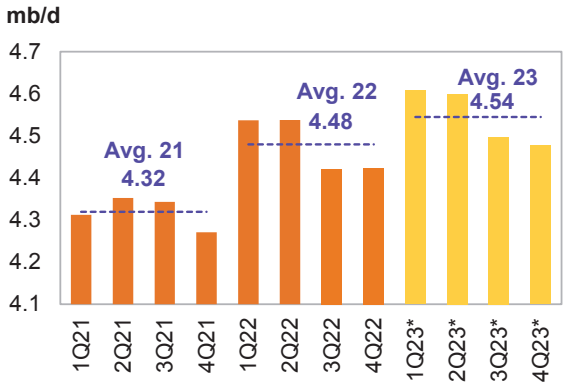
China's liquids production rose m-o-m in **February** by 39 tb/d to average 4.6 mb/d, which is a jump of 158 tb/d y-o-y, according to official data. Crude oil output in February averaged 4.2 mb/d, up by 40 tb/d compared with the previous month but higher y-o-y by 156 tb/d. NGLs and condensate production was largely stable m-o-m, averaging 48 tb/d.

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



Sources: CNPC and OPEC.

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



*Note: * 1Q23-4Q23 = Forecast. Sources: CNPC and OPEC.*

For **2022**, growth of 156 tb/d is estimated for an average of 4.5 mb/d. This remained unchanged from the previous assessment and higher by 3.6% y-o-y.

For **2023**, y-o-y growth of about 66 tb/d is forecast for an average of 4.5 m/d, revised up by 37 tb/d from last month's assessment due to higher-than-expected putput in 1Q23. Natural decline rates are expected to be offset by additional growth through more infill wells and enhanced oil recovery (EOR) projects amid efforts by state-owned oil companies to safeguard its energy supply.

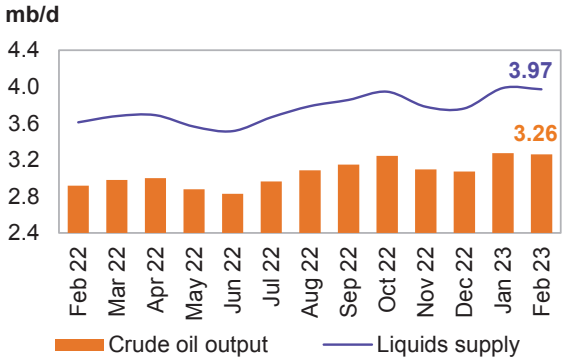
New offshore discoveries, the development of remote onshore basins and more investment in advanced EOR projects are expected to offset the declining output of mature fields. China National Offshore Oil Corporation (CNOOC) exceeded its planned capex last year by spending 102.5 billion yuan, higher than its initial allocated budget. CNOOC officials noted that the company plans to spend up to 110 billion yuan in 2023, with more than three-quarters of its budget dedicated to domestic upstream developments. In addition, PetroChina overspent its 2022 budget by a hefty 32 billion yuan for a total 274 billion yuan, with all the extra funds allocated to its upstream segment. However, PetroChina has indicated plans to cut its 2023 spending to 243.5 billion yuan to align it with its initial 2022 budget.

Latin America

Brazil

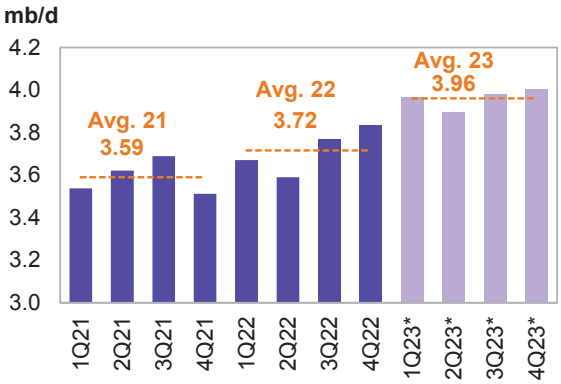
Brazil's crude output in **February** dropped m-o-m by 13 tb/d to average 3.3 mb/d. NGLs production was mostly stable at an average 88 tb/d and is expected to remain flat in February. Biofuels output (mainly ethanol) remained broadly unchanged in February at an average of 622 tb/d, with preliminary data showing a stable trend in March. The country's total liquids production decreased by 14 tb/d in February to average 4.0 mb/d, slightly lower than the highest production rate on record in January 2023.

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



Sources: Brazilian National Agency of Petroleum, Natural Gas and Biofuels (ANP) and OPEC.

Graph 5 - 24: Brazil's quarterly liquids production



*Note: * 1Q23-4Q23 = Forecast. Sources: ANP and OPEC.*

For **2022,** Brazil's liquids supply, including biofuels, is estimated to have increased by 0.1 mb/d y-o-y to average 3.7 mb/d, primarily unchanged from the previous assessment.

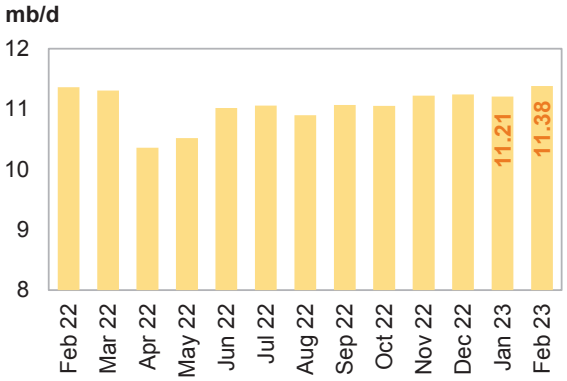
For **2023**, Brazil's liquids supply, including biofuels, is forecast to increase by 0.2 mb/d y-o-y to average 4.0 mb/d, revised up by 45 tb/d from the previous forecast due to higher production rates in 1Q23 and better expectation for the rest of the year.

Crude oil output is set to increase through production ramp-ups in the Buzios (Franco), Mero (Libra NW), Tupi (Lula), Peregrino, Sepia, Marlim and Itapu (Florim) fields. However, offshore maintenance is expected to cause some interruptions in major fields. Petrobras expects the Itapu field in the Santos basin presalt area, which produced 51 tb/d in January, to reach the project's nominal capacity of 150 tb/d in 2H23, offsetting parts of declines in mature fields. Petrobras's Buzios V development, with medium sweet crude oil, is expected to be online in 2Q23 and could be a growth driver for 2023.

Russia

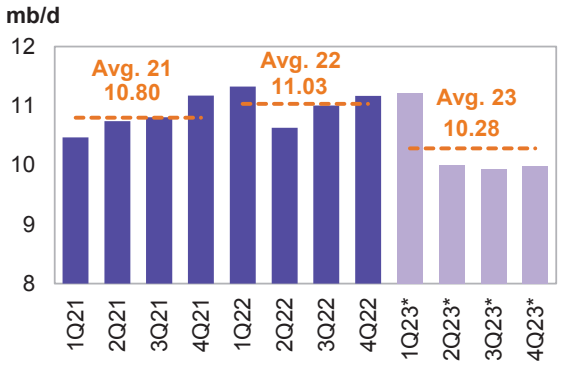
Russia's liquids production in February increased m-o-m by 175 tb/d to average 11.4 mb/d. This includes 10.0 mb/d of crude oil and 1.4 mb/d of NGLs and condensate.

Graph 5 - 25: Russia's monthly liquids production



Sources: Nefte Compass and OPEC.

Graph 5 - 26: Russia's quarterly liquids production



*Note: * 1Q23-4Q23 = Forecast.*
Sources: Nefte Compass and OPEC.

Russian liquids output in **2022** is estimated to have increased y-o-y by 0.2 mb/d to average 11.0 mb/d. This is broadly unchanged from the previous month's assessment.

For **2023**, Russian liquids production is forecast to drop by 0.75 mb/d to average 10.3 mb/d. It is worth noting that this expected contraction accounts for the recently announced additional voluntary production adjustments to the end of 2023. Annual growth is remained unchanged from the previous monthly assessment. In addition to a number of planned start-ups this year by Lukoil, Gazprom, Novatek, Sigma Energy and others.

Caspian

Kazakhstan & Azerbaijan

Liquids output in Kazakhstan decreased by 33 tb/d m-o-m to average 2.0 mb/d in **February**. Crude production was down by a minor 26 tb/d m-o-m to average 1.6 mb/d, while NGLs and condensate fell by a minor 7 tb/d m-o-m to average 0.4 mb/d.

Kazakhstan's liquids supply for **2022** is forecast to have declined by 44 tb/d y-o-y to average 1.8 mb/d. This is broadly unchanged compared with the previous month's assessment.

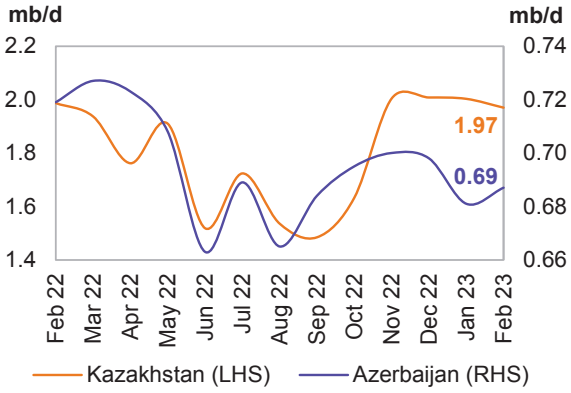
For **2023**, liquids supply is forecast to increase by 0.1 mb/d, down by 44 tb/d compared with the previous forecast. Similar to Russia, this adjutment already accounts for the recently announced additional voluntary production adjustment to the end of 2023.

Azerbaijan's liquids production in February increased slightly by 6 tb/d m-o-m, averaging 0.7 mb/d, which is a drop of 32 tb/d y-o-y. Crude production averaged 537 tb/d, with NGLs output at 150 tb/d, according to official sources.

For **2022**, liquids supply in Azerbaijan is estimated to have declined y-o-y by 40 tb/d to average 0.7 mb/d.

Azerbaijan's liquids supply for **2023** is forecast to rise by 48 tb/d to average 0.7 mb/d. This is a downward revision of a minor 7 tb/d, due to lower-than-expected production in major oil fields in February. The main declines in legacy fields are expected to be offset by ramp-ups in other fields. Growth is forecast to mainly come from the Shah Deniz and Absheron gas condensate projects. Azeri-Chirag-Guneshli (ACG) oil fields output has declined steadily from a peak of 820 tb/d in 2010. However, production is expected to rise after the start-up of the Azeri Central East flank project in 4Q23.

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



Sources: Nefte Compass, JODI and OPEC.

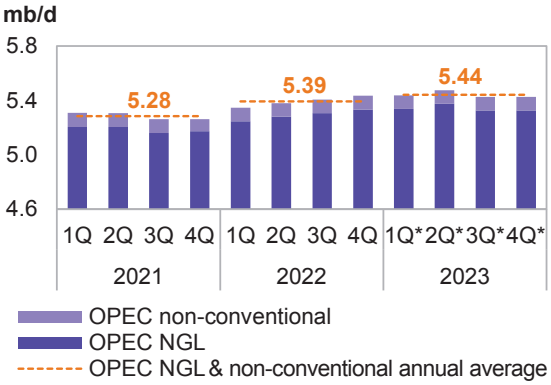
OPEC NGLs and non-conventional oils

OPEC NGLs and non-conventional liquids in 2022 are estimated to have grown by 0.1 mb/d to average 5.4 mb/d, unchanged from the previous assessment.

NGLs output in 1Q23 is expected to have averaged 5.34 mb/d, while OPEC non-conventional output remained steady at 0.1 mb/d. Taken together, 5.46 mb/d is expected for February 2023, according to preliminary data.

OPEC NGLs and non-conventional liquids are forecast to expand by around 50 tb/d in **2023** to average 5.4 mb/d. NGLs production is projected to grow by 50 tb/d to average 5.3 mb/d, while non-conventional liquids are projected to remain unchanged at 0.1 mb/d.

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



*Note: * 1Q23-4Q23 = Forecast. Source: OPEC.*

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

OPEC NGL and non-coventional oils	2021	Change 21/20	2022	Change 22/21	1Q23	2Q23	3Q23	4Q23	2023	Change 23/22
OPEC NGL	**5.18**	*0.12*	**5.29**	*0.11*	5.34	5.37	5.33	5.33	**5.34**	*0.05*
OPEC non-conventional	**0.10**	*0.00*	**0.10**	*0.00*	0.10	0.10	0.10	0.10	**0.10**	*0.00*
Total	**5.28**	***0.12***	**5.39**	***0.11***	**5.44**	**5.47**	**5.43**	**5.43**	**5.44**	***0.05***

Note: 2023 = Forecast. Source: OPEC.

OPEC crude oil production

According to secondary sources, total **OPEC-13 crude oil production** averaged 28.80 mb/d in March 2023, lower by 86 tb/d m-o-m. Crude oil output increased mainly in Saudi Arabia, while production in Angola, Iraq and Nigeria declined.

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

Secondary sources	2021	2022	3Q22	4Q22	1Q23	Jan 23	Feb 23	Mar 23	Change Mar/Feb
Algeria	913	1,017	1,040	1,030	1,015	1,016	1,017	1,013	*-4*
Angola	1,122	1,140	1,155	1,084	1,072	1,136	1,072	1,007	*-64*
Congo	263	261	265	252	268	257	278	270	*-8*
Equatorial Guinea	98	84	90	63	54	55	61	48	*-12*
Gabon	182	197	201	199	196	190	196	203	*7*
IR Iran	2,392	2,554	2,565	2,567	2,565	2,554	2,574	2,567	*-8*
Iraq	4,046	4,439	4,522	4,505	4,381	4,410	4,375	4,358	*-18*
Kuwait	2,419	2,704	2,801	2,712	2,682	2,692	2,676	2,678	*2*
Libya	1,143	981	976	1,153	1,157	1,148	1,163	1,161	*-2*
Nigeria	1,373	1,204	1,063	1,171	1,344	1,308	1,371	1,354	*-17*
Saudi Arabia	9,114	10,529	10,891	10,603	10,354	10,295	10,361	10,405	*44*
UAE	2,727	3,066	3,168	3,094	3,043	3,046	3,046	3,038	*-8*
Venezuela	553	678	662	667	693	691	692	695	*2*
Total OPEC	**26,345**	**28,856**	**29,400**	**29,100**	**28,824**	**28,798**	**28,883**	**28,797**	***-86***

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

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

Direct communication	2021	2022	3Q22	4Q22	1Q23	Jan 23	Feb 23	Mar 23	Change Mar/Feb
Algeria	911	1,020	1,050	1,030	1,011	1,012	1,014	1,008	*-6*
Angola	1,124	1,140	1,151	1,076	1,046	1,105	1,064	972	*-92*
Congo	267	262	261	261	278	275	273	285	*12*
Equatorial Guinea	93	81	83	56	51	55	50	48	*-2*
Gabon	181	191	198	183	201	206	207	190	*-16*
IR Iran	..	..	..	..	..	..	..	..	..
Iraq	3,971	4,450	4,632	4,505	4,288	4,331	4,339	4,200	*-139*
Kuwait	2,415	2,707	2,799	2,721	2,676	2,676	2,676	2,676	*0*
Libya	1,207	..	..	..	..	..	..	..	..
Nigeria	1,323	1,143	999	1,145	1,277	1,258	1,306	1,268	*-38*
Saudi Arabia	9,125	10,591	10,968	10,622	10,456	10,453	10,450	10,464	*14*
UAE	2,718	3,064	3,170	3,093	3,041	3,038	3,041	3,045	*4*
Venezuela	636	716	673	693	731	732	704	754	*50*
Total OPEC	..	..	..	..	..	..	..	..	..

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

Commercial Stock Movements

Preliminary February 2023 data sees total OECD commercial oil stocks up m-o-m by 14.1 mb. At 2,865 mb, they were 237 mb higher than the same time one year ago and 18 mb higher than the latest five-year average, but 54 mb below the 2015–2019 average. Within the components, crude stocks rose m-o-m by 20.9 mb, while product stocks fell m-o-m by 6.8 mb.

At 1,434 mb, OECD crude stocks were 172 mb higher than the same time a year ago and 49 mb above the latest five-year average, but 14 mb lower than the 2015–2019 average.

OECD product stocks stood at 1,432 mb, representing a rise of 65 mb from the same time a year ago, but they were 30 mb lower than the latest five-year average and 40 mb below the 2015–2019 average.

In terms of days of forward cover, OECD commercial stocks rose m-o-m by 1 day in February 2023 to stand at 62.9 days. This is 4.9 days above the February 2022 level, but 1.8 days lower than the latest five-year average and 0.3 days higher than the 2015–2019 average.

Preliminary data for March 2023 showed that total US commercial oil stocks fell by 32.2 mb m-o-m to stand at 1,226.3 mb, which is 72.6 mb higher than the same month in 2022 but 20.2 mb below the latest five-year average. Crude and product stocks fell by 10.3 mb and 22.0 mb, respectively.

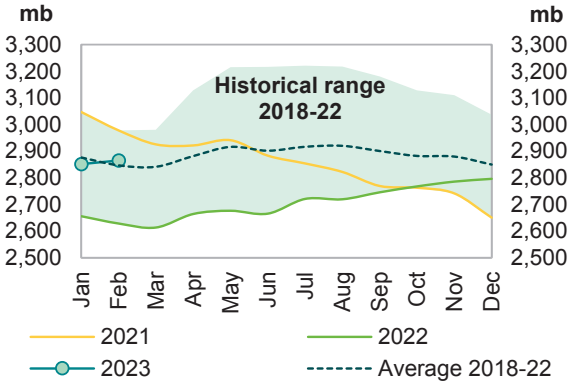
OECD

Preliminary **February 2023** data sees **total OECD commercial oil stocks** up m-o-m by 14.1 mb. At 2,865 mb, they were 237 mb higher than the same time one year ago and 18 mb higher than the latest five-year average, but 54 mb below the 2015–2019 average.

Within the components, crude stocks rose m-o-m by 20.9 mb, while product stocks fell m-o-m by 6.8 mb. Within the OECD regions, total commercial oil stocks in February 2023 rose in OECD Americas, while they fell in OECD Europe and OECD Asia Pacific.

OECD commercial **crude stocks** stood at 1,434 mb in February. This is 172 mb higher than the same time a year ago and 49 mb above the latest five-year average, but 14 mb lower than the 2015–2019 average.

Graph 9 - 1: OECD commercial oil stocks



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

Compared with the previous month, OECD Americas and OECD Europe saw crude stock builds of 20.4 mb and 2.0 mb, respectively, while stocks in OECD Asia Pacific dropped by 1.5 mb.

Total product inventories stood at 1,432 mb in February 2023. This is 65 mb above the same time a year ago, but 30 mb lower than the latest five-year average and 40 mb below the 2015–2019 average. Compared with the previous month, OECD Americas witnessed a product stock build of 1.8 mb, while product stocks in OECD Asia Pacific and OECD Europe fell by 5.8 mb and 2.8 mb, respectively.

Table 9 - 1: OECD commercial stocks, mb

OECD stocks	Feb 22	Dec 22	Jan 23	Feb 23	Change Feb 23/Jan 23
Crude oil	1,262	1,382	1,413	1,434	*20.9*
Products	1,366	1,414	1,439	1,432	*-6.8*
Total	**2,628**	**2,796**	**2,851**	**2,865**	***14.1***
Days of forward cover	**58.0**	**61.0**	**61.9**	**62.9**	***1.0***

Note: Totals may not add up due to independent rounding.
Sources: Argus, EIA, Euroilstock, IEA, METI and OPEC.

In terms of **days of forward cover**, OECD commercial stocks rose m-o-m by 1 day in February 2023 to stand at 62.9 days. This is 4.9 days above the February 2022 level, but 1.8 days lower than the latest five-year average and 0.3 days higher than the 2015–2019 average.

All three OECD regions were below the latest five-year average: the Americas by 1.1 days at 62.3 days; Asia Pacific by 3.0 days at 47.3 days; and Europe by 2.9 days at 72.4 days.

OECD Americas

OECD Americas' total commercial stocks rose by 22.2 mb m-o-m in February to settle at 1,556 mb, which is 131 mb higher than the same month in 2022 and 55 mb above the latest five-year average.

Commercial **crude oil stocks** in OECD Americas rose m-o-m by 20.4 mb in February to stand at 823 mb, which is 103 mb higher than in February 2022 and 61 mb above the latest five-year average. The monthly build in crude oil stocks came despite slightly higher US crude runs over January.

Total product stocks in OECD Americas also rose m-o-m, increasing by 1.8 mb in February to stand at 733 mb, which is 28 mb higher than the same month in 2022, but 6 mb below the latest five-year average. Lower consumption in the region was behind the product stock build.

OECD Europe

OECD Europe's total commercial stocks fell m-o-m by 0.8 mb in February to settle at 966 mb, which is 80 mb higher than the same month in 2022 but 9 mb below the latest five-year average.

OECD Europe's **commercial crude stocks** rose by 2.0 mb m-o-m to end the month of February at 428 mb, which is 37 mb higher than one year ago and 7 mb above the latest five-year average. The build in crude oil inventories came on the back of lower refinery throughput in the EU-14, plus the UK and Norway dropping by around 160 tb/d m-o-m to stand at 9.96 mb/d.

By contrast, Europe's **product stocks** fell m-o-m by 2.8 mb to end February at 538 mb, which is 42 mb higher than a year ago at the same time, but 16 mb below the latest five-year average.

OECD Asia Pacific

OECD Asia Pacific's total commercial oil stocks fell m-o-m by 7.3 mb in February to stand at 343 mb, which is 26 mb higher than a year ago at the same time but 28 mb below the latest five-year average.

OECD Asia Pacific's **crude inventories** fell by 1.5 mb m-o-m to end February at 183 mb, which is 31 mb higher than one year ago, but 19 mb below the latest five-year average.

OECD Asia Pacific's **product inventories** fell by 5.8 mb m-o-m to end February at 161 mb, which is 5 mb lower than one year ago and 9 mb below the latest five-year average.

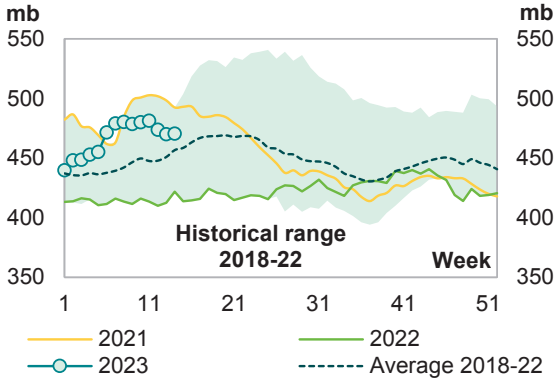
US

Preliminary data for **March 2023** showed that **total US commercial oil stocks** fell by 32.2 mb m-o-m to stand at 1,226.3 mb. This is 72.6 mb, or 6.3%, higher than the same month in 2022; but 20.2 mb, or 1.6%, below the latest five-year average. Crude and product stocks fell by 10.3 mb and 22.0 mb, respectively.

US commercial **crude stocks** in March 2023 stood at 470.0 mb. This is 55.6 mb, or 13.4%, higher than the same month of the previous year, and 13.1 mb, or 2.9%, above the latest five-year average. The monthly drop in crude oil stocks can be attributed to higher crude runs, which increased by around 540 tb/d to 16.07 mb/d.

Total product stocks also fell in March 2023 to stand at 756.3 mb. This is 17.1 mb, or 2.3%, higher than March 2022 levels; but 33.4 mb, or 4.2%, lower than

Graph 9 - 2: US weekly commercial crude oil inventories



Sources: EIA and OPEC.

the latest five-year average. The stock drop could be attributed to higher product consumption.

Gasoline stocks fell m-o-m by 16.6 mb in March 2023 to settle at 222.6 mb. This is 15.9 mb, or 6.7% lower than in the same month of 2022; and 20.3 mb, or 8.4%, lower than the latest five-year average.

Distillate stocks also fell m-o-m, dropping by 9.1 mb in March 2023 to stand at 113.1 mb. This is 1.6 mb, or 1.4%, lower than the same month of the previous year; and 17.0 mb, or 13.1%, below the latest five-year average.

Residual fuel oil stocks dropped by 1.2 mb m-o-m in March 2023. At 29.4 mb, this was 1.5 mb, or 5.4%, higher than a year earlier, but 2.1 mb, or 6.8%, below the latest five-year average

By contrast, **jet fuel stocks** rose m-o-m by 0.5 mb, ending March 2023 at 38.0 mb. This is 2.4 mb, or 6.9%, higher than the same month in 2022 but 1.3 mb, or 3.3%, below the latest five-year average.

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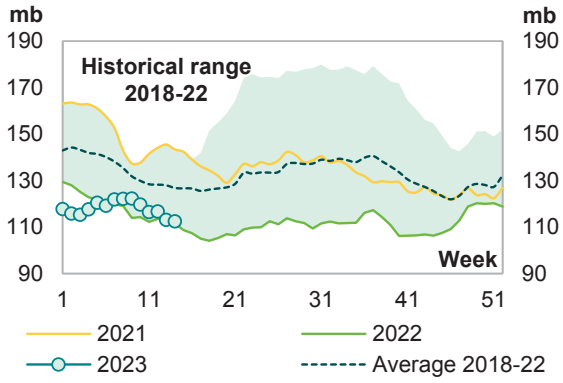
Graph 9 - 3: US weekly distillate inventories



Sources: EIA and OPEC.

Table 9 - 2: US commercial petroleum stocks, mb

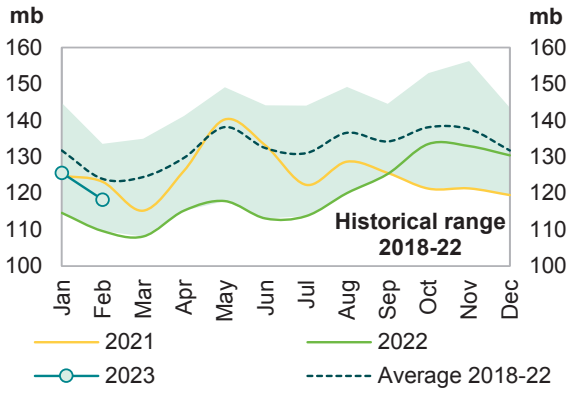
US stocks	Mar 22	Jan 23	Feb 23	Mar 23	Change Mar 23/Feb 23
Crude oil	**414.4**	**459.8**	**480.2**	**470.0**	***-10.3***
Gasoline	238.5	239.7	239.2	222.6	*-16.6*
Distillate fuel	114.6	123.0	122.1	113.1	*-9.1*
Residual fuel oil	27.9	32.1	30.7	29.4	*-1.2*
Jet fuel	35.6	35.9	37.6	38.0	*0.5*
Total products	**739.2**	**794.8**	**778.3**	**756.3**	***-22.0***
Total	**1,153.6**	**1,254.6**	**1,258.5**	**1,226.3**	***-32.2***
SPR	**566.1**	**371.6**	**371.6**	**371.2**	***-0.4***

Sources: EIA and OPEC.

Japan

In **Japan**, **total commercial oil stocks** in **February** fell m-o-m by 7.3 mb to settle at 118.3 mb. This is 8.7 mb, or 7.9%, higher than the same month in 2022; but 5.7 mb, or 4.6%, below the latest five-year average. Crude and product stocks fell m-o-m by 1.5 mb and 5.8 mb, respectively.
Japanese **commercial crude oil stocks** fell m-o-m by 1.5 mb in February to stand at 65.7 mb. This is 9.7 mb, or 17.3%, higher than the same month of the previous year; but 3.0 mb, or 4.4%, lower than the latest five-year average. This crude stock draw came on the back of lower crude runs, which declined m-o-m by 21 tb/d, or 0.7%, to stand at 2.82 mb/d.

Graph 9 - 4: Japan's commercial oil stocks



Sources: METI and OPEC.

Japan's **total product inventories** also fell m-o-m by 5.8 mb to end February at 52.6 mb. This is 1.0 mb, or 1.9%, less than the same month in 2022; and 2.7 mb, or 4.8%, below the latest five-year average.

Gasoline stocks fell m-o-m by 0.7 mb to stand at 10.5 mb in February. This was 0.5 mb, or 4.6%, below a year earlier at the same time; and 0.7 mb, or 6.0%, lower than the latest five-year average. The drop came on the back of higher exports, which increased by 17.1% m-o-m. Lower gasoline imports, which fell by 15.2%, also supported the drop in gasoline stocks.

Distillate stocks also fell m-o-m by 5.1 mb to end February at 21.3 mb. This is 1.1 mb, or 4.8%, below the same month in 2022 and 1.9 mb, or 8.2%, below the latest five-year average. Within distillate components, jet fuel, kerosene and gasoil stocks went down by 1.7%, 36.5% and 3.5%, respectively.

By contrast, **total residual fuel oil stocks** rose m-o-m by 0.5 mb to end February at 11.5 mb. This is 0.3 mb, or 2.6%, higher than in the same month of the previous year; but 0.6 mb, or 4.6%, below the latest five-year average. Within the components, fuel oil A stocks fell by 1.6%, while fuel oil B.C stocks rose by 7.3%, m-o-m.

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

Japan's stocks	Feb 22	Dec 22	Jan 23	Feb 23	*Change* Feb 23/Jan 23
Crude oil	**56.0**	**71.3**	**67.2**	**65.7**	***-1.5***
Gasoline	11.1	10.2	11.2	10.5	*-0.7*
Naphtha	9.0	10.0	9.7	9.2	*-0.5*
Middle distillates	22.4	27.1	26.4	21.3	*-5.1*
Residual fuel oil	11.2	11.8	11.1	11.5	*0.5*
Total products	**53.6**	**59.1**	**58.4**	**52.6**	***-5.8***
Total**	**109.6**	**130.4**	**125.6**	**118.3**	***-7.3***

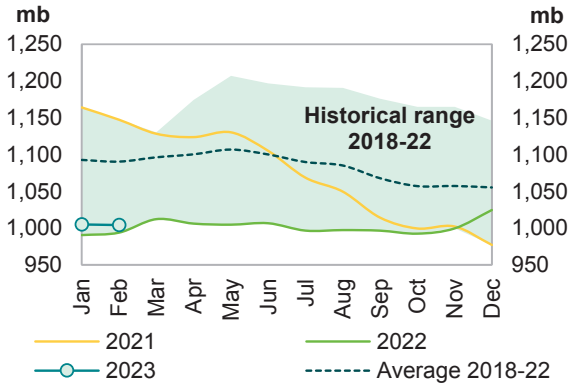
*Note: * At the end of the month. ** Includes crude oil and main products only.*
Sources: METI and OPEC.

EU-14 plus UK and Norway

Preliminary data for **February** showed that **total European commercial oil stocks** fell m-o-m by 0.8 mb to stand at 1,004.2 mb. At this level, they were 10.3 mb, or 1.0%, above the same month a year earlier, but 86.3 mb, or 7.9%, lower than the latest five-year average. Crude stocks rose by 2.0 mb, while product stocks fell by 2.8 mb, m-o-m.

European **crude inventories** rose in February to stand at 430.7 mb. This is 10.0 mb, or 2.4%, higher than the same month in 2022, but 30.0 mb, or 6.5%, below the latest five-year average. The build in crude oil inventories came on the back of lower refinery throughput in the EU-14, plus the UK and Norway dropping by around 160 tb/d m-o-m to stand at 9.96 mb/d.

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



Sources: Argus, Euroilstock and OPEC.

By contrast, **total European product stocks** fell m-o-m by 2.8 mb to end February at 573.5 mb. This is 0.3 mb, or 0.1%, higher than the same month of the previous year; but 56.3 mb, or 8.9%, below the latest five-year average.

Gasoline stocks rose m-o-m by 0.3 mb in February to stand at 108.3 mb. At this level, they were 4.2 mb, or 3.8%, lower than the same time a year earlier; and 13.4 mb, or 11.0%, below the latest five-year average.

By contrast, **middle distillate stocks** fell m-o-m by 1.9 mb in February to stand at 374.6 mb. This is 1.5 mb, or 0.4%, below the same month in 2022; and 39.3 mb, or 9.5%, lower than the latest five-year average.

Residual fuel stocks also fell m-o-m by 0.8 mb in February to stand at 60.2 mb. This is 0.9 mb, or 1.5%, higher than the same month in 2022; but 4.3 mb, or 6.7%, below the latest five-year average.

Meanwhile, **naphtha stocks** dropped m-o-m by 0.4 mb in February, ending the month at 30.4 mb. This is 5.2 mb, or 20.6%, higher than the February 2022 level; and 0.8 mb, or 2.6%, higher than the latest five-year average.

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

EU stocks	Feb 22	Dec 22	Jan 23	Feb 23	*Change* Feb 23/Jan 23
Crude oil	**420.7**	**435.7**	**428.7**	**430.7**	***2.0***
Gasoline	112.5	108.3	108.0	108.3	*0.3*
Naphtha	25.2	30.9	30.7	30.4	*-0.4*
Middle distillates	376.1	384.8	376.5	374.6	*-1.9*
Fuel oils	59.3	64.9	61.0	60.2	*-0.8*
Total products	**573.1**	**588.9**	**576.2**	**573.5**	***-2.8***
Total	**993.9**	**1,024.6**	**1,005.0**	**1,004.2**	***-0.8***

Sources: Argus, Euroilstock and OPEC.

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

Singapore

In **February**, **total product stocks in Singapore** fell m-o-m by 4.3 mb to reach 42.2 mb. This is 1.1 mb, or 2.6%, lower than the same month in 2022 and 5.9 mb, or 12.3%, below the latest five-year average.

Light distillate stocks fell m-o-m by 2.9 mb in February to stand at 14.0 mb. This is in line with the same month of the previous year and 0.6 mb, or 4.0 %, less than the latest five-year average.

Middle distillate stocks also fell m-o-m by 1.8 mb in February to stand at 7.3 mb. This is 0.4 mb, or 5.6%, lower than a year earlier at the same time, and 3.8 mb, or 34.2%, lower than the latest five-year average.

By contrast, **residual fuel oil stocks** rose m-o-m by 0.3 mb, ending February at 20.9 mb. This is 0.7 mb, or 3.3%, lower than February 2022, and 1.6 mb, or 7.0%, below the latest five-year average.

ARA

Total product stocks in ARA rose m-o-m in **February** by 1.1 mb. At 45.9 mb, they were 8.2 mb, or 21.8%, higher than the same month in 2022; and 3.2 mb, or 7.5%, higher than the latest five-year average.

Gasoline stocks in February rose by 0.2 mb m-o-m to stand at 12.2 mb, which is 2.0 mb, or 19.3%, higher than the same month of the previous year; and 1.8 mb, or 17.5%, above the latest five-year average.

Gasoil stocks also rose by 1.9 mb m-o-m, ending February at 18.9 mb. This is 6.8 mb, or 55.7%, higher than February 2022; and 1.5 mb, or 8.9%, above the latest five-year average.

Meanwhile, **fuel oil stocks** rose by 0.2 mb m-o-m in February to stand at 7.4 mb, which is 0.8 mb, or 11.8%, higher than in February 2022; and 0.3 mb, or 4.0%, higher than the latest five-year average.

By contrast, **jet oil stocks** fell by 0.9 mb m-o-m to stand at 5.4 mb. This is 1.3 mb, or 18.9%, lower than levels seen in February 2022; but they remained in line with the latest five-year average.

Fujairah

During the week ending 27 March 2023, **total oil product stocks in Fujairah** rose w-o-w by 0.58 mb to stand at 21.92 mb, according to data from Fed Com and S&P Global Commodity Insights. At this level, total oil stocks were 4.03 mb higher than at the same time a year ago.

Light distillate stocks rose w-o-w by 0.41 mb to stand at 7.72 mb, which is 1.80 mb higher than a year ago. **Heavy distillate stocks** also rose by 0.20 mb w-o-w to stand at 11.60 mb in the week to 27 March 2023, which is 1.42 mb higher than the same period a year ago. By contrast, **Middle distillate stocks** fell w-o-w by 0.02 mb to stand at 2.60 mb, which is 0.81 mb higher than the same time last year.

Balance of Supply and Demand

Demand for OPEC crude in 2022 remained unchanged from the previous MOMR to stand at 28.4 mb/d. This is around 0.5 mb/d higher than in 2021.

According to secondary sources, OPEC crude production averaged 28.3 mb/d in 1Q22, which is 0.2 mb/d lower than demand for OPEC crude. In 2Q22, OPEC crude production averaged 28.6 mb/d, which is 0.5 mb/d higher than demand for OPEC crude. In 3Q22, OPEC crude oil production averaged 29.4 mb/d, which is 1.1 mb/d higher than demand for OPEC crude. In 4Q22, OPEC crude oil production averaged 29.1 mb/d, which is 0.3 mb/d higher than demand for OPEC crude. For the whole year 2022, OPEC crude oil production averaged 28.9 mb/d, which is 0.4 mb/d higher than demand for OPEC crude.

Demand for OPEC crude in 2023 remained unchanged from the previous assessment to stand at 29.3 mb/d. This is around 0.8 mb/d higher than in 2022.

According to secondary sources, OPEC crude production averaged 28.8 mb/d in 1Q23, which is 0.3 mb/d higher than demand for OPEC crude

Balance of supply and demand in 2022

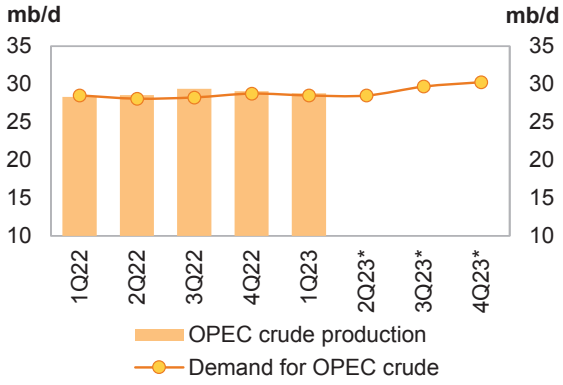
Demand for OPEC crude in 2022 remained unchanged from the previous MOMR to stand at 28.4 mb/d. This is around 0.5 mb/d higher than in 2021.

Compared with the previous assessment, 1Q22, 2Q22 and 3Q22 remained unchanged from the previous month, while 4Q22 was revised down by 0.1 mb/d.

Compared with the same quarters in 2021, demand for OPEC crude in 1Q22 and 2Q22 are estimated to be higher by 2.4 mb/d and 1.3 mb/d, respectively, while 3Q22 and 4Q22 are estimated to be lower by 0.3 mb/d and 1.2 mb/d, respectively.

According to secondary sources, OPEC crude production averaged 28.3 mb/d in 1Q22, which is 0.2 mb/d lower than demand for OPEC crude. In 2Q22, OPEC crude production averaged 28.6 mb/d, which is 0.5 mb/d higher than demand for OPEC crude. In 3Q22, OPEC crude oil production averaged 29.4 mb/d, which is 1.1 mb/d higher than demand for OPEC crude. In 4Q22, OPEC crude oil production averaged 29.1 mb/d, which is 0.3 mb/d higher than demand for OPEC crude. For the whole year 2022, OPEC crude oil production averaged 28.9 mb/d, which is 0.4 mb/d higher than demand for OPEC crude.

