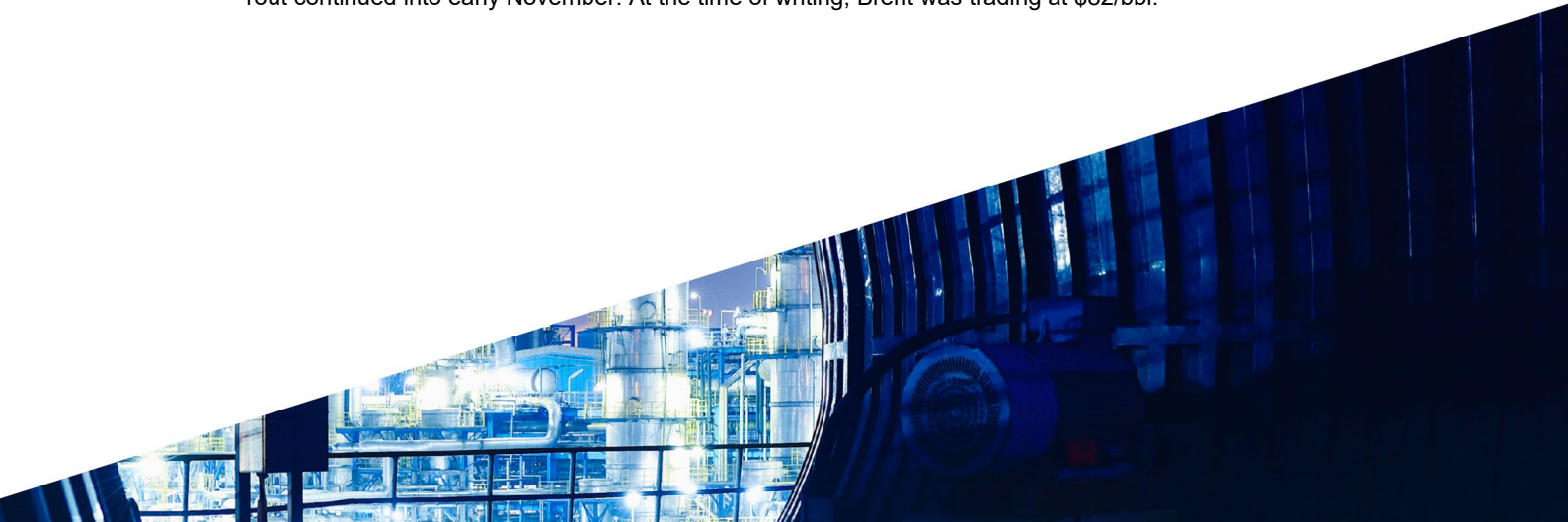


Oil Market Report

14 November 2023

- Chinese oil demand rose to another record high of 17.1 mb/d in September, underpinning global growth. China is set to account for 1.8 mb/d of the total 2.4 mb/d increase that lifts demand to 102 mb/d in 2023. Overall growth is expected to slow to 930 kb/d in 2024. In the OECD, economic headwinds are increasingly apparent, with this year's slim demand gains giving way to a contraction in 2024.
- World oil output increased by 320 kb/d in October to 102 mb/d. Growth in the United States and Brazil is outperforming forecasts, helping to propel global supply higher by 1.7 mb/d to a record 101.8 mb/d in 2023. Non-OPEC+ will again drive overall growth in 2024, projected at 1.6 mb/d. There has been no material impact on oil supply flows from the war between Israel and Hamas that started in early October.
- Refinery margins collapsed in October from the near-record levels achieved during 3Q23. Weaker gasoline cracks drove much of the decline, but still-elevated middle distillate cracks ensured margins remain above the five-year average. Global crude runs are expected to rise by 1.9 mb/d in 2023 and 1 mb/d in 2024, to average 82.6 mb/d and 83.6 mb/d, respectively.
- Russian oil exports eased by 70 kb/d in October, to 7.5 mb/d, as higher crude oil shipments failed to offset a decline in product flows. Estimated export revenues fell by \$25 million to \$18.34 billion as lower international oil prices more than offset a narrowing discount for Russian grades versus North Sea Dated. Russian crude and product prices, apart from gasoline and VGO, were above the G7 Price Cap.
- Global observed inventories rose by 9.9 mb in September but remain near historical lows. Oil on water rebounded by 25.3 mb and OECD stocks inched up by 2.9 mb while non-OECD inventories declined by 18.3 mb. In 3Q23, crude oil stocks plunged by a massive 141.4 mb and oil product built by 112.7 mb as supply cuts by OPEC+ countries coincided with increased refinery activity.
- ICE Brent futures slumped by \$8/bbl during October, as the macroeconomic outlook deteriorated and supply fears following the Hamas attack on Israel subsided. Crude's forward structure eased in tandem with flat prices, as contango returned to prompt WTI time spreads for the first time since July. The price rout continued into early November. At the time of writing, Brent was trading at \$82/bbl.



Publishing Schedule – 2024

- **Thursday** **18 January**
- **Thursday** **15 February**
- **Thursday** **14 March**
- **Friday** **12 April ⁽¹⁾**
- **Wednesday** **15 May**
- **Wednesday** **12 June ⁽²⁾**
- **Thursday** **11 July**
- **Tuesday** **13 August ⁽³⁾**
- **Thursday** **12 September**
- **Tuesday** **15 October**
- **Thursday** **14 November**
- **Thursday** **12 December**

The 2024 Edition of the *Market Report _Oil 2024* will be released on **12th June 2024**.

⁽¹⁾. Supply/demand forecasts will be ‘rolled out’ to 2025 in the report dated **12 April 2024**.

⁽²⁾ The June **OMR** will comprise the usual data and projections through end-2025, but with abridged text.

⁽³⁾. The *Annual Statistical Supplement 2024 Edition* will be published in conjunction with the **August OMR**.

NB: On each of these dates, the report will be released at 10H00 Paris local time.

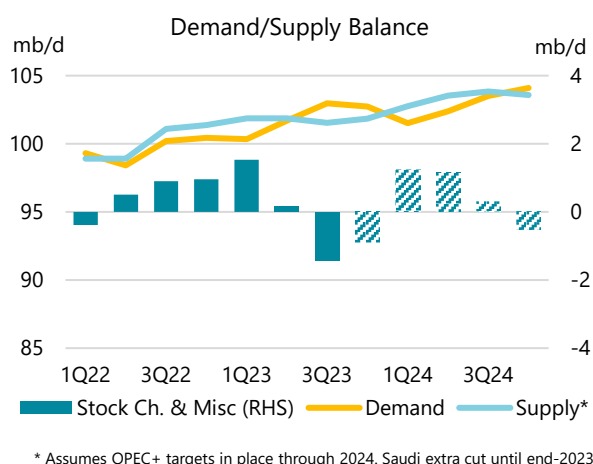
Table of contents

Exceeding expectations	4
Demand.....	5
Overview	5
OECD	6
European naphtha cracking down to five-decade lows as global competition bites	9
Non-OECD.....	11
Supply	15
Overview	15
OPEC+ crude supply	16
Russian oil export volume and revenues ebb in October	19
Non-OPEC+.....	22
Refining	26
Overview	26
Product cracks and refinery margins.....	27
Regional refining developments.....	33
Stocks	36
Overview	36
Implied balance	37
Recent OECD industry stock changes.....	38
Other stock developments.....	41
Prices	44
Overview	44
Futures markets.....	45
Spot crude oil prices	47
Freight.....	51
Tables	52

Exceeding expectations

The market rally that pushed benchmark oil prices towards triple digits in September reversed sharply in October, despite continued tight crude supplies and an intensifying conflict in the Middle East. In early November, ICE Brent futures plunged to a four-month low around \$80/bbl.

The abrupt sell-off came as market concerns shifted from supply risks to the global economy and oil demand. In addition, front month paper market trade has moved to 1Q24 when markets appear more or less in surplus, adding to the downward pressure on prices. While this more bearish mood may be justified, world oil demand continues to exceed expectations. In this *Report*, we have slightly revised up our 2023 growth forecast to 2.4 mb/d, as US deliveries proved more resilient than indicated by preliminary data and Chinese oil demand in September set another all-time high above 17 mb/d, fuelled by a booming petrochemical sector. Those gains have come to the detriment of petrochemical producers elsewhere, most notably in Europe and advanced economies in Asia and Oceania. Indeed, the two regions saw 3Q23 oil demand slump by a combined 560 kb/d year-on-year. This year's surge will take world oil demand to 102 mb/d before growth eases to 930 kb/d in 2024 as the last phase of the pandemic economic rebound dissipates and as advancing energy efficiency gains, expanding electric vehicle fleets and structural factors reassert themselves. Despite growth that is almost two-thirds lower than this year's increase, global oil demand is set to rise to a record annual high of 102.9 mb/d in 2024.



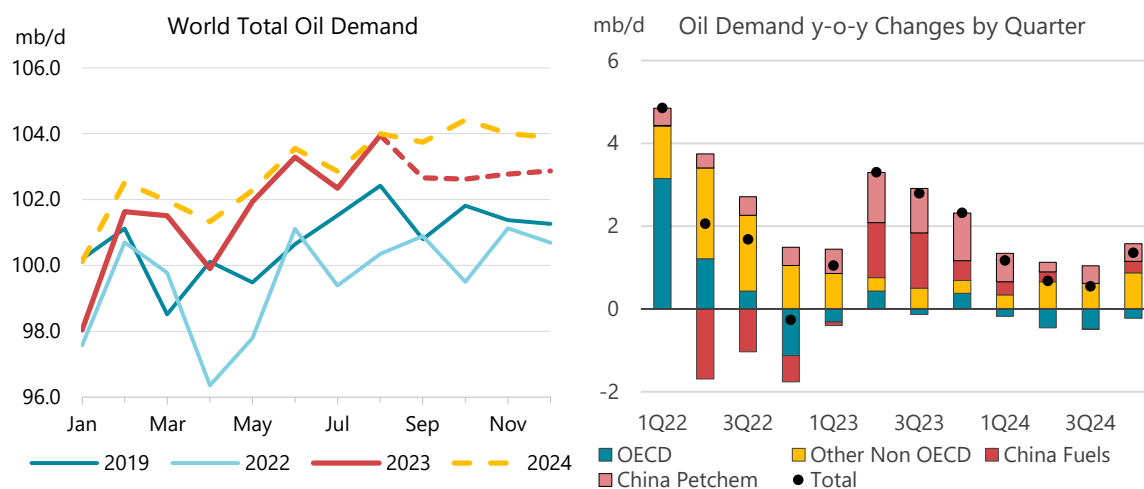
World oil supply growth is also exceeding expectations. Fears that the war between Israel and Hamas would escalate into a wider regional conflict, disrupting oil supply flows, have yet to materialise. Barring large unforeseen outages, world oil supply is firmly on an upward trajectory, with October output up 320 kb/d m-o-m. Record output from the United States, Brazil and Guyana underpin this year's 1.7 mb/d increase in global oil supplies, to a record 101.8 mb/d. In 2024, non-OPEC+ producers will continue to lead global growth, projected at 1.6 mb/d, to an unprecedented 103.4 mb/d. A temporary easing of US sanctions on Venezuela in late October is expected to have only a marginal impact on supply, as production increases from the country's battered oil sector will take time and investment.

Meanwhile, top oil exporters Saudi Arabia and Russia confirmed in early November they would continue with their additional voluntary output cuts until the end of the year. Those cuts look set to keep the oil market in a significant deficit through year-end, with the OPEC+ alliance pumping 900 kb/d below the demand for its crude. Global observed crude oil inventories fell by a massive 140 mb over the third quarter to a fresh low, according to the available data, as refineries boosted activity ahead of seasonal maintenance. With demand growth set to slow, the market could shift into surplus at the start of 2024. For now, with demand still exceeding available supplies heading into the Northern Hemisphere winter, market balances will remain vulnerable to heightened economic and geopolitical risks – and further volatility ahead.

Demand

Overview

Global oil demand is set to climb by 2.4 mb/d to 102 mb/d this year, 110 kb/d more than projected in last month's Report. Growth is heavily concentrated in a narrow set of non-OECD countries, led by China (+1.8 mb/d) where September consumption set another all-time record at 17.1 mb/d. The impact of sustained macroeconomic headwinds will become increasingly apparent next year as the massive offsets seen in 2023 fall aside. Global oil demand growth is expected to decelerate sharply to 930 kb/d in 2024.



While both overall economic and oil demand growth are expected to lose impetus next year, the macro inputs into our forecast look somewhat more benign. In part, this reflects the dovish turn in central bank messaging, fuelling hopes of a soft landing. Investors have priced an end to monetary tightening with a return to interest rate cuts expected by mid-2024. Additionally, the recent fall in crude oil prices and cracks for some key products supports demand growth expectations into next year. However, sovereign bond yields remain elevated, indicating growing concerns about government borrowing needs. At the same time, a deepening credit squeeze is curtailing bank lending to households and businesses.

In this context, analysts' consensus estimates see global GDP growth, already pedestrian at 2.8% in 2023, slowing further to 2.6% in 2024, with almost all major economies decelerating. Oil demand growth will ease in turn. The eurozone's economy shrank in 3Q23, teetering on the brink of recession amid above-target inflation. While China's economy is on track to reach its 5% 2023 GDP growth target, it is beset by tepid domestic and external demand. The US economy, which has continued to display considerable resilience given the Federal Reserve's unprecedented rate hike campaign, is now starting to cool. In this context, advancing energy efficiency and an expanding electric vehicle (EV) fleet is expected to tip the OECD back into demand decline from 2024.

In 3Q23, non-OECD growth of 2.9 mb/d y-o-y contrasted sharply with a listless OECD, where oil demand declined by 130 kb/d y-o-y, largely due to Europe's sharp deceleration. Here, flagging German industrial output acted as a major drag on demand, with gasoil and naphtha usage most affected. In 2023, Germany will see the largest decline in consumption of any country (-120 kb/d). Following a sharp slowdown of US road fuel demand in September, preliminary October data

indicate a return to y-o-y growth. Conversely, higher oil burn in Middle Eastern power generation augmented non-OECD strength, as regional grids struggled to cope with extreme temperatures.

In recent months, petrochemical feedstock products have seen diverging regional trends, but still highlight overall the structural shift in growth away from major fuels towards petrochemical products. The chemical industry has cemented its position as the main engine of Chinese demand growth, transcending the cooling post-lockdown rebound in personal mobility. We expect the sector to remain the cornerstone of Chinese and global oil demand growth through 2024. However, China's remarkable surge in activity is undercutting production almost everywhere else. While 2023 European naphtha use is set to hit a 48-year low (see *European naphtha cracking down to five-decade lows as global competition bites*), combined Chinese naphtha, LPG and ethane use registered a new all-time record in September.

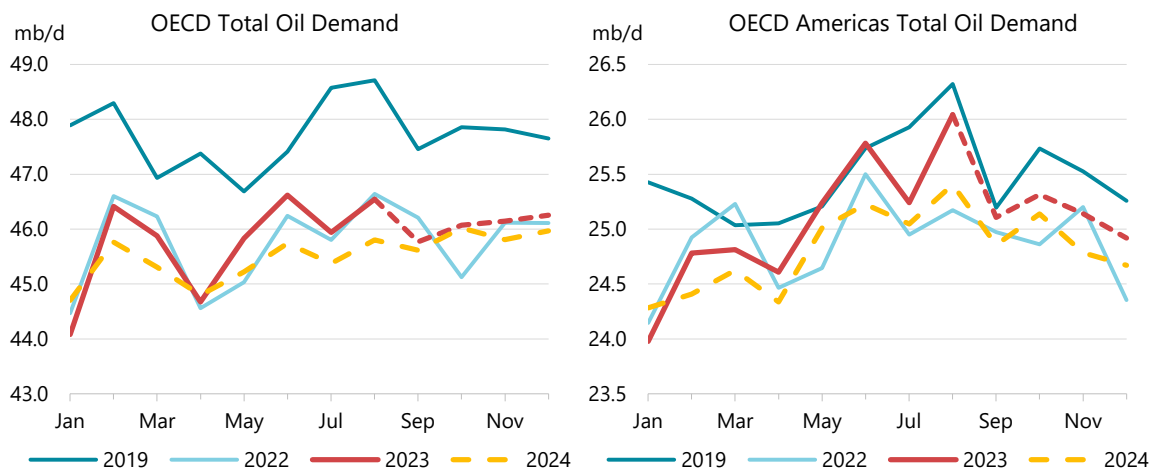
Global Demand by Region								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2021	2022	2023	2024	2023	2024	2023	2024
Africa	4 045	4 276	4 214	4 353	- 62	139	-1.5	3.3
Americas	30 325	31 073	31 407	31 213	334	- 194	1.1	-0.6
Asia/Pacific	35 953	36 096	38 200	39 157	2 104	957	5.8	2.5
Europe	13 965	14 296	14 191	14 117	- 105	- 74	-0.7	-0.5
FSU	4 891	4 945	4 961	4 931	16	- 30	0.3	-0.6
Middle East	8 351	8 907	8 988	9 118	81	130	0.9	1.4
World	97 530	99 594	101 960	102 888	2 367	928	2.4	0.9
OECD	44 851	45 755	45 848	45 510	93	- 339	0.2	-0.7
Non-OECD	52 679	53 839	56 112	57 378	2 273	1 267	4.2	2.3

Global Demand by Product								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2021	2022	2023	2024	2023	2024	2023	2024
LPG & Ethane	13 729	14 127	14 721	14 989	594	268	4.2	1.8
Naphtha	7 018	6 800	7 156	7 568	356	412	5.2	5.8
Motor Gasoline	25 745	26 296	26 953	26 979	657	25	2.5	0.1
Jet Fuel & Kerosene	5 175	6 134	7 200	7 190	1 066	- 10	17.4	-0.1
Gas/Diesel Oil	27 408	28 235	28 326	28 433	91	108	0.3	0.4
Residual Fuel Oil	6 244	6 505	6 462	6 531	- 43	69	-0.7	1.1
Other Products	12 211	11 497	11 142	11 199	- 355	56	-3.1	0.5
Total Products	97 530	99 594	101 960	102 888	2 367	928	2.4	0.9

OECD

Total OECD demand declined by 130 kb/d (-0.3%) y-o-y in 3Q23. This relatively stable headline figure masks significant regional differences. While European demand is mired in a deep slowdown, contracting by 460 kb/d for the quarter, and Asia Oceania fell by 100 kb/d, OECD Americas climbed by 430 kb/d on strong deliveries in the US and Canada. Across the OECD, major industrial inputs gasoil and naphtha were 440 kb/d and 260 kb/d lower y-o-y, respectively, in 3Q23, as cooling manufacturing conditions remain the major stumbling block for oil consumption. Overall, 2023 demand will hit 45.8 mb/d, up by just over 90 kb/d. However, in 2024, we anticipate that OECD oil consumption will fall by 340 kb/d as structural factors continue to weigh on fuel use and with the rebound in jet fuel demand largely complete.

The strongest of the three OECD regions, deliveries in the **Americas** rose by 430 kb/d y-o-y in 3Q23. The United States (+220 kb/d) and Canada (+240 kb/d) were the mainstays of growth, with Mexico's post-Covid bounce having dissipated (-30 kb/d). Annual gains are expected to extend into 4Q23 (+320 kb/d), dominated by the United States. For the year as a whole, regional oil demand is forecast to rise by 220 kb/d to 25.1 mb/d. Usage is projected to fall by 260 kb/d in 2024 as healthy EV sales and improving vehicle fleet efficiencies undermine gasoline consumption (-180 kb/d), especially in the United States.

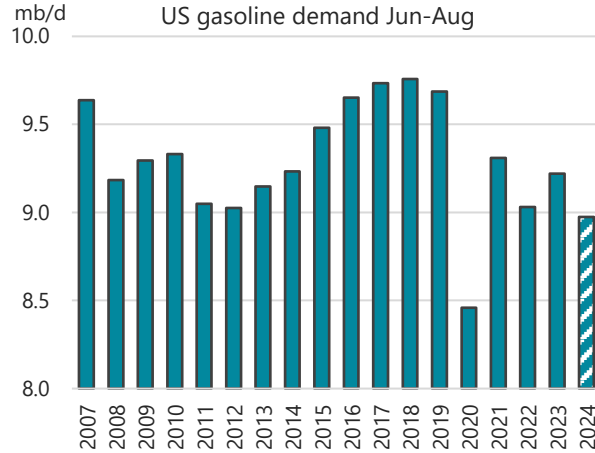
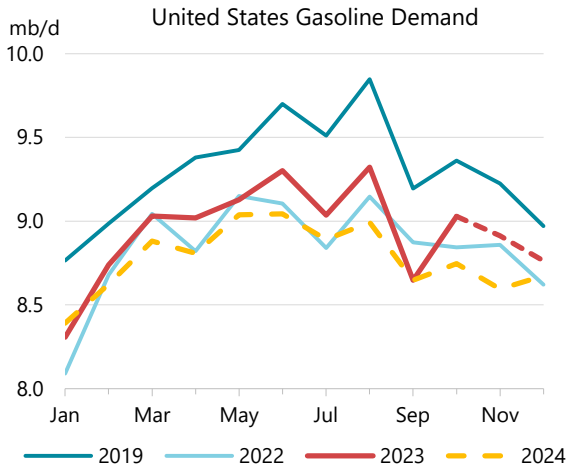


US oil demand rose by 220 kb/d y-o-y to an average 20.5 mb/d for 3Q23 as GDP grew by 4.9% on an annualised basis (+2.9% y-o-y). Third-quarter GDP growth outperformed consensus estimates, adding to the sense that the US economy has held up better than expected in the face of elevated Federal Reserve interest rates. These rates remained at 5.5% in November, with market participants converging on the view that the cycle of hikes is now complete. Core consumer inflation fell to 3.7% in September, according to the Fed's preferred measure, while unemployment remained close to historic lows at 3.9% in October.

Gasoil demand increased by 40 kb/d y-o-y (+0.9%) in 3Q23, after three straight quarters of contraction. This paints a more optimistic picture than the *S&P Global US Manufacturing PMI*, which showed neither expansion nor contraction in October (with a neutral reading of 50), compared to the slight regression indicated in September (49.8). The equivalent services PMI, which is more closely associated with gasoline demand than the gasoil-correlated manufacturing index, has performed slightly better this year. This indicated slow but continued growth in activity in October (at 50.6, up from 50.1 in September).

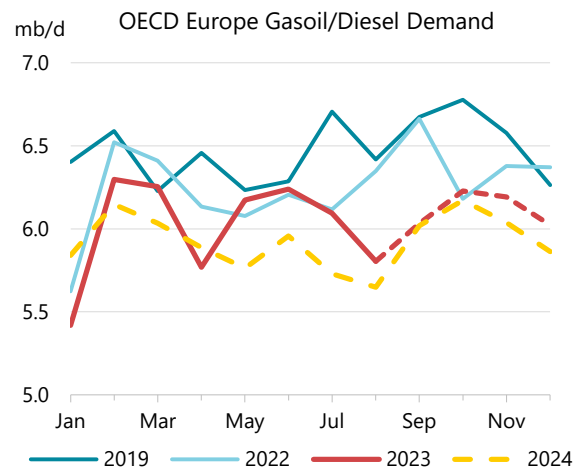
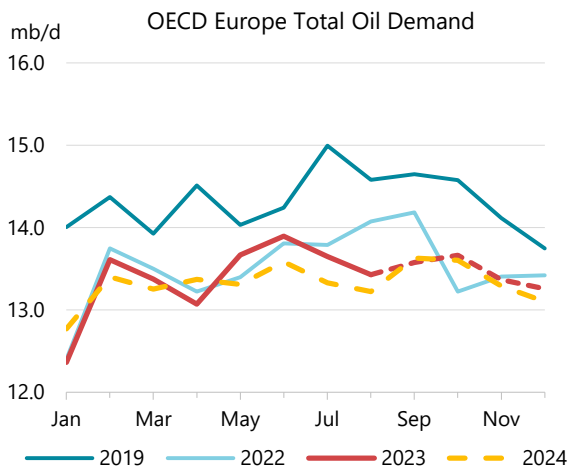
In September, preliminary figures show that US oil demand contracted by 110 kb/d to 20.2 mb/d as robust jet kerosene, diesel and petrochemical feedstock demand failed to offset gasoline weakness. US gasoline demand garnered headlines last month when preliminary data indicated September consumption fell by 4.5% y-o-y to two-decade lows. Our balances assume a smaller 2.5% decline based on the gap between final August data, which came in stronger than expected, and weekly indications, stock changes and prompt indicators. Preliminary statistics for October point to a rebound in gasoline demand, suggesting that the pronounced weakness in September's reading may prove an isolated case. We expect gasoline to post y-o-y gains of 130 kb/d in 4Q23.

Continued efficiency gains, widespread working from home and growing EV sales nevertheless are behind lower gasoline growth of 100 kb/d in 2023. These factors all combine to add further pressure on gasoline consumption next year, which is now forecast to decline by 160 kb/d to 8.8 mb/d.



Overall, US demand is set to rise by 140 kb/d to 20.3 mb/d in 2023 before falling by 220 kb/d in 2024. US jet/kerosene and LPG/ethane are both set to contribute substantially to annual gains this year. In September, jet/kerosene was up by 130 kb/d y-o-y, following a rise of 90 kb/d on average over the first eight months of the year, primarily because of an increase in the number of international flights. The apparent acceleration is not mirrored in air traffic data and may reflect the timing of deliveries, with weekly data showing gains slowing to only 10 kb/d y-o-y in October.

LPG/ethane demand is forecast to increase by 60 kb/d on average in 2023, with rising ethane demand from petrochemical facilities outweighing small declines for propane and butane. US producers have steadily increased operating rates at new export-oriented steam cracking facilities, with ethane demand reaching an all-time peak, above 2.2 mb/d in May and remaining at elevated levels in the subsequent months.



In contrast to the Americas, oil use in **OECD Europe** is in the midst of a marked slowdown. Deliveries dropped by 460 kb/d y-o-y (-3.3%) in 3Q23. The bulk of this drop was in gasoil (-400 kb/d), with the continued collapse in petrochemical activity pushing down naphtha (-130 kb/d) and LPG/ethane (-70 kb/d) consumption. Overall, 2023 OECD Europe demand is set to decline by 100 kb/d, despite a 140 kb/d rise in jet/kerosene demand. We expect a further fall of 90 kb/d in 2024, driven by gasoil (-120 kb/d) while jet fuel and petrochemical feedstock demand stabilise at their new higher and lower levels, respectively.

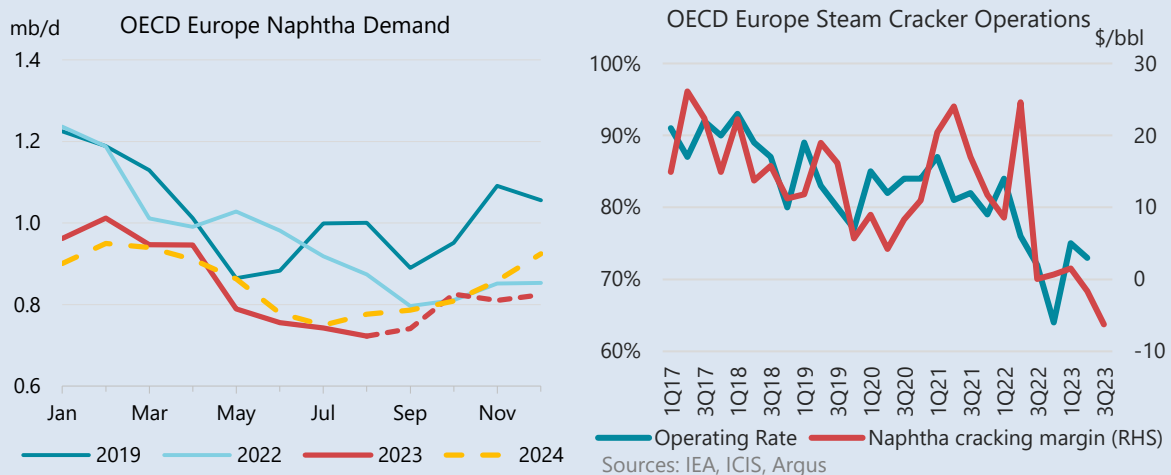
The continental slump in gasoil use has been deep and widespread. Almost every European state contributed to the y-o-y drop of 400 kb/d in 3Q23, testament to the extremely negative conditions for regional manufacturers. The *HCOB Eurozone Manufacturing PMI* remained firmly in contractionary territory at 43.1 in October, compared with 43.4 in September. This was the sixteenth consecutive month of decline and sentiment provides few signs of recovery.

The largest fall in quarterly gasoil demand came in **Germany**. Use dropped by 130 kb/d y-o-y, or 12.9%. Europe’s largest economy appears to be subject to even more negative economic conditions than the rest of the continent. In October, it’s *HCOB Manufacturing PMI* recovered slightly but remained well below 50, at 40.8. We now expect German oil demand to fall by more than any other country in 2023. Its -120 kb/d (-5.5%) annual collapse will be led by gasoil (-60 kb/d) and naphtha (-40 kb/d), two products closely tied to manufacturing.

In addition to the parlous economic climate, long-standing structural factors are eroding gasoil use. Most important amongst these have been changes to the road vehicle fleet over the last decade associated with the drop in diesel car sales in favour of gasoline, and increasingly EVs. **France**, which historically had a very large share of diesel-fuelled cars, recorded the second-largest regional fall in gasoil use during 3Q23 (-80 kb/d). This 9.2% y-o-y drop put quarterly demand at only 770 kb/d, more than 50 kb/d lower than even the equivalent period in the pandemic year of 2020. However, quarterly gasoline use was the highest for 18 years (since 3Q05), reflecting the waxing and waning of the diesel car fleet over the last two decades. We expect that in France, 20 kb/d higher gasoline usage during 2023 will largely offset a 30 kb/d fall in gasoil demand. In combination with a 30 kb/d rebound in jet/kerosene demand, also apparent in other major holiday destinations where tourist numbers continue to increase, this will result in a modest 10 kb/d boost to national demand this year.

European naphtha cracking down to five-decade lows as global competition bites

European petrochemical operators have been squeezed by a fatal combination of anaemic manufacturing and construction demand on the home front and the latest and largest wave of new competing plants in international markets. Estimates by *ICIS* show that average European cracker operating rates have plummeted from 90% in 2017 to between 65% and 75% in recent quarters.



The enormous expansion of Chinese petrochemical capabilities since the late 2010s has become devastating because of its scale and the fact that it consists largely of naphtha crackers and highly competitive propane dehydrogenation (PDH) units. This results in propylene production on a vast

scale – a key distinction with the earlier proliferation of ethane crackers in the Middle East and the United States. According to *Argus*, the average propylene/ethylene price ratio has been 0.95 since the midpoint of 2022 compared with 1.1 during 2021 and 1H22. Since cracking naphtha produces more propylene than lighter feedstocks, this severely undermines naphtha cracker economics.

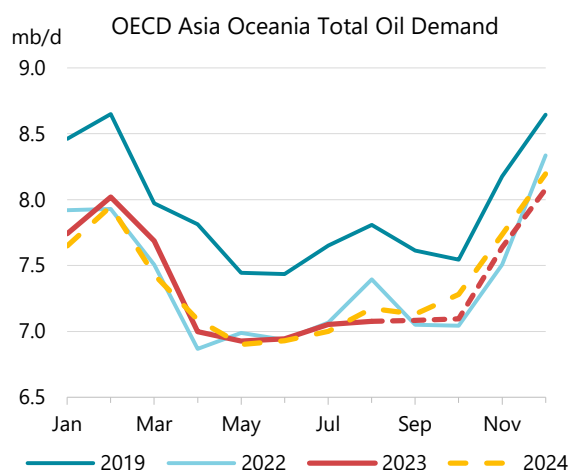
So precipitous has the disintegration in European steam cracking activity been over the last two years that 2023 European naphtha demand is set to be 320 kb/d below 2021. This is a fall of 28%, equivalent to the typical consumption of about 10 medium sized European naphtha crackers. Average annual naphtha deliveries, forecast at only 840 kb/d in 2023, would be lower than at any time since 1975 and it is increasingly difficult to see how the continent's petrochemical industry can recover its previous strength.

OECD Asia Oceania demand dropped by 100 kb/d y-o-y in 3Q23. This was almost exclusively due to a large decline in August (-320 kb/d). The quarter's y-o-y fall was heavily concentrated in Japan (-90 kb/d) and Korea (-60 kb/d), with Australian consumption rising by 30 kb/d. Average 2023 demand is set to hit 7.4 mb/d, only 20 kb/d lower y-o-y, before a marginal rise of 10 kb/d in 2024.

The size of this year's fall has been limited by resurgent jet/kerosene demand, up by 120 kb/d. The gains provide the one clear example of a post-lockdown China boost for regional oil use. According to *RadarBox* data, flight counts have gradually risen to close to 2019 levels, in line with a steady rise in Chinese international air traffic.

Naphtha demand was severely reduced during 3Q23 (-130 kb/d), dominating the overall regional decline. In relative terms, this fall, of 7%, was only about half as large as in Europe. Most of this decline took place in heavyweight petrochemical producer Korea (-90 kb/d, -7.3%), where naphtha intake was 110 kb/d lower than in 3Q19, despite the construction of a handful of new steam crackers over this period. Along with a similar decrease in Japan (-40 kb/d y-o-y, -6.6%), this emphasises the impact of heavily oversupplied global polymer markets. In 2023, we expect an overall drop in naphtha of 60 kb/d, following last year's 120 kb/d fall, and a minor rebound of only 10 kb/d in 2024.

Overall **Japanese** demand growth went into reverse in 3Q23 (-90 kb/d). Naphtha and fuel oil (each -40 kb/d), gasoil (-30 kb/d), and the other products category (-60 kb/d) all showed notable declines. Oil products used in power generation, including fuel oil, as well as asphalt and bituminous materials, included in other products, have declined so far during 2023. Ministry of Land, Infrastructure, Transport and Tourism figures also suggest an 8% decrease in asphalt demand for construction between FY22 and FY23. The industrial environment remains fragile, with the *au Jibun Bank Japan Manufacturing PMI* showing continued contraction at 48.7 in October, up slightly from September's 48.5. These falls were partially offset by a 60 kb/d increase in jet/kerosene deliveries as international flight counts continued to rebound. The number of international flights is now approaching 2019 levels, standing at about 95% in early November, but according to *Airportia* data, total miles flown remain about 15% lower.



In **Korea**, the lower 3Q23 naphtha demand (-90 kb/d) outweighed smaller rises in jet/kerosene (+30 kb/d), LPG (+20 kb/d) and other products (+30 kb/d). Excluding refinery fuels, other products are negatively correlated to naphtha demand because of the importance of backflows from petrochemical facilities. Macroeconomic indicators show signs of modest improvement. Korea's run of thirteen consecutive months of falling exports ended in October, due to a combination of a lower baseline and a gradual easing of the fall in shipments to China. Similarly, the *S&P Global South Korea Manufacturing PMI* was close to equilibrium in October (49.8) and largely unchanged from September (49.9).

Australian demand rose by an estimated 30 kb/d in 3Q23. This was almost entirely dominated by jet/kerosene (+40 kb/d). Air traffic was slow to resume in Australia after the pandemic because of a combination of long-maintained restrictions on international flights and the wider disruption to Asia-Pacific aviation markets. This means that stronger gains have been possible this year but with air traffic now close to 2019 levels the potential for further gains appears limited.

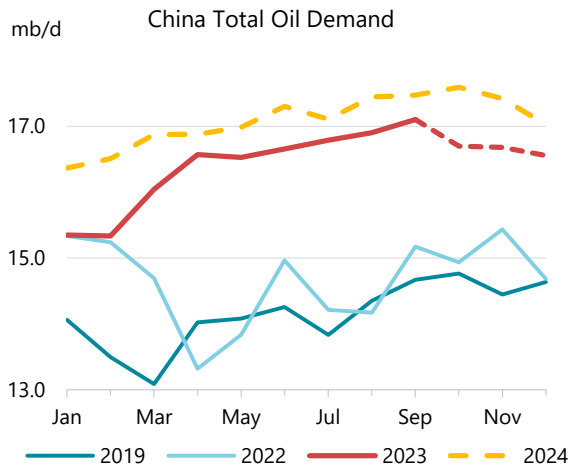
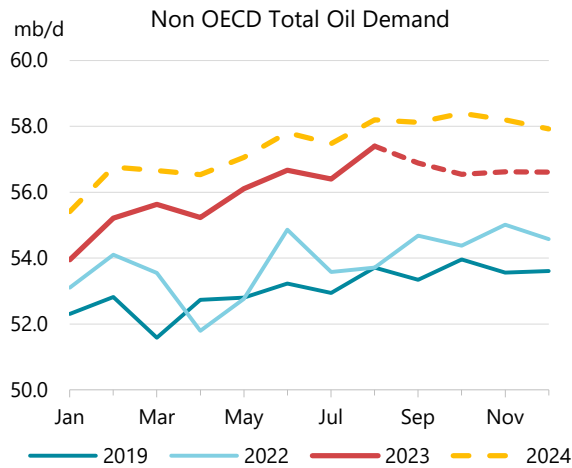
OECD Demand based on Adjusted Preliminary Submissions - September 2023																
(million barrels per day)																
	Gasoline		Jet/Kerosene		Diesel		Other Gasoil		LPG/Ethane		RFO		Other		Total Products	
	mb/d	% pa	mb/d	% pa	mb/d	% pa	mb/d	% pa	mb/d	% pa	mb/d	% pa	mb/d	% pa	mb/d	% pa
OECD Americas	10.31	-2.0	2.00	9.7	3.49	-0.4	1.85	-0.6	3.88	5.5	0.56	-14.6	3.03	2.8	25.11	0.5
US*	8.65	-2.5	1.68	8.4	2.61	0.7	1.51	-0.7	3.01	2.3	0.37	-25.4	2.32	1.8	20.16	-0.5
Canada	0.83	3.6	0.21	33.7	0.34	-1.8	0.26	-0.7	0.50	38.8	0.01	-17.4	0.50	6.6	2.65	10.0
Mexico	0.74	-2.2	0.08	0.0	0.36	-5.6	0.07	2.3	0.33	-0.9	0.16	22.3	0.17	0.0	1.92	-0.5
OECD Europe	2.15	2.9	1.62	8.9	4.88	-5.4	1.15	-23.3	1.03	-3.3	0.78	-2.3	1.97	-5.7	13.58	-4.3
Germany	0.48	16.6	0.22	1.5	0.68	-1.6	0.22	-32.8	0.10	-3.5	0.05	-9.4	0.28	-15.3	2.03	-5.1
United Kingdom	0.29	-0.6	0.32	10.7	0.45	-5.4	0.13	-18.5	0.06	-36.8	0.02	-4.1	0.11	1.7	1.37	-3.9
France	0.26	-0.4	0.17	10.3	0.70	-14.1	0.08	-46.9	0.08	-10.7	0.03	16.6	0.21	4.1	1.53	-9.8
Italy	0.20	-1.1	0.13	21.7	0.51	-4.0	0.05	-12.2	0.10	-7.8	0.06	-4.7	0.21	-6.3	1.26	-2.6
Spain	0.15	5.9	0.17	13.5	0.44	-3.1	0.17	-19.1	0.07	5.3	0.14	-1.4	0.16	-5.1	1.29	-2.5
OECD Asia & Oceania	1.47	-0.7	0.69	25.6	1.43	1.2	0.38	-9.0	0.72	1.1	0.43	-8.9	1.96	-2.1	7.08	0.5
Japan	0.83	0.9	0.32	28.0	0.44	2.2	0.25	-10.4	0.32	-3.6	0.21	-16.3	0.76	-4.3	3.14	-1.0
Korea	0.26	4.5	0.17	19.8	0.40	6.8	0.06	-17.0	0.33	6.3	0.18	-3.5	1.05	-0.3	2.44	2.5
Australia	0.27	-7.3	0.15	31.3	0.54	-1.7	-	-	0.05	-1.1	0.02	-0.5	0.10	-3.4	1.11	0.1
OECD Total	13.93	-1.1	4.30	11.7	9.80	-2.7	3.38	-10.6	5.63	3.2	1.77	-8.1	6.96	-1.1	45.77	-1.0

* Including US territories.

