

Oil Market Report

18 January 2023

- Global oil demand is set to rise by 1.9 mb/d in 2023, to a record 101.7 mb/d, with nearly half the gain from China following the lifting of its Covid restrictions. Jet fuel remains the largest source of growth, up 840 kb/d. OECD oil demand slumped by 900 kb/d in 4Q22 as weak industrial activity and weather effects lowered use, while non-OECD demand was 500 kb/d higher.
- World oil supply growth in 2023 is set to slow to 1 mb/d following last year's OPEC+ led growth of 4.7 mb/d. An overall non-OPEC+ rise of 1.9 mb/d will be tempered by an OPEC+ drop of 870 kb/d due to expected declines in Russia. The US ranks as the world's leading source of supply growth and, along with Canada, Brazil and Guyana, hits an annual production record for a second straight year.
- Global refinery activity was steady in December as US runs plunged 910 kb/d due to weather-related outages, but higher runs in Europe and Asia offset the fall. After an increase of 2.1 mb/d in 2022, refinery throughputs are set to grow by 1.5 mb/d in 2023, helped by 2.2 mb/d of capacity additions between 4Q22 and end-2023.
- Russian oil exports fell by 200 kb/d m-o-m in December to 7.8 mb/d, as crude shipments to the EU declined after the EU crude embargo and G7 price cap came into effect. Russian diesel exports surged to a multi-year high of 1.2 mb/d, of which 720 kb/d was destined for the EU. Record discounts for Russian benchmark Urals grade saw Russian revenues slip by \$3 bn m-o-m to \$12.6 bn.
- Global observed oil inventories surged by 79.1 mb m-o-m in November, hitting their highest levels since October 2021. The increase was led by non-OECD stocks (+43.9 mb) and oil on water (+38.1 mb). In the OECD, the release of government reserves offset a small increase in industry holdings. At 2 779 mb, OECD industry stocks were 37.1 mb above a year ago but 125.9 mb below their five-year average.
- Benchmark crude oil futures extended their rout in December, with ICE Brent falling \$9.51/bbl to \$81.34/bbl. The lifting of China's Covid-restrictions did little to boost sentiment while Russian oil exports remained resilient. Refinery outages in the US lifted product cracks. Freight rates eased for large crude carriers but rose on product routes ahead of the EU embargo on Russian oil products.



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Risk management

Two wild cards dominate the 2023 oil market outlook: Russia and China. This year could see oil demand rise by 1.9 mb/d to reach 101.7 mb/d, the highest ever, tightening the balances as Russian supply slows under the full impact of sanctions. China will drive nearly half this global demand growth even as the shape and speed of its reopening remains uncertain.

Energy efficiency gains and booming sales of electrical vehicles will curb global 2023 demand growth by close to 900 kb/d this year. Measures like these are especially vital in a supply-constrained oil market.

A slow demand recovery expected in 1H23 suggests continued inventory builds like those that started to emerge in 3Q22. In the last quarter of 2022, supply outpaced demand by over 1 mb/d despite a cut in OPEC+ production targets and disruptions to US supply due to winter storms. Mild

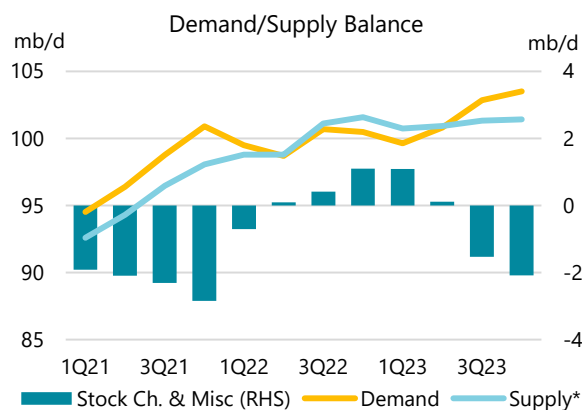
weather combined with weak industrial activity to cut oil demand use in Europe. Demand was also restrained by China's Covid lockdowns and winter blizzards that disrupted holiday travel in the US and Canada. As a result, 4Q22 oil demand contracted by a massive 910 kb/d year-on-year in the OECD and exceptionally by 130 kb/d y-o-y in China.

Much of the surplus oil appears to have ended up in emerging markets, including China, and on tankers at sea. By end-November, observed non-OECD inventories had risen by 75 mb y-o-y compared to a 233 mb decline in the OECD where 270 mb of government reserves were released. Oil on water increased by a massive 181 mb because tankers now have to sail significantly longer distances due to the reallocation of Russian flows.

Following an initial collapse in Russian loadings after the EU crude embargo and a G7 price cap came into effect on 5 December, exports have partially rebounded - underscoring the high degree of uncertainty for the outlook. For December as a whole, loadings of Russian oil fell 200 kb/d on average to 7.8 mb/d, while total oil supply held steady at 11.2 mb/d. Nevertheless, record price discounts on Russian benchmark export grades of up to \$40/bbl compared with North Sea Dated shrunk revenues by \$3 bn to \$12.6 bn last month – their lowest since February 2021. At the time of writing the North Sea benchmark was trading at around \$83/bbl, down \$18/bbl from a November peak and largely unchanged from a year ago.

The well-supplied oil balance at the start of 2023 could quickly tighten however as western sanctions impact Russian exports. Product markets, especially diesel, are most at risk just as demand growth recovers. In December, Russia exported a record 1.2 mb/d of diesel, with 60% destined for the EU. Fresh supplies from new plants in the Middle East and from China will provide welcome relief. Chinese diesel is already arriving in Europe after Beijing raised export quotas late last year.

Oil use savings and government stocks have proved their worth for managing market risks during the energy crisis triggered by Russia's invasion of Ukraine. Moving forward, accelerating efficiency gains, supporting EV uptake and prudent handling of government stocks will be more crucial than ever.

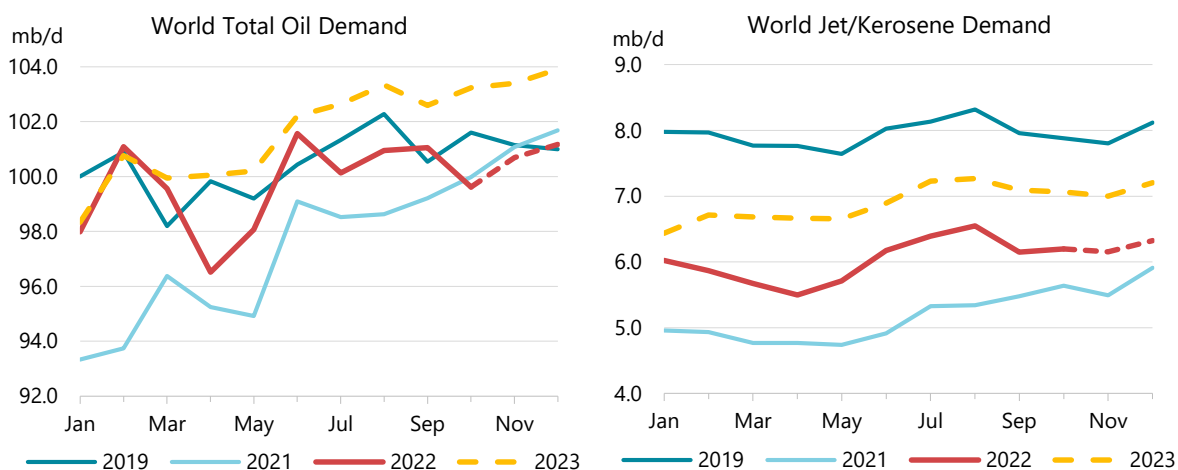


Demand

Overview

Global oil demand is set to increase by 1.9 mb/d year-on-year (y-o-y) in 2023, with about three-quarters of this rise coming from non-OECD regions. This year's oil use is now seen at 101.7 mb/d, 80 kb/d higher than in last month's *Report* and an all-time high. Jet/kerosene (+850 kb/d) accounts for 45% of this year's demand gains, by far the largest contributor. Changes to the road vehicle fleet will eliminate 870 kb/d of incremental consumption (see *Efficiency gains and electric vehicles stymie road fuel demand growth*).

This occurs against a backdrop of lower prices, a somewhat improved economic outlook and a faster than anticipated reopening of China. Overall, the global economic climate stays challenging, with (admittedly mild) recessions on the cards for the US and eurozone according to consensus estimates.



The diverging fortunes for OECD and non-OECD oil demand during 4Q22 highlighted in recent *Reports* were corroborated by the latest data. The former slowed rapidly, outweighing the latter's resilience. In view of this, our estimate for last year's oil demand growth has been lowered by 70 kb/d, to 2.2 mb/d y-o-y, reaching 99.9 mb/d.

In 2023, the pace of gains in OECD oil use is set to halve from last year, to 470 kb/d, as the prolonged economic slowdown continues to undermine demand. While developed economies enter 2023 in poor shape (4Q22 demand fell 910 kb/d y-o-y), demand should improve steadily with growth expected to accelerate from 270 kb/d y-o-y in 1Q23 to 850 kb/d by 4Q23. Overall gains will be dominated by jet/kerosene (+430 kb/d), but declining road fuel demand (gasoline -70 kb/d, diesel -200 kb/d) will limit the potential for faster growth.

Recent manufacturing PMIs in the US, Europe and China remain contractionary, highlighting the weakness of growth and the risk of a mild recession. Conversely, improving supply chains and lower energy prices are helping to ease inflation (US inflation slowed to 6.5% in December, a sixth straight monthly decline), prompting financial markets to price in a slower pace of rate hikes. Upward revisions to the 2023 GDP growth forecast for the US and eurozone reflect these developments.

The preeminent driver of 2023 GDP and oil demand growth will be the timing and pace of China's post-lockdown recovery – a variable surrounded by even more uncertainty than usual following December's sudden policy U-turn. However, China's persistently dim macro-economic outlook, characterised by rising unemployment, a slump in factory output and a deepening property crisis precludes a bigger upward revision.

Global Demand by Region								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2020	2021	2022	2023	2022	2023	2022	2023
Africa	3 766	3 994	4 178	4 154	185	- 24	4.6	-0.6
Americas	27 895	30 252	31 092	31 286	840	194	2.8	0.6
Asia/Pacific	34 085	36 189	36 325	37 856	135	1 531	0.4	4.2
Europe	13 136	13 899	14 341	14 472	442	131	3.2	0.9
FSU	4 559	4 855	4 871	4 757	15	- 114	0.3	-2.3
Middle East	8 074	8 482	9 047	9 196	566	149	6.7	1.6
World	91 515	97 671	99 854	101 720	2 183	1 867	2.2	1.9
OECD	42 028	44 825	45 952	46 419	1 127	467	2.5	1.0
Non-OECD	49 487	52 845	53 902	55 301	1 057	1 399	2.0	2.6

Supply chain issues have highlighted China's prominent role in diffusing growth through Asia and the wider world via trading ties and a common economic outlook. The anticipated recovery in China underpins much of the stronger Asian GDP growth perspectives in 2023 versus the rest of the world. Annual oil deliveries in India, Indonesia and Thailand as well as Korea and Australia (both are among the top five exporters to China) were about 90% correlated to China's during 2007-2019 and higher than observed in further-flung regions.

As Chinese oil demand returns to growth, the country is bound to overtake India this year as the world's leader in oil demand growth. We have revised up the estimated increase in Chinese oil demand by 40 kb/d to 850 kb/d y-o-y. An accelerating mobility recovery by 2Q23 will buttress gasoline and gasoil use.

Global Demand by Product								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2020	2021	2022	2023	2022	2023	2022	2023
LPG & Ethane	13 128	13 841	14 314	14 626	473	312	3.4	2.2
Naphtha	6 434	6 982	6 856	7 131	- 126	274	-1.8	4.0
Motor Gasoline	23 645	25 617	25 959	26 151	343	191	1.3	0.7
Jet Fuel & Kerosene	4 708	5 191	6 062	6 910	870	849	16.8	14.0
Gas/Diesel Oil	26 119	27 668	28 331	28 467	662	137	2.4	0.5
Residual Fuel Oil	5 624	6 160	6 471	6 668	311	197	5.1	3.0
Other Products	11 857	12 212	11 861	11 768	- 351	- 93	-2.9	-0.8
Total Products	91 515	97 671	99 854	101 720	2 183	1 867	2.2	1.9

A recent easing in natural gas market tensions, especially in Europe, where mild winter conditions early in 4Q22 slashed heating demand, has been reflected in more moderate wholesale gas prices. This means that we have reduced our assumptions for global gas-to-oil switching this winter by about 200 kb/d and now expect worldwide additional oil use of about 550 kb/d during 4Q22 and 1Q23. While this will remain concentrated in Europe, most of the downward revision relates to non-road gasoil in the continent.

The petrochemical landscape remains beset by difficulties. Faltering polymer demand from manufacturing and construction and intensifying international competition mean that producers in

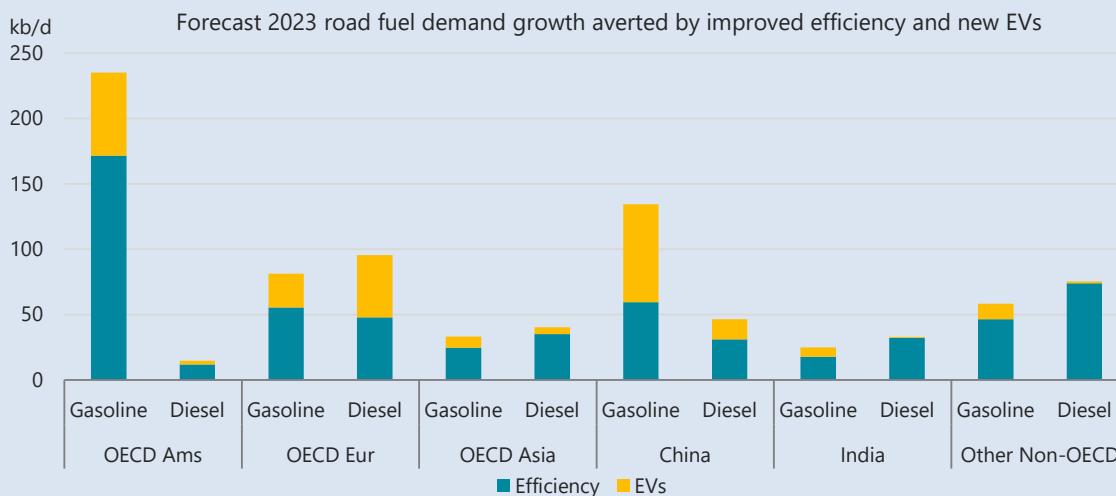
every major region except China and the Middle East have been forced to cut operations. Outside of China, we estimate that naphtha demand was down by 670 kb/d y-o-y (12%) in 4Q22 and any recovery this year will likely be slow and incomplete. Moreover, there are signs that producers in North America are also beginning to feel the strain, with growth in LPG/ethane use slowing to a crawl.

Efficiency gains and electric vehicles stymie road fuel demand growth

Recent years have seen consistent gains in fuel efficiency and burgeoning sales of electric vehicles (EVs) driven by technological advances and progressively tighter government regulations. We forecast that in 2023 these ongoing changes to the global road fleet will slow oil consumption growth by around 870 kb/d¹. Efficiency gains account for the lion's share of this saving (610 kb/d) with EVs eliminating a further 260 kb/d of road fuel usage.

Most of this averted growth takes the form of gasoline (570 kb/d), but diesel consumption (300 kb/d) is also significantly reduced. Wealthier economies have generally made more progress, with the OECD seeing most of the total improvement (500 kb/d). China has also made enormous strides, having the fastest global EV uptake (which alone obviates the need for about 100 kb/d of new fuel use).

This worldwide success story is of powerful significance in this period of oil market tightness. In the absence of efficiency gains and rapid adoption of EVs, forecast oil demand growth would otherwise have been 2.7 mb/d this year, with substantial negative implications for global crude and product balances.

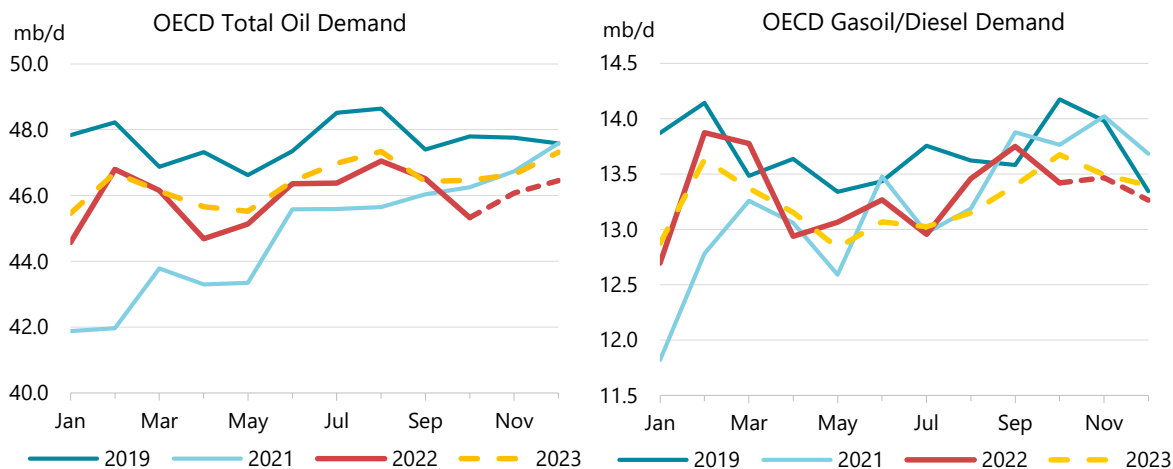


¹ OMR analysis based on WEO, 2022 efficiency and vehicles sales.

Economic woes weigh on OECD outlook

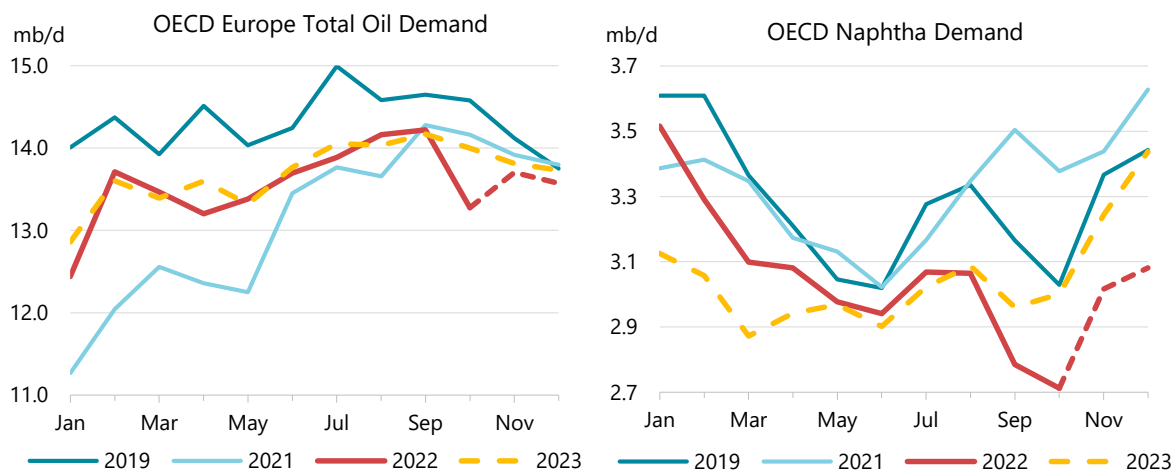
Overall OECD oil demand gains will slow to 470 kb/d in 2023, compared with 1.1 mb/d in 2022, reaching 46.4 mb/d. Growth relies chiefly on jet/kerosene, which continues its post-pandemic rebound in 2023 (+430 kb/d y-o-y). Air traffic levels are expected to approach but not surpass 2019 levels. In contrast, growth in gasoil (-70 kb/d) and gasoline (-150 kb/d) deliveries is likely to go into

reverse with major OECD economies set for recession while fleet fuel efficiencies improve and shares of EVs rise.



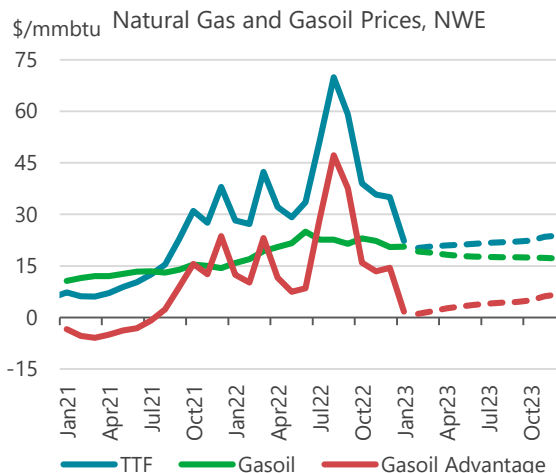
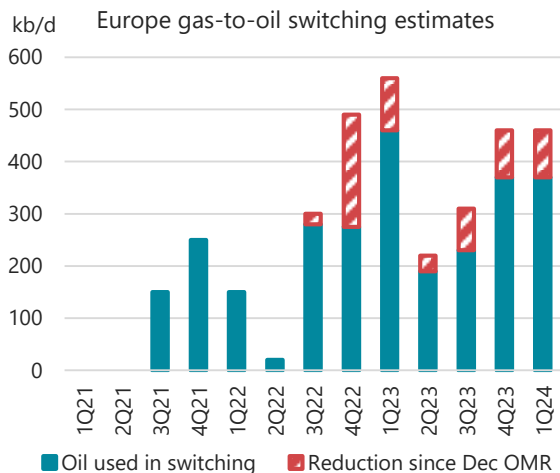
This slowdown already became apparent in 4Q22, when OECD deliveries are estimated to have dropped by 910 kb/d (y-o-y). Industrial activity slackened across all regions, but most precipitously in Europe. This had major implications for OECD usage of diesel (-300 kb/d y-o-y) and petrochemical feedstock (naphtha -550 kb/d and LPG -50 kb/d y-o-y), both of which are closely tied to manufacturing.

In addition to experiencing the sharpest deceleration amongst OECD regions in 4Q22 (-440 kb/d, -3.2%), **Europe** has the least certain economic prospects for 2023. Overall demand is set to edge up by 140 kb/d this year. This will depend on a recovery in jet/kerosene (+130 kb/d) and on the assumption that the unusually mild winter temperatures experienced across the continent in 2022 will not be repeated.



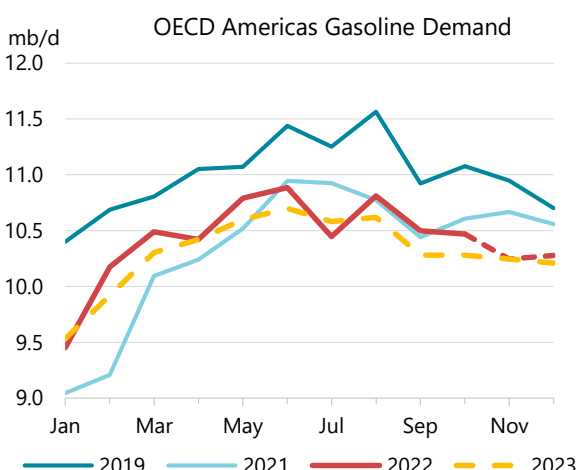
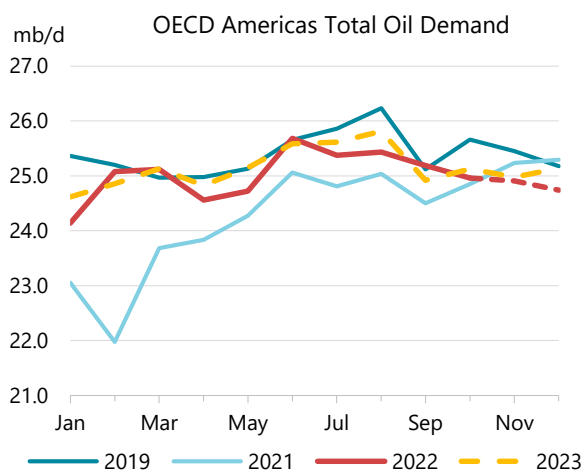
Reported oil product deliveries for October came in 880 kb/d (6.2%) lower y-o-y for Europe, with the continent generally thought to be close to recession and unusually warm weather curtailing heating demand. Continued weak demand and poor producer margins for petrochemical products undermined naphtha use (-400 kb/d, -33% y-o-y). Nonetheless, there were nascent signs of improving sentiment in December: The *S&P Global Eurozone Manufacturing PMI* edged up to 47.8, from 46 in November while the EU's *Economic Sentiment Indicator* rose from 92.7 in November to

94.2 in December. While the recent drop in natural gas futures slightly supports the sector's outlook, any recovery during this year will likely be gradual, with 2023 contracting overall (-30 kb/d).



European gasoil use in October (-560 kb/d y-o-y) was hit by a combination of reduced diesel consumption (-350 kb/d), which suffered from weakness in industrial freight, and sharply reduced heating oil demand (non-road gasoil -210 kb/d). Germany's *Federal Statistics Office* figures showed a 4.4% y-o-y decline in truck-toll mileage for October. We have also significantly cut our expectations for the prevalence of gas-to-oil switching as a result of the more than 50% fall in TTF natural gas prices since last month's *Report*. Natural gas and gasoil prices are now close to parity in energy equivalent terms and although futures prices suggest that a small gasoil advantage will gradually re-emerge, this would not reach the levels of 3Q22. Fuel oil and LPG continue to maintain wider cost advantages over natural gas. We have downgraded our expectations for 4Q22 and 1Q23 non-road gasoil use by 130 kb/d (+50 kb/d y-o-y). At the same time, we have made smaller reductions for fuel oil and refinery fuel use, leaving 350-400 kb/d of oil used in European switching this winter and an estimated average of 300 kb/d extra oil use in 2023.

Oil deliveries in **France** dropped by 270 kb/d month-on-month (m-o-m) in October amid a wave of strikes affecting refineries, chemical plants and oil product logistics.



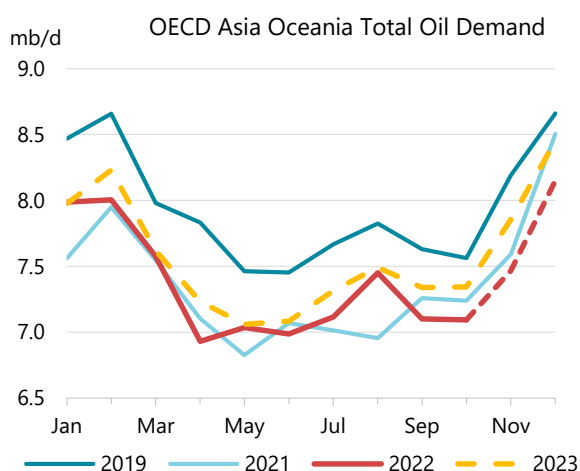
OECD Americas is also set for only a small increase (+160 kb/d y-o-y, +0.6%) in oil deliveries this year, to reach 25.1 mb/d. Jet/kerosene (+170 kb/d) will be the foremost source of gains while gasoline is set to decline by 110 kb/d (-1%). Regional economies enter 2023 amid signs of a

slowdown and the assumptions used for our projections indicate only 0.1% growth in 2023 US GDP. Gasoil demand, closely linked to industrial activity, will edge higher (+10 kb/d) and LPG/ethane volumes will climb by a lacklustre 50 kb/d.

We estimate that demand fell by 320 kb/d y-o-y in the **US** during 4Q22. Gasoline demand fell by the same amount, severely hampered by extremely cold weather in late December. Along with torrential rain and flooding in California, the impact of the freeze will also reduce January fuel deliveries. This apparent decline in personal mobility mirrors the deteriorating economic environment, with *S&P Global* PMIs for US services and manufacturing both revealing accelerating slowdowns in November and December. The *American Trucking Association's Truck Tonnage Index* fell by a total of 3.7% across October and November, reflecting the 120 kb/d y-o-y decline in gasoil demand.

In OECD Americas, LPG/ethane demand lost momentum in 4Q22, rising by only 40 kb/d compared with 250 kb/d in 3Q22. The petrochemical sector's difficulties already seen elsewhere have spread to North America, with many steam crackers reportedly forced to cut operating rates significantly in recent months. **Canadian** LPG demand was especially soft in October, falling by 130 kb/d y-o-y, while US usage went up by only 30 kb/d despite substantial structural increases over the past year.

OECD Asia Oceania has the strongest outlook of the three OECD regions for 2023, with demand forecast to rise by 170 kb/d (2.3%), in-line with firmer GDP assumptions. Japan and Korea will show the fastest growth amongst major OECD economies, benefiting from China's economic reopening. These are particularly relevant for jet/kerosene (+130 kb/d y-o-y), where Japan (+70 kb/d), Korea (+20 kb/d) and **Australia** (+40 kb/d) will recover substantial ground versus 2022, especially during 1H23.



OECD Demand based on Adjusted Preliminary Submissions - November 2022

	(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	10.24	-4.0	1.86	5.9	3.35	-3.1	1.73	-9.0	4.08	6.4	0.62	2.6	3.03	0.4	24.91	-1.3
US*	8.60	-5.0	1.60	4.8	2.47	-7.4	1.43	-8.4	3.26	8.1	0.44	-1.3	2.52	2.8	20.31	-1.9
Canada	0.80	-1.4	0.13	14.2	0.27	-12.1	0.25	-15.0	0.44	1.0	0.03	0.5	0.34	-14.5	2.25	-5.4
Mexico	0.75	6.3	0.10	12.4	0.42	45.3	0.05	8.2	0.35	-0.9	0.13	15.3	0.16	0.0	1.96	11.6
OECD Europe	2.04	0.8	1.24	22.2	5.02	-3.9	1.44	-4.0	0.99	-4.3	0.84	10.3	2.13	-9.5	13.70	-1.5
Germany	0.49	2.4	0.18	8.0	0.75	-3.8	0.30	-15.8	0.09	-16.2	0.04	-28.8	0.31	-23.8	2.15	-8.2
United Kingdom	0.28	0.4	0.28	28.5	0.49	0.5	0.11	-8.0	0.12	-5.3	0.02	14.5	0.11	0.9	1.41	3.9
France	0.23	8.0	0.14	18.5	0.74	-3.1	0.11	-22.9	0.06	-37.9	0.03	27.5	0.27	4.1	1.57	-2.2
Italy	0.20	13.2	0.09	35.3	0.52	4.3	0.06	-6.6	0.10	-5.1	0.10	5.4	0.18	-21.8	1.26	1.2
Spain	0.11	-9.4	0.12	17.4	0.43	-9.0	0.24	0.8	0.08	13.3	0.14	19.8	0.18	19.5	1.30	2.1
OECD Asia & Oceania	1.35	1.2	0.73	12.5	1.43	-2.8	0.50	6.3	0.76	0.5	0.48	0.3	2.21	-8.8	7.47	-1.6
Japan	0.71	2.0	0.40	1.0	0.42	-0.3	0.35	7.2	0.37	-8.5	0.25	-3.7	0.91	-7.9	3.43	-2.3
Korea	0.23	1.2	0.17	10.2	0.38	-7.4	0.09	7.2	0.33	13.3	0.20	0.4	1.12	-11.0	2.51	-4.1
Australia	0.28	-1.6	0.13	99.9	0.55	-1.6	-	-	0.04	-4.3	0.01	53.7	0.11	4.7	1.13	5.3
OECD Total	13.64	-2.8	3.83	12.0	9.80	-3.5	3.66	-5.2	5.83	3.6	1.94	5.2	7.37	-5.5	46.08	-1.4

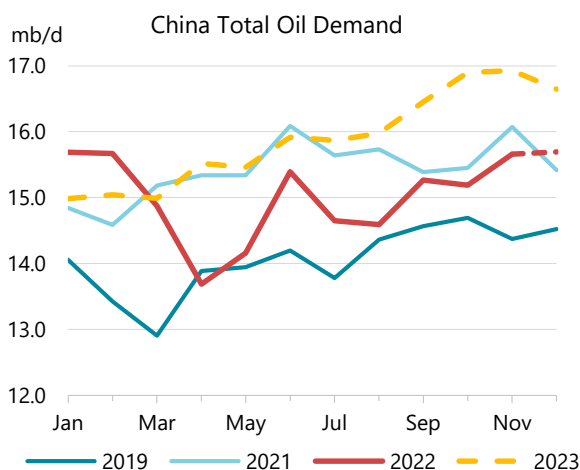
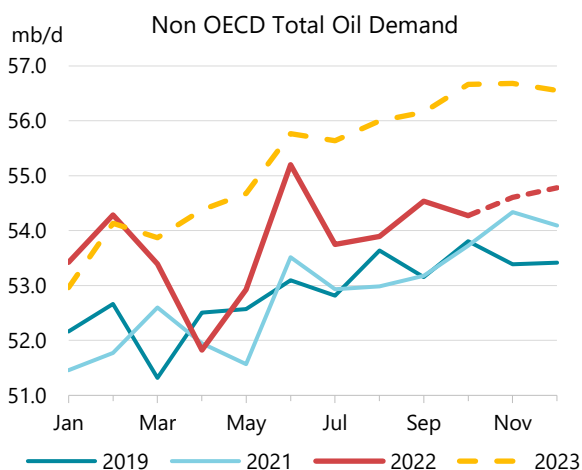
* Including US territories

Korean oil demand tumbled by 170 kb/d y-o-y in 4Q22. This was primarily due to the ongoing weakness of the petrochemical sector, but also a series of truckers' strikes impacting industrial activity and refinery operations. Korea has a large petrochemical industry with the highest naphtha consumption of any OECD country (greater than for the whole of OECD Europe). Poor demand for

chemical commodities and intensifying competition from Chinese producers drove Korean naphtha demand down by 130 kb/d for the quarter. Quarterly **Japanese** naphtha demand fell by 80 kb/d, dominating an overall fall of 100 kb/d y-o-y. Demand for other major products remained largely stable y-o-y in both countries, despite manufacturing PMIs suggesting deepening contractions.

China reopening lifts non-OECD prospects

Non-OECD demand for 2023 has been revised higher by 140 kb/d to 55.3 mb/d (+1.4 mb/d y-o-y) compared to last month's *Report*, as robust Middle Eastern and Indian consumption is complemented by China's post-lockdowns recovery. The upgrade builds on the momentum of recent months. Non-OECD demand was 270 kb/d higher y-o-y during November, driven by firmer gasoil, LPG and naphtha use. Average non-OECD demand is estimated 490 kb/d higher y-o-y during 4Q22, compared to expectations of 270 kb/d in last month's *Report*. Total non-OECD demand for 2022 is estimated at 53.9 mb/d (+1.1 mb/d y-o-y).



China's apparent oil demand in November rose by 470 kb/d m-o-m (-410 kb/d y-o-y), maintaining the relative strength of recent months. All key products except gasoline (-260 kb/d m-o-m) recorded monthly gains, with the biggest contribution once more coming from petrochemicals (naphtha and LPG +230 kb/d m-o-m), where naphtha use set a new all-time high of 2.1 mb/d. Demand is seen contracting in 4Q22 by 130 kb/d y-o-y, compared with an estimate of -250 kb/d in last month's *Report*. For 2022 as a whole, Chinese oil demand fell by 390 kb/d on average, its biggest ever annual decline and the first since 1990.

Having already loosened quarantine and testing measures in November, Beijing abruptly abandoned its zero-tolerance Covid regime in early December. This U-turn was reflected in our weighted average of provincial restrictions from Oxford University's Blavatnik School of Government (BSG), which collapsed by almost 20 points m-o-m in December, to 53%. The index is bound to fall further in January, when mainland borders will reopen to international travellers.



Sources: IEA, Oxford University BSG

Although massive underreporting of cases has obscured the scale of the ongoing Covid outbreak, the policy about-face clearly thrust China into tremendous turmoil. As the virus swept throughout the country, spiralling infections reportedly strained the nation's healthcare system. Hospitals and their intensive care units have struggled to cope with a flood of patients amid shortages of drugs and medical supplies. In wider society, the population avoided streets and shopping centres while factories struggled with acute staff shortages, causing havoc with supply chains. City-level congestion calculated from *Baidu* data showed a substantial slump in mobility, approaching levels last seen during 2022's spring Omicron-related outbreak that sent Shanghai into lockdown. Traffic subsequently recovered somewhat during the final week of the year.

Relentlessly bleak data readings demonstrated the economic urgency behind Beijing's U-turn. China's official manufacturing PMI fell 1 point to 47.0 in December, the lowest level since the early days of the pandemic. The non-manufacturing PMI, which covers the services and construction sectors, fared even worse, falling by five points to 41.6, deep in contraction territory. Meanwhile, the country's real estate slump continued to worsen, as declines in property investment and home sales gained momentum in November.

Amid the gloom surrounding manufacturing activity and exports, any rebound in oil demand is heavily dependent on a recovery in retail spending. However, this will be an arduous process, as household finances are squeezed by underwater mortgages, fast-rising unemployment and the psychological effects of three years of pandemic controls. Consumer confidence stands near record lows, while retail sales slumped 5.9% y-o-y in November.

Plans for increased monetary and fiscal stimulus may go some way to counterbalance the economic malaise. Beijing announced a number of plans to boost fiscal spending in recent months, as well as a range of measures to revive the ailing property sector by way of extending funding to cash-starved developers. However, stretched local government finances are likely to curb the schemes' impact.

Hardship and disruptions therefore look set to prevail in the near-term. As China faces a challenging winter, its exit path will unquestionably be bumpy and drawn-out. Still, the accelerated re-opening has improved medium-term economic prospects - evidenced by the 30% rally in the Hang Seng stock market index in the past two months. Mobility is bound to recover after the initial wave of infections dissipates, buttressing gasoline and jet/kerosene consumption, with three years of pent-up travel demand potentially waiting to be released.

