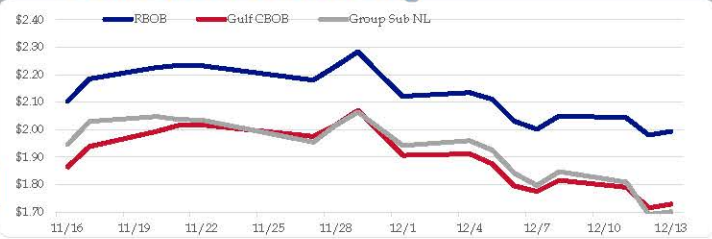


Gasoline

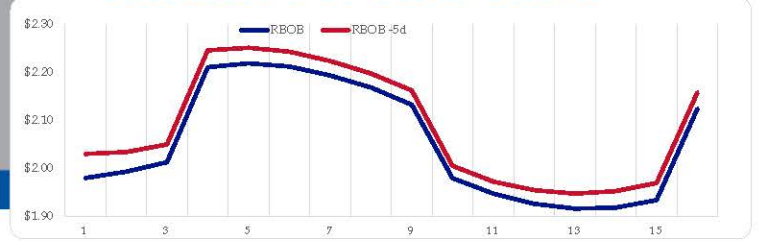
| | RBOB | Change | Gulf CBOB | Change | Group Sub NL | Change | Gulf Basis | Group Basis | LA Basis |
|-------|----------|------------------|-----------|------------------|--------------|------------------|-------------|-------------|-----------|
| 12/13 | \$1.9930 | \$0.0133 | \$1.7284 | \$0.0136 | \$1.7008 | \$0.0098 | \$ (0.2651) | \$ (0.2926) | \$ 0.0745 |
| 12/12 | \$1.9797 | -\$0.0634 | \$1.7148 | -\$0.0748 | \$1.6910 | -\$0.1174 | \$ (0.2649) | \$ (0.2888) | \$ 0.0760 |
| 12/11 | \$2.0431 | -\$0.0067 | \$1.7896 | -\$0.0256 | \$1.8083 | -\$0.0386 | \$ (0.2536) | \$ (0.2348) | \$ 0.0985 |
| 12/8 | \$2.0498 | \$0.0486 | \$1.8151 | \$0.0403 | \$1.8469 | \$0.0504 | \$ (0.2347) | \$ (0.2029) | \$ 0.2460 |
| 12/7 | \$2.0012 | -\$0.0290 | \$1.7748 | -\$0.0199 | \$1.7965 | -\$0.0442 | \$ (0.2265) | \$ (0.2047) | \$ 0.4195 |
| 12/6 | \$2.0302 | -\$0.0801 | \$1.7947 | -\$0.0801 | \$1.8407 | -\$0.0848 | \$ (0.2355) | \$ (0.1895) | \$ 0.4447 |
| 12/5 | \$2.1103 | -\$0.0239 | \$1.8748 | -\$0.0367 | \$1.9255 | -\$0.0339 | \$ (0.2355) | \$ (0.1848) | \$ 0.2746 |
| 12/4 | \$2.1342 | \$0.0131 | \$1.9115 | \$0.0056 | \$1.9594 | \$0.0174 | \$ (0.2227) | \$ (0.1748) | \$ 0.1718 |

| RBOB Technicals | | |
|-----------------|-----------|---------------------|
| Indicator | Direction | Resistance |
| MACD | Neutral | 2.9936 2023 High |
| Stochastics | Oversold | 2.7703 Sep High |
| RSI | Oversold | 1.9672 2023 Low |
| ADX | Bearish | 1.8799 Dec 2021 Low |
| Momentum | Bearish | |
| Bias: | Neutral | |

Gasoline History



Gasoline Forward Curve



Diesel

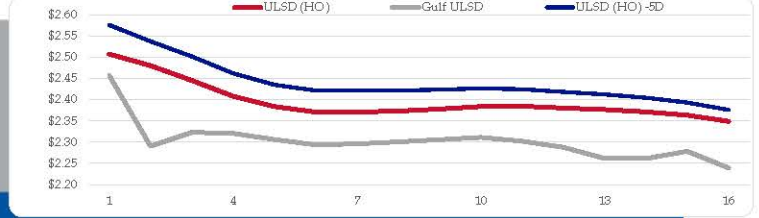
| | ULSD (HO) | Change | Gulf ULSD | Change | Group ULSD | Change | Gulf Basis | Group Basis | LA Basis |
|-------|-----------|------------------|-----------|------------------|------------|------------------|-------------|-------------|-----------|
| 12/13 | \$2.5421 | \$0.0347 | \$2.2124 | \$0.0347 | \$2.2652 | \$0.0349 | \$ (0.3307) | \$ (0.2771) | \$ 0.0105 |
| 12/12 | \$2.5074 | -\$0.1013 | \$2.1772 | -\$0.0243 | \$2.2303 | -\$0.0738 | \$ (0.3302) | \$ (0.2771) | \$ 0.0095 |
| 12/11 | \$2.6087 | \$0.0277 | \$2.2015 | -\$0.0513 | \$2.3041 | \$0.0316 | \$ (0.4072) | \$ (0.3046) | \$ 0.0095 |
| 12/8 | \$2.5810 | \$0.0318 | \$2.2528 | -\$0.0223 | \$2.2725 | \$0.0182 | \$ (0.3283) | \$ (0.3085) | \$ 0.0095 |
| 12/7 | \$2.5492 | -\$0.0270 | \$2.2751 | -\$0.0251 | \$2.2543 | -\$0.0221 | \$ (0.2741) | \$ (0.2949) | \$ 0.0095 |
| 12/6 | \$2.5762 | -\$0.0649 | \$2.3002 | -\$0.0307 | \$2.2764 | -\$0.0877 | \$ (0.2760) | \$ (0.2998) | \$ 0.0095 |
| 12/5 | \$2.6411 | -\$0.0186 | \$2.3310 | -\$0.0666 | \$2.3641 | -\$0.0486 | \$ (0.3102) | \$ (0.2770) | \$ 0.0095 |
| 12/4 | \$2.6597 | -\$0.0018 | \$2.3875 | -\$0.0418 | \$2.4127 | -\$0.0016 | | | |

| HO Technicals | | |
|---------------|-----------|------------------|
| Indicator | Direction | Resistance |
| MACD | Neutral | 3.5800 2003 High |
| Stochastics | Oversold | 3.5092 Sep High |
| RSI | Oversold | 2.4838 Dec Low |
| ADX | Bearish | 2.3750 July Low |
| Momentum | Neutral | |
| Bias: | Neutral | |

Diesel History



Diesel Forward Curve



Crude

| | WTI | Change | Brent | Change |
|-----------|---------------|-------------------------|-----------------|------------------------|
| 12/13 | \$69.32 | \$0.71 | \$73.89 | \$0.65 |
| 12/12 | \$68.61 | -\$2.71 | \$73.24 | -\$2.79 |
| 12/11 | \$71.32 | \$0.09 | \$76.03 | \$0.19 |
| 12/8 | \$71.23 | \$1.89 | \$75.84 | \$1.79 |
| 12/7 | \$69.34 | -\$0.04 | \$74.05 | -\$3.15 |
| CPL space | Line 1 0.0275 | Change -\$0.0163 | Line 2 \$0.1305 | Change \$0.0012 |

Refinery Margins

| Vs WTI | | | | | Vs Brent | | | | Group / WCS |
|--------|----------|-------------|---------|---------|----------|-------------|--------|--------|-------------|
| | Gulf Gas | Gulf Diesel | 3/2/1 | 5/3/2 | Gulf Gas | Gulf Diesel | 3/2/1 | 5/3/2 | 3/2/1 |
| 12/13 | \$3.41 | \$22.83 | \$9.89 | \$11.18 | -\$1.22 | \$18.20 | \$5.26 | \$6.55 | \$ 19.25 |
| 12/12 | \$3.84 | \$21.14 | \$9.61 | \$10.76 | -\$0.87 | \$16.43 | \$4.90 | \$6.05 | \$ 23.57 |
| 12/11 | \$5.00 | \$23.39 | \$11.13 | \$12.36 | \$0.39 | \$18.78 | \$6.52 | \$7.75 | \$ 24.30 |
| 12/8 | \$5.20 | \$26.21 | \$12.20 | \$13.61 | \$0.49 | \$21.50 | \$7.49 | \$8.90 | \$ 24.52 |
| 12/7 | \$6.00 | \$27.23 | \$13.07 | \$14.49 | -\$1.82 | \$19.41 | \$5.25 | \$6.67 | \$ 26.03 |