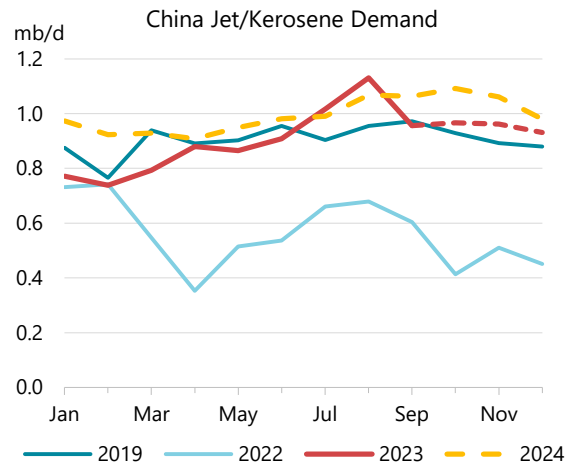
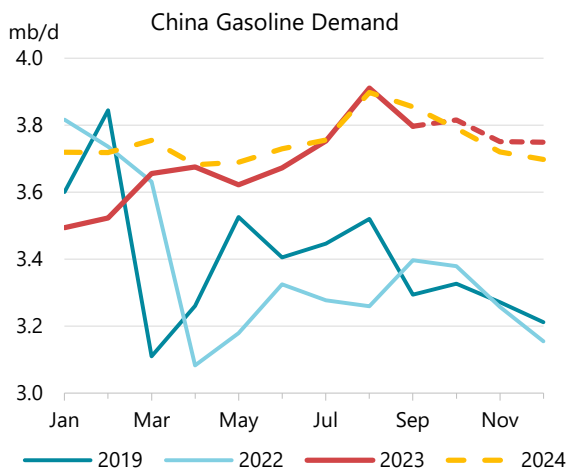
Non-OECD

Deliveries in non-OECD economies built on their recent resilience, climbing by 2.9 mb/d y-o-y in 3Q23. Robust consumption gains in China, of 2.4 mb/d y-o-y, accounted for the bulk of the quarterly increase, with smaller contributions coming from India (+230 kb/d) and the Middle East (+90 kb/d). These increases offset a collapse in Nigerian gasoline demand following the removal of pump price subsidies (-140 kb/d). Total average annual gains of 2.3 mb/d in 2023 and 1.3 mb/d in 2024 will also be largely China-driven.

China's apparent demand climbed by 200 kb/d m-o-m in September, as stronger net product imports combined with slightly higher refinery crude runs. Total consumption of 17.1 mb/d was up by 1.9 mb/d y-o-y and marked another all-time high (its fifth this year and fourth in a row, after earlier records in March, June, July and August). Total oil use is expected to average 16.4 mb/d in 2023, a rise of 1.8 mb/d, before growth slows to 640 kb/d in 2024. In addition to baselines normalising after 2023's release of pent-up demand, soaring electric vehicle sales and a slowdown in GDP growth will weigh on consumption for most products. The key exceptions are the petrochemical feedstocks, solidifying their status as China's principal engine of demand growth.



While all the main product categories contributed to China's 3Q23 y-o-y consumption gains of 2.4 mb/d, the biggest share came from gasoil (630 kb/d). This dovetails with 3Q23 GDP growth that came in at 4.9% y-o-y, surpassing expectations and suggesting that recent stimulus measures may be having some effect. However, although the official 5% annual GDP target is now likely to be attained, hopes for a lasting recovery may be premature, as China's property woes continue to deepen. Developer Country Garden teeters on the brink of default, while Evergrande appears to be heading for liquidation. Consumer prices remain deflationary amid tepid domestic demand, evidenced by September/October Golden Week holiday spending that missed expectations. External demand is equally listless, with exports falling y-o-y for a sixth straight month in October. Moreover, manufacturing PMIs remain sluggish: both the Caixin index and the official measure fell into contraction in October. Economic consensus sees China's economic growth slowing to 4.5% in 2024. In light of these headwinds, we see gasoil demand growth starting to decelerate in 4Q23 (-200 kb/d y-o-y), for average gains of 340 kb/d in 2023 before slowing further to 70 kb/d in 2024.



Gasoline demand declined by 110 kb/d m-o-m in September (+400 kb/d y-o-y), receding from August's all-time highs. Travellers made 826 million domestic trips during the eight-day Golden Week holiday, up 71.3% from a year ago and 4.1% higher than in 2019, according to data released by the Ministry of Culture and Tourism. While a record, this fell short of the Ministry's prediction of 896 million travellers. It also marks a slowdown from this year's Labour Day holiday in May and the Dragon Boat Festival in June, when travel was respectively 19.1% and 12.8% above pre-pandemic levels – suggesting that the release of pent-up travel demand has largely run its course. This ties in with an overall service sector slowdown – the *Caixin Services PMI* stabilised at 2023 lows in October

(50.4). Gasoline demand growth will average 330 kb/d y-o-y in 2023, before slowing to 50 kb/d in 2024 as 2023's mobility spike fades and EV sales continue their stellar growth pattern.

Jet/kerosene demand fell by 170 kb/d m-o-m in September (+350 kb/d y-o-y), a drop from last month's record highs that was well in excess of typical seasonal patterns. Air traffic saw only a moderate pickup around the holiday. International flights have stabilised at around 15% below pre-pandemic levels, as the weak yuan discourages overseas travel. Total average 2023 jet/kerosene deliveries of 910 kb/d are set to be virtually equal to those of 2019, supported by domestic flights. Similar to gasoline, demand growth will slow from 350 kb/d y-o-y in 2023 to 80 kb/d in 2024 – back in line with pre-pandemic trend growth.

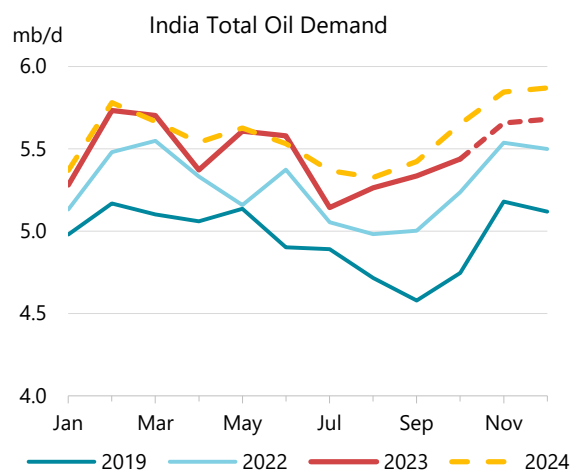
The petrochemical feedstocks deliveries continued their advance, with combined demand for LPG/ethane and naphtha climbing to an all-time high of 5.3 mb/d in September (in parallel, imports of LPG/ethane set a monthly record). At 1 mb/d y-o-y, the products will account for more than half of China's total demand growth in 2023. In 2024, that share will rise to almost 70% - a testament the sector's strategic importance, as the country continues to build out capacity and crowd out imports. Near-term profitability setbacks (propane dehydrogenation (PDH) operating rates reportedly fell to a multi-month low of 60% in October, amid weak production margins) are unlikely to dent a structural growth narrative that is relatively independent of economic activity or prices.

China: Demand by Product								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2021	2022	2023	2024	2023	2024	2023	2024
LPG & Ethane	1 943	2 116	2 537	2 686	422	148	19.9	5.8
Naphtha	1 577	1 817	2 405	2 698	588	293	32.4	12.2
Motor Gasoline	3 513	3 373	3 702	3 751	330	48	9.8	1.3
Jet Fuel & Kerosene	787	561	911	994	350	83	62.3	9.1
Gas/Diesel Oil	3 242	3 337	3 675	3 744	338	69	10.1	1.9
Residual Fuel Oil	545	592	601	595	9	- 6	1.5	-0.9
Other Products	3 480	2 867	2 609	2 617	- 258	8	-9.0	0.3
Total Products	15 088	14 662	16 440	17 084	1 778	644	12.1	3.9

Indian deliveries rose by 100 kb/d m-o-m in October (+200 kb/d y-o-y), largely driven by gasoil strength (+220 kb/d m-o-m and +160 kb/d y-o-y). This was in line with last month's estimate, with demand displaying its customary seasonal revival following the monsoon slump of the summer months.

Pump prices for gasoline and diesel have remained unchanged since June 2022. This price stability has contributed to steady consumption growth of about 6% in 2023 for both fuels. This is in line with Indian GDP growth. However, maintaining the country's extensive framework of price controls is set to

become more arduous in the face of volatile oil prices and a narrowing price discount of imported Russian crudes to the global market. The rupee fell to an all-time low against the US dollar in October, making for an even more challenging import environment. In view of this, and a generally more demanding economic climate, we see average demand growth of 200 kb/d in 2023 decelerating to 100 kb/d in 2024.



Electricity generation was the key driver of a strong recovery in **Middle Eastern** demand, as ultra-hot weather (temperatures soared above 50°C across **Saudi Arabia** and **Iraq**) sent grid loads to their seasonal peak. Cooling degree days in Saudi Arabia comfortably surpassed 2022 levels in July and August. Accordingly, the country's direct crude burn for power generation rose by 150 kb/d m-o-m (up 70 kb/d y-o-y) in August. Iraq's deliveries were equally strong, with fuel oil and direct crude burn up by 60 kb/d and 30 kb/d y-o-y, respectively. This propelled Iraq's total oil consumption to an all-time high of 1 mb/d in August. An increase in fuel oil deliveries (60 kb/d m-o-m and 10 kb/d y-o-y) also drove robust **Egyptian** oil consumption in August. As the country's rickety power grid struggled to cope with peak demand, power generation had to switch to fuel oil in the wake of a reduction in Israeli gas imports.

Non-OECD: Demand by Product

(thousand barrels per day)

	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2021	2022	2023	2024	2023	2024	2023	2024
LPG & Ethane	8 182	8 460	8 902	9 194	441	292	5.2%	3.3%
Naphtha	3 629	3 763	4 305	4 692	542	387	14.4%	9.0%
Motor Gasoline	12 090	12 360	12 825	13 052	466	226	3.8%	1.8%
Jet Fuel & Kerosene	2 150	2 319	3 005	3 028	687	23	29.6%	0.8%
Gas/Diesel Oil	14 224	14 837	15 236	15 515	399	279	2.7%	1.8%
Residual Fuel Oil	4 518	4 683	4 730	4 763	47	33	1.0%	0.7%
Other Products	7 887	7 417	7 108	7 134	- 309	26	-4.2%	0.4%
Total Products	52 679	53 839	56 112	57 378	2 273	1 267	4.2%	2.3%

Brazil's oil demand fell by 70 kb/d m-o-m in September (+60 kb/d y-o-y), largely on account of lower-than-seasonal gasoil use. Consumption growth has slowed since 2Q23 and is set to average 110 kb/d this year, before fading further to 60 kb/d in 2024 amid a worsening macro backdrop. GDP growth will slow from its current 3% to 1% according to consensus estimates, as the real's persistent strength and a stumbling Chinese economy hamper trade. Also, 2023 saw bumper crops in soybeans, corn, coffee and sugar which may not be repeated in 2024.

Argentina's oil demand growth was marginally negative in September at -20 kb/d m-o-m (-20 kb/d y-o-y). The country's sovereign bonds, stock market and currency fell sharply after the ruling coalition's presidential candidate scored a surprise win in the first round of voting. To the dismay of financial markets, this makes a continuation of Peronist economic policies more likely. In this regard, the acute fuel shortages that materialised at the end of October (after state oil company YPF was unable to raise US dollars to pay for oil shipments) do not portend well. We have downgraded our 2024 average demand growth forecast by 20 kb/d to -30 kb/d, declining further from -10 kb/d in 2023.

Non-OECD: Demand by Region

(thousand barrels per day)

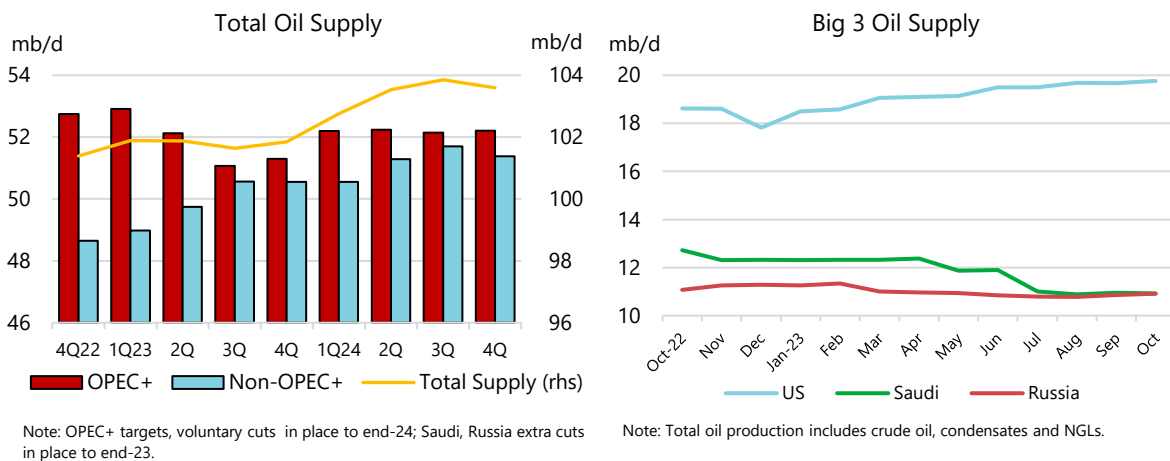
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2021	2022	2023	2024	2023	2024	2023	2024
Africa	4 045	4 276	4 214	4 353	- 62	139	-1.5	3.3
Asia	28 617	28 719	30 841	31 786	2 123	945	7.4	3.1
FSU	4 891	4 945	4 961	4 931	16	- 30	0.3	-0.6
Latin America	6 004	6 207	6 325	6 394	118	69	1.9	1.1
Middle East	8 351	8 907	8 988	9 118	81	130	0.9	1.4
Non-OECD Europe	771	785	783	796	- 2	13	-0.2	1.6
Total Products	52 679	53 839	56 112	57 378	2 273	1 267	4.2	2.3

Supply

Overview

Production growth in the United States and Brazil has been outperforming forecasts, helping to propel global oil supply higher by 1.7 mb/d to a record 101.8 mb/d in 2023. World oil supply is firmly on an upward trajectory, with October output up 320 kb/d to 102 mb/d, 140 kb/d above a year ago. Barring any unforeseen disruptions, non-OPEC+ producers will once again power global gains in 2024, projected at 1.6 mb/d, pushing supply to an unprecedented 103.4 mb/d.

There has been no material impact on oil supply flows from the war between Israel and Hamas that began on 7 October. Iran's call for an oil embargo on Israel has failed to gain traction and Saudi Arabia's Minister of Investment Khalid al Falih in early November ruled out using economic tools such as the oil price to achieve a ceasefire.



The world's top three oil producers – the United States, Saudi Arabia and Russia – have had mixed fortunes over the past year. The United States has shot ahead, with total oil supply in October roughly 1.2 mb/d higher than a year ago at 19.8 mb/d – nearly as much as Saudi Arabia and Russia pumped between them. For Saudi Arabia, OPEC+ cuts and sharp voluntary curbs have seen it shut in a massive 1.8 mb/d since last October, to 10.9 mb/d. Combined with rising US supply, the gap between the world's leading producers has widened by nearly 3 mb/d over the last year. Output in Russia was down 170 kb/d y-o-y in October at 10.9 mb/d.

For the year as a whole, the United States is forecast to deliver annual gains of 1.4 mb/d – boosting production to a fresh annual high of 19.3 mb/d. The world's top oil producer accounts for 80% of the total global supply expansion of 1.7 mb/d this year and makes up two-thirds of non-OPEC+ growth of 2.1 mb/d. US gains will slow to just 400 kb/d in 2024, but total oil supply, excluding biofuels, is projected to close in on the 20 mb/d mark. In 2024, the United States accounts for one-quarter of global supply gains and 30% of the anticipated non-OPEC+ increase of 1.3 mb/d.

The OPEC+ bloc is on course to post a 380 kb/d fall in output this year due to voluntary curbs from Saudi Arabia and lower targets for the group. Next year could see growth of 360 kb/d for the producer alliance if Riyadh were to phase out its additional cuts at the start of 2024. Conversely, OPEC+ could

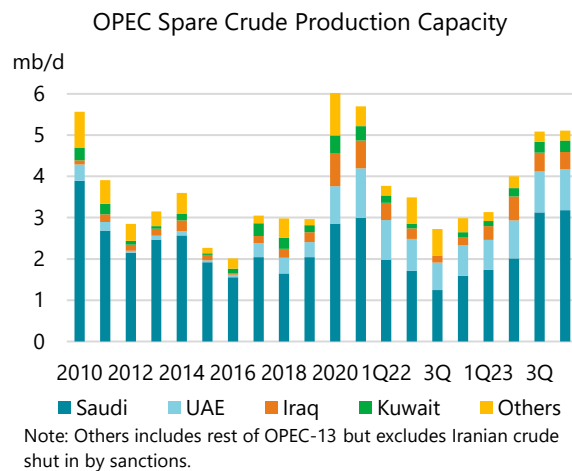
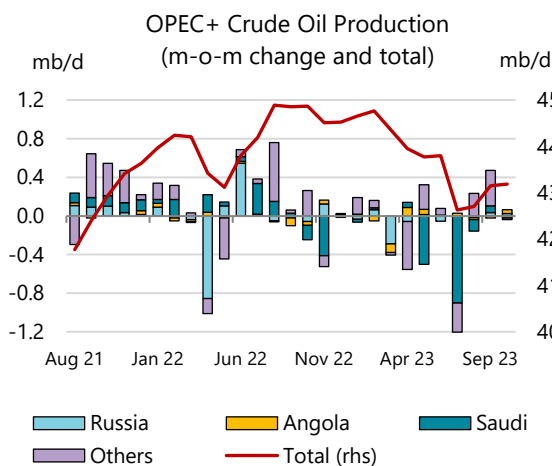
post a second year of contracting supply (-650 kb/d) if Saudi Arabia were to extend its extra curbs through to the end of 2024.

World Oil Production by Region (OPEC+ based on current agreement)											
(million barrels per day)											
	2022	1Q23	2Q23	3Q23	4Q23	2023	1Q24	2Q24	3Q24	4Q24	2024
Africa	7.1	7.2	7.1	7.2	7.3	7.2	7.2	7.2	7.2	7.2	7.2
Latin America	6.4	6.8	6.9	7.2	7.3	7.0	7.6	7.6	7.7	7.7	7.6
North America	25.7	26.7	26.9	27.4	27.6	27.1	27.4	27.6	27.8	27.8	27.7
China	4.2	4.3	4.3	4.2	4.2	4.3	4.4	4.4	4.3	4.3	4.3
Other Asia	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0	3.0
Europe	3.3	3.4	3.3	3.1	3.2	3.2	3.3	3.2	3.2	3.3	3.3
FSU	13.9	14.2	13.8	13.6	13.7	13.8	13.7	13.7	13.6	13.8	13.7
Middle East	31.1	31.2	30.8	29.9	29.9	30.5	30.9	30.9	30.9	30.9	30.9
Total Oil Production	94.8	96.9	96.3	95.7	96.3	96.3	97.6	97.7	97.7	97.9	97.7
Processing Gains	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Global Biofuels	2.9	2.7	3.3	3.6	3.2	3.2	2.8	3.4	3.7	3.3	3.3
Total Supply	100.1	101.9	101.9	101.6	101.8	101.8	102.8	103.5	103.8	103.6	103.4
OPEC Crude	29.1	29.4	28.9	28.0	28.1	28.6	28.9	29.0	28.9	28.9	28.9
OPEC NGLs*	5.4	5.5	5.5	5.6	5.6	5.5	5.6	5.6	5.6	5.6	5.6
Non-OPEC OPEC+	17.7	18.0	17.7	17.5	17.6	17.7	17.6	17.7	17.6	17.7	17.6
Total OPEC+	52.2	52.9	52.1	51.1	51.3	51.8	52.2	52.2	52.1	52.2	52.2
<i>Memo: Call on OPEC</i>	28.6	27.9	28.7	29.4	29.0	28.7	27.7	27.8	28.6	29.4	28.4

* Includes condensates reported by OPEC countries, oil from non-conventional sources, e.g. GTL in Nigeria and non-oil inputs to Saudi Arabian MTBE.

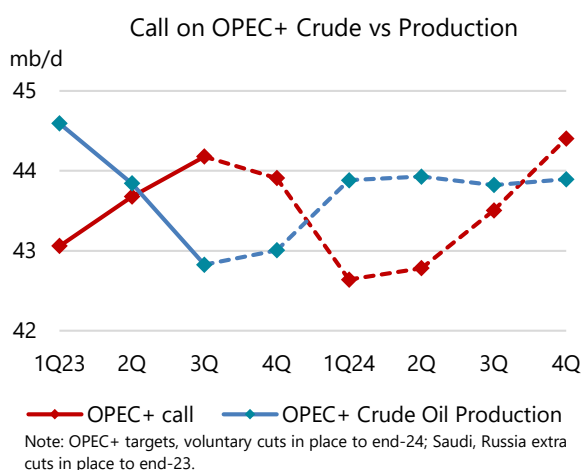
OPEC+ crude supply

OPEC+ crude oil output from all 23 member countries crept up 30 kb/d to 43.19 mb/d in October as increases from Angola, Iraq and Russia offset slight declines elsewhere. Supply from the 13 OPEC countries was steady at 28.21 mb/d, while flows from the 10 non-OPEC nations rose 30 kb/d to 14.98 mb/d. Overall output from the 19 producers subject to quotas was 400 kb/d below an implied target of 36.92 mb/d. That left the bloc's effective spare capacity, excluding sanctions-hit Iran and Russia, at 5.1 mb/d, with Saudi Arabia accounting for around 60% of the cushion. Barring the 2020-21 Covid-19 period, that's the highest surplus since 2010.



The producer bloc is due to gather for a full ministerial conference on 26 November in Vienna to review policy for the year ahead. At this point, it is unclear when and how Riyadh and Moscow will roll back their voluntary reductions that are in addition to a 2 mb/d cut to the OPEC+ output ceiling

in place since November 2022, and extra curbs of 1.7 mb/d from some members that started in May. On 5 November, Saudi Arabia reconfirmed that it would continue to pump crude at a restricted rate of around 9 mb/d until the end of 2023. Moscow also reiterated that it would retain its 300 kb/d export reduction through end-December. The two producers have said their extra cuts will be reviewed next month to decide whether to extend, deepen or increase them.



For the remainder of this year, the Kingdom's self-imposed supply cuts look set to keep the oil market in a significant deficit that could see the OPEC+ group pump 900 kb/d below the call on its crude. If Saudi Arabia were to stick with its cut through 1Q24, our balances suggest the market could still be in a slight surplus.

OPEC+ Crude Oil Production (excluding condensates)						
(million barrels per day)						
	Sep 2023 Supply	Oct 2023 Supply	Oct Prod vs Target	Oct 2023 Implied Target ¹	Sustainable Capacity ²	Cap vs Oct ³
Algeria	0.95	0.96	0.00	0.96	1.0	0.0
Angola	1.11	1.15	-0.31	1.46	1.1	0.0
Congo	0.25	0.26	-0.05	0.31	0.3	0.0
Equatorial Guinea	0.06	0.06	-0.06	0.12	0.1	0.0
Gabon	0.22	0.22	0.05	0.17	0.2	0.0
Iraq	4.34	4.38	0.16	4.22	4.7	0.4
Kuwait	2.59	2.57	0.02	2.55	2.8	0.3
Nigeria	1.35	1.35	-0.39	1.74	1.3	0.0
Saudi Arabia	9.03	9.01	0.03	8.98	12.2	3.1
UAE	3.25	3.25	0.38	2.88	4.2	1.0
Total OPEC-10	23.15	23.21	-0.17	23.38	27.9	4.8
Iran ⁴	3.14	3.10			3.8	
Libya ⁴	1.15	1.13			1.2	0.1
Venezuela ⁴	0.77	0.77			0.8	0.0
Total OPEC	28.21	28.21			33.8	4.9
Azerbaijan	0.49	0.49	-0.19	0.68	0.5	0.0
Kazakhstan	1.62	1.63	0.08	1.55	1.7	0.0
Mexico ⁵	1.66	1.67			1.7	0.0
Oman	0.80	0.80	0.00	0.80	0.9	0.0
Russia	9.50	9.53	0.08	9.45	10.0	
Others ⁶	0.88	0.85	-0.20	1.06	0.9	0.0
Total Non-OPEC	14.95	14.98	-0.24	13.54	15.6	0.2
OPEC+ 19 in Nov 2022 deal⁴	36.44	36.51	-0.40	36.92	41.8	5.0
Total OPEC+	43.16	43.19			49.3	5.1

1 Includes extra voluntary curbs where announced.

2 Capacity levels can be reached within 90 days and sustained for extended period.

3 Excludes shut in Iranian, Russian crude.

4 Iran, Libya, Venezuela exempt from cuts.

5 Mexico excluded from OPEC+ compliance.

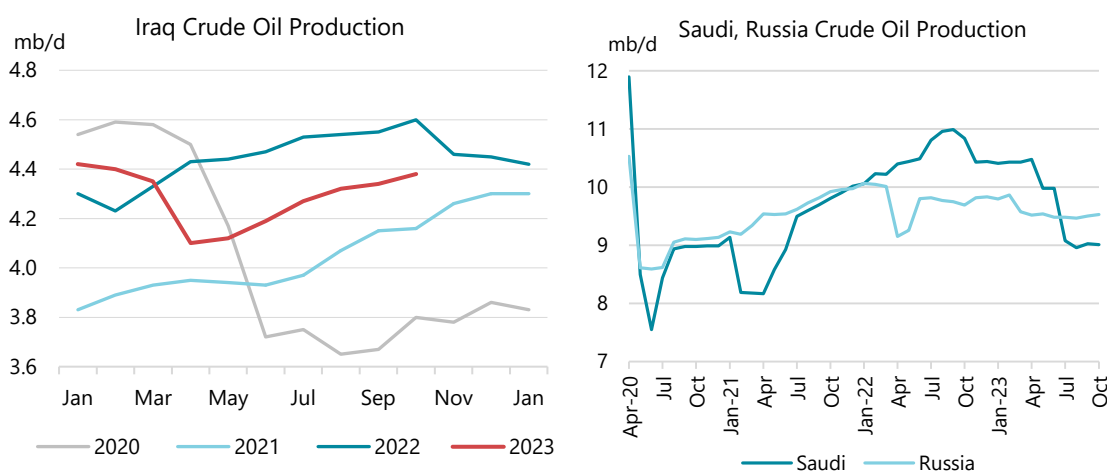
6 Bahrain, Brunei, Malaysia, Sudan and South Sudan.

Crude oil supply from **Saudi Arabia** was down 20 kb/d in October to 9.01 mb/d (-1.8 mb/d y-o-y) as lower refinery throughput due to maintenance appeared to offset higher shipments of crude oil to world markets. Riyadh's additional supply curbs, in effect since July, are meanwhile denting Saudi Aramco's earnings and affecting its budget. Aramco's 3Q23 net profit declined to \$32.6 bn from \$42.4 bn in 3Q22.

In early November, the state company revised its 2023 capex guidance to \$48-\$52 bn from \$45 bn-\$55 bn but said it will continue to invest to raise its crude production capacity to 13 mb/d by 2027. Expansion of the offshore Marjan and Berri oil fields will make up most of the 1 mb/d capacity increase. The Kingdom also reported a budget deficit of around \$9.5 bn in the third quarter compared with roughly \$1.4 bn in 2Q23. **Kuwaiti** crude oil output slipped to 2.57 mb/d and flows from the **UAE** were unchanged m-o-m at 3.25 mb/d, 380 kb/d above its implied quota. Supply from **Oman** was stable at 800 kb/d.

Iraqi production rose 40 kb/d in October despite a seven-month suspension of the Iraq-Türkiye export pipeline as more northern volumes appear to be moving into the domestic market. At 4.38 mb/d, crude output was 160 kb/d above Iraq's implied target. Just under 3.5 mb/d was exported from terminals in the Gulf, with some 15 kb/d trucked to Jordan. Shipments of around 450 kb/d from northern oil fields via the Iraq-Türkiye pipeline remained on hold as a dispute that also involves companies operating in the Kurdistan Regional Government (KRG) continued to simmer. Türkiye closed the pipeline in March due to an international arbitration ruling but has since declared the pipeline was technically ready to operate and restart exports. Iraq's oil minister Hayan Abdel-Ghani was reported as saying on 12 November that Baghdad has reached an "understanding" with Türkiye on oil shipments and he expects to strike an agreement with the KRG and foreign oil firms to restart output from the region's oil fields within three days.

In the south of the country, some progress is being made on development projects. Lukoil and Baghdad have agreed to extend the service contract for West Qurna-2 by 10 years to 2045 and gradually double capacity at the giant oil field to 800 kb/d. And after lengthy delays, Petronas is close to boosting capacity at Garraf to 230 kb/d. The southern oil field is pumping roughly 130 kb/d.



In **Iran**, crude oil supply declined 40 kb/d to 3.1 mb/d in October, along with lower exports. At the time of writing, *Kpler* tanker tracking data showed the country's oil shipments averaged around 1 mb/d, down sharply on the 1.4 mb/d-1.5 mb/d level that, with the exception of July, has been sustained since May. However, these preliminary data are often revised upwards. Most of Iran's oil exports are heading to China. The US House of Representatives in early November passed a bill to tighten sanctions on Iranian oil. It must be passed by the Senate and signed by President Joe Biden to become law. Before the former US administration withdrew from the Joint Comprehensive Plan of Action (JCPOA) in 2018, shipments of Iranian oil, including condensates, had been running above 2 mb/d. Official talks to revive the 2015 Iran nuclear deal, which would ease sanctions, have been on hold for more than a year. Tehran has meanwhile called for an oil embargo on Israel over the Gaza conflict, but OPEC has shown no signs of supporting such a move. Israel imports roughly 270 kb/d of oil mainly from Azerbaijan, Kazakhstan and African countries.

Russian crude output rose 30 kb/d to 9.53 mb/d in October. Moscow promised to curb oil exports by 300 kb/d from September through the end of 2023, but preliminary estimates show total crude and product exports of 7.5 mb/d compared with the May-June average of 7.6 mb/d. Shipments of just crude oil were 5 mb/d, in line with the May-June average. Total supply of crude, condensates and NGLs in October was 10.9 mb/d, up 50 kb/d m-o-m. For 2023, oil production is forecast to average 10.95 mb/d, down 140 kb/d y-o-y. **Kazakh** crude oil supply inched up to 1.63 mb/d in October. **Azeri** crude oil flows were unchanged at 490 kb/d.

Russian oil export volume and revenues ebb in October

Total Russian oil export volumes in October were barely changed, down just 70 kb/d on the month to 7.5 mb/d, while revenues fell \$25 million to \$18.34 billion. The first US Treasury sanctions imposed under the G7 price cap contributed to slightly weaker Russian crude prices in the latter half of the month due to rising shipping costs.

A 110 kb/d increase in seaborne volumes helped lift total crude exports to 5.04 mb/d and offset a decline in prices to boost seaborne crude revenues by 3.3% or \$280 million m-o-m, while higher pipeline prices (particularly to the EU) offset slightly lower volumes to boost overland revenues by 11% or \$360 million. Total crude export revenues were \$12.67 billion (+\$660 million y-o-y). Conversely, falling product prices deepened the impact of a 150 kb/d m-o-m drop in exports to cut revenues by \$690 million to \$5.67 billion (-\$620 million y-o-y).

Seaborne cargoes headed for Türkiye rose to 320 kb/d in October (+40 kb/d m-o-m). Cargoes destined for India rose 90 kb/d m-o-m to 1.64 mb/d, offsetting an equivalent drop to China, to 2.1 mb/d. Loadings for other known destinations fell by 200 kb/d over the month, including 90 kb/d less to the European Union, but volumes heading to unknown destinations (eventually reallocated once ships have discharged) rose by an equivalent amount.

Russian Oil Exports (mb/d)															
	EU	UK+US	Türkiye	China	India	OECD Asia	Middle East	Africa	L.America	Other	Unknown	Total	Crude	Products	Export Revenue \$bn
2021 avg	3.4	0.7	0.2	1.6	0.1	0.5	0.1	0.1	0.1	0.8	0.0	7.5	4.6	2.9	15.8
2022 avg	3.1	0.2	0.4	1.9	0.9	0.2	0.2	0.1	0.1	0.7	0.0	7.7	5.0	2.7	19.6
Sep 2022	2.6	0.0	0.6	1.9	1.1	0.0	0.2	0.2	0.1	0.8	0.0	7.5	4.9	2.6	16.2
Oct 2022	2.5	0.0	0.6	2.0	1.2	0.1	0.2	0.2	0.1	0.9	0.1	7.8	5.0	2.8	18.3
Nov 2022	2.3	0.0	0.5	2.0	1.5	0.1	0.3	0.2	0.1	0.8	0.0	7.8	4.9	3.0	17.0
Dec 2022	2.0	0.0	0.4	2.1	1.7	0.1	0.2	0.3	0.0	0.8	0.0	7.6	4.6	2.9	14.0
Jan 2023	1.4	0.0	0.5	2.6	1.8	0.0	0.3	0.4	0.1	0.9	0.0	8.0	5.1	2.9	15.0
Feb 2023	0.5	0.0	0.5	2.5	1.9	0.0	0.4	0.5	0.1	1.0	0.0	7.6	4.9	2.7	12.3
Mar 2023	0.6	0.0	0.6	2.2	2.3	0.1	0.5	0.5	0.2	1.0	0.1	8.1	4.9	3.2	14.1
Apr 2023	0.5	0.0	0.6	2.6	2.2	0.1	0.5	0.4	0.2	0.8	0.0	8.0	5.0	3.0	15.0
May 2023	0.5	0.0	0.7	2.4	2.3	0.0	0.4	0.3	0.2	1.0	0.0	7.9	5.2	2.8	13.9
Jun 2023	0.5	0.0	0.7	2.3	1.8	0.0	0.5	0.3	0.2	0.9	0.0	7.3	4.8	2.5	12.9
Jul 2023	0.5	0.0	0.7	2.2	1.8	0.0	0.5	0.4	0.2	0.9	0.1	7.3	4.6	2.7	15.3
Aug 2023	0.6	0.0	0.7	2.1	1.8	0.1	0.3	0.4	0.2	0.9	0.0	7.1	4.6	2.4	16.8
Sep 2023	0.6	0.0	0.7	2.4	1.9	0.0	0.3	0.3	0.2	0.9	0.2	7.6	4.9	2.6	18.4
Oct 2023	0.6	0.0	0.7	2.4	1.8	0.0	0.1	0.4	0.2	0.9	0.4	7.5	5.0	2.5	18.3
M-o-M chg	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	0.1	-0.1	0.1	0.2	-0.1	0.1	-0.2	0.0
Y-o-Y chg	-1.9	0.0	0.1	0.4	0.6	0.0	-0.1	0.2	0.1	0.1	0.3	-0.3	0.0	-0.3	0.0

Sources: IEA, Argus Media Group, Kpler.

Note: Data in this table were derived by granular analysis and estimates of country of origin data in cases where shipments transit via third countries. They may differ from customs information due to calculation methodology and estimates updates.

Product exports fell during October. The largest decline impacted cargoes for the Middle East (-180 kb/d m-o-m to 130 kb/d) but volumes also eased to India (-120 kb/d m-o-m), China (-50 kb/d m-o-m) and

Türkiye (-40 kb/d), according to preliminary data from *Kpler*. The decline in product exports was mostly accounted for by fuel and feedstocks (-110 kb/d m-o-m to 960 kb/d) and by gasoline (-30 kb/d m-o-m to 160 kb/d), while gasoil exports rose by just over 10 kb/d to 740 kb/d. A decline in Russian refinery throughputs and pressure to lift domestic product deliveries likely contributed to exports falling for product but rising for crude. The concentration of that loss in fuel and feedstocks may reflect an effort to sustain light product output in spite of lower refinery crude runs by feeding conversion capacity.

On 12 October, the US Treasury's Office of Foreign Assets Control (OFAC) imposed its first blocking sanctions on vessels and owners (two oil tankers and their registered Turkish and UAE-based owners) for breaching the price cap because they used US-based services while carrying Russian crude sold above the price cap. OFAC also issued an alert "to warn US persons about possible evasion of the price cap on crude oil of Russian Federation origin..." In parallel, the "Price Cap Coalition" issued its own advisory to "enhance compliance with the price caps". The US sanctions imposed against non-Russian entities and third-country individuals underline the reach of Washington's programme.

Following the announcement, Russian crude freight costs for the Baltic to West Coast India route rose by over 35% (*Argus* assessment), from \$7.40/bbl in early October to over \$10/bbl by end-month. Freight costs were last at this level in May 2023 before declining as shadow tanker capacity rose.

Russian crude price discounts versus North Sea Dated continued to narrow into October, but rising freight rates after mid-month reversed the trend, ending \$2/bbl weaker. *Argus* assessed those for Baltic Urals as relatively flat on the month, but tighter for Urals from Novorossiysk by \$0.65/bbl to -\$12.35/bbl and for ESPO by \$0.38/bbl to -\$6.83/bbl. Taken on a trade weighted average basis across all crude export streams, the Russian crude price discount narrowed by \$1.71/bbl m-o-m to -\$10.46/bbl versus September as more Urals crude loaded in the first half of the month when prices were more favourable. While Dated prices lost -\$2.84/bbl over the month, the weighted average Russian crude price lost less than half that amount at -\$1.13/bbl.

	Russian Crude FOB Export Prices (\$/bbl)					Discounts to N.Sea Dated		
	Aug-23	Sep-23	Oct-23	Aug-Sep	Sep-Oct	Aug-23	Sep-23	Oct-23
North Sea Dated	86.18	93.96	91.12	7.78	-2.84			
Price Cap	60.00	60.00	60.00					
Russia Wtd Avg	73.77	81.79	80.66	8.02	-1.13	-12.41	-12.17	-10.46
Urals FOB Primorsk	70.96	80.25	77.39	9.29	-2.86	-15.22	-13.71	-13.73
Urals FOB Novorossiysk	71.16	80.96	78.77	9.80	-2.19	-15.02	-13.00	-12.35
ESPO FOB Kozmino	78.52	86.75	84.29	8.23	-2.46	-7.66	-7.21	-6.83

Sources: *Argus Media Group*, *Kpler*. Russia Weighted Average for Urals from Baltic and Blacks Sea, Siberian Light and Espo.

All Russian product prices declined over the month, with gasoline suffering the largest loss. On a monthly average basis, diesel, naphtha and fuel oil prices exceed their respective G7 product price caps. Weaker crude prices were the main driver of the fall in Russian product prices. Russian VGO and HSFO cracks fell almost in-line with global price trends while those for middle distillates lagged the decline of their international counterparts by around \$1.70/bbl and for gasoline by roughly \$1/bbl. The US OFAC actions do not appear to have had a direct impact on Russian product cracks, with the flat price reflecting developments for crude.