Graph 10 - 1: Balance of supply and demand, 2022–2023*



*Note: * 2Q23-4Q23 = Forecast. Source: OPEC.*

Table 10 - 1: Supply/demand balance for 2022, mb/d

	2021	1Q22	2Q22	3Q22	4Q22	2022	Change 2022/21
(a) World oil demand	**97.08**	**99.45**	**98.29**	**99.51**	**101.02**	**99.57**	***2.50***
Non-OPEC liquids production	63.90	65.57	64.81	65.83	66.82	65.76	*1.86*
OPEC NGL and non-conventionals	5.28	5.35	5.38	5.41	5.43	5.39	*0.11*
(b) Total non-OPEC liquids production and OPEC NGLs	**69.19**	**70.92**	**70.19**	**71.24**	**72.25**	**71.15**	***1.96***
Difference (a-b)	**27.89**	**28.54**	**28.10**	**28.27**	**28.77**	**28.42**	***0.53***
OPEC crude oil production	**26.34**	**28.33**	**28.58**	**29.40**	**29.10**	**28.86**	***2.51***
Balance	**-1.54**	**-0.20**	**0.47**	**1.13**	**0.33**	**0.44**	***1.98***

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

Table 11 - 1: World oil demand and supply balance, mb/d

World oil demand and supply balance	2019	2020	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23	2Q23	3Q23	4Q23	2023
World demand													
Americas	25.40	22.45	24.32	24.77	24.98	25.33	24.97	25.02	24.86	25.14	25.51	25.11	25.16
of which US	*20.58*	*18.35*	*20.03*	*20.38*	*20.41*	*20.62*	*20.32*	*20.43*	*20.41*	*20.43*	*20.75*	*20.37*	*20.49*
Europe	14.31	12.41	13.13	13.19	13.43	14.07	13.34	13.51	13.02	13.36	14.10	13.37	13.46
Asia Pacific	7.95	7.17	7.38	7.85	6.99	7.22	7.68	7.43	7.89	7.05	7.27	7.70	7.47
Total OECD	**47.66**	**42.03**	**44.82**	**45.81**	**45.39**	**46.62**	**45.99**	**45.96**	**45.78**	**45.55**	**46.87**	**46.17**	**46.10**
China	13.81	13.94	15.00	14.77	14.45	14.67	15.51	14.85	15.43	15.40	15.43	16.16	15.61
India	4.99	4.51	4.77	5.18	5.16	4.95	5.26	5.14	5.41	5.44	5.21	5.50	5.39
Other Asia	9.06	8.13	8.67	9.13	9.31	8.77	8.89	9.02	9.46	9.65	9.14	9.24	9.37
Latin America	6.59	5.90	6.23	6.32	6.36	6.55	6.52	6.44	6.50	6.49	6.71	6.68	6.60
Middle East	8.20	7.45	7.79	8.06	8.15	8.53	8.44	8.29	8.52	8.47	8.86	8.73	8.65
Africa	4.44	4.08	4.22	4.51	4.15	4.25	4.69	4.40	4.71	4.34	4.43	4.88	4.59
Russia	3.57	3.39	3.61	3.67	3.42	3.45	3.71	3.56	3.68	3.45	3.59	3.87	3.65
Other Eurasia	1.19	1.07	1.21	1.22	1.16	1.00	1.21	1.15	1.21	1.16	1.02	1.22	1.15
Other Europe	0.76	0.70	0.75	0.79	0.75	0.73	0.80	0.77	0.84	0.76	0.75	0.83	0.80
Total Non-OECD	**52.62**	**49.16**	**52.25**	**53.65**	**52.90**	**52.89**	**55.03**	**53.62**	**55.77**	**55.16**	**55.16**	**57.10**	**55.80**
(a) Total world demand	**100.27**	**91.19**	**97.08**	**99.45**	**98.29**	**99.51**	**101.02**	**99.57**	**101.55**	**100.70**	**102.03**	**103.27**	**101.89**
Y-o-y change	***1.08***	***-9.09***	***5.89***	***5.17***	***2.58***	***1.78***	***0.52***	***2.50***	***2.10***	***2.41***	***2.52***	***2.25***	***2.32***
Non-OPEC liquids production													
Americas	25.88	24.87	25.45	26.11	26.51	27.26	27.47	26.84	27.59	27.84	28.20	28.57	28.05
of which US	*18.53*	*17.76*	*18.04*	*18.51*	*19.07*	*19.57*	*19.67*	*19.21*	*19.76*	*20.19*	*20.38*	*20.61*	*20.24*
Europe	3.74	3.92	3.79	3.72	3.46	3.51	3.59	3.57	3.68	3.74	3.79	3.92	3.78
Asia Pacific	0.52	0.52	0.51	0.49	0.51	0.43	0.49	0.48	0.48	0.49	0.49	0.48	0.48
Total OECD	**30.15**	**29.31**	**29.75**	**30.32**	**30.49**	**31.20**	**31.54**	**30.89**	**31.74**	**32.07**	**32.48**	**32.97**	**32.32**
China	4.05	4.16	4.32	4.54	4.54	4.42	4.42	4.48	4.61	4.60	4.50	4.48	4.54
India	0.83	0.78	0.78	0.79	0.78	0.76	0.76	0.77	0.77	0.79	0.78	0.78	0.78
Other Asia	2.75	2.53	2.42	2.37	2.32	2.24	2.31	2.31	2.37	2.39	2.34	2.37	2.37
Latin America	6.09	6.02	5.96	6.11	6.18	6.46	6.59	6.34	6.71	6.67	6.70	6.79	6.72
Middle East	3.16	3.15	3.20	3.25	3.29	3.32	3.30	3.29	3.26	3.29	3.30	3.31	3.29
Africa	1.51	1.41	1.35	1.33	1.31	1.32	1.29	1.31	1.31	1.33	1.34	1.33	1.33
Russia	11.51	10.54	10.80	11.33	10.63	11.01	11.17	11.03	11.22	10.00	9.94	9.99	10.28
Other Eurasia	3.07	2.91	2.93	3.04	2.76	2.59	2.92	2.83	3.04	3.00	2.94	2.98	2.99
Other Europe	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.11	0.10	0.10	0.10	0.10	0.10
Total Non-OECD	**33.08**	**31.64**	**31.87**	**32.85**	**31.92**	**32.23**	**32.87**	**32.47**	**33.37**	**32.17**	**31.95**	**32.13**	**32.40**
Total Non-OPEC production	63.23	60.95	61.62	63.17	62.41	63.44	64.42	63.36	65.11	64.24	64.43	65.10	64.72
Processing gains	2.37	2.16	2.29	2.40	2.40	2.40	2.40	2.40	2.47	2.47	2.47	2.47	2.47
Total Non-OPEC liquids production	**65.60**	**63.11**	**63.90**	**65.57**	**64.81**	**65.83**	**66.82**	**65.76**	**67.58**	**66.71**	**66.90**	**67.57**	**67.19**
OPEC NGL + non-conventional oils	5.21	5.17	5.28	5.35	5.38	5.41	5.43	5.39	5.44	5.47	5.43	5.43	5.44
(b) Total non-OPEC liquids production and OPEC NGLs	**70.82**	**68.28**	**69.19**	**70.92**	**70.19**	**71.24**	**72.25**	**71.15**	**73.02**	**72.19**	**72.33**	**72.99**	**72.63**
Y-o-y change	***2.14***	***-2.54***	***0.91***	***2.76***	***1.30***	***2.07***	***1.73***	***1.96***	***2.11***	***2.00***	***1.09***	***0.74***	***1.48***
OPEC crude oil production (secondary sources)	29.36	25.72	26.34	28.33	28.58	29.40	29.10	28.86	28.82				
Total liquids production	100.18	94.00	95.53	99.25	98.76	100.64	101.35	100.01	101.84				
Balance (stock change and miscellaneous)	-0.09	2.81	-1.54	-0.20	0.47	1.13	0.33	0.44	0.30				
OECD closing stock levels, *mb*													
Commercial	2,894	3,037	2,651	2,613	2,665	2,746	2,796	2,796					
SPR	1,535	1,541	1,484	1,442	1,343	1,245	1,217	1,217					
Total	**4,429**	**4,578**	**4,134**	**4,055**	**4,009**	**3,991**	**4,013**	**4,013**					
Oil-on-water	1,033	1,148	1,202	1,231	1,304	1,407	1,399	1,399					
Days of forward consumption in OECD, *days*													
Commercial onland stocks	69	68	58	58	57	60	61	61					
SPR	37	34	32	32	29	27	27	26					
Total	**105**	**102**	**90**	**89**	**86**	**87**	**88**	**87**					
Memo items													
(a) - (b)	**29.46**	**22.91**	**27.89**	**28.54**	**28.10**	**28.27**	**28.77**	**28.42**	**28.53**	**28.52**	**29.70**	**30.28**	**29.26**

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

https://www.iea.org/reports/oil-market-report-april-2023

Oil Market Report - April 2023

Part of Oil Market Report
Flagship report
April 2023

About this report

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

Highlights

- World oil demand will climb by 2 mb/d in 2023 to a record 101.9 mb/d. Reflecting the widening disparity between regions, non-OECD countries, buoyed by a resurgent China, will account for 90% of growth. OECD demand, dragged down by weak industrial activity and warm weather, contracted by 390 kb/d y-o-y in 1Q23, its second consecutive quarter of decline. Jet/kerosene accounts for 57% of 2023 gains.

- Extra cuts by OPEC+ will push world oil supply down 400 kb/d by end-2023. From March-December, gains of 1 mb/d from non-OPEC+ fail to offset a 1.4 mb/d decline from the producer bloc. For the year as a whole, global oil production growth slows to 1.2 mb/d versus 4.6 mb/d in 2022. Non-OPEC+, led by the US and Brazil, drives the 2023 expansion, rising 1.9 mb/d. OPEC+ is expected to drop by 760 kb/d.

- Global refining throughput is forecast to average 82 mb/d this year, 0.1 mb/d lower than in last month's Report due to weaker 1Q23 data. Annual gains will double to 2.1 mb/d from 1Q23 to 2Q23, as runs in the US normalise and with Chinese activity materially higher than a weak 2Q22 baseline. On average, 2023 crude runs will approach pre-covid levels but remain 0.3 mb/d below 2019 average throughputs.

- Russian oil exports in March soared to the highest since April 2020 thanks to surging product flows that returned to levels last seen before Russia invaded Ukraine. Total oil shipments rose by 0.6 mb/d to 8.1 mb/d, with products climbing 450 kb/d m-o-m to 3.1 mb/d. Estimated oil export revenues rebounded by $1 billion to $12.7 billion but were 43% lower than a year ago.

- Global inventories held largely steady in February after surging by 58 mb in the previous month. Oil on water and non-OECD stocks fell by 11.5 mb and 2.1 mb, respectively, while total OECD inventories rose by 8.8 mb. OECD commercial stocks built by 9.6 mb, narrowing the deficit against the five-year average to 7.5 mb. Preliminary data for the US, Europe and Japan show a hefty 38.9 mb decline in March.

- ICE Brent oil futures slumped to a 15-month low of $71/bbl in mid-March due to financial market instability but then recovered as banking stress waned and expectations of Federal Reserve interest rate cuts later this year increased. Surprise OPEC+ production cuts

announced in early April added further momentum to the rebound. At the time of writing, Brent futures traded at $87/bbl.

Surprise OPEC+ supply cuts announced on 2 April risk aggravating an expected oil supply deficit in 2H23 and boosting oil prices at a time of heightened economic uncertainty, even as industrial activity slows in the world's largest economies and production growth outside the alliance appears robust. The bloc's self-described "precautionary move" immediately triggered a $7/bbl jump in North Sea Dated crude to $85/bbl, up nearly $15/bbl from March lows.

The apparent weakness in industrial activity is impacting gasoil demand, whereas the services sector and personal consumption are driving gasoline and jet uptake. While gasoil cracks have eased, those for gasoline continue to trend higher. Consumers confronted by inflated prices for basic necessities will now have to spread their budgets even more thinly. This augurs badly for the economic recovery and growth.

The latest OPEC+ voluntary curbs of 1.16 mb/d come on top of an announced 500 kb/d cut in Russian output from March that has now been extended through the rest of the year, and a 2 mb/d reduction in targets taking effect last November. While apparently a move to support declining prices amid financial turmoil in mid-March, rising global oil stocks may have also contributed to the decision. In January, OECD industry stocks surged by 53 mb to 2 830 mb, the highest since July 2021 and only 47 mb below the five-year average. Preliminary data for February show further builds, albeit at a much slower pace. By March, however, the trend was already turning, with OECD industry stocks plunging by 39 mb – their biggest monthly decline in over a year.

While oil demand in developed nations has underwhelmed in recent months, slowed by warmer weather and sluggish industrial activity, robust gains in China and other non-OECD countries are providing a strong offset. In 1Q23, OECD oil demand fell 390 kb/d y-o-y, but a solid Chinese rebound lifted global oil demand 810 kb/d above year-earlier levels to 100.4 mb/d. A much stronger increase of 2.7 mb/d is expected through year-end, propelled by a continued recovery in China and international travel. For 2023 as a whole, world oil demand is forecast to rise by an average 2 mb/d, to 101.9 mb/d, with the non-OECD accounting for 87% of the growth and China alone making up more than half the global increase.

Meeting those gains may prove challenging as the new OPEC+ cuts could reduce output by 1.4 mb/d from March through year-end, more than offsetting a 1 mb/d increase in non-OPEC+ production. Growth from the US shale patch, traditionally the most price-responsive source of more output, is currently limited by supply chain bottlenecks and higher costs.

Our oil market balances were already set to tighten in the second half of 2023, with the potential for a substantial supply deficit to emerge. The latest cuts risk exacerbating those strains, pushing both crude and product prices higher. Consumers currently under siege from inflation will suffer even more from higher prices, especially in emerging and developing economies.

OPEC+ crude oil production[1]
million barrels per day

	Feb 2023 Supply	Mar 2023 Supply	Mar Prod vs Target	Mar-2023 Target	Sustainable Capacity[2]	Eff Spare Cap vs Mar[3]
Algeria	1.02	1.01	0.0	1.01	1.02	0.01
Angola	1.06	0.97	-0.49	1.46	1.17	0.2
Congo	0.27	0.27	-0.04	0.31	0.28	0.01
Equatorial Guinea	0.05	0.05	-0.07	0.12	0.09	0.04
Gabon	0.2	0.2	0.02	0.18	0.2	0.0
Iraq	4.4	4.35	-0.08	4.43	4.7	0.35
Kuwait	2.68	2.68	0.0	2.68	2.8	0.12
Nigeria	1.3	1.27	-0.47	1.74	1.37	0.1
Saudi Arabia	10.43	10.43	-0.05	10.48	12.22	1.79
UAE	3.32	3.32	0.3	3.02	4.12	0.8
Total OPEC-10	**24.73**	**24.55**	**-0.87**	**25.42**	**27.98**	**3.43**
Iran[4]	2.65	2.65			3.8	
Libya[4]	1.16	1.16			1.2	0.04
Venezuela[4]	0.69	0.73			0.76	0.03
Total OPEC	**29.23**	**29.09**			**33.75**	**3.51**
Azerbaijan	0.53	0.52	-0.17	0.68	0.58	0.06
Kazakhstan	1.63	1.62	-0.01	1.63	1.65	0.03
Mexico[5]	1.64	1.69		1.75	1.66	-0.03
Oman	0.84	0.84	0	0.84	0.86	0.02
Russia	9.87	9.58	-0.9	10.48	10.2	
Others [6]	0.81	0.84	-0.21	1.06	0.93	0.1
Total Non-OPEC	**15.32**	**15.08**	**-1.29**	**16.44**	**15.88**	**0.21**
OPEC+ 19 in cut deal[4]	**38.41**	**37.94**	**-2.16**	**40.1**	**42.2**	**3.67**
Total OPEC+	**44.55**	**44.17**			**49.63**	**3.72**

1. Excludes condensates. 2. Capacity levels can be reached within 90 days and sustained for an extended period. 3. Excludes shut in Iranian, Russian crude. 4. Iran, Libya, Venezuela exempt from cuts. 5. Mexico excluded from OPEC+ compliance. Only cut in May, June 2020. 6. Bahrain, Brunei, Malaysia, Sudan and South Sudan.

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

2023-04-14 08:00:00.2 GMT

By Kristian Siedenburg

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

	4Q 2023	3Q 2023	2Q 2023	1Q 2023	4Q 2022	3Q 2022	2Q 2022	1Q 2022	2023	2022
	Demand									
Total Demand	103.0	103.1	101.2	100.4	100.7	100.7	98.7	99.6	101.9	99.9
Total OECD	46.5	47.0	45.9	45.4	46.0	46.6	45.4	45.8	46.2	45.9
Americas	25.0	25.5	25.2	24.6	24.9	25.3	25.0	24.8	25.1	25.0
Europe	13.6	14.1	13.6	13.0	13.3	14.1	13.4	13.2	13.6	13.5
Asia Oceania	7.9	7.4	7.1	7.8	7.7	7.2	7.0	7.9	7.6	7.4
Non-OECD countries	56.6	56.0	55.3	54.9	54.7	54.1	53.3	53.7	55.7	54.0
FSU	4.9	4.9	4.7	4.8	5.1	5.1	4.7	4.7	4.8	4.9
Europe	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
China	16.6	16.3	15.9	15.8	15.4	14.8	14.4	15.4	16.2	15.0
Other Asia	14.6	13.9	14.2	14.4	14.0	13.5	14.0	14.1	14.3	13.9
Americas	6.3	6.3	6.2	6.0	6.2	6.3	6.1	5.9	6.2	6.1
Middle East	9.1	9.7	9.3	8.8	9.0	9.5	9.1	8.6	9.2	9.0
Africa	4.3	4.1	4.2	4.3	4.3	4.1	4.2	4.2	4.2	4.2
	Supply									
Total Supply	n/a	n/a	n/a	101.3	101.2	101.0	98.7	98.7	n/a	99.9
Non-OPEC	67.3	67.4	66.8	66.7	66.6	66.1	64.6	64.9	67.1	65.5
Total OECD	30.9	30.7	30.4	30.2	29.9	29.6	28.8	28.7	30.5	29.3
Americas	27.2	27.1	26.8	26.4	26.3	26.1	25.3	24.9	26.9	25.6
Europe	3.3	3.2	3.2	3.3	3.2	3.1	3.0	3.3	3.2	3.2
Asia Oceania	0.5	0.5	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5
Non-OECD	30.8	30.8	30.9	31.6	31.4	30.9	30.4	31.4	31.0	31.0
FSU	13.2	13.2	13.2	14.1	14.1	13.7	13.4	14.4	13.4	13.9
Europe	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
China	4.2	4.3	4.3	4.3	4.1	4.1	4.2	4.2	4.3	4.2
Other Asia	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.8	2.7	2.7
Americas	6.3	6.2	6.1	6.0	5.9	5.8	5.5	5.4	6.1	5.6
Middle East	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.1	3.2	3.2
Africa	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Processing Gains	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.4	2.3
Total OPEC	n/a	n/a	n/a	34.5	34.7	34.9	34.0	33.8	n/a	34.4
Crude	n/a	n/a	n/a	29.2	29.4	29.6	28.7	28.5	n/a	29.1
Natural gas liquids NGLs	5.4	5.4	5.3	5.3	5.3	5.3	5.3	5.3	5.4	5.3
Call on OPEC crude and stock change *	30.4	30.3	29.1	28.3	28.8	29.3	28.8	29.4	29.5	29.1

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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Mark Evans

IEA: March Crude Oil Production in OPEC Countries (Table)
2023-04-14 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 2023	Feb. 2023	March MoM
Total OPEC	29.09	29.23	-0.14
Total OPEC10	24.55	24.73	-0.18
Algeria	1.01	1.02	-0.01
Angola	0.97	1.06	-0.09
Congo	0.27	0.27	0.00
Equatorial Guinea	0.05	0.05	0.00
Gabon	0.20	0.20	0.00
Iraq	4.35	4.40	-0.05
Kuwait	2.68	2.68	0.00
Nigeria	1.27	1.30	-0.03
Saudi Arabia	10.43	10.43	0.00
UAE	3.32	3.32	0.00
Iran	2.65	2.65	0.00
Libya	1.16	1.16	0.00
Venezuela	0.73	0.69	0.04

NOTE: Figures are in million of barrels per day. Monthly level change calculated by Bloomberg. Production data excludes condensates.
OPEC10 excludes Iran, Libya and Venezuela.
SOURCE: International Energy Agency

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IEA REPORT WRAP: Supply Deficit in 2H to Worsen on OPEC+ Cuts
2023-04-14 09:12:00.92 GMT
By Rachel Graham
(Bloomberg) -- Summary of stories from IEA's monthly Oil Market Report on Friday:
* OPEC+ Cuts Worsen the 'Siege' on Oil Consumers, IEA Warns
** OPEC+ cuts may aggravate "substantial" deficit in 2H
** Global demand to increase by 2m b/d to record 101.9m b/d in 2023

** Global oil output growth to slow to 1.2m b/d in 2023 from 4.6m b/d in 2022
** OECD oil demand shrank in 1Q due to weak industrial demand and warm weather
* IEA World Oil Supply/Demand Key Forecasts
** Click here for detailed quarterly forecast table
* March Crude Oil Production in OPEC Countries
** Combined OPEC supply fell by 140k b/d to 29.09m
** Click here for table
* Other stories include:
** Russia Sanctions Work as Designed With Oil Flow Up, Revenue Down
*** IEA data show Russia's March oil exports highest since Covid
** IEA Sees Lack of Oilfield Services Stunting US Shale Supply
** Global Crude Runs to Near Pre-Covid Levels This Year
** Europe Turns to Atlantic Crude to Replace Russian Flows
** Nigerian Crude Prices Softened in March But Angola Gained
* NOTE: OPEC released its monthly report Thursday, saying the supply cuts agreed by OPEC+ nations last week are putting global markets on track for a hefty supply deficit

--With assistance from Grant Smith, Jack Wittels, Bill Lehane and Julian Lee.

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IEA World Oil Supply/Demand Key Forecasts
2023-04-14 08:00:00.4 GMT
By Kristian Siedenburg
(Bloomberg) -- World oil demand 2023 forecast was revised to 101.9m b/d from 102.0m b/d in Paris-based Intl Energy Agency's latest monthly report.
* 2022 world demand was revised to 99.9 from 100.0m b/d
* Demand change in 2023 est. 2% y/y or 2027m b/d
* Non-OPEC supply 2023 was revised to 67.1m b/d from 66.9m b/d
* Call on OPEC crude 2023 was revised to 29.5m b/d from 29.7m b/d
* Call on OPEC crude 2022 was revised to 29.1 m b/d from 29.0m b/d

** OPEC crude production in March fell by 140k b/d on the month to 29.09m b/d
* Detailed table: FIFW NSN RT3D5YGFA9Z4 <GO>
* NOTE: Fcasts based off IEA's table providing one decimal point

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OPEC+ Cuts Intensify the 'Siege' on Oil Consumers, IEA Warns
2023-04-14 08:00:00.13 GMT
By Grant Smith
(Bloomberg) -- OPEC+ production cuts are likely to drive up oil prices and inflict more pain on consumers already squeezed by high inflation, the International Energy Agency said.
Global oil markets — already on track for a supply deficit before Saudi Arabia and its partners unveiled the surprise curbs — will tighten more than previously expected, forcing hefty inventory withdrawals of about 2 million barrels a day on average in the second half of the year, according to the agency.
"Oil market balances were already set to tilt into a substantial deficit," the Paris-based IEA said in its monthly report on Friday. "The latest cuts risk exacerbating those strains" and "consumers currently under siege from inflation will suffer even more from higher prices."

Saudi Arabia and its OPEC+ partners shocked crude traders and sent prices rallying when they agreed fresh output curbs of more than 1 million barrels a day on April 2. Brent futures are trading near $86 a barrel, shoring up revenues for the Organization of Petroleum Exporting Countries while reviving inflationary pressures for the world economy.

Russia, a key OPEC+ member, has simultaneously announced supply cutbacks in retaliation for sanctions over the war in Ukraine, though the IEA now expects that Russian output will fall far less than it originally anticipated.

Moscow has consistently defied IEA predictions that its output would collapse, and the agency — which a few months ago expected Russian supplies to plunge by 1.6 million barrels a day this quarter — now anticipates a drop of just 530,000 a day this year, or about 5%. In March, the country's oil exports hit the highest level in three years, the IEA said.

Robust Demand

OPEC described its supply curbs as a "precautionary measure" to counter economic uncertainty, and a deterrent to speculators making unwarranted wagers against the market. Brimming inventory levels, which in January reached the highest since summer 2021, may have also triggered the move, the IEA said.

Yet the decision sits uneasily with the outlook for global oil demand, which the IEA forecasts will climb by a healthy 2 million barrels a day this year amid a post-pandemic recovery in China to reach a record 101.9 million barrels a day on average. OPEC itself retained robust forecasts for world fuel consumption this year in its report on Thursday, and signaled that the market faces a supply shortfall similar to that foreseen by the IEA.

The organization's move was criticized as ill-advised by the administration of President Joe Biden, which has had a rocky relationship with America's long-term allies in Riyadh. IEA Executive Director Fatih Birol called the decision a "bad surprise" for the global economy.

Still, OPEC+ attracted even stronger disapproval for a previous supply cutback in October, a decision that came to appear prescient in subsequent months as the global economic outlook deteriorated.

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Russia Sanctions Work as Designed With Oil Flow Up, Revenue Down

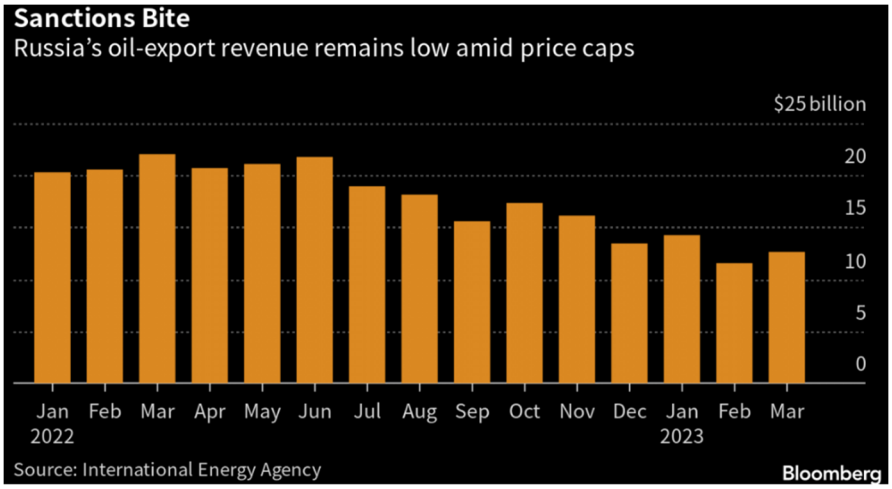
2023-04-14 08:00:00.16 GMT

By Bloomberg News

(Bloomberg) -- Sanctions on Russia appear to be working as intended, with oil exports in March the highest since Covid yet revenue down by nearly half from a year earlier, data from the International Energy Agency show.

Daily Russian oil exports averaged 8.1 million barrels a day last month, the highest since April 2020, “as deep price discounts attract traders willing to risk handling the barrels,” the IEA said in its monthly market report on Friday.

The nation’s oil-export revenues slightly rebounded from February lows, reaching $12.7 billion, but were still 43% down from a year earlier, the agency said.



Western countries and their allies have adopted several waves of sanction to reduce Russia’s oil-export proceeds, a key source of revenue for the national budget. The restrictions aim to limit the Kremlin’s ability to finance its war in Ukraine.

The Group of Seven industrialized countries and their European Union allies have imposed ceilings on the price of Russian crude oil and refined products, which are designed to ensure the country’s energy keeps flowing onto world markets while curbing revenue. The price restrictions came on top of the EU bans on imports of nearly all seaborne Russian crude and petroleum products, depriving the Kremlin of what has historically been its largest energy market.

The bans forced Russia to find alternative markets in the Middle East, and Latin America and expand supplies in Asia, yet

the G-7 price caps have given these new clients the leverage to negotiate discounts. The restrictions stipulate that buyers from third countries can only access western services such as insurance and shipping only if they comply with the caps.

Export Prices Decline

Russian crude oil and petroleum products on average were sold well below the price caps last month, according to the IEA. The weighted average export price of Russian crude was at $50.67 a barrel, compared with a cap of $60, the IEA calculated using data from Argus Media Group and Kpler. That's also nearly $2 a barrel lower than the average price for February, the agency said. The weighted average is considered by western nations in their bi-monthly review of the price cap's effectiveness.

The IEA estimates are for the so-called free-on-board, or FOB, price, which excludes shipping and insurance costs. Urals FOB Baltic and Black Sea traded at an average $44.46 and $44 per barrel, respectively, the IEA said. Russia's premium ESPO blend, designed for exports to Asia Pacific, traded at around $67.5 a barrel, the agency estimated.

The nation's petroleum products last month also traded below the caps set at $100 a barrel and $45 a a barrel, depending on the type of products, according to the IEA.

Output Drop

In response to the western price restrictions, Russia has pledged to cut its crude production by 500,000 barrels per day from the February baseline. At the start of this month, the cuts, which started from March, were extended through year-end.

The IEA estimates Russia's crude production for last month at 9.58 million barrels per day, down just 290,000 barrels per day from the February levels. The nation missed the cut target last month as it "appears to be routing its barrels to new outlets despite EU sanctions," the agency said.

Russia classified its oil statistics last year due to their "sensitive" nature, making it difficult to assess the implementation of supply cuts beyond the assurances of energy officials. So far, Russian officials have not given any public estimates of the March crude production.

The nation pumped a daily average of 1.285 million tons of crude last month, according to an industry person familiar with the figures published by the Energy Ministry, Bloomberg reported last week. That's equivalent to just over 9.4 million barrels a day.

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Europe Turns to Atlantic Crude to Replace Russian Flows: IEA
2023-04-14 08:00:00.24 GMT
By Julian Lee
(Bloomberg) -- European refiners have turned to Atlantic basin producers of generally lighter and/or sweeter crudes to replace lost Russian barrels following an import ban on Moscow's crude, the IEA said in a monthly report.
* The biggest increases in crude imports to Europe have come from the US, Norway and Angola, comparing flows in 1Q23 against the 2021 average, the IEA said, using data from Kpler
* There has been almost no increase in the volume of crude heading from the Middle East into Europe
* Logistical constraints "may limit the flexibility of European refineries to access VLCC's of Middle Eastern crude"
* Increased freight costs have favored short-haul supplies
* Capacity constraints and high natural gas prices may have curtailed demand for higher sulfur crudes
* While refiners in Asia have seen substantial discounts for Russian crude, there have been no such incentives for European processors to buy Middle Eastern grades
* OPEC+ decision to restrict supplies may accelerate the trend of lower Middle Eastern sales to Europe

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IEA Sees Lack of Oilfield Services Stunting US Shale Supply
2023-04-14 08:00:00.5 GMT
By Rachel Graham
(Bloomberg) -- The availability of oilfield services remains tight, limiting the potential for US shale to accelerate production, the International Energy Agency said in its monthly Oil Market Report.

Hydraulic fracturing, or fracking, capacity has essentially been fully utilized for almost a year due to structural underinvestment since prices crashed in 2015, according to the IEA.

"At current margins, this is the primary constraint to accelerated US LTO growth," it said, referring to light tight oil, a type of crude which typically comes from shale formations such as the Permian Basin in West Texas and Bakken in North Dakota.

Companies are also showing capital restraint as the industry matures. ConocoPhillips Chief Executive Officer Ryan Lance said this week he expects more shale mergers and acquisitions amid a dearth of investment in the industry.

An increase in crude to more than $100 a barrel would incentivize increased activity, but only marginally, the IEA said.

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Nigerian Crude Prices Softened in March But Angola Gained: IEA

2023-04-14 08:00:00.7 GMT

By Bill Lehane

(Bloomberg) -- West African sweet grades mostly declined in March, as stiff competition from the overhang in the Atlantic Basin combined with muted demand from European refiners to send Nigerian spot differentials lower, IEA says in monthly oil market report.

* Brass River fell by 75c/bbl month-on-month in March to a 48c/bbl discount to North Sea Dated
* Bonny Light lost 73c to +99c/bbl last month before moving to a discount in early April
* Forcados fell by 92c to $1.55/bbl while Qua Iboe dropped by 65c to $1.06/bbl, with both losing roughly $1/bbl more in early April
* By contrast, Angolan crudes continued to gain strength, IEA says
* Girassol added 46c to +$2.02/bbl, while Cabinda rose by 28c to +$1.30/bbl
* "Renewed interest from Atlantic buyers helped widen Angolan differentials, due to their medium composition and favorable

gasoline margins”

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Global Crude Runs to Near Pre-Covid Levels This Year: IEA
2023-04-14 08:00:00.15 GMT
By Jack Wittels
(Bloomberg) -- Over the course of 2023 crude runs will approach pre-Covid levels, the IEA said in its monthly Oil Market Report.
* Still, crude runs will remain about 0.3m b/d below 2019 average throughputs
** Global refinery crude throughput in 2023 seen at 82m b/d
** Downward revision of 0.1m b/d from previous month’s report
** Compares with 82.3m b/d in 2019 and 80.3m b/d last year
* 2Q crude runs will rise by 2.1m b/d y/y, double the growth rate of 1Q
** “This is driven both by the normalization of US crude runs after a lackluster start to the year and materially higher Chinese crude runs compared to a weak 2Q 2022 baseline”

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Fracturing US-Saudi Oil Pact Adds to Fed's Inflation Stress (2)
2023-04-13 12:32:40.667 GMT

By Ziad Daoud and Courtney McBride
(Bloomberg) -- Just three years ago, when OPEC+ oil giants fell out, the US found itself playing the role of peacemaker. Now it looks more like their target.

The Saudi-Russia oil alliance has the potential to cause all kinds of trouble for the US economy — and even for President Joe Biden's re-election campaign. This month's OPEC+ decision to cut crude output, for the second time since Biden flew to Saudi Arabia last summer seeking an increase, may be just the start.

That April 2 announcement has lifted oil prices by about $5 a barrel. OPEC's own projections show that the cuts will widen the supply shortfall later this year. That means inflation will be higher, and recession risks are bigger than they otherwise would have been — because consumers spending more on energy will have less cash left for other stuff. Russian President Vladimir Putin, meanwhile, gets a bigger war-chest to fund his attack on Ukraine.

But more significant is what the OPEC+ move says about the likely path of oil prices over the coming years.

In a world of shifting geopolitical alliances, Saudi Arabia is breaking away from Washington's orbit. The Saudis set oil production levels in coordination with Russia. When they wanted to ease tensions with regional rival Iran, they turned to China to broker a deal — with the US left out of the loop. Western influence over the oil cartel, in other words, is at its lowest point in decades.

And the OPEC+ members all have priorities of their own, from Saudi Crown Prince Mohammed Bin Salman's ambitious plans to reinvent his economy, to Putin's war. Any extra revenue they get from charging more for oil is a help.

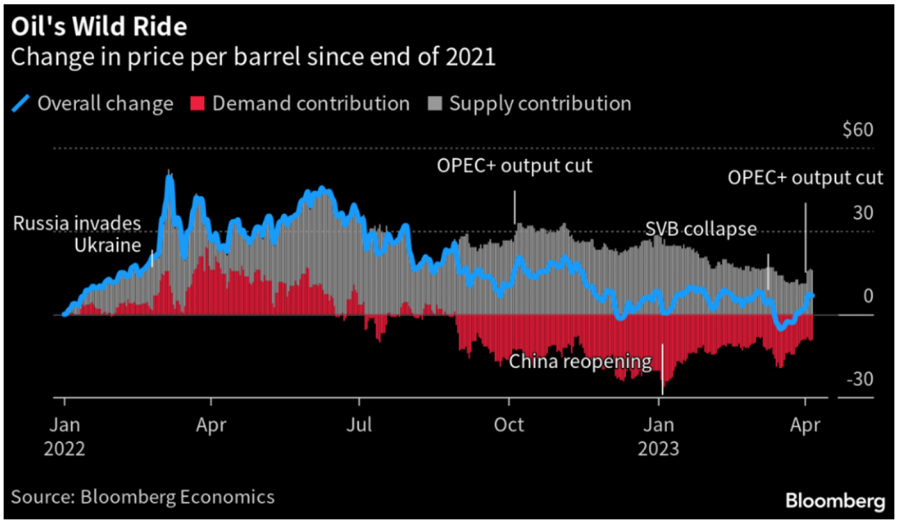
Asked about US concerns that OPEC+ has twice elected to cut production since President Biden's visit to Saudi Arabia, a State Department spokesperson said the administration is focused on holding down domestic energy prices and ensuring US energy security. The US views production cuts as inadvisable given ongoing market volatility, but will wait to see what actions OPEC+ ultimately takes, said the spokesperson.

Meanwhile, the threat of competition from US shale fields, a deterrent to price hikes in the past, has receded. And while there's a global effort to reduce fossil-fuel use — and higher prices will accelerate that effort — the dash to drill in the last year shows that the zero-carbon economy remains more long-term aspiration than short-term driver.

Add all of this up, and while some analysts say demand hurdles mean the recent bump in prices could prove fleeting, most anticipate prices above $80 a barrel over the coming years — well above the $58-a-barrel average price between 2015 and 2021.Crude Shock

It's been a volatile 18 months or so on crude markets, with three main phases.

* In the run-up to Russia's invasion of Ukraine — and even more so in its immediate aftermath — prices soared, hitting around $120 a barrel in June 2022.
* Then the trend went into reverse. Concerns about a recession in Europe, rapidly rising interest rates in the US and China's Covid restrictions combined to push the price down to around $75 in December.
* Demand started to pick up at the beginning of 2023, largely due to reopening in China - the world's largest importer. Last month's banking turmoil halted the rally – but it had resumed even before the surprise OPEC+ output cut, which lifted prices to $85 a barrel from $80.



For the global economy writ large, lower oil supply and higher prices is bad news. The major exporters are the big winners, of course. For importers, like most European countries, more expensive energy is a double blow — dragging on growth even as inflation rises.

The US falls somewhere in between. As a major producer, it benefits when prices rise. But those gains — unlike the pain of higher pump prices — aren't widely shared.

Bloomberg Economics' SHOK model predicts that for every $5 increase in oil prices, US inflation will rise by 0.2 percentage point — not a dramatic change, but at a time when the Federal Reserve is struggling to bring prices under control, not a welcome one either.

There are three key reasons why more such shocks may be in store: The geopolitical shift, the maturing of shale, and the Saudi spending splurge.Geopolitical Frictions

For decades, the US-Saudi "oil for security" pact has been a pillar of the energy market. Now it's wobbling. Symbolized by the 1945 meeting between President Franklin D. Roosevelt and King Abdul Aziz Ibn Saud, aboard a US cruiser in the Suez Canal, the deal gave the US access to Saudi oil in exchange for guaranteeing the kingdom's security.

But the pact is no longer what it once was:
* In 2018, Washington Post columnist and Saudi dissident Jamal Khashoggi was assassinated at the Saudi consulate in Istanbul.
* In 2019, Biden — then a presidential candidate — threatened to turn Saudi Arabia into a pariah state and halt arms sales.
* In 2021, early in his presidency, Biden released an intelligence report assessing that Crown Prince Mohammed, the kingdom's de facto ruler, was responsible for the Khashoggi assassination.
* In October 2022, OPEC+ lowered oil production by 2 million barrels a day — less than three months after Biden flew to Riyadh seeking an increase. The White House blasted the move as "short-sighted."
* Last month, Saudi Arabia and Iran agreed to restore diplomatic ties in a deal brokered by China and signed in Beijing.
* The Saudi government has also agreed to join the Shanghai Cooperation Organization – a group with China and Russia at the helm, and seen as a rival to Western institutions — as a "dialogue member".

"The Saudis are looking for an aggressive hedge," said Jon Alterman, director of the Middle East Program at the Center for Strategic and International Studies, a Washington-based think tank. "Given what the Saudis see as a radically unpredictable US policy, they think it's irresponsible not to look for a hedge. And by radically unpredictable, you're looking at a US policy that changed sharply between Obama and Trump and Biden."
In the aftermath of the April 2 move, Saudi officials said it was motivated by national priorities rather than any diplomatic agenda.
"OPEC+ has succeeded now and in the past in stabilizing oil markets, and contrary to claims by Western and industrial states this has nothing to do with politics," former Saudi oil ministry adviser Mohammad Al Sabban said, according to Asharq Al-Awsat newspaper.
Read More: Saudi Arabia Emboldened on World Stage Underpins OPEC Decision

Shale Buffer?

In the past, OPEC+ was often torn: it wanted high prices, but worried that they'd attract more competition, particularly from US shale oil. That disagreement is what drove a price war between Russia and Saudi Arabia in 2020 — which ended when then-US President Donald Trump brokered a deal.

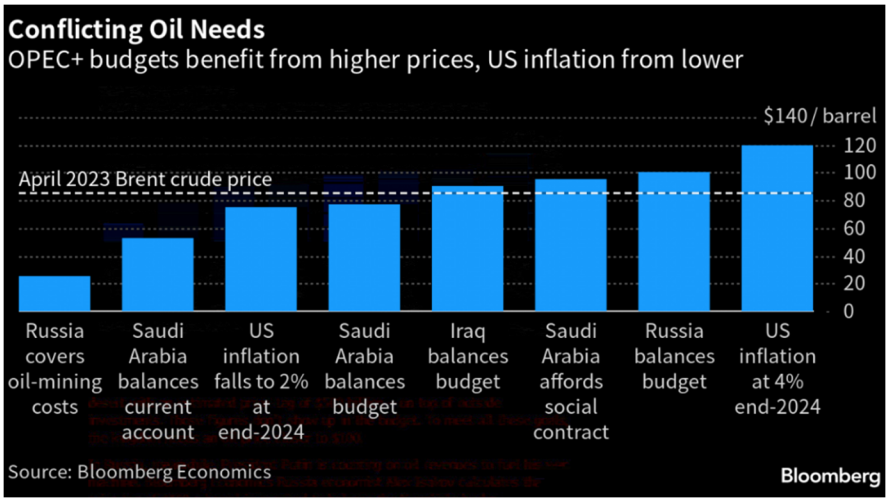
But the dilemma barely exists now. Rising US wages and inflation have increased the cost of shale production, leading to slower output growth. And firms are prioritizing the distribution of profits to shareholders rather than investing them into expanding production.

OPEC+ Budget Needs

Oil producers, meanwhile, have their own objectives. Saudi oil is cheap to extract. And the kingdom only needs prices at $50-$55 a barrel to fund its imports and offset

remittance outflows. But it requires a higher price of $75-$80 to balance the budget — and even that doesn't tell the whole story.

Saudi Arabia has an expensive social contract with its citizens, promising prosperity in return for political acquiescence. To keep its side of the deal, the government needs to invest in its non-oil industries — which employ most Saudis. Petrodollars pay that bill.



Saudi Arabia's sovereign wealth fund aims to spend $40 billion a year on the domestic economy — including the construction of Neom, a futuristic city in the desert with an estimated price-tag of $500 billion — on top of outside investments. Those figures don't show up in the budget. To meet all these goals, the kingdom needs an oil price closer to $100.

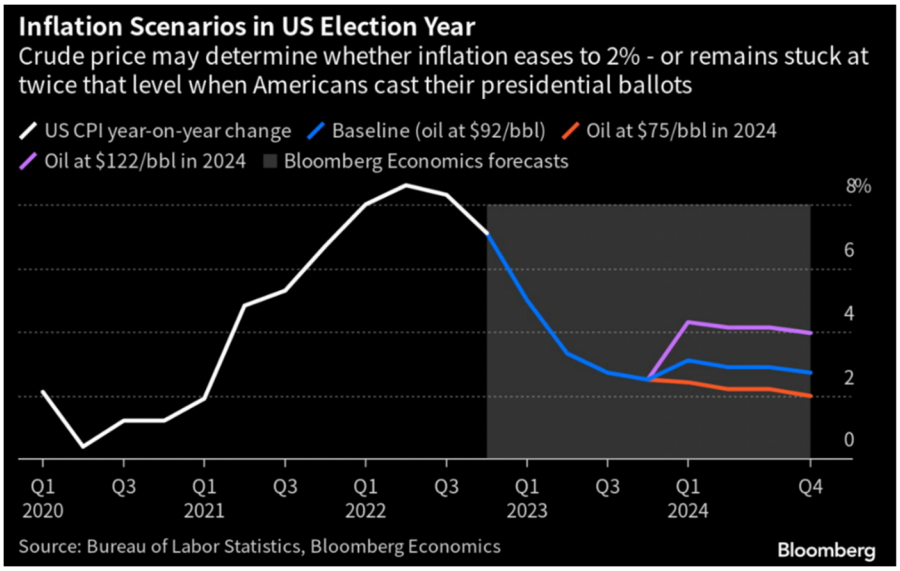
In Russia, meanwhile, President Putin is counting on oil revenues to fuel his war machine. Bloomberg Economics Russia economist Alex Isakov calculates that a price tag of $100 a barrel is required to balance the Kremlin's books.October Surprise?

To be sure, the White House appears unfazed with the latest round of production cuts. This may partly reflect expectations that the actual output decline may be smaller than the headline number of over 1 million barrels per day. Compliance among OPEC+ member with the cuts may also be less than perfect. In February, Russia pledged to unilaterally cut output. In reality, flows only began to fall last week.

Still, the consensus among analysts is for oil prices to average $85-$90 a barrel this year and next. What if OPEC+ decides to come up with another output cut next year, ahead of US presidential elections, undermining Biden's chances of winning?

Bloomberg's economic scenario modeling tool — SHOK — suggests that supply cuts pushing oil to about $120 per barrel in 2024 would keep US inflation at nearly 4% by the end of 2024 compared with a baseline forecast of 2.7%. And conventional wisdom says that high pump prices hurt incumbent politicians at the ballot box.

Terminal clients can see a SHOK scenario with oil at $120/barrel here



Of course, a setback to the US economy would increase risks of a wider recession that curbs appetite for oil and undoes the effect of supply cuts. Still, the US share of global GDP is declining, and nations like China and India are major contributors to oil demand. China buys significant volumes of Russian and Iranian oil at a discount — partially shielding it from the price hike.

India, another large and fast-growing emerging economy, is also getting cheap fuel from Russia, which has become its largest supplier. Tellingly, Delhi — which in the past expressed disappointment with OPEC+ cuts — has stayed silent about the latest round.

"For the first time in recent energy history, Washington, London, Paris and Berlin don't have a single ally inside the OPEC+ group"

Read more from Bloomberg Opinion's Javier Blas hereIt Goes in Cycles

High oil prices tend to sow the seeds of their own demise, encouraging more investment in production by firms seeking to capture bigger profits.

An oil glut in the 1980s followed the boom of the 1970s, as production expanded in Siberia, Alaska, the Gulf of Mexico and the North Sea. The pattern was repeated in the oil boom of the 2000s, which ended with the emergence of US shale and cratering prices in 2014.

There's more urgency this time around. Environmental targets are pushing countries to reduce dependence on fossil fuel. National security concerns in Europe — which until the war in Ukraine turned off the taps, was heavily reliant on Russian oil and gas — could speed the transition.

And there's no guarantee that the Saudis, Russia and the rest of the OPEC+ cartel will be able to maintain their united

front. That's easier to do when prices are high — but when the cycle turns, members prove less willing to limit supply.
Still, at least for now, the price of the world's most important commodity is being set by a country the US can no longer count on as a friend.

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Frankly Speaking: Saudis feel let down by America, says Prince Turki Al-Faisal

Updated 13 sec ago ARAB NEWS May 01, 202223:35

- Former Saudi intelligence chief and ambassador blames President Biden's policies for US energy shortage, says Saudis want only mediator role in Russia-Ukraine conflict
- He says Saudi-Turkish relationship "should be one of the best in terms of benefit for both countries," be it in trade or cross-border investments
- He says sanctions should be levied on Israel because of its record of invasions of Arab countries as "aggression is aggression"

JEDDAH: Saudis feel let down at a time when they believe the US and Saudi Arabia should be together facing threats to the stability and security of the Gulf region, Prince Turki Al-Faisal, Saudi Arabia's former intelligence chief and former ambassador to both London and Washington D.C., told Arab News.

