Energy Tidbits

Seems Saudi's Extra 1 mmbd Cut Should Hold the Market For a Month or Two Until Summer Seasonal Demand Kicks In

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Short-Term Energy Outlook

Overview

U.S. energy market indicators	2022	2023	2024
Brent crude oil spot price (dollars per barrel)	**$101**	**$80**	**$84**
Retail gasoline price (dollars per gallon)	**$3.97**	**$3.39**	**$3.30**
U.S. crude oil production (million barrels per day)	**11.89**	**12.61**	**12.77**
Natural gas price at Henry Hub (dollars per million British thermal units)	**$6.42**	**$2.66**	**$3.42**
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%	41%	39%
Coal	20%	16%	16%
Renewables	22%	23%	25%
Nuclear	19%	19%	19%
U.S. GDP (percentage change)	**2.1%**	**1.3%**	**1.0%**
U.S. CO_2 emissions (billion metric tons)	**4.96**	**4.79**	**4.78**

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

- **Global oil markets**. Following the OPEC+ announcement on June 4 to extend crude oil production cuts through 2024, we forecast global oil inventories to fall slightly in each of the next five quarters. We expect these draws will put some upward pressure on crude oil prices, notably in late-2023 and early-2024. We forecast the Brent crude oil spot price will average $79 per barrel (b) in the second half of 2023 (2H23) and $84/b in 2024.

- **Global oil consumption.** We forecast global liquids fuels consumption will rise by 1.6 million barrels per day (b/d) in 2023 from an average of 99.4 million b/d last year. Consumption in our forecast grows by an additional 1.7 million b/d in 2024. Most of this growth comes from non-OECD countries.

- **U.S. economy.** Our forecast assumes U.S. GDP growth of 1.3% in 2023 and 1.0% in 2024, which is down from last month's forecast of 1.6% in 2023 and 1.8% in 2024, based on the S&P Global macroeconomic model for the U.S. economy and our energy price forecasts. Lower GDP growth reduces total U.S. energy consumption in both years compared with last month's forecast.

- **U.S. distillate fuel consumption.** The reduction in forecast GDP growth lowers our forecast for distillate fuel (mostly diesel) consumption. We now expect U.S. distillate consumption to fall in 2024, which is a change from our forecast last month forecasting distillate consumption growing next year. This month's *Between the Lines* article discusses the relationship between economic growth and U.S. diesel consumption.

- **U.S. liquid fuels consumption.** Overall, we expect U.S. liquid fuels consumption to increase in both 2023 and 2024, driven by factors mostly unrelated to forecasts for economic growth. Consumption growth in 2023 is led by gasoline and jet fuel, which continues to increase from a pandemic-related decline in demand. Propane and ethane consumption are the main drivers of growth in 2024.

- **Natural gas production.** U.S. dry natural gas production in our forecast averages almost 103 billion cubic feet per day (Bcf/d) in 2H23, down slightly from our estimate of about 104 Bcf/d on average during April and May. The drop in forecast production reflects less natural gas-directed drilling because of a more than 75% decline in the Henry Hub natural gas spot price compared with its recent peak in August 2022. However, we expect growth of associated natural gas production in the Permian Basin to mostly offset declines in dry gas output.

- **Natural gas prices.** We expect natural gas prices to increase throughout the summer as production declines slightly and demand for air conditioning increases the use of natural gas in the electric power sector. The Henry Hub spot price in our forecast averages almost $2.90 per million British thermal units (MMBtu) in 2H23, up from the realized May average of $2.15/MMBtu. The natural gas price at the Henry Hub in our forecast rises by almost 30% in 2024 compared with 2023 to an average of about $3.40/MMBtu.

- **Electricity generation.** Solar has been the leading source of new generating capacity in the United States so far this year, and the new capacity contributes to our forecast that U.S. solar generation this summer (June, July, and August) will be 24% higher than in summer 2022. The increase in solar capacity, along with lower natural gas prices, contributes to our forecast drop in coal-fired electricity generation this year.

- **Electricity prices.** We expect wholesale electricity prices in the eastern half of the country to average about 50% lower in 2023 as a result of lower natural gas prices. The Northwest, Southwest, and California regions could experience temporary spikes in wholesale power prices this summer, due to a likelihood of limited power supply during peak demand hours. These high hourly power prices bring average monthly prices above $100 per megawatthour in July and August.

Notable forecast changes

current forecast: June 6, 2023; previous forecast: May 9, 2023	2023	2024
Natural gas price at Henry hub (current forecast) (dollars per million British thermal units)	**$2.66**	**$3.42**
Previous forecast	$2.91	$3.72
Percentage change	-8.8%	-8.0%
Dry natural gas production (current forecast) (billion cubic feet per day)	**102.7**	**103.0**
Previous forecast	101.1	101.2
Percentage change	1.6%	1.8%
Brent spot average (current forecast) (dollars per barrel)	**$79.54**	**$83.51**
Previous forecast	$78.65	$74.47
Percentage change	1.1%	12.1%
OPEC crude oil production (current forecast) (million barrels per day)	**33.5**	**33.8**
Previous forecast	33.8	34.3
Percentage change	-0.7%	-1.8%
U.S. crude oil production (current forecast) (million barrels per day)	**12.6**	**12.8**
Previous forecast	12.5	12.7
Percentage change	0.6%	0.7%
U.S. real gross domestic product growth (current forecast) (percentage)	**1.3%**	**1.0%**
Previous forecast	1.6%	1.8%
Percentage point change	-0.3	-0.7
U.S. manufacturing production index growth (current forecast) (percentage)	**-1.2%**	**0.0%**
Previous forecast	-0.6%	-1.6%
Percentage point change	-0.6	-1.6

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

Global Oil Markets

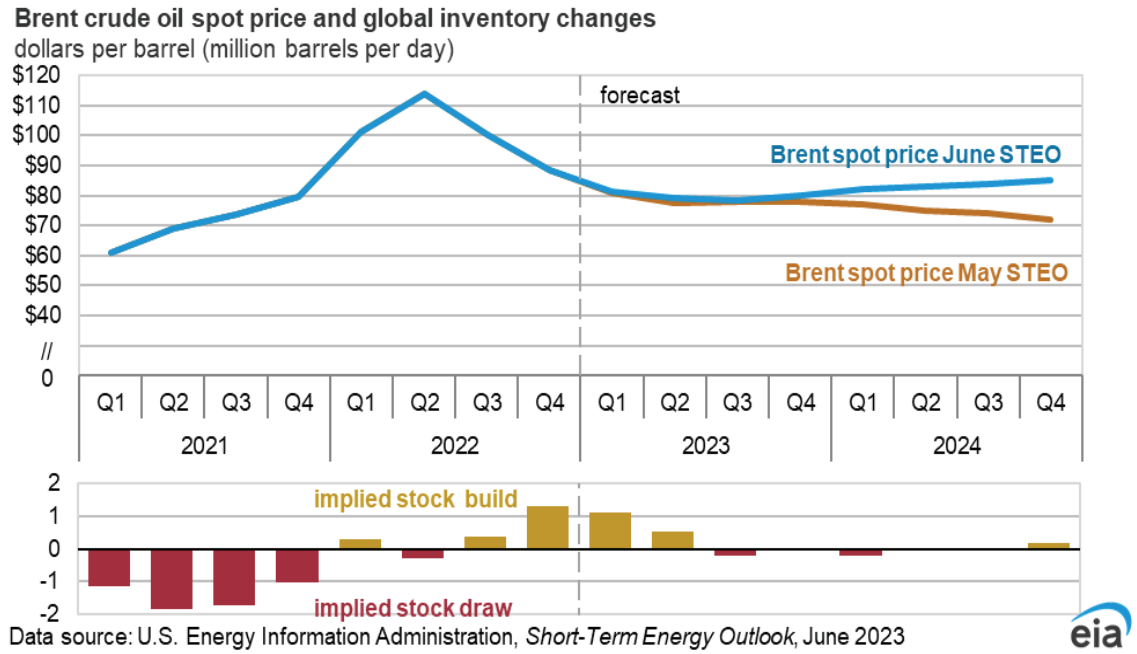
Global oil supply

We forecast lower global oil production through 2024 compared with our assessment last month following recent announcements from OPEC+ and Saudi Arabia. On June 4, OPEC+ members agreed to extend crude oil production cuts through the end of 2024. The cuts had been set to expire at the end of 2023. Following the June 4 meeting, Saudi Arabia also announced a new voluntary oil production cut of 1 million b/d for July 2023.

Despite the extension of OPEC+ production cuts, we forecast global liquid fuels production will increase by 1.5 million b/d in 2023 and by 1.3 million b/d in 2024, primarily because of growth from non-OPEC producers. Among the leading sources of non-OPEC growth are the United States, Norway, Canada, Brazil, and Guyana. We forecast that OPEC crude oil production will fall by 0.6 million b/d in 2023 and then increase by 0.3 million b/d in 2024, which is lower than our previous forecast of 0.6 million b/d growth for next year.

Oil prices

The OPEC+ cuts result in inventory draws in our forecast, which in turn trigger higher crude oil prices, mainly in 2024, compared with our May STEO.



The Brent crude oil spot price averaged $76 per barrel (b) in May, down $9/b from April. Crude oil prices fell in May as ongoing uncertainty about economic conditions continued to limit expectations for global oil demand growth. Despite the recent weakness in oil prices during May, we expect that global oil inventories will decline in each quarter from the third quarter of 2023 (3Q23) through 3Q24, which we expect will put gradual upward pressure on oil prices. We forecast that global oil inventories will

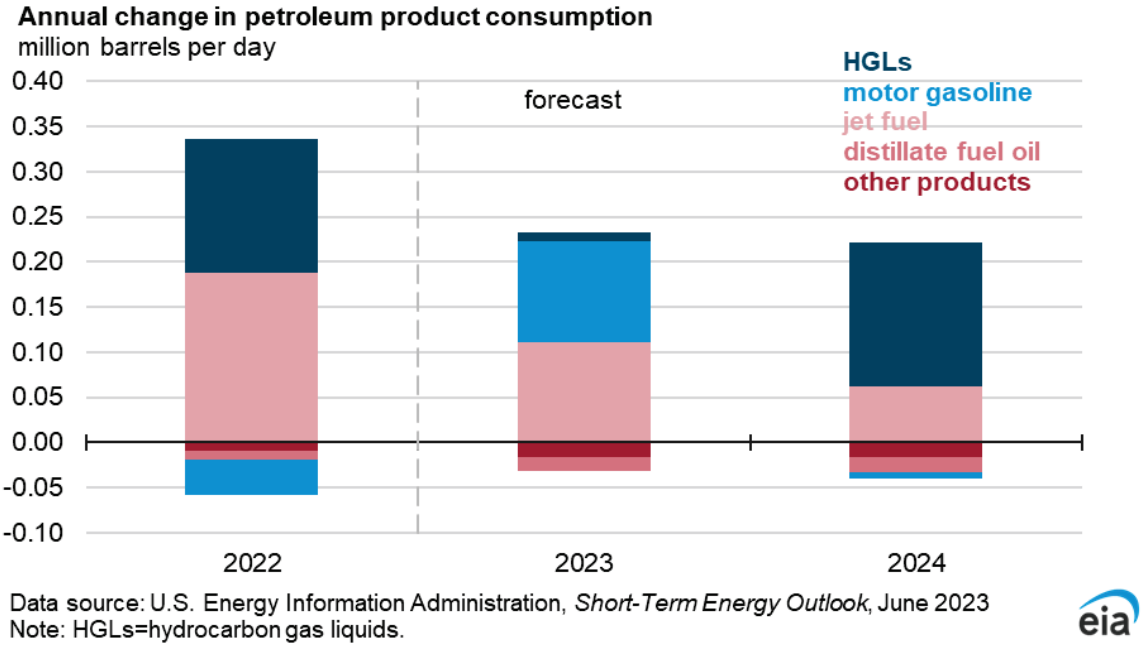
decrease slightly in 2024, compared with last month's STEO that forecast inventory growth of 0.3 million b/d.

As a result of these changes, we now forecast that the Brent crude oil price will increase from an average of $79/b in the second half of 2023 ($1/b higher than in our Mary STEO) to an average of $84/b for 2024 ($9/b higher than in our May STEO). Significant uncertainty remains around global economic growth and the potential impact on oil demand over the forecast period. Global liquid fuels consumption in our forecast increases by 1.6 million b/d in 2023 and 1.7 million b/d in 2024, led by growth in non-OECD Asia.

Petroleum Products

U.S. petroleum consumption

In 2023, we forecast total U.S. petroleum products consumption will increase by less than 1%, compared with 2% year-on-year growth in 2022. The forecast growth in 2023 is driven by gasoline and jet fuel consumption.



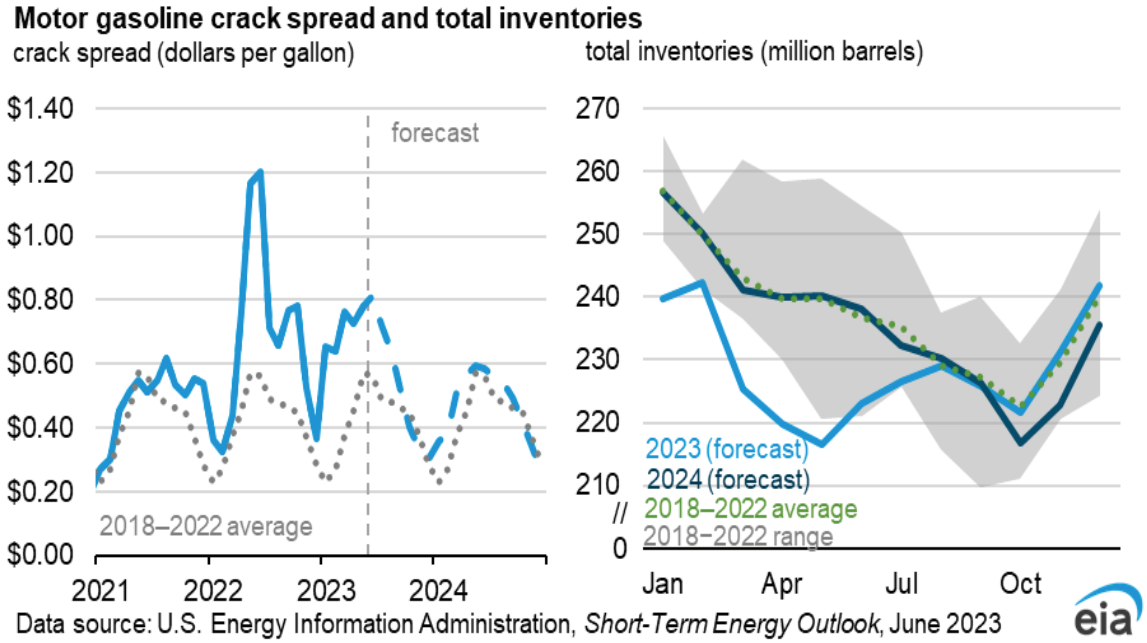
Economic growth this year is being driven by services and travel, which also tend to drive increases in gasoline and jet fuel consumption. In 2023, we forecast that these two products make up the largest portion of consumption growth, with gasoline consumption growing by 110,000 b/d (1%) on an annual average basis and jet fuel consumption also growing by 110,000 b/d (7%). Growth in gasoline and jet fuel consumption is partly offset by declining distillate fuel consumption in 2023 and 2024, which is related more to trends in the manufacturing sector.

We expect that growth in consumption for gasoline and jet fuel will be more muted in 2024, with gasoline consumption almost unchanged in 2024 and jet fuel consumption growth at 60,000 b/d (4%). Meanwhile, we estimate consumption of hydrocarbon gas liquids (HGLs) in 2023 will be unchanged from

last year. Low propane consumption in 1Q23 due to mild winter weather is the primary driver for unchanged consumption in 2023. Declining propane consumption is offset by our forecast of rising ethane consumption in 2023, as ethane crackers brought online in the United States in 2022 continue to ramp-up the consumption of ethane. However, in 2024 we forecast HGLs will be the leading source of U.S. petroleum consumption growth, largely because of growth in propane use in 1Q24 due to colder forecast weather in 1Q24 than in 1Q23.

Gasoline crack spreads

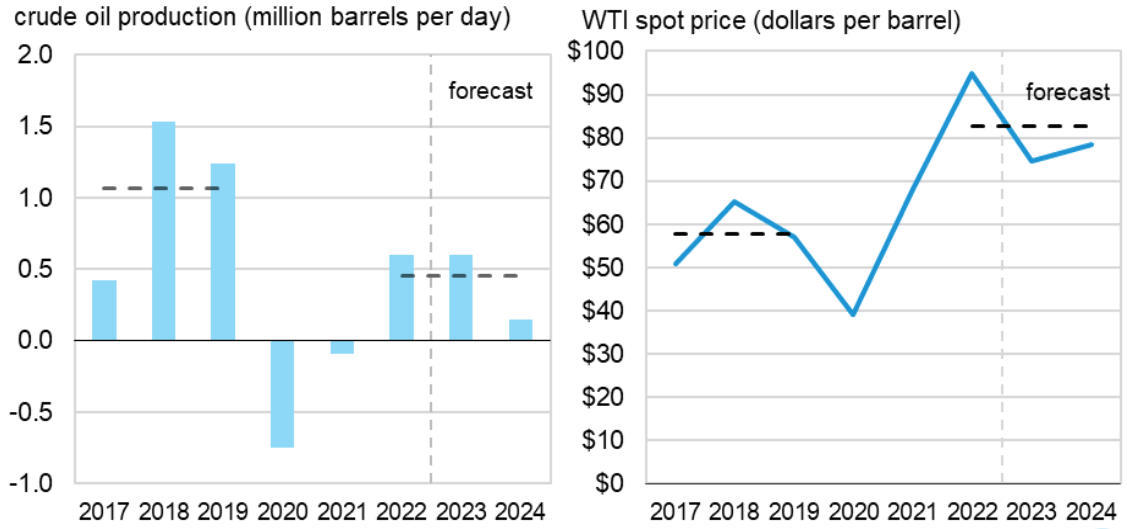
So far, gasoline crack spreads (the difference between the wholesale price of gasoline and crude oil) have been at or above the 2018–2022 average during 2Q23 in response to low gasoline inventories. U.S. gasoline consumption has been above 2022 levels, while significant refinery maintenance during the spring turnaround season reduced gasoline production. U.S. refiners are required to change over to producing summer-grade gasoline by the start of May, which also contributes to higher gasoline prices and crack spreads.



We expect new refinery capacity along the Gulf Coast and an end to refinery maintenance in early June will increase gasoline production. Rising gasoline production contributes to rising gasoline inventories, which we forecast will put downward pressure on gasoline crack spreads and retail prices beginning in July. Key sources of uncertainty in our gasoline forecast include the availability of gasoline imports to supplement domestic gasoline production on the coasts, U.S. gasoline consumption, and the overall gasoline production yield following changes to the U.S. refining fleet.

Crude oil production

Annual change in lower 48 states onshore crude oil production and WTI spot price



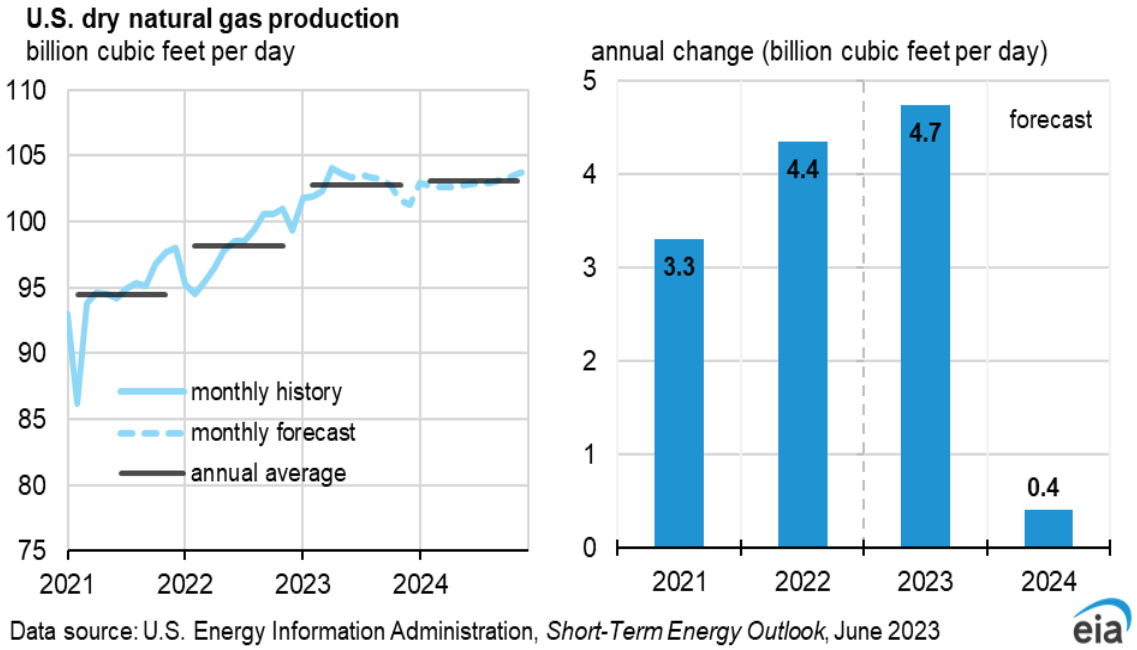
Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, June 2023
Note: WTI=West Texas Intermediate.

Although we expect U.S. crude oil production to set annual records in 2023 and 2024, growth in crude oil production is slowing. We estimate West Texas Intermediate (WTI) crude oil prices will average $83/b over the three years from 2022 to 2024, while annual growth in U.S. crude oil production over the same period will average 0.4 million b/d. That compares to average crude oil production growth of 1.1 million b/d during the three-year period from 2017 to 2019, when the WTI price averaged only $58/b. The changing response to crude oil prices by U.S. producers may reflect a combination of the use of capital to increase dividends and repurchase shares instead of investing in new production, the effects of tighter labor markets and higher costs, and increased pressure on oilfield supply chains. Despite this shift from the historical price response , we still expect U.S. crude oil production to continue growing to record levels, driven primarily by production growth in the Permian Basin.

Natural Gas

Natural gas production

We estimate U.S. dry natural gas production set a monthly record in April of 104 billion cubic feet per day (Bcf/d), up from 102 Bcf/d in March. The production record occurred despite natural gas prices that averaged below $2.50 per million British thermal units (MMBtu) at the U.S. benchmark Henry Hub in March and April, about $4.00/MMBtu less than the 2022 annual average. Production growth has been concentrated in two regions: the Haynesville region in northeastern Texas and northwestern Louisiana, and the Permian Basin in western Texas and southeastern New Mexico. Growth in the Haynesville region reflects the lagged effects of high natural gas prices in 2022 that increased drilling activity in the region. Growth in natural gas production in the Permian, because of which is mostly associated natural gas, has been driven by relatively high oil prices and increased oil production.

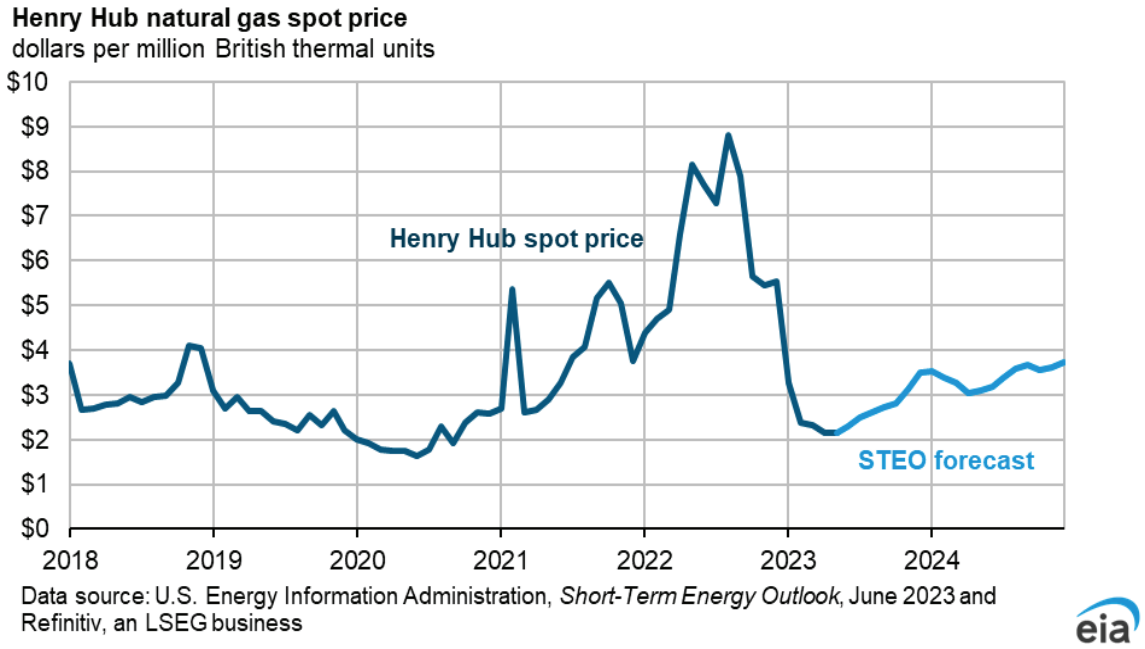


We forecast dry natural gas production will remain close to record levels through much of the rest of the forecast period, averaging around 103 Bcf/d during the second half of 2023 and 2024. The flat production reflects reduced natural gas-directed drilling in response to the drop in natural gas prices this year being offset by increasing associated natural gas production in the Permian Basin. Higher expected crude oil prices in this month's STEO compared with last month result in our upward revision of natural gas production in this month's outlook, despite lower natural gas prices in the forecast.

Natural gas prices

We expect the U.S. benchmark Henry Hub natural gas spot price to rise in the summer months, averaging just over $2.60/MMBtu in 3Q23, up from an average of $2.15/MMBtu in May. Rising natural gas use in the electric power sector and flattening production growth – which together contribute to storage injections that are less than the five-year average (2018–2022) in the coming months – are the primary drivers. The Henry Hub spot price averages around $3.40/MMBtu in 2024 in our forecast, nearly 30% higher than in 2023.

Although we forecast an increase in natural gas prices for the summer months due to inventories narrowing the surplus to the five-year average, we expect high inventory levels will keep prices well below last year's prices, which averaged almost $8.00/MMBtu in 3Q22. Natural gas storage inventories were 15% above the five-year average at the end of May compared with a deficit of 14% below the 2017–2021 average at the end of May 2022.



Electricity, coal, and renewables

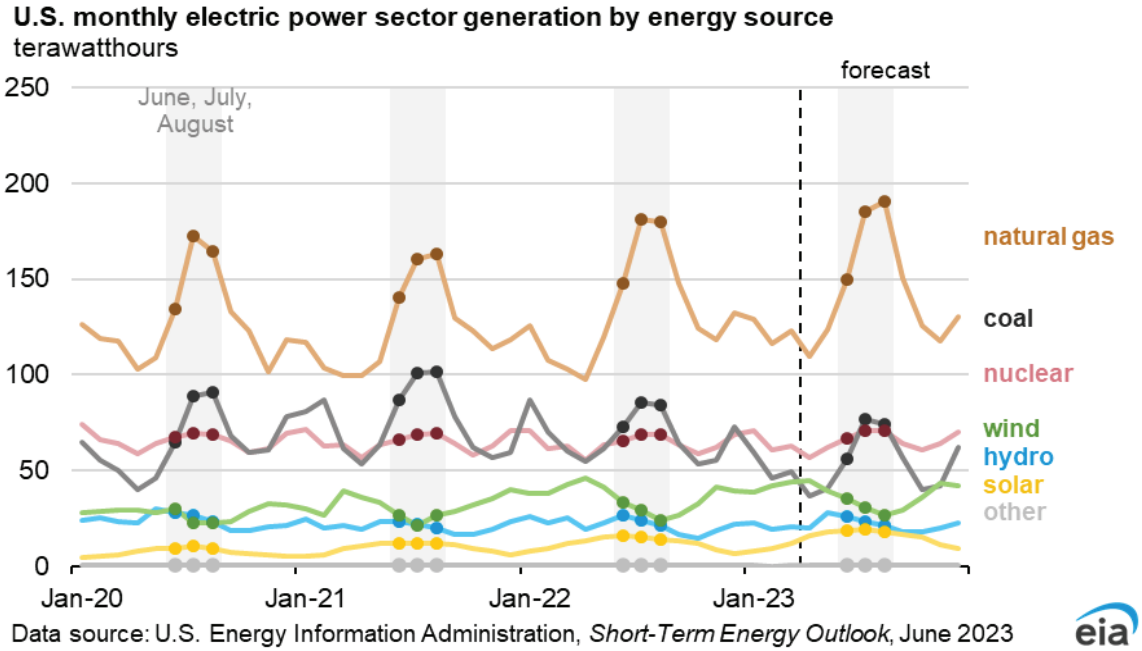
Electricity demand

We expect U.S. sales of electricity to ultimate customers will remain fairly steady through the forecast period. Forecast electricity sales during the summer this year (June, July, and August) are slightly lower than summer 2022 mostly because a reduction in manufacturing activity reduces industrial electricity consumption by 2%.

Electricity generation

New solar, wind, and nuclear generating capacity will increase electricity generation from these sources this summer. The U.S. electric power sector added an estimated 14 gigawatts of solar generating capacity and about 8 gigawatts of wind capacity during the 12 months ending May 2023.

Solar has been the leading source of new generating capacity in the United States so far this year, and the new capacity contributes to our forecast that U.S. solar generation this summer will grow 24% from summer 2022. Although wind capacity continues to grow, the rate of additions has slowed slightly. We expect 7% more wind generation in summer 2023 than in summer 2022.



Although several nuclear reactors have retired in recent years, a new reactor at the Vogtle nuclear plant in Georgia is scheduled to begin commercial operation this month. As a result of this new unit, we forecast that U.S. nuclear generation will grow by 2% this summer compared with summer 2022. Georgia Power expects to open another reactor at Vogtle around the beginning of 2024.

The expected increase in summer generation from solar, wind, and nuclear power reduces our forecast of generation from coal-fired power plants. Utilities have retired about 6% of coal capacity over the past 12 months, and the remaining coal plants are likely to run at lower utilization rates. As a result of both factors, we expect 15% less U.S. coal-fired generation this summer than summer 2022.

Natural gas remains the largest source of U.S. electricity generation, and we forecast that natural gas-fired power plants will generate 3% more this summer compared with last year. Additional natural gas-fired generating capacity and favorable fuel costs contribute to our forecast of increased summer generation from that fuel.

Coal Markets

After increasing in both 2021 and 2022, we expect U.S. coal production will decline by 6% to about 560 million short tons (MMst) in 2023, and by a further 14% to 480 MMst in 2024. The primary reason for the decrease is our forecast of a 19% reduction in coal consumption by the electric power sector in 2023. Demand from overseas markets helps support U.S. coal production by providing an outlet for exports.

The cost of coal delivered to electric generators averaged $2.51 per million British thermal units (MMBtu) in March 2023, the most recent historical data month. This price is down from a record $2.65/MMBtu reached in December 2022. We forecast the U.S. delivered coal cost will average $2.48/MMBtu in 2023 before falling 3% in 2024 to average $2.40/MMBtu. The cost reductions are mostly the result of weakening demand for coal.

