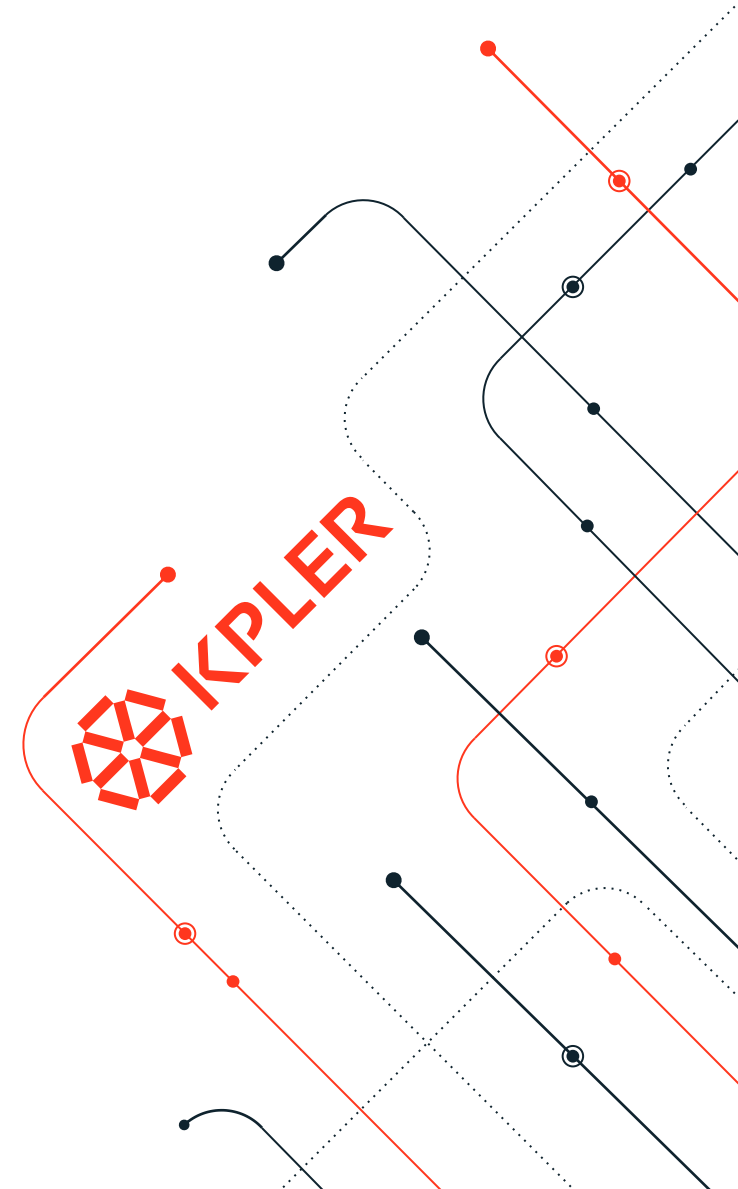


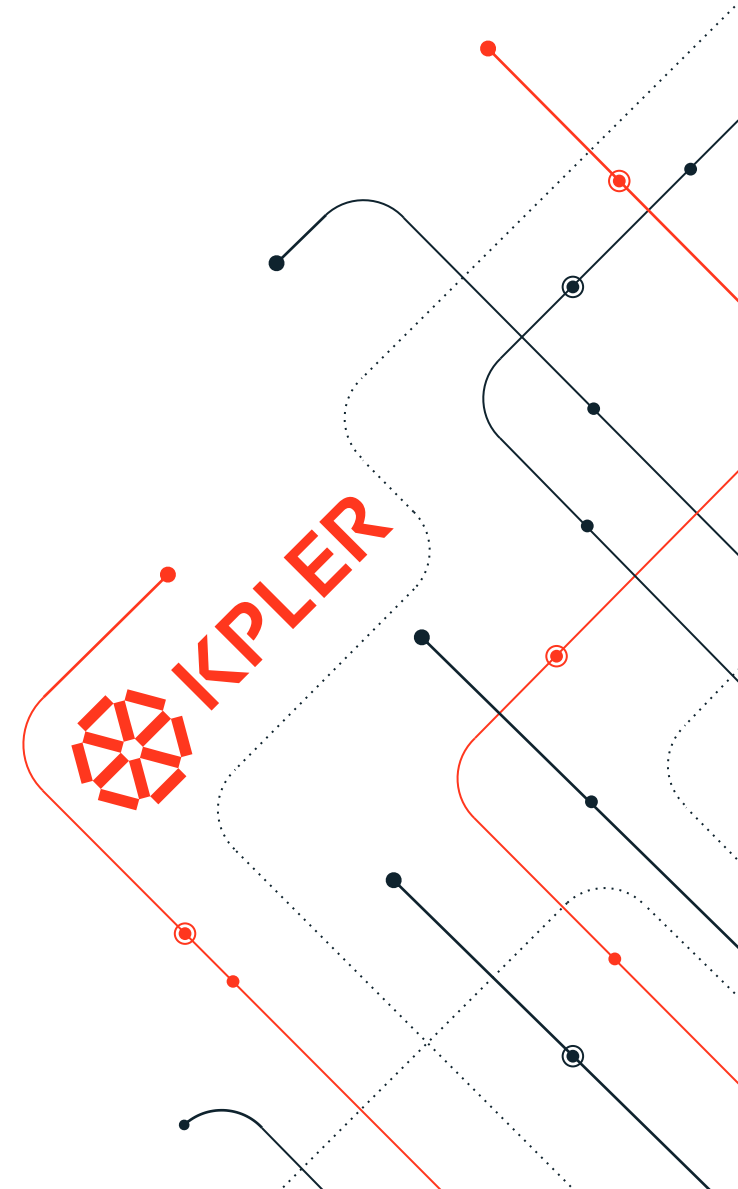
Kpler Insight Market Briefing – APPEC 2023

September 4, 2023



Macroeconomic outlook

Jon Leitch – Director of Insight





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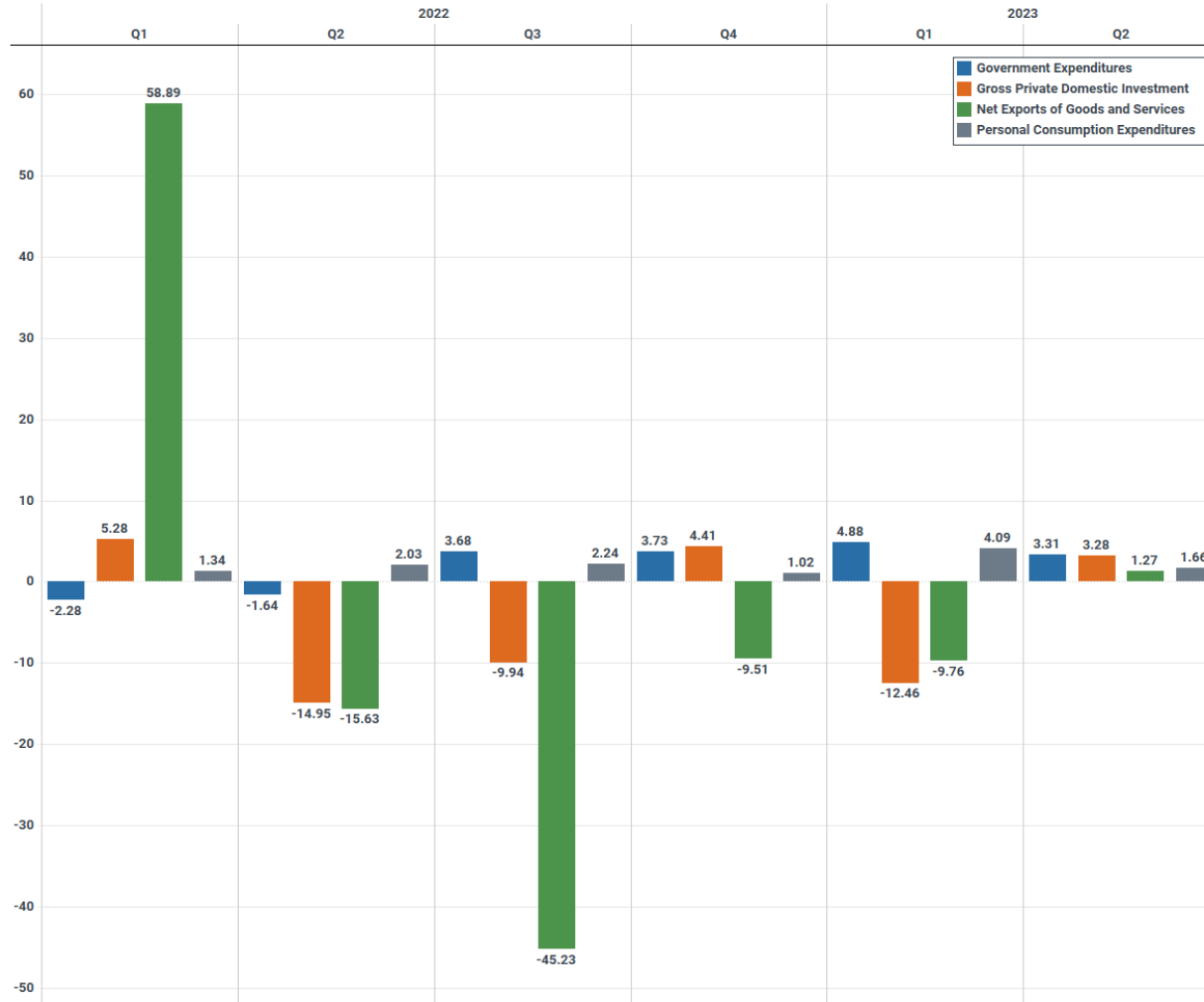
Transparency Solutions For Commodity Markets

United States

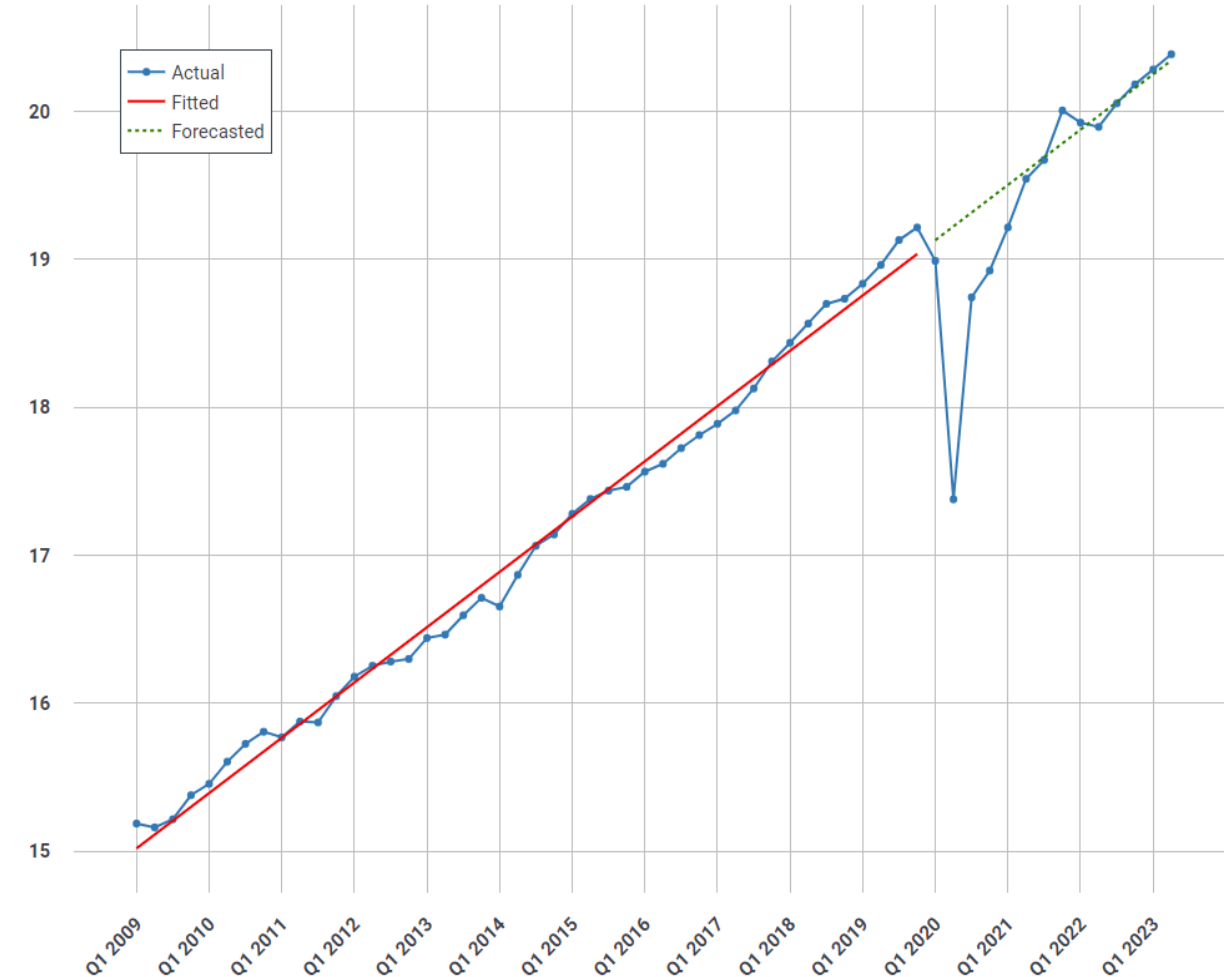
United States: Signs of Economic Resilience through Q2

Outright US economy reaccelerated in Q2 with real GDP finishing up 2.1% q/q, an increase from a 2% q/q increase seen in Q1

Q/Q Annualized US Growth by GDP Component (in Expenditure Terms)



Quarterly Annualized Real Headline US GDP Against Historic Trend (USD tn)

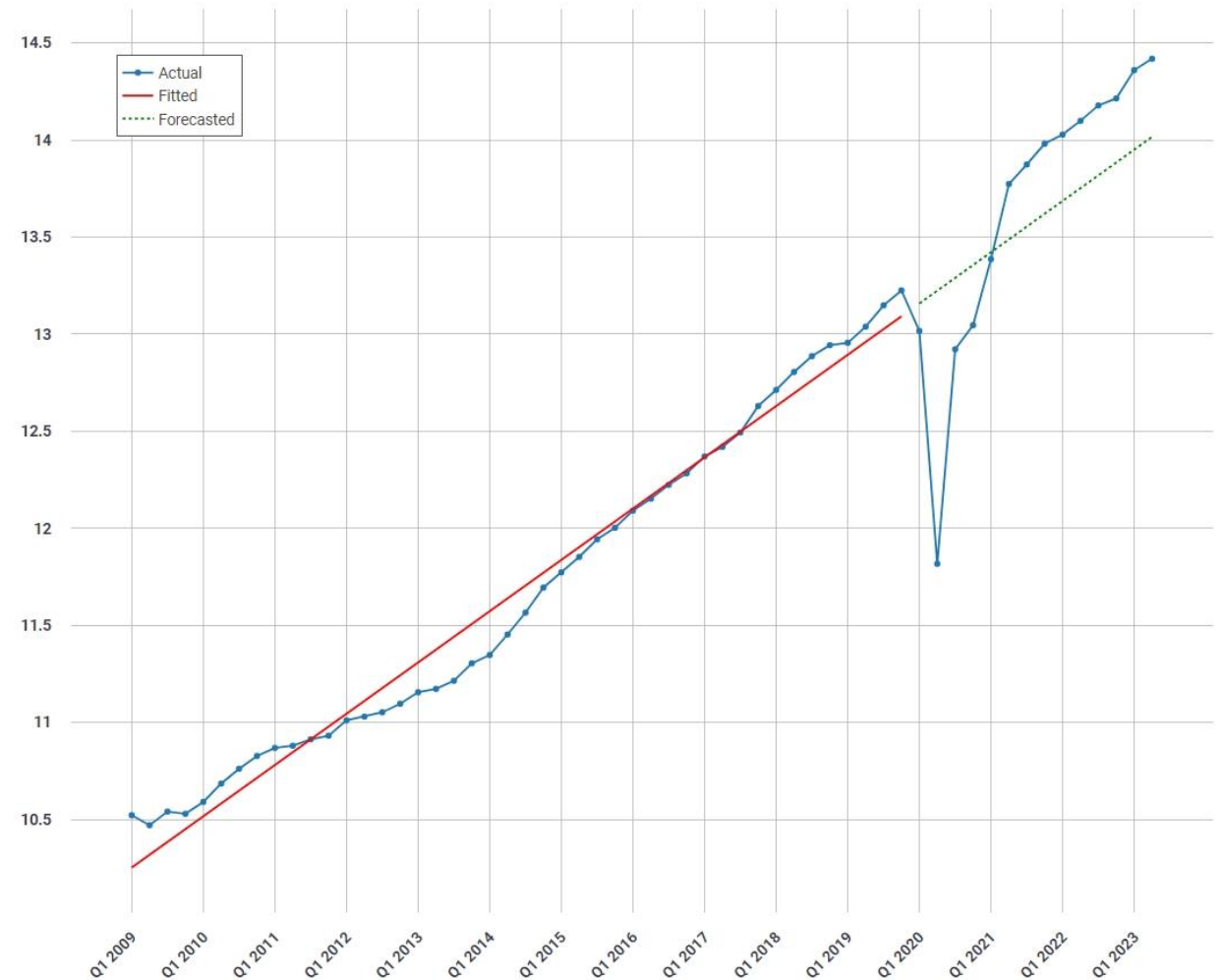


United States: Household Consumption

Household consumption growth slowed in Q2, but remains more than 2.5% above the pre-pandemic trend

- **Household consumption growth slowed in Q2** to +1.7% q/q relative to Q1 increase of +4% q/q.
 - Sector still looks incredibly resilient, up more than 2.5% against pre-pandemic trend.
- **Labor market the most important factor** supporting the consumer.
 - Wage growth remains elevated at >4%, well above pre-pandemic (~3.5%).
 - Avg weekly hours have also flatlined after broad declines last year.
 - However, early signs of weakness. Unemployment rate ticked up to 3.8% in Aug. Job openings have declined and continuing jobless claims up y/y.

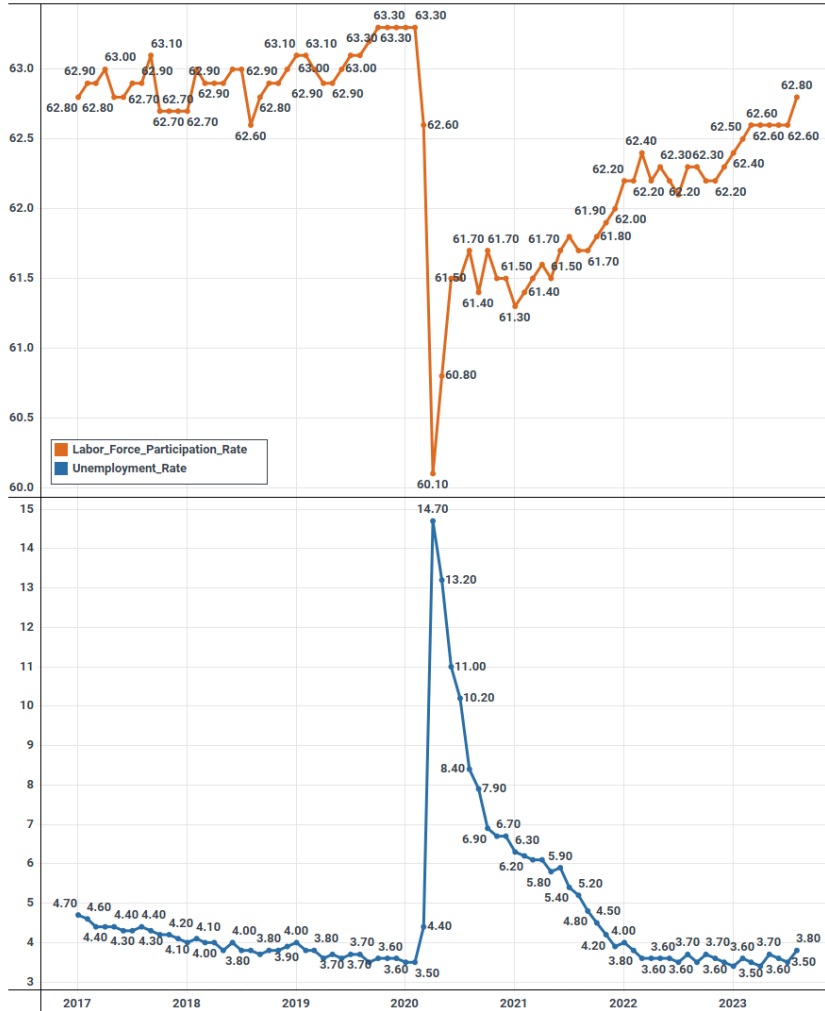
Quarterly Real US Household Consumption Against Historic Trend



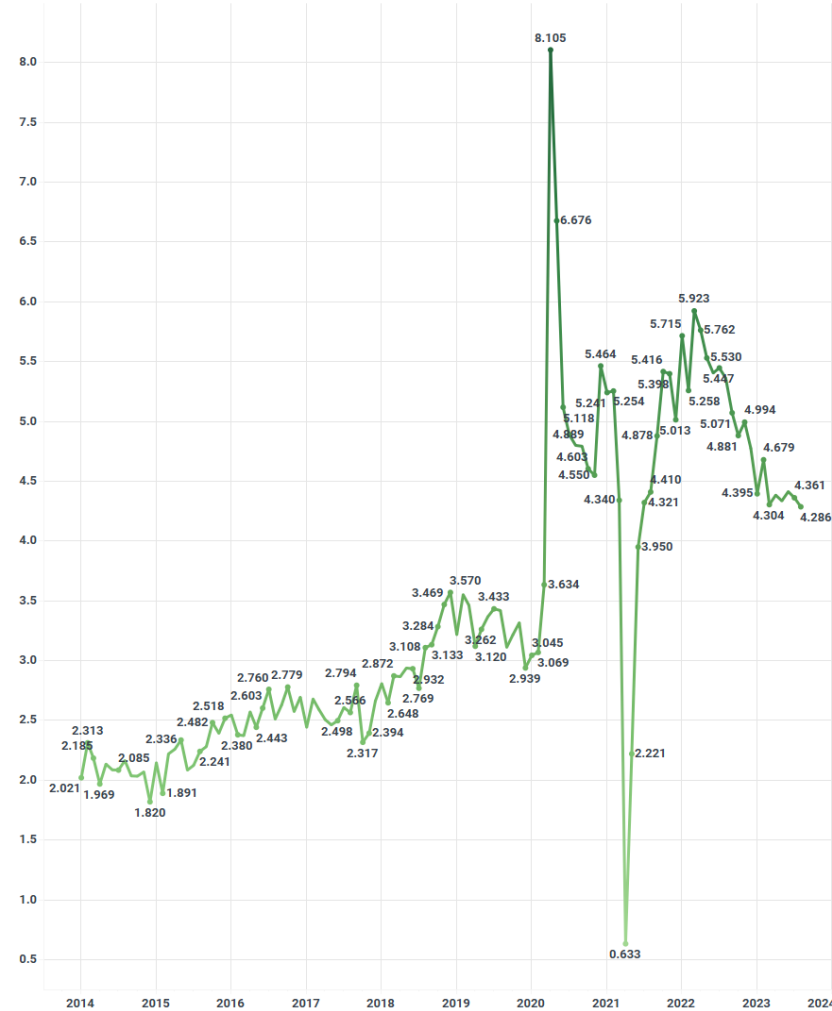
United States: Labor Market

Wage growth looks healthy but a tick higher in unemployment and job openings a sign of possible weakness

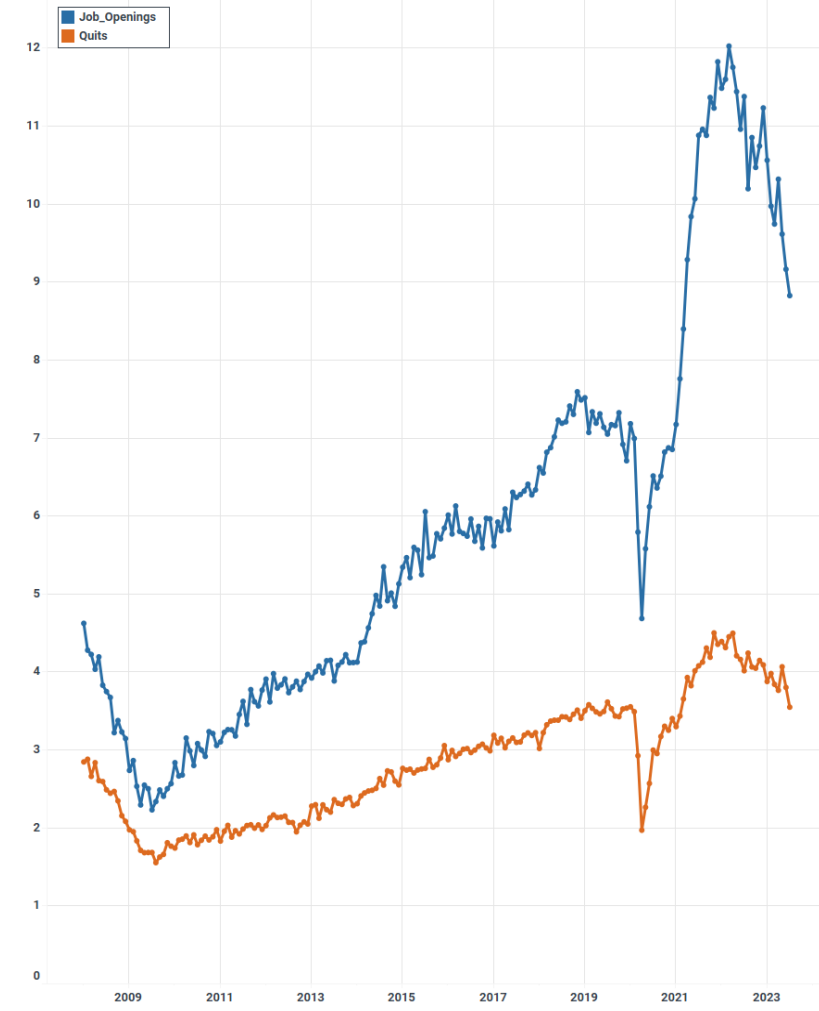
Monthly US Unemployment and Labor Force Participation Rates (%)



Monthly Annualized US Wage Growth (%)



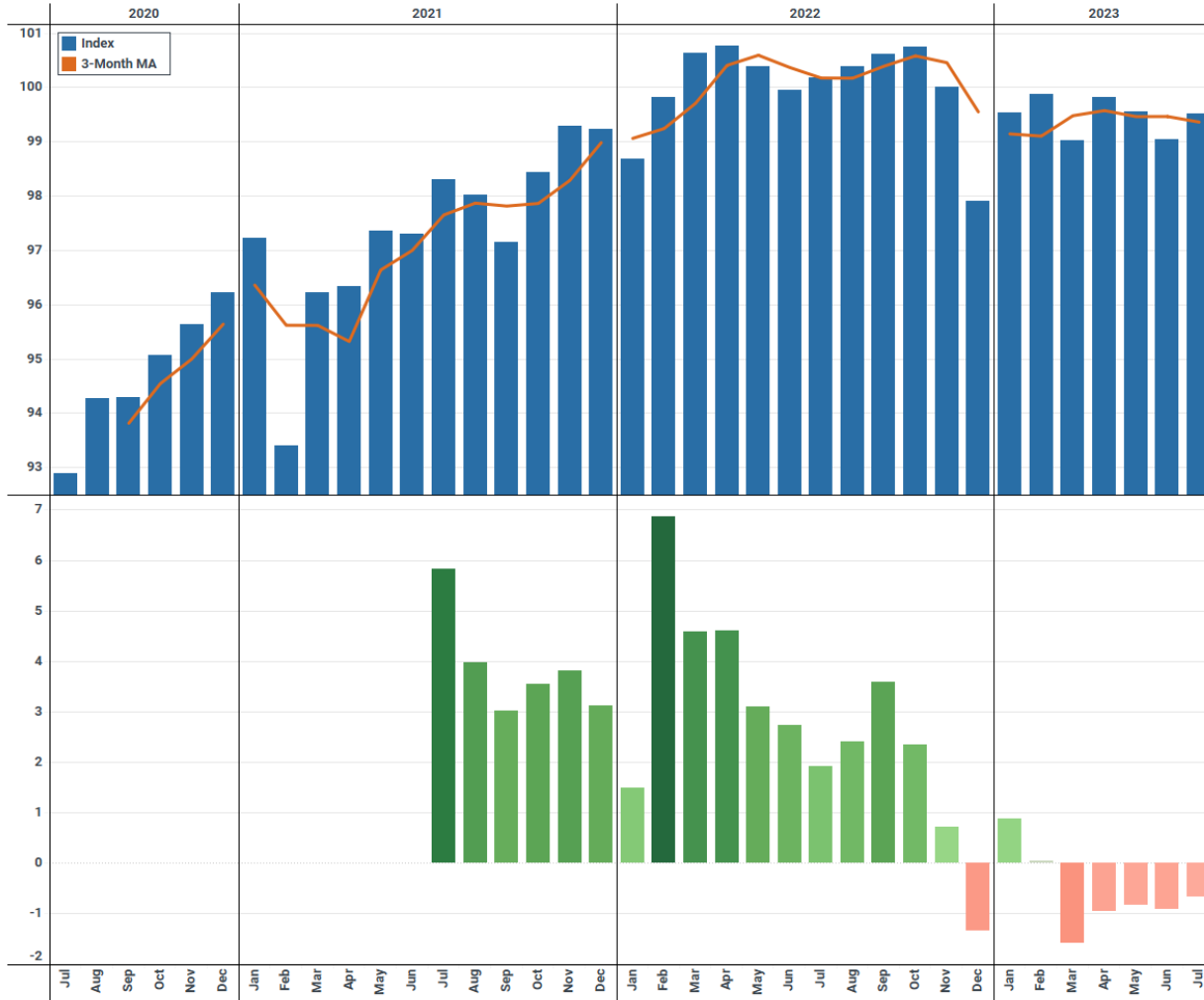
Monthly US Job Openings and Quits (million)



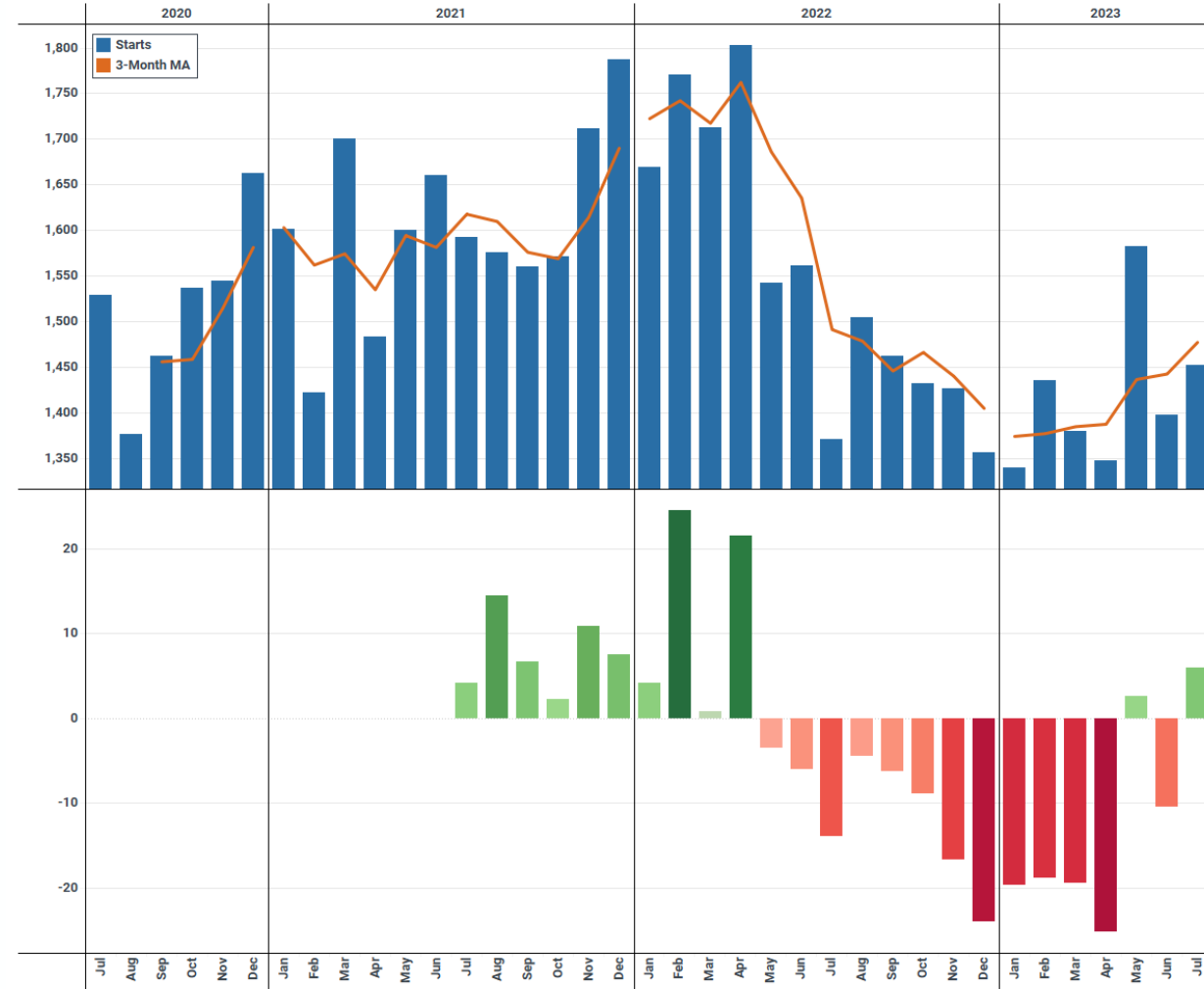
United States: Private Investment

After a large contraction through Q1, investment showed signs of reacceleration in Q2, reflected in improvements across manufacturing and construction

Monthly US Manufacturing Industrial Production Index (top) and Y/Y % Delta (bottom)



Monthly US Residential Housing Starts (top) with Y/Y % Delta (bottom)

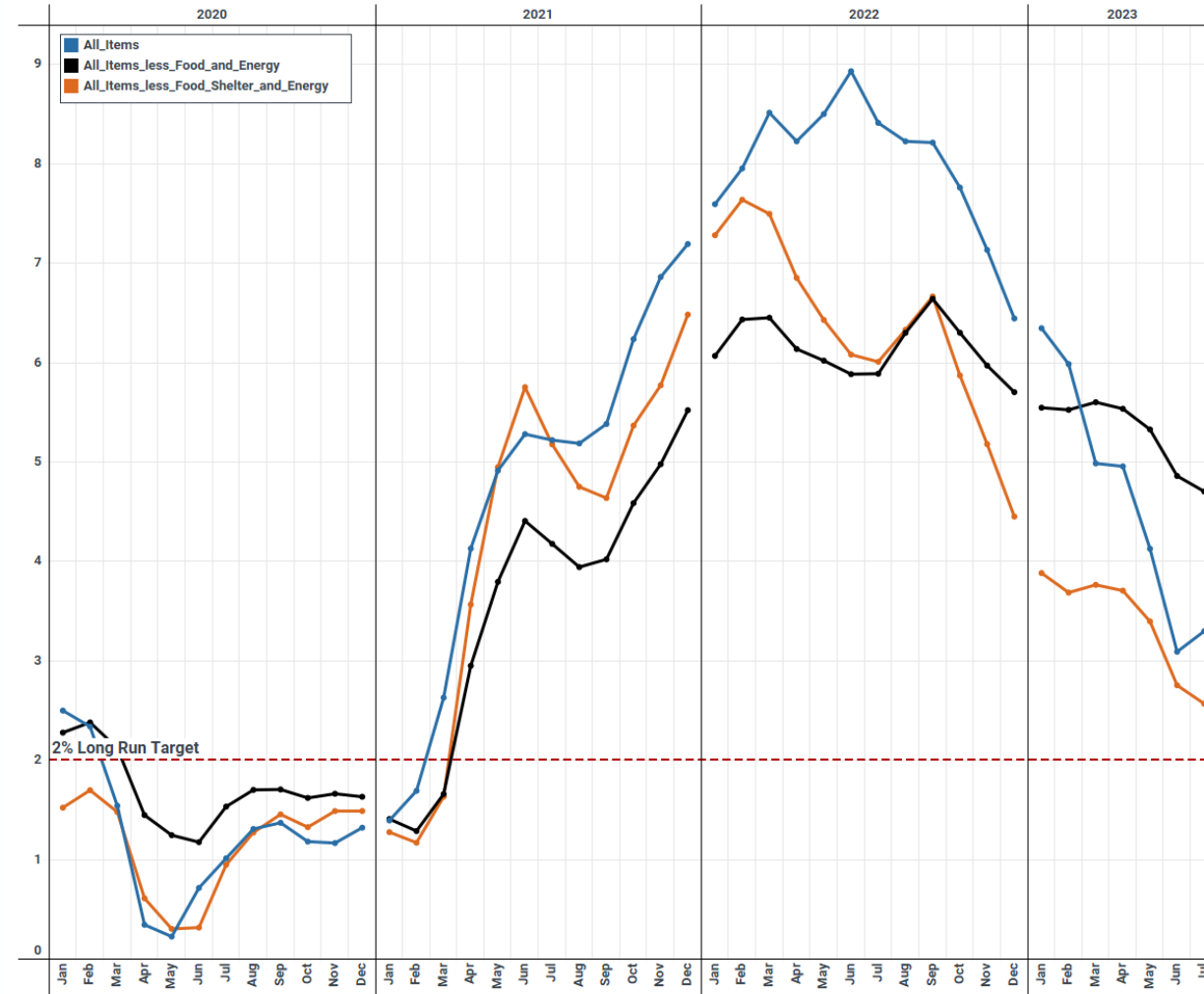


United States: Inflation Likely to Persist

Elevated deficit spending likely helping to extend the current economic cycle, but weakness is coming

- We ultimately maintain that **the US economy will need to materially weaken** if the Fed has any hopes of getting core inflation back to 2%.
- The Fed will need to keep monetary policy sufficiently restrictive well into 2024 (i.e., do not expect rate cuts any time soon)
- It is our belief that as inflation draws closer to target, it will become ever harder to keep the disinflationary trend going.
- **US running very large deficit right now** – this is helping to extend the current economic cycle, but this also promotes inflation.

Monthly Annualized US Inflation (%)





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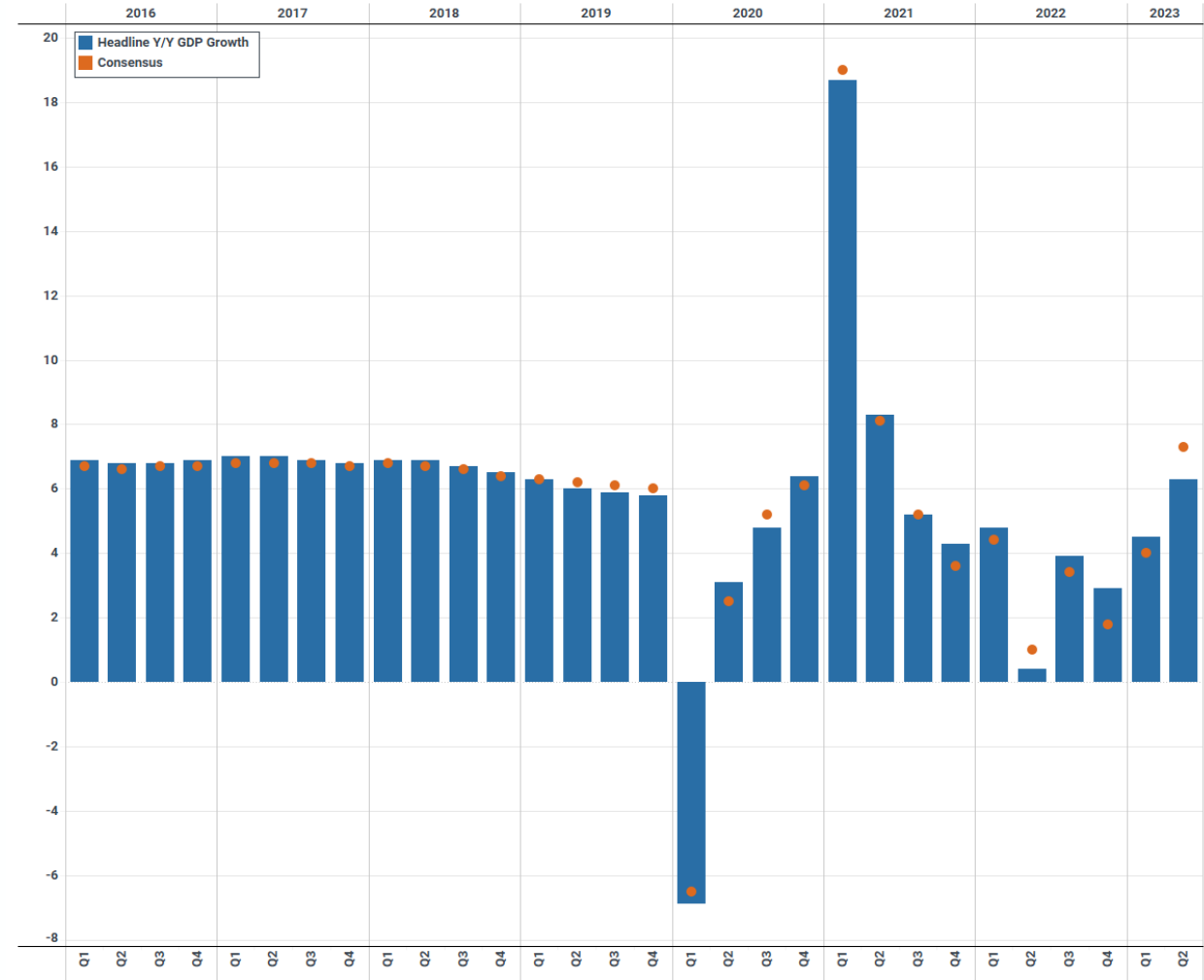
China

China: Economy Underperforming Against Expectations

Q2 GDP fell far short of expectation – do not expect growth to finish much above the official government target of 5% this year

- The **Chinese reopening** has largely **underperformed** against market consensus.
- According to official GDP figures, Q2 was a disappointment with annualized growth finishing at 6.3% y/y, under consensus (+7.3% y/y).
- **We are not expecting any major Chinese fiscal stimulus measures**, albeit PBOC will maintain a dovish position for now.
 - Cautious outlook for H2.
- China faces serious structural long run issues. **Needs to find a way to shift away from investment towards domestic consumption.**

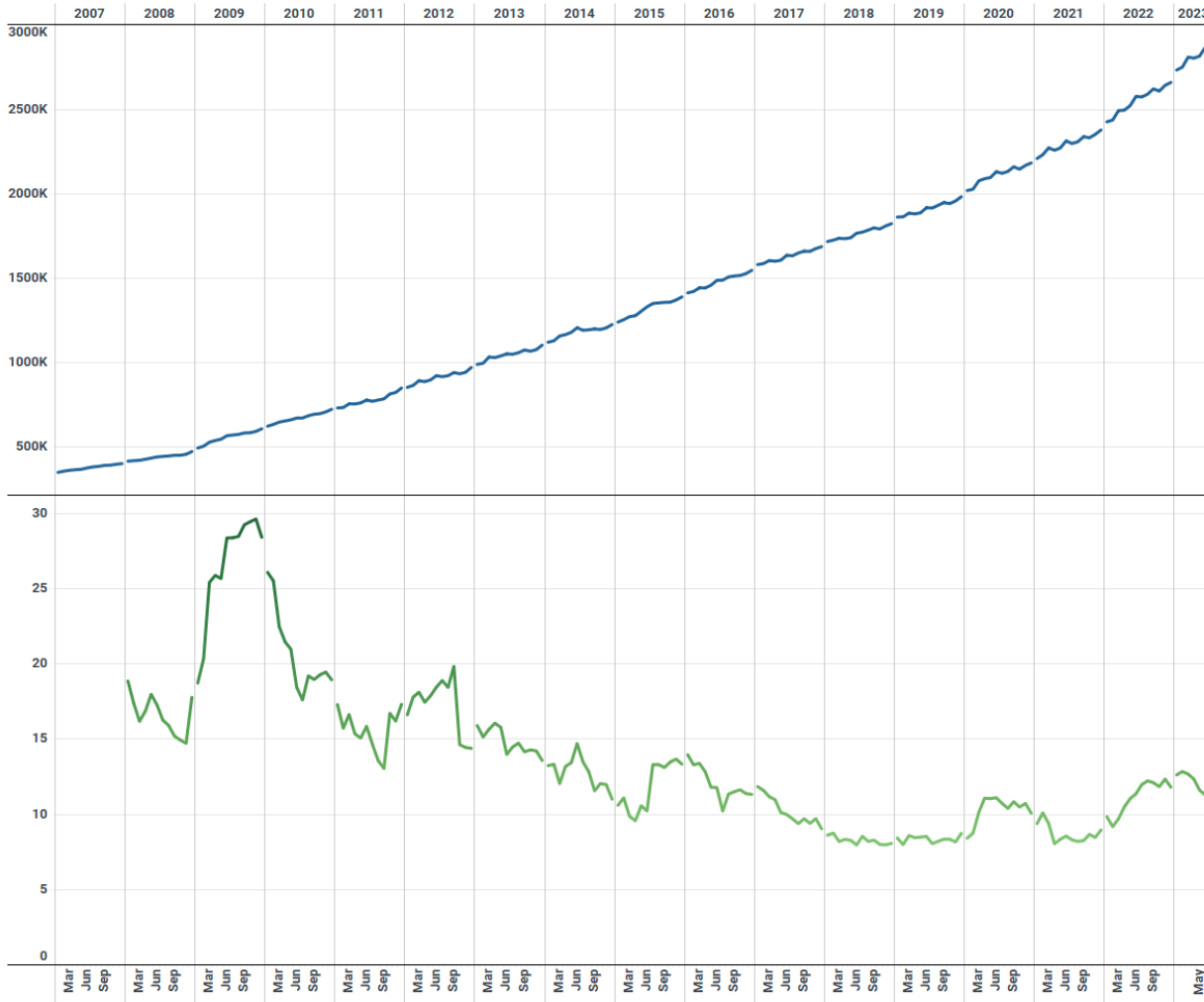
Quarterly Chinese Headline Annualized GDP Growth Against Consensus (%)



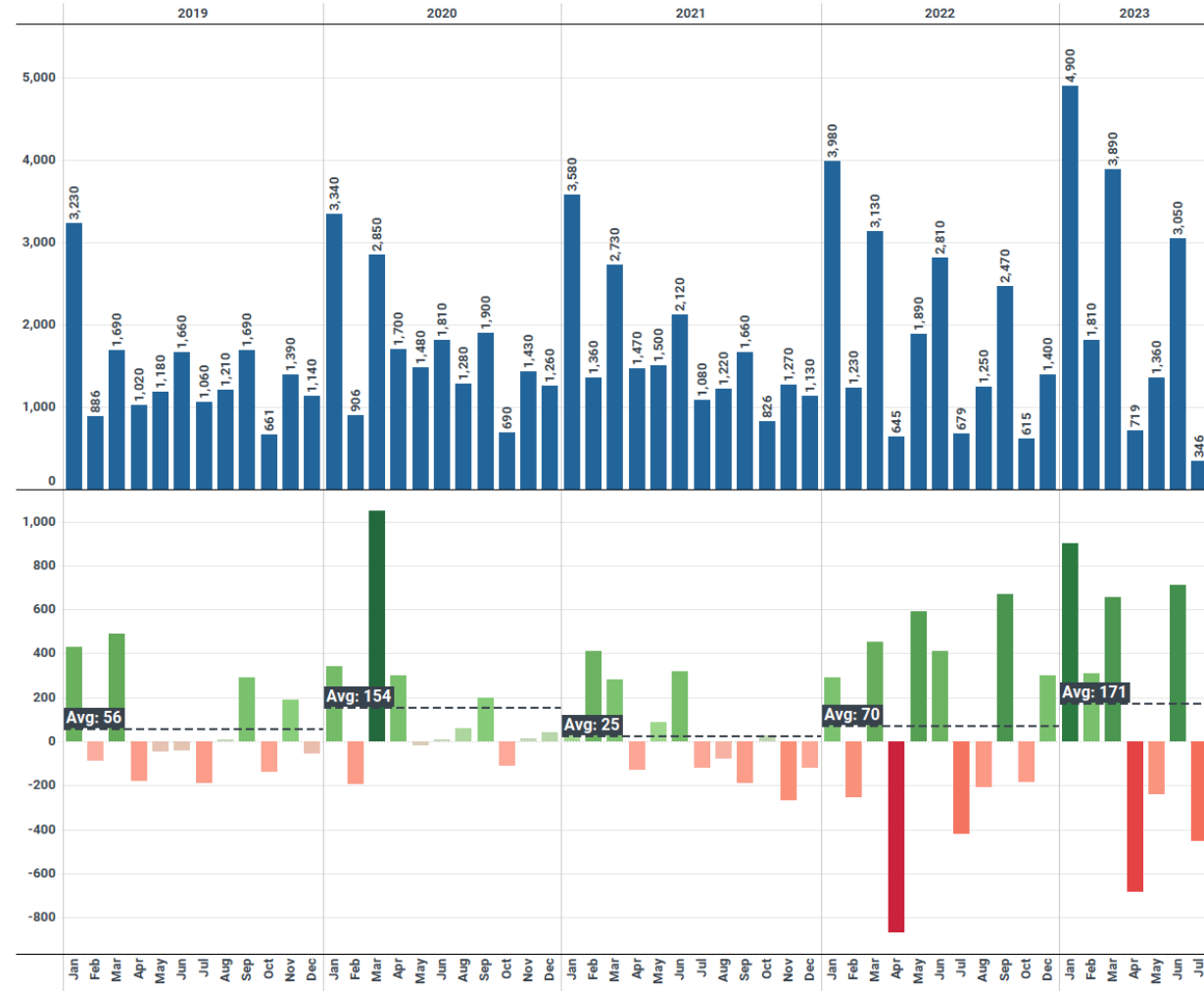
China: Liquidity Conditions Remain Loose

Low inflation provides PBOC plenty of flexibility to allow for easy liquidity conditions

Monthly Chinese Annualized Money Supply Growth (%)