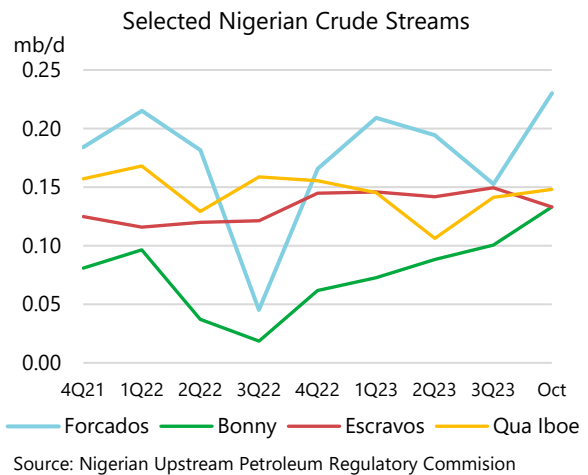
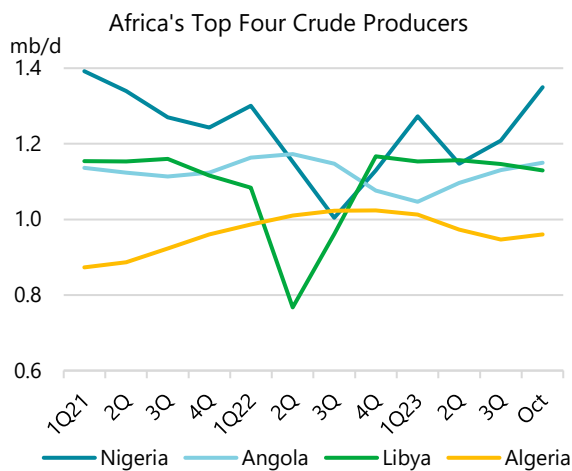
Russian government fiscal revenues from oil rose 2.4% m-o-m in October to \$10.9 bn, up 13% versus October 2022. The gains roughly reflect price and volume trends for Russian crude and products with a one- to two-month lag. The lower prices and weaker rouble in October 2023 will appear in the revenues for November. Export duty payments (representing around 5% of total fiscal receipts) rose 29%, as prices surged over September and October. The Mineral Extraction Taxes (MET) rose 1.2% m-o-m,

remaining over \$10 billion. The IEA's estimate of slightly lower export revenues in October signals a possible decline in fiscal earnings next month.

Russian FOB Export Prices (\$/bbl)											
	Aug-23	Sep-23	Oct-23	Aug-Sep	Sep-Oct		Aug-23	Sep-23	Oct-23	Aug-Sep	Sep-Oct
Premium Products					Discounted Products						
Ref. Price	113.42	119.12	110.76	5.70	-8.36	Ref. Price	79.88	84.38	74.84	4.50	-9.54
Price Cap	100.00	100.00	100.00			Price Cap	45.00	45.00	45.00		
Avg Price	92.34	98.28	89.99	5.95	-8.30	Avg Price	55.92	59.62	51.36	3.70	-8.26
Gasoline	92.85	92.26	74.94	-0.59	-17.32	Naphtha	47.85	52.64	51.82	4.79	-0.82
Diesel	103.98	112.40	106.53	8.42	-5.87	Fuel Oil	59.40	62.82	51.21	3.42	-11.61
Gasoil	99.20	107.44	99.35	8.24	-8.09	Sources: Argus Media Group, Kpler.					
VGO	63.41	72.25	67.93	8.84	-4.31	Note: Weighted avg prices from Baltic and Black Sea ports.					

Combined output from African members of OPEC+ increased 30 kb/d in October due to gains of 40 kb/d in **Angola**. Output in **Nigeria** held steady in October at 1.35 mb/d, with major exports streams continuing to run at comparatively robust rates. Production of Bonny Light increased by 10 kb/d to 130 kb/d, while Forcados dipped by around 20 kb/d to 230 kb/d.

Exports next month look set to decline as the Nigerian National Petroleum Corp (NNPC) reportedly will supply the country's new 650 kb/d Dangote refinery with up to six cargoes of crude, roughly 200 kb/d, for test runs. The crude distillation unit has been configured to run on Forcados, Bonny Light and Escravos. NNPC has meanwhile launched Nembe crude, which was running at around 20 kb/d in October. Output in **Algeria** bumped up to 960 kb/d. **Libyan** crude oil production dipped to 1.13 mb/d.

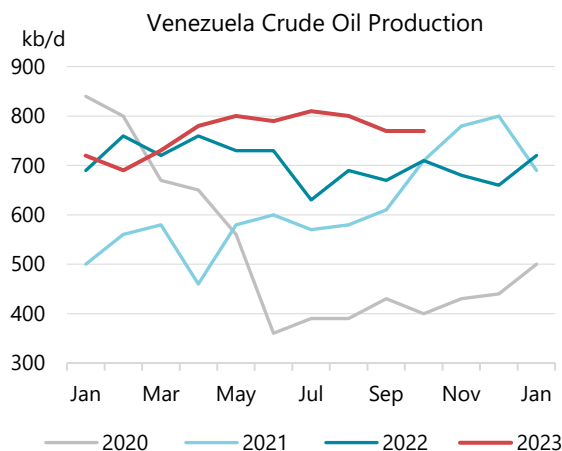


Supply in **Venezuela** was unchanged m-o-m at 770 kb/d. So far this year, crude oil production has been running at around 770 kb/d – up 70 kb/d compared to 2022. The increase is mainly due to Chevron's return after Washington granted it a license last year that allowed the US company to restart operations at four joint ventures where it is a minority partner.

On 18 October Washington announced that it is easing sanctions on Venezuela's energy sector for six months in response to a 2024 election deal reached between Caracas and the country's opposition.

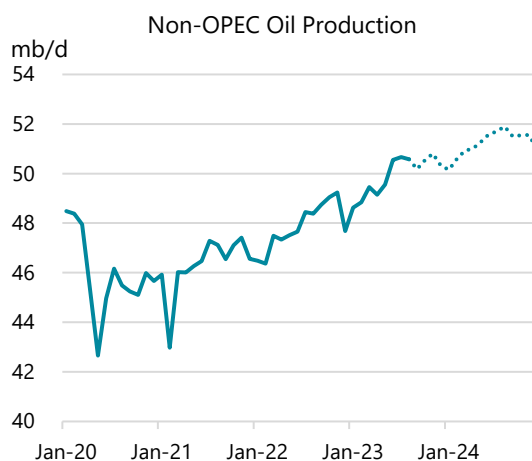
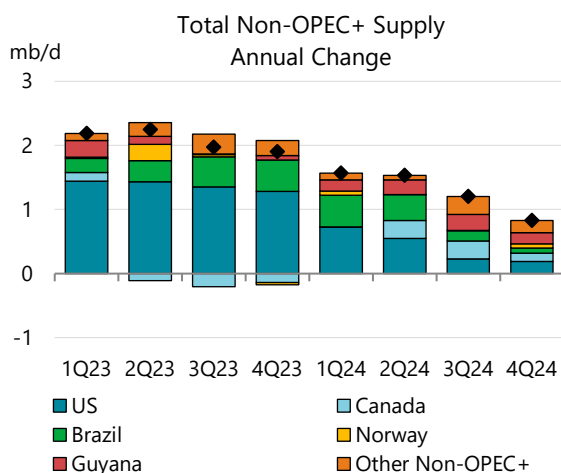
Following the easing of US sanctions, Petroleos de Venezuela and its joint venture partner Maurel & Prom signed an agreement aimed at boosting crude and gas output. The terms of the deal, featuring Lake Maracaibo, were negotiated before the US eased sanctions last month.

We do not foresee significant upside in the short-term – potentially 100-200 kb/d with the help of foreign oil companies over the next year or two. Crude oil production capacity is now constrained by long overdue maintenance and only modest operational improvements. Any material increase will take time and substantial investment. The most immediate impact could be that more of Venezuela’s exports shift away from China – its main destination – and into Europe and the US Gulf Coast.



Non-OPEC+

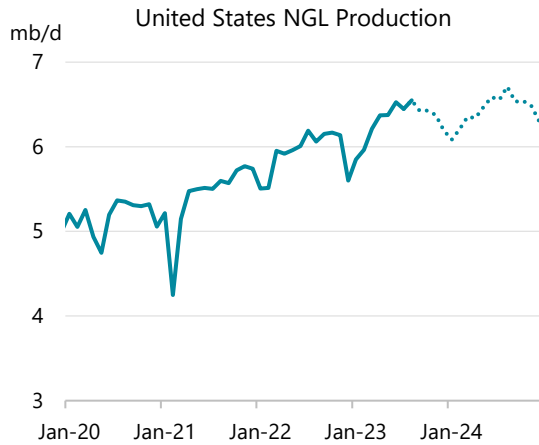
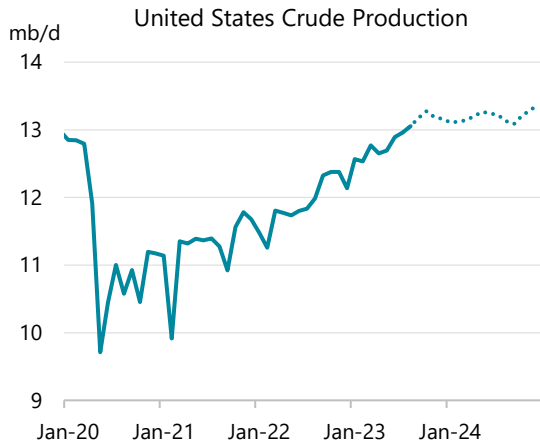
Non-OPEC+ supply rose by 260 kb/d m-o-m to 50.5 mb/d in October as Canadian production rebounded after oil sands maintenance, US production continued to creep higher in the absence of hurricane impact in the Gulf of Mexico (GoM) and as UK volumes increased. Non-OPEC+ output averaged 50.6 mb/d over the third quarter – up 2 mb/d from 3Q22 and 820 kb/d above the previous quarter – with both the United States and Brazil reaching all-time highs. For the year as a whole, the two countries are set to account for 85% of non-OPEC+ supply growth and 55% of next year’s gains. Non-OPEC+ production is forecast to rise by 2.1 mb/d to 50 mb/d this year and by a further 1.3 mb/d in 2024.



October also saw a second mega-merger in the upstream oil and gas industry, with Chevron’s proposed \$53 billion all-stock acquisition of Hess. Should the deal be approved, the US-based supermajor would gain significant exposure to Guyana through Hess’s interest in the ExxonMobil operated Stabroek block, Bakken light tight oil (LTO) and an expanded US GoM footprint. The purchase would also diversify a portfolio that had in recent years been concentrated in Kazakhstan, the US Permian Basin and Australian LNG. The deal follows ExxonMobil’s announcement in early October that it will merge with Pioneer Natural Resources.

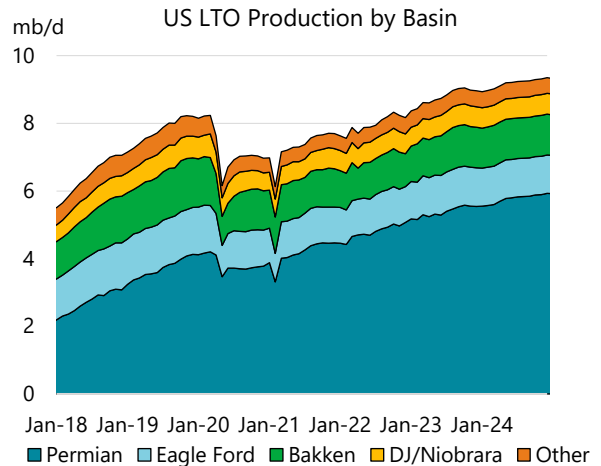
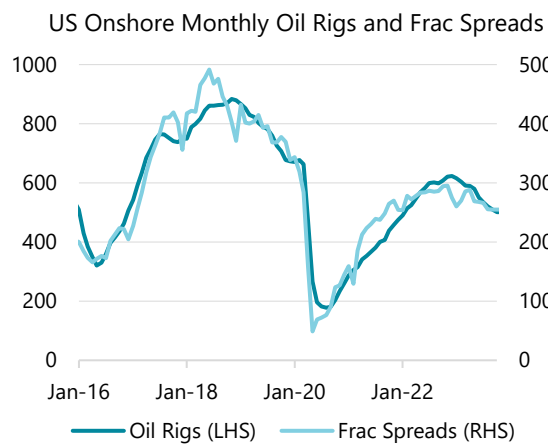
Neither the Chevron nor ExxonMobil deals are expected to have a material impact on short-term oil supply, in part due to approval and integration timelines but also statements from management regarding pro forma production profiles and asset disposals.

In August, the last month for which official data from the Energy Information Administration (EIA) is available, total **US** oil supply rose by 180 kb/d to a record 19.7 mb/d, with both crude oil and NGLs reaching all-time highs of 13.1 mb/d and 6.5 mb/d, respectively. Crude production increased by 90 kb/d, with Lower-48 growth of 140 kb/d more than offsetting a 40 kb/d decline in GoM output. NGL volumes rose by 100 kb/d, with close to half of the gains from associated Permian wet gas.



Following a dip of 20 kb/d in September, US supply is estimated to have rebounded by 100 kb/d in October, in part due to a lack of hurricane impacts. While the US hurricane season normally runs through November, the National Oceanic and Atmospheric Administration is not expecting any storms around GoM operations. From January to October, US total oil supply rose by 1.3 mb/d with LTO accounting for 680 kb/d.

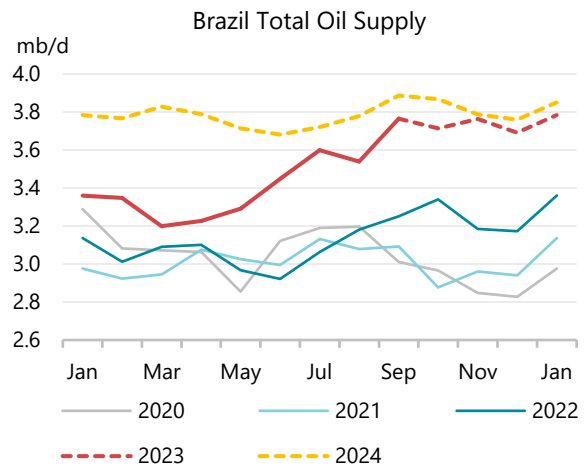
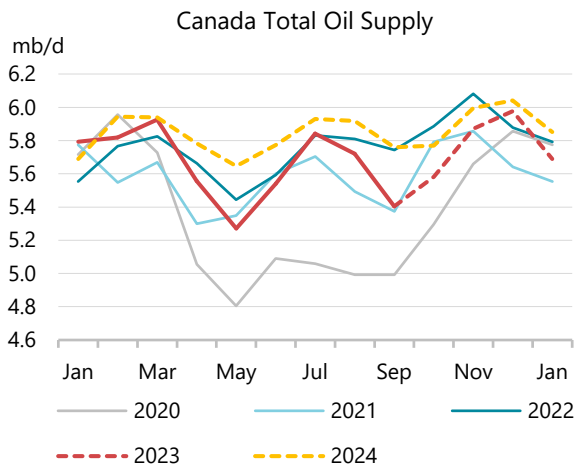
Assessed US light tight oil production has been adjusted higher both this year and next, by 30 kb/d, due to recent strong results. Heading into the fourth quarter and next year, lower rig counts and frack spreads will limit shale growth as capital restraint, higher costs and producer consolidation throttle activity levels. LTO is forecast to increase 810 kb/d this year and 400 kb/d in 2024.



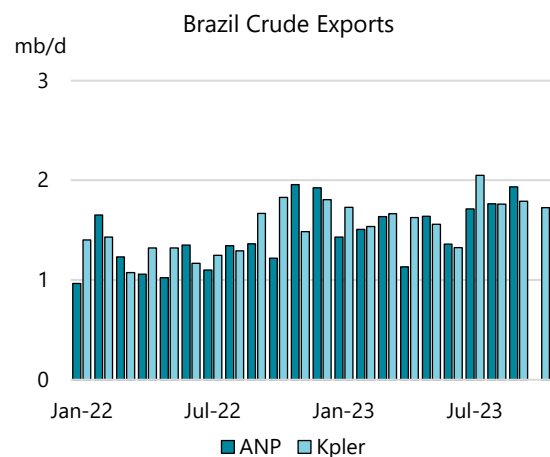
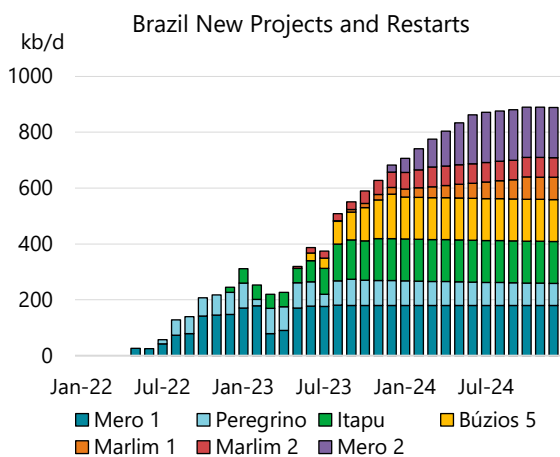
Sources: Primary Vision, Baker Hughes.

Canadian oil supply rebounded by an estimated 220 kb/d to 5.6 mb/d in October after oil sands output returned from maintenance and production at Hebron recovered from a September outage.

In September, production fell by 200 kb/d as maintenance curbed upgrader output, based on data from Suncor and from the Alberta Energy Regulator, and as Hebron volumes were reduced. For 2023, supply is forecast to fall by 80 kb/d y-o-y to 5.7 mb/d. Next year will see growth of 170 kb/d to 5.8 mb/d as new smaller mining and in situ projects ramp up and facilities continue to optimise operations, while Terra Nova in the Atlantic Offshore restarts after having been offline since late 2019. Additional takeaway capacity from Alberta is expected to come online in 2Q24 when the Trans Mountain Expansion Project (TMX) begins commercial operations with a new 590 kb/d line to Canada's west coast.



Brazilian output fell by 50 kb/d m-o-m to 3.7 mb/d in October based on provisional daily data from the Agencia Nacional do Petroleo (ANP) and export data from *Kpler*. This follows official September ANP data showing supply rose by 210 kb/d to a record high 3.8 mb/d. The six new floating production, storage and offloading (FPSO) vessels brought online since the start of 2022 continue to ramp up and operate with high production efficiency. Exports averaged 1.8 mb/d in 3Q23, according to official ANP data, up 350 kb/d (25%) from 1H23 and 530 kb/d (40%) from a year ago. Annual supply is expected to increase by 380 kb/d this year to 3.5 mb/d and by 300 kb/d in 2024 to reach 3.8 mb/d.



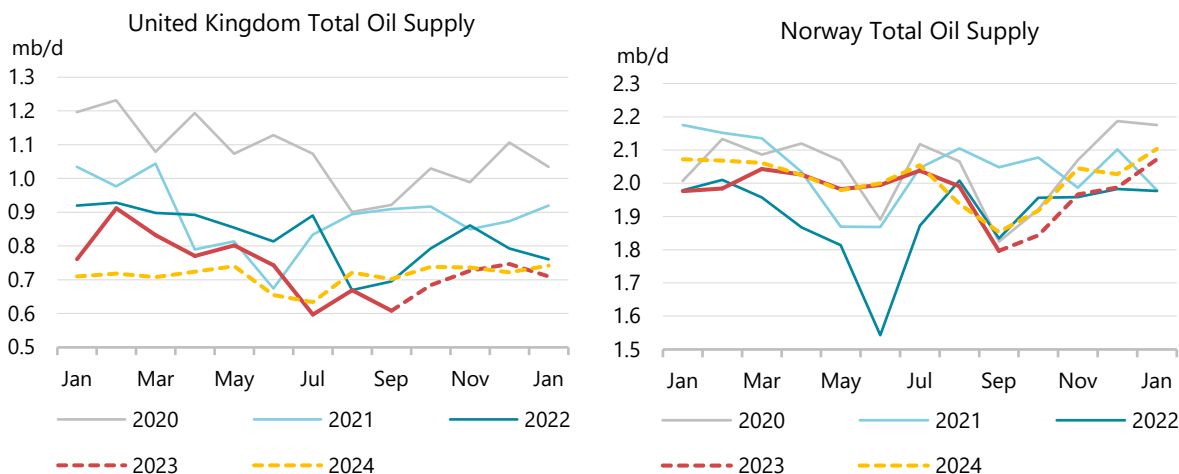
Note: Actual data through Sept 2023. Forecast includes ramp up to capacity.

Sources: ANP, Kpler Terminal, IEA.

Argentinean supply held steady at 760 kb/d in October after rising by 15 kb/d last month. While fracking activity continues apace in the Neuquén basin, oil production growth has stalled so far this year as operators have been targeting both liquid and gas-rich wells. As gas takeaway capacity becomes more limited in the Neuquén basin, and based on stated plans by operators, liquid-rich

targets are set to regain focus. Output from the basin is forecast to push output to 780 kb/d by the end of the year to average 760 kb/d annually. Next year sees further increases of 30 kb/d.

UK production rose by 80 kb/d in October to 680 kb/d. Through the end of the year, volumes will increase by another 60 kb/d to exit 2023 at 750 kb/d – 40 kb/d below last year's exit rate. October saw the UK North Sea Transition Authority (NSTA) award 27 oil and gas licenses to support energy security. The NSTA estimates that it takes an average of five years from licensing to first production. In early November, BP's delayed Seagull project started up. The project targets 50 million barrels of oil equivalent with its estimated 35 kb/d of liquids production feeding into the Forties grade. Oil supply is expected to fall by 100 kb/d this year and by 30 kb/d in 2024.



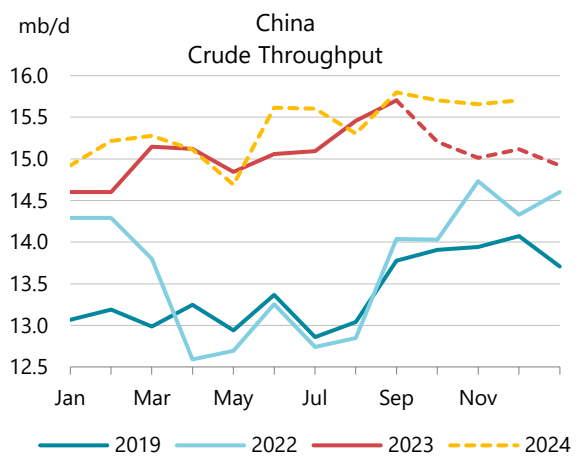
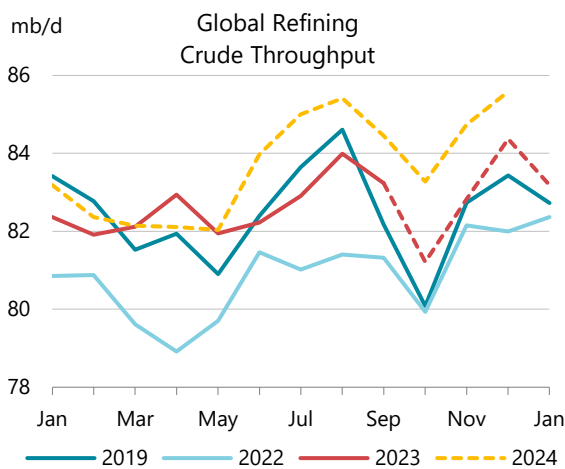
Data from the **Norwegian** Petroleum Directorate show that production fell by 200 kb/d to 1.8 mb/d in September as volumes were taken offline for maintenance from the Ekofisk, Troll-Oseberg and Statfjord systems. October supply rose by 50 kb/d as returning production from those fields was offset by lower Johan Sverdrup output. In addition to the recently announced Breidablikk field start-up, BP reached first oil ahead of schedule on a second Alvhheim (33 API) tie-in project this year. The Kobra East and Gekko (KEG) project will help sustain production capacity at the FPSO through the next decade. Equinor also announced plans for a third phase at Johan Sverdrup, extending the production plateau out further than the currently expected 2025. Norwegian annual output is forecast to rise 70 kb/d to 2 mb/d this year and by 30 kb/d in 2024.

Chinese September production was flat on the month and averaged 4.2 mb/d in the third quarter, down 140 kb/d from the first half of 2023, according to official data from the National Bureau of Statistics. Last month, PetroChina and the Chinese National Offshore Oil Company (CNOOC) both announced increases to their 2023 capital budgets. PetroChina raised its budget by 13% over its original \$33.3 bn target, while CNOOC increased its capital expenditure plans by 19% to a range of \$16.4 - \$17.8 bn. Both companies stated the budget increases will be used to facilitate reserve growth and future production. Chinese supply is forecast to grow 100 kb/d this year to 4.3 mb/d and by an additional 60 kb/d in 2024.

Refining

Overview

Global refining crude throughputs will rise to a new annual peak of 84.2 mb/d by December, from their October trough of 81 mb/d. September global crude runs are now estimated to have averaged 83.1 mb/d, 900 kb/d above last month's *Report*, as Chinese runs reached a record of 15.7 mb/d, while OECD refining activity of 36.6 mb/d was 500 kb/d higher than our earlier estimate. China's outsized impact on annual growth will fade as we head into 2024. This year, China accounts for 1.5 mb/d of the 1.9 mb/d increase. This 75% share of growth is expected to drop to 30% next year, as new capacity ramps up in other regions.



Our 2023 and 2024 forecasts are raised by around 160 kb/d this month, to 82.6 mb/d and 83.6 mb/d, respectively. Annual growth in crude runs for next year is unchanged at 1 mb/d, broadly in line with forecast demand growth.

Global Refinery Crude Throughput ¹														
(million barrels per day)														
	2019	2020	2021	2022	3Q23	Sep-23	Oct-23	Nov-23	Dec-23	4Q23	Jan-24	1Q24	2023	2024
Americas	19.1	16.6	17.7	18.7	19.3	19.1	17.9	18.9	19.0	18.6	18.4	18.0	18.7	18.4
Europe	12.2	10.7	11.0	11.5	11.7	11.7	11.5	11.6	11.7	11.6	11.6	11.1	11.4	11.3
Asia Oceania	6.8	5.9	5.8	6.1	5.7	5.8	5.7	6.1	6.3	6.1	6.1	6.1	5.9	5.9
Total OECD	38.1	33.1	34.5	36.3	36.8	36.6	35.0	36.6	37.0	36.2	36.1	35.2	36.1	35.6
FSU	6.9	6.5	6.8	6.5	6.6	6.5	6.2	6.6	6.7	6.5	6.6	6.6	6.6	6.7
Non-OECD Europe	0.5	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
China	13.4	13.7	14.4	13.6	15.4	15.7	15.2	15.0	15.1	15.1	14.9	15.1	15.1	15.4
Other Asia	10.4	9.4	9.7	10.2	10.1	9.9	10.2	10.1	10.7	10.3	11.0	10.9	10.5	10.8
Latin America	3.2	3.0	3.3	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.6	3.5
Middle East	7.9	7.1	7.8	8.3	8.6	8.7	8.7	8.7	9.0	8.8	8.9	9.0	8.6	9.3
Africa	2.0	1.9	1.8	1.8	1.6	1.7	1.6	1.7	1.7	1.7	1.6	1.7	1.7	2.0
Total Non-OECD	44.3	42.0	44.1	44.4	46.5	46.5	46.0	46.1	47.2	46.4	47.0	47.3	46.5	48.0
Total	82.4	75.1	78.6	80.7	83.3	83.1	81.0	82.7	84.2	82.6	83.1	82.5	82.6	83.6
Year-on-year change	-0.1	-7.2	3.5	2.1	2.1	1.9	1.2	0.6	2.3	1.4	0.8	0.4	1.9	1.0

¹ Preliminary and estimated runs based on capacity, known outages, economic runcuts and global demand forecast.

New capacity coming online includes Oman's 230 kb/d Duqm refinery, which is currently increasing production. Meanwhile, crude allocations are being discussed for Nigeria's mega 650 kb/d Dangote

refinery, indicating that processing should commence in earnest in 2024. The ramp up Africa's largest refinery is expected to be slow. The prospect of this additional capacity in crude exporting countries will further reshape both crude and product market flows and present a challenge to those refineries that lack scale, a protected domestic market, or sit at the high-end of the industry cost curve.

Product cracks and refinery margins

Refining margins were materially weaker in October versus September, falling by \$4-6/bbl m-o-m in Singapore, \$7-9/bbl in Europe and by around \$11/bbl on the US Gulf Coast, (USGC). Most regions saw a return to profitability levels seen in late 2Q23. These monthly declines were among the highest registered since 2010, with only July and November 2022 seeing larger m-o-m drops for most markets. Ostensibly, the late-September collapse in gasoline cracks drove much of the weaker margin environment, but so too, declines in middle distillate cracks of \$5-6/bbl compounded the impact of gasoline's weakness.

IEA Global Indicator Refining Margins										
\$/bbl	Monthly Average				Change Sep - Oct	Average for week starting:				
	Jul 23	Aug 23	Sep 23	Oct 23		09 Oct	16 Oct	23 Oct	30 Oct	06 Nov
NW Europe										
Light sweet hydroskimming	8.24	14.96	12.36	4.76	-7.60	4.96	4.65	4.96	5.77	6.40
Light sweet cracking	10.82	18.58	16.57	8.95	-7.63	9.18	8.71	9.13	10.04	10.62
Light sweet cracking + Petchem	9.99	17.99	16.02	9.11	-6.91	9.68	8.72	9.15	10.62	11.30
Medium sour cracking*	16.00	25.35	23.38	14.23	-9.15	14.57	13.90	13.72	16.05	17.94
US Gulf Coast										
Light sweet cracking	23.51	30.40	23.53	12.40	-11.13	12.38	12.46	10.31	11.55	12.19
Medium sour cracking	26.58	35.19	30.55	20.14	-10.42	20.36	20.45	17.58	19.05	18.93
Heavy sour coking	32.59	43.60	38.46	27.26	-11.21	27.17	27.18	24.90	27.84	27.94
Singapore										
Light sweet cracking	5.99	11.93	8.89	4.49	-4.40	4.67	3.85	4.83	5.80	7.32
Light sweet cracking + Petchem	6.73	12.34	9.24	5.23	-4.01	5.46	4.54	5.58	6.75	8.33
Medium sour cracking	7.91	14.77	12.31	6.67	-5.64	7.89	5.71	5.43	6.19	7.06
Medium sour cracking + Petchem	8.63	15.17	12.65	7.40	-5.25	8.66	6.39	6.17	7.12	8.05

Note: Mediterranean and US Midcontinent margins are available in Table 15 of this Report.

Source: IEA/Argus Media Group prices.

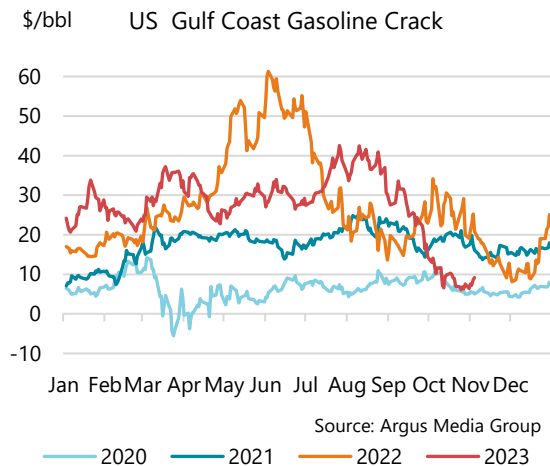
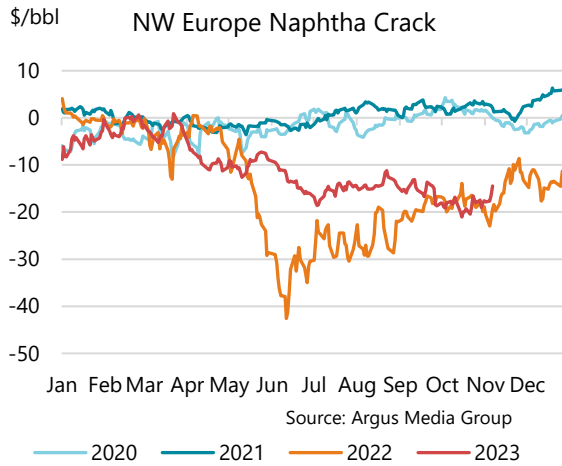
Methodology notes are available at <https://www.iea.org/topics/oil-market-report#methodology>

*From 1/12/2022, the basis has changed from Urals NWE to Argus Brent Sour

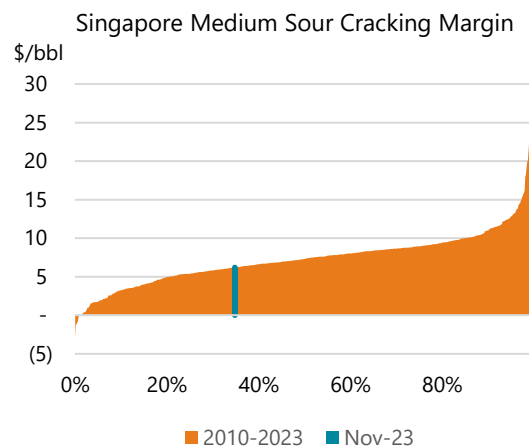
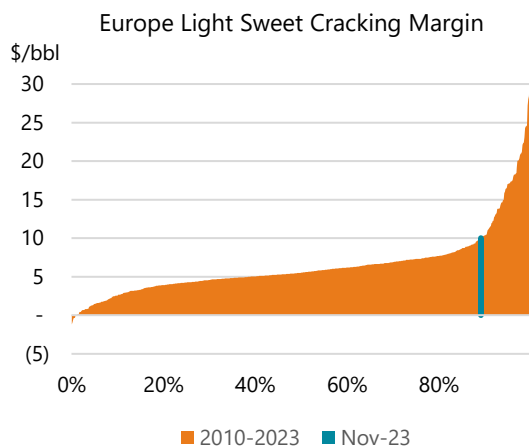
In a testament to the extraordinary levels of light and middle distillate cracks witnessed in the third quarter, margins were not only still above the five-year average in October, but, when measured against the period since 2010, many were still above the 75th percentile. The collapse in gasoline cracks – to levels not seen since late 2020 – nevertheless removed a key support to these exceptional margins. But margins remain robust, underpinned by resilient diesel and jet fuel cracks. Naphtha and fuel oil cracks remain depressed and have weighed further on margins, helping to bring them back into the five-year range.

Regionally, USGC refining margins fell the most, with cracking margins down \$10-11/bbl versus September. Similarly, heavy sour coking margins were \$11/bbl weaker on average m-o-m. The deterioration in US refining margins reflects the country's higher gasoline yield relative to Europe and Asia Oceania refineries. So far this year, US refining's gasoline yield has averaged 43%; more than double Europe and Asia Oceania's 21% average yield. Conversely, the US margin structure typically benefits from a lack of exposure to naphtha (1% yield), whereas it accounted for 9% and 16% of refinery output in Europe and Asia in 3Q23, respectively, with cracks that averaged -\$15/bbl in Europe and -\$18.5/bbl in Asia.

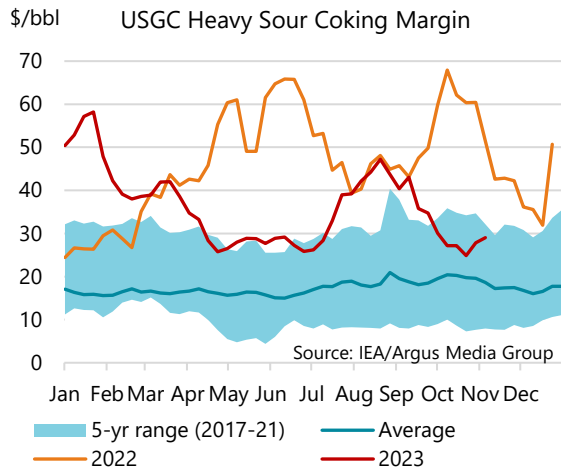
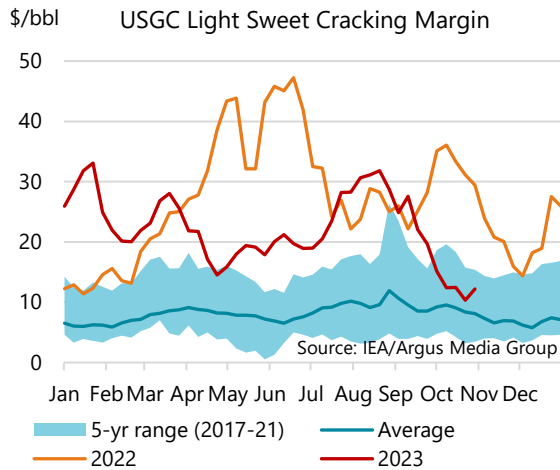
Nevertheless, the gasoline crack on the USGC retreated to sub \$7/bbl in early November – a level last seen in late 2020 – versus an average of \$32.50/bbl in 3Q23. It seems likely that this collapse in gasoline cracks will pressure refineries to shift yields further in favour of gasoil/diesel which may depress VGO premiums to crude.



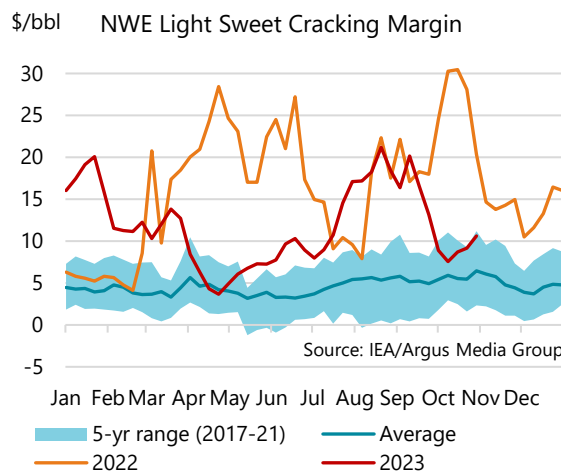
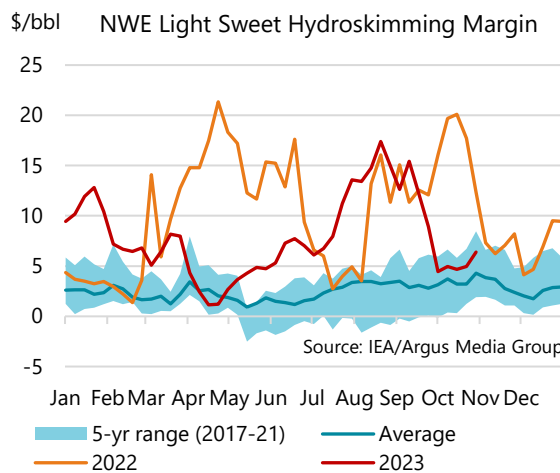
Furthermore, Atlantic Basin margins continue to benefit from the discounting of US light sweet crude and the impact WTI pricing continues to have in setting North Sea crude prices. WTI crude priced at Houston averaged \$86.47/bbl in October, as compared to a landed Dubai cost in Asia of around \$91.50/bbl. Consequently, margins in Europe and the United States remain at a structural premium versus those achieved in Asia. Compared with the weekly averages for the 2010-2023 period, light sweet cracking margins in Europe and the USGC stand at their 89th and 80th percentile, respectively. Conversely, Singapore sour cracking margins are at their 35th percentile.



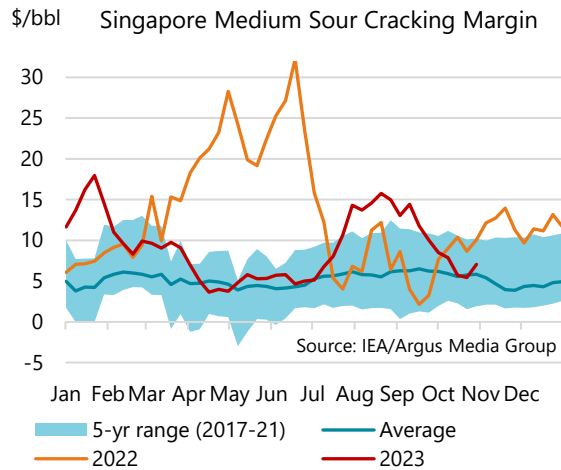
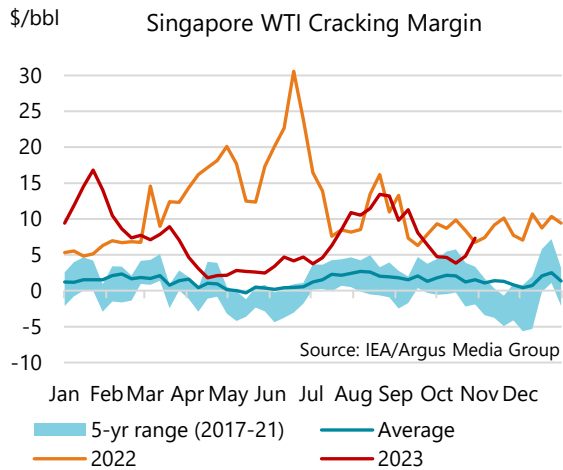
There still appears to be a clear structural advantage for US refineries over European and Asian counterparts. Access to cheaper crude, as well as more affordable natural gas, leaves export-oriented refineries well-positioned to compete internationally. Nevertheless, the USGC margins declined by \$10.92/bbl on average, with heavy sour coking margins slightly underperforming cracking margins. Coking margins reflect a full conversion of heavy sour crude into light and middle distillates. Consequently, the continued weakness in fuel oil doesn't weigh on these margins, but so too, coking margins fully reflect the shift in gasoline, jet and diesel cracks.