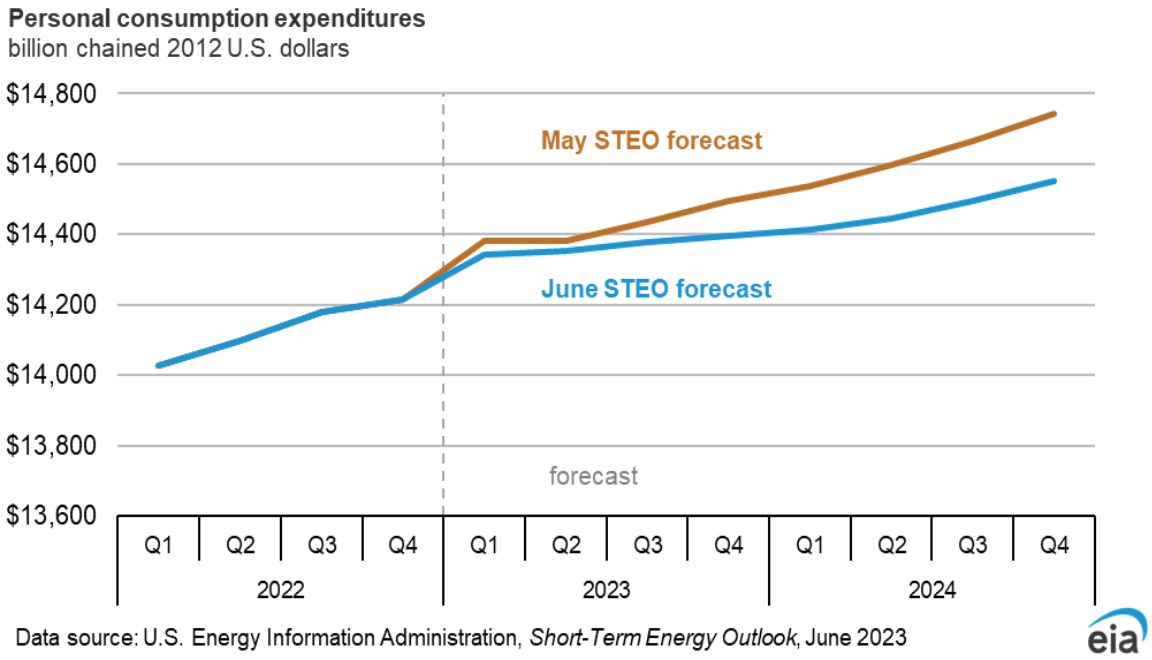
Economy, Weather, and CO_2

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.

The real U.S. GDP growth assumption in our forecast is 1.3% for 2023, down from 1.6% in our May STEO. We assume U.S. GDP growth in 2024 will be 1%, down from 1.8% in our May outlook. GDP growth in 1Q23 was slower than in our last forecast because of weakness in retail sales and personal consumption expenditures (PCE). The downward revision also marks a notable break in the recent series of upward revisions.

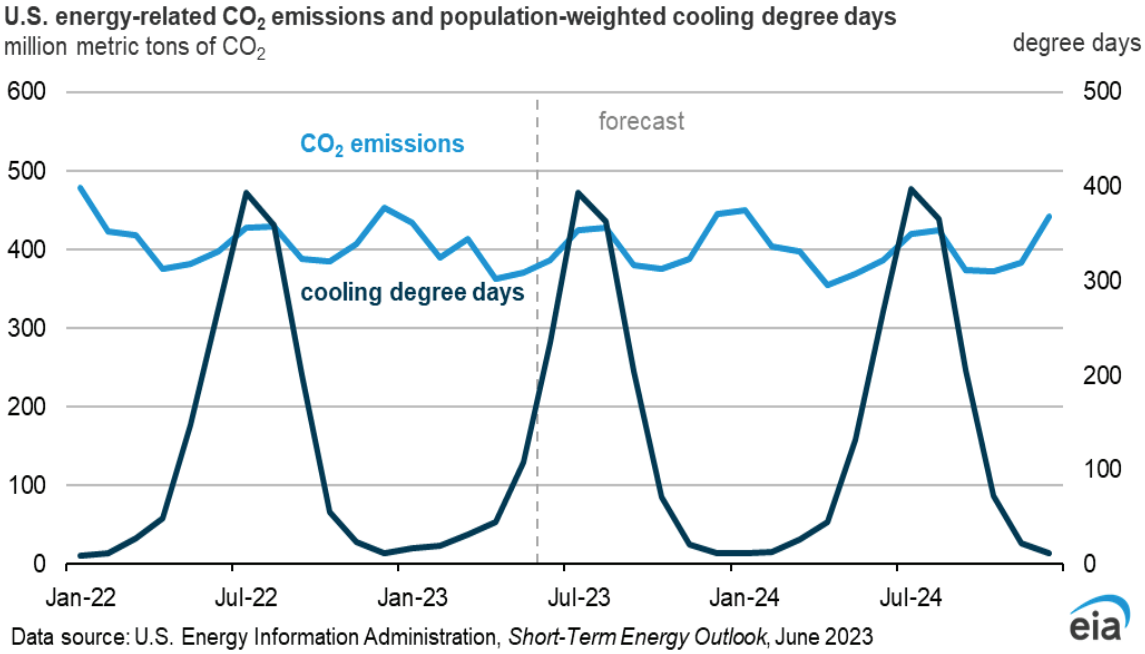
Although PCE is lower in this forecast than in last month's forecast, PCE remains flat through the rest of 2023 in the forecast. However, aggregate investment continues to decline and offset increases in government spending and net exports in the second half of the year. Higher borrowing costs reduce private fixed investment for the remainder of 2Q23, and private fixed investment in the forecast does not resume growing until 2024.



Emissions

U.S. energy-related carbon dioxide (CO_2) emissions in our forecast decrease by 3% in 2023. The largest reduction in CO_2 emissions is from coal, which declines by 18% relative to 2022. Natural gas and petroleum emissions remain unchanged in 2023. Total CO_2 emissions in 2024 remain flat as declining emissions from natural gas are mitigated by increases in petroleum and coal emissions.

The summer months tend to have some of the highest contributions to annual emissions. We expect emissions to increase over the next several months due to increased electricity generation during the summer. For both 2023 and 2024, we expect 8% and 10% more summer CO_2 emissions than the spring, with emissions peaking in August in both years. Summer increases in emissions are due to increased electricity demand, most notably for space cooling. Relative to the spring, we expect electricity more generation in the summer, with notable increases in fossil fuel-fired generation such as coal and natural gas. As consumption of these fossil fuels increases, so do their associated CO_2 emissions.



Weather

A milder start to the summer cooling season (May–September) led to 27% fewer cooling degree days (CDDs) in May compared with the same period last year. We expect the trend to continue with 235 CDDs in June, a 13% decrease from June 2022. CDDs for the remainder of the summer season will remain similar to the previous year, resulting in around 2% fewer CDDs overall in 2023 compared with 2022.

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

U.S. Energy Information Administration | Short-Term Energy Outlook - June 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**	**32.97**	**33.42**	*33.74*	*34.14*	*34.61*	*34.70*	*34.39*	*34.69*	*35.34*	**32.26**	*33.98*	*34.78*
U.S. (50 States)	**19.44**	**20.12**	**20.60**	**20.67**	**21.02**	*21.26*	*21.34*	*21.41*	*21.39*	*21.48*	*21.70*	*21.94*	**20.21**	*21.26*	*21.63*
Canada	**5.66**	**5.51**	**5.72**	**5.91**	**5.79**	*5.63*	*5.90*	*6.13*	*6.21*	*5.92*	*6.13*	*6.34*	**5.70**	*5.87*	*6.15*
Mexico	**1.91**	**1.89**	**1.90**	**1.90**	**2.07**	*2.12*	*2.11*	*2.08*	*2.09*	*2.06*	*2.03*	*1.96*	**1.90**	*2.10*	*2.03*
Other OECD	**4.61**	**4.35**	**4.32**	**4.49**	**4.54**	*4.73*	*4.80*	*4.98*	*5.02*	*4.93*	*4.83*	*5.09*	**4.44**	*4.76*	*4.96*
Non-OECD	**67.20**	**66.86**	**68.26**	**68.05**	**67.64**	*67.59*	*67.26*	*67.07*	*67.32*	*67.93*	*68.39*	*67.97*	**67.60**	*67.39*	*67.91*
OPEC	**33.75**	**33.76**	**34.71**	**34.43**	**33.95**	*33.73*	*33.17*	*33.21*	*33.84*	*33.86*	*33.95*	*33.69*	**34.17**	*33.51*	*33.84*
Crude Oil Portion	**28.19**	**28.33**	**29.23**	**28.92**	**28.46**	*28.39*	*27.78*	*27.77*	*28.31*	*28.46*	*28.51*	*28.21*	**28.67**	*28.10*	*28.38*
Other Liquids (b)	**5.56**	**5.43**	**5.48**	**5.52**	**5.49**	*5.34*	*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**	**13.90**	**14.04**	*13.63*	*13.58*	*13.65*	*13.72*	*13.71*	*13.69*	*13.77*	**13.81**	*13.72*	*13.73*
China	**5.18**	**5.18**	**5.05**	**5.09**	**5.32**	*5.26*	*5.23*	*5.28*	*5.21*	*5.24*	*5.23*	*5.27*	**5.12**	*5.27*	*5.24*
Other Non-OECD	**13.89**	**14.53**	**14.94**	**14.63**	**14.33**	*14.96*	*15.27*	*14.94*	*14.55*	*15.12*	*15.51*	*15.24*	**14.50**	*14.88*	*15.11*
Total World Production	**98.83**	**98.74**	**100.80**	**101.02**	**101.06**	*101.33*	*101.40*	*101.69*	*102.02*	*102.32*	*103.07*	*103.31*	**99.85**	*101.37*	*102.69*
Non-OPEC Production	**65.08**	**64.98**	**66.09**	**66.58**	**67.11**	*67.60*	*68.23*	*68.48*	*68.18*	*68.46*	*69.12*	*69.62*	**65.69**	*67.86*	*68.85*
Consumption (million barrels per day) (c)															
OECD	**45.76**	**45.37**	**46.63**	**45.98**	**45.45**	*45.57*	*46.41*	*46.54*	*46.11*	*45.73*	*46.56*	*46.59*	**45.94**	*46.00*	*46.25*
U.S. (50 States)	**20.22**	**20.27**	**20.47**	**20.16**	**20.00**	*20.45*	*20.67*	*20.59*	*20.42*	*20.71*	*20.90*	*20.72*	**20.28**	*20.43*	*20.69*
U.S. Territories	**0.11**	**0.12**	**0.13**	**0.12**	**0.12**	*0.12*	*0.12*	*0.12*	*0.11*	*0.11*	*0.11*	*0.11*	**0.12**	*0.12*	*0.11*
Canada	**2.24**	**2.21**	**2.38**	**2.35**	**2.27**	*2.24*	*2.34*	*2.32*	*2.30*	*2.25*	*2.35*	*2.33*	**2.29**	*2.29*	*2.31*
Europe	**13.19**	**13.42**	**14.09**	**13.34**	**12.97**	*13.47*	*13.88*	*13.64*	*13.28*	*13.43*	*13.84*	*13.60*	**13.51**	*13.49*	*13.54*
Japan	**3.70**	**3.03**	**3.19**	**3.56**	**3.73**	*3.00*	*3.11*	*3.44*	*3.56*	*2.94*	*3.05*	*3.37*	**3.37**	*3.32*	*3.23*
Other OECD	**6.30**	**6.33**	**6.37**	**6.45**	**6.36**	*6.29*	*6.31*	*6.45*	*6.43*	*6.29*	*6.31*	*6.45*	**6.36**	*6.35*	*6.37*
Non-OECD	**52.78**	**53.65**	**53.78**	**53.72**	**54.48**	*55.24*	*55.19*	*55.15*	*56.12*	*56.63*	*56.56*	*56.54*	**53.49**	*55.02*	*56.46*
Eurasia	**4.28**	**4.43**	**4.73**	**4.65**	**4.29**	*4.44*	*4.75*	*4.67*	*4.43*	*4.58*	*4.90*	*4.81*	**4.53**	*4.54*	*4.68*
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**	**15.91**	*16.11*	*15.79*	*16.00*	*16.32*	*16.51*	*16.18*	*16.40*	**15.15**	*15.95*	*16.35*
Other Asia	**13.75**	**13.76**	**13.42**	**13.84**	**14.23**	*14.29*	*13.71*	*14.01*	*14.86*	*14.84*	*14.23*	*14.55*	**13.69**	*14.06*	*14.62*
Other Non-OECD	**18.90**	**19.41**	**19.87**	**19.26**	**19.29**	*19.63*	*20.17*	*19.71*	*19.76*	*19.93*	*20.47*	*20.00*	**19.36**	*19.70*	*20.04*
Total World Consumption	**98.54**	**99.02**	**100.41**	**99.70**	**99.93**	*100.81*	*101.60*	*101.69*	*102.23*	*102.36*	*103.11*	*103.12*	**99.42**	*101.01*	*102.71*
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**	**-0.09**	*0.05*	*-0.23*	*0.28*	*0.02*	*-0.34*	*0.00*	*0.41*	**0.54**	*0.00*	*0.02*
Other OECD	**-0.09**	**-0.29**	**-0.48**	**-0.26**	**-0.37**	*-0.18*	*0.14*	*-0.09*	*0.06*	*0.12*	*0.01*	*-0.19*	**-0.28**	*-0.12*	*0.00*
Other Stock Draws and Balance	**-1.00**	**0.06**	**-0.36**	**-1.47**	**-0.67**	*-0.39*	*0.29*	*-0.18*	*0.13*	*0.26*	*0.03*	*-0.41*	**-0.69**	*-0.24*	*0.00*
Total Stock Draw	**-0.29**	**0.28**	**-0.39**	**-1.32**	**-1.13**	*-0.52*	*0.20*	*0.01*	*0.21*	*0.03*	*0.04*	*-0.18*	**-0.43**	*-0.36*	*0.02*
End-of-period Commercial Crude Oil and Other Liquids Inventories (million barrels)															
U.S. Commercial Inventory	**1,154**	**1,180**	**1,215**	**1,222**	**1,231**	*1,252*	*1,272*	*1,247*	*1,245*	*1,277*	*1,276*	*1,239*	**1,222**	*1,247*	*1,239*
OECD Commercial Inventory	**2,604**	**2,656**	**2,735**	**2,766**	**2,808**	*2,845*	*2,854*	*2,836*	*2,829*	*2,850*	*2,848*	*2,828*	**2,766**	*2,836*	*2,828*

(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 June 5, 2023.

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 - June 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**	**12.31**	**12.60**	*12.56*	*12.57*	*12.70*	*12.69*	*12.63*	*12.76*	*13.00*	**11.89**	*12.61*	*12.77*
Alaska	**0.45**	**0.44**	**0.42**	**0.44**	**0.44**	*0.39*	*0.41*	*0.43*	*0.43*	*0.36*	*0.39*	*0.41*	**0.44**	*0.42*	*0.40*
Federal Gulf of Mexico (b)	**1.67**	**1.70**	**1.80**	**1.80**	**1.87**	*1.85*	*1.89*	*1.92*	*1.96*	*1.94*	*1.86*	*1.91*	**1.74**	*1.88*	*1.91*
Lower 48 States (excl GOM)	**9.35**	**9.56**	**9.84**	**10.07**	**10.29**	*10.32*	*10.27*	*10.35*	*10.31*	*10.33*	*10.51*	*10.68*	**9.71**	*10.31*	*10.46*
Crude Oil Net Imports (c)	**3.00**	**2.81**	**2.75**	**2.14**	**2.27**	*2.51*	*3.18*	*2.75*	*2.50*	*3.04*	*2.96*	*2.19*	**2.67**	*2.68*	*2.67*
SPR Net Withdrawals	**0.31**	**0.80**	**0.84**	**0.48**	**0.01**	*0.28*	*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**	**-0.40**	*0.25*	*0.19*	*-0.09*	*-0.28*	*0.12*	*0.18*	*-0.10*	**-0.02**	*-0.01*	*-0.02*
Crude Oil Adjustment (d)	**0.71**	**0.81**	**0.74**	**0.87**	**0.71**	*0.68*	*0.52*	*0.43*	*0.53*	*0.57*	*0.49*	*0.44*	**0.78**	*0.58*	*0.51*
Total Crude Oil Input to Refineries	**15.56**	**16.09**	**16.26**	**15.80**	**15.19**	*16.28*	*16.45*	*15.79*	*15.44*	*16.36*	*16.39*	*15.53*	**15.93**	*15.93*	*15.93*
Other Supply															
Refinery Processing Gain	**0.95**	**1.07**	**1.05**	**1.01**	**0.97**	*1.03*	*1.02*	*1.02*	*0.97*	*1.01*	*1.01*	*0.99*	**1.02**	*1.01*	*1.00*
Natural Gas Plant Liquids Production	**5.61**	**5.92**	**6.09**	**5.90**	**6.01**	*6.20*	*6.28*	*6.22*	*6.22*	*6.29*	*6.37*	*6.36*	**5.88**	*6.18*	*6.31*
Renewables and Oxygenate Production (e)	**1.20**	**1.20**	**1.18**	**1.23**	**1.24**	*1.25*	*1.25*	*1.26*	*1.29*	*1.33*	*1.33*	*1.38*	**1.20**	*1.25*	*1.33*
Fuel Ethanol Production	**1.02**	**1.01**	**0.97**	**1.01**	**1.00**	*1.00*	*0.98*	*0.99*	*1.00*	*1.00*	*0.99*	*1.02*	**1.00**	*0.99*	*1.00*
Petroleum Products Adjustment (f)	**0.21**	**0.23**	**0.22**	**0.22**	**0.20**	*0.22*	*0.22*	*0.22*	*0.21*	*0.22*	*0.22*	*0.22*	**0.22**	*0.21*	*0.22*
Product Net Imports (c)	**-3.74**	**-3.99**	**-4.07**	**-3.93**	**-3.91**	*-4.05*	*-4.14*	*-4.29*	*-4.01*	*-4.03*	*-4.26*	*-4.26*	**-3.93**	*-4.10*	*-4.14*
Hydrocarbon Gas Liquids	**-2.14**	**-2.31**	**-2.16**	**-2.26**	**-2.47**	*-2.63*	*-2.57*	*-2.51*	*-2.56*	*-2.61*	*-2.55*	*-2.57*	**-2.22**	*-2.54*	*-2.57*
Unfinished Oils	**0.09**	**0.25**	**0.28**	**0.30**	**0.28**	*0.29*	*0.40*	*0.21*	*0.19*	*0.25*	*0.31*	*0.19*	**0.23**	*0.29*	*0.24*
Other HC/Oxygenates	**-0.09**	**-0.10**	**-0.07**	**-0.02**	**-0.05**	*-0.04*	*-0.03*	*-0.03*	*-0.05*	*-0.03*	*-0.03*	*-0.04*	**-0.07**	*-0.04*	*-0.04*
Motor Gasoline Blend Comp.	**0.40**	**0.60**	**0.48**	**0.40**	**0.45**	*0.63*	*0.49*	*0.45*	*0.45*	*0.58*	*0.35*	*0.38*	**0.47**	*0.51*	*0.44*
Finished Motor Gasoline	**-0.76**	**-0.73**	**-0.81**	**-0.83**	**-0.75**	*-0.68*	*-0.79*	*-0.76*	*-0.76*	*-0.61*	*-0.64*	*-0.80*	**-0.78**	*-0.74*	*-0.71*
Jet Fuel	**-0.04**	**-0.06**	**-0.11**	**-0.03**	**-0.05**	*0.02*	*0.07*	*0.08*	*0.16*	*0.18*	*0.18*	*0.19*	**-0.06**	*0.03*	*0.18*
Distillate Fuel Oil	**-0.81**	**-1.15**	**-1.29**	**-1.05**	**-0.76**	*-0.99*	*-1.17*	*-1.10*	*-0.88*	*-1.18*	*-1.27*	*-1.06*	**-1.07**	*-1.01*	*-1.10*
Residual Fuel Oil	**0.14**	**0.10**	**0.10**	**0.09**	**0.01**	*-0.03*	*0.01*	*0.04*	*0.02*	*0.06*	*0.04*	*0.12*	**0.11**	*0.01*	*0.06*
Other Oils (g)	**-0.54**	**-0.59**	**-0.49**	**-0.53**	**-0.58**	*-0.63*	*-0.56*	*-0.66*	*-0.58*	*-0.66*	*-0.64*	*-0.67*	**-0.54**	*-0.61*	*-0.63*
Product Inventory Net Withdrawals	**0.42**	**-0.25**	**-0.26**	**-0.06**	**0.30**	*-0.48*	*-0.41*	*0.37*	*0.30*	*-0.47*	*-0.17*	*0.51*	**-0.04**	*-0.06*	*0.04*
Total Supply	**20.22**	**20.27**	**20.47**	**20.16**	**20.00**	*20.46*	*20.67*	*20.59*	*20.42*	*20.71*	*20.90*	*20.72*	**20.28**	*20.43*	*20.69*
Consumption (million barrels per day)															
Hydrocarbon Gas Liquids	**3.87**	**3.43**	**3.48**	**3.57**	**3.68**	*3.33*	*3.53*	*3.85*	*3.99*	*3.50*	*3.64*	*3.90*	**3.59**	*3.60*	*3.76*
Other HC/Oxygenates	**0.13**	**0.17**	**0.17**	**0.19**	**0.22**	*0.21*	*0.21*	*0.24*	*0.25*	*0.27*	*0.28*	*0.31*	**0.16**	*0.22*	*0.28*
Unfinished Oils	**0.13**	**0.04**	**0.11**	**0.10**	**0.05**	*0.01*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	**0.09**	*0.02*	*0.00*
Motor Gasoline	**8.47**	**9.00**	**8.88**	**8.75**	**8.67**	*9.15*	*8.96*	*8.78*	*8.65*	*9.10*	*9.01*	*8.77*	**8.78**	*8.89*	*8.88*
Fuel Ethanol blended into Motor Gasoline	**0.87**	**0.93**	**0.92**	**0.93**	**0.90**	*0.96*	*0.94*	*0.92*	*0.90*	*0.95*	*0.94*	*0.94*	**0.91**	*0.93*	*0.94*
Jet Fuel	**1.45**	**1.61**	**1.60**	**1.58**	**1.55**	*1.69*	*1.76*	*1.68*	*1.64*	*1.76*	*1.80*	*1.74*	**1.56**	*1.67*	*1.73*
Distillate Fuel Oil	**4.14**	**3.89**	**3.86**	**3.96**	**4.01**	*3.96*	*3.87*	*3.96*	*4.00*	*3.92*	*3.84*	*3.95*	**3.96**	*3.95*	*3.93*
Residual Fuel Oil	**0.38**	**0.31**	**0.39**	**0.30**	**0.29**	*0.24*	*0.34*	*0.35*	*0.28*	*0.31*	*0.33*	*0.35*	**0.34**	*0.30*	*0.32*
Other Oils (g)	**1.65**	**1.82**	**1.99**	**1.71**	**1.53**	*1.87*	*2.01*	*1.73*	*1.63*	*1.85*	*1.99*	*1.72*	**1.79**	*1.79*	*1.80*
Total Consumption	**20.22**	**20.27**	**20.47**	**20.16**	**20.00**	*20.45*	*20.67*	*20.59*	*20.42*	*20.71*	*20.90*	*20.72*	**20.28**	*20.43*	*20.69*
Total Petroleum and Other Liquids Net Imports	**-0.74**	**-1.18**	**-1.32**	**-1.79**	**-1.64**	*-1.53*	*-0.96*	*-1.54*	*-1.51*	*-1.00*	*-1.30*	*-2.07*	**-1.26**	*-1.42*	*-1.47*
End-of-period Inventories (million barrels)															
Commercial Inventory															
Crude Oil (excluding SPR)	**414.4**	**417.5**	**428.8**	**429.6**	**465.4**	*442.8*	*425.8*	*433.7*	*459.5*	*448.3*	*432.1*	*441.3*	**429.6**	*433.7*	*441.3*
Hydrocarbon Gas Liquids	**142.0**	**186.7**	**243.6**	**211.1**	**174.3**	*225.9*	*264.5*	*220.7*	*177.9*	*225.8*	*264.2*	*219.2*	**211.1**	*220.7*	*219.2*
Unfinished Oils	**87.9**	**88.8**	**82.3**	**86.1**	**88.6**	*87.6*	*88.4*	*81.1*	*91.0*	*87.8*	*87.0*	*79.4*	**86.1**	*81.1*	*79.4*
Other HC/Oxygenates	**34.1**	**29.4**	**27.3**	**31.7**	**34.3**	*30.7*	*30.4*	*30.7*	*32.7*	*31.5*	*31.2*	*31.5*	**31.7**	*30.7*	*31.5*
Total Motor Gasoline	**238.5**	**221.0**	**209.6**	**224.3**	**225.3**	*223.0*	*225.7*	*241.9*	*241.2*	*238.2*	*226.3*	*235.5*	**224.3**	*241.9*	*235.5*
Finished Motor Gasoline	**17.3**	**17.1**	**17.6**	**17.4**	**14.7**	*17.7*	*19.9*	*22.8*	*19.7*	*20.1*	*21.1*	*23.2*	**17.4**	*22.8*	*23.2*
Motor Gasoline Blend Comp.	**221.2**	**203.8**	**192.0**	**206.9**	**210.6**	*205.3*	*205.8*	*219.1*	*221.5*	*218.1*	*205.2*	*212.3*	**206.9**	*219.1*	*212.3*
Jet Fuel	**35.6**	**39.3**	**36.2**	**35.0**	**37.7**	*41.1*	*41.7*	*40.0*	*40.0*	*41.8*	*42.7*	*39.2*	**35.0**	*40.0*	*39.2*
Distillate Fuel Oil	**114.6**	**111.4**	**110.5**	**118.8**	**112.3**	*113.6*	*120.2*	*122.1*	*115.7*	*118.7*	*119.3*	*118.6*	**118.8**	*122.1*	*118.6*
Residual Fuel Oil	**27.9**	**29.2**	**27.3**	**30.7**	**29.6**	*31.9*	*29.8*	*29.1*	*30.3*	*29.5*	*27.7*	*26.9*	**30.7**	*29.1*	*26.9*
Other Oils (g)	**58.5**	**56.4**	**49.5**	**54.2**	**63.3**	*54.8*	*45.9*	*47.6*	*57.0*	*55.2*	*46.1*	*47.6*	**54.2**	*47.6*	*47.6*
Total Commercial Inventory	**1153.6**	**1179.7**	**1215.1**	**1221.6**	**1230.8**	*1251.5*	*1272.5*	*1246.8*	*1245.4*	*1276.7*	*1276.5*	*1239.0*	**1221.6**	*1246.8*	*1239.0*
Crude Oil in SPR	**566.1**	**493.3**	**416.4**	**372.0**	**371.2**	*345.7*	*345.7*	*345.7*	*345.7*	*345.7*	*345.7*	*345.7*	**372.0**	*345.7*	*345.7*

(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 June 5, 2023.

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 - June 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**	**108.90**	**110.45**	*112.39*	*112.07*	*110.50*	*111.42*	*111.42*	*111.71*	*112.37*	**106.67**	*111.36*	*111.73*
Alaska	**1.06**	**1.00**	**0.96**	**1.07**	**1.08**	*0.96*	*0.86*	*0.98*	*1.00*	*0.92*	*0.84*	*0.97*	**1.02**	*0.97*	*0.93*
Federal GOM (a)	**2.05**	**2.11**	**2.19**	**2.12**	**2.15**	*2.25*	*2.22*	*2.22*	*2.22*	*2.15*	*2.02*	*2.02*	**2.12**	*2.21*	*2.10*
Lower 48 States (excl GOM)	**100.16**	**103.07**	**105.12**	**105.71**	**107.22**	*109.19*	*109.00*	*107.31*	*108.21*	*108.35*	*108.85*	*109.37*	**103.53**	*108.18*	*108.70*
Total Dry Gas Production	**95.09**	**97.59**	**99.46**	**100.29**	**102.00**	*103.69*	*103.36*	*101.91*	*102.76*	*102.76*	*103.02*	*103.63*	**98.13**	*102.74*	*103.04*
LNG Gross Imports	**0.15**	**0.01**	**0.07**	**0.05**	**0.09**	*0.04*	*0.04*	*0.06*	*0.10*	*0.04*	*0.04*	*0.06*	**0.07**	*0.06*	*0.06*
LNG Gross Exports	**11.50**	**10.80**	**9.74**	**10.35**	**11.44**	*12.30*	*12.17*	*12.33*	*12.70*	*12.60*	*12.31*	*13.30*	**10.59**	*12.07*	*12.73*
Pipeline Gross Imports	**8.89**	**7.73**	**7.84**	**8.41**	**8.45**	*6.90*	*7.06*	*7.44*	*8.18*	*6.81*	*7.04*	*7.44*	**8.22**	*7.46*	*7.36*
Pipeline Gross Exports	**8.46**	**8.50**	**8.10**	**8.19**	**8.83**	*8.42*	*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**	**11.95**	*-11.31*	*-6.74*	*3.89*	*14.07*	*-12.25*	*-7.76*	*3.25*	**0.75**	*-0.59*	*-0.68*
Total Supply	**104.52**	**75.96**	**80.76**	**92.73**	**102.41**	*78.78*	*82.95*	*91.95*	*103.09*	*76.06*	*81.00*	*91.62*	**88.44**	*88.98*	*87.93*
Balancing Item (b)	**0.30**	**0.17**	**0.01**	**-0.11**	**0.56**	*-1.47*	*0.35*	*-0.80*	*-0.95*	*-1.83*	*-0.50*	*-2.10*	**0.09**	*-0.34*	*-1.35*
Total Primary Supply	**104.83**	**76.13**	**80.77**	**92.62**	**102.97**	*77.31*	*83.30*	*91.15*	*102.14*	*74.22*	*80.50*	*89.52*	**88.53**	*88.64*	*86.59*
Consumption (billion cubic feet per day)															
Residential	**26.09**	**7.86**	**3.57**	**17.37**	**23.47**	*7.65*	*4.27*	*16.64*	*24.82*	*7.86*	*4.32*	*16.64*	**13.67**	*12.96*	*13.39*
Commercial	**15.61**	**6.67**	**4.74**	**11.69**	**14.52**	*6.80*	*5.49*	*11.57*	*14.72*	*6.84*	*5.49*	*11.54*	**9.66**	*9.57*	*9.64*
Industrial	**25.46**	**22.25**	**21.47**	**23.51**	**24.62**	*21.80*	*21.22*	*23.24*	*23.91*	*20.86*	*20.67*	*22.84*	**23.16**	*22.71*	*22.07*
Electric Power (c)	**28.39**	**30.99**	**42.36**	**30.94**	**30.78**	*32.38*	*43.43*	*30.58*	*29.09*	*30.14*	*41.25*	*29.34*	**33.20**	*34.32*	*32.47*
Lease and Plant Fuel	**5.26**	**5.41**	**5.51**	**5.55**	**5.64**	*5.72*	*5.71*	*5.63*	*5.68*	*5.68*	*5.69*	*5.72*	**5.43**	*5.68*	*5.69*
Pipeline and Distribution Use	**3.86**	**2.80**	**2.98**	**3.41**	**3.79**	*2.82*	*3.05*	*3.35*	*3.78*	*2.71*	*2.94*	*3.29*	**3.26**	*3.25*	*3.18*
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**	**92.62**	**102.97**	*77.31*	*83.30*	*91.15*	*102.14*	*74.22*	*80.50*	*89.52*	**88.53**	*88.64*	*86.59*
End-of-period Inventories (billion cubic feet)															
Working Gas Inventory	**1,401**	**2,325**	**3,146**	**2,927**	**1,849**	*2,878*	*3,498*	*3,141*	*1,860*	*2,975*	*3,689*	*3,390*	**2,927**	*3,141*	*3,390*
East Region (d)	**242**	**482**	**759**	**698**	**334**	*652*	*867*	*723*	*342*	*649*	*882*	*775*	**698**	*723*	*775*
Midwest Region (d)	**296**	**557**	**917**	**831**	**417**	*700*	*1,005*	*868*	*420*	*724*	*1,046*	*923*	**831**	*868*	*923*
South Central Region (d)	**587**	**885**	**1,006**	**1,042**	**919**	*1,131*	*1,118*	*1,093*	*787*	*1,135*	*1,195*	*1,183*	**1,042**	*1,093*	*1,183*
Mountain Region (d)	**90**	**137**	**184**	**158**	**79**	*164*	*229*	*196*	*128*	*167*	*227*	*196*	**158**	*196*	*196*
Pacific Region (d)	**165**	**240**	**247**	**169**	**74**	*202*	*246*	*230*	*159*	*272*	*306*	*284*	**169**	*230*	*284*
Alaska	**21**	**25**	**32**	**30**	**26**	*29*	*34*	*31*	*25*	*28*	*33*	*29*	**30**	*31*	*29*

(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 June 5, 2023.

