

Shifting Tides: Understanding the 2024 European LPG Landscape

March 2024

OPIS, A Dow Jones Company

Jamie Aldridge

Senior Analyst – LPG, Naphtha and Gas Freight

jaldridge@opisnet.com

Pricing

OPIS Mont Belvieu Spot Gas Liquids Prices (cts/gal)

Product	Any Current Month				Prompt Current Month				Out Month (Dec)			
	Low	High	Avg	MTD	Low	High	Avg	MTD	Low	High	Avg	MTD
TET Propane	63.500	65.500	64.5000	65.7083	63.500	65.500	64.5000	65.7083	63.500	65.750	64.6250	65.8750
Non-TET Propane	63.000	65.250	64.1250	65.4583	63.000	65.250	64.1250	65.4583	63.000	65.500	64.2500	65.6875
Other Non-TET Propane	63.500	65.500	64.5000	65.7083	63.500	65.500	64.5000	65.7083	63.500	65.750	64.6250	65.9375
TET N. Butane	80.000	83.625	81.8125	82.4583	80.000	83.625	81.8125	82.4583	80.500	84.625	82.5625	83.0625
TET Isom N. Butane	83.000	86.625	84.8125	85.4583	83.000	86.625	84.8125	85.4583	83.500	87.625	85.5625	86.0625
Non-TET N. Butane	83.000	86.625	84.8125	85.4583	83.000	86.625	84.8125	85.4583	83.500	87.625	85.5625	86.0625
Other Non-TET N. Butane	84.500	88.125	86.3125	86.0417	84.500	88.125	86.3125	86.0417	85.000	89.125	87.0625	86.6458
TET Isobutane	112.000	125.500	118.7500	115.7500	112.000	125.500	118.7500	115.7500	94.750	122.625	108.6875	106.5625
Non-TET Isobutane	112.000	125.500	118.7500	115.7500	112.000	125.500	118.7500	115.7500	94.750	122.625	108.6875	106.5625
Other Non-TET Isobutane	111.500	125.000	118.2500	115.2500	111.500	125.000	118.2500	115.2500	94.250	122.125	108.1875	106.0625
TET N. Gasoline	148.500	153.500	151.0000	150.8542	148.500	153.500	151.0000	150.8542	149.000	154.500	151.7500	151.6667
Non-TET N. Gasoline	148.500	153.500	151.0000	150.8542	148.500	153.500	151.0000	150.8542	149.000	154.500	151.7500	151.6667
Other N. Gasoline	148.500	153.500	151.0000	150.8958	148.500	153.500	151.0000	150.8958	149.000	154.500	151.7500	151.7083
River N. Gasoline	151.000	156.000	153.5000	153.3542	151.000	156.000	153.5000	153.3542	151.500	157.000	154.2500	154.1667
EP Mix	21.875	22.250	22.0625	21.8958	21.875	22.250	22.0625	21.8958	22.250	22.625	22.4375	22.3125
Other Non-TET E-P Mix	21.875	22.250	22.0625	21.8958	21.875	22.250	22.0625	21.8958	22.250	22.625	22.4375	22.3125
Purity Ethane	25.875	26.250	26.0625	25.8958	25.875	26.250	26.0625	25.8958	26.125	26.625	26.3750	26.2292
Other Non-TET Purity Ethane	25.875	26.250	26.0625	25.8958	25.875	26.250	26.0625	25.8958	26.125	26.625	26.3750	26.2292

CFR (\$/mt)

PROPANE	LOW	HIGH	MEAN	CHANGE
CFR Japan	679.50	680.50	680.000	-13.000
CFR South China	709.00	710.00	709.500	-12.750
BUTANE	LOW	HIGH	MEAN	CHANGE
CFR Japan	694.50	695.50	695.000	-13.000
CFR South China	724.00	725.00	724.500	-12.750
LPG (11:11)	LOW	HIGH	MEAN	CHANGE
CFR Japan	687.00	688.00	687.500	-13.000
CFR South China	716.50	717.50	717.000	-12.750

OPIS LPG Settle Prices (\$/mt)

Location	Low	High	Mean	Change	MTD Avg
Propane CIF ARA	503.00	507.00	505.00	+8.00	492.179
Butane CIF ARA (+4,000mt)	515.50	519.50	517.50	+10.50	506.786
Propane FOB Med	553.00	557.00	555.00	+8.50	539.500
Butane FOB Med	643.00	647.00	645.00	+10.00	633.143

Global LPG Ticker

Mont Belvieu Prices Compared to Europe and Asia in Real Time

Physical

Mt. Belvieu Non-TET Propane i ANY

Ticker	Change	Mean	% WTI
65.00000	0.87500	64.12500	33.32520

11:32:11 Nov 06

Nov 03

Houston

Mt. Belvieu Non-TET Propane i OUT

Ticker	Change	Mean	% WTI
65.25000	1.00000	64.25000	33.57222

11:32:11 Nov 06

Nov 03

Houston

+ Mt. Belvieu Non-TET Propane Any Last 5 Sessions

[cts/gal \$/mt] [% WTI % ICE Brent]

Mt. Belvieu Other Non-TET Propane i ANY

Ticker	Change	Mean	% WTI
65.37500	0.87500	64.50000	33.51746

11:32:11 Nov 06

Nov 03

Houston

Mt. Belvieu Other Non-TET Propane i OUT

Ticker	Change	Mean	% WTI
65.62500	1.00000	64.62500	33.76516

11:32:11 Nov 06

Nov 03

Houston

+ Mt. Belvieu Other Non-TET Propane Any Last 5 Sessions

Global Prices

(Spreads vs. Mt. Belvieu Non-TET Any)

CFR Japan Propane i	Change	Arb
137.37500	-0.62500	72.37500

17:05:01 Nov 06 Singapore

+ CFR Japan Propane Last 5 Sessions

CFR China Propane i	Change	Arb
142.87500	-0.50000	77.87500

17:05:01 Nov 06 Singapore

+ CFR China Propane Last 5 Sessions

CIF ARA Europe Propane i	Change	Arb
93.25000	1.87500	28.25000

- **Full-day methodology: Assessments consider physical spot deals and swaps transacted between 4:00pm-4:30pm London time.**
- The OPIS CIF ARA Propane assessment considers cargoes for 10-25 days forward delivery, basis Flushing, and in the volume range of 19,000 – 24,000 metric tons to capture the majority of bids, offers and deals.
- **Deals, bids and offers that carry a minimum 50% fixed price component will be considered for the purpose of price discovery.**
- Physical bids must have a minimum 5-day delivery date range and offers a maximum 5-day delivery date range entirely within the 10-25 days forward delivery period, basis Flushing.
- **Deals, bids and offers, which carry additional requirements that may be seen as restrictive, are not considered for pricing assessments.**
- NWE Butane - Butane prices are for field grade mixed butane cargoes above 4,000 metric tons delivered 10-25 days forward basis CIF ARA.
- **FOB Med Propane and Butane - In the Mediterranean, OPIS assesses field grade and refinery grade propane and butane FOB basis Lavera 5-15 days forward. The assessment considers cargo sizes of 1,500 metric tons and above.**