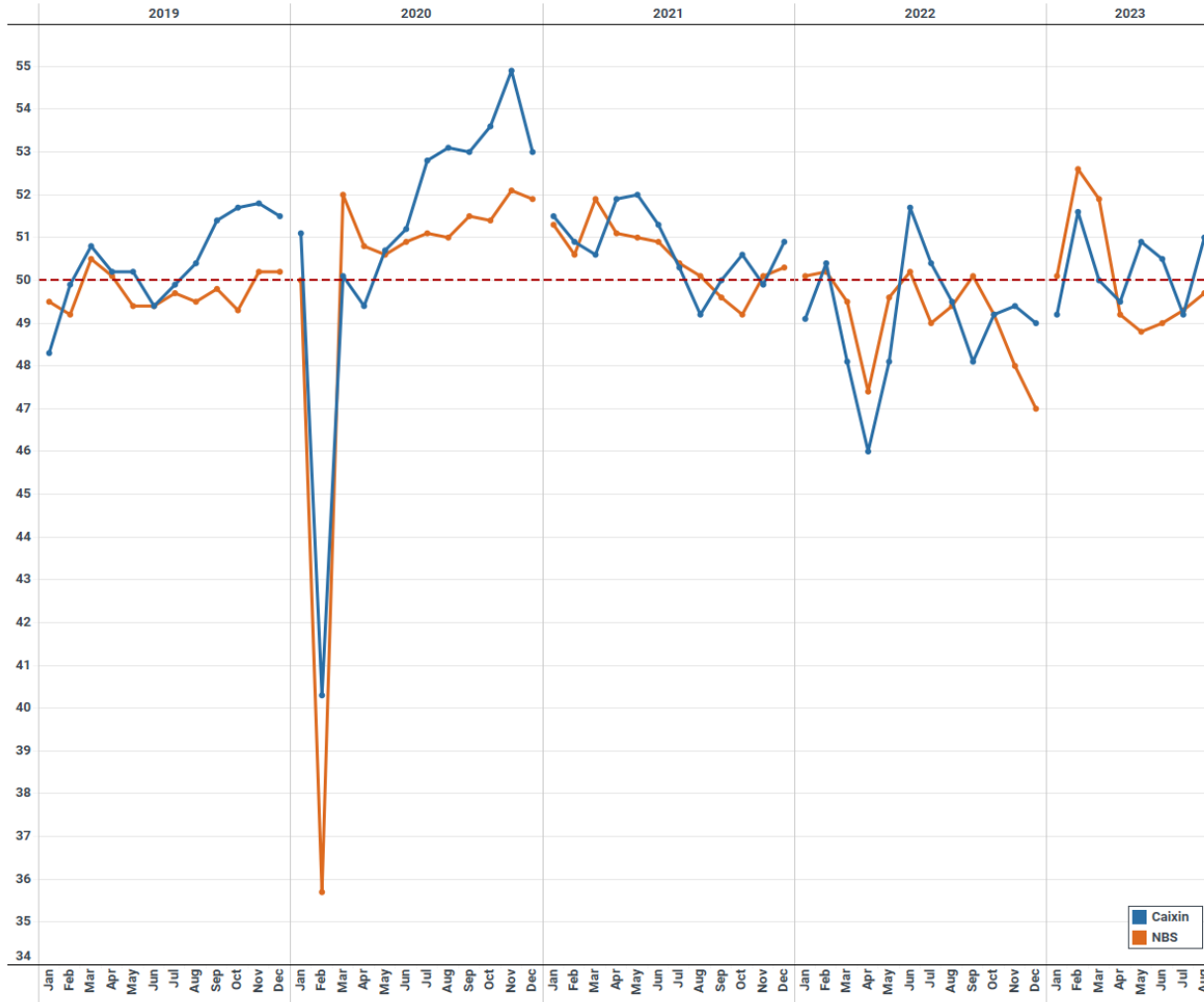
Monthly Chinese New Loans (top) and Delta Against Consensus (bottom)



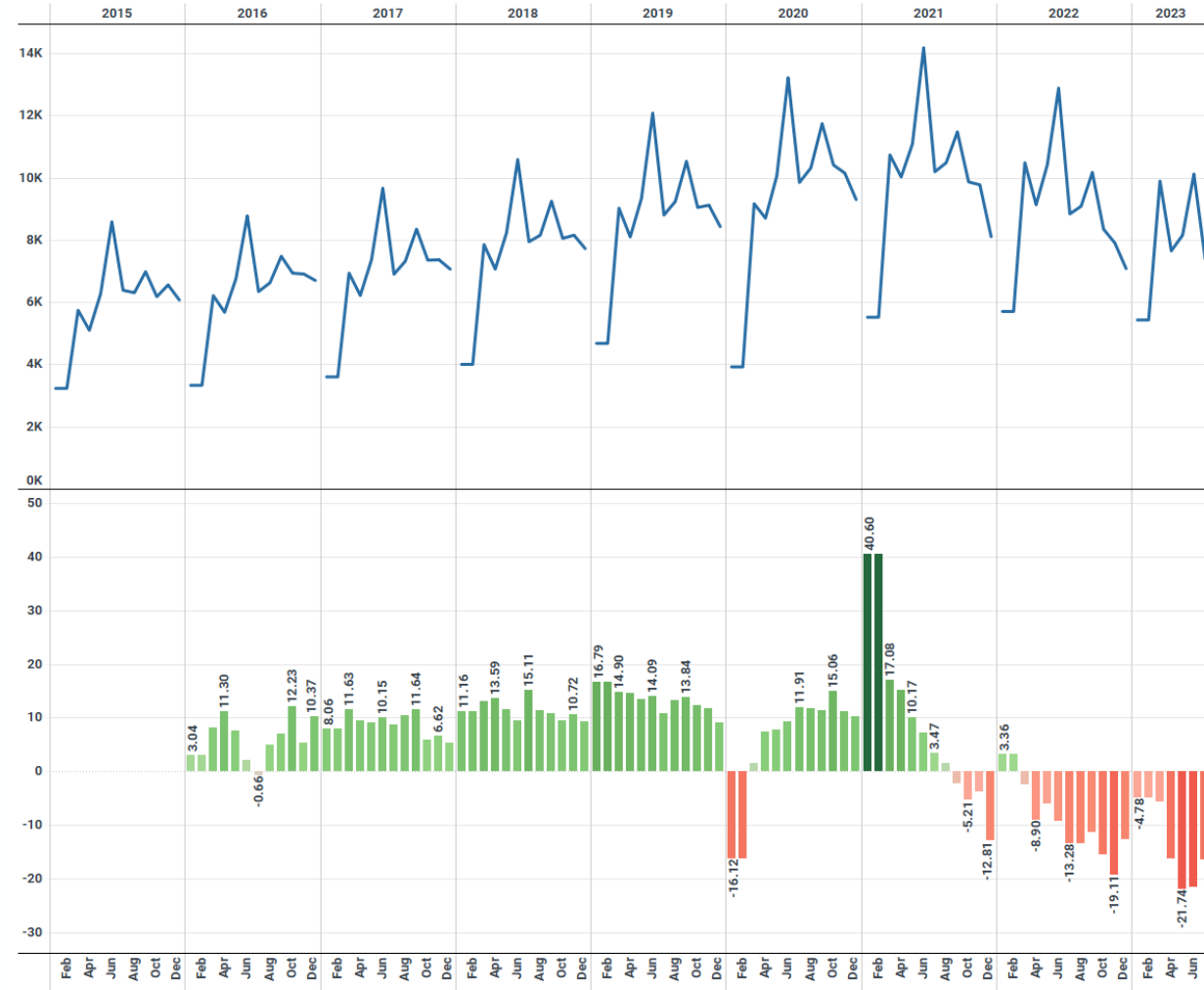
China: Private Investment

Manufacturing struggled after the initial reopening, albeit things have shown some signs of improvement into August

Monthly Chinese Manufacturing PMI by Source



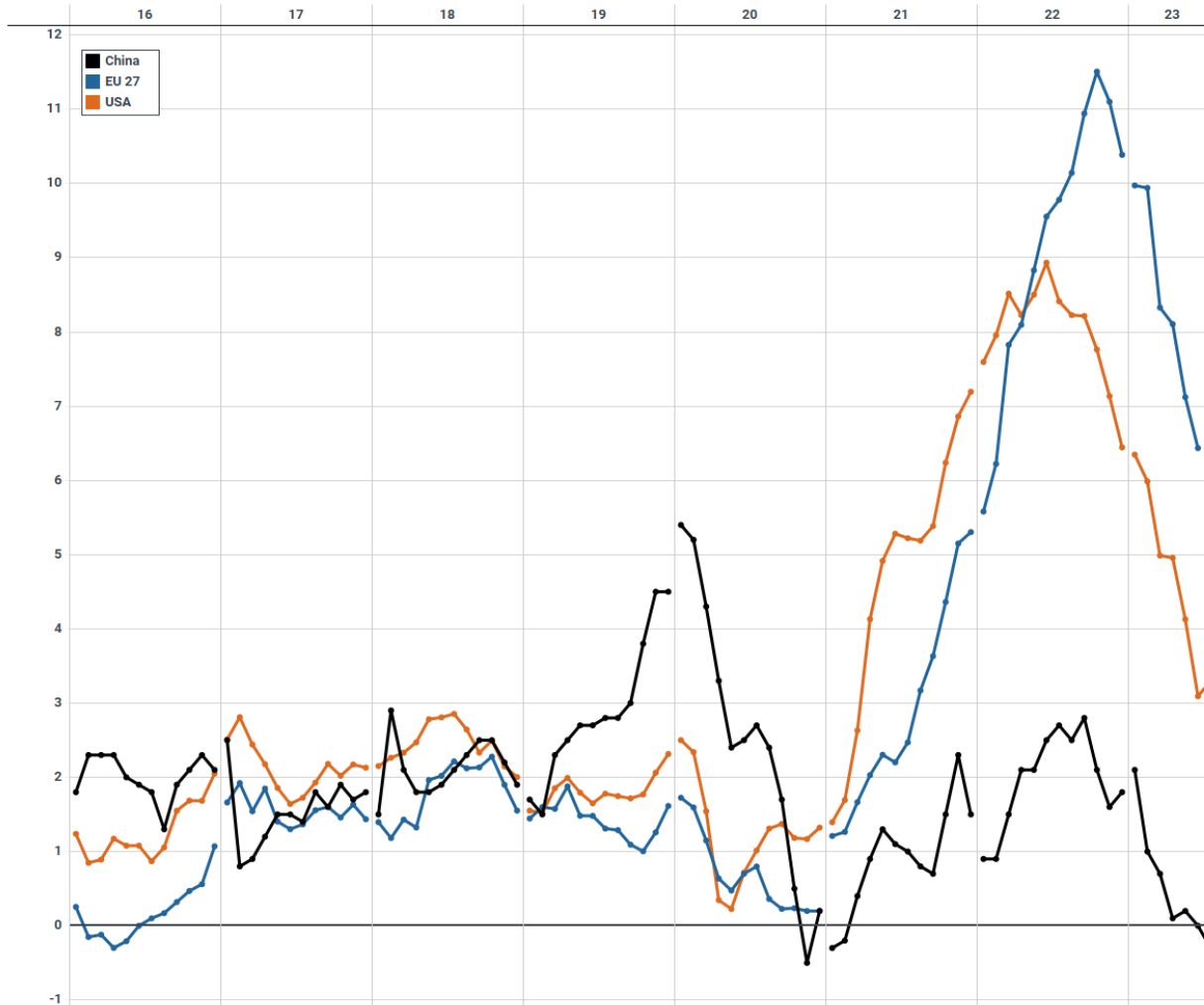
Monthly Chinese Residential + Office Investment (top) with Y/Y % Delta (bottom)



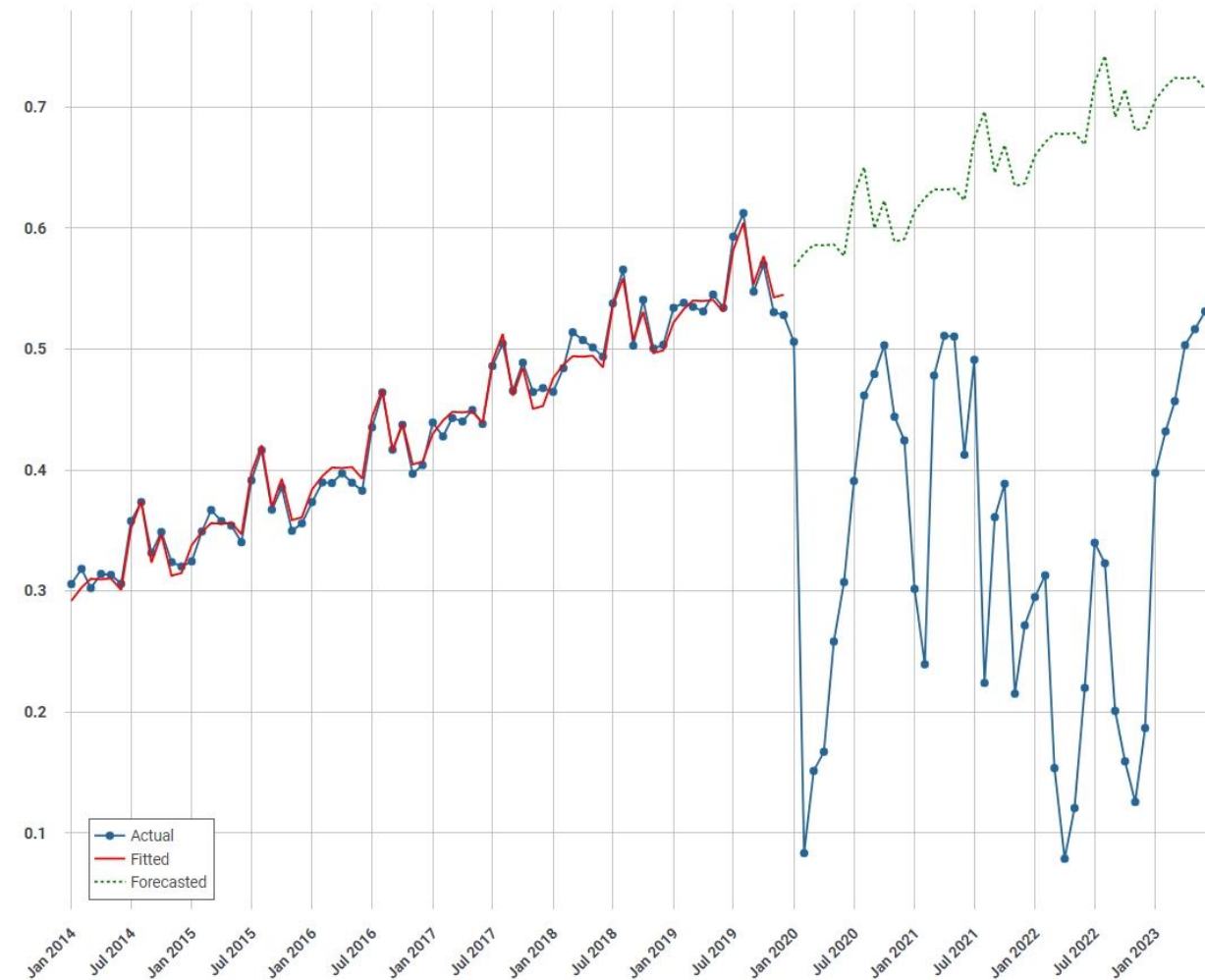
China: Household Consumption

Chinese consumer remains wary of returning to the market after years of zero-Covid

Monthly Annualized Headline Inflation by Country (%)



Monthly Chinese Flight Passenger Traffic and Pre-Pandemic Trend (mn people)





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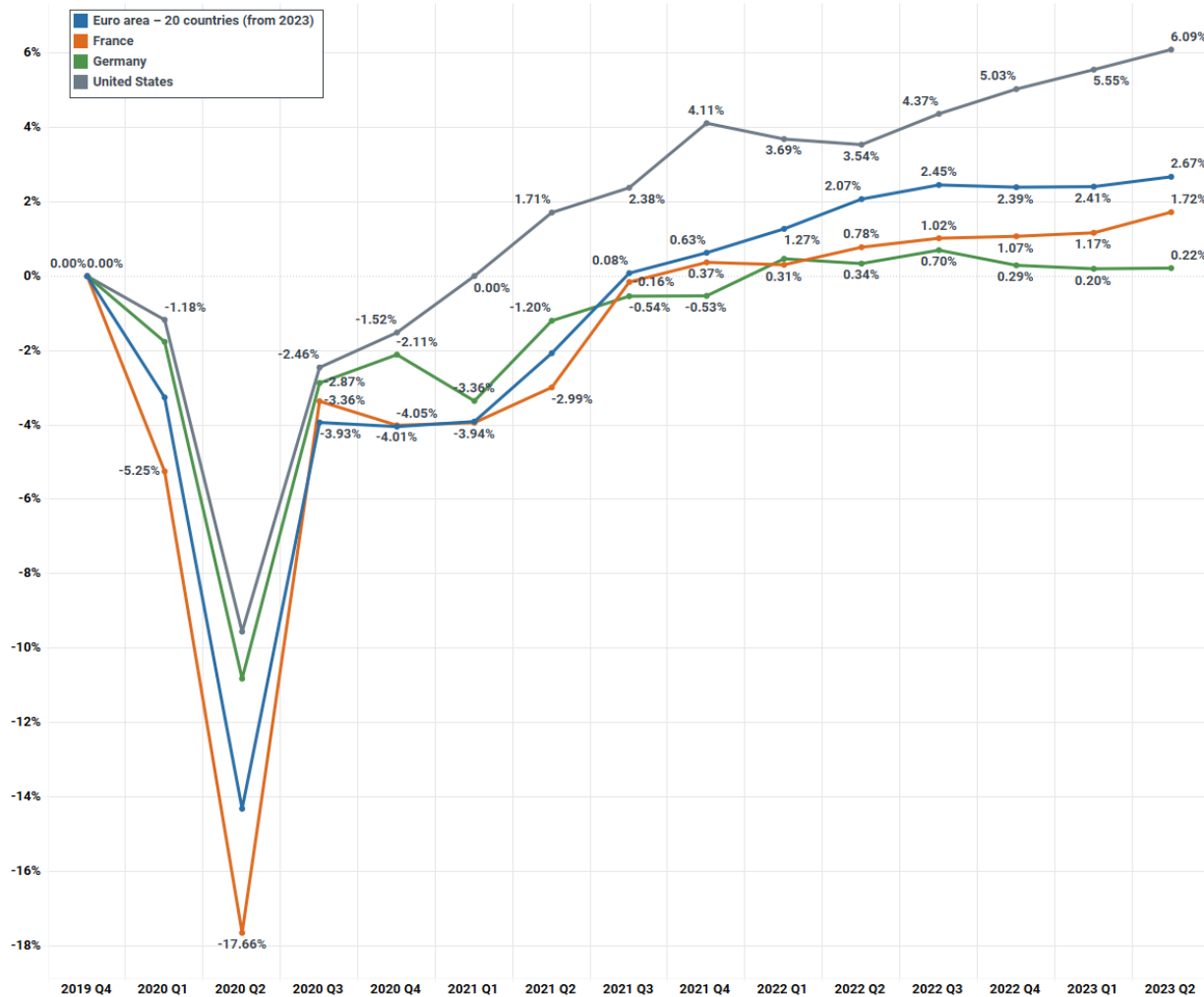
Transparency Solutions For Commodity Markets

European Union

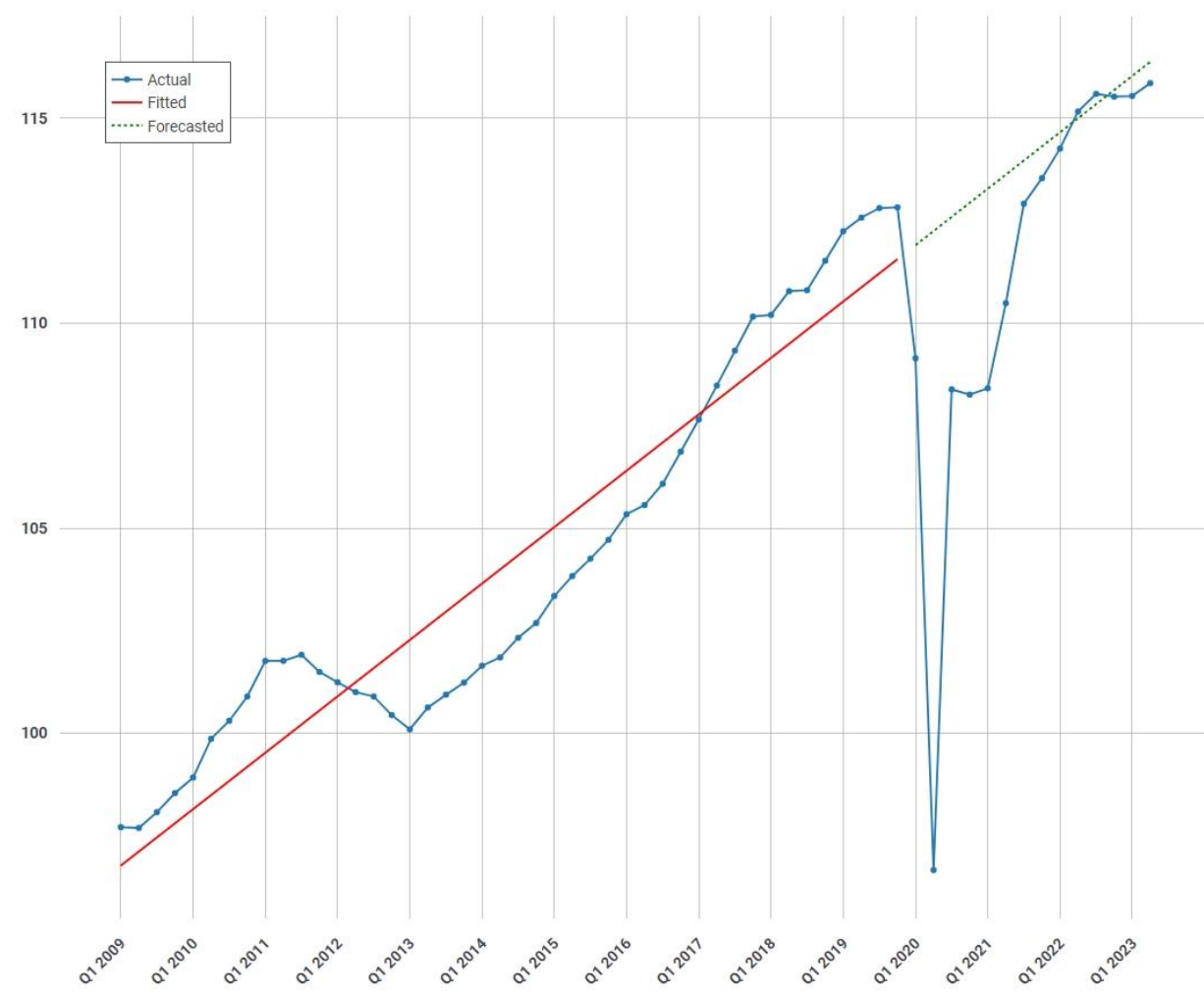
European Union: Growth is Stagnating

After a relatively strong post-Covid recovery, the war in Ukraine is weighing on growth

Real GDP Percentage Change Relative to Q4 2019 Baseline (%)



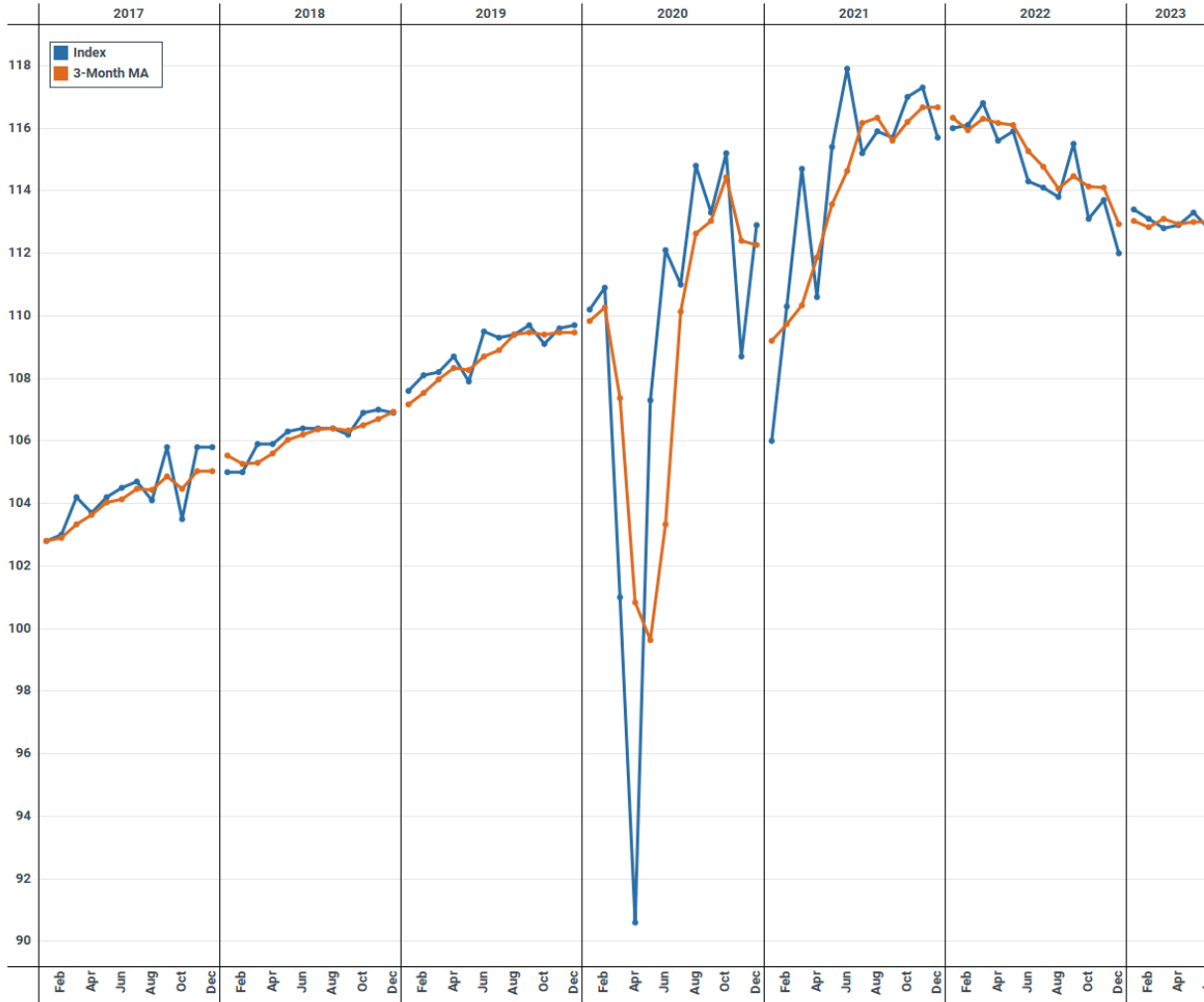
Quarterly Real Headline EU 20 GDP Against Historic Trend (Index)



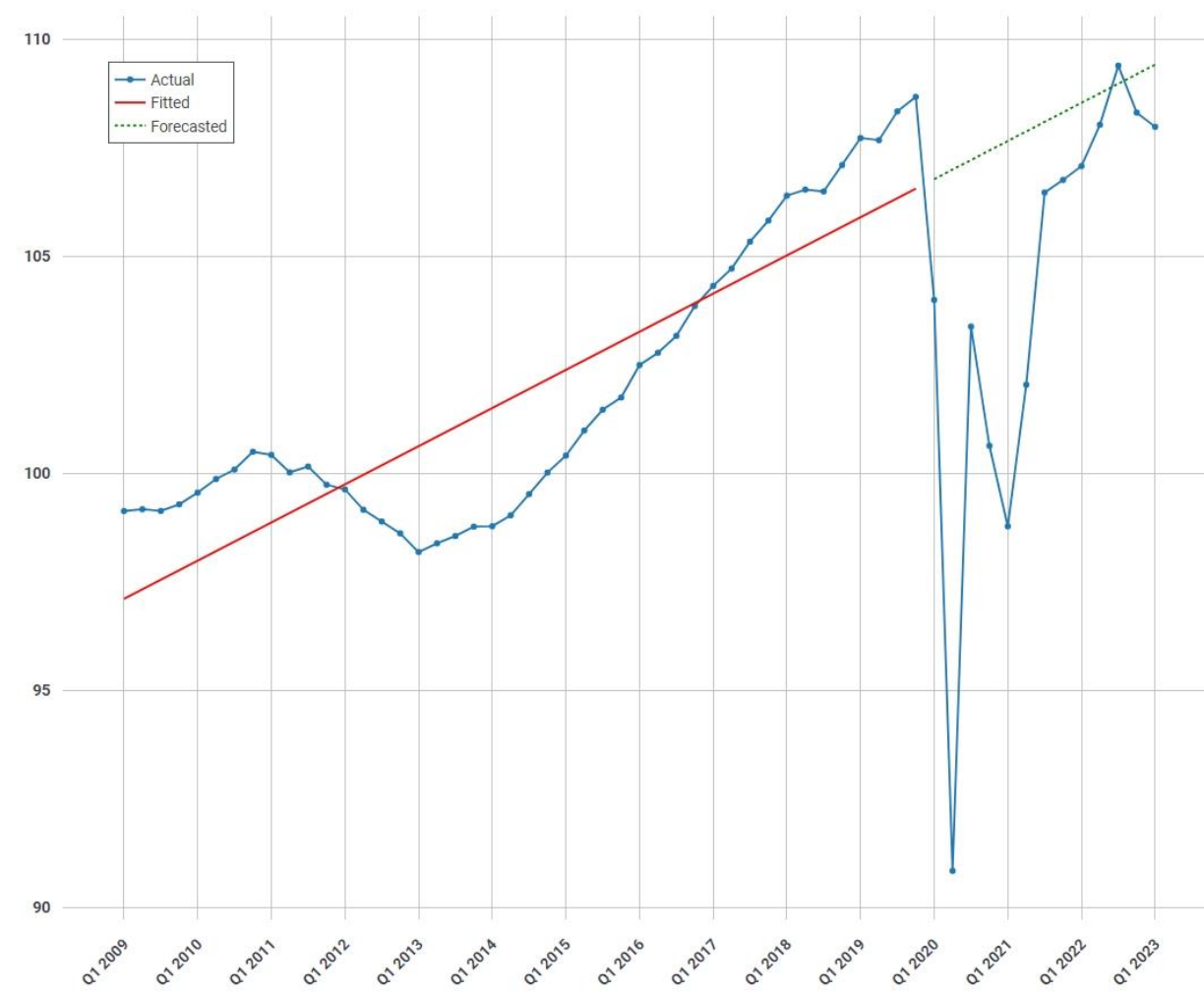
European Union: Household Consumption

Real purchases have flattened out after a sizeable decline through 2022 – consumption should see some improvement in Q3

Monthly EU 20 Real Retail Sales Index



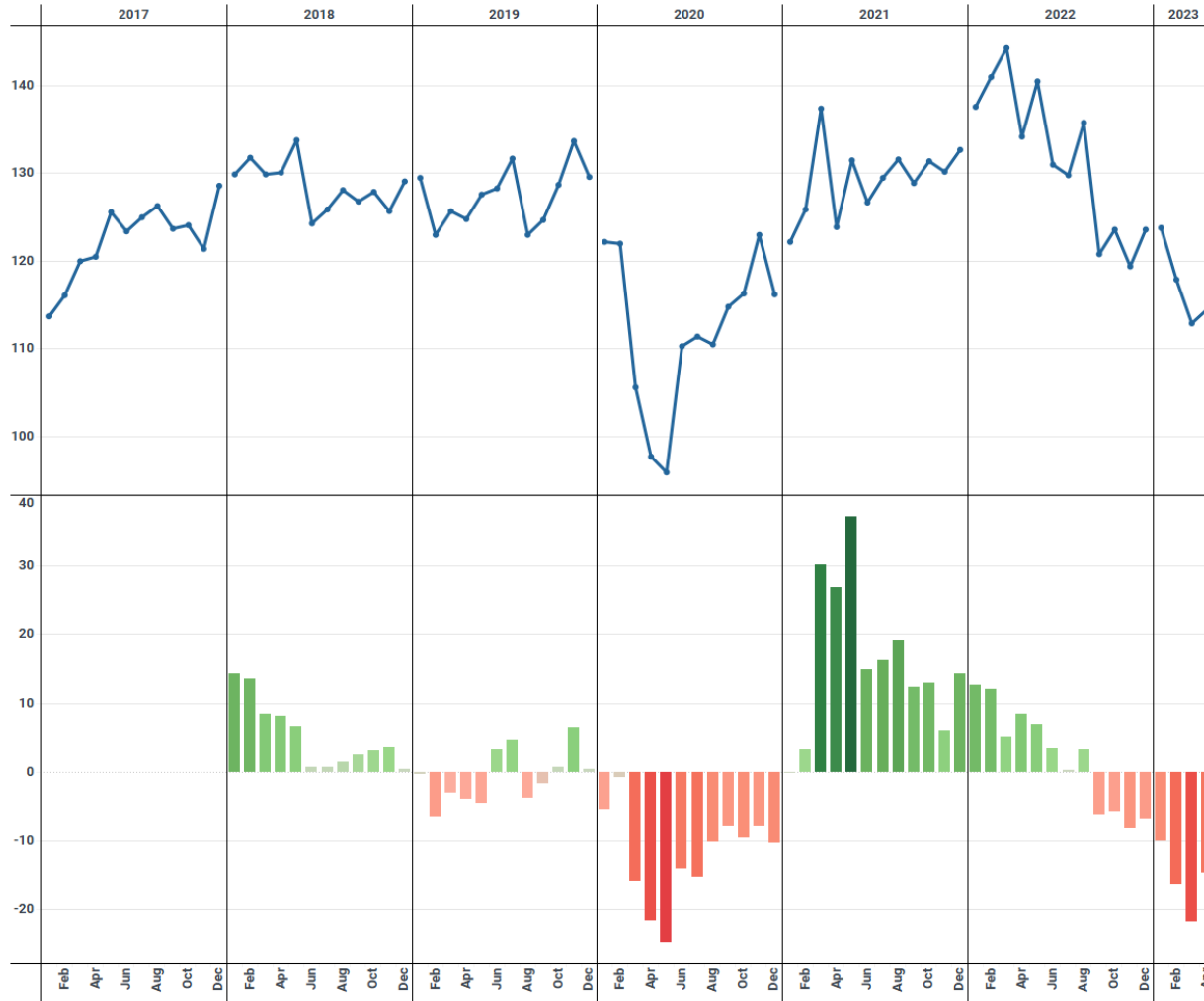
Quarterly EU 20 Real Household and NPISH Consumption Against Historic Trend



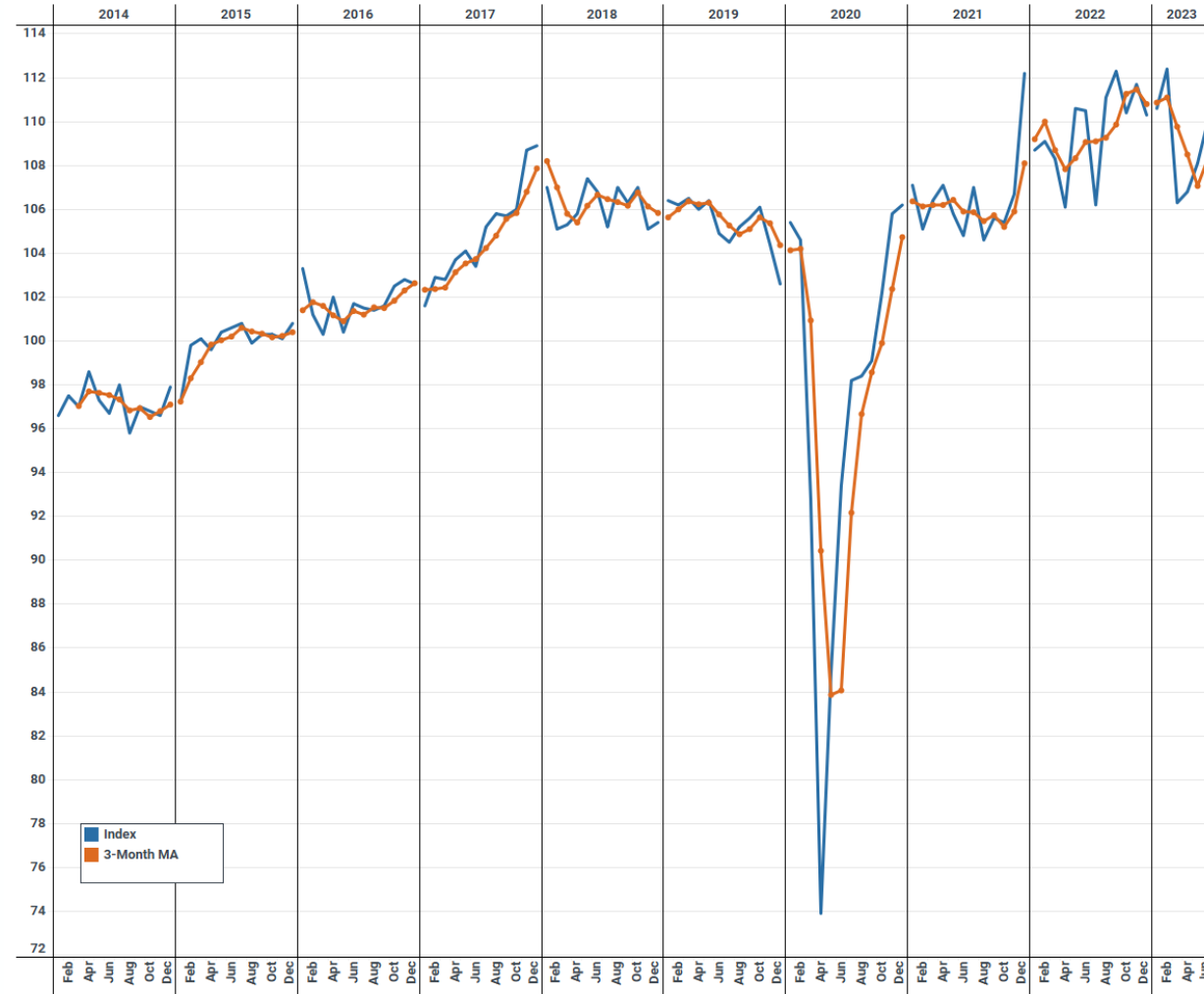
European Union: Private Investment

Manufacturing showing some signs of improvement; construction permits point to approaching weakness in the real estate sector

Monthly EU 20 Construction Permits (top) and Y/Y % Delta (bottom)



Monthly EU 20 Real Manufacturing Industrial Production Index

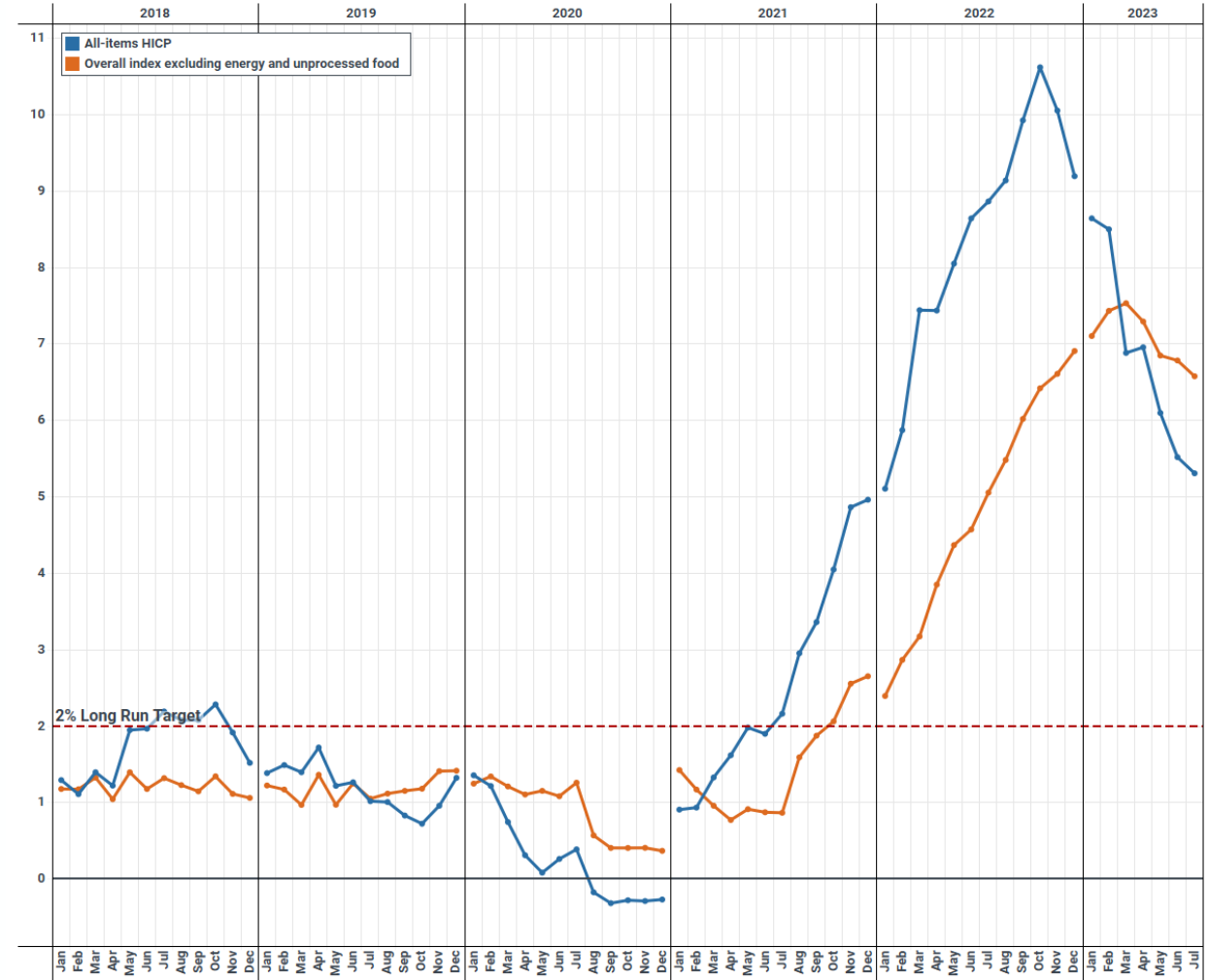


European Union: Supply Side Risks Remain

EU economy looks far from stellar but risks this winter could put the ECB in a difficult position

- The **EU economy is materially weaker than its US counterpart** and thus, there is far less demand side price pressure.
 - In a pre-Covid world, this would have meant a far more dovish ECB.
- ECB might not be required to do as much to get inflation back to 2%.
 - However, **there are massive supply side risks** given the loss of Russian pipeline gas flows.
 - Inflation is quickly declining, but if winter is cold and prices spike, EU is back to square one.
- More broadly, one should not expect much growth out of Europe for the duration of this year.

Monthly Annualized (HICP) EU 20 Inflation (%)





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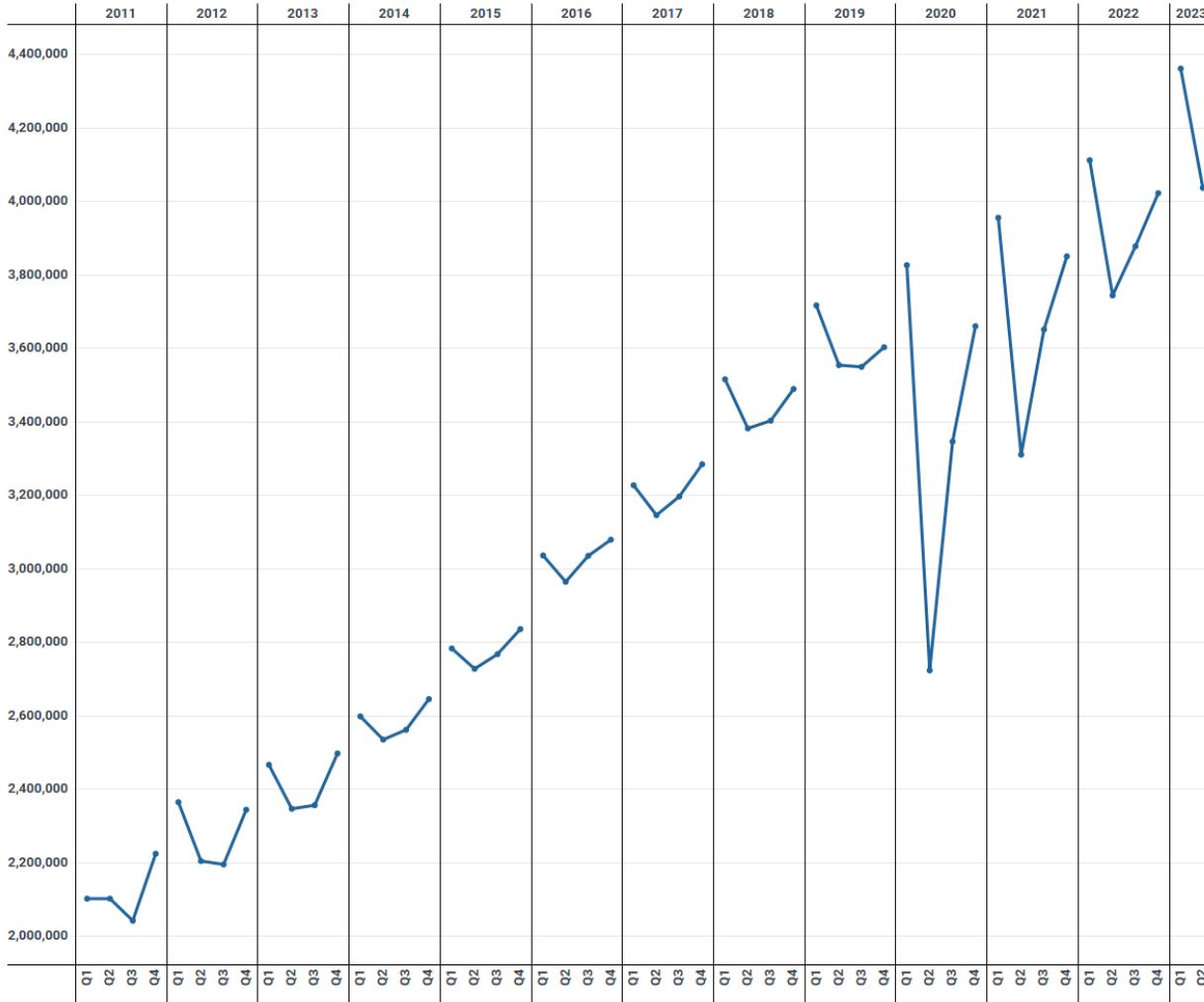
Transparency Solutions For Commodity Markets

India

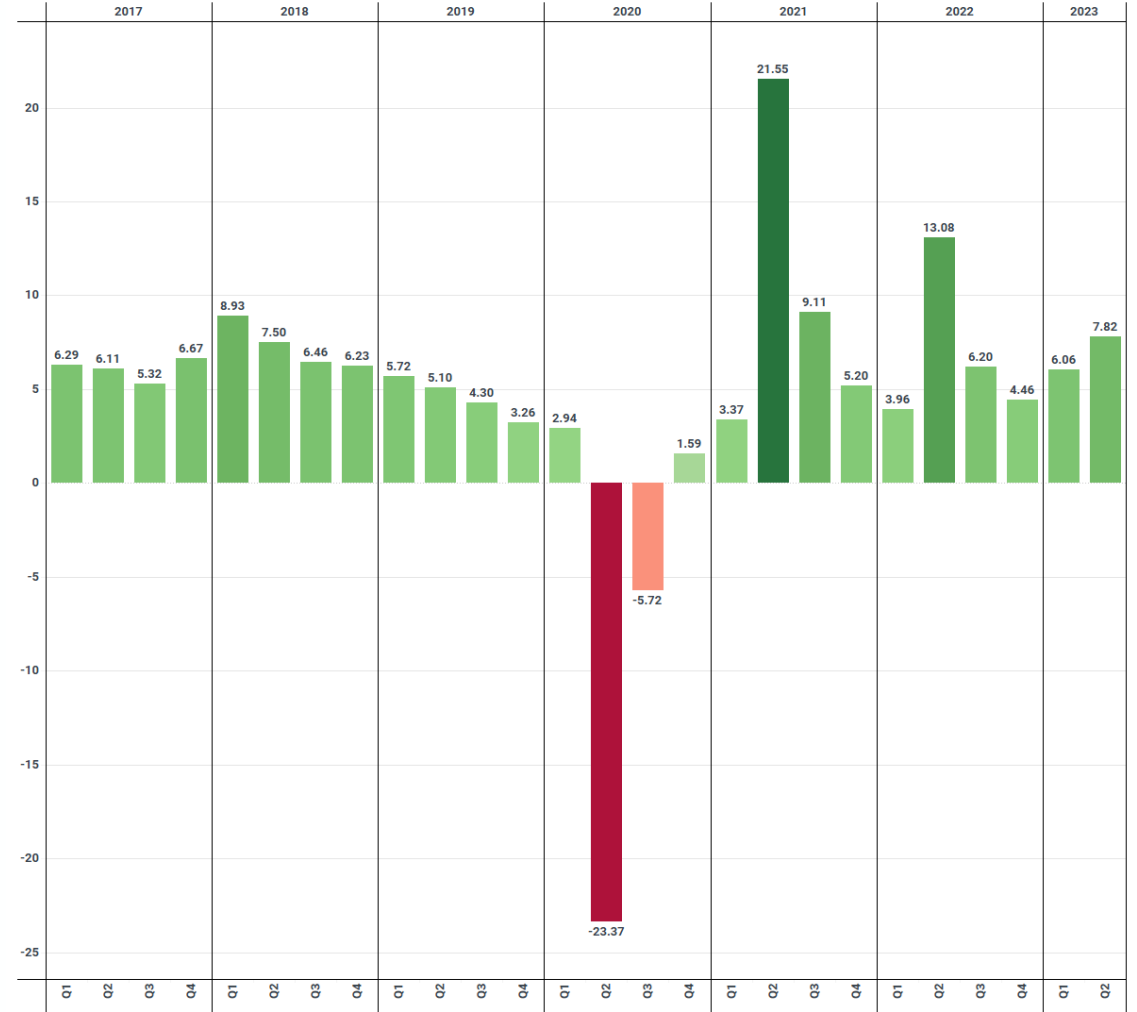
India: Growth Continues to Look Strong into Q2

Q2 GDP up 7.8% q/q; however, larger q/q declines through Q2 appear to have become the norm post-Covid

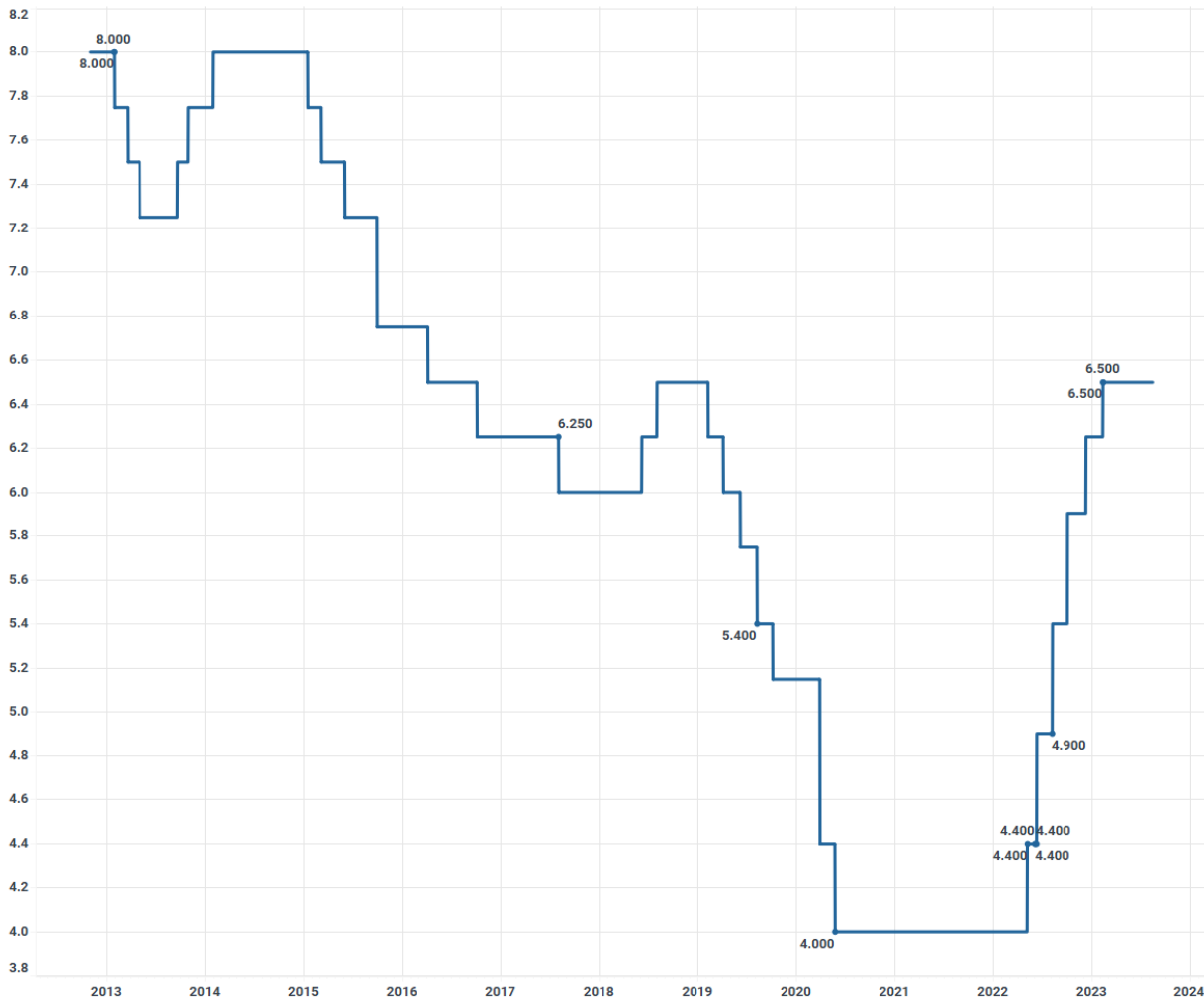
Quarterly Indian Headline Real GDP (INR mn)