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.gulf-times.com/article/662211/business/lng-supply-deals-with-european-customers-likely-after-summer-al-kaabi

LNG supply deals with European customers likely after summer: Al-Kaabi

PRATAP JOHNLAST EDITED JUNE 01, 2023 | 09:52 PM

HE the Minister of State for Energy Affairs, Saad bin Sherida al-Kaabi

QatarEnergy will sign liquefied natural gas (LNG) supply deals with European customers likely after the summer, HE the Minister of State for Energy Affairs, Saad bin Sherida al-Kaabi said on Thursday.
"Agreements with several European destinations... are very close to being finalised," he said at a media event at the QatarEnergy headquarters on Thursday.
Replying to a question by Gulf Times, al-Kaabi said, "We are talking to many companies in different countries. We are in advanced discussions with some customers. If I put everything that we have on the table and assume that we are going to be successful in signing everything that we are negotiating today, a big portion of it will be going to Asia, the other will be going to Europe and we will be more than sold out as far as volumes of North Field East (NFE) and the North Field South (NFS) are concerned."
QatarEnergy's LNG trading arm, QatarEnergy Trading, yesterday entered into a long-term LNG Sale and Purchase Agreement (SPA) with Bangladesh Oil, Gas and Mineral Corporation (Petrobangla) to supply up to 1.8mn tonnes per year (MTPY) of LNG to Bangladesh for 15 years, starting in 2026.
The gas would come from the ongoing North Field expansion, which seeks to enhance the country's liquefied natural gas (LNG) production capacity from 77 MTPY to 126 MTPY by 2026 or 2027.
North Field expansion comprises the North Field East (NFE) and the North Field South (NFS) expansion projects and is the industry's largest ever LNG project.
Al-Kaabi reiterated Qatar's commitment to honouring its contracts and said, "Until now we have not defaulted even on one cargo. We will honour our contracts fully and it is very important for us as an LNG producer and exporter. These supply arrangements reinforce our unwavering dedication to safeguarding the energy security of valued customers"."
He noted, "Today, we are proud to be the largest LNG supplier to Bangladesh and Petrobangla by a large margin, delivering more than 3.5mn tonnes per year from Qatar to Bangladesh. These supply arrangements reinforce our unwavering dedication to safeguarding the energy security of valued customers like Bangladesh and delivering the reliable energy they require for socio-economic development and prosperity."

PRATAP JOHN
PUBLISHED ON JUNE 01, 2023 | 09:48 PM

https://www.energy.gov/articles/doe-announces-6-million-barrels-strategic-petroleum-reserve-replenishment

DOE Announces 6 Million Barrels for Strategic Petroleum Reserve Replenishment

JUNE 9, 2023

1. Energy.gov

2. DOE Announces 6 Million Barrels for Strategic Petroleum Reserve Replenishment

Purchase of 3 Million Barrels and New Solicitation for Purchase of 3 Million Additional Barrels Advances Efforts to Replenish Reserve at a Good Deal for American Taxpayers, Maintain the SPR's Operational Readiness, and Protect the Nation's Energy Security

WASHINGTON, D.C. — Today, the U.S. Department of Energy's (DOE) Office of Petroleum Reserves announced that contracts have been awarded for the acquisition of 3 million barrels of U.S. produced crude oil for the Strategic Petroleum Reserve (SPR). These contracts follow the Request for Proposal that was **announced** on May 15, 2023. Furthering the Biden-Harris Administration's three-part replenishment plan, DOE also announced a new Notice of Solicitation to purchase approximately 3.1 million additional barrels of crude oil to the Big Hill SPR site this September.

Today's announcement advances the President's replenishment strategy following his historic release from the SPR to address the significant global supply disruption caused by Putin's war on Ukraine. Analysis from the Department of the Treasury indicates that SPR releases last year, along with coordinated releases from international partners, reduced gasoline prices by up to roughly 40 cents per gallon compared to what they would have been absent these drawdowns.

A total of 10 companies responded to the Request for Proposal submitting 30 proposals. This purchase has been fully subscribed, and the contracts were **awarded** to five companies. These 3 million barrels are being purchased for an average price of about $73 per barrel, lower than the average of about $95 per barrel that SPR crude was sold for in 2022, securing a good deal for taxpayers. The crude oil will be delivered to the Big Hill SPR storage site from August 1, 2023, to August 31, 2023.

The Administration's three-part replenishment strategy includes: (1) Direct purchases with revenues from emergency sales; (2) Exchange returns that include a **premium to volume** delivered; and (3) Securing legislative solutions that avoid unnecessary sales unrelated to supply disruptions. DOE has already secured cancellation of 140 million barrels in congressionally mandated sales scheduled for Fiscal Years 2024 through 2027. This cancellation has led to significant progress toward replenishment.

New Solicitation for Additional 3 Million Barrels of Crude Oil to Refill the SPR

Today, the DOE also released another **Notice of Solicitation** to purchase approximately 3 million barrels of sour crude oil for the Strategic Petroleum Reserve (SPR) at the Big Hill SPR site, with receipts scheduled for September 2023. Bids for this solicitation must be received by the DOE no later than 10:00 a.m. Central Time on June 20, 2023. Contracts will be awarded to successful offerors by June 30, 2023. This purchase is in continuation of the Biden-Harris Administration's three-part

replenishment plan and DOE will pursue additional repurchase opportunities this year as market conditions allow.

The SPR continues to be the world's largest supply of emergency crude oil, and the federally owned oil stocks are stored in underground salt caverns at four sites in Texas and Louisiana. Through scheduled maintenance periods and the Life Extension 2 program, DOE continues to prioritize the operational integrity of the SPR to ensure that the SPR can continue to meet its mission as a critical energy security asset. The SPR has a long history of protecting the economy and American livelihoods in times of emergency oil shortages.

For more information on the SPR please visit **Infographic: Strategic Petroleum Reserve** and **Fact Sheet: Strategic Petroleum Reserve**.

Indiana

bp's economic investment

With more than 130 years of operations, bp's Whiting refinery team is looking to the future by making strides to improve the facility's efficiency and help reduce its emissions.

In numbers*

$900 million+
Spent with vendors for work performed at Whiting refinery

900+
Vendors supported

61,000+
Total jobs supported

1,800+
bp employees

1,800+
Contractors

$51 million+
Property taxes and state/local income/ franchise taxes paid

$2.6 million+
Community spend (2018-2022)

Fast facts

- bp's Whiting refinery can produce enough gasoline each day to support the average daily travel of more than 7 million cars.[1]
- Along with a range of liquid fuels, the refinery produces about 7% of all asphalt in the United States.
- The Whiting refinery can process around 440,000 barrels of crude oil every day.
- bp's Indiana footprint includes the Whiting refinery, three wind farms and fuel terminals.

Located in northwest Indiana, our Whiting refinery is the largest in the Midwest and bp's largest anywhere in the world. Able to process around 440,000 barrels of crude oil every day, Whiting produces a wide range of liquid fuels, along with 7% of all asphalt in the United States.

Building for the future

Whiting refinery reached an important milestone by safely bringing its new naphtha hydrotreater processing unit online in August 2020. bp invested more than $300 million over the three-year construction period of the unit. The naphtha hydrotreater removes sulfur from gasoline and improves the facility's ability to produce cleaner-burning fuels.

In addition, the refinery has developed and implemented new performance indicators for optimizing and minimizing daily energy use. Among these efficiency initiatives, the facility installed equipment to generate steam from exhaust gas. This reduces the amount of steam generated from its boilers, which in turn reduces the amount of fuel burned and associated greenhouse gas emissions.

The Whiting team is using innovative technologies to protect the environment, boost efficiency and improve safety.

- Gas cloud imaging cameras have the capability to continuously monitor facilities and identify methane leaks earlier than during routine inspections.
- The refinery deploys drones to inspect flares, rather than have workers climb up temporary scaffolding. The team also uses robots to clean sulfur tanks.

Fueling the Midwest

Located on the Lake Michigan shoreline in northwest Indiana, not only is Whiting the largest refinery in the Midwest — it also makes enormous contributions to the region's transportation network. Every day the refinery produces around 10 million gallons of gasoline, 4 million gallons of diesel and 2 million gallons of jet fuel.

Since opening its gates in 1889 as part of John D. Rockefeller's Standard Oil Company, Whiting has been a key anchor of the northwest Indiana economy, as well as the surrounding community. The Lakeshore Chamber of Commerce recognized the refinery in 2019 for its "outstanding contributions to economic growth and betterment of northwest Indiana."

Over the years, Whiting and its employees have supported a diverse range of local and regional institutions, focusing on STEM education as well as community outreach efforts, such as Pierogifest and the East Chicago Maker Space. As one of the founders of the Process Tech program offered through Ivy Tech Community College, bp offers financial support and employees advise students exploring STEM careers.

Increasing renewable energy

bp operates all three Fowler Ridge wind farms, which collectively have 355 turbines generating enough power to support about 195,000 Indiana homes.

*Vendor spend and number of contracted vendors as of 2022. bp employee figures as of December 31, 2022. Community spend includes bp foundation. Tax paid figures for the year ended December 31, 2021.

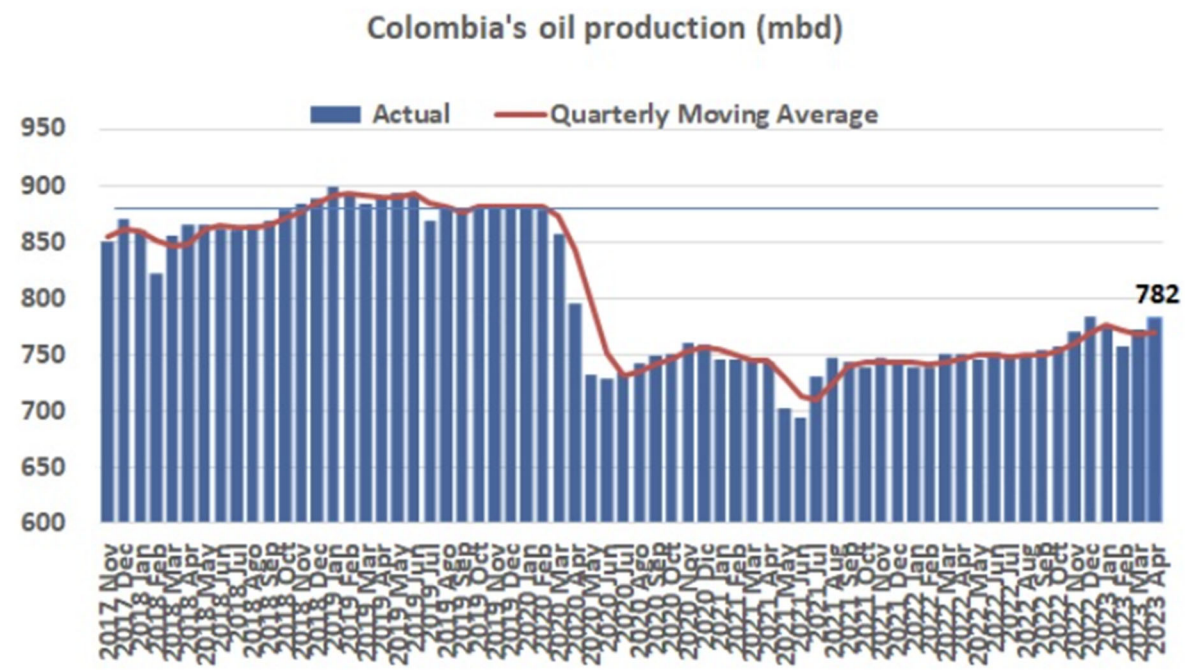
[1]Calculation based on the average amount of gasoline an American passenger car uses each day.

*Updated April 2023

https://hydrocarbonscolombia.com/article/oil-production-in-april-5/

Colombia Oil Production in April 2023

Monday, June 5th, 2023



Source: MinEnergia, Hydrocarbons Colombia (c) 2023 Mirador Comunicaciones SAS

The National Hydrocarbons Agency (ANH) reported oil production figures for April 2023.

Oil production stood at 782.3mbd in April 2023; 4% more than that reported during the same period in 2022 (752mbd), La Republica said.

This metric increased 1.39% compared to March 2023 (772mbd).

“The increase in production occurred mainly in the fields (Cabuyaro-Meta), Caño Sur Este (Puerto Gaitán-Meta), Andina (Tame-Arauca), Tigana (Tauramena-Casanare), Acordionero (San Martin-Cesar), Akacías (Acacias/Guamal-Meta), Cajúa (Puerto Gaitán-Meta),” the entity explained.

Production has been 771mbd during the first fourth months of 2023, while this was 746mbd in the same period 2022.

In April this year, the sector reported two discoveries: the Tinamú-1 well in the CPO 9 contract, operated by Ecopetrol, and the Dividivi-1 well in the E&P VIM-33 contract, operated by OIL& GAS S.A.S.

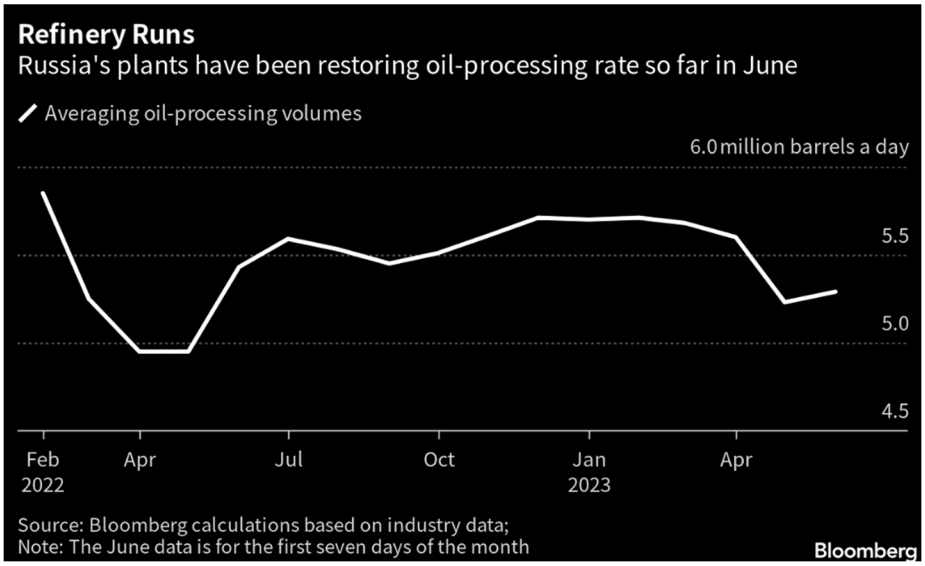
The industry drilled six exploration wells and 55 development wells in the fourth month of this year.

Bottom-Line: It is curious that production did not decline during these months, given the blockades, social unrest and attacks on oil infrastructure that have affected the industry’s performance.

Russian Refiners' Oil Processing Rates Rise as Repairs Pass Peak
2023-06-09 16:58:06.921 GMT

By Bloomberg News
(Bloomberg) -- Russia's oil refineries have been accelerating their crude-processing rates, offering further evidence that the peak of spring maintenance has now passed. Primary processing rates averaged 5.29 million barrels a day in the first week of June, according to a person familiar with the matter. That's more than 94,000 barrels a day higher than in prior seven days, when nation's refineries started to ramp up.

Russia's crude supplies to domestic refineries, along with seaborne exports, remain the key gauges for oil market observers seeking clues to the nation's production after the government classified output data following Western sanctions.



Russia pledged to cut output by 500,000 barrels a day in March, in response to the measures, including G-7 price cap on its crude sales. The nation is implementing its cuts in full, Deputy Prime Minister Alexander Novak said over the past weekend.

Crude exports from ports continue to rise even amid higher supplies to domestic refineries, creating a question mark about how the output cuts are happening. Saudi Arabia, Russia's partner in the OPEC+ producer group, has called on Moscow to be transparent.

Four-week average shipments from Russia's ports, which smooth out some of the volatility in weekly numbers, edged higher in the period to June 4, rising to 3.73 million barrels a day from a revised 3.68 million in the period to May 28.

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https://www.opec.org/opec_web/en/press_room/7160.htm

35th OPEC and non-OPEC Ministerial Meeting

No 08/2023
Vienna, Austria
04 Jun 2023

In light of the continued commitment of the OPEC and non-OPEC Participating Countries in the Declaration of Cooperation (DoC) to achieve and sustain a stable oil market, and to provide long-term guidance for the market, and in line with the successful approach of being precautious, proactive, and pre-emptive, which has been consistently adopted by OPEC and non-OPEC Participating Countries in the Declaration of Cooperation, the Participating Countries decided to:

1. Reaffirm the Framework of the Declaration of Cooperation, signed on 10 December 2016 and further endorsed in subsequent meetings; as well as the Charter of Cooperation, signed on 2 July 2019.

2. Adjust the level of overall crude oil production for OPEC and non-OPEC Participating Countries in the DoC to 40.46 mb/d, starting 1 January 2024 until 31 December 2024, which to be distributed as per the attached table.

3. Reaffirm and extend the mandate of the Joint Ministerial Monitoring Committee (JMMC) and its membership, to closely review global oil market conditions, oil production levels, and the level of conformity with the DoC and this Statement, assisted by the Joint Technical Committee (JTC) and the OPEC Secretariat. The JMMC is to be held every two months.

4. Hold the OPEC and non-OPEC Ministerial Meeting (ONOMM) every six months in accordance with the ordinary OPEC scheduled conference.

5. Grant the JMMC the authority to hold additional meetings, or to request an OPEC and non-OPEC Ministerial Meeting at any time to address market developments, whenever deemed necessary.

6. Reaffirm that the DoC conformity is to be monitored considering crude oil production, based on the information from secondary sources, and according to the methodology applied for OPEC Member Countries.

7. Reiterate the critical importance of adhering to full conformity, and subscribe to the concept of compensation by those countries who produce above the required production level as per the attached table, in addition to their already decided production levels.

8. Hold the 36th OPEC and non-OPEC Ministerial Meeting on Sunday 26 November 2023, in Vienna.

January 2024- December 2024

	Required Production Level
Algeria	1,007
Angola	1,280*
Congo	276**
Equatorial Guinea	70
Gabon	177
Iraq	4,431
Kuwait	2,676
Nigeria	1,380**
Saudi Arabia	10,478
UAE	3,219
Azerbaijan	551
Bahrain	196
Brunei	83
Kazakhstan	1,628
Malaysia	401
Mexico	1,753
Oman	841
Russia	9,828***
Sudan	64
South Sudan	124
OPEC 10	24,994
Non-OPEC	15,469

OPEC+	40,463

Notes:

By end June 2024, all OPEC and non-OPEC Participating Countries in the Declaration of Cooperation will go through an assessment by three independent sources (IHS, Wood Mackenzie, and Rystad Energy) specialized in oil upstream sources in order to identify countries' production capacities to be used for 2025 reference production levels. The OPEC Secretariat will coordinate the assessment while maintaining the independency of the three sources (IHS, Wood Mackenzie and Rystad Energy).

* Angola's stated production plan for 2024 is subject to verification by the three abovementioned sources by the next ordinary ONOMM to be held by the end of 2023, and if verified then the number will be maintained.

** The required production level for Congo and Nigeria may be updated to equal the average production that can be achieved in 2024, as assessed by the three independent sources (IHS, Wood Mackenzie, and Rystad Energy) specialized in oil upstream by the next ONOMM to be held by the end of 2023. Noting that Nigeria's stated Production Plan in 2024 is 1,578 kbd subject to verification, and if verified then the number will be reflected as required production for 2024.

*** This level was the required production level for the month of February 2023, as assessed by the average of the secondary sources, and is subject to revision by June 2023 as the country is currently working with the secondary sources to

https://www.golfdigest.com/story/what-now-becomes-of-liv-golf-greg-norman-ask-yasir-al-rumayyan

What now becomes of LIV Golf? Ask Yasir Al-Rumayyan

Editor's Note: This article first appeared in Fire Pit Collective, a Golf Digest content partner.

By Alan Shipnuck

June 08, 2023

On Wednesday morning, the day after everything changed, the 200-plus employees of LIV Golf received an email alert to join an all-call with CEO and commissioner Greg Norman. “My first thought was, *Greg is saying goodbye*,” says one LIV executive.

It was a logical assumption. Norman has been the polarizing face and voice of LIV ever since its inception. But just like everyone else in the game (except for four or five all-powerful shot-callers), Norman had been kept in the dark as the future of the professional game was hashed out in a series of secret meetings. In all the fanfare surrounding Tuesday’s announcement of a merger between the Saudi Public Investment Fund and the PGA Tour, Norman was glaringly absent. Given his year-long war of words with Tour commissioner Jay Monahan—the anointed CEO of the still unnamed joint venture—it had been hard to imagine that Norman would have a role in golf’s new world order. But when Norman finally spoke to his people he didn’t give an inch.

By way of an opening, he said, “Congratulations, you changed golf and you did it in less than a year.” The employees on the call had taken huge professional risks to join LIV and were understandably jittery. Norman radiated confidence, saying the 2024 LIV schedule was nearly finalized. “There will be no operational changes in 2023, 2024, 2025 and into the future,” he said. Then came the mic drop: “LIV is a stand-alone entity and will continue to be that moving forward. And that comes right from the top.”

The man at the top is not Monahan. Or Rory McIlroy or Tiger Woods. Or the the lords of the Seminole grill room, Jimmy Dunne and Ed Herlihy, who brokered the truce with LIV through their roles as PGA Tour board members. No, Norman was referring to the new boss of all of them, His Excellency Yasir Al-Rumayyan. H.E., as he is referred to around LIV, is the governor of the Saudi Public Investment Fund, which can alter economies and disrupt industries with its $650 billion war chest. He is also the chairman of the board of Aramco, the state oil company, making H.E. easily the most powerful person in the world who is not a head of state. His newest title is chairman of the board of the new PIF-Tour entity.

That means Monahan reports to him.

In trying to make sense of how the ground has shifted beneath their feet, Tour loyalists have been quick to point out that the majority of the seats will be held by the Tour on the reconfigured board of directors of the new

supertour. That's all window dressing. The overarching lesson in this war between the tours is that money always wins. Al-Rumayyan controls the money, so he controls the future of professional golf, even if he is graciously allowing Monahan to be in charge of the day-to-day bureaucracy.

What does this mean for LIV? Norman has been known to bluff and bluster, so his rah-rah pronouncements must always be taken with a grain of salt. In his fraught meeting with his pissed-off Tour membership on Tuesday in Toronto, Monahan said, archly, that a full review of LIV's commercial viability would be conducted at season's end. Those in the room took that as Monahan writing LIV's obituary. But Monahan will not decide LIV's future. Al-Rumayyan will.

"What people fail to understand is that LIV is H.E.'s baby," says another LIV executive. "He has poured his heart into its creation." This included numerous meetings in which Al-Rumayyan fussed over every detail, down to the look of the LIV logo.

Al-Rumayyan served as the midwife during the most tumultuous period in LIV's creation, the days immediately following Phil Mickelson's bombshell comments in which he bluntly laid out to me what was really happening in the shadows as the Saudis sought to launch a competitor to the PGA Tour. LIV had been deep in negotiations with Dustin Johnson and Bryson DeChambeau when Mickelson's comments went public in early 2022, and the folks at LIV were blind-sided by the two players' public pronouncements of fealty to the PGA Tour. "We first heard about it on Twitter," says one LIV executive. "It was complete and total panic and chaos. We went from the verge of launching to feeling like, Hey, it was a good run but now it's over."

Then Al-Rumayyan organized a group call. To that point in the process, he had been a low-key, reserved presence when dealing with his LIV subordinates. About 30 people were on the call, including a handful of Public Investment Fund employees and LIV consultants Andrew McKenna and Ari Fleischer, who had served as George W. Bush's press secretary.

"I believe in all of you, I believe in what we are building and we are going to press forward," Al-Rumayyan said with some steel in his voice. "We will do what we have to do to launch this. Just get me 16 players."
His resolute tone galvanized the entire operation. "We all went into the call with our heads hanging low, feeling so defeated," says the LIV exec. "Then it became like in *The Wolf Of Wall Street* when Leonardo DiCaprio gives that speech and the whole room goes crazy. When His Excellency finished speaking we were all high-five'ing. It was like, *Let's fucking go! We're gonna fucking do this!*"

There are easier ways to make money than building a global golf tour from scratch. It says something about Al-Rumayyan, who holds a degree from the Harvard Business School, that the golfer he has become closest to is the dweeby DeChambeau. "He's a golf nerd. A golf nut," says DeChambeau. "He plays all the time. He hits the ball straight for not having crazy power. He knows how to get the clubface back to the ball. It's kind of fun to watch. He has a good putting game, too. I think he loves everything about the game—the camaraderie, the competition, just getting outside and being in nature."

It is Al-Rumayyan who pushed and prodded for the creation of Golf Saudi, which first announced its intentions with a tournament on the 2019 European Tour schedule. "Let's be honest, the key reason the Saudis have become so involved in golf is because of Yasir's enduring love for the game," says Keith Pelley, the CEO of the European Tour. "If he was a volleyball fan, they might be building volleyball arenas and creating a volleyball super league and hosting the volleyball world championships."

During the annual playing of the Saudi International, Al-Rumayyan's yacht, parked just off-shore, has become a social hub as he hosts golfers for informal gatherings. "It's a relaxed environment that offered privacy, or so we thought," says one player who requested anonymity. "But this was interesting: Somehow we started talking about Russia, and just as we were getting going, H.E. nodded at one of his guys, who came over and grabbed both of his cell phones. He set them down next to a speaker and then turned up the music—it was just like in the movies, and then H.E. began speaking very candidly. He nodded toward the phones and said, 'My own

people are always listening.' I pulled out my phone to hand it to him, but he waved it off and laughed and said, 'Don't worry, we are not listening to you—we don't care enough!'"

Al-Rumayyan has no trouble making the players feel at ease because, for all of his power, he is soft-spoken and courtly, with beautiful manners. He is westernized in his attitudes and his appetites; in the excellent MBS biography *Blood And Oil*, by Bradley Hope and Justin Scheck, Al-Rumayyan is described as having "a taste for fine cigars and after-hours bars in Dubai frequented by long-legged, short-skirted Russian women."

Charlie Crowhurst/LIV Golf

At the completion of LIV's inaugural tournament in London, in June 2022, Al-Rumayyan was called up to the trophy presentation to give a speech. He drew confused whoops from the crowd when he announced a $54 million bonus for any LIV golfer who shoots 54 in competition. (Hey, it's not that outlandish of a thought: Jim Furyk has posted a 58 on the PGA Tour and in 2019 an Irish golfer named David Carey shot 57 at an Alps Tour event, though it was on a par-68.) His speech was otherwise boilerplate, but Al-Rumayyan's effusiveness, and the bear hugs he received from every player on stage, offered a clue to one of the central mysteries behind LIV: What are the Saudis' motivations? Al-Rumayyan may have bought his way into the chairmanship of the English Premier football club Newcastle United, and he has been known to have kick-abouts on the field after games, but he'll never connect with his callow players like he did with Mickelson during their long, leisurely pro-am round in London. The Saudi elite can scoop up the most expensive private residence in London, as the late crown prince Sultan bin Abdul-Aziz did with Rutland Gate, a 62,000-square-foot monstrosity in the shadow of Kensington Palace, but they will never be granted memberships at the old-line, aggressively private golf clubs outside of town. Yet during LIV London, Al-Rumayyan strutted around the Centurion Club as if he owned the place, which he kind of did, at least for one week. The status he enjoyed, the reflected glow of hanging out with famous golfers, the connections he made with the London movers and shakers who played in the pro-am and crowded the three-story tower of luxury suites…it's hard to put a price tag on all of that, but for a dude who controls an investment fund that is projected to reach a trillion dollar valuation by 2025 and an oil company that enjoyed $141 billion in profits for 2022, what's a few billion dollars between golfing buddies?

As always, Al-Rumayyan is playing the long game. He is a close friend and confidante to the crown prince of Saudi Arabia, Mohammed bin Salman. MBS has staked his reign on Vision 2030, his effort to remake the Saudi economy, to say nothing of its society. Creating a robust tourist sector is one of the pillars of Vision 2030. Golf helped put Dubai on the map with tourists (and the international business community), but it's a crowded city with little memorable terrain; Saudi Arabia has soaring mountains and 1,500 miles of coastline that offer vast potential for epic golf destinations. Tapping LIV's star power has always offered numerous possibilities for cross-pollination—how about a resort featuring a Mickelson-designed golf course and a sleek hotel with interiors curated by Paulina Gretzky?

LIV had to spend lavishly to launch, but by the end of the first, abbreviated season Al-Rumayyan had already tightened the screws. That included relieving Majed Al-Sorour of his day-to-day duties as managing director, a measure of H.E. 's ruthlessness because Al-Sorour is a close friend who has overseen security for Al-Rumayyan's family. "The PIF guys, they're laser-focused on the numbers," says another LIV executive. "They are very smart and very disciplined. Everyone says the Saudis have unlimited money, but that's because they have made one clever move after another to grow the PIF into what it is. Despite the narrative, they don't burn up money recklessly. There is always a larger plan and they won't stop until they have executed that plan."

And that is the key to understanding LIV's future. To get its investment back, or even turn a profit, the PIF is counting on selling the 12 LIV team franchises, in which the PIF has a 75 percent equity stake in each. (The team captains own the other 25 percent.) Internally, LIV has thrown around $500 million valuations, which seemed like science fiction…until the merger. As part of Norman's all-call, LIV's global head of partnerships, Monica Fee, spoke about how her phone has been "ringing off the hook" since the merger announcement, citing Marriott, Anheuser-Busch, Fox and ESPN as those who had already made inquiries. Getting the stamp of approval from the PGA Tour has allowed LIV to be openly embraced by corporate America, at last. (This has always been part of Al-Rumayyan's vision, too; how many blockbuster deals will the PIF now do by leveraging relationships with the Tour's sponsors?) If LIV can get some of it tournaments on network TV through the Tour's existing deals (still a big unknown), that brings a whole new level of visibility, and value, to the franchises.

So how would all of this work? Conversations with various LIV insiders leads to a consensus of a schedule of maybe a dozen tournaments. Some would be slotted on dark weeks when no traditional Tour event is being played, but a handful would be co-sanctioned as part of the new unified schedule. Imagine the riveting frisson of an event with the six strongest LIV teams and a half-dozen squads of Tour regulars! LIV had already been considering an expansion to 14 teams. Doing so for 2024 would be a way to make whole some of the embittered players who turned down mega-offers. Says one LIV exec, "Now we can finally get Hideki [Matsuyama] and Jon Rahm. I would say every big name on the PGA Tour will get an offer. Except Rory. Nobody wants that little bitch on their team."