He identified the threats specifically as Iran's influence in Yemen and its use of the Houthis as a tool "not only to destabilize Saudi Arabia, but also affect the security and stability of the international sea lanes" along the Red Sea, the Gulf and the Arabian Sea.

"The fact that President Biden delisted the Houthis from the terrorist list has emboldened them and made them even more aggressive in their attacks on Saudi Arabia, as well as on the UAE," Prince Turki told Katie Jensen, the new host of Arab News' "Frankly Speaking." He was alluding to the Feb. 12, 2021, revocation by the new Democratic administration of the Iran-aligned militia's designation as a Foreign Terrorist Organization.

"Frankly Speaking" features interviews with leading policymakers and business leaders, diving deep into the biggest news-making headlines across the Middle East and around the world. During his appearance on the video show, Prince Turki offered his views on US-Saudi relations, the war between Russia and Ukraine, and the ever-shifting dynamics of Middle Eastern geopolitics at a time of rising oil prices and diplomatic tensions.

"We have always considered our relationship with the US as being strategic," he said on the question of whether many Saudis feel they have been betrayed by one of their closest allies.

"We've had our ups and downs over the years and perhaps, at this time, it's one of the downs, particularly since the president of the US, in his election campaign, said that he will make Saudi Arabia a pariah. And, of course, he went on to practice what he preached: First of all, by stopping the joint operations that America had with the Kingdom in meeting the challenge of the Houthi-led rebellion in Yemen against the Yemeni people. And, second, among other similar actions, by not meeting with (Saudi Arabia's crown prince) and publicly declaring that he would not meet with the crown prince, and, at one stage, withdrawing anti-aircraft missile batteries from the Kingdom when we were facing an increase in attacks by the Houthis using Iranian equipment like missiles and drones."

Pointing out that Saudi Arabia "all the time … has been calling for a peaceful solution to the Yemen conflict," Prince Turki said: "Unfortunately the Houthis have always either not responded to that call or simply ignored it or opposed it. And, as we see now, there is a supposed ceasefire established by the UN, but the Houthis continue to infringe on that ceasefire and to take advantage of the ceasefire to reposition their forces and replenish them."

"So, basically this is how the situation has come to this stage," he said, referring to the current state of US-Saudi relations. "I hope that we'll get over it like we got over so many previous downturns in the relationship."

On the face of it, Washington seems to be quite eager to keep its communication channels with Riyadh open with phone calls and visits by officials but, according to Prince Turki, "it's not just one thing."

He said: “It’s the general tone of the atmosphere and America, for example, has been declaring, or American officials have been declaring, that they are in support of Saudi Arabia and will help Saudi Arabia defend itself against outside aggression and so on. We are grateful for those statements, but we need to see more in terms of the relationship between the two leaderships.”

He shrugged off the claim that Saudi Arabia has not budged on the issue of the oil problems that the US is facing, countering it with the argument that Washington itself “is the reason for the state that it is in because of its energy policy.”

“President Biden made it a policy of the US government to cut all links to what is called the oil and gas industry. He curtailed oil production and gas production in the US (when) it had been, in the last few years, the biggest producer of these two energy sources,” Prince Turki said.

This curtailment of US energy production, he says, helped lift the price of oil, together with the OPEC+ agreement established after the COVID-19 difficulty, which “was an agreement to bring down production in order to stabilize the prices, for the benefit of everybody and stability of oil prices.”

Prince Turki was emphatic that Saudi Arabia does not want to be “an instrument or a reason for instability in oil prices,” indicating that actions such as the embargo of 1973 were a thing of the past.

“That is why the Kingdom and the other OPEC members and the OPEC+ members are sticking to the production quotas that they have assigned themselves. I have read that the recent decision by OPEC+ to incrementally increase oil production while the agreement is effective, is in response to the difficulties that people have in the energy sector. Another factor that adds to all this is the security issue, the high rates of insurance that have come about as a result of the war in Ukraine, plus the European and US curtailment of, and sanctions on, the Russian oil industry. All of these things have added to the increase in oil prices.”

In this connection, Prince Turki expressed strong displeasure with comments made by Hillary Clinton, the former US secretary of state, on NBC’s “Meet the Press” program in support of a “carrot-and-stick” approach to force Saudi Arabia to increase its share of oil production in order to reduce prices during what she called an “existential crisis.”

Reiterating that he could not speak for all Saudis, Prince Turki said: “We are not schoolchildren to be treated with a carrot and stick. We are a sovereign country, and when we are dealt with fairly and squarely, we respond likewise. It is unfortunate that such statements are made by politicians wherever they may be. I hope that the relationship of the Kingdom and the US will not hinge around or be built upon that principle.”

Likewise, Prince Turki brushed away the charge that Riyadh has chosen to side with Moscow in the Ukraine conflict, noting that “the Kingdom has publicly declared and voted to condemn the aggression against Ukraine that was passed by the UN General Assembly.”

Pointing out that Saudi Arabia offered to mediate between Russia and Ukraine, he said: “As a mediator, it will have to maintain a link and the ability to talk to both sides. We’ve had good relations with both countries over the years. In general, as I mentioned, the Kingdom is against the aggression in Ukraine. But also, most recently, the Kingdom has contributed to the fund that was established by the UN to provide support for the Ukrainian refugees in Europe. So that is where the Kingdom stands.”

He described the Saudi mediation bid as “an offer of a friend to friends — both Ukraine and Russia — (with) whom we have had excellent relations in the recent past.”

Moving on to what he perceives as international hypocrisy exposed by the Russia-Ukraine conflict, Prince Turki said this has been proven “by the way refugees from Ukraine have been described in civilizational terms as being one with the West and one with Europe and so on, as if other refugees from the Middle East or from other parts of the world are not equally human as Ukrainians. That’s one discrepancy in the way that Western media particularly has depicted the issue of the refugees.

“Another one of course — part of the hypocrisy — is the UN and the way that sanctions have been placed on Russia for invading Ukraine but no sanctions for example had been placed on Israel when it invaded Arab countries a few years back. Those are the double standards and the injustices that I think have been taking place over the years.”

On the question of whether Israel should therefore be treated at par with Russia when it comes to sanctions, Prince Turki did not pull punches. “Absolutely. I don’t see what the difference is there between the two,” he told “Frankly Speaking.”

He added: “Aggression is aggression, whether it is committed by Russia or by Israel.”

Furthermore, Prince Turki cast doubt on the theory that normalizing relations with Israel — the route taken by a number of Arab countries, including Egypt, Jordan, the UAE and Bahrain — could be a more productive policy. “I have seen no evidence of that,” he said. “The Palestinian people are still occupied, they are still being imprisoned by the Israeli government. Attacks and assassinations of Palestinian individuals take place almost on a daily basis. The stealing of Palestinian land by Israel continues despite the assurances that Israel gave to the signatories of the peace (accord) between the UAE and Israel. So, there is no sign whatsoever that appeasing Israel is going to change their attitude.”

On issues closer to home, Prince Turki views the recent visit of Turkish President Recep Tayyip Erdogan, for one, as a positive development. “I think the leadership in Turkey has come to realize that their previous animus toward the Kingdom was not serving anybody’s well-being and purpose, especially the Turkish people,” he said, referring to the disputes and disagreements of recent years.

“Historic links bring us together with Turkey not just in terms of geography, but also in terms of human relations and family ties between the two countries. My own grandmother was of Turkish extraction, Circassian.”

Moving forward, the relationship “should be one of the best in terms of benefit for both countries,” Prince Turki said, citing such areas as trade, construction, development projects, and investments by Saudi Arabia and Turkey.

“All of those, I hope, will be restored now that the relationship is hopefully back to normal,” he added.

He expressed similarly cautious optimism about the likelihood of a lasting peace deal in Yemen on the basis of the recently concluded Riyadh agreement and the Ramadan ceasefire.

“I’ve always maintained that ceasefire agreements, as attempted by the UN, particularly concerning Yemen, have lacked one crucial aspect which has not led to their success, and that is a mechanism to enforce the ceasefires,” Prince Turki said.

“We saw, after the Kuwait meeting back in 2016, there was a ceasefire, but it led nowhere. And then there was the Swedish-sponsored ceasefire attempt back in 2018, equally without much success. Saudi Arabia’s own efforts at unilateral ceasefires of recent years have led nowhere because there was no mechanism to implement the ceasefire.”

Nevertheless, Prince Turki expressed hope that with the renewed international impetus to bring the fighting in Yemen to an end, some sort of instrument can be implemented so that any party that does not abide by the ceasefire terms is publicly shamed by the international community.

“That has not happened yet. I have not yet seen the UN saying that the Houthis are not abiding by the ceasefire,” he said, adding: “But I hope that they will have the courage and the moral courage to stand up and say who is at fault here.”

https://www.theatlantic.com/magazine/archive/2022/04/mohammed-bin-salman-saudi-arabia-palace-interview/622822/

GLOBAL

ABSOLUTE POWER

Asked about the murder of Jamal Khashoggi, Mohammed bin Salman said, “If that’s the way we did things, Khashoggi would not even be among the top 1,000 people on the list.”

By Graeme Wood

Photographs by Lynsey Addario

A woman walks past a poster showing Crown Prince Mohammed bin Salman (*left*) with his father (*right*) and grandfather (*top*), at the old market in Taif, Saudi Arabia. (Lynsey Addario for The Atlantic)

MARCH 3, 2022, 6 AM ET

SHARE

MOHAMMED BIN SALMAN, the crown prince of Saudi Arabia, is 36 years old and has led his country for almost five years. His father, the 86-year-old King Salman, has rarely been seen in public since 2019, and even MBS—as he is universally known—has faced the world only a few times since the pandemic began. Once, he was ubiquitous, on a never-ending publicity tour to promote his plan to modernize his father’s kingdom. But soon after the murder of the *Washington Post* columnist Jamal Khashoggi in 2018, MBS curtailed his travel. His last interview with non-Saudi press was more than two years ago. The CIA concluded that he had ordered Khashoggi’s murder, and Saudi Arabia’s own prosecutors found that it had been conducted by some of the crown prince’s closest aides. They are thought to have dismembered Khashoggi and disintegrated his corpse.

MBS had already developed a reputation for ruthlessness. In 2017, he rounded up hundreds of members of his own family and other wealthy Saudis and imprisoned them in Riyadh’s Ritz-Carlton hotel on informal charges of corruption. The Khashoggi murder fixed a view of the crown prince as brutish, thin-skinned, and psychopathic. Among those who share a dark appraisal of MBS is President Joe Biden, who has so far refused to speak with him. Many in Washington and other Western capitals hope his rise to the throne might still be averted.

But within the kingdom, MBS's succession is understood as inevitable. "Ask any Saudi, anyone at all, whether MBS will be king," a senior Saudi diplomat told me. "If there are people in Washington who think he will not be, then I cannot help them. I am not a psychiatrist."

His father's eventual death will leave him as the absolute monarch of the birthplace of Islam and the owner of the world's largest accessible oil reserves. He will also be the leader of one of America's closest allies and the source of many of its headaches.

I've been traveling to Saudi Arabia over the past three years, trying to understand if the crown prince is a killer, a reformer, or both—and if both, whether he can be one without the other.

Even MBS's critics concede that he has roused the country from an economic and social slumber. In 2016, he unveiled a plan, known as Vision 2030, to convert Saudi Arabia from—allow me to be blunt—one of the world's weirdest countries into a place that could plausibly be called normal. It is now open to visitors and investment, and lets its citizens partake in ordinary acts of recreation and even certain vices. The crown prince has legalized cinemas and concerts, and invited notably raw hip-hop artists to perform. He has allowed women to drive and to dress as freely as they can in dens of sin like Dubai and Bahrain. He has curtailed the role of reactionary clergy and all but abolished the religious police. He has explored relations with Israel.

He has also created a climate of fear unprecedented in Saudi history. Saudi Arabia has never been a free country. But even the most oppressive of MBS's predecessors, his uncle King Faisal, never presided over an atmosphere like that of the present day, when it is widely believed that you place yourself in danger if you criticize the ruler or pay even a mild compliment to his enemies. MBS's critics—not regicidal zealots or al-Qaeda sympathizers, just ordinary people with independent thoughts about his reforms—have gone into exile. Some fear that if he keeps getting his way, the modernized Saudi Arabia will oppress in ways the old Saudi Arabia never imagined. Khalid al-Jabri, the exiled son of one of MBS's most prominent critics, warned me that worse was yet to come: "When he's King Mohammed, Crown Prince MBS is going to be remembered as an angel."

For about two years, MBS hid from public view, as if hoping the Khashoggi murder would be forgotten. It hasn't been. But the crown prince still wants to convince the world that he is saving his country, not holding it hostage—which is why he met twice in recent months with me and the editor in chief of this magazine, Jeffrey Goldberg.

In our meetings, the crown prince was charming, warm, informal, and intelligent. But even at its most affable, absolute monarchy cannot escape weirdness. For our first meeting, MBS summoned us to a remote palace by the Red Sea, his family's COVID bunker. The protocols were multilayered: a succession of PCR tests by nurses from the Royal Clinics; a Gulfstream jet in the middle of the night from Riyadh; a convoy from a deserted airstrip; a surrender of electronic devices; a stopover at a mysterious guesthouse visible in satellite photos but unmarked on Google Maps. He invited us to his palace at about 1:30 a.m., and we spoke for nearly two hours.

For the second meeting, in his palace in Riyadh, we were told to be ready by 10 a.m. It also began after midnight. The halls were astir. The crown prince had just returned after nearly two years of remote work, and aides and ministers padded red carpets seeking meetings, their first in months, with the boss. Neglected packages and documents had piled up on the desks and tables in his office, which was large but hardly opulent. The most obvious concession to high taste was an old-fashioned telescope on a tripod, its altitude set shallow enough that it appeared to be pointed not at the heavens but at Riyadh, the sprawling and unsightly desert metropolis from which the Saud family has ruled for most of the past three centuries.

At the outset of both conversations, MBS said he was saddened that the pandemic precluded giving us hugs. He apologized that we all had to wear masks. (Each meeting was attended by multiple, mainly silent princes wearing identical white robes and masks, leaving us unsure, to this day, who exactly was present.) The crown prince left his tunic unbuttoned at the collar, in a casual style now favored by young Saudi men, and he gave relaxed, nonpsychopathic answers to questions about his personal habits. He tries to limit his Twitter use. He eats breakfast every day with his kids. For fun, he watches TV, avoiding shows, like *House of Cards*, that remind him of work. Instead, he said without apparent irony, he prefers to watch series that help him escape the reality of his job, such as *Game of Thrones*.

Before the meetings, I asked one of MBS's advisers if there were any questions I could ask his boss that he himself could not. "None," he answered, without pausing—"and that is what makes him different from every crown prince who has come before him." I was told he derives energy from being challenged.

MBS said it was "obvious" he had not ordered the killing of Khashoggi. "It hurt me a lot," he said. "It hurt me and it hurt Saudi Arabia, from a feelings perspective."

During our Riyadh encounter, Jeff asked MBS if he was capable of handling criticism. "Thank you very much for this question," the prince said. "If I couldn't, I would not be sitting with you today listening to that question."

"I'd be in the Ritz-Carlton," Jeff suggested.

"Well," he said, "at least it's a five-star hotel."

Difficult questions caused the crown prince to move about jumpily, his voice vibrating at a higher frequency. Every minute or two he performed a complex motor tic: a quick backward tilt of the head, followed by a gulp, like a pelican downing a fish. He complained that he had endured injustice, and he evinced a level of victimhood and grandiosity unusual even by the standards of Middle Eastern rulers.

When we asked if he had ordered the killing of Khashoggi, he said it was "obvious" that he had not. "It hurt me a lot," he said. "It hurt me and it hurt Saudi Arabia, from a feelings perspective."

"From a feelings perspective?"

"I understand the anger, especially among journalists. I respect their feelings. But we also have feelings here, pain here."

The crown prince has told two people close to him that "the Khashoggi incident was the worst thing ever to happen to me, because it could have ruined all of my plans" to reform the country.

In our Riyadh interview, the crown prince said that his *own* rights had been violated in the Khashoggi affair. "I feel that human-rights law wasn't applied to me," he said. "Article XI of the Universal Declaration of Human Rights states that any person is innocent until proven guilty." Saudi Arabia had punished those responsible for the murder, he said—yet comparable atrocities, such as bombings of wedding parties in Afghanistan and the torture of prisoners in Guantánamo Bay, have gone unpunished.

The CIA concluded that Mohammed bin Salman ordered the murder of the *Washington Post* columnist Jamal Khashoggi. Saudi Arabia's own prosecutors found that it had been conducted by some of the crown prince's closest aides. (Moises Saman / Magnum)

The crown prince defended himself in part by asserting that Khashoggi was not important enough to kill. "I never read a Khashoggi article in my life," he said. To our astonishment, he added that if he *were* to send a kill squad, he'd choose a more valuable target, and more competent assassins. "If that's the way we did things"—murdering authors of critical op-eds—"Khashoggi would not even be among the top 1,000 people on the list. If you're going to go for another operation like that, for another person, it's got to be professional and it's got to be one of the top 1,000." Apparently, he had a hypothetical hit list, ready to go. Nevertheless, he maintained that the Khashoggi killing was a "huge mistake."

"Hopefully," he said, no more hit squads would be found. "I'm trying to do my best."

If his best is not good enough for Joe Biden, MBS said, then the consequences of running a moralistic foreign policy would be the president's to discover. "We have a long, historical relationship with America," he said. "Our aim is to keep it and strengthen it." Biden and Vice President Kamala Harris have called for "accountability" for Khashoggi's murder, as well as the humanitarian disaster in Yemen, due to war between Saudi Arabia and Iranian-backed Houthi rebels. The Americans also refuse to treat him as Biden's counterpart—Biden's peer is the king, they insist—even though the crown prince rules the country with his father's blessing. This stings. MBS has lines open to the Chinese. "Where is the potential in the world today?" he said. "It's in Saudi Arabia. And if you want to miss it, I believe other people in the East are going to be super happy."

We asked whether Biden misunderstands something about him. "Simply, I do not care," he replied. Alienating the Saudi monarchy, he suggested, would harm Biden's position. "It's up to him to think about the interests of America." He gave a shrug. "Go for it."

Also risible to the crown prince was the notion that his citizens fear speaking out against him. We need dissent, he said, "if it's objective writing, without any ideological agenda." In practice, I noted, dissent seemed to be nonexistent. In September 2017, MBS ordered a boycott of Qatar, citing the country's support for the Iranian government, the Muslim Brotherhood, al-Qaeda, and other Islamist organizations in the region. His tiny neighbor suddenly transformed from official friend into official villain, and those expressing a kind word toward it disappeared into prison.

These sentiments, apparently, did not count as objective or nonideological. Qatar, MBS said, was comparable to Nazi Germany. "What do you think [would have happened] if someone was praising and trying to push for Hitler in World War II?" he asked. "How would America take that?" Of course Saudis would react strongly to Nazi sympathizers in their midst. Three years later, however, the countries reconciled, and the Saudi government tweeted out a photo of MBS and Hitler—that is, Qatari Emir Tamim Al Thani—wearing board shorts and smiling at MBS's Red Sea palace. "Sheikh Tamim's an amazing person," MBS said. The fight between them had been no big deal, "a fight between brothers." The relationship is now "better than ever in history." The dissenters remain in prison, however, and I do not mean the Ritz-Carlton.

As for the actual Ritz-Carlton prisoners: They had it coming, the crown prince said. Overnight he'd rounded up hundreds of the most prominent Saudis, delivered them to Riyadh's most lavish hotel, and refused to let them go until they confessed and paid up. I said that sounded like he was eliminating rivals. MBS looked incredulous. "How can you eliminate people who don't have any power to begin with?" If they had power, he would not have been able to force them into the Ritz.

Does Joe Biden misunderstand something about him? “Simply, I do not care,” MBS replied. “It’s up to him to think about the interests of America.” He gave a shrug. “Go for it.”

The Ritz operation, MBS said, was a blitzkrieg against corruption, and wildly successful and popular because it started at the top and did not stop there. “Some people thought Saudi Arabia was, you know, just trying to get the big whales,” MBS said. They assumed that after the government extracted settlements from the likes of Alwaleed bin Talal, the kingdom’s richest man, corruption at lower levels would resume. MBS noted, proudly, that even the minnows had been hooked. By 2019, everyone “understood that even if you steal $100, you’re going to pay for it.” In just a few months, he claims to have recovered $100 billion directly, and says that he will recover much more indirectly, as dividends of deterrence.

MBS acknowledged that to outsiders the Ritz operation may have looked thuggish. But to him it was an elegant, and by the way nonviolent, solution to the problem of vampires feasting on the kingdom’s annual budget. (An adviser to MBS told me that one alternative his aides had suggested was executing a few prominent corrupt officials.) During the months that the Ritz served as a prison, the kingdom’s financial regulator was essentially made king pro tempore, to devote the full power of the government to bleeding the vampires dry. But the Ritz guests had not, MBS said, been placed under arrest. That would imply that they had entered the court system and faced charges. Instead, he said, they had been invited to “negotiate”—and to his pleasure, 95 percent did so. “That was a strong signal,” he said. I’m sure it was.

THE SAUDI THRONE does not, like the British throne once did, just pass to the next male heir. The king chooses his successor, and ever since the founding king of the modern Saudi state, Abdulaziz, chose his son Saud as crown prince in 1933, each king has chosen another son of Abdulaziz. (He had 36 sons—with multiple wives and concubines—who survived to adulthood.) All were old enough to remember the camels-and-tents days, before extreme wealth, and they ruled conservatively, as if to lock in their gains. Even the shrewdest and most ambitious kings accomplished little. Abdullah, who took power in 2005, began as a reformer, but much of the momentum of the first half of his reign was lost as he doddered in the second, and the royal treasury was looted. (One notorious alleged thief in the Ritz, a major figure in the Royal Court, was said to have stolen tens of billions of dollars during His Majesty’s decline.)

Salman, the current king and at 86 one of the youngest of Abdulaziz’s brood, saw the perils of unchecked gerontocracy and anointed a successor from the next generation. His choice of Mohammed was not obvious. King Salman’s sons include Faisal, 51, who has a doctorate in international relations from Oxford; and Sultan, 65, a former Royal Saudi Air Force pilot who in 1985 spent a week on the space shuttle Discovery as a payload specialist. Either of these competent and educated men, citizens of the world, might have been a natural successor. But Salman had an inkling that the next king would need a certain grit and fluency with power that cannot be acquired in a seminar or a flight simulator. The new generation, born into luxury, tended to be soft, and the next king would need to be a modern version of a desert warlord like his grandfather.

Outside the immediate family, Salman considered his nephew Mohammad bin Nayef, who is known as MBN, appointing him crown prince in 2015, when he was 55. As a spymaster and security official in the 2000s, MBN had led the country’s domestic war against al-Qaeda, and in the process had become well connected with counterparts in Washington and London. In 2009, MBN was injured when an al-Qaeda bomber packed his underpants with explosives and approached him at an event.

Foreign governments considered MBN a safe pick: old enough but not too old, a proven fighter, respected overseas. But for Salman he was merely a throne-warmer for his son. (MBS had held no high office prior to his father’s coronation and needed a couple of years as defense minister to burnish his CV.) In 2017, Salman fired MBN. When you fire a prince, you fire all those who staked their fortunes on his rise; among the opponents of MBS are foreign governments who had planned for the reign of King MBN, and Saudis whose wealth and influence flowed from him. MBN’s chief adviser, Saad al-Jabri, fled to Canada. He alleges that MBS sent a

team there to kill him. MBS's government alleges that al-Jabri stole a massive fortune and is bankrolling efforts to defame the crown prince. (Both parties deny the claims.) "MBN survived al-Qaeda," al-Jabri's son Khalid told me. "But he couldn't survive his own cousin."

Others have suggested Salman's younger brother Ahmed, a well-liked former deputy interior minister, as a throne-worthy alternative to MBS. Ahmed reportedly opposed MBS's appointment as crown prince. In 2020, he was arrested on suspicion of treason.

HAVING CONSOLIDATED POWER, MBS focused on Vision 2030. He is exasperated by the rest of the world's failure to acknowledge how well it has gone. "Saudi Arabia is a G20 country," he said. "You can see our position five years ago: It was almost 20. Today, we are almost 17." He noted strong non-oil GDP growth, and reeled off statistics about foreign direct investment, Saudi overseas investment, and the share of world trade that passes through Saudi waters. The economic success, the concerts, the social reform—these are all done deals, he said. "If we were having this interview in 2016, you would say I'm making assumptions," he said. "But we did it. You can see it now with your eyes."

He was not lying. Between my first visit to Saudi Arabia, in 2019, and this conversation two years later, I had gone to the movies in Riyadh and sat next to a Saudi woman I had never met. She wore jeans and canvas sneakers, and she bounced her bare ankle while we watched *Zombieland: Double Tap*. When I first visited, I ate at restaurants that had cinder-block walls dividing single men on one side from women and families on the other. These were sledgehammered down—a little Berlin 1989 in every restaurant—and now men and women can eat together without eliciting so much as a sideways glance from fellow diners.

Many of the crown prince's most persistent critics approve of these changes, and wish only that they had come sooner. (Khashoggi was such a critic. When I met him in London for brunch, shortly before his death, I asked him to list MBS's failings. He said "90 percent" of the reforms were prudent and overdue.) The most famous Saudi women's-rights activist, Loujain al-Hathloul, campaigned for women's right to drive, and against the Saudi "guardianship law," which prevented women from traveling or going out in public without a male relative. Al-Hathloul was thrown in prison on terrorism charges in 2018—*after* MBS and his father had announced the imminent end of both policies. In prison, her family says, she was electrocuted, beaten, and—this was just a few months before Khashoggi's murder—threatened with being chopped up and thrown in a sewer, never to be found. (The Saudi government has previously denied allegations of torturing prisoners.)

Left: Saudi Crown Prince Mohammed bin Salman is greeted by Qatar's Emir Sheikh Tamim Al Thani in Doha, Qatar, in 2021. *Center:* The Saudi activist Loujain al-Hathloul in 2021. *Right:* MBS and his father, King Salman, in 2017. (Saudi Press Agency / Reuters; Ahmed Yosri / Reuters; Saudi Press Agency / AP)

Al-Hathloul and other activists had demanded rights, and the ruler had granted them. Their error was in thinking those rights were theirs to take, rather than coming from the monarch, who deserved credit for having bestowed them. Al-Hathloul was released in February 2021, but her family says she is forbidden from traveling abroad or speaking publicly.

Another dissident, Salman al-Awda, is a preacher with a massive following. His original crime, too, was to utter publicly a thought that would later be shared by the crown prince himself. When MBS began squabbling with his counterpart in Qatar, al-Awda tweeted, “May God harmonize between their hearts, for the good of their people.” He was imprisoned, and actual harmony between the two leaders has not freed him. His son Abdullah, now in the United States, claims that his father, who is 65, is being held in solitary confinement and has been tortured.

The crown prince, one of his admirers told me, “put the Wahhabis in a cage, then he reached in with gardening shears and he cut their balls off.”

Saudi authorities say al-Awda is a terrorist and a member of the Muslim Brotherhood, which is supported by Qatar and intent on overthrowing the monarchy and replacing it with a theocracy. (The Muslim Brotherhood plays a bogeyman role in the Saudi imagination similar to the role of Communists in America during the Red Scare. Also like Communists, the Muslim Brotherhood really has worked covertly to undermine state rule, just not to the extent imagined.) Al-Awda’s defenders say he is being punished for daring to speak with a moral voice independent of the monarchy’s. He faces death by beheading.

Would MBS consider pardoning those who’d spoken out in favor of women driving and normalization with Qatar—both now the policy of the country? “That’s not my power. That’s His Majesty’s power,” MBS said. But, he added, “no king has ever used” the pardon power, and his father does not intend to be the first.

The issue, he said, is not a lack of mercy. It is a problem of balance. Yes, there are liberals and kumbaya types who have run afoul of state security—and perhaps some could be candidates for a royal pardon. But some of the others in his jails are bad hombres indeed, and pardons cannot be meted out selectively. “You have, let’s say, extreme left and extreme right,” he said. “If you give forgiveness in one area, you have to give it to some very bad people. And that will take everything backward in Saudi Arabia.”

Left: Saudi women attend a live music performance in Riyadh in January. The crown prince has legalized cinemas and concerts and permitted women to dress as freely as they can in places like Dubai and Bahrain. *Bottom:* A tenth-grade girls’ basketball team in Jeddah. Until recently, a man would have been forbidden to coach a girls’ team. (Lynsey Addario for *The Atlantic*)

On one side are liberals, tugging on the sympathies of Westerners; on the other, Islamists who are also opposed to the monarchy. Letting this latter group out would not just mean the end of rock concerts and coed dining. They would not stop until they brought down the House of Saud, seized the country’s estimated 268 billion barrels of oil and the holy cities of Mecca and Medina, and established a terrorist state. In private conversations with others, MBS has likened Saudi Arabia before the Saud family’s conquest in the 18th

century to the anarchic wasteland of the *Mad Max* films. His family unified the peninsula and slowly developed a system of law and order. Without them, it would be *Mad Max* all over again—or Afghanistan.

Still, the crown prince's argument—that if he extended forgiveness to good people who deserved it, he would have to extend it equally to bad people who did not—struck me as bizarre. Why would one require the other? Then I realized that MBS was not saying that the failure of his plan to remake the kingdom *might* lead to catastrophe. He was saying that he'd guarantee it would. Many secular Arab leaders before him have made the same dark implication: Support everything I do, or I will let slip the dogs of jihad. This was not an argument. It was a threat.

ALI SHIHABI, A Saudi financier and pro-MBS commentator, told me that the changes in Saudi Arabia could be compared to those in revolutionary France. An old order had been overturned, a priestly class crushed; a new order was struggling to be born.

The priestly class in particular interested me. The brand of conservative Islam practiced in Saudi Arabia—called Wahhabism, after the sect's 18th-century founder, Muhammad ibn Abd al-Wahhab—once wielded great power and enjoys at least some popular support. I asked Shihabi if MBS really had diminished the Wahhabis' role. "Diminished their role?" Shihabi asked me. "He put the Wahhabis in a cage, then he reached in with gardening shears"—here he made the universal *snip snip* gesture with his fingers—"and he cut their balls off."

My flight into Riyadh was packed with foreigners attending Stan Lee's Super Con. Ahead of me in the passport line I saw Lou Ferrigno, the Incredible Hulk.

In France, revolution worked out just as badly for the House of Bourbon as it did for the clergy. (Diderot famously wrote that the entrails of the priests would be woven into ropes to strangle kings.) The House of Saud wanted the anticlerical revolution while conveniently omitting the antiroyalist one. I wanted to see how that alliance between monarch and sansculottes was working.

Vision 2030 made modernization easier to observe now than it would have been just a few years ago. Until October 2019, tourist visas to Saudi Arabia did not exist. Then the Saudis realized that to attract crowds to the concerts they had legalized, they'd need to let in visitors. Overnight, a visa to Saudi Arabia went from one of the hardest in the world to get to one of the easiest. In minutes I had one valid for a whole year. My flight into Riyadh was packed with foreigners attending Stan Lee's Super Con. Ahead of me in the passport line I saw Lou Ferrigno, the Incredible Hulk, on his way to an autograph signing.

The new system arrived so fast that the first visitors were like an invasive species, an unnatural fit in the rigid social order of the kingdom. For years, almost every non-Saudi in the country had needed a document called an *iqama*. It was a sort of license to exist: Your *iqama* identified your Saudi patron, the local national whom you were visiting or working for, and who controlled your fate. Every Saudi patron had his own patron, too—sometimes a tribal leader, sometimes a regional one. Even those bigwigs paid obeisance to someone and, eventually, by the transitive property of Saudi deference, to the king himself. Saudi Arabia, MBS explained, "is not one monarchy. You have beneath it more than 1,000 monarchies—town monarchies, tribal monarchies,

semitribal monarchies.” The *iqama* guaranteed that every sentient creature fit into this scheme of Saudi society.

MBS batted away my suggestion that this system is antiquated and might be replaced with a constitutional monarchy—one where citizens have freestanding rights not granted by a monarch or a demi-monarch. “No,” he said. “Saudi Arabia is based on pure monarchy,” and he, as crown prince, would preserve the system. To remove himself from it would amount to a betrayal of all the monarchies and Saudis beneath him. “I can’t stage a coup d’état against 14 million citizens.”

But he has already forced that system to adapt. Nearly every day someone asked for my *iqama*, and I had to explain that I had none. They reacted as if I’d told them that I had no name. Renting a car, buying a train ticket, checking into a hotel—all of these interactions left some poor clerk baffled. But in the new Saudi Arabia I was free to wander, to listen, to overhear.

Left: Men talk over coffee in Riyadh. *Right:* Young women at a Formula E racing event. (Lynsey Addario for *The Atlantic*)

In Riyadh I found, effortlessly, young people thrilled by the reforms. Like the other major Saudi cities, Dammam and Jeddah, Riyadh has specialty coffee shops in abundance—little outposts of air-conditioning and caffeine, in an environment otherwise characterized by heat and boredom. Many of the Saudis I met professed a deep love for America. “I spent seven years at Cal State Northridge,” one told me, before rattling off a list of cities he had visited. He was one of several hundred thousand Saudi students who’d attended U.S. universities on government scholarships in the 2000s. “I studied finance,” he said. “But I never graduated. I had a wonderful time.” He listed his American friends, who had names like Mike and Emilio. “I drank and did too much meth, and my grades weren’t good.”

“Is it possible to do just the right amount of meth?” I asked.

“When I came back, I stopped.” He looked out the window of the coffee shop at the parched cityscape. “This country is the best rehab center on the planet.”

Now he was studying again, at a Saudi university, and planning to open his own business. He had already attended concerts, and he said his fondest wish was to listen to music in the open air and smoke a joint—just one, he promised. He asked if I thought that would happen. I said I did not think that was explicitly part of Vision 2030, but he’d probably get his wish. Later, with him in mind, I asked the crown prince whether alcohol would soon be sold in the kingdom. It was the only policy question that he refused to answer.

In another café, in the northern city of Ha'il, a man pointed to a mural, freshly painted, of the Lebanese singer Fairouz, her hair flowing beautifully over her shoulders. Next to her were her lyrics (in Arabic): "Bring me the flute and sing, for song is the secret to eternity."

"One year ago," he said, "that would not be possible." By "that," he meant pretty much everything: a woman's hair; a celebration of song; a celebration of a song about singing; and, on top of all this, the music playing in the café as we spoke. Before the rise of MBS, every component of this scene would have violated long-standing canons of Saudi morality enforcement. The religious police, known in Arabic as the *hay'a* or *mutawwi'in*, would have busted the joint. They used to show up in ankle-length white *thobes*, their beards curly and unkempt. They yelled at people for dressing immodestly, or thwacked at them with sticks to goad them to the mosque for one of the five daily prayers. For the flagrancy of the Fairouz sins, the café's managers would have been detained, questioned, and punished. "Screw those guys," the man said, in a succinct expression of the most common sentiment I heard about the religious police.

Encounters with the *hay'a* have provided many an appalling story for foreign visitors. When Maureen Dowd of *The New York Times* went to Riyadh in 2002, the *hay'a* spotted her in a shopping mall and objected to being able to see the outline of her body. Her host, the future foreign minister Adel al-Jubeir, pleaded with them, but they were unimpressed by his status as a prominent diplomat, and she fled to her hotel room. "I fretted that I was in one of those movies where an American makes one mistake in a repressive country and ends up rotting in a dungeon," Dowd wrote.

"Saudi Arabia is based on pure monarchy," MBS said. To remove himself from that system would amount to a betrayal of all the Saudis beneath him. "I can't stage a coup d'état against 14 million citizens."

I told one of MBS's advisers that the religious police had been an international PR problem. "May I be impolite?" he asked me. "I don't give a fuck about the *foreigners*. They terrorized *us*." He likened the religious police to J. Edgar Hoover's FBI, operating with unchecked authority. (The religious police's official Arabic name dates back hundreds of years, but still sounds Orwellian in English: the Committee for the Prevention of Vice and Promotion of Virtue.) Anyone who wished to drag down a professional or political rival could scrutinize him for sins, then call the religious police to set up a sting. Or the *hay'a* could flex its authority on its own, either for political reasons—toppling a prince they disliked—or for recreation.

"The religious police were the losers in school," Ali Shihabi told me. "Then they got these jobs and were empowered to go and stop the cute girls, break into the parties no one wanted them at, and shut them down. It attracted a very nasty group of people." The Saudi diplomat told me that he did not miss them, and that Saudi Arabia had needed someone with the crown prince's mettle to get rid of them. "When someone hits you because he does not like what you are wearing," he said, "that is not just a form of harassment. It is abuse."



Left: Golf at the Boulevard in Riyadh. *Right:* A couple, newly engaged, dine at a restaurant in Jeddah in January. In the recent past, many restaurants had cinder-block walls dividing single men on one side from women and families on the other. (Lynsey Addario for *The Atlantic*)

MBS ordered the religious police to stand down, and one of the enduring mysteries of contemporary Saudi Arabia is what these thwackers do, now that they are invisible on the streets. Fuad al-Amri, who runs

the *hay'a* in Mecca province, confessed to me that since the reforms, one of his main activities has been vetting his own employees, to ensure that they aren't fanatics loyal to the Muslim Brotherhood.

MBS'S GRANDFATHER KING Abdulaziz founded the modern Saudi state with the support of the clergy. But he also cracked down on them, hard, when they outlived their usefulness. MBS has recounted a famous anecdote about his grandfather. In 1921, Abdulaziz attended the funeral of the most senior religious scholar in the kingdom. The king told the assembled clerics that they were dear to his heart—in the Arabic idiom, "on my *iqal*," the black cord that holds a Najd headdress in place. But then he warned them: "I can always shake my *iqal*," he said, "and you will fall."

For the past 50 years, Abdulaziz's successors have taken a softer line with the Wahhabis. The Saudi clerical class's power grew, and their imprimatur mattered. In 1964, they sealed the fate of the inept King Saud when his brothers Faisal and Mohammed sought and received religious approval for ousting him. To oppose the religious conservatives was risky. Peter Theroux, a former National Security Council director who worked on the Saudi portfolio during the 2000s, recalls being aghast at the vicious sermons still being preached by government-paid imams years after September 11. Theroux told me he confronted a senior Saudi official about the sermons. "You know," the official apologized, "the big beards are kind of our constituency." The rulers of Saudi Arabia put almost no limits on the speech or behavior of conservative clerics, and in return those clerics exempted the rulers from criticism. "That was the drug deal that the Saudi state was based upon for many years," Theroux told me. "Until Mohammed bin Salman."

Who could resist cheering on MBS as he renegotiated this relationship? One of MBS's most persistent critics in Washington, Senator Chris Murphy, a Democrat from Connecticut, told me the concerts and Comic-Cons in Riyadh have not yet translated into defunding Wahhabi intolerance overseas. "When I'm traveling the world, I still hear story after story of Gulf money and Saudi money fueling very conservative, intolerant Wahhabist mosques," he said. A hallmark of traditional Wahhabism is hatred for non-Wahhabi Muslims, whom the Wahhabis view as even worse than unbelievers for perverting the faith. With little modification, Wahhabi teachings can lead to Osama bin Laden–style jihadism. Murphy said he thinks that isn't over. "The money that flows from Saudi Arabia into conservative Islam isn't as transparent as it was 10 years ago—much of it has been driven underground—but it still exists."

Yet after spending hours in MBS's company, and in the company of his allies and enemies, I was convinced that neutering the clergy was not just symbolic. He was fighting them avidly, and personally. "The kings have historically stayed away from religion," Bernard Haykel, a scholar of Islamic law at Princeton and an acquaintance of MBS's, told me. Outsourcing theology and religious law to the big beards was both an expedient and a necessity, because no ruler had any training in religious law, or indeed a beard of any significant size.

By contrast, MBS has a law degree from King Saud University and flaunts his knowledge and dominance over the clerics. "He's probably the only leader in the Arab world who knows anything about Islamic epistemology and jurisprudence," Haykel told me.

“In Islamic law, the head of the Islamic establishment is *wali al-amr*, the ruler,” MBS explained. He was right: As the ruler, he is in charge of implementing Islam. Typically, Saudi rulers have sought opinions from clerics, occasionally leaning on them to justify a policy the king has selected in advance. MBS does not subcontract his religion out at all.

He explained that Islamic law is based on two textual sources: the Quran and the Sunna, or the example of the Prophet Muhammad, gathered in many tens of thousands of fragments from the Prophet’s life and sayings. Certain rules—not many—come from the unambiguous legislative content of the Quran, he said, and he cannot do anything about them even if he wants to. But those sayings of the Prophet (called Hadith), he explained, do not all have equal value as sources of law, and he said he is bound by only a very small number whose reliability, 1,400 years later, is unimpeachable. Every other source of Islamic law, he said, is open to interpretation—and he is therefore entitled to interpret them as he sees fit.

The effect of this maneuver is to chuck about 95 percent of Islamic law into the sandpit of Saudi history and leave MBS free to do whatever he wants. “He’s short-circuiting the tradition,” Haykel said. “But he’s doing it in an Islamic way. He’s saying that there are very few things that are fixed beyond dispute in Islam. That leaves him to determine what is in the interest of the Muslim community. If that means opening movie theaters, allowing tourists, or women on the beaches on the Red Sea, then so be it.”

MBS rebuked me when I called this attitude “moderate Islam,” though his own government champions the concept on its websites. “That term would make terrorists and extremists happy.” It suggests that “we in Saudi Arabia and other Muslim countries are changing Islam into something new, which is not true,” he said. “We are going back to the core, back to pure Islam” as practiced by Muhammad and his four successors. “These teachings of the Prophet and the four caliphs—they were amazing. They were perfect.”

Even the Islamic law that he is bound to implement will be implemented sparingly. MBS told me a story, reported in Hadith, about a woman who commits fornication, confesses her crime to the Prophet, and begs to be executed. The Prophet repeatedly tells her to go away—implying, the crown prince said, that the Prophet preferred to give sinners every chance at lenience. (MBS did not relate the end of the tale: The woman returns with indisputable evidence of her sin—a bastard son—and the Prophet acquiesces. She is buried to her chest and stoned to death.)

Instead of hunting for sin and punishing it as a matter of course, MBS has curtailed the investigative function of the religious police, and encourages sinners to keep their transgressions between themselves and God. “We should not try to seek out people and prove charges against them,” he said. “You have to do it the way that the Prophet taught us how to do it.” The law will be enforced only against those so flagrant that they are practically demanding to take their lumps.

He also stressed that none of these laws applies to non-Muslims in the kingdom. “If you are a foreign person who’s living or traveling in Saudi Arabia, you have all the right to do whatever you want, based on your beliefs,” he said. “That’s what happened in the Prophet’s time.”

It is hard to exaggerate how drastically this sidelining of Islamic law will change Saudi Arabia. Before MBS, influential clerics issued fatwas exhibiting what might charitably be called a pre-industrial view of the world. They declared that the sun orbited the Earth. They forbade women from riding bikes (“the devil’s horses”) and from watching TV without veiling, just in case the presenters could see them through the screen. Salih al-Fawzan, the most senior cleric in the kingdom today, once issued a chillingly anti-American fatwa forbidding all-you-can-eat buffets, because paying for a meal without knowing what you’ll be eating is akin to gambling.