RINs and Price Drivers

| Current Year Biodiesel RINs | | | Current Year Ethanol RINs | | |
|-----------------------------|----------------|----------------------------|---------------------------|-------------|----------------------------|
| | Settle | Net Change | | Settle | Net Change |
| | 0.8070 | 0.000 | | 0.8060 | 0.000 |
| Price Drivers | | | Price Drivers | | |
| Soybeans | Settle 1323.75 | Net Change -\$9.750 | Ethanol | Settle 1.70 | Net Change -\$0.014 |
| Soybean Oil | 50.39 | -\$0.040 | Com | 462.50 | -\$3.000 |
| BOHO Spread | 1.272 | | Com Crush | 0.044 | |
| Soy Crush | 550.49 | | RVO Estimate | | |
| | | | Per Gallon | \$ 0.1020 | \$ - |
| | | | Per Barrel | \$ 4.28 | \$ - |

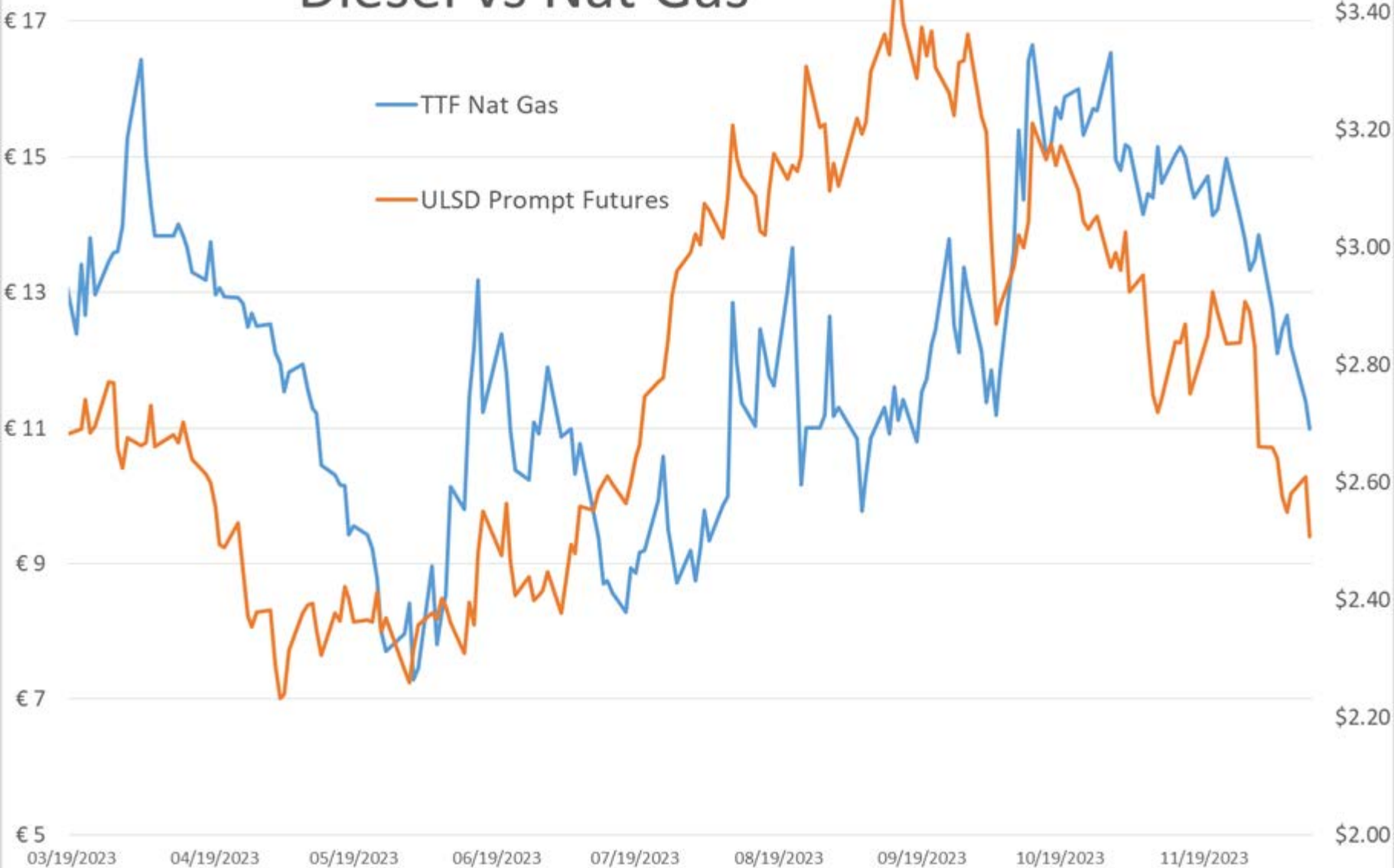
Economic Indicators

Commodity Futures

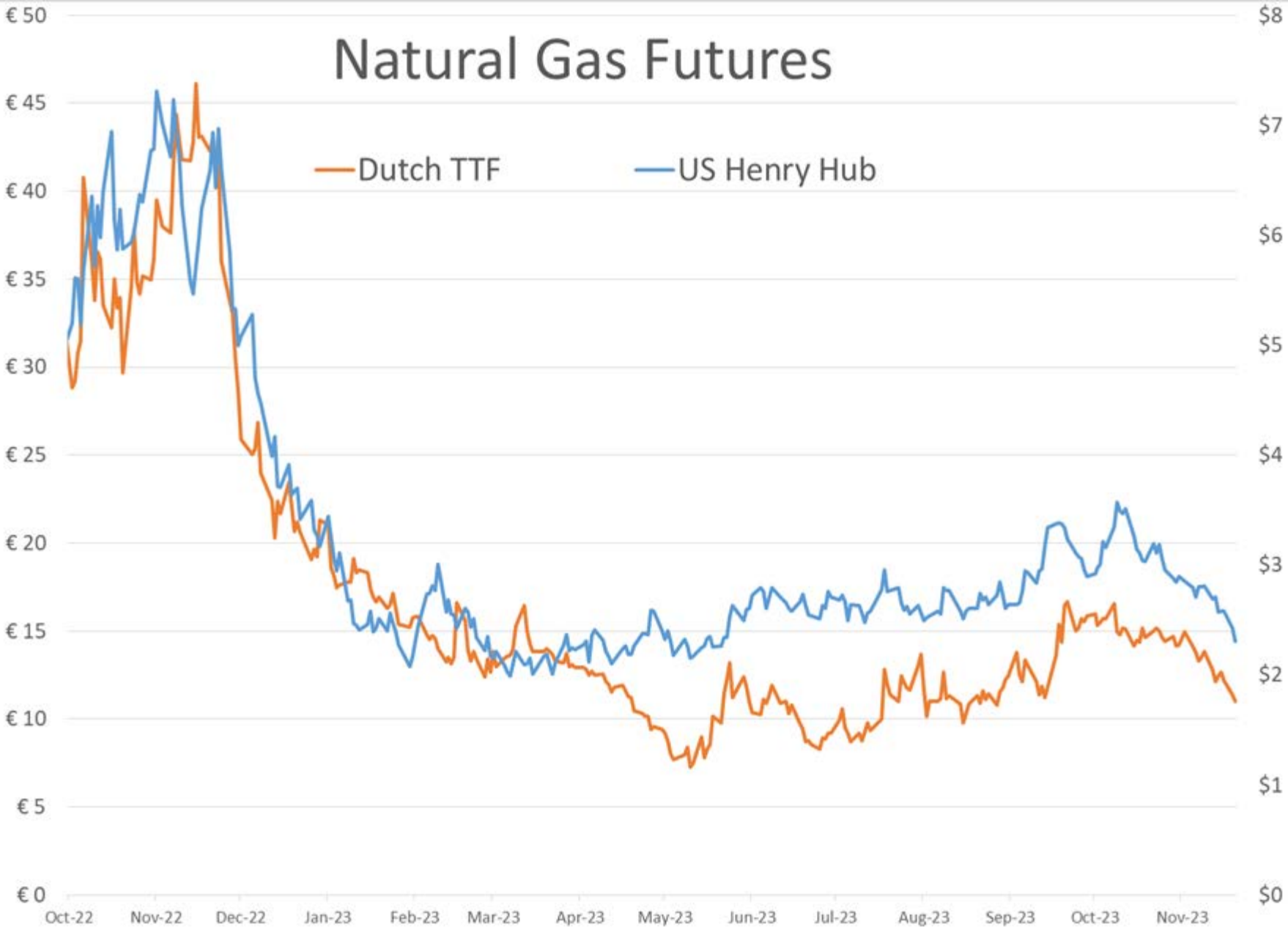
| | Settle | Change | | Settle | Change |
|----------------------------|--------|---------------|------------|---------|---------------|
| S&P 500 Futures | 4,651 | 5.50 | US NatGas | 2.431 | -0.120 |
| DJIA | 36,578 | 173.01 | TTF NatGas | 10.99 | -0.4 |
| EUR/USD | 1.0793 | 0.0010 | Gold | 1,978 | 5.6 |
| USD Index | 103.84 | -0.07 | Silver | 22.73 | -0.1 |
| US 10 YR YIELD | 4.20% | -0.03 | Copper | 371.05 | -6.100 |
| US 2 YR YIELD | 4.73% | 0.02 | FCO J | 1323.75 | -9.75 |
| Oil Volatility Index | 35.30 | 1.08 | Wheat | 607.00 | |
| S&P Volatility Index (VIX) | 12.63 | -0.56 | Butane | 1.042 | -0.029 |
| Nikkei 225 Index | 32,930 | -50.00 | Propane | 0.668 | -0.016 |
| | | | Bitcoin | 41,455 | 235 |