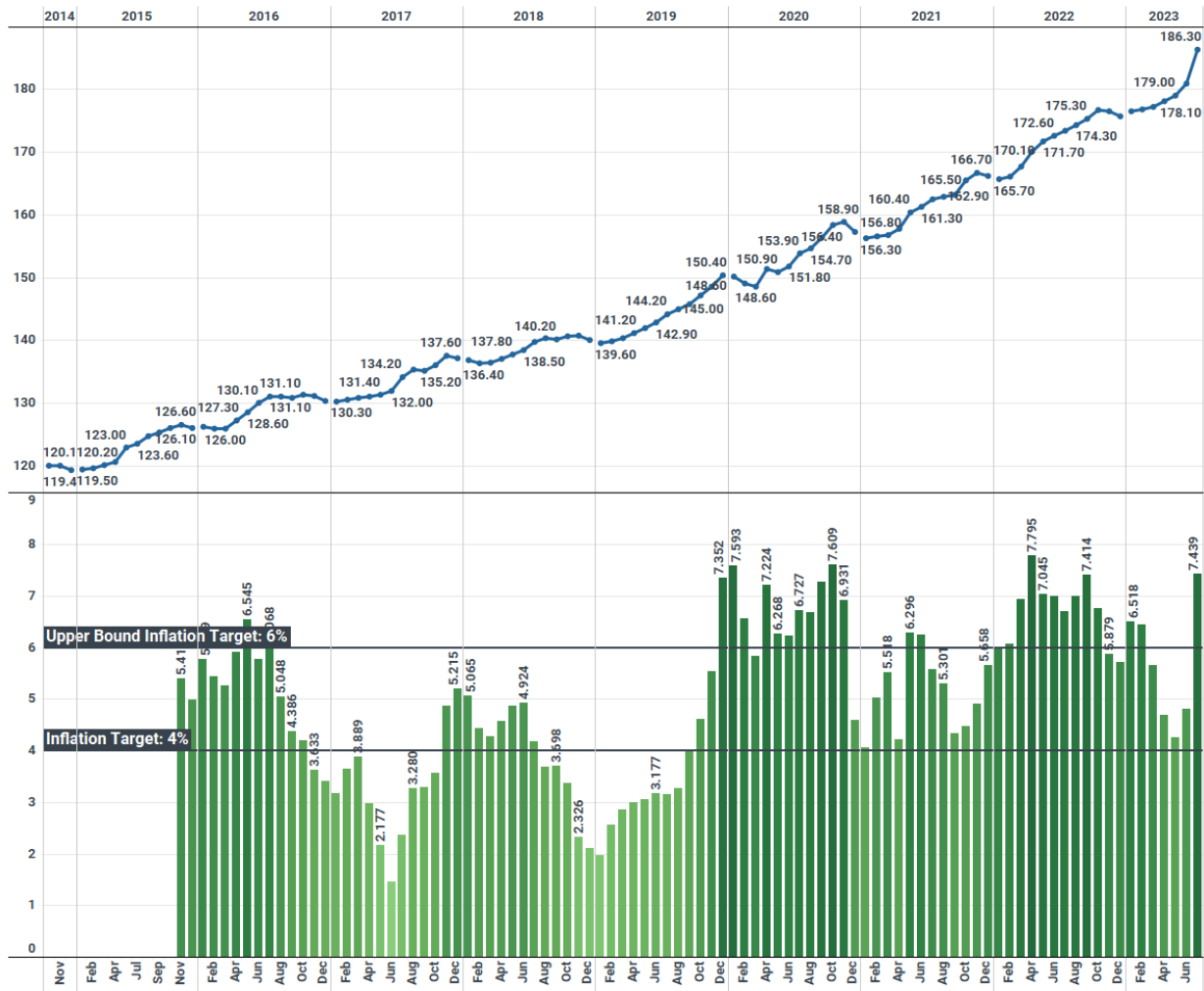
Quarterly Indian Headline Real GDP Y/Y % Delta



India Official Policy Repo Rate (%)



Monthly Indian Headline CPI Index (top) and Y/Y % Delta (bottom)





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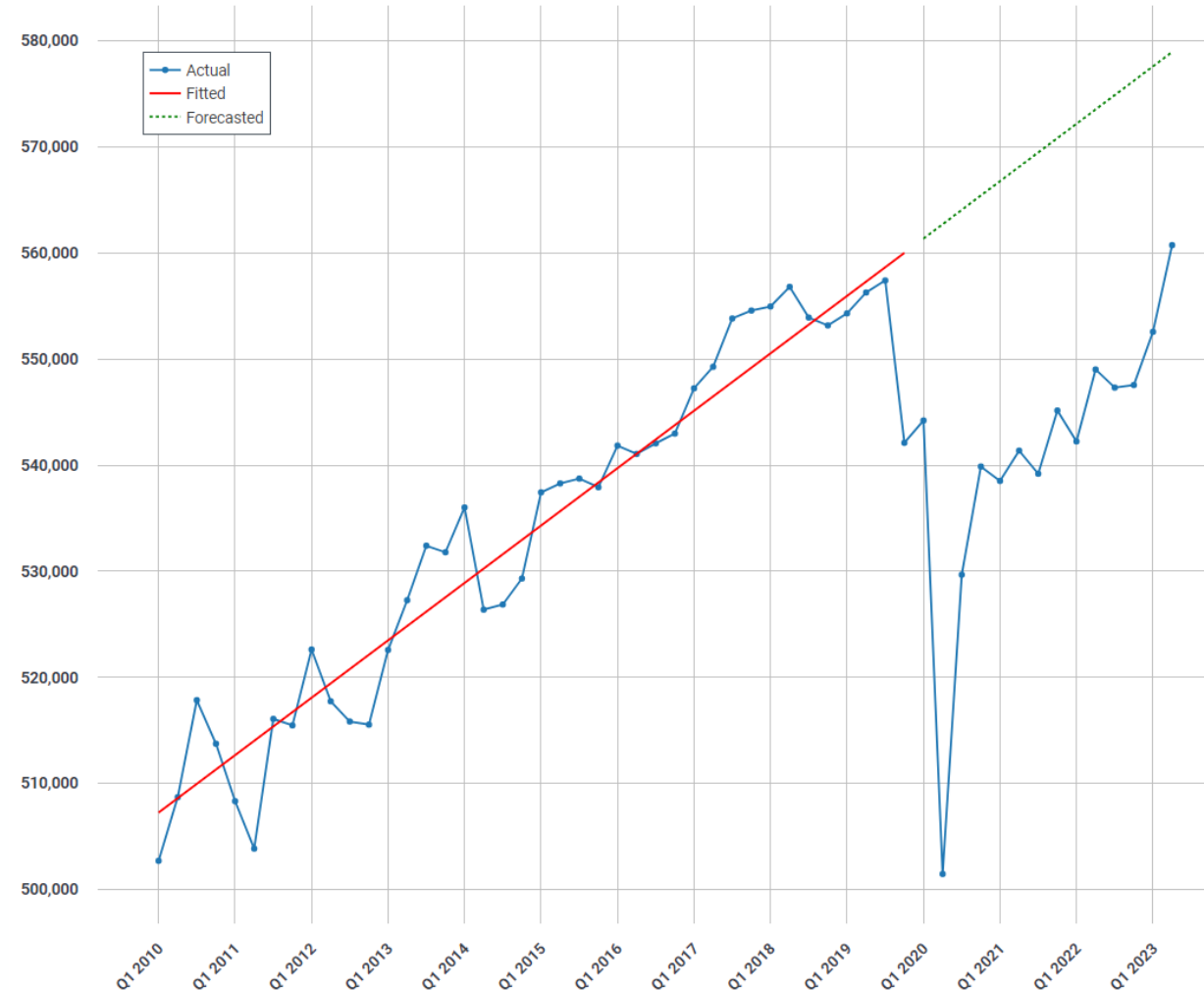
Japan

Japan: Strong Q2 Growth Figures Paper Over Problems

Japan currently a real source of GDP growth, albeit output still lagging well below pre-pandemic trend

- Japan is growing at a steady clip with output finishing up 1.5% q/q in Q2 (preliminary data).
 - However, Japanese GDP remains far below pre-pandemic trend. Unclear whether a return to trend will be possible.
- Bank of Japan and Governor Ueda face a number of difficult issues.
 - Inflation is rising and thus, monetary policy theoretically needs to tighten.
 - However, government debt levels are so high (>250% of GD) that significant tightening is unlikely. More than 20% of govt budget goes to interest alone.

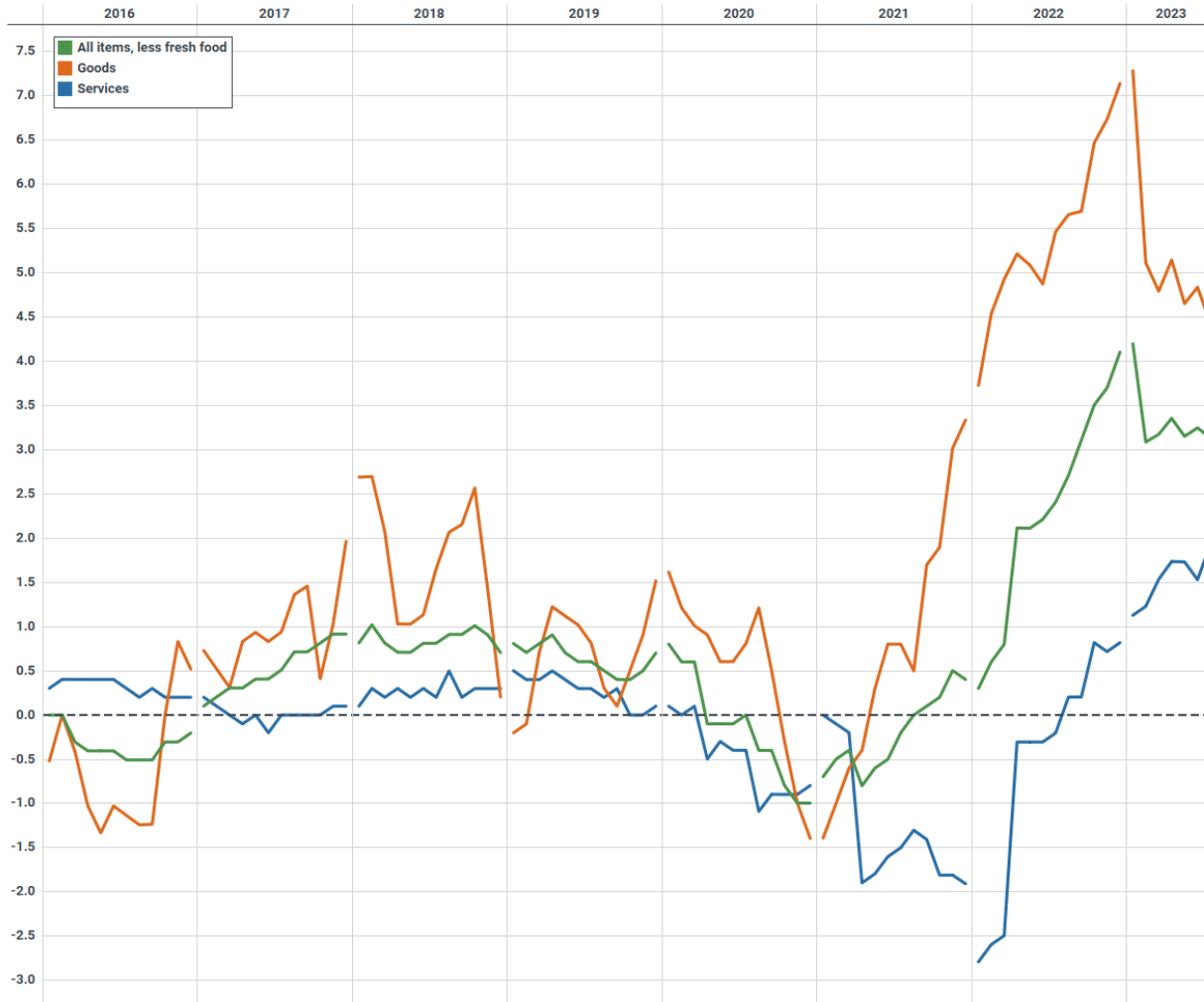
Quarterly Japanese Headline Real GDP with Historical Trend (JPY bn)



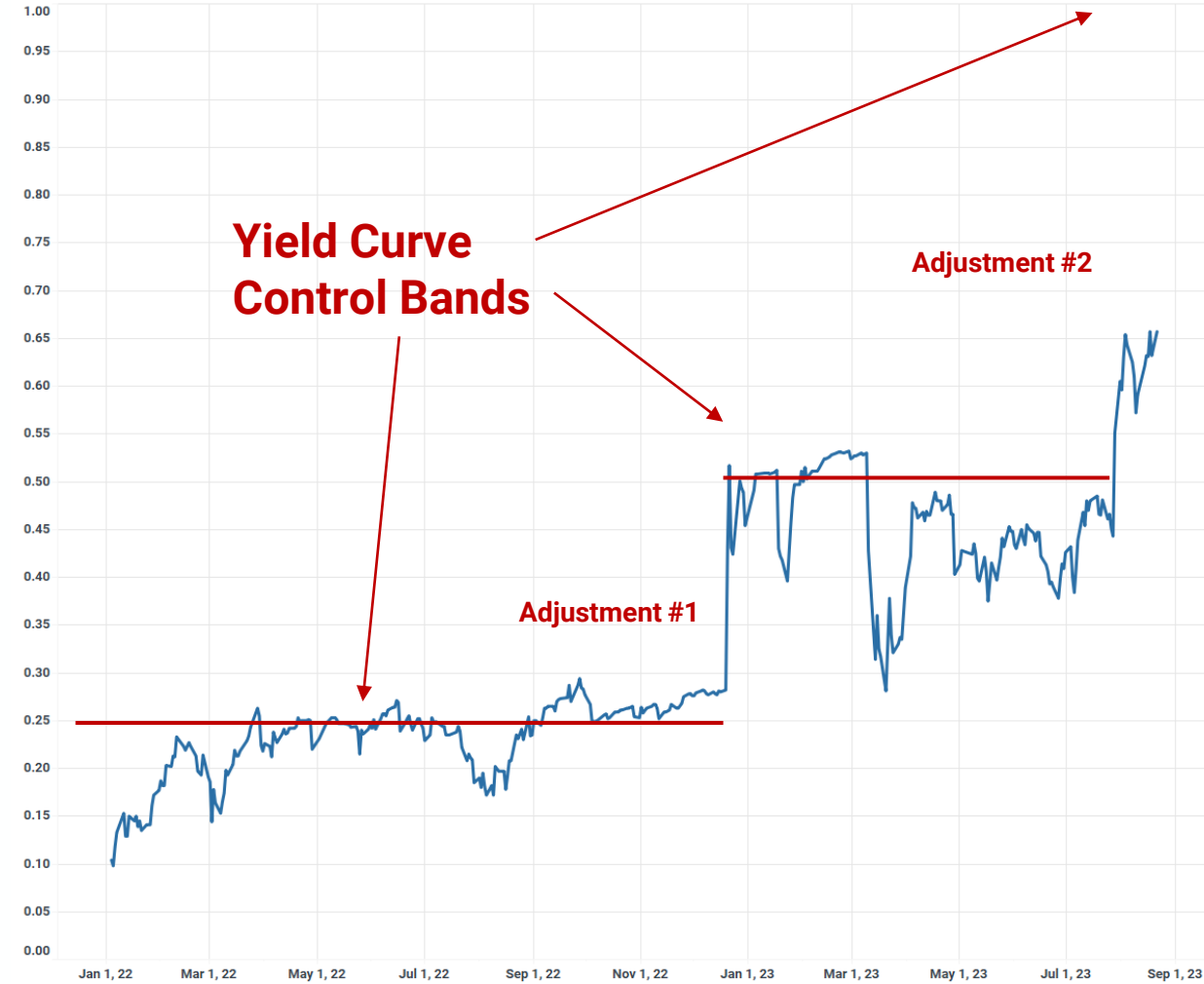
Japan: Inflation Growing More Persistent

BoJ tightened policy in July via yield curve control (they are allowing rates to rise to 1%, up from 0.5% beforehand)

Monthly Annualized Japanese Inflation (%)

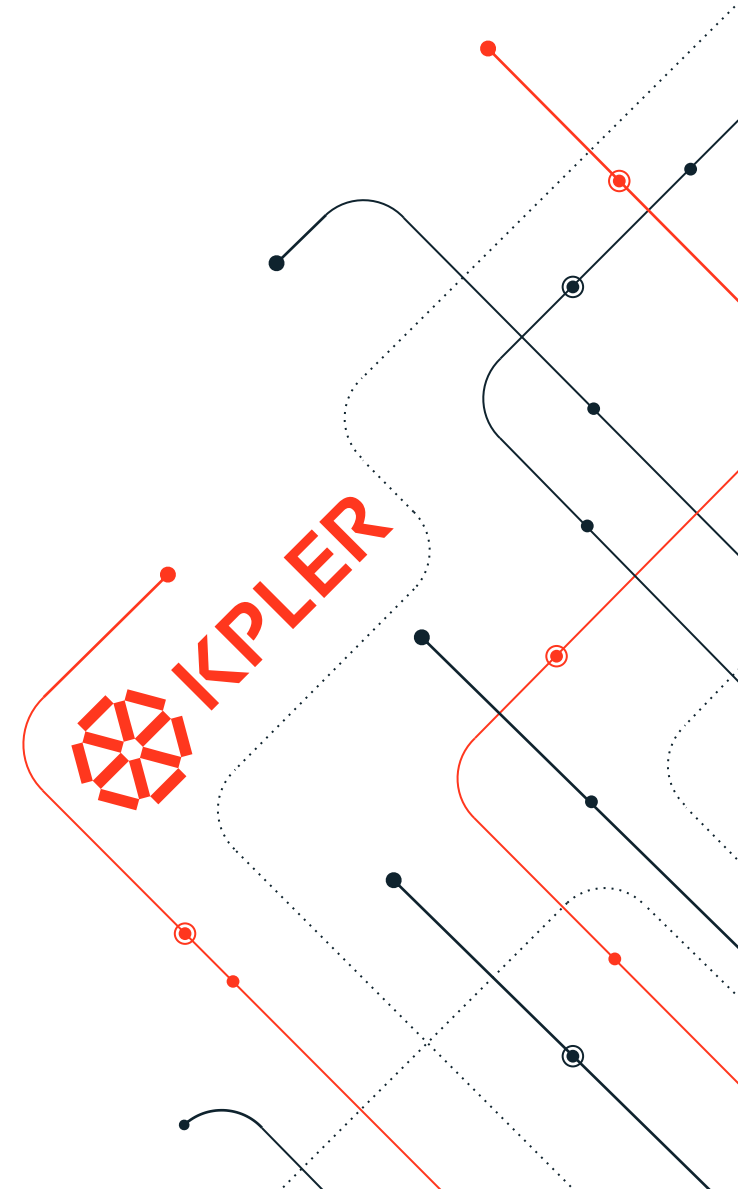


Daily Japanese 10-Year Govt Bond Yield (%)



Gas & LNG market outlook

Ryhana Rasidi – Gas/LNG analyst



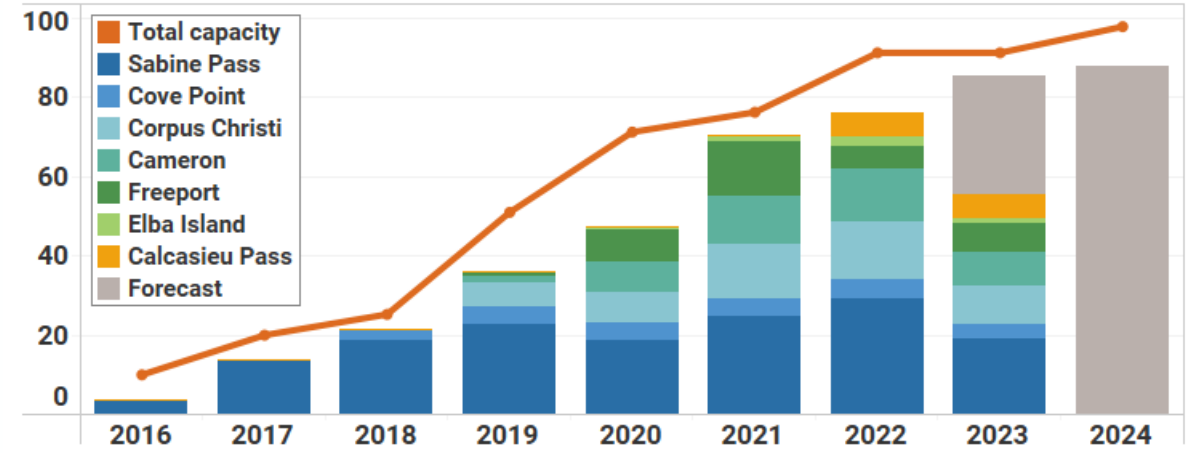


US LNG supply to grow in 2024, assuming high utilization and no major outages

Start-up of Golden Pass and Plaquemines marks the second wave of US LNG export capacity expansions

- Since the first two trains at Sabine Pass opened in 2016, the US' total LNG export capacity has grown to ~91 Mtpa in 2023.
- US supply has consistently grown despite major outages including February 2021 cold snap, Freeport explosion and deep maintenance at Sabine Pass T1 & T2.
- Kpler Insight expects **US LNG exports to grow by 2.8% y/y to 88 Mt in 2024.**
- **Additional export capacity** could come from **Golden Pass T1 (6 Mtpa)** and **Plaquemines T1-T2 (1.3 Mtpa)** in late 2024. **Actual exports from the new facilities are only expected to start in 2025.**

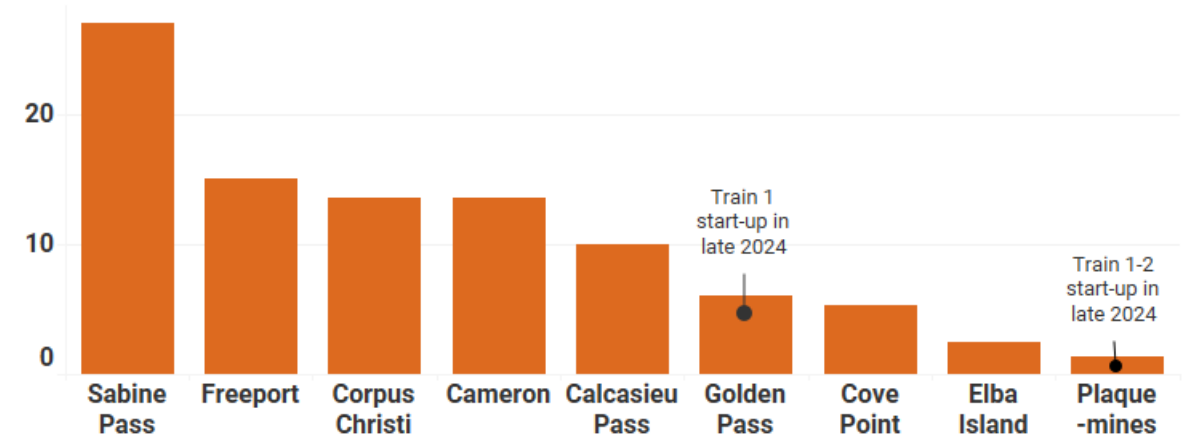
US LNG liquefaction capacity vs actual exports (Mtpa)



Source: Kpler, Various sources

Gray bars from 2023 are based on Kpler Insight forecasts.

US LNG liquefaction capacity by project in 2024 (Mtpa)



Source: Kpler, Various sources

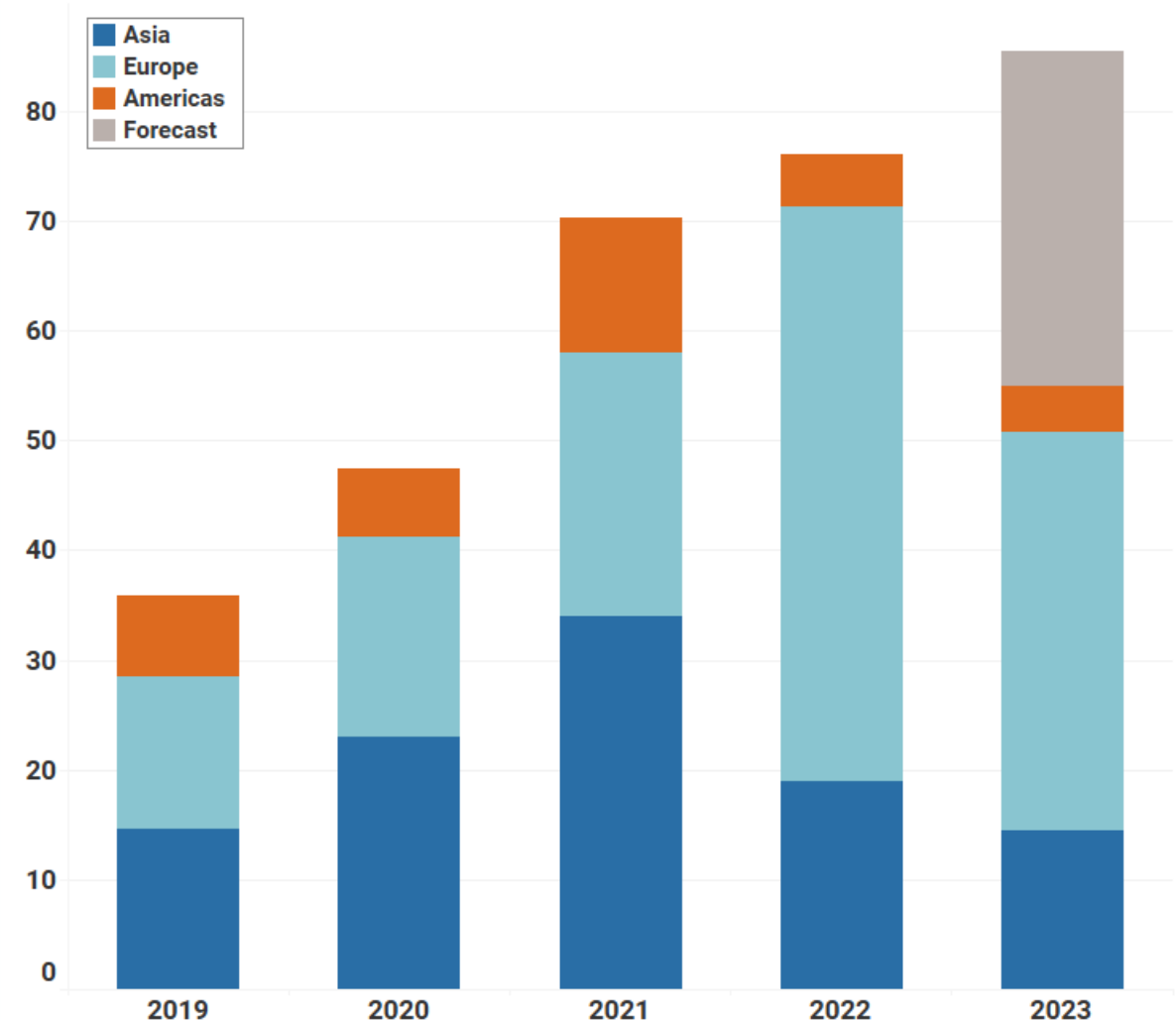


Asia's share of demand for US LNG picking up amid shoulder season in the West

...But Europe remains the US' largest LNG buyer year-to-date

- Before 2022, US LNG supply mostly went to Asia, followed by the Americas and Europe.
- Amid the Russian invasion in 2022, two-thirds of US LNG supply was delivered to Europe and a quarter to Asia.
- South American LNG demand fell in 2022 due to less severe droughts vs the previous year and healthier hydro reservoir levels.
- **In 2023, the share of US LNG to Europe vs Asia has been maintained year-to-date.**
- **Monthly US LNG exports to Asia have picked up since June amid a demand lull in Europe,** but competition to likely increase during winter.

US LNG exports by destination regions (Mt)



Source: Kpler

Gray bar for 2023 is based on Kpler Insight forecast.

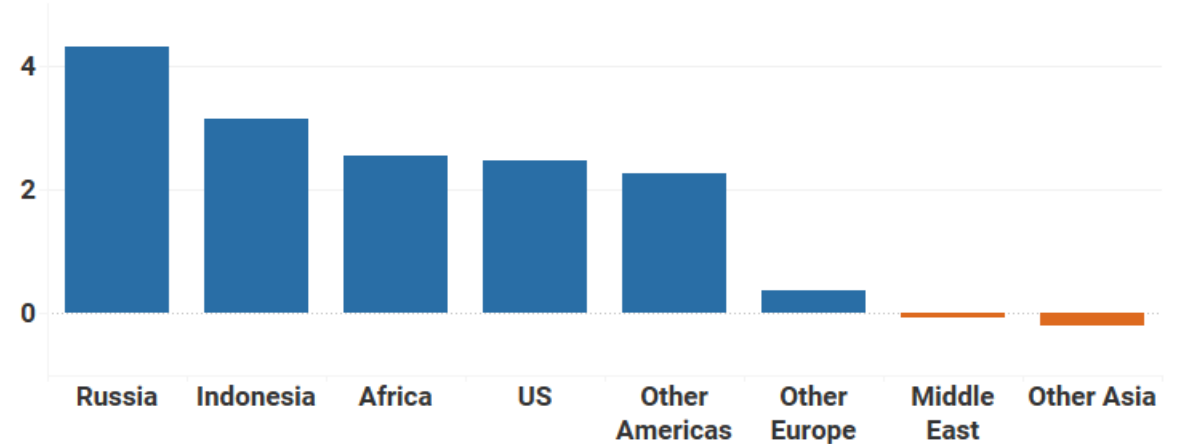


The US to become the largest LNG exporter in 2023 and 2024

Upcoming start-ups in Russia, Indonesia, Mexico and Africa will meanwhile contribute to higher LNG supplies from outside the US

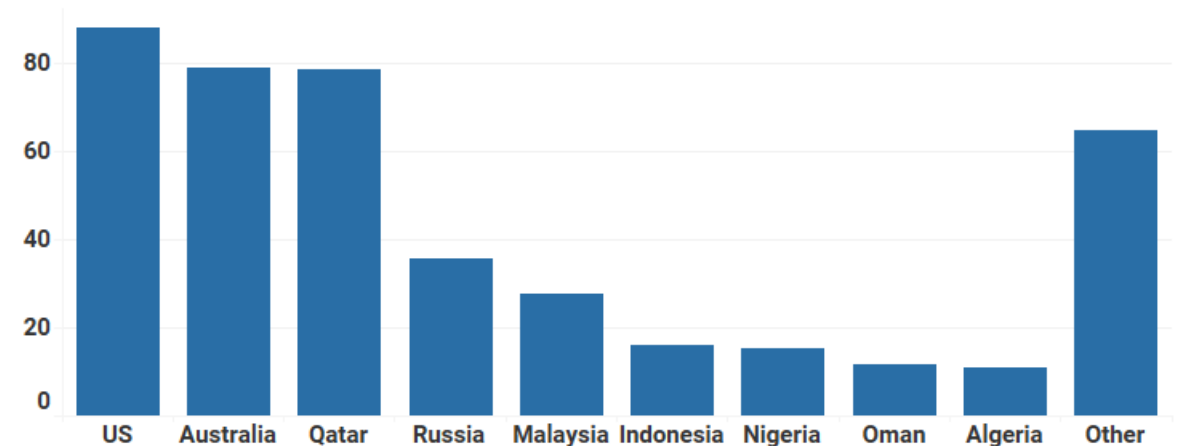
- **LNG exports from the rest of the world** are estimated to **grow by 3.2% y/y to 340 Mt in 2024**.
- Largest y/y growth expected from **Russia's 6.6-Mtpa Arctic 2 T1** and **Indonesia's 3.8-Mtpa Tangguh T3**.
- Higher African exports in 2024 due to start-ups at **Congo's 0.6-Mtpa Tango** and **Senegal/Mauritania's 2.4-Mtpa Greater Tortue Ahmeyim FLNG**.
- Start-up of **Mexico's 1.4-Mtpa Altamira FLNG** expected in Q4 2023.
- **The US** is expected to overtake Australia and Qatar in 2023 and remain the **largest LNG exporter** next year.

Y/y LNG supply changes by country/region in 2024 (Mt)



Source: Kpler
Based on Kpler Insight forecast.

Expected global LNG supply by country in 2024 (Mt)



Source: Kpler
Based on Kpler Insight forecast.

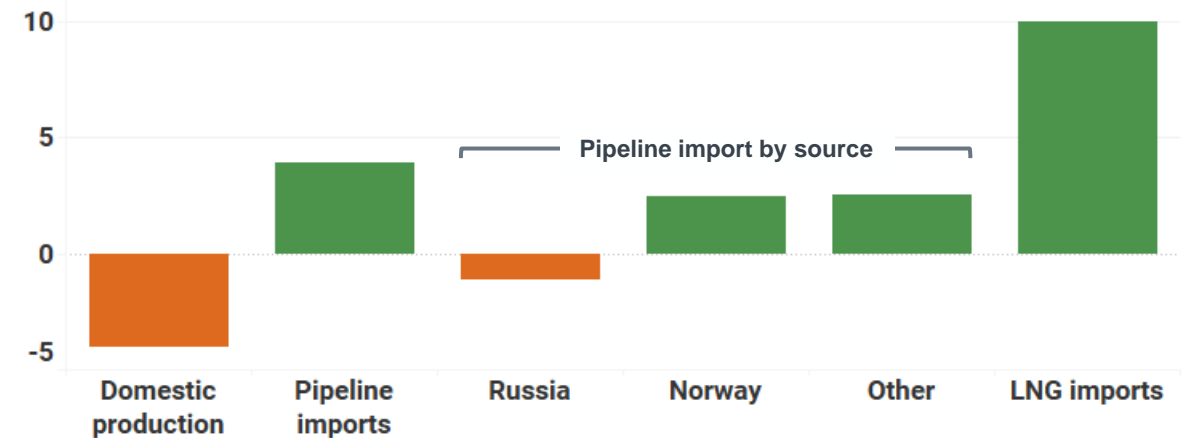


European gas in 2024 déjà vu from 2023? Weather is still a key uncertainty

Gas consumption saving measures are expected to continue, restocking targets prioritized next year

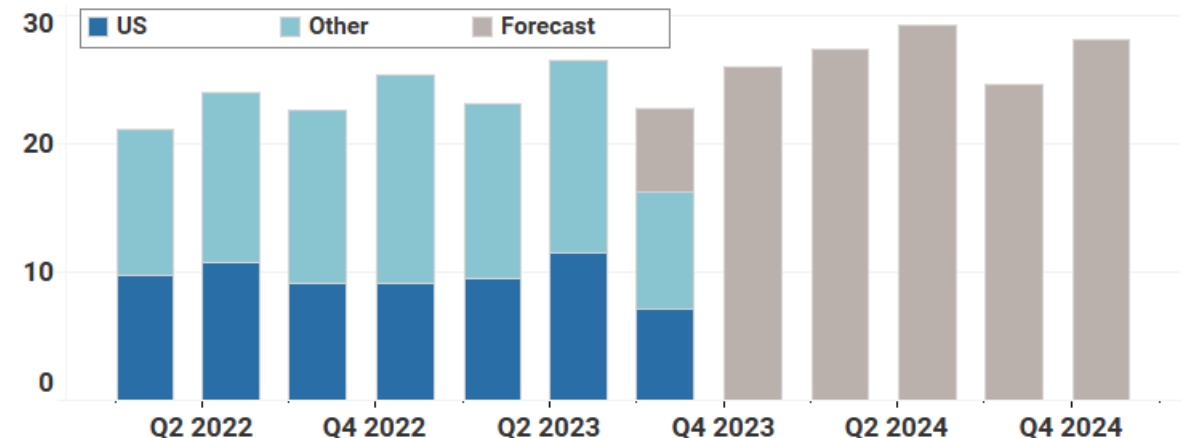
- **EU-27 LNG imports are forecast to rise by 11% y/y to 110 Mt (150 bcm) in 2024**, assuming normal weather and underground gas stocks at 57% full (60 bcm) post-winter 2023-2024.
- Regional domestic gas production is estimated to drop by 7% y/y to 36 bcm in 2024, and pipeline gas imports to increase by 3% y/y to 145 bcm.
- EU gas consumption is expected to slightly weaken next year, with demand-savings measures in winter.
- **Europe will continue to prioritise its 90% gas storage target by the November 1 deadline in 2024.**
- Spot/FOB LNG demand will be supported by some expired contracts and Groningen shutdown.

Y/y change in EU natural gas production and import in 2024 (bcm)



Source: Kpler, ENTSOG, JODI, Various sources
Based on Kpler Insight forecasts.

EU-27 LNG imports by origin, including forecast (Mt)



Source: Kpler

Gray bars from Q3 2024 are based on Kpler Insight forecasts.

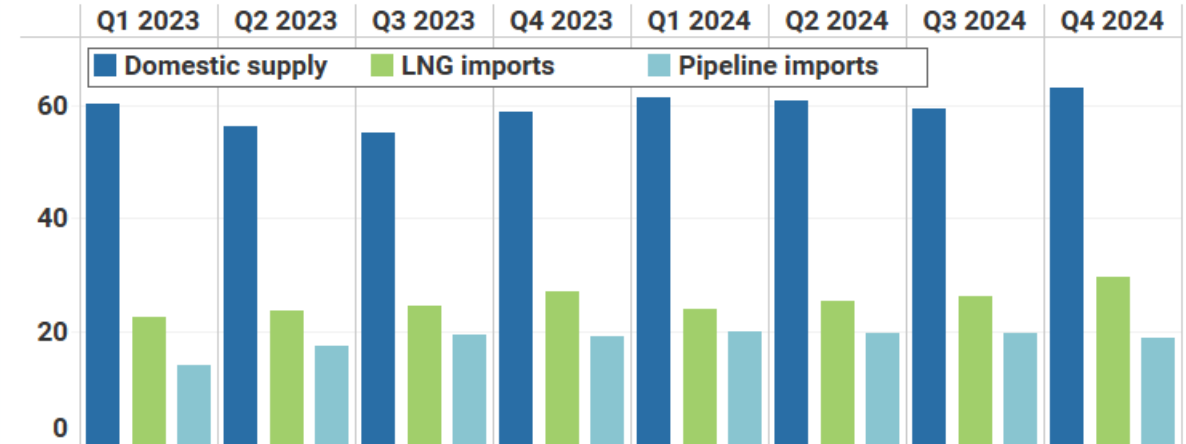


Chinese LNG demand to be supported by storage and import capacity expansions

Weak demand is expected from Japan and South Korea on higher nuclear and coal-fired capacity

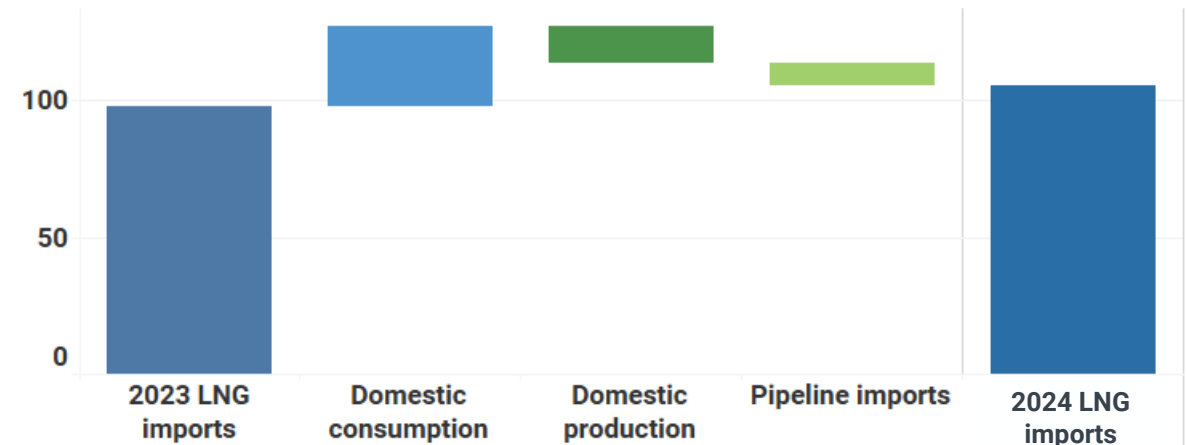
- **Northeast Asian LNG demand growth**, up 2.9% y/y to 211 Mt, **is mostly expected from China**, up 7.7% y/y to 78 Mt (106 bcm) due to new long-term contracts, storage capacity and import terminals.
- Higher Chinese gas consumption is expected from the industrial and city gas sectors.
- China's domestic gas production is forecast to grow by 5.8% y/y to 244 bcm, alongside higher pipeline imports, up 12% y/y to 78 bcm.
- LNG demand in Taiwan is forecast to increase by 4.1% y/y to 21.5 Mt (29.2 bcm) due to its nuclear power phase-out plan.
- **Imports could weaken in Japan** by 1.3% y/y to 66 Mt (89.5 bcm) and **limited upside in South Korea**, up 1% to 46 Mt (62.6 bcm), as some nuclear and coal-fired plants are scheduled to restart.

China natural gas production and import 2023-2024 (bcm)



Source: Kpler, China Customs and NBS. Data from Q4 2023 based on Kpler Insight forecasts.
Implied Chinese gas demand = domestic supply + LNG/pipeline imports.

Y/y change in Chinese gas market fundamentals in 2024 (bcm)



Source: Kpler, JODI, Chinese Customs and NBS, Various sources
Based on Kpler Insight forecasts.



Northeast Asia could receive new contracted supply next year

...But this will offset some supply lost from expiring long-term DES contracts

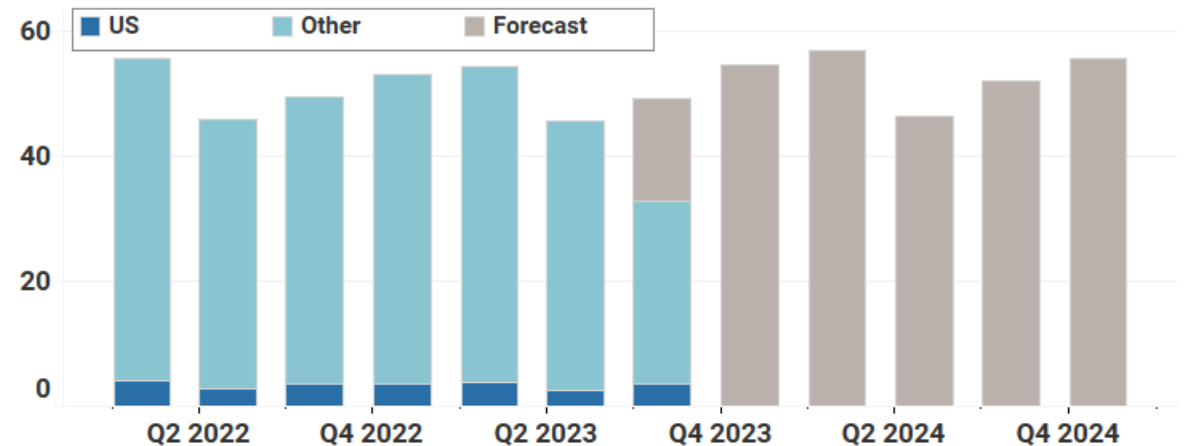
- About 2 Mt of LNG supply to Northeast Asia could be lost due to expiring DES contracts in 2024.
- Next year, China is expected to receive new contracted DES LNG supplies from Qatar Energy and Novatek.
- New DES contracts with portfolio players could provide Japan and South Korea with around 1 Mtpa of supplies.
- **Additional spot/FOB LNG will depend on regional demand growth in 2024.**
- The US makes up 6-7% of quarterly Northeast Asian imports since 2022, but the need to meet lost DES volumes could boost demand for US LNG.

Upcoming long-term Northeast Asian contracts in 2024 (Mtpa)



Source: Kpler, Various sources

Northeast Asia LNG imports by origin, including forecast (Mt)



Source: Kpler

Gray bars from Q3 2024 are based on Kpler Insight forecasts.

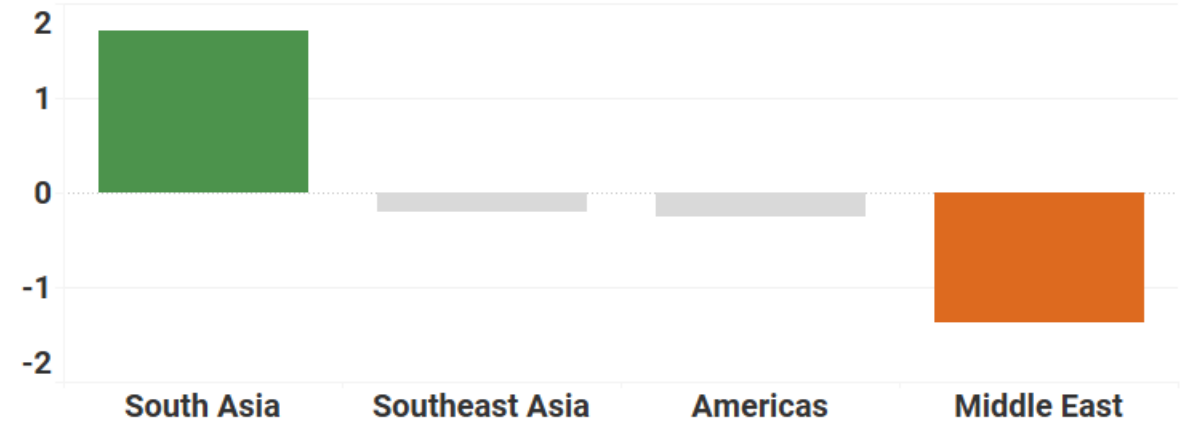


Lower gas prices could spur demand in South Asia

Southeast Asian imports could fall on lower demand from Thailand

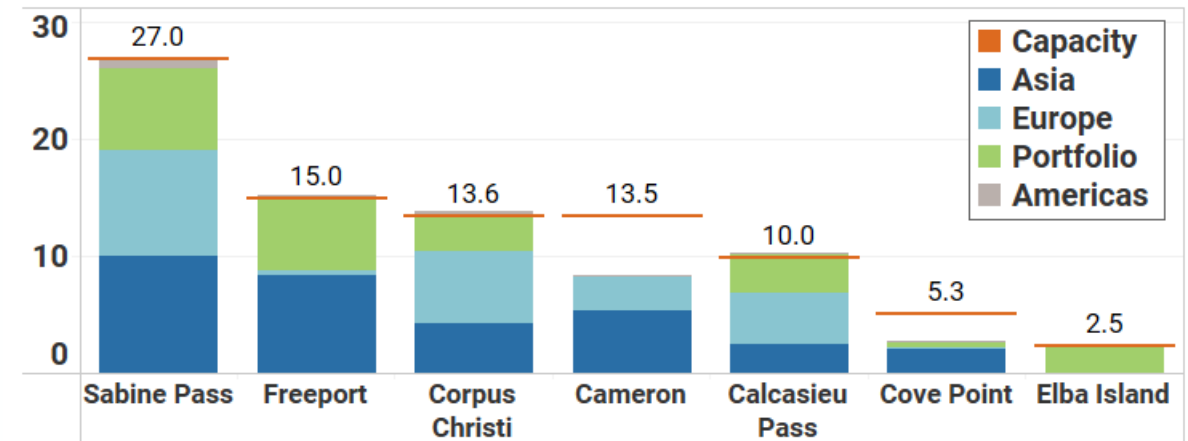
- **LNG demand from the rest of the world** is estimated to **weaken by 0.1% y/y to 75.7 Mt (103 bcm)** in 2024.
- Lower gas prices will support LNG demand of price-sensitive buyers in South Asia, up 5% y/y to 35.8 Mt.
- Weaker demand in Thailand will offset higher demand from new buyers in Southeast Asia i.e., Philippines and Vietnam.
- Fewer imports to the Americas and the Middle East.
- Most US LNG capacity is contracted to Asian, European and Portfolio buyers. About 15% of capacity is estimated to be uncontracted.

LNG demand from rest of the world in 2023 vs 2024 (Mt)



Source: Kpler
Based on Kpler Insight forecasts.

US LNG offtakers by liquefaction project (Mtpa)



Source: Kpler, Various sources

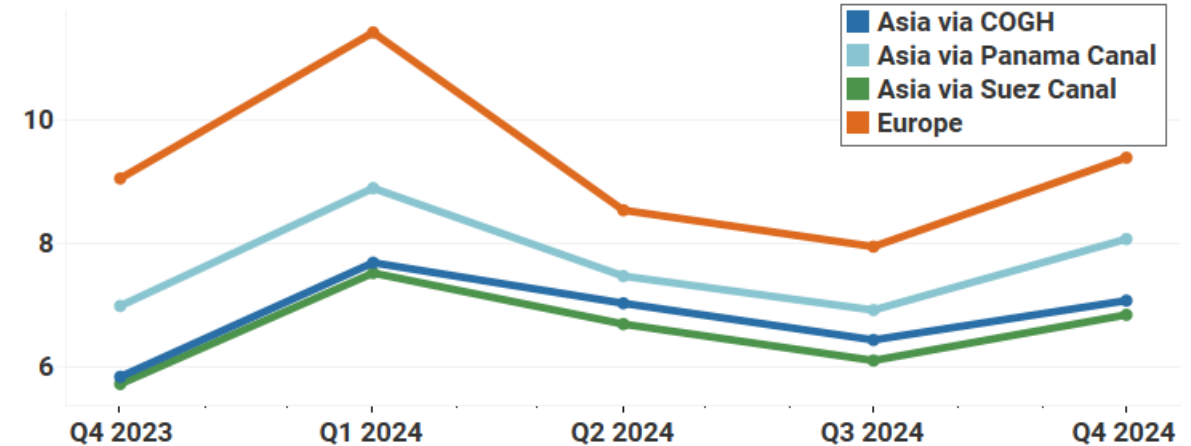


US netback prices favour Europe throughout 2024

...But key risks to still consider which could lead to bullish prices and increased competition for US LNG

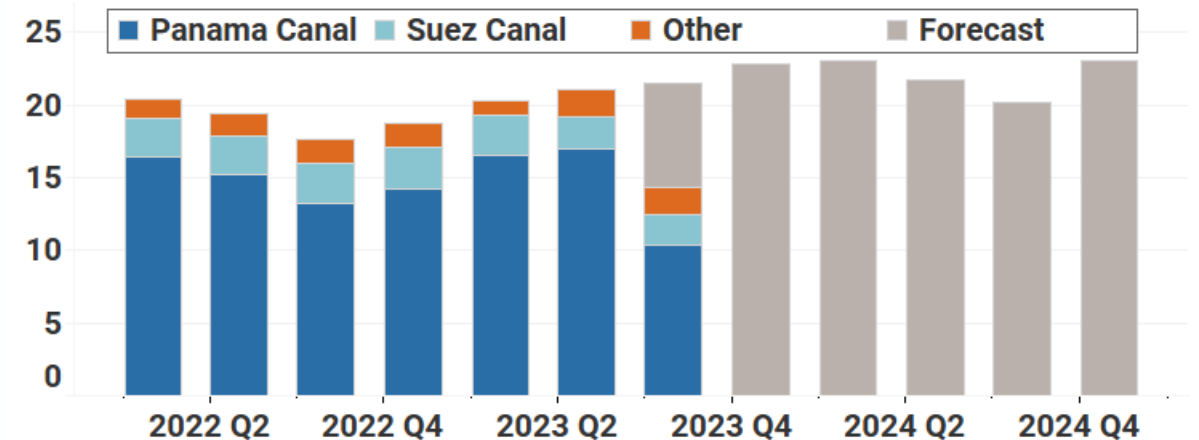
- Based on current LNG freight forward curves and Kpler Insight gas price forecasts, **average US netback prices appear in favour of cargoes to Europe throughout next year.**
- Key risks include:**
 - Extreme winter and summer temperatures in Europe and/or Asia
 - Major unplanned supply outages
 - Non-LNG supply outages e.g., pipeline gas, nuclear, hydro
 - Congestion at Panama Canal

Forward US netback prices to Europe vs Northeast Asia (\$/MMBtu)



Source: Kpler, Spark Commodities (as of August 31, 2023)
Based on Kpler Insight forecasts.