Some of the clerics may have given in because they were convinced by the crown prince's legal interpretations. Others appear to have succumbed to good old-fashioned intimidation. Formerly conservative clerics will look you in the eye and without hesitation or scruple speak in Stepfordlike coordination with the government's program. The minister of Islamic affairs and guidance, normally an unsmiling type, now cheerily defended the opening of cinemas and mass layoffs of Wahhabi imams. I liked him immediately. His name, Abdullatif Al Asheikh, indicates that he is descended from a long line of stern moralists going back to Muhammad ibn Abd al-Wahhab himself. I told him I had seen the *Zombieland* sequel in his country, and if Woody Harrelson reprised his role in *Zombieland 3*, I would return to Riyadh so we could go to a theater and watch it together. "Why not?" he replied.

Mohammad al-Arefe, a preacher known for his good looks and conservative views, mysteriously began promoting Vision 2030 after a meeting with MBS in 2016. Previously, he had preached that Mada'in Saleh, a spectacular pre-Islamic archaeological site in northwest Saudi Arabia, was forbidden to Muslim tourists. God had struck down the civilization that once lived there, and the place was forever to remain a reminder of his wrath. The conventional view held that Muslims should follow the Prophet's warning to stay away from Mada'in Saleh, but if they absolutely must pass through, they should cast their gaze downward and maintain a fearful demeanor toward the Almighty. Then, in 2019, al-Arefe appeared in what seemed, to me, like some sort of hostage video, filmed by the Saudi tourism authority, lecturing about the site's history and inviting all to enjoy it. If he was displaying a fearful demeanor, it was not toward the Almighty.

IN THE SMALLER CITIES it isn't clear how quickly modernization is catching on. I visited Buraydah, the capital of Qassim, the most conservative part of the country. In two days, every woman I saw wore a black, flowing abaya. I attended the opening of a new shopping mall and showed up early to watch the crowds arrive. The sexes separated themselves without discussion: women in the front, all in black, near the stage where children recited poems and sang; men, in white *thobes*, in the back of the audience and on the sides. The process was unconscious and organic, but to an outsider remarkable, as if salt and pepper were shaken out onto a plate, and the grains slowly and perfectly segregated themselves. Cultural practices decades or centuries old do not yield suddenly.

Taif, a city an hour outside Mecca, was once the summer residence of the king and his family. The Prophet is thought to have visited there, and many Muslims supplement their pilgrimages to Mecca with side trips to other sites from the Prophet's life. The Wahhabis have, historically, treated these visits as un-Islamic and reprehensible. Whenever pilgrimage sites have fallen into Wahhabi hands, they have methodically and remorselessly destroyed them by leveling monuments, grave markers, and other structures sacred to Muslims in other traditions.

One morning I took a long walk to a mosque where the Prophet is said to have prayed. On arrival I found a building in disrepair, fenced off by rusty wire, with parts of it reduced to rubble. A sign at this site, posted by the Ministry of Islamic Affairs, noted in Arabic, Urdu, Indonesian, and English that the historical evidence for the Prophet's visit was uncertain. It suggested, further, that "to feel an adoring reverence or regard toward these places is a kind of heresy and fabrication in religion," an innovation not sanctioned by God that "leads to polytheism."

Later, I met Mohammad al-Issa, formerly the minister of justice under King Abdullah and now, as secretary-general of the Muslim World League, an all-purpose interfaith emissary for his country. In the past, Saudi clerics inveighed against infidels of all types. Now al-Issa spends his time meeting Buddhists, Christians, and Jews, and trying to stay ahead of the occasional surfacing of comments he made in less conciliatory times. I asked him about the site, and whether Saudi Arabia's new tolerance—which he emphasizes so energetically overseas, with non-Muslims—would apply domestically. He assured me that it already did. "If in the past there

were some mistakes, now there is correction," al-Issa said. "Everyone has the right to visit the historic places, and there is a lot of care given to them."

"But the signs are still up," I said.

"Maybe they are there to remind people to be respectful," he suggested. "You see signs like that at sites all over the world: 'Don't touch or take the stones.'"

But these signs are not meant to preserve the ruins. They are there to remind you that you are wicked for visiting at all.



A mosque in Taif where the Prophet Muhammad is said to have prayed. A sign posted by the Ministry of Islamic Affairs notes that the historical evidence for the Prophet's visit is uncertain, and warns that "to feel an adoring reverence or regard toward these places is a kind of heresy." (Lynsey Addario for *The Atlantic*)

The day after my trip to the mosque, I stopped by a Starbucks in Taif. It was early afternoon. When I pulled the door handle, it clunked—the shop was closed for prayer, just as it would have been if the religious police had been enforcing prayer times.

As I waited outside alone, a small police truck pulled up behind me. The police officer salaamed me, and I responded in Arabic. Only after a short interrogation ("What are you doing here? Why are you here?") did he discover that I was American—not, as I think he suspected, Filipino—and apologize awkwardly and leave. It took me a minute to realize what had happened: The religious police have stood down, and the ordinary police have stood up in their place. The conservatism in society has not gone away. In some places, it has just undergone a costume change.

THESE LINGERING MANIFESTATIONS of intolerance illustrate what MBS's critics say is his ultimate error: Even a crown prince can't change a culture by fiat.

Belated realization of this error might be behind the grandest and most improbable of his projects. If existing cities resist your orders, just build a new one programmed to do your bidding from the start. In October 2017, MBS decreed a city in a mostly uninhabited area on the Gulf of Aqaba, adjacent to Egypt's Sinai Peninsula, the southwestern edge of Jordan, and the Israeli resort town Eilat. The city is called Neom, from a violent collision between the Greek word *neos* ("new") and the Arabic *mustaqbal* ("future").

At present, little exists but an encampment for the employees of the Neom project, a small area of tract housing. Regular buses take them to shop in the nearest city, Tabuk, which is itself a city only by the standards

of the vacant, rock-strewn desert nearby. (If you recall the early scenes of *Lawrence of Arabia*, when a lonely camel-borne Peter O'Toole sings "The Man Who Broke the Bank at Monte Carlo" to the echoes of a sandstone canyon, then you know the spot.) The ambitions for this settlement are vast. Neom's administrators say they expect it to attract billions of dollars in investment and millions of residents, both Saudi and foreign, within 10 to 20 years. Dubai grew at a similar pace in the 1990s and 2000s. MBS said Neom is "not a copy of anything elsewhere," not a xerox of Dubai. But it has more in common with the great globalized mainstream than with anything in the history of a country that, until recently, was remarkably successful at walling off its traditional culture from the blandishments of modernity.

For a few hours, the Neom team showed me around and made grandiose promises about the future. Neom would lure its investors, I gathered, by creating the ideal regulatory environment, stitched together from best practices elsewhere. The city would profit from central planning. When New York or Delhi want to grow, they choke on their own traffic and decrepit infrastructure. Neom has no inherited infrastructure at all. The centerpiece of the project will be "The Line"—a 106-mile-long, very skinny urban strip connected by a single bullet train that will travel from end to end in 20 minutes. (No train capable of this speed currently exists.) The Line is intended to be walkable—the train will run underground—and a short hike perpendicular to its main axis will take you into pristine desert. Water will be desalinated; energy, renewable.

So far, Neom is less a city than an urbanist cargo cult. The practicalities can come later, or not at all. (The projected cost is in the hundreds of billions of dollars, a huge sum even for Saudi Arabia.) But many good ideas look crazy at first. What struck me was that Neom's vision is really an anti-vision. It is the opposite of the old Saudi Arabia. In the old Saudi Arabia, and even to an extent today, corruption and bureaucracy layered on each other to make an entrepreneur's nightmare. Riyadh has almost no public transportation. No matter where you are, you cannot walk anywhere, except perhaps to your local mosque. No one in Neom mentioned religion at all. Even Neom's location is suggestive. It is far from where Saudis actually live. Instead it is huddled in a mostly empty corner, as if seeking sustenance and inspiration from Jordan and Israel.

Seen this way, Neom is MBS's declaration of intellectual and cultural bankruptcy on behalf of his country. Few nations have as many carried costs as Saudi Arabia, and Neom zeroes them out and starts afresh with a plan unburdened by the past. To any parts of the kingdom that cling to their old ways, it promises that the future is everything they are not. And the future will wait only so long.

DURING THE 1990S AND 2000S, Saudi Arabia was a net exporter of vision, but it was a jihadist vision. The standard narrative, now accepted by the Saudi state itself, is that the kingdom was seduced by conservative Islam, and eventually the jihadists it sent overseas (most famously Osama bin Laden) redirected their efforts toward the Saudi monarchy and its allies. Fifteen of the 19 hijackers on 9/11 were Saudi citizens.

"A series of things happened that made the Saudis realize they couldn't keep playing the game they had been playing," Philip Zelikow, a State Department official under George W. Bush and the executive director of the 9/11 Commission, told me. The years of violence that followed 9/11 shocked the Saudis into realizing that they had a reckoning coming, though only after jihadists began attacking in the kingdom itself did the government move to crush them. What the Saudis did not have was a plan to redirect the jihadists' energy. "They needed to have some story of what kind of country they were going to be when they grew up," Zelikow said. Jihadism would not be that story. But there was no immediate alternative, either for society or for the individuals

attracted to jihadism. Saudi Arabia was left to do what most other countries, including the United States, have done, which is to imprison terrorists until they grow too old to fight.



Left: The aftermath of an al-Qaeda bombing in Riyadh in 2003. Only after jihadists began attacking in the kingdom did the government move to crush them. *Right:* Saudi Special Security Forces at the Counterterrorism Training School in Riyadh in 2013. (Lynsey Addario)

Last year, Saudi officials informed me that the crown prince had a new plan to deprogram jihadists. One morning they sent a convoy of state-security SUVs to my hotel, and with lights flashing, we left behind the glassy skyscrapers of the capital and continued along one of the straight, hypnotic roads radiating from Riyadh to nowhere. An hour later, we turned off at an area called al-Ha'ir and went through a security checkpoint.

Ha'ir is a state-security prison, run by the Saudi secret police, which means that its prisoners are not car thieves and check forgers but offenders against the state. They include jihadists from al-Qaeda and the Islamic State—I met at least a dozen of each—as well as softer Islamists, like Salman al-Awda, the cleric.

We drove past the checkpoint and through the gates, into a windswept compound coated in a film of light-brown dust, like tiramisu. We were met by the director of state-security prisons, Muhammad bin Salman al-Sarrah, and what appeared to be a television crew of at least half a dozen men, each bearing a microphone or a camera. I worried about what would happen next. Newsworthy events inside the walls of terrorist prisons tend not to be good. Lurking in the background were several bearded men in identical gray business suits.

During the 1990s and 2000s, Saudi Arabia was a net exporter of vision, but it was a jihadist vision. Fifteen of the 19 hijackers on 9/11 were Saudi citizens.

Al-Sarrah, it turned out, was a real jihadism nerd, and over tea we reminisced about various luminaries in the history of Saudi terror. After this small talk, he invited me to join him in an auditorium that could have been a lecture hall on a small college campus. Shutters clicked as the cameramen followed.

In the auditorium, the men in suits took the stage. Their leader, a man named Abdullah al-Qahtani, explained that he and most of the others in the room were prisoners, and that they had a PowerPoint presentation they wished to show me about the enterprise they were running in the prison. The camera crew was made up of prisoners too, and they were documenting my visit for imprisoned members of jihadist sects.

What followed was the most surreal slide deck I have ever seen: a corporate org chart and plans for a set of businesses run from within the prison by jihadists and other enemies of the state. Al-Qahtani spoke in Arabic, translated by an excitable counterpart nearby.

The org chart showed CEO al-Qahtani at the top, with direct reports from seven offices beneath him, among them financial, business development, and "programs' affairs." Under the last of these was another sub-office, "social responsibility."

Al-Qahtani explained that 89 percent of the prison population had taken part in the program so far. In a way, it was like any other prison-industry program; in the United States, prisoners staff call centers, raise tilapia, or just push brooms in the prison corridor for a dollar an hour. But the Ha'ir group, doing business as a company called, simply, Power, was aggressively corporate and entrepreneurial.

Al-Qahtani and the interpreter took me to a small garden, where prisoners cultivated peppers under plastic sheeting and raised bees and harvested their honey to sell at the prison shop, in little jars with the Power logo. They operated a laundromat and presented me with a price list. The prison will clean your clothes for free, they said, but staff and inmates alike could bring clothes here for special services, such as tailoring, for a fee. I could see shirts, freshly laundered and pressed, with prisoner numbers inked into the collars. Each number started with the year of entry on the Islamic calendar. I saw one that started in 1431, about 12 years ago.

Almost all the men wore thick beards, and many had a *zabiba* (literally "raisin"), the discolored, wrinkly spot one gets from pressing the head to the ground in prayer. Some of their products were artisanal and religious-themed. They led me into a tiny room, a factory for the production of perfumes for sale outside the prison, and to another room where they made prayer beads from olive pits.

"Here, smell this," a former member of al-Qaeda commanded me, sticking under my nose a paper strip blotted with a chemical I could not identify. I think the scent was lavender. Another prisoner, at the Power-run prison canteen, offered me free frozen yogurt. As I walked around the prison, the yogurt began to melt, and my interpreter held it so I could take notes.

Strangest of all, I found, was Power's corporate nerve center—a warren of drab, cubicle-filled offices. The employees wore uniforms: suits for the C-suite executives and blue Power-branded polo shirts for the mid-levels puttering on their computers. They had a conference room with a whiteboard (at the top, "In the name of God, the most gracious, most merciful" was written in Arabic, and partially erased; the rest was the remains of a sales brainstorming session), a reception desk, and portraits of the king and the crown prince overseeing it all.

Nothing is stranger than normalcy where one least expects it. These jihadists—people who recently would have sacrificed their life to take mine—had apparently been converted into office drones. Fifteen years ago, Saudi Arabia tried to deprogram them by sending them to debate clerics loyal to the government, who told the prisoners that they had misinterpreted Islam and needed to repent. But if this scene was to be believed, it turned out that terrorists didn't need a learned debate about the will of God. They needed their spirits broken by corporate drudgery. They needed Dunder Mifflin.

My hyperactive interpreter, who had been gesticulating and yapping throughout the tour, was no ordinary jihadist. He was an American-born Saudi member of al-Qaeda named Yaser Esam Hamdi. Hamdi, now 41, emerged from a pile of rubble in northern Afghanistan in December 2001. His dear friend, pulled from the same rubble, was John Walker Lindh, the so-called American Taliban. Hamdi spent months in Guantánamo Bay before being transferred to the U.S.; he was released after his father, a prominent Saudi petrochemical executive, helped take Hamdi's case to the Supreme Court, and won (*Hamdi v. Rumsfeld*). Hamdi was sent back to Saudi Arabia on the condition that he renounce his U.S. citizenship (he was born in Louisiana and left as a small child), but the Saudis decided he needed more time in prison and locked him up for eight years in a facility in Dammam, and for another seven in Ha'ir. He is due for release this year.

Hamdi guided me like a kid showing his parents around his sleepaway camp. He explained that Power is part of a larger entity at the prison, known as the "Management of Time" (*Idarat al-Waqt*)—a comprehensive but amorphous program meant to beguile the inmates out of bad ideas and replace them with good ones. It

involves corporate training, but also gathering the inmates together for song and music, for poetry readings, for the publishing of newspapers (I snagged a copy of the *Management of Time News*), and for the production of TV shows. I watched a room full of men sing a song they had written, “O My Country!,” and show videos in which they extolled the government and the crown prince. Al-Qaeda and ISIS forbid most music and revile the monarchy. Like so many other Saudis, these men seemed to have swapped their religious fanaticism for nationalist fanaticism. One wondered what they really believed.

Al-Sarrah followed close behind us, and I shot him a look when I heard the name of the program. One of the most famous jihadist texts, a playbook for ISIS, is “The Management of Savagery” (*Idarat al-Tawahhush*). It is a deranged manual for destroying the world and replacing it with a new one. That was what this program was doing in reverse: replacing the jihadists’ savage appetite for an imagined future with an appetite for the real, the now, and the ordinary.

A bookish man who had been with Osama bin Laden at Tora Bora looked me steadily in the eye, like he was trying to convince me and not himself. “Vision 2030 is real,” he said.

I told Hamdi that I had corresponded with his friend Lindh, who served 17 years in federal prison in the United States before his release in 2019. Our correspondence had led me to believe that he was just as radical as ever, and that his stay in prison—spent in solitary study of Islamic texts—had confirmed his violent streak and converted him from an al-Qaeda supporter to an ISIS supporter.

Graeme Wood: I wrote to John Walker Lindh. He wrote back.

“Really?” Hamdi asked, before venturing a guess as to why. “The United States doesn’t know how to deal with Muslims. When I was in Afghanistan, I had extreme thinking.” Going to a Saudi prison helped. “The difference is that in jail [here] we have a program. You want to explode the thinking we have in our brain. For 17 years he was alone.” The Saudis filled Hamdi’s time. They managed it. “We didn’t have time to read the Islamic books … We didn’t have time to do anything but work to improve ourselves.” He was a specialist in Power’s media department, and could now produce videos of passable quality.

“I didn’t know what a montage was,” he said. “I didn’t know what a design was.” We were driving to another part of the prison with al-Sarrah in the front seat and Hamdi and me in the back. “Now I am professional!” he said. “I am a complete montage expert!” He pointed at al-Sarrah, who smiled but did not speak or even look back. “All thanks to this man! The government opened this for us! Now I am in a car! Talking to you! Normally! Peacefully! No kind of problems!” Upon release, he said, he might work for his father’s company, or even (this was his dream) go into film and television production. I wondered what it might be like to have a co-worker like Hamdi, with, shall we say, an unconventional work history, and a penchant for extremism and Osama bin Laden that he swore up and down had been thoroughly replaced with a love for film and video production and the crown prince of Saudi Arabia. I was pretty sure Hamdi would be a better colleague than John Walker Lindh.

 *Top left:* A camel market about an hour outside Riyadh, in January. *Top right:* A sign on the highway from Jeddah to Taif marking the turnoff for Mecca. *Bottom:* Women in Asir province. Outside Saudi Arabia's major cities, it isn't clear how quickly modernization is catching on. (Lynsey Addario for *The Atlantic*)

At the prison I asked many inmates how they could trade jihadism for these worldly things, which surely amounted to frippery compared with the chance to die in the path of God. They laughed, nervously, as if to ask what I was trying to do—get them to leave the prison and kill again? They were mostly still young, and they yearned for freedom. That they no longer wanted something thrilling and extraordinary was exactly the point. It is possible to have too much vision, or the wrong kind—some of them had gone to Syria, barely survived, and had had enough vision, thank you very much. "We don't want anything but a normal life," one told me. "I would be happy just to go outside, to walk on the Boulevard in Riyadh, to go to McDonald's."

"I went to Syria because I was offered to take part in a dream, the dream of a caliphate," said another. Ali al-Faqasi al-Ghamdi, a bookish man who had been with bin Laden at Tora Bora, told me he now recognized such dreams as counterfeit. What, he asked, is the point of a big, exciting dream when it is a false one? A small ambition that can actually be fulfilled is preferable to a big one that cannot. He looked me steadily in the eye, like he was trying to convince me and not himself. "Vision 2030 is real."

AMERICA MUST NOW decide whether that vision is worth encouraging. Twenty years ago, if you had told me that in 2022 the future king of Saudi Arabia would be pursuing a relationship with Israel; treating women as full members of society; punishing corruption, even in his own family; stanching the flow of jihadists; diversifying and liberalizing his economy and society; and encouraging the world to see his country and his country to see the world—Wahhabism be damned—I would have told you that your time machine was malfunctioning and you had visited 2052 at the earliest. Now that MBS is in power, all of these things are happening. But the effect is not as pleasing as I had hoped.

In 1804, another modernizing autocrat, Napoleon Bonaparte, arrested Louis Antoine, the duke of Enghien, on suspicion of sedition. The duke was young and foolish, and no great threat to Napoleon. But the future

emperor executed him. Around Europe, monarchs were shocked: If this was how Napoleon treated a harmless naif like the duke, what could they expect from him as his power grew, and his domestic opposition dissolved in fear? The execution of Enghien alerted the most perceptive among them that Napoleon could not be managed or appeased. It took a decade of carnage to figure out how to stop him.

Enghien's schemes wouldn't have stopped Napoleon, and Khashoggi's columns wouldn't have stopped MBS. But his murder was a warning about the personality of the man who will be running Saudi Arabia for the next half century, and it is reasonable to worry about that man even when most of what he does is good and long overdue.

For now, MBS's main request to the outside world, and especially the United States, is the usual request of misbehaving autocrats—namely, to stay out of his internal affairs. "We don't have the right to lecture you in America," he said. "The same goes the other way." Saudi affairs are for Saudis. "You don't have the right to interfere in our interior issues."

But he acknowledges that the fates of the two countries remain linked. In Washington, many see MBS's rise as abetted, perhaps even made inevitable, by American support. "There was a moment in time where the international community could have made it clear that the Khashoggi murder was the straw that broke the camel's back, and that we weren't willing to deal with MBS," Senator Murphy told me. The Trump administration's support, when MBS was at his most vulnerable, saved him. "If MBS ultimately becomes king," Murphy said, "he owes no one bigger than Jared Kushner," Trump's personal envoy to the crown prince. ("You Americans think there is something strange about a ruler who sends his unqualified son-in-law to conduct international relations," one Saudi analyst told me. "For us this is completely normal.")

Some still hope that MBS will not accede to the throne. "Only one of the last five crown princes has eventually become king," Khalid al-Jabri noted to me, optimistically. But everything I see suggests that his ascent is certain, and that the search for alternatives is forlorn. Two of those four also-ran crown princes were sidelined or replaced by MBS himself. The other two died of old age.

The United States needs its partners in isolating Iran, and MBS is a stalwart there. And even domestically, he remains in some ways the right man for the job. He is at least, as Philip Zelikow reminded me, not a ruler in denial. "We wanted Saudi leadership who would face their problems, and embark on an ambitious and incredibly challenging generational struggle to remake Saudi society for the modern world," he told me. Now we have such a leader, and he is presenting a binary choice: support me, or prepare for the jihadist deluge.

"We don't have the right to lecture you in America," MBS said. "The same goes the other way."

MBS is correct when he suggests that the Biden administration's posture toward him is basically recriminatory. *Stop bombing civilians in Yemen. Stop jailing and dismembering dissidents.* The U.S. might, on the margins, be able to persuade MBS to use a softer touch—but only by first persuading him that he will be rewarded for his good behavior. And no persuasion will be possible at all without acknowledging that the game of thrones has concluded and he has won.

Many of the exiles I spoke with said their best hope now is that the crown prince will mellow, and that elder Saudi wise men will keep him from destroying the country with rash decisions, like the fight with Qatar, or the murder of Khashoggi. MBS does have a sense that being capricious and impulsive can be costly. "If we run the country randomly," he told me, "then the whole economy is going to collapse." Others had tried that strategy: "That's the Qaddafi way."

King Salman has instituted measures ostensibly intended to force his son to govern more inclusively after Salman's death. He changed the law of succession to prevent the next king from naming his own children, or indeed anyone from his own branch of the family, as his crown prince. I asked MBS if he understood that to be the rule, and he said yes. I asked if he had anyone in mind for the job. "This is one of the forbidden subjects," he said. "You will be the last to know."

WHEN HE IS KING, however, the rules will belong to him, and to ask him to abide by them against his wishes will be about as easy as negotiating from your suite at the Ritz-Carlton.

A crown prince with a subtler mind and a gentler soul might have implemented MBS's reforms without resorting to his brutal methods. But it is pointless to consider policy in a state of childlike fantasy, as if it were possible to conjure some new Saudi monarch by closing your eyes and wishing him into existence. Open your eyes, and MBS will still be there. If he is not, then the man ruling in his place will not be an Arab Dalai Lama. He will be, at best, a member of the unsustainable Saudi old guard, and at worst one of the big beards of jihadism, now richer than Croesus and ready to fight. As MBS told me, to justify the Ritz operation, "It's sometimes a decision between bad and worse."

Since reality has handed us MBS, the question for America is how to influence him. This question is practical rather than moral: If your moralism drives him into a partnership with China, what good will it have been? A fundamental principle of Chinese foreign relations is butting out of other countries' internal affairs and expecting the same from them. Certainly Beijing will not reprimand him for his treatment of dissidents.

In effect, both the Saudis and the Americans are now in the Ritz-Carlton, forced to bargain with a jailer who promises us prosperity if we submit to his demands, and *Mad Max* if we do not. The predicament is familiar, because it is the same barrel over which every secular Arab autocrat has positioned America since the 1950s. Egypt, Iraq, and Syria all traded semitribal societies for modern ones, and they all became squalid dictatorships that justified themselves as bulwarks against chaos.

Twenty years ago, Syria watchers praised Bashar al-Assad for his modernizing tendencies—his openness to Western influence as well as his Western tastes. He liked Phil Collins; how evil could he be? By now most everyone outside Damascus, Tehran, and Moscow recognizes him as Saddam Hussein's only rival in the dubious competition for most evil Arab leader.

MBS has completed about three-quarters of the transition from tribal king with theocratic characteristics to plain old secular-nationalist autocrat. The rest of that transition need not be as ruthless as the beginning, but MBS shows no sign of letting up. The United States can, and should, make the case that Saudi Arabia's security and development will demand different tools going forward. It might even suggest what those tools should be. But it probably cannot make MBS use them.

A more pragmatic approach is to make sure that the reforms he has instituted stick, and that the changes in Saudi culture become irreversible. The opening of the country and the forcible sidelining of a crooked royal class—these are hard changes to undo, and they bind even the absolute monarch who decreed

them. Granting women driver's licenses was ultimately a smooth process. Taking them back would disrupt millions of lives and sow protest across the kingdom. American influence can acknowledge and encourage such changes.

Sometimes this is how absolute power relaxes its grip: slowly, without anyone noticing. In England, the transition from absolute monarchy to a fully constitutional one took 200 years, not all of them superintended by the most stable kings. MBS is still young and hoarding power, and everyone who has predicted that he would ease up on dissent has so far been proved optimistic. But 50 years is a long reign. The madness of King Mohammed could give way to something else: a slow and graceful renunciation of power—or, as with Assad, an ever more violent exercise of it.

This article appears in the April 2022 print edition with the headline "Absolute Power."

Graeme Wood is a staff writer at *The Atlantic* and the author of *The Way of the Strangers: Encounters With the Islamic State*.

http://reut.rs/3L4NUUd
2 minute readApril 15, 202310:08 AM MDTLast Updated an hour ago

Iraq's northern oil exports stuck on Turkey negotiations

By Rowena Edwards , Can Sezer and Ahmed Rasheed

LONDON, April 14 (Reuters) - (This April 14 story has been refiled to say 'Anything regarding the resumption of oil flows', not 'Anything regarding oil', in paragraph 6)

Oil exports from northern Iraq to the Turkish port of Ceyhan remain at a standstill almost three weeks after an arbitration case ruled Ankara owed Baghdad compensation for unauthorised exports.

The March 23 arbitration ruling by the International Chamber of Commerce (ICC) ordered Turkey to pay Baghdad damages of $1.5 billion for unauthorised exports by the Kurdistan Regional Government (KRG) between 2014 and 2018.

In response, Turkey halted the flows of 450,000 barrels per day. It wants to negotiate the payment and resolve a second arbitration case regarding unauthorised flows since 2018 before it restarts them, according to sources.

Pipeline operators have yet to receive any instruction to restart flows, a source familiar with the exports told Reuters on Friday on condition of anonymity.

Two other sources told Reuters that Baghdad has yet to request Turkey reopens the pipeline.

"Anything regarding the resumption of oil flows now is in the hands of Baghdad and Turkey, both sides have to reach an agreement to restart flows," said Lawk Ghafuri, head of foreign media affairs for the KRG.

Turkey is seeking in-person negotiations relating to the $1.5 billion it was ordered to pay Iraq in damages, a separate source told Reuters.

Iraq's state-owned marketer SOMO is waiting to finalise some technical issues essential to restarting flows with the KRG's ministry of natural resources, two Iraqi oil officials told Reuters.

Iraq's federal government in Baghdad and the KRG on April 4 signed a temporary agreement hoping to get the flows restarted.

Lost revenue from the halt for the KRG stands at around $550 million, according to Reuters calculations based on exports of 375,000 barrels per day, the KRG's historic discount against Brent crude and 20 days of outages.

The Turkish energy ministry and Iraq's oil ministry did not respond to requests for comment.

Iraq has also petitioned a U.S. federal court to enforce the arbitration award against Turkey, according to documents filed with the court.

Reporting by Rowena Edwards in London, Can Sezer in Istanbul, Ahmed Rasheed in Baghdad, and Maha el Dahan in Dubai; editing by Jason Neely

https://www.libyaherald.com/2023/02/libya-will-produce-more-than-1-5-million-barrels-of-oil-per-day-in-2023-agoco-chairman/

Libya will produce more than 1.5 million barrels of oil per day in 2023: AGOCO chairman

Provision of budget, continued and fast development, stability in Libya and oil sector - all contributing factors

by **Ibrahim Senusi** February 14, 2023

AGOCO chairman Gatrani said Libya can increase production to 1.5 million bpd this year (Photo: AGOCO).

The continuation of the Arabian Gulf Oil Company's (AGOCO) development operations at this pace will inevitably lead to Libya reaching a production rate of more than 1.5 million barrels of oil per day in 2023, AGOCO chairman Salah Gatrani said in an exclusive statement to *Libya Herald*.
He said this was because of the stability witnessed by the country in general, and by the oil sector in particular. Therefore, he continued, the Gulf Company has developed its own plan within the efforts of the National Oil Corporation (NOC). Libya has been unable to maintain production beyond 1.2 million bpd.

Gatrani was commenting to *Libya Herald* following Sunday's AGOCO's meeting on developing reserves and increasing oil production in the sector companies, attended by relevant AGOCO and NOC management.
The AGOCO chairman said that his company has already begun to implement the plan prepared by the NOC to raise production and increase reserves.

Training, localising and developing new techniques
He said AGOCO had actually delayed several projects to raise the efficiency of the employees in the company, including a cooperation project with KAMCO Oil Services Company to raise the efficiency

of employees, localize and develop technology in the company, and keep pace with global updates in the fields of drilling oil wells and extracting crude oil.

Gatrani referred to the conclusion of a training course for workers in the Nafoura field in the field of production engineering on the use of new techniques of electrical narratives and their applications to evaluate rock layers in oil-producing wells as well as water injection wells.

NOC is providing finance after securing it from government

He commended the NOC for supporting its oil companies financially, especially after allocating a good budget to the sector from the Abd Alhamid Aldabaiba government, which positively affected the entire oil sector, as several oil wells have returned to production and the completion of preparations in several new wells.

At the meeting Gatrani referred to the speech by NOC chairman Farhat Bengdara at a previous expanded meeting on the NOC's strategic plan to raise production and develop reserves. He pointed to the importance of this plan, which he said requires concerted efforts to achieve it and provide the necessary capabilities that would ensure access to the target smoothly. The most important of these capabilities, he said, is the steady cash flow as well as overcoming and developing all the problems that hinder the productive process.

AGOCO expected to increase most production

Speaking at the meeting, Khalifa Abdul Sadig, NOC board member, said that this meeting is very important and strategic to increase production and develop reserves in AGOCO, which, he said, constitutes the largest percentage of this plan. He said the NOC is counting on AGOCO to Increase production, develop reserves, and counting on it for the success of the NOC's increased production plan. He admitted that the challenges are great, but with a strong will and wise management, Libya will be able to achieve the goals and results.

Tags: AGOCO Arabian Gulf Oil Company

https://www.reuters.com/business/energy/indias-fuel-demand-rises-5-march-year-year-2023-04-10/
2 minute readApril 10, 202310:41 AM MDTLast Updated 9 hours ago

India's March fuel demand soars on robust economic activity

Reuters

People get their two-wheelers filled with petrol at a fuel station in Ahmedabad, India, May 14, 2018. REUTERS/Amit Dave

April 10 (Reuters) - India's fuel consumption jumped to a record high in March, data showed on Monday, fuelled by robust economic activity in the world's third biggest oil consumer.

Consumption of fuel, a proxy for oil demand, rose by 5% from a year earlier to 4.83 million barrels per day (20.5 million tonnes), the highest recorded in data going back to 1998 from the Indian Oil Ministry's Petroleum Planning and Analysis Cell.

Viktor Katona, lead crude analyst at Kpler, noted that bitumen, used for building roads, was the main source of growth in March, whereas transportation fuels, specifically diesel and gasoline, had been the drivers in previous months.

"This is most certainly a reflection of India's robust economic growth and the infrastructure building spree still mirroring that strength."

Sales of bitumen jumped 16.5% from February, while jet fuel sales rose more than 10.4% to 0.69 million tonnes and diesel sales were up 11.4% to 7.80 million tonnes.

On an annual basis, sales of gasoline, or petrol, rose 6.8% to 3.1 million tonnes in March, while cooking gas, or liquefied petroleum gas (LPG), sales slipped 2.7% to 2.41 million tonnes.

Independent oil market analyst Sugandha Sachdeva said that the overall jump in consumption could have been driven by the government's increased capital expenditure allocation.

"That means huge demand for construction and infra(structure) leading to more demand for oil products, especially in a pre-election year."

Increased oil products exports to Europe amid Western sanctions on Russia and a travel revival boosting jet fuel demand could be additional drivers, Sachdeva added.

India outlined plans in March to invest billions of dollars in airports, aircraft and recruitment as the world's fastest-growing economy seeks to meet booming air travel demand.

But Kpler's Katona cautioned that infrastructure spending and construction could slow during the June-September monsoon season.

Reporting by Ananya Bajpai, Arpan Varghese, Ashitha Shivaprasad and Rahul Paswan in Bengaluru, Mohi Narayan in New Delhi; Editing by Susan Fenton, Kirsten Donovan

Excerpts from ANI reporting on Hardeep Singh Puri comments post Jennifer Granholm meeting in Washington

https://aninews.in/news/world/us/india-is-clear-about-its-policy-regarding-oil-purchases-will-buy-oil-from-wherever-it-has-to-hardeep-singh-puri20221008143703/

India is clear about its policy regarding oil purchases, will buy oil from wherever it has to: Hardeep Singh Puri

ANI | Updated: Oct 08, 2022 14:37 IST

Washington [US], October 8 (ANI): India has reiterated its choice of importing oil from countries like Russia after OPEC Plus, a consortium of oil-producing nations led by Russia and Saudi Arabia announced a slash in oil production by two million barrels per day.

While taking to reporters in Washington DC during his ongoing US visit, Union Minister of Petroleum and Natural Gas Hardeep Singh Puri on Saturday touched on several topics including how India will balance OPEC Plus oil production cut, diversification of energy - equity infusion, bio-fuel blending and green hydrogen.

With rising global energy requirements, the OPEC production cut is likely to impact countries like India, the third largest oil importer. Speaking on the topic of balancing the imports from OPEC Plus countries as well as from the US, which is also a oil exporting country, Puri said "If you are clear about your policy, which means you believe in energy security, energy affordability you will buy from wherever you have to. Our energy purchases from sources hitherto unheard of, we are in discussion with them."

Answering how India will negotiate the tightrope of expectations, he told ANI, "It's not a tight rope, I don't look at - We will also acquire assets outside wherever - I mean in recent months- we did USD 1.6 billion equity infusion which BPCL has done in Brazil. We are looking at assets in Africa."

Puri explained that oil exporting countries need buyers as they have to sell their products in the market.

"Sometimes when you are looking at it in a journalistic manner, you would say that producers are holding all the cards. I disagree with that; I think the person or country with a large market also has a huge role to play. I am giving you a hypothetical example - If we decide to limit consumption, no matter what you produce, you will have to find a place to sell it too and I can tell you that in the last year or so, I have had my oil companies tell me that we can raise it from here, but there are traditional suppliers, this is a discussion which will go on," Puri said in response to a question by ANI.

"Much of the trade incidentally takes place in a manner which is not properly understood outside. It's not that - you have some fuels which have high density, some are lighter fuels - I don't want to get into that discussion - it may originate somewhere - we own assets outside, the product of those assets does not come to India, it goes in, it's sold in the swap market etc," he added.

This week's OPEC Plus announcement on oil production cut will likely have a cascading impact on geopolitical shifts amid the Russia-Ukraine crisis.

"Oil and energy have been traded for years. Governments in particular situations will react to geopolitical events. At the end of the day all governments are committed to issues of energy provisions; that is security and affordability," said Puri.

Meanwhile, an intense pressure campaign by the US to dissuade its Arab allies seemingly fell on deaf ears. Russia is already pumping below its OPEC+ ceiling, and the bulk of the cuts will be made by Gulf producers.

Speaking about the conflict and Indian diversification, Union minister Puri said, "I don't see any conflict. There are countries in OPEC that sell to us. They've never turned around and told us that they don't want to sell to us. If you don't sell to India and China, there are not many big markets left, even Europe collectively. Many of these are matured markets in energy. They don't utilize crude oil - some of them have gone into nuclear energy, and others are going into biofuels. I also want to share with you some of the advances which India has made - biofuel blending, when I was Ambassador to Brazil, we tried very hard, the central government tried to introduce 5 per cent ethanol blending in 15 of our States and Union Territories, we couldn't get it done."

Puri further stated that the India had taken a giant leap in bio-fuel blending after Prime Minister Narendra Modi assumed power in 2014.

"In 2014, when Prime Minister Narendra Modi assumed office, our bio-fuel blending was 1.4 per cent, today we have already reached 10.5 per cent of blending. We have a target of 20 per cent blending by 2030. We have just brought it forward to 2024-2025," said Puri.

He also gave examples of green Hydrogen and how India is providing opportunities for oil exploring companies.

"Green Hydrogen - We have Indian companies selling green ammonia to Germany - the world is moving at different fronts - exploration and production in India will shoot up. I have always said that we have neglected to the point, I even use words like 'criminal neglect.' We have 3.5 million square kilometres of sedimentary basin, and one million square kilometres of that sedimentary basin was called a 'no go area', just now a few months ago, 99.5 per cent of that 'no go area' has been cleaned up which means for an investor are happy to come and explore. There are not hundreds of players in the energy sector, five to six big companies, they are all interested, they are either forming joint ventures, just to come (to India)," said Puri. (ANI)

https://aninews.in/news/world/us/india-under-no-global-pressure-to-shun-russian-oil-hardeep-singh-puri20221008093740/

Union Minister of Petroleum and Natural Gas, Hardeep Singh Puri.

India under no global pressure to shun Russian oil: Hardeep Singh Puri

ANI | Updated: Oct 08, 2022 09:37 IST

Washington [US], October 8 (ANI): Union Minister of Petroleum and Natural Gas, Hardeep Singh Puri on Saturday said that India is under no pressure to shun Russian oil.

In a bilateral meeting with US energy secretary Jennifer Granholm, Puri said that the Indian government has a moral duty to provide energy to its citizens and it will continue to buy oil from wherever it has to.

Have I been told by anyone to stop buying Russian oil? The answer is a categorical No," Puri told reporters in Washington.

"India will buy oil from wherever it has to for the simple reason that this kind of a discussion cannot be taken to the consuming population of India," he added.

Since the start of the Ukraine conflict. India has sought to carve a middle path between Moscow and its Western critics and so far largely resisted Western pressure to cut its economic ties with the Kremlin.

The US is holding "deep talks" with India over the latter's reliance on Russian arms and oil, according to media reports citing a state department official. The official claimed that Indian representatives are starting to look at other markets to meet their demands as they try to become less dependent on Moscow for oil purchases.

Notably, the European Union (EU) on Thursday (local time) adopted its latest package of sanctions against Russia over the illegal annexation of Ukraine's Donetsk, Luhansk, Zaporizhzhia and Kherson regions.

The EU adopted restrictive measures against an additional 30 individuals and seven entities, read the EU's statement.

EU sanctions (8th package since the Ukraine war began) aim to force Russia to reduce prices & lose oil revenue. But at imports to the tune of 1.7 million barrels per day, the EU is still the biggest market for Russian crude.

Moreover, the EU is trying to determine the pricing of Russian oil through its insurance firms as Russia is the world's largest oil exporter. The European insurers rule commercial oil tankers by providing them with massive insurance.

The EU sanctions ll forbid these insurers from providing services to Russian companies selling oil above the price cap.

Moreover, EU's sanctions package on Russia will impact countries like India. EU is capping what other countries can pay for Russian oil. It bans the sale of oil above that price. This applies only to oil transported by sea. While, the EU members importing Russian oil by pipeline won't be hurt by these sanctions.

Puri highlighted India is one of the largest oil importer and the demand is expected to rise driven by an increase in India's per capita consumption of energy which currently stands at one-third of the global average. Puri further stressed that the fuel demand is expected to keep rising as the country's economy grows.

It is pertinent to note that External Affairs Minister S Jaishankar also on several platforms had explained India's decision to continue buying Russian oil. Recently, Jaishankar said PM Modi's advice on the issue was to do what is best for the nation. "Due to the Russia-Ukraine conflict, petrol prices doubled. We had pressure from where to buy the oil but Prime Minister Narendra Modi and the government were of the view that we have to do what is the best for our nation," Jaishankar said. (ANI)

https://aninews.in/news/world/us/oil-price-rise-in-india-is-way-below-global-price-hikes-hardeep-singh-puri20221008091154/

Oil price rise in India is way below global price hikes: Hardeep Singh Puri

ANI | Updated: Oct 08, 2022 09:11 IST

Washington [US], October 8 (ANI): Union Petroleum and Natural Gas minister Hardeep Singh Puri said that compared to fuel price hikes globally, India only raised prices by 2 per cent, which is way below that of other countries.

"In terms of petrol and diesel, if the increases in North America are 43-46 per cent, in India we allow prices to go up by only 2 per cent or so. In terms of gas, global benchmarks went up by 260-280 per cent and our own ability to contain gas price increases was something around 70 per cent," Puri told reporters in Washington DC.

Puri on Thursday held bilateral meeting with US energy secretary Jennifer Granholm and other top officials of the Biden Administration.

The minister also highlighted India's commitment to accelerating a just and sustainable energy transition at the ministerial dialogue on India-US strategic clean energy.

During his visit, the union minister also held meetings with senior officials of the World Bank, the Presidential envoy for energy and infrastructure Amos Hochstein and senior representatives of the White House. Puri is scheduled to meet energy business leaders in Houston on Saturday.

The Union Minister said that India was "very confident" of navigating the Organisation of Petroleum Exporting Countries Plus (OPEC+) decision to cut oil production from November by a steeper-than-expected two million barrels per day (bpd). "

How will this impact India? We are very confident of being able to navigate through the situation," Puri told reporters in Washington.

"How will this navigate India? We're very confident of being able to navigate through the situation," said Puri.

Puri highlighted India is one of the largest oil importers and the demand is expected to rise driven by an increase in the country's per capita consumption of energy which currently stands at one-third of the global average. Puri further stressed that the fuel demand is expected to keep rising as the country's economy grows.

"In India, 5mn (oil) bpd is being consumed daily; it's set to rise. Our per capita consumption compared to global averages is 1/3rd. But I see in the coming years, 25 per cent of the global increase in demand will come from India. Energy is a critical driver of economic growth," the union minister said.

The Union Minister also said that India will buy crude oil from whichever country it wanted and that New Delhi faces no pressure from Washington to cut its energy buys from Russia.