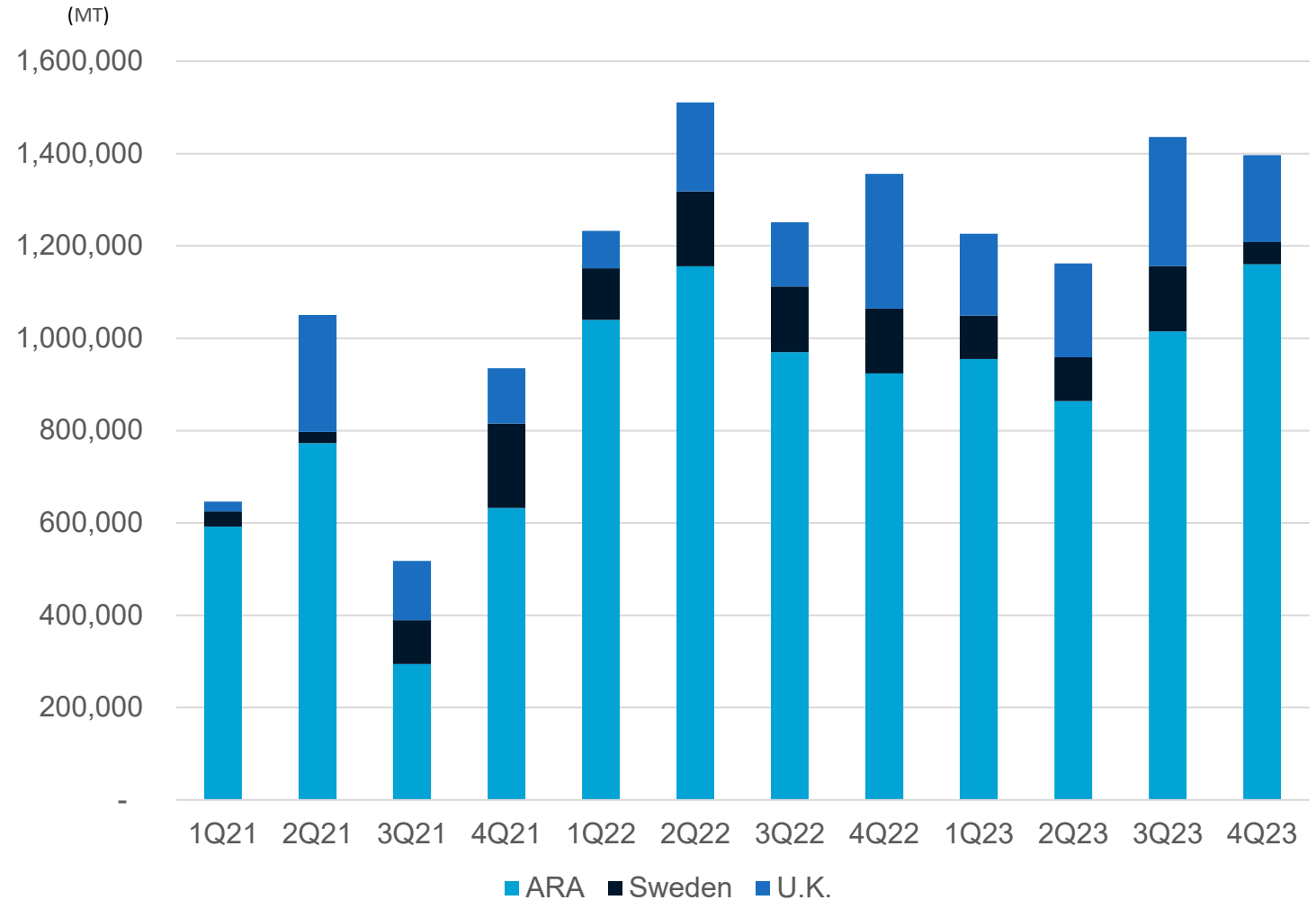
CIF ARA (\$/mt)



Supply/Demand

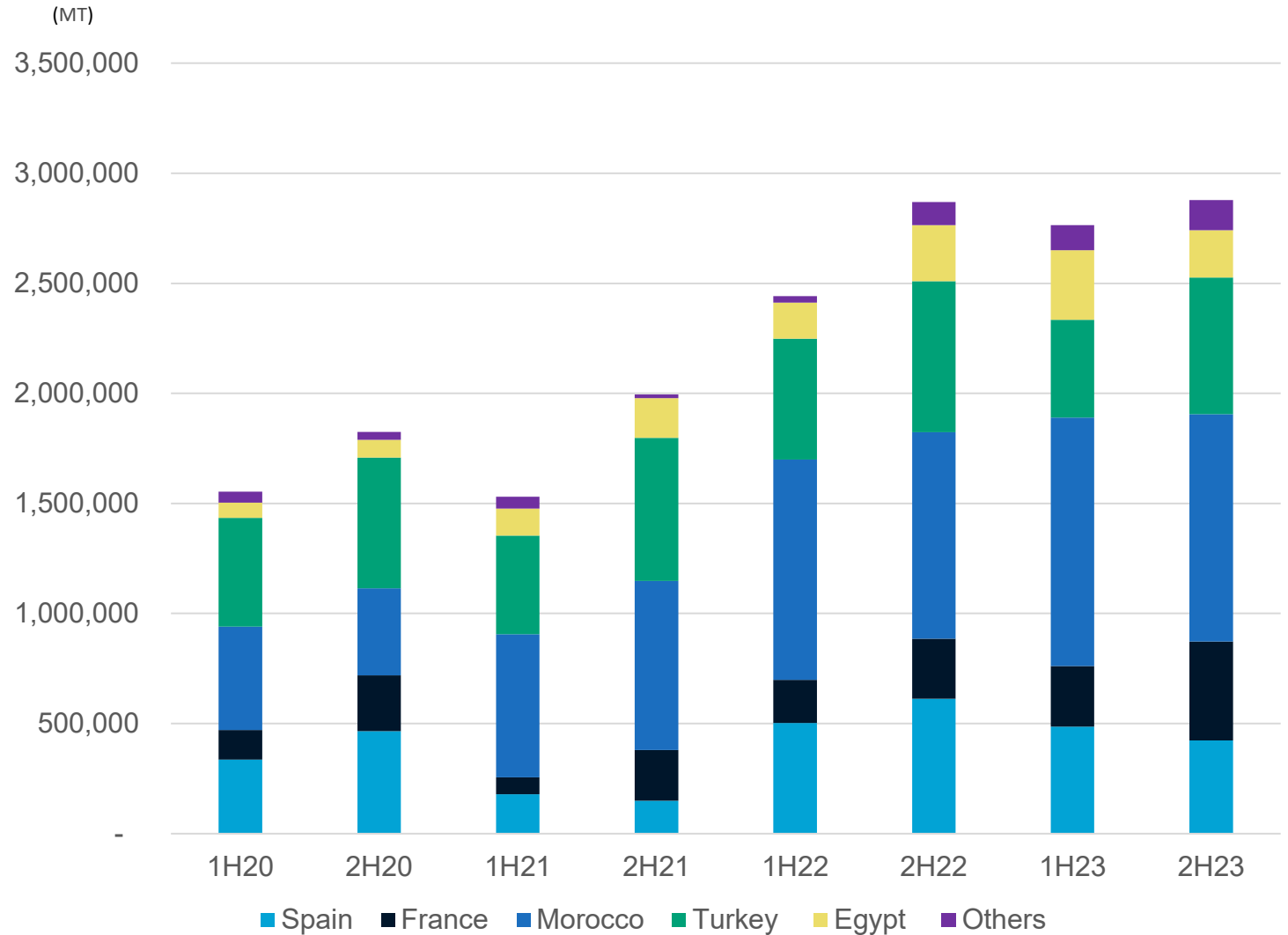
USGC/USAC Supply to NWE

- Propane and butane imports from the U.S. are likely to continue help meet demand in Europe in 2024.
- With Russian flows to the EU phasing out over the next 12-months – more supply is likely to come from the U.S.
- Flows into ARA reached 4.46mn mt in 2023 – down YOY.
- Deliveries into NWE are arriving on larger carriers – monthly data can be volatile.
- 64% of petrochemical intake as feedstock in NWE had a U.S. origin in Jan – 55% USGC & 9% USAC