*SOURCES: Nymex, CBOT, NYSE, ICE, NASDAQ, CME Group, CBOE. Prices delayed.

Diesel vs Nat Gas



Natural Gas Futures



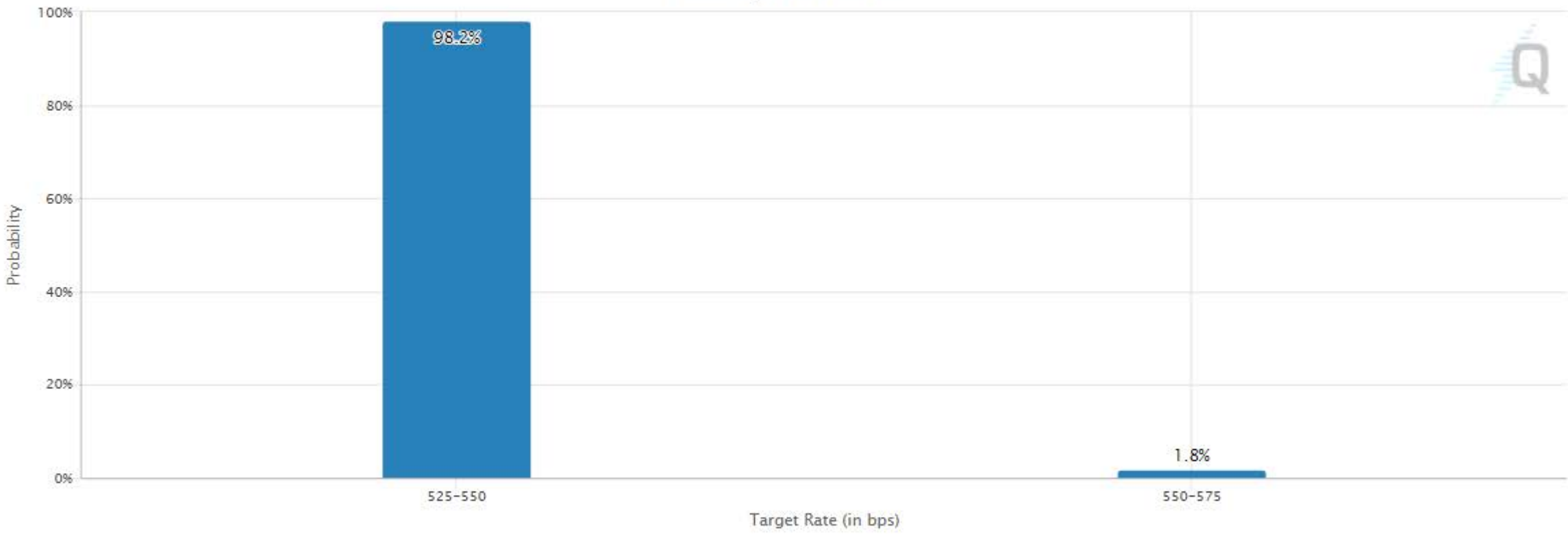
Target Rate | 13 Dec23 | 31 Jan24 | 20 Mar24 | 1 May24 | 12 Jun24 | 31 Jul24 | 18 Sep24 | 7 Nov24 | 18 Dec24

- Current**
- Compare
- Probabilities
- Historical
- Historical
- Downloads
- Prior Hikes
- Dot Plot
- Chart
- Table
- Tools
- CVOL
- SOFR Watch

| MEETING INFORMATION | | | | | | PROBABILITIES | | |
|---------------------|----------|-------------|-----------|--------------|----------|---------------|-----------|-------|
| MEETING DATE | CONTRACT | EXPIRES | MID PRICE | PRIOR VOLUME | PRIOR OI | EASE | NO CHANGE | HIKE |
| 13 Dec 2023 | ZQZ3 | 29 Dec 2023 | 94.6688 | 9,682 | 167,548 | 0.0 % | 98.2 % | 1.8 % |

TARGET RATE PROBABILITIES FOR 13 DEC 2023 FED MEETING

Current target rate is 525-550



| TARGET RATE (BPS) | PROBABILITY(%) | | | |
|-------------------|----------------|----------------------|----------------------|------------------------|
| | NOW * | 1 DAY 12 DEC 2023 | 1 WEEK 6 DEC 2023 | 1 MONTH 13 NOV 2023 |
| 525-550 (Current) | 98.2% | 97.1% | 99.0% | 85.5% |
| 550-575 | 1.8% | 2.9% | 1.0% | 14.5% |

* Data as of 13 Dec 2023 07:34:23 CT

1/1/2025 and forward are projected meeting dates

Target Rate | 13 Dec23 | 31 Jan24 | **20 Mar24** | 1 May24 | 12 Jun24 | 31 Jul24 | 18 Sep24 | 7 Nov24 | 18 Dec24