"India will buy oil from wherever it has to for the simple reason that this kind of a discussion cannot be taken to the consuming population of India," Puri told reporters in Washington. (ANI

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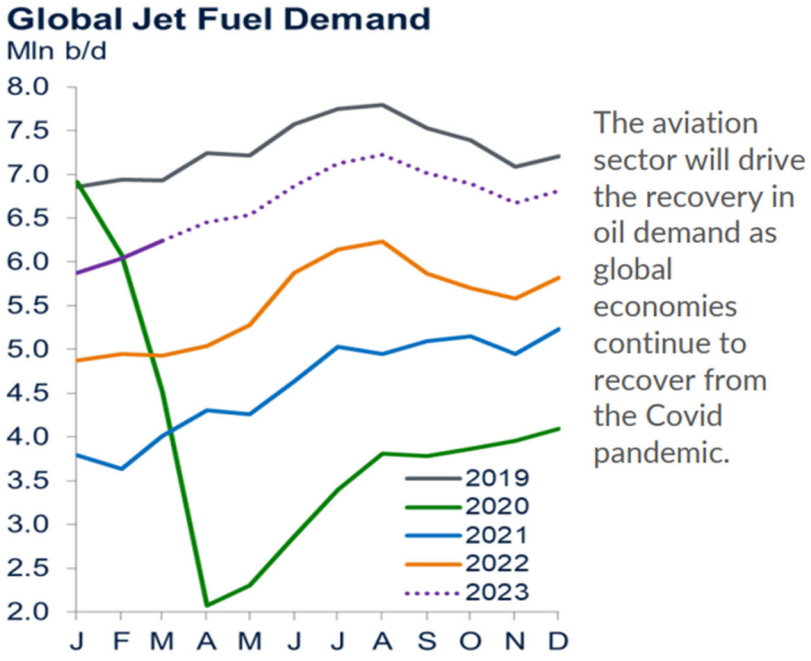
Vitol expects jet fuel demand to strengthen throughout the first half of the year, with consumption reaching around 90% of pre-Covid levels (compared to 80% in 2022) by the time of the peak summer travel season.

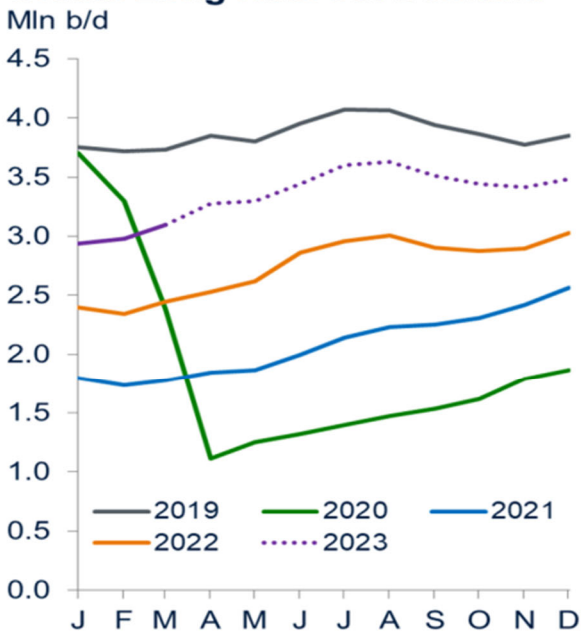
This is largely due to China's economy reopening, following two years of Covid lockdowns, and a global rebound in long and short-haul travel, with airline carriers offering more seats, more routes and with greater frequency for passengers looking to travel.

This improvement in the aviation sector will contribute 1.1m b/d to global oil demand growth, which we expect to be 2m b/d this year.

Vitol

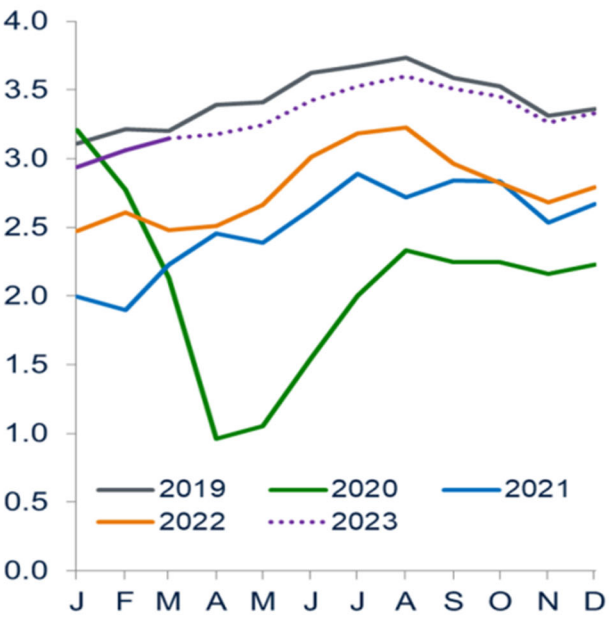


Global Long Haul Jet Demand



Long haul jet demand should recover this year, as seat availability improves and carriers are able to lay on more routes and frequency.

Global Short Haul Jet Demand



Short-haul jet demand is the most recovered segment as the domestic and intra-regional tourist markets boom.

Apr 14, 2023 07:55:54

OIL DEMAND MONITOR: Asia Signals Strength But Headwinds Loom

Chinese and Indian data suggest consumption at robust levels
Some analysts warn that flat global economy may crimp demand

By John Deane

(Bloomberg) -- Plenty of data suggest oil consumption has picked up as highways and the skies have gotten busier. But while some market watchers see that trend continuing through the year, others caution that lackluster economic prospects threaten to undercut demand.

China, the world's biggest importer, shipped in the most oil in almost three years in March – the equivalent of 12.37 million barrels a day – as the nation continued its rebound from the Covid Zero era, according to government data on Thursday.

India's consumption of oil products such as diesel and gasoline rose to a new high in the 12 months ended March 31, extending the recovery from the impact of Covid, with demand gaining 10% in the period, government data there showed.

In the US meanwhile, gasoline demand showed signs of strength heading into peak driving demand season, with the latest four-week average showing consumption surging to the highest level since December 2021.

In its monthly market report on Thursday, the Organization of Petroleum Exporting Countries struck an upbeat tone. Continued demand growth, combined with output cuts agreed by OPEC+ nations earlier this month, have put global markets on track for a hefty supply deficit that will widen as the year progresses – world markets may be under supplied by about 2 million barrels a day in the fourth quarter, according to OPEC.

Consumption will climb by 2.3 million barrels a day to a record 101.89 million a day, the organization projected. Demand growth in non-OECD countries, notably China, will make up for a meager advance in the OECD.

In China, demand for transportation fuels is anticipated to increase further "amid increased mobility and air travel in early spring, as people travel freely following the easing of pandemic-led restrictions," OPEC said. Traffic levels in the Asian nation's major cities remained elevated in the latest data, even as congestion in many major world cities eased amid Easter holidays, according to a BNEF analysis of Baidu figures.

In its monthly report on Friday, the International Energy Agency said global oil demand will climb by a healthy 2 million barrels a day this year amid a post-pandemic recovery in China, despite sluggish economic growth in the OECD.

The US Energy Information Administration, however, sees global crude supplies surpassing demand this year and next even taking into account the production cut by OPEC and its partners. In a potential harbinger of economic slowdown, diesel demand is expected to contract this year compared with 2022.

Two Fuel Markets Are Flashing Signs of Softer Oil Demand in Asia

China's long-awaited recovery has been slower than expected, while the prospect of economic slowdowns is crippling demand, according to Ed Morse, global head of commodities research at

CitiGroup Inc. Morgan Stanley has lowered its oil price forecasts, citing dimming demand prospects for the second half of the year.

Ed Morse, Citigroup's global head of commodities research, says oil demand is being "crippled" by the prospects of an economic slowdown.Source: Bloomberg

Looking further out, the Biden administration's plan to stifle auto pollution and spur electric vehicles is expected to shrink US oil demand by billions of barrels in the decades ahead.

The Bloomberg oil-demand monitor uses a range of high-frequency data to help identify emerging trends. Following are the latest indicators. The first two tables shows fuel demand and road congestion, the next shows air travel globally and the last is refinery activity:

Demand Measure	Location	%vs 2022	% vs 2021	% vs 2020	% vs 2019	% m/m	Freq	Latest Date	Latest Value	Source
Gasoline product supplied	US	+2.3	-0.1	+76	-8.9	+4	w	April 7	8.94m b/d	EIA
Distillates product supplied	US	+8	-8.8	-1.2	-0.4	+0.7	w	April 7	3.76m b/d	EIA
Jet fuel product supplied	US	-4.9	+12	+102	+5.5	-7.1	w	April 7	1.52m b/d	EIA
Total oil products supplied	US	+1.5	-6.3	+32	-6.2	-0.3	w	April 7	19.06m b/d	EIA
All motor vehicle use index	UK	+9.8	+26	+159	+1	+16	m	April 6	101	DfT
Car use	UK	+10	+31	+169	-3	+18	m	April 6	97	DfT
Heavy goods vehicle use	UK	-1	unch.	+69	+3	+7	m	April 6	103	DfT
Gasoline (petrol) avg sales per filling station	UK	+5.1	+22	+208	-2.9	-0.4	m	Week to April 2	6,977 liters/d	BEIS
Diesel avg sales per station	UK	-2.2	+6	+118	-13	+0.1	m	Week to April 2	9,090 liters/d	BEIS
Total road fuels sales per station	UK	+0.9	+12	+150	-8.7	-0.1	m	Week to April 2	16,067 liters/d	BEIS
Gasoline	India	+6.8				+12	m	March	3.11m tons	PPAC (prelim.)
Diesel	India	+1.2				+11	m	March	7.8m tons	PPAC
LPG	India	-2.7				+0.6	m	March	2.41m tons	PPAC
Total Oil Products	India	+5				+11		March	20.5m	PPAC
Gasoline	Spain	+15				+17	m	March	509k m3	Exolum

Diesel (and heating oil)	Spain	+11		+7.7 m	March	2,370k m3	Exolum
Jet fuel	Spain	+23		+23 m	March	484k m3	Exolum
Total oil products	Spain	+12		+11 m	March	3,363k m3	Exolum
Road fuel sales	France	-5.2		-7.7 m	February	3.56m m3	UFIP
Gasoline	France	+2.5		m	February	n/a	UFIP
Road diesel	France	-7.7		m	February	n/a	UFIP
Jet fuel	France	+29	-11	-6.2 m	February	531k m3	UFIP
All petroleum products	France	-4.6		-5.5 m	February	4.113m tons	UFIP
All vehicles traffic	Italy	+5.5		+4.1 m	March	n/a	Anas
Heavy vehicle traffic	Italy	-1		+5.9 m	March	n/a	Anas
Gasoline	Portugal	+11 +69	+1.6 +6.4	-4.8 m	February	80.3k tons	ENSE
Diesel	Portugal	+4.6 +32	+1.8 +2.2	-2.1 m	February	387k tons	ENSE
Jet fuel	Portugal	+45 +498	+4.5 +19	-6.9 m	February	109k tons	ENSE

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

In DfT UK daily data the column showing versus 2019 is actually showing the change versus the first week of February 2020, to represent the pre-Covid era.

In BEIS UK daily data, the column showing versus 2019 is actually showing the change versus the average of Jan. 27-March 22, 2020, to represent the pre-Covid era.

After December, Atlantia ceased publishing its toll road data.

City congestion:

Measure	Location	Apr 10	Apr 3	Mar 27	Mar 20	Mar 13	Mar 6	Feb 27	Feb 20	Feb 13	Feb 6	Jan 30	Jan 23
Congestion	Tokyo	83	105	102	106	91	88	92	92	83	85	88	86
Congestion	Taipei	66	82	85	80	84	74	85	83	83	78	48	86
Congestion	Jakarta	68	69	51	87	89	99	93	75	79	83	79	73
Congestion	Mumbai	47	45	48	52	39	49	50	49	51	53	47	56
Congestion	New York	76	88	87	87	86	80	70	77	79	75	73	76
Congestion	Los Angeles	86	94	94	92	96	93	86	92	92	93	93	97
Congestion	London	87	107	119	125	117	117	96	119	121	110	125	130
Congestion	Rome	102	113	119	116	113	107	99	102	100	106	102	109
Congestion	Madrid	27	76	88	73	89	86	74	81	85	85	80	87
Congestion	Paris	92	96	94	106	108	82	78	99	105	99	101	102
Congestion	Berlin	75	109	104	106	85	100	97	101	99	88	93	100
Congestion	Mexico City	35	81	74	72	77	81	75	83	83	72	78	75
Congestion	Sao Paulo	69	80	87	87	99	86	56	71	92	80	66	65

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

NOTE: TomTom changed its methodology for calculating traffic delays with data for Feb. 20 and no longer publishes comparisons with pre-Covid levels. We have therefore switched to using figures calculated by BNEF, which show 7-day moving average congestion indexed to average 2019 levels. See the linked PDF for more details.

NOTE: Public holidays affected traffic levels in many cities on April 10.

Air Travel:

Measure	Location	vs 2022	vs 2021	vs 2020	vs 2019	m/m	w/w	Freq.	Latest Date	Latest Value	Source
		changes shown as %									
All flights	Worldwide	+15	+22	+204	+14	+7.4	+3.8	d	April 11	204,931	Flightradar24
Commercial flights	Worldwide	+30	+44	+283	+3.2	+5.1	+3	d	April 11	114,362	Flightradar24
Seat capacity per week	Worldwide	+23	+67	+219	-4.2		+1.3	w	April 11 week	104.4m seats	OAG
Air traffic (flights)	Europe				-12	+18	+1.5	d	April 11	26,855	Eurocontrol
Airline passenger throughput (7-day avg)	US	+9	+62	+1,979	-0.2	+4	-2	w	April 9	2.3m	TSA

Air passenger traffic per month	China	+38	+81	+420	-20	+8.5	m	February	43.2m CAAC
Heathrow airport passengers	UK	+48	+1,050	+101	-4.6	+20	m	March	6.23m Heathrow

NOTE: Comparisons versus 2019 are a better measure of a return to normal for most nations, rather than y/y comparisons.

FlightRadar24 data shown above, and comparisons thereof, all use 7-day moving averages, except for w/w which uses single day data.

Refineries:

Measure	Location	vs 2022	vs 2021	vs 2019	m/m chg	Latest as of Date	Latest Value	Source
			Changes are in ppt unless noted					
Crude intake	US	+0.4%	+3.5%	-3.2%	+1.2%	April 7	15.59m b/d	EIA
Utilization	US	-0.7	+4.3	+1.8	+1.1	April 7	89.3%	EIA
Utilization	US Gulf	-1	+6.8	+3.1	+4	April 7	93.1%	EIA
Utilization	US East	+6.8	+6.8	+8.1	+10	April 7	87.9%	EIA
Utilization	US Midwest	-2.4	+0.8	-1.1	-7	April 7	85.4%	EIA

NOTE: US refinery data is weekly. Changes are shown in percentages for the row on crude intake, while refinery utilization changes are shown in percentage points. SCI99 data on Chinese refinery run rates was discontinued in late 2021.

Previous versions:

Click here for prior versions of the OIL DEMAND MONITOR or run NI OILDEMON

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This story was produced with the assistance of Bloomberg Automation.

Air Passenger Market Analysis

February 2023

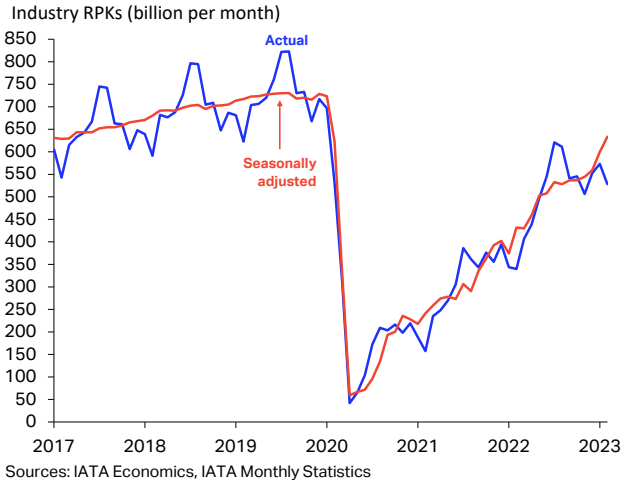
Air travel growth remains strong in February

- Global passenger demand continued to grow in February. Industry-wide revenue passenger-kilometers (RPKs) increased 55.5% year-on-year (YoY) and were 15.1% below their pre-pandemic level. The global traffic recovery has been helped by recent developments in the Asia Pacific region's air travel markets.
- International RPKs grew 89.7% annually, as passenger flows between the Asia Pacific region and the rest of the world continued to catch up with other major international markets. Asia Pacific airlines grew their international RPKs by 378.7% YoY.
- Domestic passenger traffic continued to trend near pre-pandemic levels, growing 25.2% annually and achieving 91.2% of February 2019 RPKs. A few monitored markets have exceeded their pre-pandemic capacity and passenger traffic levels.

Upward trend in air travel demand stays on course

Industry-wide revenue-passenger kilometers (RPKs) grew by 55.5% YoY in February and reached 84.9% of their pre-pandemic traffic levels (**Chart 1**). In seasonally adjusted (SA) terms, total RPKs grew 5.6% month-on-month (MoM). Passenger traffic increased across all regions compared to the previous month, with the Asia Pacific region's carriers recording the fastest growth in RPKs at 15% MoM.

Chart 1 – Global air passengers, revenue-passenger kilometers (RPKs), billions

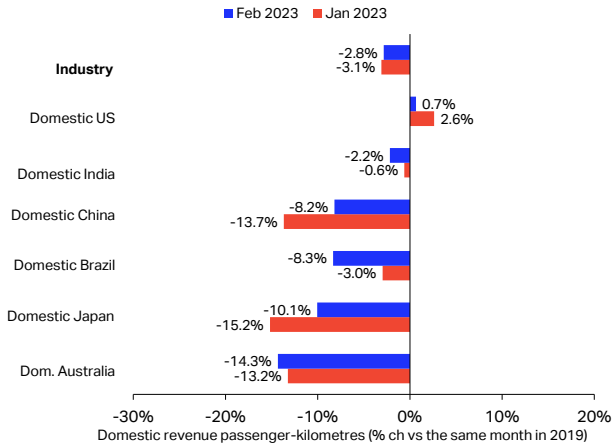


Sources: IATA Economics, IATA Monthly Statistics

Industry-wide passenger load factors continued to trend near pre-pandemic levels at 77.8%, while available seat-kilometers (ASKs) grew 35.7% YoY.

Domestic traffic continues to approach pre-pandemic levels

Chart 2 – Domestic RPK growth by airline region of registration, YoY% change versus 2019



Sources: IATA Economics, IATA Monthly Statistics

Total domestic RPKs grew 25.2% YoY in February and were within 2.8% of pre-pandemic levels (**Chart 2**). The broad improvement in domestic RPKs we have seen over the past two months was driven by travel policy relaxations in China. China's domestic market has seen further recovery compared to January when the country's reopening had an immediate and strong effect on the recovery of domestic air travel (**Chart 3**). Domestic RPKs in China stood 8.2% below February 2019 levels while ASKs surpassed pre-pandemic capacity levels by 6.2%. Similarly in India, passenger traffic was down 2.2% on February 2019 levels and

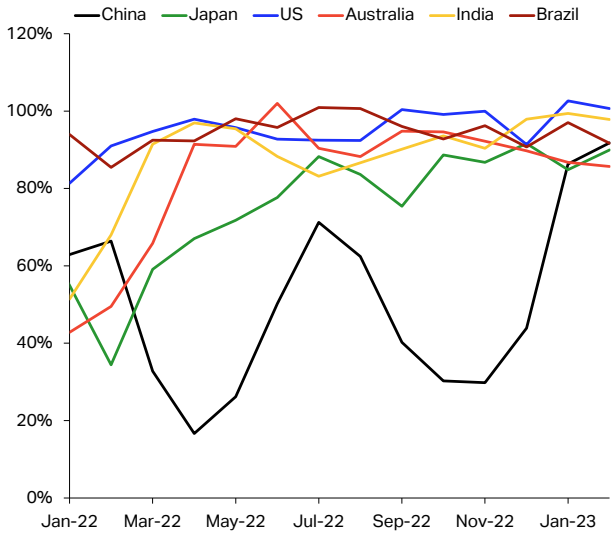
Air passenger market overview - February 2023

	World share [1]	February 2023 (% year-on-year) RPK	ASK	PLF (%-pt)[2]	PLF (level)[3]	February 2023 (% ch vs the same month in 2019) RPK	ASK	PLF (%-pt)[2]	PLF (level)[3]
TOTAL MARKET	***100.0%***	**55.5%**	**35.7%**	**9.9%**	**77.8%**	**-15.1%**	**-12.0%**	**-2.9%**	**77.8%**
International	*57.9%*	89.7%	53.5%	14.8%	77.7%	-22.5%	-20.6%	-1.9%	77.7%
Domestic	*42.1%*	25.2%	17.4%	4.9%	77.9%	-2.8%	3.1%	-4.7%	77.9%

[1]% of industry RPKs in 2022 [2]Change in load factor [3]Load factor level

ASKs were 7.1% above pre-crisis capacity. On the other hand, RPKs and ASKs in Japan and Australia have remained below their respective pre-pandemic levels for February. Overall, monitored markets in the Asia Pacific region have sustained their recovery momentum from early 2022 (**Chart 3**). At the regional level, Asia Pacific airlines have posted higher domestic RPKs compared with the previous month, and stood 8.2% under February 2019 figures (**Chart 4**).

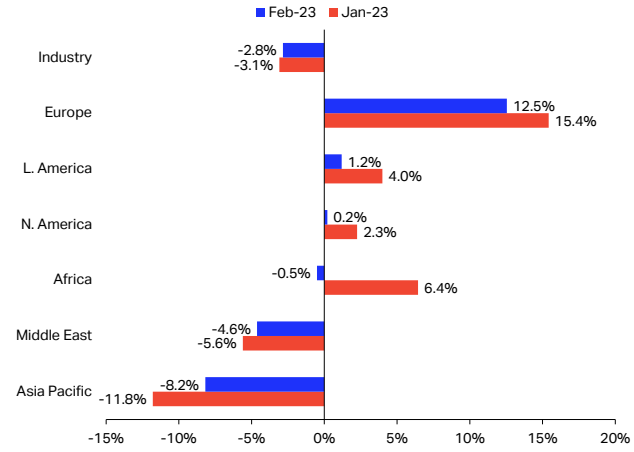
Chart 3 – Domestic markets, RPK share (%) of the same month in 2019



Source: IATA Economics, IATA Monthly Statistics

In the US, domestic RPKs increased 10.6% YoY in February and remained above pre-pandemic levels for the second consecutive month, growing 0.7% over February 2019 RPKs (**Chart 2**). Brazil's domestic passenger traffic grew 7.3% YoY while continuing to trend near pre-pandemic levels. In the Americas region, domestic RPKs for Latin American and North American airlines exceeded pre-crisis traffic again in February, with 1.2% and 0.2% growth, respectively, above 2019 levels (**Chart 4**).

Chart 4 – Domestic RPK growth by airline region of registration, YoY% change versus 2019



Source: IATA Economics, IATA Monthly Statistics

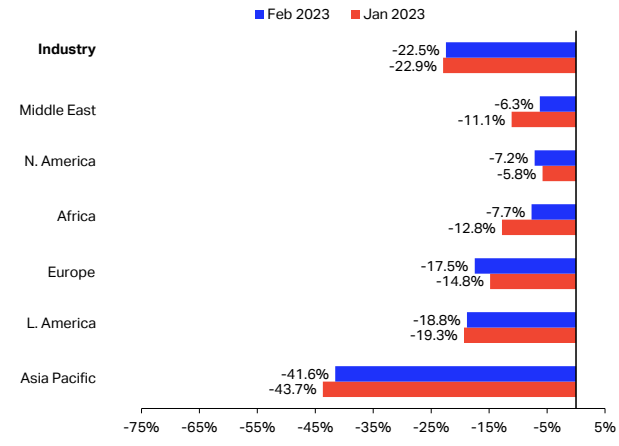
Sustaining the strong recovery in Europe's domestic markets, the region's airlines grew domestic RPK's by 24.4% annually and kept passenger traffic 12.5% above February 2019 levels. Data constraints prevent us from reporting on Russia's domestic market.

Domestic traffic carried by airlines of the Middle East grew 1.0% YoY and continued to increase towards pre-pandemic RPKs at 95.4% of February 2019 levels. In Africa, domestic passenger traffic increased 75.5% YoY and accounted for 99.5% of February 2019 results.

International passenger traffic growth steadied In February

Total international RPKs grew 89.7% YoY in February and recovered to 77.5% of pre-pandemic levels, a modest improvement from the month prior. The annual growth of international seat capacity was more moderate at 53.5%, raising passenger load factors (PLF) to 77.7%. Passenger load factors for international markets increased by 14.8 percentage points (ppts) from the previous year while remaining 1.9 ppts lower than pre-pandemic load factors (**Chart 5**). Passenger load factors are higher than they were in 2019 for most regions except Europe and North America, where the ASKs recovery has outpaced the growth in RPKs. Across all regions, the international passenger load factor was down 1.9% compared to the February 2019 load factor.

Chart 5 – International RPK growth by airline region of registration, YoY% change versus 2019



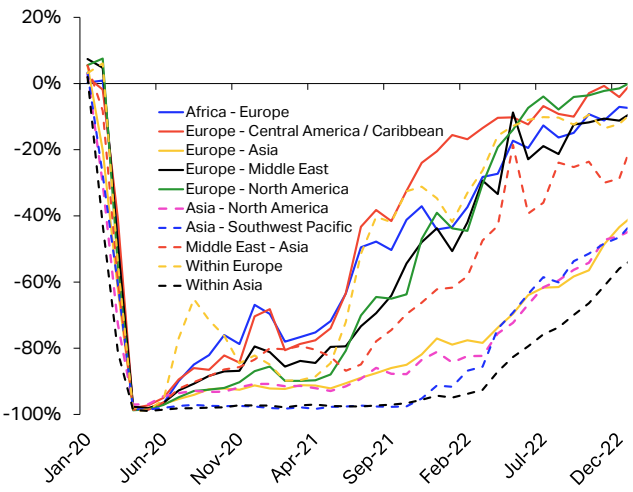
Sources: IATA Economics, IATA Monthly Statistics

The recovery of international flows continues to improve in the Asia Pacific region, with the region's airlines achieving the fastest annual growth rates for passenger traffic. International RPKs grew 378.7% over the previous year and accounted for 58.4% of February 2019 traffic (**Chart 5**). The high growth rates reflect growth from the low traffic levels the region's international markets had seen for an extended period of time. Despite this base effect, the recovery of

international air travel in the region has sustained this year's strong momentum through February.

Within the Asia Pacific region, international traffic in February recovered to 49.4% of 2019 RPKs. Passenger traffic recovery between the region and the rest of the world is underway having seen positive developments in recent months (**Chart 6**).

Chart 6 – International RPKs, YoY% change versus 2019 – Top 10 route areas in 2019, ranked by performed traffic level



Source: IATA Economics, IATA Monthly Statistics

European airlines have transported 47.9% more international traffic compared to the same month last year and 17.5% less traffic than in February 2019. Within Europe, international traffic continued to trend near pre-pandemic levels. Intra-Europe traffic has reached 90.3% of February 2019 RPKs. These positive developments have also persisted on routes between Europe and the Americas as well as between Europe and the Middle East (**Chart 6**).

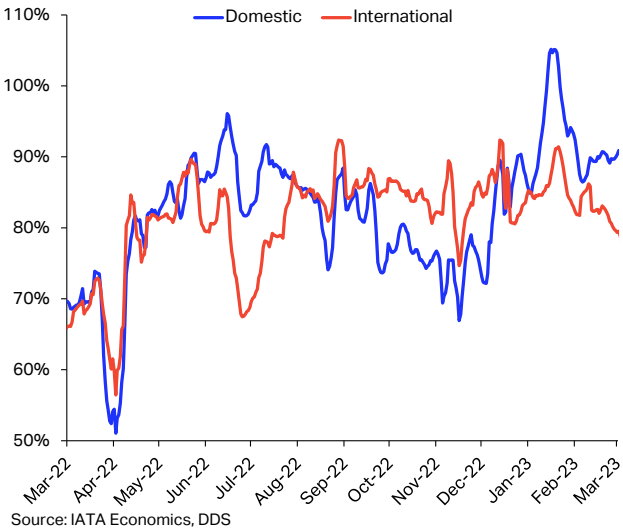
Airlines from North America and Latin America have achieved 67.4% and 44.1% annual growth in international RPKs, respectively. The Middle East – North America and North America – Central America route areas continued to outperform 2019 RPKs, while the remaining main route areas between the Americas and the world have maintained their traffic growth in February (**Chart 6**).

Middle Eastern airlines grew their international RPKs by 75.0% YoY in February, reaching 93.7% of pre-pandemic levels. African carriers attained 90.7% growth in international passenger traffic YoY and recovered 92.3% of their February 2019 RPKs.

Domestic and International ticket sales diverged in February but were resilient overall

The Lunar New Year celebrations led to a peak in ticket sales, for both international and domestic travel. The timing of the seasonal event coincided with the reopening of China's borders, which boosted demand for air travel. Over the following weeks domestic and international tickets sales followed slightly diverging trends (**Chart 7**). Overall, no major changes in air travel demand have been observed since our last analysis of ticket sales, which continue to support a positive outlook.

Chart 7 – Passenger ticket sales by purchase date, % share of the same day in 2019, 7-day average.



Source: IATA Economics, DDS

Air passenger market in detail - February 2023

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TOTAL MARKET	***100.0%***	**55.5%**	**35.7%**	**9.9%**	**77.8%**	**-15.1%**	**-12.0%**	**-2.9%**	**77.8%**
Africa	*2.1%*	87.9%	62.3%	10.3%	75.6%	-6.6%	-12.6%	4.9%	75.6%
Asia Pacific	*22.1%*	105.4%	61.2%	17.1%	79.2%	-26.3%	-22.9%	-3.6%	79.2%
Europe	*30.7%*	44.1%	27.9%	8.5%	75.2%	-14.3%	-6.9%	-6.5%	75.2%
Latin America	*6.4%*	23.7%	21.1%	1.7%	81.1%	-9.3%	-8.8%	-0.4%	81.1%
Middle East	*9.8%*	70.6%	37.6%	15.4%	79.8%	-6.2%	-15.0%	7.5%	79.8%
North America	*28.9%*	25.1%	19.0%	3.8%	77.1%	-2.3%	2.2%	-3.5%	77.1%
International	***57.9%***	**89.7%**	**53.5%**	**14.8%**	**77.7%**	**-22.5%**	**-20.6%**	**-1.9%**	**77.7%**
Africa	*1.8%*	90.7%	61.7%	11.4%	75.0%	-7.7%	-14.2%	5.3%	75.0%
Asia Pacific	*8.9%*	378.7%	176.4%	34.9%	82.5%	-41.6%	-42.6%	1.4%	82.5%
Europe	*26.3%*	47.9%	29.7%	9.1%	73.7%	-17.5%	-7.8%	-8.7%	73.7%
Latin America	*2.9%*	44.1%	34.0%	5.8%	82.7%	-18.8%	-20.2%	1.4%	82.7%
Middle East	*9.4%*	75.0%	40.5%	15.8%	80.0%	-6.3%	-15.2%	7.6%	80.0%
North America	*8.7%*	67.4%	39.5%	12.8%	76.6%	-7.2%	-4.6%	-2.1%	76.6%
Domestic	***42.1%***	**25.2%**	**17.4%**	**4.9%**	**77.9%**	**-2.8%**	**3.1%**	**-4.7%**	**77.9%**
Dom. Australia[4]	*1.0%*	73.0%	38.9%	15.1%	76.7%	-14.3%	-13.0%	-1.2%	76.7%
Domestic Brazil[4]	*1.5%*	7.3%	8.3%	-0.8%	78.9%	-8.3%	-4.2%	-3.5%	78.9%
Dom. China P.R.[4]	*6.4%*	38.3%	22.0%	8.9%	75.9%	-8.2%	6.2%	-11.9%	75.9%
Domestic India[4]	*2.0%*	43.9%	50.4%	-3.7%	81.6%	-2.2%	7.1%	-7.7%	81.6%
Domestic Japan[4]	*1.2%*	161.4%	33.8%	36.8%	75.5%	-10.1%	-14.5%	3.7%	75.5%
Domestic US[4]	*19.3%*	10.6%	10.7%	0.0%	76.9%	0.7%	6.6%	-4.6%	76.9%

[1]% of industry RPKs in 2022 [2]Change in load factor [3]Load factor level

4 Note: the six domestic passenger markets for which broken-down data are available account for approximately 31.4% of global total RPKs and 74.6% of total domestic RPKs

Note: The total industry and regional growth rates are based on a constant sample of airlines combining reported data and estimates for missing observations. Airline traffic is allocated according to the region in which the carrier is registrated; it should not be considered as regional traffic.

IATA S&E Economics
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04 April 2023

Get the data

Access data related to this briefing through IATA's Monthly Statistics publication:
www.iata.org/monthly-traffic-statistics

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Air Cargo Market Analysis

February 2023

Air cargo decline slows down in February

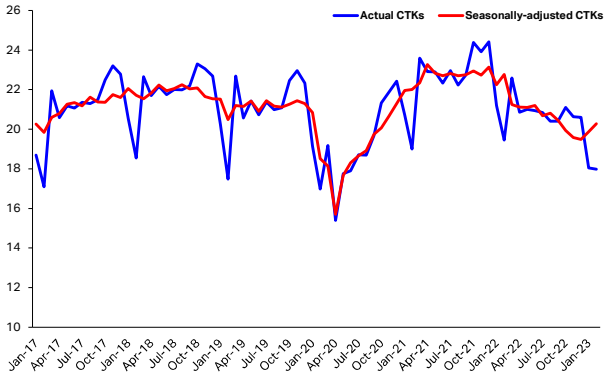
- Air cargo demand displayed resilience in February. Compared with a year ago, cargo tonne-kilometers (CTKs) were 7.5% lower, a significant improvement from the 14.9% annual decline in January.
- Global air cargo capacity, measured by available cargo tonne-kilometers (ACTKs), grew 8.6% year-on-year (YoY). This growth was driven by the return of passenger aircraft belly-hold capacity in international markets, which increased 57.0% YoY and recovered 75.1% of pre-pandemic capacity in February.
- International air cargo traffic saw varied performance across regions, with Africa and North America maintaining their lead in the recovery of cargo traffic. China's reopening played a significant role in improving the performance of Asia-related route areas.

Air cargo traffic decline slowed in February

The annual decline in industry-wide cargo tonne-kilometers (CTKs) slowed in February, falling 7.5% from last year's levels. At half the rate of the annual decline in the previous two months, this marks a substantial improvement in performance **(Chart 1)**. Air cargo traffic surpassed pre-pandemic CTKs for the first time in eight months, growing 2.9% over February 2019 levels.

February is typically a slow month for air cargo demand. Adjusting for the regular monthly volatility in the historical data, seasonally adjusted (SA) CTKs indicate that air cargo volumes continued their 2.0% month-over-month (MoM) increase from January, reversing declines that persisted in the four months ending 2022.

Chart 1 Global Industry CTKs (billions per month)

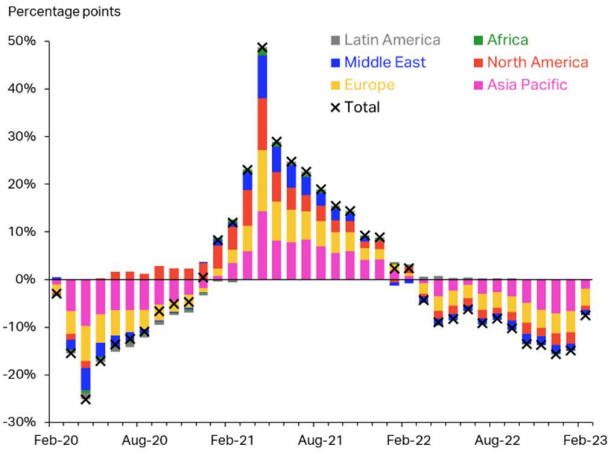


Sources: IATA Economics, IATA Monthly Statistics

International CTKs contracted 8.3% YoY in February, slightly faster than the industry-wide cargo traffic decline.

The weakening cargo demand over the recent period has been broad-based, with declines across all regions (**Chart 2**). The past year's contractions in the global industry CTKs reflect a decline from the strong performance of air cargo that began early in 2021 and ended in February 2022.

Chart 2 Regional contributions to YoY CTK growth



Sources: IATA Economics, IATA Monthly Statistics

Weakness in global trade stabilizes and key drivers support cargo demand

Demand for air cargo faces increasing headwinds from the current economic environment. Although the annual growth in global inflation is slowing, the general price

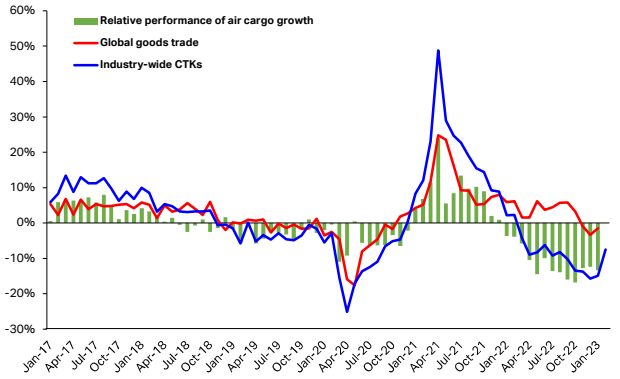
Air cargo market overview - February 2023

	World share [1]	February 2023 (% year-on-year) CTK	ACTK	CLF (%-pt)[2]	CLF (level)[3]	February 2023 (% ch vs the same month in 2019) CTK	ACTK	CLF (%-pt)[2]	CLF (level)[3]
TOTAL MARKET	***100.0%***	**-7.5%**	**8.6%**	**-7.9%**	**45.6%**	**2.9%**	**1.3%**	**-2.2%**	**45.6%**
International	*86.8%*	-8.3%	7.8%	-9.3%	52.8%	2.4%	-1.8%	-0.8%	52.8%

[1]% of industry CTKs in 2022 [2]Change in load factor [3]Load factor level

level has increased and will continue to diminish the purchasing power of consumers. This impacts overall consumption and global trade. As shown in **Chart 3**, global goods trade sustained its annual decline for a third month in a row in January, albeit at a slower rate than the previous month. The decline in air cargo traffic also steadied in January, attenuating the relative performance of air cargo growth. Further improvement in the performance of CTKs in February suggests strengthening in global trade and potential progress in the relative importance of air cargo in global trade.

Chart 3 Growth in global goods trade and CTKs (YoY)

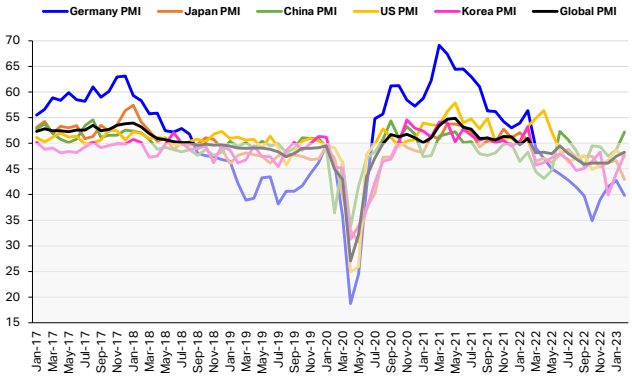


Sources: IATA Statistics, Netherlands CPB

Given the strong ties between manufacturing activity and air cargo demand, we closely monitor the new export orders component of the global manufacturing Purchasing Managers Index (PMI).

In February, the PMIs for new export orders continued their improving trends across the countries under consideration. A slight improvement was observed in the PMI values for most countries, with China surpassing the key 50-mark, which signals an expansion in its export market. Korea also saw an improvement to 47.8, while Germany, Japan, and the US continued to experience more contractions in their export markets (**Chart 4**).

Chart 4 Global new export orders, component of the manufacturing PMI (50 = no change, SA)

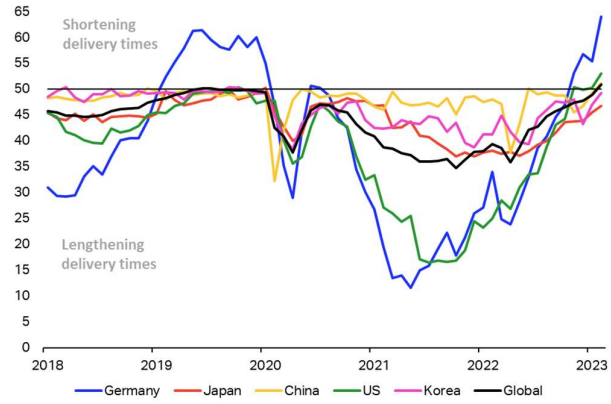


Sources: Markit

These trends suggest that while some countries are experiencing growth in their export markets, others are still struggling to recover. The global PMI increased slightly from 47.5 in January to 48.3 in February, remaining below the 50-mark and indicating a slower but continuing contraction in global export markets.

New export orders continued to fall by 5.3% YoY in February, slower than the annual declines that were in the 9%-range for most of last year when global supply chains were strained. In addition, supplier delivery times have shortened, particularly in the US and Germany but also in other tracked countries, pushing the global supplier delivery times PMI slightly above the critical 50-mark (**Chart 5**). The shortened supplier delivery times could have a negative impact on air cargo demand, as shippers may seek alternative transportation modes that are cheaper and slower to transport goods.

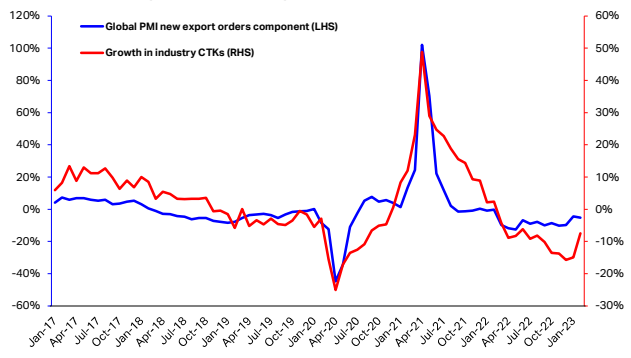
Chart 5 Supplier delivery times PMIs (50 = no change)



Source: Markit

The historical contractions and expansions in the PMI for global new export orders exhibit consistent trends with industry wide CTKs (**Chart 6**). The data suggest that the global trade environment and the air cargo industry remain interlinked, with both sectors continuing to face challenges in the current economic environment. Although we see the beginning of an improvement trend early in 2023, it is important to monitor these trends closely to determine if a more sustained recovery is underway.

Chart 6 CTK growth and global new export orders (YoY)

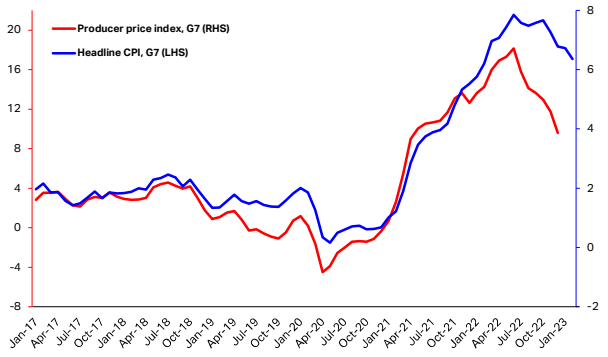


Sources: IATA Economics, IATA Monthly Statistics, Markit

Inflation slowed further in February

The global oil price decline has led to a decrease in year-on-year inflation rates for the G7 countries, as evidenced by the headline Consumer Price Index (CPI), which fell to 6.4% in February from its peak of 7.8% in June 2022. Producer prices, measured by the Producer Price Index (PPI), have also followed suit, retreating by 8.6 percentage points (ppts) from their June 2022 peak to reach 9.6% in December (**Chart 7**).

Chart 7 G7 headline CPI and PPI inflation (% ch YoY)



Source: Refinitiv Eikon

In contrast, core inflation rates, which exclude volatile components such as energy and food prices, have remained relatively stable, hovering around the 5% mark for the past three months. This persistence suggests a continued high level of prices across various sectors.