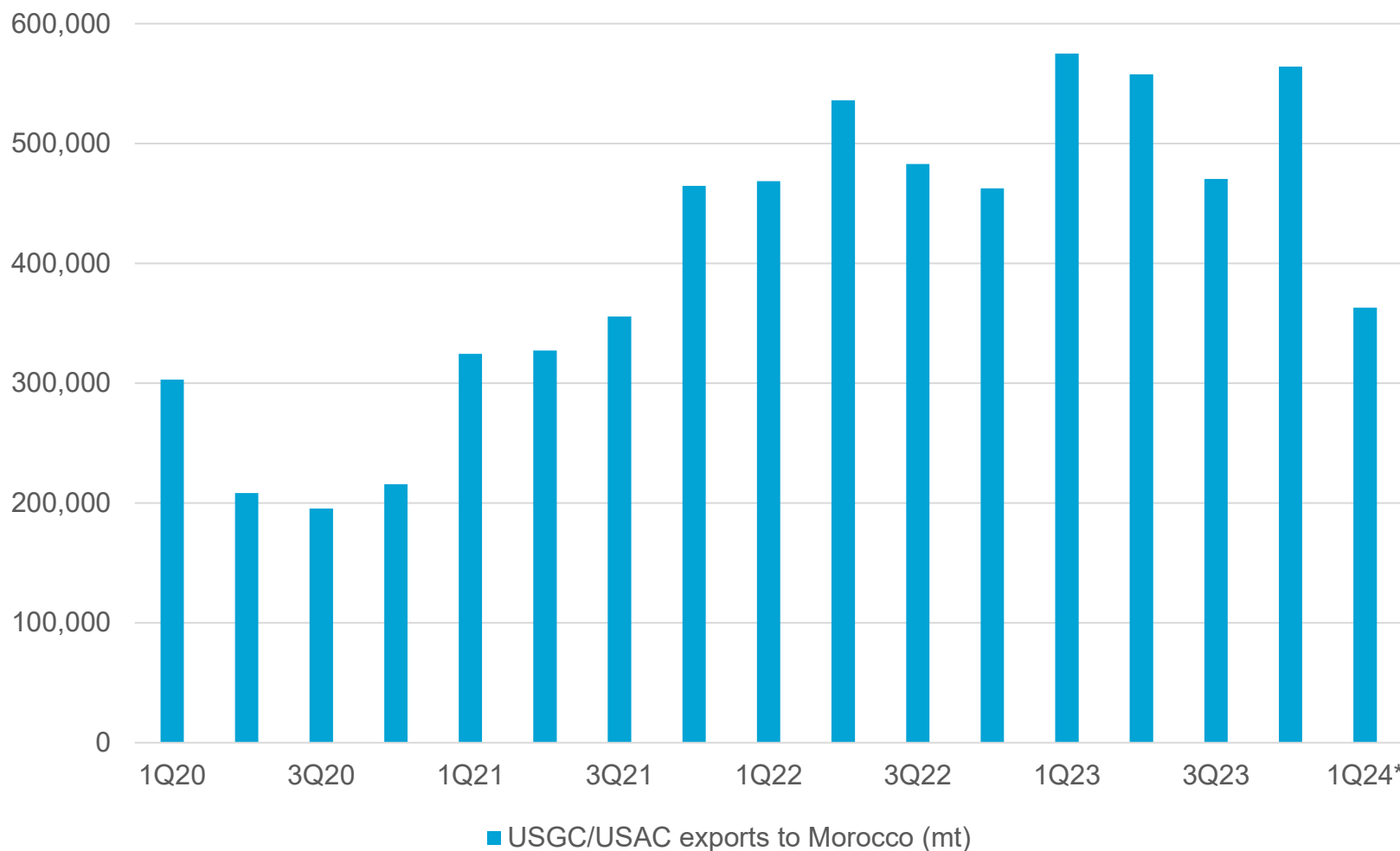
USGC/USAC to Med shipments

- Deliveries on larger carriers from the USGC and USAC are firming.
- Record levels exported to the Med in 4Q22 – but the trend remains upwards despite small dip at start of 2023.
- Follows a similar pattern to what we saw with shipments to NWE – more volumes expected to come from U.S. going forward.
- Turkey remains the second largest recipient of U.S. product in the Med - Spain emerging as a significant consumer.



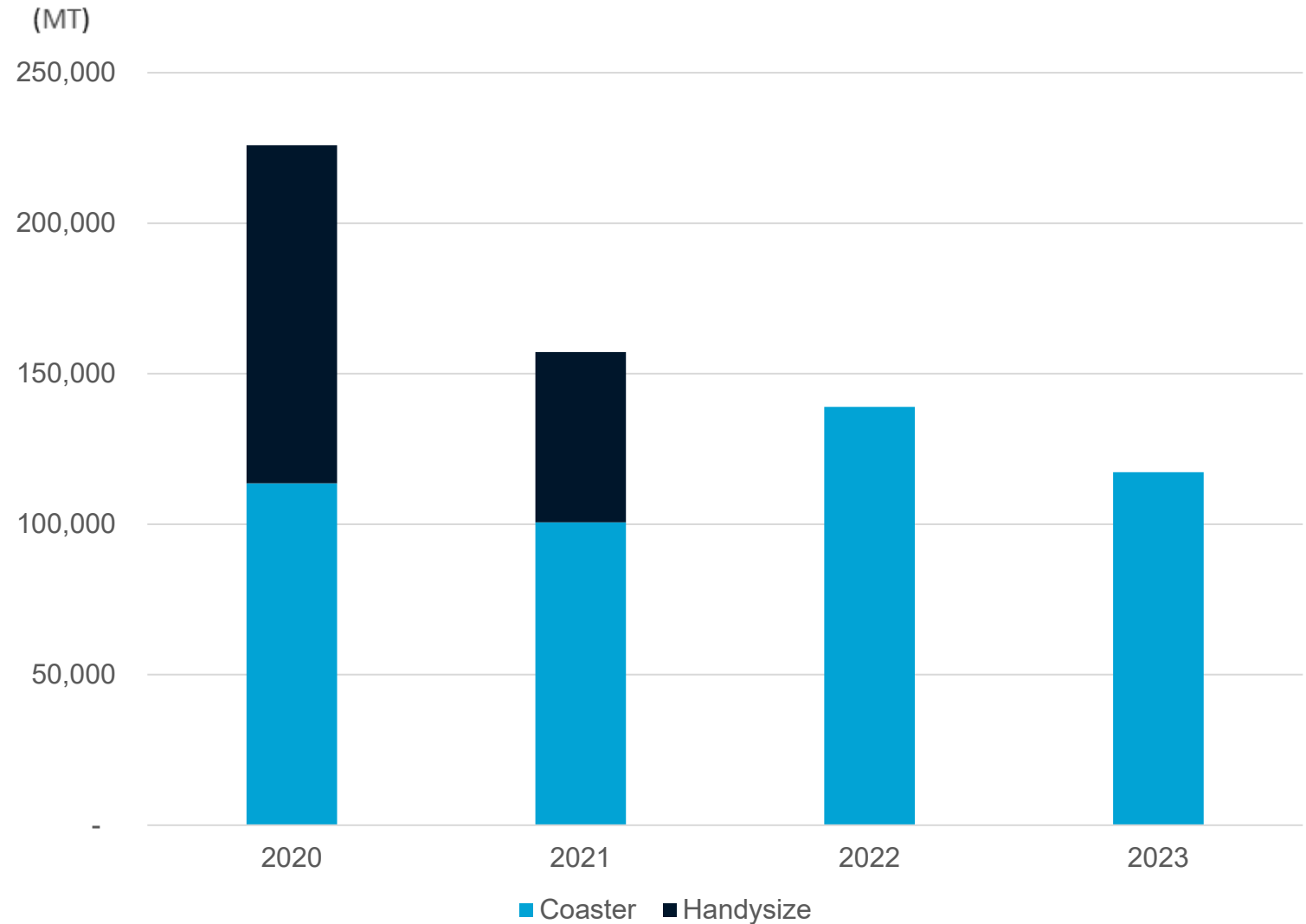
USGC/USAC to Morocco exports

- Morocco reliance on the U.S. is building.
- More butane/propane volumes arriving – record levels in 1Q23.
- August '23 posted the strongest month – 270,000mt. November 2nd place – 249,000mt
- With more volumes going directly to Morocco – the trade flows on the European coaster market from the Med & NWE are under pressure.