China: Demand by Product								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2020	2021	2022	2023	2022	2023	2022	2023
LPG & Ethane	1 836	2 153	2 346	2 532	192	186	8.9	7.9
Naphtha	1 479	1 679	1 910	2 106	231	196	13.7	10.3
Motor Gasoline	3 156	3 502	3 352	3 524	- 150	172	-4.3	5.1
Jet Fuel & Kerosene	755	733	493	709	- 241	216	-32.8	43.9
Gas/Diesel Oil	3 022	3 399	3 483	3 692	84	208	2.5	6.0
Residual Fuel Oil	490	527	578	609	52	31	9.8	5.4
Other Products	3 466	3 434	2 878	2 721	- 556	- 156	-16.2	-5.4
Total Products	14 204	15 427	15 039	15 893	- 388	854	-2.5	5.7

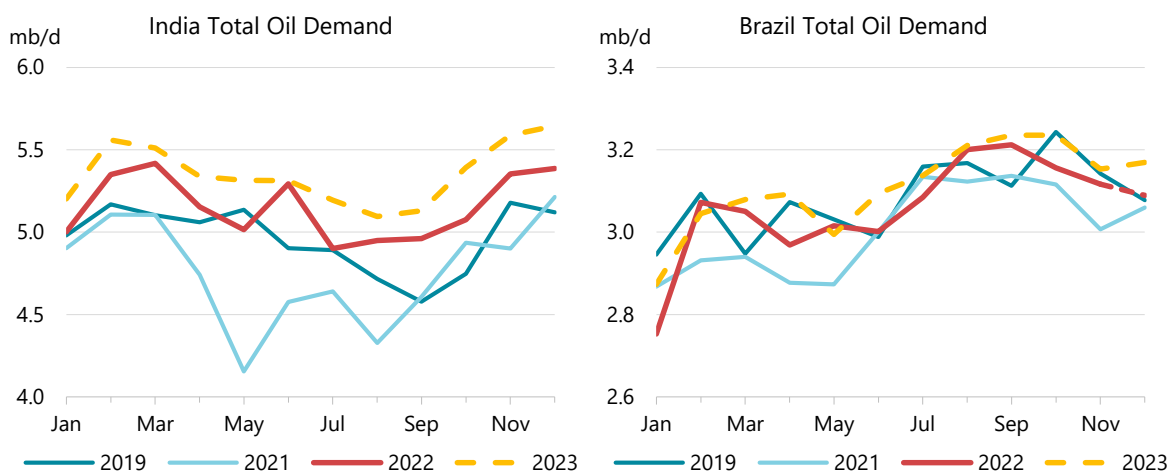
We have **moderately increased our forecast** for 2023 growth, by 40 kb/d to 850 kb/d y-o-y, with adjustments concentrated in transport fuels and petrochemicals. Oil demand will return to positive y-o-y growth during 2Q23 - as gasoline's post-lockdown recovery reaches critical mass - before growing by an average of 1.3 mb/d during 2H23. Gasoil, gasoline, LPG, naphtha and jet/kerosene will each contribute roughly 200 kb/d y-o-y to average 2023 growth. The latter will see the biggest

relative gains by far during 2023 (44% y-o-y) as air traffic recovers, but will remain some 20% below pre-pandemic levels on average.

Indian deliveries increased 30 kb/d m-o-m in December (+170 kb/d y-o-y), with growth largely driven by gasoil. Demand remained solid even after October/November's post-monsoon/Diwali peak. Deliveries grew by 250 kb/d y-o-y during 4Q22, thereby accounting for the bulk of non-OECD demand growth.

India: Demand by Product								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2020	2021	2022	2023	2022	2023	2022	2023
LPG & Ethane	873	892	918	927	25	10	2.8	1.1
Naphtha	313	313	287	295	- 26	8	-8.2	2.6
Motor Gasoline	698	781	862	902	81	40	10.3	4.6
Jet Fuel & Kerosene	118	127	151	183	24	32	18.8	21.3
Gas/Diesel Oil	1 448	1 551	1 710	1 818	160	107	10.3	6.3
Residual Fuel Oil	146	152	163	160	11	- 3	7.4	-1.9
Other Products	984	950	1 061	1 071	112	9	11.8	0.9
Total Products	4 582	4 765	5 152	5 355	387	203	8.1	3.9

However, 2022's economic tailwinds will mostly fade during 2023, with a likely export boost from a re-opening China outweighed by lower external demand from advanced economies. India's GDP growth is expected to decelerate by about 2 percentage points, according to consensus estimates. This slowdown is set to strain India's fiscal and trade balances. At the same time, sustaining the country's large-scale food and energy price controls is not helped by the record-low rupee - as Asia's worst-performing currency, it fell 11% against the US dollar during 2022. After average growth of 390 kb/d y-o-y during 2022 (5.2 mb/d), we see a deceleration to 200 kb/d in 2023 (5.4 mb/d).



Brazilian deliveries fell 40 kb/d m-o-m in November, largely on account of seasonal weakness in gasoil. Demand was up 110 kb/d y-o-y in November, with overall 2022 growth seen at 50 kb/d. Macro-economic conditions were extremely favourable in 2022, when Brazil was the standout performer in global financial markets. The Bovespa stock index was the biggest gainer last year among major equity benchmarks, climbing 4.7%, while the real was 2022's best-performing major currency, appreciating 5.4% against the US dollar. This is especially notable considering the risk-averse investor sentiment that engulfed emerging market economies during 2022. Brazil's

commodity export revenues – echoed in 2022's record trade surplus - insulate it against the inflationary spiral that beset numerous net-importing developing nations.

Non-OECD: Demand by Product								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2020	2021	2022	2023	2022	2023	2022	2023
LPG & Ethane	7 778	8 280	8 582	8 813	302	231	3.6%	2.7%
Naphtha	3 311	3 654	3 805	4 079	150	274	4.1%	7.2%
Motor Gasoline	10 985	11 993	12 161	12 503	168	341	1.4%	2.8%
Jet Fuel & Kerosene	2 112	2 162	2 285	2 707	123	421	5.7%	18.4%
Gas/Diesel Oil	13 471	14 462	15 008	15 215	546	208	3.8%	1.4%
Residual Fuel Oil	4 108	4 401	4 584	4 698	183	114	4.2%	2.5%
Other Products	7 721	7 893	7 477	7 287	- 416	- 190	-5.3%	-2.5%
Total Products	49 487	52 845	53 902	55 301	1 057	1 399	2.0%	2.6%

Brazil is not immune to the deteriorating global economic climate, however. GDP growth is set to slow further this year, with a consensus estimate of 0.8% y-o-y in 2023 and a possible recession in 1H23. Nonetheless, we expect oil demand to remain reasonably robust in the face of these headwinds, with increased fiscal spending and the possible expansion of energy price controls by the new Lula administration buttressing consumption. We anticipate 2023 demand growth of 50 kb/d, with consumption regaining its pre-pandemic level during 1Q23.

Middle Eastern oil demand fell by 350 kb/d m-o-m during October, largely due to declines in **Saudi Arabia** (-200 kb/d m-o-m) and **Iraq** (-110 kb/d m-o-m). This drop was primarily seasonal, as oil use for electricity generation declined rapidly after temperatures came off their summer peaks.

Still, record burning of crude and fuel oil during the summer heat wave sent average Middle Eastern deliveries higher by 570 kb/d y-o-y during 2022, making for the largest regional contribution to non-OECD demand growth. In this regard, on a country level, Saudi Arabia and Iraq (190 kb/d y-o-y each) find themselves outranked only by India. We anticipate a more moderate pace of growth of 150 kb/d y-o-y during 2023 for the Middle East, as ongoing robust power demand is counterbalanced by slowing GDP growth, partly due to lower oil prices weighing on fiscal budgets.

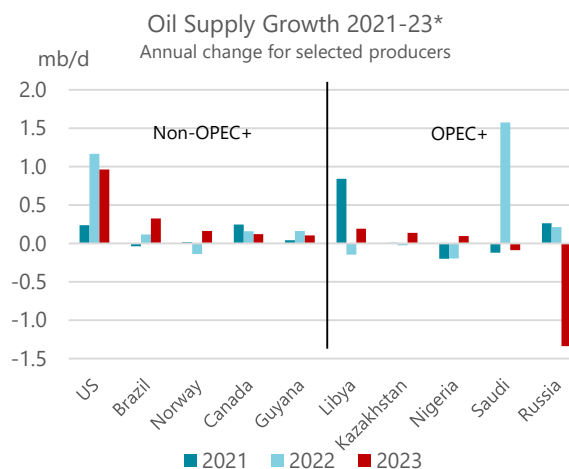
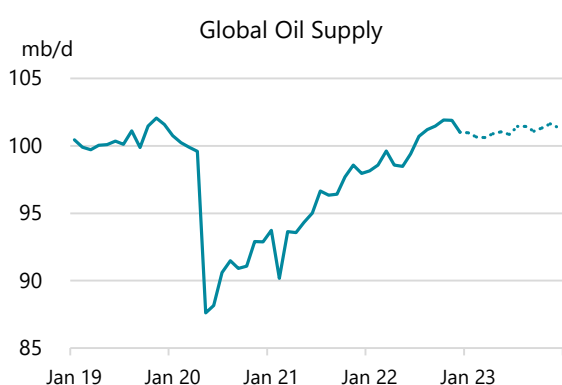
Non-OECD: Demand by Region								
(thousand barrels per day)								
	Demand				Annual Chg (kb/d)		Annual Chg (%)	
	2020	2021	2022	2023	2022	2023	2022	2023
Africa	3 766	3 994	4 178	4 154	185	- 24	4.6	-0.6
Asia	26 918	28 807	28 918	30 276	111	1 357	0.4	4.7
FSU	4 559	4 855	4 871	4 757	15	- 114	0.3	-2.3
Latin America	5 447	5 937	6 102	6 139	165	37	2.8	0.6
Middle East	8 074	8 482	9 047	9 196	566	149	6.7	1.6
Non-OECD Europe	723	770	785	780	15	- 6	2.0	-0.7
Total Products	49 487	52 845	53 902	55 301	1 057	1 399	2.0	2.6

Russian oil use rose 30 kb/d y-o-y in November. Demand has been resilient for most of the year, buoyed by a ballooning current account surplus that financed increased military spending, thereby furthering gasoil use in particular. However, growth has slowed in recent months, with a decline of 20 kb/d y-o-y seen in 4Q22, as gasoil demand decelerated and growth in other main products turned negative. We see this reversal gathering momentum in 2023 as increasingly biting sanctions decimate hydrocarbon export revenues. A case in point for the gloomier outlook is the collapse in the rouble, which has fallen about 10% since the EU ban on seaborne Russian crude imports came into effect. We expect oil use to contract by 140 kb/d y-o-y during 2023.

Supply

Overview

Global oil supply growth in 2023 is set for a dramatic slowdown as OPEC+ shifts into contraction following last year's massive 4.7 mb/d expansion, dominated by the producer bloc. Gains of 1 mb/d will be fuelled by the US along with Brazil, Norway, Canada and Guyana, all producers outside the OPEC+ alliance (non-OPEC+). An overall non-OPEC+ increase of 1.9 mb/d will be tempered by an OPEC+ decline of 870 kb/d as Russia feels the full weight of sanctions. Though modest versus 2022, growth in 2023 will still lift total oil supply to an all-time high of 101.1 mb/d.



*Assumes OPEC+ sticks with cut through 2023. Russia under sanctions.

After rising 1.6 mb/d in 2022, a continued robust non-OPEC+ performance will see the US replace Saudi Arabia as the largest source of growth in 2023 and – along with Canada, Brazil and Guyana – scale annual records for a second straight year. As for OPEC+, last year saw gains of 3.1 mb/d as the coalition phased out a record 2020 reduction. Saudi pumped at its highest ever and supply this year should remain close to that lofty annual level even if production cuts remain in place through 2023. Russia is the wildcard. Despite sanctions, it managed to increase supply in 2022 but this year flows could fall hard under the impact of EU sanctions and G7 price caps. Nigeria and Libya posted the biggest y-o-y declines in 2022 due to civil unrest and sabotage, though recovery appears to be underway. Excluding Russia, oil supply from the rest of the bloc could expand by 460 kb/d in 2023 with Libya ranking as the top source of growth.

The tail end of last year saw a substantial decline in volumes due to an Arctic blast in the US that battered the shale patch. At 101 mb/d, production in December was down 860 kb/d m-o-m. Russian oil supply (including condensates and NGLs) eased just a touch despite the imposition of an EU ban on Russian crude imports along with a G7 price cap on exports. As a result, total OPEC+ output edged down 70 kb/d, while non-OPEC+ supply fell 790 kb/d. Save for Nigeria, which saw a further recovery, and the UAE, where exports fell, production in December from OPEC+ members held broadly steady.

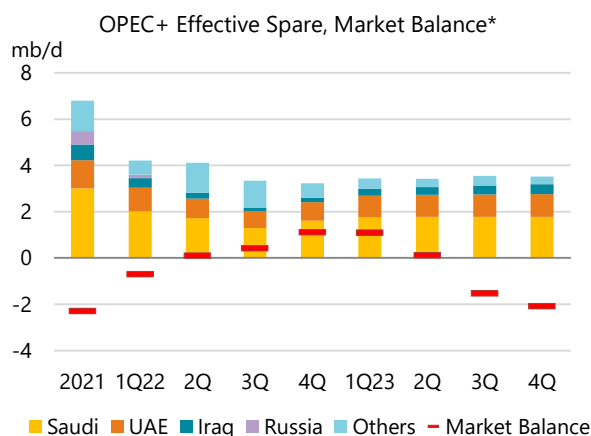
World Oil Production by Region (OPEC+ based on current agreement)

(million barrels per day)

	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23	2Q23	3Q23	4Q23	2023
Africa	7.4	7.4	7.0	7.0	7.2	7.2	7.4	7.4	7.3	7.3	7.4
Latin America	5.9	6.2	6.2	6.5	6.6	6.4	6.7	6.9	7.0	7.1	7.0
North America	24.4	25.0	25.4	26.2	26.5	25.8	26.5	26.8	27.1	27.3	26.9
China	4.1	4.2	4.2	4.1	4.1	4.2	4.3	4.2	4.2	4.2	4.2
Other Asia	3.4	3.3	3.2	3.1	3.2	3.2	3.1	3.1	3.0	3.0	3.0
Europe	3.5	3.4	3.1	3.2	3.3	3.3	3.5	3.4	3.3	3.5	3.4
FSU	13.8	14.4	13.4	13.7	14.1	13.9	13.4	12.6	12.4	12.4	12.7
Middle East	27.9	30.1	30.8	31.8	31.4	31.0	31.0	31.0	31.0	31.0	31.0
Total Oil Production	90.3	94.0	93.4	95.5	96.3	94.8	95.8	95.4	95.5	95.9	95.6
Processing Gains	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4
Global Biofuels	2.8	2.5	3.1	3.3	2.9	3.0	2.6	3.2	3.5	3.1	3.1
Total Supply	95.4	98.8	98.8	101.1	101.6	100.1	100.7	100.9	101.3	101.4	101.1
OPEC Crude	26.4	28.5	28.7	29.6	29.4	29.1	29.3	29.3	29.3	29.3	29.3
OPEC NGLs*	5.1	5.3	5.4	5.4	5.3	5.3	5.4	5.4	5.4	5.4	5.4
Non-OPEC OPEC+	17.4	18.2	17.2	17.5	17.9	17.7	17.2	16.4	16.3	16.3	16.5
Total OPEC+	49.0	52.0	51.3	52.5	52.7	52.1	51.8	51.2	51.0	51.0	51.2
Demand	97.7	99.5	98.7	100.7	100.5	99.9	99.6	100.8	102.9	103.5	101.7
Balance	-2.3	-0.7	0.1	0.4	1.1	0.2	1.1	0.1	-1.5	-2.1	-0.6

While world oil supply is poised to outpace demand in 1Q23 and meet it in 2Q23, a substantial deficit could develop in 2H23 as demand gallops ahead. That would shift the focus onto spare production capacity, most of which is held by Saudi Arabia, along with the UAE. Effective spare capacity, excluding volumes shut in by sanctions on Iran and Russia, is projected to average 3.5 mb/d in 2023, up from 3.2 mb/d in 4Q22. But if OPEC+ were to respond to the call on its crude and ramp up to balance the market, that spare cushion would be squeezed wafer thin.

OPEC+ agreed last month to stick with a sharply reduced supply ceiling that runs through 2023. In reality, however, only Saudi Arabia and its Gulf neighbours will produce at or around lower quotas as most of the bloc are pumping below their targets. The OPEC+ Joint Ministerial Monitoring Committee meets on 1 February to review policy. The next full ministerial session is scheduled for 4 June.

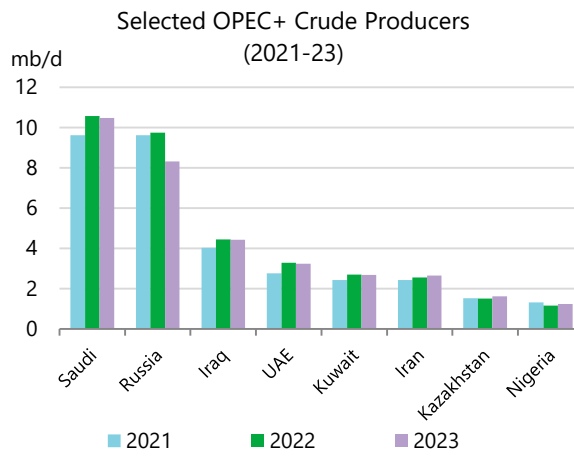
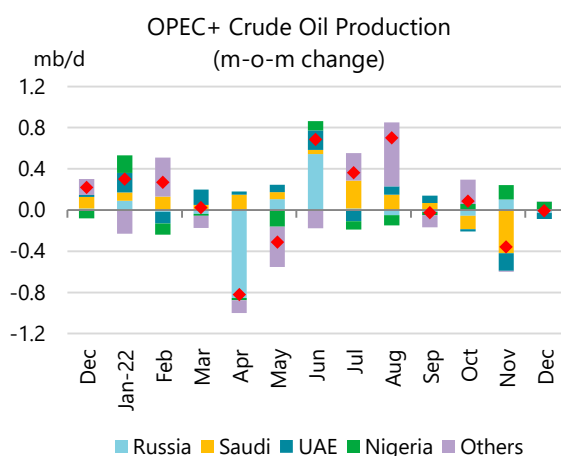


*Excludes shut-in Iranian, Russian crude.

OPEC+ crude oil supply

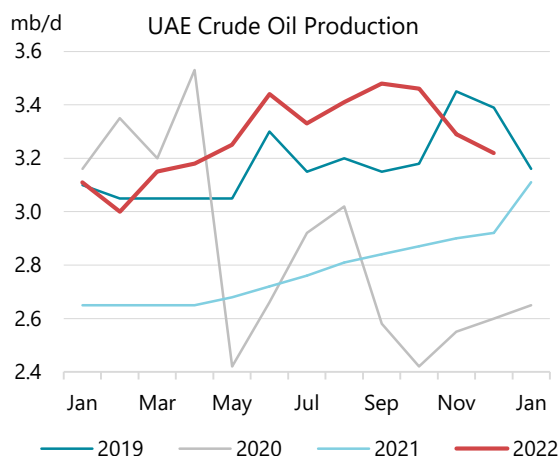
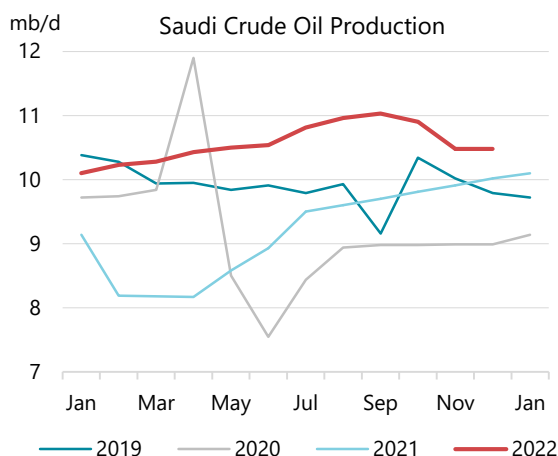
Crude oil production from the OPEC+ alliance is expected to decline y-o-y in 2023 primarily due to the impact of the EU embargoes on Russian crude and products along with the G7 price caps. The big question is just how far Russian output will fall. Supply from Saudi Arabia and its Gulf neighbours is expected to stay broadly steady versus 2022 provided the bloc retains its production cut through 2023. Significant upside potential lies mostly in Libya, Nigeria and Kazakhstan – all of which suffered declines last year.

As for December, OPEC+ crude oil production from all 23 countries inched down 10 kb/d to 44.53 mb/d. A substantial increase from Nigeria was offset by lower output in the UAE. Russian crude supply eased. Saudi Arabia - along with Iraq and Kuwait - continued to pump at or around OPEC+ quotas. Volumes from OPEC countries eased 40 kb/d to 29.19 mb/d while output from non-OPEC partners rose 30 kb/d to 15.34 mb/d. Production from the 19 members bound by quotas decreased by 50 kb/d to 38.33 mb/d last month leaving a gap of 1.77 mb/d between the bloc's supply and official targets. Due to sanctions, Russia leads those lagging far below quotas, while operational issues and capacity constraints are keeping countries such as Nigeria and Angola well under target.



* Assumes OPEC+ sticks with cut in 2023. Iran, Russia remain under sanctions.

Saudi crude production in December held steady at 10.48 mb/d – in line with its quota. Shipments of crude oil to world markets were relatively stable m-o-m. For 2022 as a whole, the Kingdom's crude supply reached a record 10.6 mb/d, up 1.4 mb/d y-o-y, as it fully unwound 2020 production cuts. On average, the Kingdom held 1.66 mb/d of spare capacity last year. Annual crude output in 2023 could ease to 10.5 mb/d if Riyadh stays at its current OPEC+ target for the whole year.



Crude oil supply in the **UAE** fell 60 kb/d in December along with lower exports. Production of 3.23 mb/d was 210 kb/d above its OPEC+ target. In 2022, UAE output reached an annual high of 3.3 mb/d, up 520 kb/d y-o-y, leaving it with 845 kb/d of spare capacity. Volumes this year are expected to edge lower.

Iraqi output dipped 10 kb/d to 4.45 mb/d, just above its quota. Production may decrease in February due to scheduled 10-day maintenance at the 400 kb/d West Qurna-2 field. For the whole of 2022,

Iraqi volumes averaged 4.4 mb/d, up 410 kb/d. Crude supply is expected to hold broadly steady this year. **Kuwaiti** production inched down to 2.66 mb/d in December.

OPEC+ Crude Oil Production ¹						
(million barrels per day)						
	Nov 2022	Dec 2022	Dec Prod vs	Dec 2022	Sustainable	Eff Spare Cap
	Supply	Supply	Target	Target	Capacity ²	vs Dec ³
Algeria	1.02	1.01	0.00	1.01	1.0	0.0
Angola	1.09	1.09	-0.37	1.46	1.2	0.1
Congo	0.26	0.25	-0.06	0.31	0.3	0.0
Equatorial Guinea	0.06	0.06	-0.06	0.12	0.1	0.0
Gabon	0.19	0.18	0.00	0.18	0.2	0.0
Iraq	4.46	4.45	0.02	4.43	4.7	0.3
Kuwait	2.68	2.66	-0.02	2.68	2.8	0.1
Nigeria	1.15	1.23	-0.51	1.74	1.4	0.1
Saudi Arabia	10.48	10.48	0.00	10.48	12.2	1.7
UAE	3.29	3.23	0.21	3.02	4.1	0.9
Total OPEC-10	24.68	24.64	-0.78	25.42	28.0	3.3
Iran ⁴	2.72	2.72			3.8	
Libya ⁴	1.15	1.17			1.2	0.0
Venezuela ⁴	0.68	0.66			0.8	0.1
Total OPEC	29.23	29.19			33.7	3.5
Azerbaijan	0.55	0.55	-0.14	0.68	0.6	0.0
Kazakhstan	1.68	1.68	0.06	1.63	1.7	0.0
Mexico ⁵	1.61	1.65		1.75	1.7	0.0
Oman	0.84	0.84	0.00	0.84	0.9	0.0
Russia	9.80	9.77	-0.71	10.48	10.2	
Others ⁶	0.84	0.85	-0.20	1.06	0.9	0.1
Total Non-OPEC	15.31	15.34	-0.99	16.44	15.9	0.2
OPEC+ 19 in cut deal⁶	38.38	38.33	-1.77	40.10	42.2	3.5
Total OPEC+	44.54	44.53			49.6	3.6

1 Excludes condensates.

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

3 Excludes shut in Iranian, Russian crude.

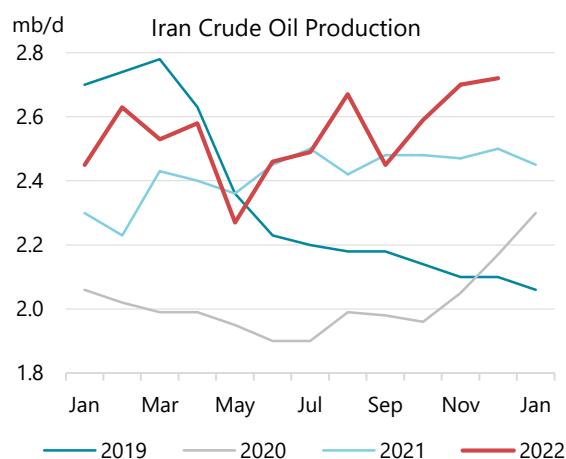
4 Iran, Libya, Venezuela exempt from cuts.

5 Mexico excluded from OPEC+ compliance.

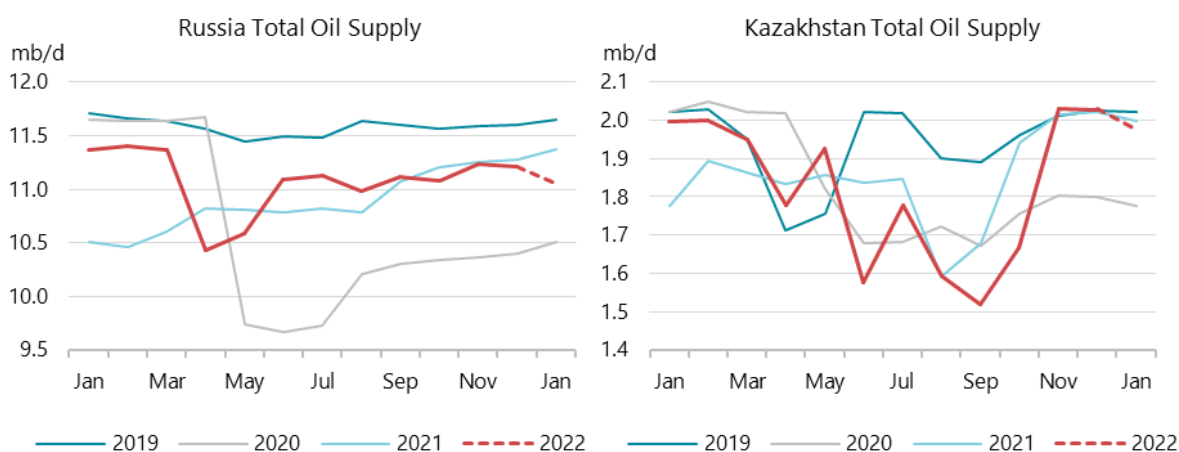
6 Bahrain, Brunei, Malaysia, Sudan and South Sudan.

Crude oil production in **Iran**, exempt from the OPEC+ supply pact, held steady at 2.72 mb/d in December. Iran managed to increase output by about 130 kb/d in 2022 to an average 2.5 mb/d despite sanctions. Tehran's oil sales to China appear to have risen by about 150 kb/d in 4Q22 vs 3Q22. We expect higher shipments to continue this year, boosting average production of crude to roughly 2.7 mb/d. Talks to revive the 2015 Iran nuclear deal, which would ease sanctions, have been on ice since September.

Despite the EU import ban and G7 price cap, **Russian** production merely dipped 30 kb/d in December. Crude oil exports fell due to the newly imposed sanctions but Russia raised refinery throughput and appeared to have stored significant volumes to keep the taps open. Crude oil supply accounted for all the loss, easing to 9.77 mb/d in December – taking total output of crude oil, condensates and NGLs to 11.2 mb/d, just 190 kb/d below pre-invasion levels.



President Vladimir Putin in late December announced Moscow's response to the G7 price cap, signing a decree that bans the supply of crude and oil products from 1 February for five months to countries that support the cap. Deputy Prime Minister Alexander Novak was reported as saying that action could result in a 500-700 kb/d cut to production. We believe Russia will have to shut in more substantial volumes in 1Q23 after the EU bans Russian product imports. On an annual basis, sanctions limited growth in total oil supply to just 210 kb/d in 2022. By the end of 1Q23, we forecast that around 1.6 mb/d will be shut in versus pre-invasion levels, which would reduce average oil production to 9.7 mb/d in 2023, down 1.3 mb/d y-o-y.



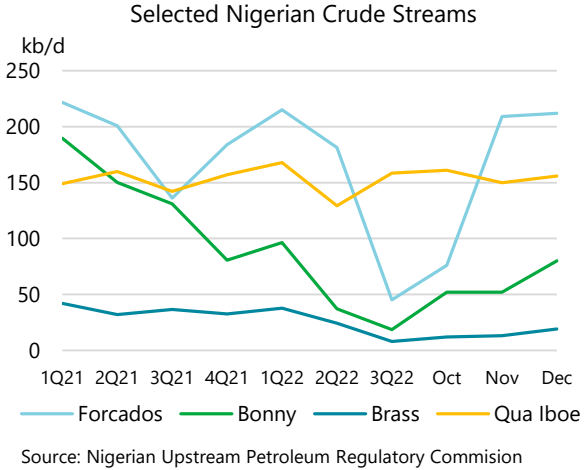
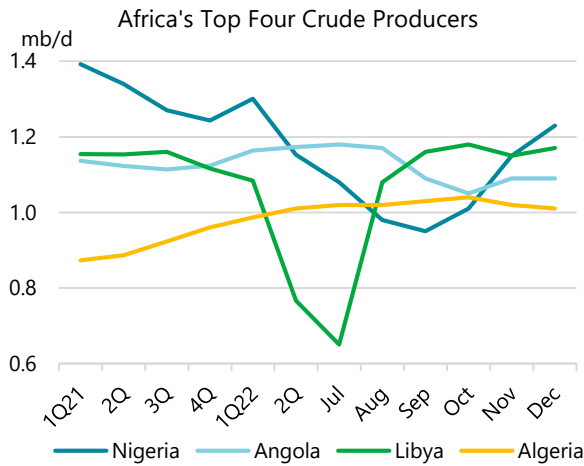
Kazakh crude oil production held steady in December at 1.68 mb/d. Various unplanned outages along with prolonged maintenance set back output last year. Crude oil supply averaged 1.5 mb/d in 2022, down 20 kb/d y-o-y, but volumes are expected to grow by around 110 kb/d this year as the Chevron-operated Tengiz future growth project (FGP-WPMP) continues to ramp up.

The central Asian country is meanwhile gearing up for its first ever shipment of crude via Russia's Druzhba pipeline to Germany. It reportedly has received approval from Moscow to transport 300,000 tonnes of oil (25 kb/d) to Germany in 1Q23. The Druzhba pipeline is exempt from sanctions, but German refineries in Leuna and Schwedt, connected to the pipeline, have halted Russian crude purchases since the end of 2022. However, Kazakh oil will most likely be routed through the northern leg of the Druzhba via Poland as of February.

Combined crude oil output from African members of OPEC+ increased by 60 kb/d in December as Nigeria's recovery stretched into a second month. **Nigerian** crude oil rose 80 kb/d to 1.23 mb/d, the highest level since April, as key grade Bonny Light ramped up and other core streams such as Forcados held broadly steady. Sabotage and oil theft sank Nigerian supply to 40-year lows in 2022, but this year could see a modest rebound as major export streams recover and stabilise.

Nigeria posted the world's largest decline last year, with average crude output falling 160 kb/d to 1.1 mb/d. This year, crude supply could rise by 90 kb/d to 1.2 mb/d – allowing the country to maintain its rank as Africa's largest crude oil producer. In an effort to bolster its volumes, it has launched a bid round for seven offshore oil blocks, the first such offering in more than 15 years. The Nigerian Upstream Petroleum Regulatory Commission intends to invite bids for pre-qualification by 31 January.

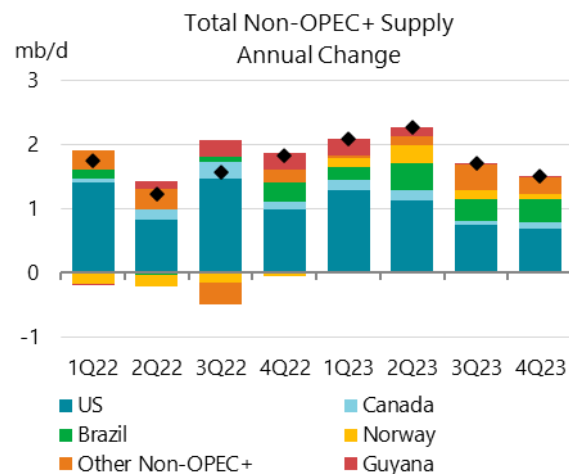
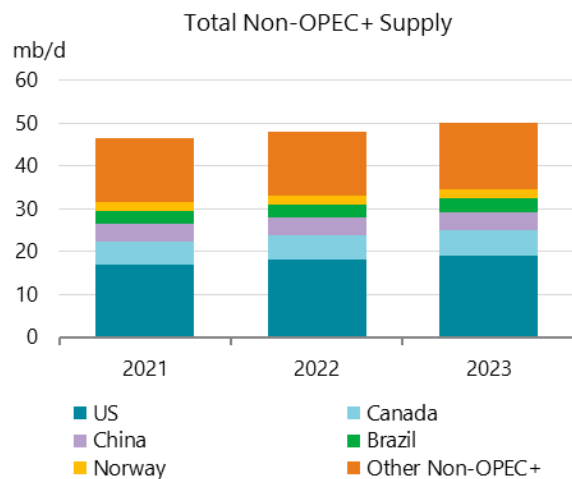
Crude supply in **Angola** was stable m-o-m at 1.09 mb/d. After suffering years of decline, the west African producer managed to hold production broadly steady at 1.1 mb/d in 2022 thanks to the start-up of a number of fields and projects in 2021-22.



Libyan crude oil output inched up by 20 kb/d to 1.17 mb/d in December. Production from the North African producer has been relatively stable after a deal in July that ended an oil blockade remains in place. The prolonged period of civil unrest in 2022 led to a 150 kb/d annual drop in Libyan crude production. Growth of 190 kb/d this year would lift average crude supply to 1.2 mb/d provided the current period of stability persists.

Output in **Venezuela** slipped by 20 kb/d in December to 660 kb/d. An increase of production is expected after the US eased sanctions on Caracas at the end of November, enabling Chevron to resume operations at its joint ventures. Chevron's first cargo of Venezuelan crude under the new US license is due to arrive at its Pascagoula, Mississippi, refinery later this month. The loosening of sanctions followed the restart of dialogue between President Nicolas Maduro and opposition parties. Last year, Venezuelan production increased by 90 kb/d to 700 kb/d. A similar rise is expected this year, lifting crude output to around 800 kb/d.

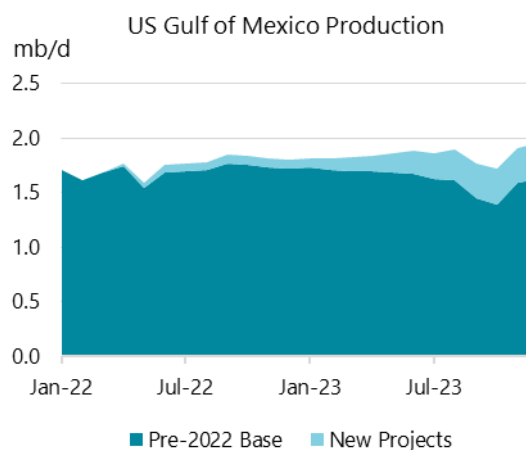
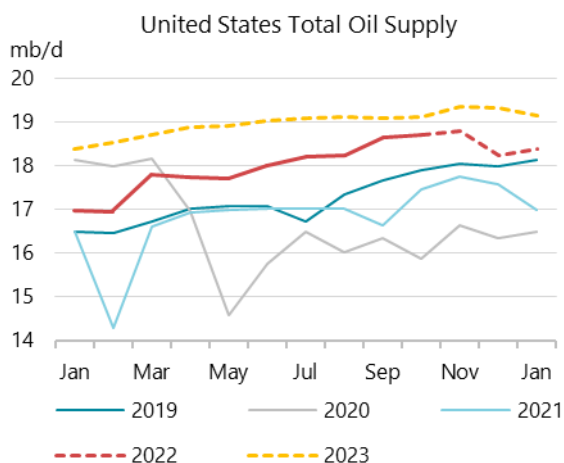
Non-OPEC+ oil supply



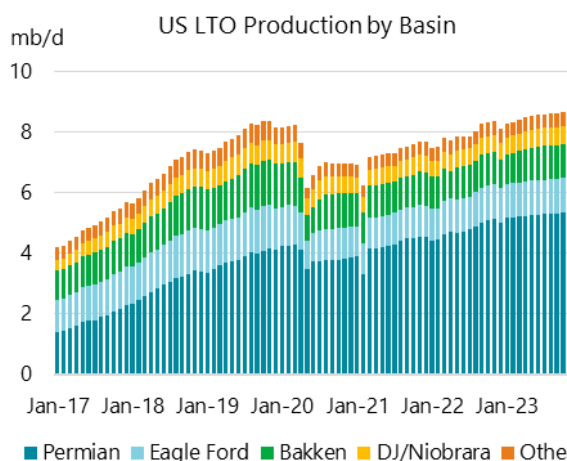
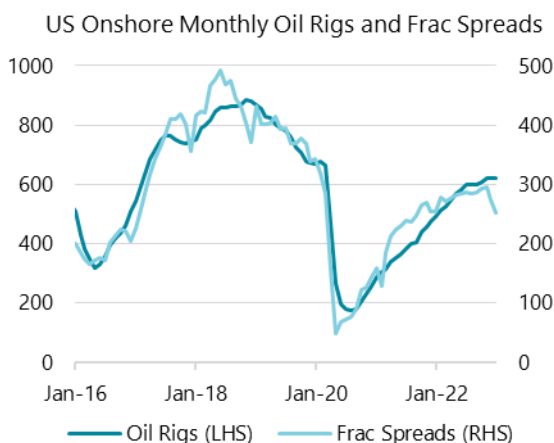
Output from non-OPEC+ countries retreated in December as winter weather pummelled the US and Canada and biofuel seasonality more than offset gains elsewhere. The 790 kb/d m-o-m drop to 48.4 mb/d still left volumes 2 mb/d higher than January 2022. Expected growth in 2023 is largely unchanged since the last *Report* at 1.9 mb/d, boosting production to 49.9 mb/d. The US, along with

Brazil and Norway, will account for roughly 75% of the gains. Additionally, the US (19 mb/d), Canada (5.9 mb/d), Brazil (3.4 mb/d) and Guyana (380 kb/d) will all produce record volumes.