Northwest Europe (NWE) refinery margins fell by an average of \$7.95/bbl last month, while in the Mediterranean they dropped by \$9.11/bbl. Nevertheless, NWE light sweet hydroskimming margins averaged \$4.76/bbl, well above the five-year average and close to the 90th percentile for the 2010-2023 period. Similarly, European cracking margins sit at the top of the historic five-year range (2017-2021), despite having briefly touched a five-month low in mid-October.



Asian margins, as assessed in Singapore, appear relatively depressed versus those in the Atlantic Basin. Despite posting the smallest regional m-o-m decline at -\$4.83/bbl, Singapore margins started from a lower level. We continue to attribute much of the deviation between Asia and the Atlantic Basin margins to higher sour crude prices and additional freight costs to bring US crude to Asia. Comparing October's WTI cracking margins on the USGC to Singapore indicates a \$7.91/bbl spread, of which additional freight costs account for a large part. Margins for regional benchmark crude Oman weakened in line with other benchmarks. Singapore margins remain under pressure from weak naphtha and fuel oil pricing.



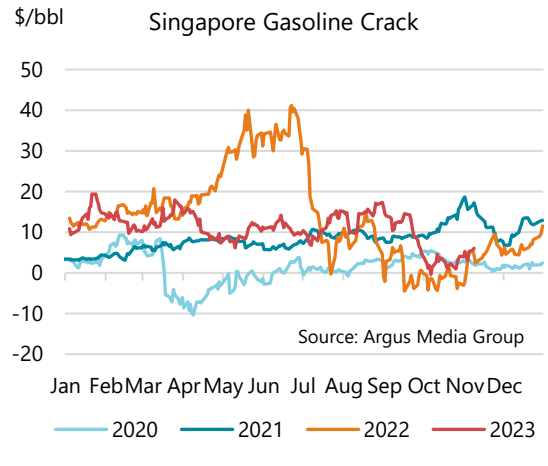
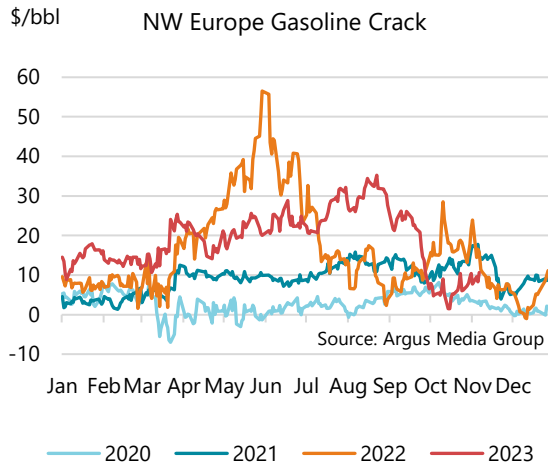
Product prices fell m-o-m across the board in October, with the exception of VLSFO in Singapore, which eked out a \$0.34/bbl gain versus September. Price declines were led by gasoline, which collapsed in relative terms, particularly in the United States.

Product Prices and Differentials (\$/bbl)													
	Prices			Differentials				Week Starting					
	Aug	Sep	Oct	Aug	Sep	Oct	Sep-Oct chg	09-Oct	16-Oct	23-Oct	30-Oct	06-Nov	
Northwest Europe				to North Sea Dated									
Gasoline	116.85	114.93	97.21	30.67	20.96	6.09	-14.87	5.34	4.42	7.50	9.03	11.26	
Diesel	122.52	131.73	122.28	36.33	37.77	31.15	-6.61	31.03	31.66	31.41	32.16	30.51	
Jet/Kero	124.27	131.44	123.52	38.09	37.47	32.40	-5.07	32.84	33.57	32.86	33.07	33.51	
Naphtha	72.14	78.59	72.52	-14.04	-15.38	-18.61	-3.23	-18.25	-20.11	-17.70	-18.02	-14.54	
HSFO	85.20	88.93	76.14	-0.98	-5.03	-14.98	-9.95	-14.22	-15.34	-15.44	-15.90	-15.89	
0.5% Fuel Oil	89.91	92.59	90.09	3.73	-1.38	-1.04	0.34	-0.69	-1.55	-0.61	-0.28	0.94	
US Gulf Coast				to WTI Houston									
Gasoline	120.82	117.59	96.33	37.85	26.58	9.87	-16.72	9.43	9.71	7.13	7.02	9.28	
Diesel	128.02	135.95	124.95	45.05	44.95	38.48	-6.46	39.08	39.58	36.41	38.00	34.50	
Jet/Kero	125.34	129.27	119.20	42.37	38.26	32.74	-5.52	33.62	31.70	32.29	38.99	37.92	
Naphtha	71.31	77.91	74.40	-11.66	-13.10	-12.06	1.04	-13.40	-13.24	-11.12	-8.84	-7.39	
HSFO	79.81	82.98	74.51	-3.16	-8.03	-11.96	-3.92	-11.95	-11.19	-13.23	-10.13	-8.59	
0.5% Fuel Oil	94.78	99.55	93.96	11.81	8.54	7.49	-1.05	6.63	7.67	8.56	8.35	7.67	
Singapore				to Dubai									
Gasoline	101.68	104.47	93.71	14.10	10.26	2.62	-7.63	3.45	1.53	3.86	4.78	7.75	
Diesel	119.07	125.32	117.46	31.49	31.11	26.37	-4.74	27.45	26.13	24.04	23.83	21.88	
Jet/Kero	116.28	122.77	113.58	28.70	28.56	22.50	-6.06	23.62	22.26	20.52	21.16	21.50	
Naphtha	70.65	74.73	70.80	-16.93	-19.48	-20.29	-0.80	-19.09	-22.24	-20.87	-20.36	-17.56	
HSFO	83.93	82.46	72.99	-3.65	-11.75	-18.10	-6.35	-16.76	-17.89	-19.50	-18.93	-16.61	
0.5% Fuel Oil	95.78	99.72	100.04	8.21	5.51	8.96	3.45	9.13	8.85	8.28	13.15	15.21	

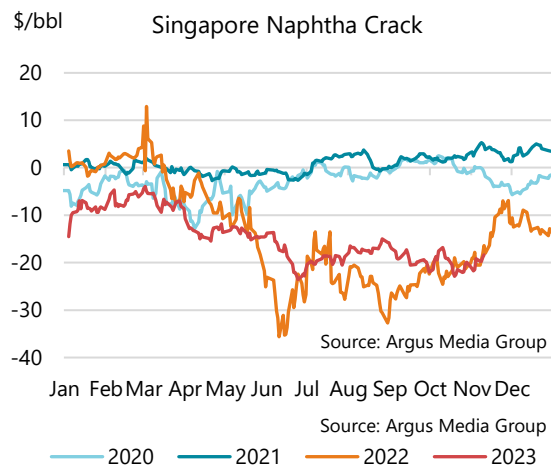
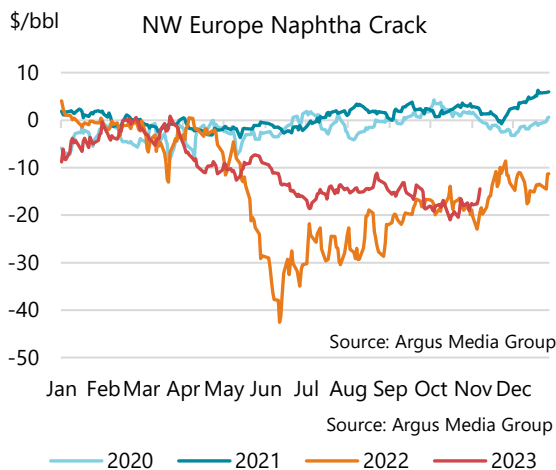
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Gasoline prices fell globally in October by between -\$11/bbl and -\$21/bbl m-o-m, as rising stocks, easing manufacturing constraints and seasonally weaker demand all contributed to the drop. US gasoline prices outpaced losses elsewhere, reversing outsized gains achieved in 3Q23. Consequently, cracks fell by between -\$7.63/bbl and -\$16.72/bbl m-o-m. Having reset to the lower level, USGC cracks stabilised from mid-October onwards. In Europe and Singapore, gasoline cracks were close to multi-year lows and approached zero at times, but by early November had recovered to mid to high single digits.

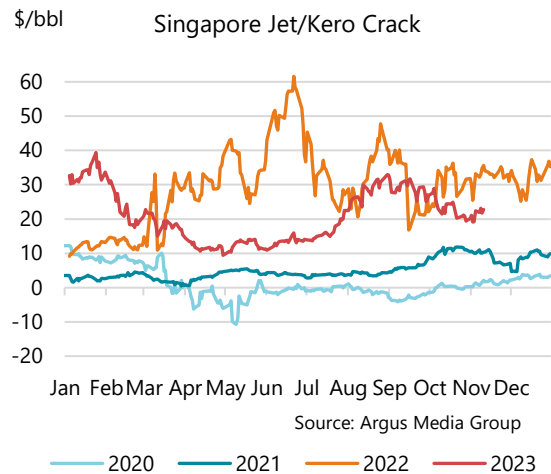
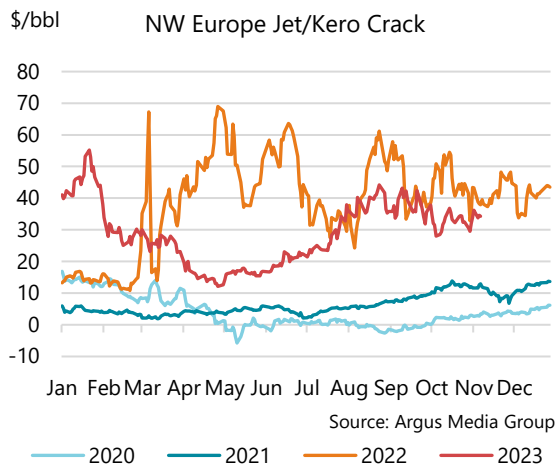
Naphtha prices have tracked gasoline lower in recent weeks as the reduced uplift for blending into the gasoline pool and the continued poor profitability of petrochemical processing capped the upside. Naphtha continues to be a key drag on refinery profitability, averaging -\$10.67/bbl year-to-date (YTD) in Europe. Intense competition from propane supplies as a petrochemical feedstock has tethered naphtha prices below crude. Propane values have improved in recent weeks, with colder Northern Hemisphere weather boosting demand. Nevertheless, naphtha cracks in Europe posted a \$3.23/bbl m-o-m decline, to -\$18.61/bbl, reaching their lowest level in nearly a year at -\$21/bbl in mid-October.



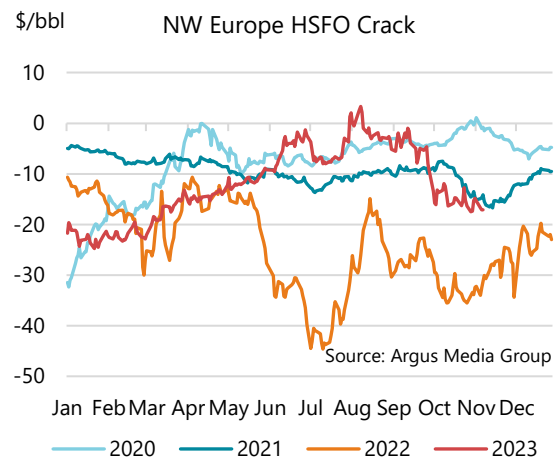
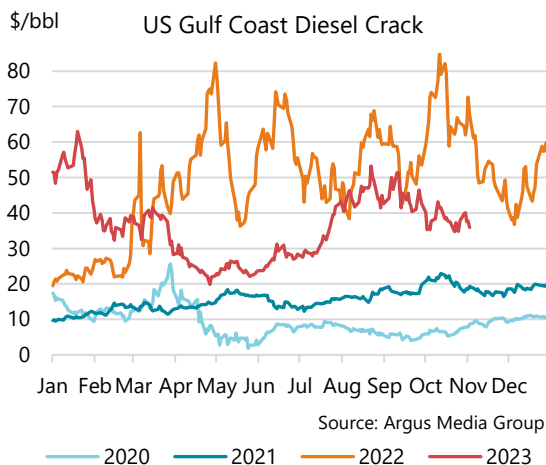
A similar pattern emerged in Singapore last month, with naphtha cracks deteriorating by \$0.80/bbl m-o-m to -\$20.29/bbl and hitting a four-month low of -\$23/bbl by mid-October. USGC naphtha prices fell less dramatically than WTI, leading to a m-o-m bounce in naphtha cracks to -\$12/bbl. Furthermore, the incentive to blend heavy naphtha into gasoline, while still healthy, reached a new YTD low and the reforming spread between heavy naphtha and reformate also returned to a low point for the year.



Jet fuel prices fell by \$8-10/bbl m-o-m in October, in part a reflection of the 0.5 mb/d drop in demand from its August peak. The fall in prices outpaced the fall in crude and drove a \$5-6/bbl compression in jet fuel cracks. Despite the decline, jet cracks remain extremely elevated in a historical context as the product competes for an increased share of the refinery yield, driven by robust aviation demand. The return of refineries from maintenance in the United States and Europe this month should allow supplies to ramp up ahead of increased winter demand and the pull from the diesel pool for improved winter-quality blending. Atlantic Basin cracks are around \$32.50/bbl, while Singapore continued to trade at a \$10/bbl relative discount at \$22.50/bbl in October.



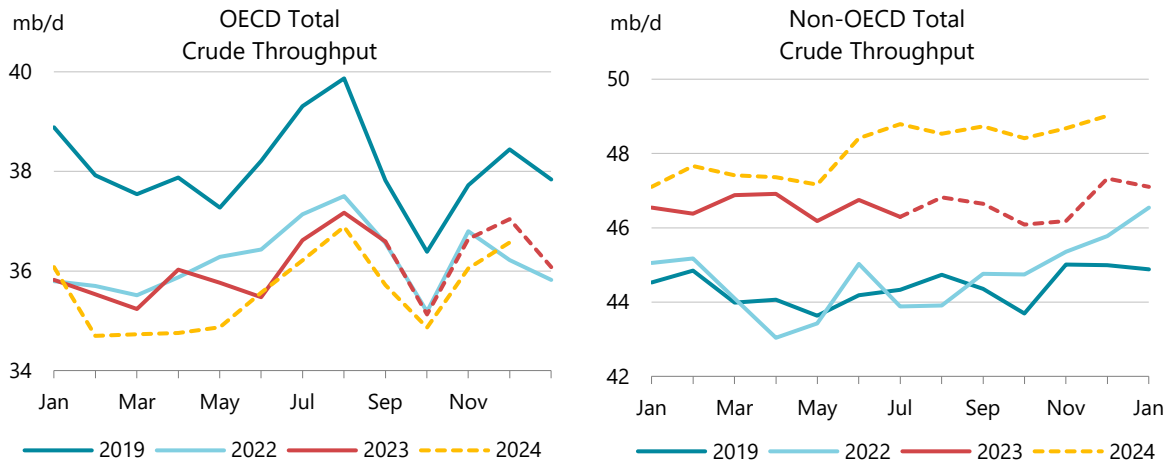
Diesel prices reversed September’s gains, falling by \$8-11/bbl m-o-m in October, thereby compressing diesel cracks by \$5-7/bbl. The decline in Atlantic Basin cracks outpaced that seen in Singapore, in part a reversal of 3Q23 pricing dynamics. Nevertheless, given their high yield, diesel cracks continue to support refinery profitability, averaging more than \$30/bbl globally. The emergence in recent weeks of a premium for German specification diesel (-7°C cloud and -22°C Cold Filter Plugging Point (CFPP)), versus UK and French specification diesel, (-5°C cloud and -15°C CFPP), indicates that European diesel markets continue to be tight.



High sulphur fuel oil (HSFO) prices weakened further in October, outpacing crude price losses and staking their claim as the second worst performing product category after gasoline. Diminished HSFO cracks remain another factor limiting sour crude cracking and hydroskimming refinery profitability during October. Having averaged -\$1/bbl in Europe during August they continued the weakening trend evident in September and fell a further \$10/bbl m-o-m in October to -\$14.98/bbl. In Asia, HSFO cracks dropped \$6.35/bbl to -\$18.10/bbl on average. Additional supplies of HSFO from Kuwait were reported to be weighing on regional pricing, at the expense of reduced very low (0.5%) sulphur fuel oil (VLSFO) production from the Al Zour refinery. The interruption to VLSFO supplies from a key export region likely explains, at least in part, the support evident in VLSFO cracks, which rallied in Asia and Europe but weakened on the USGC.

Regional refining developments

Global crude throughput forecasts are raised by 170 kb/d for 2023 and 160 kb/d for 2024, to 82.6 mb/d and 83.6 mb/d, respectively. Consequently, annual growth is boosted to 1.9 mb/d in 2023 and held steady at 1 mb/d for next year. September estimates are raised by 900 kb/d as the OECD beat expectations by 500 kb/d and China reported record runs of 15.7 mb/d, some 350 kb/d higher than forecast.



OECD September refinery throughputs averaged 36.6 mb/d, a decline of 580 kb/d m-o-m, as maintenance works in the United States, Germany and Japan weighed on activity levels. Though sequentially weaker, crude runs were above forecast, suggesting that maintenance works started later than expected and this factor contributes to a lower estimate for October runs. September crude runs were stronger than expected in all three regions, with Europe 240 kb/d, Asia Oceania 150 kb/d and the Americas 120 kb/d better than forecast.

Refinery Crude Throughput and Utilisation in OECD Countries

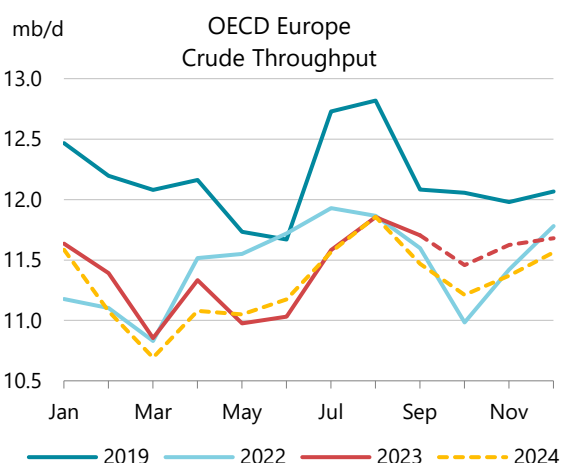
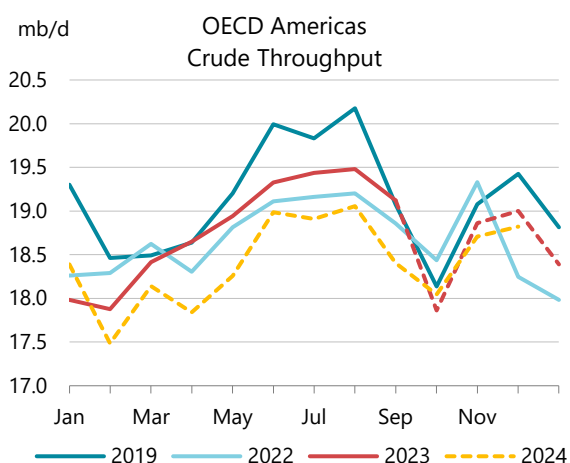
(million barrels per day)

	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Change from		Utilisation rate	
							Aug 23	Sep 22	Sep 23	Sep 22
US ¹	15.84	16.21	16.39	16.60	16.69	16.39	-0.30	0.25	91%	91%
Canada	1.61	1.68	1.81	1.85	1.85	1.76	-0.09	0.02	97%	96%
Chile	0.21	0.19	0.14	0.19	0.19	0.20	0.01	0.03	86%	75%
Mexico	0.97	0.85	0.97	0.78	0.74	0.76	0.02	-0.03	47%	49%
OECD Americas¹	18.64	18.93	19.32	19.42	19.47	19.11	-0.36	0.26	88%	88%
France	0.66	0.96	0.99	1.04	1.08	1.05	-0.02	0.17	86%	72%
Germany	1.55	1.54	1.68	1.71	1.72	1.66	-0.05	-0.22	81%	92%
Italy	1.42	1.17	1.18	1.22	1.32	1.34	0.01	-0.06	77%	81%
Netherlands	1.12	1.05	0.98	0.98	1.04	1.20	0.15	0.15	96%	84%
Spain	1.27	1.18	1.17	1.29	1.27	1.31	0.05	0.03	89%	87%
United Kingdom	1.04	1.05	0.94	1.00	0.99	0.89	-0.10	-0.15	74%	86%
Other OECD Europe ²	4.26	4.04	4.08	4.33	4.44	4.25	-0.19	0.18	88%	84%
OECD Europe	11.33	10.98	11.03	11.58	11.85	11.70	-0.15	0.11	85%	84%
Japan	2.62	2.33	2.18	2.39	2.75	2.54	-0.21	-0.18	79%	79%
Korea	2.88	2.97	2.43	2.69	2.57	2.70	0.13	-0.16	76%	80%
Other Asia Oceania ³	0.56	0.55	0.51	0.53	0.52	0.53	0.01	0.00	99%	99%
OECD Asia Oceania	6.05	5.85	5.13	5.61	5.84	5.77	-0.07	-0.34	79%	81%
OECD Total	36.03	35.76	35.47	36.61	37.17	36.59	-0.58	0.03	86%	86%

September's extraordinary refinery margin strength likely encouraged refiners to maximize throughputs to the extent possible. August preliminary data was revised higher by 400 kb/d, to 37.2 mb/d, with Germany, Greece, Italy, and Türkiye accounting for the majority of the upward revisions. Australian data was adjusted higher for the whole of 2023 by an average of 60 kb/d, with August's estimate raised by 86 kb/d.

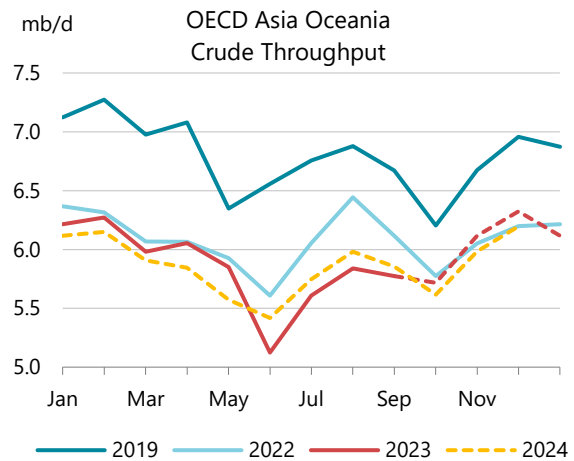
OECD refinery utilisation fell 1.4% m-o-m to 86% and was flat y-o-y, having trailed 2022 levels by an average of 0.8% in the eight months to August. The Americas continue to report the strongest regional OECD utilisation rates at 88%, led by Canada and the United States. Preliminary weekly data indicate that utilisation rates in the Americas and Europe fell further in October.

OECD Americas runs dipped 360 kb/d m-o-m in September as the start of seasonal maintenance in the United States and Canada weighed on processing. Strong US runs of 16.4 mb/d were helped by high margins and reflect the need for refineries to build product stocks ahead of heavy seasonal maintenance. The combination of factors pushed US Midwest runs to a record high of 4.2 mb/d in early September, based on EIA Weekly data, before dropping 600 kb/d by early October. The lack of hurricane-related disruptions also boosted runs versus our forecast which includes a seasonal adjustment for this. Mexican runs appear mired at close to 750 kb/d, equivalent to utilisation of less than 50% of nameplate refining capacity.

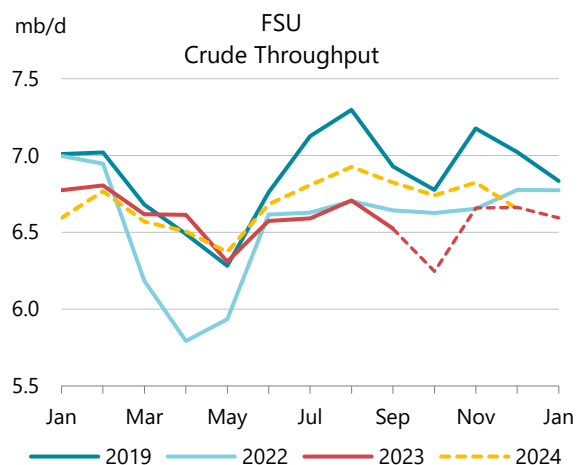
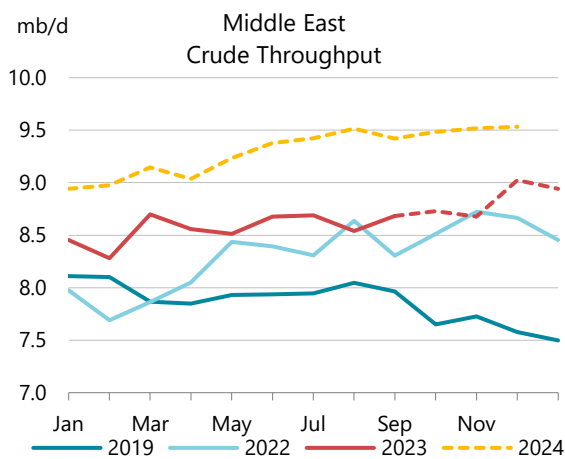


OECD Europe refinery throughputs fell 150 kb/d m-o-m to 11.7 mb/d, as maintenance in Germany, Sweden and the United Kingdom weighed on activity. Having lagged year-ago levels for much of 2Q23 and 3Q23, September runs posted a y-o-y increase. In part, a lighter planned maintenance schedule explains the shift, with October also expected to see lower maintenance y-o-y. August preliminary data was revised higher, by 360 kb/d for the region to a seasonal peak of 11.9 mb/d, somewhat easing the apparent low regional utilisation rates versus the backdrop of near-record profitability during 3Q23.

OECD Asia Oceania runs fell 70 kb/d m-o-m in September to 5.8 mb/d, as rising Korean runs – which hit a four-month high of 2.7 mb/d – failed to offset the 200 kb/d decline in Japanese throughputs. A further decrease in regional activity is estimated to have occurred in October, with lower Japanese runs outpacing the marginal gain in Korean runs. The permanent closure of Eneos’s 120 kb/d Wakayama refinery in mid-October will weigh on future Japanese crude processing rates. Furthermore, the poorer margin environment evident in Asian markets in recent weeks has prompted renewed talk of run cuts, creating a downside risk to the forecast.



Chinese crude runs capped off a stellar 3Q23 by posting record throughputs of 15.7 mb/d in September, some 1.7 mb/d higher than a year earlier and 350 kb/d above last month’s forecast. Nevertheless, versus our expectations at the start of the quarter, 3Q23 crude runs were in line with the forecast of 15.5 mb/d. Seasonal maintenance should drag activity lower in October and November, while the lack of crude import quotas for independents is seen constraining activity levels into year-end. Crude import volumes slipped from 12.5 mb/d in August to 11.2 mb/d in September, before rebounding to 11.6 mb/d in October. A lack of additional crude import quotas in October resulted in the third largest crude stock draw in two years, according to satellite data from Kayrros, as refineries sought to maintain output. Consequently, in the absence of further import quotas and assuming only further limited crude inventory draws, we maintain a cautious view on Chinese 4Q23 throughputs of 15.1 mb/d.



Middle East crude runs slipped 150 kb/d in August, based on preliminary data, to 8.5 mb/d. Crude runs dipped m-o-m in Saudi Arabia tempering gains elsewhere. We estimate that runs increased in September/October as the ramp up of the Duqm refinery in Oman more than offset planned regional maintenance. As this maintenance unwinds in 4Q23, we expect to see crude runs push towards 9 mb/d. **Russian** runs fell in September to 5.4 mb/d, ostensibly on planned maintenance work. Preliminary weekly data point to further decline in Russian throughputs in October, to 5.2 mb/d, but we assume Russian runs rebound towards year-end, lifting FSU runs to 6.7 mb/d in December.

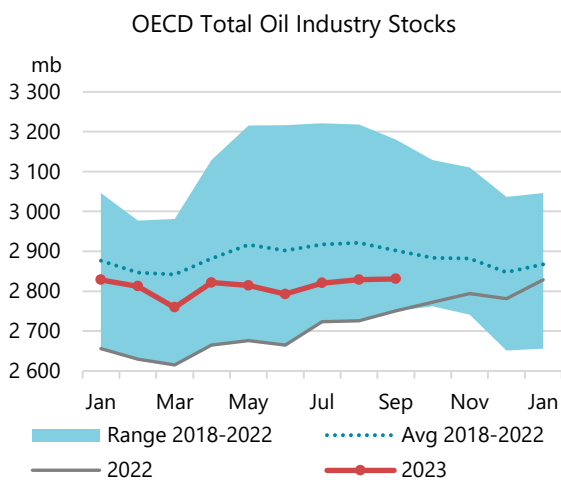
Stocks

Overview

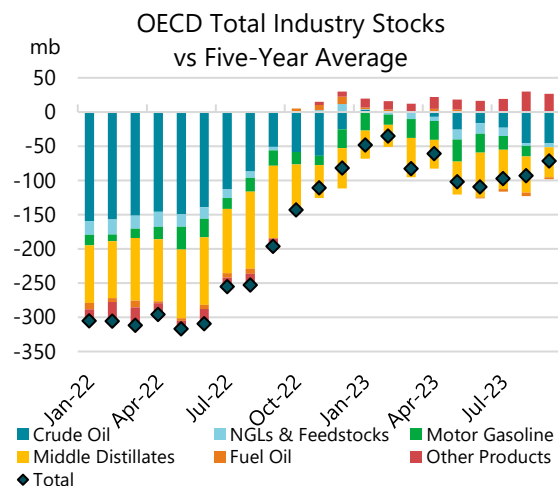
Global observed inventories rose by 9.9 mb in September but remain at historically low levels. OECD total stocks inched up by 2.9 mb, while non-OECD inventories declined by 18.3 mb. Oil on water rebounded by a large 25.3 mb, or 840 kb/d, after dropping by 130 mb over the previous five months. Nevertheless, crude oil stocks slumped by a massive 141.4 mb in the third quarter as supply cuts by OPEC+ countries coincided with increased refinery activity. Over the same period, observed oil product stocks built by 112.7 mb, with 80% of the increase in the OECD, narrowing their deficit compared with the five-year average to 14.5 mb by end-September. Preliminary data suggest global inventories declined in October, mainly in on-land stocks.



Sources: IEA, Kayrros, Kpler, FEDCom/S&P Global Platts, Enterprise Singapore



OECD commercial inventories edged up by 1.8 mb in September. At 2 831 mb, they were at the highest level since July 2021 but remained 71.2 mb below the five-year average. About half of the deficit came from crude oil (-45.5 mb), and the rest was mostly in middle distillates (-43.6 mb), which were partially offset by higher other product stocks (+25.3 mb). In terms of forward demand, industry stocks covered 61.3 days, down by 0.2 days m-o-m but 1.2 days higher y-o-y. Crude oil stocks fell by 8.6 mb to a 12-month low, with declines in all three regions. NGL and feedstock inventories also decreased, by 3.6 mb. Oil product stocks rose for the third consecutive month, by 14 mb. Gasoline stocks in the OECD Americas led the increase, rising 12.5 mb, lifting OECD gasoline stocks (+13.1 mb) from the bottom of the five-year range to 1.6 mb above the average in September. Fuel oil stocks rose by 2.2 mb, after declining over the previous three months. Other product inventories increased by 4.4 mb, or about half the level of the seasonal norm. Middle distillate stocks fell by 5.7 mb, less than the historical average (-15 mb).



Preliminary data from the US, Europe and Japan for October show total industry inventories declined by 12.8 mb, led by the United States (-10.9 mb), followed by Japan (-1.9 mb), while they were largely unchanged in Europe. Crude, NGL and feedstock inventories edged up by 0.8 mb thanks to builds in the United States (+4.9 mb) but they were partially offset by Japan (-3.1 mb). Oil product inventories fell by 13.6 mb as stocks decreased in all four product categories. The largest decline came from middle distillates (-6.4 mb) although they rose in Europe (+1 mb) and Japan (+1.8 mb). Gasoline and other product stocks dropped by 2.8 mb each. Fuel oil inventories were down by 1.5 mb with draws in all three regions. Stock trends reflect the uptick in refinery maintenance activity from September to October, reducing crude use and product output.

	September 2023 (preliminary)				Third Quarter 2023							
	(million barrels)				(million barrels per day)							
	Am	Europe	As.Ocean	Total	Am	Europe	As.Ocean	Total	Am	Europe	As.Ocean	Total
Crude Oil	-2.0	-5.4	-1.3	-8.6	-0.1	-0.2	0.0	-0.3	-0.4	-0.1	-0.1	-0.7
Gasoline	12.5	0.3	0.3	13.1	0.4	0.0	0.0	0.4	0.1	0.1	0.0	0.2
Middle Distillates	-0.1	-8.8	3.2	-5.7	0.0	-0.3	0.1	-0.2	0.1	0.1	0.1	0.3
Residual Fuel Oil	1.3	1.1	-0.1	2.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Other Products	2.7	6.2	-4.5	4.4	0.1	0.2	-0.1	0.1	0.4	0.2	0.0	0.6
Total Products	16.3	-1.2	-1.1	14.0	0.5	0.0	0.0	0.5	0.5	0.3	0.1	1.0
Other Oils ¹	1.4	-3.9	-1.1	-3.6	0.0	-0.1	0.0	-0.1	0.1	0.0	0.1	0.1
Total Oil	15.8	-10.4	-3.5	1.8	0.5	-0.3	-0.1	0.1	0.2	0.2	0.1	0.4

¹ Other oils includes NGLs, feedstocks and other hydrocarbons.

OECD industry inventories for August were revised up by 12.4 mb following the submission of more complete data. The largest adjustment came from OECD Europe (+15.1 mb), mainly in middle distillates (+7.4 mb). In the OECD Americas, stocks were up by 1.8 mb as revisions in other products (+5 mb) and other oils (+2.2 mb) were partly offset by middle distillates (-5.2 mb). Inventories in Asia Oceania were down by 4.5 mb, led by crude oil (-5.2 mb). July figures were lowered by 2.6 mb, mostly due to a revision in Canadian crude (-5.1 mb).

OECD Industry Stock Revisions versus October 2023 Oil Market Report									
(million barrels)									
	Americas		Europe		Asia Oceania		OECD		
	Jul-23	Aug-23	Jul-23	Aug-23	Jul-23	Aug-23	Jul-23	Aug-23	
Crude Oil	-5.1	-0.2	0.9	3.5	0.7	-5.2	-3.4	-2.0	
Gasoline	0.1	0.1	0.1	1.5	0.0	-1.2	0.1	0.4	
Middle Distillates	0.2	-5.2	0.4	7.4	0.0	0.8	0.6	3.0	
Residual Fuel Oil	0.1	-0.1	0.2	1.5	0.0	0.2	0.2	1.6	
Other Products	0.3	5.0	0.3	3.2	0.0	1.6	0.6	9.8	
Total Products	0.7	-0.2	0.9	13.7	0.0	1.3	1.6	14.8	
Other Oils ¹	0.0	2.2	0.0	-2.0	-0.7	-0.6	-0.7	-0.4	
Total Oil	-4.4	1.8	1.8	15.1	0.0	-4.5	-2.6	12.4	

¹ Other oils includes NGLs, feedstocks and other hydrocarbons.

Implied balance

For September, IEA's global oil balance estimates show a 950 kb/d supply shortfall, while 330 kb/d of stock builds were observed in the available data. OECD industry crude stocks fell by 410 kb/d while product inventories built by 470 kb/d. OECD government stocks increased by 30 kb/d. Non-OECD crude inventories plunged by 690 kb/d, mainly in China and India. Product stocks in Fujairah and Singapore edged up by a combined 80 kb/d. Oil on water rebounded by a hefty 840 kb/d.

In the third quarter, observed global inventories declined by 370 kb/d, compared with the previous five consecutive quarters of stock builds. Total oil inventories in 3Q23 built by 460 kb/d in the OECD while they fell by 280 kb/d in non-OECD countries, and oil on water declined by 550 kb/d. From July through September, crude oil inventories plunged by a substantial 1.5 mb/d, reflecting tight availability due to OPEC+ supply cuts, although product stocks rose by 1.2 mb/d. OECD countries accounted for a large share of the builds, at 970 kb/d, including 390 kb/d of other products in the United States thanks to abundant NGL production. However, OECD product stock levels were still 14.5 mb lower than the five-year average in September. Product stock coverage for non-OECD countries is generally not publicly available.

IEA Global oil balance (implied stock change) (mb/d)											
	2019	2020	2021	2022	1Q23	2Q23	Jul-23	Aug-23	Sep-23	3Q23	Oct-23
Global oil balance	-0.04	2.26	-2.03	0.50	1.53	0.16	-0.78	-2.31	-0.95	-1.35	-0.59
Observed stock changes											
OECD industry stocks	0.05	0.41	-1.06	0.35	-0.25	0.37	0.90	0.27	0.06	0.41	-0.41
OECD government stocks	-0.04	0.02	-0.16	-0.74	0.03	-0.12	-0.02	0.13	0.03	0.05	0.00
Non-OECD crude stocks*	0.17	0.43	-0.46	0.26	0.20	0.53	0.56	-0.47	-0.69	-0.19	-0.71
Selected non-OECD product stocks**	-0.14	0.12	-0.02	-0.01	0.35	-0.17	0.10	-0.45	0.08	-0.09	-0.07
Oil on water	0.03	0.04	-0.04	0.28	0.10	-0.60	-1.17	-1.27	0.84	-0.55	
Total observed stock changes	0.07	1.02	-1.74	0.15	0.43	0.01	0.37	-1.79	0.33	-0.37	
Unaccounted for balance	-0.10	1.24	-0.30	0.35	1.10	0.16	-1.16	-0.52	-1.28	-0.98	

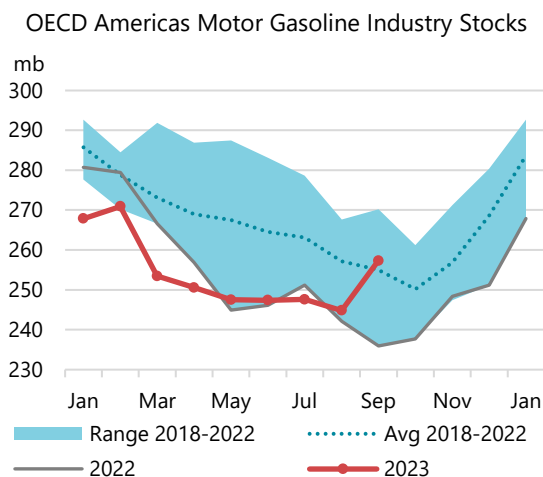
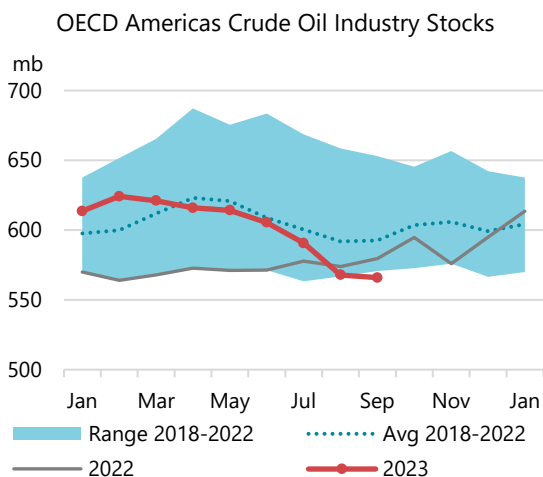
*Crude stock change data from Kayros and estimated Saldanha Bay data from Kpler.
 Kayros data are available for selected countries and include only, and not all, above-ground storage.
 **JODI data adjusted for monthly gaps in reporting, latest data for August 2023, plus Fujairah and Singapore inventories.
 Sources: IEA, EIA, PAJ, Euroistock, Kayros, JODI, Kpler, FEDCom/S&P Global Platts and Enterprise Singapore.