US LNG deliveries by shipping route (Mt)



Source: Kpler

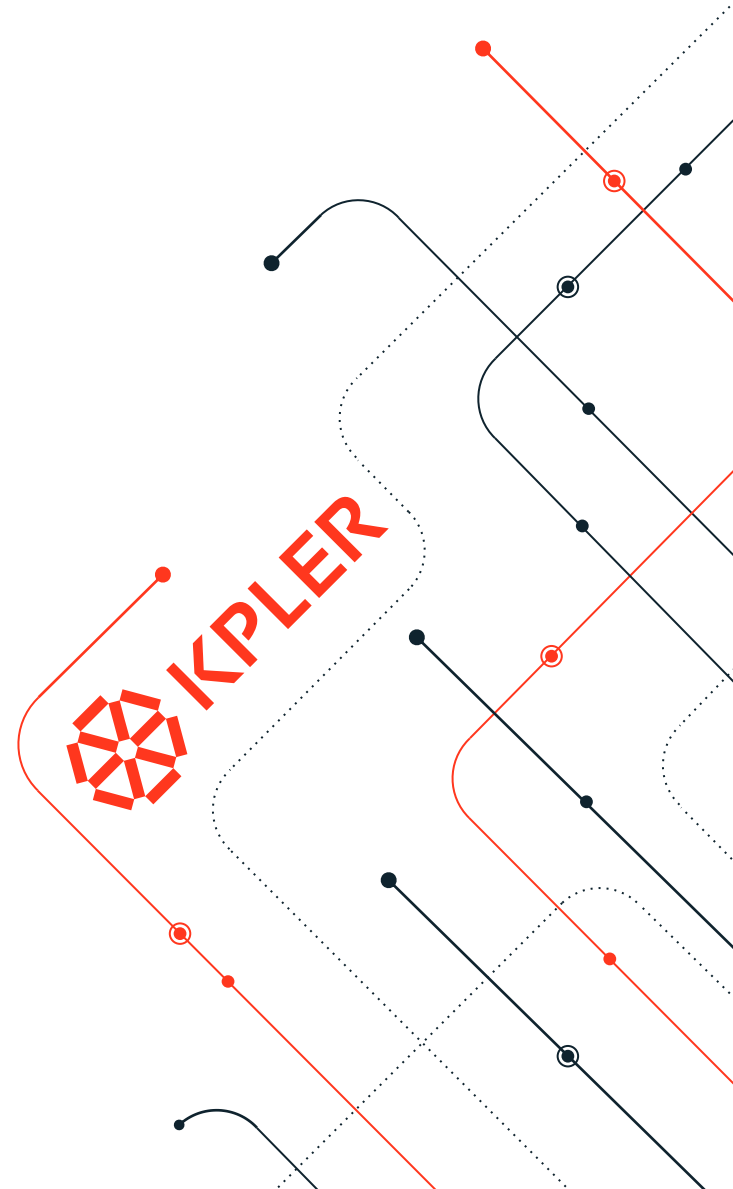
Gray bars from Q3 2024 are based on Kpler Insight forecasts.



- US LNG supply is expected to grow in 2024 but at a slower rate vs 2023. Still, the US is set to become the largest global LNG exporter in 2023 and 2024.
- Total Asian LNG demand is anticipated to grow in 2024, mainly from Northeast Asia and South Asia.
- EU LNG imports are forecast to increase, albeit the extent is dependent on gas demand. Higher pipeline imports are expected to offset lower domestic production.
- LNG growth outside of the US may limit Asian demand for US supplies, as some buyers have offtake agreements with upcoming liquefaction projects in 2024.
- Extreme weather, unplanned supply outages, and freight congestion could still increase competition for US LNG between Europe and Asia.

Crude oil market update

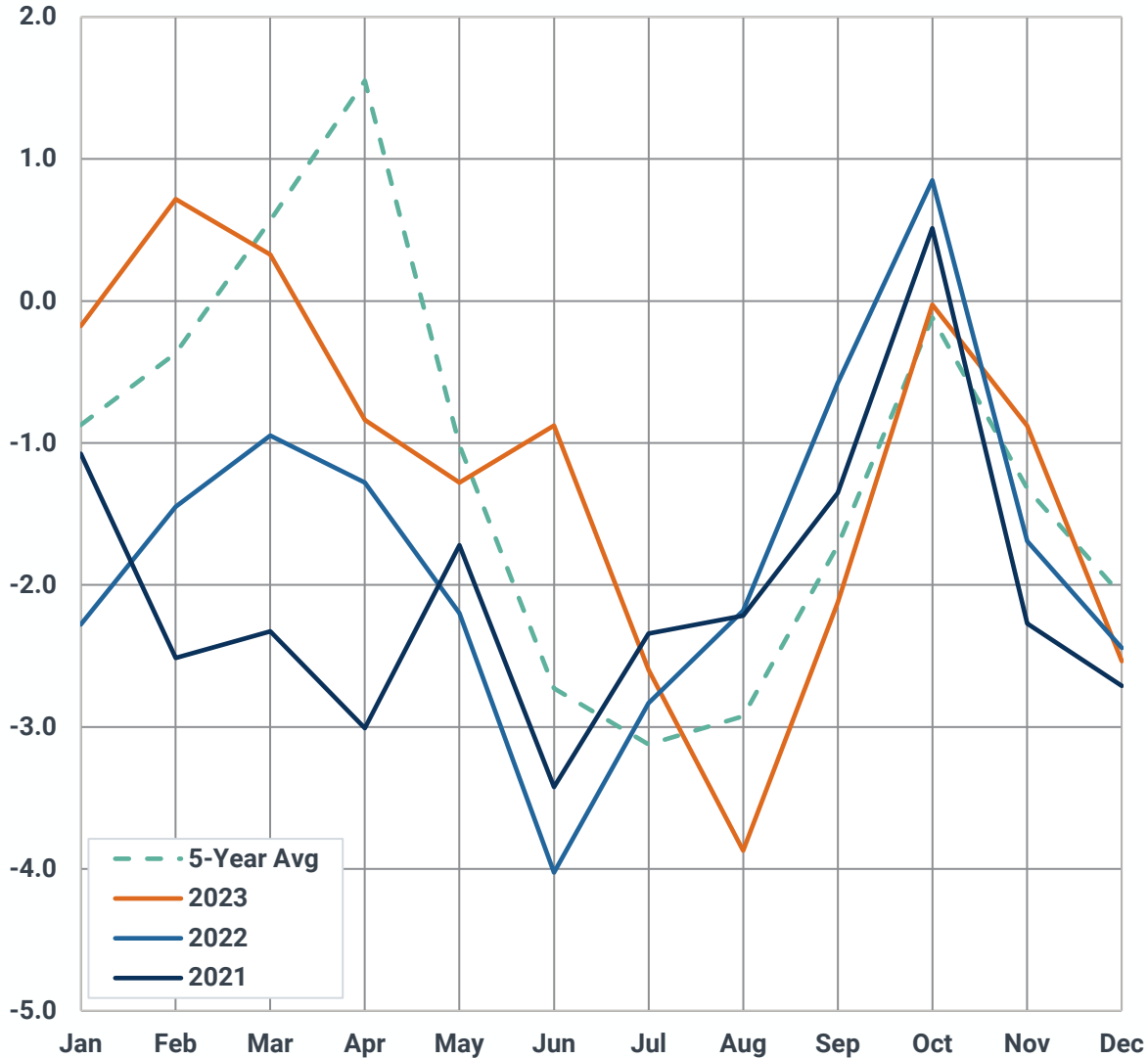
Viktor Katona – Lead crude analyst



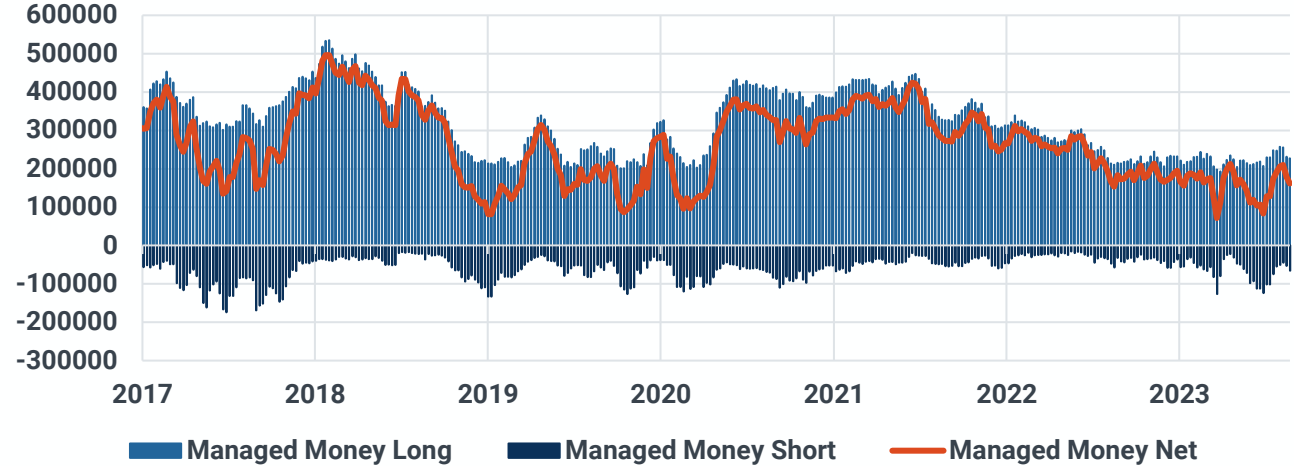
Global: August lives up to hype, tightest month of 2023

Saudi Arabia's 1 Mbd voluntary cut adds additional pressure to already limited supply

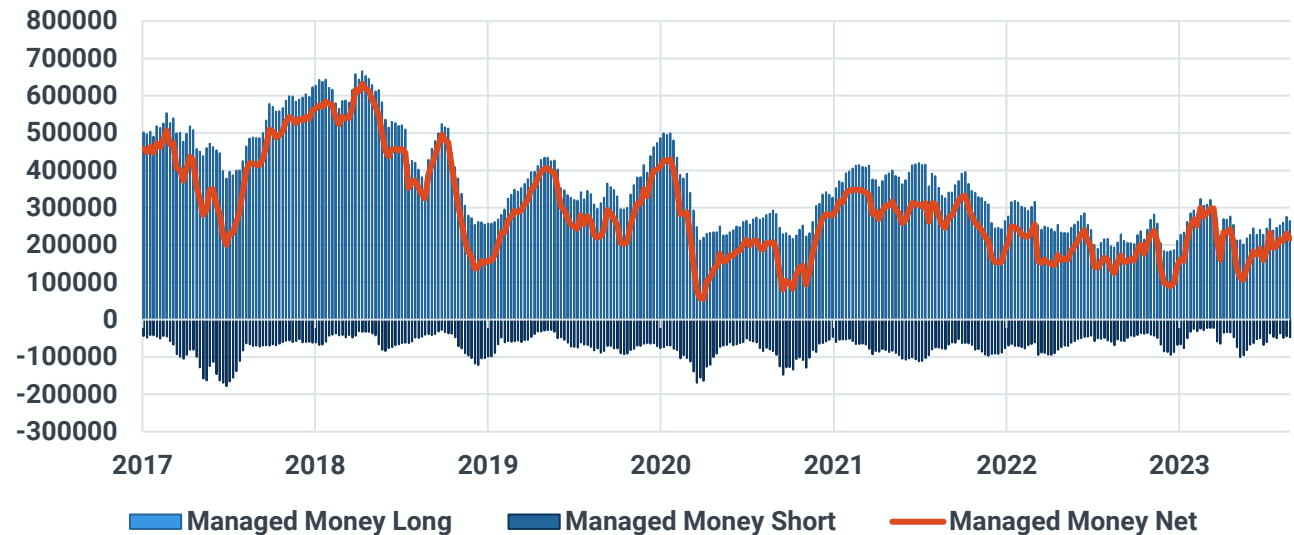
Monthly Seasonal Global Crude Balances (Mbd)



WTI Futures and Options Net Length Money Managers/Hedge Funds (lots)



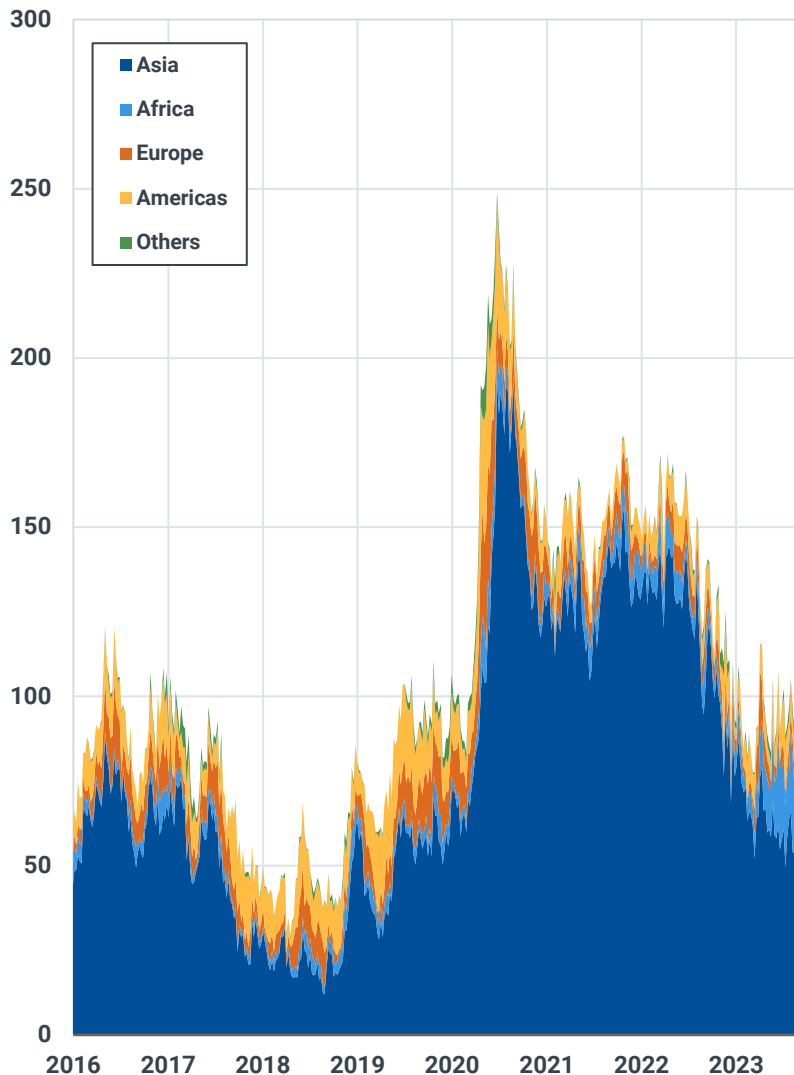
ICE Brent Futures and Options Net Length Money Managers/Hedge Funds (lots)



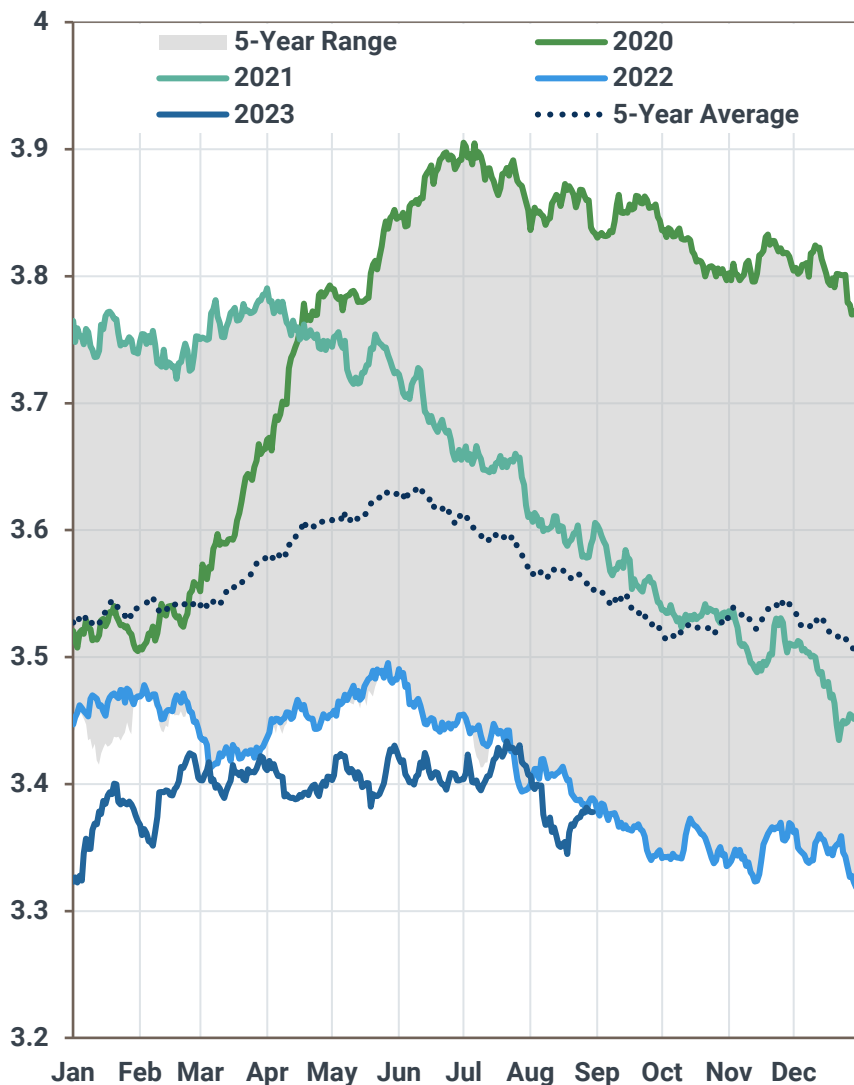
Global: China seesawing drives crude inventory changes

The post-2020 buildup in floating storage has largely been run down, Saudi build-up in Egypt over

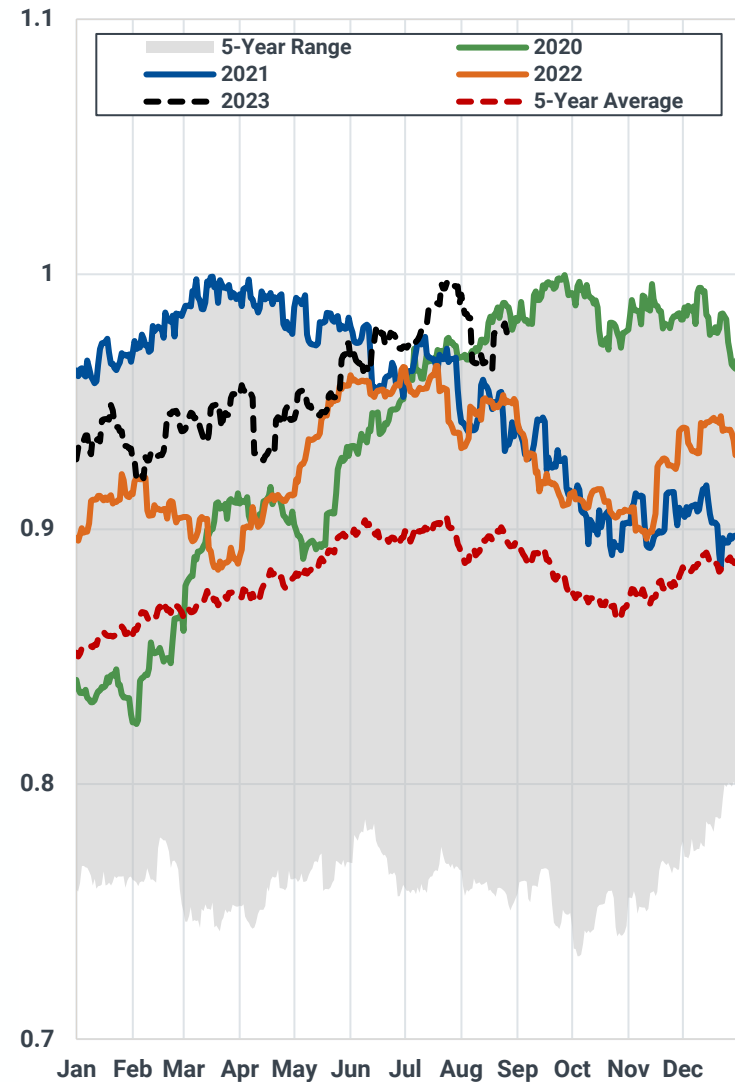
Daily Crude Floating Storage by Location (Mb)



Global Crude Inventories (bn bbl)



Daily Chinese Crude Inventories (bn bbl)



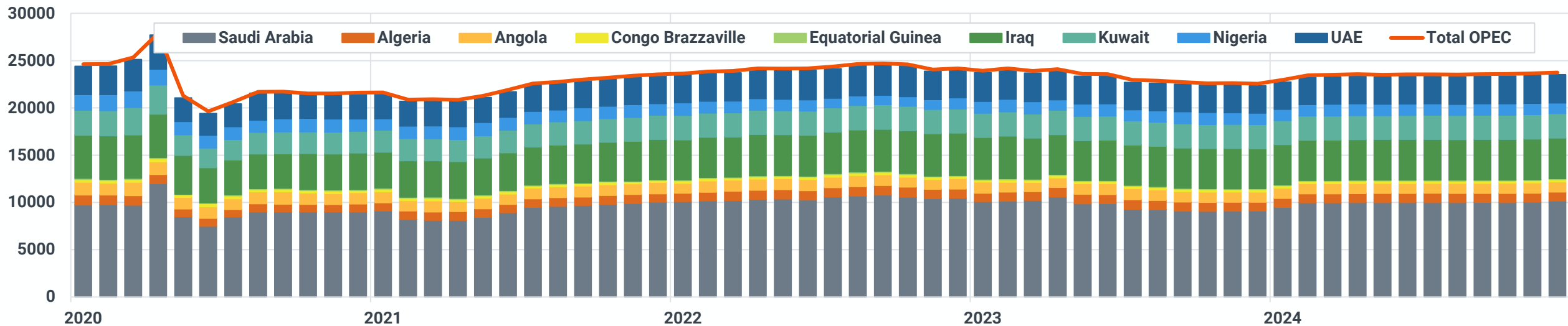


KPLER

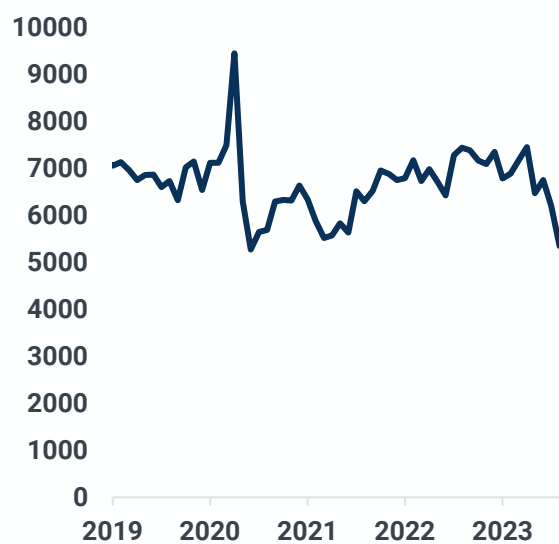
OPEC+ strategy becomes too Riyadh-dependent

Saudi Arabia bears the brunt of a leader with exports declining to peak COVID levels

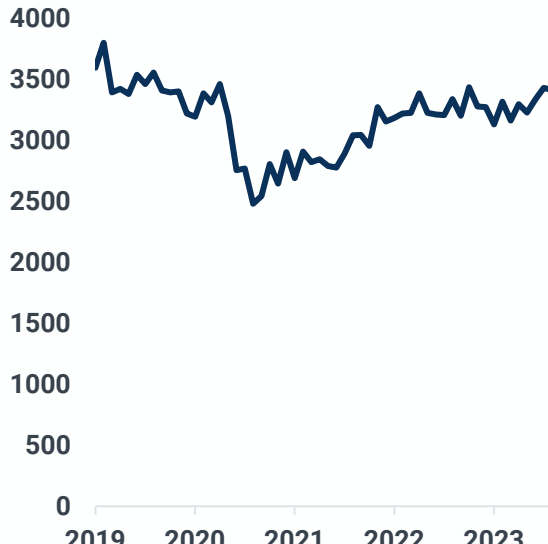
OPEC Production vs Key Middle Eastern exporters, kbd



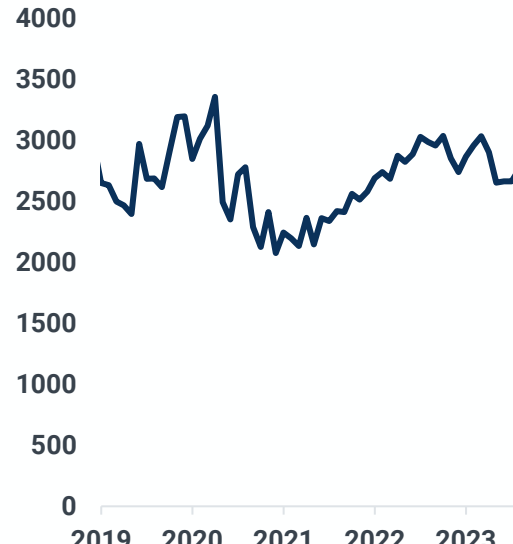
Saudi Arabia



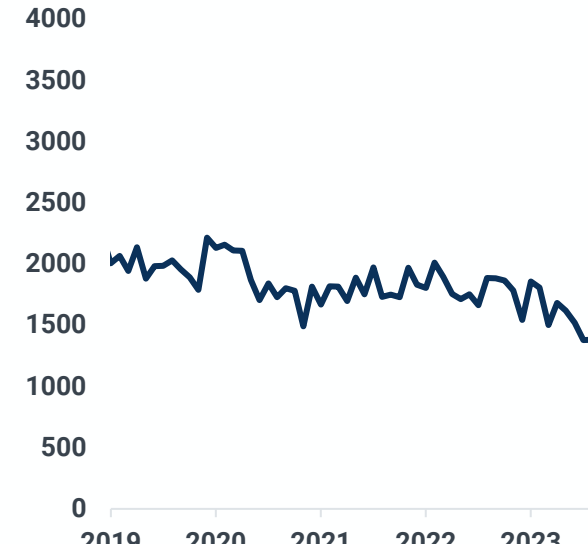
Iraq



UAE



Kuwait



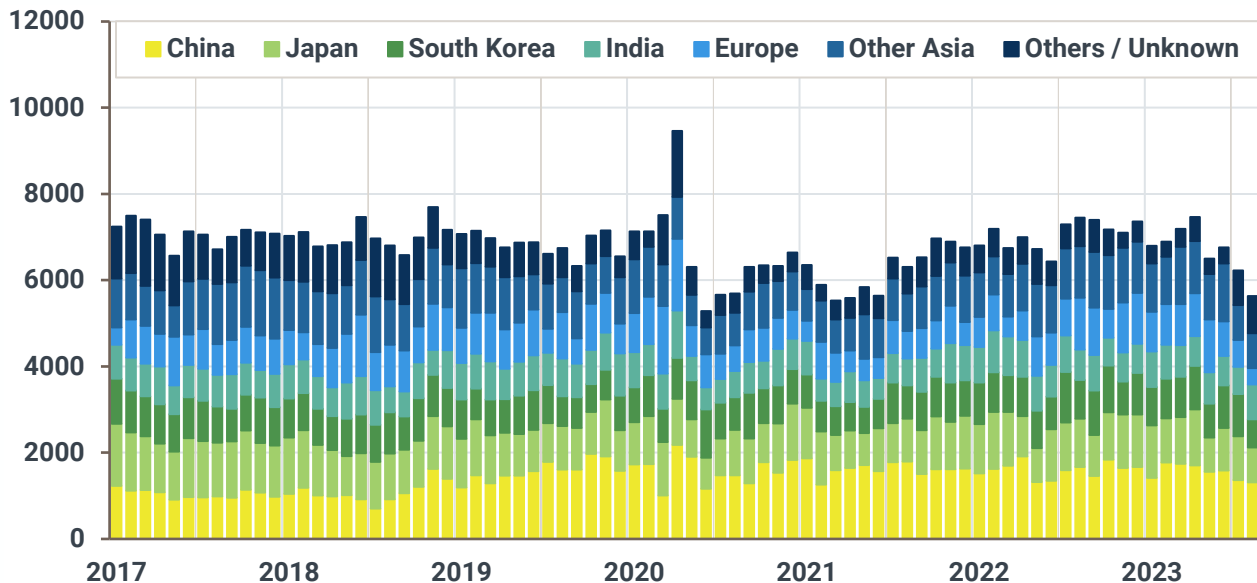


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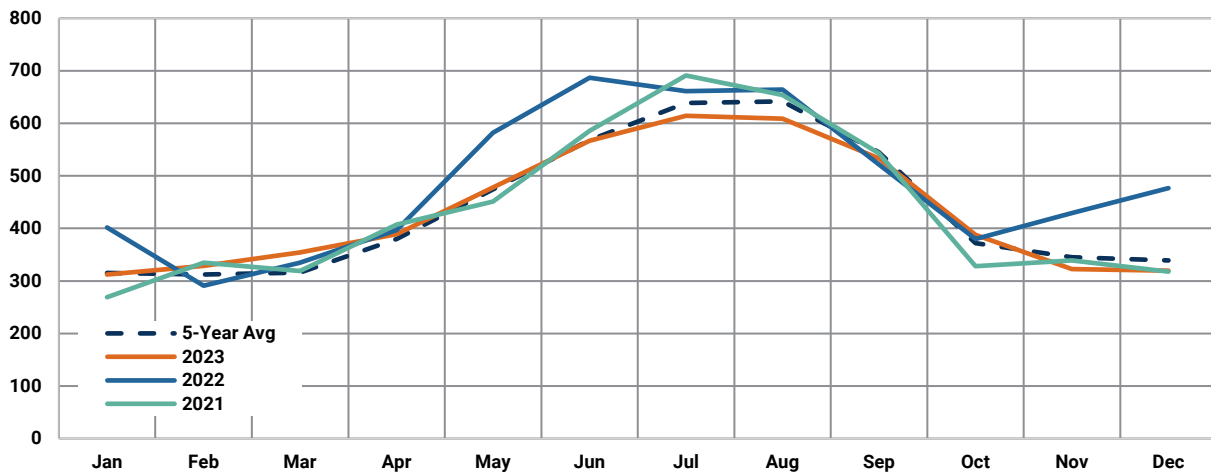
Riyadh's "Saudi first" decision-making spearheads OPEC+ response

Saudi Arabia is pursuing its own agenda, but this bears political risks

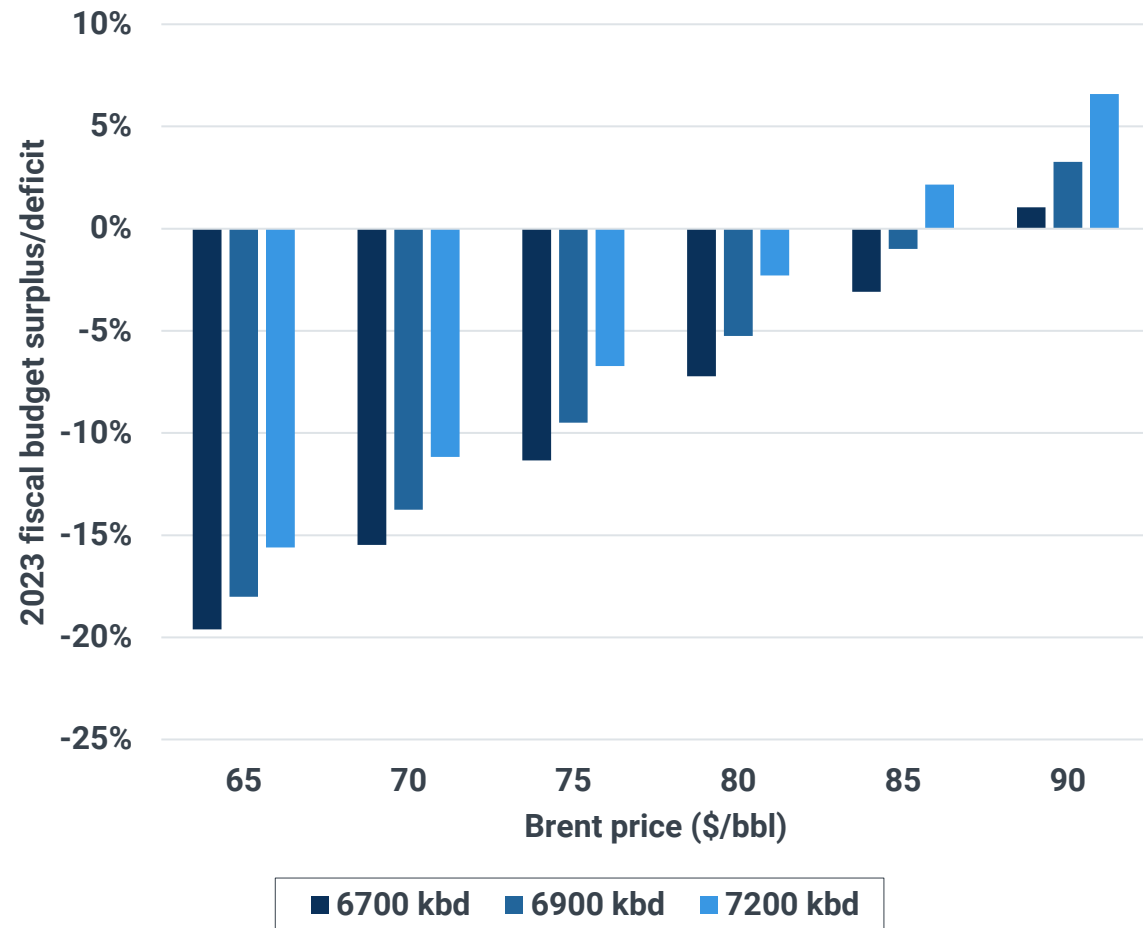
Saudi Arabia seaborne crude exports by destination, kbd



Saudi Arabia crude burn, kbd



Sensitivity analysis on Saudi's 2023 fiscal budget surplus/deficit relative to Brent (\$/bbl) and oil exports (kbd)



Source: Kpler

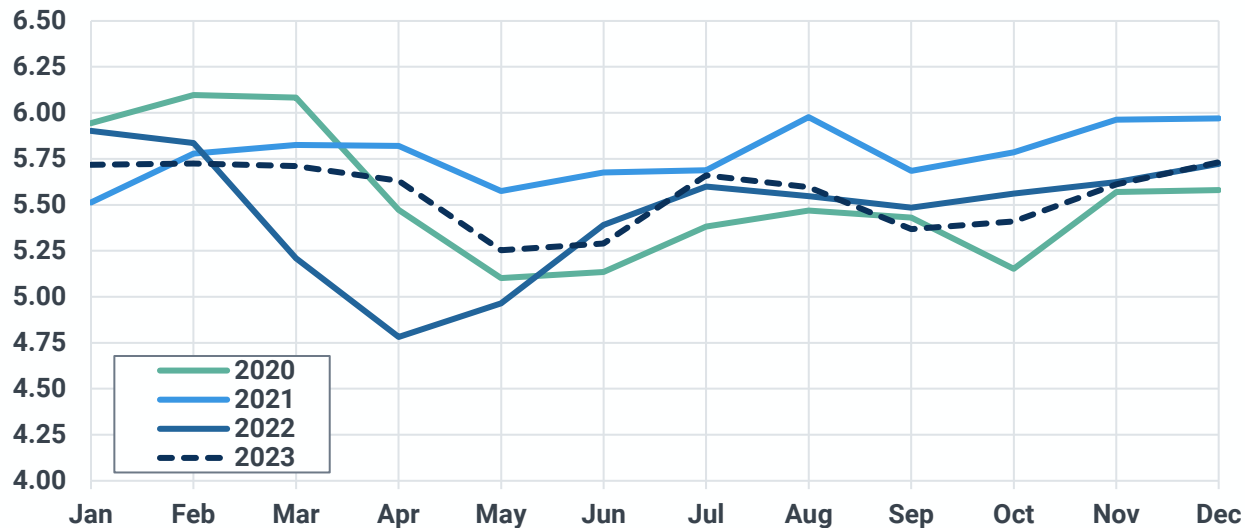


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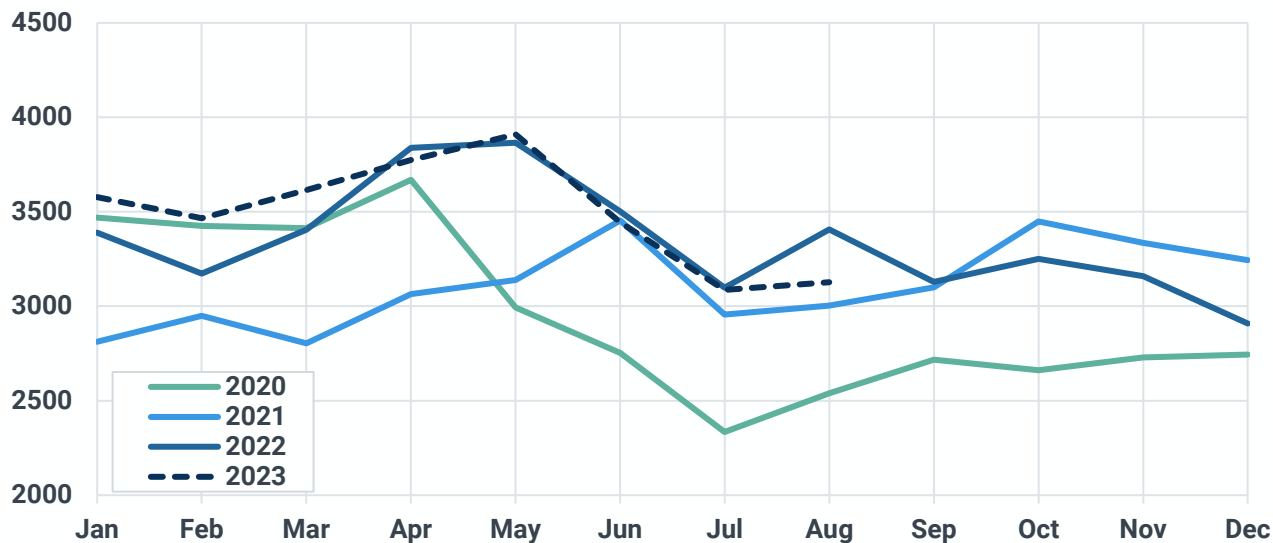
Russia: Refineries remain key missing part

August to see refining bonanza before September kicks in with end of reverse excise duty

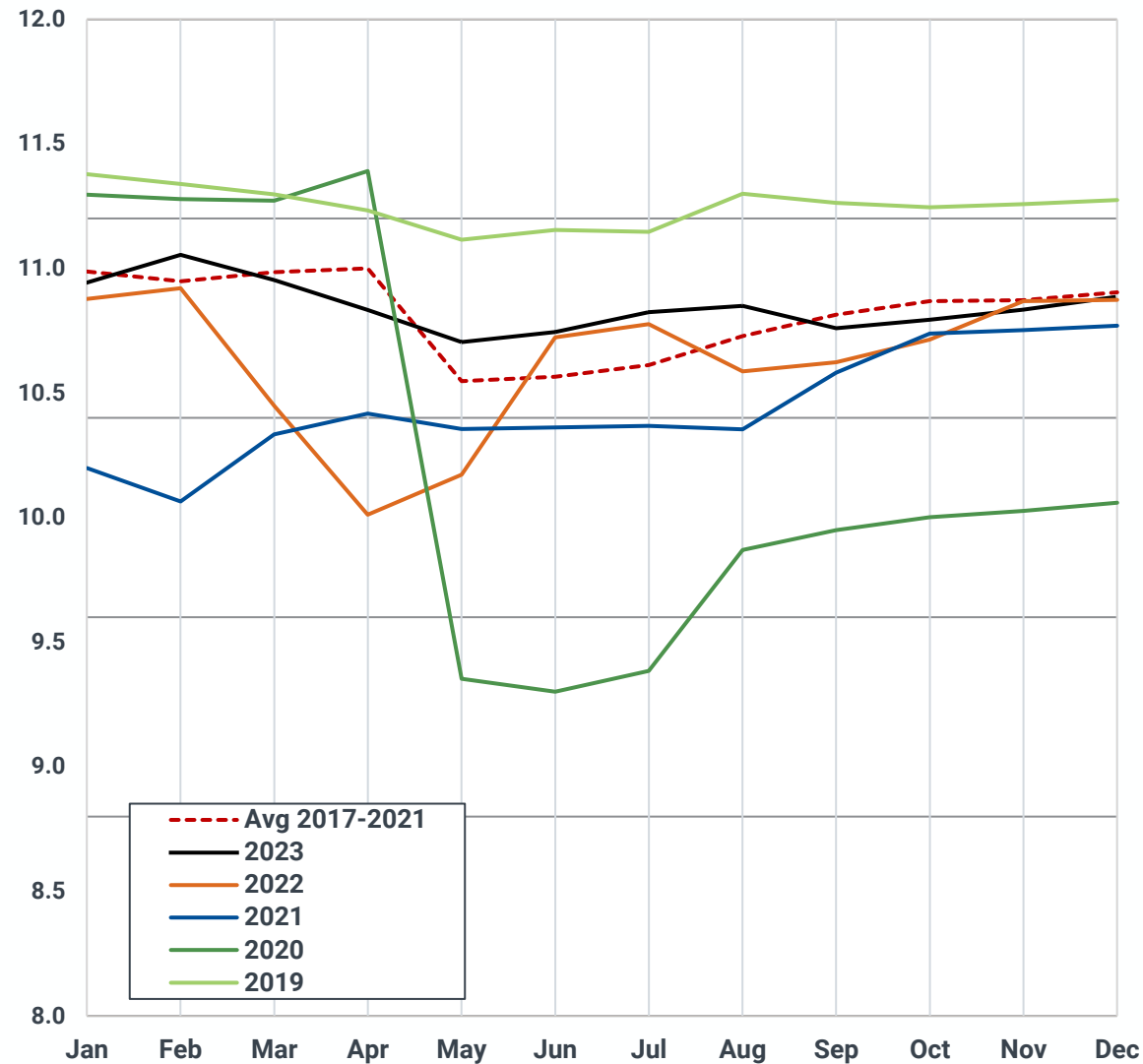
Monthly Russian Refinery Runs (kbd)



Russian seaborne crude exports (kbd)



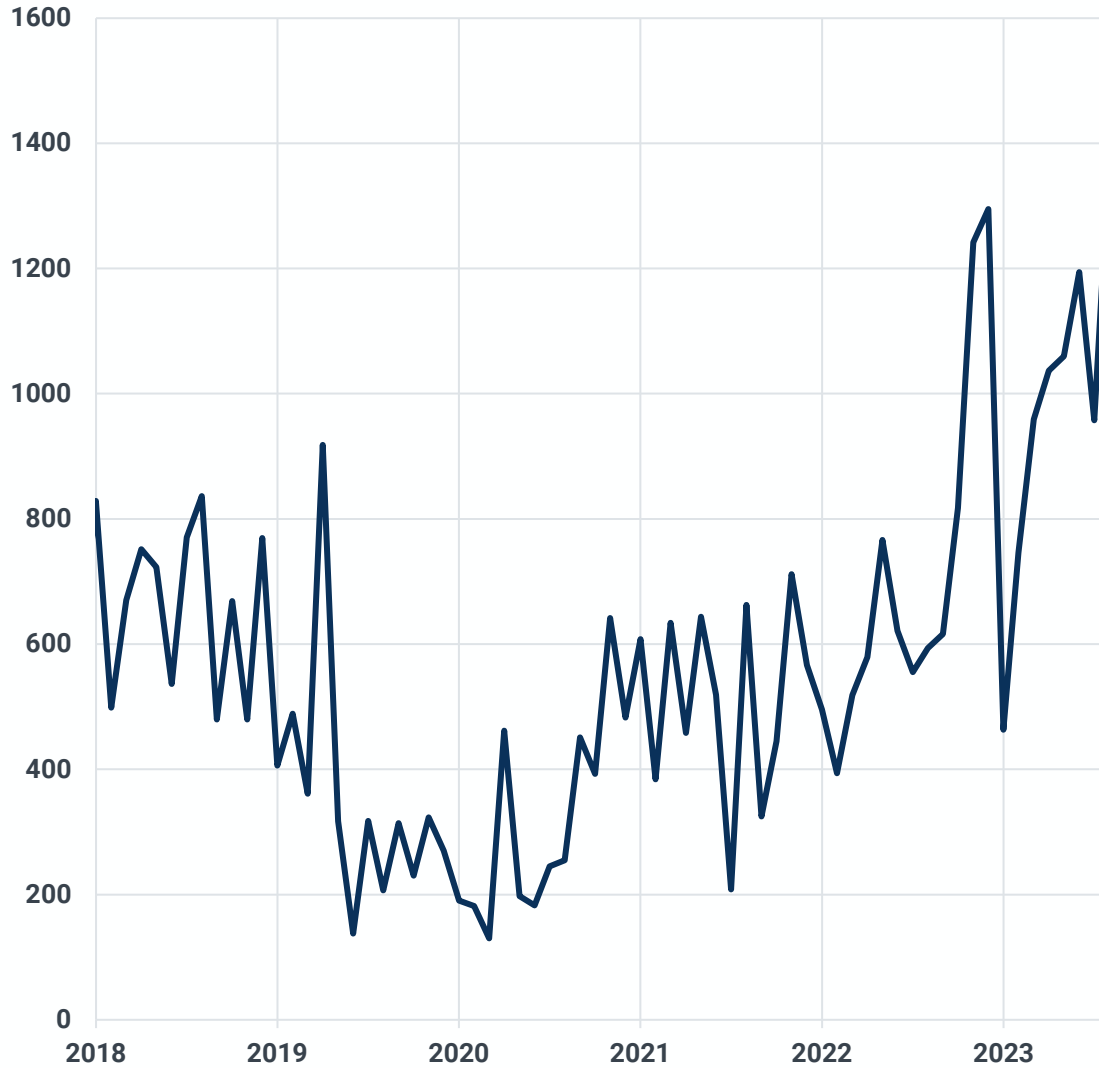
Monthly Seasonal Russian Crude and Condensate Production (Mbd)



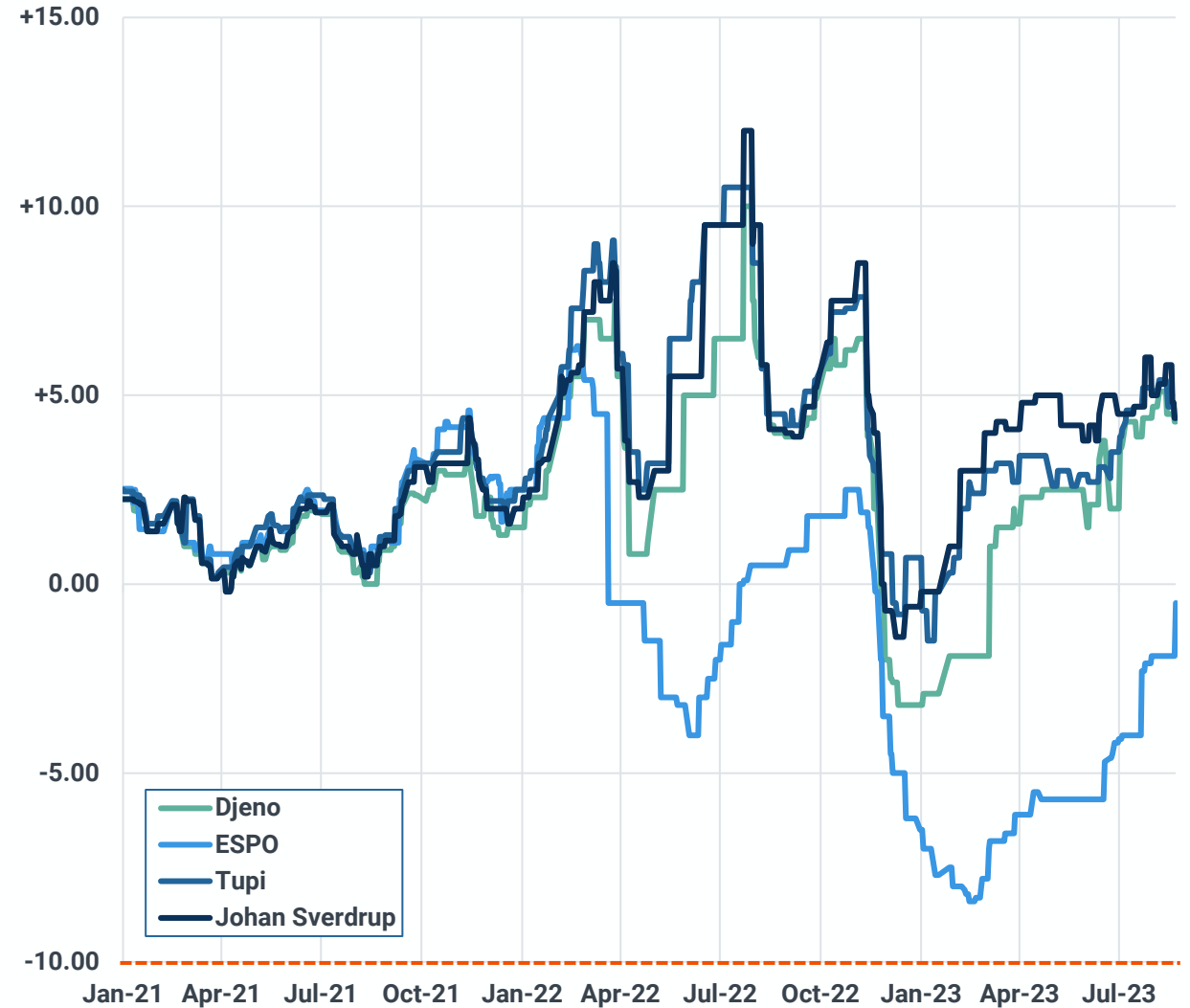
Iran: Exports to China hit all-time highs

Coveted by Shandong refiners, Iran Light becomes only medium sour available at double-digit discounts to Brent

Chinese imports of Iranian grades (incl. EOPL), kbd



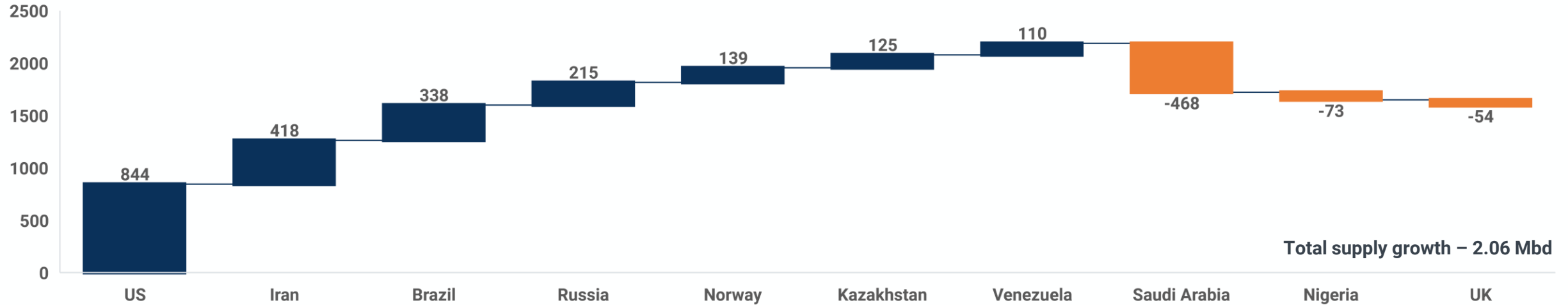
Selected medium-density grades DES Shandong vs ICE Brent, \$/bbl