Total oil supply in the **US** took a beating in December, plummeting by 570 kb/d m-o-m to 18.2 mb/d as winter storms blew across most of the country and disrupted oil operations (as well as many aspects of life). The losses were split between crude and NGLs as basins were affected all the way from the Bakken to the Permian and across to Appalachia. Those volumes are expected to return during January and we expect annual growth of 960 kb/d in 2023, below the 1.2 mb/d gain seen in 2022. Total output this year would then be 19 mb/d, an all-time high, with crude oil growing to 12.5 mb/d – overtaking the previous record of 12.3 mb/d reached in 2019.



But these barrels will not come without challenges. The favourable conditions for US producers over the last two years may face headwinds as costs are expected to rise by a further 5-15%. Budgets are estimated to increase nominally by a similar amount but only companies with operating scale, strong purchasing power and rigorous planning will be able to boost activity.



Sources: Primary Vision, Baker Hughes

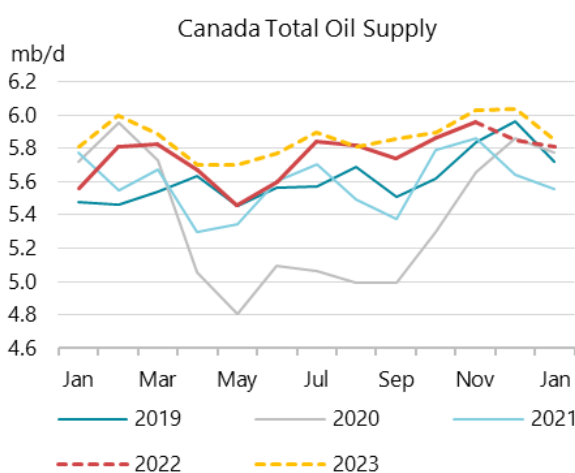
Results of the fourth quarter Dallas Fed Energy Survey reiterated the deteriorating macro picture and challenges to US light tight oil (LTO). The quarterly survey of 152 energy firms (97 producers and 55 oilfield service companies) showed that business activity has fallen to levels similar to January 2021 while uncertainty amongst the group is at the highest since 1Q20. Additionally, employee hours worked and wages have come off record highs seen in 3Q22. One-third of the

producer group pointed to inflation and/or supply chain bottlenecks limiting production growth, with another 27% highlighting a maturing asset base and 16% having issues with capital availability.

This *Report* continues to see constrained pressure pumping capacity (fracking crews), shareholder return prioritisation and gas takeaway capacity as downside risks to US LTO growth in 2023. Annual LTO gains last year were 640 kb/d and in 2023 are expected to be 610 kb/d with output increasing 420 kb/d from January to December of this year (entry-exit rate). US LTO provides one-third of the non-OPEC+ growth in 2023 and just shy of two-thirds of the total US increase.

The Gulf of Mexico (GoM) is expected to grow by 100 kb/d y-o-y to 1.8 mb/d with 220 kb/d of new capacity in 2023 offsetting declines in other projects. Murphy Oil's Kings Quay and Shell's Power Nap will continue to ramp up and BP's Mad Dog phase 2 and Shell's Vito will come on line.

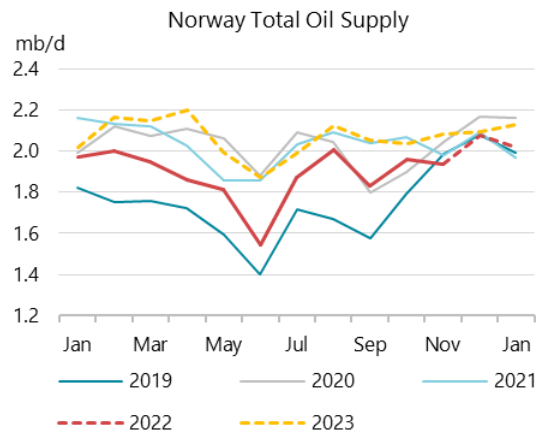
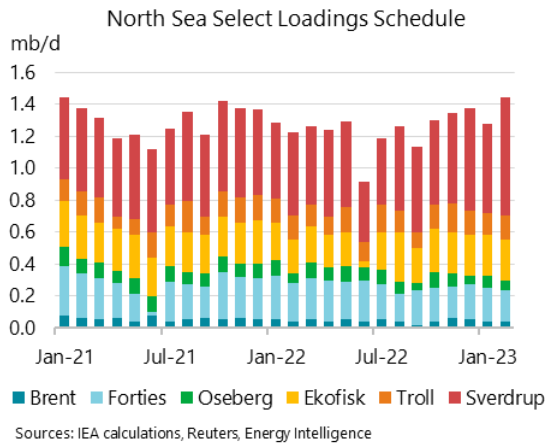
In November, **Canadian** supply jumped by 100 kb/d m-o-m as Hibernia volumes returned and upgrader output increased, according to data from the Alberta Energy Regulator and Canada-Newfoundland & Labrador Offshore Petroleum Board. November saw record high production in Alberta at 4.46 mb/d. December volumes fell by 100 kb/d m-o-m to 5.86 mb/d as weather impacted operations. Annual growth continues in 2023 as the offshore Terra Nova field restarts in 1Q23 and oil sands production increases with expansions and debottlenecking projects; 120 kb/d of new volume is expected on top of the 160 kb/d increase seen in 2022.



North Sea loadings (as measured by BFOE plus Troll and Johan Sverdrup) are scheduled at 1.44 mb/d in February, 20 kb/d lower than January's original slate but 160 kb/d higher than the revised loadings of 1.18 mb/d as power outages at Johan Sverdrup phase 2 have lowered output. Loadings were reduced from 700 kb/d to 570 kb/d as a result. Preliminary schedules for March have Johan Sverdrup recovering to 740 kb/d, slightly above the recently revised expected production plateau of 720 kb/d. This will be good news for European refiners as it is the most suitable North Sea replacement grade for Urals.

Data from the **Norwegian** Petroleum Directorate (NPD) show output in November fell by 20 kb/d m-o-m to 1.94 mb/d. December saw production increase by 140 kb/d as Johan Sverdrup phase 2 started flowing. In 2023 as Johan Sverdrup phase 2 continues to ramp up, total volumes are expected to grow by 160 kb/d to 2.06 mb/d. These have been revised down following a recent announcement from the NPD that the country would be prioritising natural gas deliveries to Europe (Norway is now the largest supplier to Europe, supplying around a third of EU gas consumption). Significant oil and gas resources still remain in the country and there are plans to continue to exploit the resource base, the NPD received 13 new development plans over the year and 32 exploration wells were drilled in 2020 with 11 discoveries.

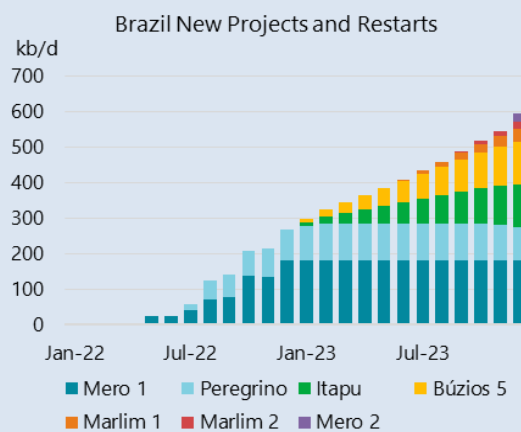
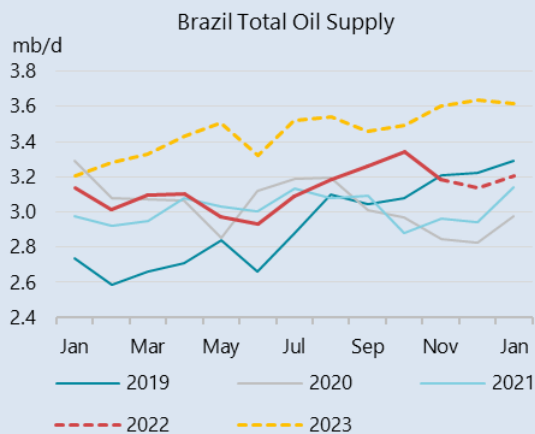
UK supply rose by 40 kb/d m-o-m in November as fields continued to ramp up after returning from maintenance the previous month. UK output is set to drop for a fourth straight year in 2023, but the rate of decline is flattening out – with annualised production of 820 kb/d down only 10 kb/d versus 2022 as the Penguin and Seagull fields bolster volumes.



Elsewhere in OECD Europe, **Denmark** is expected to see a small drop in production in 2023 to 60 kb/d (-5 kb/d y-o-y). The Tyra restart has been delayed again and we forecast barrels to come back online in November this year, with no material impact on supply until 2024. In **Turkey**, the state operator TPAO plans to drill 12 additional wells at the Sehit Esma Cevik field, adding 20 kb/d of production by the end of the year and bringing annualised gains of 10 kb/d to 80 kb/d.

Brazil offshore growth kicks into high gear

With the inauguration of President Luiz Inácio Lula da Silva for a non-consecutive third term and his nomination of Senator Jean Paul Prates as CEO of Petrobras, investors and the industry are looking to see what changes may be afoot in Brazil. Senator Prates of the Rio Grande do Norte state was previously its energy secretary. The latter has drafted bills proposing regulatory frameworks for offshore wind and green hydrogen projects as well as proposals for carbon capture and storage. He was also heavily involved in the design of the concession based offshore licensing system.



There is an expectation that Prates will begin to shift Petrobras' strategy towards one similar to the European supermajors, such as Shell, Eni, Total, Equinor, BP and Repsol. But a strategic transition would be coupled with near term pragmatism as Prates and Lula are both keenly aware of the role of hydrocarbons in government receipts. Also, 13 of the 18 floating production storage and offloading vessels (FPSOs) in Petrobras' latest business plan have already passed final investment decision (FID).

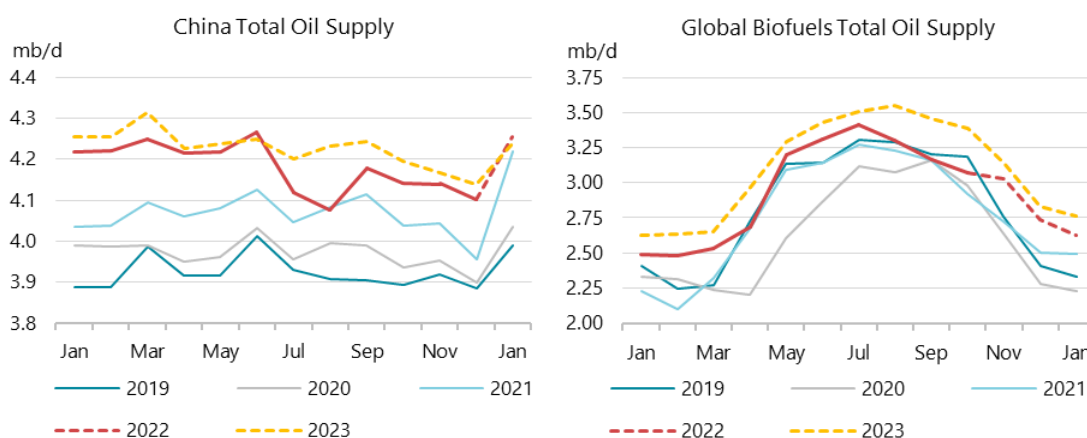
In its latest business plan Petrobras earmarked \$64 billion over the next five years to bring those 18 FPSOs on line, with \$13 billion expected in 2023 to start up five additional FPSOs (Itapu P-71 was commissioned earlier this month). These projects, in addition to the start of Mero 1 last year and Equinor's Peregrino restart (after 26 months of downtime) are anticipated to boost output by 420 kb/d on average this year, propelling Brazil to record production for a second year running.

After record high supply was reached in October, Brazilian volumes fell 150 kb/d m-o-m in November and by a further 50 kb/d m-o-m in December, according to provisional daily data from the Agencia Nacional do Petroleo (ANP). Brazil's 2022 full year production was 3.1 mb/d, up 120 kb/d from 2021's output. This year sees y-o-y increases of 320 kb/d to average 3.45 mb/d as the new projects more than offset on-going field declines.

Guyanese loadings are expected to hold steady at around 370 kb/d until the Payara FPSO is brought on line in the fourth quarter. Payara would be the third vessel producing from the prolific Stabroek Block. Growth is expected to average 100 kb/d for the year as a whole, with gains also stemming from the Unity vessel that was brought on line last April and reached full capacity in July.

Ecuadorian supply is set to increase 10 kb/d y-o-y to 480 kb/d in 2023. Most of the gains should come from the Ishpingo-Tambococha-Tiputini (ITT) block in the Amazon Basin. Petroecuador, the state-owned oil firm, has planned a \$3.2 billion 128 well capex program for the year. This helps provide confidence and certainty to private investors as the government continues to state a lofty goal of doubling production to 1 mb/d in the medium term. Elsewhere in Latin America, **Peruvian** output is expected to stay relatively flat at 120 kb/d as PetrolTal's drilling campaign in Block 95 of the Marañon Basin stems decline. **Argentinean** supply is forecast to grow by 60 kb/d to average 770 kb/d, as Neuquén LTO more than offsets conventional declines elsewhere in the country.

Chinese supply fell by 40 kb/d to 4.1 mb/d in December, and is expected to gain 50 kb/d annually in 2023 as multiple smaller projects ramp up. Elsewhere in **non-OPEC+ Asia**, production eased by 20 kb/d, split equally between India and Vietnam. Over 2023, regional output is forecast to fall by 100 kb/d to 2.43 mb/d, led by Indonesia (-30 kb/d), Vietnam (-20 kb/d), Thailand (-10 kb/d), Australia (-10 kb/d) and India (-10 kb/d).



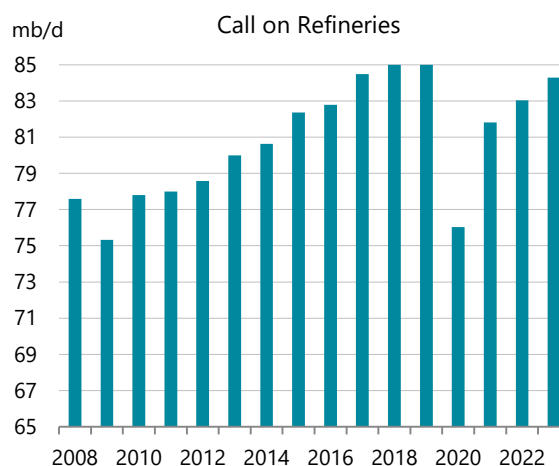
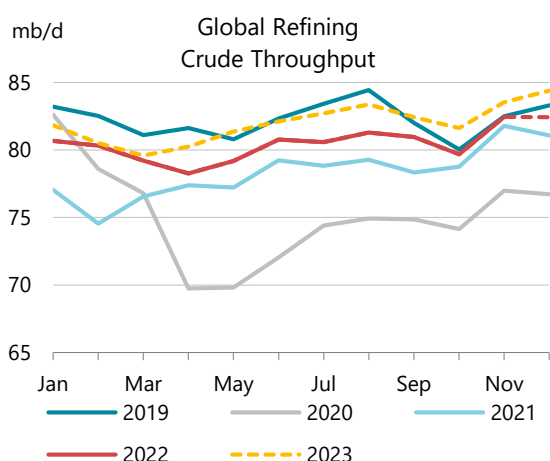
Global **biofuels** fell seasonally by 260 kb/d m-o-m in December. Volumes are expected to increase in 2023 by 170 kb/d to 3.13 mb/d, with 100 kb/d of gains combined in biodiesel plus renewable diesel and 70 kb/d in ethanol. This comes after a similar increase was seen in 2022. Growth is driven by Brazil (70 kb/d) and the US (40 kb/d). For an in-depth review of biofuels, see the recent IEA [Renewables 2022](#) report.

Refining

Overview

Global refinery throughputs held steady in December even as the arctic freeze cut US activity by 910 kb/d m-o-m. The fall in the United States was more than offset by higher runs in Europe, Japan and India, with smaller increases elsewhere. Nevertheless, the US remained the largest contributor to the annual growth of 2.1 mb/d in 2022, accounting for more than a third of the total increment. Overall, most of last year's global gains came from increased utilisation rates rather than new capacity. After a 1 mb/d decline in 2021, global refinery capacity expanded by a net 540 kb/d in 2022, heavily weighted towards 4Q22.

There is little room left for US refiners to ramp up further in 2023, but new refineries in Africa and the Middle East, as well as China, are expected to step in to cater for the growth in refined product demand, more than offsetting forecast declines in Russia. In this *Report*, we have pushed back the start of the commercial operations of Mexico's Olmecca refinery to 2024, following comments by Pemex. This has lowered our expectations of 2023 capacity additions to 1.7 mb/d from 2 mb/d.



While our headline oil demand (all liquids, including biofuels) hits an all-time high this year, the call on refineries is forecast below 2017 levels as the growth in petrochemical feedstocks and biofuels over time has had a considerable impact on refiners' market share, which has fallen from 86% in 2017 to 83% in 2023. The expected growth in refined product demand this year, at 1.3 mb/d, should be comfortably covered by the cumulative 2.2 mb/d additions between 4Q22 and 4Q23. Thus, the challenge in meeting refined product demand in 2023 seems less daunting than in 2022, but remains dependent upon adequate crude supply.

The actual timing of new capacity start-ups will be a key factor in 2023, along with utilisation rates in China and Russia. For example, the commercial operations at Oman's Duqm project have been delayed to the second half of the year. African projects, in particular Nigeria's Lekki, are currently forecast to start up this summer, but the sheer size and complexity of this single-train refinery may require a slower and later start.

The situation in the refined product markets has relaxed somewhat with a temporarily well-supplied European diesel market and demand suffering from slower winter traffic and unusually warm weather. This could well be the calm before the storm, however, if more projects are delayed and if

Chinese refiners scale back product exports either due to lower-than-expected runs or domestic demand rebounding more strongly than expected after the lifting of Covid restrictions.

Global Refinery Crude Throughput ¹														
(million barrels per day)														
	2019	2020	2021	Oct-22	Nov-22	Dec-22	4Q22	2022	Jan-23	1Q23	2Q23	3Q23	4Q23	2023
Americas	19.1	16.6	17.8	18.4	19.2	18.2	18.6	18.7	18.1	18.3	19.0	19.2	19.1	18.9
Europe	12.2	10.7	11.0	11.0	11.5	11.9	11.4	11.5	11.5	11.1	11.5	11.7	11.3	11.4
Asia Oceania	6.8	5.9	5.8	5.7	6.0	6.3	6.0	6.1	6.3	6.1	5.5	6.0	6.0	5.9
Total OECD	38.1	33.2	34.5	35.1	36.7	36.4	36.0	36.2	35.8	35.4	36.0	36.9	36.4	36.2
FSU	6.8	6.4	6.7	6.5	6.6	6.7	6.6	6.4	6.7	6.1	5.6	5.6	5.6	5.7
Non-OECD Europe	0.5	0.4	0.4	0.6	0.5	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6
China	13.4	13.7	14.4	14.0	14.7	14.4	14.4	13.7	14.2	14.2	14.4	14.5	14.7	14.4
Other Asia	10.3	9.3	9.6	10.1	10.1	10.4	10.2	10.3	10.6	10.5	10.5	10.5	10.8	10.6
Latin America	3.2	3.0	3.2	3.3	3.5	3.5	3.4	3.4	3.5	3.5	3.5	3.5	3.6	3.5
Middle East	7.8	7.1	7.6	8.2	8.5	8.6	8.4	8.1	8.4	8.4	8.7	8.9	9.1	8.8
Africa	2.0	1.9	1.9	1.7	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.4	2.4	2.2
Total Non-OECD	44.1	41.9	43.8	44.5	45.7	45.9	45.4	44.2	45.9	45.1	45.2	45.9	46.7	45.7
Total	82.2	75.0	78.3	79.6	82.4	82.3	81.4	80.4	81.7	80.6	81.1	82.7	83.1	81.9
Year-on-year change	-0.2	-7.1	3.2	0.9	0.7	1.3	1.0	2.1	1.2	0.6	1.8	1.9	1.7	1.5

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

Product cracks and refinery margins

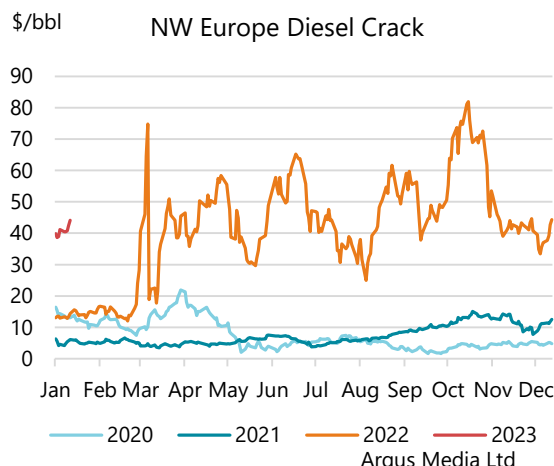
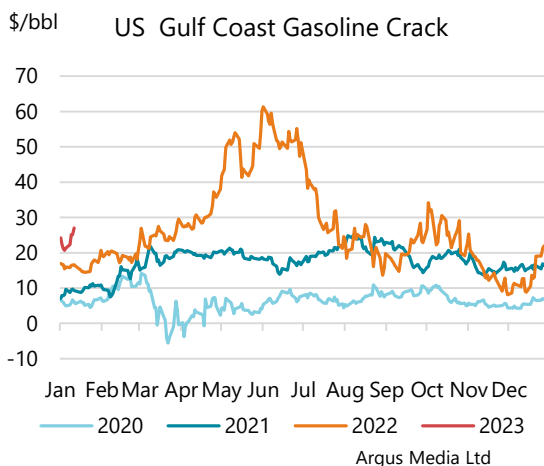
By the end of 2022 the oil market rally clearly ran out of steam. In December, crude prices declined for the second consecutive month, with benchmark grades pricing at levels remarkably close to the beginning of the year. Premium transport fuel cracks also continued falling in December, with regional gasoline cracks down to pre-war levels or even lower. Middle distillate cracks remained elevated, well above historical averages.

Product Prices and Differentials (\$/bbl)													
	Prices			Differentials				Week Starting					
	Oct	Nov	Dec	Oct	Nov	Dec	Nov-Dec chg	12-Dec	19-Dec	26-Dec	02-Jan	09-Jan	
Northwest Europe				to North Sea Dated									
Gasoline	110.80	102.07	84.51	17.70	10.97	4.16	-6.82	0.34	4.48	9.92	11.84	12.47	
Diesel	162.68	134.75	120.56	69.57	43.66	40.20	-3.46	41.18	40.53	43.22	39.63	41.63	
Jet/Kero	138.99	132.07	121.11	45.89	40.97	40.75	-0.23	40.63	41.01	43.75	40.90	42.82	
Naphtha	75.57	75.15	66.76	-17.54	-15.94	-13.60	2.34	-15.48	-14.02	-12.38	-7.85	-4.79	
HSFO	60.23	61.74	56.80	-32.88	-29.36	-23.56	5.80	-24.66	-21.86	-22.45	-20.69	-22.60	
0.5% Fuel Oil	94.38	88.73	77.95	1.27	-2.37	-2.41	-0.04	-4.85	-2.34	-1.24	0.29	0.61	
US Gulf Coast				to WTI Houston									
Gasoline	116.16	102.36	90.55	26.56	16.09	13.35	-2.74	10.73	13.82	21.84	22.07	24.16	
Diesel	159.40	141.16	124.37	69.80	54.89	47.16	-7.73	48.64	46.83	58.38	50.73	54.92	
Jet/Kero	148.53	133.22	122.36	58.93	46.94	45.15	-1.79	46.50	44.58	59.44	62.40	68.84	
Naphtha	81.05	76.50	70.75	-8.55	-9.78	-6.46	3.32	-5.68	-5.06	-2.89	-1.11	4.17	
HSFO	52.59	59.87	54.18	-37.01	-26.40	-23.03	3.37	-23.00	-22.98	-22.76	-23.66	-24.27	
0.5% Fuel Oil	100.80	94.68	82.69	11.20	8.41	5.48	-2.92	5.31	4.75	6.83	8.76	11.91	
Singapore				to Dubai									
Gasoline	91.16	93.11	85.09	-1.76	4.75	6.61	1.86	5.79	6.99	10.15	9.99	11.91	
Diesel	137.25	127.61	113.75	44.33	39.25	35.27	-3.98	37.19	35.06	36.66	32.09	34.06	
Jet/Kero	123.40	121.01	110.22	30.48	32.65	31.74	-0.91	31.67	32.37	35.90	31.55	32.04	
Naphtha	71.86	74.22	66.34	-21.06	-14.14	-12.14	2.00	-11.71	-13.11	-13.57	-11.48	-8.17	
HSFO	57.46	61.74	56.28	-35.45	-26.62	-22.20	4.42	-22.34	-21.10	-21.62	-22.83	-22.98	
0.5% Fuel Oil	105.77	99.25	88.14	12.85	10.89	9.66	-1.24	7.36	8.19	8.51	7.30	7.96	

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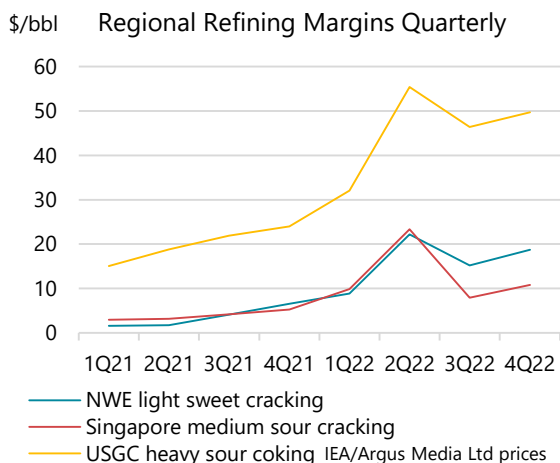
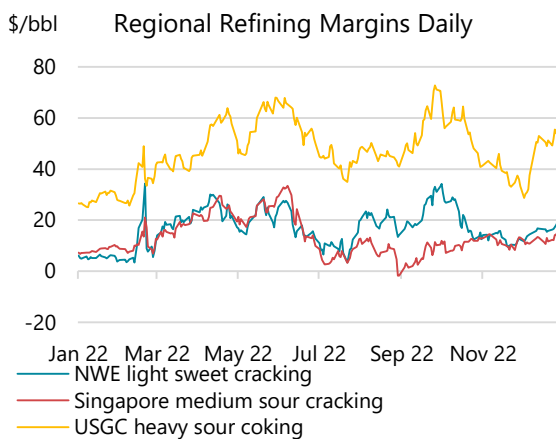
Gasoline cracks in Europe briefly turned negative at end-year. December average Northwest Europe gasoline cracks were half January levels. In the US Gulf Coast, they were also lower m-o-m and compared to the beginning of the year, despite the end-of-month spike due to weather-related refinery outages in the US. In Singapore, gasoline cracks strengthened m-o-m, but remained at

relatively low levels. Lower crude prices helped push naphtha cracks higher in Europe and Singapore.



Middle distillate cracks fell in all regions, with diesel registering more substantial losses than kerosene due to higher refining activity and a slowdown in demand. Northwest Europe diesel cracks have fallen by 40% from their October peak as regional refinery runs have ramped up by 900 kb/d and demand has weakened noticeably. Steady air traffic development has supported jet cracks.

High-sulphur fuel oil cracks strengthened on the back of lower crude prices, but while the latter returned to January levels the former remain below. In Europe, the 0.5% sulphur fuel oil cracks were still in negative territory for the second consecutive month in-line with weaker diesel markets and improving low-sulphur marine bunkers supplies. Exports of low sulphur fuel oil from Kuwait’s new al-Zour refinery have also contributed to ease the supply pressures.



Benchmark regional margins fell m-o-m in December, for the second consecutive month, following lower transport fuel cracks. Singapore light sweet margins bucked the trend thanks to higher regional gasoline cracks. Margins in 4Q22 rose q-o-q, pulled higher by exceptional values in October that reached historical peaks in Europe and the US. Starting from 1 December, the basis for our Northwest Europe medium sour crude margin is changed from Urals to Argus Brent Sour. The yields have been adjusted accordingly. As of December 2022, the share of Urals in EU refining has fallen below 10%, compared to 27-30% pre-war levels. If Poland and Germany stop Druzhba purchases, the share of Urals will further drop to just under 5%.

IEA Global Indicator Refining Margins

\$/bbl	Monthly Average				Change		Average for week starting:			
	Sep 22	Oct 22	Nov 22	Dec 22	Nov - Dec	12 Dec	19 Dec	26 Dec	02 Jan	09 Jan
NW Europe										
Light sweet hydroskimming	12.60	18.20	8.00	6.12	-1.88	4.67	6.92	9.52	9.44	10.17
Light sweet cracking	18.73	28.10	15.32	12.75	-2.58	11.58	13.26	16.43	16.02	17.45
Light sweet cracking + Petchem	19.25	27.95	16.36	14.38	-1.98	13.50	14.87	17.66	16.60	17.43
Medium sour cracking*	36.92	51.37	43.03	21.16	-21.86	20.59	21.43	24.32	22.77	23.31
US Gulf Coast										
Light sweet cracking	25.24	33.60	22.71	18.86	-3.86	18.17	18.90	27.50	25.92	28.73
Medium sour cracking	32.85	43.51	32.36	29.05	-3.32	27.60	29.05	38.48	36.67	39.48
Heavy sour coking	46.34	62.38	48.59	38.16	-10.43	35.54	31.90	50.66	50.42	52.82
Singapore										
Light sweet cracking	8.85	9.10	8.27	8.92	0.65	10.70	8.74	10.35	9.43	11.85
Light sweet cracking + Petchem	11.28	10.28	9.18	10.77	1.58	12.72	10.76	12.03	10.93	12.67
Medium sour cracking	4.63	9.01	12.17	11.19	-0.98	11.42	11.15	13.18	11.65	13.67
Medium sour cracking + Petchem	7.02	10.17	13.07	13.01	-0.06	13.42	13.14	14.85	13.13	14.48

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

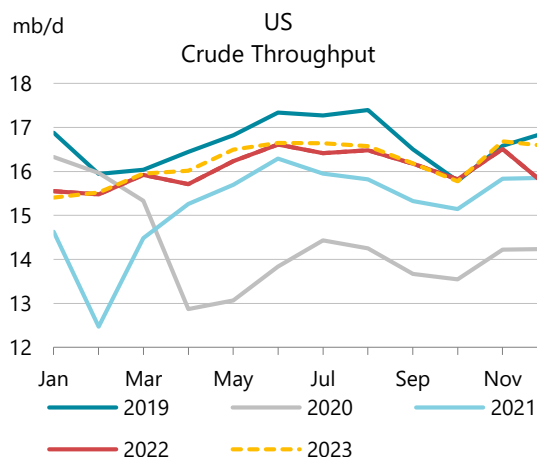
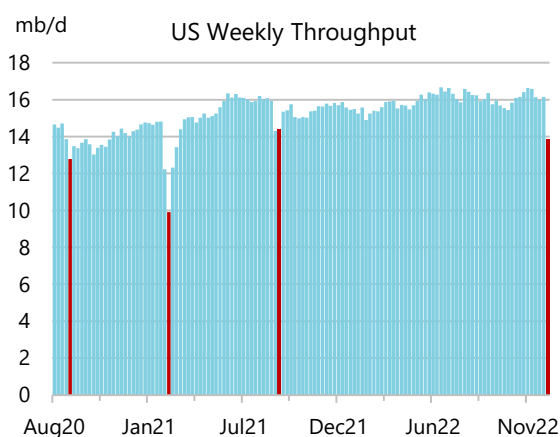
Source: IEA/Argus Media Ltd prices.

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

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

Regional refining developments

The arctic freeze cooled down US refining activity in December as runs fell 2.3 mb/d in the last week of the month, with the Gulf Coast and Midcontinent down about 1.7 mb/d and 500 kb/d, respectively. At 13.8 mb/d, weekly throughputs were at their lowest since the previous arctic freeze in February-March 2021. Instead of an expected small m-o-m gain, December runs declined 910 kb/d m-o-m to 15.5 mb/d, 260 kb/d lower y-o-y. By mid-January, almost all of the 23 refineries affected by weather-related outages were back online. Overall, the scale and duration of the impact were smaller than during Arctic storm Uri in February 2021.



For 2022 as a whole, the US remained the largest contributor to the increase in global refinery runs, accounting for more than a third of the total. This boosted US net exports of clean products by about 600 kb/d, half of which came from diesel. On average, US refiners ran at 90% of installed capacity last year, with peak summer rates reaching 94%. This leaves little room for further growth in 2023. Throughputs are expected to increase by 170 kb/d, with a 250 kb/d expansion at ExxonMobil's Beaumont refinery in Texas scheduled to start in the first half of the year.

Pemex, the state-owned **Mexican** refinery operator, said in its five-year business plan published in December that it does not expect commercial production at the 340 kb/d Olmeca refinery to start this year. It lowered its refinery throughput forecast from 1.6 mb/d envisaged in the previous plan to 995 kb/d. In November, Mexican refineries processed 880 kb/d. We have revised our 2023 forecast down by 90 kb/d to 885 kb/d.

Refinery Crude Throughput and Utilisation in OECD Countries

(million barrels per day)

	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Change from		Utilisation rate	
							Oct 22	Nov 21	Nov 22	Nov 21
US ¹	16.51	16.32	16.38	16.07	15.72	16.41	0.69	0.67	93%	88%
Canada	1.72	1.85	1.79	1.73	1.65	1.76	0.11	-0.07	93%	97%
Chile	0.10	0.11	0.15	0.17	0.19	0.16	-0.03	0.02	69%	61%
Mexico	0.71	0.83	0.81	0.79	0.81	0.88	0.07	0.15	53%	44%
OECD Americas¹	19.05	19.11	19.14	18.77	18.37	19.20	0.83	0.77	90%	85%
France	0.85	0.98	1.03	0.88	0.45	0.89	0.44	0.10	78%	69%
Germany	1.91	1.86	1.76	1.88	1.88	1.90	0.02	-0.03	94%	95%
Italy	1.46	1.42	1.41	1.40	1.33	1.27	-0.07	-0.12	73%	80%
Netherlands	1.11	1.02	1.02	1.04	1.05	0.94	-0.11	-0.11	78%	87%
Spain	1.35	1.34	1.30	1.28	1.11	1.17	0.06	-0.03	83%	85%
United Kingdom	0.99	0.96	1.05	1.04	1.05	1.03	-0.03	-0.01	86%	87%
Other OECD Europe ²	4.06	4.35	4.30	4.08	4.11	4.30	0.19	-0.09	85%	90%
OECD Europe	11.72	11.93	11.87	11.60	10.98	11.49	0.51	-0.29	83%	85%
Japan	2.42	2.57	2.91	2.72	2.60	2.70	0.09	0.07	81%	76%
Korea	2.65	2.98	3.04	2.87	2.67	2.80	0.12	0.08	79%	77%
Other Asia Oceania ³	0.49	0.47	0.45	0.49	0.46	0.48	0.02	-0.09	92%	88%
OECD Asia Oceania	5.57	6.02	6.40	6.07	5.73	5.97	0.24	0.06	81%	78%
OECD Total	36.34	37.05	37.41	36.44	35.08	36.66	1.57	0.55	86%	84%

¹ US includes US50, OECD Americas include Chile and US territories

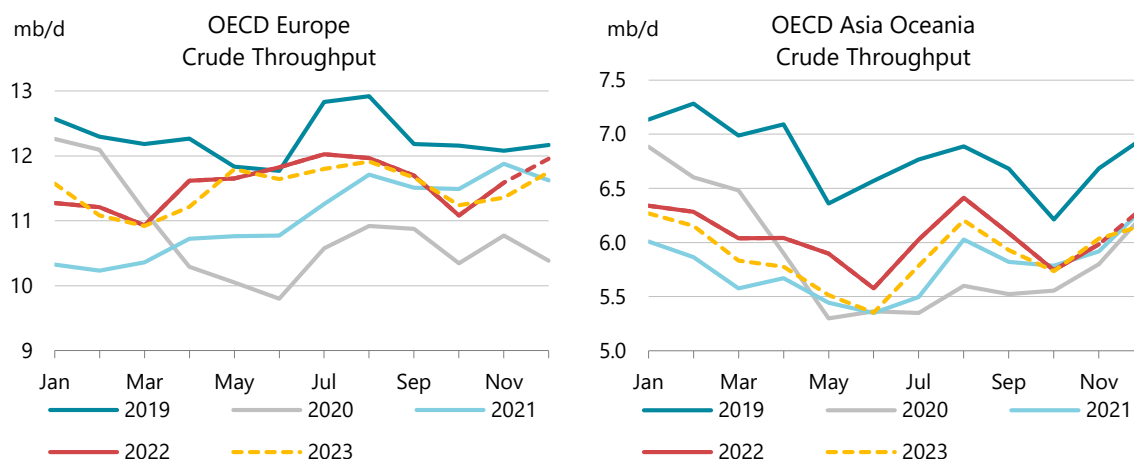
² Includes Lithuania

³ Includes Israel

European throughputs rebounded by 510 kb/d m-o-m in November, as refinery strikes in **France** and maintenance elsewhere wound down. Runs were nevertheless 290 kb/d lower y-o-y. Preliminary data for December confirm a further ramp-up with the EU embargo on seaborne Russian crude oil not seriously hampering crude supply, so far. Pipeline flows from Russia rose 100 kb/d m-o-m in December. The picture for 2023 is less clear, however, as higher crude oil demand from China and India could tighten the availability of non-Russian origin barrels on global markets.