Recent OECD industry stock changes

OECD Americas

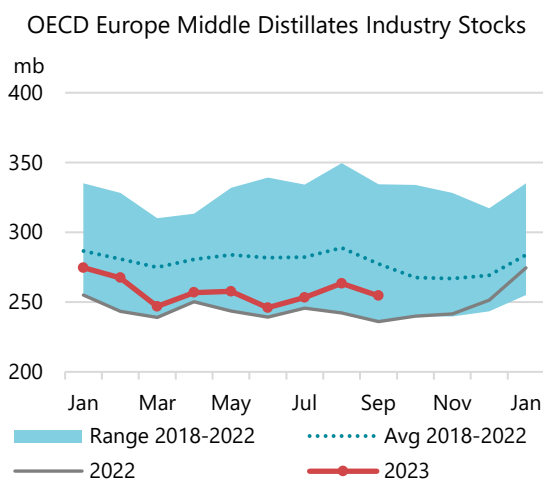
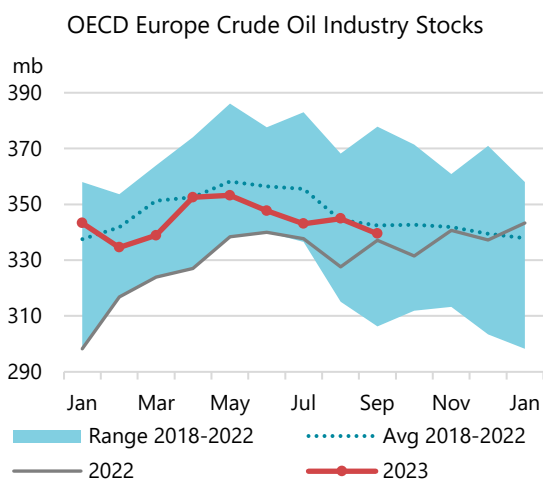
Industry inventories in OECD Americas recovered by 15.8 mb in September. The stock builds were six times larger than the typical increase for the month. At 1 528 mb, regional industry stocks reached their highest level since October 2021, but remained 28.9 mb lower than the five-year average. Crude oil stocks continued to decline (-2 mb) for a seventh consecutive month, to a 19-month low and below their seasonal range. NGL and feedstock inventories rose by 1.4 mb.

Oil product stocks jumped by 16.3 mb, when they usually rise by a smaller 3 mb. The difference came from higher gasoline stocks. Lacklustre US demand and strong refinery throughputs (the highest for September in four years) were behind the region's counter-seasonal gasoline build (+12.5 mb). They had been around their five-year seasonal low since 2021 but exceeded the historical average by 2.3 mb in September. Fuel oil inventories also posted a counter-seasonal increase (+1.3 mb), after hitting their lowest level in the available data since 1980 in the previous month. Middle distillate stocks edged down by 0.1 mb, compared with a 3.2 mb seasonal draw. By contrast, other product inventories rose by a smaller-than-usual 2.7 mb.



US commercial stocks declined by 10.9 mb in October, according to weekly data from the US Energy Information Administration (EIA). Crude oil inventories rose by 4.9 mb when they typically build by a much higher 12.4 mb. Refinery intake was 430 kb/d lower y-o-y, while exports surged by 690 kb/d y-o-y. However, crude stocks at the Cushing, Oklahoma delivery point for the NYMEX WTI contract fell by a further 0.5 mb. Other oil inventories edged down by 0.3 mb. Total oil product stocks fell by 15.6 mb, a modest decline compared with the seasonal pattern (-26.4 mb). Gasoline, middle distillate and other product inventory draws were smaller than the seasonal trend, at 3.1 mb, 9.2 mb and 3.2 mb, respectively. US gasoline demand recovered to above the previous year, according to the weekly data, while refinery output was up 250 kb/d y-o-y. Fuel oil inventories decreased counter-seasonally by a marginal 0.1 mb.

OECD Europe



In OECD Europe, commercial inventories declined by 10.4 mb to 938.5 mb in September. The decrease was lower than the seasonal norm (-15.7 mb), but stocks remained 23 mb below the five-year average. Crude oil (-5.4 mb), and NGL and feedstock (-3.9 mb) fell by more than the historical average as regional refinery intake was higher than the previous year for the first time in six months.

Product inventories were down by a marginal 1.2 mb, compared with a 13.5 mb normal draw. Other product stocks posted a counter-seasonal increase of 6.2 mb. Fuel oil inventories rose by 1.1 mb, following sharp declines in the previous three consecutive months. Gasoline stocks increased by a

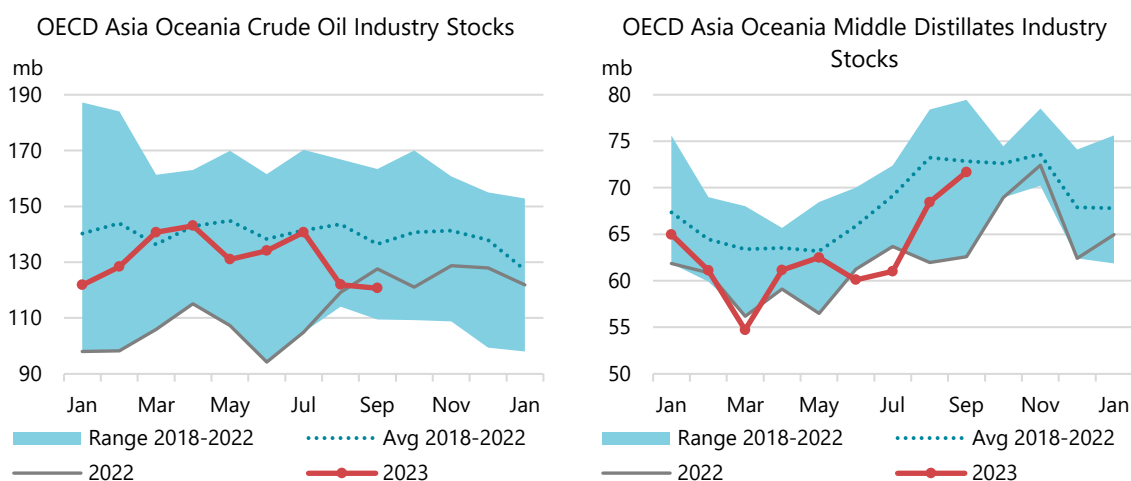
modest 0.3 mb but recovered above the five-year average, as in the OECD Americas. However, middle distillate inventories fell by 8.8 mb, to stand 22.9 mb below the historical level.

Preliminary data from *Euroilstock* showed industry inventories in 16 countries were largely unchanged in October. Crude oil stocks held steady as builds in the UK (+1.5 mb) and Spain (+0.9 mb) were offset by draws in other countries, including Italy (-0.6 mb). Total product inventories were also unchanged as regional middle distillate stocks rose by 1 mb while fuel oil inventories fell by 1 mb, while gasoline and naphtha stocks were flat.

OECD Asia Oceania

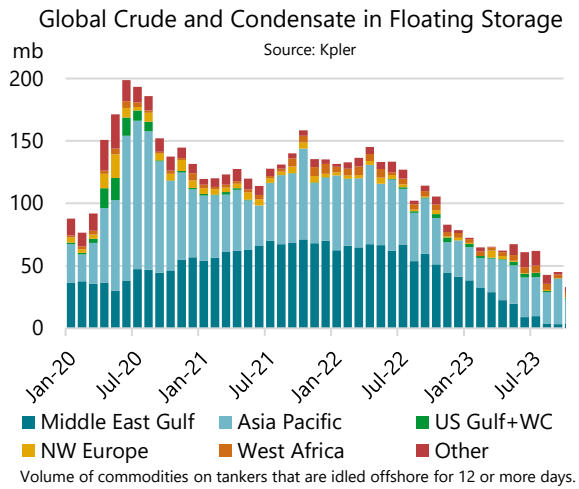
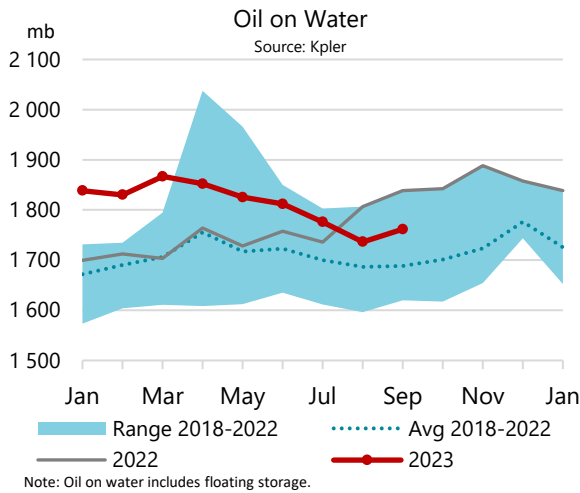
Industry stocks in OECD Asia Oceania fell by 3.5 mb in September. At 364.4 mb, inventories were 19.3 mb below the 2018-2022 average. Crude oil stocks decreased by 1.3 mb when they typically decline by 7.1 mb. Japan posted a counter-seasonal build (+2.6 mb) due to weak refinery intake (-210 kb/d m-o-m). NGL and feedstock inventories inched lower by 1.1 mb.

Oil product stocks were down by 1.1 mb. Other products led the decrease, falling counter-seasonally by 4.5 mb, pushing down inventories from the top of the seasonal range to the normal level. Gasoline stocks rose marginally by 0.3 mb, in line with seasonal patterns. Middle distillate inventories increased by 3.2 mb, narrowing the gap to the five-year average to 1.2 mb. Fuel oil stocks edged down by 0.1 mb as builds in Korea (+0.6 mb) were offset by draws in Japan (-0.7 mb).

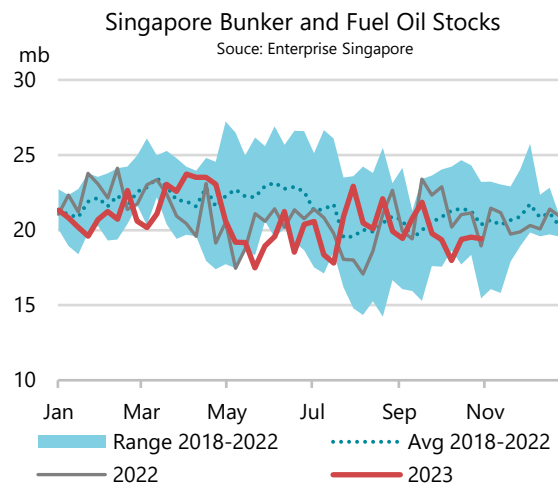
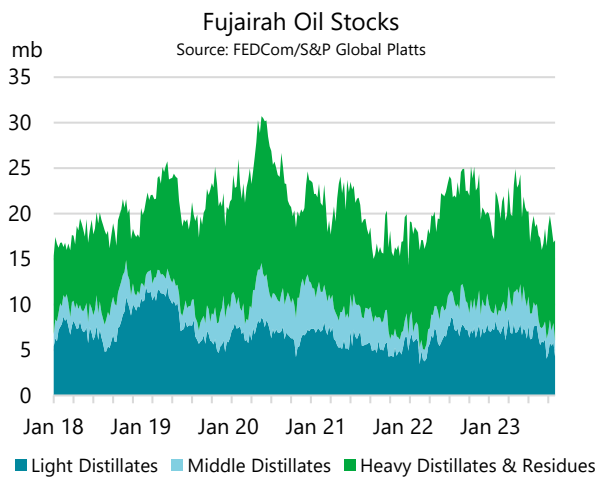


Preliminary data from the *Petroleum Association of Japan* show total industry stocks decreased counter-seasonally by 1.9 mb in October. Crude inventories fell by 3.1 mb despite weak refinery intake (-140 kb/d y-o-y), partly due to the closure of Eneos's 120 kb/d Wakayama refinery on 16 October. Japanese crude imports were 200 kb/d lower than a year ago, according to *Kpler*. Other oil stocks also fell, by 0.8 mb. Oil product inventories built by 2 mb, three times more than the seasonal trend. Other product stocks rose counter-seasonally by 0.4 mb. Middle distillate stocks increased by 1.8 mb, led by higher kerosene (+2.4 mb). Gasoline inventories inched up by 0.3 mb, in line with the five-year average. Fuel oil stocks fell by 0.4 mb.

Other stock developments

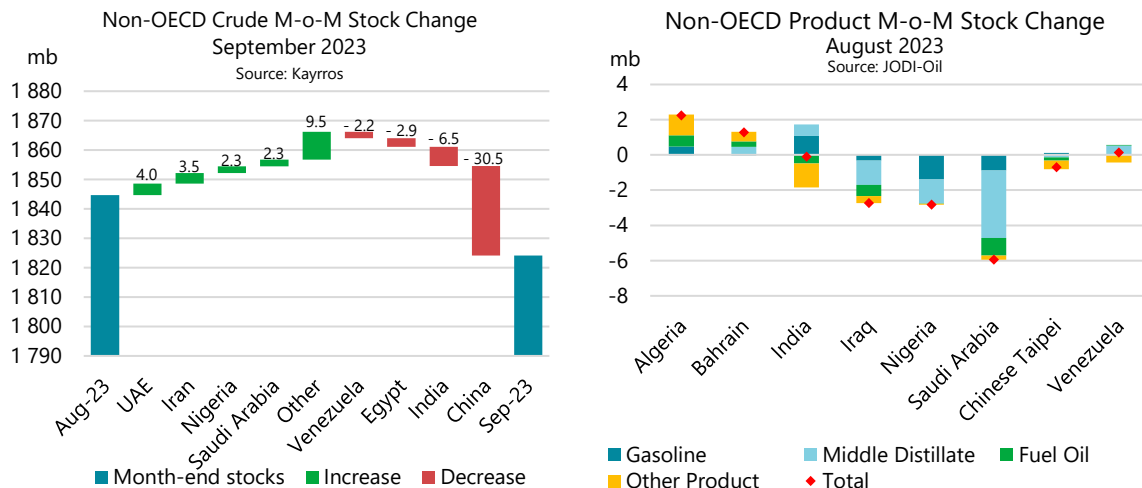


Oil on water, including floating storage, rebounded by 25.3 mb to 1 762 mb in September, after five consecutive months of declines totalling 130 mb, according to *Kpler*. Crude oil recovered by 8.9 mb following the 60.4 mb (2 mb/d) draw in the previous month. Oil products continued to increase, by 16.4 mb on the month. Oil exports from Saudi Arabia and the United States rose m-o-m by 700 kb/d and 300 kb/d, respectively. Crude oil held in short-term floating storage built by 2.3 mb as increases in Asia (+11.2 mb) partially offset declines in other areas (-8.9 mb). Notably, 6 mb of Saudi Arabian crude held in three vessels near the mouth of the Suez Canal since early August was taken onshore in September. Products in floating storage also rose, by 2.5 mb, mainly in the Middle East (+1.4 mb) and Asia (+0.7 mb).



In Fujairah, independent product stocks rose by 1.2 mb to 18 mb in September after hitting a 16-month low in the previous month, according to *FEDCom* and *S&P Global Platts* data. Heavy distillate and residue inventories led the increase, building by 1.9 mb. Weak bunkering demand at Fujairah (-410 kb/d m-o-m) partially explains the movement. Middle distillate stocks were up by 0.5 mb. By contrast, light distillate inventories declined by 1.3 mb to their lowest level since April 2022 due to robust net exports of about 100 kb/d for the second month in a row, according to *Kpler*. In October, total stocks fell by 0.8 mb, mainly in middle distillates.

Independent product stocks in Singapore rose by 1.1 mb to 42.1 mb in September, according to data from *Enterprise Singapore*. Light distillate inventories decreased for a seventh consecutive month, by 0.2 mb to below 13 mb for the first time since January 2022. Residue stocks also edged down by 0.2 mb. Middle distillate inventories built by 1.5 mb, hitting a six-month high. Total stocks dipped by 1.2 mb in October, to the lowest level in 18 months, with declines in all three categories.

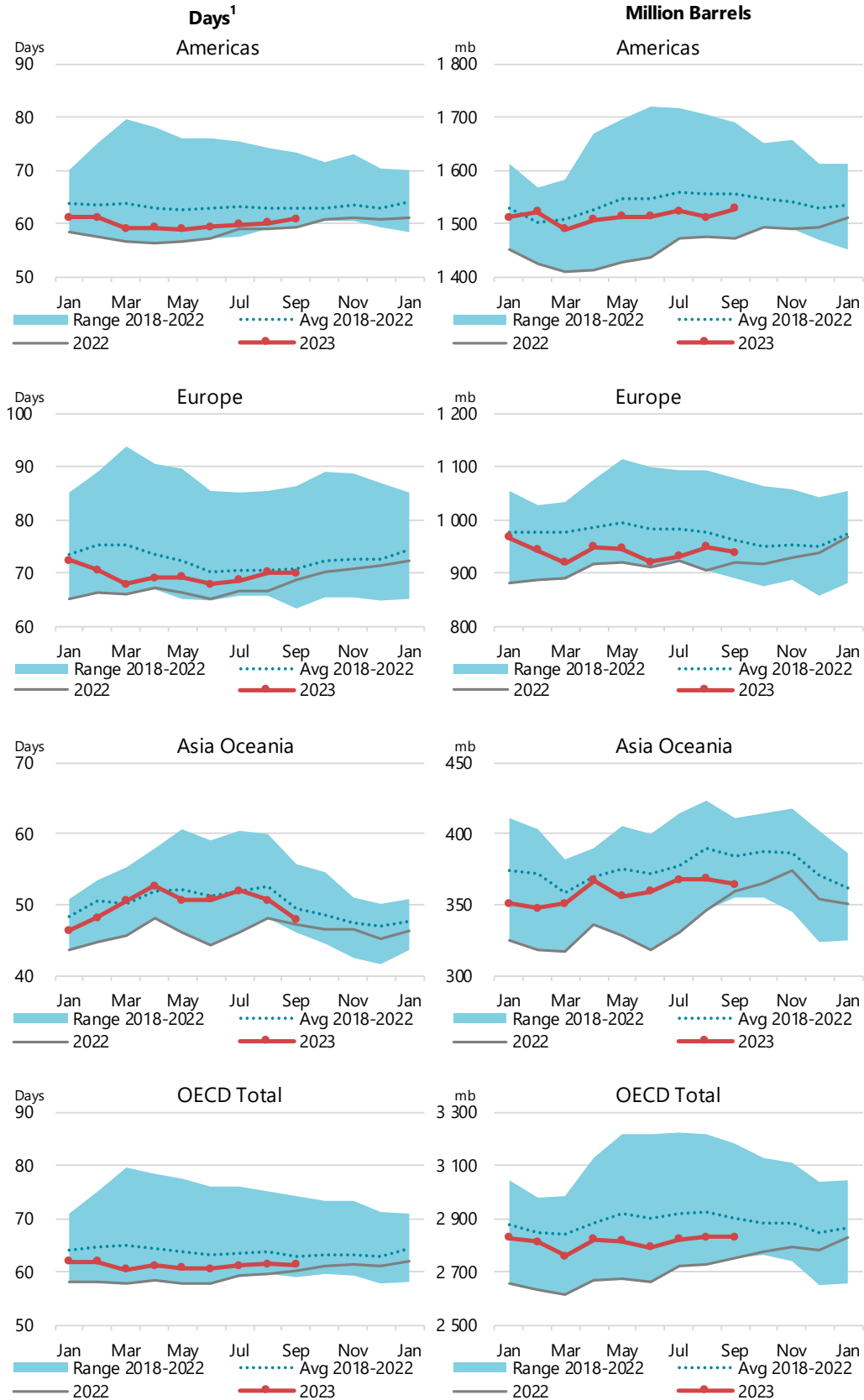


Observed crude oil stored in floating-roof tanks in non-OECD countries declined by 20.6 mb in September, according to satellite data from *Kayrros*. China recorded a massive stock draw of 30.5 mb, which was the third largest monthly decline seen in available data since 2016. In early September, the Chinese government issued its third round of oil product export quotas this year and refinery intake stayed at a historically high level. In India, crude inventories fell by 6.5 mb. Seaborne crude imports eased to their lowest in 12 months as supply from Saudi Arabia fell to less than 500 kb/d for the first time since 2015, according to *Kpler*. By contrast, oil producing countries such as the UAE (+4 mb), Iran (+3.5 mb), Nigeria (+2.3 mb) and Saudi Arabia (+2.3 mb) posted stock builds for the month. In October, non-OECD crude inventories declined by a further 22.1 mb.

In August, oil product stocks in the 11 non-OECD economies reporting to the *JODI-Oil World Database* were down by 8.7 mb. Saudi Arabia posted the sharpest decline at 6 mb. The Kingdom reduced crude refinery intake for a fifth consecutive month due to their voluntary production cuts, while demand for direct use was robust. Product inventories in Nigeria declined by 2.8 mb as imports dropped to their lowest since 2017. In Iraq, product stocks fell by 2.7 mb. Despite the highest-ever refinery output, record-breaking product demand (notably for power generation during the spike in summer temperatures) and lofty exports led the drawdown. By contrast, product stocks in Algeria and Bahrain built by 2.2 mb and 1.3 mb, respectively, despite higher domestic demand as refinery output increased and exports were lower than the previous month.

Regional OECD End-of-Month Industry Stocks

(in days of forward demand and million barrels of total oil)



¹ Days of forward demand are based on average OECD demand over the next three months.

Prices

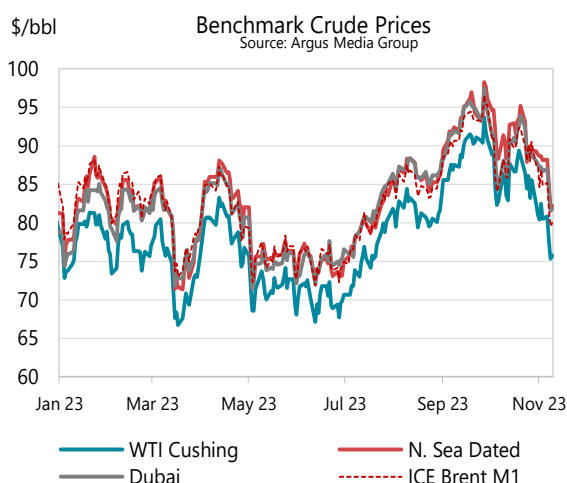
Overview

Brent futures tumbled by nearly \$8/bbl to \$87/bbl during October as macro headwinds gathered pace, counterbalancing concerns that the Middle Eastern crisis could disrupt the region's oil supplies. Crude prices spiked by around \$4/bbl after the 7 October Hamas attack on Israel, bringing geopolitics sharply into focus. This war risk premium oscillated wildly over the course of the month, sending price volatility to 2023 highs as fears of an escalation in the conflict ebbed and flowed. The turbulence occurred amid crumbling investor sentiment that ultimately pressured prices lower. Bond yields soared to their highest level since the global financial crisis as anxiety about hawkish central bank policies was compounded by fiscal concerns. The sell-off continued unabated in early November, with Brent trading at \$82/bbl at the time of writing.

Differentials and time spreads weakened, as US restocking allayed worries about near-term availability. Together with higher freight rates, this pressured WTI, sending its discount to Brent to its largest level since June. Refining margins fell sharply for gasoline, as US demand continued to languish post-driving season. Speculative exchange positioning reflected these price trends, as October saw large-scale investor liquidation in WTI and RBOB gasoline futures.

The US economy grew at a 4.9% annual rate in 3Q23, the quickest pace in almost two years and more than double the previous quarter's rate of 2.1%. Personal consumption contributed the most to the GDP strength, buoyed by a historically tight labour market. Household spending rose by 4% for the quarter, with expenditure on durable goods climbing by 7.6%, as consumers, undeterred by higher interest rates, stepped up spending on big ticket items. Economic consensus sees US GDP growth cooling to around 1% in the final quarter, as higher long-term interest rates take hold while leftover pandemic savings are depleted. A deteriorating geopolitical climate also makes for a more uncertain outlook, as do ongoing labour strikes and the possibility of a government shutdown.

US resilience contrasted with eurozone gloom. The *S&P Global HCOB Flash Eurozone Purchasing Managers' Index* (PMI) fell by 0.7 to a three-year low of 46.5 in October. Excluding pandemic months, this was the steepest drop since 2013, with services (47.8) and manufacturing (43.1) deep in contraction territory. The eurozone's GDP declined by 0.1% q-o-q in 3Q23. Confronted with anaemic growth, the European Central Bank (ECB) pivoted away from further tightening and kept interest rates unchanged in October. As in the US, concerns about public finances pushed up EU borrowing costs, after the Italian government forecasted that its borrowing would exceed five percent of GDP this year. A credit squeeze is exacerbating Europe's economic malaise, as commercial banks further tightened their lending standards in the third quarter, according to the ECB's quarterly survey.



China's 3Q23 GDP came in at 4.9% y-o-y, keeping it on target to meet its 5% goal for the year as a whole. This was better than expected, helped by recent stimulus aimed at the ailing property sector, such as interest rate cuts and lower minimum down payments for mortgages. These measures will do little to relieve embattled developers Evergrande and Country Garden, with both finding themselves on the brink of collapse. Faced with an economy that has turned deflationary (headline inflation fell 0.2% y-o-y in October), China rolled out a fresh array of fiscal stimulus policies, increasing bond issuance and raising budget-deficit targets. Conditions remain fragile, as domestic and external demand remain weak, with exports falling for a sixth straight month in October.

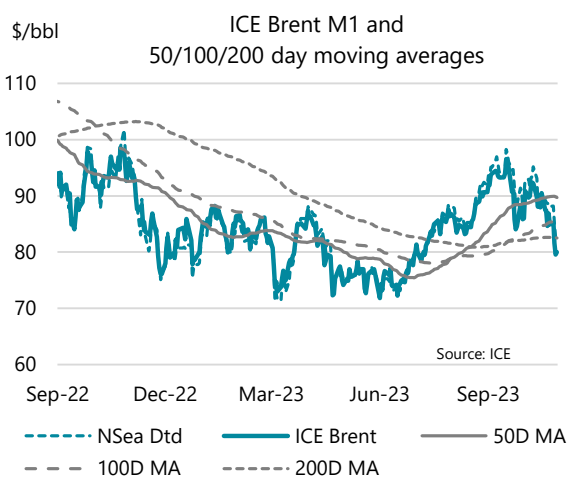
Crude Prices and Differentials (\$/bbl)								
	Month		Week of:		Last:	Changes Oct-23		
	Aug 2023	Sep 2023	Oct 2023	30 Oct	09 Nov	*Monthly Δ	m-o-m Δ	y-o-y Δ
	Crude Futures (M1)							
NYMEX WTI	81.32	89.43	85.47	81.35	75.74	-8.48	-3.96	-1.56
ICE Brent	85.10	92.59	88.70	86.25	80.01	-7.86	-3.88	-4.89
Crude Marker Grades								
North Sea Dated	86.18	93.96	91.12	88.72	82.14	-6.81	-2.84	-1.98
WTI (Cushing)	81.41	89.57	85.57	81.35	75.74	-8.48	-4.00	-1.69
Dubai (London close)	86.43	93.75	89.27	87.31	81.81	-6.37	-4.48	-2.05
Differential to North Sea Dated								
WTI (Cushing)	-4.77	-4.39	-5.55	-7.37	-6.40	-1.67	-1.16	0.30
Dubai (London close)	0.25	-0.22	-1.86	-1.41	-0.33	0.44	-1.64	-0.07
Differential to ICE Brent								
North Sea Dated	1.08	1.38	2.42	2.47	2.13	1.05	1.04	2.91
NYMEX WTI	-3.78	-3.16	-3.24	-4.90	-4.27	-0.62	-0.08	3.33

Sources: Argus Media Group, ICE, NYMEX (NYMEX WTI = NYMEX Light Sweet Crude).

*Monthly Δ refers to the difference in price between the current and previous end of month

Futures markets

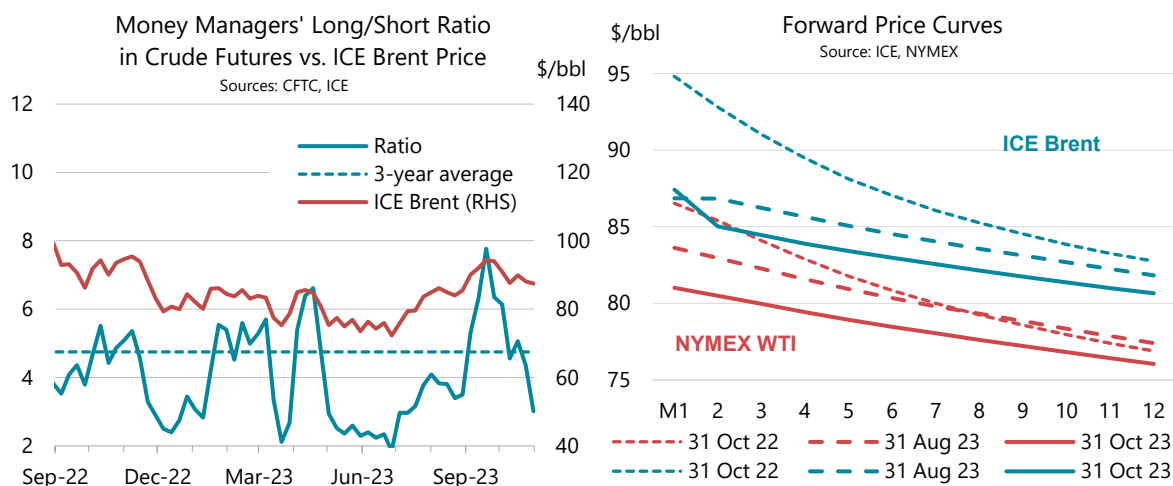
Brent crude futures fell by about \$8/bbl during October, as macroeconomic factors deteriorated and geopolitical concerns eased after an initial spike. The sharp run-up in long-term bond yields made for an unfavourable macro backdrop, while the US dollar stabilised at yearly highs. Ten-year yields climbed for a sixth straight month, hitting 5% for the first time since 2007. Although the Federal Reserve held interest rates steady at its September and November meetings (markets are now pricing a first rate cut by mid-2024), investors are increasingly concerned about rising government borrowing needs. Oil's geopolitical risk premium soared following the Hamas attack on Israel before subsiding, as traders downgraded the odds of the conflict evolving into a broader war. The turbulence caused a spike in volatility. Front-month Brent futures moved by a daily average of \$1.88/bbl during October, their highest in 2023 and more than double September's level.



WTI differentials to Brent weakened after tensions over low US inventories eased. Cushing stocks began to rebuild mid-month, although they remain near 10-year seasonal lows. A spike in ocean freight rates additionally weighed on the WTI-Brent spread, after the US sanctioned two oil tanker owners for violating the Russian price cap on 12 October. Oil held above key support levels for most of October, before finally succumbing at month-end when Brent dipped below the 50-day moving average. The 100- and 200-day levels were subsequently taken out in early November.

The forward structure narrowed in tandem with outright prices, with the 1-12 month backwardation falling by about \$7/bbl, to \$5/bbl for WTI and \$4/bbl Brent. Having traded as high as \$2/bbl in September, the prompt WTI time spread ended October at \$0.52/bbl and on 9 November moved into contango for the first time since July. Likewise, the RBOB gasoline forward curve is pricing comfortable US balances, its front-end also flirting with contango. This compares to the fuel's customary deep backwardation at this time of the year when inventories normally slump seasonally.

Gasoline cracks remained weak over the month compared to the robust levels for distillates. Refining margins reflect the two products' disparate narratives. The ULSD versus WTI front-month crack consolidated near all-time highs, with the exception of last year. By contrast, the RBOB equivalent traded near 10-year seasonal lows.



The outbreak of the Hamas-Israel conflict prompted large-scale investor buying of Brent futures, with funds adding 74 mb that week. This coincided with their selling 57 mb of WTI, as Brent's more "global" profile made it the preferred venue for geopolitical trading strategies. However, fund liquidation subsequently resumed, with investors eventually selling a total of 167 mb of WTI and 43 mb of Brent during October. The ratio of long-to-short crude future holdings by money managers slumped by 3.3 points to 3.0, well below its long-term average of 4.7. Net managed money positions in NYMEX RBOB gasoline sank to 29 mb, their lowest level in three years. NYMEX ULSD and ICE Gasoil also saw, more moderate, investor liquidation. Funds were net sellers of refined product futures for the tenth straight week before the streak stopped at the end of October, sending the product long-to-short ratio to 2.3, about half the long-term average.

Total open interest in the five main ICE and NYMEX futures contracts fell by 380 mb during the month, to 4 880 mb.

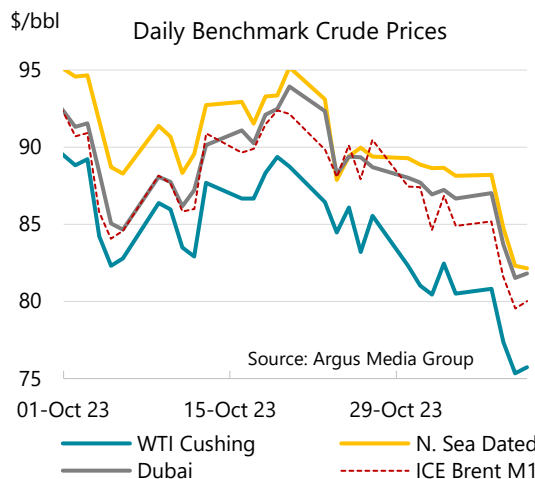
Prompt Month Oil Futures Prices											
(monthly and weekly averages, \$/bbl)											
	Oct 2023						Week Commencing:				Last:
	Aug 2023	Sep 2023	Oct 2023	*Monthly Δ	m-o-m Δ	y-o-y Δ	09 Oct	16 Oct	23 Oct	30 Oct	09 Nov
NYMEX											
Light Sweet Crude Oil (WTI) 1st contract	81.32	89.43	85.47	-8.48	-3.96	-1.56	85.29	87.95	84.67	81.35	75.74
Light Sweet Crude Oil (WTI) 12th contract	77.76	82.52	79.91	2.12	-2.61	1.95	76.63	79.66	79.16	77.65	73.07
RBOB	118.80	110.24	95.50	-9.24	-14.73	-18.25	93.55	97.83	96.17	93.03	90.75
ULSD	130.82	138.94	128.80	-16.63	-10.15	-37.17	128.03	132.68	128.24	124.89	114.20
ULSD (\$/mmbtu)	23.57	25.03	23.20	-3.00	-1.83	-6.70	23.06	23.90	23.10	22.50	20.57
NYMEX Natural Gas (\$/mmbtu)	2.65	2.70	3.15	0.42	0.45	-2.94	3.34	3.02	3.06	3.48	3.04
ICE											
Brent 1st contract	85.10	92.59	88.70	-7.86	-3.88	-4.89	87.70	91.12	89.29	86.25	80.01
Brent 12th; contract	81.76	86.30	83.81	1.93	-2.49	0.78	80.74	83.79	83.52	81.94	77.14
Gasoil	122.11	130.61	121.22	-18.24	-9.39	-29.49	120.73	123.16	119.53	119.24	109.19
Prompt Month Differentials											
NYMEX WTI - ICE Brent	-3.78	-3.16	-3.24	-0.62	-0.08	3.33	-2.41	-3.17	-4.61	-4.90	-4.27
NYMEX WTI 1st vs. 12th	3.56	6.91	5.55	-10.60	-1.36	-3.52	8.66	8.30	5.52	3.70	2.67
ICE Brent 1st - 12th	3.35	6.29	4.90	-9.79	-1.40	-5.67	6.96	7.33	5.77	4.30	2.87
NYMEX ULSD - WTI	49.50	49.51	43.33	-8.15	-6.18	-35.60	42.74	44.72	43.57	43.54	38.46
NYMEX RBOB - WTI	37.48	20.80	10.04	-0.76	-10.77	-16.68	8.26	9.88	11.50	11.68	15.01
NYMEX 3-2-1 Crack (RBOB)	41.49	30.37	21.14	-3.22	-9.24	-22.99	19.76	21.49	22.19	22.30	22.83
NYMEX ULSD - Natural Gas (\$/mmbtu)	20.92	22.33	20.05	-3.42	-2.28	-3.76	19.72	20.88	20.05	19.02	17.53
ICE Gasoil - ICE Brent	37.01	38.02	32.52	-10.38	-5.51	-24.60	33.03	32.04	30.24	32.99	29.18

Source: ICE, NYMEX.

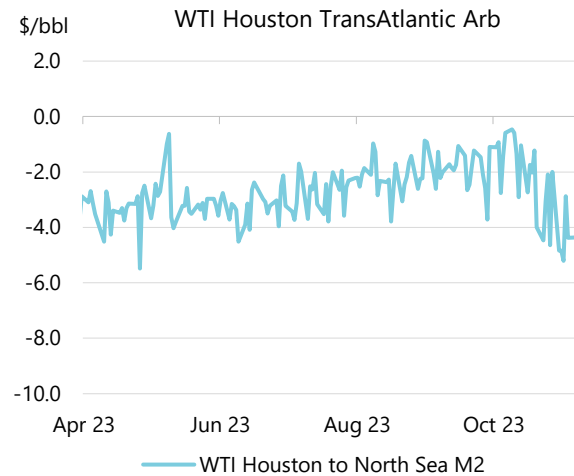
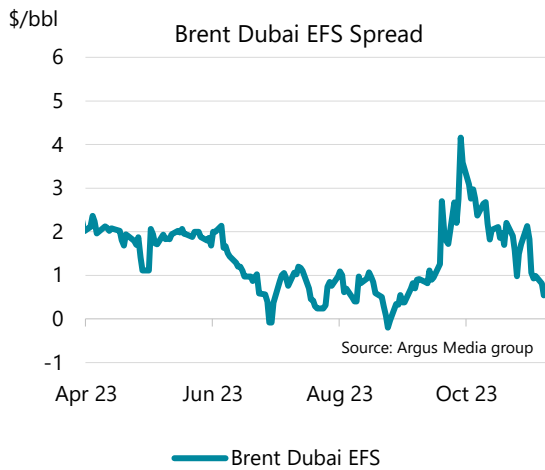
*Monthly Δ refers to the difference in price between the current and previous end of month

Spot crude oil prices

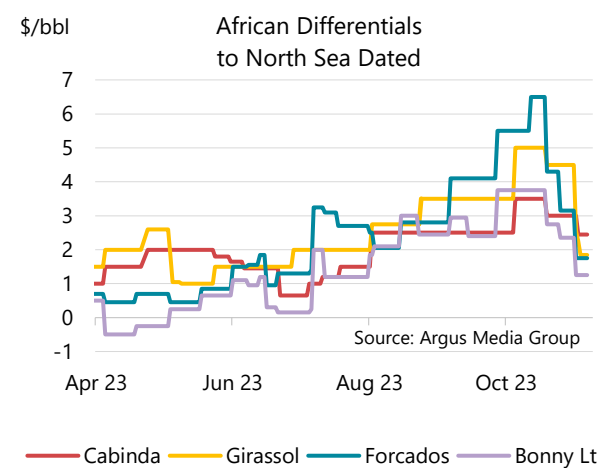
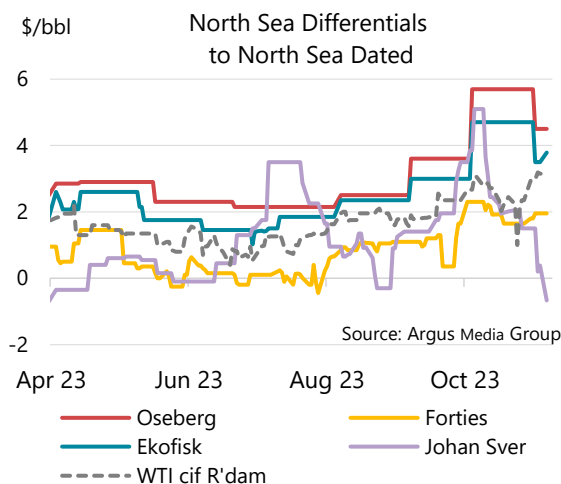
Physical oil prices tracked futures lower in October. In September, tight crude inventories and supply concerns had pushed oil prices to near-term highs. However, in October, extensive refinery maintenance mitigated these worries. The spread between North Sea Dated and ICE Brent rose by \$1.04/bbl m-o-m to \$2.42/bbl, highlighting the increased demand for immediate barrels, notably at the start of the month. The spread rose as high as \$4.07/bbl on 6 October, before briefly retreating to a discount in the final weeks of the month. Overall benchmark physical crude prices dropped on average by approximately \$3/bbl m-o-m, however prices deteriorated substantially over the month and into November. North Sea Dated fell \$6.81/bbl over the course of October, to \$88.86/bbl by end-month, its lowest level since July, while US WTI slipped by \$8.48/bbl to \$81.02/bbl, and Dubai decreased by \$5.16/bbl to \$88.49/bbl. Prompt crude commanded a higher premium in the Atlantic Basin in October.