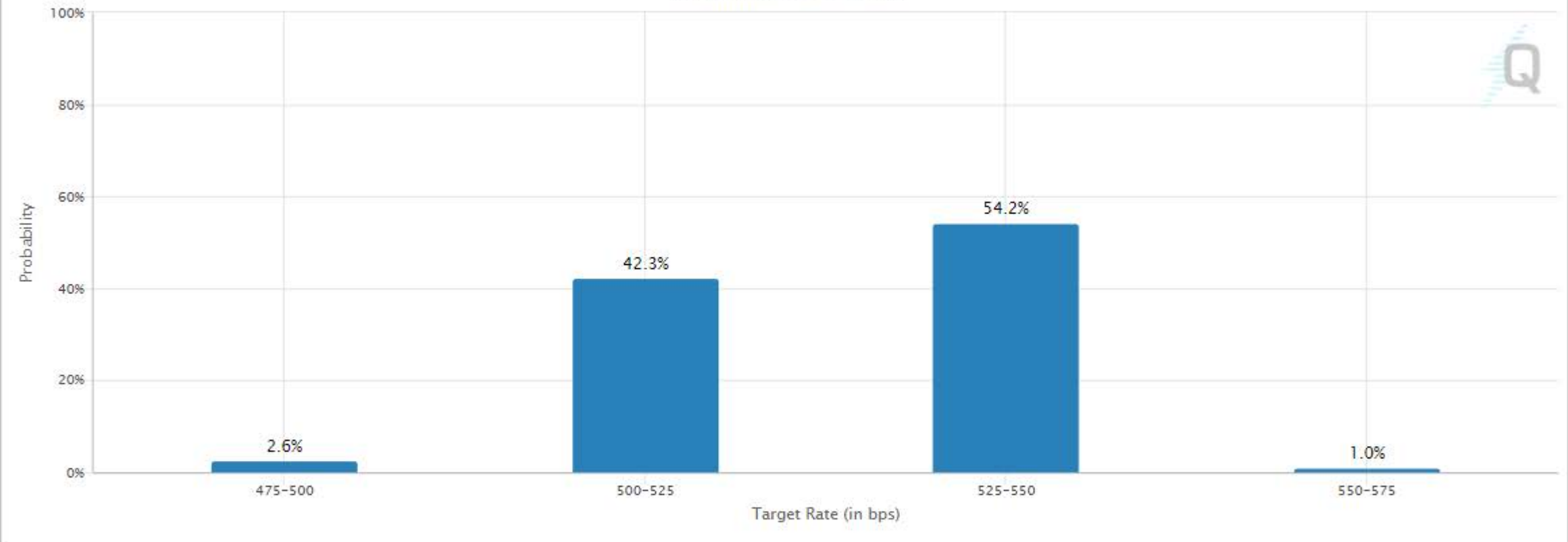
| MEETING INFORMATION | | | | | |
|---------------------|----------|-------------|-----------|--------------|----------|
| MEETING DATE | CONTRACT | EXPIRES | MID PRICE | PRIOR VOLUME | PRIOR OI |
| 20 Mar 2024 | ZQH4 | 28 Mar 2024 | 94.7200 | 9,832 | 73,354 |

| PROBABILITIES | | |
|---------------|-----------|-------|
| EASE | NO CHANGE | HIKE |
| 44.8 % | 54.2 % | 1.0 % |

- Current
- Compare
- Probabilities
- Historical
- Historical
- Downloads
- Prior Hikes
- Dot Plot
- Chart
- Table
- Tools
- CVOL
- SOFR Watch

TARGET RATE PROBABILITIES FOR 20 MAR 2024 FED MEETING

Current target rate is 525-550



| TARGET RATE (BP'S) | PROBABILITY(%) | | | |
|--------------------|----------------|----------------------|----------------------|------------------------|
| | NOW * | 1 DAY 12 DEC 2023 | 1 WEEK 6 DEC 2023 | 1 MONTH 13 NOV 2023 |
| 475-500 | 2.6% | 1.6% | 6.9% | 0.0% |
| 500-525 | 42.3% | 39.7% | 54.0% | 10.5% |
| 525-550 (Current) | 54.2% | 57.0% | 38.7% | 67.7% |
| 550-575 | 1.0% | 1.7% | 0.4% | 20.3% |
| 575-600 | 0.0% | 0.0% | 0.0% | 1.5% |

* Data as of 13 Dec 2023 07:35:08 CT

1/1/2025 and forward are projected meeting dates

Notable forecast changes

Current forecast: December 12, 2023; previous forecast: November 7, 2023

2023**2024****Henry Hub spot price** (dollars per million British thermal units)**\$2.56****\$2.79**