Both **Poland** and **Germany** have vowed to stop pipeline crude imports from Russia despite no explicit ban in the sanction packages introduced so far. The 220 kb/d Schwedt refinery in Germany was reportedly running at 55% capacity in early January due to limited access to non-Druzhba supplies. The government of Kazakhstan announced it had reached a deal with Russia to send 30 kb/d of Kazakh crude through the Druzhba system to Germany this year. Earlier conversations referred to a swap arrangement, which would complicate sanctions and price cap compliance checks. The volume is only a fraction of Russian supplies through the Druzhba, but the refinery operator is also working to secure deliveries via the port of Rostock in Germany.

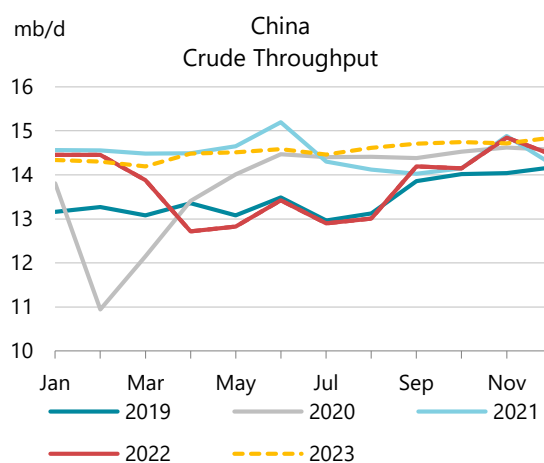
Lukoil announced the sale of its 320 kb/d ISAB refinery in **Italy** to GOI Energy, an investment company affiliated with the owners of the Bazan refinery in Israel. Meanwhile, the spectre of large-scale French strikes is looming again as unions plan for action in January to protest proposed legislation to raise the minimum retirement age.



In OECD Asia, throughputs increased seasonally in November, but, after strong annual gains in 2Q-3Q22, runs have gravitated towards year-earlier levels. Following a 290 kb/d y-o-y increase in 2022, runs are expected to resume their long-term declining trend, falling by 170 kb/d in 2023 due to capacity shutdowns and increased competition from Chinese product exports.

Chinese throughputs surged 700 kb/d m-o-m to 14.75 mb/d in November, their third-highest level ever (after June 2021 and November 2022), but fell to 14.36 mb/d in December. In 2022, runs declined by 700 kb/d y-o-y, the first annual reduction in decades. The November increase appears to have been led mostly by independent refiners. Reported refinery intake in the Shandong province exceeded 3 mb/d for the first time since June 2021. Data for Jiangsu province confirmed the start-up of the 320 kb/d Shenghong refinery in November. Other provinces with large-scale independent petrochemical refineries such as Zhejiang and Liaoning, also reported record or near-record runs.

With the second batch of 2023 crude oil import quotas issued in early January, independent refineries have already received 2.65 mb/d in allowances. The first batch of oil product export quotas, which are predominantly issued to state-owned refiners, was also substantially higher y-o-y, implying close to 1 mb/d of annualised export shipments for 2023, double the outflows in 1H22. Higher crude import and higher product export quotas indicate the willingness of the government to enable more product exports, but the uncertainty in the refinery throughput forecast remains very high as it also depends on domestic demand prospects.

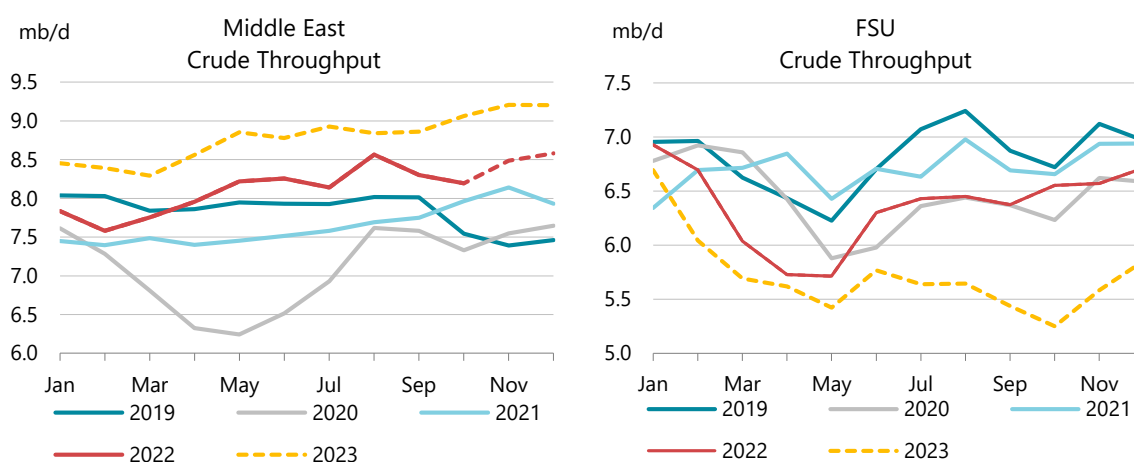


For now, we expect a slowdown in activity in January and February due to the Covid situation in the country and a gradual recovery over the course of the year. Nevertheless, 2023 runs are forecast to increase 780 kb/d y-o-y to a new annual record of 14.4 mb/d.

Heavy refinery outages in **India** continued to affect throughputs, with November down to just below 4.8 mb/d. We estimate runs rose in December by 385 kb/d, to 5.15 mb/d with completion of maintenance at several refineries. India has been ramping up crude oil imports from Russia, with a new record 1.4 mb/d Russian loadings in December destined for the country's refiners. Purchases of Russian crude are almost equally split between the state-owned refiners (accounting for 70% of

total capacity), and the two private refiners. Commodity trader Trafigura sold its stake in the 400 kb/d Nayara refinery which was a joint venture with Rosneft. The buyer is an Italian-registered investment vehicle. Indian runs are forecast to increase 90 kb/d in 2023 to a new annual record of 5.14 mb/d.

October throughputs in the Middle East were assessed slightly lower m-o-m at 8.2 mb/d with small declines in **Kuwait** and **Saudi Arabia** and increases in **Bahrain** and **Iraq**. In 2022, regional runs crossed the 8 mb/d mark for the first time and are set to reach 9 mb/d in 2H23 when Kuwait's al-Zour is at full capacity and Oman's 230 kb/d Duqm refinery starts up. This would put the region on par with the US Gulf Coast in terms of the scale of its refining activity, ahead of China's loosely defined Bohai Bay Rim. Kuwait said the country will increase diesel exports to Europe fivefold this year, to a relatively modest 50 kb/d.



Russian refinery throughputs in December increased 100 kb/d m-o-m to 5.7 mb/d in line with an increase in product exports (see *Russian exports resilient despite EU crude embargo*). January runs are likely to hold steady from December levels. Starting from February, the EU ban on Russian product imports coming into force is expected undermine throughputs that fall below 5 mb/d in March. In 2022 runs were 175 kb/d lower y-o-y. In 2023, we expect a 650 kb/d fall.

Russian exports resilient despite EU crude embargo

Russian oil exports fell 200 kb/d m-o-m in December as a 270 kb/d reduction in crude shipments was partly offset by an 80 kb/d increase in product volumes. With the EU embargo on Russian seaborne crude oil imports coming into force on 5 December, loadings to Europe were down only 140 kb/d m-o-m, as a 240 kb/d fall in seaborne shipments was partly offset by a 100 kb/d increase in Druzhba volumes. In December, most of the EU-destined seaborne shipments, 160 kb/d out of 230 kb/d went to Bulgaria, which has a derogation from the import ban. Italy and Netherlands split the remaining volume, with a single cargo destined for Italy and two to the Netherlands.

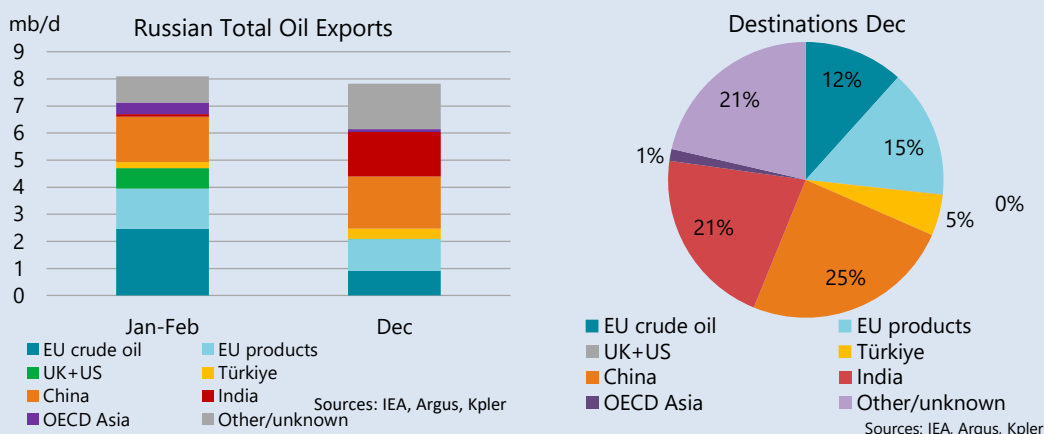
From January, only Bulgaria can continue seaborne crude imports from Russia. Germany has said it will fully stop pipeline deliveries Russia, with an agreement to import modest volumes from Kazakhstan. This means that Druzhba volumes are set to fall by 330 kb/d, to around 360 kb/d. Thus, Russia's share in EU crude oil imports could fall to just 5%, from pre-war levels of 27-30%.

Russian Oil Exports (mb/d)														
	2021 avg	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	2022 avg
EU crude oil	2.1	2.4	2.5	2.1	2.1	2.2	1.9	1.7	1.9	1.6	1.5	1.1	0.9	1.8
EU products	1.2	1.4	1.6	1.3	1.4	1.3	1.2	1.1	1.0	1.0	1.0	1.2	1.2	1.2
UK+US	0.7	0.6	0.9	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Türkiye	0.2	0.2	0.2	0.4	0.4	0.3	0.4	0.4	0.6	0.6	0.6	0.5	0.4	0.4
China	1.6	1.8	1.6	1.8	1.8	2.0	2.2	1.8	2.0	2.0	2.0	2.0	1.9	1.9
India	0.1	0.1	0.1	0.5	1.0	1.0	0.8	1.2	1.0	1.1	1.2	1.5	1.6	0.9
OECD Asia	0.5	0.5	0.4	0.4	0.3	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2
Other/unknown	1.1	1.0	0.9	0.8	1.1	0.9	1.1	1.3	1.2	1.4	1.6	1.6	1.7	1.2
Total exports	7.5	8.0	8.2	7.6	8.2	7.8	7.6	7.4	7.8	7.7	8.0	8.0	7.8	7.8
<i>Memo</i>														
Pipeline to EU	0.7	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.7	0.8
Pipeline to China	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Crude Oil	4.7	5.0	4.9	5.1	5.6	5.4	5.1	4.9	5.1	4.9	5.1	5.0	4.7	5.1
Oil Products	2.8	3.0	3.2	2.5	2.6	2.4	2.5	2.5	2.7	2.8	2.9	3.0	3.1	2.8
Estimated export revenues, \$bn	14.7	20.3	20.5	21.5	18.4	19.9	21.0	18.8	17.8	15.0	16.7	15.6	12.6	18.2

Sources: IEA, Argus, Kpler.

Note: Recent months volumes and revenues are estimates and subject to change.

A new record volume of crude oil, about 1.4 mb/d, was shipped to India in December, along with a new record high 225 kb/d of products. Crude oil loadings to China were steady m-o-m but down for Türkiye by 200 kb/d to a multi-month low of 45 kb/d. The first crude oil cargo in seven months from the Sakhalin 2 development was sent to Japan.



Product exports to EU countries were steady m-o-m at 1.2 mb/d, with diesel volumes at a 10-month high of 720 kb/d. Overall, Russian diesel exports in December were at a multi-year peak of 1.2 mb/d. Gasoline exports were up by 110 kb/d m-o-m to a record level of 275 kb/d, with some of the increase going to the EU.

Oil export revenues in December fell by \$3 bn, the largest monthly drop since April. Crude oil earnings were down to just \$7.2 bn, values last seen in the beginning of 2021 when export volumes were almost 10% lower than December levels.

Overall, in 2022, Russian oil exports increased by 4% y-o-y to 7.8 mb/d, with all the increase coming from crude oil as products remained flat on average. Export revenues were up y-o-y by almost a quarter to \$220 bn, close to historical highs. Exports to EU countries fell by just 400 kb/d y-o-y, to 3 mb/d. For the year as a whole, EU accounted for 39% of Russian exports, down from 45% in 2021.

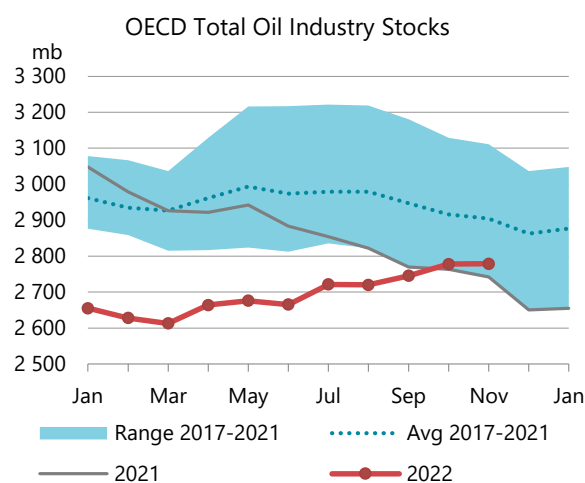
Stocks

Overview

Global observed oil inventories surged by 79.1 mb month-on-month (m-o-m) in November, hitting their highest levels since October 2021. The increase was led by non-OECD stocks which rose by 43.9 mb on the month and oil on water (+38.1 mb). OECD stocks were slightly lower as the release of government stocks offset a marginal increase in industry holdings. By end-November, non-OECD inventories had risen by 75.3 mb year-on-year (y-o-y), compared to a 232.9 mb decline in the OECD where 269.5 mb of government reserves were released over the period. Oil on water increased by a massive 181 mb y-o-y as Russian oil exports were diverted to buyers further afield.



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



OECD industry oil inventories rose for a third consecutive month in November, by 1 mb. At 2 779 mb, they were 37.1 mb above a year ago but 125.9 mb below their five-year average. Crude oil, NGL and feedstock inventories fell by 22.6 mb. Oil product stocks built by 23.6 mb, mainly in middle distillates (+17.3 mb) and gasoline (+12.9 mb). In terms of forward demand, total OECD industry stocks covered 60.2 days, down by 0.2 days m-o-m, but exceeded 2021 levels by one day. At the same time, 10.4 mb of government crude stocks were released from the US SPR while other countries including Korea, Austria and Germany replenished their strategic reserves by 6.5 mb in total (4.8 mb in crude).

Preliminary data for the US, Europe and Japan show a hefty 14.3 mb decline in December. Crude oil, NGL and feedstock inventories rose counter-seasonally, by 15.3 mb. Stocks in the US and Japan built by 14.2 mb and 4.4 mb, respectively, but were partially offset by a 3.2 mb draw in Europe. Product stocks plunged by 29.7 mb. Other product inventories fell by 22.7 mb, mainly in the US, in line with the seasonal trend. Middle distillate stocks declined by 6.2 mb, reflecting the tight market, even though they increased by a mere 0.8 mb in Europe. Fuel oil also fell, by 2.9 mb. Gasoline stocks built by 2 mb, far short of the normal seasonal increase.

Preliminary OECD Industry Stock Change in November 2022 and Third Quarter 2022												
	November 2022 (preliminary)				Third Quarter 2022							
	(million barrels)				(million barrels per day)				(million barrels per day)			
	Am	Europe	As.Ocean	Total	Am	Europe	As.Ocean	Total	Am	Europe	As.Ocean	Total
Crude Oil	-24.4	5.1	-0.4	-19.8	-0.8	0.2	0.0	-0.7	0.1	0.0	0.4	0.4
Gasoline	12.3	-0.9	1.6	12.9	0.4	0.0	0.1	0.4	-0.1	0.0	0.0	-0.1
Middle Distillates	12.4	1.4	3.5	17.3	0.4	0.0	0.1	0.6	0.0	0.0	0.0	-0.1
Residual Fuel Oil	-1.2	1.9	0.9	1.5	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Other Products	-5.2	0.5	-3.3	-8.1	-0.2	0.0	-0.1	-0.3	0.5	0.0	0.0	0.6
Total Products	18.2	2.8	2.6	23.6	0.6	0.1	0.1	0.8	0.3	0.0	0.0	0.4
Other Oils ¹	-1.0	-0.6	-1.2	-2.9	0.0	0.0	0.0	-0.1	-0.1	0.1	0.0	0.1
Total Oil	-7.2	7.3	0.9	1.0	-0.2	0.2	0.0	0.0	0.4	0.1	0.4	0.9

¹ Other oils includes NGLs, feedstocks and other hydrocarbons.

OECD industry stock data for October have been revised up by 12.6 mb to 2 778 mb, while September numbers were lowered by 2.2 mb since last month's *Report* following the receipt of more complete data. Crude oil stocks were down by 5.1 mb, led by Japan (-11.2 mb), the UK (-5.7 mb) and Italy (-5.3 mb), but were adjusted up in Canada (+10 mb) and France (+4.7 mb). Inventories of other oils were also down (-1.5 mb). Oil product stocks were revised up by 19.3 mb, notably in the US (+12 mb). The largest revision came from middle distillates (+7.1 mb), followed by gasoline (+5.6 mb).

OECD Industry Stock Revisions versus December 2022 Oil Market Report								
	(million barrels)							
	Americas		Europe		Asia Oceania		OECD	
	Sep-22	Oct-22	Sep-22	Oct-22	Sep-22	Oct-22	Sep-22	Oct-22
Crude Oil	-2.9	12.5	0.0	-6.6	0.0	-11.0	-2.9	-5.1
Gasoline	0.0	4.2	0.0	0.0	0.2	1.3	0.1	5.6
Middle Distillates	0.0	4.0	0.1	0.0	0.3	3.0	0.4	7.1
Residual Fuel Oil	0.0	0.0	0.0	1.9	0.4	0.7	0.4	2.6
Other Products	0.0	3.8	0.0	-0.6	0.0	0.8	0.0	4.0
Total Products	0.0	12.0	0.1	1.4	0.9	5.8	1.0	19.3
Other Oils ¹	-0.3	-0.5	0.0	-0.8	0.0	-0.2	-0.3	-1.5
Total Oil	-3.2	23.9	0.1	-5.9	0.9	-5.4	-2.2	12.6

¹ Other oils includes NGLs, feedstocks and other hydrocarbons.

Implied balance

In November, observed stocks increased by 2.64 mb/d, while the global supply and demand balance shows an implied stock build of 1.18 mb/d. The large unaccounted-for balance (-1.45 mb/d) may partially offset the missing barrels in October (+2. mb/d) due to discrepancies in reporting times and unaccounted for builds in non-OECD product stocks. OECD industry crude oil, NGL and feedstock inventories fell by 750 kb/d in November while oil product stocks rose by 790 kb/d. OECD government stocks edged down by 130 kb/d. In non-OECD countries, crude oil inventories expanded by a significant 1.4 mb/d, notably in China (+900 kb/d), according to satellite data from *Kayrros*. In addition, product stocks in Fujairah and Singapore built by 60 kb/d. Oil on water surged by 1.27 mb/d, according to *Kpler*. In December, our supply and demand estimates show the first monthly deficit (-160 kb/d) in the second half of 2022, in line with preliminary data for observed stocks.

IEA Global oil balance (implied stock change) (mb/d)								
	2020	2021	1Q22	2Q22	3Q22	Oct-22	Nov-22	Dec-22
Global oil balance	2.31	-2.30	-0.70	0.10	0.42	2.29	1.18	-0.16
Observed stock changes								
OECD industry stocks	0.41	-1.06	-0.37	0.58	0.87	1.04	0.03	-0.46
OECD government stocks	0.02	-0.16	-0.46	-1.08	-1.06	-0.62	-0.13	-0.49
Non-OECD crude stocks*	0.44	-0.47	0.40	0.80	-0.56	-0.19	1.40	-0.08
Selected non-OECD product stocks**	0.12	-0.03	0.12	0.07	0.16	-0.29	0.06	-0.01
Oil on water	0.01	-0.05	-0.54	0.52	1.05	-0.10	1.27	
Total observed stock changes	0.99	-1.76	-0.85	0.88	0.46	-0.17	2.64	
Unaccounted for balance	1.31	-0.54	0.15	-0.78	-0.04	2.46	-1.45	

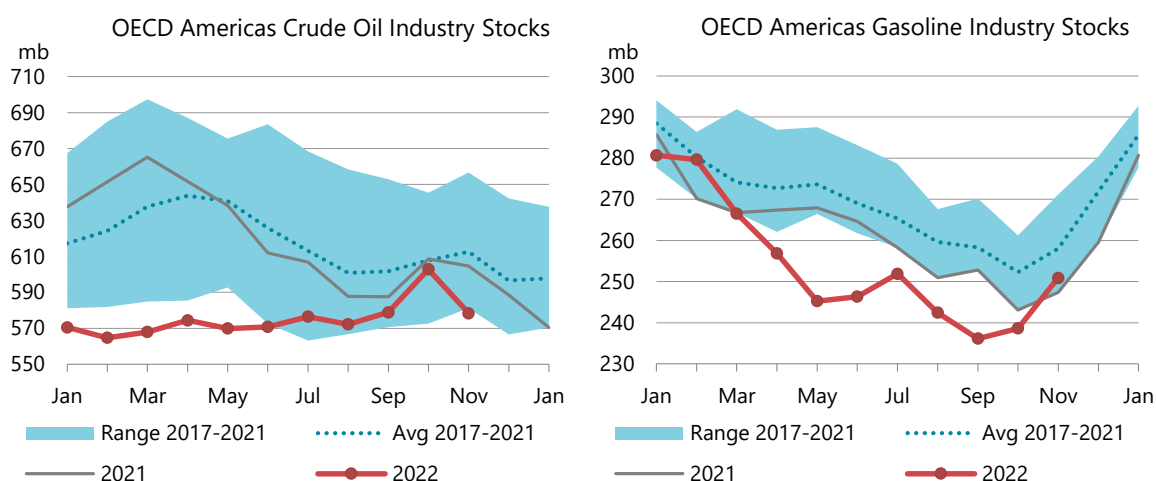
*Crude stock change data from Kayrros. Data are available for selected countries and include only, and not all, above-ground storage.
**JODI data adjusted for monthly gaps in reporting, latest data for October 2022, plus Fujairah and Singapore inventories.
Sources: IEA, EIA, PAJ, Euroilstock, Kayrros, JODI, Kpler, FEDCom/S&P Global Platts and Enterprise Singapore.

Recent OECD industry stocks changes

OECD Americas

Industry stocks in OECD Americas fell by 7.2 mb in November after building 28.7 mb in the previous month. They stood at 1 490 mb, 57.9 mb below the five-year average. Crude oil stocks led the decline with a 24.4 mb drop, despite the fact that 10.4 mb of crude oil was released from the US SPR, due to high crude exports and refinery runs. NGL and feedstock inventories inched down by 1 mb.

By contrast, oil product stocks built counter-seasonally in November by a large 18.2 mb. Middle distillate and gasoline stocks increased by 12.4 mb and 12.3 mb, respectively, on lower product demand in the US. Gasoline stocks rose from a 10-year low in September to exceed last year's level, while middle distillate inventories remained 9.1 mb lower y-o-y. Fuel oil inventories fell by 1.2 mb. Other product stocks dropped by only 5.2 mb, while they usually decline by 15.8 mb.



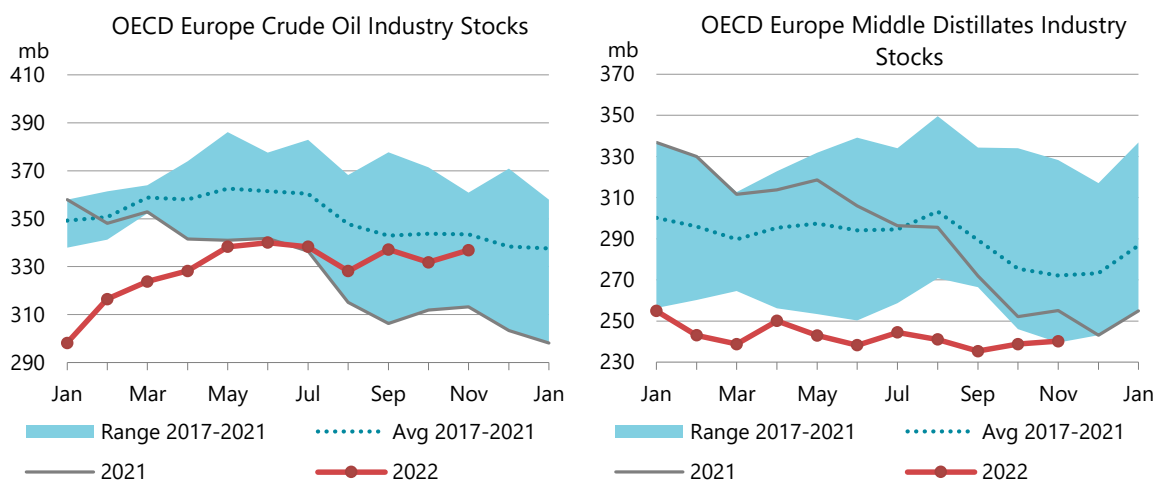
Weekly data from the US Energy Information Administration (EIA) show that total industry oil stocks declined by 4.7 mb in December, less than the five-year average (-14.3 mb), as 15.2 mb of crude oil was withdrawn from the SPR. Crude oil and other oils inventories held by industry rose counter-seasonally (+11.4 mb and +2.8 mb, respectively). By contrast, oil product stocks fell by 18.9 mb,

while they usually build by 2.9 mb. Gasoline stocks increased by 5.5 mb, and middle distillates inventories fell by 3.1 mb, when they normally rise by 14.6 mb and 9.2 mb, respectively. Fuel oil stocks inched up by 0.8 mb. Other product inventories dropped by 22.1 mb, in line with seasonal trends. A winter storm hit the country during the Christmas holidays, affecting monthly refinery runs (-910 kb/d m-o-m). As a result, US crude stocks built on average over December while product stocks drew. The draw in product stocks was concentrated in LPGs, partly reflecting the wellhead production losses of gas liquids, while product stocks built for gasoline and diesel as draws in the second half of the month failed to offset large builds in the first half.

OECD Europe

Commercial inventories in OECD Europe for November increased by 7.3 mb. At 922.9 mb, they remained 36.7 mb below the 2017-2021 average. The build came mainly from Italy (+3.7 mb), the Netherlands (+2.8 mb) and France (+1.5 mb), while they fell by 1.6 mb in Germany. Crude oil stocks rose by 5.1 mb, led by Italy (+6.1 mb), while NGL and feedstock inventories edged down by 0.6 mb.

Oil product stocks rose by 2.8 mb, largely in line with the five-year average. Fuel oil increased by 1.9 mb to 68.9 mb, the highest since August 2020. Middle distillate inventories also built, by 1.4 mb. Other product stocks edged up by 0.5 mb. Gasoline declined counter-seasonally, by 0.9 mb, to below the five-year range. Ahead of the Russian crude oil embargo coming into effect on 5 December, European countries managed to increase their crude stocks to 336.9 mb, only 6.6 mb below the five-year average. However, middle distillate inventories only reached 240.2 mb in November, 31.9 mb below the 2017-2021 average.



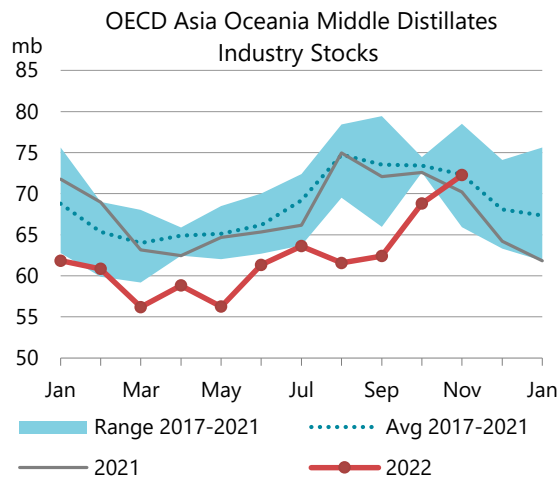
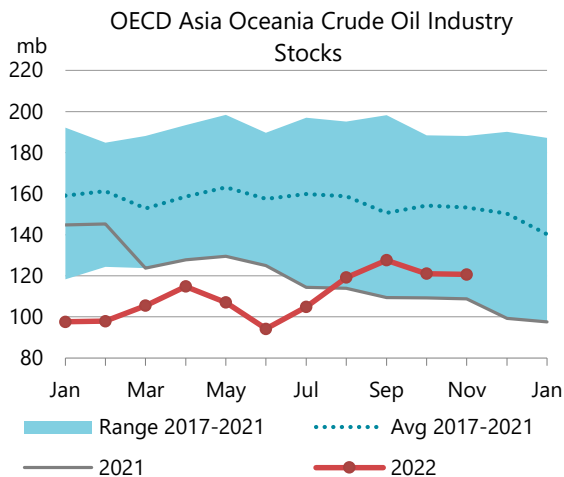
Preliminary data from *Euroilstock* show total oil stocks declined by 7.2 mb in December. Crude oil inventories fell by 3.2 mb, mainly in Germany (-3.3 mb), France (-1.8 mb) and the Netherlands (-1.5 mb). They were partially offset by builds in Finland, Norway and Sweden (+3 mb in total). Oil products stocks also dropped, by 4 mb. The most significant decrease came from fuel oil (-2.7 mb), followed by gasoline (-2.1 mb). By contrast, middle distillate stocks edged up by 0.8 mb, notably in the Netherlands (+2.3 mb). Naphtha inventories were largely unchanged.

OECD Asia Oceania

Industry stocks in OECD Asia Oceania inched up by 0.9 mb in November, when they typically fall by 4.9 mb. At 365.8 mb, inventories were 31.2 mb below the five-year average, with 32.5 mb of the

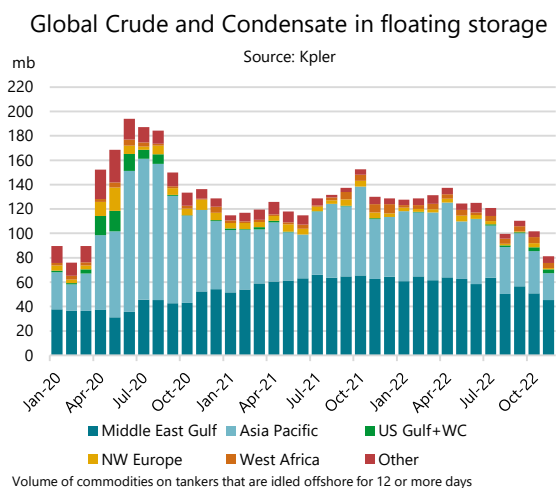
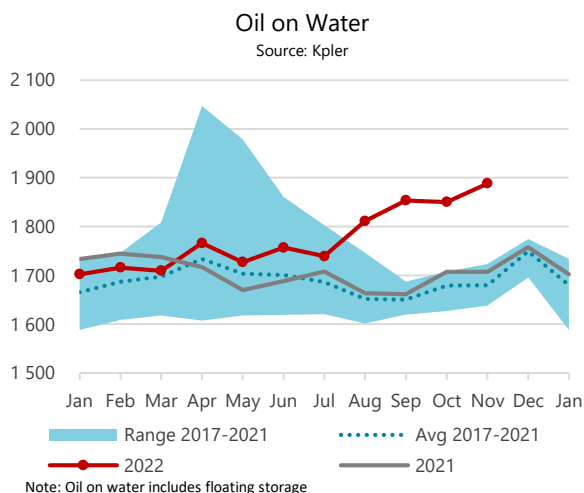
deficit in crude oil. Crude oil stocks edged down by 0.4 mb as a 4.4 mb decline in Japan was partially offset by a 3.4 mb increase in Korea. NGL and feedstock inventories decreased by 1.2 mb.

Oil product stocks rose counter-seasonally, by 2.6 mb, when they usually fall by 3.6 mb. Middle distillate inventories increased by 3.5 mb to 72.3 mb, a 13 month high. Fuel oil stocks were up by 0.9 mb to 19.5 mb, its highest since February 2020. Gasoline stocks increased for a third consecutive month, by 1.6 mb, to a nine-month high. By contrast, other products fell by 3.3 mb.



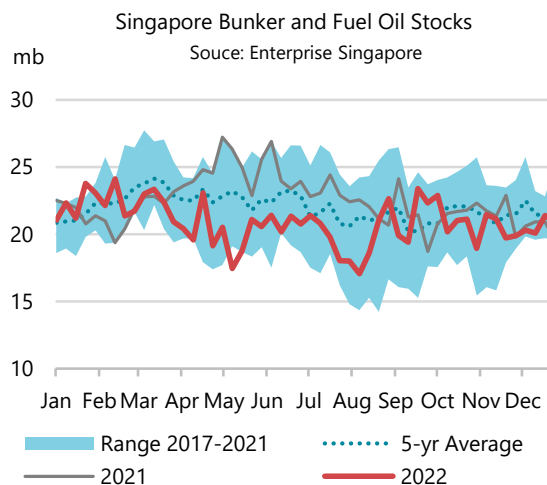
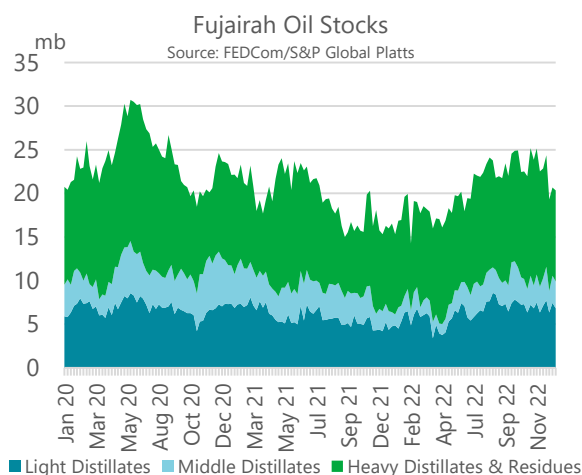
Preliminary data from the *Petroleum Association of Japan* show a 2.5 mb draw in December. Crude oil and feedstocks increased by 4.4 mb compared to a 2.5 mb of typical decrease and oil product stocks fell by 6.8 mb, twice the seasonal norm, due in large part to lower refinery runs. The largest decline came from middle distillates (-3.9 mb), followed by gasoline (-1.4 mb) and residual fuels (-1.1 mb). Naphtha stocks were down by a marginal 0.5 mb.

Other stock developments



Oil on water, including floating storage, rose by 38.1 mb to 1 888 mb in November, the highest since May 2020, according to *Kpler*. The increase mainly came from crude oil, which built by 31.5 mb as global seaborne crude exports increased by 230 kb/d m-o-m to another post-Covid record (41.6 mb/d) and as oil flows further reshuffled. Product volumes on water also rose (+6.7 mb), led

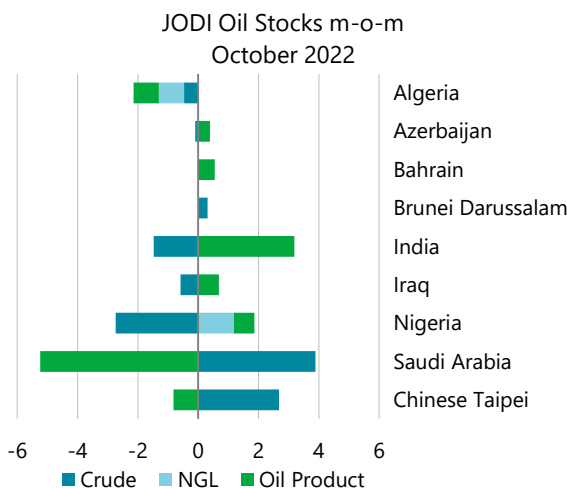
by gasoil/diesel (+8.9 mb) and gasoline (+7.3 mb). Short-term floating crude oil storage plunged by 20.5 mb to 81.2 mb, a three-year low. Volumes decreased by a combined 18 mb in the Middle East and Asia, where Iranian oils are mainly stored. *Kpler* data show the highest imports of Iranian oil in November (1.4 mb/d) mostly in China and Malaysia, after the US strengthened the sanction against the country in May 2019. Oil products held in offshore storage eased by 0.9 mb to 66 mb.



In Fujairah, independent product stocks ended 2022 at 20.4 mb, 2.2 mb lower than a month earlier, according to *FEDCom and S&P Global Platts* data. Inventories were at a seven-month low but still 2.1 mb higher than the five-year average. Residual fuels led the decline with a significant 2.7 mb decrease to their lowest level since February. Light distillates (+0.5 mb) and middle distillates (+0.1 mb) inched up in the month.

Independent product stocks in Singapore rose by 1.8 mb to 44.1 mb in December, according to data from *Enterprise Singapore*. Bunker and fuel oils rose by 1.2 mb and remained slightly lower than the five-year average. Light distillates and middle distillates edged up by 0.3 mb and 0.2 mb, respectively. Middle distillate stocks in Singapore have been under tension throughout 2022, ending the year at 8 mb, 2.9 mb below the 2017-2021 average.

In October, crude oil and NGL inventories rose by a combined 1.9 mb in 11 non-OECD economies reporting to the *JODI-Oil* database, led by Saudi Arabia (+3.9 mb) and Chinese Taipei (+2.7 mb). Saudi Arabia's crude stocks rose despite lower production and higher exports as direct crude use declined in line with seasonal trends. Oil product stocks in those same 11 countries drew by 1.3 mb, mainly in Saudi Arabia (-5.2 mb), while they built by 3.2 mb in India due to two-year low oil product exports.