After news of the merger broke, McIlroy said, "I still hate LIV." He added, "You can't just welcome back" the golfers who left the PGA Tour and caused "irreparable harm to the Tour and started litigation against it." Keeping LIV going solves a few problems: The players could be denied full PGA Tour membership, which would prevent them from playing in the FedEx Cup playoffs or enjoying the Tour's famously generous retirement program. This would give McIlroy (and many of his colleagues) a measure of the retribution they crave. But the LIV players could be allowed to accept sponsor's exemptions into their favorite Tour events—the maximum is seven per season for non-members—helping those tournaments attract more stars and further reunify the game. And Tour members being able to moonlight at some LIV events would give them access to the bloated purses, which would certainly smooth over some of the hard feelings.
Many, many details still have to be sorted out, including Norman's role. The new com
pany and tour that the PIF and the PGA Tour are creating are distinctly different from LIV, so perhaps Norman will continue to oversee his fiefdom. If not, someone close to him says, "He has a huge golden parachute. Greg will be fine." If he doesn't have a place in the new landscape, Norman can ride off into the sunset having helped achieve the sweeping change he sought for nearly three decades. But that's the past. The future of golf doesn't belong to Norman. Or Monahan or McIlroy. It belongs to Yasir Al-Rumayyan.

Adapted in part from* LIV AND LET DIE: The Inside Story of the War (and Peace!) Between the PGA Tour and LIV Golf*, which can be* *preordered here

https://www.reuters.com/world/white-house-denies-report-us-iran-nearing-interim-nuclear-deal-2023-06-08/

US and Iran both deny report of nearing interim nuclear deal

By Trevor Hunnicutt and Parisa Hafezi

June 8, 20232:15 PM MDTUpdated 2 days ago

WASHINGTON/DUBAI, June 8 (Reuters) - The United States and Iran on Thursday both denied a report that they were nearing an interim deal under which Tehran would curb its nuclear program in return for sanctions relief.

"This report is false and misleading," said a spokesperson for the White House National Security Council, referring to an article on the London-based Middle East Eye website. "Any reports of an interim deal are false."

Iran's mission to the United Nations also cast doubt on the report, saying: "Our comment is the same as the White House comment."

U.S. and European officials have been searching for ways to curb Tehran's nuclear program since the breakdown of indirect U.S.-Iranian talks on reviving the 2015 nuclear deal between Iran, Britain, China, France, Germany, Russia and the United States.

That accord, aimed at keeping Iran from developing a nuclear weapon, required Tehran to accept restrictions on its nuclear program and more extensive U.N. inspections in exchange for an end to U.N., U.S. and EU sanctions.

One possible solution has been an interim deal under which Iran would accept fewer limits on its nuclear program in return for more modest sanctions relief than under the 2015 pact.

Middle East Eye cited two unnamed sources as saying Iran and the United States had "reached an agreement on a temporary deal" to take to their superiors.

It said Iran would cease enriching uranium to purity of 60% or above and continue cooperation with the U.N. nuclear watchdog in return for exporting up to 1 million barrels of oil per day and access to "income and other frozen funds abroad."

Oil prices fell by more than $3 a barrel on the Middle East Eye report before paring their losses after the White House denied it.

The website said the talks were led by U.S. special envoy for Iran Rob Malley and Iran's ambassador to the U.N. Amir Saeid Iravani in an apparent reversal of Iran's refusal to deal directly with U.S. officials.

A State Department spokesperson declined to comment on any such talks, saying only that it had ways to pass messages to Iran but would not detail their content or how they were delivered.

Two Iranian officials told Reuters there had been progress but no agreement was imminent. A third said Malley and Irvani met at least three times in the past weeks but gave no details.

"There (has) been some progress and we have exchanged proposals and messages with Americans," said a senior Iranian official. "Still, there are lots of details that we need to discuss."

The 2015 deal, which capped Iran's uranium enrichment at 3.67%, was abandoned in 2018 by then-U.S. President Donald Trump, who reimposed U.S. sanctions to choke Iran's oil exports.

Iran has since amassed a stockpile of uranium enriched to 60% and the U.N. nuclear watchdog has found traces enriched to 83.7%, nearing the 90% regarded as bomb grade.

Reporting By Trevor Hunnicutt in Washington and Parisa Hafezi in Dubai; Writing by Arshad Mohammed; Editing by Chris Reese and Lisa Shumaker

https://www.presstv.ir/Detail/2023/06/11/705080/Enemies-nuclear-weapons-excuse-lie-Iran-Leader

News / Politics / BreakingNews

Leader: Nothing wrong with a nuclear deal if infrastructure remains intact

Sunday, 11 June 2023 9:20 AM **[Last Update: Sunday, 11 June 2023 10:20 AM]**

Leader of the Islamic Revolution Ayatollah Seyyed Ali Khamenei visits a group of nuclear experts and officials in Tehran on June 11, 2023.

Leader of the Islamic Revolution Ayatollah Seyyed Ali Khamenei says there is nothing wrong with reaching a nuclear deal if the country's nuclear infrastructure remains untouched, noting that the West has reneged on its promises and commitments many times and its untrustworthiness is now proven.

"Iranian experts have made breakthroughs in our nuclear industry and have built and developed the great infrastructure of the industry. There is nothing wrong with a deal in this field as long as the nuclear infrastructure remains intact," Ayatollah Khamenei said.

The Leader made the remarks in a meeting with a group of nuclear experts and officials in Tehran on Sunday.

Ayatollah Khamenei added that the enemies use the claim that Iran is developing nuclear weapons as an excuse to target Iran, but the claim is no more than a lie and they are well aware of it.

"The enemies have created a nuclear challenge for us for twenty years because they know that the movement in the nuclear industry is the key to the country's scientific progress," the Leader said. "The excuse of nuclear weapons is a lie and they (the enemies) know it too."

"Based on our Islamic basis, we do not want to go towards [nuclear] weapons. Otherwise, they (the enemies) would not have been able to stop it, as until now they could not stop our nuclear developments," Ayatollah Khamenei added.

[This item is being updated.]

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https://www.kurdistan24.net/en/story/31634-Final-agreement-on-the-seventh-point-of-Article-14-of-the-budget-bill-has-been-reached:-Iraqi-FM

Final agreement on the seventh point of Article 14 of the budget bill has been reached: Iraqi FM

The Iraqi parliament had previously suspended the vote on Article 14 due to disagreements between factions.

The Iraqi Deputy Prime Minister for Financial Affairs and Foreign Minister Fuad Hussein speaking to Kurdistan 24, June 10, 2023. (Photo: Kurdistan 24)

ERBIL (Kurdistan 24) – The Iraqi Deputy Prime Minister for Financial Affairs and Foreign Minister Fuad Hussein on Saturday told Kurdistan 24 that a final agreement has been reached on the seventh point of Article 14 of the budget bill.

Vian Sabri, Chairwoman of the Kurdistan Democratic Party bloc in Iraqi Parliament, told Kurdistan 24 that the Kurdish factions in Iraqi parliament are now unanimously in favor of the seventh point of Article 14 of the budget bill.

The Iraqi parliament had previously suspended the vote on Article 14 due to disagreements between factions.

Article 14, point 1 of the budget bill states that all oil revenues from the sale of oil fields in the Kurdistan Region shall be collected in a bank account and the Prime Minister of the Kurdistan Region shall be responsible for spending the revenues. Other accounts opened for this purpose will be closed.

The second point states that the Iraqi Federal Board of Supreme Audit in coordination with the Kurdistan Regional Government's (KRG) Supreme Audit Bureau, the Iraqi Oil Ministry and the KRG Ministry of Natural Resources will audit the figures and monitor the contracts with international companies.

As stated in point three of the article, an international audit company will audit the bank account referenced in the first point.

In the fourth point, the annual and semi-annual financial statements signed by the KRG Minister of Finance and Economy and the independent auditor (i.e. an international audit company) shall be submitted and a copy sent to the Iraqi Ministry of Finance.

The fifth point states that a joint committee will be formed from both sides to conduct a comprehensive review of the past in everything related to the oil and gas sector in the Kurdistan Region.

As stated in point 6, Article 14's provisions - its first five points - become effective upon its enforcement date.

The last point of Article 14, point 7, emphasizes that when there is a dispute between the Iraqi Federal Government and the KRG regarding rights, obligations, and mechanisms mentioned in the provisions of this law, a joint committee between the two sides will be formed to resolve outstanding issues from the date of its formation until the Iraqi Prime Minister takes appropriate decisions within 30 days.

Marketplace review

Commodity markets: Macro headwinds clash with micro tailwinds

Saad Rahim
Chief Economist

Many of the key themes that defined commodity markets since the onset of the war in Ukraine continued during the six months to the end of March 2023.

At the start of our financial year, inflation remained high and central banks continued to raise interest rates to levels that are now proving restrictive for growth.

The turmoil seen earlier this year in the banking sector, primarily in the US but with some spill-over into Europe, has been one of the direct results of tighter monetary policy.

The idea that looser credit conditions in China, combined with the re-opening of the country late last year after the end of its zero-COVID-19 policy, would offset the impact of tighter financial conditions in the West, has yet to play out.

Unlike previous periods of weakness, it appears that China's problem is not the supply of credit. Rather, it is the demand for credit, as repeated lockdowns, high youth unemployment and shaken faith in real estate developers are combining to keep consumer confidence, and therefore spending, low.

Facing those macroeconomic headwinds, commodity prices unsurprisingly struggled so far in 2023, even though some OPEC members cut oil production – which should support the market later this year – and stockpiles of metal have continued to draw in China.

At the time of writing, Brent crude oil, which was close to USD90 per barrel in January 2023, was trading at USD75 per barrel, while copper was just above USD8,300 per tonne, compared to USD9,400 per tonne in January 2023.

During the reporting period, gas and power prices in Europe were volatile, swinging from over EUR200 per megawatt hour in Autumn, to below EUR30 per megawatt hour, helped by a mild winter and demand reduction measures, particularly in the industrial sector. Higher LNG prices also allowed Europe to attract more cargoes, away from other markets." In shipping, longer transit times due to the sanctions levied on Russian oil effectively removed tankers from the market and saw so-called "oil-on-water" volumes increase materially.

Looking forward, the most recent data points to a US economy that is still running hot, especially in terms of employment and in the services sector.

As such, commodity prices may struggle in the months ahead, especially if higher interest rates slow growth, the US dollar continues to rise and downbeat sentiment around China persists. Manufacturing globally is already contracting.

Still, across the major economies there are significant shock absorbers in the form of savings built up over the last three years that should provide some support.

Consumers in the US, Europe and China still have around USD4-5 trillion of excess savings thanks to stimulus efforts and deferred consumption during COVID-19.

The situation is therefore very different to the run-up to the 2007-08 financial crisis when savings were stretched and consumers had taken on significant amounts of debt.

An eventual end to the rate hiking cycle should allow consumers to deploy pent-up savings and growth to resume.

Oil market challenged by macro-economic headwinds

Source: Bloomberg Research

Oil markets

Last year, oil markets were buffeted by the threat of Russian disruptions, China's zero-COVID-19 policy and record oil releases from strategic reserves in the US and its allies.

In the end, lockdowns resulted in China exporting significant volumes of refined products, particularly diesel, to the rest of the world, more than offsetting any possible disruptions.

The fact that there were no real disturbances to Russian flows meant that markets ended up being quite well supplied, especially as there were large releases from strategic petroleum reserves (SPR). The US SPR, for example, released 200 million barrels of crude oil following the invasion of Ukraine.

Despite higher prices for most of the year and China's lockdowns, global demand still grew by a very healthy 2.3 million barrels per day in 2022. Given that the International Energy Agency reported China's demand contracting by 0.4 million barrels per day over the course of 2022, that meant global demand excluding China grew by over 2.7 million barrels per day, which would be one of the strongest increments of recent years.

Even with the US and Europe seeing demand falter slightly due to higher interest rates and rising recession risk, China's re-opening at the turn of the year has helped support demand.

Demand growth projections for 2023 are again above 2.0 million barrels per day, led by China, which is expected to account for almost half of that gain. Much of that global demand comes from demand recovery in jet fuel, as air travel has picked up.

Looking back to the financial crisis, global oil demand contracted by 2.0 million barrels per day over 2008-09. Despite concerns about an economic slowdown, the forecast is for something much milder in 2023.

Set against any demand losses, voluntary production cuts announced by some key OPEC members that are in theory as high as 2.0 million barrels per day, although in reality will probably be around half that. However, Saudi Arabia continues to make additional voluntary cuts, including those announced at the June OPEC+ meeting. Those supply cuts plus emerging market demand growth should still point towards material draws in inventories later this year.

For over a decade, tightening oil markets could always rely on the US shale industry to ramp up production to bring markets back into balance.

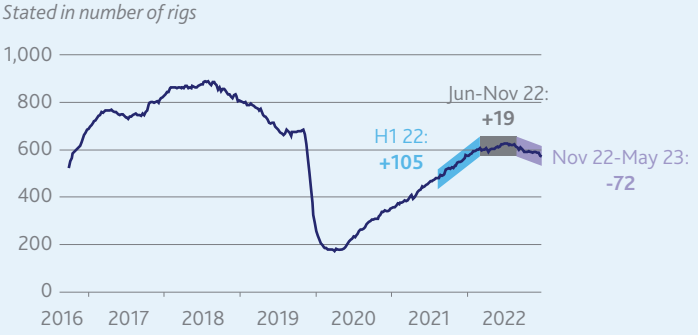
However, it is difficult to see how US production is going to increase this year given lower oil prices, higher interest rates and rising costs – and certainly not by the levels many forecasters were projecting coming into the year, in some cases as high as 1.0 million barrels per day. We can already see that in the number of oil rigs being deployed, which has fallen steadily by a total of 72 rigs since the most recent peak in November 2022 (which in itself was down almost 1,000 rigs from the all-time peak in 2014).

But it is not just the US; across the globe, oil companies have slashed exploration and production spending, dropping to levels that are 40 percent or less of the last peak of spending in 2014.

Thus, while refining capacity, which has previously been a bottleneck, is now starting to expand, led by extra capacity in China and the Middle East, there will likely be a structural dearth of crude oil in the coming years to feed both these refineries and any future demand growth needed to meet the needs of a growing global population.

This raises the prospect of higher prices and heightened volatility in the years ahead, despite the rapidly increasing adoption of electric vehicles.

Baker Hughes US oil rig count



Source: Baker Hughes, Bloomberg, Trafigura Research

Metals markets

For most of last year, tightening fundamentals, highlighted by stock levels, which declined to historically low levels in many cases, did not translate into higher prices for metals, as normally would be the case.

This unusual dynamic was driven in large part by investment flows; specifically, the strength of the US dollar, which meant capital flowed into that market and out of other assets, in particular commodities. At the same time, there was also a view that China's COVID-19 lockdowns and property woes meant that metals demand was weak.

The reality was actually quite different, with China seeing record levels of demand for copper, aluminium, stainless steel and other metals.

Much of this growth was due to government-driven spending on infrastructure, especially the build-out of the electrical grid, but also the production of electric vehicles, which exceeded expectations by a wide margin. As regards the electrical grid, it has not just been an increase in overall capacity, but specifically more renewable capacity, which is metals intensive.

China added 125 gigawatts of installed renewable power generation capacity in 2022, with wind growing by 38 gigawatts and solar capacity by 87 gigawatts. Added to the growth seen in the first quarter of the 2023 calendar year, we could potentially see these numbers grow by over 30 percent and 150 percent respectively over the next six months, bringing the total to over 170 gigawatts for the 2023 calendar year.

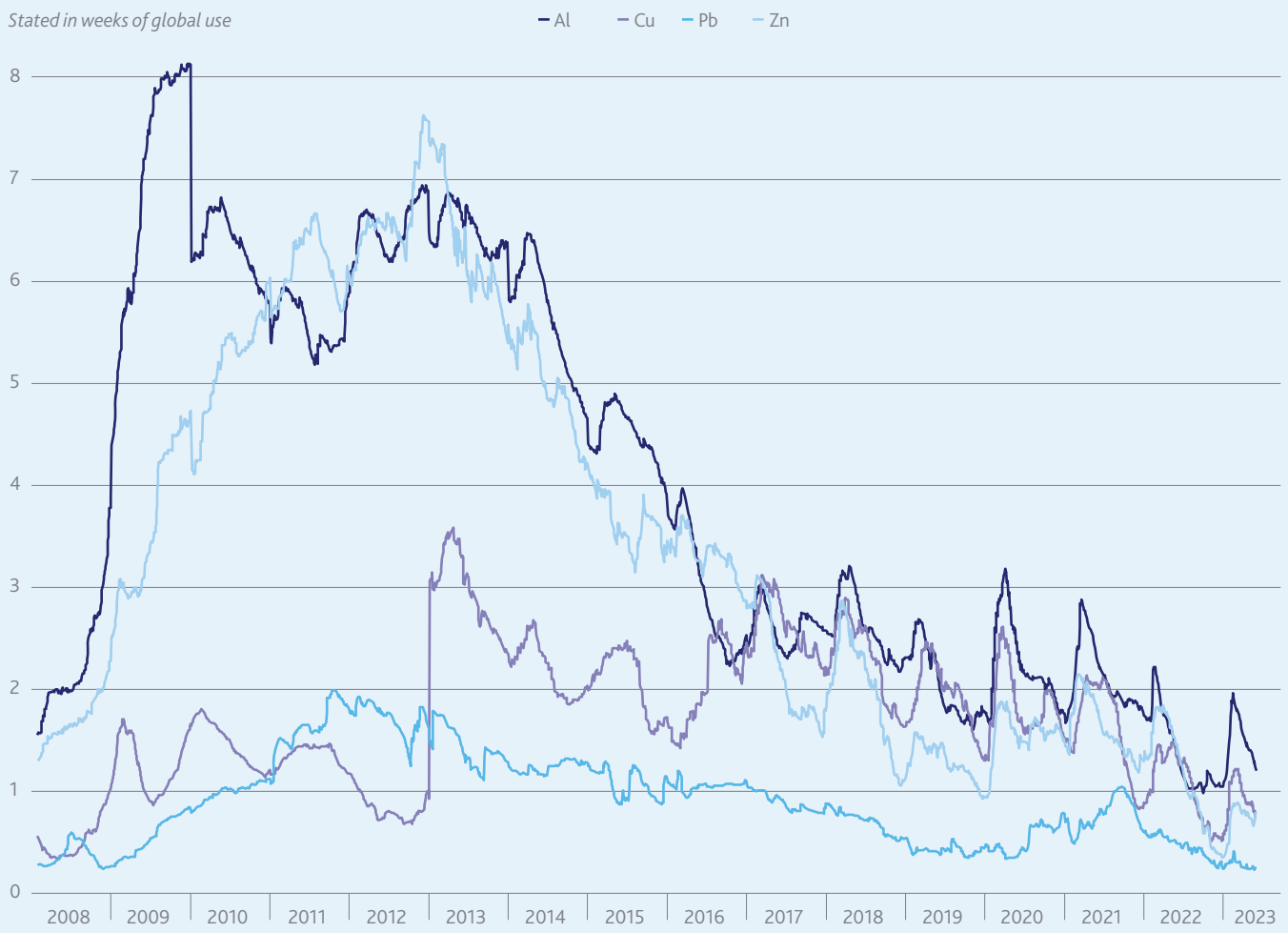
That said, we are seeing relatively high inventories of finished goods in China, mainly as the result of consumer demand shifting from goods to services, but also due to the debottlenecking of disrupted supply chains. A persistent overhang of real estate inventory in China is also contributing to a weaker recovery than would have been hoped for, although the trajectory is still positive.

The important point to note for both metals and energy is that any economic growth slowdown this year will not just impact demand but will also further depress investment in the supply of commodities which are needed for the energy transition and to meet the needs of a growing global population.

As such, when demand recovers it will do so quickly, and run up against short stocks, low spare capacity and few response mechanisms, with new project pipelines running dry.

Global visible stocks for base metals

Stated in weeks of global use



Source: LME, SMM, COMEX, SHFE, Trafigura Research

Exxon's Math Calls For Overall Global Oil Decline Rate of ~7%, A Very Bullish Argument For Post 2020 Oil Prices

Posted: Thursday June 20, 2019. 5:30pm Mountain

We believe Exxon presented a very bullish argument for oil prices beyond 2020 and that it has been overlooked because most readers only flip thru a slide deck and don't listen to or read transcripts of management's spoken words. Exxon's spoken words highlighted one of the forgotten (and perhaps most important) oil supply/demand concerns for post 2020 - the mid term challenge to replace increasing rate of overall global oil declines. And what is eye opening is Exxon's estimated overall global oil decline rate, which is way higher than any we can ever remember seeing. Its impossible to tell from the small oil supply/demand graph in the slide deck, but Exxon's spoken words says long term oil demand is 0.7% per year and then "*When you factor in depletion rates, the need for new oil grows at close to 8% per year and new gas at close to 6% per year*." Exxon may not specifically say what the global decline rate is, but their math is that the world needs new oil supply to grow annually at close to 8% to meet the 0.7% annual increase in oil demand and offset declines ie. an overall global decline rate of approx. 7%. This is an overall global oil decline rate for OPEC and non-OPEC. This compares to BP's estimate of overall global oil decline rate of 4.5% and we expect most are probably assuming something around 5%, certainly not above 6%. No one should be surprised by the increased decline rate given that high decline US shale and tight oil have increased by ~2.5 mmb/d in the last ~2 years. But an implied ~7% overall global oil decline rate is way higher than expectations. There is a big difference between needing to offset oil declines of ~7 mmb/d vs declines of ~4.5 mmb/d ie. an additional 2.5 mmb/d of new oil supply every year. Even if the implied difference was to 6%, it would still be an additional 1.5 mmb/d of new oil supply and that would also be very bullish for post 2020 oil. We recognize that the 2019/2020 oil supply demand story is the need for OPEC+ to keep cuts thru 2020, but Exxon's math implying ~7% overall global oil decline rate sets up a very bullish view for oil post 2020. We believe the reality to replace oil declines post 2020 is overlooked.

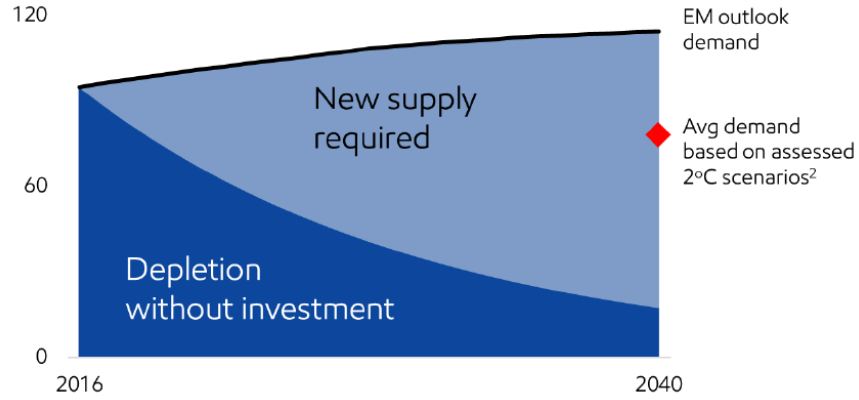
The 2019/2020 oil story - oil inventories still above the 5 yr ave and OPEC+ need to work together in 2020. There is increasing geopolitical risk to oil in a range of regions (Iran/Saudi Arabia, Libya, Venezuela, etc.) yet the prevailing tone to oil in the past month is negative with the concerns on trade wars/lower economic growth leading to weakness in oil demand. This was reinforced in the past week with the view that there is the need for OPEC+ to continue to work together in H2/19 and in 2020. Our SAF June 16, 2019 Energy Tidbits memo [LINK] reviewed the IEA's new monthly Oil Market Report [LINK], which included (i) "*OECD oil stocks remain at comfortable levels 16 mb above the five-year average"*, (ii) the EIA lowered its 2019 oil demand growth rate by 0.1 mmb/d to +1.2 mmb/d, and (iii) a negative first look at 2020 oil supply/demand. The EIA's first 2020 forecast puts more pressure on OPEC+ to continue with cuts through 2020. IEA says oil demand growth rate will grow from +1.2 mmb/d in 2019 to +1.4 mmb/d in 2020. This is a positive, however, it is more than offset as the IEA forecasts another year of big non-OPEC oil supply growth of +2.3 mmb/d in 2020. In theory a lesser call on OPEC of 0.9 mmb/d. The IEA writes "*A clear message from our first look at 2020 is that there is plenty of non-OPEC supply growth available to meet any likely level of demand, assuming no major geopolitical shock, and the OPEC countries are sitting on 3.2 mb/d of spare capacity".*

Exxon sees modest annual growth in oil demand, but peak oil demand sometime after 2040. Exxon presented at a US sellside energy conference on Tues. We expect a big reason why Exxon's oil outlook was ignored was that the presentation was almost all about providing a great detailed look at the Guyana oil play. Plus its headline annual growth rate for oil demand of 0.7% per year wouldn't have made anyone bullish, if anything maybe even more so so on oi. Exxon only provided some brief comments on their oil supply and demand outlook. Exxon said *"In this scenario, oil demand is expected to grow 0.7% per year, driven by commercial transportation and chemical"*. This compares to 2018 oi demand growth of 1.45% and even this year's lower oil demand growth rates of 1.15%. However, we recognize it is tough to get data from a small graph, but a positive tn the graph is that it seems to indicate that peak oil demand doesn't happen before 2040.

However, Exxon says new oil supply of 8% per year is needed to meet demand growth and offset decline rates. On one hand, we continue to be surprised that Exxon's view on new oil supply has received no attention. On the other, it makes sense because the vast majority of readers only flip thru a slide deck so will miss the spoken word that gives numbers and context to a slide. That was clearly the case with the Exxon presentation. If Exxon is anywhere near right, this is a hugely bullish view for mid/long term oil ie post 2020 oil. Exxon highlighted one of the forgotten oil supply/demand concerns is

the mid term challenge to replace global oil declines. And what is eye opening is Exxon's estimated decline rate, which is way higher than any we can ever remember seeing. Exxon says long term oil demand is 0.7% per year and then says "*When you factor in depletion rates, the need for new oil grows at close to 8% per year and new gas at close to 6% per year*." Exxon didn't specifically say that the overall global decline rate was ~7%, but the math looks straightforward. The world needs new oil supply to growth at close to 8% per year to meet 0.7% annual demand growth and to offset declines in global (OPEC and non-OPEC) oil production ie. the overall global oil decline rate is approx. 7%. This is an overall OPEC and non-OPEC global decline rate.

Oil Supply/Demand (moebd)

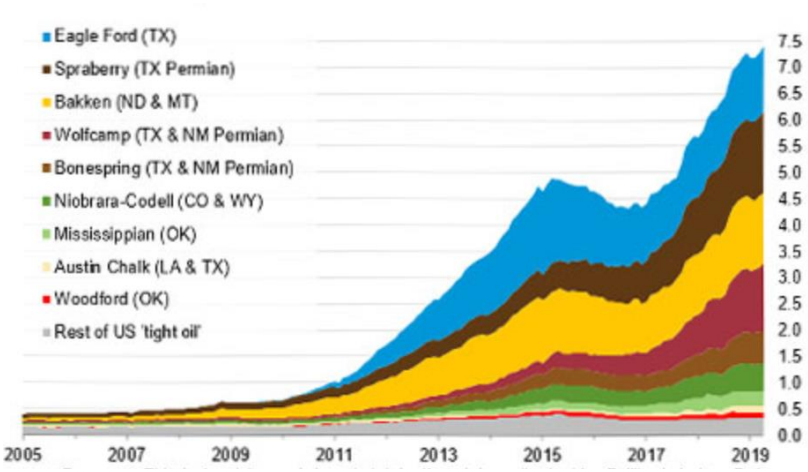


Source: Exxon US Sellside Conference Presentation June 18, 2019

Implies a huge overall global decline rate of ~7% - way higher than other estimates. It may well be the case that forecasters haven't updated their global oil decline models to reflect the impact of the US adding ~2.5 mmb/d of high decline shale and tight oil in the past two years. But we aren't aware of anyone who is using an overall global oil decline rate as high as 7%. We have seen estimates for 7% for decline rates for non-OPEC oil, but not for the decline rates overall for global oil. Rather, we expect that most have been assuming overall global oil decline rates of 4% to 5%. Later in the blog, we note our peak oil demand comment from Nov 6, 2017 (prior to the big ramp up in US shale and tight oil) that used Core Laboratories spring 2017 estimate for overall global oil decline of ~3.3%.

Exxon's global leadership position, especially in shale, is why we should pay attention to this view of significantly higher global oil decline rates. Everyone knows Exxon is the largest public international oil company and is in all major oil regions and all types of plays from conventional, oil sands, middle east, deepwater oil and shale oil, We believe that Exxon is viewed as the global leader in the Permian, and this shale oil leadership is critical to understand as we believe that the growth of US shale is the key reason for the increasing overall global oil decline rates. Exxon's shale oil leadership is why we should be paying attention to this estimate. The game changer to global oil decline rates has been the increasing oil production from high decline US shale and tight oil. The EIA estimates [LINK] that US shale and tight oil plays are up over 6 mmb/d this decade and ~2.5 mmb/d n the past two years alone.

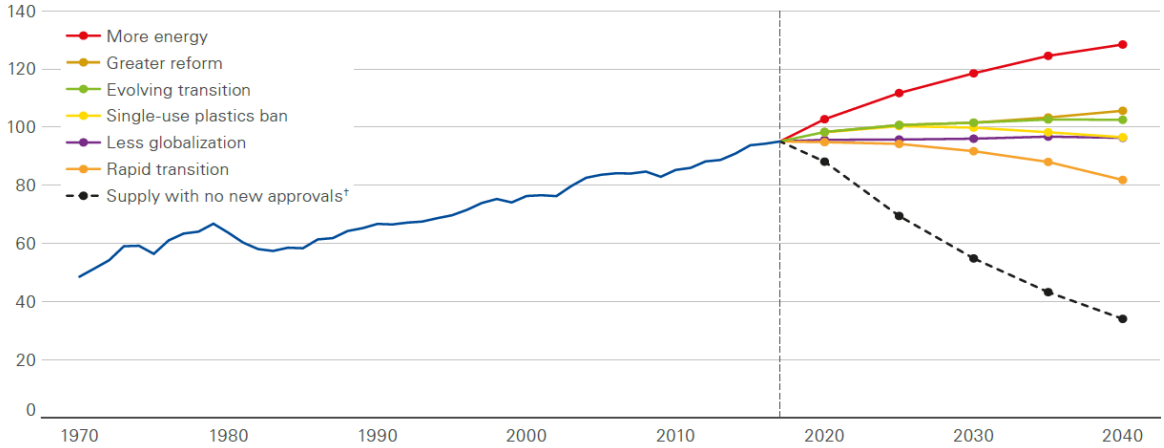
US Tight Oil Production – Selected Plays (Million barrels of oil per day)



Source: EIA

BPs recent forecast for overall global oil decline rate is 4.5% per year. BP's Energy Outlook 2019 Edition (Feb 14, 2019) [LINK] included their outlook for oil supply and demand and specifically on overall global oil decline rates. BP wrote "*Second, significant levels of investment are required for there to be sufficient supplies of oil to meet demand in 2040. If future investment was limited to developing existing fields and there was no investment in new production areas, global production would decline at an average rate of around 4.5% p.a. (based on IEA's estimates), implying global oil supply would be only around 35 Mb/d in 2040."* Below is the graph from their Energy Outlook 2019 Edition report.