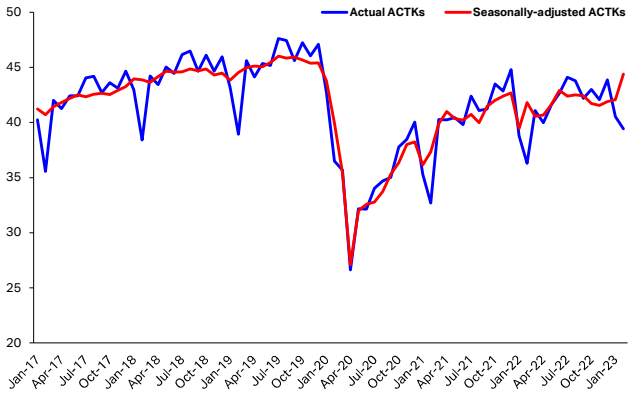
Global crude oil prices have been trending downward since the peak reached during the onset of the war in Ukraine, averaging USD 83 per barrel (bbl) in February, lower than the January figures. Following refinery capacity adjustments and the typical reduction in travel demand during the winter season, jet fuel demand has cooled down, and jet fuel crack prices have eased from USD 52 per bbl in January to USD 33 per bbl in February, with the downward trend persisting. As a result, jet fuel prices averaged USD 116 per bbl in February.

Cargo capacity continues to outpace demand

Gathering more pace in February, global air cargo capacity – measured by available cargo tonne-kilometers (ACTKs) – grew 8.6% YoY (**Chart 8**).

As passenger flights return on international markets that are reopening in various regions, the belly-hold cargo capacity of passenger carriers continues to drive the increase in industry ACTKs. International ACTKs for belly-hold cargo grew 57.0% YoY in February, reaching 75.1% of their 2019 capacity. Dedicated cargo international capacity declined by 9.3% YoY, consistent with the weakening demand for air cargo. The increased capacity from the passenger side of the business continued to drive industry cargo load factors down to 45.6% in February, 7.9 ppts below the previous year's load factors.

Chart 8 Global ACTKs (billions per month)

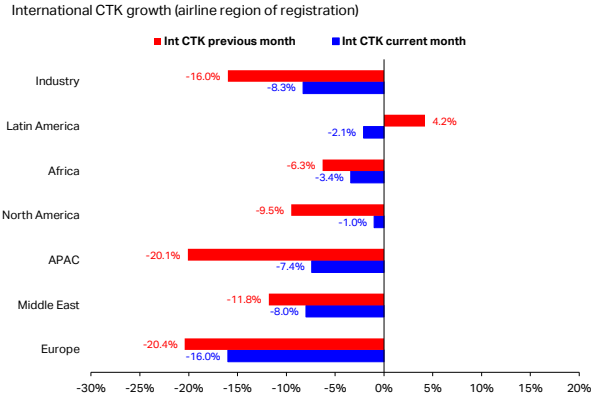


Sources: IATA Economics, IATA Monthly Statistics

International CTKs declined across all regions

Consistent with trends in the global air cargo market, international CTKs contracted by 8.3% YoY. The decline was broad-based across all regions including Latin America, where carriers had registered positive CTK growth in January (**Chart 9**).

Chart 9 YoY growth in international CTKs by region



Sources: IATA Economics, IATA Monthly Statistics

Despite the annual decline in February, compared to January, several regions have shown signs of resilience. Africa, Asia Pacific, Europe, and the Middle East have all experienced a substantial improvement in their YoY growth rates from January to February 2023. This indicates that these regions are overcoming the seasonal slump and are well-positioned in the global air cargo market for future growth.

The improvement in the Asia Pacific region's YoY growth rate can be partially attributed to China's reopening, as restrictions were lifted and economic activities resumed, bolstering the air cargo industry in the broader region.

The annual growth in international air cargo traffic for Latin America has been on a downward trend since its peak in April 2022, and has witnessed its first contraction

since March 2021. On a brighter note, despite the downturn, the region's overall performance remains relatively stable.

North America stands out in the international air cargo landscape, with a significant increase in its YoY growth rate from January to February 2023. The region has maintained a strong presence in the industry, even during the seasonally slow month of February. These improvements have placed its market share in international air cargo traffic above pre-pandemic levels (21.7% in Feb 2023 versus 18.2% in Feb 2019).

Although international air cargo performance is weak, some regions are bucking the trend and keeping their cargo traffic levels above pre-pandemic levels. Africa and North America have maintained their lead in the recovery of cargo traffic and have grown their CTKs compared with the levels in 2019, amidst a challenging economic environment. In contrast, cargo volumes for Asia Pacific, Europe and Middle East carriers have dipped below their pre-crisis levels in 2022 and continue to lag behind the rest of industry.

Asia trade lanes improve amidst mixed results for others

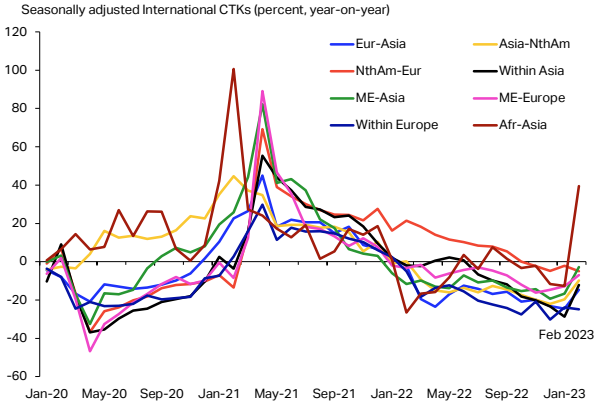
The year-on-year growth of international air cargo by different route areas peaked in mid-2021, before descending gradually across various trade landes through the end of 2022.

The latest update in February 2023 saw a shift in several regions. Europe to Asia, Asia to North America, and Within Asia route areas experienced a significant improvement in their growth rates compared to previous months. Although they still remain in the negative territory, a significant factor contributing to the improvement in Asia-related route areas is China's reopening, where the lifting of restrictions has stimulated economic activity and trade in the region (**Chart 10)**.

Most notably, the Africa to Asia route area experienced significant cargo demand growth in February. Jumping to 39.5% YoY, this was highest growth rate for this particular route since January 2020.

It is important to note that despite some recent improvements, many routes still show negative YoY growth rates, suggesting that there is still room for further recovery in the international air cargo market.

Chart 10 Seasonally adjusted YoY growth of international CTKs by route area



Source: IATA Economics, IATA Monthly Statistics by Route

Air cargo market in detail - February 2023

	World share[1]	February 2023 (% year-on-year) CTK	ACTK	CLF (%-pt)[2]	CLF (level)[3]	February 2023 (% ch vs the same month in 2019) CTK	ACTK	CLF (%-pt)[2]	CLF (level)[3]
TOTAL MARKET	***100.0%***	**-7.5%**	**8.6%**	**-7.9%**	**45.6%**	**2.9%**	**1.3%**	**0.7%**	**45.6%**
Africa	*2.0%*	-3.4%	4.7%	-3.9%	46.8%	31.4%	0.1%	11.2%	46.8%
Asia Pacific	*32.4%*	-6.0%	19.9%	-12.8%	46.4%	3.1%	1.6%	0.7%	46.4%
Europe	*21.8%*	-15.3%	-1.5%	-9.4%	57.4%	-9.6%	-16.2%	4.2%	57.4%
Latin America	*2.7%*	-2.7%	27.6%	-11.2%	36.1%	-3.4%	-12.5%	3.4%	36.1%
Middle East	*13.0%*	-8.1%	9.3%	-8.4%	44.5%	-5.8%	-0.8%	-2.4%	44.5%
North America	*28.1%*	-3.2%	2.8%	-2.5%	40.0%	18.8%	17.0%	0.6%	40.0%
International	***86.8%***	**-8.3%**	**7.8%**	**-9.3%**	**52.8%**	**2.4%**	**-1.8%**	**2.2%**	**52.8%**
Africa	*2.0%*	-3.4%	3.7%	-3.6%	48.0%	33.1%	2.1%	11.2%	48.0%
Asia Pacific	*29.7%*	-7.4%	13.0%	-12.5%	56.7%	4.8%	-1.0%	3.1%	56.7%
Europe	*21.5%*	-16.0%	-2.4%	-9.6%	59.3%	-10.3%	-17.0%	4.5%	59.3%
Latin America	*2.3%*	-2.1%	38.3%	-17.1%	41.4%	-2.4%	-5.7%	1.4%	41.4%
Middle East	*13.0%*	-8.0%	9.5%	-8.5%	44.8%	-5.7%	-0.7%	-2.4%	44.8%
North America	*18.4%*	-1.0%	7.1%	-4.1%	49.8%	22.2%	16.2%	2.4%	49.8%

[1]% of industry CTKs in 2022 [2]Change in load factor [3]Load factor level

Note: the total industry and regional grow th rates are based on a constant sample of airlines combining reported data and estimates for missing observations. Airline traffic is allocated according to the region in w hich the carrier is registered; it should not be considered as regional traffic. Historical statistics are subject to revision.

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CSU researchers predicting slightly below-average 2023 Atlantic hurricane season

Note to reporters: The full report is available at tropical.colostate.edu. CSU will be releasing the forecast live from the National Tropical Weather Conference at 10am EDT. There will be a live stream of the release here.

Colorado State University hurricane researchers are predicting a slightly below-average Atlantic hurricane season in 2023, citing the likely development of El Niño as a primary factor. Eastern and central tropical and subtropical Atlantic sea surface temperatures are much warmer than normal, while Caribbean sea surface temperatures are near their long-term averages.

The tropical Pacific currently has neutral ENSO conditions, that is, water temperatures are near normal in the eastern and central tropical Pacific. Current large-scale conditions and forecasts indicate that a transition to El Niño is relatively likely in the next several months. However, there is considerable uncertainty as to how strong El Niño would be if it does develop. El Niño tends to increase upper-level westerly winds across the Caribbean into the tropical Atlantic. The increased upper-level winds result in vertical wind shear which can tear apart hurricanes as they try to form.

When waters in the eastern and central tropical and subtropical Atlantic are warmer than normal, this tends to force a weaker subtropical high and associated weaker winds blowing across the tropical Atlantic. These conditions lead to warmer waters in the tropical Atlantic for the peak of the Atlantic hurricane season. The anomalously warm eastern and central tropical and subtropical Atlantic favor an above-normal season.

Given the conflicting signals between a potentially robust El Niño and an anomalously warm tropical and subtropical Atlantic, the team stresses that there is more uncertainty than normal with this outlook.

13 named storms

The CSU Tropical Meteorology Project team is predicting 13 named storms during the Atlantic hurricane season, which runs from June 1 to November 30. Of those, researchers expect six to become hurricanes and two to reach major hurricane strength (Saffir/Simpson category 3-4-5) with sustained winds of 111 miles per hour or greater.

The team bases its forecasts on a statistical model, as well as four models that use a combination of statistical information and model output from the European Centre for Medium-Range Weather Forecasts, the UK Met Office, the Japan Meteorological Agency, and the Centro Euro-Mediterraneo sui Cambiamenti Climatici. These models use 25–40 years of historical hurricane seasons and evaluate conditions including: Atlantic sea surface temperatures, sea level pressures, vertical wind shear levels (the change in wind direction and speed with height in the atmosphere), El Niño (warming of waters in the central and eastern tropical Pacific), and other factors.

So far, the 2023 hurricane season is exhibiting characteristics similar to 1969, 2002, 2004, 2006, 2009, 2012, 2014 and 2015. “Our analog seasons exhibited a wide range of outcomes, from below-normal seasons to hyperactive seasons,” said Phil Klotzbach, research scientist in the Department of Atmospheric Science and lead author of the report. “This highlights the large uncertainty that exists with this outlook.”

The team predicts that 2023 hurricane activity will be about 80 percent of the average season from 1991–2020. By comparison, 2022’s hurricane activity was about 75 percent of the average season. The 2022 hurricane season will be most remembered for its two major hurricanes: Fiona and Ian. Fiona brought devastating flooding to Puerto Rico before causing significant surge, wind and rain impacts in the Atlantic Provinces of Canada as a post-tropical cyclone. Ian made landfall as a Category 4 hurricane in southwest Florida, causing over 150 fatalities and $113 billion dollars in damage.

In addition to the various hurricane metrics that CSU has forecast for many years, the forecast team is introducing a new metric this year. This metric is Accumulated Cyclone Energy (ACE) occurring west of 60°W. ACE is an integrated metric accounting for storm frequency, intensity and duration. ACE generated west of 60°W correlates better with landfalling storms in the Atlantic basin than basinwide ACE. Generally, a slightly lower percentage of basinwide ACE occurs west of 60°W in El Niño years, and since the team favors El Niño as the most likely outcome in 2023, the percentage of basinwide ACE occurring west of 60°W is slightly lower this year.

The CSU team will issue forecast updates on June 1, July 6 and August 3.

This is the 40th year that the CSU hurricane research team has issued an Atlantic basin seasonal hurricane forecast. The Tropical Meteorology Project team also includes Michael Bell, professor in the CSU Department of Atmospheric Science and Alex DesRosiers, a PhD candidate in the same department. Bill Gray, who originated the seasonal forecasts, launched the report in 1984 and continued to author them until his death in 2016.

The CSU forecast is intended to provide a best estimate of activity in the Atlantic during the upcoming season – not an exact measure.

As always, the researchers caution coastal residents to take proper precautions.

“It takes only one storm near you to make this an active season for you,” Bell said.

Landfalling probability included in report

The report also includes the probability of major hurricanes making landfall:

- 44 percent for the entire U.S. coastline (average from 1880-2020 is 43 percent)

- 22 percent for the U.S. East Coast including the Florida peninsula (average from 1880-2020 is 21 percent)

- 28 percent for the Gulf Coast from the Florida panhandle westward to Brownsville (average from 1880-2020 is 27 percent)

- 49 percent for the Caribbean (average from 1880-2020 is 47 percent)

The forecast team also provides probabilities of named storms, hurricanes and major hurricanes tracking within 50 miles of each county or parish along the Gulf and US East Coast, as well as hurricane-prone coastal states, Mexican states, Canadian provinces and countries in Central America and the Caribbean. These probabilities for regions and countries are adjusted based on the current seasonal forecast.

Funding for this year's report has been provided by Ironshore Insurance, the Insurance Information Institute, Weatherboy, Insurance Auto Auctions, First Onsite and a grant from the G. Unger Vetlesen Foundation.

Extended range Atlantic Basin hurricane forecast for 2023

Released April 13, 2023
Tropical Cyclone Parameters Extended Range
(1991–2020 Climatological Average Forecast for 2023
in parentheses)
Named Storms (14.4)* 13
Named Storm Days (69.4) 55
Hurricanes (7.2) 6
Hurricane Days (27.0) 25
Major Hurricanes (3.2) 2
Major Hurricane Days (7.4) 5
Accumulated Cyclone Energy (123) 100
Accumulated Cyclone Energy West of 60°W (73) 55
Net Tropical Cyclone Activity (135%) 105
* Numbers in ( ) represent averages based on 1991–2020 data.

Independent Statistics and Analysis
U.S. Energy Information Administration

Country Analysis Brief: South Korea

Last Updated: April 2023
Next Update: February 2025

Overview

Table 1. South Korea energy indicators, 2021

	Coal	Natural gas	Petroleum and other liquids	Nuclear	Renewables
Primary energy production (quads)	<0.1	<0.1	0.0	1.4	0.4
Primary energy production (%)	1%	<1%	11%	69%	20%
Primary energy consumption (quads)	3.2	2.4	5.3	1.4	0.4
Primary energy consumption (%)	25%	19%	41%	11%	3%
Generation (billion kWh)	209.3	174.4	6.9	150.5	47.4
Generation (%)	**36%**	**30%**	**1%**	**26%**	**8%**

Data source: U.S. Energy Information Administration, *International Energy Statistics*, and *BP Statical Review of World Energy 2022*
Note: Percentages may not equal 100% due to independent rounding. Quads=quadrillion British thermal units, kWh=kilowatthours.

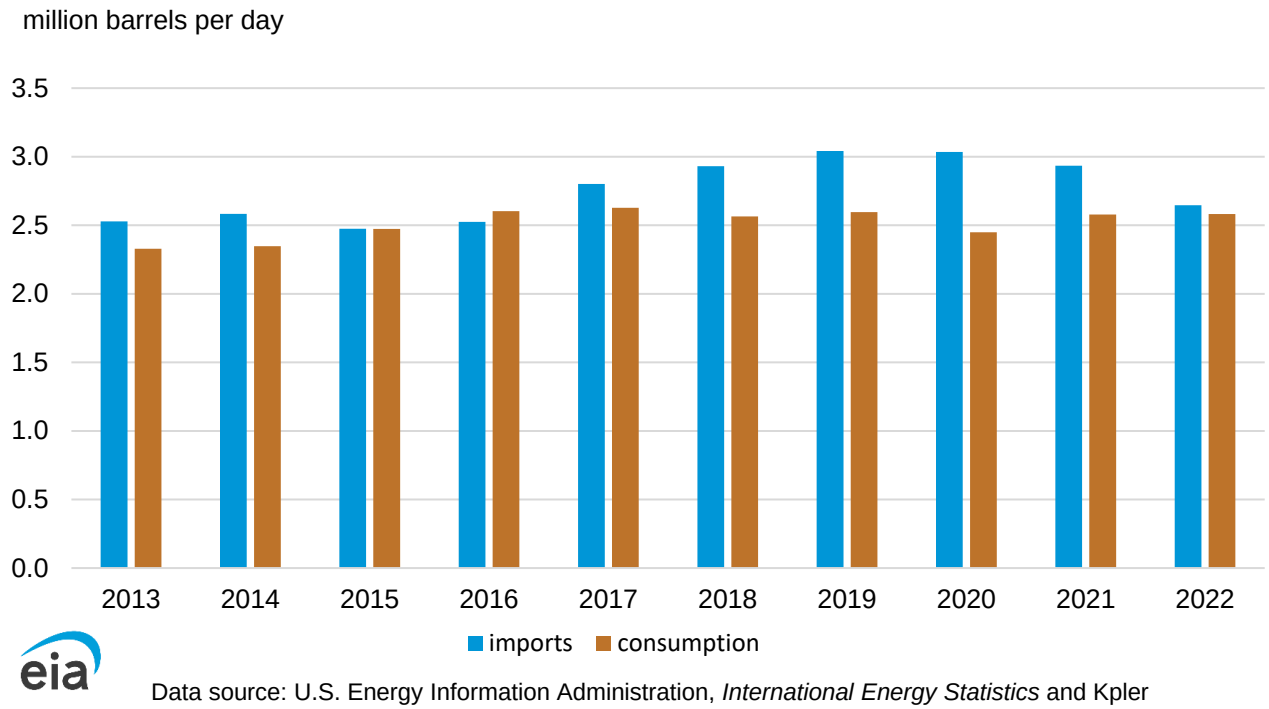
- South Korea relies on imports to meet almost 98% of its fossil fuel consumption as a result of insufficient domestic resources. Because it has no international oil or natural gas pipelines, South Korea relies on tanker shipments of liquefied natural gas (LNG) and crude oil to meet demand.[1]
- South Korea released its Green New Deal in July 2020 as part of a larger economic initiative. The initiative aims to help South Korea achieve its goals of lowering greenhouse gas (GHG) emissions and increasing renewables generation capacity. The plan also calls for:
    - Increased energy efficiency in electricity infrastructure
    - Increased use of renewable energy
    - Preparing the economy for a shift to a low carbon and decentralized energy supply
    - Investing in innovations within the green industry space[2]

- South Korea was the world's seventh-largest energy consumer in 2021.[3] The country's economic growth is fueled by exports, most notably exports of automobiles, ships, semiconductors, and petrochemicals, mainly to regional trading partners in Asia. Real gross domestic product (GDP) grew 4.1% in 2021 as a result of record demand ($645 billion) for the country's exports. [4]
- Although renewables accounted for the smallest portion (3%) of South Korea's primary energy consumption in 2021, renewables were the only energy source with a steadily increasing share since 2015. At that time, renewables accounted for less than 1% of total energy consumption.[5]
- The Ministry for Trade, Industry and Energy (MOTIE) released its *10th Basic Plan for Long-Term Electricity Supply and Demand* at the end of 2022. The plan decreases the previous goal of renewables accounting for 30% of electricity generation to 22% in 2030. The plan also calls for nuclear power's share of generation to reach 32% in 2030 and 35% in 2036. This rise is a significant change from the previous administration's plan that was set to phase out nuclear.[6]
- MOTIE created a roadmap to accelerate its hydrogen economy. The government intends to increase hydrogen demand in the transportation, electric power, and industrial sectors. Outlined goals would produce 30,000 commercial hydrogen vehicles and 70 hydrogen refueling stations by 2030 and would have hydrogen account for 7% of power generation by 2036.[7]

Petroleum and Other Liquids

- South Korea has a small amount of domestic oil reserves; therefore, the country relies almost entirely on crude oil imports to meet demand (Figure 1). Virtually all of South Korea's total petroleum and other liquids production of 108,000 barrels per day (b/d) in 2021 was from refinery processing gains, nonconventional liquids, and biofuels production.[8]

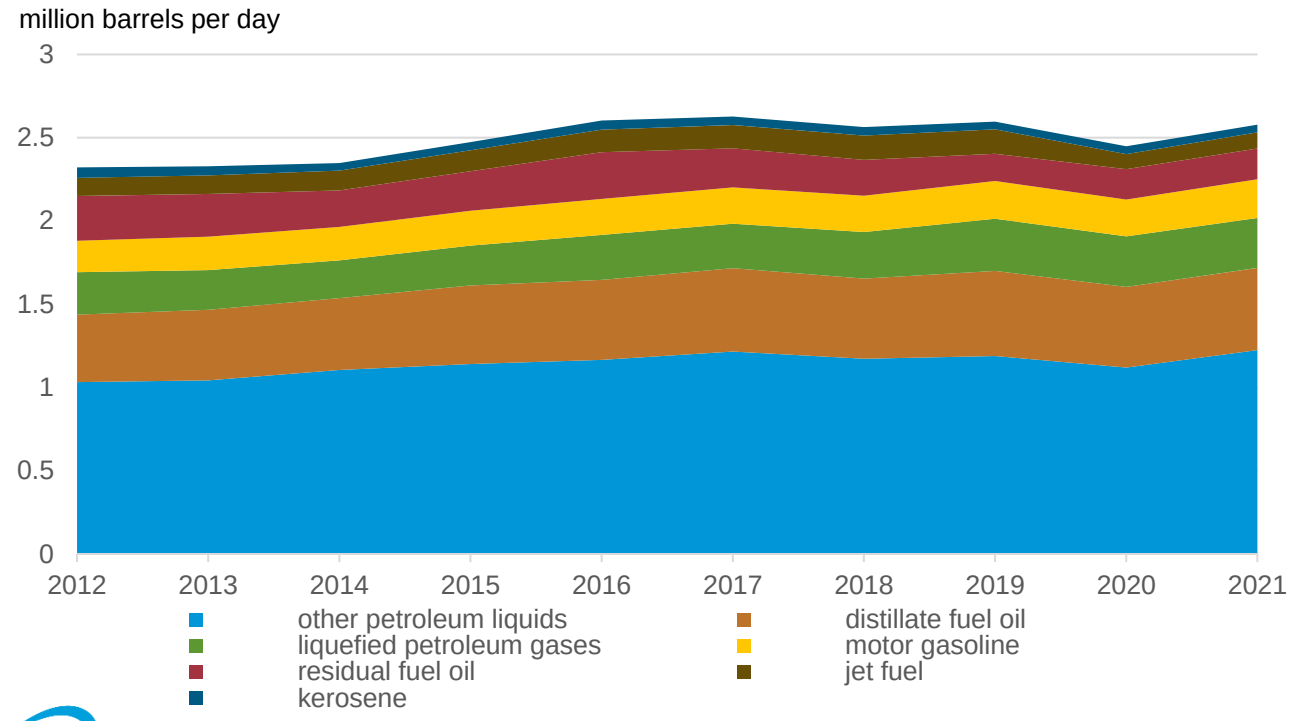
Figure 1. South Korea's petroleum and other liquids imports and consumption, 2013—2022



Data source: U.S. Energy Information Administration, *International Energy Statistics* and Kpler

- South Korea was the eighth-largest consumer of petroleum and other liquids in the world in 2021. Consumption grew in 2021, mainly driven by higher use for transportation, new petrochemical facilities that required more liquefied petroleum gas (LPG) and naphtha, and higher use by domestic industry.[9]
- South Korea had 3.3 million b/d of crude oil refining capacity in the beginning of 2022 and had the fifth-largest refining capacity in the world (Table 2). There are no plans to increase refining capacity in the next few years.[10]

Figure 2. South Korea's refined petroleum products consumption, 2012 — 2021



Data source: U.S. Energy Information Administration, *International Energy Statistics*

Table 2. Operating refineries in South Korea

Name of company	Refinery location	Crude oil refining capacity (thousand barrels per day)
Hanwha Total	Daesan	167
Hyundai Oilbank	Daesan	484
Hyundai Lotte	Daesan (Seosan)	158
SK Energy	Inchean	93
SK Energy	Inchean	256
SK Energy	Ulsan	781
S-Oil	Ulsan	83
S-Oil	Ulsan	539
GS Caltex	Yeosu	744
Total		**3,305**

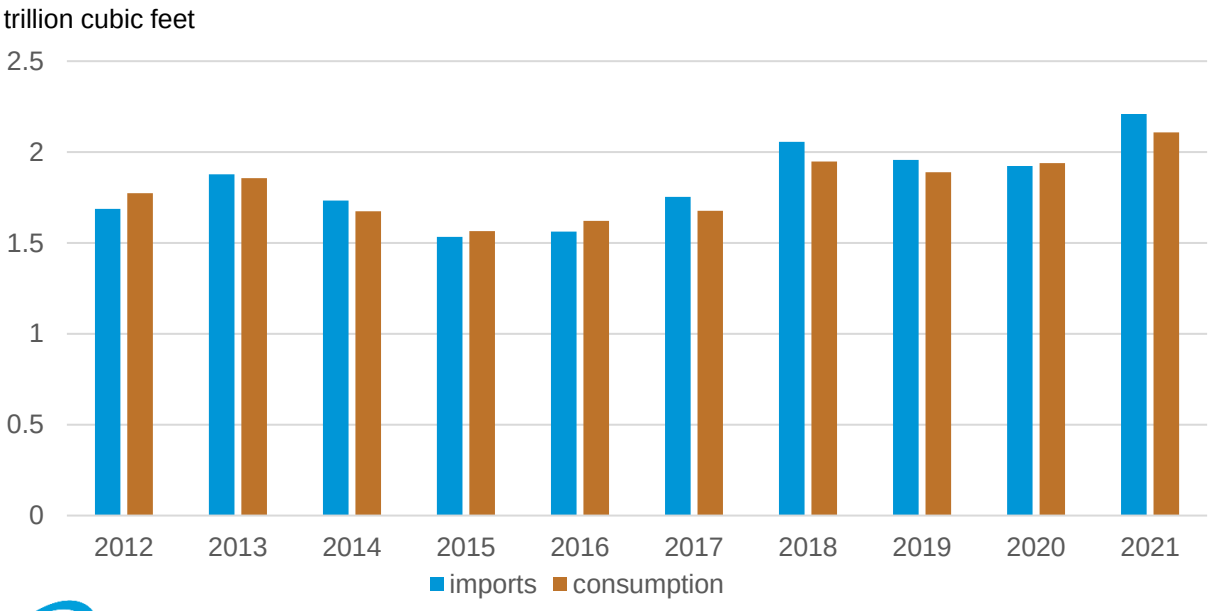
Data source: FACTS Global Energy, Asia Pacific Databook 2: Refinery Configuration, Fall 2022

- The Korea National Oil Corporation (KNOC) produced over 100,000 b/d of oil and 77 billion cubic feet (Bcf) of natural gas in its overseas operations.
- KNOC participates in several overseas exploration and production projects. Its largest producing assets are in North America. The Eagle Ford project in the United States produced almost 23,000 barrels of oil equivalent per day (BOE/d) in 2022. KNOC purchased Canada Harvest Operations Corporation and, at the end of 2021, produced 22,000 BOE/d from its Canadian assets, which they estimate to have 381 million BOE in total proved and probable reserves. However, KNOC's Al Dahfra project in the United Arab Emirates will surpass these production levels if it reaches the 30,000 b/d production number the corporation expects. The exact date when it will reach peak production is unknown.[11]
- KNOC operates nine state-run strategic storage facilities with 146 million barrels of capacity. As of 2021, KNOC held 98 million barrels of strategic reserves, and about 51 million barrels of inventories are stored as international stockpiles under agreements between South Korea and other governments.[12]

Natural Gas

- South Korea was the third-largest importer of LNG in the world, after China and Japan, in 2021.[13] South Korea's annual production of domestic natural gas declined since reaching a high of 12 Bcf in 2017 to just under 2 Bcf in 2021.[14]

Figure 3. South Korea's natural gas imports and comsumption, 2012—2021



Data source: U.S. Energy Information Administration, *International Energy Statistics*

- At 6.6 trillion cubic feet per year (Tcf/y), South Korea had the world's second-largest regassification capacity in 2021. With increased demand for natural gas, the annual utilization rate of South Korea's regassification facilities rose from 30% in 2020 to 34% in 2021.[15]

Table 3. South Korea's existing regasification terminals

Project name	Owners	Peak output (billion cubic feet per year)	Start year
Existing LNG import terminals			
Pyeontaek LNG	KOGAS	1,950	1986
Incheon	KOGAS	2,531	1996
Tongyeong LNG	KOGAS	1,278	2002
Gwangyang	POSCO	110	2005
Samcheok LNG	KOGAS	557	2014
Boryeong LNG	GS Caltex (50%), SK E&S (50%)	144	2017
Jeju LNG	KOGAS	48	2019
Total		**6,618**	

Data source: International Gas Union, *2022 World LNG Report*
Note: LNG=liquified natural gas.

- The Korea Gas Corporation (KOGAS) participates in natural gas projects around the world, and as of the end of 2022, KOGAS held investments in 22 projects, including exploration, production, LNG assets, and downstream facilities, in 11 countries (Table 4).[16]

Table 4. KOGAS overseas projects

Country	Project type	Project name	Owners
Australia	LNG	Australian GLNG	KOGAS (15%), Santos (30%), Total (27.5%), Petronas (27.5%)
	LNG	Prelude FLNG	KOGAS (10%), Shell (67.5%), Index (17.5%), OPIC (5%)
Canada	Production	Canadian Hon River Development Project	KOGAS (50%), Obintiv (50%)
	Production	Umiak Mine Project	KOGAS (20%), MGM (40%), ConocoPhilips (40%)
	LNG	LNG Canada	KOGAS (5%), Shell (40%), CNPC (15%), Mitsubishi (15%), Petronas (25%)
Cypress	Exploration	Cypress Ocean 2 Gwanggu	KOGAS (20%), Total (20%), ENI (60%)
	Exploration	Cypress Ocean 3 Gwanggu	KOGAS (20%), Total (30%), ENI (50%)
	Exploration	Cypress Ocean 9 Gwanggu	KOGAS (20%), Total (20%), ENI (60%)
Indonesia	Exploration	Exploration project for Inni Marine Mining	KOGAS (15%), ENI (85%)
	Production	Innisenoro Toilee Oil Gas Plant	Multi
	LNG	INNI DSLNG	KOGAS, SLD, Pertamina, Medco, Mitsubishi
Iraq	Production	Jubair Oilfield Project	KOGAS, ENI, BOC, MOC
	Production	Iraqi Badra Oilfield Project	KOGAS, Petronas, TPAO, OEC
	Production	Mansurya Gas Fields Project	KOGAS, TPAO, KEC OEC
	Production	Akas Gas Field Project	KOGAS, NOC
Mozambique	Exploration	Mozambique Area 4	KOGAS (10%), MRV (70%), Galp Energia (10%), ENH (10%)
	LNG	Mozambique Coral FLNG	Multi
Myanmar	Production	Myanmar A-1/A-3 Development Project	Multi
Oman	LNG	Oman OLNG	Multi
Qatar	LNG	Qatar RasGas	Multi
Uzbekistan	Production	Surgil Gas field and Gas Chemical Construction and Operation Project	KOGAS, Kor-Uz, Uzbekneftegaz, Lotte Chamical, GSE&R
Yemen	LNG	Yemen YLNG	Multi

Data source: Korea Gas Corporation (KOGAS), Overseas Business

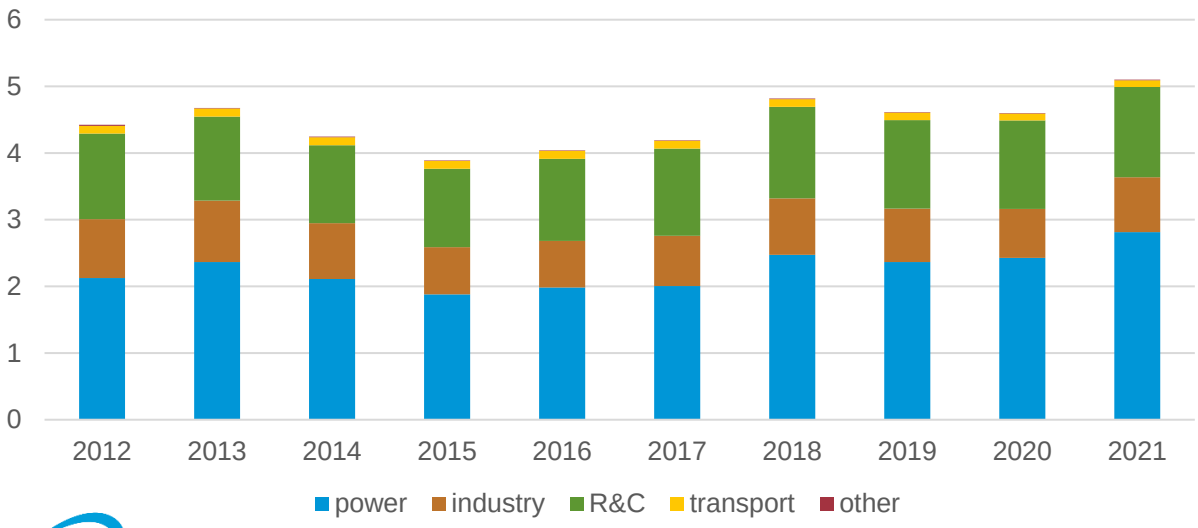
Note: Ownership status *multi* represents a business structure too complex to display in the table. LNG=liquefied natural gas.

- South Korea's natural gas demand grew by almost 9% in 2021. The main driver behind the growth was the electic power sector (Figure 4). Growing electricity demand combined with

unplanned nuclear maintenance led to a 16% increase in growth in natural gas use for electric power generation from 2020 to 2021.[17]

Figure 4. South Korea's natural gas consumption by sector, 2012-2021

billion cubic feet per day



Data source: FACT Global Energy, *South Korea Natural Gas Outlook*

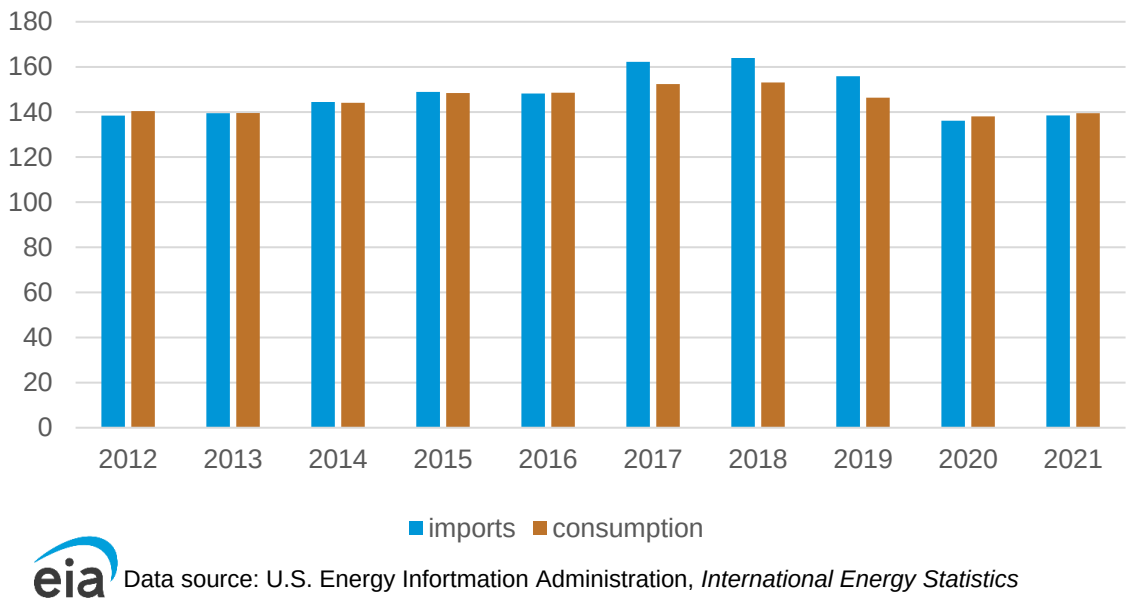
- South Korea's 1998 Gas Enterprise Law allows private companies to import LNG as long as these companies do not compete with KOGAS in the natural gas market. The allowance of independent importers led to a decrease in market share for KOGAS to 82% in 2021 from 90% in 2018.[18]
- South Korea's Hyundai Heavy Industries Group, Samsung Heavy Industries, and Daewoo Shipbuilding & Marine Engineering were the three top global shipbuilders for LNG carrier vessels in 2021.[19]

Coal

- South Korea produced just under 1 million short tons of coal from its anthracite reserves in 2021 and is its lowest amount of production in over four decades. This amount is only a fraction of its coal consumption of 139 million shorttons. South Korea relies mainly on imports to meet its demand (Figure 5).[20]
- The previous administration led by president Moon Jae-in planned to completely phase out coal by 2050 as part of the country's net-zero target.[21] Current president, Yoon Suk Yeol, has committed to upholding the net-zero target by 2050 and intends to accelerate the reduction of coal production to help fight air pollution.[22]
- In 2021, South Korea agreed to place a moratorium on overseas financing of coal projects. Historically, South Korea was one of the largest providers of financing for coal projects. Investments, since 2010, totaled $5.8 billion in overseas coal projects, most of which have gone

to Southeast Asia. Coal projects in Vietnam and Indonesia accounted for 94% of South Korea's overseas coal investments.[23]

Figure 5. South Korea's coal imports and consumption, 2012—2021



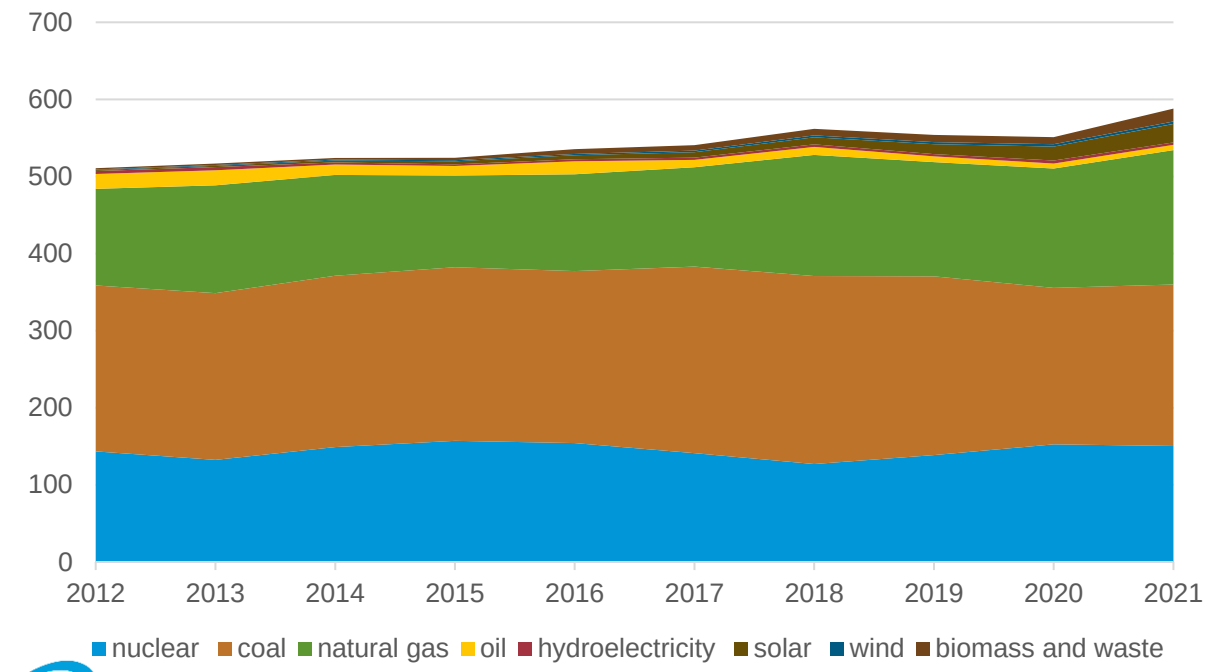
Data source: U.S. Energy Infortmation Administration, *International Energy Statistics*

Electricity

- Fossil fuels accounted for two-thirds of South Korea's electricity generation in 2021, and nuclear power accounted for 26%. Non-hydro renewables are the fastest-growing generation source, although in 2021, they only represented 8% of power generation. [24] The *10th Basic Plan for Long-Term Electricity Supply and Demand* calls for a 31% renewables generation target share by 2036.[25]

Figure 6. South Korea's generation by source, 2012—2021

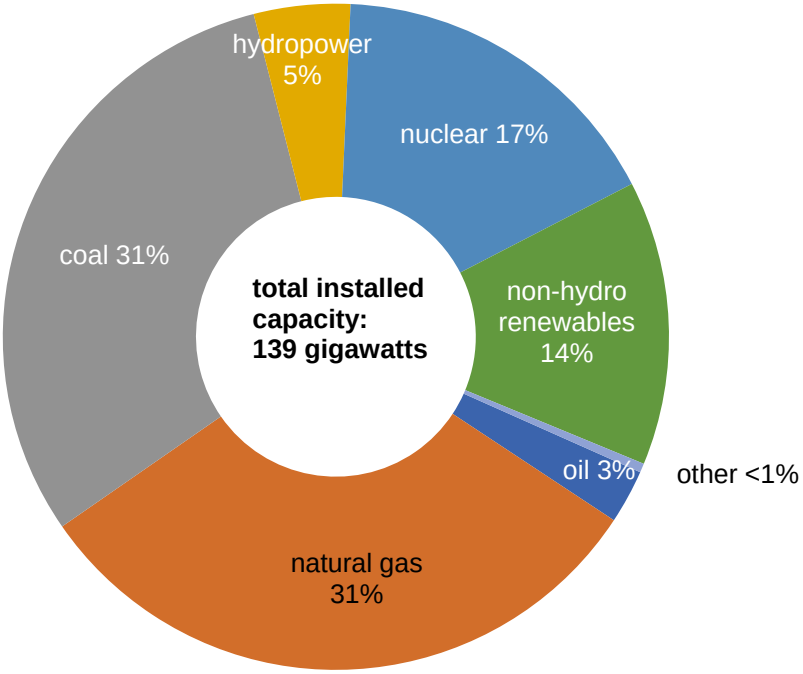
terawatt hours



Data source: U.S. Energy Information Administration, *International Energy Statistics* and estimates

- In 2021, electricity consumption grew by almost 7%, driven by the industrial sector (increased production activity), as well as the residential and commercial sectors (increased space heating demand as a result of weather).[26]
- South Korea's generating capacity grew by 4% in 2021 to 143 gigawatts (GW). Although fossil fuels account for almost 63% of installed capacity, almost all of the growth in 2021 can be attributed to solar and wind (Figure 12).[27]
- Nuclear power accounted for 17% of installed generating capacity (Figure 7).[28] South Korea's targets for expanding installed nuclear capacity are expected to reach 29 GW by 2030 and just under 32 GW by 2036. The current administration has called for the restart of construction on Units 3 and 4 at the Shin Hanul nuclear power plant. By 2033, 6 new reactors are set to join the 12 that are already in operation.[29]

Figure 7. South Korea's installed electricity generating capacity by type, 2020



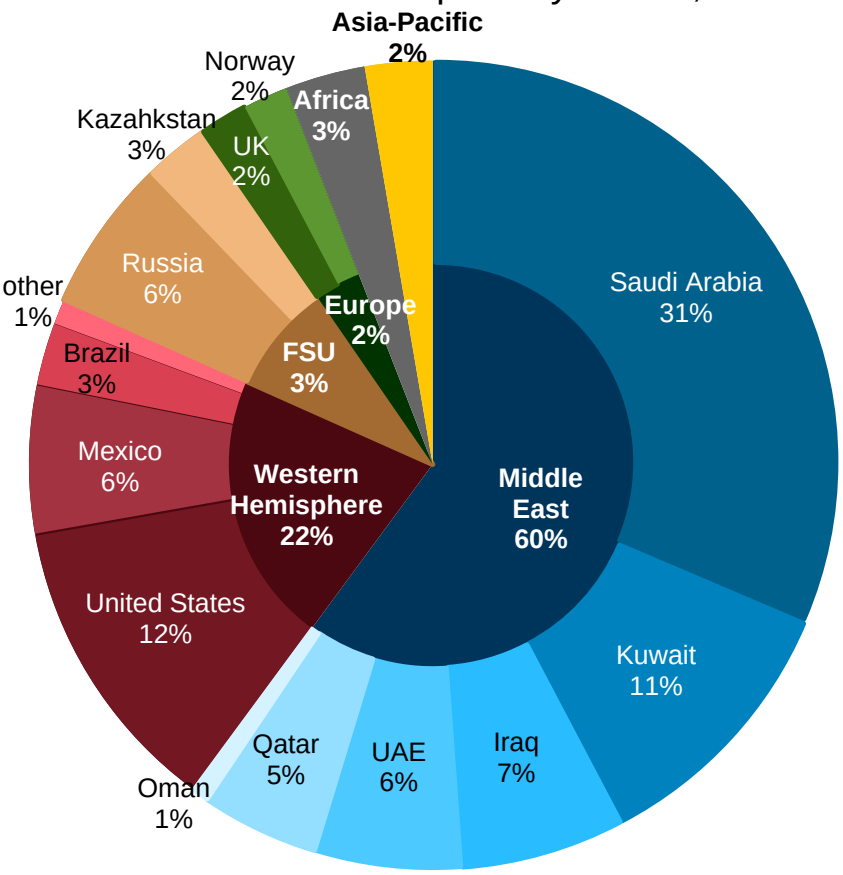
Data source: International Energy Agency
Note: Numbers may not equal 100% due to independent rounding.