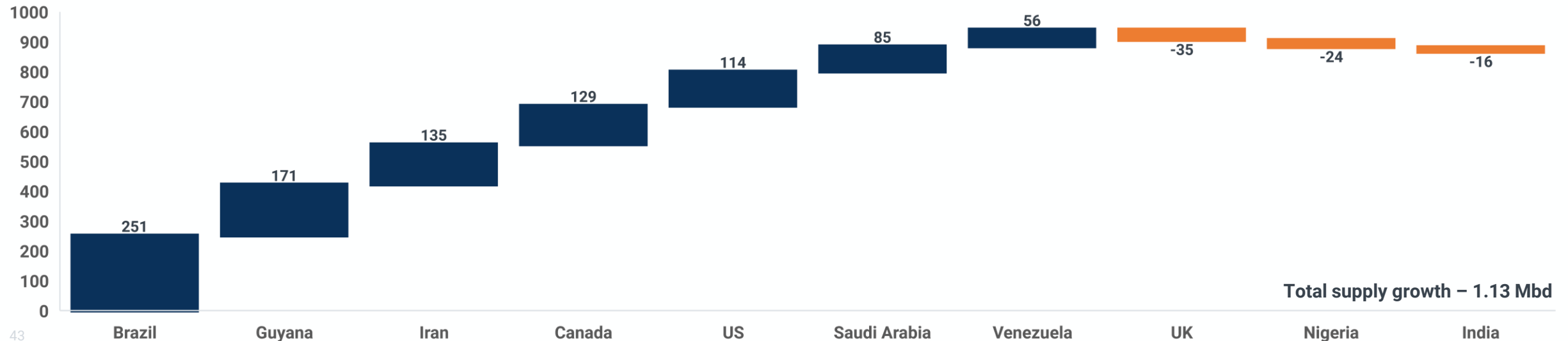
Sources of new supply: US shale hits peak, Atlantic offshore sparks hope

Structural declines take years to assume form, however sources of new growth are waning

Main sources of crude supply growth in 2023, kbd



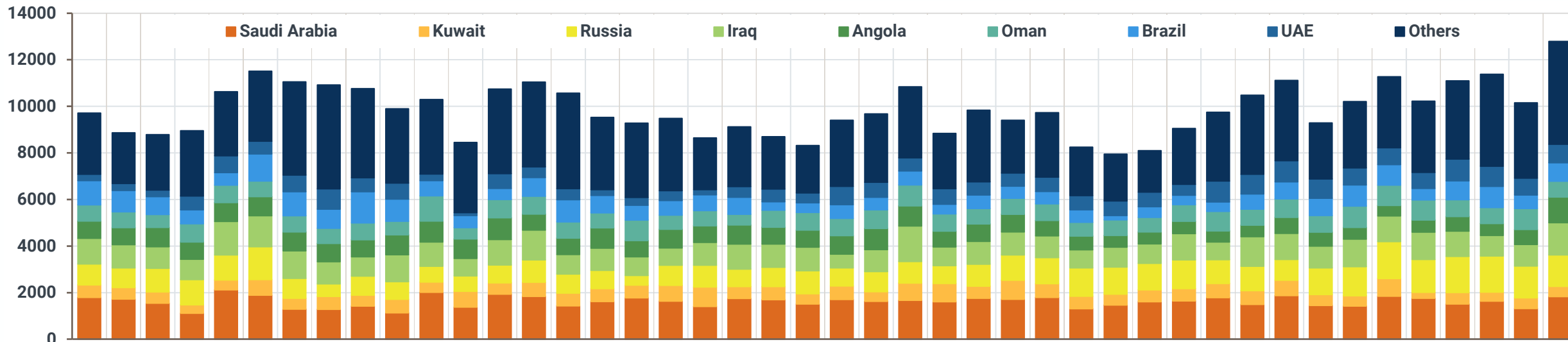
Main sources of crude supply growth in 2024, kbd



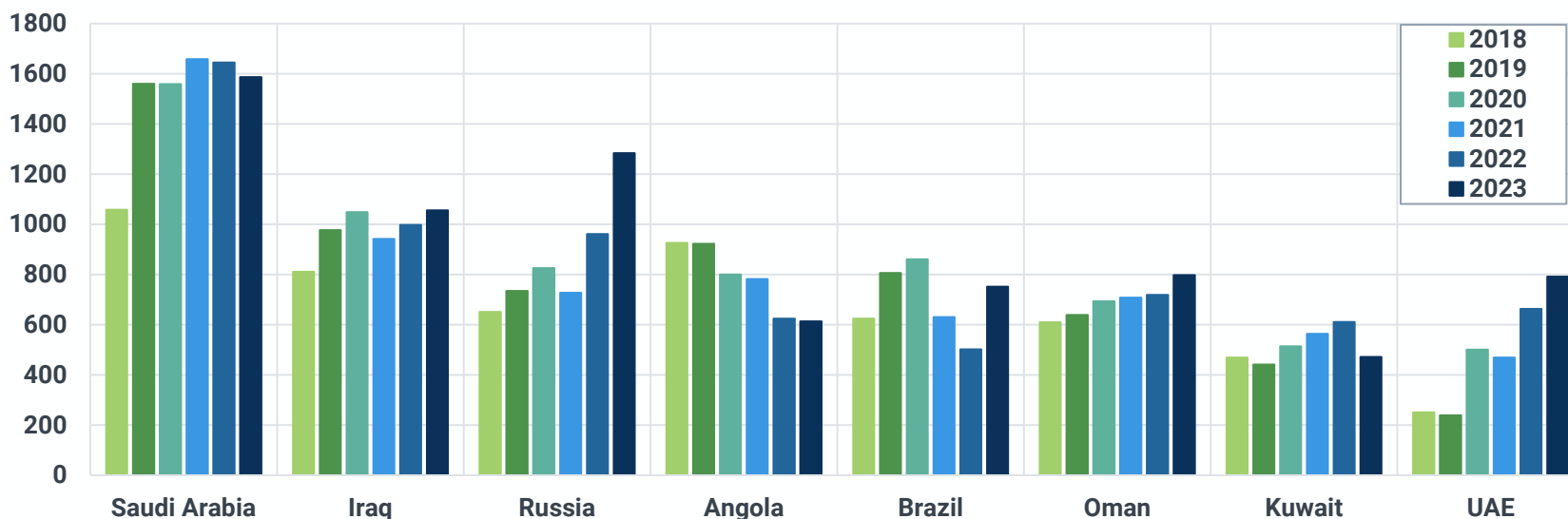
China: Incremental Iranian barrels push August imports high

August imports set for highest monthly reading this year

Chinese seaborne crude imports by origin country (Mbd)



China's key crude suppliers by annual import average, kbd

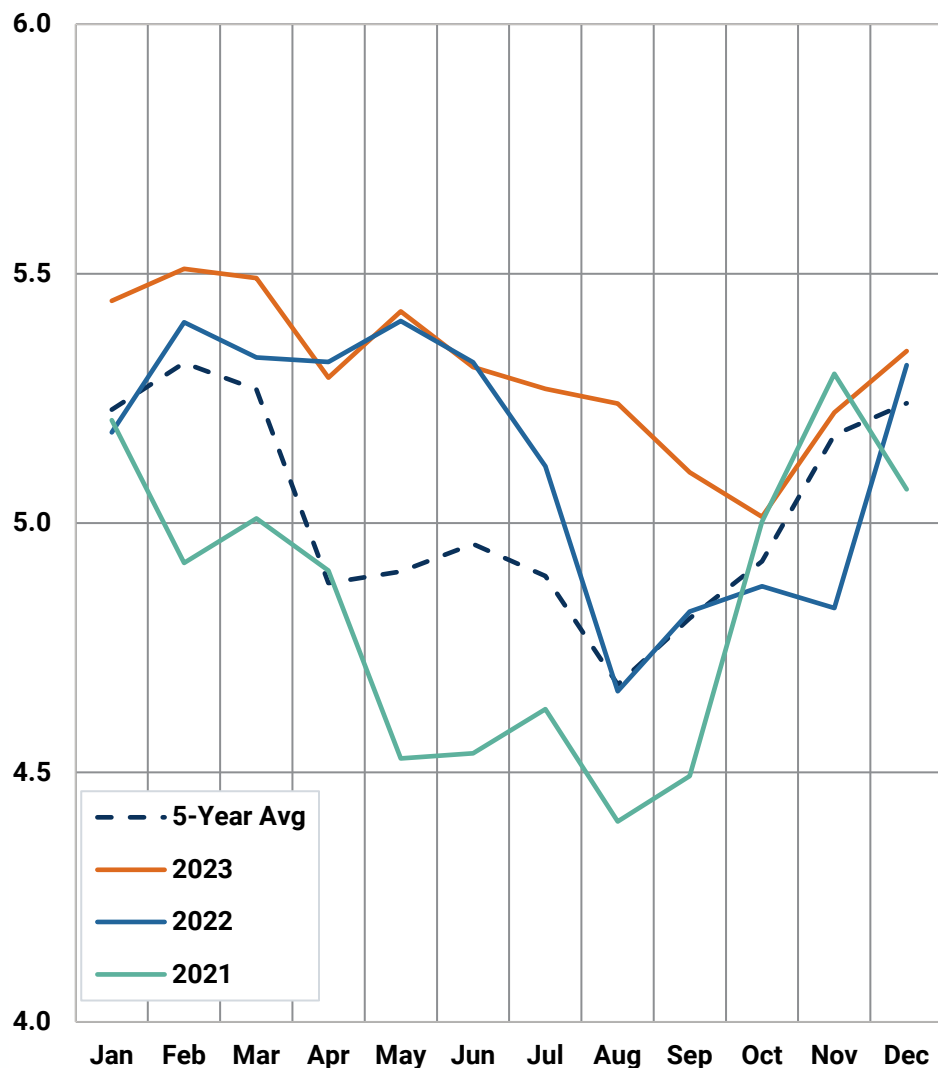


- Huge August stock draw-down prompts refiners to buy again
- HSFO buying fell by 25% m/m in July, almost completely driven by lower Russian supply
- 1.5 Mbd Iranian crude by far the highest monthly reading on record
- Chinese turnarounds to kick in November-December

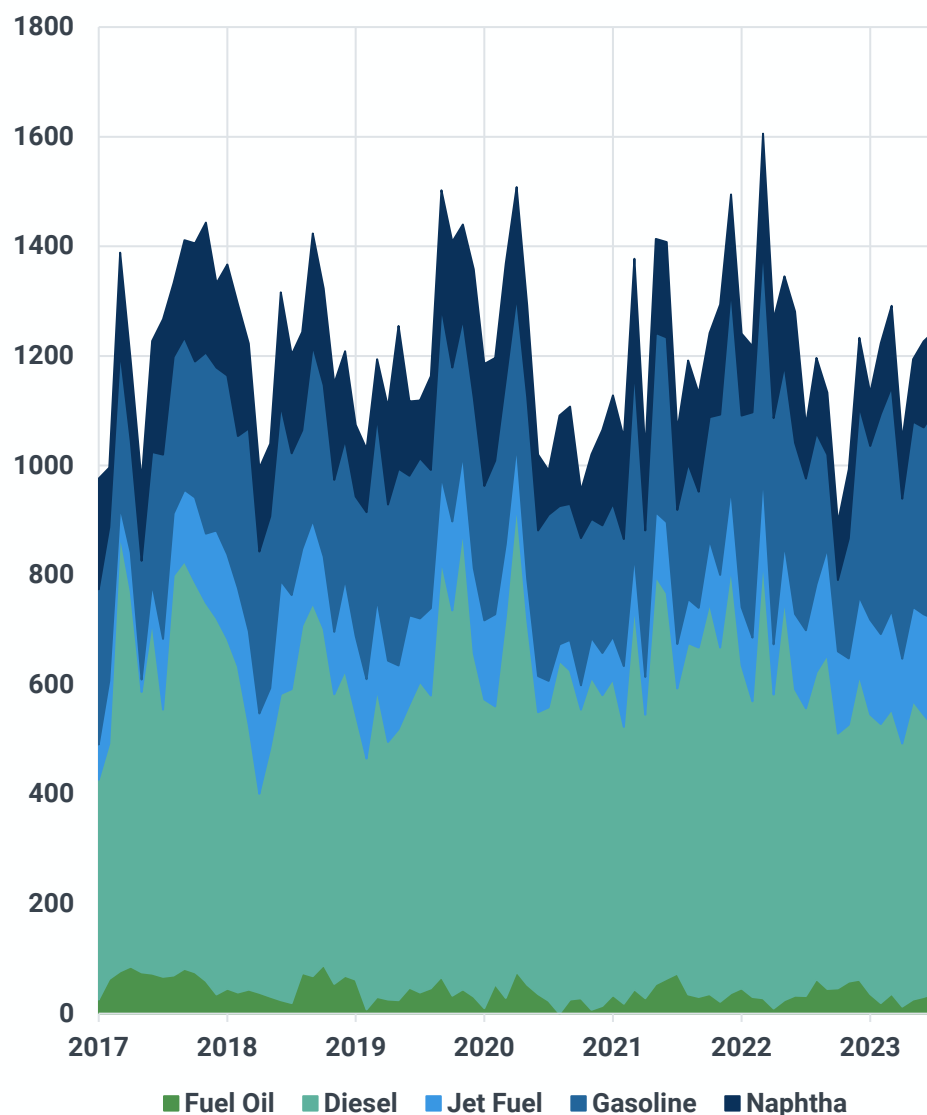
India: Monsoon season puts a lid on buying

Impact on domestic demand much more tangible than on refinery runs

Indian refinery runs (Mbd)



Indian oil product seaborne exports by category (kbd)



- Steady decline in domestic demand coming from monsoon season impact
- 13% m/m diesel sales drop in July pushes middle distillates into regional markets
- Jet fuel exports out of India at all-time highs
- Throughout October, Jamnagar's 400 kbd CDU out for maintenance
- Seaborne crude imports decline to 4.6-4.7 Mbd, led by lower Russian availability
- Refinery runs to hit 5.4 Mbd again by end-December

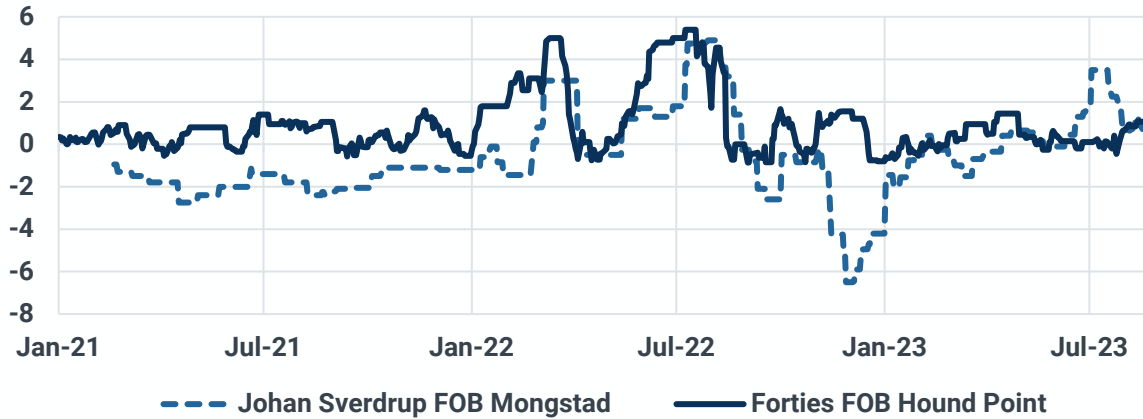


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Europe: Physical market already looks into slacker autumn

The Old Continent's key benchmarks kickstart seasonal declines

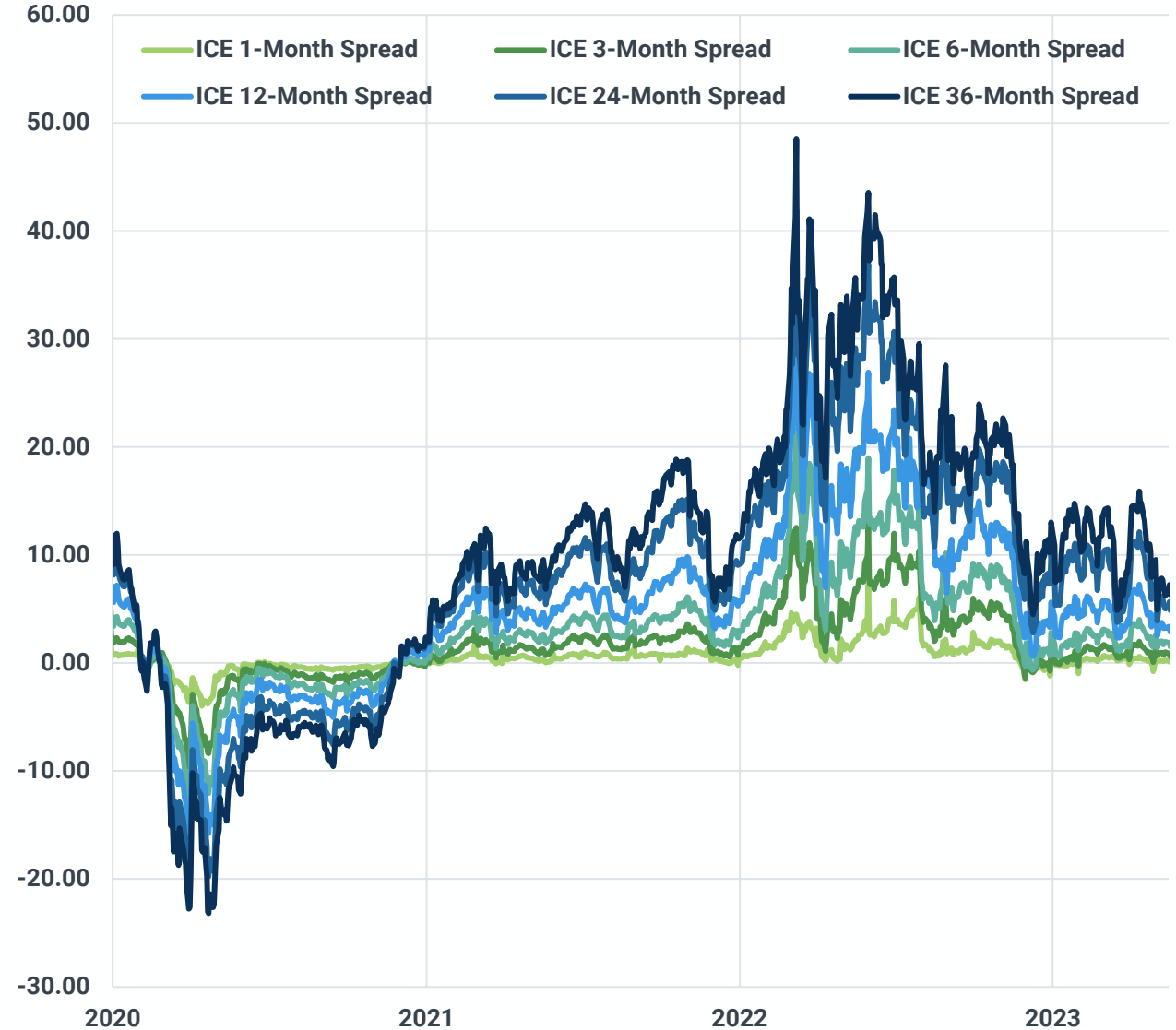
Johan Sverdrup and Forties differentials vs Dated, \$/bbl



Brent CFDs by week, \$/bbl



ICE Brent time spreads, \$/bbl



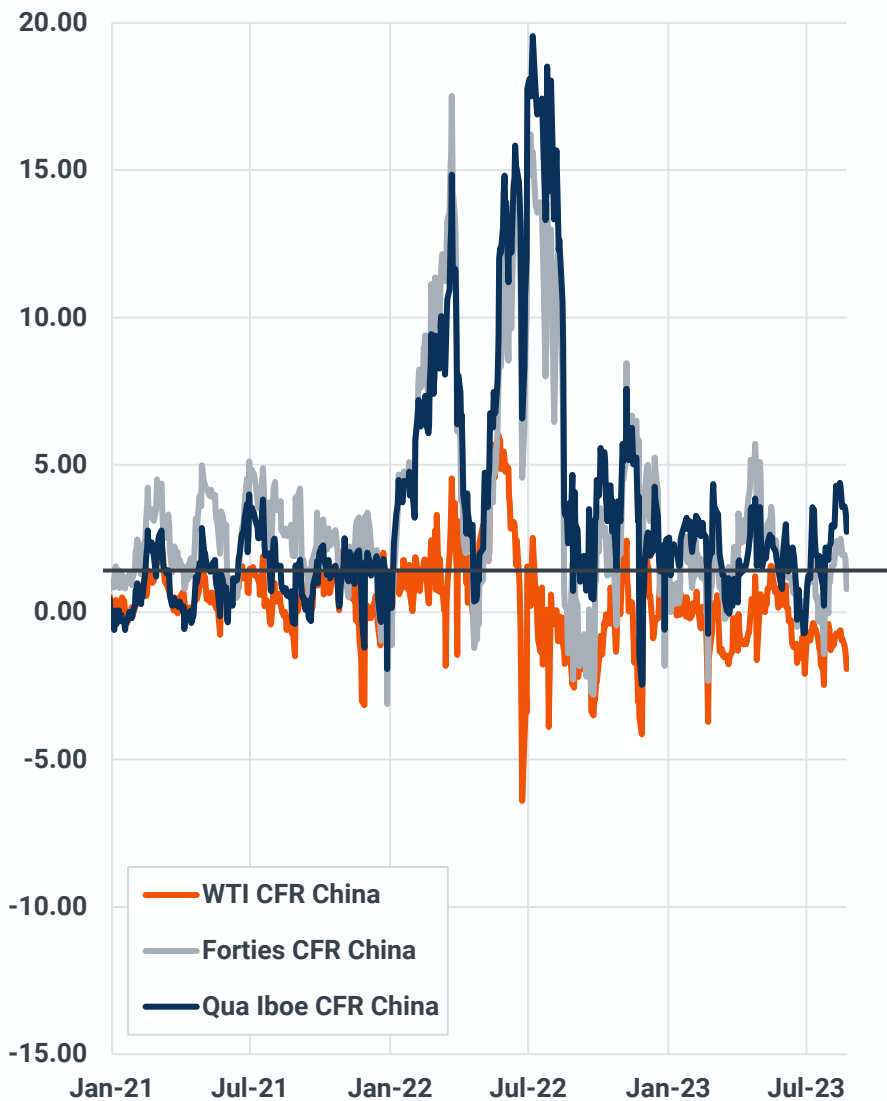


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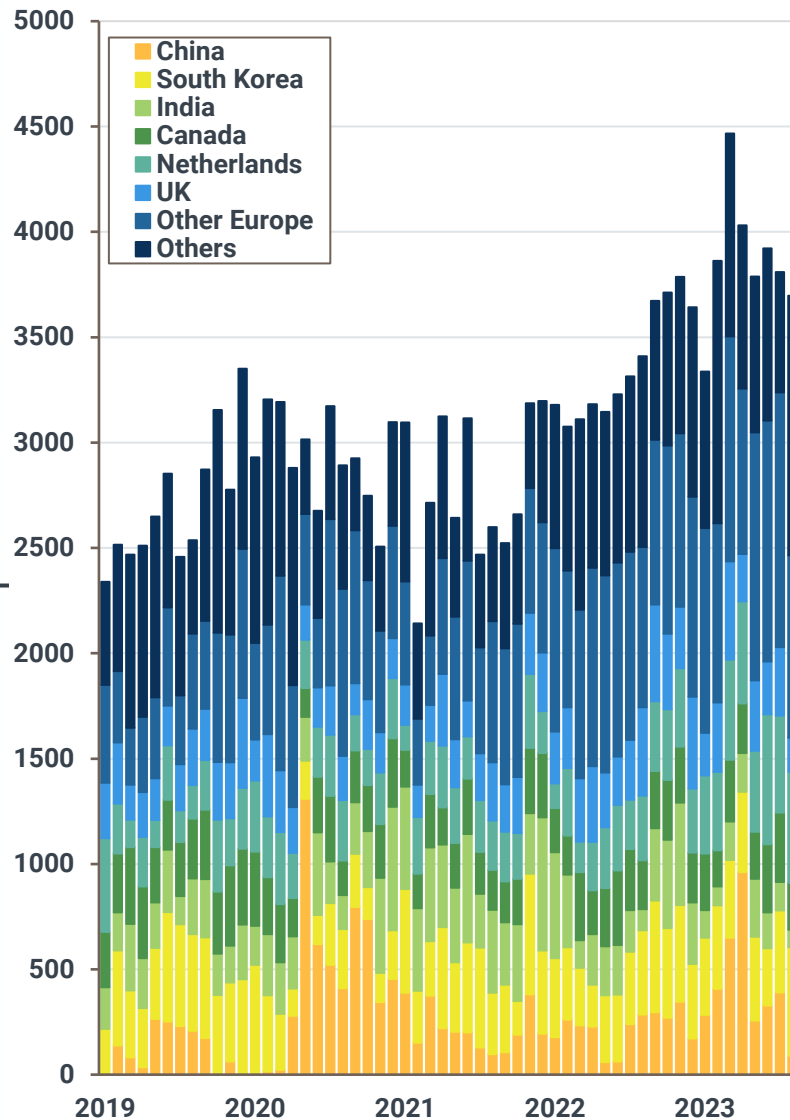
US: The weaker the WTI, the bigger the appeal

1 Mbd of US refining capacity will go offline in September-October, weakening domestic pull on crude

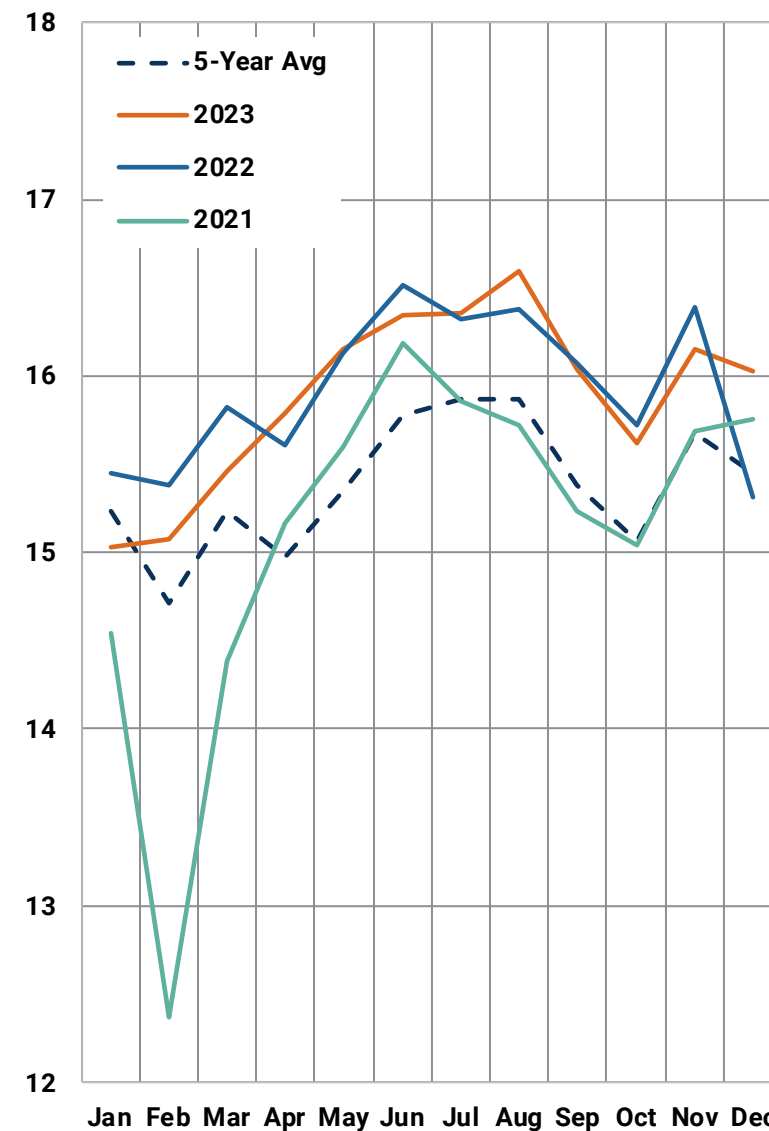
Selected light grades CFR China vs Murban, \$/bbl



US seaborne crude exports by destination, kbd



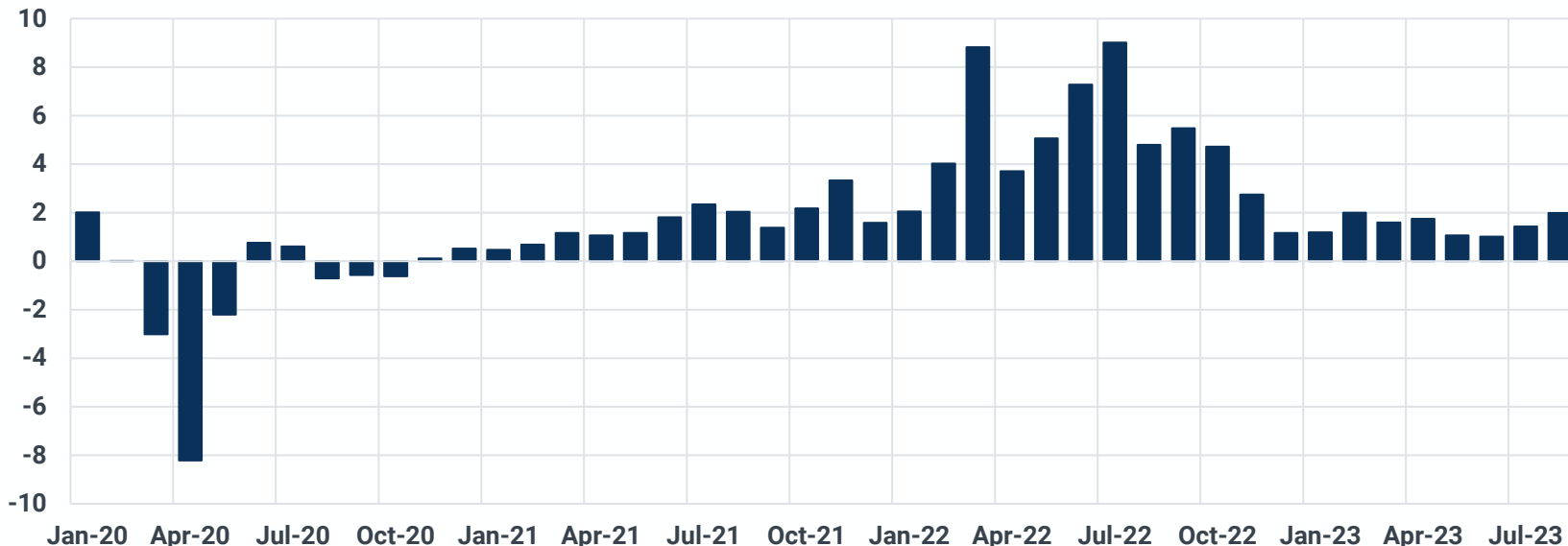
US refinery crude intake, Mbd



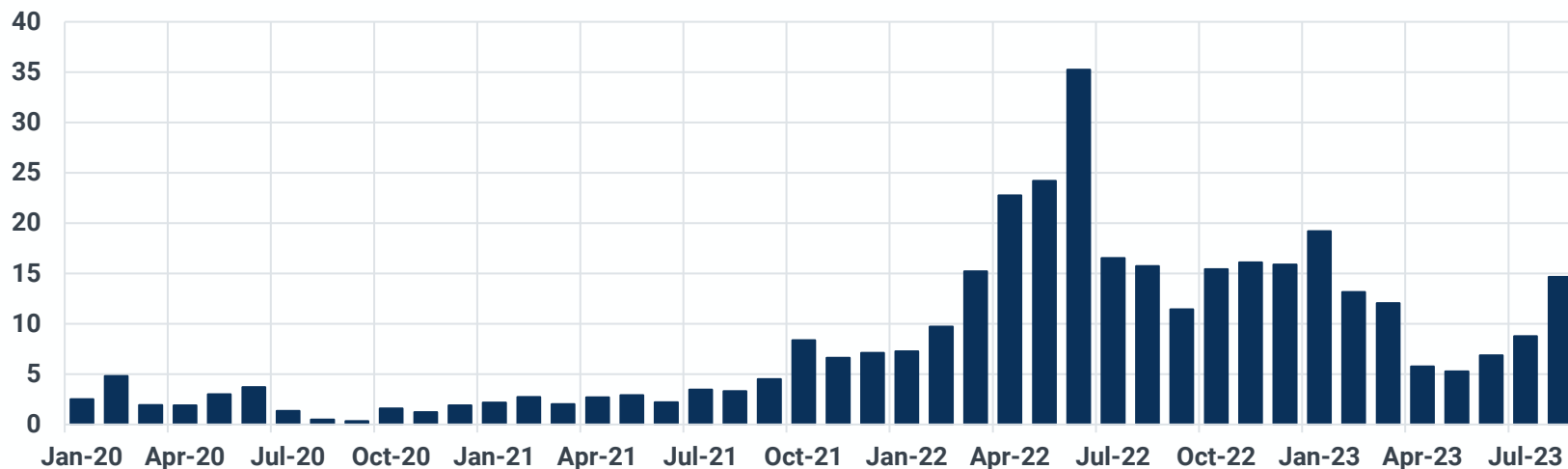
Asia: Another OSP hike in the making

Medium sours ideally placed for further increments

Dubai M1-M3 spread monthly average, \$/bbl



Average monthly Asian complex refinery margins, \$/bbl

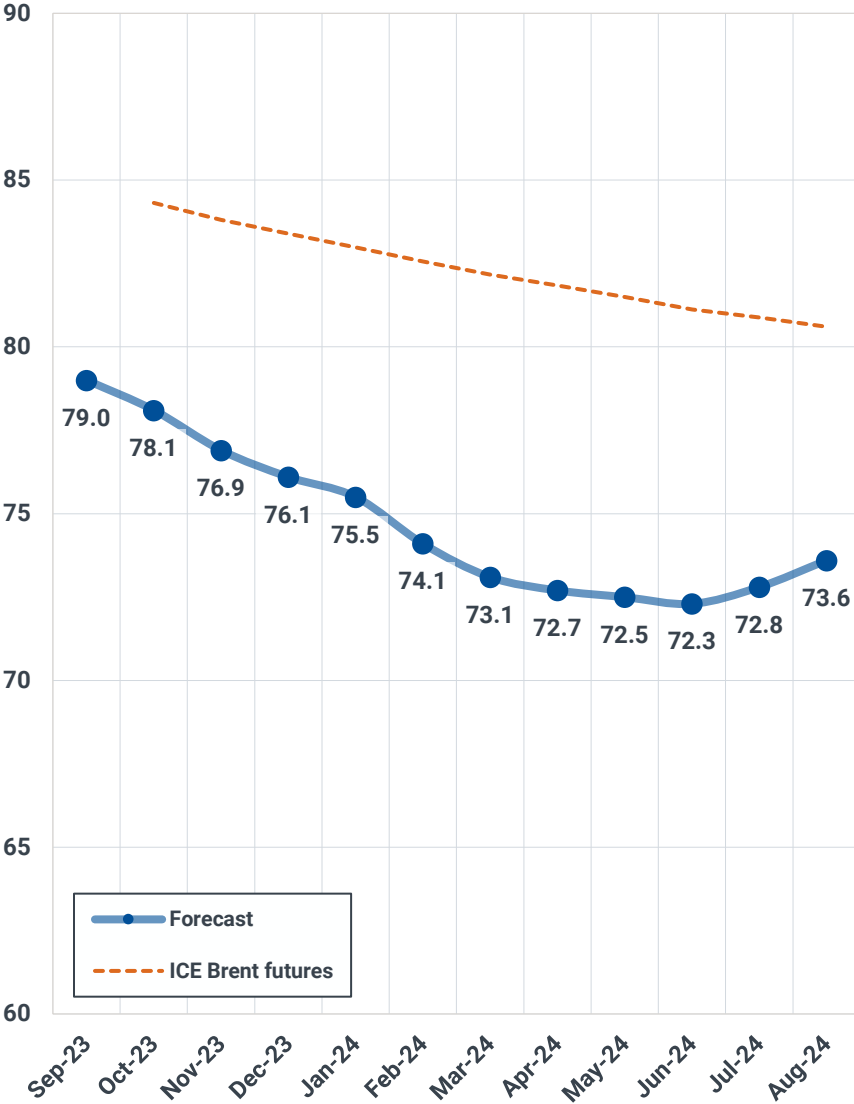


- Asian crude demand to lose some 600 kbd between August and October
- Steep backwardation nevertheless adds \$0.5/bbl on the month
- Complex refinery margins the best since January, boosted by mid-distillates and HSFO
- Declining European differentials might prompt more WoS imports into Asia
- Johan Sverdrup down \$3/bbl from a month ago, delivered China prices already \$4.5/bbl
- Alignment in pricing trends only happening over the upcoming weeks

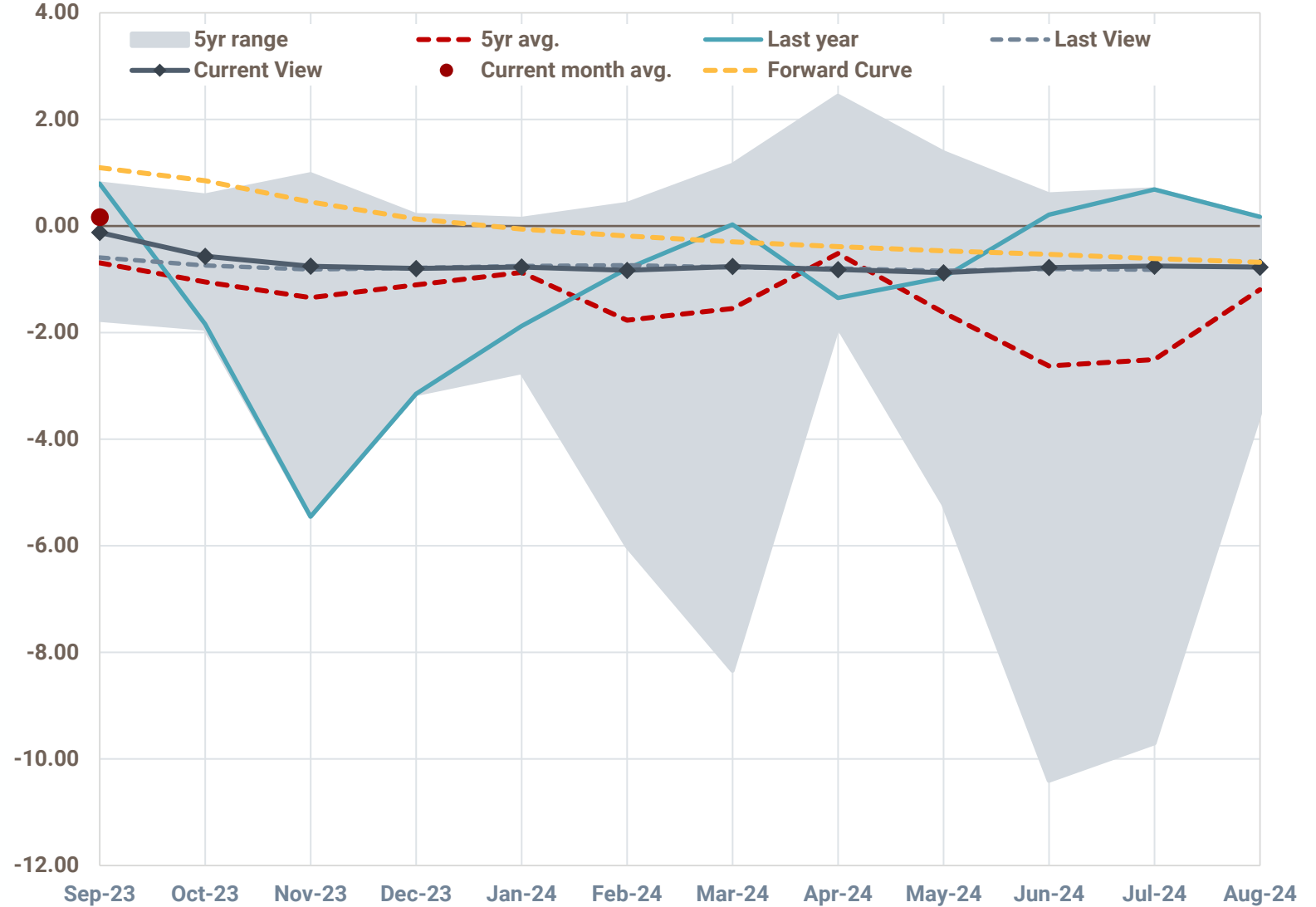
Global: Oil Price Forecasts

Some 80% of Saudi Arabia's production and exports are medium sour – production cuts add to the upward pressure on Dubai

Dated Brent Forecast (\$/bbl)

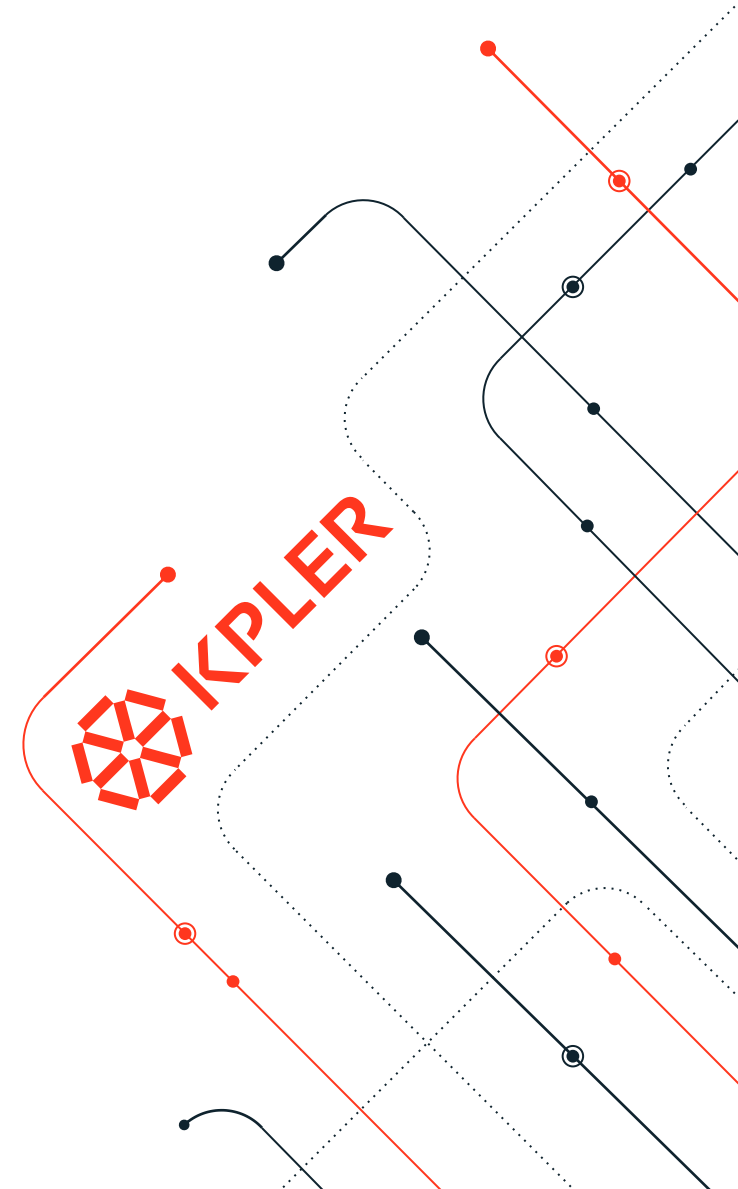


Dubai vs Dated Brent Forecast Compared to Futures Markets (\$/bbl)



Petroleum products market update

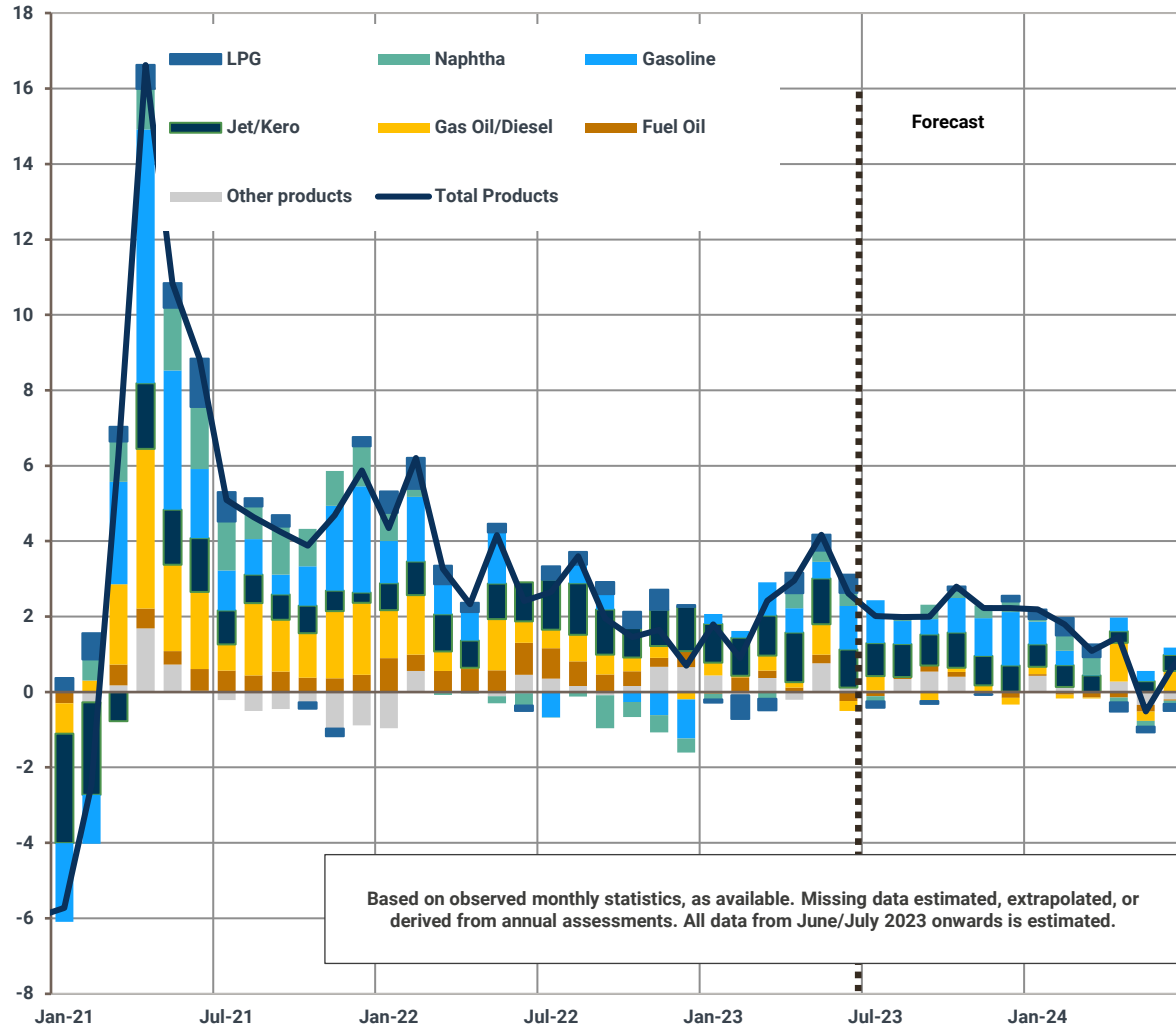
Andon Pavlov – Lead refining and DPP analyst



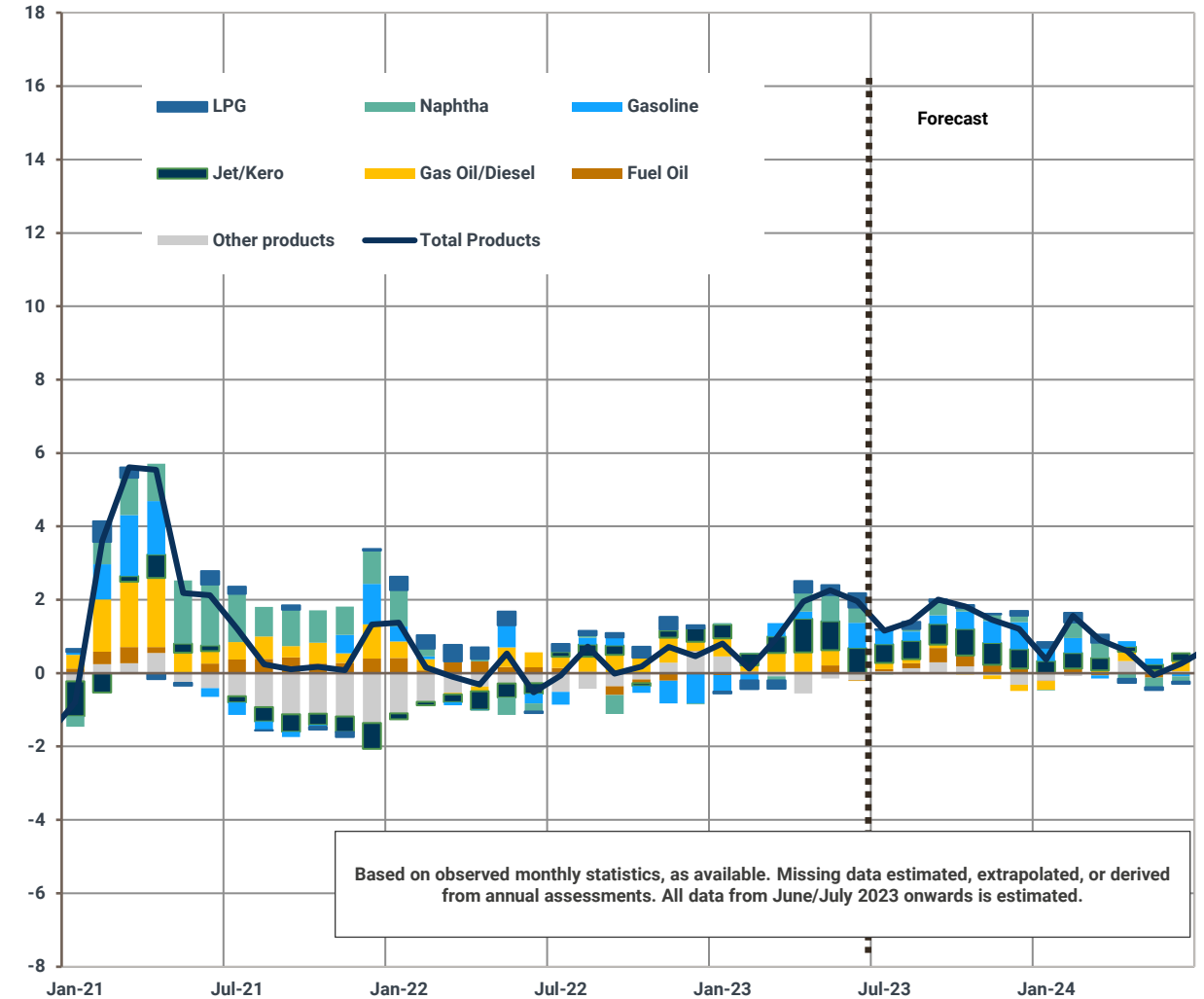
Another year of demand recovery but don't expect wonders