Demand and Supply of Oil (Mbd)



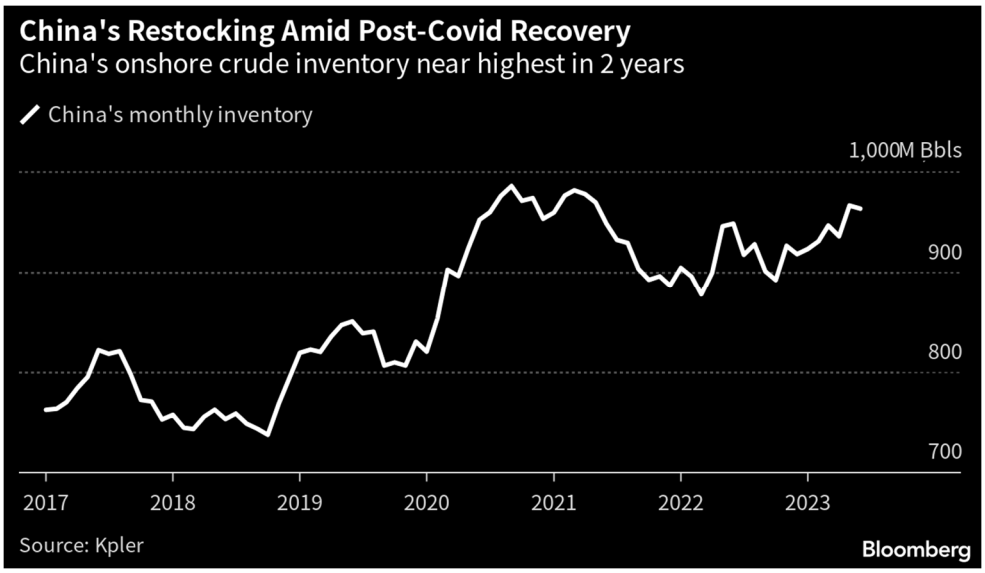
Source: BP Energy Outlook 2019 Edition

If Exxon is anywhere close, this is a hugely bullish signal for mid/long term oil ie. post 2020 oil. We recognize that this significantly higher than expected overall global oil decline rate will take a year or two to work thru the current supply/demand fundamentals given where markets are today. However, over the mid term, the need to add ~7 mmb/d of new oil supply is a huge challenge for the world. The difference between an Exxon type view of ~7% declines vs BP's 4.5% declines is approx. 2.5 mmb/d of an additional new oil supply every year is needed to balance the markets. In reality, even if Exxon's implied overall global decline rate was ~6%, it would still be very bullish for mid/long term oil as this means an additional ~1.5 mmb/d of new global oil supply per year.

Its even more bullish for post 2020 oil than we thought in our Nov 6, 2017 peak oil demand blog. We have always been in the camp that believes peak oil demand is coming, but we have also been of the view that the post 2020 challenge to replace oil declines would be getting tougher. We believe Exxon's view of higher global oil decline rates is consistent with the ~2.5 mmb/d increase in US shale and tight oil in the past two years. And is way more bullish than we wrote in our Nov 6, 2017 blog "*Peak Oil Demand Is Coming, But >4 Mmb/d Of New Oil Supply Will Be Needed Every Year To Replace Declines To Get There*" [LINK], and "*We buy into the narrative of peak oil demand, believe it is inevitable, its visible and will happen before 2030. Peak oil demand will be from the cumulative impact of a number of factors including EVs, battery/storage, LNG for power, LNG for transportation, increased energy efficiency, etc. But the peak oil demand narrative forgets the most basic fundamentals of oil – industry has to add new oil supply every year to replace declines just to keep production flat. Even after today's big oil rally, long dated strips are still under $52 from 2020 thru 2025. We don't believe long dated 2020 thru 2025 strips are predictive of future prices or indicative of the marginal supply costs to add 4 to 5 million b/d every year in 2020 to 2025 or to add >3 million b/d every year once peak oil demand is reached and is in plateau. We believe these marginal supply costs are significantly higher and >$60. We believe oil can quickly move to a base of >$60 with this supply challenge and there will be longevity to this call as markets appreciate this challenge and that the marginal supply cost to add this much new oil production every year is well over $60. Peak oil demand won't take away from the challenge to add significant new oil production every year."* Note that our Nov 6, 2017 blog was based on the spring 2017 Core Laboratories estimate that the global world wide annual decline rate in oil was then 3.3%. But to Core Laboratories support, this estimate would have been before the ~2.5 mmb/d of added US shale and tight oil in the past two years.

China’s Crude Stockpiles Hit Two-Year High After Buying Spree
2023-06-09 03:01:09.813 GMT

By Bloomberg News
(Bloomberg) -- China’s onshore crude oil stockpiles hit a two-year high in May as demand fell short of expectations amid a disappointing economic recovery.
Inventories climbed to 966 million barrels, before easing back to 963 million barrels in June, according to analytics firm Kpler. That compares to a five-year average of 858 million barrels.
Refiners have been on a post-Covid buying spree, betting that oil demand would quickly rebound after China reopened its economy. That hasn’t been the case and consumption has stagnated at the same time as processors have idled facilities for spring maintenance.
Few corners of the market have escaped the slowdown. Lackluster industrial activity has curbed diesel consumption, while the recovery in travel demand for items like jet fuel has yet to fully take off. Petrochemical products such as styrene are feeling the pinch from China’s sagging property market.
Meanwhile, a customs probe on bitumen mix — a refining feedstock often classified as crude — is delaying some cargoes from clearing onshore tanks.



A customs probe in Shandong has also kept oil from clearing storage, said Emma Li, an analyst at Vortexa Ltd., which puts onshore inventory at 960 million barrels, its highest since December 2020.
China could draw 20 million barrels from its stockpiles between June and August as crude imports show a seasonal decline, before purchases strengthen again in September, Energy Aspects Ltd. said earlier this month.
New refining capacity and storage facilities are also expanding the amount of oil that China can stockpile. Inventory

capacity grew to 1.63 billion barrels in June, compared to 1.55 billion barrels a year ago, according to Kpler.

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India's May Demand for Oil Products Jumps Most in Six Months
2023-06-07 12:13:09.267 GMT

By Bloomberg Automation
(Bloomberg) -- India's oil-product consumption in May rose 9% y/y, up the most since November, to 20 million tons, according to provisional data published by the oil ministry's Petroleum Planning & Analysis Cell.

* Gasoline consumption was at 3.35 million tons, +11% y/y, up the most since January
* Diesel consumption was at 8.22 million tons, +13% y/y, up the most since January
* Naphtha consumption was at 1.15 million tons, +38% y/y, up the most since April 2021
* LPG consumption was at 2.35 million tons, +8.7% y/y, up the most since March 2022
* Petcoke consumption -2.5% y/y to 1.44 million tons

NOTE: PPAC releases preliminary data that is revised in subsequent months

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leum Planning & Analysis Cell

Period : April-Mar 2024

Metric Tonnes)

DOMESTIC CONSUMPTION OF PETROLEUM PRODUCTS (P) (as on 07.06.2023)

PRODUCTS	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
LPG	2154	2347											4501
Naphtha	1079	1145											2223
MS	2877	3348											6226
ATF	656	670											1326
SKO	30	42											72
HSD	7823	8217											16040
LDO	61	69											129
Lubricants & (	280	296											576
FO & LSHS	589	574											1162
Bitumen	751	732											1483
Petroleum cok	1445	1435											2880
Others	800	1154											1954
TOTAL	**18544**	**20028**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**38571**

NOTE :

i) All figures are provisional.

ii) The source of information includes Oil Companies, DGCIS & online SEZ data.

iii) The consumption estimates represent market demand and is aggregate of :

(a) actual sales by oil companies in domestic market,

(b) consumption through direct imports by private parties (Private direct imports) prorated for Apr-May'23, which may undergo change on receipt of actual data), and

(c) sales by SEZ units in Domestic Tariff Area (DTA)

Air Passenger Market Analysis

April 2023

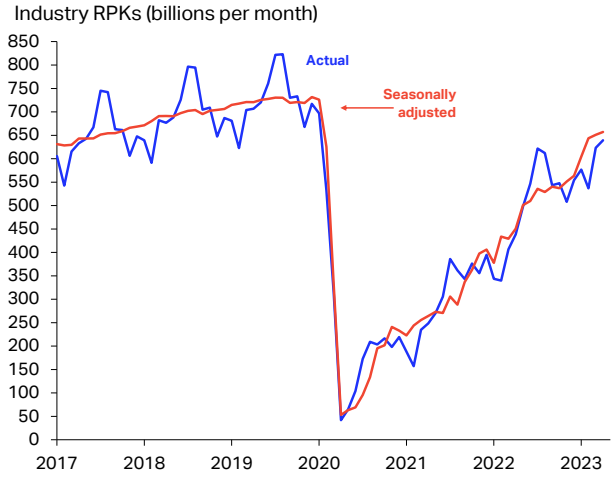
Domestic traffic fully recovers to pre-pandemic levels

- Air passenger traffic growth persisted in April, with industry-wide revenue passenger-kilometers (RPKs) increasing 45.8% year-on-year (YoY), reaching 90.5% of pre-Covid levels.
- Domestic traffic fully recovered for the first time since the pandemic began, surpassing the benchmark 2019 levels by 2.9%. This recovery was driven by growth in various markets, particularly in the Asia Pacific region.
- The recovery in international traffic remained resilient, growing 48.0% YoY. With China's international markets reopened, Asia Pacific carriers registered an annual growth of 192.7%. Across the industry, international traffic remained 16.4% below pre-pandemic levels in April.
- North American carriers achieved full recovery in international passenger traffic, with RPKs standing 0.4% above April 2019 levels.

April saw further global traffic recovery…

Industry-wide revenue passenger-kilometers (RPKs) increased 45.8% year-on-year (YoY) in April. While this growth rate was lower compared to the first quarter, it still indicated a positive trend. Adjusted for seasonality, RPKs rose by 0.9% in April over the previous month. The slowdown in month-on-month growth aligns with the lower annual growth rate, which can be attributed to the industry's progress towards reaching 2019 levels while building upon the higher base established in 2022 (**Chart 1**).

Chart 1 – Global air passengers, revenue-passenger kilometers (RPKs), billions per month



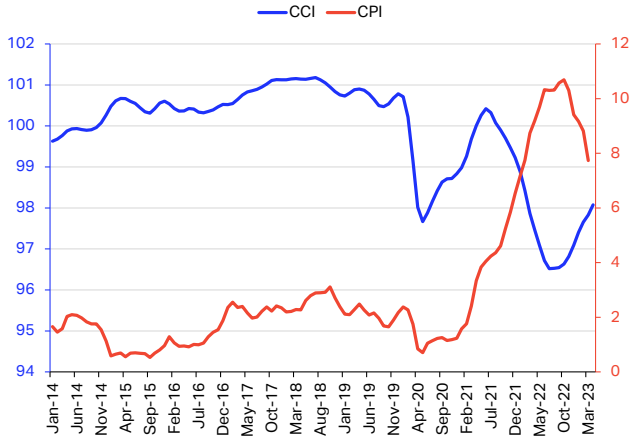
Sources: IATA Sustainability and Economics, IATA Monthly Statistics

Industry-wide available seat capacity, measured in available seat-kilometers (ASKs), increased 39.7% compared to a year ago. This growth was in line with the recovery in passenger demand as the industry-wide load factor reached 81.3% in April 2023, sitting only 1.8 percentage points (ppts) below the pre-pandemic level.

…while macroeconomic headwinds eased

Across the OECD, consumer price inflation likely peaked in October 2022 while consumer confidence also dropped to a historical low (**Chart 2**). However, there has been a subsequent decrease in the annual inflation rate and a rise in consumer confidence in most OECD countries.

Chart 2 – OECD total Consumer Price Index (CPI), YoY% change and Consumer Confidence Index (CCI)



Source: OECD

The inflation rate in the OECD is expected to pull back to 6.6% in 2023. However, prices are still high and

Air passenger market overview - April 2023

	World share [1]	April 2023 (% year-on-year) RPK	ASK	PLF (%-pt)[2]	PLF (level)[3]	April 2023 (% ch vs the same month in 2019) RPK	ASK	PLF (%-pt)[2]	PLF (level)[3]
TOTAL MARKET	***100.0%***	**45.8%**	**39.7%**	**3.4%**	**81.3%**	**-9.5%**	**-7.5%**	**-1.8%**	**81.3%**
International	*58.0%*	48.0%	38.1%	5.5%	81.4%	-16.4%	-15.1%	-1.3%	81.4%
Domestic	*42.0%*	42.6%	42.1%	0.3%	81.1%	2.9%	6.3%	-2.7%	81.1%

[1]% of industry RPKs in 2022 [2]Change in load factor [3]Load factor level

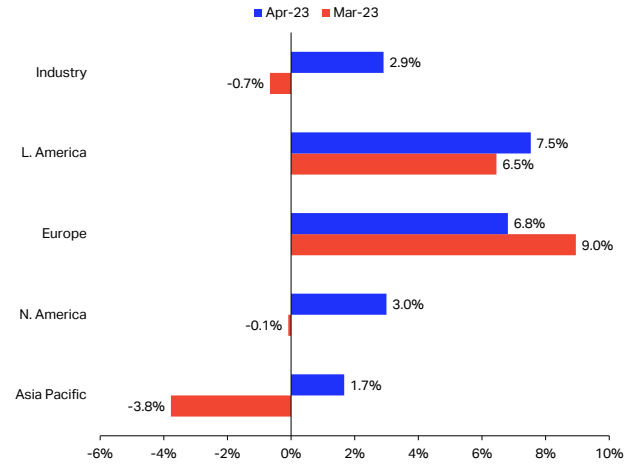
continuing to rise, albeit at a slower rate. Inflation has a significant impact on airlines as the price of jet fuel is considerably higher than other household energy sources, and it represents a substantial portion of their operating expenses. However, since unemployment rates are at historically low levels, we anticipate a consistent level of demand for air travel as more people are earning income, despite their reduced purchasing power due to inflation. Additionally, the decline in jet fuel prices is expected to moderate airline operating costs.

Total domestic traffic surpassed 2019 levels…

A significant milestone was achieved this month as global domestic traffic surpassed the levels observed in 2019, indicating a full recovery (**Chart 3**). Both domestic RPKs and ASKs topped their April figures from 2019, with RPKs exceeding by 2.9% and ASKs by 6.3%. Even though the recovery in domestic seat capacity outpaced passenger traffic on a global scale, the load factor increased to 81.1%, which is 2.7 percentage points below the pre-pandemic level. The growth in domestic RPKs was robust and widespread, as all regions where we report domestic traffic surpassed their pre-pandemic levels in April.

Maintaining their positive momentum, Europe and Latin America carriers continued to outperform their pre-pandemic levels in terms of domestic RPKs this month. Airlines registered in Europe observed a growth of 6.8% compared to April 2019, while Latin America carriers experienced an even higher increase of 7.5%. Similarly, North America carriers matched their performance from February 2023 with another 3.0% growth above the levels seen in 2019. Notably, April marked the first month in which Asia Pacific carriers achieved domestic RPK growth surpassing their 2019 levels (**Chart 3**).

Chart 3 – Domestic RPK growth by airline region of registration, YoY% change versus 2019



Source: IATA Sustainability and Economics, IATA Monthly Statistics

… with the recovery accelerated by recent developments in Asia Pacific

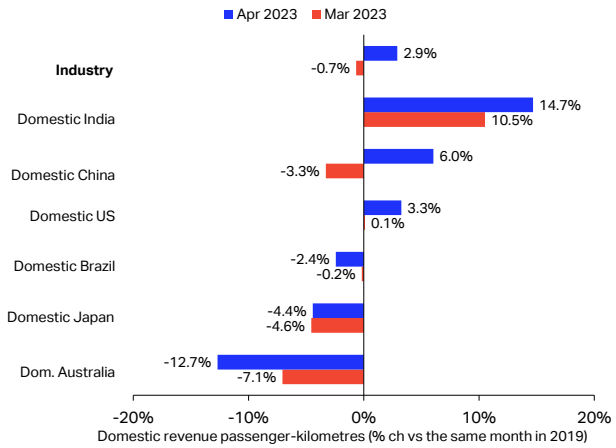
In 2019, Asia Pacific carriers held the largest proportion of total domestic RPKs at 43.1%, followed closely by North America airlines at 40.7%. Currently, Asia Pacific carriers are making significant progress in reclaiming their dominant position in global domestic demand, as demonstrated by an impressive annual increase of 155.3% in domestic RPKs in April 2023. This growth outpaced other regions in terms of percentage growth and helped Asia Pacific carriers to exceed their pre-Covid traffic levels by 1.7% this month.

On the other hand, Asia Pacific airlines have experienced capacity growth outpacing the increase in demand. ASKs exceeded the levels observed in April 2019 by 11.1%, highlighting the rapid restoration of capacity by the airlines in the region, especially in China.

… and the swift recovery in China

In April, domestic traffic in China showed significant progress, achieving a full recovery and surpassing 2019 levels by 6.0%, with a remarkable annual growth of 536.2% from a low base **(Chart 4).** However, compared to the same month in 2019, the load factor difference in China was the highest among the markets being monitored. This was due to the capacity (ASKs) being 21.3% higher than the pre-pandemic levels.

Chart 4 – Domestic RPK growth by market, YoY% change versus 2019



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

Traffic levels were stable in Japan and India while Australia saw a contraction

Japan maintained a steady traffic recovery in April, with RPKs growing by 42.6% YoY and sitting only 4.4% under pre-Covid levels. Conversely, Australia experienced a decline in domestic RPKs, with a decrease of 4.5% compared to the previous year and a 12.7% drop compared to 2019 levels. Australia had

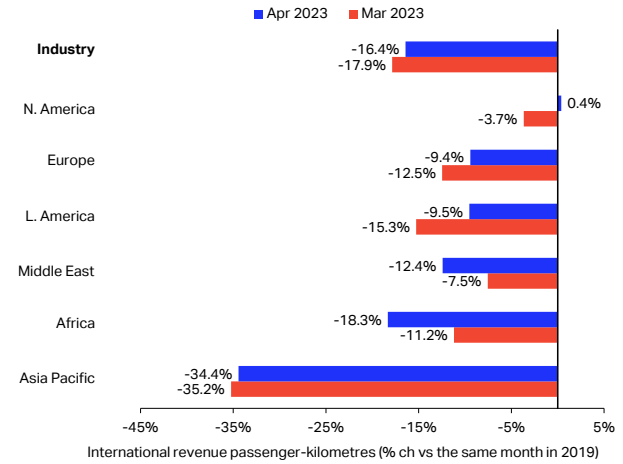
initially rebounded faster than other Asia Pacific countries and achieved full recovery in June 2022.

Meanwhile, India witnessed a significant surge in domestic traffic, with RPKs surpassing 2019 levels by 14.7% and experiencing an 18.3% year-on-year increase. Domestic traffic in the United States had already returned to pre-pandemic levels and continued its upward trajectory in April, with carriers operating 3.3% above the levels seen in April 2019. Brazil also maintained stable passenger traffic despite a slowdown in the pace of recovery from March to April 2023 **(Chart 4).**

International traffic growth maintained its momentum

The stable growth in international traffic continued this month, with international RPKs rising 48.0% YoY. Over the past year, international traffic has followed a steady recovery trend. In April, the total international passenger traffic reached 83.6% of the levels seen in April 2019, marking a notable increase of 27.1ppts compared to the same month in 2022 **(Chart 5).** International seat capacity also increased in line with these developments, growing by 38.1% over the year, resulting in a total passenger load factor of 81.4%.

Chart 5 – International RPK growth by airline region of registration, YoY% change versus 2019



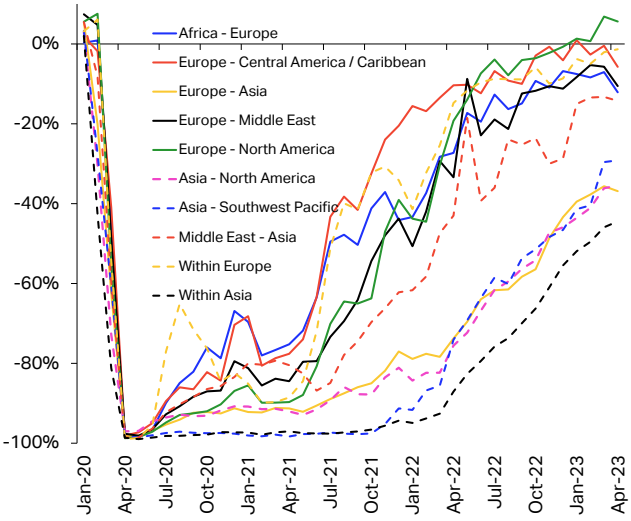
Sources: IATASustainability and Economics, IATA Monthly Statistics

Asia Pacific carriers continued to lead in growth…

Among the regions, traffic levels remained relatively stabled when compared to 2019. International RPKs performed by Asia Pacific carriers nearly tripled, with a 192.7% annual increase in April. They recovered 65.6% of the international traffic volume observed in April 2019 **(Chart 5).**

This significant recovery in international routes between the Asia Pacific region and the rest of the world reflects the resilience demonstrated by airlines in the region. Furthermore, traffic within Asia itself also showed positive momentum, reaching 55.6% of pre-pandemic levels (**Chart 6**).

Chart 6 – International RPKs, YoY% change versus 2019 – Top 10 route areas in 2019, ranked by performed traffic level



Source: IATA Sustainability and Economics, IATA Monthly Statistics

…while North American carriers were first to recover international RPKs to pre-pandemic levels

North American airlines witnessed a substantial annual growth of 34.8% in international RPKs and were the first among the regions to restore international traffic to pre-Covid levels. In April, international RPKs exceeded 2019 levels by 0.4%, highlighting a consistent recovery trend in international routes connecting North America, Europe, and Latin America & Caribbean (**Chart 6**). Most notably, passenger flows between Europe and North America consistently maintained elevated levels of traffic, exceeding pre-Covid levels for the 4th consecutive month.

International recovery trend continued for all regions

International RPKs have seen different evolutions amongst the regions compared to 2019. However, all regions have achieved year-on-year growth and month-on-month growth in seasonally adjusted terms, highlighting the robust momentum propelling the global recovery in international traffic (**Chart 6**).

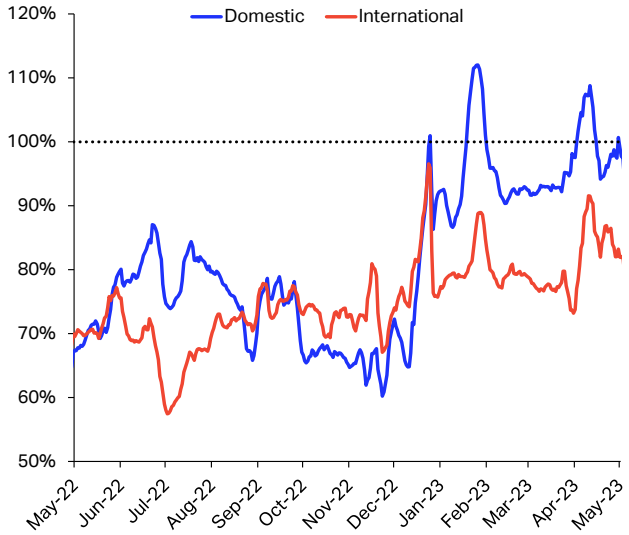
Africa and Middle East carriers have made remarkable progress in recovering international RPKs, achieving growth rates of 53.5% and 38.0% respectively compared to the previous year. Similarly, Europe and Latin America airlines have performed well, with annual growth rates of 22.6% and 25.8% in international RPKs, respectively. The slowdown in traffic growth experienced by certain regions can be attributed to the higher comparison base of their 2022 traffic levels. This trend is particularly noticeable for North America, Europe, and Latin America airlines, as these regions reopened their air travel markets earlier than others.

Ticket sales reached above pre-pandemic levels with Labor Day holidays

In 2023, Labor Day holidays in China occurred between April 29th and May 3rd. Over the month of April, domestic ticket sales increased significantly, driven by pent up demand and domestic tourism in China. International ticket sales for travel to and from China over the same period made a substantial contribution to the total global sales volume **(Chart 7).**

By the end of April, domestic bookings reached their peak, surpassing the 2019 sales levels by 11%. In contrast, international bookings remained 8% below the 2019 levels. Domestic ticket sales have consistently outperformed their pre-pandemic levels, while international sales have remained relatively stable. The ticket bookings data continue to project a positive outlook for the upcoming months.

Chart 7 – Passenger ticket sales by day of travel (7-day average), % share of the same day in 2019



Source: IATA Sustainability and Economics, DDS

Air passenger market in detail - April 2023

	World share[1]	April 2023 (% year-on-year) RPK	ASK	PLF (%-pt)[2]	PLF (level)[3]	April 2023 (% ch vs the same month in 2019) RPK	ASK	PLF (%-pt)[2]	PLF (level)[3]
TOTAL MARKET	***100.0%***	**45.8%**	**39.7%**	**3.4%**	**81.3%**	**-9.5%**	**-7.5%**	**-1.8%**	**81.3%**
Africa	*2.1%*	47.1%	41.7%	2.6%	70.8%	-16.2%	-12.5%	-3.1%	70.8%
Asia Pacific	*22.1%*	170.8%	135.1%	10.3%	78.4%	-18.4%	-14.7%	-3.6%	78.4%
Europe	*30.8%*	22.2%	15.6%	4.5%	83.8%	-7.8%	-6.2%	-1.4%	83.8%
Latin America	*6.4%*	15.3%	15.8%	-0.4%	81.4%	-1.5%	-0.6%	-0.7%	81.4%
Middle East	*9.8%*	36.8%	26.4%	5.8%	76.0%	-12.1%	-7.0%	-4.4%	76.0%
North America	*28.8%*	13.9%	13.8%	0.1%	85.6%	2.1%	1.2%	0.8%	85.6%
International	***58.0%***	**48.0%**	**38.1%**	**5.5%**	**81.4%**	**-16.4%**	**-15.1%**	**-1.3%**	**81.4%**
Africa	*1.8%*	53.5%	50.0%	1.6%	69.8%	-18.3%	-14.5%	-3.2%	69.8%
Asia Pacific	*8.9%*	192.7%	145.3%	13.2%	81.6%	-34.4%	-34.7%	0.4%	81.6%
Europe	*26.5%*	22.6%	16.0%	4.5%	83.3%	-9.4%	-6.9%	-2.3%	83.3%
Latin America	*2.8%*	25.8%	26.4%	-0.4%	83.1%	-9.5%	-10.1%	0.5%	83.1%
Middle East	*9.4%*	38.0%	27.8%	5.6%	76.2%	-12.4%	-7.2%	-4.5%	76.2%
North America	*8.7%*	34.8%	26.5%	5.2%	83.8%	0.4%	-0.8%	1.0%	83.8%
Domestic	***42.0%***	**42.6%**	**42.1%**	**0.3%**	**81.1%**	**2.9%**	**6.3%**	**-2.7%**	**81.1%**
Dom. Australia[4]	*1.0%*	-4.5%	1.1%	-4.4%	76.0%	-12.7%	-7.3%	-4.7%	76.0%
Domestic Brazil[4]	*1.5%*	5.7%	6.7%	-0.7%	77.4%	-2.4%	3.2%	-4.4%	77.4%
Dom. China P.R.[4]	*6.4%*	536.2%	377.5%	18.6%	74.4%	6.0%	21.3%	-10.7%	74.4%
Domestic India[4]	*2.0%*	18.3%	7.8%	7.8%	88.2%	14.7%	13.9%	0.6%	88.2%
Domestic Japan[4]	*1.2%*	42.6%	11.8%	15.2%	70.4%	-4.4%	-6.3%	1.4%	70.4%
Domestic US[4]	*19.2%*	5.5%	8.1%	-2.1%	86.1%	3.3%	2.9%	0.3%	86.1%

[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 31.3% of global total RPKs and 74.5% 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 registered; it should not be considered as regional traffic.

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01June 2023

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Air Cargo Market Analysis

April 2023

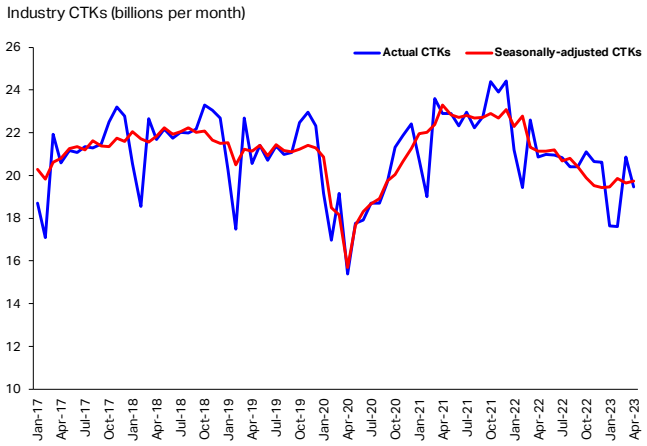
Capacity returns to pre-Covid levels as traffic decline slows

- Global air cargo demand in April continued its year-on-year decline at a slower rate than the first three months of 2023, with cargo tonne-kilometers (CTKs) falling by 6.6% compared to April 2022.
- Industry-wide cargo capacity returned pre-pandemic levels for the first time in three years, with available cargo-tonne kilometers (ACTKs) surpassing April 2019 levels by 3.2%.
- Global cross-border trade and new export orders PMIs, the two critical indicators of air cargo demand, both saw year-on-year growth for the first time in several months.
- North American airlines experienced notable declines in international CTKs compared to the previous year, primarily due to decreased air cargo traffic on the North America-Europe and North America-Asia trade lanes.

Air cargo continues to decline at a slower pace

Industry-wide cargo tonne-kilometers (CTKs) in April were 6.6% below their 2022 levels. Despite the decline, this represents a continued improvement from the double-digit annual contractions of CTKs experienced earlier in 2023 **(Chart 1)**. As a result, the gap between 2022 and 2023 year-to-date CTKs has narrowed from -16.8% in January to -10.1% in April. Compared with the pre-pandemic period, industry CTKs decreased by 5.3% over April 2019 levels, which also indicates an improvement from the 8.1% contraction in the previous month. Moreover, seasonally adjusted CTKs increased slightly by 0.5% in April compared to the March level.

Chart 1 Global Industry CTKs (billions per month)

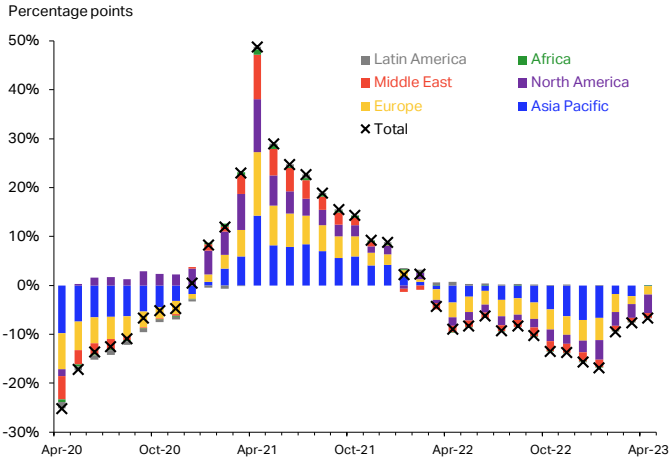


Sources: IATA Sustainability and Economics, IATA Monthly Statistics

International air cargo demand, which accounts for around 85% of the industry-wide total CTKs, saw a 7.0% decline in April, slightly more than the annual decline of the industry-wide CTKs, indicating a stronger performance from domestic CTKs in April.

The annual contraction of cargo demand in April was driven by the softening demand for carriers in North America and Europe (**Chart 2**). However, there were signs of improvement in CTKs for airlines in the Asia Pacific region, which accounted for a relatively small portion of the overall 6.6% annual decline in industry-wide CTKs. Notably, African airlines made the only positive contribution to the year-on-year change in industry-wide CTKs among the various regions.