The Brent to Dubai EFS (exchange of futures for swaps), a measure of the East-West sweet versus sour arbitrage, declined from its September highs. A surge to over \$4/bbl at end-September pushed buyers toward Dubai-linked crudes, helping to ease the spread in early October to around \$2.13/bbl and to \$0.90/bbl at the time of writing. Over recent months, the Brent to Dubai spread has consistently moved in favour of Dubai. The tightness in the sour market, visible in the backwarddated Dubai curve, has eased less than that in the physical North Sea Dated and WTI forward curves. The premium for the first month to the third in Dubai widened by \$0.25/bbl m-o-m to \$2.69/bbl, hitting an 11-month high on 2 October at \$3.61/bbl. However, it fell to \$1.38/bbl in the first week November – the lowest since mid-July 2022. Dubai’s relative price strength directed buyers towards Atlantic crudes.



In the Atlantic Basin, North Sea grade premiums against Dated rose with tight supplies and increased competition, reaching 15-month highs. Sour crude grades saw continued support from lost Kirkuk exports, sanctions on Russian Urals, ongoing OPEC+ production cuts and persistent hikes in official selling prices (OSPs) for Middle East crudes. As a result, European refineries maintained their appetite for regional sweet and sour grades, while Asian refiners shifted towards Atlantic Basin crudes. Notably, China acquired 60% of the total exports of the light sour Forties grade, which reached a high of \$2.30/bbl but later fell back to \$1.70/bbl in early November. This was due to narrowing refining margins along with rising North Sea supply as platform maintenance ended. Similarly, Johan Sverdrup's premium rose \$0.93/bbl m-o-m to \$2.75/bbl, hitting a high of \$5.10/bbl on 5 October before collapsing to negative values in early November. Despite weaker refining margins, tight supplies pushed premiums for Oseberg and Ekofisk to their highest levels in 15 months, maintaining that strength into November. Ekofisk's spread rose by \$1.67/bbl to \$4.55/bbl against Dated while Oseberg widened by \$2.12/bbl m-o-m to \$5.51/bbl. By contrast, WTI CIF Rotterdam differentials to North Sea Dated widened by \$0.47/bbl m-o-m to \$2.51/bbl.

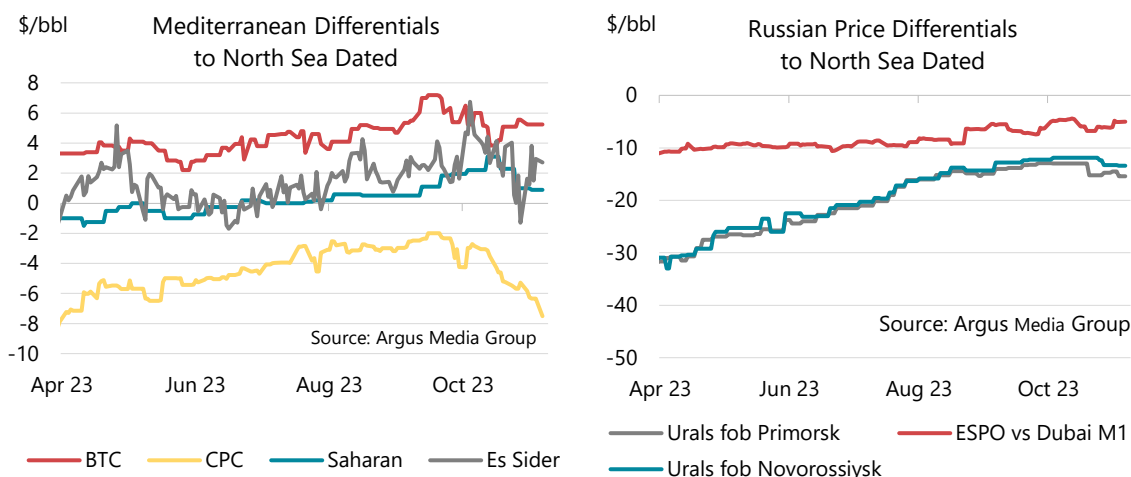


The tightness in the North Sea spilled over into the West African crude market. Premiums for West African crudes against North Sea Dated spiked early in the month but eased as rising freight rates left many cargoes unsold by month-end. Trade economics deteriorated, as represented by the Brent-Dubai EFS, leaving many typical Chinese buyers out of the market. The Forcados spread against Dated climbed by \$0.86/bbl m-o-m to \$4.97/bbl, peaking at \$6.50/bbl through 18 October but fell sharply by \$4.75/bbl to \$1.75/bbl in November. Brass River and Bonny firmed to \$3.75/bbl and \$3.25/bbl, respectively (+\$0.90/bbl and +\$0.49/bbl). Qua Iboe, on the other hand, experienced

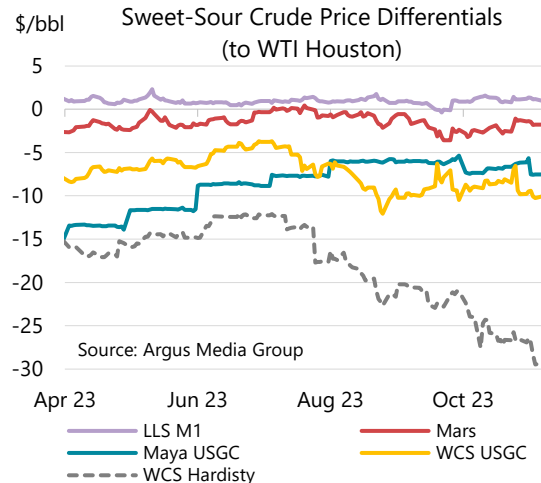
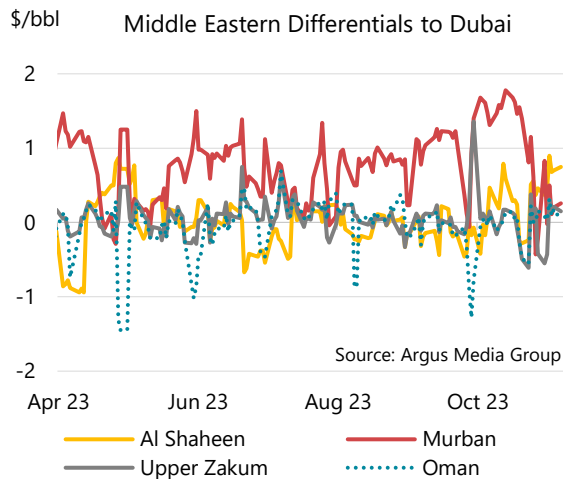
a decline of \$0.11/bbl m-o-m to \$3.41/bbl. Angolan crude prices remained relatively stable throughout the month. Cabinda rose by \$0.66/bbl m-o-m to \$3.16/bbl, retreating to \$2.45/bbl in early November, while Girassol was up by \$1.09/bbl m-o-m to \$4.59/bbl, but recently collapsed to \$1.05/bbl.

Mediterranean grades were mostly lower versus Dated in October, reflecting weaker regional demand, higher freight costs and narrowing refining margins. Unfavourable trade economics pushed out the eastern refiners. Discounts for CPC Blend versus Dated widened significantly, by \$1.73/bbl m-o-m, to -\$4.33/bbl on average and -\$6.26/bbl by month-end. Es Sider followed a similar pattern, with premiums falling by \$0.45/bbl m-o-m to \$0.64/bbl, eventually reaching a discount before rebounding in early November. Differentials for BTC Blend decreased by \$0.99/bbl m-o-m to \$5.13/bbl, but spreads remained relatively stable. Saharan Blend was an exception during this period, rising by \$0.93/bbl m-o-m to \$2.10/bbl. While European buyers initially secured several cargoes at the beginning of the month on the heels of last month's run up in diesel margins, prices failed to sustain their early momentum, shedding \$0.95/bbl from the start to the end of the month. Nevertheless, premiums remained at their highest levels since August 2022.

Russian Urals price discounts to Dated widened slightly throughout October in the wake of rallying freight rates. Urals FOB Primorsk fell by \$1.85/bbl to -\$14.50/bbl by the end of October, while those for Urals FOB Novorossiysk sank by \$1.05/bbl. ESPO prices versus Dubai rose by \$0.92/bbl m-o-m to -\$5.52/bbl even with dwindling import quotas which have affected Chinese demand for the crude.



In the Middle East, higher OSPs prompted many term buyers in the market to seek spot barrels from other regions. At the beginning of the month, the spot market for Dubai also gained support due to the widening of the Brent to Dubai EFS, making Dubai-linked deals more attractive. The flattening of the Dubai curve throughout the month also improved arbitrage economics, resulting in increased demand from Japan and Korea as they prepare for the winter months. Qatar's Al-Shaheen rose by \$0.37/bbl m-o-m to flip to a \$0.22/bbl premium versus Dubai, with most of the gains occurring in the final trading days of the month. Differentials for Al-Shaheen are now at their highest level in over a year. Abu Dhabi's light sour Murban crude, which has the highest spread in the Dubai basket, continued its rally from the previous month, It reached \$1.78/bbl in the week of 13 October before collapsing to a \$0.23/bbl discount, resulting in a monthly average premium of \$1.19/bbl. Differentials for Oman rose by \$0.17/bbl m-o-m, bringing the discount to -\$0.02/bbl. By contrast, Upper Zakum differentials to Dubai fell by \$0.21/bbl m-o-m, to -\$0.07/bbl.



Both the US Gulf Coast and Cushing saw modest increases in crude oil inventories in October. However, stock levels remain well below both seasonal and annual averages. This, combined with extensive fall refinery maintenance, led to a weakening in USGC crude oil differentials. WTI Midland and WTI Houston each experienced a \$0.55/bbl decrease against WTI Cushing, resulting in average premiums of \$0.71/bbl and \$0.89/bbl, respectively. The transatlantic arbitrage spread, as exemplified by the North Sea Dated Month 2 premium to WTI Houston, showed significant volatility throughout October. It initially narrowed to a low of \$0.46/bbl in the week of 9 October, impacting export flows. However, by the end of the month, the spread widened to a high of \$4.84/bbl, effectively opening arbitrage opportunities for eastbound cargoes. In the sour market, the spread for WCS priced at Hardisty versus WCS in the Gulf Coast significantly increased by over \$17/bbl, representing the widest gap since January 2020 and potentially creating opportunities for rail transport. This was driven by growth in oil sands production, limited pipeline capacity to the United States and other export markets, rising inventories in Canada, as well as refinery maintenance.

Spot Crude Oil Prices and Differentials
(monthly and weekly averages, \$/bbl)

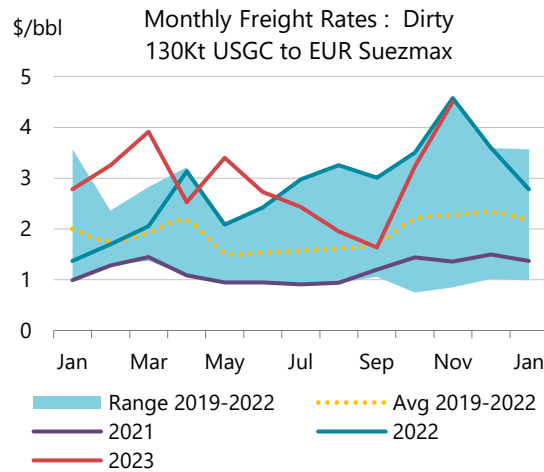
	Oct 2023			Week Commencing:			Last:				
	Aug 2023	Sep 2023	Oct 2023	*Monthly Δ	m-o-m Δ	y-o-y Δ	09 Oct	16 Oct	23 Oct	30 Oct	09 Nov
Crudes											
North Sea Dated	86.18	93.96	91.12	-6.81	-2.84	-1.98	90.53	93.25	89.95	88.72	82.14
North Sea Mth 1	85.87	93.76	90.62	-5.37	-3.14	-3.90	89.67	93.15	90.52	87.79	81.40
North Sea Mth 2	85.17	92.72	88.78	-4.76	-3.94	-4.73	87.54	91.19	89.02	86.72	80.94
WTI (Cushing) Mth 1	81.41	89.57	85.57	-8.48	-4.00	-1.69	85.29	87.95	85.15	81.35	75.74
WTI (Cushing) Mth 2	80.86	88.57	84.39	-7.12	-4.17	-1.68	83.79	86.88	84.37	80.93	75.75
WTI (Houston) Mth 1	82.97	91.01	86.47	-8.51	-4.54	-3.13	86.27	88.84	85.77	82.30	76.54
Urals FOB Primorsk	70.96	80.25	77.39	-8.66	-2.86	7.91	77.53	79.80	74.80	73.99	66.19
Dubai (1st month)	86.44	93.19	89.81	-5.16	-3.38	-1.27	87.97	91.93	90.52	87.77	81.12
Differentials to Futures											
North Sea Dated vs. ICE Brent	1.08	1.38	2.42	1.05	1.04	2.91	2.83	2.13	0.66	2.47	2.13
WTI (Cushing) Mth1 vs. NYMEX	0.09	0.14	0.11	0.00	-0.04	-0.12	0.00	0.00	0.47	0.00	0.00
Differentials to Physical Markers											
WTI (Houston) vs. North Sea Mth 2	-2.20	-1.71	-2.31	-3.75	-0.60	1.59	-1.27	-2.35	-3.25	-4.43	-4.40
WTI (Houston) vs. WTI (Cushing)	1.56	1.44	0.89	-0.02	-0.55	-1.45	0.98	0.89	0.63	0.95	0.80
Urals FOB Prim vs. North Sea Dated	-15.22	-13.71	-13.73	-1.85	-0.02	9.90	-13.00	-13.45	-15.15	-14.73	-15.95
Dubai vs. ICE Brent	1.33	0.60	1.11	2.70	0.51	3.53	0.27	0.82	1.23	1.52	1.11
Dubai vs. WTI (Cushing) Mth 2	5.58	4.62	5.42	1.96	0.80	0.41	4.18	5.05	6.15	6.84	5.37
Prompt Month Differentials											
Forward North Sea Mth1-Mth2	0.69	1.04	1.84	-0.61	0.80	0.83	2.12	1.97	1.50	1.07	0.46
Forward WTI Cushing Mth1-Mth2	0.55	1.00	1.18	-1.36	0.18	-0.01	1.50	1.07	0.77	0.41	-0.01
Forward Dubai Mth1-Mth2	1.08	1.17	1.49	-0.25	0.31	-0.67	1.54	1.57	1.12	1.05	0.82

Source: Argus Media group, ICE, NYMEX

*Monthly Δ refers to the difference in price between the current and previous end of month

Freight

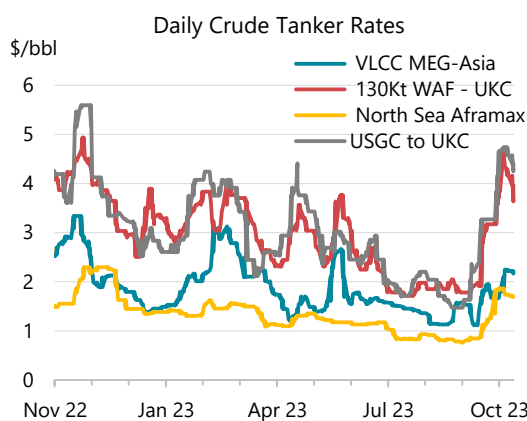
Global tanker rates skyrocketed for crude shipments in October, whereas rates for clean product tankers mostly eased. October and early November traditionally mark a robust period for tonne-mile demand, with higher global crude loadings.



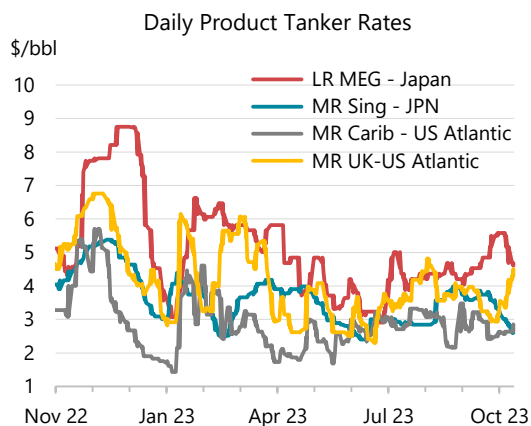
The heightened demand for oil, particularly in preparation for the Northern Hemisphere winter, has partially contributed to higher rates. However, the tanker market has also been strained by the increase of WTI shipments to Europe, greater demand for charters from West Africa, and ongoing shifts in trade flows. Combined, these factors have added additional pressure to the tanker market, driving rates to higher-than-average levels as shippers scramble amid tight tonnage lists.

Geopolitical tensions have introduced a level of uncertainty to crude trade routes but have impacted freight rates to a lesser extent. The recent imposition of US sanctions on two companies that owned vessels carrying Russian crude oil exports (which were purchased at prices exceeding the G7 price cap) has added to the heightened risk perception in the market. Increased insurance costs in some markets have also contributed to higher freight rates.

Suezmax rates experienced the most substantial gains, with rates for charters from West Africa rising by \$1.06/bbl m-o-m to \$2.94/bbl, while those from the US Gulf Coast to Europe doubled to average \$3.23/bbl. Aframax charters out of the North Sea jumped by \$0.45/bbl m-o-m to \$1.27/bbl. Simultaneously, VLCC rates for long-haul shipments from the Middle East to Asia added \$0.34/bbl m-o-m, to average \$1.65/bbl.



Source: Argus Media Group



Source: Argus Media Group

Conversely, rates for clean product mostly declined, except for long-range (LR) shipments from the Middle East to Asia, where they rose by \$0.63/bbl to \$4.98/bbl. The increase in long-haul movements aligns with seasonal averages, which tend to rise ahead of the winter months. Medium-range (MR) rates within Asia fell by \$0.19/bbl m-o-m to \$3.54/bbl, while values for MR vessels from Europe to the United States decreased by \$0.42/bbl m-o-m to \$3.41/bbl. MR rates in the Americas remained unchanged at around \$2.75/bbl.

Table 2a
OECD REGIONAL OIL DEMAND¹
(million barrels per day)

	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23 ²	Latest month vs.	
										Jul 23	Aug 22
Americas											
LPG and ethane	3.70	3.83	3.63	3.88	4.00	3.85	3.98	4.08	3.77	-0.30	0.36
Naphtha	0.26	0.23	0.22	0.22	0.22	0.24	0.23	0.23	0.22	0.00	0.01
Motor gasoline	10.34	10.46	10.62	10.41	10.23	10.79	11.02	10.65	11.04	0.38	0.19
Jet and kerosene	1.57	1.84	1.90	1.87	1.85	1.98	2.06	2.11	2.06	-0.05	0.10
Gasoil/diesel oil	5.04	5.27	5.19	5.27	5.23	5.06	5.10	4.84	5.35	0.51	0.15
Residual fuel oil	0.56	0.55	0.60	0.53	0.51	0.43	0.48	0.45	0.56	0.11	-0.02
Other products	2.86	2.68	2.88	2.62	2.49	2.85	2.90	2.88	3.04	0.16	0.08
Total	24.32	24.87	25.03	24.80	24.52	25.21	25.78	25.24	26.04	0.80	0.87
Europe											
LPG and ethane	1.09	1.04	1.10	0.99	1.10	1.11	1.07	1.00	1.07	0.07	-0.04
Naphtha	1.16	0.96	0.86	0.84	0.97	0.83	0.76	0.74	0.72	-0.02	-0.15
Motor gasoline	1.93	2.04	2.15	2.02	1.98	2.19	2.29	2.23	2.23	0.00	0.02
Jet and kerosene	0.86	1.29	1.50	1.32	1.26	1.46	1.57	1.64	1.64	0.00	0.11
Gasoil/diesel oil	6.29	6.25	6.37	6.31	5.98	6.06	6.24	6.09	5.80	-0.29	-0.54
Residual fuel oil	0.72	0.78	0.80	0.77	0.76	0.73	0.71	0.72	0.76	0.04	-0.03
Other products	1.16	1.16	1.24	1.11	1.05	1.16	1.26	1.21	1.20	-0.01	-0.01
Total	13.19	13.51	14.01	13.35	13.10	13.54	13.89	13.65	13.43	-0.22	-0.65
Asia Oceania											
LPG and ethane	0.76	0.79	0.71	0.80	0.90	0.70	0.69	0.71	0.77	0.06	0.06
Naphtha	1.97	1.85	1.89	1.84	1.94	1.69	1.59	1.69	1.77	0.07	-0.21
Motor gasoline	1.39	1.44	1.52	1.50	1.41	1.43	1.46	1.51	1.55	0.04	-0.01
Jet and kerosene	0.60	0.68	0.53	0.83	0.94	0.67	0.68	0.66	0.64	-0.02	0.10
Gasoil/diesel oil	1.86	1.87	1.85	1.94	1.89	1.84	1.89	1.87	1.79	-0.08	-0.15
Residual fuel oil	0.45	0.50	0.48	0.51	0.54	0.42	0.42	0.43	0.40	-0.03	-0.10
Other products	0.30	0.24	0.20	0.22	0.19	0.19	0.21	0.18	0.16	-0.02	-0.02
Total	7.34	7.38	7.17	7.63	7.81	6.96	6.94	7.05	7.08	0.02	-0.32
OECD											
LPG and ethane	5.55	5.67	5.43	5.66	6.00	5.66	5.74	5.79	5.61	-0.18	0.37
Naphtha	3.39	3.04	2.97	2.89	3.13	2.76	2.57	2.66	2.71	0.05	-0.35
Motor gasoline	13.66	13.94	14.29	13.93	13.62	14.42	14.77	14.40	14.82	0.42	0.21
Jet and kerosene	3.02	3.81	3.92	4.02	4.04	4.11	4.32	4.41	4.34	-0.07	0.31
Gasoil/diesel oil	13.18	13.40	13.41	13.53	13.10	12.97	13.24	12.80	12.95	0.14	-0.54
Residual fuel oil	1.73	1.82	1.88	1.81	1.80	1.59	1.61	1.60	1.72	0.12	-0.14
Other products	4.32	4.08	4.31	3.95	3.73	4.20	4.37	4.27	4.40	0.12	0.05
Total	44.85	45.75	46.22	45.78	45.43	45.71	46.62	45.94	46.55	0.61	-0.09

¹ Demand, measured as deliveries from refineries and primary stocks, comprises inland deliveries, international bunkers and refinery fuel. It includes crude for direct burning, oil from non-conventional sources and other sources of supply. Jet/kerosene comprises jet kerosene and non-aviation kerosene. Gasoil comprises diesel, light heating oil and other gasoils.

Americas comprises US 50 states, US territories, Mexico, Canada and Chile.

² Latest official OECD submissions (MOS).

Table 2b
OIL DEMAND IN SELECTED OECD COUNTRIES¹
(million barrels per day)

	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23 ²	Latest month vs.	
										Jul 23	Aug 22
United States³											
LPG and ethane	2.88	3.08	2.91	3.08	3.24	3.08	3.14	3.13	2.91	-0.22	0.19
Naphtha	0.19	0.14	0.13	0.13	0.13	0.15	0.12	0.14	0.13	0.00	0.01
Motor gasoline	8.82	8.81	8.93	8.74	8.67	9.13	9.28	9.01	9.30	0.29	0.18
Jet and kerosene	1.38	1.56	1.60	1.58	1.57	1.68	1.74	1.78	1.71	-0.07	0.06
Gasoil/diesel oil	3.97	4.03	3.91	4.00	4.01	3.93	3.96	3.65	4.13	0.49	0.19
Residual fuel oil	0.31	0.33	0.38	0.30	0.29	0.22	0.26	0.26	0.33	0.07	-0.05
Other products	2.35	2.06	2.25	2.01	1.90	2.20	2.22	2.15	2.37	0.22	0.02
Total	19.89	20.01	20.11	19.85	19.80	20.38	20.72	20.12	20.88	0.76	0.62
Japan											
LPG and ethane	0.40	0.39	0.32	0.41	0.51	0.35	0.36	0.33	0.34	0.00	0.00
Naphtha	0.69	0.61	0.62	0.64	0.64	0.56	0.49	0.51	0.61	0.10	-0.07
Motor gasoline	0.77	0.80	0.85	0.82	0.77	0.79	0.80	0.86	0.89	0.04	0.01
Jet and kerosene	0.37	0.38	0.23	0.47	0.57	0.33	0.33	0.29	0.27	-0.02	0.04
Diesel	0.42	0.42	0.43	0.43	0.41	0.41	0.43	0.43	0.41	-0.02	-0.02
Other gasoil	0.31	0.31	0.28	0.32	0.34	0.28	0.29	0.27	0.26	-0.01	-0.02
Residual fuel oil	0.25	0.26	0.25	0.27	0.30	0.21	0.22	0.23	0.21	-0.01	-0.05
Other products	0.21	0.20	0.21	0.20	0.18	0.17	0.18	0.16	0.14	-0.02	-0.07
Total	3.41	3.38	3.20	3.57	3.73	3.10	3.10	3.08	3.13	0.06	-0.19
Germany											
LPG and ethane	0.11	0.11	0.10	0.09	0.10	0.10	0.10	0.11	0.10	-0.01	0.00
Naphtha	0.37	0.31	0.27	0.27	0.30	0.28	0.26	0.24	0.21	-0.03	-0.06
Motor gasoline	0.46	0.45	0.47	0.44	0.45	0.46	0.47	0.46	0.45	-0.01	-0.06
Jet and kerosene	0.13	0.20	0.22	0.21	0.18	0.20	0.22	0.23	0.22	-0.01	0.00
Diesel	0.73	0.71	0.74	0.71	0.66	0.69	0.71	0.71	0.67	-0.04	-0.13
Other gasoil	0.30	0.28	0.30	0.31	0.29	0.27	0.26	0.23	0.21	-0.02	-0.08
Residual fuel oil	0.05	0.06	0.06	0.05	0.04	0.05	0.06	0.05	0.04	0.00	-0.01
Other products	0.08	0.06	0.08	0.05	0.04	0.04	0.06	0.07	0.05	-0.02	-0.03
Total	2.23	2.18	2.24	2.13	2.06	2.10	2.12	2.10	1.95	-0.14	-0.37
Italy											
LPG and ethane	0.10	0.11	0.10	0.11	0.12	0.09	0.09	0.10	0.11	0.01	0.01
Naphtha	0.08	0.06	0.04	0.05	0.06	0.05	0.04	0.03	0.05	0.01	0.00
Motor gasoline	0.17	0.18	0.20	0.18	0.16	0.19	0.21	0.20	0.21	0.01	0.01
Jet and kerosene	0.05	0.09	0.11	0.08	0.07	0.10	0.11	0.13	0.12	-0.01	0.02
Diesel	0.48	0.49	0.51	0.50	0.47	0.49	0.51	0.51	0.46	-0.06	-0.02
Other gasoil	0.07	0.05	0.06	0.05	0.03	0.04	0.06	0.06	0.04	-0.02	-0.01
Residual fuel oil	0.06	0.06	0.07	0.06	0.05	0.05	0.05	0.06	0.06	0.00	-0.01
Other products	0.15	0.16	0.17	0.16	0.15	0.16	0.16	0.16	0.14	-0.02	-0.02
Total	1.16	1.19	1.25	1.18	1.13	1.18	1.23	1.25	1.18	-0.07	-0.02
France											
LPG and ethane	0.11	0.10	0.10	0.07	0.11	0.11	0.11	0.11	0.11	0.00	0.02
Naphtha	0.14	0.10	0.10	0.08	0.11	0.11	0.10	0.10	0.12	0.01	0.02
Motor gasoline	0.21	0.23	0.26	0.23	0.22	0.25	0.27	0.26	0.27	0.01	0.01
Jet and kerosene	0.09	0.14	0.17	0.14	0.15	0.17	0.18	0.19	0.20	0.00	0.00
Diesel	0.72	0.73	0.75	0.72	0.69	0.71	0.78	0.72	0.66	-0.06	-0.02
Other gasoil	0.14	0.11	0.10	0.11	0.14	0.08	0.08	0.08	0.08	0.00	-0.01
Residual fuel oil	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.00	-0.01
Other products	0.09	0.09	0.11	0.08	0.07	0.10	0.12	0.10	0.09	-0.01	-0.02
Total	1.54	1.54	1.63	1.47	1.53	1.55	1.67	1.60	1.56	-0.04	-0.02
United Kingdom											
LPG and ethane	0.11	0.10	0.09	0.08	0.10	0.09	0.08	0.06	0.05	-0.01	-0.05
Naphtha	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Motor gasoline	0.25	0.28	0.28	0.27	0.28	0.30	0.31	0.27	0.28	0.01	0.00
Jet and kerosene	0.17	0.27	0.28	0.28	0.29	0.30	0.31	0.31	0.31	0.00	0.02
Diesel	0.47	0.47	0.47	0.47	0.47	0.53	0.53	0.49	0.48	0.00	0.01
Other gasoil	0.13	0.13	0.15	0.12	0.12	0.09	0.09	0.08	0.09	0.01	-0.04
Residual fuel oil	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.00	0.00
Other products	0.10	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.00	0.00
Total	1.25	1.38	1.41	1.36	1.40	1.44	1.46	1.35	1.36	0.00	-0.05
Canada											
LPG and ethane	0.46	0.38	0.34	0.41	0.38	0.41	0.47	0.56	0.48	-0.09	0.16
Naphtha	0.05	0.06	0.07	0.06	0.06	0.07	0.07	0.07	0.07	0.00	0.00
Motor gasoline	0.76	0.78	0.82	0.80	0.73	0.83	0.88	0.80	0.86	0.06	0.02
Jet and kerosene	0.09	0.14	0.17	0.15	0.14	0.16	0.19	0.19	0.21	0.02	0.03
Diesel	0.29	0.32	0.34	0.34	0.31	0.28	0.27	0.32	0.32	0.00	-0.01
Other gasoil	0.27	0.27	0.26	0.27	0.28	0.26	0.26	0.25	0.25	0.00	0.00
Residual fuel oil	0.03	0.03	0.03	0.04	0.04	0.02	0.02	0.03	0.01	-0.01	-0.01
Other products	0.31	0.42	0.43	0.40	0.39	0.44	0.48	0.51	0.47	-0.03	0.07
Total	2.26	2.41	2.44	2.47	2.33	2.47	2.63	2.73	2.68	-0.05	0.25

¹ Demand, measured as deliveries from refineries and primary stocks, comprises inland deliveries, international bunkers and refinery fuel. It includes crude for direct burning, oil from non-conventional sources and other sources of supply. Jet/kerosene comprises jet kerosene and non-aviation kerosene. Gasoil comprises diesel, light heating oil and other gasoils.

² Latest official OECD submissions (MOS).

³ US figures exclude US territories.

Table 3
WORLD OIL PRODUCTION
(million barrels per day)

	2022	2023	2024	2Q23	3Q23	4Q23	1Q24	2Q24	Aug 23	Sep 23	Oct 23
OPEC											
Crude Oil											
Saudi Arabia	10.53			10.14	9.02				8.96	9.03	9.01
Iran	2.55			3.00	3.11				3.14	3.14	3.10
Iraq	4.45			4.14	4.31				4.32	4.34	4.38
UAE	3.34			3.27	3.23				3.22	3.25	3.25
Kuwait	2.70			2.63	2.57				2.58	2.59	2.57
Angola	1.14			1.10	1.13				1.13	1.11	1.15
Nigeria	1.15			1.15	1.21				1.18	1.35	1.35
Libya	0.99			1.16	1.15				1.16	1.15	1.13
Algeria	1.01			0.97	0.95				0.93	0.95	0.96
Congo	0.26			0.28	0.27				0.27	0.25	0.26
Gabon	0.19			0.20	0.22				0.22	0.22	0.22
Equatorial Guinea	0.08			0.06	0.06				0.06	0.06	0.06
Venezuela	0.70			0.79	0.79				0.80	0.77	0.77
Total Crude Oil	29.08			28.89	28.01				27.97	28.21	28.21
<i>of which Neutral Zone¹</i>	<i>0.28</i>			<i>0.30</i>	<i>0.24</i>				<i>0.22</i>	<i>0.24</i>	<i>0.30</i>
Total NGLs²	5.43	5.55	5.63	5.52	5.58	5.60	5.63	5.63	5.58	5.59	5.58
Total OPEC³	34.51			34.41	33.59				33.55	33.80	33.79
NON-OPEC⁴											
OECD											
Americas	25.70	27.12	27.68	26.85	27.38	27.56	27.41	27.64	27.53	27.19	27.48
United States	17.93	19.30	19.71	19.25	19.62	19.61	19.42	19.78	19.69	19.67	19.77
Mexico	2.01	2.12	2.11	2.14	2.10	2.12	2.13	2.12	2.11	2.11	2.11
Canada	5.76	5.69	5.85	5.45	5.66	5.81	5.86	5.73	5.72	5.40	5.58
Chile	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Europe	3.16	3.15	3.16	3.22	3.01	3.10	3.22	3.15	3.10	2.86	2.97
UK	0.83	0.74	0.71	0.77	0.62	0.72	0.71	0.71	0.67	0.61	0.68
Norway	1.90	1.97	2.00	2.00	1.94	1.93	2.07	2.00	1.99	1.80	1.84
Others	0.43	0.44	0.44	0.44	0.44	0.45	0.45	0.45	0.44	0.45	0.45
Asia Oceania	0.48	0.47	0.48	0.46	0.46	0.48	0.50	0.48	0.47	0.47	0.47
Australia	0.41	0.39	0.40	0.38	0.38	0.41	0.42	0.40	0.39	0.40	0.41
Others	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Total OECD	29.34	30.73	31.32	30.53	30.84	31.14	31.14	31.28	31.09	30.51	30.92
NON-OECD											
Former USSR	13.90	13.81	13.71	13.79	13.59	13.72	13.68	13.72	13.50	13.69	13.77
Russia	11.09	10.95	10.81	10.91	10.81	10.88	10.81	10.81	10.78	10.86	10.91
Azerbaijan	0.67	0.63	0.65	0.62	0.62	0.62	0.64	0.64	0.62	0.61	0.61
Kazakhstan	1.82	1.92	1.93	1.95	1.85	1.90	1.92	1.96	1.79	1.91	1.94
Others	0.32	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Asia	6.88	6.92	6.90	7.00	6.83	6.81	6.94	6.93	6.82	6.84	6.85
China	4.18	4.27	4.33	4.34	4.21	4.21	4.36	4.36	4.23	4.21	4.24
Malaysia	0.56	0.55	0.55	0.55	0.54	0.53	0.55	0.55	0.52	0.54	0.53
India	0.70	0.69	0.68	0.69	0.69	0.68	0.67	0.68	0.69	0.68	0.68
Indonesia	0.63	0.63	0.60	0.64	0.62	0.61	0.61	0.60	0.61	0.62	0.61
Others	0.81	0.78	0.74	0.78	0.78	0.77	0.75	0.74	0.78	0.78	0.77
Europe	0.11	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Americas	5.65	6.18	6.69	6.00	6.28	6.47	6.67	6.65	6.20	6.40	6.39
Brazil	3.12	3.50	3.81	3.32	3.63	3.74	3.82	3.75	3.55	3.76	3.71
Argentina	0.71	0.76	0.79	0.76	0.76	0.77	0.78	0.78	0.75	0.77	0.76
Colombia	0.76	0.79	0.77	0.79	0.79	0.79	0.78	0.77	0.80	0.79	0.79
Ecuador	0.47	0.45	0.46	0.45	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Others	0.59	0.68	0.86	0.68	0.64	0.71	0.83	0.88	0.65	0.62	0.67
Middle East	3.16	3.13	3.14	3.15	3.11	3.13	3.14	3.13	3.13	3.14	3.13
Oman	1.07	1.06	1.05	1.06	1.05	1.05	1.05	1.05	1.05	1.04	1.05
Qatar	1.80	1.81	1.81	1.81	1.81	1.81	1.82	1.81	1.81	1.81	1.81
Others	0.29	0.26	0.28	0.28	0.25	0.27	0.28	0.28	0.27	0.28	0.27
Africa	1.29	1.28	1.31	1.27	1.31	1.31	1.31	1.31	1.32	1.30	1.31
Egypt	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Others	0.70	0.68	0.71	0.67	0.71	0.71	0.71	0.71	0.72	0.70	0.71
Total Non-OECD	30.99	31.42	31.83	31.32	31.23	31.53	31.84	31.84	31.07	31.47	31.54
Processing gains ⁵	2.31	2.35	2.44	2.35	2.38	2.37	2.44	2.44	2.39	2.36	2.34
Global biofuels	2.95	3.18	3.28	3.28	3.59	3.17	2.77	3.39	3.54	3.56	3.43
TOTAL NON-OPEC	65.59	67.69	68.86	67.47	68.05	68.20	68.18	68.94	68.09	67.91	68.23
TOTAL SUPPLY	100.09			101.88	101.64				101.64	101.71	102.03

¹ Neutral Zone production is already included in Saudi Arabia and Kuwait production with their respective shares.

² Includes condensates reported by OPEC countries, oil from non-conventional sources, e.g. GTL in Nigeria and non-oil inputs to Saudi Arabian MTBE.

³ OPEC data based on today's membership throughout the time series.

⁴ Comprises crude oil, condensates, NGLs and oil from non-conventional sources.

⁵ Net volumetric gains and losses in refining and marine transportation losses.