While we see total product demand rising by 2.3 Mbd y/y, core products will register a modest 1.8 Mbd y/y growth. H1-2024 is to see a limited y/y growth in the region of 1 Mbd

World: Petroleum product demand y/y growth (Mbd)



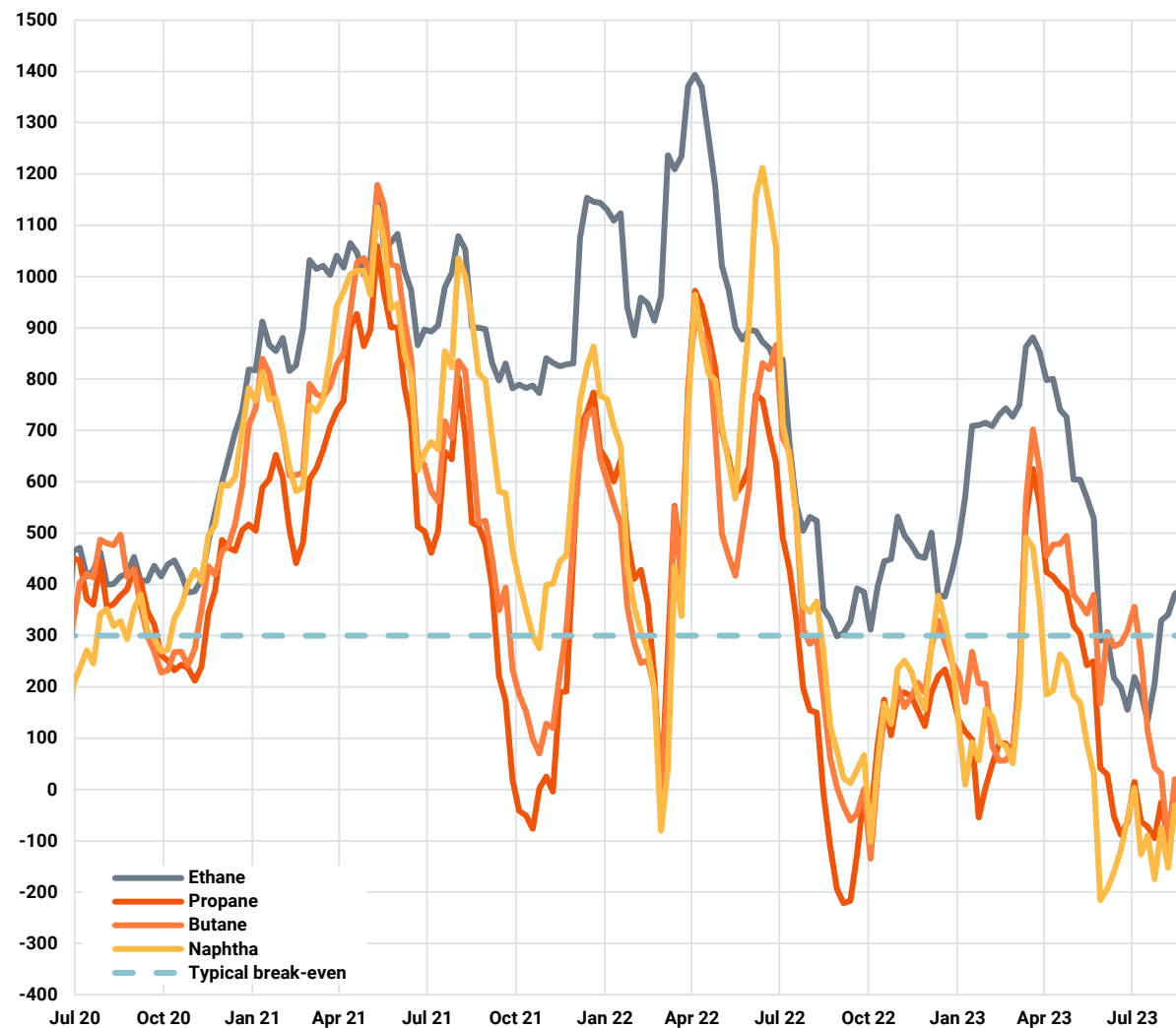
Asia: Petroleum product demand y/y growth (Mbd)



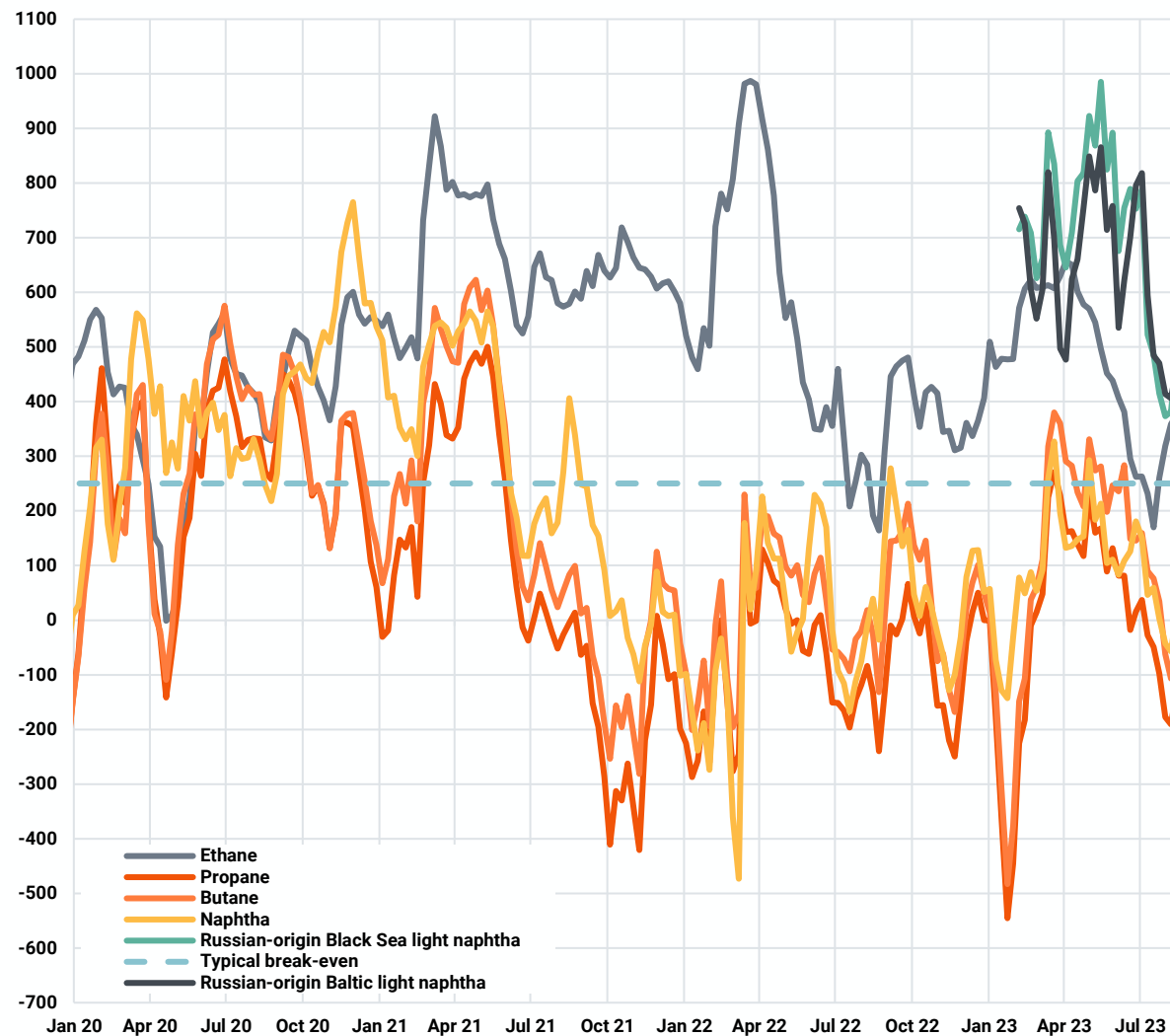
Global: Not much hope on the cards for steam cracker operators

High interest rates in the west and sizeable capacity additions in China post systematic risks to global petrochemicals markets

Daily NWE Gross Complex Steam Cracking Margins per One Metric Tonne of Ethylene Produced (\$/t)



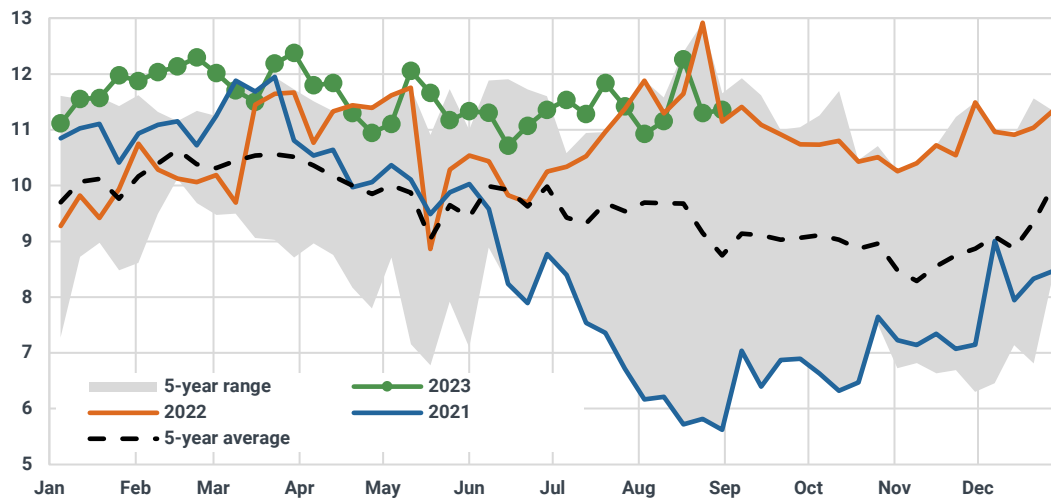
Daily NEA Gross Complex Steam Cracking Margins per One Metric Tonne of Ethylene Produced (\$/t)



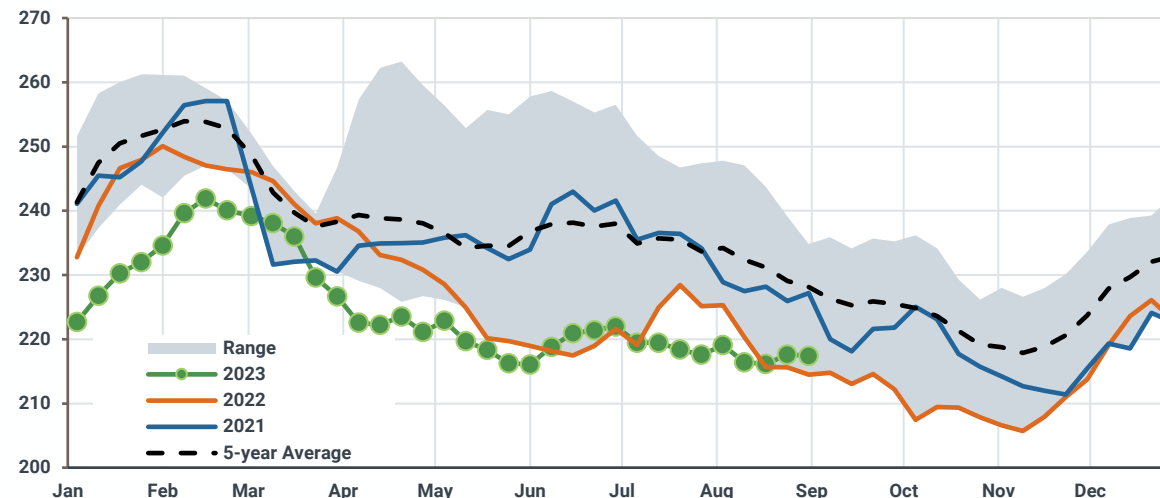
Global: Gasoline Steals the Show

The summer driving season and low US inventories set the stage for a strong Q3 for gasoline in the Atlantic Basin area

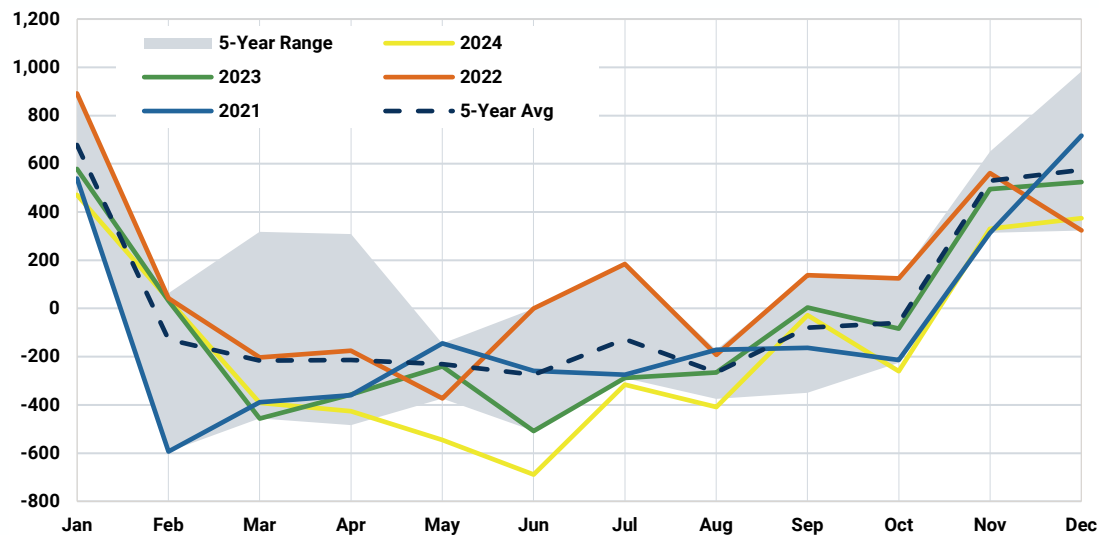
Monthly ARA Gasoline Stocks in Independent Storages (Mbbbls)



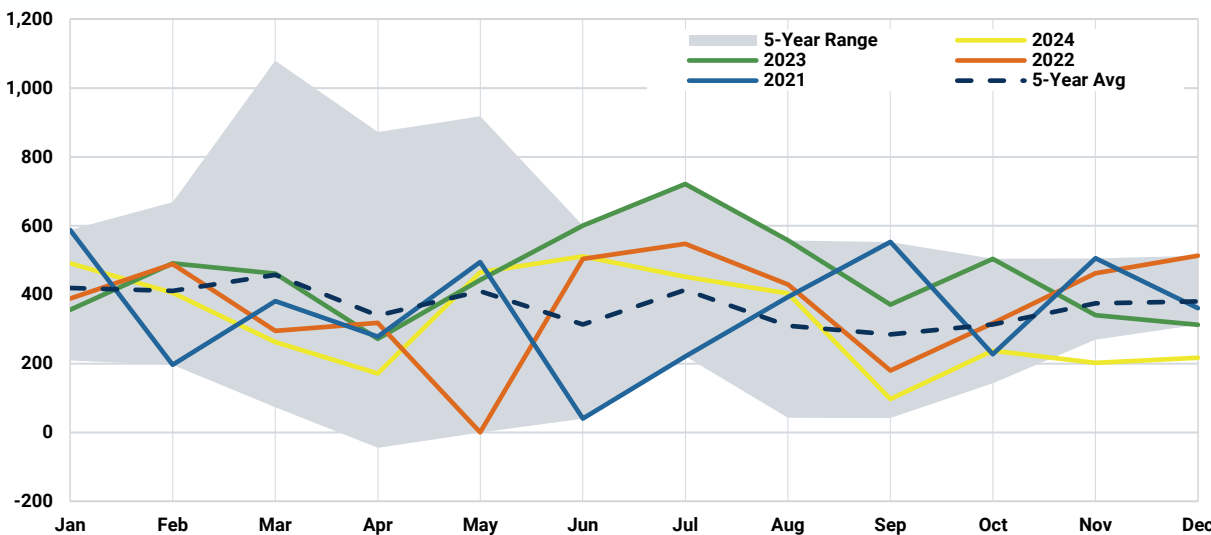
US: Weekly Gasoline Inventories (Mbbbls)



Monthly Seasonal US Gasoline Balance (Mbd)



Monthly Seasonal Asia Gasoline Balance (kbd)

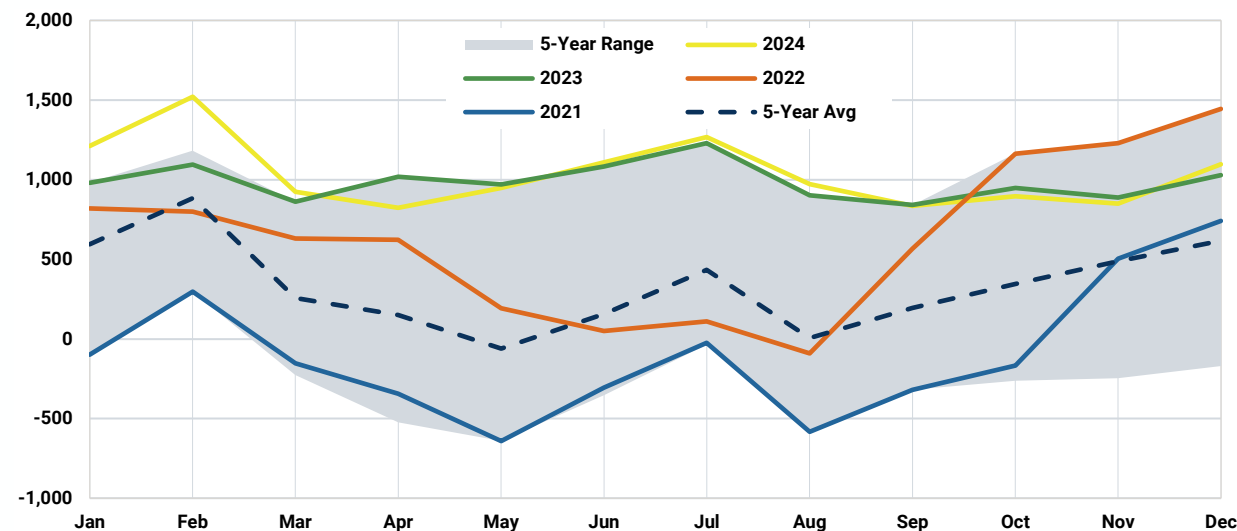


Global tightness in diesel markets begins in China

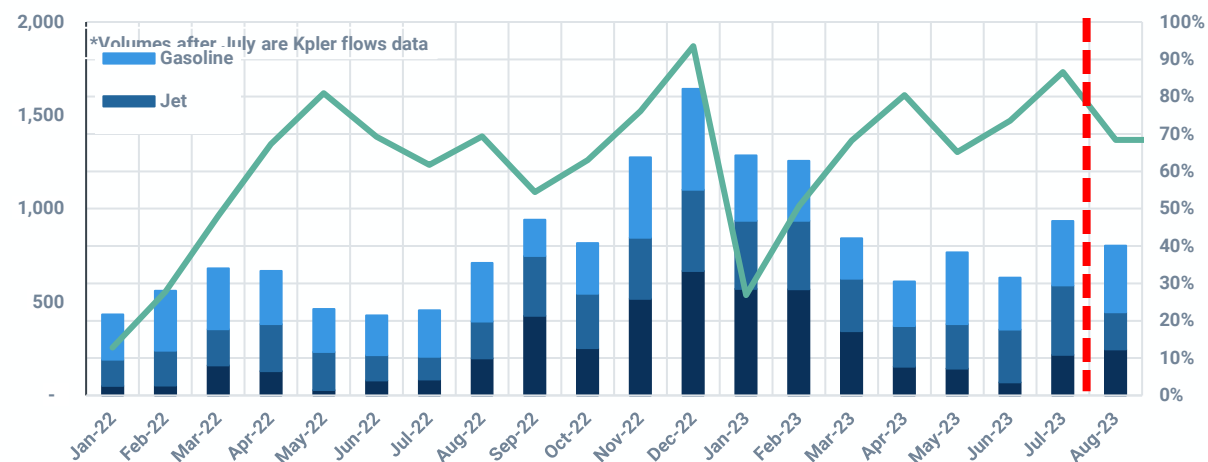
Oil product export quota system has kept surplus diesel in the country

- China has almost 1 Mbd of surplus diesel, but it is gated behind oil export quota system
- Clean oil product export quota utilization (87% of 27.99 Mt in July vs 62% of 22.50 Mt year ago) much higher this year
- Previous focus on gasoline exports due to reforming margins, weak BTX market. Domestic diesel cracks were also firm
 - Gasoline volumes steady at 300 kbd ytd
 - Diesel exports fell from 500 kbd Q1 average to 150 kbd
- This could soon change with the end of the summer driving season
- Export economics have evolved, favoring diesel once more
 - Diesel (\$12-15/bbl)
 - Jet A-1 (\$10/bbl)
 - Gasoline (\$7-8/bbl)
- Third round of quotas will facilitate this rebalancing – 12 Mt CPP, 3 Mt VLSFO

China: Gasoil – Balance (kbd)



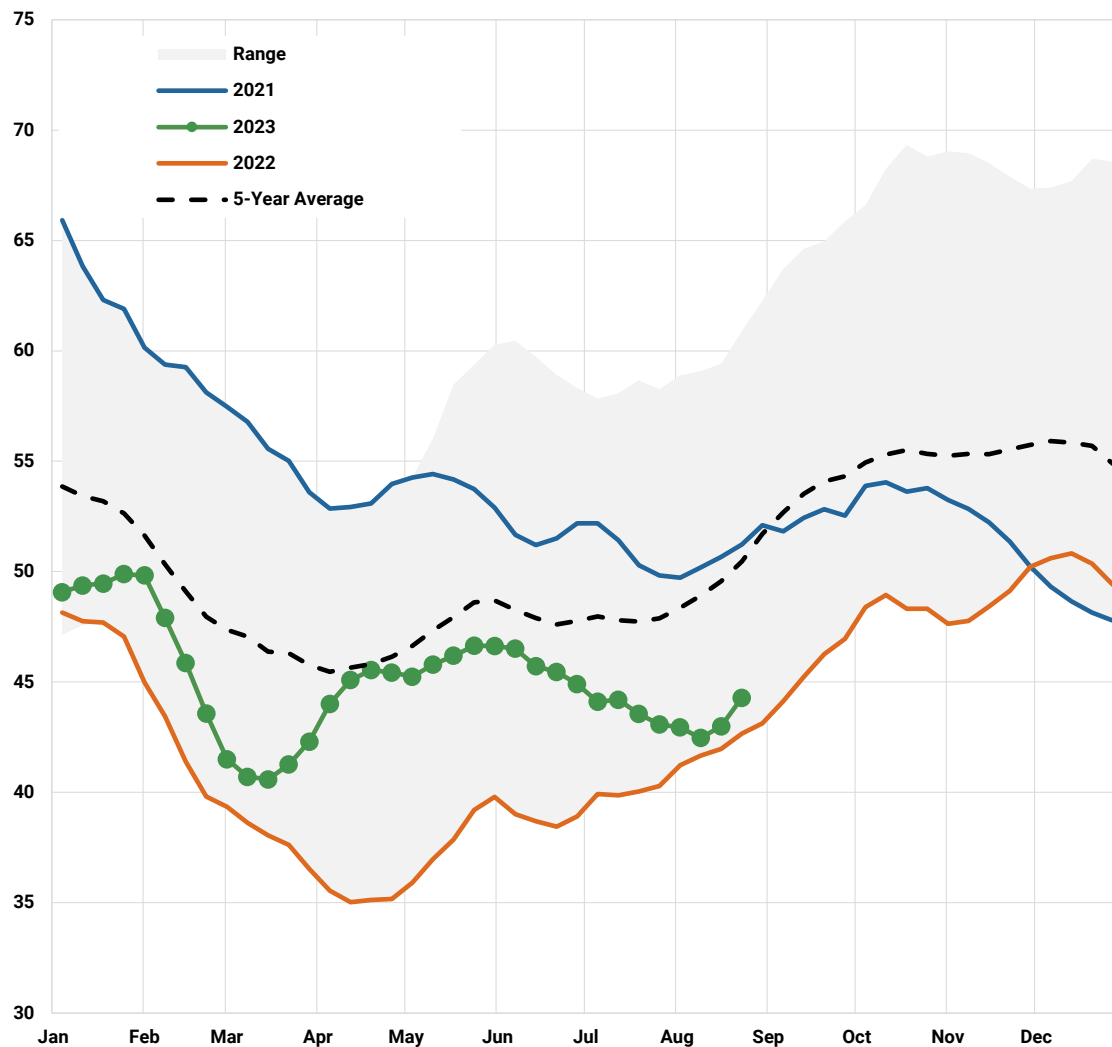
China CPP exports and quota utilization % (kbd)



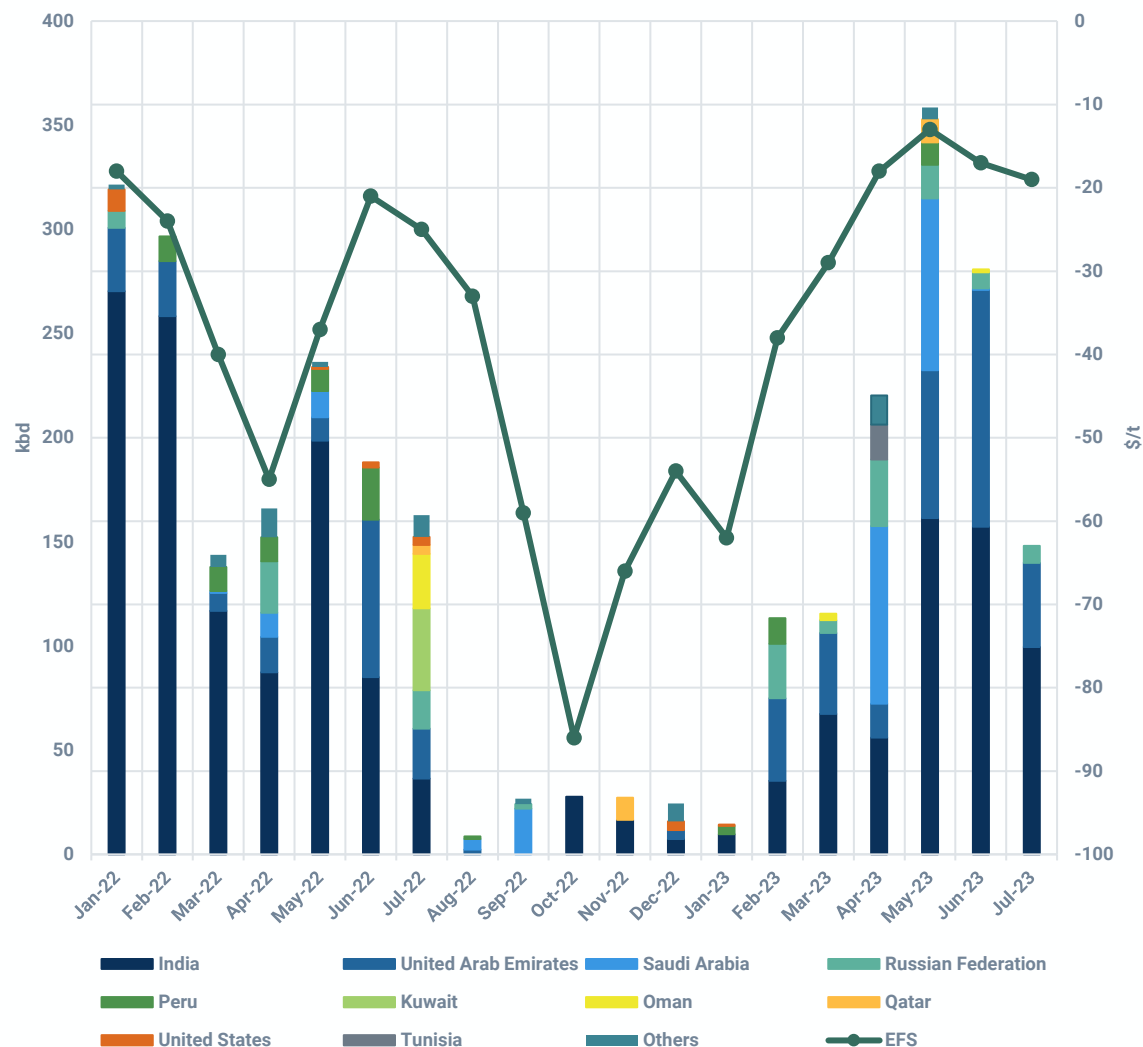
Tighter EoS stocks and strong cracks shut the E/W window

EoS unable to fulfill WoS diesel requirements due to closed arbitrage

EoS: Middle distillate inventories level 4-week rolling average (Mbbbls)



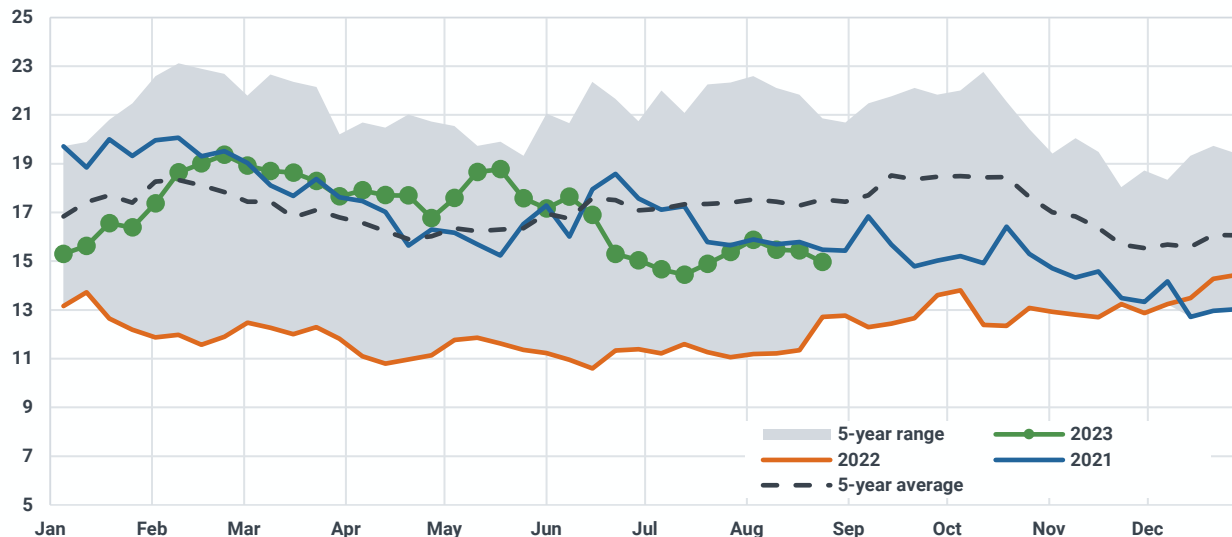
Diesel Exports to Asia-Pacific by Origin Country (kbd), ICE Gasoil EFS (\$/t)



Global: Latest Rally in Diesel Cracks Loses Steam

Low US diesel inventories have favored cracks. However, weak demand in the Atlantic Basin, coupled with higher supply in the East, pose a problem

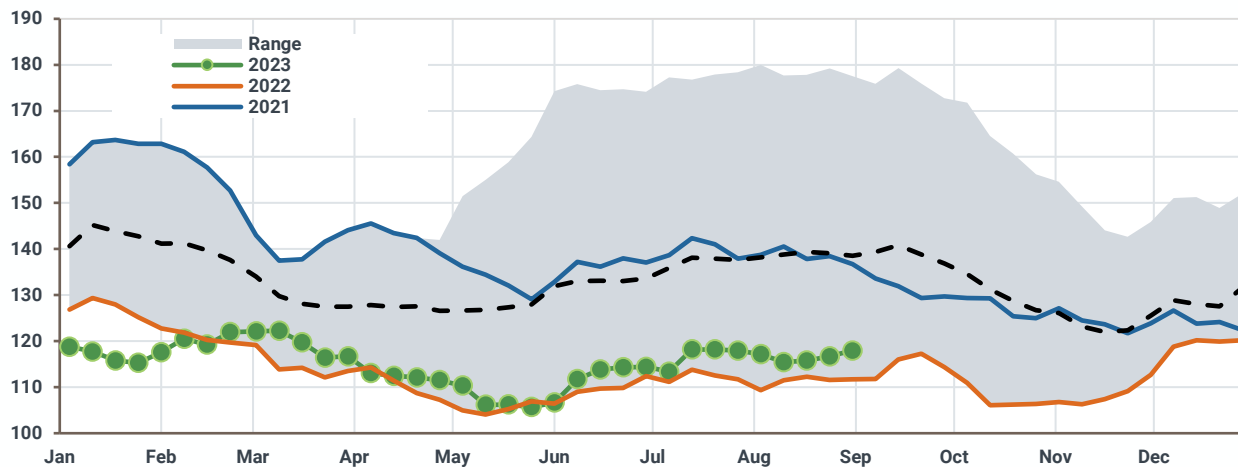
ARA: gasoil/diesel stocks in independent storage (Mbbbls)



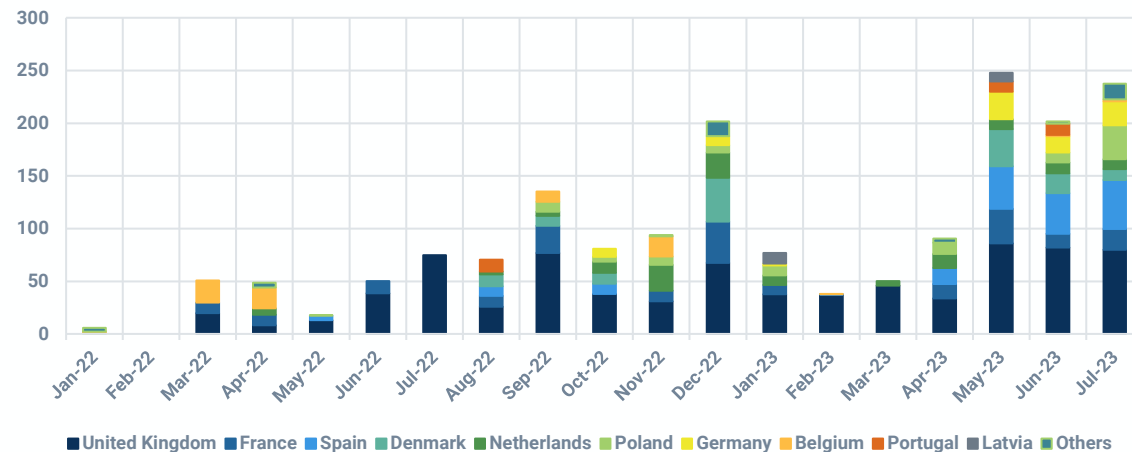
ICE Gasoil hedge fund positioning (contracts)



US: Diesel Inventories (Mbbbls)



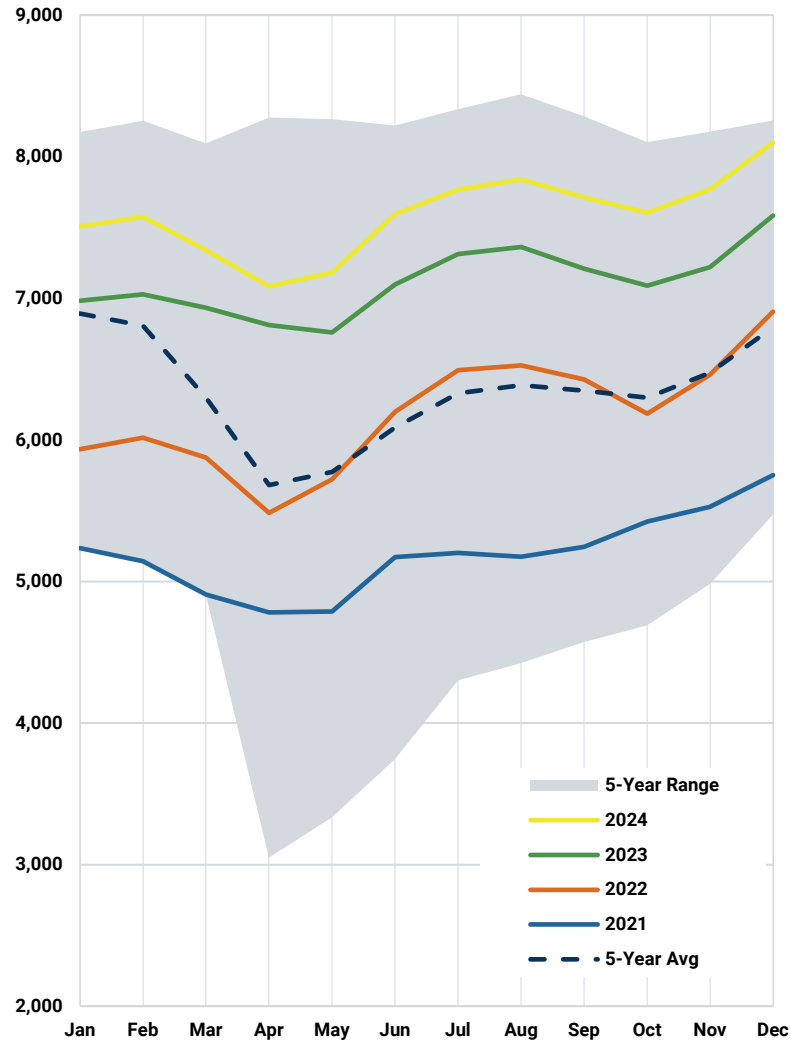
US Gulf Coast-NWE Diesel Exports (kbd)



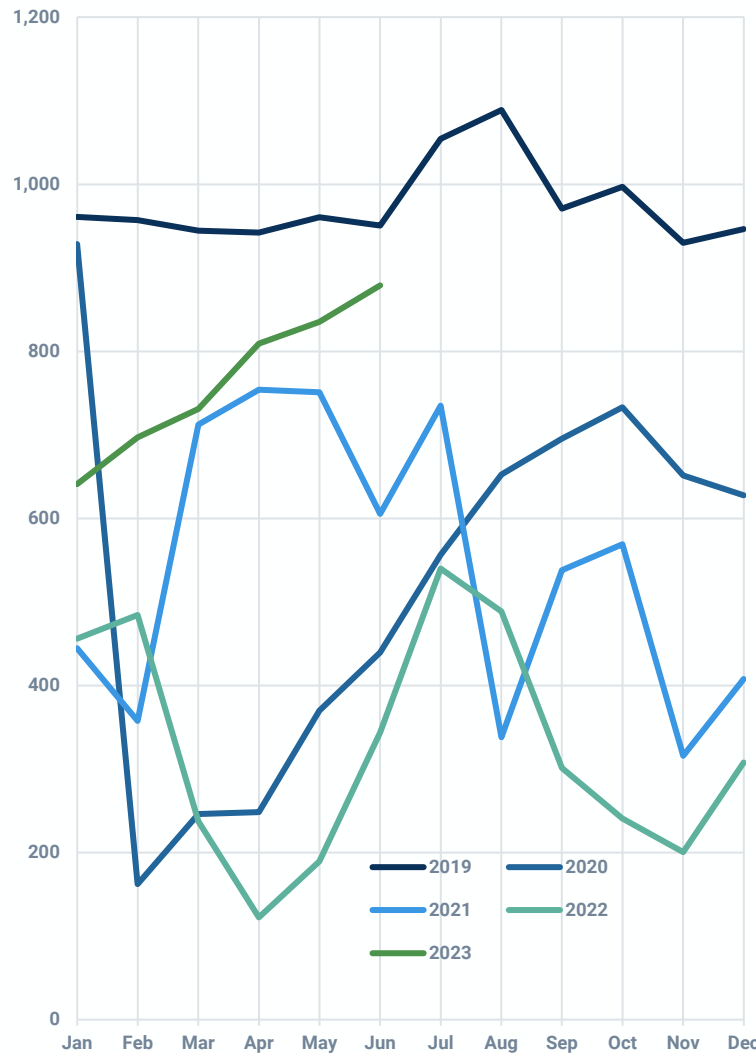
Global: Rising Jet Fuel Demand not Enough to Change the MD picture

Slow recovery of international traffic in APAC continues to weigh on jet fuel demand growth, further incentivizing the Middle East and India to fill the European gap

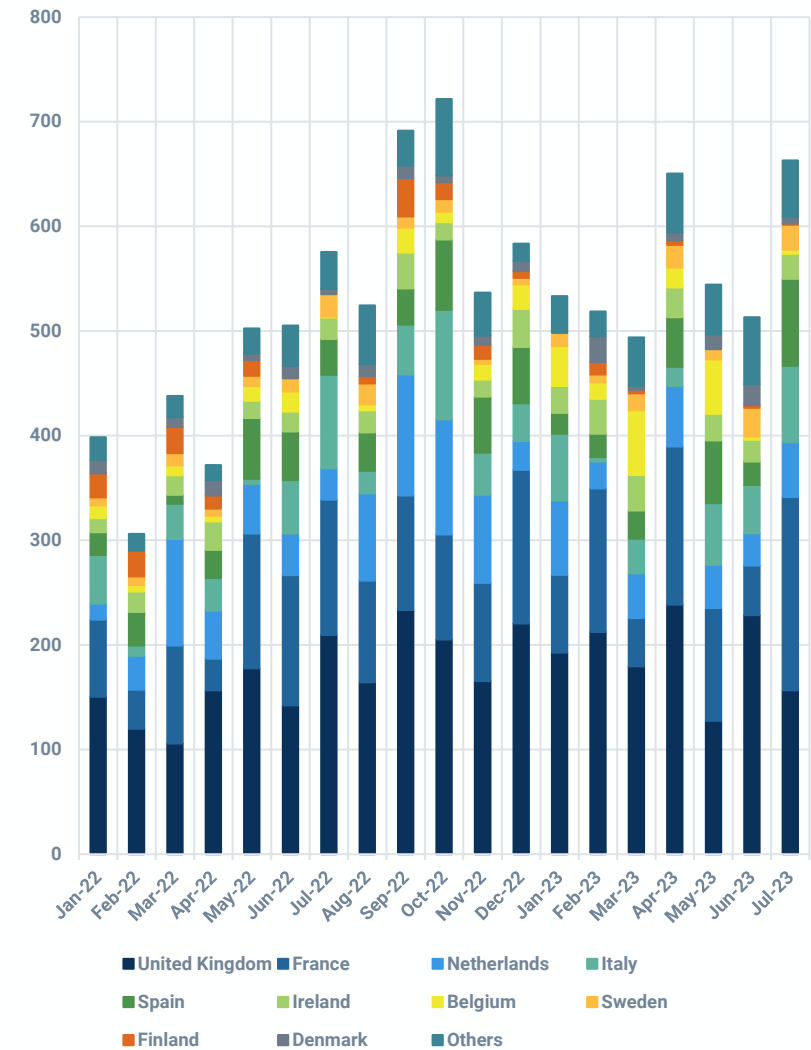
World: Jet fuel Demand (Mbd)



China Passenger-Kilometers of Civil Aviation, Current Period (100 million pax-km)



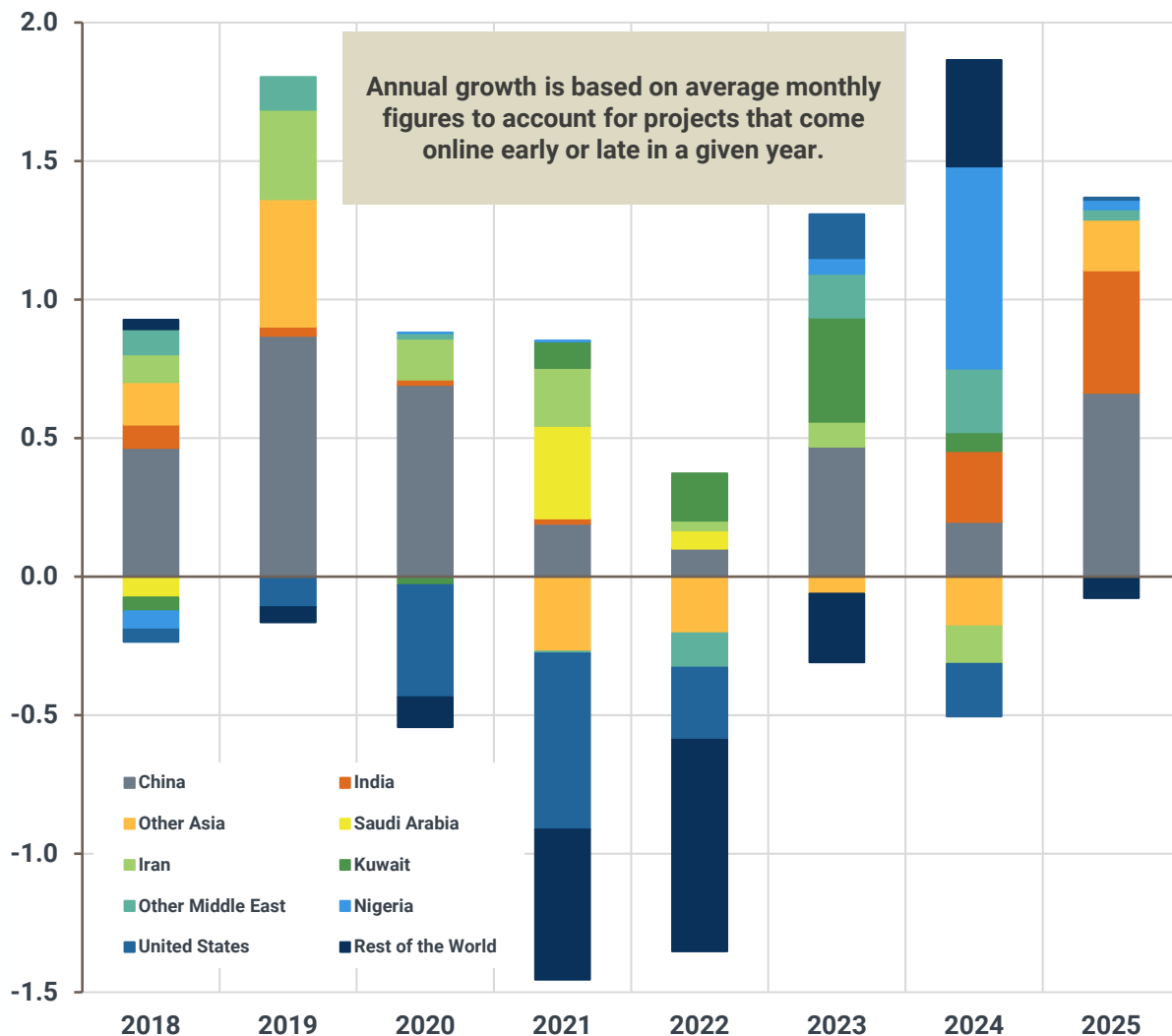
EU-27 + UK Jet Fuel Arrivals by Origin Country (kbd)



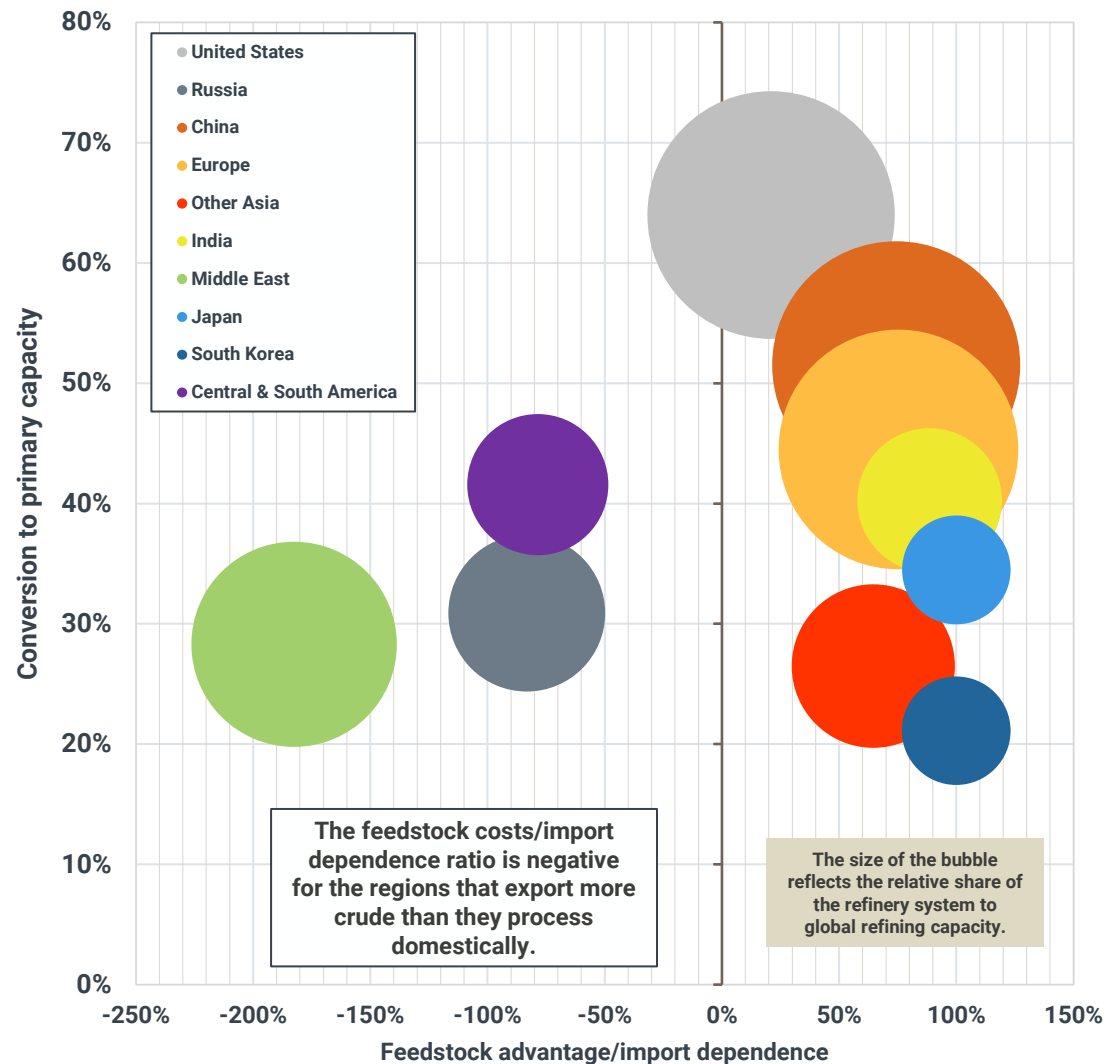
Global: Refining in Transition

The combination of sizeable capacity additions and shut-ins of less complex setups is increasing global refining complexity

Primary Capacity Net Additions (Mbd)