Previous forecast

\$2.67

\$3.25

Percentage change

-4.1%

-14.3%

Brent crude oil spot price (dollars per barrel)**\$82****\$83**

Previous forecast

\$84

\$93

Percentage change

-1.9%

-11.4%

U.S. motor gasoline retail price (dollars per gallon)**\$3.53****\$3.36**

Previous forecast

\$3.55

\$3.61

Percentage change

-0.8%

-6.8%

U.S. crude oil inventories (million barrels)**435****439**

Previous forecast

416

427

Percentage change

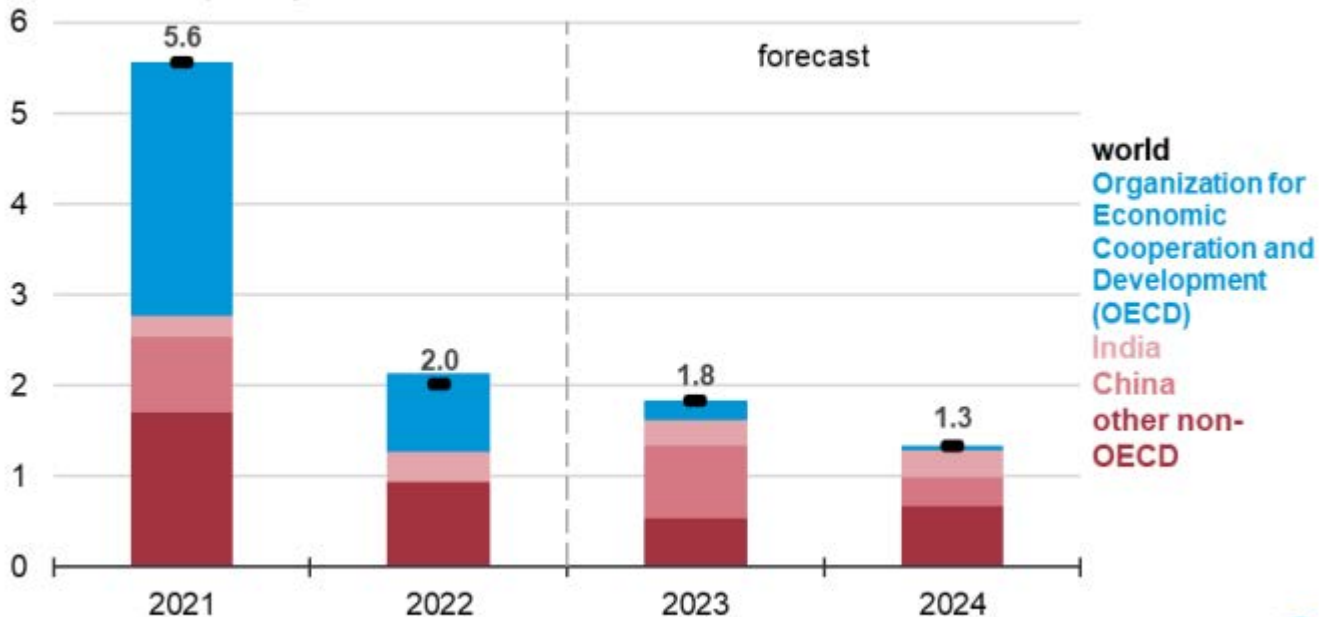
4.7%

2.9%

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

Annual change in world liquid fuels consumption

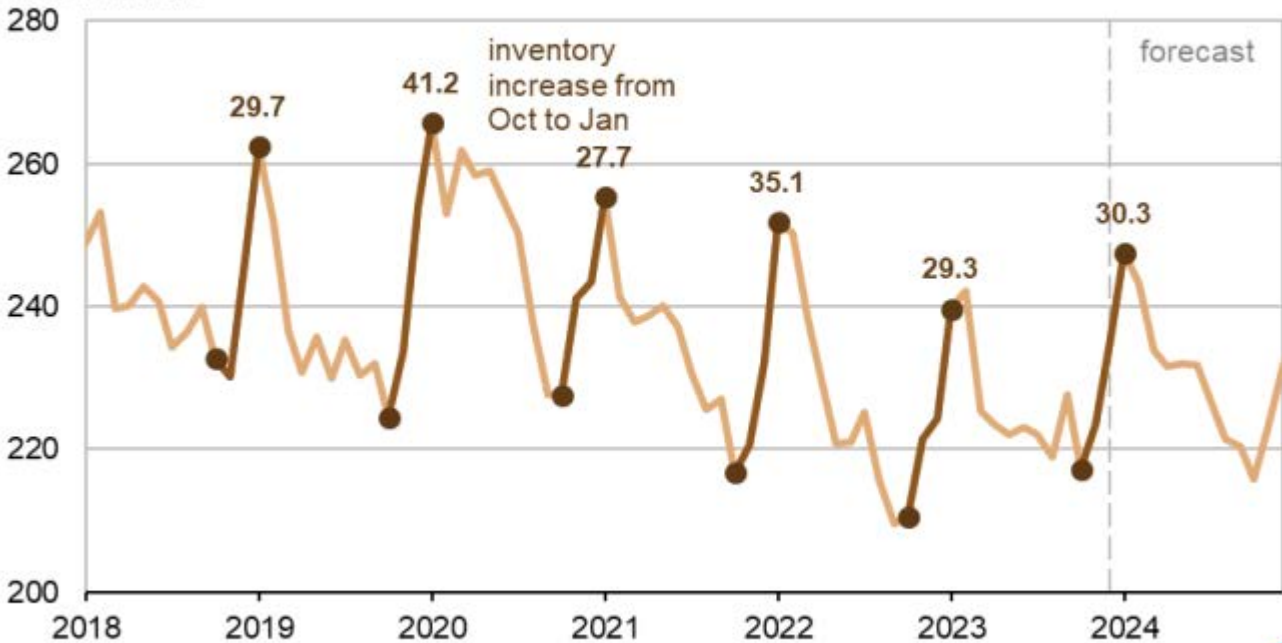
million barrels per day



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

U.S. total motor gasoline inventory

million barrels



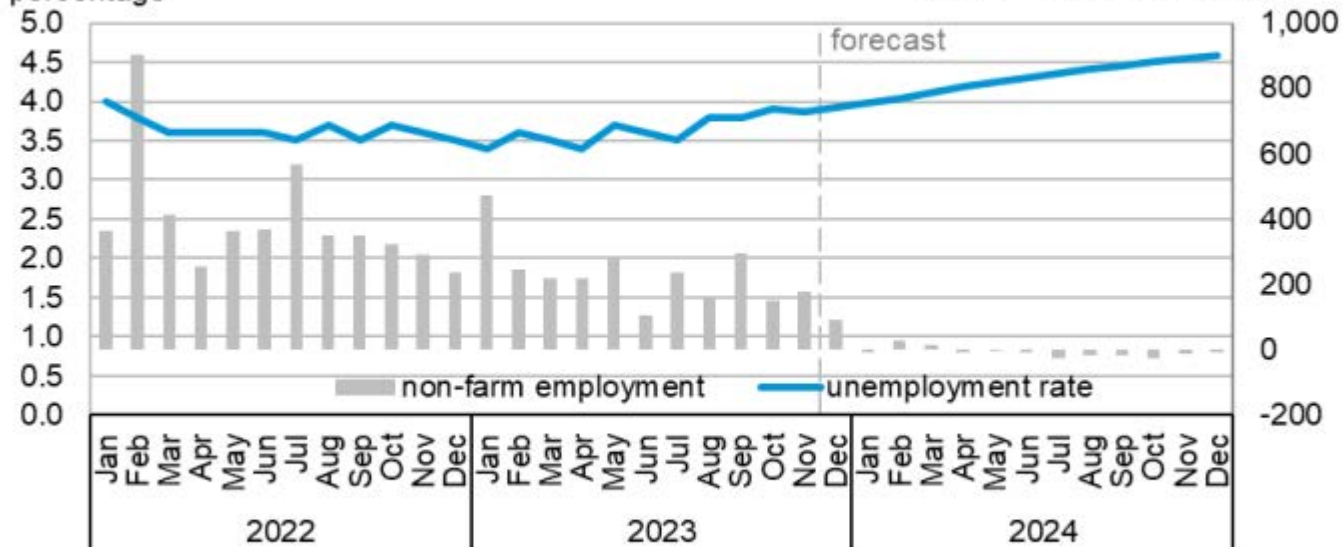
Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, December 2023



U.S. labor market indicators

Unemployment rate
percentage

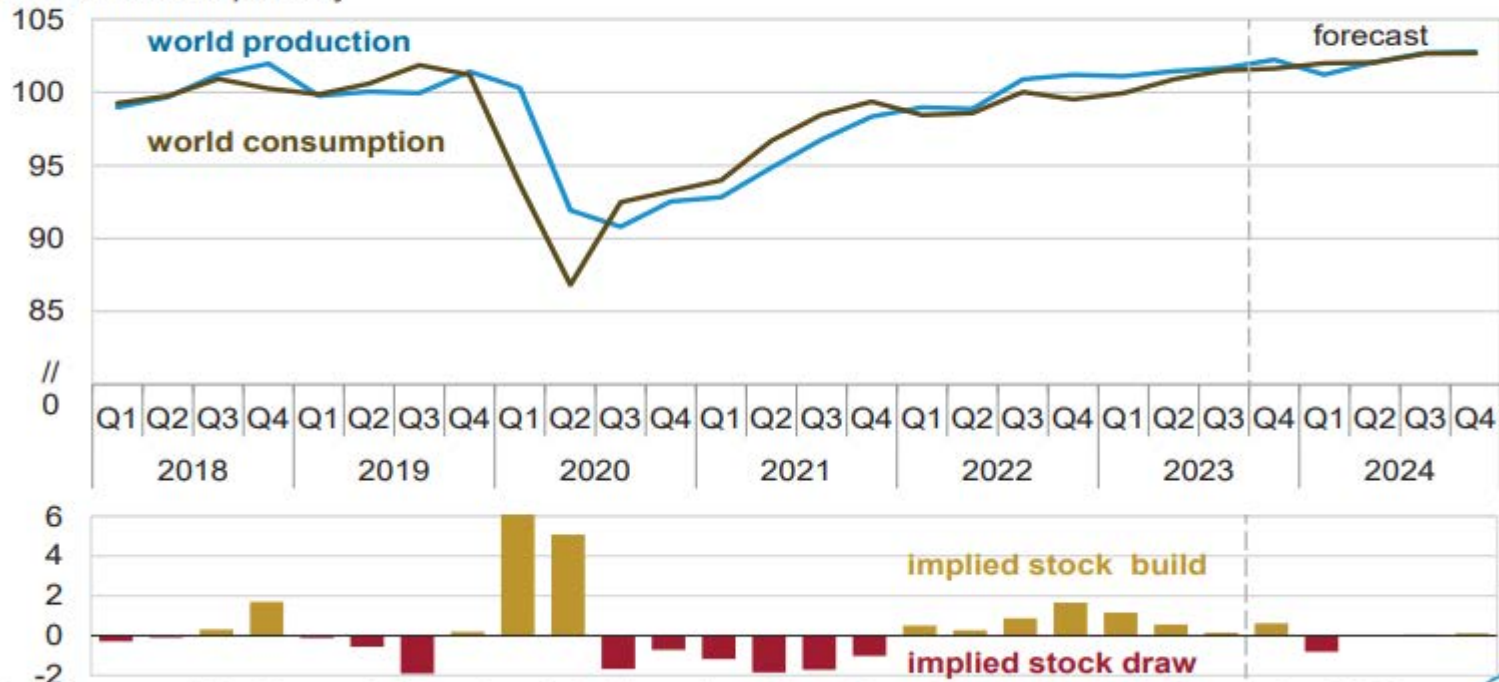
Non-farm employment
monthly change, thousands



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, December 2023, Bureau of Labor Statistics, *Employment Situation Summary*