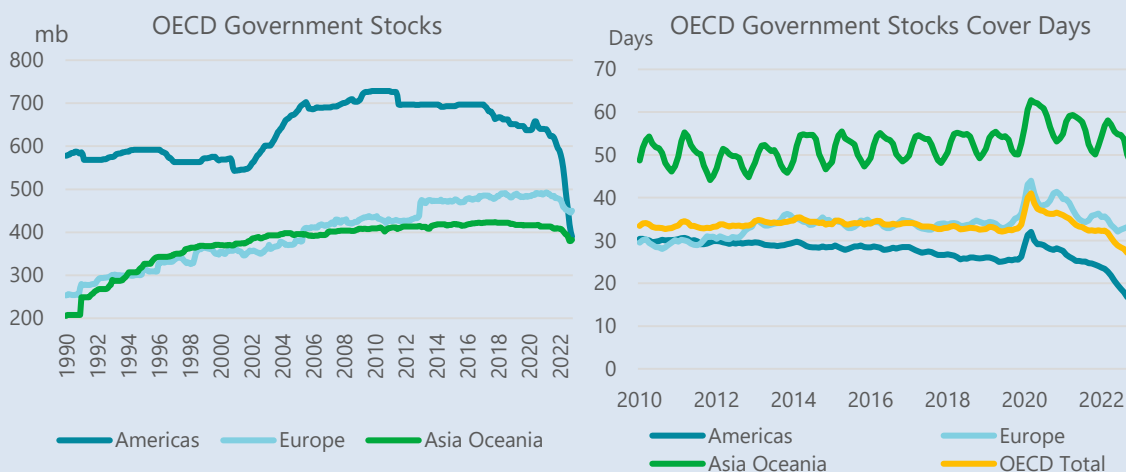


Countries consider refilling the tanks after massive release

The vast majority of stocks offered to the market through the March and April 2022 IEA collective actions were released by end-October 2022. The US also accomplished its plan to release 180 mb of oil from its SPR by December, including volumes independent of the IEA Collective Actions.

Further to the IEA collective stock draw decisions, government stocks were made available to the market for various additional reasons in 2022, including a refinery accident in Austria, low Rhine River water levels, strikes in the French oil industry, and the Keystone pipeline leaks.

OECD government stocks at the end of 2022 are estimated at around 1.2 billion barrels, the lowest level since 1994. As of November, government stocks in OECD Americas covered 15.8 days, 8.5 days less than a year earlier, while total OECD government stocks covered 26.5 days. Although complete data is not yet available, total government stocks in the OECD America region at the end of 2022 is likely to have fallen below the levels held in the other OECD regions for the first time in decades.



The IEA collective actions remain active and countries will not be obliged to replenish their stocks until a decision is taken by the IEA's Governing Board to terminate the action. Such a decision will include a transition period for the replenishing of emergency stocks to avoid creating market tightness. Thus the 90-day requirement, currently suspended, will only be re-established at the end of a replenishment phase that will likely last longer than the overall duration of the collective actions.

Countries can nevertheless choose to replenish their emergency stocks in advance of such a decision, taking into account national circumstances. This has been the case for a number of countries which have begun to rebuild strategic stocks in advance of the 5 February implementation of the embargo on Russia oil products.

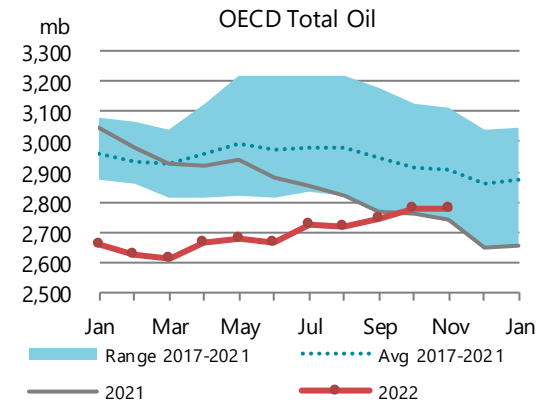
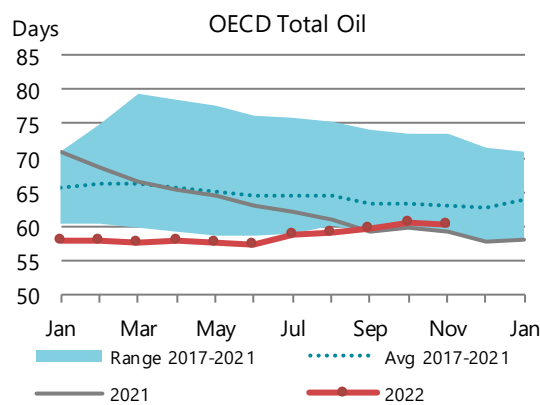
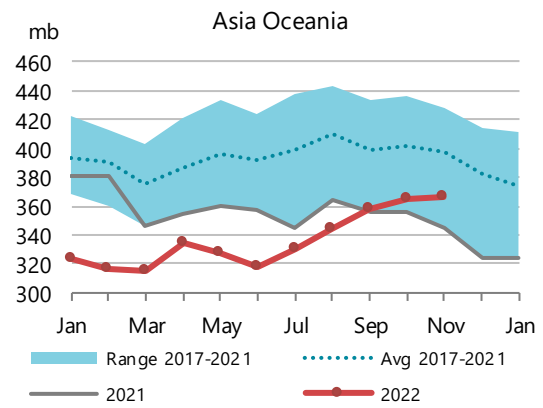
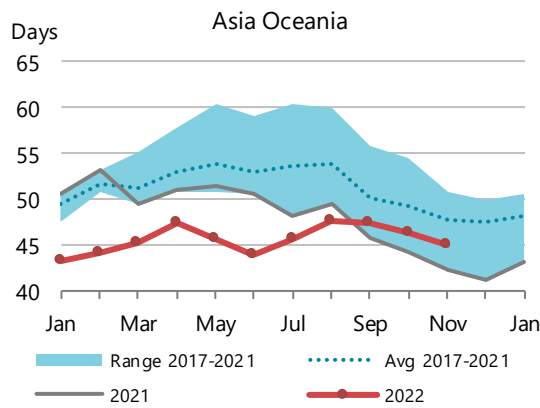
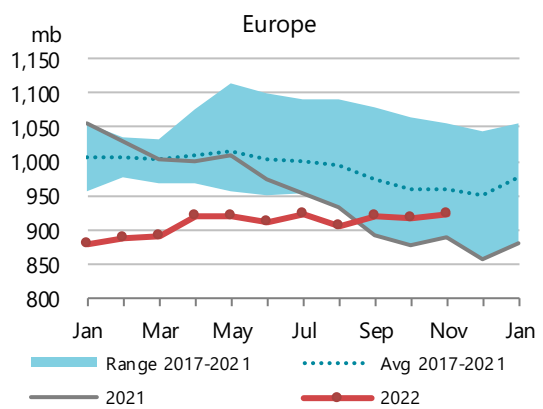
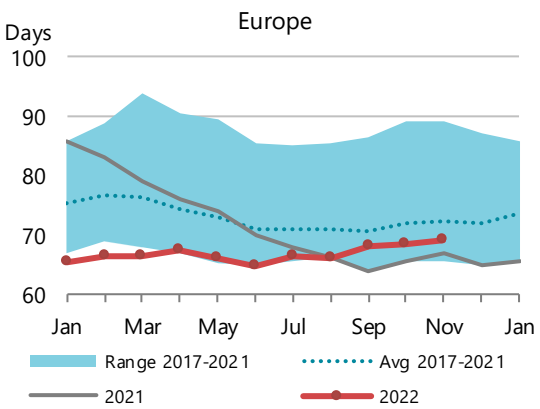
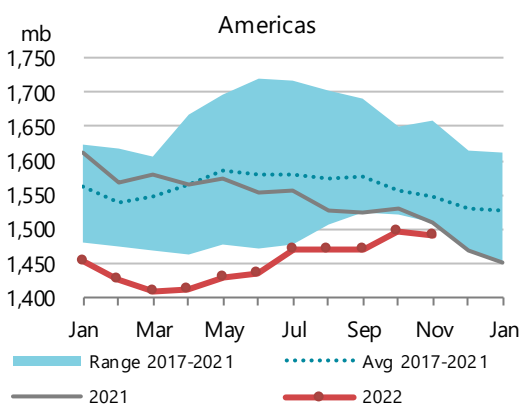
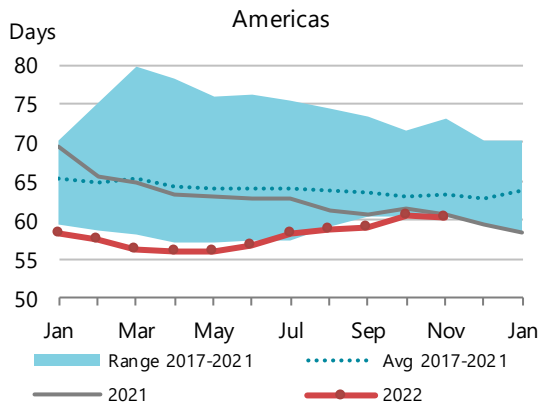
The US Department of Energy (DOE) announced a bid to purchase 3 mb of crude oil by February 2023, but it is reported that no offers matched their expected oil price. The government has indicated it is targeting an oil price in the range of \$67-72/bbl for their buyback programme, some \$4-9/bbl below average WTI prices in the first half of January. Separately, the 2023 US Omnibus Appropriations bill has cancelled the sale of 140 mb from the SPR previously mandated for FY2024-27. The sale of 26 mb in FY2023 will still take place, but the equivalent amount of exchanged crude oil will be returned by 2024.

Regional OECD End-of-Month Industry Stocks

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

Days¹

Million Barrels



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

Prices

Overview

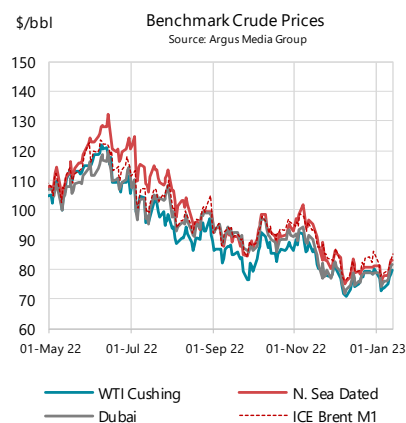
After a year of extraordinary price volatility, having traded in a \$63/bbl range, North Sea Dated concluded 2022 at \$81.29/bbl. This is 40% below the \$132/bbl peak of 14 June but only \$4/bbl above its price one year ago. The weakness attests to the oil market's malaise as reemerging Chinese demand is smothered under an explosion in Covid cases, while economic weakness in developed markets weighs on oil consumption. These trends were aggravated by the seasonal end-of-year slowdown in buying ahead of the first quarter refinery maintenance season.

Oil prices extended their rout into December, falling to a one-year low of \$75/bbl on 8 December as hopes evaporated that China's about-face on zero-Covid would bring a swift boost to the country's oil demand. Markets subsequently recovered somewhat on indications of lower Russian seaborne crude exports in the wake of the EU embargo and price cap. Weather-related disruptions in the US also added to the more bullish climate, propelling product cracks higher. Anticipation of tighter markets flipped the ICE Brent futures curve into backwardation again.

In early January, oil prices slipped back below \$80/bbl as ample indications of slower economic activity from Europe to China pressured expectations. The Chinese government issued large crude import quotas and product export quotas. This suggested the likelihood of stronger crude demand and weaker international product prices, notably for gasoil. Prices subsequently recovered somewhat - Dated was \$82.70/bbl at the time of writing.

Crude Prices and Differentials (\$/bbl)							
	Month			Week of	Last	Chng Dec-22	
	Dec 2021	Nov 2022	Dec 2022	26 Dec	13 Jan	m-o-m	y-o-y
Crude Futures (M1)							
NYMEX WTI	71.69	84.39	76.52	79.29	79.86	-7.87	4.83
ICE Brent	74.80	90.85	81.34	83.94	85.28	-9.51	6.54
Crude Marker Grades							
North Sea Dated	74.01	91.10	80.36	80.93	83.13	-10.74	6.35
WTI (Cushing)	71.53	84.78	76.50	79.29	79.86	-8.28	4.97
Dubai (London close)	73.13	85.64	77.08	78.78	81.59	-8.57	3.94
Differential to North Sea Dated							
WTI (Cushing)	-2.47	-6.31	-3.86	-1.64	-3.27	2.45	-1.39
Dubai (London close)	-0.87	-5.45	-3.28	-2.15	-1.54	2.17	-2.41
Differential to ICE Brent							
North Sea Dated	-0.80	0.24	-0.98	-3.01	-2.15	-1.23	-0.19
NYMEX WTI	-3.11	-6.47	-4.82	-4.65	-5.42	1.64	-1.71

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



The global economic outlook remained weak, with data pointing to recession in many regions. US third-quarter GDP growth was revised upwards to 3.2% annualised, expanding in the face of the Federal Reserve's aggressive interest-rate increases (totalling 4.25 percentage points in 2022). However, there are nascent signs that rate hikes are filtering into the real economy and the labour market. Recent US data indicate a slower pace of hiring and wage growth. This deceleration, as well as recovering supply chains, have begun to weigh on inflation. US consumer prices rose 6.5% y-o-y in December, more than two points below June's peak.

Along the same line, inflation in the eurozone may have peaked at 10.6% in October, helped by natural gas prices that are now back at pre-war levels after a run of warmer-than-usual weather. Although the economic bloc is, in all likelihood, already in contraction, Europe's labour market remained red-hot, with unemployment hitting a record low of 6.5% in October. This has raised the

risk of a wage-price spiral, thereby setting the scene for more ECB rate hikes. Consensus estimates see flat GDP growth in 2023 for the eurozone (-0.1% y-o-y) and the US (0.3% y-o-y), with the former probably already in recession and the latter moving close to, or into, recession by mid-year.

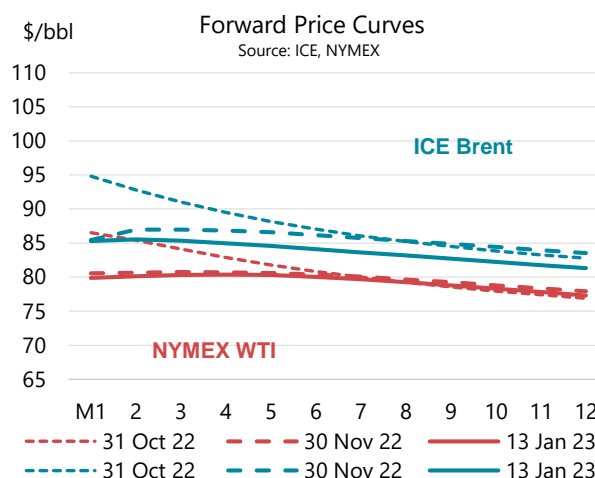
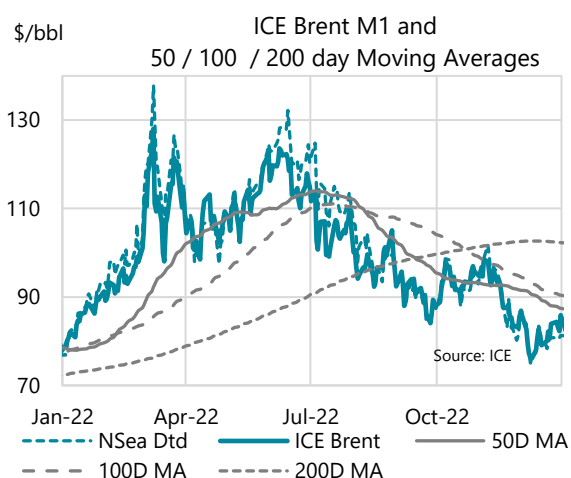
December saw Beijing abruptly scrapping almost all domestic zero-Covid measures and announcing the imminent re-opening of its mainland borders. However, hopes of a swift Chinese demand upswing that could counterbalance the global slowdown rapidly waned, with cases multiplying exponentially. As the wave overwhelmed the nation’s healthcare system and threw factory supply chains into disarray, consumer spending plummeted with the deepening property slump acting as a further drag on sentiment.

These tepid macro drivers caused North Sea Dated to weaken by about \$2/bbl against the WTI and Dubai markers, aided by benign European weather that undercut heating fuel uptake. Prices found a measure of support after Moscow attempted to counter the G7’s \$60/bbl price cap and EU embargo on Russian crude oil (starting 5 December) by announcing it would ban supplies to countries observing the cap. Russian seaborne crude exports fell sharply at the start of December reflecting weather related loading disruptions and illustrating the country’s difficulties in finding shipping capacity and buyers for exports displaced by sanctions. Russia’s Prime Minister Novak stated that Russian oil output may fall by between 5% to 7% as a result of sanctions and price cap.

US supplies initially tightened in December after the temporary closure of the Keystone pipeline, following a spill in Kansas that restricted southward flows of Canadian crude. Balances subsequently eased, as the pre-Christmas Polar Vortex event shut in more refining capacity than oil production in the Midwest and along the Gulf Coast.

Futures markets

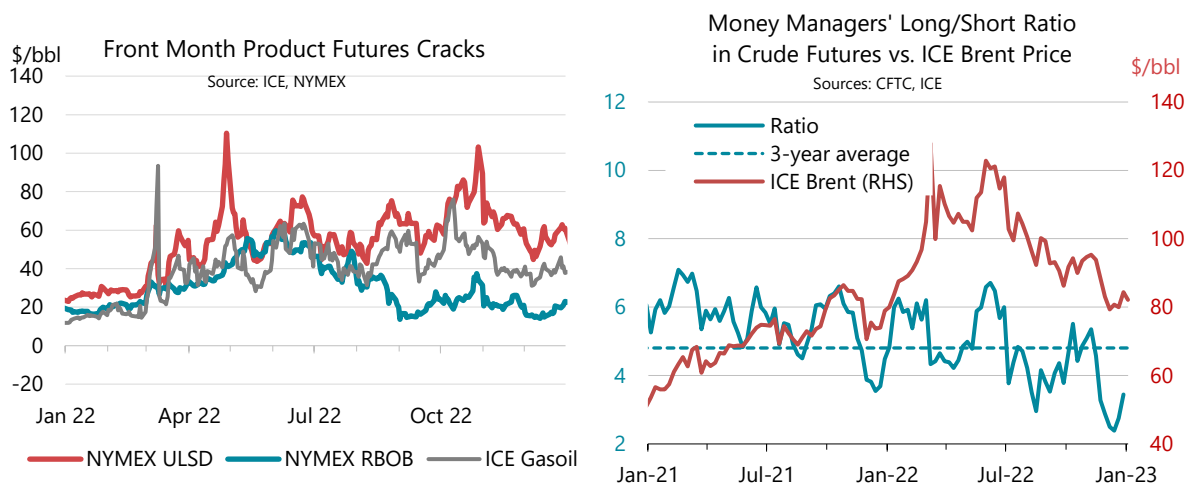
Front-month WTI and Brent futures ended December virtually unchanged from where they started, having traded in a monthly range of about \$10/bbl. Most of this volatility was concentrated in the first week, when prices fell almost \$10/bbl after hopes that China’s reopening would bring a swift demand recovery were dashed. ICE Brent’s 20-day running correlation with copper and iron ore - where pricing is heavily geared toward Chinese demand - spiked around this time, at 70% and 40% respectively, their highest level since the summer.



Brent traded well below its 50-, 100- and 200-day moving average levels throughout the month, underscoring its ultra-bearish technical price picture.

The price curve reflected the contrast between a well-supplied spot market and forward expectations of tightening balances further out in 2023. The ICE Brent February-March spread expired in contango, while Brent CFDs (contracts for difference) also priced a carry at year-end. Conversely, the entire ICE Brent futures curve finished the year in backwardation – although a modest one by 2022’s standards. The 1-12 months spread closed the year \$5/bbl backwardated, having traded as high as \$30/bbl in the immediate aftermath of the Ukraine invasion.

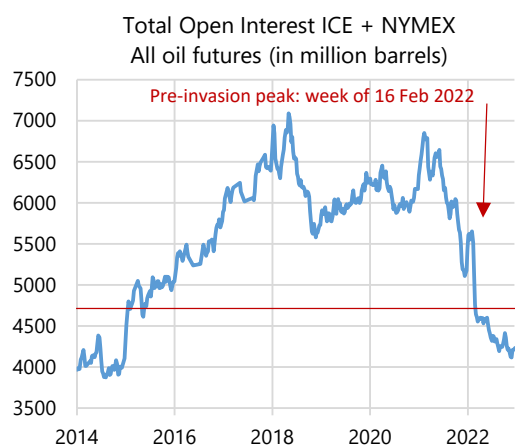
Product cracks on futures contracts traded lower throughout most of December, before staging a late recovery after freezing temperatures shut in about 3 mb/d of refining capacity in the US Midwest and on the Gulf Coast. In response, NYMEX ULSD and RBOB front-month cracks against WTI rallied to \$61/bbl and \$23/bbl, respectively, more or less in line with early December levels. The outages occurred amid historically tight product inventories. According to weekly EIA inventory data, US East Coast (PADD1) gasoline (56.9 mb) and distillate (33.8 mb) stocks are currently at seasonally adjusted nine- and ten-years lows, respectively.



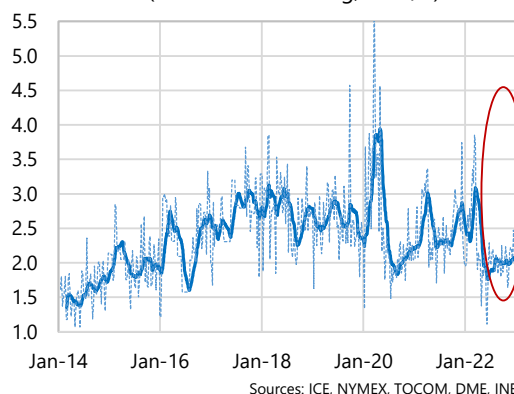
Money manager net long holdings in Brent recovered somewhat from their two-year lows set last month, climbing by 44 mb to 144 mb, mirroring a roughly equivalent increase in producer hedging shorts. Along the same line, the ratio of long to short crude future holdings by money managers increased by half a point to 3.4, still well below its 4.8 long term average and echoing fund managers’ reluctance to build long positions in the face of a bear market.

Speculative positioning in diesel and gasoline was equally lacklustre. Refined product fundamentals remain tighter than for crude, but their smaller market sizes and greater volatility expose them more to the exceptional drainage of commodity exchange liquidity that beset 2022. Combined net managed money long holdings in ICE Gasoil, NYMEX ULSD and NYMEX RBOB fell to 90 mb mid-month, their lowest level since November 2020.

Exchange liquidity continued to dwindle in December, amid elevated volatility and high exchange margins that boosted trading costs. In a testament to the year’s remarkable volatility, prices for the front-month ICE Brent contract moved by a daily \$2.20/bbl on average during 2022, compared to \$10/bbl in 2021. The escalation was even more pronounced for the products: \$4.10/bbl versus \$1.10/bbl for NYMEX ULSD, and \$2.90/bbl versus \$1.30/bbl for NYMEX RBOB. Overall open interest in ICE and NYMEX petroleum futures fell to fresh seven-year lows in December, about 25% below pre-invasion levels. Open interest in the NYMEX WTI contract fell below 1 400 mb in December for the first time in eight years, one-third below pre-war levels.



Trading volumes NYMEX & ICE oil futures
(1 wk & 2 mth MAvg, bn b/d)



Sources: ICE, NYMEX, TOCOM, DME, INE

Prompt Month Oil Futures Prices

(monthly and weekly averages, \$/bbl)

	Oct 2022	Nov 2022	Dec 2022	Dec 2022							Last
				m-o-m Chg	y-o-y Chg	Week Commencing:					
						28 Nov	05 Dec	12 Dec	19 Dec	26 Dec	13 Jan
NYMEX											
Light Sweet Crude Oil (WTI) 1st contract	87.03	84.39	76.52	(7.87)	4.83	79.44	73.13	75.25	77.32	79.29	79.86
Light Sweet Crude Oil (WTI) 12th contract	76.67	77.63	74.40	(3.23)	6.98	76.81	72.85	73.57	74.13	76.00	77.31
RBOB	113.75	106.45	93.57	(12.89)	4.07	98.31	88.48	90.60	94.82	100.31	106.38
ULSD	165.97	150.06	131.19	(18.86)	36.87	136.96	120.70	132.22	131.45	140.77	136.75
ULSD (\$/mmbtu)	29.90	27.03	23.63	(3.40)	6.64	24.67	21.74	23.82	23.68	25.36	24.63
NYMEX Natural Gas (\$/mmbtu)	6.08	6.43	5.77	(0.66)	1.90	6.78	5.80	6.70	5.32	4.76	3.42
ICE											
Brent 1st contract	93.59	90.85	81.34	(9.51)	6.54	84.82	78.29	80.32	81.38	83.94	85.28
Brent 12th; contract	81.87	83.00	78.75	(4.25)	8.00	82.09	77.26	77.85	78.35	80.30	81.32
Gasoil	151.15	133	119	(13.60)	32.19	122.72	111.44	119.07	119.23	125.17	125.20
Prompt Month Differentials											
NYMEX WTI - ICE Brent	(6.56)	(6.46)	(4.82)	1.64	(1.71)	(5.38)	(5.16)	(5.07)	(4.06)	(4.65)	(5.42)
NYMEX WTI 1st vs. 12th	10.36	6.76	2.12	(4.64)	(2.15)	2.63	0.28	1.68	3.19	3.29	3.96
ICE Brent 1st - 12th	11.72	7.85	2.59	(5.26)	(1.46)	2.73	1.03	2.47	3.03	3.64	3.96
NYMEX ULSD - WTI	78.94	65.67	54.67	(10.99)	32.04	57.52	47.57	56.97	54.13	61.48	56.89
NYMEX RBOB - WTI	26.72	22.06	17.05	(5.02)	(0.76)	18.87	15.35	15.35	17.50	21.02	26.52
NYMEX 3-2-1 Crack (RBOB)	44.13	36.60	29.59	(7.01)	10.17	31.75	26.09	29.22	29.71	34.51	36.64
NYMEX ULSD - Natural Gas (\$/mmbtu)	23.81	20.60	17.87	(2.74)	4.74	17.89	15.95	17.12	18.36	20.60	21.22
ICE Gasoil - ICE Brent	57.56	41.78	37.69	(4.09)	25.65	37.90	33.15	38.75	37.85	41.23	39.92

Source: ICE, NYMEX.

Spot crude oil prices

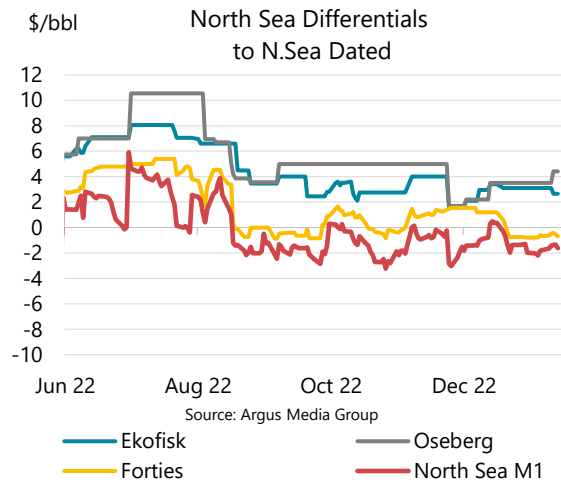
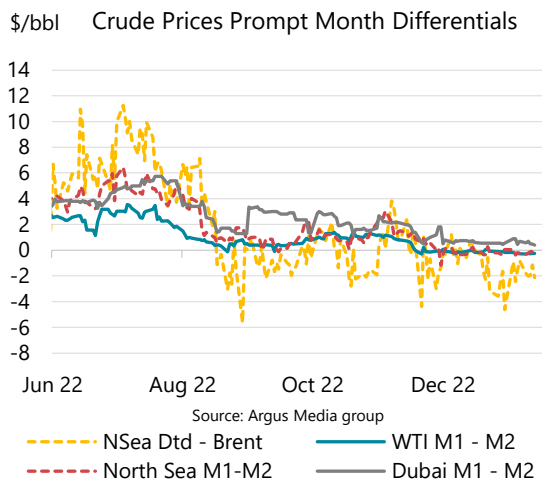
Physical crude prices weakened in December, falling in absolute terms and relative to futures prices. Looming recessionary concerns in Europe and uncertainty over the re-opening of the Chinese economy weighed on product demand which in turn undermined refinery margins and crude requirements. As a consequence, price differentials to marker grades deteriorated despite an easing of freight rates.

North Sea Dated fell \$10.74/bbl m-o-m in December to \$80.36/bbl. From the 7 November high of \$101.75/bbl, Dated plunged almost \$27/bbl to a low of \$75.09 on 8 December before rebounding to average just \$80/bbl over the rest of the month. WTI at Cushing fell by \$8.28/bbl m-o-m to \$76.50/bbl, while the Middle Eastern marker Dubai dropped by \$9.03/bbl to \$77.09/bbl.

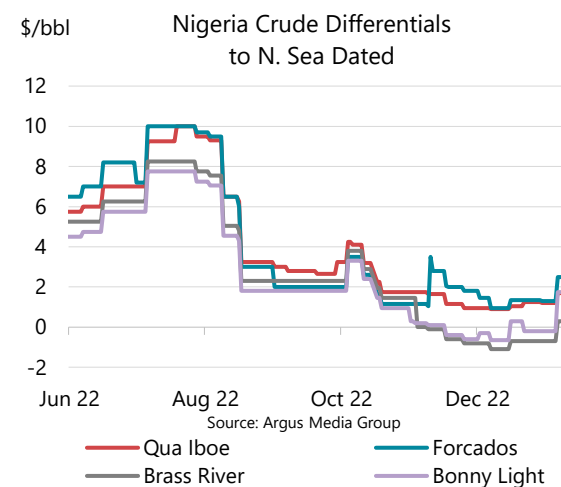
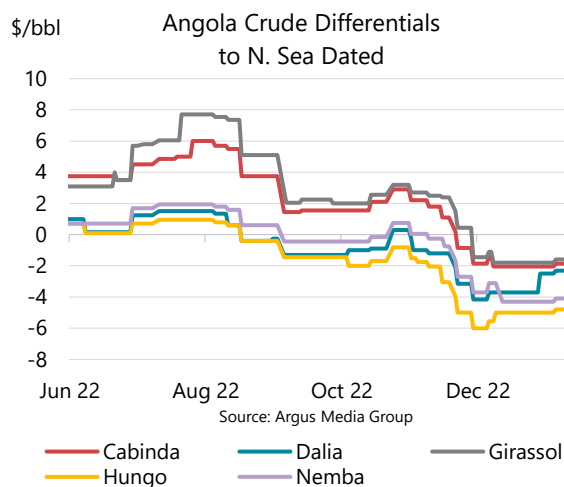
Weakening crude demand in Europe and rising supply - notably from Nigeria, Kazakhstan and Norway - combined to weigh on North Sea Dated prices and regional grade price differentials. The North Sea Dated premium to front-month ICE Brent contracted by \$1.23/bbl, and flipped to a \$0.98/bbl discount with the Atlantic Basin supply overhang.

At the same time, the deterioration in the Middle East crude market lagged that in the Atlantic Basin, improving the arbitrage economics for West African and North West European crudes to Asia. The discount for Dubai swaps to ICE Brent narrowed m-o-m by over \$1.50/bbl, facilitating trade of Atlantic Basin barrels to Asia as freight rates eased.

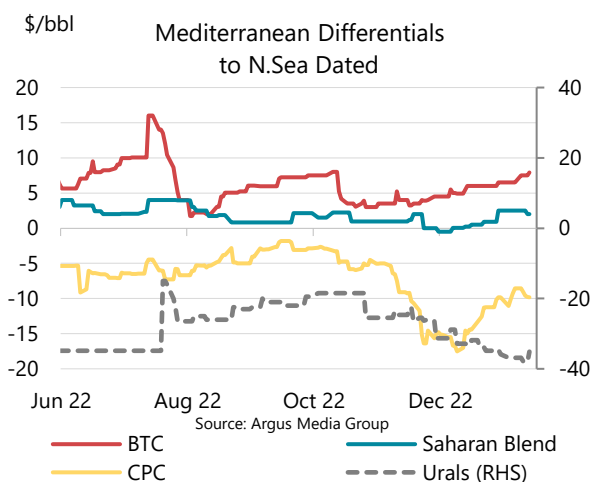
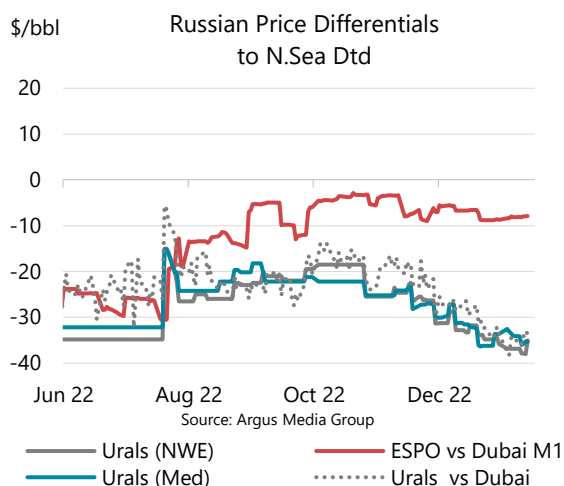
The discount for WTI at Houston versus North Sea Dated (month 2) averaged over \$5/bbl in the first decade of the month, sustaining strong transatlantic crude flows. However, the shutdown of the 600 kb/d TC Energy Keystone pipeline followed by the production losses due to the Polar Vortex tightened the US crude market and narrowed the transatlantic spread to less than \$3/bbl over the remainder of the month. The arbitrage remained poor until January when it returned to over \$5/bbl.



In Nigeria, the end of maintenance on Forcados crude and the progressive return of the Trans Nigeria pipeline boosted national production to a recent peak in December. The higher light sweet crude availability pressured differentials as unsold cargos for January remained in the market late into the month. Nigerian crude differentials declined: Forcados lost \$0.66/bbl reaching \$1.24/bbl while Qua Iboe dropped \$0.39/bbl to \$1.02/bbl. Brass River and Bonny Light continued to trade at discounts (falling \$0.72/bbl to -\$0.86/bbl and \$0.17/bbl to -\$0.29/bbl, respectively). Heavy sweet Angolan prices subsided: Girassol fell \$3.34/bbl to -\$1.68/bbl while Cabinda dropped \$2.73/bbl to -\$1.96/bbl. Both grades slipped into a discount against North Sea, as December saw only muted interest from Chinese buyers – their key market.



Atlantic Basin grade premiums to North Sea Dated receded in December as the crude price structure flattened and as European refinery requirements eased. Strikes at North Sea oil and gas facilities put a mid-month floor under regional price differentials, as did some Chinese buying interest. Premiums for Forties and Ekofisk declined by \$0.36/bbl m-o-m each, averaging \$0.61/bbl and \$2.86/bbl, respectively. Statfjord fell \$0.64/bbl to \$1.49/bbl, while Oseberg dropped \$1.30/bbl to \$2.96/bbl.



The Russian Urals discount to North Sea Dated widened by \$6.80/bbl in December to -\$32.49/bbl on average. Since the 5 December EU sanctions deadline, rising shipping and insurance costs for exports (essentially for India and China) have depressed FOB prices for Russian crude. Negative price momentum continued to build against this backdrop, undercutting prices by another \$4/bbl in the first week of January. At -\$36.85/bbl, this marks the lowest spread on record.

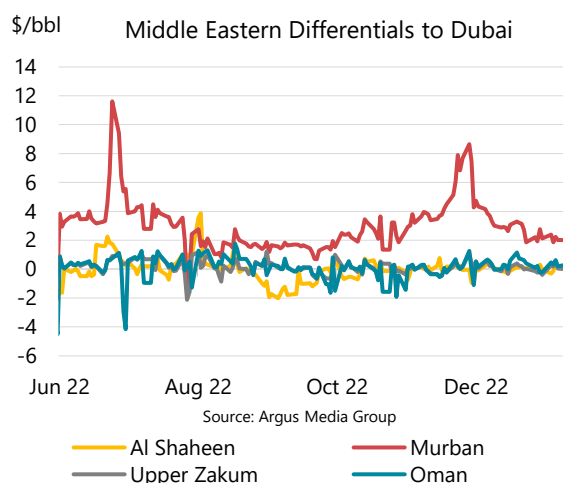
The CPC loading terminal returned, after shutting in 75% of its operations in November due to maintenance. For around a week after 5 December, Turkey restricted passage through the Bosphorus of crude cargos unable to demonstrate Protection & Indemnity (P&I) insurance, further depressing CPC discounts. The spread fell to a record low of -\$17.52/bbl, but recovered to end the year at -\$13.93/bbl. Russian ESPO blend's discount to Dubai also lost ground, falling \$1.09/bbl to -\$7.11/bbl.

The shipping congestion in the Turkish Straits that hindered CPC exports boosted prices of Mediterranean delivered grades. Azeri/BTC rose relative to North Sea Dated by \$1.72/bbl to \$5.36/bbl. North African grades similarly benefitted, with Algerian Sahara Blend's spread against North Sea Dated rallying by roughly \$3/bbl to conclude the year at a \$2/bbl premium. Libya's Es Sider grade rose from an average -\$2.58/bbl discount in December to a \$0.25/bbl premium in the first week of January.

In the Middle East, Chinese demand for sour crudes eased slightly in December, as refiners waited for government crude import quotas but also to assess the impact of the EU sanctions on Russian crude. The backwardation in the Dubai complex flattened, causing regional producers to cut their January official prices (OSPs) to Asian destinations. Murban's premium to Dubai fell by \$1.70/bbl to \$3.08/bbl before dropping a further \$1/bbl to \$2/bbl in early January. Qatar Al-Shaheen and Upper Zakum remained aligned with the Dubai benchmark. December saw a correction in both Minas and Tapis prices: the former dropped by \$1.04/bbl to \$2.05/bbl, while the latter was down \$3.02/bbl to \$12.59/bbl.

WTI prices in Midland and Houston softened against their Cushing benchmark by \$0.78/bbl each, to premiums of \$0.71/bbl and \$0.39/bbl, respectively – briefly moving into a discount intra-month for only the second time since outbreak of the pandemic. The interruption of service on TC Energy's Keystone pipeline cut deliveries of ~600 kb/d of WCS to the US midcontinent, supporting regional crude prices. On the other hand, refinery activity on the USGC was disrupted by cold weather starting mid-December (with 3 mb/d of capacity off-line

at one point), pressuring crude balances as stocks built. The loss of WCS exports via Keystone reduced the discount at Houston by \$5.94/bbl to -\$13.38/bbl, as US Gulf coast refineries sought alternative heavy sour crude availabilities, tightening the heavy market in the process.