Chart 2 Regional contributions to industry-wide annual CTK growth



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

Global cross-border trade picked up while remaining decoupled with trends in industry-wide CTKs

By the end of the first quarter of 2023, global cross-border trade and industrial production remained higher

Air cargo market overview - April 2023

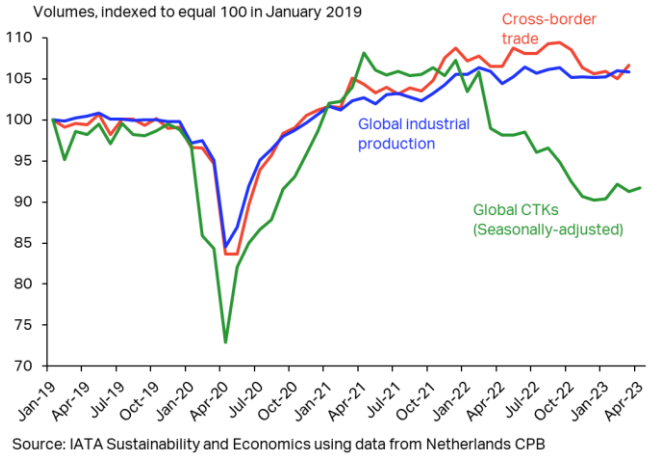
	World share [1]	April 2023 (% year-on-year) CTK	ACTK	CLF (%-pt)[2]	CLF (level)[3]	April 2023 (% ch vs the same month in 2019) CTK	ACTK	CLF (%-pt)[2]	CLF (level)[3]
TOTAL MARKET	***100.0%***	**-6.6%**	**13.4%**	**-9.2%**	**42.7%**	**-5.3%**	**3.2%**	**-2.2%**	**42.7%**
International	*86.8%*	-7.0%	10.7%	-9.4%	49.3%	-5.1%	-0.9%	-0.8%	49.3%

[1]% of industry CTKs in 2022 [2]Change in load factor [3]Load factor level

than 2019 levels by 7.1% and 5.6%, respectively. International trade also increased 0.2% in March, marking the first annual growth since November 2022. However, there has been a divergence between the downward trend in global CTKs and the evolutions in cross-border trade and industrial production since February 2022, and this gap had been progressively widening until recently (**Chart 3**).

The divergent trend in global CTKs can be attributed to the slower decline in air cargo yields compared to the decrease in maritime cargo yields over the same period. In March 2023, air cargo yields remained 45% higher than yields in 2019, whereas container yields had declined to be within 8% of their 2019 levels. This difference in yield performance helps explain the competitive advantage the maritime cargo industry enjoys amid elevated levels of global trade and industrial production.

Chart 3 Global trade, industrial production, and CTKs



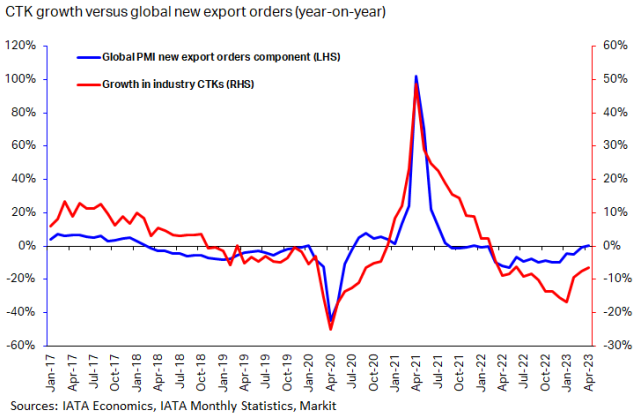
Source: IATA Sustainability and Economics using data from Netherlands CPB

New export orders PMI sees first annual growth in over a year

In April, the new export orders manufacturing Purchasing Managers Index (PMI) experienced its first annual growth in 16 months, with a modest 0.2% increase. This positive development aligns with the improvement of global air cargo demand, even though it remains in the negative territory compared with the previous year (**Chart 4**). Historical data for this PMI have demonstrated a robust correlation with the growth rate of global air cargo demand. Therefore, we have been closely monitoring the manufacturing PMI at a global level and for major economies.

In line with the expansion of global trade in April, there was an improvement observed in the PMI for new export orders at the global level, although it remained below the critical threshold represented by the 50-mark (**Chart 5**).

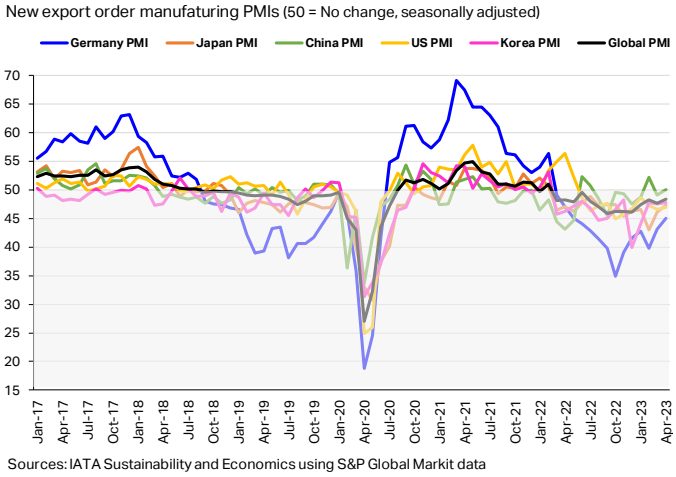
Chart 4 CTK growth, change in global new export orders (YoY)



Sources: IATA Economics, IATA Monthly Statistics, Markit

China's PMI inched above the 50-line in April, making it the only major economy that had an expansion in new export orders in April (**Chart 5**). Other major economies, including Germany, Japan, US, and Korea, all registered a contraction in April compared to March. It is worth noting, however, that both Germany and Japan witnessed constant improvements in their PMIs, suggesting a slowdown in the rate of contraction in these economies.

Chart 5 Global new export orders, component of the manufacturing PMI (50 = no change, SA)



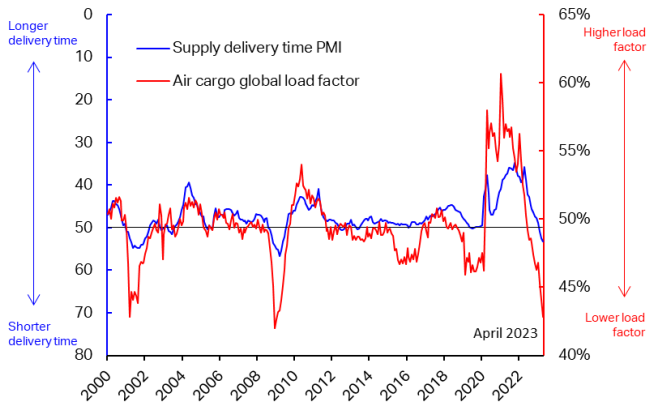
Sources: IATA Sustainability and Economics using S&P Global Markit data

There was a notable reduction in supplier delivery times in April, especially in the US and Germany, resulting in a global supplier delivery time index of 53. This index has rebounded from its lowest point of 35, which was recorded in October 2021 (**Chart 6**). The threshold of 50 for this indicator represents stability in supplier delivery times, and a higher PMI indicates a greater proportion of shorter delivery times compared to the previous month. A sustained increase in the PMI suggests a faster rate of shortening delivery times.

The significant shift towards shorter delivery times within a span of less than a year has sustained the decrease in air cargo load factors, reaching 42.8% in April. The combination of increased belly-hold capacity from passenger aircraft and reduced demand for air cargo has contributed to the decline in load factors.

However, this situation has also brought some relief to supply chains and transportation networks.

Chart 6 Air cargo load factors and supplier delivery times PMIs (50 = no change)

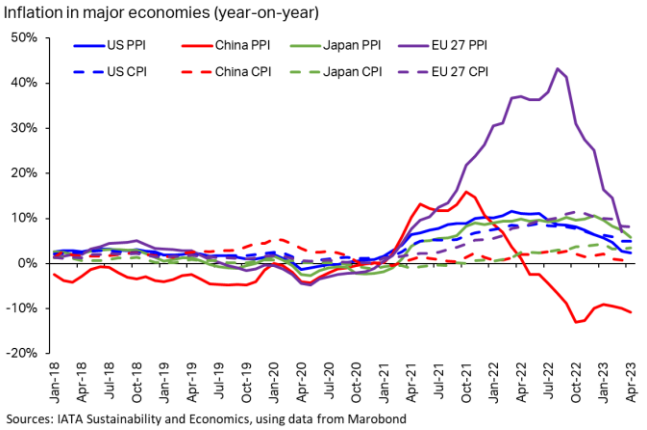


Sources: IATA Sustainability and Economics, IATA Monthly Statistics, S&P Global Markit

Price increases in major economies continue to ease

Consumer and producer price increases in major economies have decelerated in recent months. In April, the annual increase in headline Consumer Price Index (CPI) recorded rates of 5.0% in the US, 0.3% in China, 3.5% in Japan, and 8.1% in the EU 27 countries (**Chart 7**). And the Producer Price Index (PPI), which measures changes in producer prices, stood at 2.4% in the US, -10.7% in China, and 5.8% in Japan (April PPI data for EU 27 countries has not been released). Although the PPI in Europe has significantly decreased from its peak in September 2022, it remains high. The main factor driving the cooling in these price indexes is the recent decline in global oil prices.

Chart 7 Headline CPI and PPI inflation (YoY) in major economies



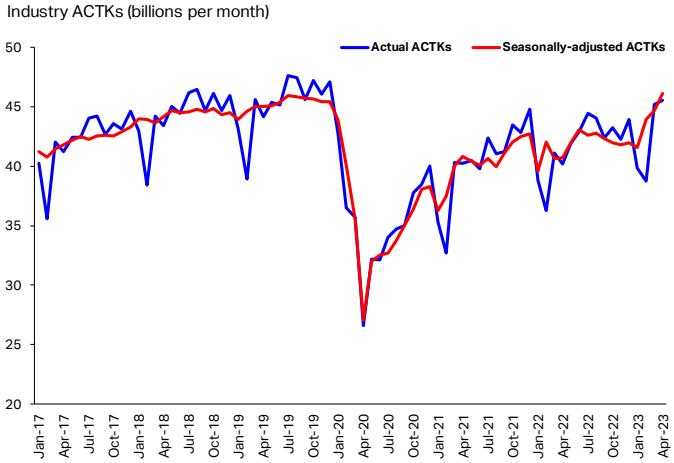
Sources: IATA Sustainability and Economics, using data from Marobond

Excluding volatile oil and food prices, China's core inflation remained below 1% since mid-2022. During the same period, PPI remained in the negative territory, suggesting a moderation in the price of inputs for producers. Both readings suggest a weak demand environment, reflecting the lingering impacts of the pandemic's restrictions on China's manufacturing sector.

Air cargo capacity exceeds 2019 levels in April

The air cargo industry continued to see significant growth in its capacity this month, as measured by available cargo tonne-kilometers (ACTKs), which increased by 13.4% compared to the previous year (**Chart 8**). This expansion propelled the industry's capacity to surpass pre-Covid levels by 3.2%, marking the first time in three years that such levels have been achieved.

Chart 8 Global ACTKs (billions per month)



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

The recovery of air cargo capacity can be attributed to the restoration of belly-hold cargo capacity provided by passenger aircraft. The ACTKs from passenger flights experienced a remarkable increase of 47.9% this month, while ACTKs from dedicated freighters contracted by 2.3%. Moreover, April witnessed the absence of scheduled passenger freighters (also known as preighters) globally for the first time in two and a half years, after they played an essential role during the pandemic. In April, International capacity increased 10.7% YoY, consistent with the faster recovery of belly-hold cargo capacity in international passenger markets.

Despite the full recovery of air cargo capacity, the industry continues to be challenged by softening demand, leading to a decline in air cargo load factors. Cargo load factors dropped to 42.8% in April, 9.1 percentage points (ppts) lower than the previous year. This decline can be attributed to the combination of increased capacity and weaker air cargo demand.

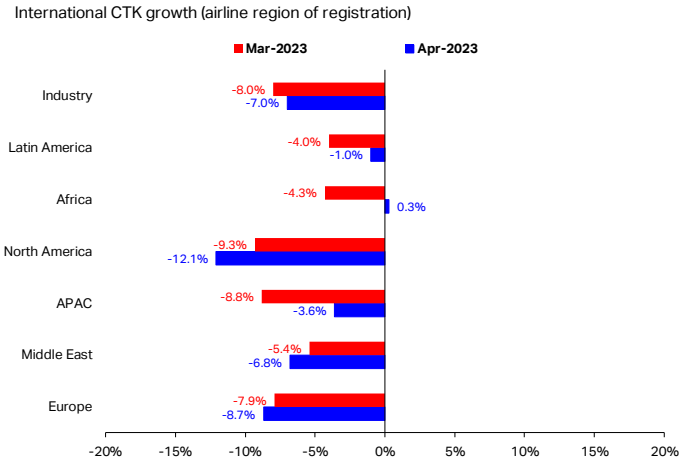
Mixed performance of international CTKs across regions

International cargo demand witnessed a year-on-year decline of 7.0% in April, aligning with the overall industry-wide contraction of 6.6% in CTKs. Among the different regions, Asia Pacific, Latin America, and Africa airlines showed improvements in their international cargo performance compared to the previous month's

year-on-year change. Specifically, Asia Pacific airlines witnessed an annual decline in traffic of 3.6% in April, while Latin America saw a decrease of 1.0%. African airlines achieved a small increase of 0.3% in international cargo demand (**Chart 9**). We note that carriers registered in Asia Pacific grew their traffic from a lower base, as Chinese airlines in particular were restricted by Covid-related lockdowns in April 2022.

On the other hand, North American carriers faced a worsening annual contraction in their international CTKs, with the decline increasing from 9.3% in March to 12.1% in April. Similarly, European airlines experienced a larger decrease in their international cargo traffic, with the figure dropping from -7.9% in March to -8.7% in April. Additionally, Middle East carriers witnessed a decline in their year-on-year growth rate of CTKs, from -5.4% in March to -6.8% in April.

Chart 9 Growth in international CTKs by region (YoY)



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

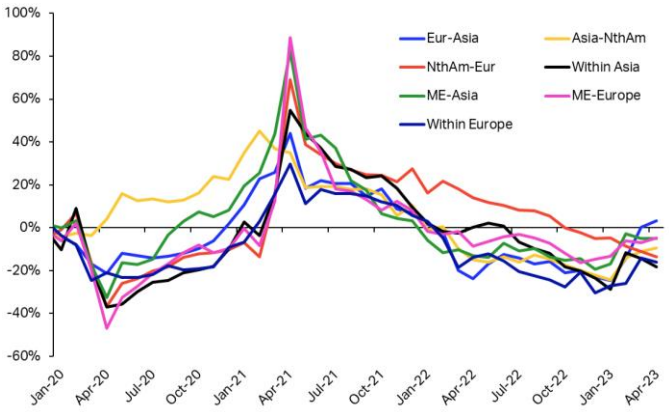
Performance of air cargo on trade lanes also varied

The changes in international air cargo demand among different regions can be explained by the performance of key trade lanes. North America carriers experienced a significant contraction of 12.1% in international air cargo demand in April. This decline can be attributed to annual declines in international CTKs on two major trade lanes: North America-Europe (-13.5%) and North America-Asia (-9.3%) (**Chart 10**).

The performance of the North America-Europe trade lane also affected European airlines, which faced a 16.1% YoY decline in air cargo demand within Europe. Although these route areas experienced double-digit contractions in April, the robust growth of air cargo traffic on the Europe-Asia route area (up 3.4% YoY) helped mitigate the overall decline in demand for the region. Growth in this route area reflects a shift in cargo traffic from Russian carriers to other airlines operating routes through the Middle East.

In contrast to the other regions, African airlines achieved year-on-year growth in April. This trend was supported by the notable 20.0% annual increase in cargo demand on the Africa-Asia trade lane (**Chart 10**). The remarkable performance in this route area reflects the strengthening trade relationship between Africa and Asia, particularly the commercial ties between China and African countries.

Chart 10 Seasonally adjusted growth of international CTKs by route area (YoY)



Source: IATA Sustainbility and Economics, IATA Monthly Statistics by Route

Air cargo market in detail - April 2023

	World share [1]	April 2023 (% year-on-year) CTK	ACTK	CLF (%-pt)[2]	CLF (level)[3]	April 2023 (% ch vs the same month in 2019) CTK	ACTK	CLF (%-pt)[2]	CLF (level)[3]
TOTAL MARKET	***100.0%***	**-6.6%**	**13.4%**	**-9.2%**	**42.7%**	**-5.3%**	**3.2%**	**-3.8%**	**42.7%**
Africa	*2.0%*	0.9%	5.3%	-2.1%	48.2%	9.9%	-13.2%	10.1%	48.2%
Asia Pacific	*32.4%*	-0.4%	41.2%	-18.5%	44.2%	-9.0%	6.6%	-7.6%	44.2%
Europe	*21.8%*	-8.2%	7.8%	-8.6%	49.7%	-12.2%	-11.6%	-0.3%	49.7%
Latin America	*2.7%*	-1.6%	8.1%	-3.6%	36.4%	-3.4%	-7.3%	1.5%	36.4%
Middle East	*13.0%*	-6.8%	10.0%	-7.8%	43.1%	-2.9%	5.1%	-3.5%	43.1%
North America	*28.1%*	-13.1%	-1.5%	-5.0%	37.3%	3.6%	12.5%	-3.2%	37.3%
International	***86.8%***	**-7.0%**	**10.7%**	**-9.4%**	**49.3%**	**-5.1%**	**-0.9%**	**-2.2%**	**49.3%**
Africa	*2.0%*	0.3%	5.0%	-2.3%	49.1%	10.4%	-12.2%	10.0%	49.1%
Asia Pacific	*29.7%*	-3.6%	23.7%	-15.4%	54.4%	-6.8%	-1.2%	-3.3%	54.4%
Europe	*21.5%*	-8.7%	7.4%	-9.0%	51.3%	-12.7%	-11.3%	-0.8%	51.3%
Latin America	*2.3%*	-1.0%	11.0%	-5.0%	41.7%	-0.7%	-0.5%	-0.1%	41.7%
Middle East	*13.0%*	-6.8%	10.1%	-7.9%	43.4%	-2.8%	6.2%	-4.1%	43.4%
North America	*18.4%*	-12.1%	0.0%	-6.3%	45.9%	4.6%	8.5%	-1.7%	45.9%

[1]% of industry CTKs in 2022 [2]Change in load factor [3]Load factor level

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 registered; it should not be considered as regional traffic. Historical statistics are subject to revision.

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31 May 2023

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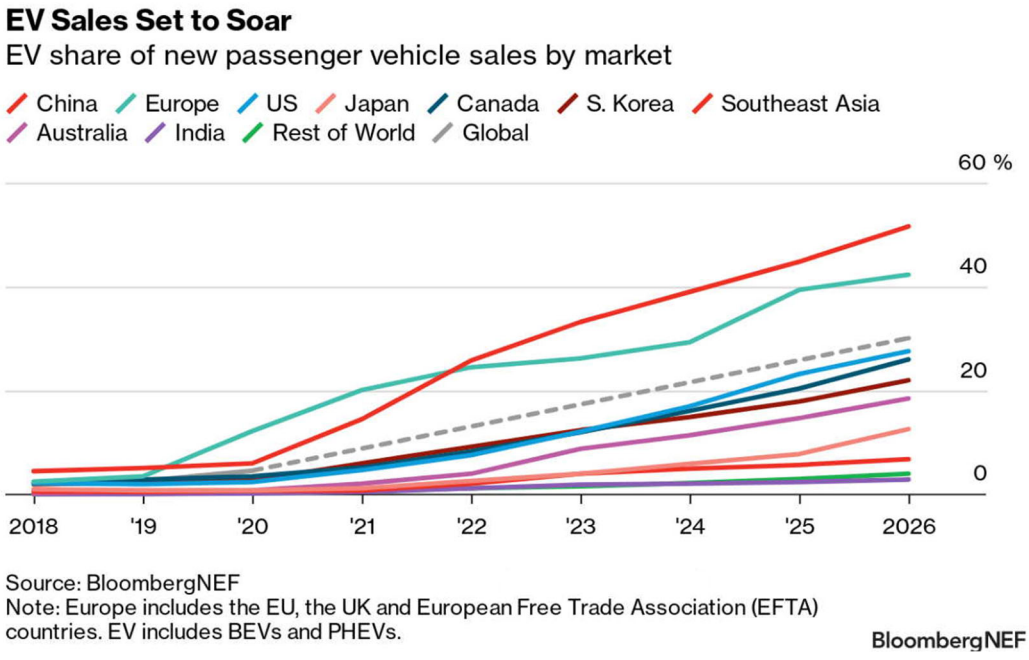
EV Sales Are Surging And Oil Use Is About to Peak: Hyperdrive
2023-06-08 11:27:30.205 GMT

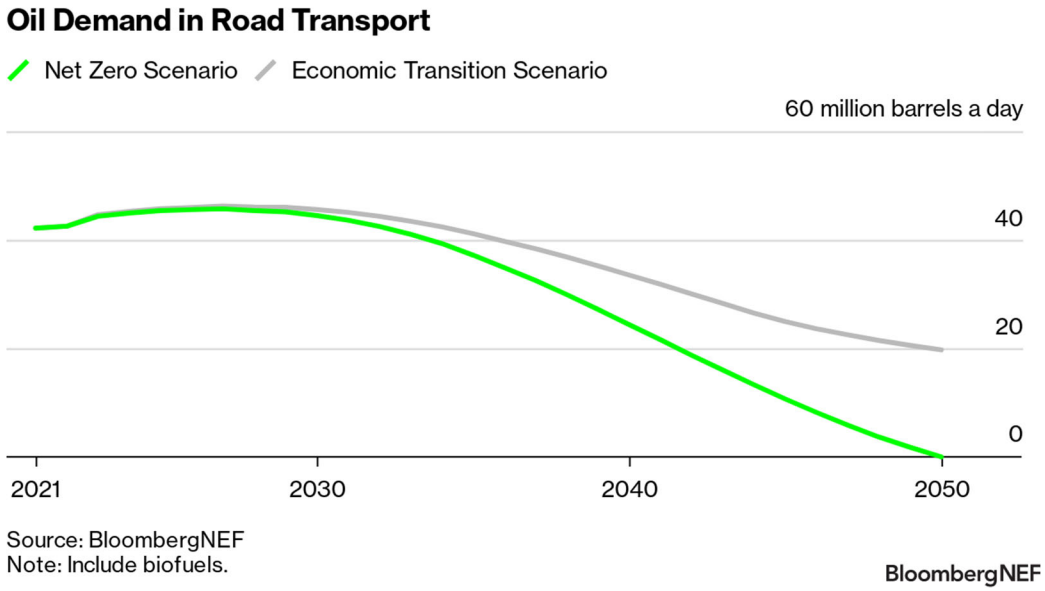
By Colin McKerracher
(Bloomberg) -- Today, we at BloombergNEF published our annual Electric Vehicle Outlook. The report looks at how the different segments of road transport could evolve over the coming decades and maps the impact on oil markets, electricity demand, batteries, metals and materials, charging infrastructure and greenhouse gas emissions.
There's a lot of different angles within a big report like this. Here are a few I'd like to highlight:

EV sales will surge in the coming years
The share of electric vehicles in sales of new passenger vehicles is set to more than double globally in the next few years — to 30% in 2026. Their penetration in some markets will be even higher, with EVs reaching 89% of sales in the Nordics, 52% in China and 42% in Europe. Our latest near-term EV sales outlook is brighter than what BNEF published last year, mostly due to policy changes in the US, where a major investment push sparked by the Inflation Reduction Act will help more than triple the share of EVs in new sales, to 28% by 2026.



Peaks everywhere
Sales of combustion-engine vehicles peaked six years ago and are now in long-term decline. Oil demand from road transport is also very close to cresting.
EVs of all types are already displacing 1.5 million barrels of oil a day. This will increase dramatically in the coming years, leading to demand for road fuels peaking in 2027. Uptake in the US and Europe has already crested, while it's expected to peak in China next year. Oil demand from two-wheelers, three-

wheelers and buses has also peaked, with demand from passenger cars following in 2025. Commercial vehicles will take longer to shift as heavy trucks continue to rely largely on diesel.

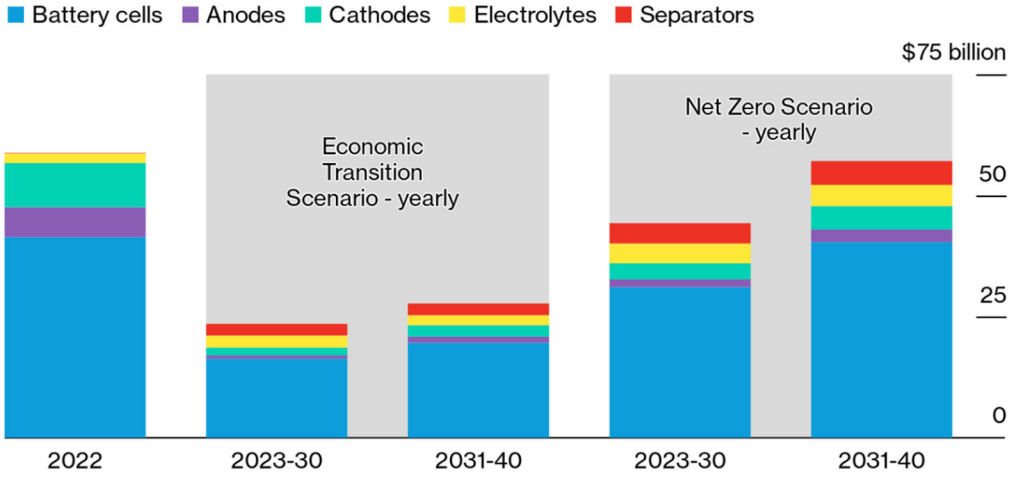


Battery factory spending ahead of plan

BNEF models two main scenarios in its EV outlook. The Economic Transition Scenario — which assumes no new policies and regulations are enacted — is primarily driven by techno-economic trends and market forces. The Net Zero Scenario investigates what a potential route to net-zero emissions by the middle of the century looks like for the road transport sector. Large investments are needed in all areas of the battery supply chain, but some areas are already running ahead of what's required to stay on track to eliminate emissions by 2050. BNEF estimates that between $24 billion and $57 billion in battery and component plant investment is needed each year to keep up with demand. It's looking good: Spending already totaled $59 billion in 2022.

Battery Plant Investment Ahead of Target Last Year

Annual battery factory investment by scenario



Source: BloombergNEF.
Note: Battery factory requirements include investment needed to meet EV demand as well as stationary energy storage.

BloombergNEF

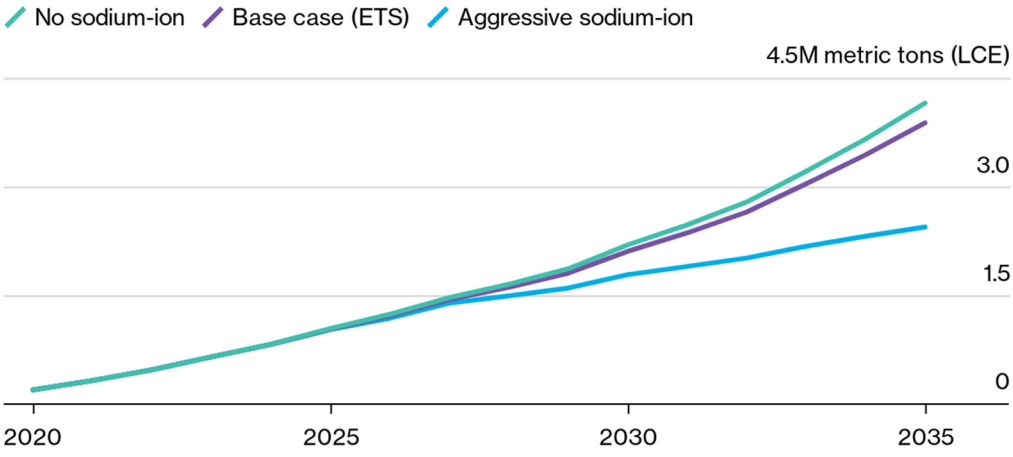
Lithium has a supply challenge

Lithium is the most concerning of the battery metals in terms of supply, with demand increasing 22 times by 2050 under BNEF's Net Zero Scenario.

Building more public chargers can help consumers feel comfortable with shorter EV ranges and smaller battery packs — which in turn reduces pressure on the supply chain. While battery recycling will also help, it won't deliver large volumes until the 2030s.

Still, there are reasons for optimism. Sodium-ion ion batteries, which are entering commercialization this year, could reduce lithium demand by nearly 40% in 2035 compared to BNEF's base case scenario. Advances like solid-state batteries and next-generation anodes are also entering the market.

Impact of Sodium-Ion Battery Uptake on Lithium Demand



Source: BloombergNEF
Note: LCE = lithium carbonate equivalent. ETS = Economic Transition Scenario.

BloombergNEF

Electricity demand from EVs

The rising adoption of EVs adds about 14% to global electricity demand by 2050 in the Economic Transition Scenario and only 12% in the Net Zero Scenario — despite more vehicles on the road. That's because the Net Zero Scenario includes additional consumption from electrification of heating, industry as well as electrolyzer use for hydrogen production in other sectors.

This year's report includes five new thematic highlights, each of which explores a different part of the transition in markets around the world. The topics are:

* EV price parity under different battery price scenarios
* Will average EV ranges keep rising?
* Emerging battery technologies: sodium-ion batteries, solid-state batteries, and next-generation anode technologies
* High-powered charging for trucking fleets
* The impact of autonomous vehicles

BNEF clients can access it here, and the executive summary is available publicly here.

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https://www.iata.org/en/pressroom/2023-releases/2023-06-06-01/

Press Release No: 34

Date: 6 June 2023

SAF Production Set for Growth but Needs Policy Support to Diversify Sources

Istanbul -The International Air Transport Association (IATA) announced its expectation for overall renewable fuel production to reach an estimated capacity of at least 69 billion liters (55 million tonnes) by 2028. Sustainable Aviation Fuels (SAF) will comprise a portion of this growing output which is being achieved through new renewable fuel refineries and the expansion of existing facilities. Importantly, the expected production has a wide geographic footprint covering North America, Europe and Asia Pacific.

"The expected production increase is extremely encouraging. Seeing this, we need governments to act to ensure that SAF gets its fair production share. That means, in the first instance, production incentives, to support aviation's energy transition. And we need continued approval for more diversification of methods and feedstocks available for SAF production. With these two measures successfully in place, we can be confident that the expected 2028 production levels will be realistically aligned with our recently published roadmaps to net zero carbon emissions by 2050. That is important as we are counting on SAF to provide about 62% of the carbon mitigation needed in 2050," said Willie Walsh, IATA's Director General.

Trends supporting this optimistic outlook are already visible. In 2022, SAF production tripled to some 300 million liters (240,000 tonnes) and project announcements for potential SAF producers are rapidly growing. IATA counts over 130 relevant renewable fuel projects announced by more than 85 producers across 30 countries. Each of these projects has either announced the intent or commitment to produce SAF within their wider product slate of renewable fuels. Typically, there is a 3 –5-year lag between a project announcement and its commercialization date. This implies that further renewable fuel capacity out until 2030 could still be announced over the following years.

If renewable energy production reaches 69 billion liters by 2028 as estimated, the trajectory to 100 billion liters (80 million tonnes) by 2030 would be on track. If just 30% of that produced SAF, the industry could achieve 30 billion liters (24 million tonnes) of SAF production by 2030.

"Achieving the necessary SAF percentage output from these new and expanding facilities is not a given. But with governments the world-over agreeing at ICAO to a long-term aspirational goal (LTAG) of net zero by 2050, they now share accountability for aviation's decarbonization. That means establishing a policy framework to ensure that aviation gets the needed share of renewable energy production in SAF," said Walsh.

Policy Support & Government Investment

The case for diversification, within current sustainability criteria, is clear. At present, it is expected that 85% of future SAF volume over the next five years will be derived from just one of nine certified pathways, being Hydrotreated Esters and Fatty Acids (HEFA), which is dependent on limited availability of feedstock such as waste fat, oil and grease feedstocks (FOGs, recognized by industry as second-generation feedstock).