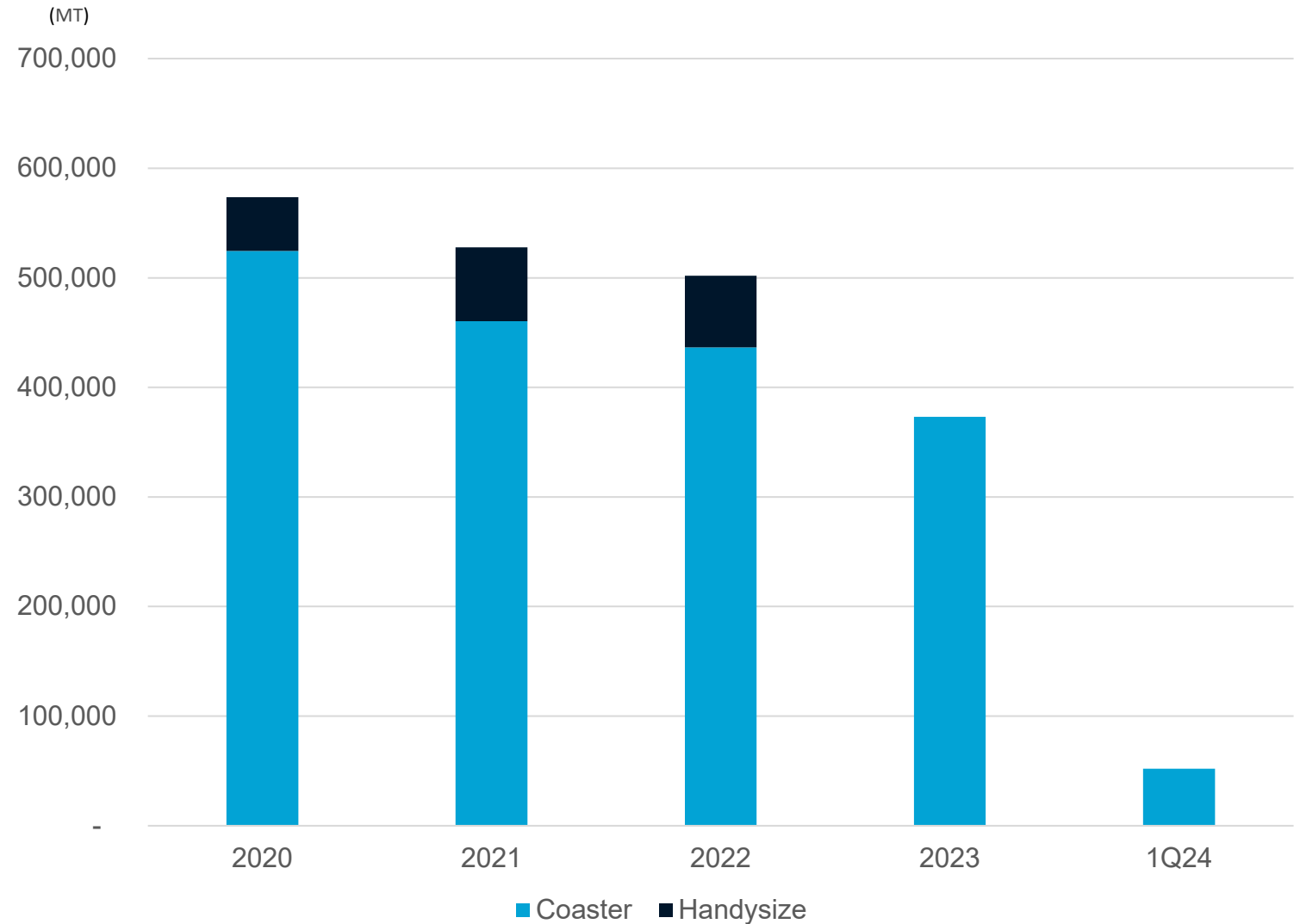
ARA/UK to Morocco SGC trade on the slide

- The impact of the larger vessels has hit the European coaster and handysize sector.
- Trade flows from ARA and UK have nearly halved since 2020.
- No handysize trade since 2021.
- Around 12kt of butane/propane has been shipped between U.K. and Morocco in 2024 – nothing from ARA.