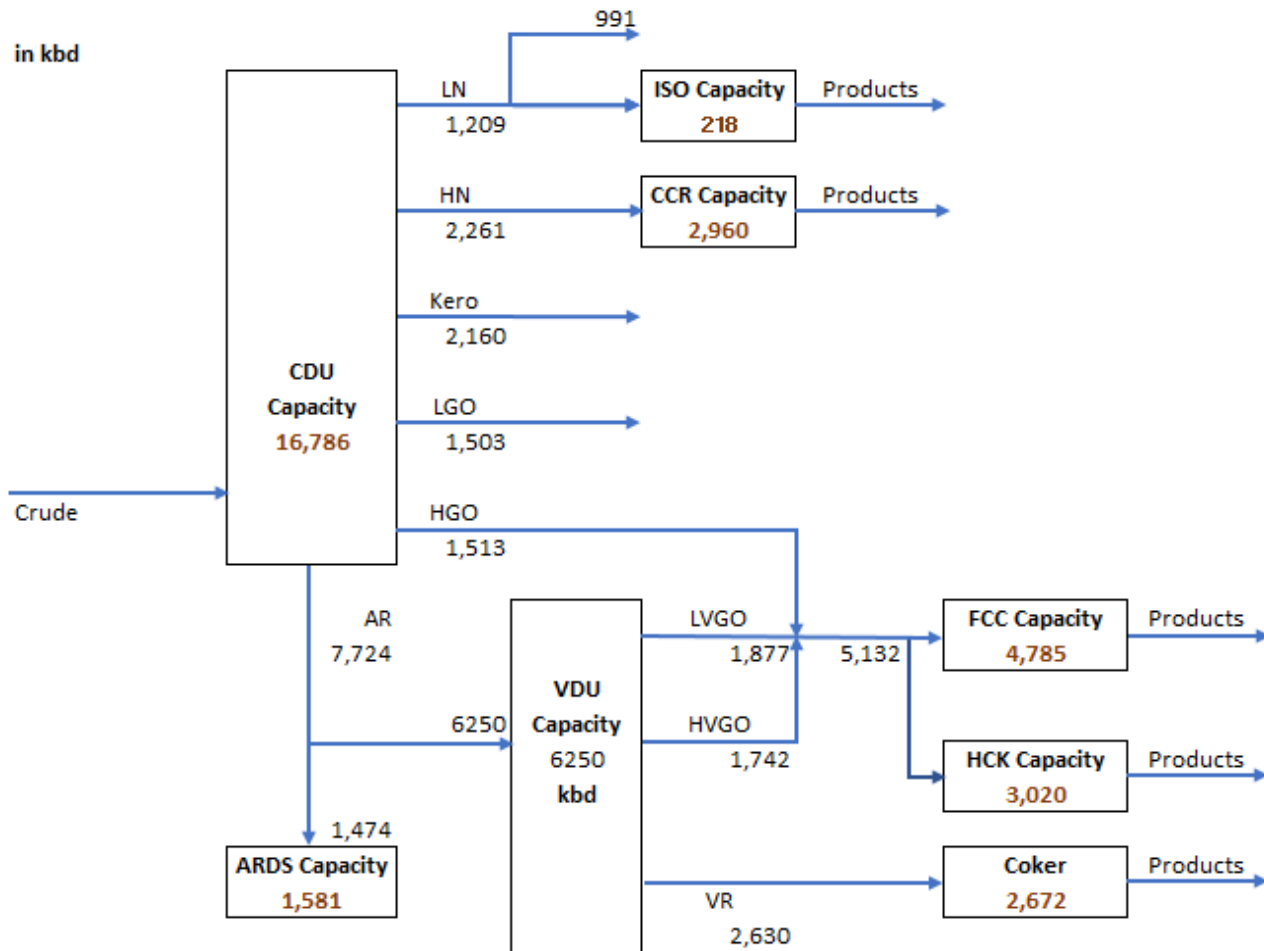


Relative Competitiveness of Refinery System Conversion Capacity vs. Feedstock Import Dependence (%)

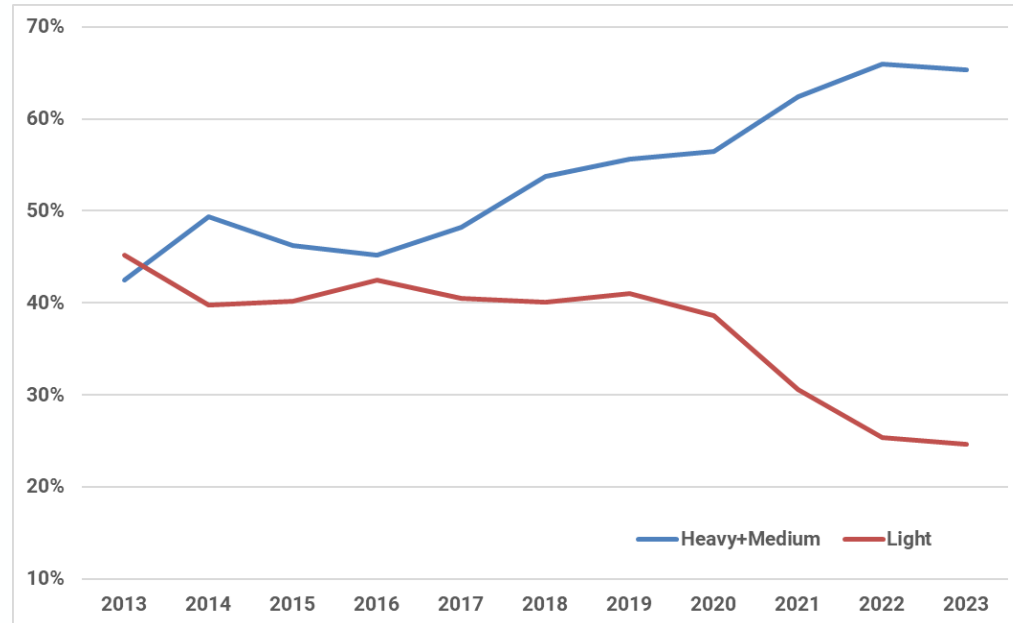


China: Well Matched Rival in Complexity to the US

Well balanced system for steam cracker feed and VLSFO production



Chinese Crude Imports (% of total imports)



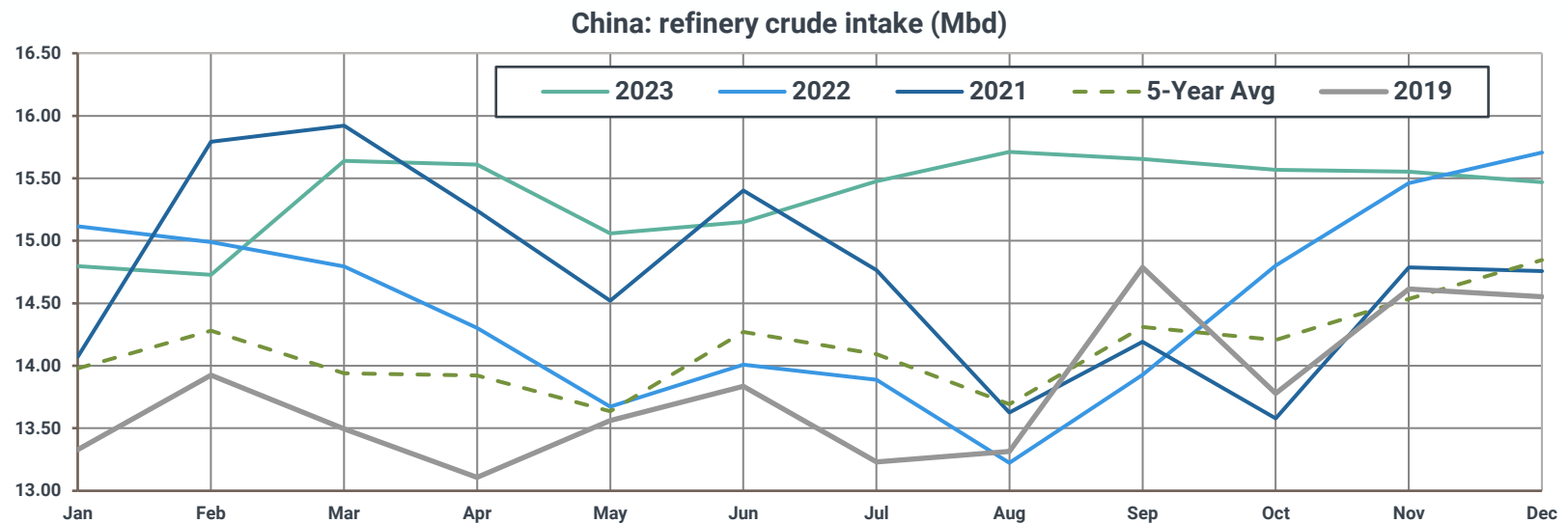
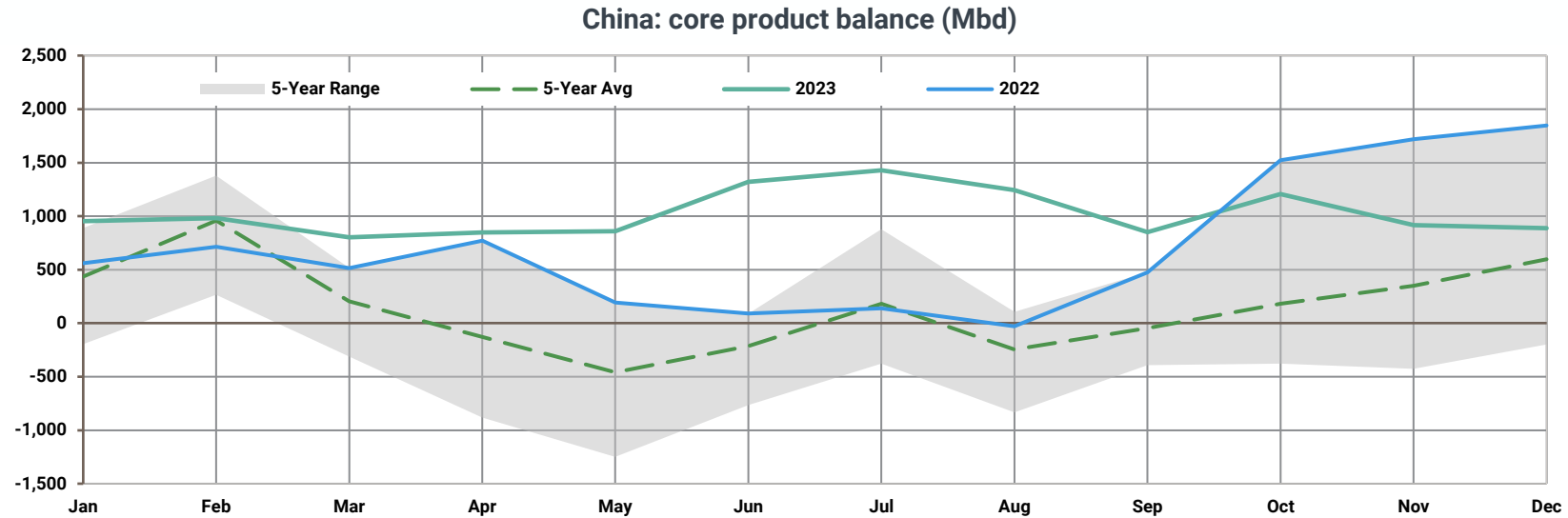
- Significant LN surplus (990 kbd) by design for the domestic steam cracker capacity.
- Massive ARDS capacity (1.6 Mbd) for VLSFO production.
- Spare conversion capacities requires VGO/fuel oil imports or heavier crude imports.



The China angle

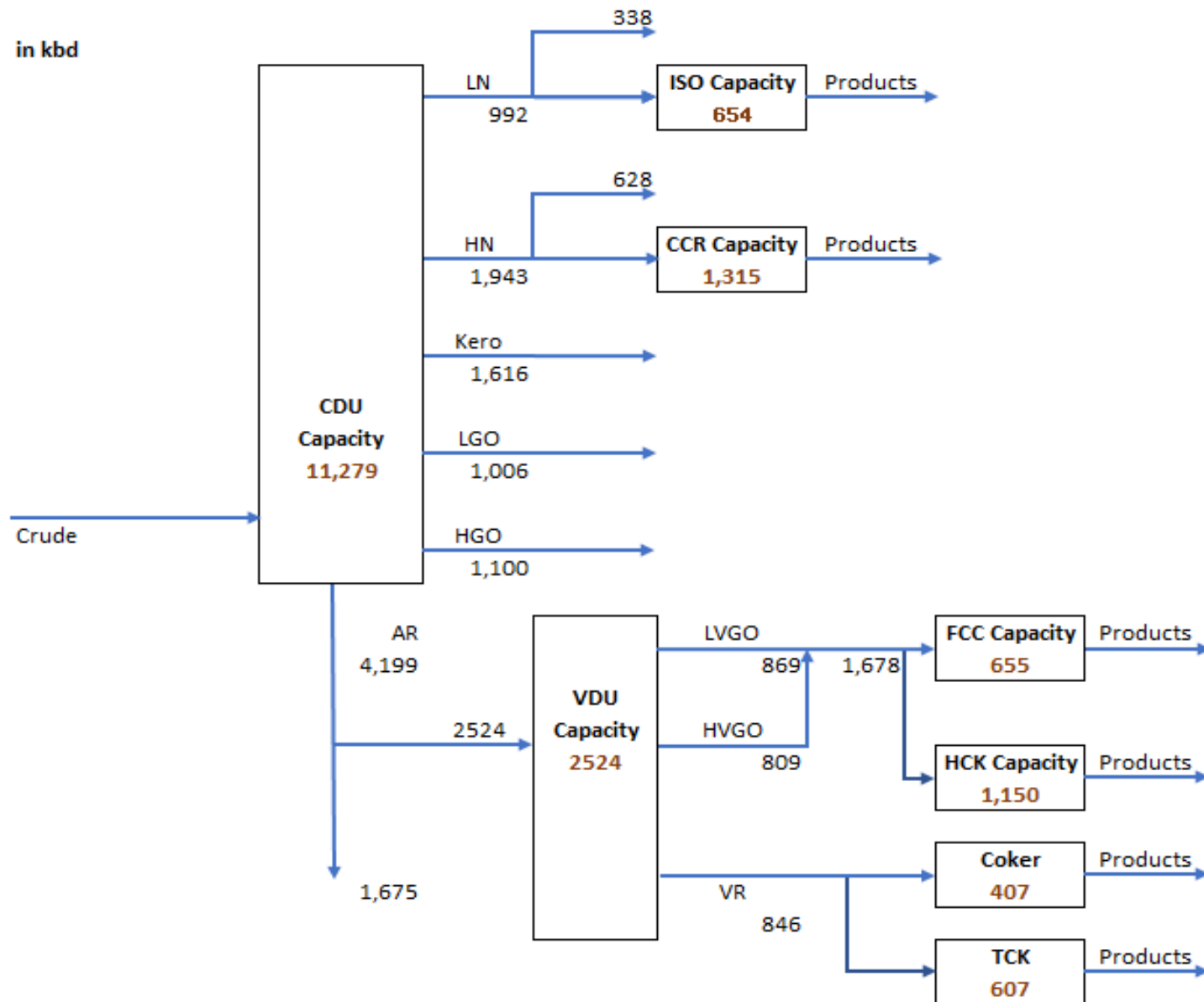
The sizable capacity additions over the past three years, put China in a particularly strong position in export markets

- China is again in the export game and demand at home will be a decisive factor in regional refinery margins.
- China has added about 1.2 Mbd of net primary capacity additions since the onset of the pandemic.
- With access to discounted Russian residue, VGO, crude, as well as the observed Iranian and Venezuelan barrels, China will be in a particularly favorable positions vs its regional peers in East Asian export markets later this year.
- By extension, this suggests run cuts across OECD Asia over H2, amid tepid demand at home. That only applies if there are sufficient export quotas granted, however.



Middle East: Catching Up but Still Some Way to Go

Imbalance between primary/secondary distillation and conversion capacity despite recent neck-breaking modernization

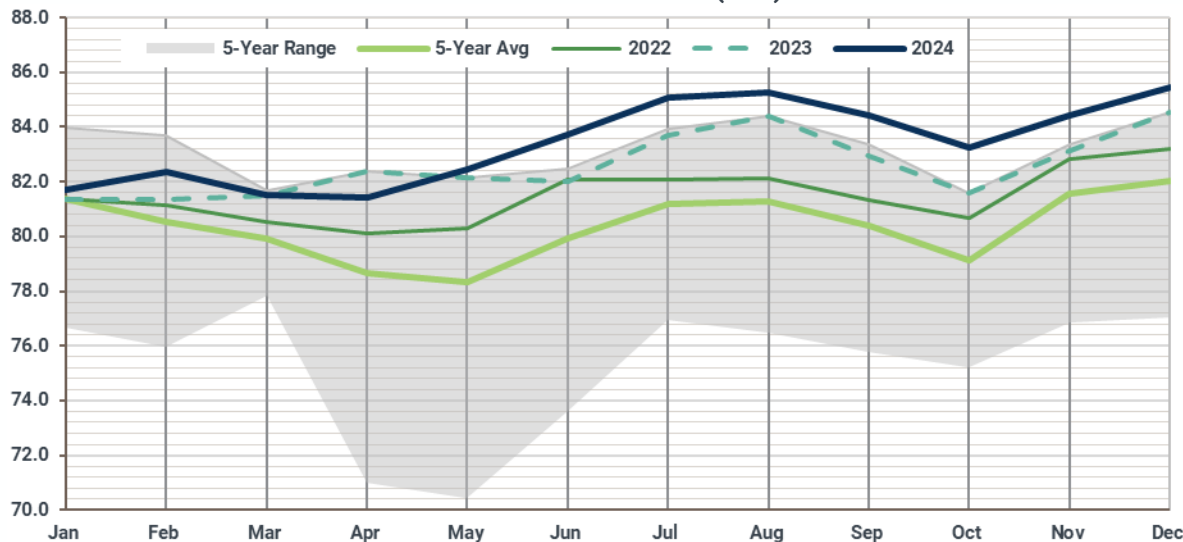


- Nealy 1 Mbd surplus in naphtha for export to Asia due to limited isomerisation capacity (650 kbd) and reforming capacity (1.3 kbd).
- Relatively well-balanced VDU (vacuum distillation capacity) and conversion capacity (FCC, Hydrocracker, and Coker). Slight overcapacity in thermal cracking/visbreaking.
- Significant mis-match between primary and secondary distillation leads to a surplus 1.6 Mbd of straight-run atmospheric residue for fuel oil production and export.
- There is potential future rationalisation of thermal cracking/visbreaking capacity and addition of secondary distillation plus conversion capacity.

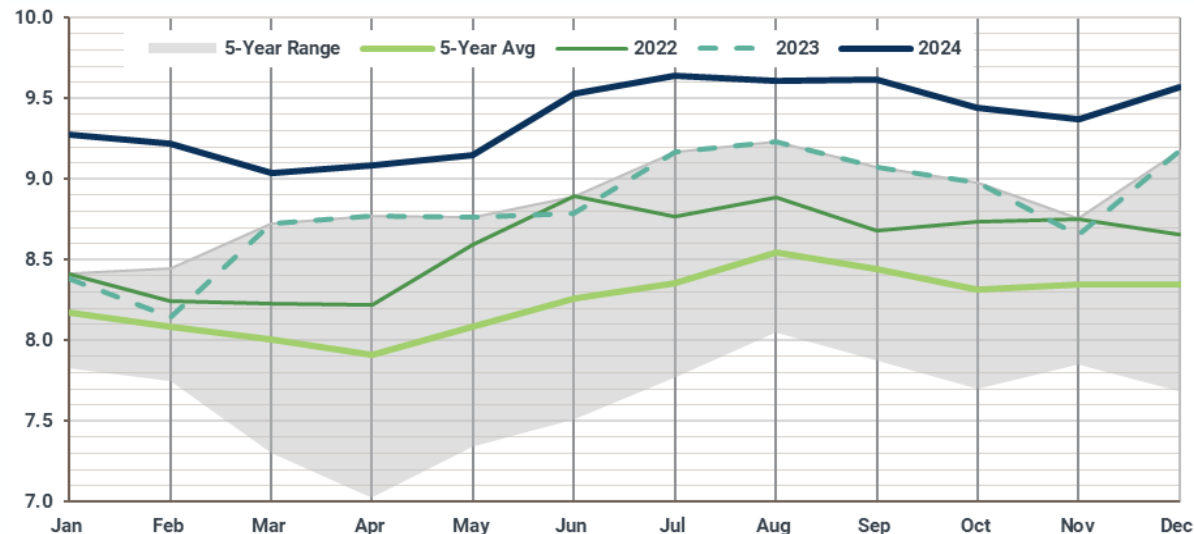
Global: 2023 refinery runs higher by 1.1 Mbd y/y but 2024 growth slows

Growth across the East of Suez offsets tepid performance in the West of Suez, helping margins retain some strength

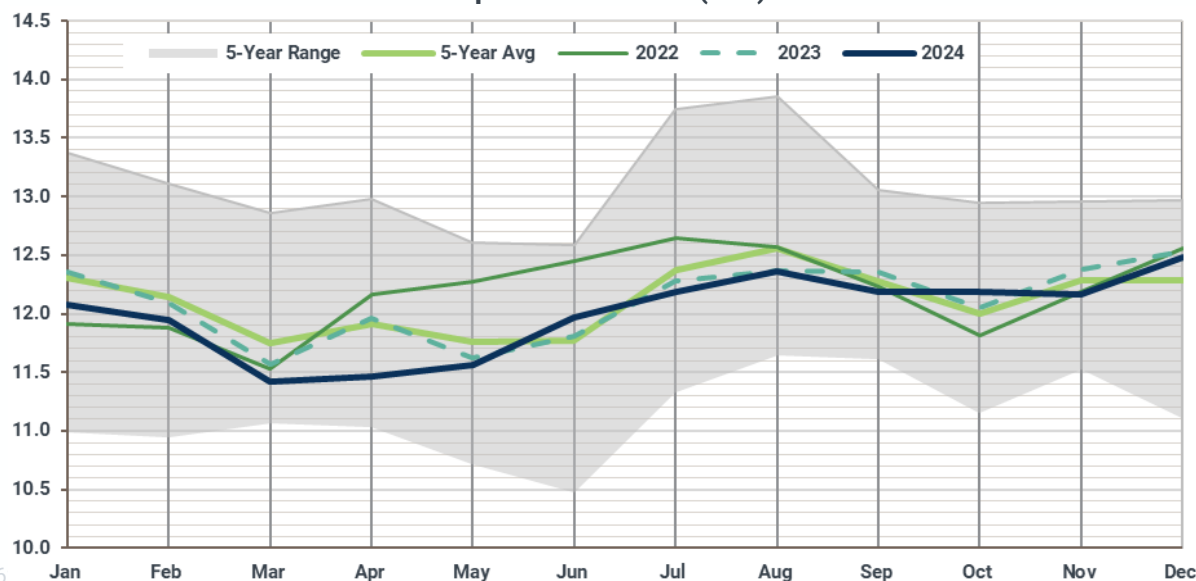
World: Crude intake (kbd)



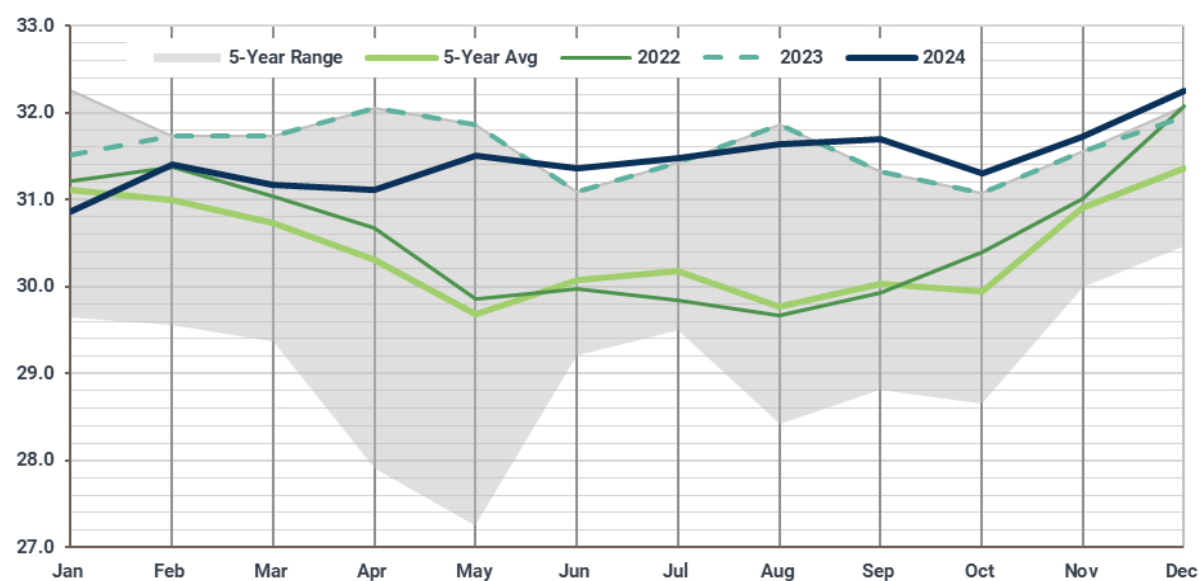
Middle East: Crude intake (kbd)



Europe: Crude intake (kbd)



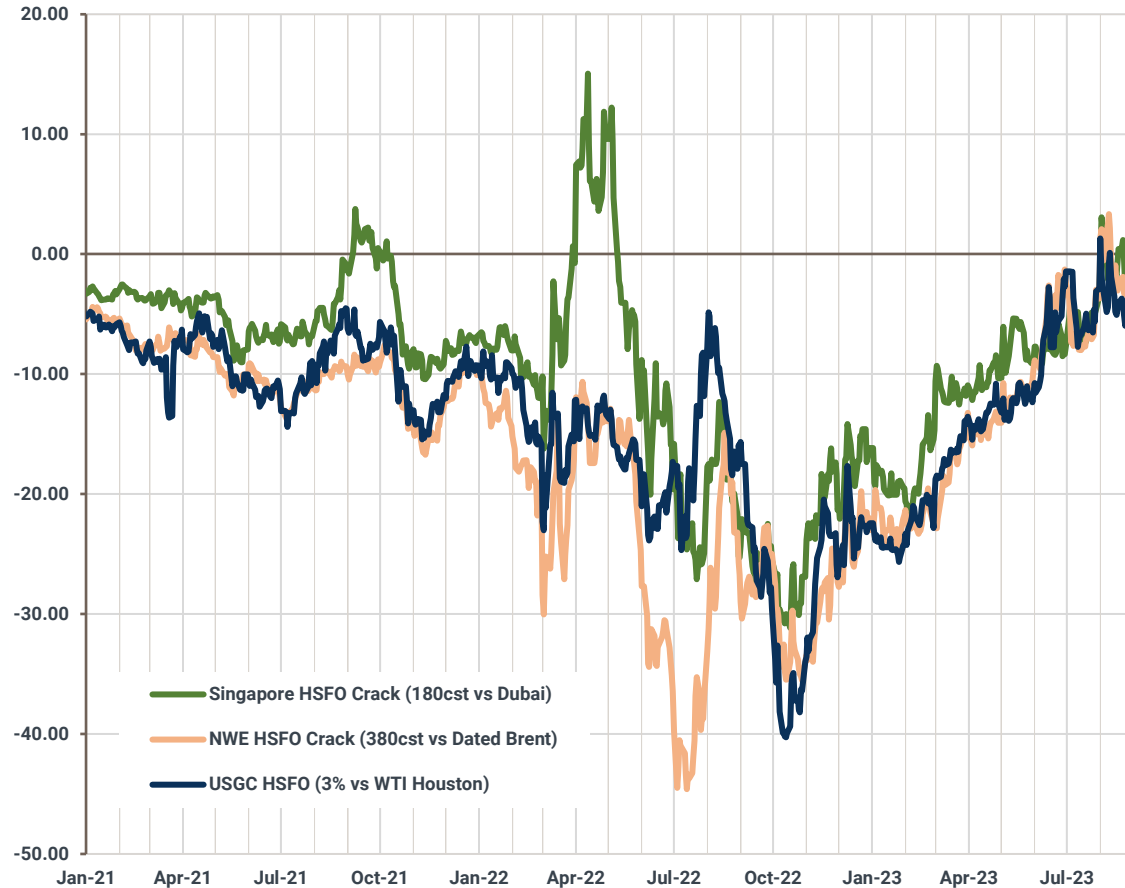
Asia: Crude intake (kbd)



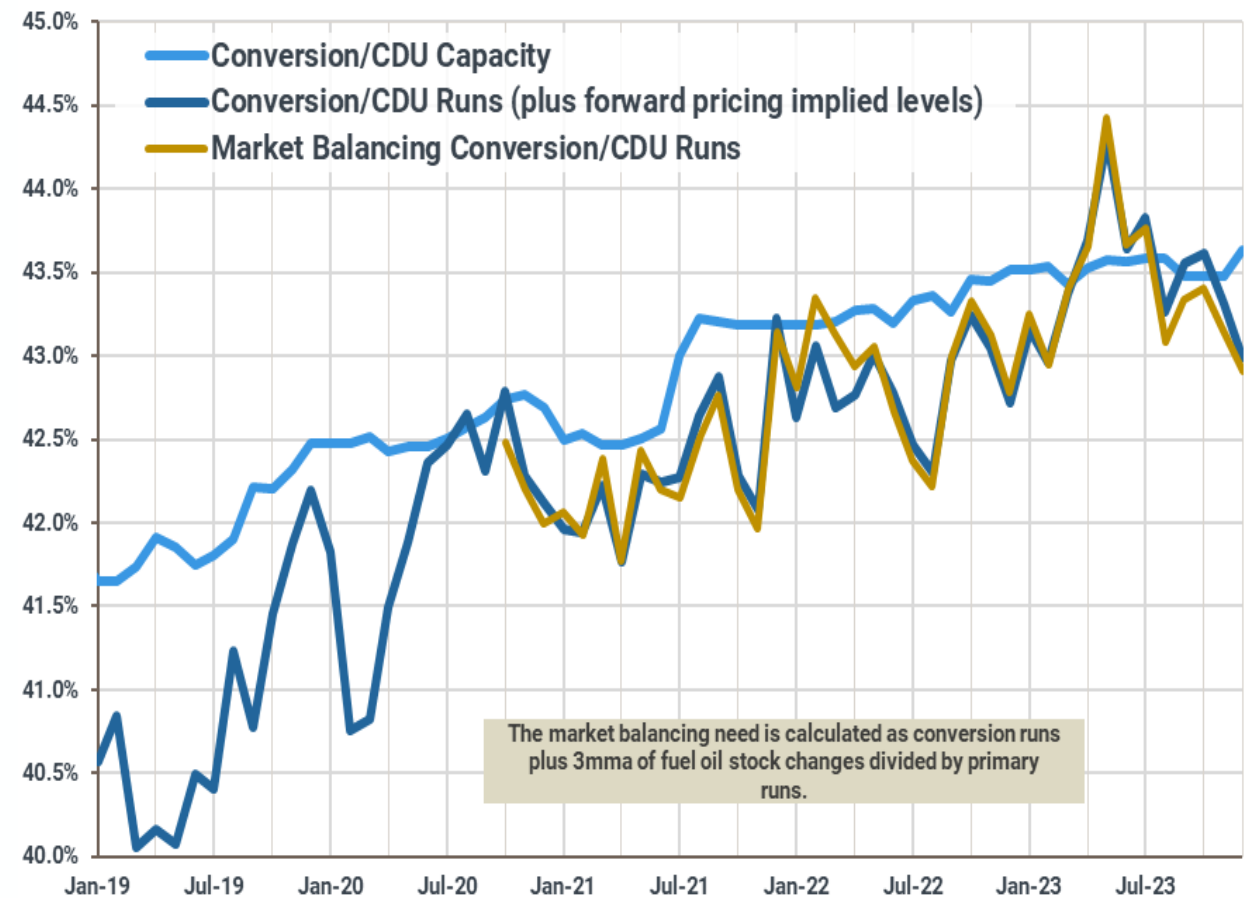
Global: Things are Getting Interesting at the Bottom of the Barrel

High conversion systems in the WoS are being deprived of suitable feedstock, causing ripples across the residue spectrum

HSFO cracks by region (\$/bbl)



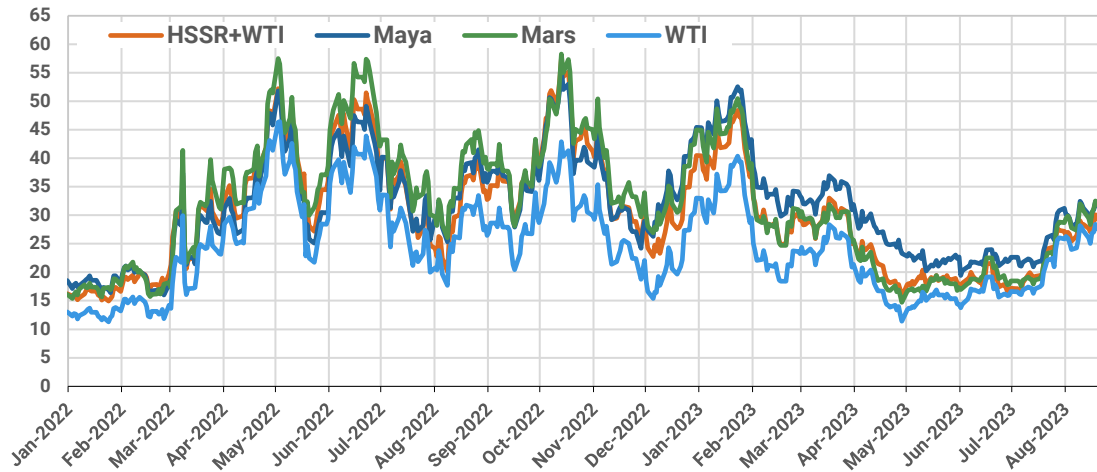
Conversion to CDU capacity ratio vs actual conversion to crude runs (%)



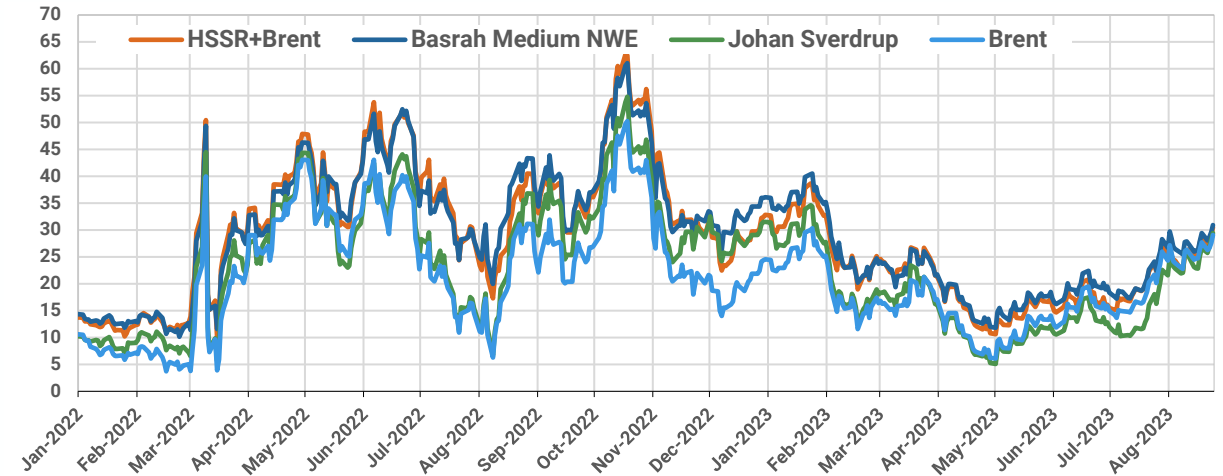
Global: HSSR Coking Margins are not Losing Momentum

Heavy crude full-conversion vs HSSR coking margin price spreads are narrowing, amid tightening availability of medium and heavy crude

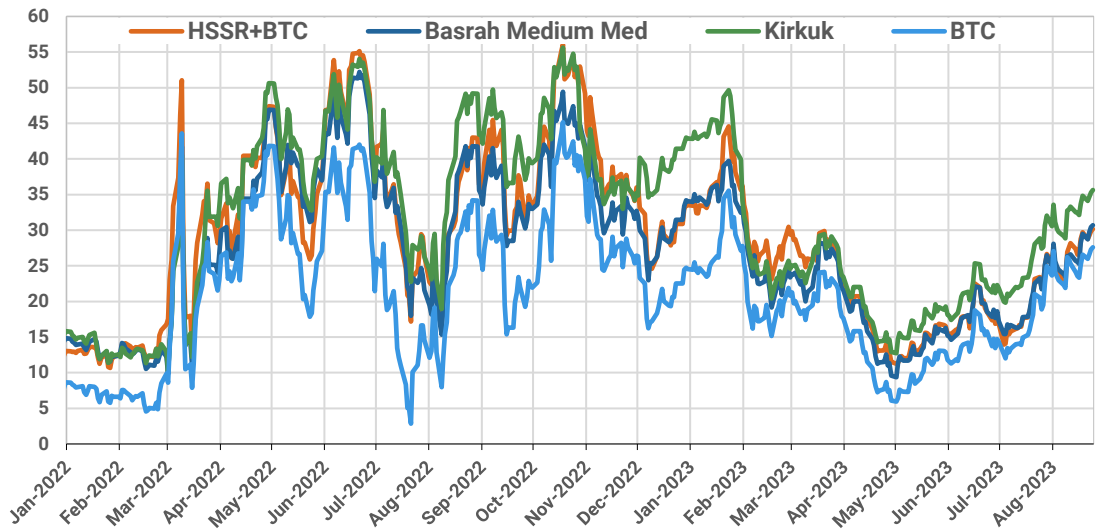
USGC: coker/conversion refinery margins (\$/bbl)



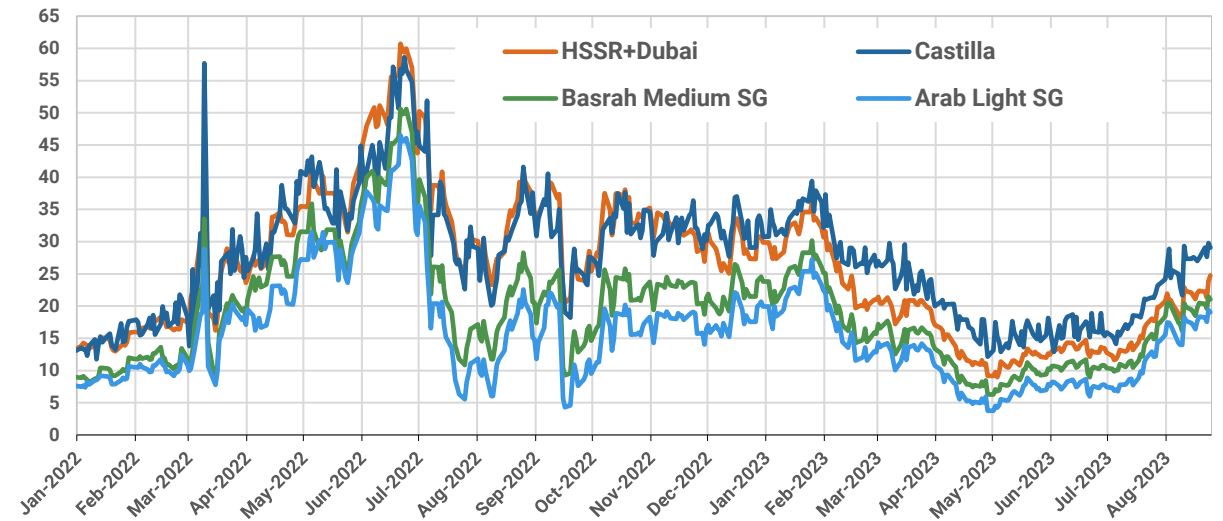
NWE: coker/conversion refinery margins (\$/bbl)



Med: coker/conversion refinery margins (\$/bbl)

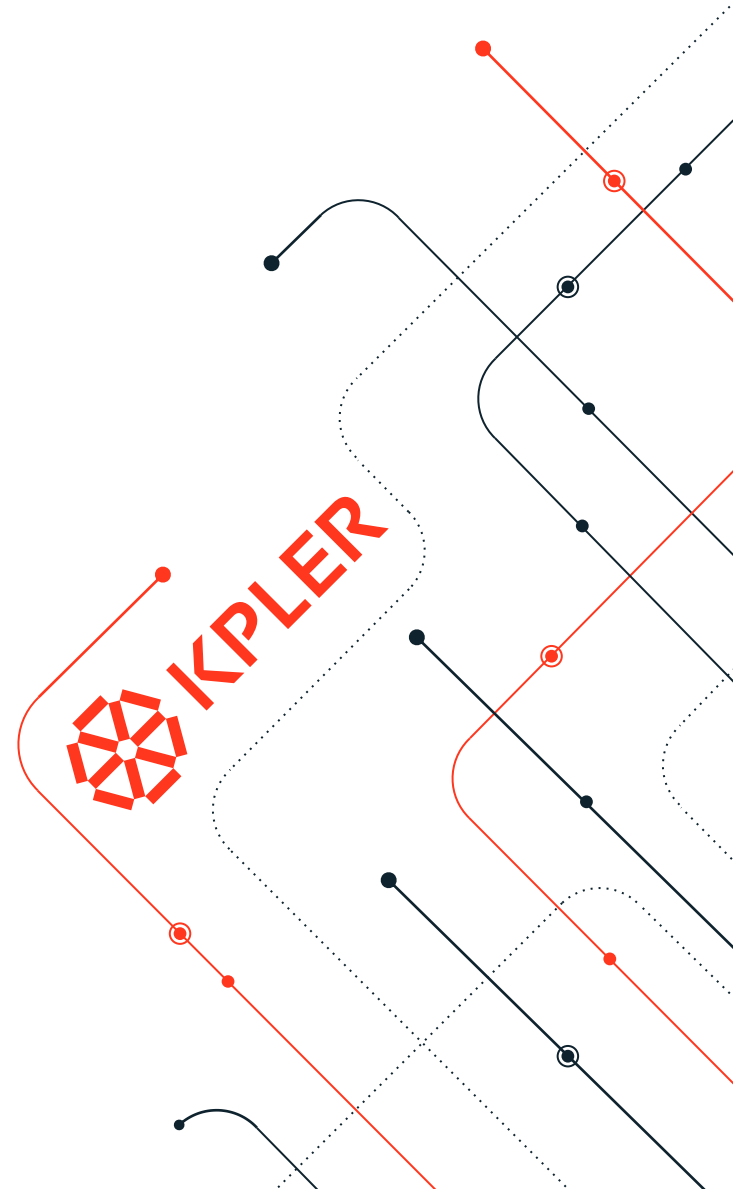


Singapore: coker/conversion refinery margins (\$/bbl)



Kpler product overview and sneak peeks

Dingwen Huang – Product manager



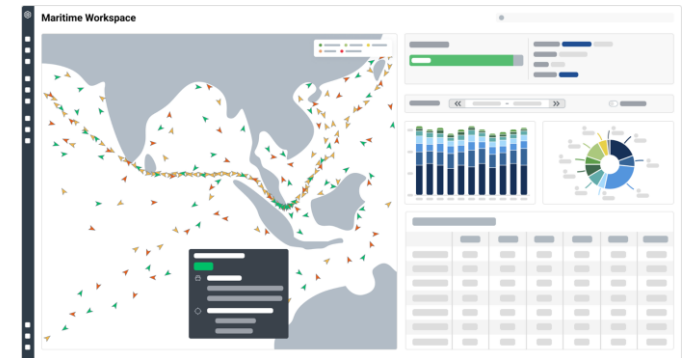
One World, One Platform for Global Trade Intelligence



Commodities



Energy Transition



Maritime

Our commodity offering



Flows

Follow more than 40 commodities cargo and volume traded. Access finely tuned trade details and grab the essential information with a glance. Identify routes and patterns. Watch competitors.



Inventories

Monitor inventory and capacity movements like never before with our proprietary satellite and cargo-tracking methodologies, for insight into over 7.8bn barrels of onshore storage



Refineries Product (WIP)

Our Refineries product offers an unmatched granularity in refineries data, powered by in-house Flows data and IIR refineries & events database.



Supply & Demand

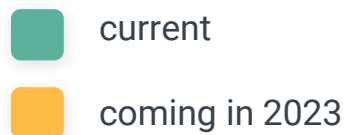
S&D is built on best-in-class maritime trade flow and inventory Crude data with 18 Month Forward View and Balance data with components included.



Insight

Global trade & commodity news, research, analytics and forecasting fortified by Kpler's proprietary data.

The widest coverage of the commodity value chain

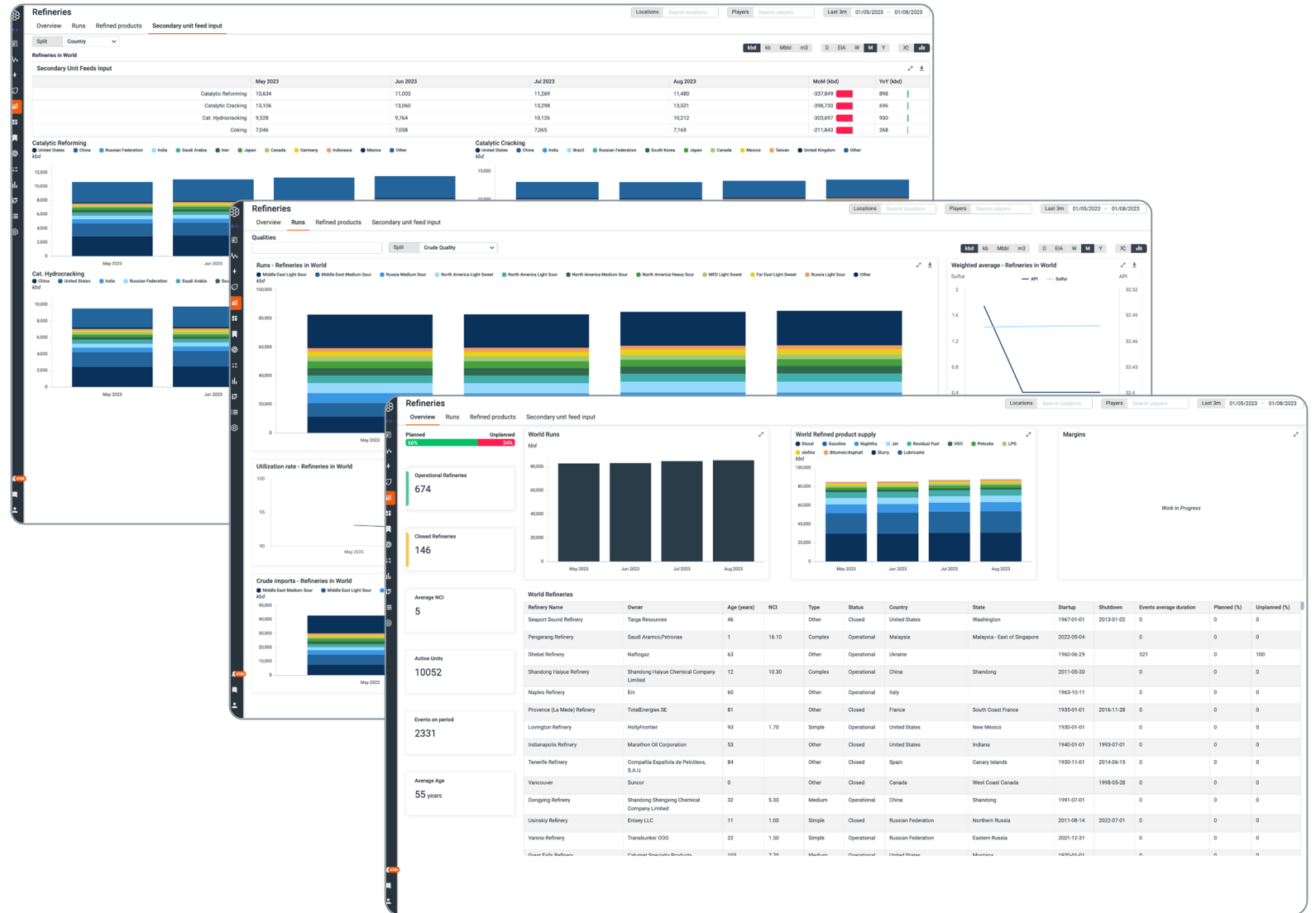


Refineries

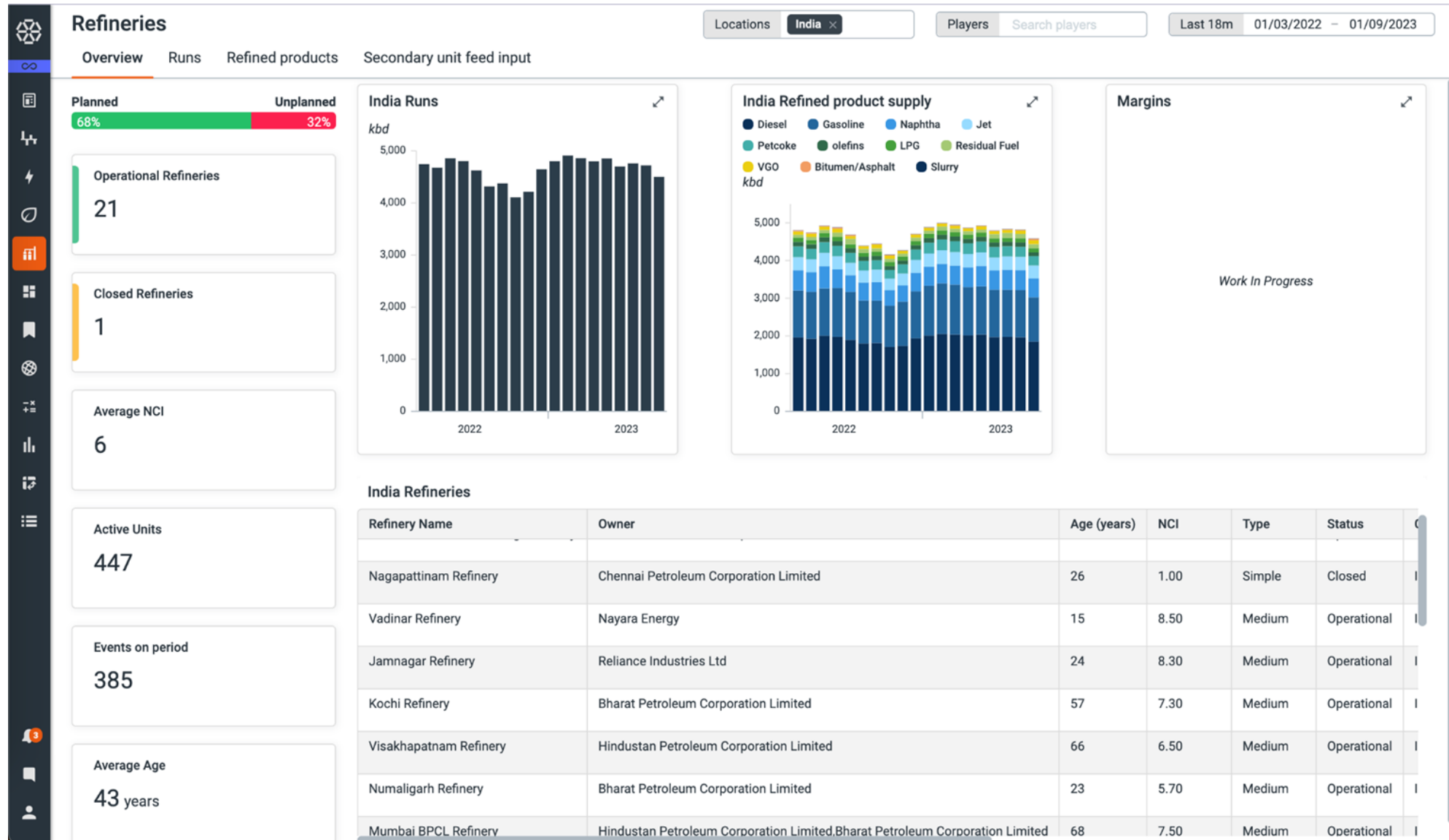
Our Refineries product offers an unmatched granularity in refineries data, powered by in-house Flows data and IIR refineries & events database.

Access Runs by crude qualities, Production from LPG to Asphalts and Residual Fuels, and gross Margin for every refinery on a daily basis since 2017.