IATA identifies three main avenues to achieve SAF diversification:

1. Scale already certified SAF pathways, such as Alcohol-to-Jet (AtJ) & Fischer-Tropsch (FT)
2. Accelerated R&D for SAF production pathways that are currently in development
3. Scale up of feedstock/feedstock conversion technology

Accelerating these avenues to commercialized levels will require policy leadership from governments. To start, there is an impending need for the harmonization of core SAF policies (pdf) as a means of reducing administrative, logistical and geographic barriers to entry for new market entrants, including producers, feedstock providers, and offtakers.

More fundamentally, the challenge is finding the capital needed to fund the development of new technology and production facilities. Governments must look at the broader sustainability picture with these investments. SAF can be produced from surplus forestry and agricultural residues, municipal solid waste, food waste and wet wastes (third generation feedstocks). Producing SAF from these can create long-term return on investment opportunities for governments, with the potential of financing the clean-up of the environment, supporting developing economies and delivering a future-proofed intersection of energy transition and energy security.

Passenger Support

A recent IATA survey revealed significant public support for SAF. Some 85% of travelers agreed that governments should provide incentives for airlines to use SAF.
"People have experienced governments' role in the transition to green energy for electricity. They now expect it for SAF. The G7 leaders are among the latest to reiterate their understanding that SAF is critical for sustainable aviation. Now they must support their declarations with effective policies. To promote SAF production, there are many tried and tested tools including tax credits, grants, or even direct investments in emerging technologies and solutions. The market is there. Airlines want to purchase SAF. Anything to meaningfully incentivize SAF production will be a step forward," added Walsh.

For more information, please contact:

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Email: corpcomms@iata.org

Notes for Editors:

- IATA (International Air Transport Association) represents some 300 airlines comprising 83% of global air traffic.
- You can follow us at twitter.com/iata for announcements, policy positions, and other useful industry information.
- The IATA Annual General Meeting & World Air Transport Summit is taking place on 4-6 June in Istanbul. Find out all media material including photos and downloadable videos for use in broadcast at www.iata.org/agm-2023

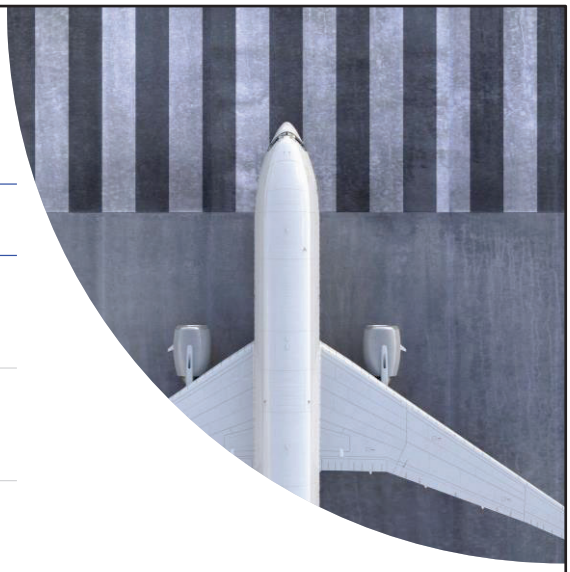
- Fly Net Zero
- The IATA passenger insights survey was conducted 26 April 26-3 May 2023 with a sample of 4,700 recent travelers. It covers 11 markets (Australia, Canada, Chile, France, Germany, India, Japan, Singapore, UAE, US, and UK). Sample size in each market was 500 apart from Chile, Japan, Singapore and UAE where it was 300. This Is

Motif Ltd prepared the questionnaire and analysis based on data collection and tabulation by Dynata. www.thisismotif.com

- Presentation: Update on Sustainable Aviation Fuel (pdf)

Recap

Year	2019	2020	2021	2022
Estimated SAF Output (Mt)	<0.02	0.05	0.08	0.24 (300 million liters)
Global Jet Fuel (Mt)	288	157	182	254
SAF % of Global Jet Fuel	<0.01%	0.03%	0.04%	0.1%



IATA

In December 2022, IATA announced a tripling of SAF output with an estimated 300 million litres (240,000 tonnes) produced in the year

SAF production is continuing to make strong progress in the first half of this year, with output set to rise exponentially again in 2023.

Driving 2023's increase in SAF output will be the commissioning of new renewable fuel refineries, along with the expansion of capacity at existing facilities, spanning North America, Europe and Asia Pacific.

The following presentation will provide an update on:

1) The outlook for the refining capacity for renewable fuels (for which SAF would be one output of a suite renewable products)

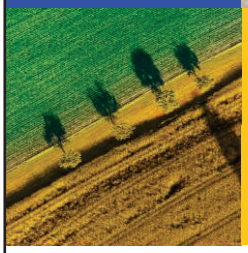
2) The opportunity and need for diversification of SAF feedstock and pathways

3) The essential role of policy to support SAF production output.

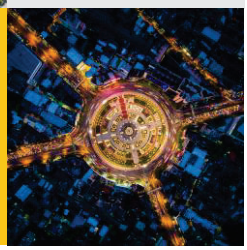
Tracking Renewable Fuel Capacity

130+
Global Identified Projects

30
Countries with Announced Projects



85
Global Identified Producers



Publicly Announced Renewable Fuel Projects until 2028

As of June 2023:

69 billion liters renewable fuel capacity has been announced publicly.

Further renewable fuel capacity until 2028 can be expected

Sources: *Internal Analysis; ATI; Argus; Waypoint 2050; ICAO Stocktaking; Bioenergy International; SPG Global; Clean Skies for Tomorrow*

IATA

Based on IATA's research, over 130 relevant renewable fuel projects have been announced publicly by more than 85 producers across 30 countries.

Importantly each of these projects have either announced the intent or commitment to producing SAF within their wider product slate of renewable fuels.

At present, these projects represent an estimated total renewable fuel capacity of over 69 billion liters (55 million tonnes) by 2028, of which SAF output will be derived from. It's important to note that there is typically a 3-to-5-year lag period between a project announcement and its commercialization date, implying that further renewable fuel capacity out until 2030 can be expected.

Renewable Fuel Projects Operating 2023

This map shows the renewable fuel plants operating today or before the end of 2023 across the globe. They are in North America, Europe and in Singapore.

In 2023 we have a number of facilities coming on-line (they can be new facilities or conversions):

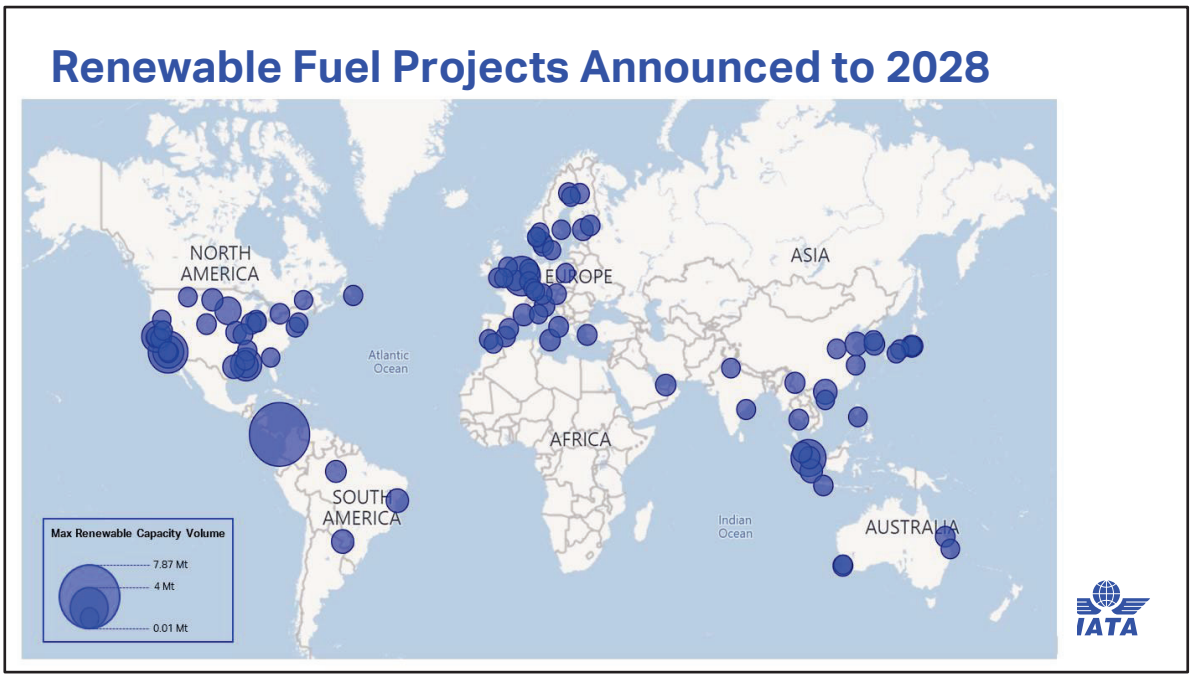
In the US: In Montana (Calumet), Martinez (Marathon) and Paramount (World Energy). Also we have the first Alcohol to Jet facility coming on-line in Freedom Pines (operated v Lanza).

In Italy: Livorno (ENI)

UK: Lincolnshire (Phillips 66)

Spain: Cartagena (Repsol)

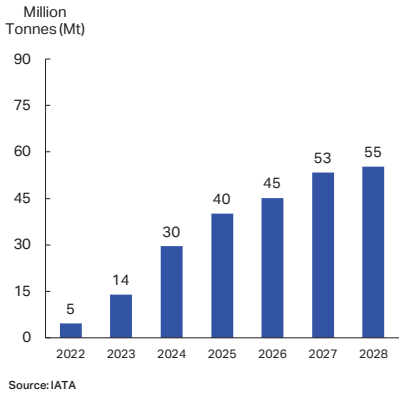
Singapore (Neste)



Here is an overview of the geographical location of renewable fuel projects that are already operating together with the ones that will be operating in the coming years (till 2028).There is a much greater geographical spread of renewable fuel facilities coming on line between now and 2028. Together these would provide the combined capacity output of 69 million litres or (55 million tonnes) of renewable fuel capacity

SAF is only one output from the renewable fuel facility, others typically include Renewable Diesel and Naphtha but the actual slate of products output depends on the feedstock and pathway.The challenge is to ensure an optimal output of SAF understanding there will be competing products which often have favorable governmental incentives

Projected increase in Renewable Fuel capacity



Source: IATA

But ensuring SAF output requires support

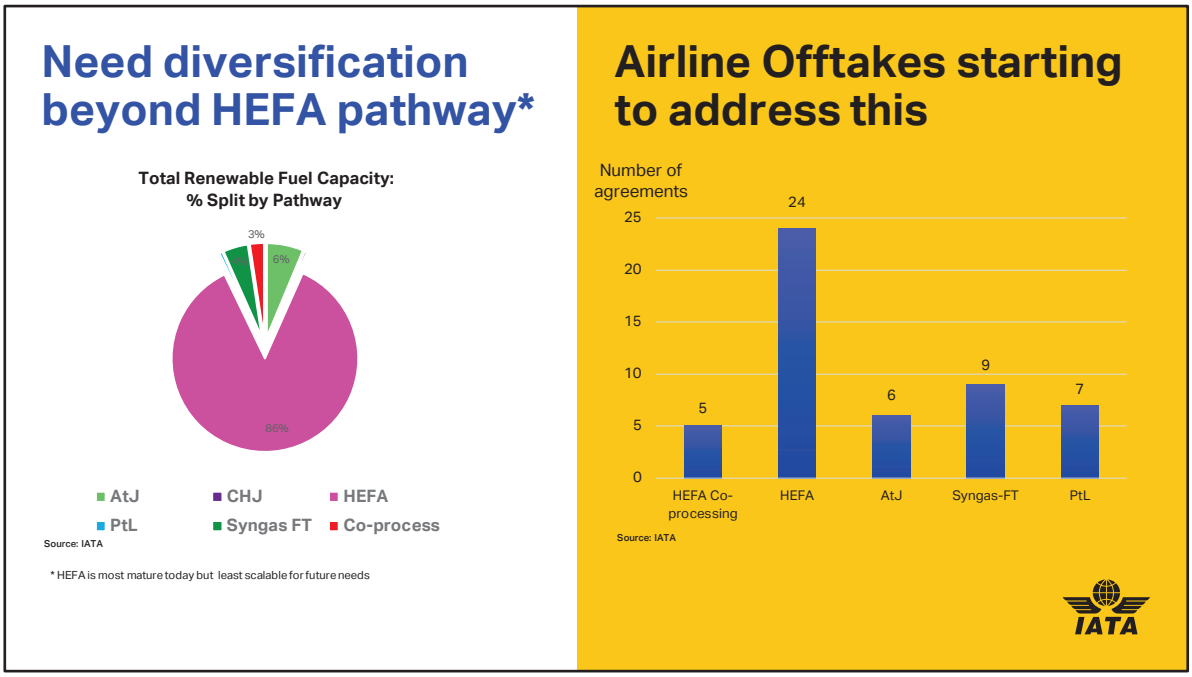
- Optimization of refining facilities for SAF output
- Balanced incentives to facilitate SAF production
- Government / financing support for project development
- Diversification of feedstocks and production pathways

IATA

The projected increase in renewable fuel capacity shows a steady increase, however a SAF output isn't guaranteed.

To ensure that SAF gets produced in adequate quantities, support is needed to:

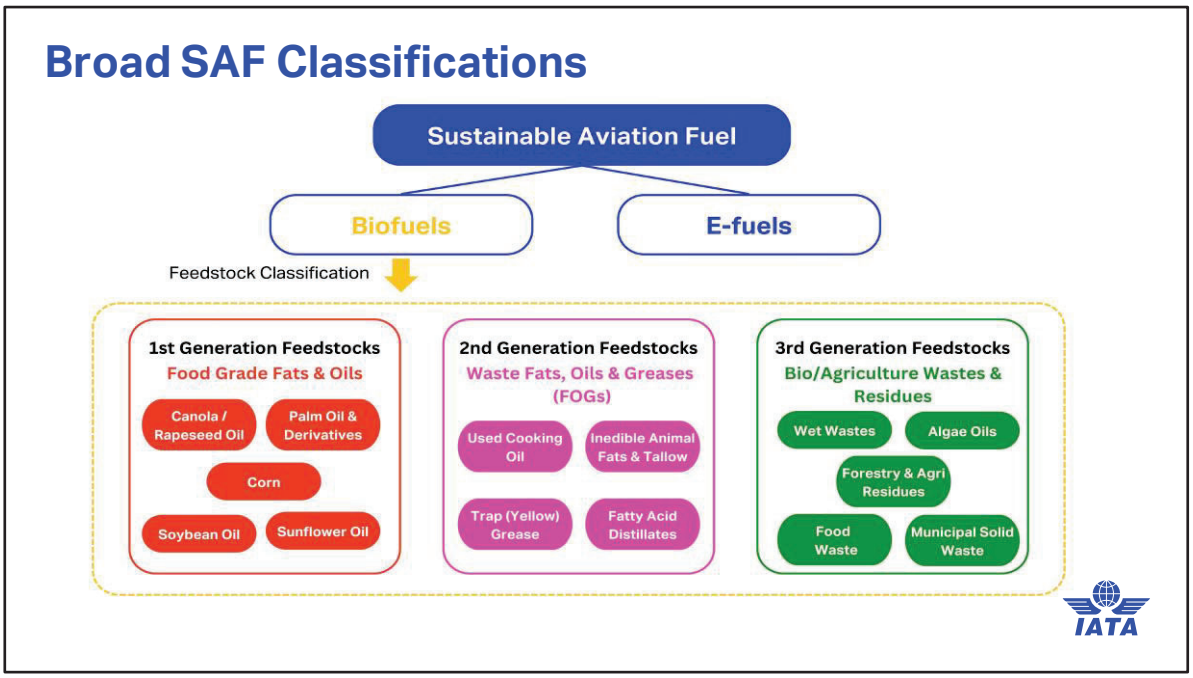
- Optimize refining facilities for SAF output
- Balanced incentives to facilitate SAF production
- Government/ financing support for project development
- Diversification of feedstocks and production pathways



At present, it is expected that 85% of future SAF volume over the next five years will be derived from just one of nine certified pathways, HEFA, which is dependent on limited availability of feedstock such as waste fat, oil & grease feedstocks.

IATA identifies three main avenues to achieve SAF diversification:
1. Scale already certified SAF pathways, such as Alcohol-to-Jet (AtJ) & Fischer-Tropsch (FT)
2. Accelerated RD&D for SAF production pathways that are currently in development
3. Scale up of feedstock/feedstock conversion technology

Airline off take agreements are already supporting this diversification. We see increasing interest in securing production volumes for pathways using Alcohol to Jet or Fisher Tropsch. The volumes from these offtake agreements are significant. This is a good sign but the diversification must continue because the HEFA pathway represents the least scalable of SAF feedstock solutions.



In fact, SAF and SAF feedstocks is on a journey:This is a journey to ensure we have scalability (create the volumes we need for the industry) while maintaining the integrity of a wide and stringent set of sustainability criteria (beyond emissions reductions):

- SAF need to demonstrate they do not promote nor add incremental water, land and chemical usage throughout their lifecycle.
- They need to verify they do not have negative effects on disforestation, soil productivity and biodiversity.

There are well-established, comprehensive and rigorous processes to verify the environmental integrity of SAF through Sustainability Certification Schemes, including the Roundtable for Sustainable Biomaterials (RSB) and the International Sustainability & Carbon Certification (ISCC), presently recognized in regulations through EU RED, UK RFTO and ICAO CORSIA. But the journey to uphold these criteria and ensure scalability defines the progress from 1st Generation Feedstocks (food grade fats and oils) to now when we are using 2nd Generation Feedstocks (Waste Fasts, Oils and Greases) and well as the coming progression to 3rd Generation Feedstocks (Bio/Agriculture Wastes and Residues)

It is this 3rd Generation of Feedstock are the most attractive inputs for SAF production and scalability, 3rd Generation has the ability to achieve:

1.Restorative and/or Regenerative

2.Naturally Scalable and Globally Available

3.Lower Input Cost by Virtue of Natural Scalability

This is in parallel to the opportunities and scale-up potential from E fuels.

Critical Policy Support

Key policy incentives:

- Tax relief and tax exemptions on production, sale, or procurement
- Public capital support and loan guarantees for production facilities
- Feedstock subsidies or similar support mechanisms
- Financial market policies such as preferential treatment of tailored financial instruments
- Accounting policies, including amortization schedules
- Research and development programs and support.

Policy support in favor of renewable fuels should be balanced and not dis-incentivize the production of SAF


IATA

POLICY

SAF Deployment

Government policy has an instrumental role to play in the deployment of Sustainable Aviation Fuels (SAF). IATA encourages policies which are harmonized across countries and industries, while being technology and feedstock agnostic. Incentives should be used to accelerate SAF deployment. Given SAF is in the early stages of market development, mandates should only be used if they are part of a broader strategy to increase the production of SAF and complemented with incentive programs that facilitate innovation, scale-up and unit cost reduction.

BACKGROUND INFORMATION

Airlines committed to net-zero carbon dioxide (CO_2) emissions by 2050 at the 77th International Air Transport Association (IATA) Annual General Meeting in 2021, and member states of the International Civil Aviation Organization (ICAO) agreed to a long-term aspirational goal (LTAG) of net-zero CO_2 emissions from aviation by 2050 in 2022. These commitments spring from the industry's conviction that it, and all forms of connectivity, are necessary for economic development. Air transport contributes directly to 15 of the 17 United Nations Sustainable Development Goals (all but Nr 14 and Nr 16), and in particular to Goal Nr 1: No Poverty. Hence, flying is necessary, and flying sustainably is a must.

The anticipated traffic of the industry in 2050 would likely generate 1.8 billion tonnes of carbon emissions if fueled by traditional jet kerosene. In order to achieve net-zero emissions, 65% of the total emissions reductions will in all probability need to be achieved using Sustainable Aviation Fuel, or SAF. This, in turn, would represent more than 380 million tonnes (450 billion liters) of SAF annually by 2050, from every available sustainable feedstock.

Reaching this ambitious target will require support from governments and value-chain partners. Government policy must play a pivotal role in encouraging the scaling-up of SAF production.

Current State and Challenges

In 2022, global SAF production is estimated to have been between 240 and 380 thousand tonnes (300 to 450 million liters), covering only around 0.1% to 0.15% of total jet fuel demand. Despite a significant price difference between conventional jet fuel and SAF, every single drop of sustainable aviation fuel produced was purchased by aircraft operators and their customers. These purchases came at an additional cost to the industry of between USD 322 million to 510 million in the single year of 2022.

Challenges to the rapid development and deployment of SAF that could be addressed through policy measures include:

- Insufficient policy support in promoting the scaling up for SAF
- Absence of a harmonized approach in SAF accounting methodology
- Lack of access to SAF in existing fuel logistics and airport infrastructure
- Lack of understanding of SAF as an inserting measure in addition to carbon offsets
- Limited availability of cost-effective and sustainable SAF feedstock and feedstock treatment infrastructure

IATA

Appropriate policies and incentives will play a critical role in the scaling and diversification of SAF production. In this context, IATA calls for the harmonization of policies across sector and geographies, as a means of reducing barriers to entry for new players seeking to enter the SAF market; especially new technology and feedstock providers. Policies need to address both near-term and longer-term SAF deployment and provide the necessary certainty for producers and investors to allocate existing capacity to SAF as well as to develop new infrastructure. Policies should also look to promote research and development of new production pathways together with the associated supply chains. Given the nascent nature SAF market as well at the need to achieve scalability and diversification of feedstocks/production pathways, the focus of policies at this stage should on incentives to support innovation and project generation.

The physical output of SAF is only part of the story!

Projects that aggregate wastes or recultivate degraded land create numerous socio-economic co-benefits, which be **major factors for attracting investment**:

Sustainable Supply Chains	**Job & Wealth Creation**	**Energy Security**
Land Restoration	**Biodiversity**	**Regional Development**

SAF is the biggest lever for aviation's transition to net zero. But this key solution for aviation also offers broader benefits positively impacting sustainability, economic opportunity and energy security. Projects aimed at aggregating wastes or recultivating degraded land (3rd generation feedstock) have several positive socio-economic effects which become a major pull factor for attracting institutional and critically, government investment. Governments should be encouraged and supportive of projects related to 3rd generation feedstock SAF's because of the potential to:

- Develop sustainable supply chains at the regional level
- Create of local income and employment
- Support land restoration and/or regeneration
- Promote and foster biodiversity
- Aiding the development of localized energy independence and security

Ola Borten Moe is Minister of Research and Higher Education since 2021. Previously, he also served as Minister of Petroleum and Energy from 2011 to 2013.

https://www.facebook.com/SPolabortenmoe/posts/pfbid02FhTrNJAApZa6m392J41EgiRbFzG6ffgq12n3JAwqYQVL3cR7p9ztixMQjR1wG6qXl

Google Translate of Moe's above Facebook posting

It is increasingly obvious that for far too long we have acted as if there is unlimited access to renewable and affordable electricity in Norway. The fact is plain and simple that there is a lack of energy in our power systems. Very high prices and fears about security of supply document this. We must therefore of course have a far more realistic relationship with what we use energy for. And we must have a proven relationship with simple factors such as resource efficiency and effectiveness. Hydrogen is certainly good for many things, but the fact is that it is a highly explosive storage medium with large energy losses at both ends of the process. If you use 100 kwh of electricity to produce hydrogen, you will be left with an amount of energy in hydrogen corresponding to 50 kwh. In other words, half of the energy is lost. If you are going to use this hydrogen in a fuel cell, you lose a further 50%. If you run it in a turbine to produce electricity, you lose 70%. In other words, you get a utilization rate in a car of about 25% or 25 kwh of the original 100 kwh due to energy loss in the processes. In a simple turbine, the loss is even greater. Alternatively, this current/energy could have been used directly all the time it is taken from the grid in Norway with a utilization rate for, for example, heating, production or transport of 90-100%! If Statkraft together with NEL succeeds in establishing 2 gw electrolysis of hydrogen in Norway, this corresponds to an energy quantity of approximately 17.5 twh, or approximately 12-13% of all power production in Norway. With a 75% energy loss, that's 14 twh, or 10% of all Norwegian power production right there. It is, in my opinion, light years away from being justifiable or reasonable. We need all the energy we have and can do for far more sensible things than fighting for the crow.

Google Translate of Statkraft's press release [LINK] linked in Moe Facebook posting

NEWS 2023

NEL AND STATKRAFT LAY THE FOUNDATION FOR A VALUE CHAIN FOR GREEN HYDROGEN IN NORWAY

Nel and Statkraft are laying the foundations for a value chain for green hydrogen in Norway

06 JAN., 2023

The hydrogen technology company Nel and Europe's largest supplier of renewable energy, Statkraft, recently signed a contract for the delivery of 40 MW electrolyser equipment and will thus work together to create a strong value chain for the production of green hydrogen in Norway.

Press releases

- We are determined to contribute to making Norway a leading producer of green hydrogen and establish an ecosystem of equipment suppliers, including the production of electrolysers, say Nels CEO Håkon Volldal and CEO of Statkraft, Christian Rynning-Tønnesen.

The announcement came in connection with German Vice-Chancellor Robert Habeck's visit to Nel's fully automatic electrolyser factory on Herøya. Industry Minister Jan Christian Vestre also joined the delegation together with his colleague, Energy and Energy Minister Terje Lien Aasland. The ministers are enthusiastic about the two companies' plans for a value chain for green hydrogen in Norway.

- It is gratifying that leading Norwegian players such as Nel and Statkraft are planning value chains for green hydrogen in Norway. This is an important step in the right direction to achieve our ambitions to build a coherent value chain for hydrogen and facilitate the production of hydrogen with no or low emissions to cover the national demand for hydrogen, says Oil and Energy Minister Terje Aasland .

From left: Habeck, Volldal, Rynning-Tønnesen, Aasland and Vestre Statkraft has recently signed a contract for the supply of 40 MW electrolyser equipment from Nel. The electrolysers will be manufactured at Nel's factory on Herøya and used for the production of green hydrogen in some of Statkraft's many hydrogen projects. As Europe's largest supplier of renewable energy, Statkraft has ambitions to reach an annual development rate of 4 GW of new power production and to have 2 GW of renewable hydrogen production in place by 2030. In Norway, Statkraft will strengthen its investment in developing new renewable power production and flexibility in hydropower and wind power both on- and offshore.

- The contract with Nel is the first important step towards realizing our ambitions of 2 GW of green hydrogen and securing production capacity for several of our hydrogen projects, says Rynning-Tønnesen. Volldal is very happy to have Statkraft on its customer list.

- Statkraft is Europe's largest supplier of renewable energy and a well-reputed and highly knowledgeable renewable company with an ambitious growth agenda, and we are very proud that they have chosen us as a supplier of green hydrogen technology, says Volldal.

- With this and other orders, Nel strengthens its position as a leading supplier and exporter of hydrogen equipment, which is crucial for the green shift in Europe and internationally, and for the development of new green jobs in Norway, says Volldal.

https://www.reuters.com/business/energy/shell-pivots-back-oil-win-over-investors-sources-2023-06-09/?taid=64838505db77690001a8fd2e&utm_campaign=trueAnthem:+Trending+Content&utm_medium=trueAnthem&utm_source=twitter

Exclusive: Shell pivots back to oil to win over investors

By Ron Bousso

June 9, 202311:06 AM MDTUpdated a day ago

- Summary

- Companies
- CEO to scrap annual oil output cut after meeting goal early
- CEO to update investors at event in New York next week
- CEO Sawan sticking to energy transition strategy
- Shell aims to reach net zero emissions by 2050
- Sawan expected to boost shareholder payouts-analyst

LONDON, June 9 (Reuters) - Shell (SHEL.L) will keep oil output steady or slightly higher into 2030 as part of CEO Wael Sawan's efforts to regain investor confidence as the energy giant wrestles with poor returns from renewables while oil and gas profits are booming, company sources said.

Sawan will announce at an investor event next week the scrapping of a target to reduce oil output by 1% to 2% per year having already largely reached its goal for production cuts, mainly through selling oil assets such as its U.S. shale business, the three sources said.

Sawan, who took the helm in January with a vow to improve Shell's performance as its shares lag rivals, said oil and gas will remain central to Shell for years to come, insisting that efforts to shift to low-carbon businesses cannot come at the expense of profits.

His more cautious approach to the energy transition marks a change in tack from his predecessor Ben van Beurden who introduced the carbon reduction targets and the energy transition strategy.
Shell scrapped in recent months several projects, including in offshore wind, hydrogen and biofuels, due to projections of weak returns. It is also exiting its European power retail businesses, which were seen only a few years ago as key to its energy transition. At the same time, Shell reported record profits of $40 billion last year on the back of strong oil and gas prices.

Shell declined to comment.

Sawan, a 48-year-old Canadian-Lebanese national, who previously headed Shell's oil, gas and renewables divisions, will detail his vision at the June 14 event in New York, which will include updates on capital allocation, shareholder payouts and "strategic choices we're making," he said recently.

Sawan previously flagged that the 2021 target to cut oil output by 20% the end of the decade was under review.

Shell produced around 1.5 million barrels per day (bpd) of oil in the first quarter of 2023, representing a 20% decline from 2019 production of 1.9 million bpd.

Output is now expected to remain largely flat and could slightly rise by the end of the decade, depending on whether new projects meet internal profitability thresholds as well as on the success of exploration activity, particularly in Namibia, the sources said.

Speculation that Sawan was set to slow Shell's plans to reduce greenhouse gas emission and shift to renewables have angered climate-focused investors.

But, Sawan will stick to Shell's target of becoming a net zero emitter by mid-century as part of the Powering Progress energy transition strategy it announced in 2021, which he has described as "still the right strategy."

The shift away from further cuts in oil production at Shell is similar to a move by rival BP (BP.L) made earlier this year when CEO Bernard Looney rowed back from plans to cut its oil and gas output by 40% by the end of the decade.

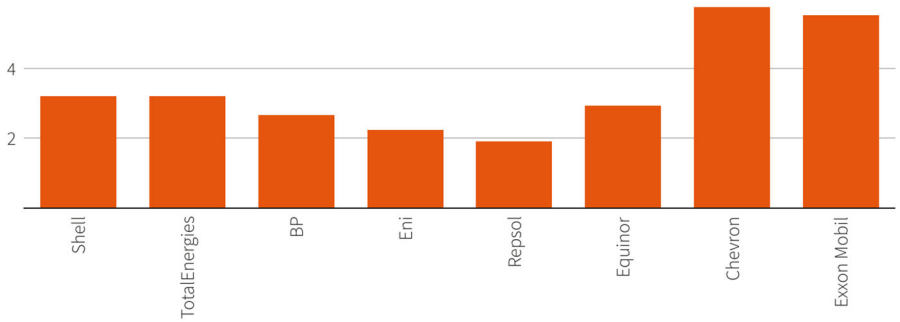
Returns from oil and gas typically range between 10% to %20, while those for solar and wind projects tend to be between 5% to 8%, according to companies and analysts.

Sawan told investors at Shell's annual general meeting in London last month that "significant investments in oil and gas are needed just to keep production at a constant level, let alone to meet growing demand."

Around two-thirds of Shell's $25 billion spending last year went towards oil and gas, while the company invested $4.3 billion in renewables, biofuels, hydrogen and electric vehicle charging.

The valuation gap

Shares of Europe's top oil and gas companies have underperformed their U.S. rivals



Note: Price-to-cashflow ratio (June 8, 2023)
Source: Refinitiv

Reuters Graphics Reuters Graphics

THE GAP

A key concern for Sawan has been the significantly weaker performance of Shell's shares since late 2021 compared with its U.S. rivals Exxon Mobil (XOM.N) and Chevron (CVX.N), which both plan to grow fossil fuel output.

To narrow that gap, Sawan introduced a sharp focus on performance and returns.

"The direction is unchanged, it's more how do we execute to be able to achieve that and importantly, how do we stay competitive because we are underperforming" peers, Sawan told reporters last month.