Table 3a
OIL SUPPLY IN OECD COUNTRIES¹
(thousand of barrels per day)

	2022	2023	2024	2Q23	3Q23	4Q23	1Q24	2Q24	Aug 23	Sep 23	Oct 23
United States											
Alaska	437	430	442	429	398	453	461	442	396	400	437
California	349	315	305	318	315	312	309	306	314	315	313
Texas	5060	5544	5713	5482	5653	5675	5629	5710	5631	5724	5704
New Mexico	1589	1802	1922	1812	1779	1803	1833	1922	1797	1782	1805
Federal Gulf of Mexico ²	1730	1889	1897	1767	1923	1993	1959	1927	1891	1946	2016
Other US Lower 48	2746	2932	2920	2937	2993	2971	2933	2931	3024	3007	2998
NGLs ³	5933	6311	6432	6424	6474	6332	6214	6467	6549	6424	6430
Other Hydrocarbons	84	79	75	77	83	74	80	70	83	69	67
Total	17928	19302	19706	19246	19618	19614	19418	19776	19685	19667	19770
Canada											
Alberta Light/Medium/Heavy	491	515	539	498	521	518	544	541	525	522	518
Alberta Bitumen	1995	1979	2015	1809	2035	2093	1959	1952	2039	2072	2146
Saskatchewan	454	448	434	451	443	439	440	436	444	441	441
Other Crude	432	348	392	429	248	312	394	448	240	149	221
NGLs	1036	1041	1085	979	1065	1070	1075	1082	1071	1056	1069
Other Upgraders	181	184	186	176	176	192	196	175	176	163	171
Synthetic Crudes	1167	1179	1198	1115	1165	1192	1249	1104	1213	1006	1026
Total	5756	5692	5849	5454	5658	5809	5856	5733	5721	5403	5582
Mexico											
Crude	1843	1949	1958	1965	1935	1962	1970	1967	1944	1942	1954
NGLs	158	163	150	173	158	156	154	151	163	159	156
Total	2006	2116	2113	2141	2097	2123	2128	2123	2111	2105	2114
UK											
Brent Fields	23	17	14	23	12	12	18	17	20	-1	18
Forties Fields	210	178	135	178	158	172	166	95	128	177	172
Ninian Fields	20	27	23	28	27	26	25	24	27	26	26
Flotta Fields	40	32	29	27	33	32	31	27	32	32	33
Other Fields	474	434	472	459	352	441	436	509	414	351	394
NGLs	66	48	35	57	42	37	36	35	48	23	41
Total	833	737	709	772	625	719	712	707	669	608	684
Norway⁴											
Ekofisk-Ula Area	122	113	110	114	96	113	114	106	100	69	108
Oseberg-Troll Area	192	179	179	178	163	184	183	180	168	145	185
Statfjord-Gullfaks Area	250	212	201	198	202	213	208	203	233	161	214
Haltenbanken Area	237	235	245	230	235	247	251	249	242	235	243
Sleipner-Frigg Area	784	960	1035	979	991	945	1033	975	972	993	856
Other Fields	124	92	57	115	91	54	100	109	99	56	68
NGLs	190	178	177	186	167	175	178	178	178	138	169
Total	1899	1969	2003	2001	1943	1932	2067	2001	1991	1797	1844
Other OECD Europe											
Denmark	65	63	74	57	65	70	75	75	70	66	68
Italy	83	86	75	91	86	86	75	75	87	86	85
Türkiye	69	77	87	76	78	81	84	87	77	79	80
Other	78	67	69	66	57	74	72	70	59	75	74
NGLs	7	6	5	6	5	5	5	5	6	6	5
Non-Conventional Oils	129	144	135	148	146	134	135	135	141	140	133
Total	431	443	445	444	437	450	446	447	440	452	445
Australia											
Gippsland Basin	8	9	9	9	9	9	9	9	9	9	9
Cooper-Eromanga Basin	18	18	17	19	18	18	18	17	18	18	18
Carnarvon Basin	108	79	92	50	94	98	96	93	97	102	98
Other Crude	177	181	182	199	156	178	196	179	156	161	178
NGLs	102	105	101	108	107	105	104	102	112	105	105
Total	413	392	401	385	384	408	422	400	393	395	409
Other OECD Asia Oceania											
New Zealand	16	17	14	18	17	15	14	14	19	15	15
Japan	3	3	3	3	3	3	3	3	3	3	3
NGLs	11	10	8	10	9	8	8	8	10	8	8
Non-Conventional Oils	38	39	41	38	40	41	41	41	42	41	40
Total	68	69	65	69	70	67	66	66	74	67	66
OECD											
Crude Oil	20228	21235	21678	21022	21191	21609	21655	21715	21277	21171	21502
NGLs	7510	7871	8000	7952	8034	7897	7782	8036	8144	7926	7992
Non-Conventional Oils ⁵	1605	1628	1638	1554	1620	1631	1702	1525	1672	1416	1430
Total	29342	30734	31316	30528	30845	31137	31139	31276	31093	30513	30924

¹ Subcategories refer to crude oil only unless otherwise noted.

² Only production from Federal waters is included.

³ To the extent possible, condensates from natural gas processing plants are included with NGLs, while field condensates are aggregated with crude oil.

⁴ North Sea production is grouped into crude streams that include all fields being processed through the named field complex, i.e. the name corresponds to the crude stream not just the field of that name.

⁵ Does not include biofuels.

Table 3b
WORLD OIL PRODUCTION (Including OPEC+ based on current agreement¹)
(million barrels per day)

	2022	2023	2024	2Q23	3Q23	4Q23	1Q24	2Q24	Aug 23	Sep 23	Oct 23
OPEC+											
Crude Oil											
Algeria	1.01	0.97	0.96	0.97	0.95	0.96	0.96	0.96	0.93	0.95	0.96
Angola	1.14	1.09	1.03	1.10	1.13	1.10	1.05	1.04	1.13	1.11	1.15
Azerbaijan	0.56	0.51	0.53	0.50	0.50	0.50	0.52	0.52	0.50	0.49	0.49
Bahrain	0.19	0.18	0.19	0.20	0.17	0.20	0.20	0.19	0.19	0.20	0.20
Brunei	0.07	0.07	0.08	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Congo	0.26	0.27	0.27	0.28	0.27	0.27	0.27	0.27	0.27	0.25	0.26
Equatorial Guinea	0.08	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Gabon	0.19	0.20	0.18	0.20	0.22	0.19	0.18	0.18	0.22	0.22	0.22
Iran	2.55	2.98	3.10	3.00	3.11	3.10	3.10	3.10	3.14	3.14	3.10
Iraq	4.45	4.30	4.30	4.14	4.31	4.35	4.30	4.30	4.32	4.34	4.38
Kazakhstan	1.50	1.59	1.59	1.62	1.53	1.58	1.58	1.61	1.46	1.62	1.63
Kuwait	2.70	2.61	2.55	2.63	2.57	2.56	2.55	2.55	2.58	2.59	2.57
Libya	0.99	1.15	1.19	1.16	1.15	1.15	1.17	1.19	1.16	1.15	1.13
Malaysia	0.40	0.37	0.37	0.36	0.36	0.35	0.37	0.37	0.34	0.37	0.35
Mexico	1.62	1.66	1.68	1.67	1.65	1.68	1.69	1.69	1.67	1.66	1.67
Nigeria	1.15	1.23	1.25	1.15	1.21	1.30	1.27	1.25	1.18	1.35	1.35
Oman	0.85	0.81	0.80	0.82	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Russia	9.75	9.57	9.48	9.51	9.48	9.53	9.48	9.48	9.47	9.50	9.53
Saudi Arabia	10.53	9.64	9.98	10.14	9.02	8.99	9.98	9.98	8.96	9.03	9.01
South Sudan	0.14	0.16	0.16	0.15	0.18	0.17	0.17	0.17	0.18	0.18	0.18
Sudan	0.06	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06
UAE	3.34	3.30	3.24	3.27	3.23	3.24	3.24	3.24	3.22	3.25	3.25
Venezuela	0.70	0.77	0.84	0.79	0.79	0.78	0.82	0.85	0.80	0.77	0.77
Total Crude Oil	44.22	43.56	43.88	43.84	42.83	43.01	43.88	43.93	42.71	43.16	43.19
<i>of which Neutral Zone</i>	<i>0.28</i>			<i>0.30</i>	<i>0.24</i>				<i>0.22</i>	<i>0.24</i>	<i>0.30</i>
Total NGLs	8.00	8.28	8.32	8.29	8.24	8.29	8.32	8.32	8.24	8.26	8.29
TOTAL OPEC+	52.2	51.8	52.2	52.1	51.1	51.3	52.2	52.2	50.9	51.4	51.5
NON-OPEC+											
OECD											
Americas²	23.69	25.00	25.56	24.71	25.29	25.43	25.28	25.52	25.42	25.08	25.36
United States	17.93	19.30	19.71	19.25	19.62	19.61	19.42	19.78	19.69	19.67	19.77
Canada	5.76	5.69	5.85	5.45	5.66	5.81	5.86	5.73	5.72	5.40	5.58
Chile	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Europe	3.16	3.15	3.16	3.22	3.01	3.10	3.22	3.15	3.10	2.86	2.97
UK	0.83	0.74	0.71	0.77	0.62	0.72	0.71	0.71	0.67	0.61	0.68
Norway	1.90	1.97	2.00	2.00	1.94	1.93	2.07	2.00	1.99	1.80	1.84
Others	0.43	0.44	0.44	0.44	0.44	0.45	0.45	0.45	0.44	0.45	0.45
Asia Oceania	0.48	0.47	0.48	0.46	0.46	0.48	0.50	0.48	0.47	0.47	0.47
Australia	0.41	0.39	0.40	0.38	0.38	0.41	0.42	0.40	0.39	0.40	0.41
Others	0.07	0.07	0.08	0.07	0.07	0.07	0.08	0.08	0.07	0.08	0.07
Total OECD (non-OPEC+)	27.34	28.62	29.20	28.39	28.75	29.01	29.01	29.15	28.98	28.41	28.81
Non-OECD											
FSU	0.32	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Asia	6.23	6.27	6.25	6.37	6.19	6.18	6.30	6.28	6.20	6.20	6.22
China	4.18	4.27	4.33	4.34	4.21	4.21	4.36	4.36	4.23	4.21	4.24
India	0.70	0.69	0.68	0.69	0.69	0.68	0.67	0.68	0.69	0.68	0.68
Indonesia	0.63	0.63	0.60	0.64	0.62	0.61	0.61	0.60	0.61	0.62	0.61
Others	0.71	0.68	0.64	0.69	0.68	0.67	0.65	0.65	0.68	0.68	0.68
Europe	0.11	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Americas	5.65	6.18	6.69	6.00	6.28	6.47	6.67	6.65	6.20	6.40	6.39
Brazil	3.12	3.50	3.81	3.32	3.63	3.74	3.82	3.75	3.55	3.76	3.71
Argentina	0.71	0.76	0.79	0.76	0.76	0.77	0.78	0.78	0.75	0.77	0.76
Colombia	0.76	0.79	0.77	0.79	0.79	0.79	0.78	0.77	0.80	0.79	0.79
Ecuador	0.47	0.45	0.46	0.45	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Others	0.59	0.68	0.86	0.68	0.64	0.71	0.83	0.88	0.65	0.62	0.67
Middle East	1.89	1.88	1.89	1.89	1.88	1.88	1.89	1.88	1.88	1.88	1.87
Qatar	1.80	1.81	1.81	1.81	1.81	1.81	1.82	1.81	1.81	1.81	1.81
Others	0.09	0.07	0.08	0.07	0.07	0.07	0.07	0.08	0.07	0.07	0.06
Africa	1.09	1.07	1.10	1.07	1.07	1.08	1.08	1.09	1.09	1.06	1.08
Egypt	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Others	0.49	0.47	0.49	0.46	0.47	0.48	0.49	0.49	0.49	0.46	0.48
Total non-OECD (non-OPEC+)	15.28	15.82	16.32	15.74	15.85	16.01	16.34	16.31	15.78	15.96	15.97
Processing gains	2.31	2.35	2.44	2.35	2.38	2.37	2.44	2.44	2.39	2.36	2.34
Global biofuels	2.95	3.18	3.28	3.28	3.59	3.17	2.77	3.39	3.54	3.56	3.43
TOTAL NON-OPEC+	47.87	49.97	51.24	49.75	50.57	50.55	50.55	51.29	50.69	50.29	50.55
TOTAL SUPPLY	100.09	101.81	103.44	101.88	101.64	101.85	102.76	103.53	101.64	101.71	102.03

¹ From November 2023, OPEC+ supply reflects latest OPEC+ deal and individual country's sustainable capacity. Libya and Iran held at most recent level through 2024.

Table 4
OECD STOCKS AND QUARTERLY STOCK CHANGES

	RECENT MONTHLY STOCKS ² in Million Barrels					PRIOR YEARS' STOCKS ² in Million Barrels			STOCK CHANGES in mb/d			
	May2023	Jun2023	Jul2023	Aug2023	Sep2023 ³	Sep2020	Sep2021	Sep2022	4Q2022	1Q2023	2Q2023	3Q2023
OECD INDUSTRY-CONTROLLED STOCKS¹												
OECD Americas												
Crude	614.1	605.4	590.6	567.8	565.8	652.9	587.6	579.4	0.17	0.29	-0.17	-0.43
Motor Gasoline	247.5	247.4	247.6	244.8	257.3	257.0	252.8	235.9	0.17	0.03	-0.07	0.11
Middle Distillate	184.2	183.4	191.8	189.1	189.0	241.3	204.2	174.3	0.10	-0.04	0.03	0.06
Residual Fuel Oil	39.0	36.4	34.2	31.9	33.2	38.5	34.3	34.5	0.03	-0.02	0.01	-0.04
Total Products ⁴	738.6	747.7	768.3	780.1	796.4	862.6	773.0	731.5	0.00	-0.30	0.47	0.53
Total⁵	1512.9	1513.1	1522.6	1511.9	1527.7	1690.4	1523.7	1473.0	0.20	-0.03	0.27	0.16
OECD Europe												
Crude	353.2	347.7	343.0	344.8	339.5	377.8	306.2	337.2	0.00	0.02	0.10	-0.09
Motor Gasoline	82.7	80.4	84.8	86.3	86.6	90.0	80.9	87.7	0.00	0.02	-0.10	0.07
Middle Distillate	257.5	245.9	253.2	263.3	254.5	334.4	270.5	236.0	0.17	-0.05	-0.01	0.09
Residual Fuel Oil	70.2	65.5	63.0	62.3	63.4	68.6	63.4	66.6	0.04	-0.03	-0.02	-0.02
Total Products ⁴	514.9	495.9	509.4	523.9	522.7	612.5	511.7	500.9	0.19	-0.14	-0.11	0.29
Total⁵	945.9	920.5	930.1	949.0	938.5	1078.9	889.7	918.3	0.20	-0.19	0.01	0.20
OECD Asia Oceania												
Crude	131.0	134.1	140.7	121.9	120.7	163.3	109.4	127.6	0.00	0.13	-0.07	-0.15
Motor Gasoline	24.8	25.1	23.5	24.0	24.3	26.8	26.7	23.6	0.01	0.00	0.01	-0.01
Middle Distillate	62.5	60.1	61.0	68.4	71.7	72.0	72.1	62.6	0.00	-0.09	0.06	0.13
Residual Fuel Oil	17.7	17.2	17.7	18.7	18.6	17.2	18.7	16.7	0.00	0.00	0.01	0.01
Total Products ⁴	166.9	167.5	167.6	181.9	180.8	183.4	184.1	168.8	-0.05	-0.08	0.11	0.14
Total⁵	355.6	358.9	367.6	367.9	364.4	411.3	355.2	359.2	-0.06	-0.03	0.09	0.06
Total OECD												
Crude	1098.2	1087.2	1074.3	1034.5	1026.0	1194.0	1003.3	1044.2	0.17	0.44	-0.15	-0.67
Motor Gasoline	355.0	352.9	355.8	355.1	368.2	373.7	360.4	347.2	0.18	0.04	-0.16	0.17
Middle Distillate	504.2	489.4	506.1	520.8	515.1	647.6	546.8	472.8	0.27	-0.17	0.08	0.28
Residual Fuel Oil	126.9	119.2	114.9	112.9	115.1	124.3	116.3	117.8	0.07	-0.05	0.00	-0.04
Total Products ⁴	1420.4	1411.0	1445.4	1485.9	1499.9	1658.5	1468.8	1401.3	0.15	-0.52	0.47	0.97
Total⁵	2814.4	2792.5	2820.3	2828.8	2830.6	3180.6	2768.5	2750.5	0.34	-0.25	0.37	0.41
OECD GOVERNMENT-CONTROLLED STOCKS⁶												
OECD Americas												
Crude	354.4	347.2	347.5	350.3	351.3	642.2	617.8	416.4	-0.48	-0.01	-0.26	0.05
Products	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.00	0.00	0.00	0.00
OECD Europe												
Crude	186.8	189.3	191.1	191.2	190.7	207.4	205.3	194.0	-0.01	-0.06	0.02	0.02
Products	276.2	278.8	279.0	279.5	280.0	280.5	277.6	252.5	0.15	0.05	0.09	0.01
OECD Asia Oceania												
Crude	352.1	351.3	348.1	349.1	349.1	377.6	369.5	342.3	0.01	0.06	0.04	-0.02
Products	35.7	35.7	35.5	34.8	35.1	39.4	38.8	37.3	-0.02	0.00	0.00	-0.01
Total OECD												
Crude	893.2	887.8	886.6	890.6	891.2	1227.1	1192.5	952.7	-0.49	-0.01	-0.21	0.04
Products	313.9	316.5	316.5	316.3	317.1	321.9	318.5	291.8	0.13	0.04	0.09	0.01
Total⁵	1208.7	1205.8	1205.3	1209.1	1210.2	1551.3	1512.7	1245.6	-0.35	0.03	-0.12	0.05

¹ Stocks are primary national territory stocks on land (excluding utility stocks and including pipeline and entropot stocks where known) and include stocks held by industry to meet IEA, EU and national emergency reserve commitments and are subject to government control in emergencies.

² Closing stock levels.

³ Estimated.

⁴ Total products includes gasoline, middle distillates, fuel oil and other products.

⁵ Total includes NGLs, refinery feedstocks, additives/oxygenates and other hydrocarbons.

⁶ Includes government-owned stocks and stock holding organisation stocks held for emergency purposes.

Table 5
TOTAL STOCKS ON LAND IN OECD COUNTRIES¹
(millions of barrels¹ and 'days'²)

	End September 2022		End December 2022		End March 2023		End June 2023		End September 2023 ³	
	Stock Level	Days Fwd ² Demand	Stock Level	Days Fwd Demand	Stock Level	Days Fwd Demand	Stock Level	Days Fwd Demand	Stock Level	Days Fwd Demand
OECD Americas										
Canada	188.1	76	199.8	86	188.3	76	180.0	-	-	-
Chile	10.6	29	10.6	28	10.8	29	10.9	-	-	-
Mexico	36.7	20	36.6	20	37.3	20	35.8	-	-	-
United States ⁴	1634.0	82	1596.6	81	1603.5	79	1613.6	-	-	-
Total⁴	1891.4	77	1865.7	76	1862.0	74	1862.3	73	1881.1	75
OECD Asia Oceania										
Australia	35.8	32	38.7	35	39.8	35	38.9	-	-	-
Israel	-	-	-	-	-	-	-	-	-	-
Japan	522.4	146	513.9	138	492.5	159	510.7	-	-	-
Korea	174.5	69	173.8	68	196.0	84	190.8	-	-	-
New Zealand	6.1	35	5.5	36	5.8	38	5.4	-	-	-
Total	738.8	97	731.9	94	734.1	106	745.9	105	748.5	98
OECD Europe⁵										
Austria	17.4	72	21.3	91	22.6	91	22.0	-	-	-
Belgium	45.4	77	45.7	73	45.5	77	46.9	-	-	-
Czech Republic	22.6	105	23.1	116	23.6	113	22.0	-	-	-
Denmark	21.1	142	23.6	167	22.8	149	21.8	-	-	-
Estonia	2.3	80	3.4	120	3.2	110	3.0	-	-	-
Finland	40.4	219	38.0	222	35.9	198	36.4	-	-	-
France	142.3	97	151.3	99	138.7	89	151.8	-	-	-
Germany	265.6	125	271.7	132	264.3	126	264.8	-	-	-
Greece	30.4	97	31.9	118	32.1	107	31.6	-	-	-
Hungary	28.6	172	28.7	177	30.5	172	30.7	-	-	-
Ireland	10.3	65	11.0	70	10.3	67	10.3	-	-	-
Italy	123.3	104	120.0	106	122.9	104	117.7	-	-	-
Latvia	2.8	82	2.9	89	1.9	55	3.0	-	-	-
Lithuania	8.2	115	8.3	133	8.7	122	8.5	-	-	-
Luxembourg	0.6	14	0.5	11	0.5	10	0.5	-	-	-
Netherlands	125.2	141	139.8	155	130.1	142	126.3	-	-	-
Norway	26.0	128	27.2	123	27.8	115	26.1	-	-	-
Poland	82.1	116	83.8	128	88.5	125	87.5	-	-	-
Portugal	21.1	103	20.0	91	18.9	86	19.1	-	-	-
Slovak Republic	13.5	141	13.1	141	13.5	146	13.5	-	-	-
Slovenia	4.5	85	4.9	100	4.5	92	4.7	-	-	-
Spain	111.5	87	109.5	87	110.2	88	112.9	-	-	-
Sweden	34.5	118	36.0	121	36.9	121	39.2	-	-	-
Switzerland	28.2	140	27.4	145	28.4	144	29.0	-	-	-
Republic of Türkiye	86.6	83	88.6	92	87.9	82	93.9	-	-	-
United Kingdom	71.1	52	65.9	47	69.6	48	66.9	-	-	-
Total	1365.8	102	1397.5	107	1379.7	102	1390.2	103	1411.2	105
Total OECD	3996.0	87	3995.1	88	3975.8	87	3998.3	87	4040.8	88
DAYS OF IEA Net Imports⁶ -	242	-	241	-	242	-	143	-	-	-

¹ Total Stocks are industry and government-controlled stocks (see breakdown in the table below). Stocks are primary national territory stocks on land (excluding utility stocks and including pipeline and entropot stocks where known) they include stocks held by industry to meet IEA, EU and national emergency reserves commitments and are subject to government control in emergencies.

² Note that days of forward demand represent the stock level divided by the forward quarter average daily demand and is very different from the days of net imports used for the calculation of IEA Emergency Reserves.

³ End September 2023 forward demand figures are IEA Secretariat forecasts.

⁴ US figures exclude US territories. Total includes US territories.

⁵ Data not available for Iceland.

⁶ Reflects stock levels and prior calendar year's net imports adjusted according to IEA emergency reserve definitions (see www.iea.org/netimports.asp). Net exporting IEA countries are excluded.

TOTAL OECD STOCKS

CLOSING STOCKS	Total	Government ¹ controlled		Industry	Total	Government ¹ controlled	
		Millions of Barrels	Days of Fwd. Demand ²			Days of Fwd. Demand ²	
3Q2020	4732	1551	3181	110	36	74	
4Q2020	4578	1541	3037	108	36	71	
1Q2021	4470	1546	2924	102	35	66	
2Q2021	4405	1524	2882	96	33	63	
3Q2021	4281	1513	2769	91	32	59	
4Q2021	4135	1484	2651	90	32	58	
1Q2022	4057	1442	2615	90	32	58	
2Q2022	4008	1343	2664	87	29	58	
3Q2022	3996	1246	2750	87	27	60	
4Q2022	3995	1214	2781	88	27	61	
1Q2023	3976	1217	2759	87	27	60	
2Q2023	3998	1206	2792	87	26	61	
3Q2023	4041	1210	2831	88	26	61	

¹ Includes government-owned stocks and stock holding organisation stocks held for emergency purposes.

² Days of forward demand calculated using actual demand except in 3Q2023 (where latest forecasts are used).

Table 6
IEA MEMBER COUNTRY DESTINATIONS OF SELECTED CRUDE STREAMS¹
(million barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier	
											Aug 22	change
Saudi Light & Extra Light												
Americas	0.26	0.34	0.46	0.52	0.41	0.39	0.39	0.41	0.30	0.39	0.68	-0.29
Europe	0.59	0.48	0.62	0.60	0.67	0.73	0.67	0.61	0.47	0.50	0.67	-0.18
Asia Oceania	1.39	1.30	1.51	1.53	1.58	1.58	1.43	1.42	1.37	1.28	1.74	-0.45
Saudi Medium												
Americas	0.14	0.01	-	-	-	-	-	-	-	-	-	-
Europe	0.02	0.01	0.02	0.03	0.01	0.01	-	-	0.02	-	0.02	-
Asia Oceania	0.25	0.21	0.23	0.26	0.23	0.25	0.16	0.08	0.22	0.33	0.33	0.00
Canada Heavy												
Americas	2.39	2.59	2.61	2.58	2.63	2.70	2.57	2.61	2.42	2.46	2.38	0.07
Europe	0.03	0.03	0.08	0.08	0.11	0.07	0.14	0.11	0.11	0.13	0.03	0.10
Asia Oceania	0.00	0.02	0.01	0.01	-	-	-	-	-	-	-	-
Iraqi Basrah Light²												
Americas	0.11	0.08	0.21	0.25	0.13	0.33	0.18	0.21	0.18	0.34	0.16	0.18
Europe	0.58	0.62	0.69	0.82	0.69	0.71	0.75	0.82	0.80	0.79	0.82	-0.03
Asia Oceania	0.22	0.17	0.23	0.26	0.26	0.27	0.26	0.30	0.22	0.25	0.22	0.04
Kuwait Blend												
Americas	-	-	-	-	-	-	-	-	-	-	-	-
Europe	0.04	-	-	-	-	-	-	-	-	-	-	-
Asia Oceania	0.55	0.48	0.48	0.47	0.46	0.51	0.45	0.43	0.50	0.41	0.50	-0.10
Iranian Light												
Americas	-	-	-	-	-	-	-	-	-	-	-	-
Europe	-	-	-	-	-	-	-	-	-	-	-	-
Asia Oceania	-	-	-	-	-	-	-	-	-	-	-	-
Iranian Heavy³												
Americas	-	-	-	-	-	-	-	-	-	-	-	-
Europe	-	-	-	-	-	-	-	-	-	-	-	-
Asia Oceania	-	-	-	-	-	-	-	-	-	-	-	-
BFOE												
Americas	-	0.00	-	-	-	-	-	-	0.02	-	-	-
Europe	0.42	0.36	0.41	0.44	0.38	0.50	0.47	0.29	0.53	0.49	0.34	0.16
Asia Oceania	0.03	0.05	0.03	0.02	-	-	-	-	-	-	-	-
Kazakhstan												
Americas	-	0.01	-	-	-	-	-	-	-	-	-	-
Europe	0.74	0.69	0.73	0.67	0.70	0.98	0.97	1.02	0.93	0.89	0.69	0.20
Asia Oceania	0.07	0.09	0.13	0.09	0.14	0.15	0.14	0.07	0.14	0.07	0.13	-0.07
Venezuelan 22 API and heavier												
Americas	-	-	-	-	-	-	0.03	-	0.09	0.09	-	-
Europe	0.04	-	0.01	0.04	0.02	0.01	0.02	0.03	0.05	0.03	-	-
Asia Oceania	-	-	-	-	-	-	-	-	-	-	-	-
Mexican Maya												
Americas	0.48	0.40	0.40	0.40	0.36	0.43	0.38	0.46	0.37	0.39	0.39	0.00
Europe	0.16	0.14	0.10	0.09	0.12	0.09	0.10	0.10	0.03	0.08	0.10	-0.02
Asia Oceania	0.12	0.14	0.06	0.04	0.08	0.05	0.05	0.05	0.05	-	0.03	-
Russian Urals												
Americas	-	-	-	-	-	-	-	-	-	-	-	-
Europe	1.12	1.05	0.74	0.71	0.40	0.13	0.09	0.10	0.10	0.09	0.65	-0.57
Asia Oceania	-	0.01	-	-	-	-	-	-	-	-	-	-
Cabinda and Other Angola												
North America	0.01	-	0.00	0.00	-	-	-	-	-	-	0.01	-
Europe	0.12	0.03	0.23	0.29	0.31	0.35	0.22	0.20	0.19	0.37	0.31	0.06
Pacific	-	-	0.00	0.01	0.01	-	-	-	-	-	-	-
Nigerian Light⁴												
Americas	-	0.02	0.00	0.01	-	-	-	-	-	-	0.03	-
Europe	0.49	0.41	0.41	0.29	0.46	0.53	0.43	0.47	0.46	0.51	0.24	0.27
Asia Oceania	0.02	0.01	0.01	0.02	0.02	0.00	0.00	-	-	-	0.03	-
Libya Light and Medium												
Americas	-	0.02	-	-	-	-	-	-	-	-	-	-
Europe	0.19	0.80	0.63	0.52	0.76	0.65	0.76	0.76	0.91	0.78	0.57	0.21
Asia Oceania	0.01	0.02	0.01	0.01	0.01	0.02	0.00	-	0.02	0.02	-	-

¹ Data based on monthly submissions from IEA countries to the crude oil import register (in '000 bbl), subject to availability. May differ from Table 8 of the Report. IEA Americas includes United States and Canada. IEA Europe includes all countries in OECD Europe except Estonia, Hungary, Slovenia and Latvia. IEA Asia Oceania includes Australia, New Zealand, Korea and Japan.

² Iraqi Total minus Kirkuk.

³ Iranian Total minus Iranian Light.

⁴ 33* API and lighter (e.g., Bonny Light, Escravos, Qua Iboe and Oso Condensate).

Table 7
REGIONAL OECD IMPORTS^{1,2}
(thousand barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier	
											Aug 22	% change
Crude Oil												
Americas	1895	2077	2116	2161	2129	2105	2182	2135	2255	2598	2134	22%
Europe	8349	8520	9090	9302	8986	8368	8337	8576	8331	8965	8939	0%
Asia Oceania	5579	5514	5871	6228	5724	5934	5407	5280	5609	5043	6481	-22%
Total OECD	15823	16110	17077	17692	16839	16408	15926	15991	16194	16606	17553	-5%
LPG												
Americas	28	21	25	24	18	31	23	18	23	21	26	-20%
Europe	422	404	525	514	578	543	538	473	482	510	479	6%
Asia Oceania	559	562	579	532	538	677	486	492	514	586	570	3%
Total OECD	1009	987	1130	1070	1134	1251	1048	983	1020	1116	1074	4%
Naphtha												
Americas	7	8	7	7	8	5	14	8	7	5	6	-9%
Europe	409	513	306	225	195	176	134	125	189	147	211	-30%
Asia Oceania	1003	1146	1046	1063	1074	1118	933	942	897	1116	1071	4%
Total OECD	1419	1667	1359	1294	1277	1298	1082	1075	1093	1268	1288	-2%
Gasoline³												
Americas	576	805	675	733	590	548	988	1040	834	912	749	22%
Europe	109	106	101	108	69	63	53	47	63	61	112	-46%
Asia Oceania	116	153	176	179	179	197	196	162	200	199	176	13%
Total OECD	800	1064	953	1021	838	808	1237	1250	1097	1172	1036	13%
Jet & Kerosene												
Americas	159	165	134	115	177	178	160	164	166	111	96	15%
Europe	337	329	453	535	536	383	478	394	625	590	508	16%
Asia Oceania	60	69	87	67	139	161	113	132	112	110	66	66%
Total OECD	556	563	674	717	852	722	751	690	902	810	670	21%
Gasoi/Diesel												
Americas	134	197	99	41	120	158	59	34	46	50	49	2%
Europe	1192	1188	1225	1136	1486	1164	1261	1300	1213	985	1142	-14%
Asia Oceania	328	349	319	311	325	336	384	417	473	428	300	43%
Total OECD	1654	1735	1644	1489	1931	1658	1704	1752	1733	1463	1491	-2%
Heavy Fuel Oil												
Americas	143	102	122	82	132	105	51	68	29	57	102	-44%
Europe	295	374	260	244	241	146	158	136	167	154	221	-30%
Asia Oceania	88	119	89	68	75	107	86	90	121	120	84	43%
Total OECD	526	594	470	393	448	358	295	295	318	331	407	-19%
Other Products												
Americas	592	581	498	504	457	473	477	523	468	379	475	-20%
Europe	574	605	629	643	605	561	615	653	637	616	537	15%
Asia Oceania	207	229	213	225	209	167	192	217	165	193	216	-11%
Total OECD	1373	1415	1340	1372	1271	1201	1284	1393	1269	1188	1228	-3%
Total Products												
Americas	1639	1879	1560	1506	1502	1499	1772	1856	1574	1534	1503	2%
Europe	3339	3518	3500	3405	3711	3035	3238	3129	3376	3062	3209	-5%
Asia Oceania	2360	2628	2510	2445	2538	2761	2390	2452	2483	2752	2483	11%
Total OECD	7339	8025	7570	7355	7751	7295	7400	7437	7432	7348	7194	2%
Total Oil												
Americas	3535	3957	3676	3667	3632	3604	3954	3991	3828	4133	3637	14%
Europe	11688	12037	12590	12707	12697	11403	11574	11704	11707	12027	12148	-1%
Asia Oceania	7939	8141	8381	8673	8262	8696	7798	7732	8091	7795	8963	-13%
Total OECD	23162	24135	24647	25047	24591	23703	23326	23427	23627	23954	24748	-3%

1 Based on Monthly Oil Questionnaire data submitted by OECD countries in tonnes and converted to barrels conversion factors available at <https://www.iea.org/articles/oil-market-report-glossary#>.

2 Excludes intra-regional trade.

3 Includes additives.

Table 7a
REGIONAL OECD IMPORTS FROM NON-OECD COUNTRIES^{1,2}
(thousand barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier	
											Aug 22	% change
Crude Oil												
Americas	1835	1982	2049	2094	2057	2053	2110	2064	2202	2574	2089	23%
Europe	7115	7265	7523	7612	7251	6564	6441	6781	6288	6847	7091	-3%
Asia Oceania	5051	4904	5293	5690	5083	5380	4920	4827	5029	4753	5912	-20%
Total OECD	14002	14151	14865	15396	14392	13998	13472	13672	13519	14174	15092	-6%
LPG												
Americas	22	20	25	24	18	31	23	18	23	21	26	-21%
Europe	252	243	256	236	283	263	275	245	251	253	230	10%
Asia Oceania	58	46	62	54	52	50	34	15	28	20	81	-76%
Total OECD	331	309	343	314	353	345	332	278	302	293	336	-13%
Naphtha												
Americas	1	4	3	2	6	3	6	4	6	1	4	-63%
Europe	390	426	272	224	194	162	103	82	180	112	210	-46%
Asia Oceania	832	974	945	952	958	1047	889	908	863	1072	954	12%
Total OECD	1223	1404	1220	1179	1158	1212	998	994	1049	1186	1168	2%
Gasoline³												
Americas	195	248	174	214	137	155	329	328	287	259	247	5%
Europe	104	100	84	90	58	49	38	37	52	39	97	-60%
Asia Oceania	98	149	176	179	179	197	196	162	200	199	176	13%
Total OECD	397	497	434	483	374	400	562	528	539	497	519	-4%
Jet & Kerosene												
Americas	55	63	48	25	89	91	60	59	86	39	17	125%
Europe	297	294	393	461	423	370	423	361	565	489	437	12%
Asia Oceania	60	69	87	67	139	161	113	132	112	110	66	66%
Total OECD	413	426	528	553	650	622	597	551	764	638	521	22%
Gasoi/Diesel												
Americas	103	134	43	12	48	98	39	22	36	43	20	113%
Europe	1062	1107	1120	1034	1315	1008	1021	973	908	809	1038	-22%
Asia Oceania	323	349	319	311	325	336	384	417	473	428	300	43%
Total OECD	1488	1591	1482	1358	1688	1441	1444	1413	1418	1280	1358	-6%
Heavy Fuel Oil												
Americas	110	86	90	56	96	86	38	47	16	57	81	-30%
Europe	279	347	239	215	220	126	133	94	161	128	195	-35%
Asia Oceania	88	119	89	68	75	107	86	90	121	120	84	43%
Total OECD	477	552	418	339	390	318	257	231	297	305	361	-16%
Other Products												
Americas	514	530	421	398	360	385	421	448	379	287	355	-19%
Europe	352	427	443	453	415	314	365	365	474	383	342	12%
Asia Oceania	130	151	140	148	138	101	105	119	101	101	142	-29%
Total OECD	996	1108	1004	999	912	800	890	932	953	770	839	-8%
Total Products												
Americas	1001	1086	804	732	754	848	917	926	833	707	751	-6%
Europe	2735	2944	2806	2715	2907	2291	2357	2157	2590	2212	2549	-13%
Asia Oceania	1590	1857	1818	1779	1864	1999	1807	1844	1898	2050	1802	14%
Total OECD	5325	5886	5428	5225	5525	5138	5080	4926	5322	4968	5102	-3%
Total Oil												
Americas	2836	3068	2853	2825	2811	2901	3027	2989	3035	3281	2840	16%
Europe	9850	10209	10330	10327	10158	8855	8799	8938	8878	9059	9640	-6%
Asia Oceania	6641	6760	7111	7469	6948	7379	6727	6671	6928	6803	7714	-12%
Total OECD	19327	20037	20294	20621	19917	19135	18552	18598	18841	19142	20194	-5%

1 Based on Monthly Oil Questionnaire data submitted by OECD countries in tonnes and converted to barrels
conversion factors available at <https://www.iea.org/articles/oil-market-report-glossary#a>.

2 Excludes intra-regional trade.

3 Includes additives.

Table 7b
INTER-REGIONAL OECD TRANSFERS^{1,2}
(thousand barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier	
											Aug 22	% change
Crude Oil												
Americas	60	95	66	68	72	52	71	71	53	25	45	-46%
Europe	1234	1255	1567	1690	1735	1804	1895	1795	2043	2118	1848	15%
Asia Oceania	527	610	578	538	641	554	487	453	579	289	568	-49%
Total OECD	1821	1959	2212	2296	2448	2410	2454	2319	2675	2432	2461	-1%
LPG												
Americas	6	1	1	0	0	0	0	0	0	0	0	na
Europe	171	161	269	278	296	280	264	227	231	257	249	3%
Asia Oceania	501	516	517	478	486	626	452	477	487	566	489	16%
Total OECD	678	678	787	756	782	906	716	704	718	823	738	11%
Naphtha												
Americas	6	4	3	4	2	2	8	4	2	4	2	100%
Europe	20	87	35	1	1	14	31	44	10	34	1	3205%
Asia Oceania	170	172	101	110	115	70	44	33	33	44	117	-63%
Total OECD	196	263	139	115	119	86	83	81	45	82	120	-32%
Gasoline³												
Americas	381	557	501	519	452	394	660	712	547	653	502	30%
Europe	5	6	17	18	11	15	15	10	11	22	15	48%
Asia Oceania	18	5	0	0	0	0	0	0	0	0	0	-13%
Total OECD	403	567	518	537	464	408	675	722	558	675	517	31%
Jet & Kerosene												
Americas	103	102	87	90	88	87	99	106	79	72	79	-9%
Europe	40	35	60	74	114	12	54	33	60	101	71	42%
Asia Oceania	0	0	0	0	0	0	0	0	0	0	0	na
Total OECD	144	137	147	164	202	100	154	139	139	173	150	15%
Gasoi/Diesel												
Americas	31	63	56	29	72	61	20	12	10	7	29	-77%
Europe	131	81	106	101	171	156	241	327	305	177	104	69%
Asia Oceania	4	0	0	0	0	0	0	0	0	0	0	2198%
Total OECD	166	144	162	131	243	217	261	339	315	184	133	38%
Heavy Fuel Oil												
Americas	33	16	31	25	35	20	12	22	14	0	20	-100%
Europe	16	27	21	28	22	21	26	42	7	27	26	4%
Asia Oceania	0	0	0	0	0	0	0	0	0	0	0	-100%
Total OECD	49	42	52	53	57	40	38	64	20	27	46	-42%
Other Products												
Americas	78	51	78	106	98	88	56	76	89	92	120	-23%
Europe	222	178	186	190	190	247	250	288	163	233	194	20%
Asia Oceania	77	78	73	77	71	66	87	98	64	92	75	23%
Total OECD	377	307	336	373	359	401	393	461	316	418	389	7%
Total Products												
Americas	639	794	756	774	748	650	855	930	740	827	751	10%
Europe	604	574	694	690	805	744	881	972	786	850	660	29%
Asia Oceania	770	771	692	666	673	763	584	608	584	702	681	3%
Total OECD	2013	2139	2141	2130	2226	2158	2320	2510	2110	2380	2092	14%
Total Oil												
Americas	699	889	823	842	820	702	927	1002	793	852	797	7%
Europe	1838	1829	2261	2380	2539	2548	2776	2767	2829	2968	2508	18%
Asia Oceania	1297	1381	1270	1204	1314	1317	1071	1061	1163	992	1249	-21%
Total OECD	3834	4098	4353	4426	4674	4568	4773	4829	4786	4812	4554	6%

1 Based on Monthly Oil Questionnaire data submitted by OECD countries in tonnes and converted to barrels conversion factors available at <https://www.iea.org/articles/oil-market-report-glossary/#a>.