Energy Trade

Petroleum and other liquids

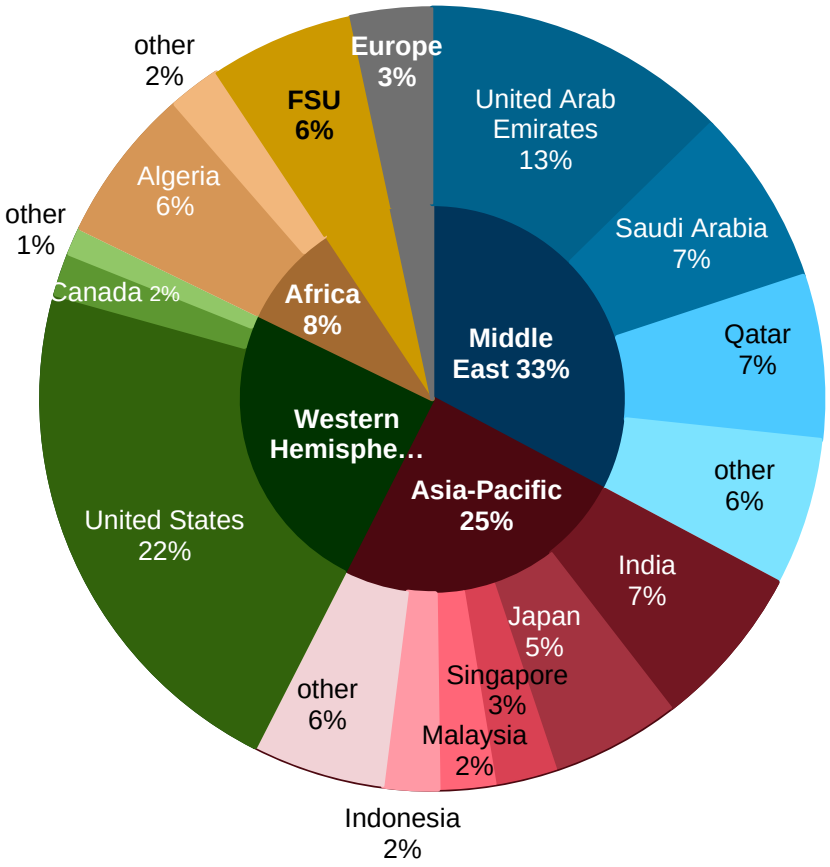
- South Korea’s crude oil imports declined since 2018 and dropped to just below 2.6 million b/d in 2021. South Korea is the fourth-largest crude oil importer in the world, and it mostly imports its crude oil from the Middle East, which accounted for more than 60% of its oil imports in 2021 (Figure 8). Russia supplied 6% of South Korea’s crude imports in 2021. However, after Russia’s full-scale invasion of Ukraine, imports from Russia were reduced, and in 2022, only about 3% of South Korea’s crude oil imports came from Russia. [30]

Figure 8. South Korea's crude oil imports by source, 2021



Data source: Global Trade Tracker
Note: Total may not equal 100% because of independent rounding. FSU = former Soviet

Figure 9. South Korea's petroleum products imports by source, 2022

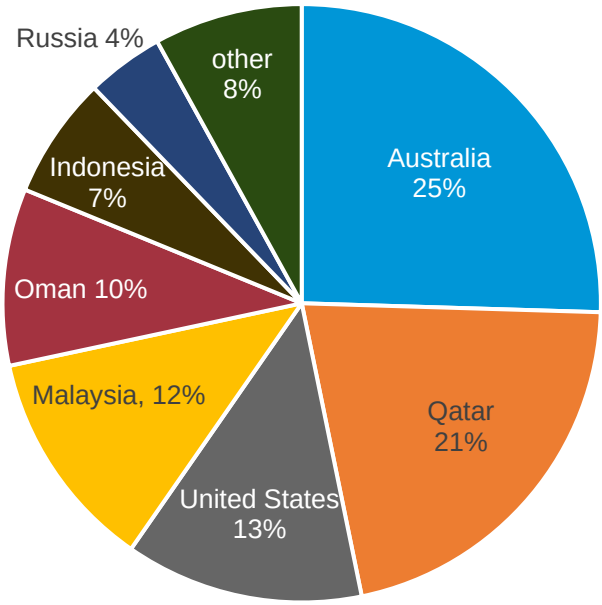


Data source: Vortexa
Note: Total may not equal 100% because of independent rounding. FSU= former Soviet Union.

Natural gas

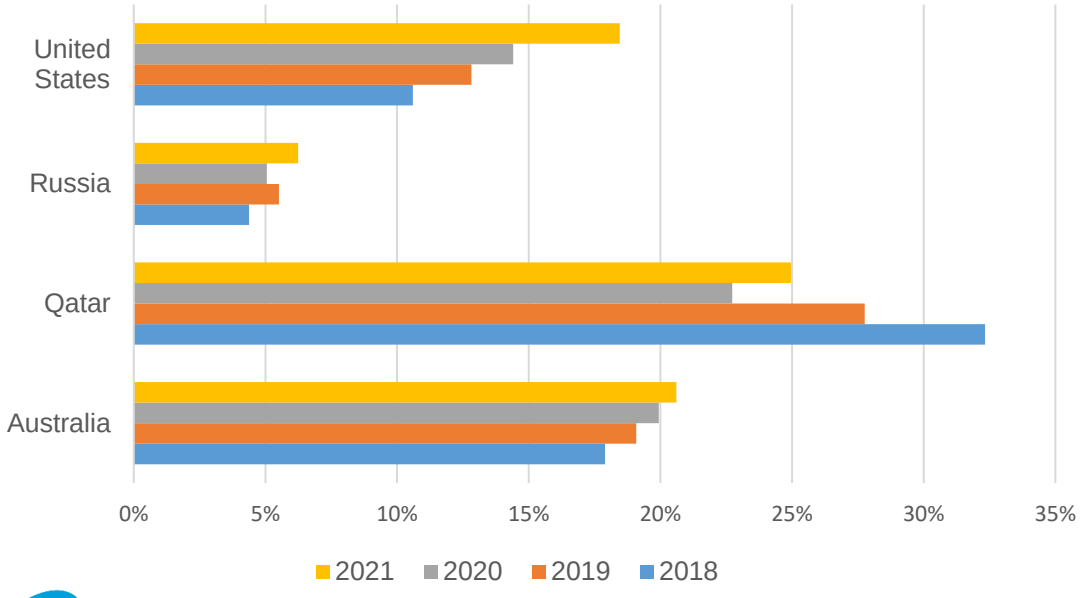
- South Korea's LNG imports remained relatively flat at 2.2 Tcf in 2022. The largest year-over-year increases in imports were from Malaysia (47%), followed by Indonesia (26%) and Australia (19%). The largest decreases occurred in imports from the United States (33%), Russia (27%), and Qatar (13%) (Figure 11).[31]

Figure 10. South Korea's LNG imports by source, 2022



Data source: Vortexa
Note: LNG=liquified natural gas.

Figure 11. South Korea's LNG market share changes, 2018-2021

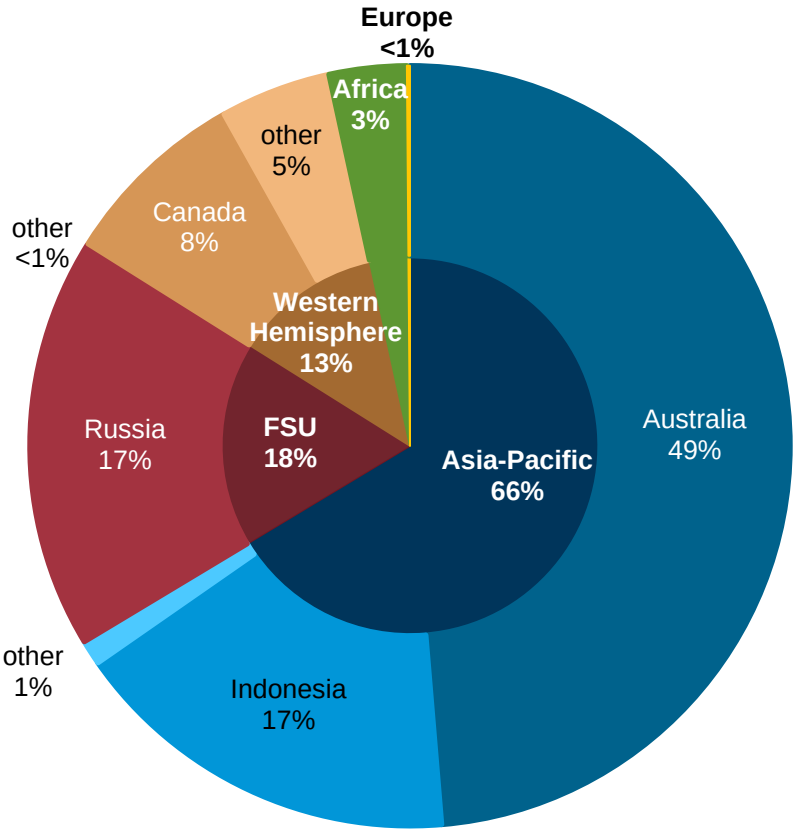


Data source: Global Trade Tracker (accessed January 2023)

Coal

- In 2021, coal imports were relatively flat compared with the previous year. Most of South Korea's coal use in 2021 is attributed to power generation (59%) followed by industrial use (41%).[32]
- The majority of the coal imported in 2021 was bituminous (65%) and metallurgic (29%).[33] Although coal imports from Australia increased to 67 million short tons from 52 million short tons in 2020, imports from Indonesia and Russia declined. Following China's unofficial ban on Australia's coal imports in 2020, South Korea received a greater share of Australia's coal.[34]

Figure 12. South Korea's coal imports by source, 2021



Data source: Global Trade Tracker
Note: Total may not equal 100% because of independent rounding. FSU=former Soviet Union.

[1] U.S. Energy Information Administration, *International Energy Statistics*
[2] Republic of Korea, Green Climate Policy Division, National Strategy for a Great Transformation: Korean New Deal, pg. 25.
[3] U.S. Energy Information Administration, *International Energy Statistics*
[4] World Bank data: GDP growth (accessed December 2022); "South Korea's GDP Growth Hit 11-Year High in 2021 as Exports Boom." CNBC, January 25, 2022; Ani. "South Korea Exports Post $644.5 Billion, Hitting All-Time High in 2021." Business Standard News. Business-Standard, January 4, 2022.

[5] U.S. Energy Information Administration, *International Energy Statistics*.
[6] Djunisic, Sladjana. "South Korea Commits to Lower Renewables Target in Favour of Nuclear." Renewablesnow.com. Renewables Now, January 16, 2023.
[7] Li, Tng Yong. "South Korea Outlines Hydrogen Roadmap to Boost Industry: Argus Media." South Korea outlines hydrogen roadmap to boost industry, November 10, 2022.
[8] U.S.Energy Information Administration, *International Energy Statistics.*
[9] KEEI Energy Demand Outlook page 3; Energy Information Administration, *International Energy Statistics;* FACTS Global Energy Services, *Asia Pacific Petroleum Databook 1: Supply and Demand*, Fall 2022, page 26.
[10] FACTS Global Energy, Asia Pacific Databook 2: Refinery Configuration, Fall 2022; BP Statistical Review of World Energy 2022.
[11] "Korean National Oil Corporation - Operations" Korea National Oil Corporation. Accessed February 15, 2023.
[12] KNOC, Investor Relations (accessed December 2022).
[13] Vortexa (accessed February 2023)
[14] U.S. Energy Information Administration, *International Energy Statistics.*
[15] International Gas Union, 2022 World LNG Report, page 81.
[16] "Overseas Business." KOGAS. Accessed January 29, 2023.
[17] U.S. Energy Information Administration, *International Energy Statistics*; FACTS Global Energy, *South Korea Natural Gas Outlook*, August 2022, page 1.
[18] FACTS Global Energy, *South Korea Natural Gas Outlook*, August 2022, page 3.
[19] International Gas Union, 2022 World LNG Report, page 55.
[20] U.S. Energy Information Administration, *International Energy Statistics.*
[21] Choi, Jeanne. "South Korea's Net-Zero Ambitions and Overseas Public Financing." The National Bureau of Asian Research (NBR), July 14, 2022.
[22] FACTS Global Energy, *South Korea Natural Gas Outlook*, August 2022, page 3.
[23] Choi, Jeanne. "South Korea's Net-Zero Ambitions and Overseas Public Financing." The National Bureau of Asian Research (NBR), July 14, 2022; Global Energy Monitor (accessed March 2023)
[24] U.S. Energy Information Administration, *International Energy Statistics.*
[25] "South Korea Increases Expected Contribution of Nuclear Power." South Korea increases expected contribution of nuclear power: Nuclear Policies - World Nuclear News. Accessed January 27, 2023.
[26] Korea Energy Economics Institute, *Korean Energy Demand Outlook 2022 First Half*, Vol. 24, No. 1, page 5.
[27] U.S. Energy Information Administration, *International Energy Statistics.*
[28] U.S. Energy Information Administration, *International Energy Statistics.*
[29]"South Korea Increases Expected Contribution of Nuclear Power." South Korea increases expected contribution of nuclear power: Nuclear Policies - World Nuclear News. Accessed January 27, 2023.
[30] Global Trade Tracker (accessed January 2023).
[31] Global Trade Tracker (accessed January 2023).
[32] Korea Energy Economics Institute, *Monthly Energy Statistics*, March 2022, page 12
[33] U.S. Energy Information Administration, *International Energy Statistics.*
[34] Global Trade Tracker (accessed January 2023).

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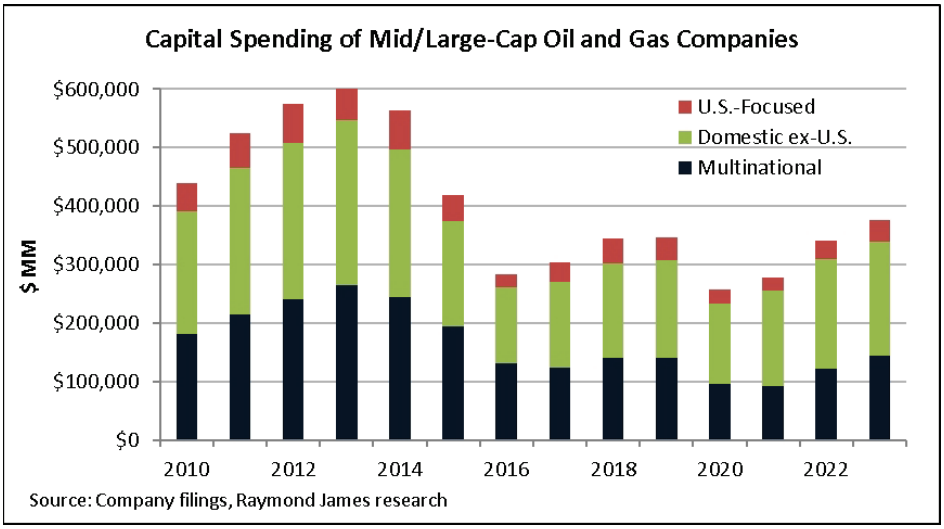
APRIL 10, 2023 | 2:00 AM EDT
INDUSTRY BRIEF

Energy Stat: Even with Recent Cost Inflation, Global CapEx in 2023 Is Down 40% from the Record Level of 2013

This is our tenth annual report on global upstream capital spending: the single most important leading indicator of oilfield activity and ultimately medium-term oil supply. After an epic spending collapse in 2020 and a small uptick in 2021, the past year marked a more noticeable recovery. Based on our industry survey (with all the underlying data included at the end of the report) — encompassing public companies that account for 65-70% of global spending — spending in 2022 was up 23%, the largest increase since before the global financial crisis. This came amid a much higher commodity environment, including the wide-ranging effects of Russia's war in Ukraine, alongside substantial cost inflation. For 2023, our survey points to a third consecutive increase, up 11%, which finally takes spending above where it had been pre-COVID. That being said, capital discipline is emphatically here to stay, irrespective of how high oil prices may get. Also here to stay is the industry's adaptation to ESG investor pressure, as exemplified by net zero targets and rising emphasis on renewable and clean tech efforts.

The big picture: global spending was up 23% in 2022, and an 11% increase is on deck in 2023, which finally surpasses the pre-COVID level.

As shown below, aggregate capital spending for our global 50-company survey peaked in 2013 at $608 billion. This was followed by harsh austerity during 2014-2016; modest recovery during 2017-2019; a COVID-fueled spending collapse in 2020; and a small uptick in 2021. It was clear one year ago that 2022 would exhibit a more noticeable recovery, and that is indeed what took place: global spending of $340 billion was up 23%. This spending increase was the largest of any year since our survey began in the immediate aftermath of the global financial crisis. As is intuitive, this included a substantial amount of cost inflation.



Based on the initial 2023 budget figures — which are subject to future revision, of course — our survey indicates that 2023 global spending will increase 11% to $376 billion (bearing in mind the inherently limited level of precision involving amounts in the hundreds of billions). This marks the third consecutive increase, and it finally takes spending above the pre-COVID level of 2018-2019. Even so, there is still a **cumulative** drop of nearly 40% from the peak level of 2013. This drop comprises a combination of lower activity levels as well as lower industrywide costs, with the relative proportions of these two variables differing from region to region and from company to company. On the flip side, as noted earlier, cost inflation was very visible in 2022, and it continues to be an important factor in 2023.

Our spending survey is broad-based, but quantifying global spending is still partly a matter of guesstimating.

There is always less clarity on capital spending in countries where the industry is dominated by state enterprises, especially those without public listings. This lack of clarity — which is especially true of most OPEC countries — means that any analysis of global spending carries a limited degree of precision. In our survey, we focus on a sample of 50 large companies that disclose financials. Of these, 17 are U.S.-focused (pure-plays

or close to it), operating in all of the major basins. Another 17 are focused in a single country outside the U.S. (such as Russia, Canada, China, Brazil); and 16 are diversified multinationals. All in, we believe that our survey captures 45-50% of spending in the U.S. and 75-80% of spending outside the U.S., which brings the global weighted average to 65-70%.

While obviously we cannot include every industry player, thematically our global survey is designed to be as holistic as possible. Every kind of upstream activity (conventional, shale/horizontals, deepwater, oilsands, enhanced recovery, LNG, frontier exploration) is encompassed. While around half of the companies have some assets other than upstream (refining, chemicals, pipelines, renewables), the overwhelming majority of the spending is upstream. There is always plenty of M&A, and we have **not** attempted to create pro forma estimates **except** for the largest corporate buyouts. After six such deals in 2020 (Chevron/Noble, Conoco/Concho, Devon/WPX, Pioneer/Parsley, Cenovus/Husky, and Diamondback/QEP), there were one each in 2021 (Cabot/Cimarex) and 2022 (Woodside/BHP's petroleum division). For companies that report in other currencies, we convert everything into U.S. dollars, so there are always some currency effects.

As you may have noticed, there is one very notable omission in our 50-company survey: Saudi Aramco, which, to state the obvious, is the world's largest oil producer. Aramco has disclosed financials, but only since 2016. As such, there is not enough historical data to include Aramco in our survey, which relies on more than a decade of data, going back to 2010. For what it's worth, though, Aramco's 2022 spending of $38 billion was up 18% y/y, and the 2023 budget of $45-55 billion is up 33% at the midpoint.

U.S. outlook: after a 41% increase in 2022, spending is set for a 23% boost in 2023.

For U.S. spending, reflecting the industry's high degree of fragmentation, we had historically estimated spending via a "top down" analysis based on commodity prices and industrywide production and cost metrics, thereby creating a proxy for aggregate cash flow generation. However, the traditional relationship between cash flow and spending — a reinvestment rate at or above 100% — began to break down even before COVID, as management teams finally internalized what investors repeatedly demanded: to put it bluntly, stop drilling. The pivot to historically unprecedented capital discipline gained further strength in the COVID era. As such, we use the "bottom up" approach of tracking publicly disclosed budgets, while recognizing that 1) there is no practical way to track the budgets of the numerous private E&P companies; and 2) the U.S. operations of multinationals are part of our survey's multinational section rather than U.S. section.

After three consecutive years of decline, U.S. E&Ps finally increased spending in 2022, by 41%. For 2023, budgets point to an increase of 23%. To be clear, this is **not** very much, especially when cost inflation is taken into account, as evidenced by the fact that 2023 spending is still below the level of 2019. Based on commodity strip prices, we estimate a cash flow reinvestment rate of only 52%, which is a dramatic contrast from the pre-COVID era, when the industry averaged spending 120% of cash flow during 2010-2019.

Domestic ex-U.S. outlook: after a 15% increase in 2022, spending is set for a 4% boost in 2023.

Multinational outlook: after a 32% increase in 2022, spending is set for a 17% boost in 2023.

Outside of the U.S., the "top down" approach has never been practical. First, a wide range of tax structures and fiscal terms — some of them cloaked in contractual secrecy — complicate cash flow math. This is particularly true of most OPEC countries, but even outside OPEC, there are significant differences in taxes, which means cash flow available for reinvestment is less straightforward to calculate. Second, the relationship between cash flow and capital spending is rarely as clear-cut as it is in the U.S. In contrast to the U.S. industry's fragmentation, other non-OPEC countries are more concentrated, and many have a dominant national oil company (NOC). The capital spending decisions of Russia's Rosneft and Gazprom, Brazil's Petrobras, etc. are based partly on cash flow expectations, but also the government's strategic and budgetary considerations. Therefore, for tracking spending trends outside the U.S., the only realistic approach is always "bottom up".

In 2023, even more so than last year, a key question mark is the extent to which sanctions and divestments are affecting capital spending in Russia. Compliance with government-enforced restrictions, alongside reputational considerations, means that approximately 80% of the international energy companies that had been doing business in or with Russia before the war have curtailed, fully or partially, their operations. The consequences are deteriorating productivity at existing wells and also less capital for new activity. Russian oil production has been resilient thus far, but it is also true that Russia has a steeper base decline rate (13-15%) than most other OPEC+ members (5-7%), so any reductions in activity will have a noticeable effect over the medium-term.

As shown in the data table at the end of this report, we separate the list of international companies into two parts: 1) domestic ex-U.S. and 2) multinationals. The first subset comprises operators centered on a particular country, including, though not solely, the NOCs. The second subset, which has some of the world's largest budgets, comprises diversified operators that have a footprint just about everywhere, including, in many cases, significant operations in the U.S.

Domestic ex-U.S. spending. There is huge variability within this subset of companies, ranging on a percentage basis from a sizable cut at Pemex to a near-doubling at Santos. In general, we expect companies to overspend their budgets, though not to the extent of U.S. E&Ps, given the generally lower focus on short-cycle activity.

Multinational spending. Many of the multinationals have hefty dividend payouts and thus a long history of taking a balanced approach to cash flow allocation. Though not quite as much as in the domestic ex-U.S. subset, there is still variability here; for example, the supermajors range on a percentage basis from a 7% decrease at Chevron to a 41% increase at BP. As with domestic ex-U.S. companies, some overspending is likely.

Oil and gas company investments in clean tech are on the rise: while Europe leads the way, this is a worldwide phenomenon.

While none of the top-tier oil and gas companies are about to dismantle their core business, the industry's role in the energy transition is **not** merely rhetorical: increasingly needle-moving amounts of capital are being allocated to renewable energy and clean technology investments. These investments, detailed below, represent the substance — real money — behind the industry's net zero CO_2 emissions (carbon neutrality) targets. There are mixed levels of disclosure on the percentage of capital spending allocated to these investments, as well as varying definitions from company to company as to what qualifies as energy transition capex. The European multinationals stand out for being at the high end of the spectrum: for example, Shell is at 33% in 2023; TotalEnergies is at 29% in 2023; BP is targeting 50% by 2030, up from 30% (inclusive of M&A) in 2022; and Equinor is targeting 30% by 2025 and 50% by 2030. Simply put, approximately one-third of the European peer group's spending is for opportunities outside oil and gas. Just about everyone else remain below 10%.

Oil and Gas Companies: Net Zero Targets and Clean Tech Investments

	Net Zero CO2 Target		Notable Investments, Partnerships, or Acquisitions in Renewable Energy and Clean Technology
	Scope 1 / 2	Scope 3	
BP plc	2050	2050	Lightsource BP, Bunge, Chargemaster, Fulcrum BioEnergy, FreeWire, StoreDot, Calysta, Equinor, Orsted, IoTecha, Open Energi, Blueprint Power, AMPLY, Xpansiv, Archaea
California Resources	2045	2045	Carbon TerraVault
Cenovus Energy	2050		Evok Innovations, FuelCell Energy, General Fusion, Svante
Chesapeake Energy	2050		Project Canary
Chevron Corp.	2050		Gorgon CCS, Ensyn, Nowi, ChargePoint, Natron, Inventys, Blue Planet Systems, Baseload Capital, Natel Energy, Gevo, Renewable Energy Group, Carbon Clean, Beyond6
China Petroleum & Chemical	2050		Green hydrogen production, hydrogen fuel distribution
CNOOC Ltd.			Wind generation, carbon capture
ConocoPhillips	2050		Energy Technology Ventures, JERA
Ecopetrol S.A.	2050		Solar generation, green hydrogen production
ENEOS Holdings	2040		GK Happo Noshiro Offshore Wind, Ubiquitous Energy, Ample
Eni SpA	2040		Solar and wind generation, Genomatica, Commonwealth Fusion, Evolvere, Falck Renewables, C-Zero, Dhamma Energy, BF Group
Equinor ASA	2030	2050	Wind generation, carbon capture, Mainspring Energy, Reactive Technologies, Carbon Clean, Wento, East Point Energy
Exxon Mobil Corp.	2050		Carbon capture, Viridos, FuelCell Energy, Global Thermostat, Biojet, Global Clean Energy
Galp Energia	2050	2050	Solar and wind generation, sustainable jet fuel and green hydrogen production, Mobiletric, Aurora Lithium
Imperial Oil	2050		Renewable diesel production
Lukoil PJSC	2050		Solar generation, green hydrogen production
Marathon Petroleum			Corn ethanol and renewable diesel production, Virent, Fulcrum BioEnergy, Archer-Daniels-Midland, Neste, LF Bioenergy
Neste Oyj	2035		Renewable diesel and sustainable jet fuel production, Mahoney Environmental, Sunfire, Alterra Energy
Occidental Petroleum	2040	2050	NET Power, Carbon Engineering, Cemvita Factory, Svante, TerraLithium, Xpansiv, LanzaTech
OMV AG	2050		Green hydrogen and sustainable jet fuel production, geothermal and wind generation, SMATRICS, Verbund, BASF
PetroChina Co.	2050		Wind, solar, and geothermal generation
Petróleo Brasileiro	TBD		Wind generation, renewable diesel production, carbon capture
Petroliam Nasional Berhad	2050		Amplus Energy Solutions, NEFIN Group, SOLS Energy, SEDC Energy
Phillips 66			Renewable diesel production, hydrogen fuel distribution, Ryze Renewables, Novonix, FreeWire
Pioneer Natural Resources	2050		Nature-based carbon offsetting
PKN Orlen	2050		Wind and solar generation, green hydrogen production
Repsol S.A.	2050	2050	Renewable diesel production, Valdesolar Hive, Ibil, Scutum, Principle Power, Gana Energia, Hecate Energy, Ibereólica Renovables, EDP, Enerkem, Asterion
Rosneft PJSC	2050		Equinor, Vestas
Santos Ltd.	2040		Moomba CCS, Bayu-Undan CCS
Saudi Aramco	2050		Green hydrogen production, Carbon Clean
Shell plc	2050	2050	Raizen, sonnen, Zeco Systems, New Motion, Silicon Ranch, Cleantech Solar, ESCO Pacific, Select Carbon, ubitricity, LanzaJet, WestWind, Zap Energy, Daystar Power, Volta
Suncor Energy	2050		Corn ethanol production, Enerkem, CO2 Solutions, ATCO, LanzaJet
TotalEnergies SE	2050	2050	SunPower, Saft, Clean Energy Fuels, PitPoint, G2mobility, Global Wind, Adani Green, Fonroche Biogaz, Plastic Omnium, Core Solar, Clearway Energy
Tullow Oil	2030		Nature-based carbon offsetting
Valero Energy			Corn ethanol production, Diamond Green Diesel, Pure Biofuels, Enerkem
Woodside Energy	2050		Solar generation, HyNet, Hyzon Motors, ReCarbon, LanzaTech, Heliogen
YPF S.A.			Wind and solar generation, Sustentator

Source: Company reports, Raymond James research

Except for biofuels and natural gas fuels (including RNG) — which are direct petroleum substitutes — the vast majority of these investments have no fundamental linkage to oil prices. Wind, solar, green hydrogen, power storage, carbon capture — none of these are tied to oil. Each individual company's specific focus is a matter of geographic footprint and management preferences. Some of the companies are also involved in carbon offsetting initiatives, such as forestry, though these are sometimes perceived by environmentalists as a way to avoid the difficult choices of direct decarbonization.

These investments are being catalyzed by three trends. First, the economic rationale is becoming more attractive, as everything from PV modules to hydrogen electrolyzers is coming down the cost curve. Second, public policy, whether "carrots" (e.g., tax credits and rebates) or "sticks" (e.g., mandatory decarbonization targets and fossil fuel phase-outs), is creating a regulatory push for accelerating the transition. The strongest push is in those major emitters — the European Union, Japan, South Korea, Canada, Australia, and the U.K. — which have net zero mandates that are legally binding. Third, the industry is responding to pressure from ESG investors. Their influence has historically been the strongest in Europe but is materializing in North America and elsewhere. A sizable portion of professionally managed assets (equity and debt) is subject to one or more ESG criteria, with climate funds being very prominent in the mix.

Capital Spending of Mid/Large-Cap Oil and Gas Companies ($ MM)																				
	2010	2011		2012		2013		2014		2015		2016		2017	
	Actual	Actual	Y/Y	Actual	Y/Y	Actual	Y/Y	Actual	Y/Y	Actual	Y/Y	Actual	Y/Y	Actual	Y/Y
U.S.-Focused															
Antero Resources	$ 347	$ 601	73%	$ 981	63%	$ 2,209	125%	$ 3,232	46%	$ 2,143	-34%	$ 1,747	-18%	$ 1,823	4%
APA Corp.	$ 4,407	$ 6,414	46%	$ 7,428	16%	$ 9,612	29%	$ 9,489	-1%	$ 4,441	-53%	$ 1,768	-60%	$ 2,582	46%
Chesapeake Energy	$ 6,568	$ 9,476	44%	$ 11,581	22%	$ 6,576	-43%	$ 5,307	-19%	$ 3,238	-39%	$ 1,332	-59%	$ 2,207	66%
Coterra Energy	$ 1,817	$ 2,463	35%	$ 2,591	6%	$ 2,767	7%	$ 3,588	30%	$ 1,935	-46%	$ 1,097	-43%	$ 2,043	86%
Devon Energy	$ 8,367	$ 9,175	10%	$ 9,674	5%	$ 7,965	-18%	$ 8,922	12%	$ 6,173	-31%	$ 1,968	-68%	$ 3,200	63%
Diamondback Energy	$ 1,514	$ 1,511	0%	$ 2,900	92%	$ 1,895	-35%	$ 3,225	70%	$ 1,659	-49%	$ 1,572	-5%	$ 2,836	80%
EOG Resources	$ 5,582	$ 6,950	25%	$ 7,355	6%	$ 7,061	-4%	$ 8,247	17%	$ 5,013	-39%	$ 2,583	-48%	$ 4,124	60%
EQT Corp.	$ 888	$ 938	6%	$ 857	-9%	$ 1,237	44%	$ 1,717	39%	$ 1,670	-3%	$ 783	-53%	$ 1,385	77%
Marathon Oil	$ 4,762	$ 3,295	-31%	$ 4,940	50%	$ 4,766	-4%	$ 5,160	8%	$ 3,476	-33%	$ 1,245	-64%	$ 1,974	59%
Matador Resources	$ 161	$ 161	0%	$ 308	91%	$ 367	19%	$ 570	55%	$ 497	-13%	$ 454	-9%	$ 820	81%
Murphy Oil	$ 2,316	$ 2,623	13%	$ 3,683	40%	$ 3,723	1%	$ 3,679	-1%	$ 2,550	-31%	$ 927	-64%	$ 1,010	9%
Ovintiv Inc.	$ 6,437	$ 6,921	8%	$ 5,256	-24%	$ 4,735	-10%	$ 4,621	-2%	$ 3,839	-17%	$ 2,000	-48%	$ 2,952	48%
PDC Energy	$ 163	$ 334	105%	$ 348	4%	$ 395	14%	$ 624	58%	$ 600	-4%	$ 437	-27%	$ 737	69%
Pioneer Natural Resources	$ 1,195	$ 2,315	94%	$ 3,121	35%	$ 3,086	-1%	$ 4,054	31%	$ 2,776	-32%	$ 2,566	-8%	$ 3,846	50%
Range Resources	$ 817	$ 1,200	47%	$ 1,499	25%	$ 1,159	-23%	$ 1,200	4%	$ 1,031	-14%	$ 466	-55%	$ 1,149	146%
SM Energy	$ 668	$ 1,633	144%	$ 1,508	-8%	$ 1,554	3%	$ 1,975	27%	$ 1,494	-24%	$ 630	-58%	$ 888	41%
Southwestern Energy	$ 2,073	$ 2,184	5%	$ 2,108	-3%	$ 2,253	7%	$ 2,043	-9%	$ 1,798	-12%	$ 593	-67%	$ 1,268	114%
Subtotal	$ 48,081	$ 58,184	21%	$ 66,137	14%	$ 61,361	-7%	$ 67,654	10%	$ 44,332	-34%	$ 22,168	-50%	$ 34,842	57%
Domestic ex-U.S.															
Canadian Natural Resources	$ 5,186	$ 5,954	15%	$ 5,795	-3%	$ 7,002	21%	$ 9,248	32%	$ 3,676	-60%	$ 2,852	-22%	$ 3,526	24%
Cenovus Energy	$ 5,884	$ 7,676	30%	$ 8,150	6%	$ 8,056	-1%	$ 7,321	-9%	$ 3,688	-50%	$ 2,054	-44%	$ 2,999	46%
China Petroleum & Chemical	$ 16,811	$ 22,017	31%	$ 24,903	13%	$ 25,227	1%	$ 20,247	-20%	$ 16,511	-18%	$ 10,958	-34%	$ 10,511	-4%
CNOOC Ltd.	$ 4,174	$ 5,637	35%	$ 8,614	53%	$ 12,979	51%	$ 15,578	20%	$ 10,889	-30%	$ 7,566	-31%	$ 7,883	4%
Crescent Point Energy	$ 944	$ 1,266	34%	$ 1,509	19%	$ 1,696	12%	$ 1,965	16%	$ 1,255	-36%	$ 880	-30%	$ 1,430	62%
Ecopetrol S.A.	$ 5,286	$ 8,365	58%	$ 8,082	-3%	$ 7,589	-6%	$ 7,807	3%	$ 5,041	-35%	$ 1,864	-63%	$ 2,004	8%
Equinor ASA	$ 13,797	$ 16,304	18%	$ 19,113	17%	$ 19,275	1%	$ 19,567	2%	$ 15,449	-21%	$ 12,191	-21%	$ 10,755	-12%
Gazprom PJSC	$ 34,300	$ 52,800	54%	$ 43,400	-18%	$ 43,900	1%	$ 33,200	-24%	$ 27,100	-18%	$ 20,536	-24%	$ 24,101	17%
Imperial Oil	$ 3,748	$ 3,962	6%	$ 5,478	38%	$ 6,114	12%	$ 4,793	-22%	$ 2,810	-41%	$ 871	-69%	$ 766	-12%
PetroChina Co.	$ 40,817	$ 44,017	8%	$ 55,893	27%	$ 51,888	-7%	$ 47,487	-8%	$ 32,527	-32%	$ 25,931	-20%	$ 32,033	24%
Petróleo Brasileiro	$ 45,525	$ 41,713	-8%	$ 39,917	-4%	$ 45,101	13%	$ 34,750	-23%	$ 21,502	-38%	$ 13,737	-36%	$ 13,262	-3%
Petróleos Mexicanos	$ 14,614	$ 14,465	-1%	$ 15,801	9%	$ 19,105	21%	$ 17,443	-9%	$ 15,428	-12%	$ 9,730	-37%	$ 10,104	4%
Rosneft PJSC	$ 8,696	$ 13,335	53%	$ 15,245	14%	$ 17,598	15%	$ 14,125	-20%	$ 9,520	-33%	$ 10,635	12%	$ 15,807	49%
Santos Ltd.	$ 1,732	$ 3,170	83%	$ 3,474	10%	$ 4,229	22%	$ 3,014	-29%	$ 1,421	-53%	$ 649	-54%	$ 634	-2%
Suncor Energy	$ 5,842	$ 6,857	17%	$ 6,959	1%	$ 6,580	-5%	$ 6,307	-4%	$ 5,211	-17%	$ 4,937	-5%	$ 5,051	2%
Tourmaline Oil	$ 479	$ 730	52%	$ 666	-9%	$ 1,133	70%	$ 1,840	62%	$ 1,134	-38%	$ 567	-50%	$ 1,051	85%
YPF S.A.	$ 2,292	$ 3,257	42%	$ 3,691	13%	$ 5,080	38%	$ 6,186	22%	$ 6,887	11%	$ 4,241	-38%	$ 3,596	-15%
Subtotal	$ 210,127	$ 251,524	20%	$ 266,690	6%	$ 282,554	6%	$ 250,877	-11%	$ 180,048	-28%	$ 130,198	-28%	$ 145,513	12%
Multinational															
BP plc	$ 18,421	$ 17,845	-3%	$ 23,078	29%	$ 24,520	6%	$ 22,546	-8%	$ 18,648	-17%	$ 16,701	-10%	$ 16,562	-1%
Capricorn Energy	$ 1,060	$ 963	-9%	$ 139	-86%	$ 418	201%	$ 376	-10%	$ 323	-14%	$ 274	-15%	$ 332	21%
Chevron Corp.	$ 21,497	$ 29,094	35%	$ 34,588	19%	$ 42,131	22%	$ 40,290	-4%	$ 32,483	-19%	$ 19,650	-40%	$ 16,053	-18%
ConocoPhillips	$ 10,445	$ 14,974	43%	$ 17,725	18%	$ 17,305	-2%	$ 19,637	13%	$ 11,882	-39%	$ 6,019	-49%	$ 6,265	4%
Eni SpA	$ 17,669	$ 17,965	2%	$ 16,708	-7%	$ 16,347	-2%	$ 16,255	-1%	$ 12,409	-24%	$ 10,064	-19%	$ 9,589	-5%
Exxon Mobil Corp.	$ 28,110	$ 34,561	23%	$ 35,243	2%	$ 38,104	8%	$ 34,583	-9%	$ 27,097	-22%	$ 17,580	-35%	$ 20,909	19%
Galp Energia	$ 1,571	$ 1,337	-15%	$ 1,162	-13%	$ 1,230	6%	$ 1,518	23%	$ 1,424	-6%	$ 1,352	-5%	$ 1,139	-16%
Hess Corp.	$ 5,492	$ 7,006	28%	$ 7,795	11%	$ 6,315	-19%	$ 5,214	-17%	$ 4,321	-17%	$ 2,251	-48%	$ 1,937	-14%
Kosmos Energy	$ 445	$ 479	8%	$ 369	-23%	$ 317	-14%	$ 425	34%	$ 824	94%	$ 534	-35%	$ 140	-74%
Occidental Petroleum	$ 8,948	$ 13,168	47%	$ 17,468	33%	$ 16,758	-4%	$ 18,230	9%	$ 11,679	-36%	$ 6,382	-45%	$ 8,669	36%
OMV AG	$ 2,660	$ 3,291	24%	$ 3,072	-7%	$ 6,073	98%	$ 5,089	-16%	$ 3,306	-35%	$ 2,244	-32%	$ 1,849	-18%
Repsol S.A.	$ 4,283	$ 5,725	34%	$ 4,600	-20%	$ 3,885	-16%	$ 4,825	24%	$ 3,617	-25%	$ 3,116	-14%	$ 3,127	0%
Shell plc	$ 35,611	$ 36,518	3%	$ 43,867	20%	$ 51,779	18%	$ 41,256	-20%	$ 32,518	-21%	$ 22,116	-32%	$ 20,845	-6%
TotalEnergies SE	$ 17,595	$ 23,997	36%	$ 24,604	3%	$ 29,748	21%	$ 26,320	-12%	$ 25,132	-5%	$ 18,106	-28%	$ 13,767	-24%
Tullow Oil	$ 1,200	$ 1,400	17%	$ 1,900	36%	$ 1,800	-5%	$ 2,020	12%	$ 1,720	-15%	$ 857	-50%	$ 225	-74%
Woodside Energy	$ 6,417	$ 6,125	-5%	$ 9,099	49%	$ 7,777	-15%	$ 6,576	-15%	$ 6,842	4%	$ 4,125	-40%	$ 2,862	-31%
Subtotal	$ 181,423	$ 214,449	18%	$ 241,417	13%	$ 264,507	10%	$ 245,159	-7%	$ 194,225	-21%	$ 131,372	-32%	$ 124,270	-5%
Total	$ 439,632	$ 524,157	19%	$ 574,244	10%	$ 608,421	6%	$ 563,690	-7%	$ 418,605	-26%	$ 283,738	-32%	$ 304,624	7%