"What we need to do is to be excellent at the production of oil and gas and we need to be excellent at creating the low carbon options," Sawan said.

Investors will closely watch new guidance on Shell's shareholder payout plans, with several analysts forecasting a significant increase in the dividend.

"Shell needs to change. Both its absolute pay-out to shareholders and the percentage that arises as dividend are no longer competitive with peers," Exane analyst Lucas Herrmann said in a note.

Herrmann expects Shell to boost its dividend by around 20% and overall payouts to be raised to 35% to 40% of cashflow from operations, compared with the current 20% to 30%.

BP, for example, has said it aims to return 60% of surplus cash flow to shareholders in dividends and share buybacks this year.

Reporting by Ron Bousso;Editing by Elaine Hardcastle

Our Standards: The Thomson Reuters Trust Principles.

Google Translate of https://rosstat.gov.ru/folder/313/document/209097

Rosstat presents data on the vital movement of the population in April 2023

In April 2023, 96,131 babies were born, 135,915 people died, 64,794 marriages and 57,350 divorces were registered.

The natural loss amounted to 39 thousand 784 people, which is 15.18% lower than in April 2022 and 14.97% lower than in March 2023.

The death rate in April 2023 decreased compared to April 2022 by 7.3%, the birth rate - by 3.6%. Infant mortality decreased by 14.3% compared to April 2022.

In the first four months of 2023, 407,188 babies were born, 595,693 people died, 219,860 marriages and 216,170 divorces were registered. The natural decline amounted to 188 thousand 505 people, which is 39.42% less than in January-April 2022.

The death rate in January-April 2023 decreased compared to the same period in 2022 by 18.5%, the birth rate - by 3.1%. Infant mortality decreased by 12.9% compared to January-April 2022.

Detailed information on the vital movement of the population in April 2023 is here.

9 JUNE 2023 19:00

Dan Tsubouchi @Energy_Tidbits · 3h

Will #Biden accept Iran Supreme Leader offer this morning for some sort of nuclear deal?

"There is nothing wrong with a deal in this field as long as the nuclear infrastructure remains intact," Ayatollah Khamenei said reports PressTV

#OOTT

https://www.presstv.ir/Detail/2023/06/11/705080/Enemies-nuclear-weapons-excuse-lie-Iran-Leader
News / Politics / BreakingNews

Leader: Nothing wrong with a nuclear deal if infrastructure remains intact

Sunday, 11 June 2023 9:20 AM [**Last Update: Sunday, 11 June 2023 10:20 AM**]

Leader of the Islamic Revolution Ayatollah Seyyed Ali Khamenei visits a group of nuclear experts and officials in Tehran on June 11, 2023.

Leader of the Islamic Revolution Ayatollah Seyyed Ali Khamenei says there is nothing wrong with reaching a nuclear deal if the country's nuclear infrastructure remains untouched, noting that the West has reneged on its promises and commitments many times and its untrustworthiness is now proven.

"Iranian experts have made breakthroughs in our nuclear industry and have built and developed the great infrastructure of the industry. There is nothing wrong with a deal in this field as long as the nuclear infrastructure remains intact," Ayatollah Khamenei said.

The Leader made the remarks in a meeting with a group of nuclear experts and officials in Tehran on Sunday.

Ayatollah Khamenei added that the enemies use the claim that Iran is developing nuclear weapons as an excuse to target Iran, but the claim is no more than a lie and they are well aware of it.

"The enemies have created a nuclear challenge for us for twenty years because they know that the movement in the nuclear industry is the key to the country's scientific progress," the Leader said. "The excuse of nuclear weapons is a lie and they (the enemies) know it too."

"Based on our Islamic basis, we do not want to go towards [nuclear] weapons. Otherwise, they (the enemies) would not have been able to stop it, as until now they could not stop our nuclear developments," Ayatollah Khamenei added.

[This item is being updated.]

Press TV's website can also be accessed at the following alternate addresses:

1 2 3 1,147

Dan Tsubouchi @Energy_Tidbits · 4h

Reality Check holding back #Hydrogen at scale.

Just now Saudi Energy Minister Abdulaziz "people talk a lot about hydrogen. But, again, i would stress where are the incentives that will make the offtaker commit to the offtake"

#OOTT #EnergyTransition

SAF Group created transcript of comments by Saudi Energy Minister Abdulaziz with Dan Murphy (Anchor & correspondent, CNBC) at the Arab-China Business Conference in Riyadh on June 11, 2023.
https://www.youtube.com/watch?v=645Rb1aIuC0I

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

Abdulaziz "*.... For example in hydrogen, people talk a lot about hydrogen. But, again I would stress where are the incentives that will make the offtaker commit to the offtake*"

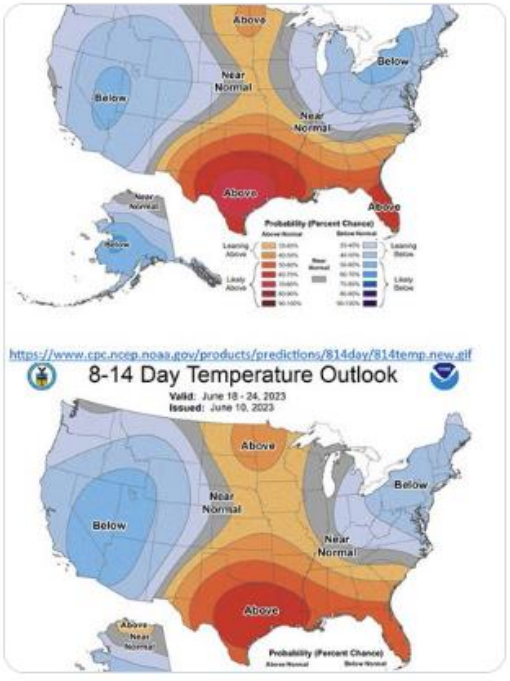
Prepared by SAF Group https://safgroup.ca/news-insights/

> **Dan Tsubouchi** @Energy_Tidbits · May 23
>
> 
>
> Hydrogen, the fuel of the future, can't take off until there are buyers.
>
> Saudi Energy Minister Abdulaziz "who is going to be the offtaker?" no clear policies for offtaker to step up...

2 · 7 · 2,591

Dan Tsubouchi @Energy_Tidbits · 18h

Today's @NOAA 6-10 & 8-14 day temperature outlook covering June 16-24 calls for normal/below normal for NE and West US. Above normal in South. Shouldn't be a catalyst for #NatGas prices. #OOTT



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Dan Tsubouchi @Energy_Tidbits · 18h

great day for the rafters down the Elbow River in #Calgary. 27C. river is very low for early June. normally can't see the rocks. only 10 days from the 10th anniversary of the great flood that flooded the houses

13 1,402

Dan Tsubouchi @Energy_Tidbits · 23h

#Vortexa crude #Oil floating storage at June 9 est 95.14 mmb, -10.67 mmb WoW vs revised up big by +17.32 mmb June 2 of 105.81 mmb. Floating is only small fraction of onshore storage, but still want to watch to see if more upward revisions this week.
Thx @Vortexa @business #OOTT

1 11 2,190

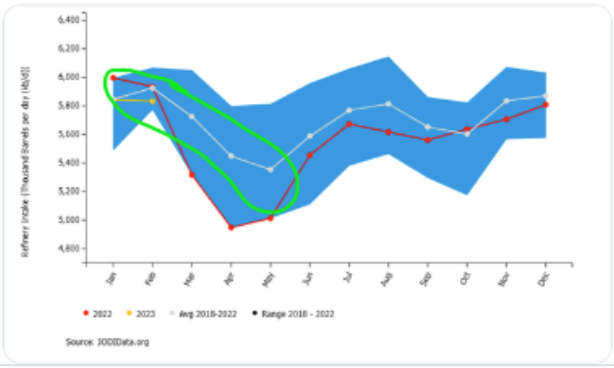
Dan Tsubouchi @Energy_Tidbits · Jun 9

Less Russian #Oil available for export.

@ja_herron reports peak of RUS refinery maintenance has passed. Refined +94,000 b/d this wk to 5.29 mmb/d.

See 👇 05/27 tweet: fits normal seasonal timing for increasing RUS refinery runs, which means less oil for export.

#OOTT

> **Dan Tsubouchi** @Energy_Tidbits · May 27
>
> Should see RUS #oil production cuts hit Jun/Jul/Aug physical markets & why cuts hasn't hit exports yet.
>
> Normal seasonal pattern of RUS refinery turnarounds reduce oil intake by ~500,000 b/d from Feb thru May.
>
> Thx @JODI_Data
> #OOTT
>
> 
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Dan Tsubouchi @Energy_Tidbits · Jun 9

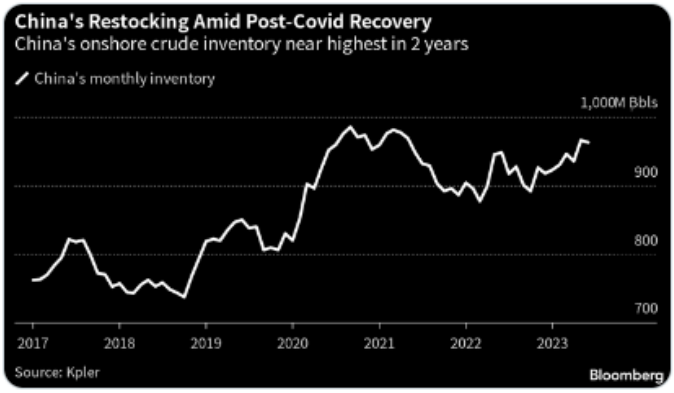
Stalled China recovery leads to China onshore #Oil stocks at 2-yr high.

@business John Liu, Sarah Chen reporting on:

@Kpler data: onshore stocks 963 mmb in June, 966 mmb in May. see 👇 graph.

@Vortexa onshore stocks 960 mmb.

#OOTT



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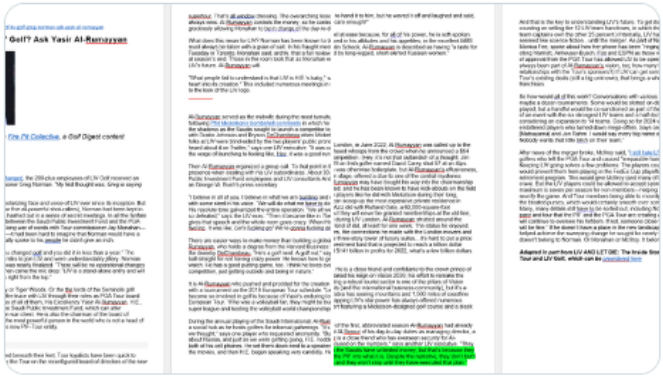
Dan Tsubouchi @Energy_Tidbits · 4h

Here's why Saudi Energy Min Abdulaziz is "The Man" - he has plan that isn't focused on this month or next but his plan generally works in near term.

Was reminded of this approach by 👇 what LIV golf execs say about @PIF_en "There is always a larger plan and they won't stop until... Show more



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SAF

Dan Tsubouchi @Energy_Tidbits · 6h

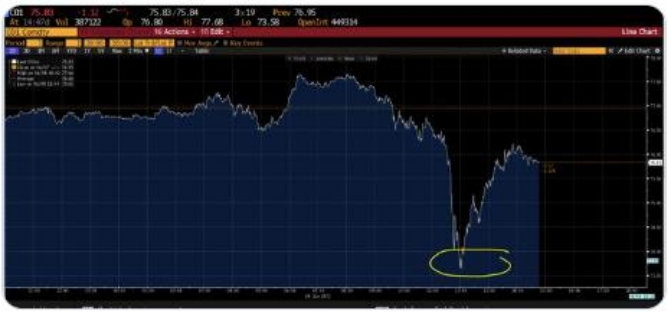
Hmmm!

Here's Brent #Oil price dived ~noon MT. See 👇 @Reuters report on potential Iran/US deal that US reportedly says is "any reports of an interim deal are false"

BUT at least in this short answer, US didn't deny discussions may be ongoing.

#OOTT

reuters.com/world/white-ho...



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SAF

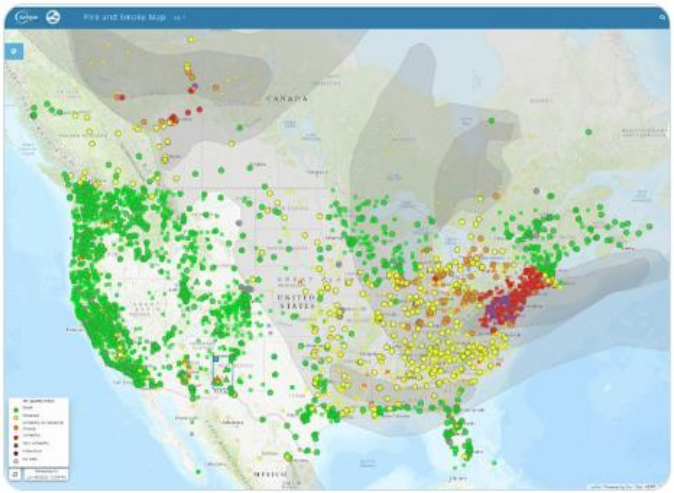
Dan Tsubouchi @Energy_Tidbits · 8h

Winds continue to bring major smoke from Cdn wildfires to NE US.

Good link to live air quality index map is from @AIRNow.

fire.airnow.gov

#OOTT



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Dan Tsubouchi @Energy_Tidbits · 11h

When people are the best in their sport or profession, you know it right away!

@FerroTV on Messi - Sometimes Tom players burst on a team, they get the ball, they're scared of it & they pass it back immediately. This guy was nothing like that. you knew almost immediately he was... Show more

855

Dan Tsubouchi @Energy_Tidbits · 13h

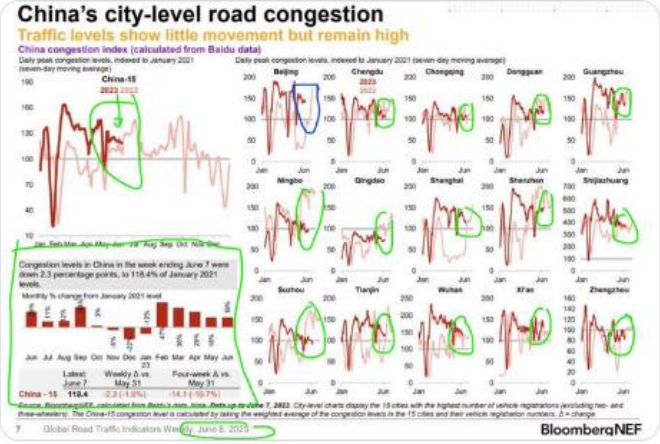
China Slowdown.

Economic slowdown, Covid impact or combination thereof.

See 👇 @BloombergNEF Baidu city-level road congestion.

All major cities road congestion, except Beijing, have crossed or about to cross over to lower YoY.

#OOTT



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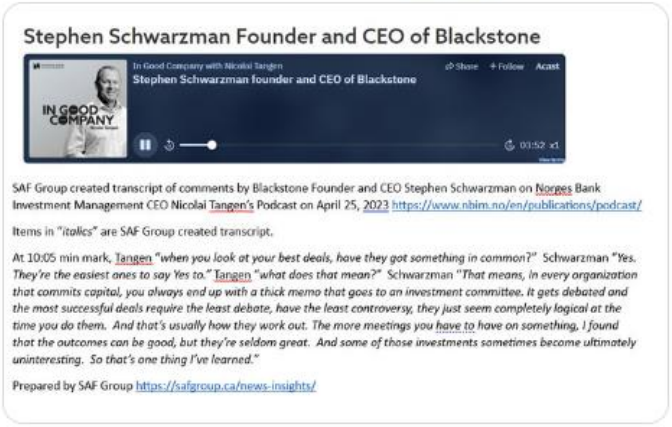
Dan Tsubouchi @Energy_Tidbits · 22h

Here's a key to great capital allocation over decades, @Blackstone CEO Schwarzman re what's common on his best deals.

"they're the easiest ones to say Yes to"

"the most successful deals .... just seem completely logical at the time you do them. And that's usually how they work... Show more



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Dan Tsubouchi @Energy_Tidbits · Jun 7

Must Read #Oil#Metals outlook from @Trafigura@saadrahim

"*difficult to see how US [#Oil] production is going to increase this year...*"

with new refining capacity "*there will likely be a structure dearth of crude oil in the coming years .... raises prospect of heightened...*Show more

2 15 56 11.7K

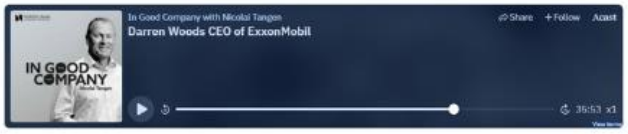
Dan Tsubouchi @Energy_Tidbits · Jun 7

Need markets/buyers to drive lower carbon products like hydrogen.

"government cannot subsidize this business in perpetuity" "there are very few companies who are willing to pay for lower carbon intense" products ie. no market force driving things. #Exxon CEO Woods.

Fits... Show more

Darren Woods CEO of ExxonMobil



SAF Group created transcript of comments by Exxon CEO Darren Woods on Norges Bank Investment Management CEO Nicolai Tangen's Podcast on June 7, 2023 https://www.nbim.no/en/publications/podcast/

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

Reminding buyers aren't willing to pay for lower carbon products. At 19:15 min mark, Woods "*.... There really is no market today for carbon reduction. There are very few companies who are willing to pay for lower carbon intense and so there is not a market force that is driving things. And the technology, as I said in most cases, remains high, the cost is high. So we got to work on bringing that down. Frankly, the policies put in place today are incentivizing some of those investments. And the way I look at that is it's a good catalyst to get us started. We've got to find on this path and start down the road But ultimately, a market is going to have to develop. The government cannot subsidize this business in perpetuity. It can act to accelerate it, it can catalyze it, the needed investments, it can start industries down this technology curve to get us going. But ultimately, markets are going to have to develop.*"

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

Dan Tsubouchi @Energy_Tidbits · May 23

Hydrogen, the fuel of the future, can't take off until there are buyers.

Saudi Energy Minister Abdulaziz "who is going to be the offtaker?" no clear policies for offtaker to step up...

5 8 3,779

Dan Tsubouchi @Energy_Tidbits · Jun 7

Common sense!

#Exxon CEO, LNG to Asia is absolutely critical to backing out coal & reducing the world's emissions

But if Exxon focused on reducing Scope 3 by less #LNG, it would mean more #Coal & related emissions in Asia.
Great interview Darren Woods, Nicolai Tangen
#OOTT

Darren Woods CEO of ExxonMobil

SAF Group created transcript of comments by Exxon CEO Darren Woods on Norges Bank Investment Management CEO Nicolai Tangen's Podcast on June 7, 2023 https://www.nbim.no/en/publications/podcast/

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

More coal will be produced if Exxon has Scope 3 emissions targets. At 25:00 min mark, Woods *"... I will give you an example of some of the unintended consequences associated with Scope 3 targets for a company like ExxonMobil. We produce LNG, liquefied natural gas. For every ton of natural gas that we produce and ship typically to Asia, we back out coal and therefore we reduce emissions. So growing our LNG business today, certainly in the medium term, short to medium term, is absolutely critical to backing out coal and reducing the world's emissions while we're working on these other solutions sets, while we're working on the transition. If I have a Scope 3 target, every ton of LNG I produce is more Scope 3 emissions for me as a company. So if I want to meet my objectives of reducing Scope 3, I stop growing LNG and the world burns more coal. That's not a good answer for society."*

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

1 6 19 3,130

Dan Tsubouchi @Energy_Tidbits · Jun 7

For those, like me, who weren't near their laptops at 8:30am MT, @EIAgov just released its #Oil #Gasoline #Distillates inventory as of June 2. Table below compares EIA data vs @businessexpectations and vs @APIenergy yesterday. #OOTT

Oil/Products Inventory June 2: EIA, Bloomberg Survey Expectations, API

(million barrels)	EIA	Expectations	API
Oil	-0.45	1.50	-1.71
Gasoline	2.74	1.00	2.42
Distillates	5.07	1.18	4.50
	7.36	3.68	5.21

Note: Oil is commercial so builds in a draw of 1.8 mmb in SPR for the June 2 week
Note: Included in the oil data, Cushing had a 1.72 mmb build for June 2 week
Source EIA, Bloomberg
Prepared by SAF Group https://safgroup.ca/news-insights/

1 3 1,172

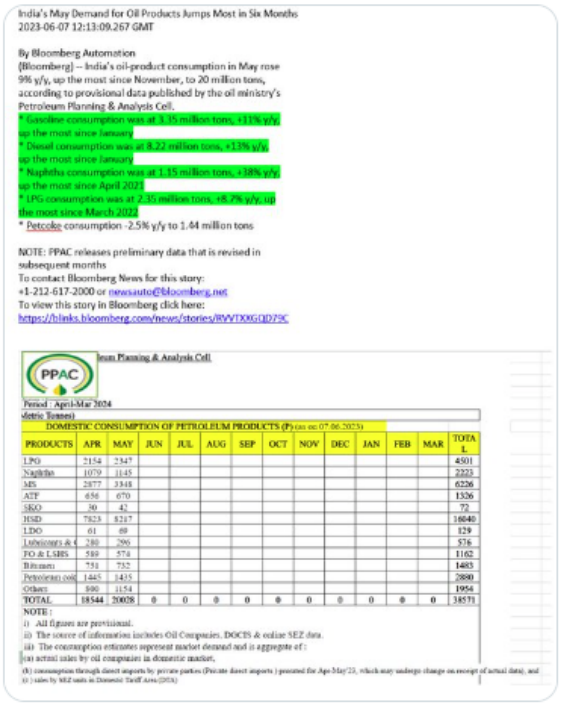
Dan Tsubouchi @Energy_Tidbits · Jun 7

Continued growth in India #PetroleumProducts consumption in May.

Across the board for all key products.
Gasoline +11% YoY
Diesel +13% YoY
Napptha +38% YoY
LPG +8.7% YoY

Only Petcoke down -2.5% YoY

Thx @business.
#OOTT



India's May Demand for Oil Products Jumps Most in Six Months
2023-06-07 12:13:09.267 GMT

By Bloomberg Automation
(Bloomberg) -- India's oil-product consumption in May rose 9% y/y, up the most since November, to 20 million tons, according to provisional data published by the oil ministry's Petroleum Planning & Analysis Cell.

* Gasoline consumption was at 3.35 million tons, +11% y/y, up the most since January
* Diesel consumption was at 8.22 million tons, +13% y/y, up the most since January
* Naphtha consumption was at 1.15 million tons, +38% y/y, up the most since April 2021
* LPG consumption was at 2.35 million tons, +8.7% y/y, up the most since March 2022
* Petcoke consumption -2.5% y/y to 1.44 million tons

NOTE: PPAC releases preliminary data that is revised in subsequent months
To contact Bloomberg News for this story:
+1-212-617-2000 or newsauto@bloomberg.net
To view this story in Bloomberg click here:
https://blinks.bloomberg.com/news/stories/RVVTX0GDJD7IC

PPAC

Period : April-Mar 2024
(Metric Tonnes)

DOMESTIC CONSUMPTION OF PETROLEUM PRODUCTS (P) (as on 07-06-2023)

PRODUCTS	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
LPG	2154	2347											4501
Naphtha	1079	1145											2223
MS	2877	3348											6226
ATF	656	670											1326
SKO	30	42											72
HSD	7823	8217											16040
LDO	61	69											129
Lubricants & G	280	296											576
FO & LSHS	589	574											1162
Bitumen	753	732											1485
Petroleum coke	1465	1435											2900
Others	890	1154											1954
TOTAL	18544	20028	0	0	0	0	0	0	0	0	0	0	38571

NOTE :
i) All figures are provisional.
ii) The source of information includes Oil Companies, DGCIS & eadar SEZ data.
iii) The consumption estimates represent market demand and is aggregate of :
(a) actual sales by oil companies in domestic market,
(b) consumption through direct imports by private parties (Pvt.ate direct imports) prorated for Apr-May'23, which may undergo change on receipt of actual data), and
(c) sales by SEZ units in Domestic Tariff Area (DTA)

7 25 5,641

Dan Tsubouchi @Energy_Tidbits · Jun 6

Negative to Cdn #Oil differentials after Labor Day

@barbarajpowell8 reports major BP Whiting refinery turnaround for 2 months post Labor Day.

Whiting capacity is ~440,000 b/d, runs basically on Cdn crude, is the largest refinery in Cdn exports major market - PADD 2 Midwest.... Show more

a turnaround beginning mid-September on multiple units, including the second largest of 3 crude units, according to people familiar with maintenance plans.
* The biggest crude unit, the 255k b/d Pipestill 12, is scheduled for a 2-month turnaround in fall 2024 that will include a coker
** The last turnround for PS-12 occurred in September and November 2018
* Whiting will begin shutting units for the first turnaround, including the 115k b/d crude unit known as Pipestill 11-C and several hydrotreaters, a few days after the upcoming Sept. 4 Labor Day holiday
* Work is expected to keep units down through late October
* The last turnround on PS-11C was in October through Thanksgiving
* BP doesn't comment on day-to-day operations at its facilities, spokesperson Christina Audisho
* Whiting, the largest US inland refinery, has a total crude processing capacity of 435k b/d: EIA

To contact the reporter on this story:
Barbara Powell in Houston at bpowell4@bloomberg.net
To contact the editors responsible for this story:

In numbers+
$900 million+
900+
61,000+
1,800+
1,800+
$51 million+
$2.6 million+

2 10 18 5,417

Dan Tsubouchi @Energy_Tidbits · Jun 6

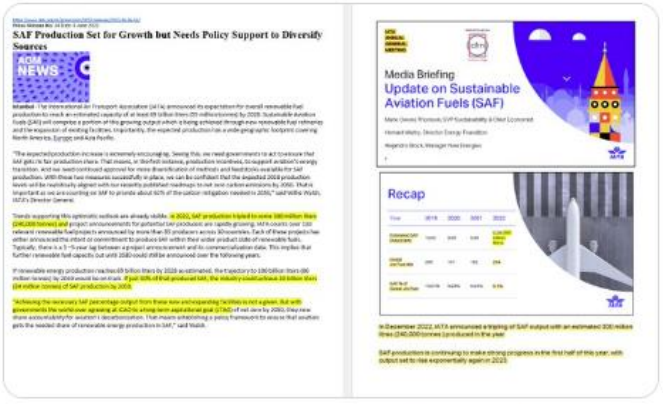
Challenge and will take a very long time to decarbonize airline industry.

@IATA Sustainable Aviation Fuel update.

SAF to provide 62% of carbon mitigation by 2050

SAF tripled in 2022, BUT only to 0.1% of jet fuel use.

IATA says SAF of 24 mm tonnes in 2030 IF 30% of renewable... Show more



SAF Production Set for Growth but Needs Policy Support to Diversify Sources

NEWS

Media Briefing
Update on Sustainable Aviation Fuels (SAF)

Recap

3 3 1,958

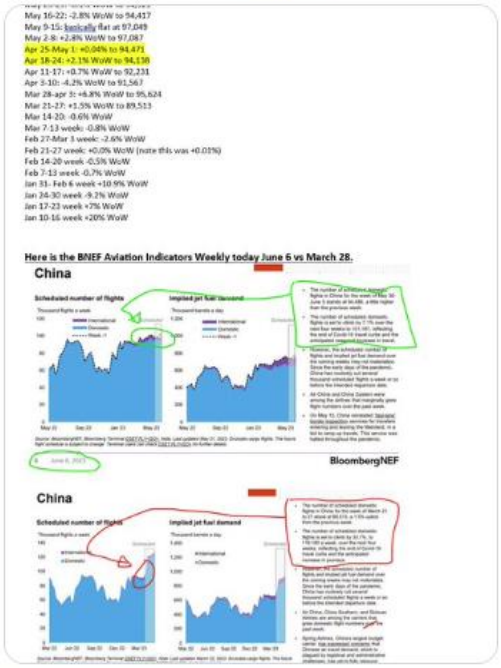
Dan Tsubouchi @Energy_Tidbits · Jun 6

China consumers continue to take a pause.

Scheduled domestic air flights still stuck after falling back to late Apr levels.

Scheduled domestic flights +0.2% WoW to 94,486.

Scheduled "over" next 4-wk is increasing to 101,197 flights is -15.1% vs 119,180 flights that were... Show more



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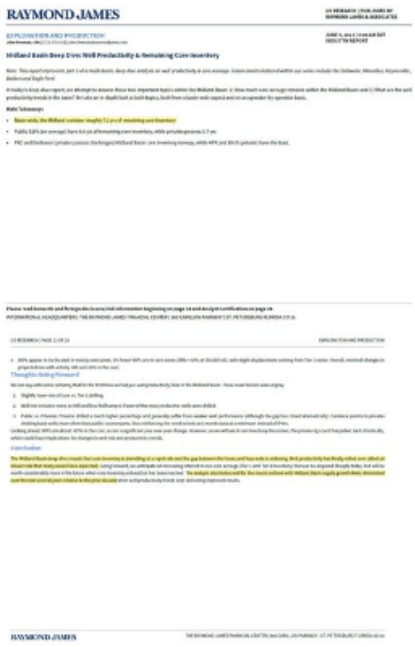
Dan Tsubouchi @Energy_Tidbits · Jun 5

Here's why this 👇 is a must read #Permian #MidlandBasin report

@RaymondJames John Freeman notes Midland Basin is ~2.4 mmbd or 20% of total US #Oil production.

Midland Basin would be just behind UAE of 2.875 mmbd and Kuwait 2.548 mmbd for May-Dec 2023 quota.

#OOTT

> **Dan Tsubouchi** @Energy_Tidbits · Jun 5
>
> Must read #Permian #MidlandBasin report by @RaymondJames John Freeman.
>
> Core inventory dwindling at a rapid rate
>
> Well productivity has finally rolled over (albeit at a slower rate than many would have expected)
>
> Bodes well for the macro outlook [positive for #Oil] with Midland... Show more
>
> 
> RAYMOND JAMES
> EXPLORATION AND PRODUCTION
> Midland Basin Deep Dive: Well Productivity & Remaining Core Inventory
>
>
> RAYMOND JAMES

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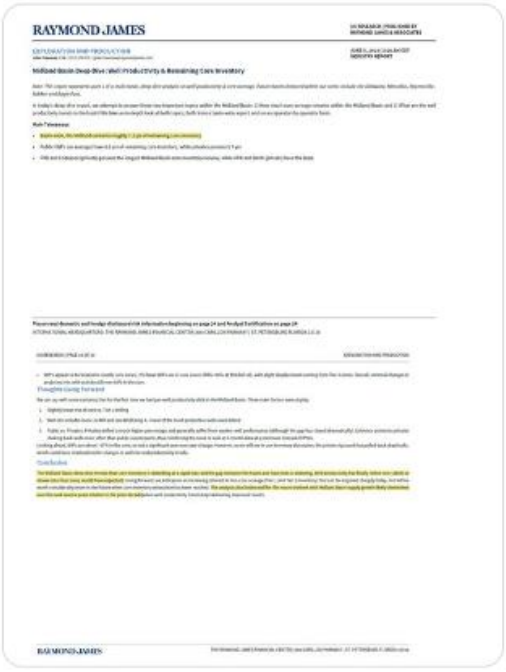
Dan Tsubouchi @Energy_Tidbits · Jun 5

Must read #Permian #MidlandBasin report by @RaymondJames John Freeman.

Core inventory dwindling at a rapid rate

Well productivity has finally rolled over (albeit at a slower rate than many would have expected)

Bodes well for the macro outlook [positive for #Oil] with Midland... Show more



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Dan Tsubouchi @Energy_Tidbits · Jun 4

Thx @Amena_Bakr for your tweets all weekend on #OPEC+

> **Amena Bakr** @Amena_Bakr · Jun 4
> What a weekend! Have a good night zzZ
> Show this thread

6 2,284