2 Excludes intra-regional trade.

3 Includes additives.

Table 8
REGIONAL OECD CRUDE IMPORTS BY SOURCE¹
(thousand barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier Aug 22	change
OECD Americas												
Venezuela	-	-	-	-	-	69	151	126	153	145	-	-
Other Central & South America	745	719	845	917	879	837	808	884	966	1148	901	247
North Sea	59	92	64	60	72	52	63	60	53	25	45	-21
Other OECD Europe	1	3	-	-	-	-	4	-	-	-	-	-
Non-OECD Europe	-	-	-	-	-	-	-	-	-	-	-	-
Former Soviet Union	91	229	43	25	19	23	32	25	60	22	24	-2
Saudi Arabia	588	427	535	487	516	487	434	420	457	428	476	-48
Kuwait	21	21	27	14	42	14	19	20	26	60	20	40
Iran	-	3	1	-	-	-	-	-	-	14	-	-
Iraq	177	152	244	277	245	257	190	182	204	252	214	38
Oman	-	-	-	-	-	-	-	-	-	-	-	-
United Arab Emirates	5	17	12	19	-	16	-	-	-	-	24	-
Other Middle East	-	-	-	-	-	-	-	-	-	-	-	-
West Africa ²	145	228	186	202	160	264	288	235	298	307	283	24
Other Africa	45	161	153	139	196	80	186	162	38	197	129	68
Asia	17	25	5	21	-	-	7	21	-	-	18	-
Other	3	-	-	-	-	6	-	-	-	-	-	-
Total	1895	2077	2116	2161	2129	2105	2182	2135	2255	2598	2134	464
<i>of which Non-OECD</i>	<i>1835</i>	<i>1982</i>	<i>2049</i>	<i>2094</i>	<i>2057</i>	<i>2053</i>	<i>2110</i>	<i>2064</i>	<i>2202</i>	<i>2574</i>	<i>2089</i>	<i>485</i>
OECD Europe												
Canada	95	83	129	124	172	131	207	148	210	141	62	80
Mexico + USA	1139	1172	1438	1566	1562	1673	1689	1647	1822	1973	1786	187
Venezuela	44	-	15	35	23	8	25	38	57	38	-	-
Other Central & South America	208	219	409	561	443	610	580	676	449	572	391	181
Non-OECD Europe	25	23	15	12	15	19	17	15	14	16	15	1
Former Soviet Union	3504	3538	3179	2951	2528	1813	1845	1980	1978	1928	2783	-855
Saudi Arabia	756	518	763	867	882	873	854	897	744	781	754	27
Kuwait	48	0	-	-	-	-	-	-	-	-	-	-
Iran	6	1	-	-	-	-	-	-	-	-	-	-
Iraq	814	912	989	1121	940	932	876	978	799	952	1038	-86
Oman	-	-	-	-	-	11	11	33	-	30	-	-
United Arab Emirates	-	-	48	86	76	75	49	37	110	93	159	-66
Other Middle East	8	9	7	11	10	22	-	-	-	64	-	-
West Africa ²	1074	822	1001	970	1055	1090	980	936	835	1083	1090	-7
Other Africa	596	1198	1071	979	1269	1064	1186	1189	1285	1285	860	425
Asia	0	0	1	-	-	-	-	-	11	4	-	-
Other	11	1	3	-	-	0	-	-	-	-	-	-
Total	8329	8496	9067	9282	8976	8321	8318	8576	8315	8963	8939	24
<i>of which Non-OECD</i>	<i>7115</i>	<i>7265</i>	<i>7523</i>	<i>7612</i>	<i>7251</i>	<i>6564</i>	<i>6441</i>	<i>6781</i>	<i>6288</i>	<i>6847</i>	<i>7091</i>	<i>-244</i>
OECD Asia Oceania												
Canada	1	16	6	10	-	-	-	-	-	-	-	-
Mexico + USA	477	496	538	486	633	554	479	453	579	289	568	-279
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central & South America	91	110	120	140	109	95	94	74	79	101	138	-37
North Sea	49	98	34	42	8	0	8	0	0	0	-	-
Other OECD Europe	-	-	-	-	-	0	0	0	0	0	-	-
Non-OECD Europe	-	-	-	-	-	-	-	-	-	-	-	-
Former Soviet Union	300	335	239	116	161	154	145	69	136	67	133	-66
Saudi Arabia	1867	1766	1991	2040	2033	2128	1845	1778	1819	1796	2371	-575
Kuwait	584	506	534	516	524	586	485	487	569	459	568	-109
Iran	-	-	-	-	-	-	-	-	-	-	-	-
Iraq	224	167	220	262	241	247	241	296	221	222	219	3
Oman	22	32	40	68	26	28	49	65	32	48	58	-10
United Arab Emirates	1096	1083	1287	1509	1288	1220	1325	1128	1157	1458	1365	93
Other Middle East	387	362	370	424	289	371	394	347	322	343	455	-112
West Africa ²	65	71	64	88	55	35	5	15	14	14	54	-39
Other Africa	42	56	40	33	43	44	27	43	29	29	38	-9
Non-OECD Asia	161	175	119	97	135	139	126	125	136	124	74	51
Other	210	235	265	397	173	332	184	399	504	91	440	-350
Total	5577	5509	5868	6228	5720	5934	5407	5280	5598	5043	6481	-1438
<i>of which Non-OECD</i>	<i>5051</i>	<i>4904</i>	<i>5293</i>	<i>5690</i>	<i>5083</i>	<i>5380</i>	<i>4920</i>	<i>4827</i>	<i>5029</i>	<i>4753</i>	<i>5912</i>	<i>-1159</i>
Total OECD Trade	15801	16083	17051	17671	16825	16361	15907	15991	16167	16604	17553	-950
<i>of which Non-OECD</i>	<i>14002</i>	<i>14151</i>	<i>14865</i>	<i>15396</i>	<i>14392</i>	<i>13998</i>	<i>13472</i>	<i>13672</i>	<i>13519</i>	<i>14174</i>	<i>15092</i>	<i>-918</i>

¹ Based on Monthly Oil Questionnaire data submitted by OECD countries in tonnes, and converted to barrels at 7.37 barrels per tonne. Data will differ from Table 6 which is based on submissions in barrels.

² West Africa includes Angola, Nigeria, Gabon, Equatorial Guinea, Congo and Democratic Republic of Congo.

Table 9
REGIONAL OECD GASOLINE IMPORTS BY SOURCE¹
(thousand barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier		
											Aug 22	change	
OECD Americas													
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Central & South America	40	41	45	61	62	49	65	75	47	38	78	-40	
ARA (Belgium Germany Netherlands)	148	194	170	199	100	97	216	233	219	247	175	72	
Other Europe	213	327	293	266	320	259	389	445	296	368	272	96	
FSU	56	83	8	0	-	-	-	-	-	0	-	-	
Saudi Arabia	6	24	27	19	20	8	33	44	33	42	16	26	
Algeria	4	1	1	2	1	-	21	1	21	14	1	13	
Other Middle East & Africa	13	13	14	22	13	15	20	6	10	21	24	-3	
Singapore	1	4	2	4	2	10	29	42	36	29	4	25	
OECD Asia Oceania	21	37	38	54	32	38	63	43	35	38	55	-17	
Non-OECD Asia (excl. Singapore)	72	81	76	107	38	71	153	152	136	115	125	-10	
Other	-	0	0	-	0	-	-	-	-	-	-	-	
Total²	576	805	675	733	590	548	988	1040	834	912	749	163	
of which Non-OECD	195	248	174	214	137	155	329	328	287	259	247	12	
OECD Europe													
OECD Americas	3	5	16	17	11	11	14	8	10	22	15	7	
Venezuela	0	2	2	3	2	3	2	2	1	2	3	-1	
Other Central & South America	4	7	10	14	6	7	6	1	2	9	14	-5	
Non-OECD Europe	16	10	8	14	6	8	9	8	9	6	19	-14	
FSU	31	8	9	3	2	7	1	1	1	1	2	-1	
Saudi Arabia	8	3	1	2	-	0	-	-	10	3	5	-2	
Algeria	1	-	6	7	4	7	2	-	10	5	8	-3	
Other Middle East & Africa	3	5	8	6	5	5	5	6	3	-	4	-	
Singapore	2	0	2	1	3	2	3	4	1	4	1	2	
OECD Asia Oceania	1	1	1	1	1	4	1	3	1	-	-	-	
Non-OECD Asia (excl. Singapore)	0	3	3	4	3	3	4	8	3	4	5	-1	
Other	37	63	36	37	26	8	6	6	11	5	35	-31	
Total²	107	106	101	108	69	63	53	47	63	61	112	-51	
of which Non-OECD	104	100	84	90	58	49	38	37	52	39	97	-58	
OECD Asia Oceania													
OECD Americas	4	1	0	0	0	0	0	0	0	0	0	0	
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-	
Other Central & South America	-	-	-	-	-	-	0	-	-	-	-	-	
ARA (Belgium Germany Netherlands)	4	4	0	0	0	0	0	0	-	0	0	0	
Other Europe	10	0	0	0	0	0	0	0	0	0	0	0	
FSU	0	-	-	-	-	-	-	-	-	-	-	-	
Saudi Arabia	-	-	-	-	-	-	4	-	-	-	-	-	
Algeria	-	-	-	-	-	-	-	-	-	-	-	-	
Other Middle East & Africa	1	-	-	-	-	-	-	-	-	0	-	-	
Singapore	51	100	126	121	125	141	123	89	122	104	123	-20	
Non-OECD Asia (excl. Singapore)	37	29	30	35	27	38	53	56	62	79	36	43	
Other	9	20	21	23	27	17	17	17	16	16	16	0	
Total²	116	153	176	179	179	197	196	162	200	199	176	24	
of which Non-OECD	98	149	176	179	179	197	196	162	200	199	176	24	
Total OECD Trade²	798	1064	953	1021	838	808	1237	1250	1097	1172	1036	136	
of which Non-OECD	397	497	434	483	374	400	562	528	539	497	519	-22	

¹ Based on Monthly Oil Questionnaire data submitted by OECD countries in tonnes.

² Total figure excludes intra-regional trade.

Table 10
REGIONAL OECD GASOIL/DIESEL IMPORTS BY SOURCE¹
(thousand barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier	
											Aug 22	change
OECD Americas												
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	34	28	6	12	3	15	17	11	34	14	20	-6
ARA (Belgium Germany Netherlands)	11	34	15	3	11	3	1	3	0	2	-	-
Other Europe	4	5	2	0	3	0	0	-	2	0	0	0
FSU	12	25	6	-	-	-	1	-	-	-	-	-
Saudi Arabia	8	15	9	-	5	9	-	-	-	-	-	-
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	9	25	4	-	8	7	8	9	2	-	-	-
Singapore	-	2	1	-	2	3	-	-	-	6	-	-
OECD Asia Oceania	16	25	39	26	58	57	19	9	8	5	29	-24
Non-OECD Asia (excl. Singapore)	34	27	5	-	17	52	12	2	-	22	-	-
Other	6	12	11	-	13	12	-	-	-	-	-	-
Total²	134	197	99	41	120	158	59	34	46	50	49	1
of which Non-OECD	103	134	43	12	48	98	39	22	36	43	20	23
OECD Europe												
OECD Americas	99	38	76	84	126	126	214	313	278	160	95	64
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	3	1	1	3	0	-	-	-	-	1	0	1
Non-OECD Europe	30	35	44	43	45	24	32	26	7	47	54	-7
FSU	627	612	530	506	538	299	287	305	329	334	512	-178
Saudi Arabia	193	141	169	184	221	231	209	200	154	110	197	-88
Algeria	2	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	71	156	161	143	200	208	270	302	269	192	142	50
Singapore	17	19	37	28	33	33	32	29	28	26	16	10
OECD Asia Oceania	32	42	30	18	45	30	26	14	27	17	9	8
Non-OECD Asia (excl. Singapore)	101	123	152	105	269	204	182	101	120	91	81	10
Other	15	21	23	23	9	9	7	10	1	8	36	-27
Total²	1190	1188	1223	1136	1486	1164	1260	1300	1213	985	1142	-157
of which Non-OECD	1062	1107	1120	1034	1315	1008	1021	973	908	809	1038	-229
OECD Asia Oceania												
OECD Americas	4	0	0	0	0	0	-	-	-	-	-	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	0	-	-	-	-	-	-	-	-	-	-	-
ARA (Belgium Germany Netherlands)	0	0	0	0	0	0	0	-	0	0	0	0
Other Europe	-	0	0	0	-	0	-	-	-	-	-	-
FSU	2	1	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	-	-	-	-	-	-	-	-	-	-	-
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	13	4	6	14	-	-	3	11	16	-	-	-
Singapore	91	109	112	112	97	123	76	63	79	90	121	-31
Non-OECD Asia (excl. Singapore)	208	229	191	176	209	209	298	331	376	336	176	160
Other	9	6	10	9	20	3	7	12	2	2	2	0
Total²	328	349	319	311	325	336	384	417	473	428	300	129
of which Non-OECD	323	349	319	311	325	336	384	417	473	428	300	129
Total OECD Trade²	1652	1734	1641	1489	1931	1658	1703	1752	1733	1463	1491	-27
of which Non-OECD	1488	1591	1482	1358	1688	1441	1444	1413	1418	1280	1358	-78

¹ Based on Monthly Oil Questionnaire data submitted by OECD countries in tonnes.

² Total figure excludes intra-regional trade.

Table 11
REGIONAL OECD JET AND KEROSENE IMPORTS BY SOURCE¹
(thousand barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier	
											Aug 22	change
OECD Americas												
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	5	1	0	-	1	1	3	6	1	-	-	-
ARA (Belgium Germany Netherlands)	-	5	0	-	0	-	1	3	2	-	-	-
Other Europe	4	7	1	-	4	11	1	0	0	2	-	-
FSU	0	4	1	-	-	-	-	-	-	-	-	-
Saudi Arabia	6	6	1	-	1	3	5	-	14	-	-	-
Algeria	1	4	0	-	1	-	-	-	-	-	-	-
Other Middle East and Africa	11	18	16	6	38	33	32	32	48	11	9	2
Singapore	4	2	1	1	2	-	5	5	-	5	-	-
OECD Asia Oceania	100	91	85	90	85	80	97	103	77	70	79	-8
Non-OECD Asia (excl. Singapore)	23	27	24	17	44	48	12	5	14	14	8	6
Other	4	1	3	1	1	4	3	10	10	10	-	-
Total²	159	165	134	115	177	178	160	164	166	111	96	15
of which Non-OECD	55	63	48	25	89	91	60	59	86	39	17	22
OECD Europe												
OECD Americas	13	3	6	6	11	6	6	9	5	19	4	16
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	0	0	0	1	-	3	-	-	-	-	2	-
Non-OECD Europe	0	0	3	4	5	1	3	-	7	-	-	-
FSU	21	27	16	16	14	15	19	25	9	10	16	-6
Saudi Arabia	40	27	57	62	61	45	51	53	64	51	53	-2
Algeria	9	5	4	5	-	-	-	-	-	-	16	-
Other Middle East and Africa	155	153	172	208	145	186	199	193	338	313	163	150
Singapore	10	11	13	25	10	11	-	-	7	8	37	-30
OECD Asia Oceania	27	32	54	68	102	6	49	24	54	82	67	14
Non-OECD Asia (excl. Singapore)	50	61	121	125	187	107	149	88	137	105	148	-43
Other	10	9	5	14	0	1	0	0	0	1	3	-2
Total²	336	328	452	535	536	380	475	392	622	588	508	80
of which Non-OECD	297	294	393	461	423	370	423	361	565	489	437	52
OECD Asia Oceania												
OECD Americas	-	0	0	0	0	0	0	0	-	-	0	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	-	-	-	-	-	-	-	-	-	-	-	-
ARA (Belgium Germany Netherlands)	-	0	0	-	0	-	-	-	-	-	-	-
Other Europe	-	0	0	0	-	-	0	-	-	0	-	-
FSU	-	-	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	-	-	-	-	-	-	-	-	-	-	-
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	-	1	0	-	0	0	0	0	5	0	-	-
Singapore	14	16	34	41	39	44	41	39	23	39	46	-7
Non-OECD Asia (excl. Singapore)	28	34	38	20	72	83	41	35	65	57	17	40
Other	18	19	15	5	27	33	32	58	19	13	3	10
Total²	60	69	87	67	139	161	113	132	112	110	66	44
of which Non-OECD	60	69	87	67	139	161	113	132	112	110	66	44
Total OECD Trade²	555	562	673	716	852	720	748	688	900	808	670	138
of which Non-OECD	413	426	528	553	650	622	597	551	764	638	521	117

¹ Based on Monthly Oil Questionnaire data submitted by OECD countries in tonnes.

² Total figure excludes intra-regional trade.

Table 12
REGIONAL OECD RESIDUAL FUEL OIL IMPORTS BY SOURCE¹
(thousand barrels per day)

	2020	2021	2022	3Q22	4Q22	1Q23	2Q23	Jun 23	Jul 23	Aug 23	Year Earlier	
											Aug 22	change
OECD Americas												
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	52	34	53	36	69	44	16	8	1	46	43	4
ARA (Belgium Germany Netherlands)	12	6	12	14	18	9	4	7	3	-	-	-
Other Europe	21	10	19	11	18	11	1	-	10	0	20	-20
FSU	43	34	21	4	9	1	4	7	-	-	13	-
Saudi Arabia	2	0	7	8	6	3	0	-	-	-	11	-
Algeria	2	7	4	4	1	18	4	11	-	-	11	-
Other Middle East and Africa	10	8	4	3	5	15	10	12	12	2	4	-2
Singapore	1	0	-	-	-	-	-	-	-	2	-	-
OECD Asia Oceania	-	0	-	-	-	-	8	15	-	-	-	-
Non-OECD Asia (excl. Singapore)	-	2	2	2	6	4	4	9	3	5	-	-
Other	-	-	-	-	-	-	-	-	-	1	-	-
Total²	143	102	122	82	132	105	51	68	29	57	102	-45
of which Non-OECD	110	86	90	56	96	86	38	47	16	57	81	-24
OECD Europe												
OECD Americas	12	24	13	21	11	5	16	35	7	20	19	1
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	6	4	5	6	10	4	11	4	15	3	3	-1
Non-OECD Europe	13	12	31	47	25	21	25	23	25	16	28	-12
FSU	141	247	121	89	63	45	59	45	99	96	92	4
Saudi Arabia	2	-	-	-	-	10	0	-	-	-	-	-
Algeria	2	2	5	4	2	5	9	14	10	7	6	1
Other Middle East and Africa	13	14	21	9	31	27	26	4	4	5	15	-10
Singapore	3	3	2	2	0	1	-	-	-	-	-	-
OECD Asia Oceania	4	3	8	7	11	16	10	7	-	7	7	0
Non-OECD Asia (excl. Singapore)	-	0	2	3	6	8	-	-	-	-	2	-
Other	93	59	45	51	67	2	1	1	5	1	44	-43
Total²	288	368	254	238	227	144	157	134	164	154	215	-61
of which Non-OECD	279	347	239	215	220	126	133	94	161	128	195	-68
OECD Asia Oceania												
OECD Americas	-	-	0	0	-	-	-	-	-	-	0	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	0	-	-	-	-	-	-	-	-	-	-	-
ARA (Belgium Germany Netherlands)	-	0	0	0	0	-	-	-	-	-	0	-
Other Europe	-	-	0	0	0	-	-	-	-	-	0	-
FSU	5	0	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	1	13	16	15	7	7	11	-	30	10	19	-9
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	38	30	7	2	13	9	7	20	-	-	-	-
Singapore	18	29	22	18	14	37	19	14	61	18	19	-1
Non-OECD Asia (excl. Singapore)	26	47	44	32	41	54	49	56	30	88	45	43
Other	-	-	-	-	-	-	-	-	-	4	-	-
Total²	88	119	89	68	75	107	86	90	121	120	84	36
of which Non-OECD	88	119	89	68	75	107	86	90	121	120	84	36
Total OECD Trade²	519	588	464	387	434	356	293	293	314	331	401	-70
of which Non-OECD	477	552	418	339	390	318	257	231	297	305	361	-56

¹ Based on Monthly Oil Questionnaire data submitted by OECD countries in tonnes.

² Total figure excludes intra-regional trade.

Table 13
AVERAGE IEA CIF CRUDE COST AND SPOT CRUDE AND PRODUCT PRICES

	2020	2021	2022	4Q22	1Q23	2Q23	3Q23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
(\$/bbl)													
CRUDE PRICES													
IEA CIF Average Import¹													
IEA Europe	42.91	70.67	100.22	102.36	89.42	82.16	79.75	78.41	76.56	81.61	87.94		
IEA Americas	37.31	64.78	90.77	92.16	77.18	67.91	70.63	70.03	69.70	72.26	78.52		
IEA Asia Oceania	46.28	70.41	102.56	111.62	96.43	86.14	83.19	85.27	80.0	80.59	84.18		
IEA Total	42.19	68.87	98.20	101.90	87.96	79.25	78.03	77.70	75.33	78.77	84.34		
SPOT PRICES²													
North Sea Dated	41.76	70.82	101.10	88.36	81.11	78.02	86.74	75.49	74.73	80.09	86.18	93.96	91.12
North Sea Dated M1	42.90	71.51	101.17	89.54	82.37	78.02	86.69	75.57	75.13	80.50	85.87	93.76	90.62
WTI (Cushing) M1	39.25	68.10	94.58	82.82	75.96	73.54	82.51	71.59	70.24	76.39	81.41	89.57	85.57
WTI (Houston) M1	40.71	69.01	96.19	84.33	77.74	74.69	84.01	72.57	71.83	77.91	82.97	91.01	86.47
Urals	41.21	69.00	76.58	62.46	46.77	54.63	72.79	52.00	54.26	63.31	72.91	82.13	80.00
Dubai M1	42.36	69.35	96.27	84.68	80.20	77.56	86.54	74.94	74.88	80.33	86.44	93.19	89.81
PRODUCT PRICES²													
Northwest Europe													
Gasoline	44.64	80.07	117.01	99.41	96.17	99.44	112.44	97.06	98.12	105.34	116.85	114.93	97.21
Diesel	49.34	78.41	142.36	139.55	113.71	96.12	119.87	91.52	96.34	105.24	122.52	131.73	122.28
Jet/Kero	45.80	77.31	139.91	130.90	114.74	95.43	120.67	91.73	94.64	106.12	124.27	131.44	123.52
Naphtha	40.18	71.58	86.51	72.63	77.95	67.47	71.72	65.87	61.81	64.42	72.14	78.59	72.52
HSFO	33.99	61.18	76.58	59.55	60.51	67.96	82.63	63.97	69.68	73.63	85.20	88.93	76.14
0.5% Fuel Oil	48.50	76.78	107.05	87.19	83.99	79.21	88.17	76.06	78.84	81.92	89.91	92.59	90.09
Mediterranean Europe													
Gasoline	45.57	80.50	119.73	103.89	100.36	98.77	112.74	94.33	98.01	105.88	115.19	117.04	97.49
Diesel	48.82	77.93	136.11	130.46	112.08	94.97	118.10	90.68	95.30	104.35	120.94	128.88	120.24
Jet/Kero	45.57	77.19	140.02	131.28	114.89	95.43	120.60	91.73	94.64	106.08	124.27	131.28	123.52
Naphtha	39.04	70.65	84.62	70.36	75.83	65.93	69.99	64.60	60.56	62.93	70.50	76.51	70.88
HSFO	34.17	60.05	73.40	56.73	56.97	65.19	81.00	63.34	64.21	74.44	82.14	86.37	73.99
US Gulf Coast													
Gasoline	47.30	86.49	123.00	103.04	105.58	103.93	117.09	101.24	101.70	112.06	120.82	117.59	96.33
Diesel	50.26	84.73	145.74	141.65	120.39	100.11	124.92	96.61	98.68	109.56	128.02	135.95	124.95
Jet/Kero	46.30	77.95	140.05	134.73	125.00	94.79	120.40	91.39	94.14	105.09	125.34	129.27	119.20
Naphtha	40.12	72.24	91.24	76.09	80.92	74.87	72.92	74.69	72.30	69.63	71.31	77.91	74.40
HSFO	34.71	59.90	76.96	55.48	57.10	64.07	78.65	60.29	65.53	72.69	79.81	82.98	74.51
0.5% Fuel Oil	49.88	79.69	112.92	92.69	90.54	82.18	93.20	78.88	80.06	84.63	94.78	99.55	93.96
Singapore													
Gasoline	45.28	78.49	110.86	89.89	95.15	89.57	99.68	85.69	87.43	93.13	101.68	104.47	93.71
Diesel	49.60	77.80	135.47	126.25	108.44	93.09	115.23	89.05	92.31	101.79	119.07	125.32	117.46
Jet/Kero	45.06	75.29	126.90	118.30	106.38	91.57	112.47	88.49	90.06	98.85	116.28	122.77	113.58
Naphtha	40.94	71.02	83.79	70.92	74.21	63.26	69.18	62.12	57.01	62.43	70.65	74.73	70.80
HSFO	38.33	63.20	77.65	58.60	62.36	68.53	80.28	66.96	66.28	74.54	83.93	82.46	72.99
0.5% Fuel Oil	52.85	80.81	116.78	97.77	90.95	86.97	94.06	84.10	87.25	86.94	95.78	99.72	100.04

¹ IEA CIF Average Import price for Aug is an estimate.

IEA Europe includes all countries in OECD Europe except Estonia, Hungary and Slovenia.

IEA Americas includes United States and Canada.

IEA Asia Oceania includes Australia, New Zealand, Korea and Japan.

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Table 14
MONTHLY AVERAGE END-USER PRICES FOR PETROLEUM PRODUCTS

October 2023

	NATIONAL CURRENCY ¹						US DOLLARS					
	Total	% change from		Ex-Tax	% change from		Total	% change from		Ex-Tax	% change from	
		Price	Sep-23		Oct-22	Price		Sep-23	Oct-22		Price	Sep-23
GASOLINE ² (per litre)												
France	1.867	-4.9	12.2	0.865	-8.6	-8.6	1.971	-6.0	20.4	0.913	-9.6	-1.9
Germany	1.875	-3.4	-5.0	0.853	-6.1	-15.0	1.980	-4.4	1.9	0.901	-7.1	-8.8
Italy	1.928	-2.6	15.4	0.852	-4.8	-4.5	2.036	-3.7	23.8	0.900	-5.8	2.5
Spain	1.694	-2.9	-2.3	0.927	-4.3	-14.5	1.789	-4.0	4.8	0.979	-5.4	-8.2
United Kingdom	1.552	1.0	-5.2	0.763	1.7	-8.5	1.888	-0.8	2.0	0.928	-0.1	-1.6
Japan	175.5	-4.4	3.8	102.9	-6.6	6.1	1.174	-5.6	2.1	0.688	-7.8	4.3
Canada	1.588	-7.4	-8.8	1.088	-9.5	-13.2	1.159	-8.5	-8.8	0.794	-10.6	-13.2
United States	0.954	-5.9	-5.4	0.820	-6.8	-6.4	0.954	-5.9	-5.4	0.820	-6.8	-6.4
AUTOMOTIVE DIESEL FOR NON COMMERCIAL USE (per litre)												
France	1.878	-1.3	2.2	0.956	-2.1	-18.5	1.983	-2.4	9.6	1.009	-3.2	-12.5
Germany	1.823	-0.4	-13.8	0.987	-0.6	-24.5	1.925	-1.5	-7.5	1.042	-1.7	-19.0
Italy	1.900	0.1	3.8	0.940	0.1	-17.1	2.006	-1.0	11.4	0.993	-1.0	-11.0
Spain	1.665	0.7	-12.9	0.997	1.0	-24.8	1.758	-0.4	-6.6	1.053	-0.1	-19.3
United Kingdom	1.622	3.0	-11.8	0.822	5.1	-18.0	1.974	1.2	-5.1	1.000	3.2	-11.8
Japan	155.2	-4.8	4.2	109.1	-6.1	5.4	1.038	-6.0	2.4	0.730	-7.3	3.6
Canada	1.876	-2.1	-13.8	1.387	-2.6	-17.8	1.369	-3.3	-13.9	1.012	-3.8	-17.9
United States	1.191	-1.2	-13.5	1.036	-1.3	-15.4	1.191	-1.2	-13.5	1.036	-1.3	-15.4
DOMESTIC HEATING OIL (per litre)												
France	1.355	-0.5	-17.4	0.973	-0.6	-19.7	1.431	-1.6	-11.4	1.028	-1.7	-13.8
Germany	1.203	1.0	-22.5	0.869	1.1	-30.1	1.270	-0.1	-16.8	0.918	0.0	-24.9
Italy	1.663	-0.8	-11.0	0.960	-1.2	-15.0	1.756	-1.9	-4.5	1.014	-2.2	-8.8
Spain	1.155	0.6	-18.0	0.858	0.7	-19.6	1.220	-0.5	-12.0	0.906	-0.4	-13.7
United Kingdom	0.866	-0.8	-24.3	0.723	-1.0	-26.8	1.053	-2.6	-18.6	0.879	-2.7	-21.3
Japan ³	117.9	-4.3	5.7	104.4	-4.4	5.8	0.788	-5.5	3.9	0.698	-5.7	4.1
Canada	1.876	-0.9	-10.6	1.563	-1.0	-16.5	1.369	-2.2	-10.6	1.140	-2.2	-16.6
United States	-	-	-	-	-	-	-	-	-	-	-	-
LOW SULPHUR FUEL OIL FOR INDUSTRY ⁴ (per kg)												
France	0.738	-1.8	-6.5	0.599	-2.3	-7.8	0.779	-2.9	0.4	0.632	-3.3	-1.1
Germany	-	-	-	-	-	-	-	-	-	-	-	-
Italy	0.696	-1.7	-6.7	0.665	-1.8	-7.0	0.735	-2.8	0.1	0.702	-2.9	-0.2
Spain	0.678	3.3	-2.1	0.661	3.4	-2.1	0.715	2.2	5.1	0.698	2.3	5.0
United Kingdom	-	-	-	-	-	-	-	-	-	-	-	-
Japan	-	-	-	-	-	-	-	-	-	-	-	-
Canada	-	-	-	-	-	-	-	-	-	-	-	-
United States	-	-	-	-	-	-	-	-	-	-	-	-

¹ Prices for France, Germany, Italy and Spain are in Euros; UK in British Pounds, Japan in Yen, Canada in Canadian Dollars

² Unleaded premium (95 RON) for France, Germany, Italy, Spain, UK; regular unleaded for Canada, Japan and the United States.

³ Kerosene for Japan.

⁴ VAT excluded from prices for low sulphur fuel oil when refunded to industry.

Table 15
IEA Global Indicator Refining Margins

\$/bbl	2020	2021	2022	4Q22	1Q23	2Q23	3Q23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
NW Europe													
Light sweet hydroskimming	1.11	2.54	10.05	10.81	8.41	4.42	11.90	4.06	6.61	8.24	14.96	12.36	4.76
Light sweet cracking	2.07	3.51	16.22	18.77	14.08	7.07	15.37	6.44	8.95	10.82	18.58	16.57	8.95
Light sweet cracking + Petchem	3.23	6.55	18.44	19.59	14.69	7.03	14.72	6.56	7.93	9.99	17.99	16.02	9.11
Medium sour cracking*	4.30	6.11	39.13	38.86	19.33	11.87	21.64	10.64	13.75	16.00	25.35	23.38	14.23
Mediumsour cracking + Petchem*	5.44	9.07	41.28	39.67	19.94	11.82	20.98	10.76	12.73	15.18	24.76	22.84	14.40
Mediterranean													
Light sweet hydroskimming	2.36	2.90	9.08	10.84	8.45	5.24	12.37	4.48	7.59	9.37	15.20	12.41	4.18
Light sweet cracking	3.34	4.97	16.82	19.14	15.80	9.42	18.58	8.10	11.63	14.56	21.71	19.31	10.03
Medium sour cracking	5.70	5.68	21.65	24.36	21.78	12.02	20.47	10.46	14.25	16.04	22.86	22.39	12.56
US Gulf Coast													
Light sweet cracking	4.28	11.04	26.64	25.10	25.53	18.83	26.07	18.13	19.72	23.51	30.40	23.53	12.40
Medium sour cracking	6.61	15.79	35.69	35.01	33.40	23.21	31.06	22.27	23.71	26.58	35.19	30.55	20.14
Heavy sour coking	9.73	19.98	45.92	49.73	44.90	28.64	38.57	28.05	27.74	32.59	43.60	38.46	27.26
US Midwest													
Light sweet cracking	3.74	12.33	29.90	30.81	25.23	22.00	20.43	23.01	22.53	17.66	25.99	16.66	10.18
Heavy sour coking	13.26	26.02	50.61	55.59	46.84	36.17	36.30	37.14	34.61	31.77	42.07	33.98	27.36
Singapore													
Light sweet cracking	0.20	3.10	11.46	8.75	9.94	3.19	8.94	2.54	4.16	5.99	11.93	8.89	4.49
Light sweet cracking + Petchem	2.03	4.82	12.94	10.05	10.83	4.45	9.44	3.94	5.37	6.73	12.34	9.24	5.23
Medium sour cracking	1.80	3.92	12.81	10.83	11.35	5.04	11.65	4.99	5.33	7.91	14.77	12.31	6.67
Medium sour cracking + Petchem	3.61	5.61	14.27	12.11	12.23	6.29	12.14	6.37	6.53	8.63	15.17	12.65	7.40

Source: IEA, Argus Media Ltd prices.

Methodology notes are available at <https://www.iea.org/topics/oil-market-report/#methodology>

*From 1 December 2022, the basis has changed from Urals NWE to Argus Brent Sour

Table 16
REFINED PRODUCT YIELDS BASED ON TOTAL INPUT (% VOLUME)¹

	Jun-23	Jul-23	Aug-23	Aug-22	Aug 23 vs Previous Month	Aug 23 vs Previous Year	Aug 23 vs 5 Year Average	5 Year Average
OECD Americas								
Naphtha	1.0	1.0	1.0	0.9	0.0	0.1	-0.3	1.2
Motor gasoline	43.9	44.3	43.9	43.4	-0.4	0.5	-0.6	44.5
Jet/kerosene	9.4	9.6	9.7	9.0	0.1	0.7	1.3	8.4
Gasoil/diesel oil	27.3	27.7	27.9	28.6	0.2	-0.7	-0.5	28.4
Residual fuel oil	2.9	2.8	2.9	3.2	0.1	-0.3	-0.1	3.0
Petroleum coke	4.2	4.3	4.2	4.2	-0.1	0.0	-0.2	4.4
Other products	14.2	14.2	14.3	13.6	0.0	0.7	0.7	13.6
OECD Europe								
Naphtha	8.5	8.2	8.4	8.3	0.2	0.1	0.1	8.3
Motor gasoline	22.2	22.2	22.0	21.1	-0.2	0.9	1.2	20.8
Jet/kerosene	9.0	9.3	9.8	8.6	0.5	1.2	1.9	7.9
Gasoil/diesel oil	38.1	38.2	38.1	39.7	-0.1	-1.6	-2.3	40.4
Residual fuel oil	7.6	7.2	7.9	7.8	0.7	0.1	-0.2	8.1
Petroleum coke	1.6	1.4	1.5	1.5	0.1	0.0	0.0	1.5
Other products	15.8	16.2	15.4	15.7	-0.7	-0.3	-0.4	15.8
OECD Asia Oceania								
Naphtha	16.9	16.4	15.7	16.4	-0.7	-0.7	-0.3	16.0
Motor gasoline	21.7	21.6	22.6	21.1	1.1	1.5	0.7	21.9
Jet/kerosene	13.2	13.9	14.6	13.6	0.8	1.1	1.0	13.6
Gasoil/diesel oil	30.6	29.9	29.4	30.4	-0.5	-1.0	-0.8	30.1
Residual fuel oil	8.3	8.1	7.7	8.6	-0.5	-0.9	0.6	7.0
Petroleum coke	0.4	0.4	0.2	0.5	-0.2	-0.3	-0.2	0.4
Other products	11.6	11.9	11.8	11.5	-0.1	0.3	-0.9	12.7
OECD Total								
Naphtha	5.7	5.7	5.7	5.9	0.0	-0.2	-0.3	6.1
Motor gasoline	33.8	33.6	33.5	32.4	-0.2	1.0	0.6	32.9
Jet/kerosene	9.8	10.2	10.5	9.7	0.4	0.9	1.4	9.1
Gasoil/diesel oil	31.2	31.4	31.4	32.4	0.0	-1.0	-1.2	32.6
Residual fuel oil	5.2	5.1	5.3	5.6	0.2	-0.3	-0.1	5.3
Petroleum coke	2.8	2.8	2.7	2.7	-0.1	0.0	-0.1	2.8
Other products	14.3	14.5	14.2	13.9	-0.2	0.3	0.1	14.2

¹ Due to processing gains and losses, yields in % will not always add up to 100%

Table 17
WORLD BIOFUELS PRODUCTION
(thousand barrels per day)

	2022	2023	2024	1Q23	2Q23	3Q23	Aug 23	Sep 23	Oct 23
ETHANOL									
OECD Americas	1031	1036	1017	1035	1039	1044	1038	1026	1026
United States	1002	1002	982	1000	1005	1010	1004	992	992
Other ¹	29	34	35	34	34	34			
OECD Europe	107	108	110	99	109	113	118	109	109
France	20	20	22	19	23	22	27	16	16
Germany	13	13	13	16	18	16	21	4	4
Spain	10	10	10	8	8	10	8	15	15
United Kingdom	9	9	9	6	6	9	6	15	15
Other ¹	54	55	55	50	53	56			
OECD Asia Oceania	4	4	4	4	4	4	4	5	5
Australia	4	4	4	4	4	4	4	4	4
Other ¹	0	1	1	0	0	1			
Total OECD Ethanol	1142	1148	1131	1138	1152	1162	1161	1140	1140
Total Non-OECD Ethanol	763	854	872	399	935	1248	1239	1221	1091
Brazil	528	596	603	141	677	991	981	963	833
China ¹	81	136	146	136	136	136			
Argentina ¹	21	22	23	22	22	22			
Other	133	100	100	100	100	100	258	258	258
TOTAL ETHANOL	1904	2002	2004	1536	2086	2410	2400	2361	2231
BIODIESEL									
OECD Americas	209	270	308	253	297	267	249	263	263
United States	202	256	291	243	288	253	239	239	239
Other ¹	6	15	18	10	10	15			
OECD Europe	307	314	323	294	298	314	299	347	347
France	48	48	48	47	53	49	49	43	43
Germany	64	63	62	59	57	64	61	72	72
Italy ¹	25	25	25	22	26	28			
Spain	31	32	35	29	30	32	30	37	37
Other	139	145	153	137	132	142	127	170	170
OECD Asia Oceania	14	13	13	9	16	16	17	12	12
Australia	0	0	0	0	0	0	0	0	0
Other ¹	14	13	13	9	16	16			
Total OECD Biodiesel	530	597	644	556	612	598	565	623	623
Total Non-OECD Biodiesel	513	580	630	580	580	580	580	580	580
Brazil	108	127	156	102	130	144	144	142	131
Argentina ¹	42	40	40	40	40	40			
Other ¹	363	413	434	438	410	396			
TOTAL BIODIESEL	1043	1177	1275	1136	1192	1178	1144	1202	1202
GLOBAL BIOFUELS	2947	3179	3278	2672	3278	3588	3544	3564	3433

¹ monthly data not available.

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Next Issue: 14 December 2023

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