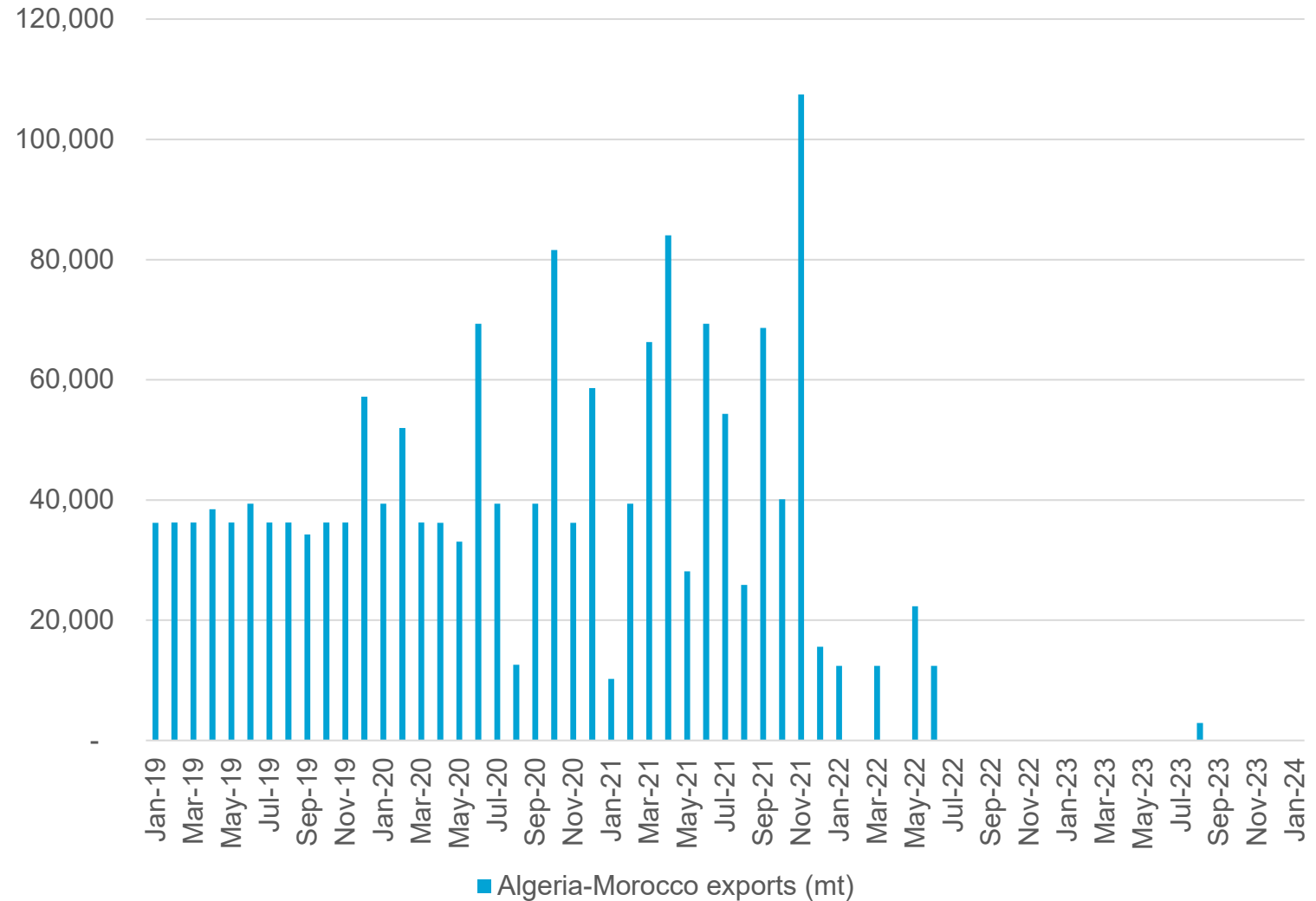
Med SGC activity follows suit

- Cross-Mediterranean flows have also started to dry up.
- No handysize trade since 2022.
- The majority of the Med product has come from Spain, with an increasing amount from Italy.
- Algerian flows – no more!
- Around 52kt of butane has been exported to Morocco in 2024.



Algeria-Morocco flows disappeared

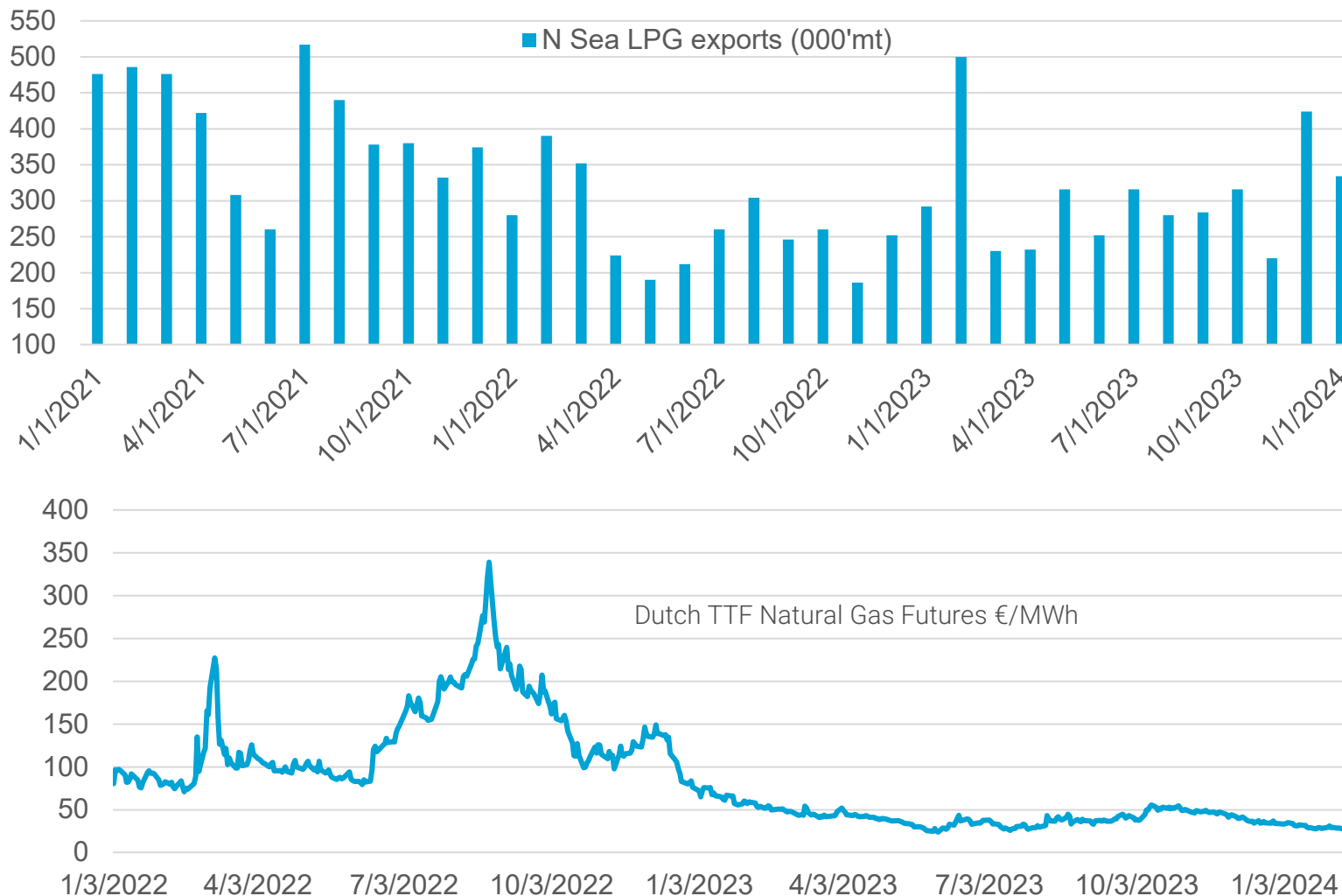
- Tensions between Algeria and Morocco has simmered for decades over the provenance of the Western Sahara.
- Algeria halted all LPG exports to Morocco in mid-2022.
- Exports to Morocco went from 626,000mt in 2021 to 59,600mt in 2022.
- The halt forced Morocco to look elsewhere – notably the U.S.