World liquid fuels production and consumption balance

million barrels per day

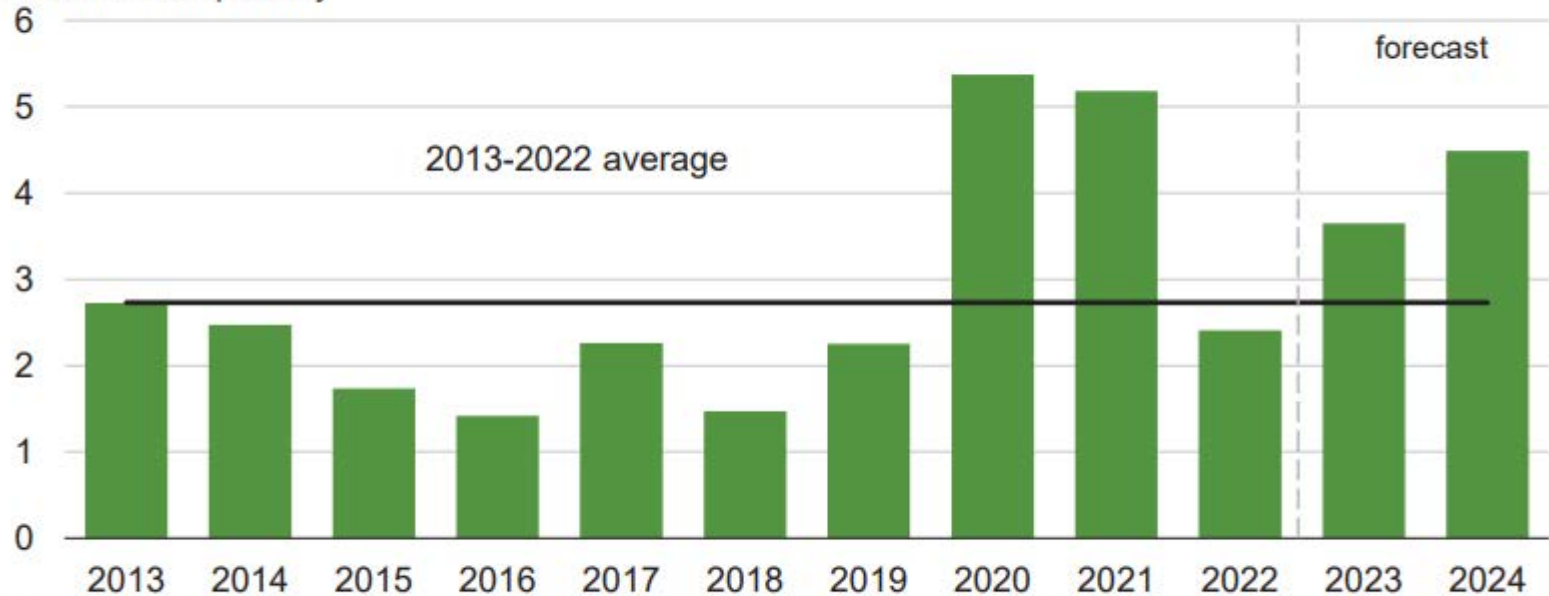


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



Organization of the Petroleum Exporting Countries (OPEC) surplus crude oil production capacity

million barrels per day

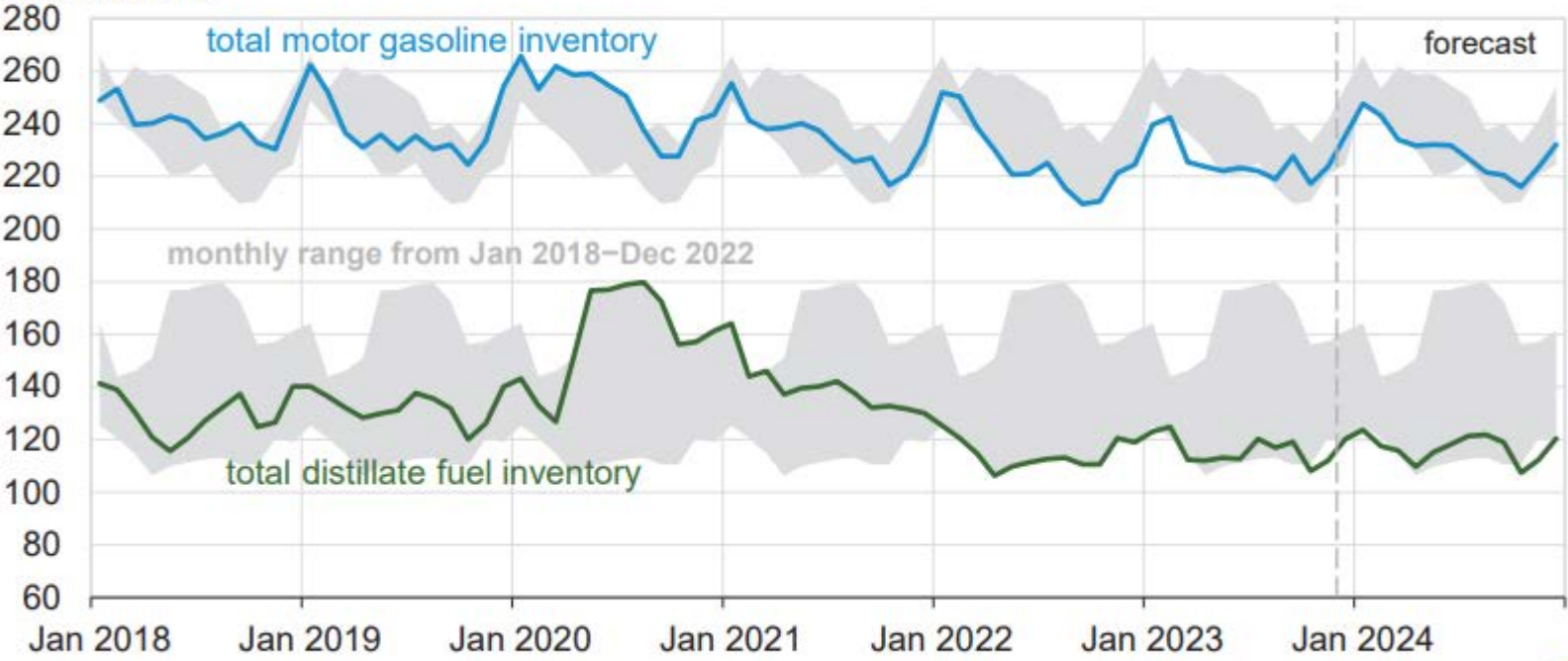


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

Note: Black line represents 2013-2022 average (2.7 million barrels per day).

U.S. gasoline and distillate inventories

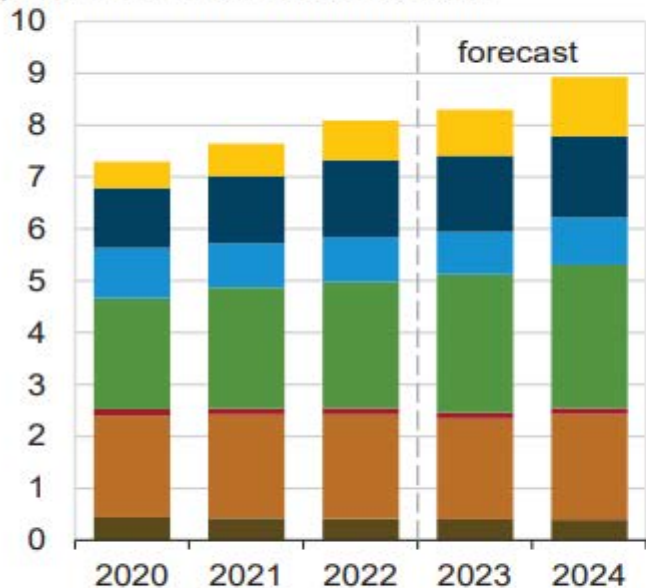
million barrels



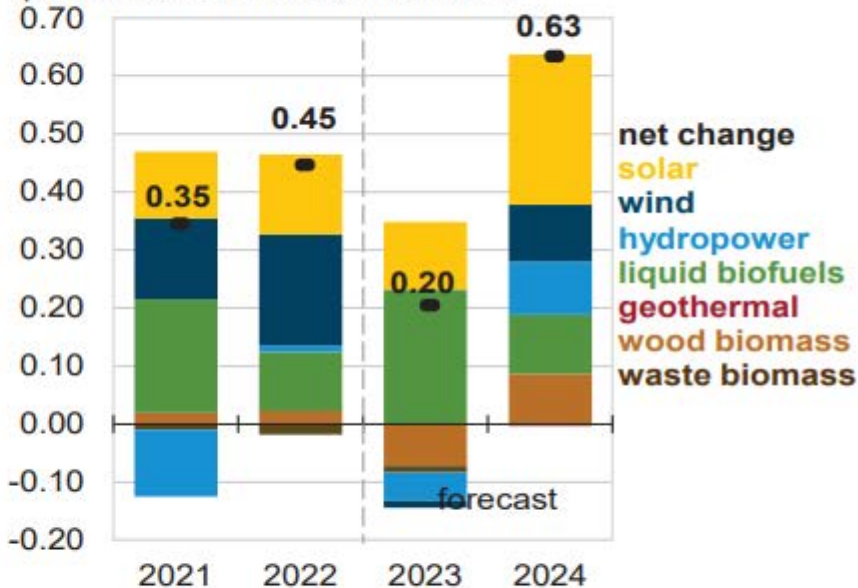
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