Spot Crude Oil Prices and Differentials

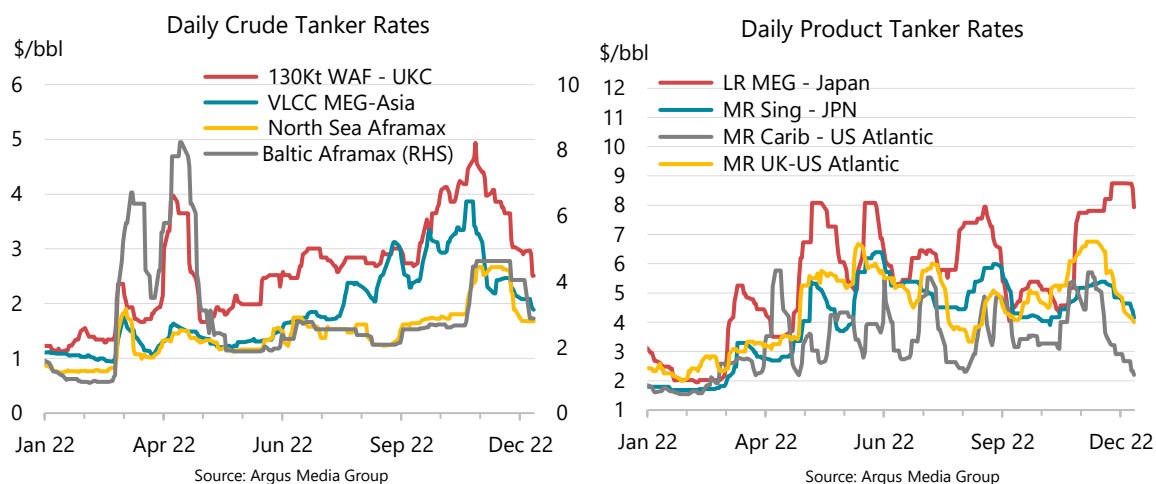
(monthly and weekly averages, \$/bbl)

	Dec 2022					Week Commencing:					Last:
	Oct 2022	Nov 2022	Dec 2022	m-o-m Chg	y-o-y Chg	28 Nov	05 Dec	12 Dec	19 Dec	26 Dec	13 Jan
Crudes											
North Sea Dated	93.11	91.10	80.36	-10.74	6.35	83.47	78.29	80.47	79.75	80.93	83.13
North Sea Mth 1	94.52	92.28	81.31	-10.97	6.63	85.26	79.52	80.33	80.92	82.45	84.75
North Sea Mth 2	93.50	91.09	81.46	-9.63	6.96	85.50	79.72	80.39	81.07	82.66	84.91
WTI (Cushing) Mth 1	87.26	84.78	76.50	-8.28	4.97	79.44	73.13	75.25	77.25	79.29	79.86
WTI (Cushing) Mth 2	86.07	84.27	76.62	-7.65	5.27	79.49	73.32	75.33	77.39	79.42	80.11
WTI (Houston) Mth 1	89.60	86.27	77.21	-9.07	4.35	80.50	73.81	75.60	78.24	79.99	80.99
Urals (NWE)	73.28	65.40	47.87	-17.54	-24.83	53.16	48.21	47.68	46.12	46.03	48.06
Dubai (1st month)	91.08	86.12	77.09	-9.03	3.84	79.63	75.39	75.59	76.80	79.54	80.79
Differentials to Futures											
North Sea Dated vs. ICE Brent	-0.48	0.25	-0.98	-1.23	-0.19	-1.35	0.00	0.15	-1.63	-3.01	-2.15
WTI (Cushing) Mth1 vs. NYMEX	0.23	0.39	-0.02	-0.41	0.14	0.00	0.00	0.00	-0.07	0.00	0.00
Differentials to Physical Markers											
WTI (Houston) versus North Sea Mth 2	-3.90	-4.81	-4.25	0.56	-2.61	-5.00	-5.91	-4.79	-2.83	-2.66	-3.93
WTI (Houston) versus WTI (Cushing) Mth	2.34	1.49	0.71	-0.78	-0.62	1.06	0.68	0.35	0.99	0.71	1.13
Urals (NWE) versus North Sea Dated	-19.83	-25.69	-32.49	-6.80	-31.18	-30.31	-30.09	-32.79	-33.64	-34.90	-35.07
Dubai versus North Sea Mth 2	-2.43	-4.97	-4.37	0.60	-3.13	-5.87	-4.33	-4.80	-4.27	-3.12	-4.12
Dubai versus WTI (Cushing) Mth 2	5.00	1.85	0.47	-1.38	-1.44	0.14	2.07	0.26	-0.59	0.12	0.68
Prompt Month Differentials											
Forward North Sea Mth1-Mth2	1.01	1.20	-0.14	-1.34	-0.34	-0.24	-0.20	-0.06	-0.15	-0.20	-0.16
Forward WTI Cushing Mth1-Mth2	1.19	0.52	-0.12	-0.64	-0.31	-0.05	-0.19	-0.08	-0.14	-0.13	-0.25
Forward Dubai Mth1-Mth2	2.15	1.70	0.62	-1.08	-0.38	1.22	0.67	32.59	0.55	0.52	0.40

Source: Argus Media group, ICE, NYMEX

Freight

Dirty tanker rates pulled back in December after months of sustained upward pressure from the global reallocation of trade. Tanker availability for long-range journeys had tightened as trade routes reshuffled, pushing freight rates to uncomfortable highs. These shifts paused in December as European refiners took more regional grades and as Russian crude trade moved almost entirely to the shadow tanker fleet. Crude tanker rates for VLCCs to Asia fell by \$1.04/bbl to \$2.30/bbl, before dropping another \$0.30/bbl in early January. Suezmax vessel rates weakened \$0.72/bbl to \$3.56/bbl in December, also extending their declines into January. Short-range Aframax vessel chartered in the Baltic rose by \$1/bbl to \$4.43/bbl m-o-m in December, while North Atlantic movements remained steady at \$2.37/bbl.



By contrast, product tanker rates firmed for long-range routes East of Suez, up 46 percent or \$2.59/bbl m-o-m to \$8.22/bbl. Long-range product charters are finding support as the 5 February sanctions deadline approaches. Europe has ramped-up purchases of Middle East gasoil to build precautionary stock ahead of the EU sanctions on Russian product. Inter-Asian rates averaged \$5.15/bbl during December but dipped to \$4.41/bbl at month-end, a pattern mirrored in medium-range Atlantic rates.

Freight Costs

(monthly and weekly averages, \$/bbl)

	Dec-22					Week Commencing				
	Oct 22	Nov 22	Dec 22	m-o-m chg	y-o-y chg	05-Dec	12-Dec	19-Dec	26-Dec	02-Jan
Crude Tankers										
VLCC MEG-Asia	2.79	3.34	2.30	-1.04	1.21	2.25	2.46	2.28	2.08	1.96
130Kt WAF - UKC	3.30	4.28	3.56	-0.72	2.24	3.98	3.73	3.18	2.93	2.73
Baltic Aframax	2.62	3.40	4.43	1.03	3.37	4.63	4.63	4.17	4.05	2.88
North Sea Aframax	1.69	2.08	2.37	0.29	1.56	2.66	2.64	2.15	1.68	1.68
Product Tankers										
LR MEG - Japan	4.96	5.63	8.22	2.59	5.36	7.81	7.97	8.64	8.75	8.49
MR Sing - JPN	4.30	4.54	5.15	0.60	3.42	5.30	5.37	5.09	4.71	4.41
MR Carib - US Atlantic	3.47	4.04	4.10	0.05	2.26	5.40	4.21	3.16	2.79	2.39
MR UK-US Atlantic	4.57	5.62	5.98	0.36	3.38	6.76	6.32	5.42	4.53	4.11

Source: Argus Media group

Tables

Table 1
WORLD OIL SUPPLY AND DEMAND
(million barrels per day)

	2019	2020	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23	2Q23	3Q23	4Q23	2023
OECD DEMAND																	
Americas	25.4	22.4	22.9	24.4	24.8	25.1	24.3	24.8	25.0	25.3	24.9	25.0	24.9	25.2	25.5	25.1	25.1
Europe	14.3	12.4	12.0	12.7	13.9	14.0	13.1	13.2	13.4	14.1	13.5	13.6	13.3	13.6	14.1	13.8	13.7
Asia Oceania	7.9	7.2	7.7	7.0	7.1	7.8	7.4	7.9	7.0	7.2	7.6	7.4	7.9	7.1	7.4	7.9	7.6
Total OECD	47.7	42.0	42.6	44.1	45.8	46.9	44.8	45.8	45.4	46.6	46.0	46.0	46.1	45.9	46.9	46.8	46.4
NON-OECD DEMAND																	
FSU	4.7	4.6	4.6	4.7	5.0	5.1	4.9	4.7	4.7	5.1	4.9	4.9	4.6	4.7	4.9	4.9	4.8
Europe	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
China	14.1	14.2	14.9	15.6	15.6	15.6	15.4	15.4	14.4	14.8	15.5	15.0	15.0	15.6	16.1	16.8	15.9
Other Asia	14.1	12.7	13.7	13.1	12.8	13.9	13.4	14.1	14.0	13.4	14.0	13.9	14.4	14.3	14.0	14.8	14.4
Americas	6.3	5.4	5.7	5.8	6.1	6.1	5.9	5.9	6.1	6.3	6.2	6.1	6.0	6.1	6.3	6.2	6.1
Middle East	8.8	8.1	8.2	8.4	8.9	8.4	8.5	8.5	9.2	9.6	8.9	9.0	8.7	9.3	9.8	8.9	9.2
Africa	4.1	3.8	4.0	3.9	3.9	4.1	4.0	4.2	4.1	4.1	4.3	4.2	4.2	4.1	4.1	4.2	4.2
Total Non-OECD	52.9	49.5	51.9	52.3	53.0	54.0	52.8	53.7	53.3	54.1	54.5	53.9	53.6	54.9	55.9	56.7	55.3
Total Demand¹	100.5	91.5	94.5	96.4	98.8	100.9	97.7	99.5	98.7	100.7	100.5	99.9	99.6	100.8	102.9	103.5	101.7
OECD SUPPLY																	
Americas	24.8	23.9	23.5	24.4	24.4	25.3	24.4	25.0	25.4	26.2	26.5	25.8	26.5	26.8	27.1	27.3	26.9
Europe	3.4	3.6	3.6	3.1	3.4	3.4	3.4	3.3	3.0	3.1	3.2	3.2	3.4	3.3	3.3	3.4	3.3
Asia Oceania	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total OECD²	28.6	28.0	27.6	27.9	28.3	29.2	28.3	28.8	28.9	29.7	30.2	29.4	30.4	30.5	30.8	31.2	30.7
NON-OECD SUPPLY																	
FSU	14.6	13.5	13.4	13.7	13.7	14.3	13.8	14.4	13.4	13.7	14.1	13.9	13.4	12.6	12.4	12.4	12.7
Europe	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
China	3.9	4.0	4.1	4.1	4.1	4.0	4.1	4.2	4.2	4.1	4.1	4.2	4.3	4.2	4.2	4.2	4.2
Other Asia	3.3	3.0	3.0	2.9	2.8	2.8	2.9	2.8	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6
Americas	5.3	5.3	5.3	5.3	5.4	5.2	5.3	5.4	5.5	5.8	5.9	5.6	5.9	6.1	6.2	6.3	6.1
Middle East	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Africa	1.5	1.4	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Total Non-OECD²	31.8	30.3	30.2	30.5	30.5	30.8	30.5	31.4	30.5	30.9	31.4	31.0	30.8	30.1	30.0	30.1	30.2
Processing gains ³	2.4	2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4
Global Biofuels	2.8	2.7	2.2	3.0	3.2	2.7	2.8	2.5	3.1	3.3	2.9	3.0	2.6	3.2	3.5	3.1	3.1
Total Non-OPEC Supply	65.6	63.0	62.1	63.6	64.4	65.1	63.8	65.0	64.8	66.2	66.8	65.7	66.1	66.2	66.6	66.7	66.4
OPEC⁴																	
Crude	29.6	25.7	25.4	25.6	27.0	27.8	26.4	28.5	28.7	29.6	29.4	29.1					
NGLs	5.3	5.1	5.1	5.1	5.1	5.2	5.1	5.3	5.4	5.4	5.3	5.3	5.4	5.4	5.4	5.4	5.4
Total OPEC	35.0	30.8	30.4	30.7	32.1	33.0	31.5	33.8	34.1	34.9	34.8	34.4					
Total Supply	100.6	93.8	92.6	94.3	96.5	98.1	95.4	98.8	98.8	101.1	101.6	100.1					
STOCK CHANGES AND MISCELLANEOUS																	
Reported OECD																	
Industry	0.1	0.4	-1.2	-0.5	-1.2	-1.3	-1.1	-0.4	0.6	0.9							
Government	0.0	0.0	0.1	-0.2	-0.1	-0.3	-0.2	-0.5	-1.1	-1.1							
Total	0.0	0.4	-1.2	-0.7	-1.4	-1.6	-1.2	-0.8	-0.5	-0.2							
Floating storage/Oil in transit	0.1	0.0	-0.4	-0.5	-0.3	1.0	0.0	-0.5	0.5	1.0							
Miscellaneous to balance ⁵	0.0	1.9	-0.3	-0.8	-0.7	-2.3	-1.0	0.7	0.1	-0.4							
Total Stock Ch. & Misc	0.0	2.3	-1.9	-2.1	-2.3	-2.8	-2.3	-0.7	0.1	0.4	1.1	0.2					
Memo items:																	
Call on OPEC crude & stock changes ⁶	29.6	23.4	27.3	27.6	29.3	30.6	28.7	29.2	28.6	29.1	28.3	28.8	28.2	29.2	30.8	31.4	29.9

¹ Measured as deliveries from refineries and primary stocks, comprises inland deliveries, international marine bunkers, refinery fuel, crude for direct burning, oil from non-conventional sources and other sources of supply. Includes biofuels.

² Comprises crude oil, condensates, NGLs, oil from non-conventional sources and other sources of supply.

³ Net volumetric gains and losses in the refining process and marine transportation losses.

⁴ OPEC include current members throughout the time series.

⁵ Includes changes in non-reported stocks in OECD and non-OECD.

⁶ Total demand minus total non-OPEC supply minus OPEC NGLs.

For the purpose of this and the following tables:

- OECD comprises of Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, Norway, New Zealand, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Republic of Turkey, UK, US.

- OPEC comprises of Algeria, Angola, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Neutralzone, Nigeria, Saudi Arabia, UAE, Venezuela.

- OPEC+ comprises of OPEC members throughout time series plus Sudan, South Sudan, Russia, Oman, Mexico, Malaysia, Kazakhstan, Brunei, Bahrain, Azerbaijan.

Table 1a
WORLD OIL SUPPLY AND DEMAND: CHANGES FROM LAST MONTH'S TABLE 1
(million barrels per day)

	2019	2020	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23	2Q23	3Q23	4Q23	2023
OECD DEMAND																	
Americas	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-0.1	-
Europe	-	-	-	-	-	-	-	-	-	-	-0.4	-0.1	-0.1	-	-	-0.1	-
Asia Oceania	-	-	-	-	-	-	-	-	-	-	-0.1	-	-	-	-	-	-
Total OECD	-	-	-	-	-	-	-	-	-	-	-0.5	-0.1	-0.1	0.1	-	-0.2	-0.1
NON-OECD DEMAND																	
FSU	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
Europe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
China	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	0.2	0.1
Other Asia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Americas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Middle East	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.1	0.1
Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Non-OECD	-	-	-	-	-	-	-	-	-	-	0.2	0.1	-	-	0.1	0.4	0.1
Total Demand	-	-	-	-	-	-	-	-	-	-	-0.3	-0.1	-0.1	0.2	0.1	0.1	0.1
OECD SUPPLY																	
Americas	-	-	-	-	-	-	-	-	-	-	-0.2	-	-0.1	0.1	-	-0.1	-
Europe	-	-	-	-	-	-	-	-	-	-	-0.1	-	-	-0.1	-0.1	-0.1	-0.1
Asia Oceania	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total OECD	-	-	-	-	-	-	-	-	-	-	-0.2	-0.1	-0.1	-	-0.1	-0.2	-0.1
NON-OECD SUPPLY																	
FSU	-	-	-	-	-	-	-	-	-	-	0.2	-	0.4	0.1	-	-	0.1
Europe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
China	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Asia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Americas	-	-	-	-	-	-	-	-	-	-	-0.1	-	-	-	0.1	0.1	-
Middle East	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Non-OECD	-	-	-	-	-	-	-	-	-	-	0.1	-	0.3	0.1	-	0.1	0.1
Processing gains	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Global Biofuels	-	-	-	-	-	-	-	0.1	0.1	0.1	-	-	0.1	0.1	0.1	0.1	0.1
Total Non-OPEC Supply	-	-	-	-	-	-	-	0.1	0.1	0.1	-0.1	-	0.3	0.2	-	-0.1	0.1
OPEC																	
Crude	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NGLs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total OPEC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Supply	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	-	-
STOCK CHANGES AND MISCELLANEOUS																	
REPORTED OECD																	
Industry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Floating storage/Oil in transit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous to balance	-	-	-	-	-	0.1	-	0.1	-	0.1	-	0.1	-	-	-	-	-
Total Stock Ch. & Misc	-	-	-	-	-	-	-	0.1	-	0.1	-	0.1	-	-	-	-	-
Memo items:																	
Call on OPEC crude & stock changes	-	-	-	-	-	-	-	-0.1	-0.1	-	-0.2	-0.1	-0.4	-	0.1	0.2	-

Note: When submitting monthly oil statistics, OECD member countries may update data for prior periods. Similar updates to non-OECD data can also occur.

Table 1b
WORLD OIL SUPPLY AND DEMAND (Including OPEC+ based on current agreement¹)
(million barrels per day)

	2019	2020	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q22	3Q22	4Q22	2022	1Q23	2Q23	3Q23	4Q23	2023
Total Demand	100.5	91.5	94.5	96.4	98.8	100.9	97.7	99.5	98.7	100.7	100.5	99.9	99.6	100.8	102.9	103.5	101.7
OECD SUPPLY																	
Americas ²	22.8	21.9	21.5	22.4	22.4	23.4	22.4	23.0	23.4	24.2	24.5	23.8	24.4	24.7	25.0	25.3	24.8
Europe	3.4	3.6	3.6	3.1	3.4	3.4	3.4	3.3	3.0	3.1	3.2	3.2	3.4	3.3	3.2	3.4	3.3
Asia Oceania	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total OECD (non-OPEC+)	26.7	26.0	25.7	26.0	26.4	27.3	26.3	26.8	26.9	27.7	28.2	27.4	28.3	28.4	28.7	29.1	28.6
NON-OECD SUPPLY																	
FSU ³	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Europe	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
China	3.9	4.0	4.1	4.1	4.1	4.0	4.1	4.2	4.2	4.1	4.1	4.2	4.3	4.2	4.2	4.2	4.2
Other Asia ⁴	2.5	2.3	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0
Latin America	5.3	5.3	5.3	5.3	5.4	5.2	5.3	5.4	5.5	5.8	5.9	5.6	5.9	6.1	6.2	6.3	6.1
Middle East ⁵	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Africa ⁶	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total Non-OECD (non-OPEC+)	15.3	15.1	15.1	15.1	15.2	14.8	15.0	15.2	15.2	15.4	15.5	15.3	15.7	15.8	15.8	15.8	15.8
Processing Gains	2.4	2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4
Global Biofuels	2.8	2.7	2.2	3.0	3.2	2.7	2.8	2.5	3.1	3.3	2.9	3.0	2.6	3.2	3.5	3.1	3.1
Total Non-OPEC+	47.2	45.9	45.1	46.3	47.1	47.1	46.4	46.8	47.5	48.7	48.9	48.0	48.9	49.8	50.4	50.4	49.9
OPEC+ CRUDE																	
Algeria	1.0	0.9	0.9	0.9	0.9	1.0	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Angola	1.4	1.3	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Azerbaijan	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.5
Bahrain	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Brunei	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Congo	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Equatorial Guinea	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Gabon	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Iran	2.4	2.0	2.3	2.4	2.5	2.5	2.4	2.5	2.4	2.5	2.4	2.5	2.7	2.7	2.7	2.7	2.7
Iraq	4.7	4.0	3.9	3.9	4.1	4.2	4.0	4.3	4.4	4.5	4.5	4.4	4.4	4.4	4.4	4.4	4.4
Kazakhstan	1.6	1.5	1.5	1.5	1.4	1.7	1.5	1.6	1.4	1.4	1.6	1.5	1.6	1.6	1.6	1.6	1.6
Kuwait	2.7	2.4	2.3	2.4	2.4	2.5	2.4	2.6	2.7	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Libya	1.1	0.4	1.2	1.2	1.2	1.1	1.1	1.1	0.8	1.0	1.2	1.0	1.2	1.2	1.2	1.2	1.2
Malaysia	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Mexico	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7
Nigeria	1.7	1.5	1.4	1.3	1.3	1.2	1.3	1.3	1.2	1.0	1.1	1.1	1.3	1.2	1.2	1.2	1.2
Oman	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8
Russia	10.4	9.4	9.3	9.5	9.7	10.0	9.6	10.0	9.4	9.8	9.8	9.7	8.9	8.2	8.1	8.1	8.3
Saudi Arabia	9.9	9.2	8.5	8.6	9.6	9.9	9.2	10.2	10.5	10.9	10.6	10.6	10.5	10.5	10.5	10.5	10.5
South Sudan	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sudan	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
UAE	3.2	2.9	2.7	2.7	2.8	2.9	2.8	3.1	3.3	3.4	3.3	3.3	3.2	3.2	3.2	3.2	3.2
Venezuela	0.9	0.5	0.5	0.5	0.6	0.8	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
OPEC+ Crude	45.9	40.6	40.0	40.5	42.0	43.3	41.5	44.1	43.4	44.6	44.7	44.2	43.7	43.0	42.8	42.8	43.1
OPEC+ NGLs & Condensate	7.4	7.2	7.4	7.4	7.3	7.5	7.4	7.7	7.8	7.7	7.9	7.8	8.0	8.0	8.1	8.1	8.0
OPEC+ Nonconventionals	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total OPEC+	53.4	47.9	47.5	48.0	49.4	51.0	49.0	52.0	51.3	52.5	52.7	52.1	51.8	51.2	51.0	51.0	51.2
Total Supply Oil	100.6	93.8	92.6	94.3	96.5	98.1	95.4	98.8	98.8	101.1	101.6	100.1	100.7	100.9	101.3	101.4	101.1
Memo items:																	
Call on OPEC+ crude & stock changes	45.9	38.3	41.9	42.6	44.3	46.2	43.8	44.8	43.3	44.2	43.6	44.0	42.6	42.9	44.3	44.9	43.7

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

² OECD Americas excludes Mexico.

³ FSU excludes Russia, Kazakhstan, Azerbaijan.

⁴ Other Asia excludes Brunei, Malaysia.

⁵ Middle East excludes Oman, Bahrain.

⁶ Africa excludes Sudan, South Sudan.

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

	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22 ²	Latest month vs.	
										Sep 22	Oct 21
Americas											
LPG and ethane	3.52	3.69	3.93	4.18	3.62	3.78	3.56	3.71	3.59	-0.11	-0.05
Naphtha	0.26	0.25	0.25	0.22	0.21	0.20	0.20	0.20	0.19	-0.01	-0.01
Motor gasoline	9.53	10.34	10.61	10.04	10.70	10.59	10.81	10.50	10.47	-0.03	-0.14
Jet and kerosene	1.25	1.56	1.74	1.69	1.87	1.89	1.94	1.82	1.81	-0.02	0.11
Gasoil/diesel oil	4.88	5.06	5.16	5.33	5.14	5.09	5.09	5.23	5.32	0.08	0.22
Residual fuel oil	0.41	0.55	0.59	0.59	0.54	0.61	0.57	0.67	0.53	-0.13	0.01
Other products	2.61	2.85	2.84	2.72	2.91	3.17	3.26	3.06	3.05	0.00	-0.02
Total	22.45	24.31	25.12	24.77	24.98	25.33	25.43	25.19	24.96	-0.23	0.11
Europe											
LPG and ethane	1.07	1.10	1.09	1.11	0.95	1.09	1.10	1.05	0.89	-0.15	-0.16
Naphtha	1.06	1.12	1.18	1.15	1.01	0.87	0.88	0.81	0.80	-0.01	-0.40
Motor gasoline	1.76	1.93	2.02	1.88	2.08	2.17	2.23	2.12	2.02	-0.10	-0.03
Jet and kerosene	0.74	0.86	1.07	1.02	1.29	1.49	1.52	1.47	1.41	-0.06	0.30
Gasoil/diesel oil	5.93	6.26	6.68	6.16	6.09	6.39	6.38	6.64	6.20	-0.44	-0.56
Residual fuel oil	0.69	0.76	0.76	0.79	0.84	0.85	0.85	0.85	0.81	-0.04	0.07
Other products	1.17	1.10	1.15	1.07	1.17	1.22	1.20	1.29	1.15	-0.15	-0.10
Total	12.41	13.13	13.96	13.19	13.42	14.09	14.16	14.22	13.28	-0.95	-0.88
Asia Oceania											
LPG and ethane	0.76	0.77	0.78	0.94	0.77	0.74	0.74	0.75	0.71	-0.04	0.03
Naphtha	1.81	1.95	2.06	1.93	1.78	1.90	1.99	1.78	1.73	-0.05	-0.26
Motor gasoline	1.38	1.35	1.37	1.28	1.30	1.42	1.47	1.38	1.35	-0.03	0.05
Jet and kerosene	0.61	0.61	0.72	0.87	0.51	0.53	0.54	0.55	0.66	0.11	0.09
Gasoil/diesel oil	1.83	1.89	1.98	1.95	1.86	1.90	1.99	1.88	1.91	0.02	0.00
Residual fuel oil	0.42	0.45	0.48	0.52	0.45	0.47	0.49	0.46	0.45	0.00	0.00
Other products	0.36	0.36	0.39	0.36	0.31	0.25	0.24	0.30	0.28	-0.01	-0.05
Total	7.17	7.38	7.78	7.85	6.98	7.22	7.45	7.10	7.09	-0.01	-0.15
OECD											
LPG and ethane	5.35	5.56	5.80	6.23	5.34	5.61	5.40	5.51	5.20	-0.31	-0.19
Naphtha	3.12	3.33	3.48	3.30	3.00	2.97	3.06	2.79	2.71	-0.07	-0.67
Motor gasoline	12.66	13.62	14.00	13.20	14.08	14.18	14.51	14.00	13.84	-0.16	-0.12
Jet and kerosene	2.60	3.03	3.54	3.59	3.67	3.91	4.01	3.85	3.88	0.03	0.50
Gasoil/diesel oil	12.65	13.21	13.82	13.43	13.09	13.38	13.46	13.75	13.42	-0.33	-0.34
Residual fuel oil	1.52	1.76	1.84	1.91	1.82	1.93	1.90	1.98	1.80	-0.18	0.07
Other products	4.14	4.32	4.39	4.15	4.39	4.65	4.70	4.64	4.48	-0.16	-0.17
Total	42.03	44.83	46.86	45.81	45.39	46.64	47.05	46.51	45.33	-1.18	-0.92

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)

	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22 ²	Latest month vs.	
										Sep 22	Oct 21
United States³											
LPG and ethane	2.74	2.88	3.13	3.37	2.89	2.95	2.75	2.97	2.94	-0.02	0.03
Naphtha	0.18	0.19	0.18	0.15	0.14	0.13	0.12	0.13	0.12	-0.01	-0.03
Motor gasoline	8.05	8.82	8.98	8.47	9.00	8.88	9.08	8.81	8.83	0.01	-0.20
Jet and kerosene	1.08	1.38	1.50	1.46	1.61	1.60	1.65	1.55	1.53	-0.02	0.05
Gasoil/diesel oil	3.78	3.97	4.03	4.14	3.89	3.86	3.87	4.01	4.10	0.09	0.13
Residual fuel oil	0.21	0.31	0.40	0.38	0.31	0.39	0.37	0.46	0.28	-0.18	-0.08
Other products	2.13	2.35	2.31	2.24	2.43	2.65	2.76	2.54	2.62	0.08	0.13
Total	18.19	19.89	20.54	20.22	20.27	20.47	20.60	20.47	20.41	-0.06	0.04
Japan											
LPG and ethane	0.39	0.40	0.41	0.49	0.40	0.37	0.38	0.38	0.36	-0.02	0.02
Naphtha	0.66	0.70	0.76	0.63	0.56	0.62	0.69	0.56	0.64	0.08	-0.07
Motor gasoline	0.79	0.73	0.73	0.67	0.68	0.75	0.78	0.72	0.71	-0.01	-0.01
Jet and kerosene	0.37	0.37	0.46	0.58	0.25	0.24	0.24	0.26	0.32	0.07	-0.01
Diesel	0.41	0.42	0.44	0.43	0.41	0.43	0.43	0.43	0.42	-0.01	-0.02
Other gasoil	0.31	0.32	0.35	0.37	0.30	0.30	0.30	0.30	0.31	0.01	-0.01
Residual fuel oil	0.22	0.25	0.26	0.29	0.24	0.26	0.27	0.26	0.26	0.00	0.01
Other products	0.21	0.22	0.25	0.23	0.18	0.22	0.22	0.25	0.22	-0.04	-0.02
Total	3.36	3.41	3.66	3.70	3.03	3.19	3.31	3.15	3.23	0.07	-0.11
Germany											
LPG and ethane	0.11	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.08	-0.02	-0.03
Naphtha	0.28	0.32	0.34	0.35	0.33	0.25	0.25	0.23	0.21	-0.02	-0.14
Motor gasoline	0.46	0.45	0.46	0.43	0.46	0.48	0.52	0.43	0.45	0.01	-0.02
Jet and kerosene	0.10	0.13	0.16	0.15	0.20	0.22	0.22	0.21	0.24	0.03	0.08
Diesel	0.71	0.71	0.75	0.69	0.68	0.75	0.79	0.70	0.70	0.00	-0.08
Other gasoil	0.36	0.27	0.36	0.29	0.24	0.32	0.31	0.35	0.31	-0.04	-0.06
Residual fuel oil	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.05	0.04	-0.01	-0.01
Other products	0.08	0.07	0.08	0.06	0.07	0.10	0.09	0.12	0.09	-0.04	-0.01
Total	2.15	2.13	2.34	2.15	2.15	2.28	2.33	2.20	2.12	-0.08	-0.29
Italy											
LPG and ethane	0.09	0.11	0.12	0.13	0.10	0.10	0.10	0.11	0.10	-0.01	0.00
Naphtha	0.10	0.09	0.10	0.10	0.07	0.06	0.06	0.07	0.07	0.00	-0.03
Motor gasoline	0.14	0.17	0.18	0.16	0.19	0.20	0.20	0.20	0.18	-0.02	-0.01
Jet and kerosene	0.05	0.06	0.07	0.07	0.10	0.11	0.11	0.11	0.10	-0.01	0.02
Diesel	0.39	0.48	0.51	0.48	0.49	0.50	0.48	0.53	0.49	-0.04	-0.02
Other gasoil	0.07	0.07	0.07	0.04	0.05	0.06	0.06	0.07	0.06	-0.01	-0.03
Residual fuel oil	0.06	0.09	0.09	0.09	0.10	0.11	0.11	0.11	0.11	0.00	0.01
Other products	0.14	0.11	0.12	0.10	0.13	0.13	0.11	0.13	0.12	-0.01	0.00
Total	1.03	1.18	1.26	1.17	1.23	1.28	1.22	1.33	1.22	-0.11	-0.04
France											
LPG and ethane	0.11	0.11	0.10	0.12	0.10	0.10	0.09	0.09	0.07	-0.02	-0.01
Naphtha	0.12	0.14	0.16	0.13	0.09	0.10	0.09	0.09	0.07	-0.01	-0.09
Motor gasoline	0.17	0.21	0.22	0.21	0.24	0.26	0.26	0.26	0.22	-0.04	0.00
Jet and kerosene	0.09	0.09	0.11	0.10	0.11	0.15	0.18	0.14	0.10	-0.03	-0.01
Diesel	0.67	0.73	0.75	0.71	0.75	0.75	0.68	0.82	0.74	-0.08	-0.03
Other gasoil	0.14	0.13	0.16	0.16	0.07	0.11	0.10	0.15	0.09	-0.06	-0.06
Residual fuel oil	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.00	0.01
Other products	0.09	0.10	0.10	0.08	0.11	0.12	0.11	0.12	0.09	-0.03	-0.02
Total	1.43	1.55	1.62	1.54	1.50	1.62	1.57	1.69	1.42	-0.27	-0.21
United Kingdom											
LPG and ethane	0.12	0.11	0.11	0.12	0.12	0.10	0.10	0.09	0.09	0.00	-0.01
Naphtha	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Motor gasoline	0.22	0.25	0.28	0.26	0.28	0.28	0.28	0.28	0.28	0.00	0.01
Jet and kerosene	0.18	0.18	0.24	0.24	0.27	0.29	0.29	0.29	0.29	0.00	0.08
Diesel	0.43	0.47	0.49	0.46	0.51	0.48	0.50	0.45	0.49	0.04	0.01
Other gasoil	0.11	0.13	0.12	0.11	0.09	0.12	0.13	0.11	0.08	-0.03	-0.05
Residual fuel oil	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00
Other products	0.10	0.10	0.10	0.11	0.10	0.11	0.12	0.12	0.10	-0.01	0.01
Total	1.21	1.26	1.35	1.31	1.39	1.40	1.45	1.36	1.36	-0.00	0.05
Canada											
LPG and ethane	0.43	0.45	0.43	0.43	0.39	0.45	0.43	0.36	0.27	-0.09	-0.13
Naphtha	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.02
Motor gasoline	0.73	0.76	0.80	0.73	0.78	0.81	0.84	0.81	0.80	-0.01	-0.01
Jet and kerosene	0.08	0.09	0.12	0.10	0.13	0.17	0.17	0.15	0.16	0.00	0.05
Diesel	0.29	0.29	0.29	0.30	0.25	0.28	0.27	0.28	0.28	0.01	-0.04
Other gasoil	0.28	0.28	0.28	0.30	0.27	0.26	0.26	0.27	0.26	-0.01	-0.01
Residual fuel oil	0.03	0.03	0.03	0.04	0.03	0.03	0.02	0.03	0.04	0.01	0.02
Other products	0.28	0.31	0.35	0.29	0.30	0.33	0.31	0.34	0.24	-0.10	-0.16
Total	2.17	2.26	2.34	2.24	2.21	2.38	2.35	2.29	2.10	-0.19	-0.26

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)

	2021	2022	2023	3Q22	4Q22	1Q23	2Q23	3Q23	Oct 22	Nov 22	Dec 22
OPEC											
Crude Oil											
Saudi Arabia	9.15	10.56		10.93	10.62				10.90	10.48	10.48
Iran	2.42	2.55		2.54	2.68				2.59	2.72	2.72
Iraq	4.03	4.45		4.54	4.50				4.60	4.46	4.45
UAE	2.76	3.28		3.41	3.33				3.46	3.29	3.23
Kuwait	2.42	2.70		2.80	2.71				2.80	2.68	2.66
Angola	1.12	1.14		1.15	1.08				1.05	1.09	1.09
Nigeria	1.31	1.15		1.00	1.13				1.01	1.15	1.23
Libya	1.15	0.99		0.96	1.17				1.18	1.15	1.17
Algeria	0.91	1.01		1.02	1.02				1.04	1.02	1.01
Congo	0.27	0.26		0.26	0.26				0.26	0.26	0.25
Gabon	0.18	0.19		0.20	0.18				0.17	0.19	0.18
Equatorial Guinea	0.10	0.08		0.09	0.06				0.06	0.06	0.06
Venezuela	0.61	0.70		0.66	0.68				0.71	0.68	0.66
Total Crude Oil	26.43	29.06		29.55	29.42				29.83	29.23	29.19
of which Neutral Zone ¹	0.25	0.28		0.31	0.27				0.32	0.24	0.24
Total NGLs²	5.12	5.33	5.39	5.38	5.34	5.37	5.38	5.39	5.38	5.33	5.29
Total OPEC³	31.55	34.39		34.93	34.75				35.21	34.56	34.48
NON-OPEC⁴											
OECD											
Americas											
United States	16.83	17.99	18.96	18.35	18.56	18.54	18.93	19.10	18.70	18.79	18.21
Mexico	1.95	2.01	2.09	2.02	2.04	2.07	2.09	2.11	2.02	2.03	2.06
Canada	5.59	5.75	5.87	5.80	5.90	5.90	5.73	5.86	5.87	5.96	5.86
Chile	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Europe	3.38	3.16	3.32	3.08	3.21	3.39	3.29	3.25	3.12	3.19	3.32
UK	0.89	0.83	0.82	0.75	0.80	0.85	0.83	0.76	0.77	0.81	0.82
Norway	2.04	1.90	2.06	1.90	1.99	2.11	2.02	2.06	1.96	1.94	2.08
Others	0.45	0.43	0.44	0.42	0.42	0.44	0.44	0.44	0.39	0.44	0.43
Asia Oceania	0.51	0.48	0.47	0.43	0.49	0.47	0.46	0.46	0.49	0.48	0.50
Australia	0.44	0.41	0.41	0.37	0.43	0.40	0.40	0.40	0.42	0.42	0.44
Others	0.07	0.07	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.07
Total OECD	28.28	29.41	30.72	29.69	30.20	30.37	30.52	30.79	30.20	30.46	29.96
NON-OECD											
Former USSR											
Russia	10.87	11.08	9.75	11.07	11.17	10.38	9.61	9.50	11.08	11.24	11.21
Azerbaijan	0.70	0.67	0.67	0.66	0.67	0.68	0.67	0.66	0.67	0.67	0.67
Kazakhstan	1.85	1.82	1.96	1.63	1.91	1.98	1.97	1.90	1.67	2.03	2.03
Others	0.35	0.32	0.31	0.31	0.31	0.32	0.31	0.31	0.31	0.31	0.32
Asia	6.91	6.88	6.81	6.78	6.80	6.88	6.83	6.80	6.78	6.85	6.77
China	4.06	4.18	4.23	4.12	4.13	4.27	4.24	4.23	4.14	4.14	4.10
Malaysia	0.57	0.56	0.52	0.54	0.57	0.52	0.52	0.52	0.56	0.58	0.56
India	0.73	0.70	0.69	0.70	0.68	0.68	0.69	0.70	0.67	0.69	0.69
Indonesia	0.68	0.63	0.60	0.62	0.62	0.61	0.60	0.60	0.63	0.61	0.61
Others	0.88	0.81	0.77	0.79	0.80	0.79	0.78	0.76	0.78	0.82	0.80
Europe	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Americas	5.30	5.64	6.13	5.78	5.87	5.95	6.10	6.19	5.95	5.84	5.83
Brazil	3.00	3.12	3.44	3.18	3.22	3.27	3.42	3.51	3.34	3.19	3.13
Argentina	0.64	0.71	0.77	0.72	0.75	0.76	0.76	0.77	0.74	0.75	0.75
Colombia	0.74	0.76	0.76	0.76	0.77	0.77	0.77	0.76	0.77	0.77	0.77
Ecuador	0.48	0.47	0.47	0.47	0.46	0.47	0.47	0.47	0.44	0.47	0.48
Others	0.43	0.58	0.68	0.66	0.67	0.68	0.67	0.67	0.66	0.67	0.69
Middle East	3.08	3.20	3.22	3.25	3.21	3.22	3.22	3.22	3.25	3.17	3.22
Oman	0.98	1.07	1.07	1.10	1.08	1.07	1.07	1.07	1.10	1.07	1.07
Qatar	1.82	1.84	1.85	1.84	1.84	1.85	1.85	1.85	1.84	1.84	1.84
Others	0.28	0.29	0.30	0.31	0.29	0.30	0.30	0.30	0.31	0.26	0.30
Africa	1.34	1.31	1.28	1.31	1.31	1.28	1.28	1.27	1.33	1.30	1.30
Egypt	0.59	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Others	0.74	0.71	0.68	0.71	0.71	0.69	0.68	0.67	0.73	0.70	0.70
Total Non-OECD	30.51	31.03	30.23	30.89	31.36	30.79	30.11	29.96	31.13	31.51	31.44
Processing gains ⁵	2.25	2.31	2.35	2.32	2.34	2.31	2.34	2.37	2.30	2.35	2.38
Global biofuels	2.79	2.95	3.13	3.29	2.94	2.64	3.23	3.50	3.07	2.99	2.74
TOTAL NON-OPEC	63.83	65.70	66.42	66.19	66.84	66.11	66.21	66.62	66.70	67.30	66.52
TOTAL SUPPLY	95.38	100.09		101.12	101.59				101.91	101.87	101.01