North Sea LPG exports returning

Source: OPIS, ICE

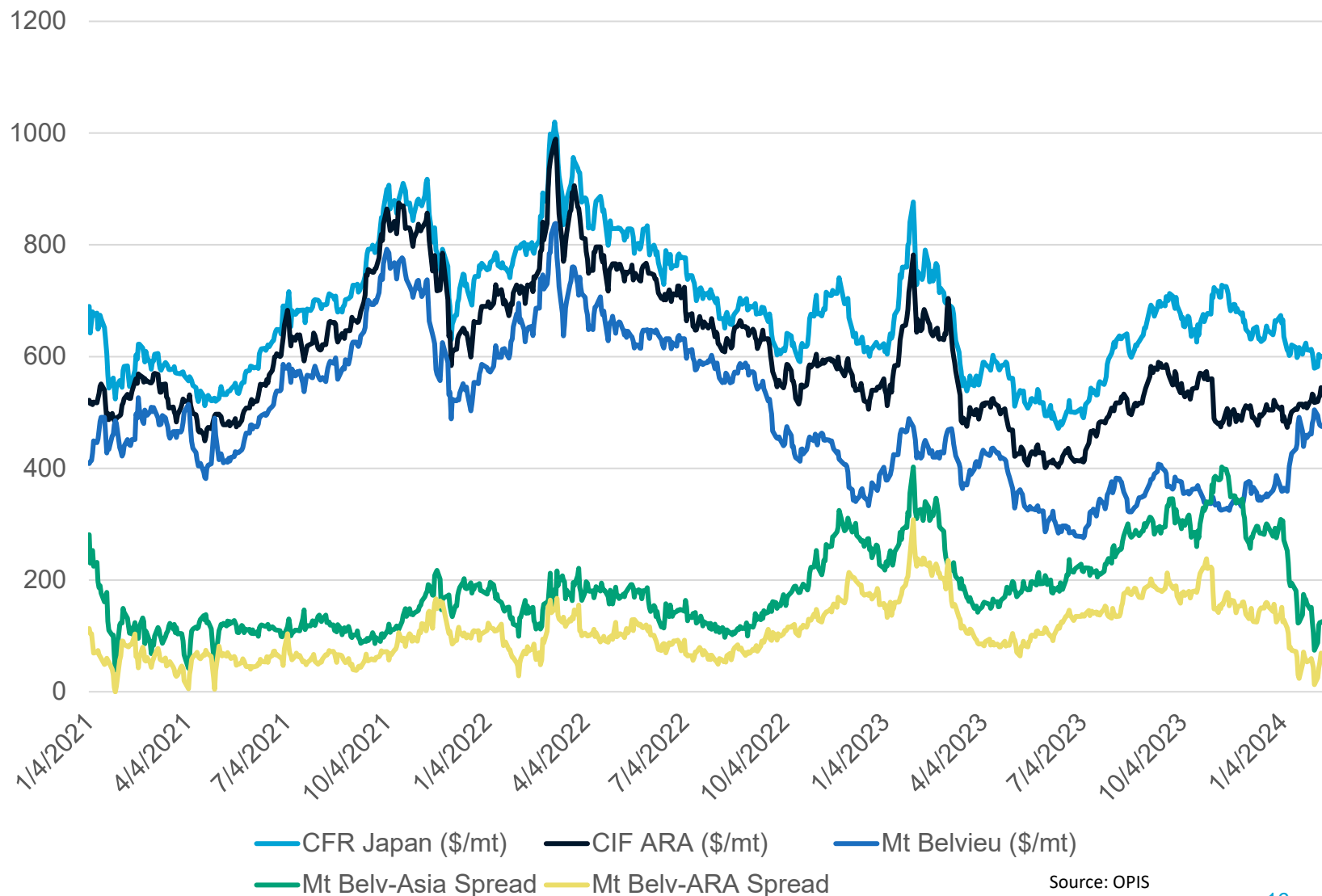
- Falling natural gas prices are deterring N Sea LPG producers from re-injection – pushing N Sea LPG exports higher.
- December & January – two the highest months since the start of the Ukraine-Russian conflict.
- LPG intake in Jan by the feed flexible coastal steam crackers increased by 10% MoM.
- TTF levels now below 1Q22
- Peaked at €339.20/MWh or \$99.41/MMBtu – Aug. 25 '22.