ALPHA Available
Commercial Release in Q4



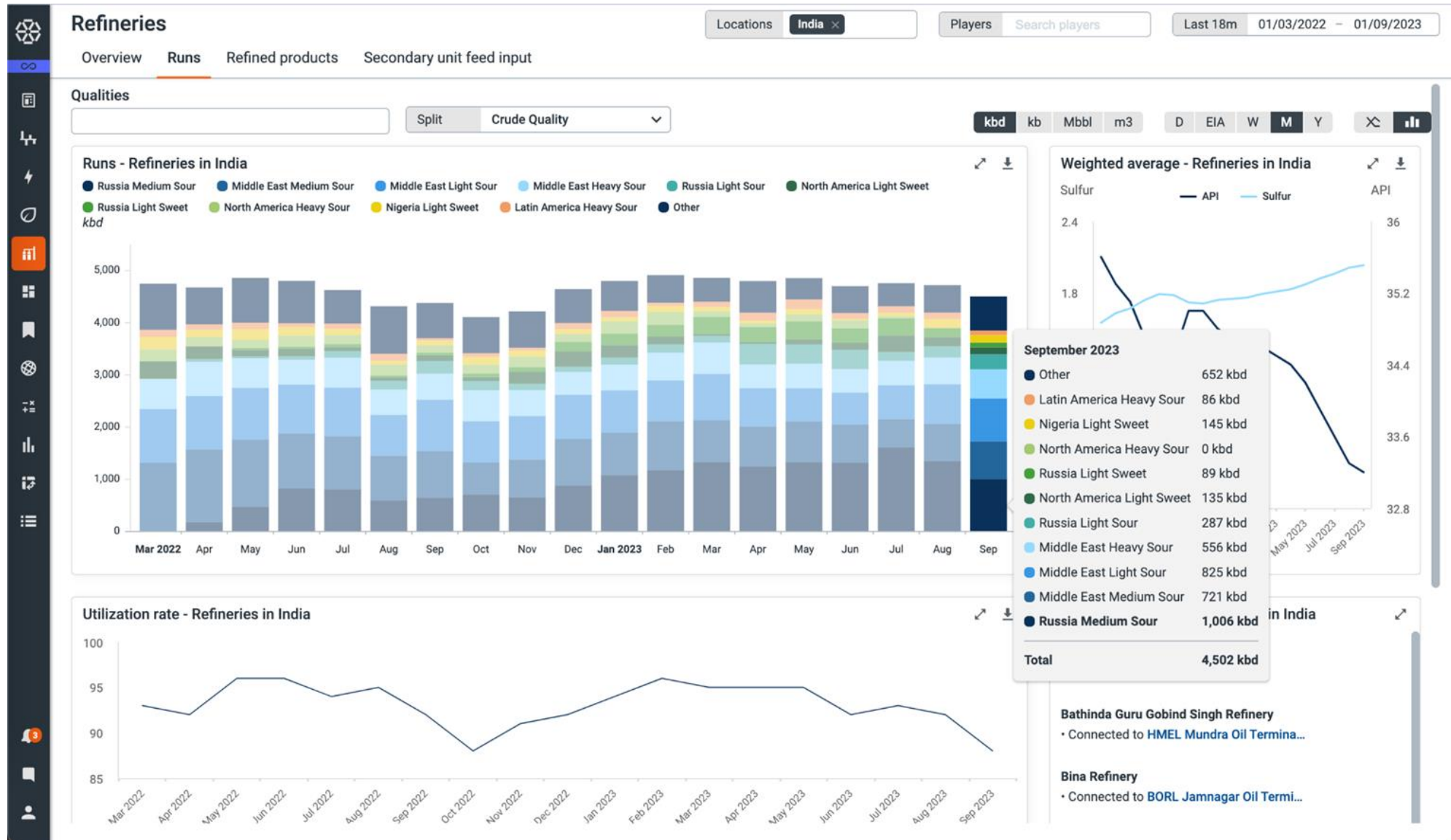
Refineries



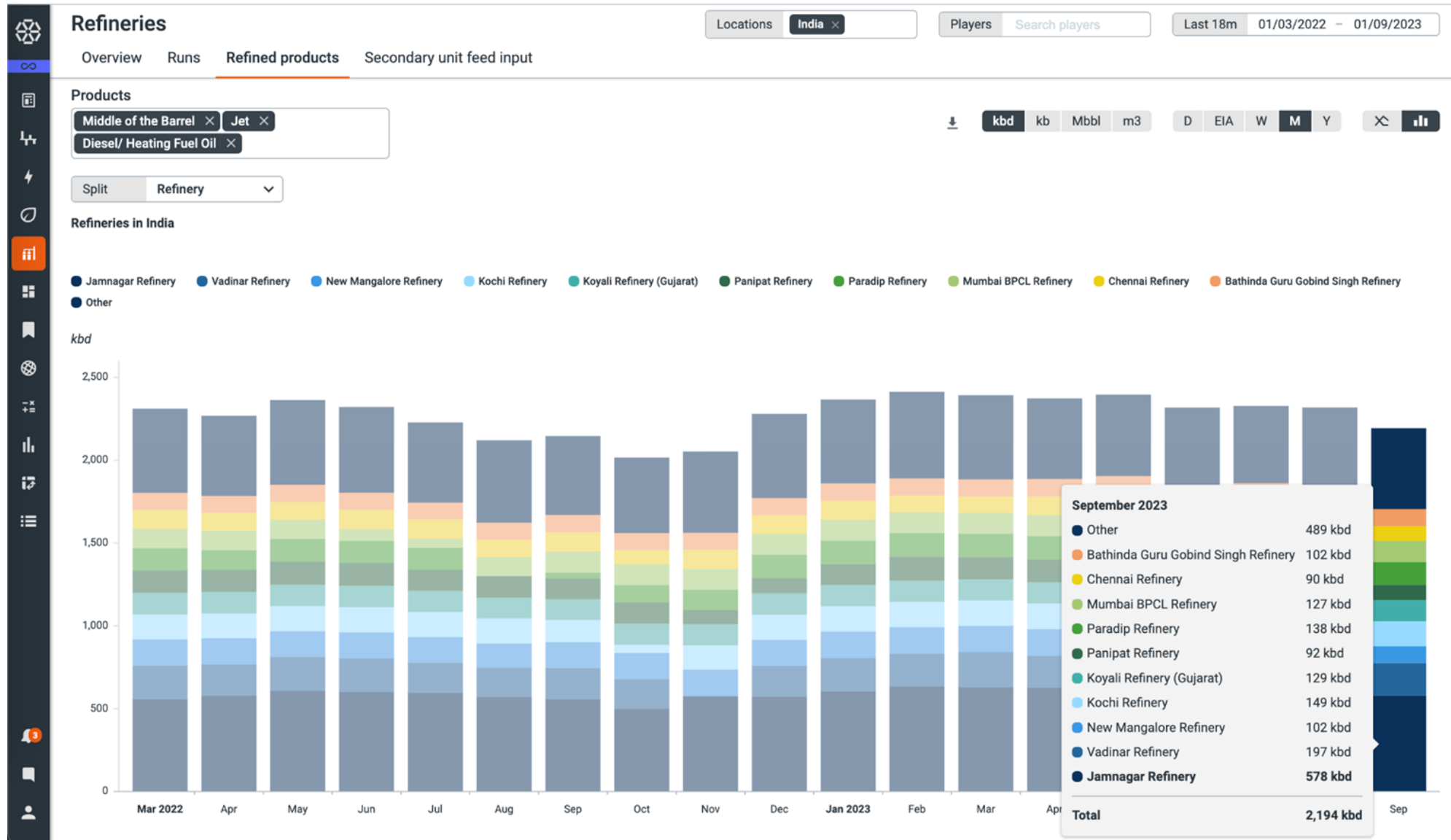
India Refineries

Refinery Name	Owner	Age (years)	NCI	Type	Status
Nagapattinam Refinery	Chennai Petroleum Corporation Limited	26	1.00	Simple	Closed
Vadinar Refinery	Nayara Energy	15	8.50	Medium	Operational
Jamnagar Refinery	Reliance Industries Ltd	24	8.30	Medium	Operational
Kochi Refinery	Bharat Petroleum Corporation Limited	57	7.30	Medium	Operational
Visakhapatnam Refinery	Hindustan Petroleum Corporation Limited	66	6.50	Medium	Operational
Numaligarh Refinery	Bharat Petroleum Corporation Limited	23	5.70	Medium	Operational
Mumbai BPCL Refinery	Hindustan Petroleum Corporation Limited, Bharat Petroleum Corporation Limited	68	7.50	Medium	Operational

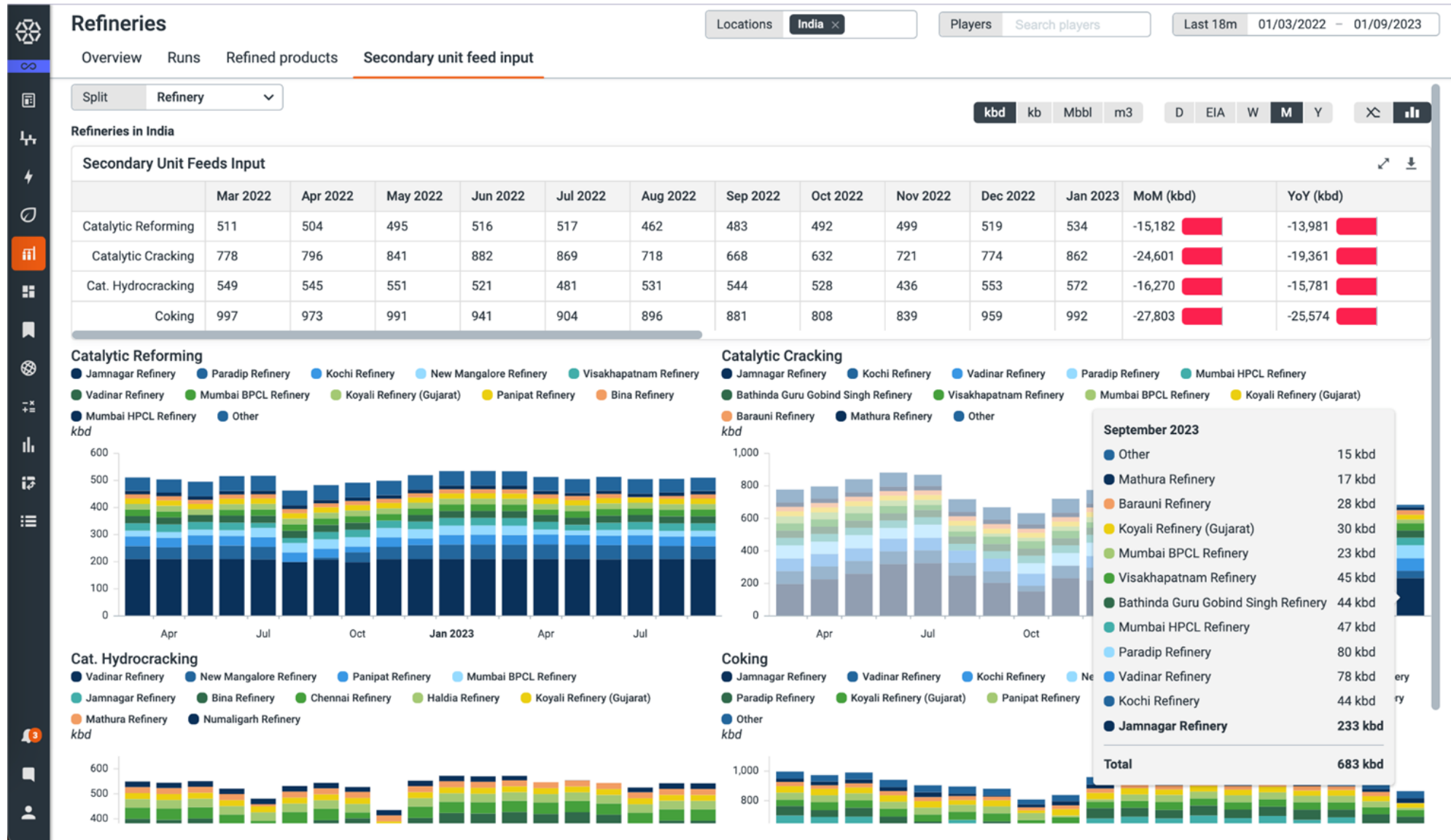
Refineries



Refineries



Refineries



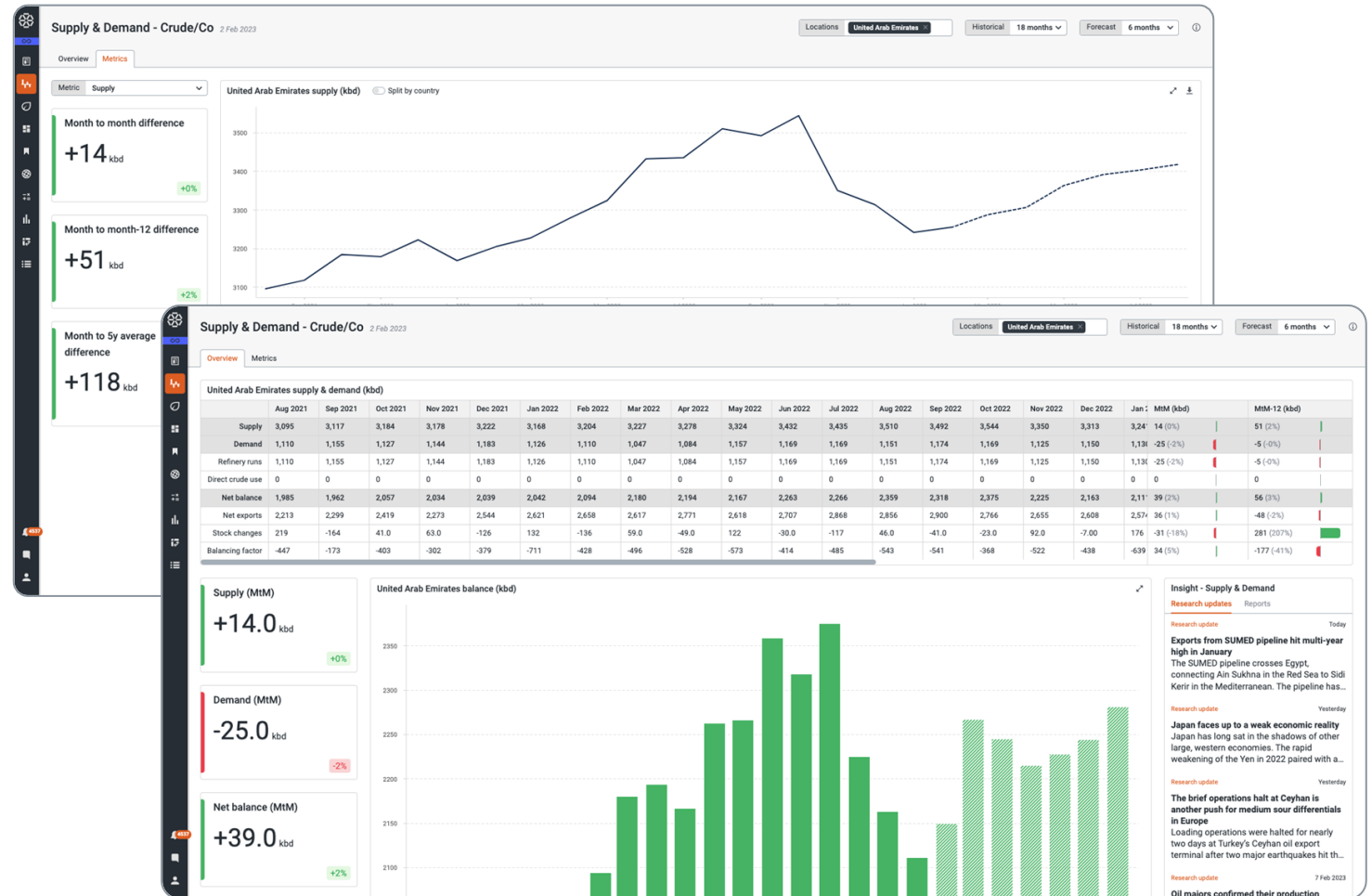
Supply & Demand

Crude/co S&D is built on best-in-class maritime trade flow and inventory Crude data delivering production, refinery runs, direct use, and net exports along with an **18 Month Forward View** with components included.

Analyze information on **over 100 countries**.

Available Now for Crude/co

Refined Product S&D coming at the end of Q4

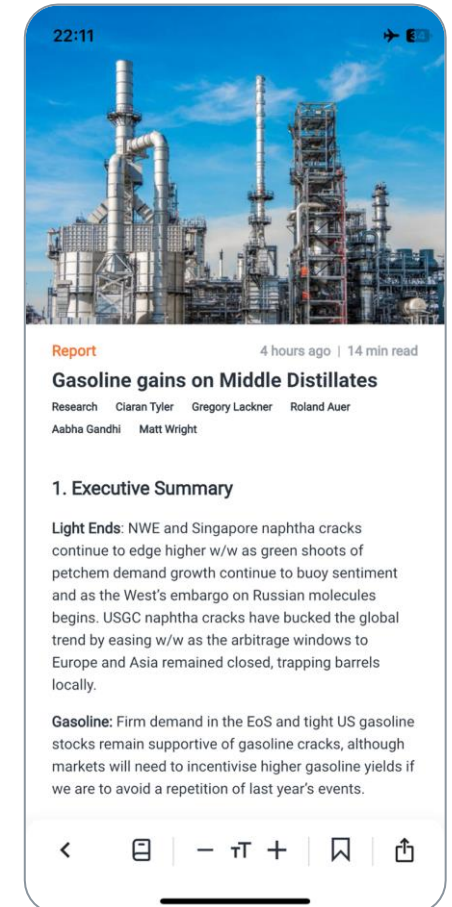
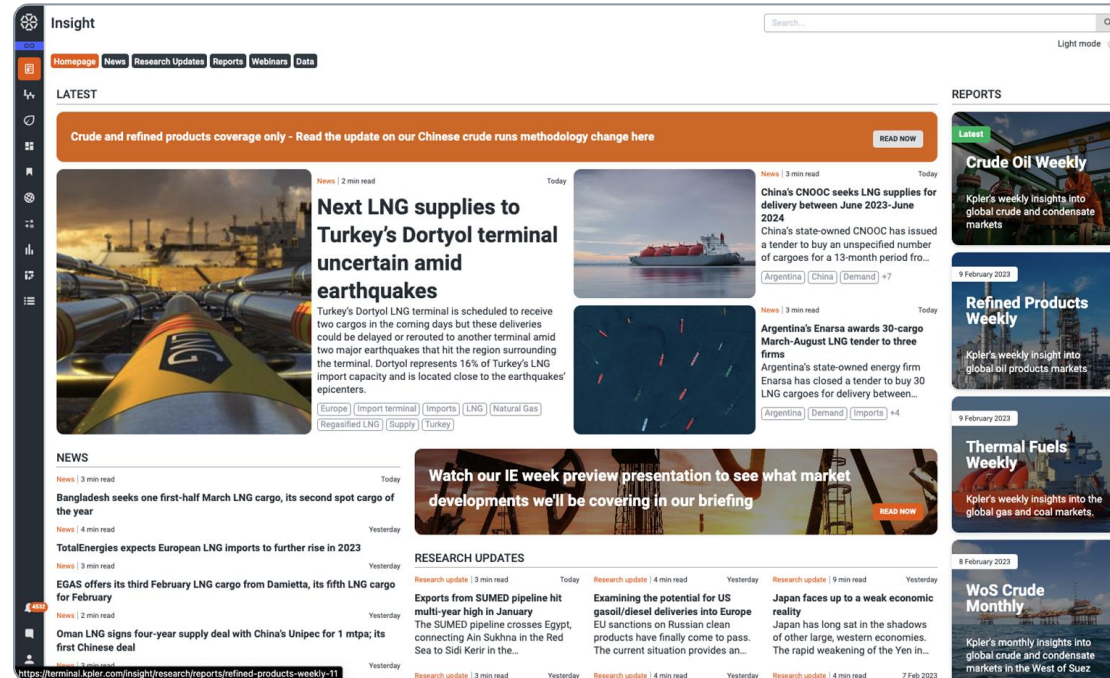


Insight & News

Offers a **comprehensive commodity market coverage** including difficult to reach regions, often ignored by our competitors

Provide in-depth market knowledge with fully integrated monthly supply, demand & price forecasts for crude oil, refined product, natural gas and LNG along with arbitrage opportunities and annual long term forecasts.

Offline content on the mobile app available now



Our energy transition offering



European Power Markets

The energy transition means electrification at a massive scale, with a significant portion of renewable energy in the short term.

This will bring unprecedented volatility, hence a need for both more data and more tools to make commercial decisions.



Veg/Bio Markets

The rise of US renewable diesel upends economics in the global oilseeds crushing and vegoil refining industries.

As the biodiesel, human food and animal feed industries compete for the same commodities.



Emissions (WIP)

Incremental regulatory constraints trigger a drive for our clients to reduce carbon emissions from their operations. Providing transparency on vessel, cargo and ultimately on other assets.



Weather (WIP)

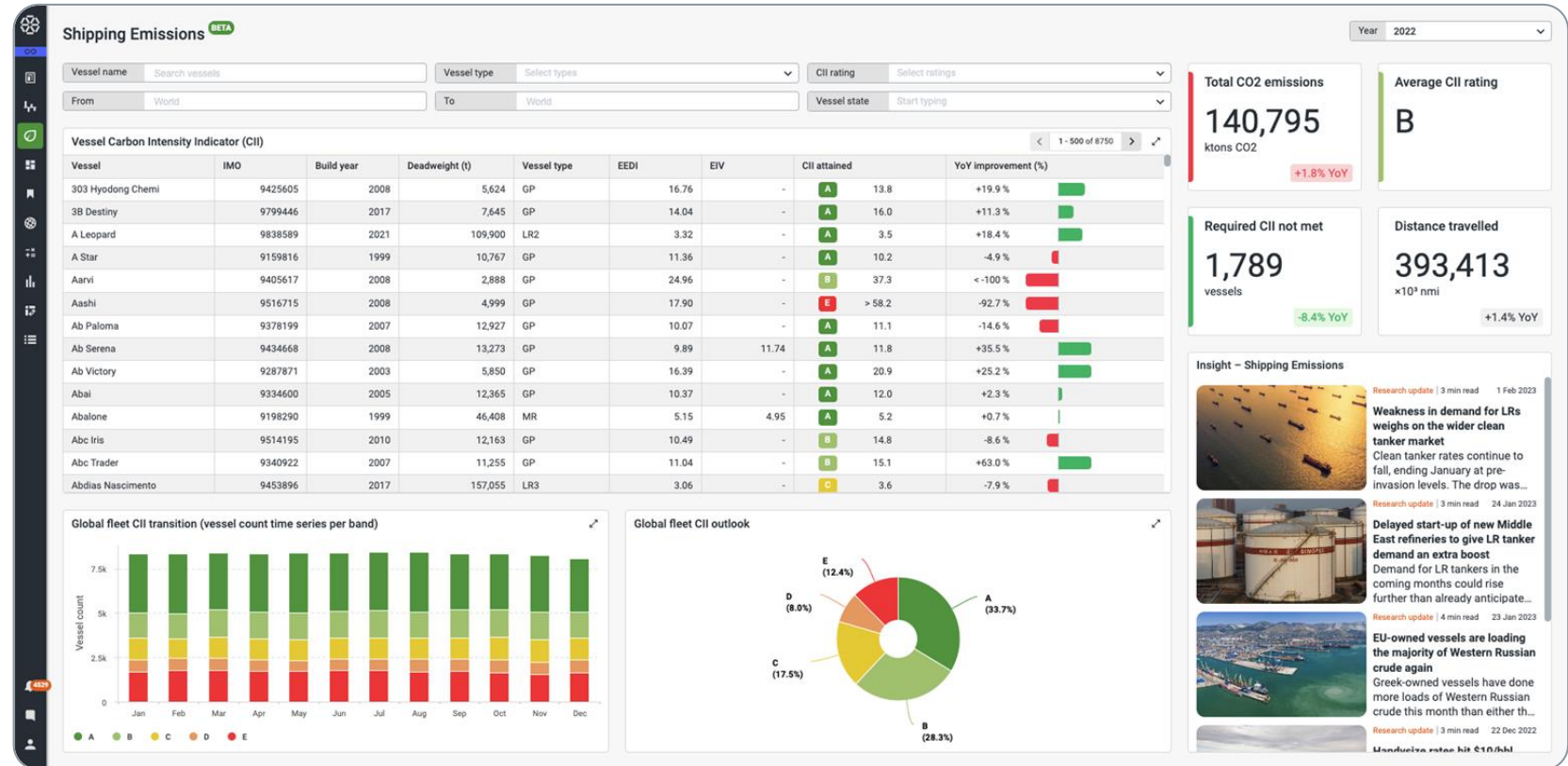
This data is crucial to forecast renewable energy generation as well as power demand. Clients often need the primary data in order to derive their own idiosyncratic analytics

Emissions

Estimate the carbon footprint of each vessel across the global gas, dry bulk, crude oil, and refined product fleets.

Gain competitive intelligence by aggregating commercial fleet emissions and comparing rankings.

Beta Available
Emission mapped to cargo volume traded is coming in Q4



Our maritime offering



Terrestrial AIS

Terrestrial AIS is a precious input for all of our derived data. We offer the highest quality of this primary data at the root of most maritime data & analytics, based on the largest network of AIS receptors (6,000 including 5,000 proprietary)



Freight Analytics

Supply and Demand of freight is an increasingly crucial parameter for our clients' decisions, as freight prices are commercially vital to optimise.



Fleet Management

Carrying out commercial decisions at an operational effort requires efforts to monitor one's vessels, plan the most effective route, and report a comprehensive overview of a fleet's activities.



Supply Chain Visibility

Companies at the end of supply chains have little transparency on their containers' ETA. This comes from supply chain complexity, and much can be improved by aggregating fragmented data sources and enabling coordination.



Port Call Optimisation (WIP)

Supply Chain inefficiencies come from traffic jams at the port. Up to 14% of bunker fuel could be saved if vessels avoided the "hurry and wait" pattern, incentivized by current contracting practices. This would reduce costs and carbon emissions.

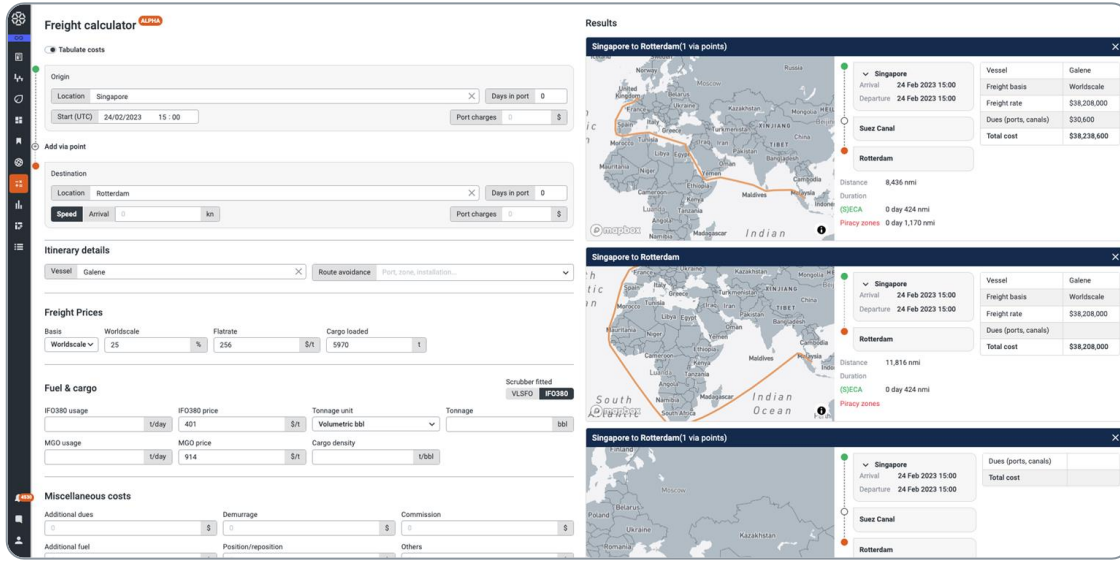


Maritime Compliance (WIP)

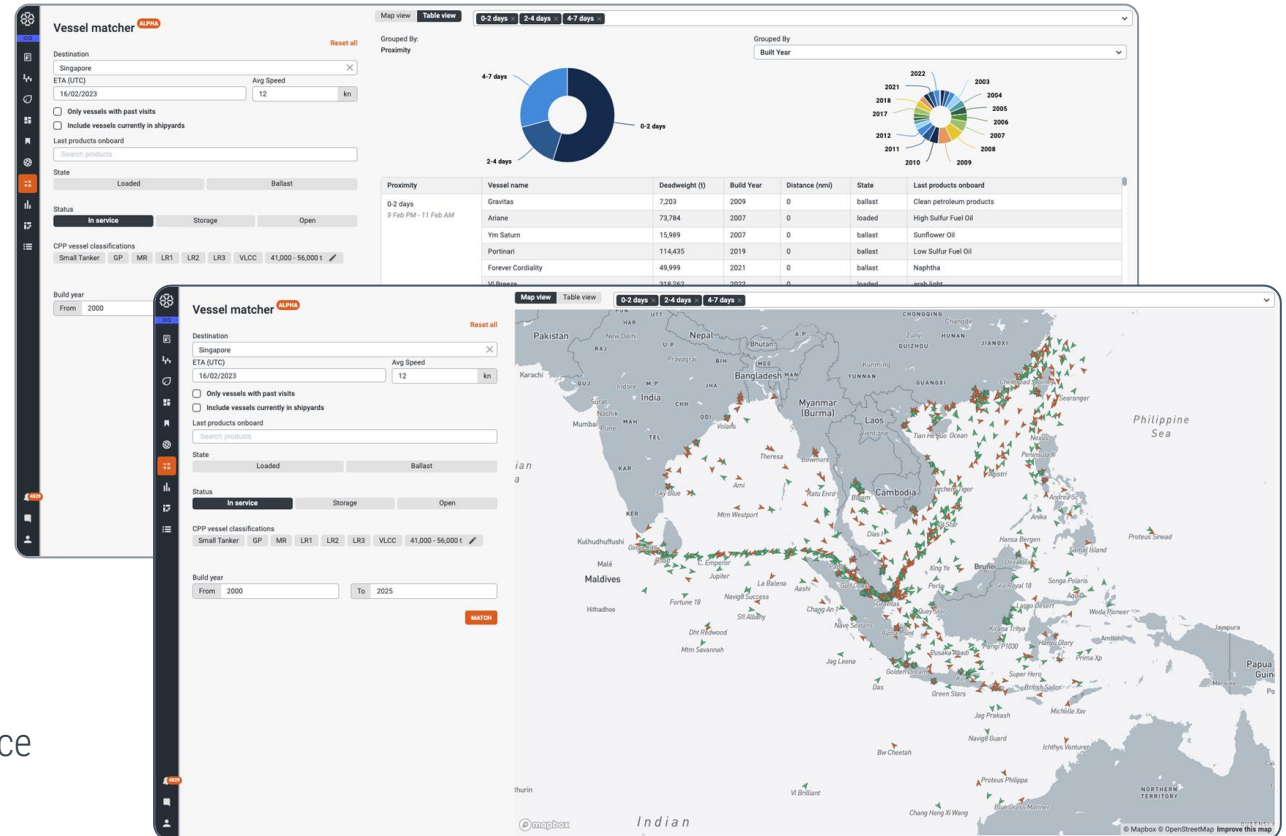
The escalation of geopolitical risk increases the need for commercial parties to monitor maritime compliance, and for governmental organisations to sophisticate their Maritime Domain Awareness.

Maritime Analytics

New Freight Calculator



New Vessel Matcher



Get more accurate cost, time, availability estimates for your maritime operations using the new freight calculator and vessel matcher. Use Distance Matrix API to get distances between locations globally.

Available Now

MarineTraffic AIS

New, unparalleled AIS feed produced by the merger of the MarineTraffic and Fleetmon owned networks plus **satellite** and **shipborne** AIS data capturing.

Most **comprehensive, highest density** and **lowest latency** AIS feed in the world, continuously updated in real-time.

Track vessel movements to **optimize voyage planning** and **monitor shipping routes**.

Monitor voyage execution, vessel speed and fuel consumption to **reduce costs** and **improve situational awareness**.

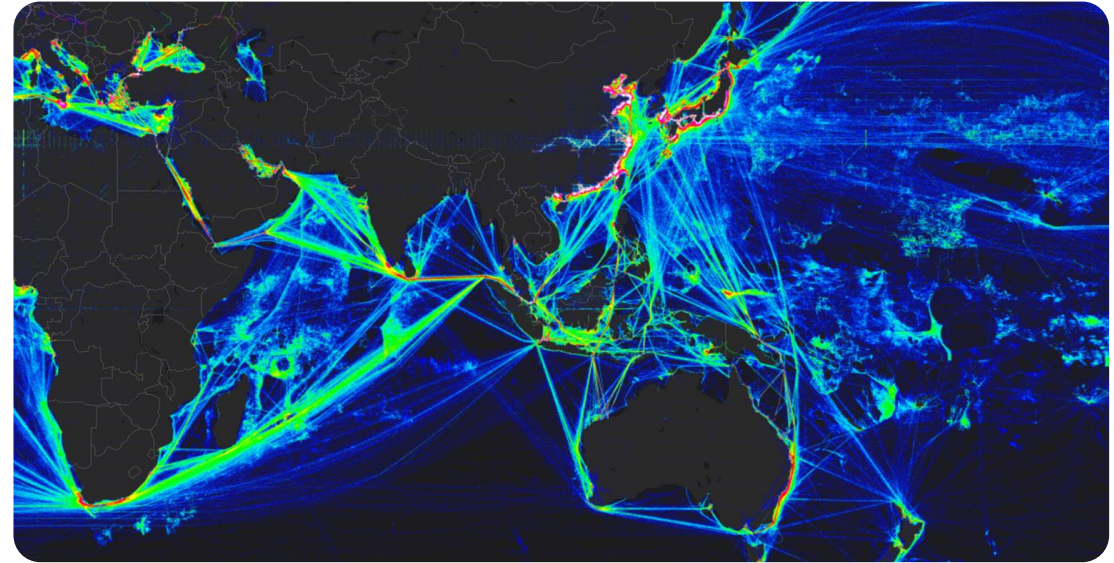
Identify **disruptions** to supply chains and global trade to **plan effectively**.

Detect suspicious vessel activity.

State of the art API structure with redesigned internal data structures, additional fields & filters plus pagination

Available today

New upgraded version with the latest technologies embedded and extreme response feed flexibility and capabilities (2024)



MarineTraffic Fleet Management Solution

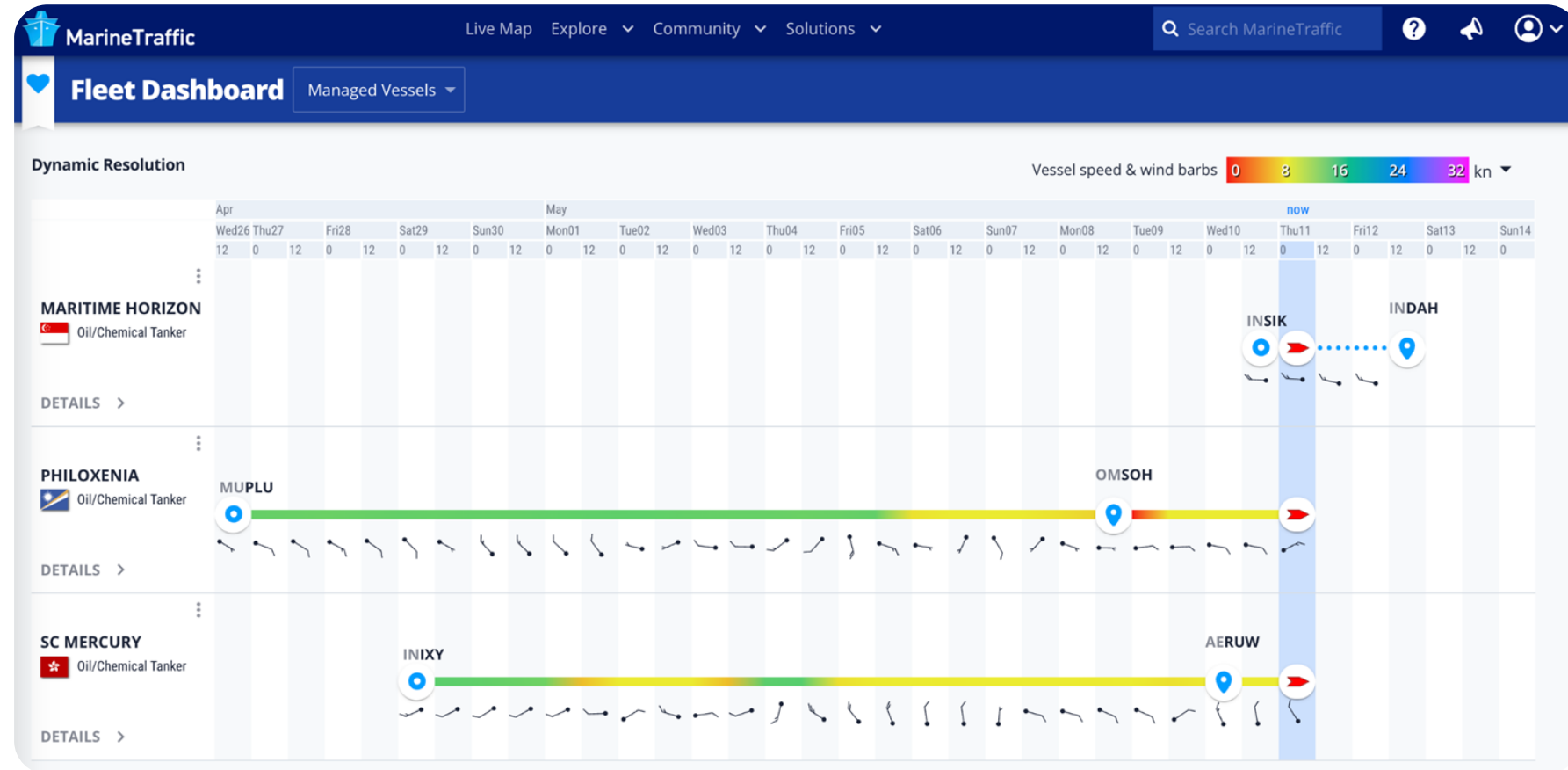
Monitor, plan and report with confidence.

Vessel Monitoring. Follow up the voyage of your vessel as it crosses the oceans, and be immediately notified when mission-critical events occur.

Operations Planning. Plan the most cost-effective route for your vessel, taking into account bunker costs, weather and nautical charts.

Voyage Reporting. Get a comprehensive overview and visual summary of the voyage. Review pilotage, bunkering or charter party compliance.

Available Today

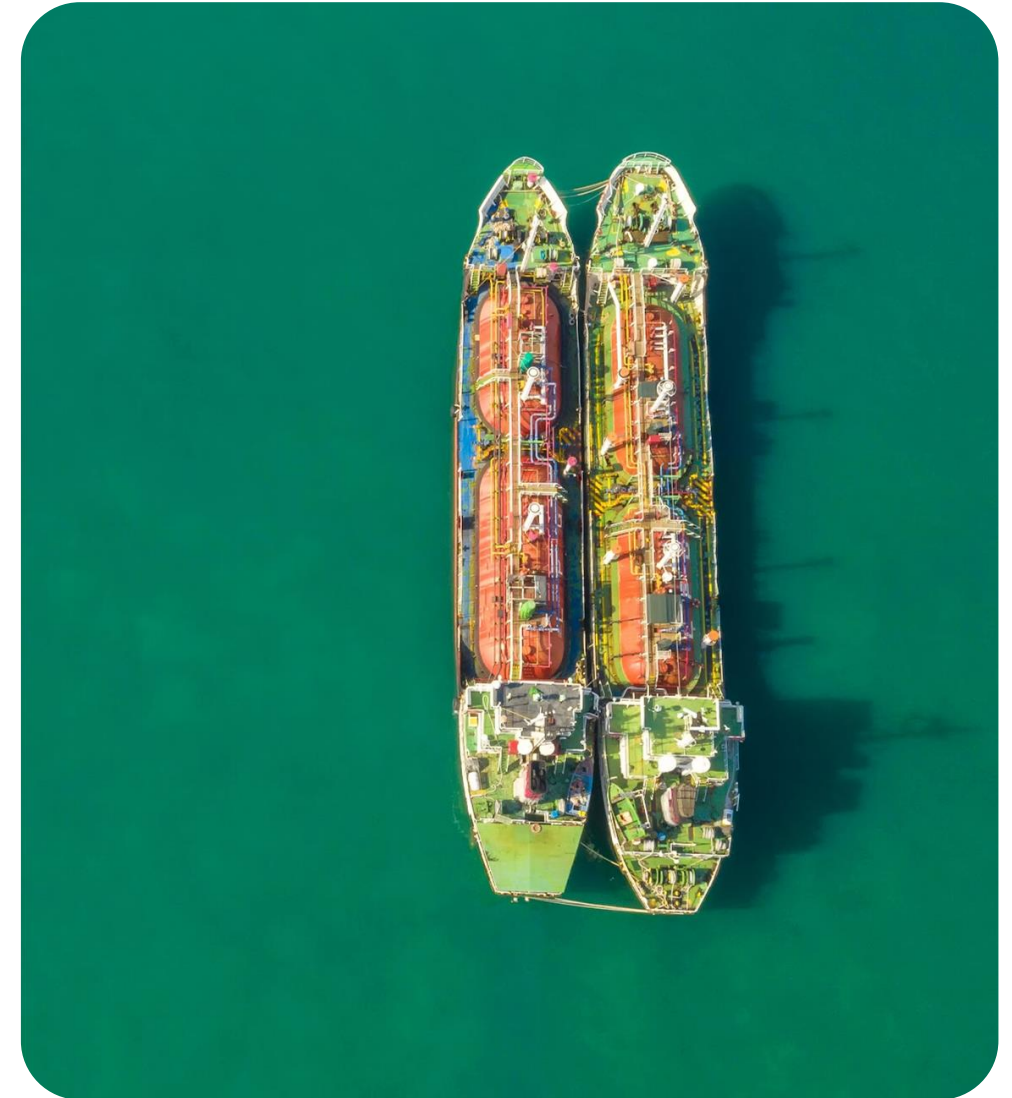


Risk & Compliance

New Risk & Compliance solution provides insights necessary to ensure regulatory compliance.

- **Holistic Risk Coverage:**
 - Address **Sanctions** related to vessel, ownership, flag & cargo.
 - Identify **Operational risks** such as AIS gaps, sanctioned STS events, sanctioned Port calls, dark activities and abnormal trade behaviour.
 - Identify **Management risks** related to vessel classification, insurance & Port State Control data
 - Address **Flag risks related** to port state control rankings and IMO/ILO convention adoption
- **Intuitive Visualization:**
 - Present complex compliance and risk data through user-friendly visualizations, allowing users to grasp vessel compliance status and risk exposure at a glance.

Coming in 2024



Our technology accesses



Terminal

Access data in our Terminal from the web or mobile. Find contextual information and analytical tools such as dashboards, calculators, watchlists and more for you to draw insights at scale, anywhere in the world at any time.



API/SDK

Use the supercharged API to access Kpler's data ecosystem and download the data you need, whenever you need it. Use the intuitive Python SDK to access the data or to build advanced data science model and derive unique insights.



Excel Add-in

The simplest way to download data directly into excel and start slicing and dicing as you need.



Snowflake / LiveDB

The live feed uses the latest data modeling and access technology to ensure it is optimized and delivers a real time feed from the Kpler database



Marketplaces

Access Kpler's data through various market places such as Zema, Snowflake DataShare, CruX.

Excel Add-in

Use Microsoft Excel to **create complex data requests** with speed and ease by introducing seamless filters and an improved UX.

Brand New Version of the Excel Add-in fully integrated with Windows & Mac.

The image displays three screenshots of the KPLER Excel Add-in interface, illustrating its capabilities for creating complex data requests.

Left Screenshot (Flows View): Shows the 'Flows' view with filters for Location (Saudi Arabia to Europe), Products (Kb, Kbd, Kt, Mt, MMbbl), Date (Origin and Destination dates), and Vessels (Oil, CPP). It includes buttons for 'Exports', 'Imports', and 'Net exports', and a 'Run' button.

Middle Screenshot (Trades View): Shows the 'Trades' view with a dropdown menu open, listing various data categories: Cargo tracking, Trades, Flows, Fleet Metrics, PortCalls, STS, Fleet, Storage, Inventories, Cushing Drone Inventories, Freight, Ballast Capacity, Congestion, Fleet Development, Fleet Utilization, Freight Metrics, Data, Fixtures, S&D, and Supply & Demand. It also includes filters for Location, Products, Date, and Vessels, and a 'Run' button.

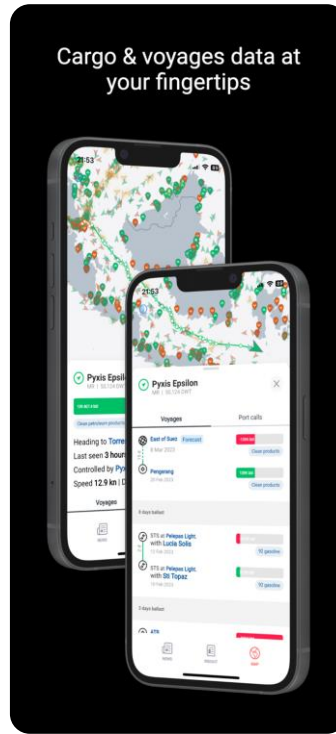
Right Screenshot (Filter Menu): Shows a detailed filter menu with sections for Quick filters (Origin, Destination, Product group), Origin date (Origin date, Origin month, Origin year, Origin week, Origin week year, Origin port), Origin geography (Origin continent, Origin subcontinent, Origin country, Origin PADD, Origin port, Origin installation, Origin trading region), and Origin vessel (Origin name). It includes a 'Cell Location' field and a 'Run' button.

Mobile App

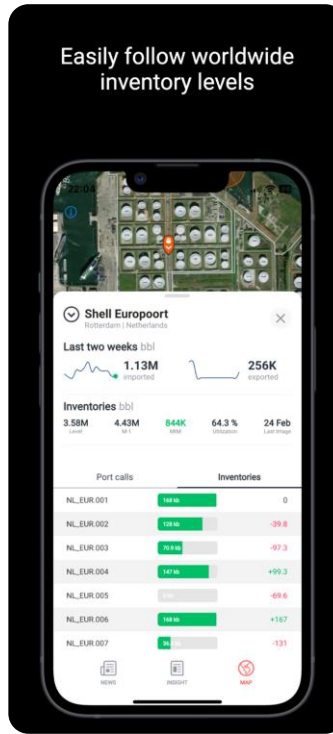
Commodity intelligence
for faster, better
decisions



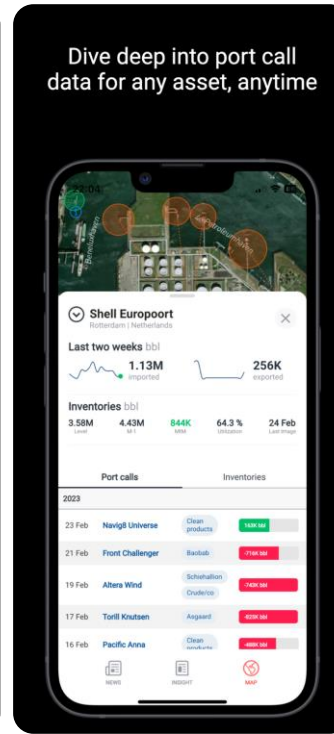
Cargo & voyages data at
your fingertips



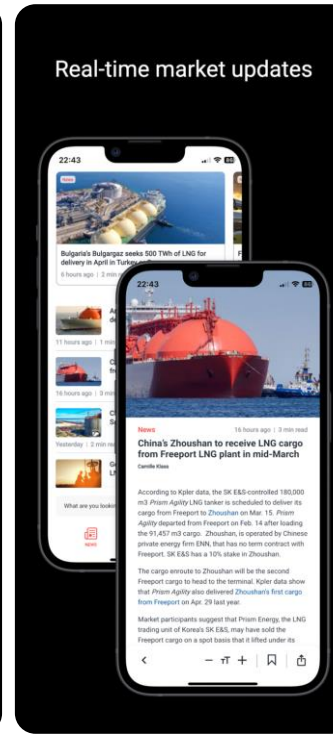
Easily follow worldwide
inventory levels



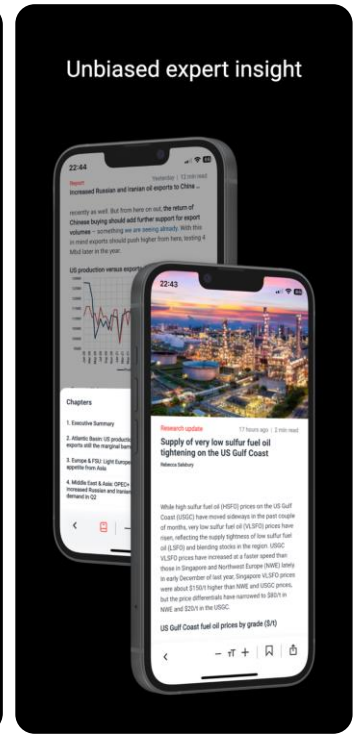
Dive deep into port call
data for any asset, anytime



Real-time market updates



Unbiased expert insight

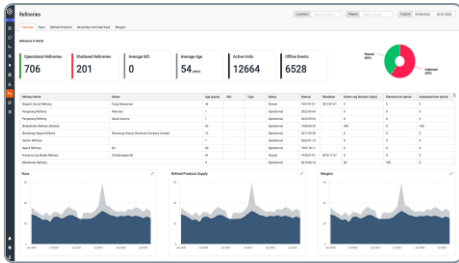


High level initiatives 2023

Increase your commodity market understanding

with

New Data



Facilitate your energy transition

with

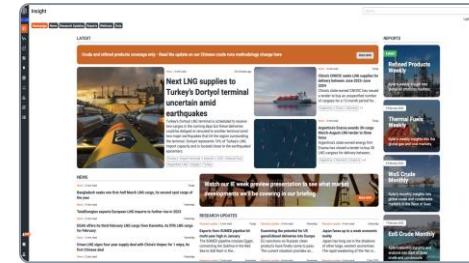
Emissions Tracking



Bring the best market research to you

with

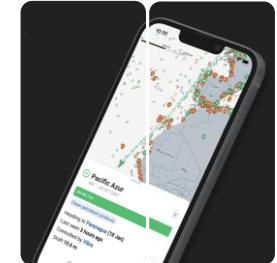
Insights



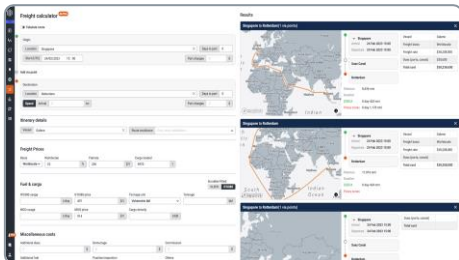
Ease & speed-up your access to data and insights

with

New Mobile App



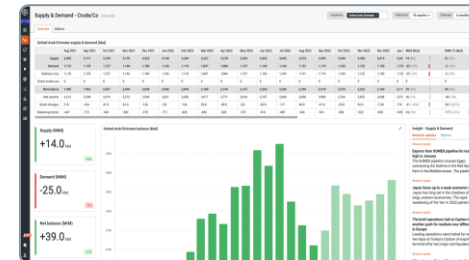
New Workflows



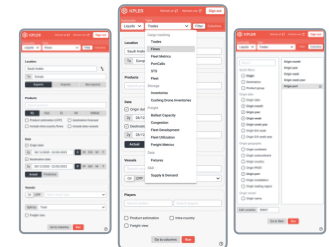
Power Market Transparency



Macro S&D



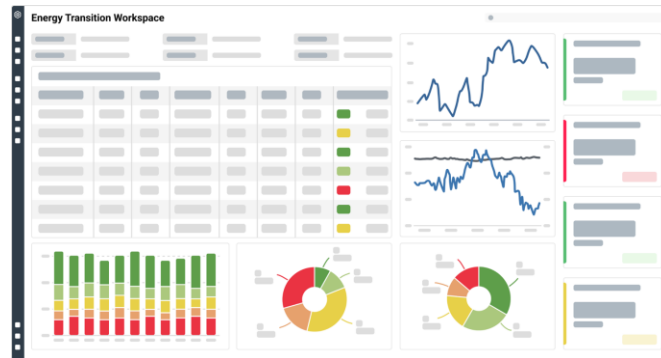
New Excel Add-in



One World, One Platform for Global Trade Intelligence



Commodities



Energy Transition



Maritime

Kpler Insight Market Briefing
Please contact sales@kpler.com