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)

	2021	2022	2023	3Q22	4Q22	1Q23	2Q23	3Q23	Oct 22	Nov 22	Dec 22
United States											
Alaska	437	439	427	425	447	441	424	410	435	452	454
California	380	343	329	340	337	334	331	327	339	337	336
Texas	4766	5036	5271	5084	5186	5212	5256	5287	5196	5237	5126
Federal Gulf of Mexico ²	1707	1748	1848	1798	1819	1821	1862	1845	1842	1817	1798
Other US Lower 48	3963	4306	4586	4403	4474	4499	4601	4615	4569	4531	4322
NGLs ³	5425	5927	6247	6090	6081	6011	6217	6353	6118	6191	5938
Other Hydrocarbons	149	196	250	207	220	220	243	260	200	220	240
Total	16827	17995	18958	18346	18564	18538	18934	19098	18700	18785	18214
Canada											
Alberta Light/Medium/Heavy	436	492	513	496	504	518	515	511	508	504	500
Alberta Bitumen	1921	2005	2055	2107	2102	1981	1949	2140	2150	2037	2117
Saskatchewan	444	457	461	457	467	467	463	458	474	463	465
Other Crude	456	428	445	416	408	435	473	466	391	417	418
NGLs	975	1025	1021	1006	1025	1045	1022	1003	1076	1005	993
Other Upgraders	180	181	185	177	187	195	176	172	170	206	184
Synthetic Crudes	1181	1163	1191	1139	1202	1255	1134	1107	1097	1329	1185
Total	5593	5751	5870	5799	5896	5896	5732	5859	5866	5961	5862
Mexico											
Crude	1780	1844	1929	1848	1868	1902	1930	1949	1854	1860	1890
NGLs	170	162	158	164	164	162	159	157	162	166	165
Total	1954	2011	2091	2017	2037	2068	2094	2110	2021	2030	2058
UK											
Brent Fields	25	23	20	15	21	24	23	15	14	26	23
Forties Fields	211	209	186	164	216	212	167	172	218	222	208
Ninian Fields	24	20	24	15	25	25	24	23	20	31	24
Flotta Fields	50	39	32	38	31	32	30	33	30	31	33
Other Fields	512	473	497	458	441	493	525	452	420	436	465
NGLs	67	66	60	61	62	61	60	60	63	61	62
Total	888	831	819	752	796	847	829	755	765	807	816
Norway⁴											
Ekofisk-Ula Area	141	123	126	136	140	136	127	115	139	141	139
Oseberg-Troll Area	211	198	240	166	211	238	239	241	206	192	234
Statfjord-Gullfaks Area	262	247	232	246	247	241	235	229	251	245	244
Haltenbanken Area	284	267	269	271	265	268	266	266	265	262	266
Sleipner-Frigg Area	816	797	994	794	877	988	964	1008	844	846	942
Other Fields	76	82	8	101	67	46	-6	3	73	63	66
NGLs	249	190	195	191	184	191	196	194	180	189	184
Total	2039	1902	2064	1905	1991	2108	2022	2056	1959	1938	2075
Other OECD Europe											
Denmark	66	65	60	62	63	62	60	59	64	65	61
Italy	97	84	93	82	78	93	93	93	64	85	86
Türkiye	66	69	82	72	72	75	79	84	71	72	72
Other	99	80	83	75	88	86	84	82	89	88	86
NGLs	7	6	6	6	6	6	6	6	7	6	6
Non-Conventional Oils	117	121	116	126	113	116	116	116	98	127	116
Total	452	425	439	423	421	437	439	439	394	442	427
Australia											
Gippsland Basin	5	5	4	4	4	4	4	4	4	4	4
Cooper-Eromanga Basin	23	18	17	18	17	17	17	16	18	17	17
Carnarvon Basin	113	112	105	113	111	108	106	104	111	111	110
Other Crude	193	178	177	147	191	170	169	170	186	191	197
NGLs	109	101	102	85	104	103	104	102	104	101	107
Total	444	414	405	367	428	402	399	397	423	424	436
Other OECD Asia Oceania											
New Zealand	18	16	15	15	16	16	15	15	15	16	16
Japan	4	3	3	3	3	3	3	3	3	3	3
NGLs	11	10	8	10	9	9	8	8	10	9	9
Non-Conventional Oils	37	38	36	39	34	36	36	36	34	30	38
Total	71	68	63	67	62	64	63	63	62	58	66
OECD											
Crude Oil	19589	20206	21130	20373	20798	20948	21031	21199	20867	20803	20726
NGLs	7019	7497	7806	7622	7645	7596	7781	7891	7729	7736	7472
Non-Conventional Oils ⁵	1668	1704	1783	1692	1761	1826	1711	1696	1604	1916	1767
Total	28277	29407	30719	29686	30204	30370	30523	30786	30200	30455	29964

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)

	2021	2022	2023	1Q22	2Q22	3Q22	4Q22	1Q23	Oct 22	Nov 22	Dec 22
OPEC+											
Crude Oil											
Algeria	0.91	1.01	1.00	0.99	1.01	1.02	1.02	1.00	1.04	1.02	1.01
Angola	1.12	1.14	1.10	1.16	1.17	1.15	1.08	1.12	1.05	1.09	1.09
Azerbaijan	0.59	0.56	0.54	0.58	0.56	0.55	0.55	0.55	0.55	0.55	0.55
Bahrain	0.17	0.19	0.19	0.18	0.19	0.20	0.19	0.20	0.20	0.15	0.20
Brunei	0.08	0.07	0.07	0.08	0.07	0.07	0.07	0.07	0.05	0.08	0.07
Congo	0.27	0.26	0.27	0.27	0.26	0.26	0.26	0.27	0.26	0.26	0.25
Equatorial Guinea	0.10	0.08	0.08	0.09	0.09	0.09	0.06	0.06	0.06	0.06	0.06
Gabon	0.18	0.19	0.18	0.19	0.18	0.20	0.18	0.18	0.17	0.19	0.18
Iran	2.42	2.55	2.65	2.53	2.43	2.54	2.68	2.65	2.59	2.72	2.72
Iraq	4.03	4.45	4.43	4.29	4.45	4.54	4.50	4.41	4.60	4.46	4.45
Kazakhstan	1.52	1.50	1.61	1.63	1.43	1.35	1.60	1.63	1.45	1.68	1.68
Kuwait	2.42	2.70	2.68	2.61	2.67	2.80	2.71	2.68	2.80	2.68	2.66
Libya	1.15	0.99	1.18	1.08	0.77	0.96	1.17	1.18	1.18	1.15	1.17
Malaysia	0.42	0.40	0.36	0.41	0.39	0.38	0.40	0.36	0.39	0.41	0.39
Mexico	1.66	1.63	1.66	1.64	1.62	1.62	1.63	1.65	1.62	1.61	1.65
Nigeria	1.31	1.15	1.24	1.30	1.15	1.00	1.13	1.25	1.01	1.15	1.23
Oman	0.75	0.85	0.84	0.82	0.84	0.88	0.85	0.84	0.88	0.84	0.84
Russia	9.62	9.74	8.31	10.04	9.40	9.78	9.75	8.94	9.69	9.80	9.77
Saudi Arabia	9.15	10.56	10.48	10.20	10.49	10.93	10.62	10.48	10.90	10.48	10.48
South Sudan	0.15	0.14	0.12	0.14	0.14	0.15	0.14	0.12	0.17	0.14	0.13
Sudan	0.06	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
UAE	2.76	3.28	3.24	3.09	3.29	3.41	3.33	3.24	3.46	3.29	3.23
Venezuela	0.61	0.70	0.79	0.72	0.74	0.66	0.68	0.74	0.71	0.68	0.66
Total Crude Oil	41.47	44.19	43.07	44.10	43.41	44.59	44.66	43.68	44.90	44.54	44.53
of which Neutral Zone	0.25	0.19		0.27	0.28	0.31	0.27	0.24	0.32	0.24	0.24
Total NGLs	7.50	7.91	8.16	7.86	7.88	7.86	8.01	8.13	7.91	8.10	8.04
TOTAL OPEC+	48.97	52.1	51.2	52.0	51.3	52.5	52.7	51.8	52.8	52.6	52.6
NON-OPEC+											
OECD											
Americas²	22.43	23.76	24.84	22.99	23.39	24.16	24.47	24.44	24.58	24.76	24.09
United States	16.83	17.99	18.96	17.25	17.80	18.35	18.56	18.54	18.70	18.79	18.21
Canada	5.59	5.75	5.87	5.73	5.58	5.80	5.90	5.90	5.87	5.96	5.86
Chile	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Europe	3.38	3.16	3.32	3.32	3.03	3.08	3.21	3.39	3.12	3.19	3.32
UK	0.89	0.83	0.82	0.92	0.86	0.75	0.80	0.85	0.77	0.81	0.82
Norway	2.04	1.90	2.06	1.97	1.74	1.90	1.99	2.11	1.96	1.94	2.08
Others	0.45	0.43	0.44	0.43	0.43	0.42	0.42	0.44	0.39	0.44	0.43
Asia Oceania	0.51	0.48	0.47	0.49	0.51	0.43	0.49	0.47	0.49	0.48	0.50
Australia	0.44	0.41	0.41	0.42	0.45	0.37	0.43	0.40	0.42	0.42	0.44
Others	0.07	0.07	0.06	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.07
Total OECD (non-OPEC+)	26.32	27.40	28.63	26.80	26.93	27.67	28.17	28.30	28.18	28.42	27.91
Non-OECD											
FSU	0.35	0.32	0.31	0.34	0.30	0.31	0.31	0.32	0.31	0.31	0.32
Asia	6.24	6.23	6.19	6.32	6.30	6.15	6.14	6.26	6.15	6.17	6.11
China	4.06	4.18	4.23	4.23	4.23	4.12	4.13	4.27	4.14	4.14	4.10
India	0.73	0.70	0.69	0.72	0.71	0.70	0.68	0.68	0.67	0.69	0.69
Indonesia	0.68	0.63	0.60	0.65	0.63	0.62	0.62	0.61	0.63	0.61	0.61
Others	0.77	0.72	0.67	0.73	0.72	0.71	0.71	0.69	0.71	0.72	0.71
Europe	0.11	0.11	0.10	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10
Americas	5.30	5.64	6.13	5.44	5.47	5.78	5.87	5.95	5.95	5.84	5.83
Brazil	3.00	3.12	3.44	3.09	3.00	3.18	3.22	3.27	3.34	3.19	3.13
Argentina	0.64	0.71	0.77	0.69	0.70	0.72	0.75	0.76	0.74	0.75	0.75
Colombia	0.74	0.76	0.76	0.75	0.76	0.76	0.77	0.77	0.77	0.77	0.77
Ecuador	0.48	0.47	0.47	0.47	0.45	0.47	0.46	0.47	0.44	0.47	0.48
Others	0.43	0.58	0.68	0.44	0.55	0.66	0.67	0.68	0.66	0.67	0.69
Middle East	1.92	1.93	1.95	1.91	1.94	1.94	1.94	1.95	1.94	1.94	1.94
Qatar	1.82	1.84	1.85	1.82	1.84	1.84	1.84	1.85	1.84	1.84	1.84
Others	0.10	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Africa	1.12	1.11	1.10	1.11	1.11	1.11	1.11	1.10	1.10	1.10	1.12
Egypt	0.59	0.60	0.60	0.59	0.61	0.60	0.60	0.60	0.60	0.60	0.60
Others	0.53	0.51	0.50	0.52	0.50	0.51	0.51	0.51	0.50	0.50	0.52
Total non-OECD (non-OPEC+)	15.04	15.33	15.78	15.24	15.22	15.39	15.48	15.67	15.56	15.47	15.41
Processing gains	2.25	2.31	2.35	2.28	2.29	2.32	2.34	2.31	2.30	2.35	2.38
Global biofuels	2.79	2.95	3.13	2.50	3.07	3.29	2.94	2.64	3.07	2.99	2.74
TOTAL NON-OPEC+	46.41	47.99	49.88	46.82	47.52	48.67	48.92	48.93	49.11	49.23	48.44
TOTAL SUPPLY	95.38	100.09	101.11	98.79	98.81	101.12	101.59	100.74	101.91	101.87	101.01

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

Table 4
OECD STOCKS AND QUARTERLY STOCK CHANGES

	RECENT MONTHLY STOCKS ²					PRIOR YEARS' STOCKS ²			STOCK CHANGES			
	in Million Barrels					in Million Barrels			in mb/d			
	Jul2022	Aug2022	Sep2022	Oct2022	Nov2022 ³	Nov2019	Nov2020	Nov2021	4Q2021	1Q2022	2Q2022	3Q2022
OECD INDUSTRY-CONTROLLED STOCKS¹												
OECD Americas												
Crude	576.5	572.2	578.9	602.8	578.3	581.2	656.7	604.6	0.01	-0.23	0.03	0.09
Motor Gasoline	251.9	242.5	236.2	238.7	250.9	259.7	271.2	247.4	0.07	0.08	-0.22	-0.11
Middle Distillate	181.0	180.2	174.2	175.1	187.5	196.5	225.3	196.6	-0.09	-0.20	0.01	-0.05
Residual Fuel Oil	35.0	35.1	34.4	36.0	34.7	37.8	38.0	35.2	-0.02	0.03	0.01	-0.01
Total Products ⁴	729.9	735.1	732.3	735.0	753.2	778.5	827.4	745.1	-0.46	-0.48	0.23	0.32
Total⁵	1470.2	1469.6	1468.8	1497.5	1490.3	1523.6	1658.3	1509.5	-0.58	-0.64	0.32	0.35
OECD Europe												
Crude	338.3	328.2	337.2	331.8	336.9	355.9	360.9	313.2	-0.03	0.23	0.18	-0.03
Motor Gasoline	86.9	87.2	87.2	86.3	85.4	90.4	102.0	87.8	0.06	0.06	-0.06	0.01
Middle Distillate	244.5	241.0	235.4	238.9	240.2	270.5	328.2	255.2	-0.31	-0.05	-0.01	-0.03
Residual Fuel Oil	63.6	61.1	66.2	67.0	68.9	65.0	66.1	60.8	-0.04	0.04	0.02	0.02
Total Products ⁴	506.1	501.3	500.2	499.1	501.9	542.9	611.8	501.2	-0.31	0.06	0.09	0.03
Total⁵	921.4	906.1	918.4	915.6	922.9	979.8	1056.6	887.6	-0.37	0.36	0.24	0.08
OECD Asia Oceania												
Crude	104.9	119.2	127.6	121.1	120.7	153.0	155.5	108.8	-0.11	0.07	-0.12	0.36
Motor Gasoline	23.9	23.5	23.5	24.7	26.2	25.7	25.5	24.5	-0.03	0.02	0.00	-0.02
Middle Distillate	63.6	61.6	62.4	68.8	72.3	75.6	71.4	70.2	-0.09	-0.09	0.06	0.01
Residual Fuel Oil	15.7	15.4	16.3	18.6	19.5	19.1	16.1	16.0	-0.02	-0.02	0.01	0.00
Total Products ⁴	167.7	164.9	168.2	182.1	184.7	181.2	178.3	174.8	-0.23	-0.05	0.08	0.03
Total⁵	330.0	344.4	358.5	364.9	365.8	399.2	395.8	344.8	-0.34	-0.09	0.02	0.44
Total OECD												
Crude	1019.7	1019.5	1043.6	1055.6	1035.9	1090.0	1173.0	1026.6	-0.13	0.07	0.09	0.42
Motor Gasoline	362.8	353.2	346.8	349.6	362.5	375.9	398.8	359.6	0.10	0.16	-0.28	-0.12
Middle Distillate	489.1	482.8	472.0	482.7	500.0	542.6	624.9	522.0	-0.49	-0.33	0.06	-0.07
Residual Fuel Oil	114.2	111.6	116.9	121.6	123.1	121.9	120.3	112.0	-0.08	0.05	0.04	0.01
Total Products ⁴	1403.7	1401.2	1400.7	1416.2	1439.8	1502.6	1617.4	1421.1	-1.00	-0.47	0.40	0.37
Total⁵	2721.6	2720.1	2745.7	2777.9	2778.9	2902.6	3110.7	2741.8	-1.29	-0.37	0.58	0.87
OECD GOVERNMENT-CONTROLLED STOCKS⁶												
OECD Americas												
Crude	468.0	445.1	416.4	398.6	388.1	635.0	638.1	601.5	-0.26	-0.31	-0.80	-0.84
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	194.6	195.1	194.0	193.4	195.5	209.3	207.1	202.4	-0.05	-0.02	-0.04	-0.01
Products	255.3	254.3	252.3	251.7	253.1	273.7	282.0	275.1	-0.01	-0.09	-0.14	-0.04
OECD Asia Oceania												
Crude	357.2	350.1	342.3	343.7	346.4	377.4	374.5	370.5	0.01	-0.03	-0.11	-0.17
Products	37.3	37.3	37.3	36.0	35.9	38.9	39.1	38.9	0.00	-0.01	-0.01	0.00
Total OECD												
Crude	1019.7	990.3	952.7	935.6	930.0	1221.6	1219.7	1174.3	-0.31	-0.35	-0.94	-1.02
Products	294.7	293.6	291.6	289.7	291.0	314.6	323.0	316.1	-0.01	-0.11	-0.14	-0.04
Total⁵	1315.5	1285.0	1245.4	1226.2	1222.3	1537.9	1544.7	1492.3	-0.31	-0.46	-1.08	-1.06

¹ Stocks are primary national territory stocks on land (excluding utility stocks and including pipeline and entrepot 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 barrels² and days³)

	End September 2021		End December 2021		End March 2022		End June 2022		End September 2022 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	204.1	87	201.7	90	185.7	84	187.9	79	184.3	-
Chile	10.3	27	10.8	28	10.3	27	9.9	26	10.6	-
Mexico	36.0	22	36.7	22	35.7	20	36.6	20	36.7	-
United States ⁴	1870.7	91	1794.3	89	1721.7	85	1675.0	82	1633.5	-
Total⁴	2143.2	86	2065.6	84	1975.5	80	1931.5	77	1887.2	76
OECD Asia Oceania										
Australia	40.9	39	37.6	36	40.0	37	38.3	35	35.8	-
Israel	-	-	-	-	-	-	-	-	-	-
Japan	525.1	144	519.4	140	500.5	165	502.8	158	522.4	-
Korea	189.3	70	168.8	62	174.6	70	165.9	65	174.5	-
New Zealand	8.3	53	6.8	44	6.2	43	6.2	40	5.5	-
Total	763.5	98	732.6	93	721.4	103	713.3	99	738.1	97
OECD Europe⁵										
Austria	21.1	81	20.9	85	24.1	98	20.0	80	17.4	-
Belgium	47.1	71	43.3	68	42.9	74	44.8	75	45.4	-
Czech Republic	21.7	97	22.5	107	22.2	100	22.3	101	22.6	-
Denmark	24.3	164	22.7	161	20.4	136	21.8	142	21.0	-
Estonia	2.7	90	2.5	90	2.6	77	2.3	75	2.3	-
Finland	37.3	192	36.2	189	38.4	209	41.0	205	40.4	-
France	157.3	97	151.6	98	148.8	99	144.6	89	142.3	-
Germany	270.1	116	268.9	125	268.9	125	267.8	118	266.4	-
Greece	26.4	90	29.4	107	29.2	104	29.8	88	30.1	-
Hungary	25.9	134	27.0	143	28.0	152	29.2	156	28.6	-
Ireland	10.6	67	10.8	70	10.6	72	10.3	69	10.3	-
Italy	118.0	94	112.5	96	116.3	94	119.3	94	123.3	-
Latvia	2.7	75	2.6	76	2.8	79	2.8	68	2.8	-
Lithuania	9.1	132	8.2	137	9.8	161	8.4	117	8.2	-
Luxembourg	0.5	9	0.6	11	0.5	11	0.7	14	0.6	-
Netherlands	125.8	151	109.5	130	123.9	139	127.1	144	125.2	-
Norway	20.2	85	21.4	112	26.3	171	25.5	106	26.0	-
Poland	78.1	104	80.6	112	82.8	113	82.4	112	82.1	-
Portugal	19.0	83	20.9	89	21.3	84	22.5	85	21.1	-
Slovak Republic	12.2	127	12.2	134	12.8	135	13.2	141	13.5	-
Slovenia	4.9	99	5.2	108	4.6	86	4.8	92	4.5	-
Spain	111.6	89	104.9	84	106.6	81	107.9	83	111.5	-
Sweden	38.3	120	30.1	99	28.2	104	30.2	94	32.7	-
Switzerland	33.4	156	31.5	168	30.2	173	29.9	150	28.2	-
Republic of Türkiye	85.6	82	87.4	96	87.6	86	87.8	80	86.6	-
United Kingdom	71.6	53	72.8	55	68.6	49	67.3	48	72.4	-
Total	1375.7	99	1336.2	101	1358.3	101	1363.9	97	1365.8	101
Total OECD	4282.4	92	4134.4	90	4055.3	90	4008.7	86	3991.1	87
DAYS OF IEA Net Imports⁶	160	-	156	-	156	-	243	-	241	-

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 2022 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			Millions of Barrels	Days of Fwd. Demand ²
3Q2019	4488	1544	2944	94	32	62	
4Q2019	4429	1535	2894	98	34	64	
1Q2020	4518	1537	2981	121	41	80	
2Q2020	4778	1561	3217	113	37	76	
3Q2020	4732	1551	3181	110	36	74	
4Q2020	4578	1541	3037	108	36	72	
1Q2021	4472	1546	2926	102	35	67	
2Q2021	4407	1524	2884	97	33	63	
3Q2021	4282	1513	2770	92	32	59	
4Q2021	4134	1484	2651	90	32	58	
1Q2022	4055	1442	2613	90	32	58	
2Q2022	4009	1343	2666	86	29	57	
3Q2022	3991	1245	2746	87	27	60	

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 3Q2022 (where latest forecasts are used).

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

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier	
											Oct 21	change
Saudi Light & Extra Light												
Americas	0.20	0.26	0.34	0.43	0.44	0.46	0.52	0.68	0.48	0.35	0.36	-0.01
Europe	0.68	0.59	0.48	0.55	0.53	0.68	0.60	0.67	0.57	0.57	0.59	-0.02
Asia Oceania	1.42	1.39	1.30	1.48	1.57	1.36	1.53	1.74	1.42	1.48	1.25	0.23
Saudi Medium												
Americas	0.12	0.14	0.01	-	-	-	-	-	-	-	-	-
Europe	0.02	0.02	0.01	-	0.00	0.04	0.03	0.02	0.02	0.00	-	-
Asia Oceania	0.23	0.25	0.21	0.26	0.20	0.26	0.26	0.33	0.20	0.17	0.26	-0.09
Canada Heavy												
Americas	2.27	2.39	2.59	2.82	2.69	2.54	2.58	2.38	2.71	2.72	2.65	0.07
Europe	0.04	0.03	0.03	0.03	0.03	0.09	0.08	0.03	0.09	0.11	0.02	0.09
Asia Oceania	0.00	0.00	0.02	0.00	0.01	0.01	0.01	-	0.03	-	-	-
Iraqi Basrah Light²												
Americas	0.31	0.11	0.08	0.17	0.16	0.30	0.25	0.16	0.33	0.19	0.13	0.06
Europe	0.85	0.58	0.62	0.71	0.61	0.64	0.82	0.82	0.80	0.64	0.75	-0.11
Asia Oceania	0.37	0.22	0.17	0.19	0.17	0.20	0.26	0.22	0.29	0.22	0.13	0.09
Kuwait Blend												
Americas	-	-	-	-	-	-	-	-	-	-	-	-
Europe	0.11	0.04	-	-	-	-	-	-	-	-	-	-
Asia Oceania	0.61	0.55	0.48	0.52	0.58	0.42	0.47	0.50	0.39	0.41	0.54	-0.12
Iranian Light												
Americas	-	-	-	-	-	-	-	-	-	-	-	-
Europe	0.00	-	-	-	-	-	-	-	-	-	-	-
Asia Oceania	0.00	-	-	-	-	-	-	-	-	-	-	-
Iranian Heavy³												
Americas	-	-	-	-	-	-	-	-	-	-	-	-
Europe	0.04	-	-	-	-	-	-	-	-	-	-	-
Asia Oceania	0.14	-	-	-	-	-	-	-	-	-	-	-
BFOE												
Americas	0.00	-	0.00	-	-	-	-	-	-	-	-	-
Europe	0.37	0.42	0.36	0.40	0.38	0.44	0.44	0.34	0.37	0.34	0.36	-0.02
Asia Oceania	0.01	0.03	0.05	0.05	0.02	0.06	0.02	-	0.07	-	0.10	-
Kazakhstan												
Americas	-	-	0.01	-	-	-	-	-	-	-	-	-
Europe	0.76	0.74	0.69	0.68	0.86	0.69	0.67	0.69	0.57	0.55	0.59	-0.04
Asia Oceania	0.18	0.07	0.09	0.10	0.14	0.16	0.09	0.13	0.04	0.11	0.10	0.01
Venezuelan 22 API and heavier												
Americas	0.05	-	-	-	-	-	-	-	-	-	-	-
Europe	0.09	0.04	-	-	-	-	0.04	-	-	-	-	-
Asia Oceania	-	-	-	-	-	-	-	-	-	-	-	-
Mexican Maya												
Americas	0.51	0.48	0.40	0.32	0.36	0.47	0.40	0.39	0.40	0.46	0.30	0.16
Europe	0.19	0.16	0.14	0.12	0.11	0.07	0.09	0.10	0.07	0.10	0.10	0.00
Asia Oceania	0.13	0.12	0.14	0.13	0.08	0.05	0.04	0.03	0.03	0.10	0.15	-0.06
Russian Urals												
Americas	0.01	-	-	-	-	-	-	-	-	-	-	-
Europe	1.37	1.12	1.05	1.15	1.08	0.79	0.71	0.65	0.75	0.50	1.22	-0.72
Asia Oceania	-	-	0.01	-	-	-	-	-	-	-	-	-
Cabinda and Other Angola												
North America	0.01	0.01	-	-	-	-	0.00	0.01	-	-	-	-
Europe	0.15	0.12	0.03	0.04	0.06	0.26	0.29	0.31	0.20	0.28	0.09	0.19
Pacific	0.00	-	-	-	-	-	0.01	-	0.02	0.03	-	-
Nigerian Light⁴												
Americas	0.03	-	0.02	-	-	-	0.01	0.03	-	-	-	-
Europe	0.51	0.49	0.41	0.52	0.47	0.43	0.29	0.24	0.29	0.23	0.60	-0.37
Asia Oceania	0.02	0.02	0.01	0.01	-	-	0.02	0.03	0.02	0.02	0.02	0.00
Libya Light and Medium												
Americas	0.00	-	0.02	-	-	-	-	-	-	-	-	-
Europe	0.67	0.19	0.80	0.78	0.66	0.56	0.52	0.57	0.76	0.86	0.74	0.12
Asia Oceania	0.03	0.01	0.02	0.03	0.02	0.02	0.01	-	0.02	-	0.01	-

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)

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier	
											Oct 21	% change
Crude Oil												
Americas	2722	1896	2077	2128	2096	2075	2161	2132	2007	1918	2064	-7%
Europe	9872	8349	8516	9137	8887	9196	9297	8922	9437	8625	9331	-8%
Asia Oceania	6541	5579	5519	5876	6101	5363	6197	6446	6019	5335	5802	-8%
Total OECD	19136	15823	16113	17141	17084	16633	17655	17501	17463	15878	17197	-8%
LPG												
Americas	26	28	21	25	39	21	24	26	25	10	20	-51%
Europe	434	422	404	424	470	503	497	479	483	550	336	64%
Asia Oceania	583	559	563	528	681	569	533	570	519	490	517	-5%
Total OECD	1042	1009	988	977	1189	1093	1054	1075	1027	1051	873	20%
Naphtha												
Americas	5	7	8	8	6	6	7	6	6	2	4	-39%
Europe	347	409	512	563	399	409	225	211	152	231	588	-61%
Asia Oceania	990	1003	1146	1199	1078	971	1063	1071	985	1089	1166	-7%
Total OECD	1342	1419	1667	1770	1482	1386	1295	1288	1143	1322	1757	-25%
Gasoline³												
Americas	812	576	805	574	485	890	733	749	670	579	662	-13%
Europe	112	109	106	89	102	125	108	111	102	82	68	20%
Asia Oceania	110	116	146	129	157	175	173	169	216	167	132	26%
Total OECD	1034	801	1057	793	745	1190	1014	1029	988	828	863	-4%
Jet & Kerosene												
Americas	174	159	165	179	120	123	115	96	87	163	238	-32%
Europe	520	337	334	411	306	429	538	511	575	597	382	56%
Asia Oceania	72	60	71	82	71	76	69	68	70	122	44	181%
Total OECD	766	556	570	673	497	629	722	675	732	882	664	33%
Gasoi/Diesel												
Americas	118	134	197	222	158	76	41	49	26	45	267	-83%
Europe	1300	1192	1192	1262	1093	1145	1152	1170	1240	1521	1279	19%
Asia Oceania	261	328	352	377	299	352	314	299	351	342	354	-4%
Total OECD	1679	1654	1740	1862	1551	1572	1507	1518	1617	1908	1900	0%
Heavy Fuel Oil												
Americas	116	143	102	104	139	135	82	102	84	118	129	-8%
Europe	223	295	374	375	302	253	244	221	260	277	216	28%
Asia Oceania	101	88	119	129	117	96	68	84	70	91	101	-10%
Total OECD	440	526	594	607	559	484	393	407	415	487	446	9%
Other Products												
Americas	714	591	580	509	496	534	502	475	424	496	536	-7%
Europe	865	574	575	689	667	557	622	505	670	581	742	-22%
Asia Oceania	261	207	233	241	221	182	218	209	267	225	256	-12%
Total OECD	1840	1372	1389	1440	1384	1274	1342	1189	1361	1302	1534	-15%
Total Products												
Americas	1965	1639	1878	1621	1443	1786	1502	1502	1322	1413	1856	-24%
Europe	3800	3339	3497	3814	3339	3421	3385	3208	3481	3840	3612	6%
Asia Oceania	2378	2360	2630	2686	2624	2420	2438	2471	2480	2526	2570	-2%
Total OECD	8144	7338	8005	8121	7407	7627	7326	7181	7284	7779	8037	-3%
Total Oil												
Americas	4688	3534	3955	3749	3540	3861	3663	3635	3329	3332	3920	-15%
Europe	13672	11688	12013	12951	12226	12617	12683	12130	12918	12465	12943	-4%
Asia Oceania	8919	7939	8150	8562	8725	7783	8635	8917	8499	7860	8372	-6%
Total OECD	27279	23161	24118	25262	24491	24260	24981	24682	24747	23657	25235	-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#>.