U.S. renewable energy supply quadrillion British thermal units



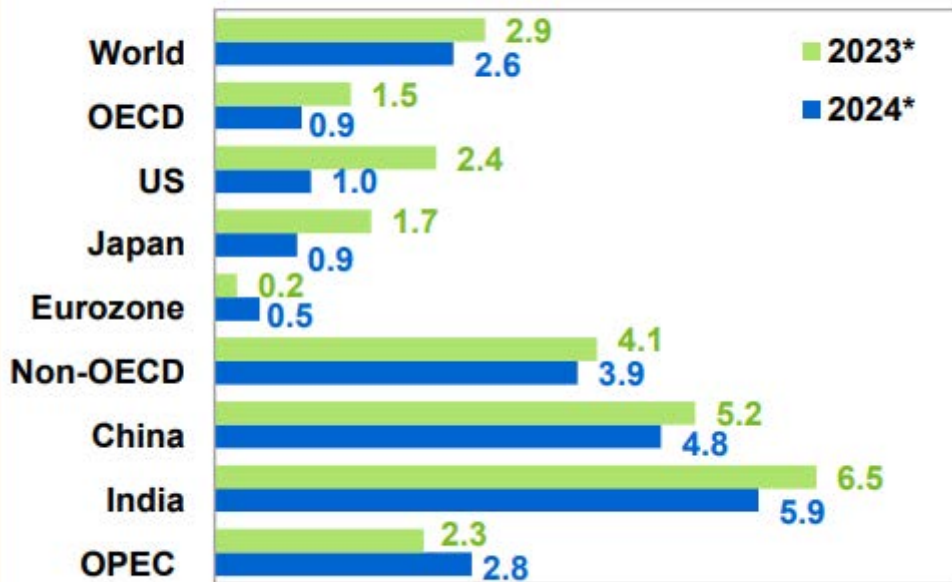
Components of annual change quadrillion British thermal units



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

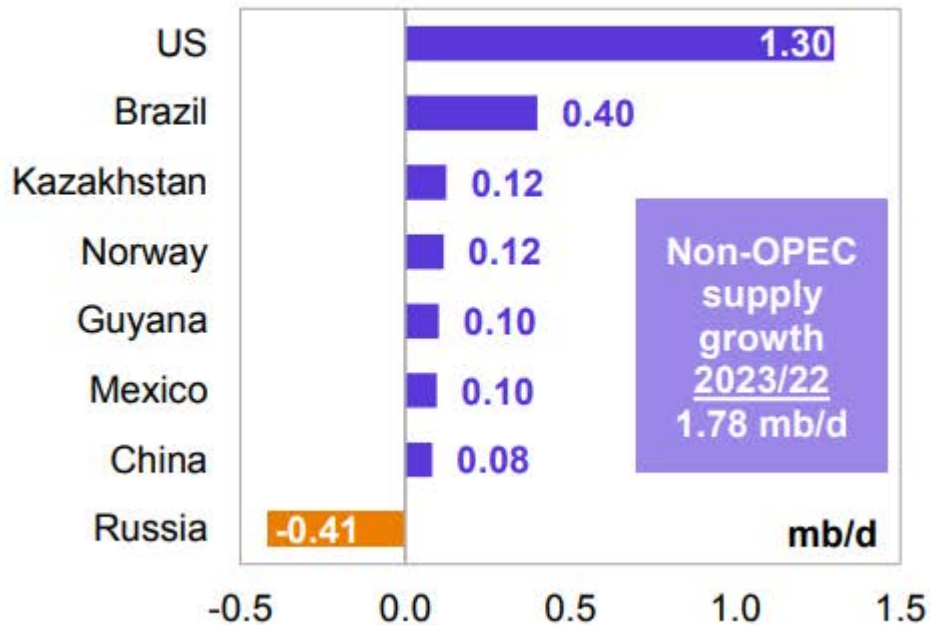
Note: Hydropower excludes pumped storage generation. Liquids include ethanol, biodiesel, renewable diesel, other biofuels, and biofuel losses and coproducts. Waste biomass includes municipal waste from biogenic sources, landfill gas, and non-wood waste.

Graph 1: 2023–2024 real GDP growth in key countries and regions (%)



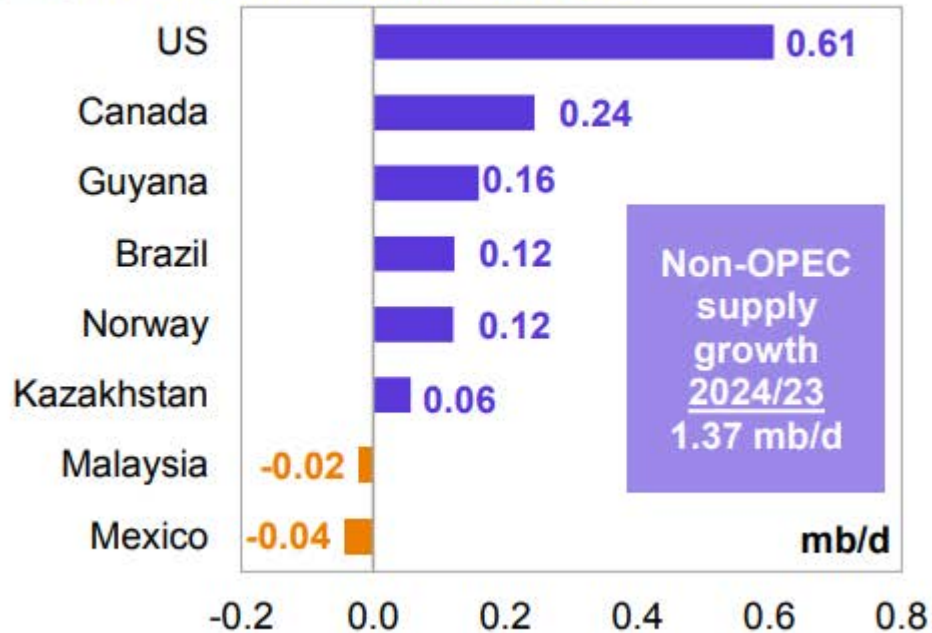
*Note: * 2023 and 2024 = Forecast. Source: OPEC.*

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



Note: * 2023 = Forecast. Source: OPEC.

Graph 5 - 4: Annual liquids production changes y-o-y for selected countries in 2024*



Note: * 2024 = Forecast. Source: OPEC.

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

| State | | | | Change | |
|-----------------------------|---------------|---------------|---------------|------------|------------|
| | Sep 22 | Aug 23 | Sep 23 | m-o-m | y-o-y |
| Texas | 5,211 | 5,579 | 5,573 | -6 | 362 |
| Gulf of Mexico (GOM) | 1,824 | 1,892 | 2,000 | 108 | 176 |
| New Mexico | 1,686 | 1,798 | 1,818 | 20 | 132 |
| North Dakota | 1,112 | 1,225 | 1,304 | 79 | 192 |
| Colorado | 438 | 462 | 459 | -3 | 21 |
| Oklahoma | 417 | 428 | 424 | -4 | 7 |
| Alaska | 430 | 396 | 415 | 19 | -15 |
| Total | 12,325 | 13,012 | 13,236 | 224 | 911 |

Sources: EIA and OPEC.