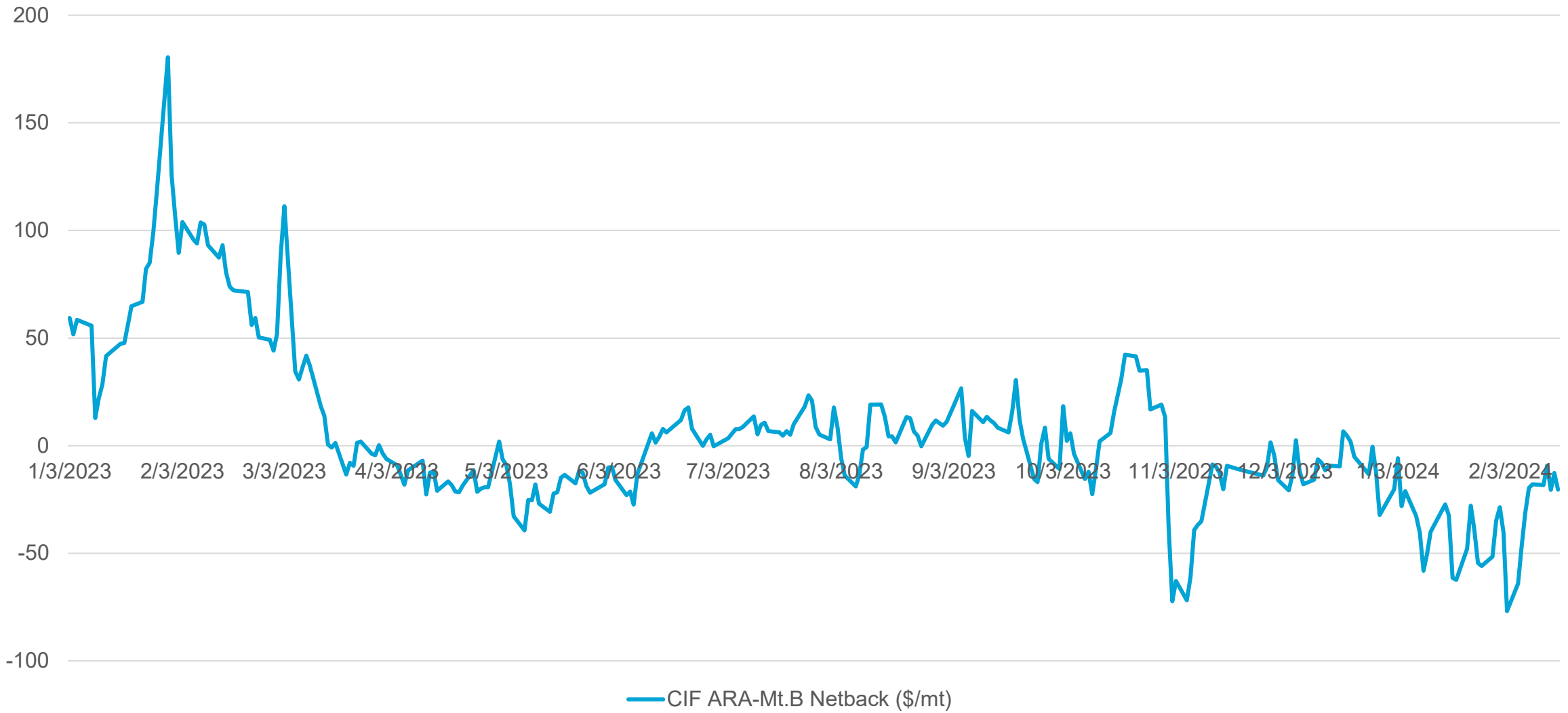
Freight

Strong arbitrage margins drive U.S. propane exports

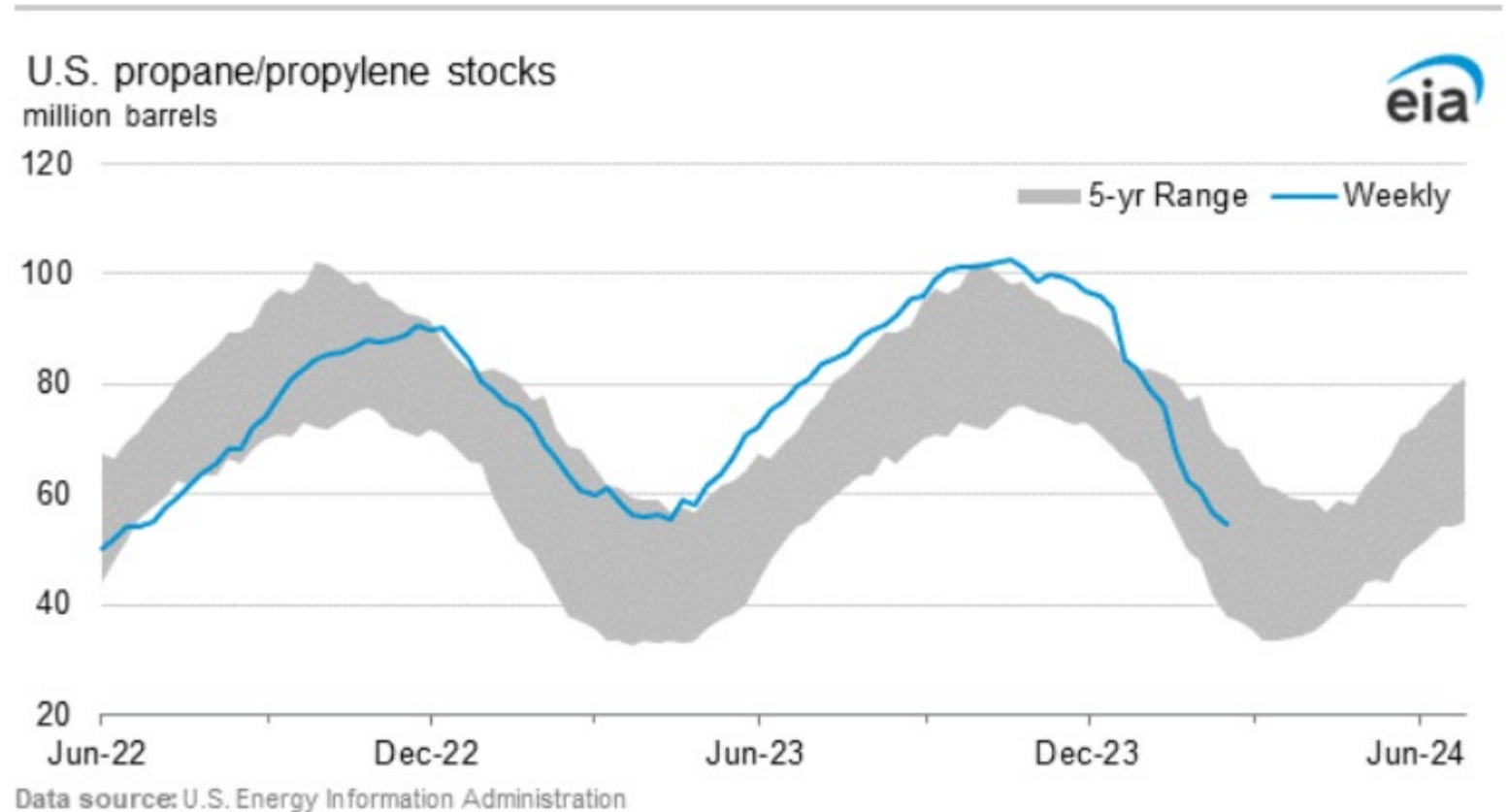
- Open arbitrages are key for spot U.S. propane export flows.
- Reduced Neopanamax slots at the Panama Canal helped drive Asian prices higher.
- Cold snap – spiked US propane prices, drawing down stock levels.
- Arbs to both Asia and Europe have closed, and VLGC freight has tumbled.



CIF ARA-Mt Belvieu Propane Netback

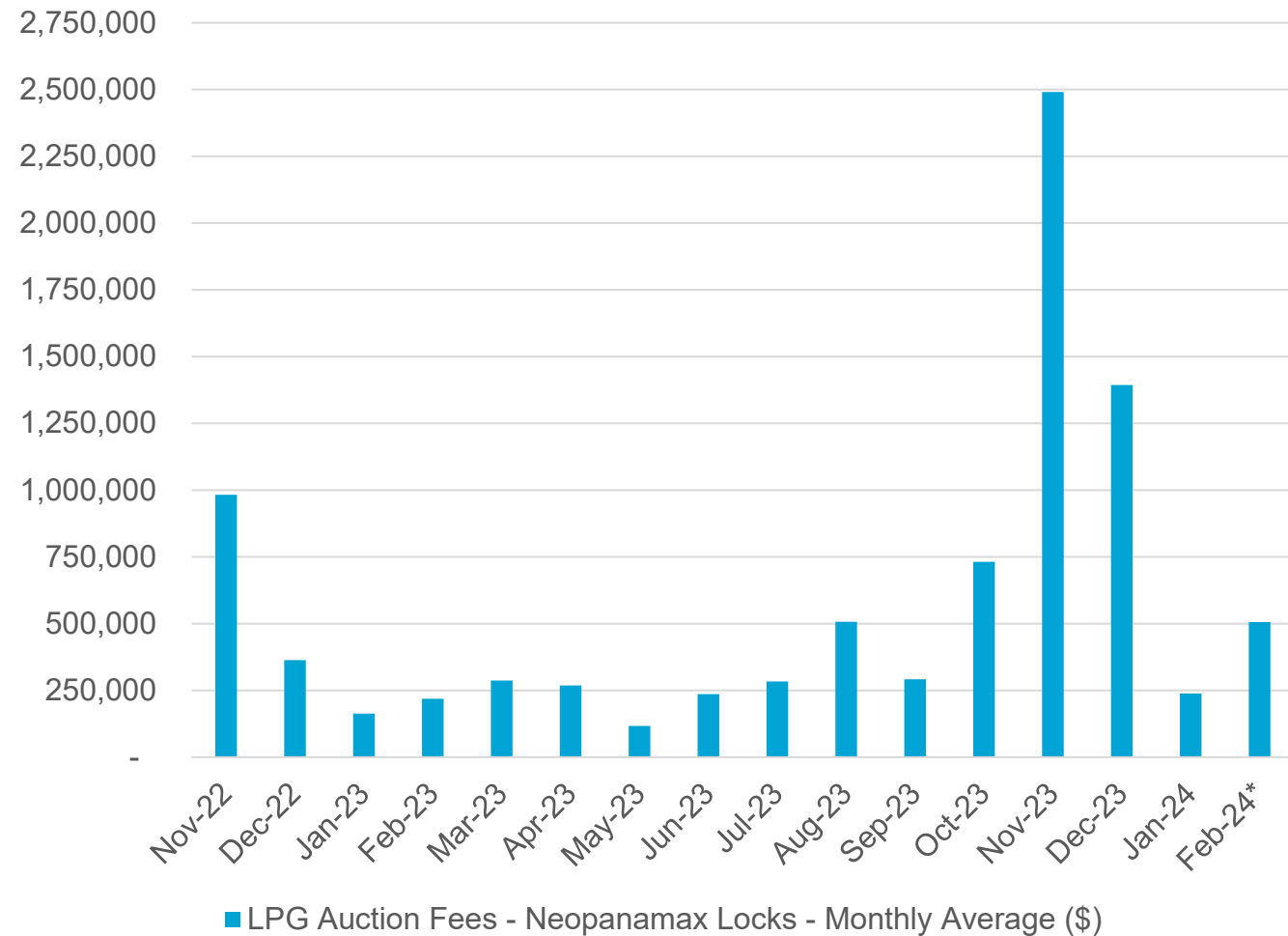


- U.S. propane/propylene stocks back down in line with 5-yr average.
- US propane inventory levels are now forecast to remain around the 5-year average level over the next few months.
- Year on year, stocks are down around 14%.