2 Excludes intra-regional trade.

3 Includes additives.

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

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier	
											Oct 21	% change
Crude Oil												
Americas	2573	1835	1982	2027	2033	2012	2093	2087	1937	1844	1939	-5%
Europe	8913	7115	7264	7832	7551	7681	7617	7099	7873	7033	8133	-14%
Asia Oceania	5914	5051	4910	5312	5480	4849	5659	5878	5524	4662	5150	-9%
Total OECD	17399	14002	14156	15171	15063	14542	15369	15064	15334	13539	15222	-11%
LPG												
Americas	23	22	20	25	37	21	24	26	25	10	20	-51%
Europe	303	252	242	251	253	249	236	230	264	279	229	22%
Asia Oceania	74	58	47	33	90	53	55	81	41	47	33	40%
Total OECD	400	331	309	309	379	323	315	337	331	335	282	19%
Naphtha												
Americas	2	1	4	5	3	2	2	4	1	0	2	-99%
Europe	320	390	425	485	338	332	224	210	152	228	486	-53%
Asia Oceania	895	832	975	1073	942	929	953	955	872	976	1024	-5%
Total OECD	1217	1223	1404	1563	1283	1263	1179	1168	1024	1203	1512	-20%
Gasoline³												
Americas	304	195	248	176	111	233	214	247	162	104	214	-51%
Europe	108	104	100	80	84	103	90	97	86	68	65	5%
Asia Oceania	84	98	141	129	157	174	173	169	216	167	132	26%
Total OECD	496	397	489	385	352	511	477	513	464	339	412	-18%
Jet & Kerosene												
Americas	41	55	63	93	43	33	25	17	24	104	110	-6%
Europe	464	297	298	362	303	381	464	440	463	455	347	31%
Asia Oceania	72	60	71	82	71	76	69	68	70	122	44	181%
Total OECD	576	413	433	538	416	489	558	526	558	681	501	36%
Gasoi/Diesel												
Americas	86	103	134	146	87	26	12	20	7	4	161	-97%
Europe	1126	1062	1109	1186	1026	1062	1037	1043	1087	1358	1200	13%
Asia Oceania	260	323	352	377	299	352	314	299	351	342	354	-4%
Total OECD	1472	1488	1595	1709	1412	1439	1364	1362	1446	1703	1716	-1%
Heavy Fuel Oil												
Americas	102	110	86	77	109	101	56	81	36	92	95	-3%
Europe	202	279	347	350	282	239	215	195	230	261	170	53%
Asia Oceania	100	88	119	129	117	96	68	84	70	91	101	-10%
Total OECD	404	477	552	555	508	436	339	361	337	444	366	21%
Other Products												
Americas	543	514	530	463	455	471	397	355	367	385	507	-24%
Europe	629	352	398	498	481	379	433	319	451	421	554	-24%
Asia Oceania	177	130	155	150	148	114	141	134	179	135	171	-21%
Total OECD	1350	996	1083	1111	1083	964	971	808	997	941	1231	-24%
Total Products												
Americas	1102	1000	1085	985	844	887	730	751	623	699	1110	-37%
Europe	3152	2735	2920	3211	2767	2745	2701	2533	2734	3069	3050	1%
Asia Oceania	1662	1590	1860	1974	1824	1792	1773	1790	1800	1879	1860	1%
Total OECD	5915	5325	5864	6169	5434	5424	5203	5074	5156	5647	6020	-6%
Total Oil												
Americas	3675	2835	3067	3012	2876	2900	2824	2838	2560	2543	3049	-17%
Europe	12064	9850	10183	11043	10318	10425	10317	9632	10607	10101	11183	-10%
Asia Oceania	7576	6641	6769	7286	7304	6642	7431	7668	7324	6541	7009	-7%
Total OECD	23315	19327	20020	21341	20498	19966	20572	20138	20490	19185	21242	-10%

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)

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier	
											Oct 21	% change
Crude Oil												
Americas	149	60	95	101	64	62	68	45	70	74	125	-41%
Europe	959	1234	1252	1305	1336	1515	1680	1823	1564	1593	1198	33%
Asia Oceania	628	527	610	563	621	514	538	569	495	673	652	3%
Total OECD	1736	1821	1957	1969	2021	2091	2286	2437	2129	2340	1975	18%
LPG												
Americas	3	6	1	0	2	0	0	0	0	0	0	-100%
Europe	131	171	162	173	217	254	261	249	218	271	108	152%
Asia Oceania	508	501	516	495	591	517	478	489	478	444	483	-8%
Total OECD	642	678	679	669	810	771	739	738	697	715	591	21%
Naphtha												
Americas	3	6	4	2	2	4	4	2	5	2	1	60%
Europe	27	20	87	79	61	77	1	1	0	3	103	-97%
Asia Oceania	96	170	172	126	136	42	110	117	114	113	141	-20%
Total OECD	125	196	263	207	200	123	115	120	119	118	245	-52%
Gasoline³												
Americas	508	382	557	399	375	656	518	502	508	475	448	6%
Europe	4	5	6	9	18	22	18	15	16	14	3	309%
Asia Oceania	26	18	5	0	0	0	0	0	0	0	0	-17%
Total OECD	538	404	567	408	393	679	536	517	524	489	451	8%
Jet & Kerosene												
Americas	133	103	102	86	78	90	90	79	63	59	128	-54%
Europe	56	40	35	49	3	48	74	71	112	142	35	305%
Asia Oceania	0	0	0	0	0	1	0	0	0	0	0	na
Total OECD	190	144	138	135	81	139	164	150	175	201	163	23%
Gasoi/Diesel												
Americas	31	31	63	76	71	50	29	29	19	41	106	-61%
Europe	174	131	82	77	67	83	114	128	152	163	78	108%
Asia Oceania	1	4	0	0	0	0	0	0	0	0	0	-100%
Total OECD	206	166	146	153	138	133	143	156	171	204	184	11%
Heavy Fuel Oil												
Americas	14	33	16	27	31	34	25	20	48	26	34	-23%
Europe	21	16	26	25	20	14	28	26	30	17	46	-64%
Asia Oceania	1	0	0	0	0	0	0	0	0	0	0	na
Total OECD	36	49	42	52	50	48	53	46	77	43	80	-47%
Other Products												
Americas	171	78	50	47	41	64	105	120	57	111	29	285%
Europe	236	222	178	191	187	178	189	186	219	161	188	-15%
Asia Oceania	83	77	78	91	73	69	77	74	88	90	86	5%
Total OECD	491	377	306	329	301	310	371	381	364	361	303	19%
Total Products												
Americas	864	639	793	636	600	899	772	751	700	714	746	-4%
Europe	649	604	577	603	572	676	685	675	748	771	561	37%
Asia Oceania	716	770	771	713	801	628	665	680	680	647	711	-9%
Total OECD	2228	2013	2141	1952	1973	2203	2122	2107	2127	2132	2018	6%
Total Oil												
Americas	1013	699	888	737	663	961	840	796	770	788	870	-9%
Europe	1608	1838	1829	1908	1908	2191	2365	2498	2312	2364	1760	34%
Asia Oceania	1343	1297	1381	1276	1422	1141	1203	1249	1175	1320	1363	-3%
Total OECD	3964	3834	4098	3921	3993	4294	4408	4544	4256	4472	3993	12%

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

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier Oct 21	change
OECD Americas												
Venezuela	81	-	-	-	-	-	-	-	-	-	-	-
Other Central & South America	865	745	719	731	780	802	917	901	952	731	674	57
North Sea	148	59	92	101	64	62	60	45	70	74	125	-51
Other OECD Europe	2	1	3	-	-	-	-	-	-	-	-	-
Non-OECD Europe	-	-	-	-	-	-	-	-	-	-	-	-
Former Soviet Union	192	91	229	185	103	27	25	24	-	52	213	-162
Saudi Arabia	621	588	427	520	571	569	487	475	462	477	385	92
Kuwait	45	21	21	20	24	25	14	20	-	41	23	17
Iran	-	-	3	-	6	-	-	-	-	-	-	-
Iraq	331	177	152	192	225	229	277	214	231	195	185	9
Oman	-	-	-	-	-	-	-	-	-	-	-	-
United Arab Emirates	3	5	17	22	10	19	19	24	-	-	33	-
Other Middle East	-	-	-	-	-	-	-	-	-	-	-	-
West Africa ²	267	145	228	180	171	211	201	282	150	137	176	-39
Other Africa	137	45	161	157	144	131	139	129	120	212	216	-4
Asia	32	17	25	22	-	-	21	18	21	-	32	-
Other	0	3	-	-	-	-	-	-	-	-	-	-
Total	2722	1896	2077	2128	2096	2075	2161	2132	2007	1918	2064	-146
of which Non-OECD	2573	1835	1982	2027	2033	2012	2093	2087	1937	1844	1939	-95
OECD Europe												
Canada	60	95	83	55	79	139	125	62	123	188	44	144
Mexico + USA	900	1139	1169	1250	1257	1376	1556	1761	1441	1405	1154	251
Venezuela	106	44	-	-	-	-	35	-	-	-	-	-
Other Central & South America	118	208	219	194	217	402	562	394	627	551	122	429
Non-OECD Europe	14	25	23	23	20	12	12	15	15	13	24	-11
Former Soviet Union	4239	3504	3538	3849	4060	3197	2951	2783	2971	2500	3799	-1299
Saudi Arabia	792	756	518	483	523	779	867	754	1021	799	579	220
Kuwait	97	48	0	0	-	-	-	-	-	-	0	-
Iran	74	6	1	-	-	-	-	-	-	-	-	-
Iraq	1124	814	912	1018	881	1013	1121	1038	1108	918	1099	-181
Oman	-	-	-	-	-	-	-	-	-	-	-	-
United Arab Emirates	2	-	-	-	-	31	86	159	78	61	-	-
Other Middle East	3	8	9	6	-	6	11	-	-	31	18	13
West Africa ²	1140	1074	822	947	807	1169	971	1092	697	885	1001	-116
Other Africa	1180	596	1197	1282	997	1038	980	864	1325	1249	1470	-221
Asia	-	0	0	-	5	-	-	-	-	-	-	-
Other	13	11	1	6	3	8	0	0	-	-	16	-
Total	9863	8329	8493	9113	8850	9170	9277	8922	9406	8600	9326	-725
of which Non-OECD	8913	7115	7264	7832	7551	7681	7617	7099	7873	7033	8133	-1100
OECD Asia Oceania												
Canada	5	1	16	3	9	6	10	-	32	-	-	-
Mexico + USA	613	477	496	463	582	452	486	569	395	648	497	152
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central & South America	48	91	110	97	129	102	140	138	138	86	60	26
North Sea	10	49	98	97	30	56	42	-	69	25	156	-131
Other OECD Europe	-	-	-	-	-	-	-	-	-	-	-	-
Non-OECD Europe	-	-	-	-	-	-	-	-	-	-	-	-
Former Soviet Union	435	300	335	376	405	272	116	133	61	136	435	-299
Saudi Arabia	1878	1867	1766	2020	2029	1862	2040	2371	1886	1944	1729	215
Kuwait	666	584	506	563	624	472	516	568	442	476	570	-94
Iran	137	-	-	-	-	-	-	-	-	-	-	-
Iraq	364	224	167	192	172	204	262	219	295	220	126	94
Oman	59	22	32	22	28	39	68	58	33	30	49	-19
United Arab Emirates	1256	1096	1083	1184	1145	1200	1509	1365	1538	1326	1039	287
Other Middle East	449	387	362	301	442	326	424	455	403	289	313	-25
West Africa ²	56	65	71	79	52	61	88	54	135	90	112	-22
Other Africa	90	42	56	39	42	31	32	34	41	61	33	28
Non-OECD Asia	220	161	175	153	126	130	97	74	77	122	181	-59
Other	254	210	241	280	277	151	367	409	477	-122	496	-618
Total	6541	5577	5515	5869	6093	5363	6197	6446	6019	5332	5796	-464
of which Non-OECD	5914	5051	4910	5312	5480	4849	5659	5878	5524	4662	5150	-488
Total OECD Trade	19126	15801	16085	17111	17039	16608	17635	17501	17432	15850	17185	-1335
of which Non-OECD	17399	14002	14156	15171	15063	14542	15369	15064	15334	13539	15222	-1684

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)

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier	
											Oct 21	change
OECD Americas												
Venezuela	4	-	-	-	-	-	-	-	-	-	-	-
Other Central & South America	83	40	41	51	12	44	61	78	59	12	72	-60
ARA (Belgium Germany Netherlands)	188	149	194	96	126	255	199	175	182	111	97	13
Other Europe	294	213	327	273	222	364	266	272	273	334	299	35
FSU	79	56	83	58	31	3	0	-	0	-	61	-
Saudi Arabia	7	6	24	-	6	62	19	16	22	18	-	-
Algeria	-	4	1	-	-	-	2	1	5	-	-	-
Other Middle East & Africa	14	13	13	4	8	14	22	24	14	17	-	-
Singapore	5	1	4	3	-	-	4	4	9	-	9	-
OECD Asia Oceania	28	21	37	30	27	39	54	55	53	31	52	-21
Non-OECD Asia (excl. Singapore)	112	72	81	60	53	108	107	125	53	57	73	-16
Other	0	-	0	-	-	0	-	-	-	-	-	-
Total²	812	576	805	574	485	890	733	749	670	579	662	-83
of which Non-OECD	304	195	248	176	111	233	214	247	162	104	214	-110
OECD Europe												
OECD Americas	3	3	5	8	17	21	17	15	14	14	3	10
Venezuela	0	0	2	-	2	2	3	3	4	5	-	-
Other Central & South America	3	4	7	5	14	4	14	14	20	6	14	-7
Non-OECD Europe	18	16	10	6	5	6	14	19	21	5	2	3
FSU	54	31	8	2	7	24	3	2	6	2	3	-2
Saudi Arabia	0	8	3	0	0	1	2	5	-	-	0	-
Algeria	0	1	-	-	-	12	7	8	-	10	-	-
Other Middle East & Africa	8	3	5	2	11	9	6	4	7	3	4	-1
Singapore	3	2	0	0	1	2	1	1	1	1	0	1
OECD Asia Oceania	1	1	1	1	1	1	1	-	2	-	0	-
Non-OECD Asia (excl. Singapore)	0	0	3	3	3	2	4	5	4	7	4	3
Other	21	37	62	61	41	41	37	35	23	28	37	-9
Total²	112	107	106	89	102	125	108	111	102	82	68	14
of which Non-OECD	108	104	100	80	84	103	90	97	86	68	65	3
OECD Asia Oceania												
OECD Americas	6	4	1	0	0	0	0	0	0	0	0	0
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central & South America	-	-	-	-	-	-	-	-	-	-	-	-
ARA (Belgium Germany Netherlands)	14	4	4	0	0	0	-	-	-	-	0	-
Other Europe	5	10	0	0	0	0	-	-	-	-	-	-
FSU	0	0	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	1	-	-	-	-	-	-	-	-	-	-	-
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East & Africa	-	1	-	-	-	-	-	-	-	-	-	-
Singapore	46	51	100	120	135	122	121	124	122	101	124	-22
Non-OECD Asia (excl. Singapore)	21	37	29	0	14	44	35	36	63	26	0	26
Other	17	9	12	9	9	9	16	9	31	40	9	31
Total²	110	116	146	129	157	175	173	169	216	167	132	34
of which Non-OECD	84	98	141	129	157	174	173	169	216	167	132	34
Total OECD Trade²	1034	799	1057	793	745	1190	1014	1029	988	828	863	-35
of which Non-OECD	496	397	489	385	352	511	477	513	464	339	412	-73

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)

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier	
											Oct 21	change
OECD Americas												
Venezuela	1	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	38	34	28	20	3	6	12	20	7	4	16	-12
ARA (Belgium Germany Netherlands)	5	11	34	22	40	6	3	-	4	1	45	-43
Other Europe	2	4	5	10	2	3	0	0	0	0	8	-8
FSU	6	12	25	33	25	-	-	-	-	-	38	-
Saudi Arabia	3	8	15	18	18	15	-	-	-	-	34	-
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	2	9	25	26	8	-	-	-	-	-	25	-
Singapore	0	-	2	-	2	-	-	-	-	-	-	-
OECD Asia Oceania	24	16	25	44	29	42	26	29	15	39	53	-14
Non-OECD Asia (excl. Singapore)	30	34	27	31	0	2	-	-	-	-	24	-
Other	7	6	12	18	31	3	-	-	-	-	23	-
Total²	118	134	197	222	158	76	41	49	26	45	267	-222
of which Non-OECD	86	103	134	146	87	26	12	20	7	4	161	-157
OECD Europe												
OECD Americas	138	99	40	33	31	61	97	119	117	114	25	88
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	0	3	1	3	1	1	3	0	9	0	1	-1
Non-OECD Europe	41	30	35	32	39	46	43	54	65	59	34	25
FSU	608	627	611	516	595	472	506	512	437	454	482	-28
Saudi Arabia	205	193	140	153	98	163	186	200	210	217	156	61
Algeria	0	2	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	83	71	158	222	137	160	147	143	134	243	211	32
Singapore	27	17	19	22	39	50	28	16	50	34	20	15
OECD Asia Oceania	36	32	42	44	36	22	18	9	35	50	53	-4
Non-OECD Asia (excl. Singapore)	152	101	126	195	88	149	105	81	173	344	173	171
Other	10	15	20	43	30	20	19	36	10	6	124	-118
Total²	1300	1190	1191	1262	1092	1145	1152	1170	1240	1521	1278	243
of which Non-OECD	1126	1062	1109	1186	1026	1062	1037	1043	1087	1358	1200	158
OECD Asia Oceania												
OECD Americas	1	4	0	-	-	-	-	-	-	-	-	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	-	0	-	-	-	-	-	-	-	-	-	-
ARA (Belgium Germany Netherlands)	-	0	0	0	0	0	0	0	-	-	0	-
Other Europe	-	-	0	0	-	-	-	-	-	-	-	-
FSU	4	2	1	1	-	-	-	-	-	-	3	-
Saudi Arabia	-	-	-	-	-	-	-	-	-	-	-	-
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	7	13	4	3	-	11	14	-	-	-	-	-
Singapore	111	91	109	110	123	117	112	121	87	97	104	-7
Non-OECD Asia (excl. Singapore)	133	208	229	259	168	217	177	173	238	205	243	-38
Other	5	9	8	5	8	7	11	4	26	40	5	35
Total²	261	328	352	377	299	352	314	299	351	342	354	-13
of which Non-OECD	260	323	352	377	299	352	314	299	351	342	354	-13
Total OECD Trade²	1679	1652	1740	1861	1550	1572	1507	1518	1617	1908	1900	8
of which Non-OECD	1472	1488	1595	1709	1412	1439	1364	1362	1446	1703	1716	-12

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)

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier	
											Oct 21	change
OECD Americas												
Venezuela	0	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	7	5	1	-	-	-	-	-	-	3	-	-
ARA (Belgium Germany Netherlands)	-	-	5	-	-	0	-	-	-	1	-	-
Other Europe	0	4	7	10	0	1	-	-	-	0	29	-29
FSU	-	0	4	16	3	-	-	-	-	-	9	-
Saudi Arabia	2	6	6	17	5	-	-	-	-	-	32	-
Algeria	-	1	4	5	-	-	-	-	-	-	5	-
Other Middle East and Africa	10	11	18	22	11	10	6	9	5	52	28	24
Singapore	3	4	2	-	2	2	1	-	2	-	-	-
OECD Asia Oceania	133	100	91	76	78	90	90	79	63	59	98	-40
Non-OECD Asia (excl. Singapore)	16	23	27	33	17	18	17	8	17	48	37	11
Other	3	4	1	-	5	4	1	-	-	-	-	-
Total²	174	159	165	179	120	123	115	96	87	163	238	-75
of which Non-OECD	41	55	63	93	43	33	25	17	24	104	110	-7
OECD Europe												
OECD Americas	20	13	3	9	1	4	6	4	11	15	8	7
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	1	0	0	1	-	1	1	2	-	-	1	-
Non-OECD Europe	2	0	0	0	-	4	4	-	9	0	0	0
FSU	41	21	27	21	20	12	16	16	14	15	23	-8
Saudi Arabia	105	40	27	21	37	58	62	53	59	71	-	-
Algeria	11	9	5	-	3	8	5	16	-	-	-	-
Other Middle East and Africa	199	155	155	168	154	186	210	164	235	169	168	1
Singapore	29	10	11	15	6	11	26	38	41	9	19	-10
OECD Asia Oceania	36	27	32	40	2	44	68	67	102	127	27	100
Non-OECD Asia (excl. Singapore)	73	50	62	113	78	95	125	148	104	190	116	74
Other	2	10	9	22	4	2	14	3	2	-	21	-
Total²	520	336	333	411	306	425	538	511	575	597	382	215
of which Non-OECD	464	297	298	362	303	381	464	440	463	455	347	108
OECD Asia Oceania												
OECD Americas	-	-	0	0	0	0	-	-	-	-	0	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	-	-	-	-	-	-	-	-	-	-	-	-
ARA (Belgium Germany Netherlands)	-	-	0	-	-	-	-	-	-	-	-	-
Other Europe	-	-	0	-	-	1	-	-	-	-	-	-
FSU	-	-	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	-	-	-	-	-	-	-	-	-	-	-
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	-	-	1	-	-	0	-	-	-	-	-	-
Singapore	21	14	16	19	26	28	42	46	32	43	24	19
Non-OECD Asia (excl. Singapore)	29	28	34	29	20	38	20	17	28	63	5	59
Other	22	18	21	34	25	9	7	5	11	16	15	1
Total²	72	60	71	82	71	76	69	68	70	122	44	79
of which Non-OECD	72	60	71	82	71	76	69	68	70	122	44	79
Total OECD Trade²	766	555	570	673	497	624	722	675	732	882	664	218
of which Non-OECD	576	413	433	538	416	489	558	526	558	681	501	180

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)

	2019	2020	2021	4Q21	1Q22	2Q22	3Q22	Aug 22	Sep 22	Oct 22	Year Earlier	
											Oct 21	change
OECD Americas												
Venezuela	7	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	50	52	34	44	55	53	36	43	20	55	58	-3
ARA (Belgium Germany Netherlands)	6	12	6	9	6	11	14	-	40	19	10	9
Other Europe	8	21	10	18	25	23	11	20	8	7	24	-17
FSU	29	43	34	18	46	24	4	13	-	21	29	-9
Saudi Arabia	2	2	0	2	1	12	8	11	8	-	-	-
Algeria	8	2	7	13	-	10	4	11	-	-	6	-
Other Middle East and Africa	5	10	8	0	6	1	3	4	2	4	1	4
Singapore	1	1	0	-	-	-	-	-	-	-	-	-
OECD Asia Oceania	-	-	0	-	-	-	-	-	-	-	-	-
Non-OECD Asia (excl. Singapore)	0	-	2	-	-	-	2	-	6	12	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total²	116	143	102	104	139	135	82	102	84	118	129	-10
of which Non-OECD	102	110	86	77	109	101	56	81	36	92	95	-2
OECD Europe												
OECD Americas	7	12	24	20	13	6	21	19	27	10	39	-29
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	5	6	4	1	1	3	6	3	-	-	1	-
Non-OECD Europe	21	13	12	11	17	35	47	28	58	54	9	45
FSU	144	141	247	279	216	119	89	92	60	53	232	-179
Saudi Arabia	-	2	-	-	-	-	-	-	-	-	-	-
Algeria	0	2	2	3	-	13	4	6	-	-	8	-
Other Middle East and Africa	19	13	14	13	11	34	9	15	5	44	5	40
Singapore	1	3	3	2	5	0	2	-	2	-	7	-
OECD Asia Oceania	14	4	3	5	7	7	7	7	2	7	7	0
Non-OECD Asia (excl. Singapore)	3	-	-	-	-	-	3	2	7	7	-	-
Other	8	93	59	41	30	33	51	44	89	62	-93	155
Total²	222	288	368	374	300	251	238	215	250	237	215	22
of which Non-OECD	202	279	347	350	282	239	215	195	230	261	170	91
OECD Asia Oceania												
OECD Americas	1	-	-	-	-	-	-	-	-	-	-	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Central and South America	-	0	-	-	-	-	-	-	-	-	-	-
ARA (Belgium Germany Netherlands)	-	-	0	-	-	0	-	-	-	0	-	-
Other Europe	-	-	-	-	-	-	-	-	-	-	-	-
FSU	6	5	0	-	-	-	-	-	-	-	-	-
Saudi Arabia	1	1	13	25	12	29	15	19	-	-	24	-
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Other Middle East and Africa	27	38	30	30	6	6	2	-	6	14	-	-
Singapore	25	18	29	23	34	21	19	20	29	4	29	-25
Non-OECD Asia (excl. Singapore)	40	26	47	51	64	39	32	44	36	73	48	25
Other	1	-	-	-	-	-	-	-	-	-	-	-
Total²	101	88	119	129	117	96	68	84	70	91	101	-10
of which Non-OECD	100	88	119	129	117	96	68	84	70	91	101	-10
Total OECD Trade²	439	519	588	607	556	482	387	401	405	446	444	2
of which Non-OECD	404	477	552	555	508	436	339	361	337	444	366	78

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

	2019	2020	2021	1Q22	2Q22	3Q22	4Q22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22
(\$/bbl)													
CRUDE PRICES													
IEA CIF Average Import¹													
IEA Europe	64.25	42.91	70.67	97.95	111.08	102.38		118.56	112.22	102.17	92.19		
IEA Americas	56.93	37.31	64.78	86.94	106.20	92.16		111.31	100.85	91.78	83.23		
IEA Asia Oceania	66.38	46.28	70.41	89.86	113.01	111.62		117.54	116.34	110.99	107.28		
IEA Total	62.75	42.19	68.87	92.72	110.17	101.91		116.27	110.03	101.69	93.49		
SPOT PRICES²													
North Sea Dated	64.12	41.76	70.82	102.12	113.90	100.66	88.36	112.63	99.63	89.76	93.11	91.10	80.36
North Sea Dated M1	64.74	42.90	71.51	101.45	114.15	100.16	89.54	109.85	99.19	91.49	94.52	92.28	81.31
WTI (Cushing) M1	57.03	39.25	68.10	95.18	108.77	91.91	82.82	99.84	91.57	83.96	87.26	84.78	76.50
WTI (Houston) M1	61.87	40.71	69.01	96.77	109.96	94.04	84.33	101.85	93.61	86.34	89.60	86.27	77.21
Urals	63.31	41.21	69.00	89.49	79.11	75.41	62.46	83.05	74.63	68.59	73.28	65.40	47.87
Dubai M1	63.49	42.36	69.35	96.06	108.12	96.79	84.68	102.86	96.43	91.10	91.08	86.12	77.09
PRODUCT PRICES²													
Northwest Europe													
Gasoline	71.15	44.64	80.07	110.20	146.06	114.30	99.41	131.84	111.23	98.47	110.80	102.07	84.51
Diesel	79.28	49.34	78.41	124.88	160.84	145.21	139.55	153.09	142.81	139.29	162.68	134.75	120.56
Jet/Kero	80.15	45.80	77.31	122.94	165.15	142.09	130.90	147.78	142.85	134.91	138.99	132.07	121.11
Naphtha	56.62	40.18	71.58	99.99	97.26	77.03	72.63	86.05	74.18	70.37	75.57	75.15	66.76
HSFO	49.85	33.99	61.18	84.19	92.98	70.72	59.67	71.89	76.18	63.12	60.23	61.74	56.80
0.5% Fuel Oil	80.17	48.50	76.78	109.62	126.09	106.56	87.19	116.36	106.23	96.12	94.38	88.73	77.95
Mediterranean Europe													
Gasoline	71.09	45.57	80.50	111.66	147.99	117.35	103.89	139.15	112.32	99.07	108.74	112.24	89.60
Diesel	78.94	48.82	77.93	122.53	156.54	136.06	130.46	142.46	133.39	132.06	148.51	129.87	112.15
Jet/Kero	79.96	45.57	77.19	123.04	164.87	142.30	131.28	147.90	143.11	135.16	139.44	132.50	121.36
Naphtha	55.51	39.04	70.65	98.64	94.95	75.37	70.36	84.29	72.44	68.91	73.55	73.01	64.08
HSFO	52.01	34.17	60.05	82.75	89.63	65.84	56.73	71.69	72.15	52.07	57.51	58.64	53.81
US Gulf Coast													
Gasoline	71.11	47.30	86.49	116.70	153.69	119.07	103.04	134.83	115.54	106.77	116.16	102.36	90.55
Diesel	79.12	50.26	84.73	126.70	167.83	146.96	141.65	151.92	148.23	140.22	159.40	141.16	124.37
Jet/Kero	78.84	46.30	77.95	121.54	163.46	140.49	134.73	145.44	139.74	136.19	148.53	133.22	122.36
Naphtha	59.04	40.12	72.24	99.45	105.15	84.63	76.09	90.34	87.05	75.70	81.05	76.50	70.75
HSFO	52.53	34.71	59.90	83.38	93.04	76.51	55.48	84.50	81.74	61.76	52.59	59.87	54.18
0.5% Fuel Oil	74.08	49.88	79.69	114.08	133.17	112.20	92.69	125.31	111.24	99.54	100.80	94.68	82.69
Singapore													
Gasoline	70.10	45.28	78.49	111.63	137.95	106.08	89.89	116.35	107.19	94.03	91.16	93.11	85.09
Diesel	78.47	49.60	77.80	119.08	159.99	138.17	126.25	145.27	139.12	129.66	137.25	127.61	113.75
Jet/Kero	77.55	45.06	75.29	113.53	147.63	129.57	118.30	134.90	131.73	121.58	123.40	121.01	110.22
Naphtha	57.41	40.94	71.02	98.04	92.73	74.63	70.92	82.70	72.73	68.22	71.86	74.22	66.34
HSFO	57.46	38.33	63.20	85.69	98.18	69.96	58.60	73.83	74.95	60.36	57.46	61.74	56.28
0.5% Fuel Oil	75.66	52.85	80.81	115.97	139.05	116.26	97.77	135.90	110.92	101.48	105.77	99.25	88.14

¹IEA 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

December 2022

	NATIONAL CURRENCY ¹						US DOLLARS					
	Total Price	% change from		Ex-Tax Price	% change from		Total Price	% change from		Ex-Tax Price	% change from	
		Nov-22	Dec-21		Nov-22	Dec-21		Nov-22	Dec-21		Nov-22	Dec-21
GASOLINE ² (per litre)												
France	1.685	-2.4	3.2	0.713	-22.0	6.4	1.784	1.2	-3.3	0.755	-19.1	-0.3
Germany	1.748	-6.9	4.6	0.815	-11.6	8.8	1.851	-3.4	-2.0	0.863	-8.3	1.9
Italy	1.669	-1.1	-3.2	0.815	-10.0	18.8	1.767	2.6	-9.4	0.863	-6.7	11.3
Spain	1.621	-8.1	9.5	0.867	-21.8	15.4	1.716	-4.6	2.5	0.918	-18.8	8.1
United Kingdom	1.554	-5.1	6.5	0.765	-8.3	20.3	1.891	-1.6	-2.7	0.931	-4.9	9.9
Japan	168.1	0.2	1.1	96.2	0.3	1.7	1.247	5.8	-14.6	0.713	5.9	-14.1
Canada	1.445	-12.4	1.8	0.981	-15.9	4.5	1.063	-13.4	-4.1	0.722	-16.8	-1.7
United States	0.848	-12.9	-3.0	0.716	-15.0	-3.8	0.848	-12.9	-3.0	0.716	-15.0	-3.8
AUTOMOTIVE DIESEL FOR NON COMMERCIAL USE (per litre)												
France	1.762	-4.7	14.7	0.859	-21.8	28.0	1.865	-1.1	7.5	0.909	-18.9	19.9
Germany	1.817	-7.4	18.8	1.057	-10.3	29.7	1.924	-3.9	11.3	1.119	-7.0	21.5
Italy	1.735	-4.5	9.1	0.980	-12.7	42.9	1.837	-0.9	2.2	1.038	-9.4	33.8
Spain	1.695	-10.8	25.7	1.022	-22.3	39.0	1.794	-7.5	17.8	1.082	-19.4	30.3
United Kingdom	1.792	-4.7	19.8	0.963	-7.1	44.4	2.181	-1.2	9.5	1.172	-3.7	32.0
Japan	148.2	0.2	1.3	102.7	0.2	1.7	1.099	5.8	-14.4	0.762	5.8	-14.1
Canada	2.058	-6.9	42.3	1.576	-8.2	55.9	1.514	-7.9	34.0	1.159	-9.2	46.7
United States	1.245	-10.3	29.4	1.092	-11.6	34.5	1.245	-10.3	29.4	1.092	-11.6	34.5
DOMESTIC HEATING OIL (per litre)												
France	1.333	-10.2	32.3	0.954	-11.7	39.6	1.411	-6.8	23.9	1.010	-8.3	30.8
Germany	1.242	-14.0	46.3	0.983	-14.8	50.7	1.315	-10.8	37.1	1.040	-11.6	41.1
Italy	1.647	-7.1	19.1	0.947	-9.9	29.6	1.744	-3.6	11.6	1.002	-6.5	21.4
Spain	1.169	-12.1	42.7	0.870	-13.3	49.8	1.238	-8.8	33.7	0.921	-10.0	40.4
United Kingdom	0.931	-14.3	33.9	0.785	-15.9	42.4	1.133	-11.2	22.3	0.955	-12.8	30.2
Japan ³	111.2	-0.1	5.3	98.3	-0.1	5.5	0.825	5.5	-11.0	0.729	5.5	-10.9
Canada	1.951	-10.3	43.4	1.739	-10.4	46.8	1.435	-11.3	35.0	1.279	-11.4	38.2
United States	-	-	-	-	-	-	-	-	-	-	-	-
LOW SULPHUR FUEL OIL FOR INDUSTRY ⁴ (per kg)												
France	0.657	-10.6	1.0	0.518	-13.1	1.3	0.696	-7.2	-5.4	0.548	-9.8	-5.1
Germany	-	-	-	-	-	-	-	-	-	-	-	-
Italy	0.639	-9.1	8.0	0.608	-9.5	8.4	0.676	-5.7	1.1	0.643	-6.1	1.6
Spain	0.633	-7.5	20.4	0.616	-7.7	21.1	0.670	-4.0	12.8	0.652	-4.2	13.5
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	1Q22	2Q22	3Q22	4Q22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22
NW Europe													
Light sweet hydroskimming	1.11	2.54	10.02	5.27	15.29	8.94	10.81	4.95	9.59	12.60	18.20	8.00	6.12
Light sweet cracking	2.07	3.51	16.18	8.85	22.17	15.19	18.77	12.43	14.76	18.73	28.10	15.32	12.75
Light sweet cracking + Petchem	3.23	6.55	18.41	10.98	26.45	16.98	19.60	15.19	16.72	19.25	27.95	16.36	14.38
Medium sour cracking*	4.30	6.11	39.13	21.55	59.43	37.59	38.87	40.43	35.46	36.92	51.37	43.03	21.16
Mediumsour cracking + Petchem*	5.44	9.07	41.30	23.63	63.59	39.33	39.69	43.12	37.37	37.42	51.22	44.03	22.79
Mediterranean													
Light sweet hydroskimming	2.36	2.90	9.05	4.13	13.88	7.56	10.84	1.68	8.32	13.16	16.58	9.22	6.59
Light sweet cracking	3.34	4.97	16.79	8.76	23.71	15.85	19.14	12.37	15.53	20.07	25.52	17.62	14.12
Medium sour cracking	5.70	5.68	21.64	11.85	30.24	20.49	24.36	18.30	20.65	22.74	30.72	22.78	19.42
US Gulf Coast													
Light sweet cracking	4.28	11.04	26.64	16.54	38.22	26.72	25.10	29.39	25.62	25.24	33.60	22.71	18.86
Medium sour cracking	6.61	15.79	35.70	25.08	47.39	35.32	35.01	38.88	34.26	32.85	43.51	32.36	29.05
Heavy sour coking	9.73	19.98	45.91	32.06	55.43	46.40	49.73	49.64	43.63	46.34	62.38	48.59	38.16
US Midwest													
Light sweet cracking	3.74	12.33	29.85	13.95	40.42	34.23	30.81	33.64	33.17	36.13	44.90	33.72	13.94
Heavy sour coking	13.26	26.02	50.57	32.07	60.64	53.96	55.59	55.07	50.68	56.76	71.61	59.49	35.85
Singapore													
Light sweet cracking	0.20	3.10	11.48	7.94	18.69	10.93	8.75	12.04	11.75	8.85	9.10	8.27	8.92
Light sweet cracking + Petchem	2.03	4.82	12.94	8.63	20.69	12.83	10.05	13.24	13.84	11.28	10.28	9.18	10.77
Medium sour cracking	1.80	3.92	12.87	9.85	23.35	7.91	10.83	9.91	8.98	4.63	9.01	12.17	11.19
Medium sour cracking + Petchem	3.61	5.61	14.31	10.53	25.33	9.79	12.11	11.09	11.04	7.02	10.17	13.07	13.01

Source: IEA, Argus Media Ltd prices.

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

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

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

	Aug-22	Sep-22	Oct-22	Oct-21	Oct 22 vs Previous Month	Oct 22 vs Previous Year	Oct 22 vs 5 Year Average	5 Year Average
OECD Americas								
Naphtha	0.9	0.9	0.9	1.1	0.0	-0.2	-0.4	1.3
Motor gasoline	43.6	44.8	46.2	46.9	1.3	-0.7	-1.3	47.5
Jet/kerosene	9.0	8.7	8.7	7.5	-0.1	1.1	0.6	8.0
Gasoil/diesel oil	28.5	28.9	29.2	28.6	0.3	0.7	0.8	28.5
Residual fuel oil	3.1	3.3	3.2	3.0	-0.1	0.2	0.2	3.1
Petroleum coke	4.2	4.2	4.2	4.2	0.0	0.0	-0.2	4.4
Other products	13.6	12.9	11.5	12.4	-1.4	-0.9	0.0	11.5
OECD Europe								
Naphtha	8.3	7.8	8.7	8.7	0.9	0.0	0.5	8.2
Motor gasoline	21.2	20.4	19.5	21.7	-1.0	-2.2	-1.9	21.3
Jet/kerosene	8.6	8.6	7.7	6.3	-1.0	1.4	0.2	7.5
Gasoil/diesel oil	39.8	39.4	39.9	40.5	0.5	-0.6	-0.1	40.0
Residual fuel oil	7.8	8.9	9.3	8.1	0.4	1.2	0.6	8.7
Petroleum coke	1.6	1.7	1.7	1.4	0.0	0.3	0.3	1.4
Other products	15.8	15.9	15.2	15.8	-0.6	-0.6	0.1	15.1
OECD Asia Oceania								
Naphtha	16.4	16.4	16.0	16.9	-0.4	-0.8	-0.2	16.2
Motor gasoline	21.1	20.8	21.0	22.6	0.1	-1.6	-1.3	22.3
Jet/kerosene	13.5	13.0	13.5	12.2	0.5	1.4	-0.6	14.2
Gasoil/diesel oil	30.5	30.7	31.3	30.8	0.6	0.5	1.3	30.0
Residual fuel oil	8.5	8.9	8.9	7.8	0.0	1.1	1.7	7.2
Petroleum coke	0.5	0.4	0.3	0.4	-0.1	-0.1	-0.1	0.4
Other products	11.7	12.0	12.0	12.4	-0.1	-0.5	-0.3	12.2
OECD Total								
Naphtha	6.0	5.7	5.9	6.3	0.2	-0.4	-0.3	6.2
Motor gasoline	32.6	33.0	33.5	34.4	0.5	-0.9	-1.0	34.5
Jet/kerosene	9.7	9.4	9.2	7.9	-0.3	1.2	0.3	8.9
Gasoil/diesel oil	32.5	32.5	33.0	32.9	0.4	0.1	0.4	32.5
Residual fuel oil	5.5	6.0	6.1	5.5	0.1	0.6	0.5	5.6
Petroleum coke	2.7	2.7	2.7	2.6	0.0	0.1	0.0	2.7
Other products	14.0	13.7	12.8	13.5	-0.9	-0.8	0.0	12.8

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)

	2019	2020	2021	2Q22	3Q22	4Q22	Oct 22	Nov 22	Dec 22
ETHANOL									
OECD Americas	1063	934	1008	1038	1000	1042	1047	1040	1040
United States	1029	906	979	1006	968	1011	1015	1008	1008
Other ¹	34	28	28	32	32	32			
OECD Europe	98	95	101	110	116	102	91	107	107
France	21	18	18	24	27	9	7	10	10
Germany	12	12	12	17	17	6	15	2	2
Spain	9	9	10	9	9	14	9	16	16
United Kingdom	5	6	9	7	7	13	7	16	16
Other ¹	50	50	53	53	56	60			
OECD Asia Oceania	4	4	4	4	4	4	4	4	4
Australia	4	4	4	4	4	4	4	4	4
Other ¹	0	0	0	0	0	0			
Total OECD Ethanol	1165	1033	1113	1152	1119	1148	1141	1151	1151
Total Non-OECD Ethanol	804	751	718	865	1121	720	906	755	499
Brazil	621	560	515	637	893	491	678	527	271
China ¹	67	69	76	79	79	86			
Argentina ¹	19	15	18	21	21	21			
Other	97	106	110	128	128	120	228	228	228
TOTAL ETHANOL	1968	1783	1832	2018	2240	1868	2048	1906	1650
BIODIESEL									
OECD Americas	151	160	167	210	220	221	214	224	224
United States	145	153	160	201	211	205	205	205	205
Other ¹	6	7	7	9	9	15			
OECD Europe	297	274	302	316	305	324	290	342	342
France	47	48	51	58	51	45	41	47	47
Germany	69	62	64	63	60	69	59	74	74
Italy ¹	18	28	24	28	28	27			
Spain	42	24	31	30	30	35	30	38	38
Other	121	112	133	137	136	149	133	157	157
OECD Asia Oceania	14	12	12	13	14	10	10	10	10
Australia	0	0	0	0	0	0	0	0	0
Other ¹	14	12	12	13	14	10			
Total OECD Biodiesel	462	446	482	539	540	554	514	575	575
Total Non-OECD Biodiesel	413	422	472	513	513	513	513	513	513
Brazil	102	111	116	105	116	112	116	109	110
Argentina ¹	42	27	36	42	42	42			
Other ¹	270	285	319	366	355	360			
TOTAL BIODIESEL	875	868	954	1052	1053	1068	1027	1088	1088
GLOBAL BIOFUELS	2844	2651	2785	3070	3293	2935	3074	2995	2739

¹ monthly data not available.

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