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

| | | <i>Change</i> | | <i>Change</i> | | <i>Change</i> |
|---------------------------------|--------------|----------------|--------------|----------------|--------------|----------------|
| US liquids | 2022 | 2022/21 | 2023* | 2023/22 | 2024* | 2024/23 |
| Tight crude | 7.73 | 0.55 | 8.43 | 0.70 | 8.83 | 0.40 |
| Gulf of Mexico crude | 1.73 | 0.02 | 1.82 | 0.09 | 1.85 | 0.03 |
| Conventional crude oil | 2.45 | 0.07 | 2.51 | 0.06 | 2.42 | -0.09 |
| Total crude | 11.91 | 0.64 | 12.76 | 0.85 | 13.10 | 0.34 |
| Unconventional NGLs | 4.78 | 0.47 | 5.22 | 0.44 | 5.47 | 0.26 |
| Conventional NGLs | 1.15 | 0.04 | 1.10 | -0.05 | 1.07 | -0.03 |
| Total NGLs | 5.93 | 0.51 | 6.32 | 0.38 | 6.55 | 0.23 |
| Biofuels + Other liquids | 1.44 | 0.08 | 1.51 | 0.07 | 1.54 | 0.03 |
| US total supply | 19.28 | 1.23 | 20.58 | 1.30 | 21.19 | 0.61 |

*Note: * 2023 and 2024 = Forecast.*

Sources: EIA, OPEC and Rystad Energy.

OPEC crude oil production

According to secondary sources, total **OPEC-13 crude oil production** averaged 27.84 mb/d in November 2023, lower by 57 tb/d, m-o-m. Crude oil output increased mainly in Venezuela, Libya and Kuwait, while production in Iraq, Angola and Nigeria decreased.

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

| Secondary sources | 2021 | 2022 | 1Q23 | 2Q23 | 3Q23 | Sep 23 | Oct 23 | Nov 23 | Change Nov/Oct |
|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| Algeria | 913 | 1,017 | 1,013 | 979 | 953 | 960 | 965 | 962 | -2 |
| Angola | 1,123 | 1,140 | 1,058 | 1,104 | 1,135 | 1,118 | 1,168 | 1,130 | -37 |
| Congo | 263 | 260 | 269 | 264 | 259 | 249 | 257 | 258 | 2 |
| Equatorial Guinea | 98 | 84 | 53 | 59 | 59 | 50 | 56 | 56 | 0 |
| Gabon | 182 | 197 | 194 | 206 | 205 | 204 | 217 | 218 | 2 |
| IR Iran | 2,392 | 2,554 | 2,572 | 2,698 | 3,003 | 3,082 | 3,121 | 3,128 | 7 |
| Iraq | 4,046 | 4,439 | 4,371 | 4,135 | 4,287 | 4,317 | 4,355 | 4,278 | -77 |
| Kuwait | 2,419 | 2,704 | 2,684 | 2,585 | 2,560 | 2,577 | 2,552 | 2,571 | 19 |
| Libya | 1,138 | 981 | 1,157 | 1,168 | 1,160 | 1,177 | 1,157 | 1,178 | 21 |
| Nigeria | 1,373 | 1,204 | 1,348 | 1,234 | 1,273 | 1,407 | 1,388 | 1,370 | -17 |
| Saudi Arabia | 9,114 | 10,531 | 10,357 | 10,150 | 8,993 | 9,020 | 8,987 | 8,998 | 12 |
| UAE | 2,727 | 3,066 | 3,045 | 2,941 | 2,912 | 2,929 | 2,918 | 2,909 | -9 |
| Venezuela | 553 | 680 | 694 | 751 | 764 | 745 | 757 | 780 | 23 |
| Total OPEC | 26,341 | 28,858 | 28,817 | 28,276 | 27,562 | 27,837 | 27,895 | 27,837 | -57 |

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

Source: OPEC.

Table 6 - 2: Refinery crude throughput, mb/d

| Refinery crude throughput | 2020 | 2021 | 2022 | 4Q22 | 1Q23 | 2Q23 | 3Q23 | 4Q23 |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| OECD Americas | 16.60 | 17.79 | 18.68 | 18.56 | 18.04 | 19.05 | 19.23 | 18.55 |
| <i>of which US</i> | <i>14.73</i> | <i>15.66</i> | <i>16.48</i> | <i>16.35</i> | <i>15.78</i> | <i>16.75</i> | <i>17.02</i> | <i>16.06</i> |
| OECD Europe | 10.65 | 10.92 | 11.43 | 11.38 | 11.28 | 11.10 | 11.72 | 11.59 |
| <i>of which:</i> | | | | | | | | |
| <i>France</i> | <i>0.67</i> | <i>0.69</i> | <i>0.84</i> | <i>0.78</i> | <i>0.83</i> | <i>0.87</i> | <i>1.06</i> | <i>0.98</i> |
| <i>Germany</i> | <i>1.72</i> | <i>1.72</i> | <i>1.83</i> | <i>1.87</i> | <i>1.64</i> | <i>1.59</i> | <i>1.70</i> | <i>1.66</i> |
| <i>Italy</i> | <i>1.11</i> | <i>1.23</i> | <i>1.32</i> | <i>1.29</i> | <i>1.28</i> | <i>1.26</i> | <i>1.29</i> | <i>1.29</i> |
| <i>UK</i> | <i>0.92</i> | <i>0.92</i> | <i>1.04</i> | <i>1.03</i> | <i>1.03</i> | <i>1.01</i> | <i>0.96</i> | <i>0.81</i> |
| OECD Asia Pacific | 5.87 | 5.77 | 6.08 | 6.01 | 6.16 | 5.68 | 5.74 | 6.02 |
| <i>of which Japan</i> | <i>2.48</i> | <i>2.49</i> | <i>2.71</i> | <i>2.73</i> | <i>2.77</i> | <i>2.38</i> | <i>2.55</i> | <i>2.73</i> |
| Total OECD | 33.12 | 34.47 | 36.20 | 35.95 | 35.48 | 35.83 | 36.69 | 36.16 |
| Latin America | 3.20 | 3.50 | 3.36 | 3.32 | 3.41 | 3.53 | 3.37 | 3.39 |
| Middle East | 6.10 | 6.80 | 7.28 | 7.40 | 7.31 | 7.46 | 7.62 | 7.77 |
| Africa | 1.79 | 1.77 | 1.76 | 1.73 | 1.71 | 1.71 | 1.67 | 1.73 |
| India | 4.42 | 4.73 | 5.00 | 4.89 | 5.35 | 5.22 | 5.03 | 4.99 |
| China | 13.48 | 14.07 | 13.49 | 14.14 | 14.57 | 14.78 | 15.19 | 15.11 |
| Other Asia | 4.72 | 4.72 | 4.89 | 4.77 | 4.86 | 5.13 | 4.99 | 5.06 |
| Russia | 5.39 | 5.61 | 5.46 | 5.59 | 5.67 | 5.40 | 5.49 | 5.40 |
| Other Eurasia | 1.10 | 1.23 | 1.15 | 1.15 | 1.23 | 1.07 | 1.07 | 1.02 |
| Other Europe | 0.43 | 0.41 | 0.48 | 0.49 | 0.44 | 0.42 | 0.48 | 0.45 |
| Total Non-OECD | 40.63 | 42.85 | 42.87 | 43.48 | 44.55 | 44.73 | 44.92 | 44.92 |
| Total world | 73.75 | 77.32 | 79.07 | 79.43 | 80.04 | 80.56 | 81.60 | 81.08 |

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

Sources: AFREC, APEC, EIA, IEA, Euroilstock, PAJ, Ministry data, including Ministry of Energy of the Russian Federation, Ministry of Petroleum and Natural Gas of India, OPEC and JODI.