Source: Company filings, Bloomberg, Raymond James research

Capital Spending of Mid/Large-Cap Oil and Gas Companies ($ MM)																						
	2018				2019				2020				2021				2022				2023E	
	Orig. Plan		Actual	Y/Y	Orig. Plan		Actual	Y/Y	Orig. Plan		Actual	Y/Y	Orig. Plan		Actual	Y/Y	Orig. Plan		Actual	Y/Y	Orig. Plan	Y/Y
U.S.-Focused																						
Antero Resources	$ 1,450	$	1,747	-4%	$ 1,463	$	1,823	4%	$ 1,000	$	826	-55%	$ 590	$	601	-27%	$ 687	$	781	30%	$ 900	15%
APA Corp.	$ 3,000	$	3,771	46%	$ 2,400	$	2,921	-23%	$ 1,100	$	1,298	-56%	$ 1,100	$	1,113	-14%	$ 1,600	$	1,770	59%	$ 2,050	16%
Chesapeake Energy	$ 2,175	$	1,979	-10%	$ 2,400	$	2,228	13%	$ 1,450	$	1,142	-49%	$ 705	$	735	-36%	$ 1,650	$	1,823	148%	$ 1,800	-1%
Coterra Energy	$ 2,738	$	2,564	26%	$ 2,290	$	2,111	-18%	$ 1,160	$	1,215	-42%	$ 1,210	$	1,211	0%	$ 1,450	$	1,700	40%	$ 2,100	24%
Devon Energy	$ 3,625	$	3,961	24%	$ 3,450	$	3,223	-19%	$ 2,338	$	2,233	-31%	$ 1,700	$	1,989	-11%	$ 2,250	$	2,542	28%	$ 3,700	46%
Diamondback Energy	$ 2,475	$	2,964	5%	$ 3,540	$	3,487	18%	$ 2,265	$	2,217	-36%	$ 1,800	$	1,487	-33%	$ 1,825	$	1,938	30%	$ 2,600	34%
EOG Resources	$ 5,600	$	6,076	47%	$ 6,300	$	6,423	6%	$ 4,500	$	3,465	-46%	$ 3,750	$	3,850	11%	$ 4,500	$	5,000	30%	$ 6,000	20%
EQT Corp.	$ 2,200	$	2,255	63%	$ 1,600	$	1,377	-39%	$ 1,125	$	1,042	-24%	$ 1,150	$	1,055	1%	$ 1,375	$	1,400	33%	$ 1,800	29%
Marathon Oil	$ 2,300	$	2,753	39%	$ 2,600	$	2,550	-7%	$ 1,300	$	1,343	-47%	$ 1,000	$	1,046	-22%	$ 1,200	$	1,450	39%	$ 1,950	34%
Matador Resources	$ 630	$	871	6%	$ 725	$	875	1%	$ 815	$	708	-19%	$ 575	$	495	-30%	$ 730	$	853	72%	$ 1,425	67%
Murphy Oil	$ 1,056	$	1,103	9%	$ 1,350	$	1,344	22%	$ 780	$	873	-35%	$ 700	$	688	-21%	$ 865	$	985	43%	$ 950	-4%
Ovintiv Inc.	$ 3,150	$	3,467	17%	$ 2,800	$	2,626	-24%	$ 2,400	$	1,736	-34%	$ 1,500	$	1,519	-13%	$ 1,500	$	1,831	21%	$ 2,250	23%
PDC Energy	$ 885	$	946	28%	$ 840	$	856	-10%	$ 550	$	551	-36%	$ 550	$	583	6%	$ 950	$	1,098	88%	$ 1,425	30%
Pioneer Natural Resources	$ 4,350	$	5,664	47%	$ 4,400	$	4,616	-19%	$ 2,800	$	2,568	-44%	$ 2,550	$	3,287	28%	$ 3,450	$	4,033	23%	$ 4,775	18%
Range Resources	$ 941	$	961	-16%	$ 756	$	687	-28%	$ 430	$	408	-41%	$ 425	$	395	-3%	$ 470	$	457	16%	$ 593	30%
SM Energy	$ 1,270	$	1,303	47%	$ 1,035	$	1,024	-21%	$ 670	$	548	-47%	$ 663	$	675	23%	$ 750	$	880	30%	$ 1,100	25%
Southwestern Energy	$ 1,200	$	1,290	2%	$ 1,130	$	1,099	-15%	$ 860	$	896	-18%	$ 888	$	1,032	15%	$ 1,950	$	2,115	105%	$ 2,350	11%
Subtotal	$ 39,045	$	43,675	25%	$ 39,079	$	39,270	-10%	$ 25,543	$	23,069	-41%	$ 20,955	$	21,761	-6%	$ 27,202	$	30,657	41%	$ 37,768	23%
Domestic ex-U.S.																						
Canadian Natural Resources	$ 3,440	$	3,221	-9%	$ 2,775	$	2,727	-15%	$ 2,220	$	1,907	-30%	$ 2,564	$	3,594	88%	$ 3,476	$	3,929	9%	$ 3,900	-1%
Cenovus Energy	$ 3,680	$	3,823	27%	$ 3,525	$	3,478	-9%	$ 1,875	$	1,825	-48%	$ 2,000	$	2,050	12%	$ 2,240	$	2,855	39%	$ 3,188	12%
China Petroleum & Chemical	$ 12,371	$	15,592	48%	$ 20,193	$	20,420	31%	$ 20,486	$	18,985	-7%	$ 25,723	$	26,038	37%	$ 30,938	$	28,056	8%	$ 25,508	-9%
CNOOC Ltd.	$ 11,905	$	10,666	35%	$ 11,111	$	12,368	16%	$ 12,857	$	11,698	-6%	$ 14,515	$	14,103	21%	$ 14,844	$	15,208	8%	$ 16,154	6%
Crescent Point Energy	$ 1,440	$	1,402	-2%	$ 938	$	984	-30%	$ 563	$	521	-47%	$ 525	$	541	4%	$ 690	$	791	46%	$ 788	0%
Ecopetrol S.A.	$ 2,906	$	2,789	39%	$ 3,750	$	4,154	49%	$ 3,800	$	2,987	-28%	$ 3,750	$	3,432	15%	$ 5,300	$	4,869	42%	$ 6,122	26%
Equinor ASA	$ 11,000	$	11,367	6%	$ 11,000	$	10,204	-10%	$ 8,500	$	8,476	-17%	$ 10,000	$	8,040	-6%	$ 10,000	$	8,758	9%	$ 10,500	20%
Gazprom PJSC	$ 23,022	$	26,099	8%	$ 19,890	$	27,455	5%	$ 14,361	$	21,074	-23%	$ 12,362	$	26,242	25%	$ 15,858	$	28,326	8%	$ 30,667	8%
Imperial Oil	$ 1,280	$	1,150	50%	$ 1,763	$	1,233	7%	$ 1,238	$	648	-47%	$ 960	$	886	37%	$ 1,120	$	1,175	33%	$ 1,275	9%
PetroChina Co.	$ 35,841	$	38,743	21%	$ 44,533	$	42,938	11%	$ 42,143	$	35,672	-17%	$ 36,769	$	38,942	9%	$ 37,813	$	40,698	5%	$ 37,462	-8%
Petróleo Brasileiro	$ 17,300	$	12,021	-9%	$ 16,000	$	8,590	-29%	$ 7,000	$	5,874	-32%	$ 10,200	$	6,325	8%	$ 11,000	$	9,581	51%	$ 16,000	67%
Petróleos Mexicanos	$ 11,059	$	9,817	-3%	$ 13,650	$	10,457	7%	$ 16,710	$	10,900	4%	$ 13,000	$	10,330	-5%	$ 18,740	$	15,935	54%	$ 12,111	-24%
Rosneft PJSC	$ 16,596	$	14,900	-6%	$ 19,000	$	13,203	-11%	$ 13,000	$	10,865	-18%	$ 13,699	$	14,235	31%	$ 13,333	$	16,195	14%	$ 17,814	10%
Santos Ltd.	$ 680	$	566	-11%	$ 770	$	859	52%	$ 603	$	761	-11%	$ 1,600	$	1,087	43%	$ 2,325	$	1,707	57%	$ 3,000	76%
Suncor Energy	$ 3,800	$	4,171	-17%	$ 3,938	$	4,097	-2%	$ 3,150	$	2,930	-28%	$ 3,320	$	3,644	24%	$ 3,760	$	3,840	5%	$ 4,200	9%
Tourmaline Oil	$ 864	$	973	-7%	$ 975	$	805	-17%	$ 694	$	681	-15%	$ 880	$	1,150	69%	$ 900	$	1,291	12%	$ 1,256	-3%
YPF S.A.	$ 4,200	$	3,137	-13%	$ 3,750	$	3,365	7%	$ 2,800	$	1,678	-50%	$ 2,700	$	2,452	46%	$ 3,700	$	4,006	63%	$ 5,000	25%
Subtotal	$ 161,385	$	160,437	10%	$ 177,560	$	167,348	4%	$ 151,999	$	137,482	-18%	$ 154,667	$	163,092	19%	$ 176,036	$	187,220	15%	$ 194,943	4%
Multinational																						
BP plc	$ 15,600	$	16,707	1%	$ 16,000	$	15,418	-8%	$ 12,000	$	12,306	-20%	$ 14,000	$	10,887	-12%	$ 14,500	$	12,069	11%	$ 17,000	41%
Capricorn Energy	$ 235	$	298	-10%	$ 300	$	270	-9%	$ 615	$	398	47%	$ 90	$	87	-78%	$ 200	$	156	80%	$ 200	28%
Chevron Corp.	$ 15,600	$	17,071	6%	$ 16,200	$	16,640	-3%	$ 11,350	$	8,922	-46%	$ 9,700	$	8,056	-10%	$ 11,700	$	11,974	49%	$ 11,100	-7%
ConocoPhillips	$ 7,500	$	9,388	50%	$ 9,600	$	9,631	3%	$ 6,300	$	6,316	-34%	$ 5,500	$	5,324	-16%	$ 7,200	$	10,159	91%	$ 11,000	8%
Eni SpA	$ 10,000	$	10,771	12%	$ 9,200	$	9,376	-13%	$ 6,050	$	5,303	-43%	$ 4,854	$	6,176	16%	$ 8,470	$	8,459	37%	$ 10,450	24%
Exxon Mobil Corp.	$ 27,182	$	21,555	3%	$ 30,000	$	28,266	31%	$ 23,000	$	22,139	-22%	$ 17,500	$	14,893	-33%	$ 22,500	$	21,497	44%	$ 24,000	12%
Galp Energia	$ 1,313	$	1,052	-7%	$ 1,208	$	958	-10%	$ 1,210	$	1,024	7%	$ 708	$	1,104	8%	$ 1,100	$	1,328	20%	$ 1,100	-17%
Hess Corp.	$ 2,430	$	2,097	8%	$ 3,188	$	2,829	35%	$ 2,550	$	1,896	-33%	$ 1,900	$	1,584	-16%	$ 2,600	$	2,487	57%	$ 3,700	49%
Kosmos Energy	$ 300	$	214	53%	$ 450	$	340	59%	$ 213	$	317	11%	$ 250	$	473	25%	$ 700	$	787	67%	$ 725	-8%
Occidental Petroleum	$ 8,300	$	11,158	29%	$ 9,000	$	9,046	-19%	$ 2,800	$	2,535	-72%	$ 2,900	$	2,870	13%	$ 4,100	$	4,497	57%	$ 5,800	29%
OMV AG	$ 2,375	$	2,235	21%	$ 2,645	$	2,520	13%	$ 2,200	$	2,234	-11%	$ 3,186	$	2,946	32%	$ 3,850	$	3,090	5%	$ 4,070	32%
Repsol S.A.	$ 4,250	$	5,543	77%	$ 4,370	$	7,033	27%	$ 3,080	$	2,301	-67%	$ 3,068	$	2,880	25%	$ 4,180	$	3,914	36%	$ 5,500	41%
Shell plc	$ 26,000	$	23,011	10%	$ 27,500	$	22,971	0%	$ 20,000	$	16,585	-28%	$ 20,500	$	19,000	15%	$ 24,000	$	22,600	19%	$ 25,000	11%
TotalEnergies SE	$ 14,000	$	17,080	24%	$ 15,500	$	11,810	-31%	$ 15,000	$	10,764	-9%	$ 12,000	$	12,343	15%	$ 14,500	$	15,690	27%	$ 17,000	8%
Tullow Oil	$ 450	$	423	88%	$ 570	$	490	16%	$ 300	$	431	-12%	$ 265	$	237	-45%	$ 350	$	306	30%	$ 400	31%
Woodside Energy	$ 3,581	$	2,699	-6%	$ 3,130	$	2,543	-6%	$ 6,150	$	2,891	14%	$ 4,650	$	3,722	29%	$ 6,300	$	3,136	-16%	$ 6,250	99%
Subtotal	$ 139,025	$	141,311	14%	$ 148,360	$	140,141	-1%	$ 112,818	$	96,423	-31%	$ 101,071	$	92,582	-4%	$ 126,250	$	122,150	32%	$ 143,295	17%
Total	$ 339,455	$	345,424	13%	$ 365,498	$	346,760	0%	$ 290,359	$	256,974	-26%	$ 276,694	$	277,435	8%	$ 329,488	$	340,027	25%	$ 376,006	11%

Source: Company filings, Bloomberg, Raymond James research

https://www.reuters.com/business/environment/g7-climate-ministers-drop-language-growing-lng-demand-draft-2023-04-11/?taid=64356ef9eea76d00011ee59b&utm_campaign=trueAnthem:+Trending+Content&utm_medium=trueAnthem&utm_source=twitter

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G7 climate ministers drop language on growing LNG demand in draft

By Kate Abnett and Makiko Yamazaki

A liquefied natural gas (LNG) tanker is tugged towards a thermal power station in Futtsu, east of Tokyo, Japan November 13, 2017. REUTERS/Issei Kato/File Photo

BRUSSELS/TOKYO, April 11 (Reuters) - Climate ministers of the Group of Seven countries have backtracked for now on earlier language touting growing future demand for liquefied natural gas (LNG), instead noting there may be "considerable uncertainty" for consumption.

A previous draft communique for this week's meeting of G7 climate change and energy ministers had called for "necessary upstream investments in LNG and natural gas" amid the energy fallout from Russia's invasion of Ukraine and said "demand for LNG will continue to grow".

But, as negotiations over the communique resumed on Tuesday ahead of the ministerial meeting on April 15-16 in Sapporo, Japan, the wording was changed, the latest draft reviewed by Reuters showed.

"We recognize that, based on the IEA's (International Energy Agency) analyses, there would be considerable uncertainty for future demand of natural gas and LNG and consequently there are risks of supply and demand gap to be addressed," the document dated April 5 said.

The draft also altered the earlier language on LNG and gas investments to say they would be needed to "bridge the gap in a manner consistent with our climate objectives and commitments."

It added a line saying, "Furthermore we will accelerate the clean energy transition through energy savings and gas demand reductions in the process of decarbonization."

It was not clear from the document why the language was changed. But Italy, Germany, France and the European Union had opposed the initial proposal on LNG demand increasing, the draft showed.

An official dealing with international affairs at the Japanese industry ministry declined to comment on the draft, saying the negotiations are ongoing.

Scientists and analysts have warned that new fossil fuel investments would negate globally agreed climate change goals.

Japan plans to keep LNG as a transition fuel for at least 10-15 years, and many Japanese companies are exposed to super-chilled gas projects globally.

The document may still change before it is adopted. The latest text showed countries are still at odds over other issues.

The EU, the United States and Japan have opposed a proposal by Britain to commit to phase out domestic unabated coal power generation by 2030 and call for the global pipeline of new coal plants to be cancelled, the latest draft showed.

Japan wants to start widely co-firing ammonia in its coal-fuelled power plants as a way to reduce CO2 emissions, and is seeking the endorsement of other G7 countries for this plan.

The latest draft acknowledged that some countries plan to use "hydrogen and its derivatives" - which include ammonia - to cut power sector emissions in line with limiting global warming to 1.5 degrees Celsius (2.7 degrees Fahrenheit), wording that would be a win for Tokyo.

Additional reporting by Yuka Obayashi; Writing by Katya Golubkova; Editing by Christian Schmollinger

https://www.reuters.com/business/sustainable-business/key-excerpts-g7-statement-energy-climate-change-2023-04-16/?taid=643bc0215fd9f800017b1e6b&utm_campaign=trueAnthem:+Trending+Content&utm_medium=trueAnthem&utm_source=twitter
5 minute readApril 16, 20233:29 AM MDTLast Updated 37 min ago

Factbox: Key excerpts from G7 statement on energy and climate change

SAPPORO, Japan, April 16 (Reuters) - The Group of Seven rich nations on Sunday set big new targets for solar power and offshore wind capacity, agreeing to speed up renewable energy development and move toward a quicker phase-out of fossil fuels.

Below are key extracts from the G7 climate, energy and environment ministers' communique, including the annex.

RUSSIA

"We condemn Russia's illegal, unjustifiable, and unprovoked war of aggression against Ukraine;
"We stand ready to support the sustainable and resilient recovery and green reconstruction of Ukraine."

GAS INVESTMENTS

"Recognising the primary need to accelerate the clean energy transition through energy savings and gas demand reduction, investment in the gas sector can be appropriate to help address potential market shortfalls provoked by the crisis, subject to clearly defined national circumstances, and if implemented in a manner consistent with our climate objectives and without creating lock-in effects, for example by ensuring that projects are integrated into national strategies for the development of low-carbon and renewable hydrogen."

RENEWABLE ENERGY

"The G7 contributes to expanding renewable energy globally and bringing down costs by strengthening capacity including through a collective increase in offshore wind capacity of 150 gigawatt by 2030 based on each country's existing targets and a collective increase of solar (photovoltaic) to more than 1 terawatt by 2030."

COAL-FIRED PLANTS

"(We) reaffirm our commitment to achieving a fully or predominantly decarbonised power sector by 2035, and prioritising concrete and timely steps towards the goal of accelerating the phase-out of domestic unabated coal power generation in a manner consistent with keeping a limit of 1.5°C temperature rise;
"We call on and will work with other countries to end new unabated coal-fired power generation projects globally as soon as possible to accelerate the clean energy transition in a just manner."

HYDROGEN AND AMMONIA

"We recognise low-carbon and renewable hydrogen and its derivatives such as ammonia should be developed and used where they are impactful as effective emission reduction tools to advance decarbonisation across sectors and industries, notably in hard-to-abate sectors in industry and transportation.
"We also note that some countries are exploring the use of low-carbon and renewable hydrogen and its derivatives in the power sector to work towards zero-emission thermal power generation if this can be aligned with a 1.5°C pathway and our collective goal for a fully or predominantly decarbonised power sector by 2035."

CRITICAL MINERALS

"We reaffirm the growing importance of critical minerals for the clean energy transition and the need to prevent economic and security risks caused by vulnerable supply chains, monopolisation, lack of diversification of existing suppliers of critical minerals;

"We are fully committed to maintain products containing critical minerals and raw materials in the economy as long as possible;
"We emphasise the importance of countering geopolitical risks, including with respect to critical minerals, for the clean energy transition.
"We boost up developing new mines and supply chains for critical minerals in a responsible manner that promotes transparency and traceability to meet the rising demand.
"Currently $13 billion fiscal support that can be used for domestic and foreign projects is prepared across the G7 countries."

PHASING OUT UNABATED FOSSIL FUELS
"We underline our commitment, in the context of a global effort, to accelerate the phase-out of unabated fossil fuels so as to achieve net zero in energy systems by 2050 at the latest;
"We stress that fossil fuel subsidies are inconsistent with the goals of the Paris Agreement."

NUCLEAR ENERGY
"Those countries that opt to use nuclear energy recognise its potential to provide affordable low-carbon energy that can reduce dependence on fossil fuels;
"They also commit to support the development and construction of nuclear reactors, such as small modular and other advanced reactors with advanced safety systems in line with (International Atomic Energy Agency) safety standards."

PLASTIC POLLUTION
"We are committed to end plastic pollution, with the ambition to reduce additional plastic pollution to zero by 2040."

TRANSPORTATION
"We reaffirm our commitment to a highly decarbonised road sector by 2030;
"We recognise the range of pathways that G7- and beyond-G7 members are adopting to approach this goal. We are committed to the goal of achieving net-zero emissions in the road sector by 2050, and underline that a transition over the coming decade to infrastructure and a vehicle fleet that supports zero emissions transport is critical."
"We highlight the various actions that each of us is taking to decarbonise our vehicle fleet, including such domestic policies that are designed to achieve 100% or the overwhelming penetration of sales of light duty vehicles (LDVs) as zero emission vehicles (ZEV) by 2035 and beyond; to achieve 100 percent electrified vehicles in new passenger car sales by 2035."
"We note the opportunity to collectively reduce by at least 50%, CO2 emissions from G7 vehicle stock by 2035 or earlier relative to the level in 2000 as a halfway point to achieving net zero."

Reporting by Katya Golubkova; Editing by David Dolan and William Mallard

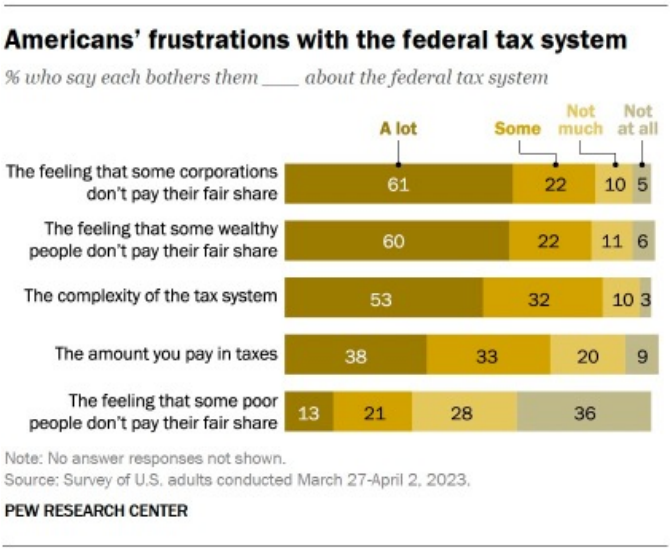
https://www.pewresearch.org/fact-tank/2023/04/07/top-tax-frustrations-for-americans-the-feeling-that-some-corporations-wealthy-people-dont-pay-fair-share/

APRIL 7, 2023

Top tax frustrations for Americans: The feeling that some corporations, wealthy people don't pay fair share

BY J. BAXTER OLIPHANT

With the annual IRS tax filing deadline approaching, majorities of Americans continue to be bothered by the feeling that some corporations and wealthy people do not pay their fair share in taxes. Majorities also say they would like taxes on these groups to be raised.



About six-in-ten adults now say that the feeling that some corporations don't pay their fair share (61%) bothers them a lot, while a nearly identical share say this about some wealthy people not paying their fair share (60%), according to a Pew Research Center survey of 5,079 U.S. adults conducted from March 27 to April 2, 2023. These percentages are essentially unchanged since 2021.

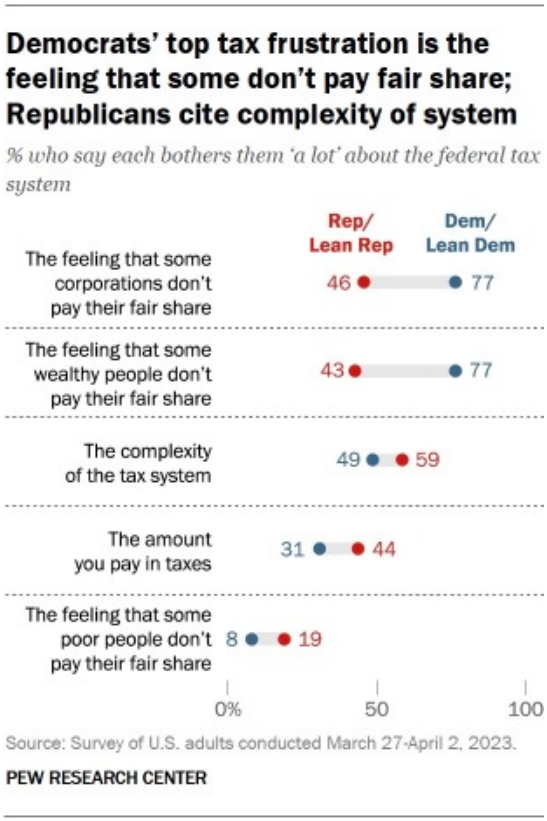
About half of Americans (53%) now say the complexity of the federal tax system bothers them a lot, up from 47% who said this in 2021. About a third (32%) say the tax system's complexity bothers them some, while 13% say it bothers them not much or not at all.

How we did this

Roughly four-in-ten adults (38%) are bothered a lot by the amount they personally pay in taxes today, a modest increase from two years ago, when 33% said this. A third today say the amount they pay bothers them some, while 29% say it doesn't bother them much or at all.

Only about one-in-ten Americans are bothered a lot (13%) by a sense that lower-income people don't pay their fair share to the federal treasury. An additional 21% are somewhat bothered by this, while most Americans say this bothers them not too much (28%) or not at all (36%).

Partisans' top frustrations with the tax system differ



Republicans and Democrats, including those who lean toward each party, diverge in their frustrations with the federal tax system.

Democrats and Democratic leaners overwhelmingly say they are bothered a lot by the feeling that corporations and wealthy people do not pay their fair shares (77% say this for each). By comparison, fewer than half of Republicans and Republican leaners share those views (46% say this about corporations and 43% about the wealthy).

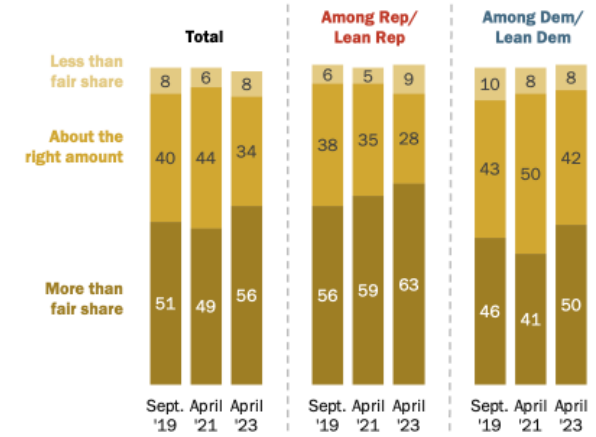
Republicans express their highest levels of frustration with the complexity of the tax system (59% say this bothers them a lot, compared with 49% of Democrats). Republicans are also more likely than Democrats to say the amount they pay in taxes bothers them a lot (44% vs. 31%). Few in either party

say the feeling that some people with lower incomes don't pay their fair share bothers them, though Republicans are more than twice as likely as Democrats to say this (19% vs. 8%).

Narrow majority of Americans now say they pay more than their fair share in taxes

Compared with past years, more Americans now say they pay 'more than their fair share' in taxes

% who say, considering what they get from the federal government, they pay ___ in taxes



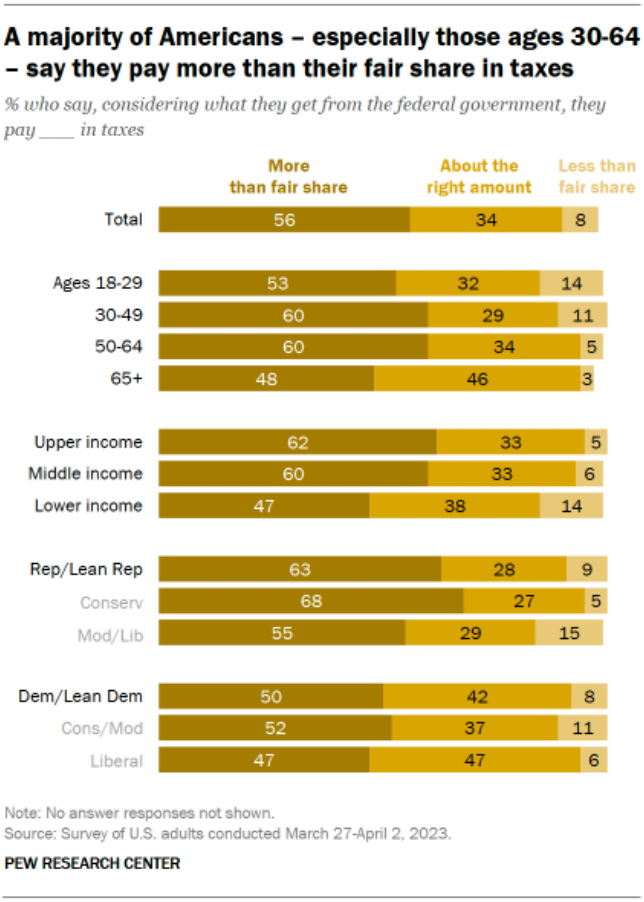
Note: No answer responses not shown.
Source: Survey of U.S. adults conducted March 27-April 2, 2023.

PEW RESEARCH CENTER

Today, 56% of Americans say that the amount they pay in taxes is "more than their fair share," given what they get from the federal government, up from 49% in 2021. Roughly a third (34%) now say they pay about the right amount in taxes, while 8% say they pay less than their fair share.

Republicans are more likely than Democrats (63% vs. 50%) to say they pay more than their fair share to the federal government, but these percentages have increased in both parties over the last two years. The share of Republicans saying they pay more than their fair share has increased by four percentage points since 2021; among Democrats, it has increased by nine points.

Americans from upper- and middle-income households, conservative Republicans and those ages 30 to 64 are especially likely to say they pay more than their fair share in taxes to the federal government.



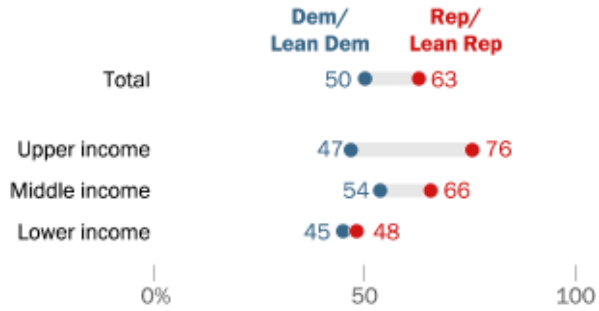
Six-in-ten adults ages 30 to 64 say their personal tax burden is too high, while smaller shares of those ages 18 to 29 and those 65 and older say the same (53% and 48%, respectively).

Upper-income (62%) and middle-income (60%) Americans are more likely than those with lower household incomes (47%) to feel their tax burden is unfair, given what they receive from the federal government. (Refer to the methodology for details on how household income tiers are determined.)

While Republicans overall are more likely than Democrats to say they pay more than their fair share to the federal government, conservatives in the GOP are particularly likely to say this. About two-thirds of conservative Republicans (68%) say they pay an unfair amount, compared with 55% of moderate and liberal Republicans. Among Democrats, there is no significant ideological gap in views of personal tax burdens (52% of conservative and moderate Democrats say they pay an unfair share, as do 47% of liberal Democrats).

Upper-income Republicans more likely than other Americans to say they pay more than their fair share in taxes

% who say, considering what they get from the federal government, they pay ***more than their fair share*** *in taxes*



Source: Survey of U.S. adults conducted March 27-April 2, 2023.

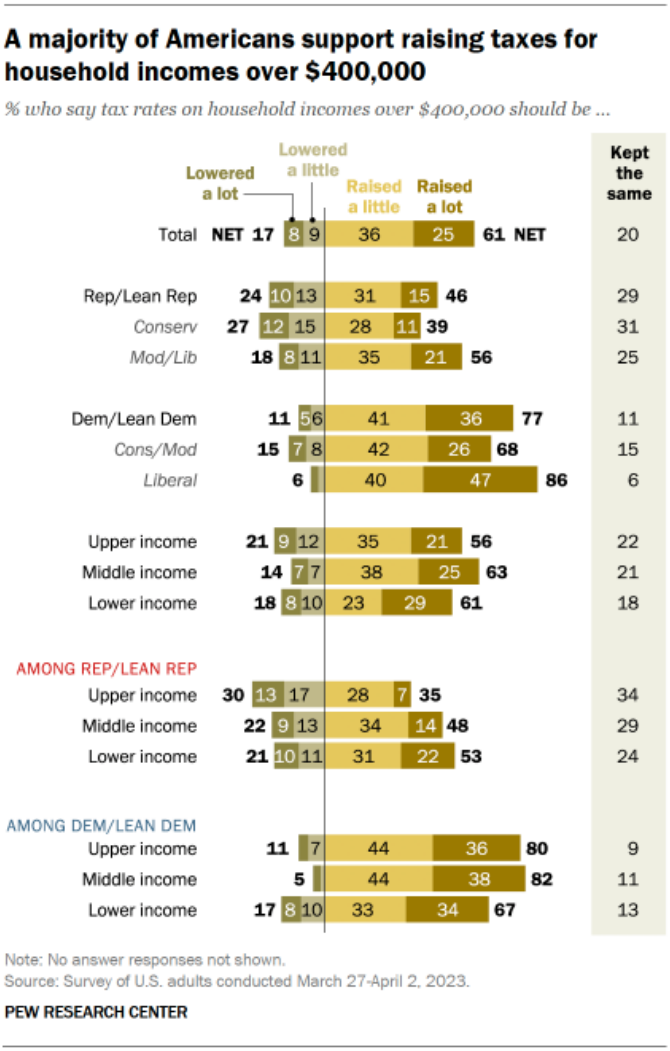
PEW RESEARCH CENTER

Republicans with higher household incomes are especially likely to be critical of the taxes they pay. About three-quarters of upper-income Republicans (76%) say they pay more than their fair share, while two-thirds of middle-income Republicans (66%) and about half of lower-income Republicans (48%) say the same.

By comparison, about half of Democrats across income tiers say they pay more than their fair share.

As a result, the partisan divide in views of one's personal tax burden is particularly pronounced among upper-income Americans. About half of Democrats with high family incomes (47%) say they pay an unfair share in taxes, almost 30 percentage points lower than the share of Republicans in the same income bracket who say this (76%). In contrast, nearly identical shares of lower-income Democrats (45%) and Republicans (48%) say they pay too much.

Majority of Americans support raising taxes on incomes over $400,000



About six-in-ten Americans (61%) favor raising tax rates for households that make more than $400,000, including a quarter who say these tax rates should be raised a lot and 36% who say they should be raised a little. Another 20% say tax rates for this group should be kept the same as they are now, while a similar share (17%) say taxes should be lowered for these households. These views are little changed in recent years.

Democrats – especially liberal Democrats – overwhelmingly favor raising tax rates for high-income households. About three-quarters of Democrats (77%) say tax rates should be raised for those with incomes above $400,000. That share jumps to 86% among liberal Democrats, including 47% who want rates to be raised a lot. A smaller majority of conservative and moderate Democrats (68%) want rates raised on these households.

Republicans are less likely than Democrats to say tax rates should be raised for those with incomes over $400,000, but more Republicans support raising rates for these high incomes (46%) than say rates should be kept the same (29%) or lowered (24%). Moderate and liberal Republicans (56%) are more likely than conservative Republicans (39%) to say taxes should be raised on these incomes.

Majorities of upper-income (56%), middle-income (63%) and lower-income (61%) Americans say tax rates should be raised on household incomes over $400,000. However, within both parties, support for raising taxes on high earners varies by household income.

Upper-income Republicans are the least supportive of raising tax rates for those with incomes over $400,000. About a third (35%) say this, compared with 48% of middle-income Republicans and 53% of lower-income Republicans.

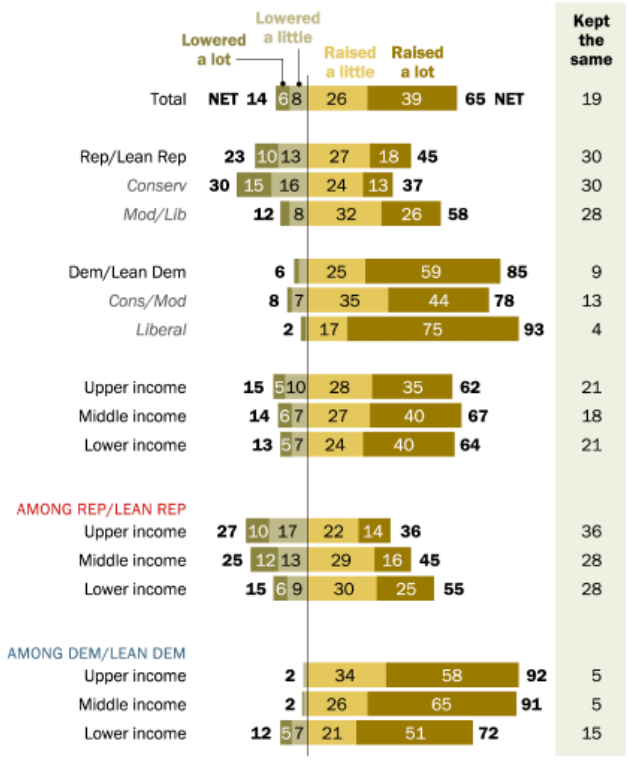
Among Democrats, those in lower-income households are *less* supportive than those with middle and upper incomes of raising rates for incomes over $400,000. About two-thirds of lower-income Democrats say these taxes should go up, while about eight-in-ten middle-income (82%) and upper-income (80%) Democrats say the same.

Most favor higher taxes on large businesses and corporations

A majority of Americans (65%) say that tax rates on large businesses and corporations should be raised a lot (39%) or a little (26%). About two-in-ten (19%) say large businesses' tax rates should be kept about the same, while 14% say their taxes should be lowered a little (8%) or a lot (6%).

About two-thirds of Americans say corporate tax rates should be raised; 39% say they should be raised 'a lot'

% who say tax rates on large businesses and corporations should be ...



Note: No answer responses not shown.
Source: Survey of U.S. adults conducted March 27-April 2, 2023.

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There are deep partisan divisions over raising tax rates for large businesses: 85% of Democrats say these rates should be raised at least a little, compared with 45% of Republicans.

Among Republicans, moderates and liberals are more supportive of raising taxes for large businesses and corporations (58% favor raising them a lot or a little) than conservatives. Conservative Republicans' views are almost equally divided between raising corporate taxes (37%), lowering them (30%) and keeping them about the same (30%).

Among Democrats, large majorities of both liberals (93%) and conservatives or moderates (78%) say that large businesses and corporations should have higher tax rates. However, while three-quarters of liberal Democrats favor raising large businesses' taxes a lot, a smaller share (44%) of conservative and moderate Democrats say the same.

When it comes to household income, Americans' views of raising tax rates on large businesses and corporations are similar to the patterns observed in their attitudes toward raising taxes on incomes over $400,000. Among Democrats, those with lower household incomes are *less* supportive than those in higher income groups of raising large businesses' taxes, while among Republicans, those with lower incomes are *more* supportive of higher corporate tax rates than those with middle or upper incomes.

Note: This is an update of a post originally published April 30, 2021. Here are the questions used for the analysis and its methodology.

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SOCIETY
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Poverty and threshold: 25% of Russians spend the bulk of their income on food

At the same time, the share of the poor is "not too dynamic", but is decreasing, sociologists state

Valeria Mishina

The lack of funds for food, clothing or footwear in 2022 was experienced by 17% of Russians, follows from the data of the Center for Civil Society Studies of the Higher School of Economics. 25% of respondents noted that they spend two-thirds or more of family income on food. At the same time, the authors of the study indicate that in comparison with previous years, these figures have decreased, the well-being of citizens is growing, albeit "not too dynamically." The positive trend is explained by the significant social support of these segments of the population from the state, experts say. They state that the indexation of child benefits, the introduction of other measures to support families with a low level of income allowed them to "rise above the poverty line."

Immediate needs

Every sixth resident of Russia (17%) in 2022 experienced a shortage of funds for the purchase of food or clothes and shoes. This is evidenced by the data of the Center for Studies of Civil Society and the Non-Profit Sector of the Higher School of Economics. In particular, 4% reported that there is not enough money even for food, and 13% - that they have the opportunity to buy food, but not clothes or shoes.

At the same time, the data of the latest survey indicate a positive trend in comparison with previous years. So, in 2019, in a study conducted using the same methodology, almost twice as many people complained about the lack of money for food - 7%. The share of those who did not have enough for shoes and clothes was 16%.

"Russians over 60 years old are more likely to note that the financial situation does not allow them to meet basic needs," said Irina Mersiyanova, director of the Center.

Thus, 27% of the surveyed elderly respondents stated a lack of funds for food, clothing and footwear.

10% of study participants, when asked how much of their income goes from their household budget to food, reported that "almost everything." Another 15% spend about two-thirds of income on food. At the same time, in 2021, these figures were higher - they were 11% and 20%, respectively.
The data demonstrate that the well-being of citizens is growing, although "not very dynamically," Lyudmila Ivanova-Shvets, associate professor at the Department of Human Resource Management at the Plekhanov Russian University of Economics, told Izvestia.

"It should be noted that the high rate of spending on food is a purely Russian specificity," she said. — The structure of expenses in Russia, Europe and the United States is significantly different. Many of our citizens have their own apartments, transport is not too expensive, and in other countries two-thirds of the costs are payments for rent and utilities, but much less is spent on food there.

At the same time, in Russia, even among those who barely have enough money for food, every third person made monetary donations at least once, Irina Mersiyanova said, relying on other studies of the center.

"In particular, those who do not have enough money even for food most often donate funds to other people who find themselves in a difficult life situation," she said.

Источник: Центр исследований развития гражданского общества и некоммерческого сектора Высшей школы экономики

Social support

In recent years, state support for the most vulnerable segments of the population has grown, Lyudmila Ivanova-Shvets recalled. Economist Mykola Kulbaka also explained the role of increasing social support by the figures obtained.

"The state now has a large program of assistance to the poor, large families and other vulnerable groups," he said. But recent years have been characterized by significant upheavals, remember both the pandemic and the SVO. So I would be wary of looking at the data: many sociologists say that people have increasingly refused to answer questions in recent years. That is, we are dealing with a specific sample of people who are ready to speak, and not with a random one.

At the same time, in his opinion, the data obtained confirm that the stratification, polarization of society is increasing. So, in the survey, the indicator of those who can buy real estate (5% in 2022, 6% in 2019) only slightly exceeds the level of statistical error. And the share of those who cannot afford to buy a car has grown in four years: from 20% in 2019 to 25% in 2022.

"The share of the poor is decreasing, they are becoming less poor, but at the same time the share of the middle class, which the state supports to a much lesser extent, is also decreasing," Mykola Kulbaka believes.
The conclusions about the reduction in the number of the poor are "close to reality" were also stated by Natalia Zubarevich, Professor of Moscow State University, Chief Researcher at the HSE Institute for Social Policy.

"The poor were really helped," she said.
In particular, she recalled the indexation of child benefits and the introduction in 2022 of new ones for children from 8 to 17 years old in families with a low level of income. In her opinion, targeted support for low-income families allowed them to "slightly rise above the poverty line."

Источник: Центр исследований развития гражданского общества и некоммерческого сектора Высшей школы экономики