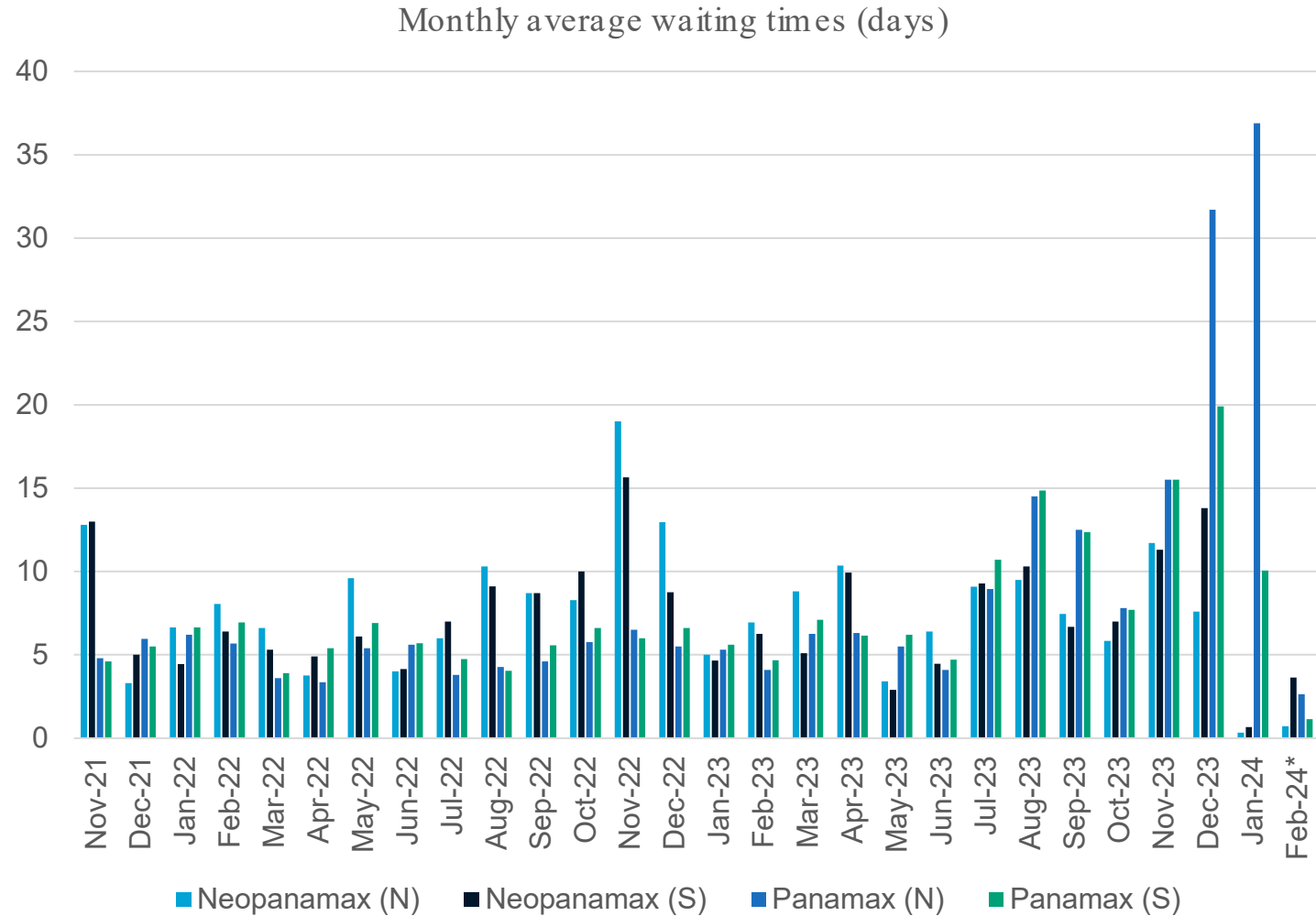


Panama Fees make way after fiery start

- Panama Canal fees have checked back after spiking in the early part of winter.
- Record high fee was paid for an LPG carrier - \$3.975mn on 8 November.
- Monthly average fees paid - \$2.5mn for Nov – more than double on the year.
- LPG face tough competition at auction – behind LNG and Containerships.
- January average was only \$75,000 higher than a year earlier.
- Feb – firm levels returning.

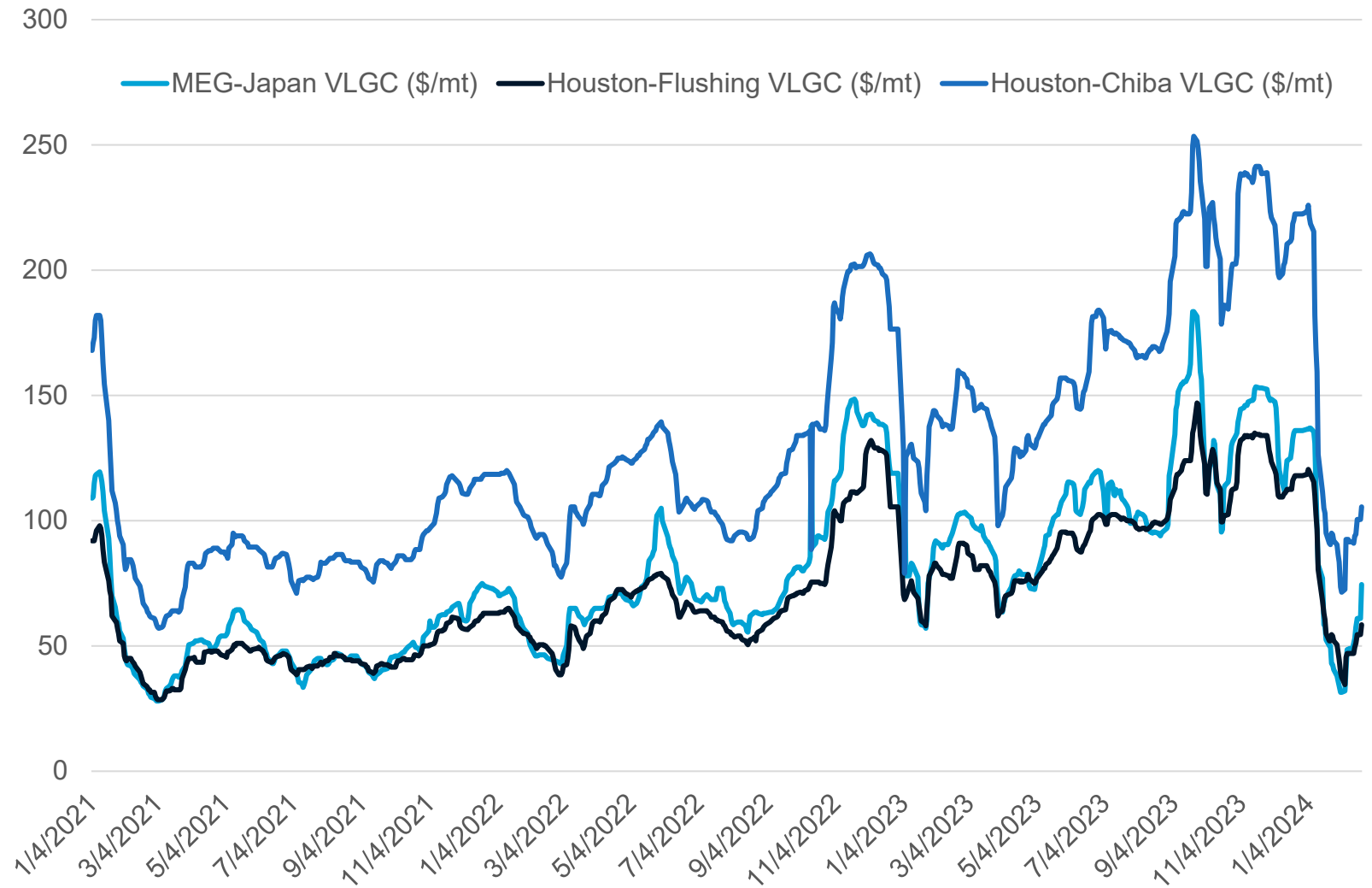


- The volatility of the Panama Canal has a profound effect on freight rates as we have seen.
- Waiting times at both Neo-Pan & Panamax have now fallen to single digits.
- Soaring waiting times in Nov/Dec pushed more cargoes being offered to the European market.
- In Nov-Dec, vessels were diverting via Suez & COGH to avoid the delays.
- Nominal delays in February.



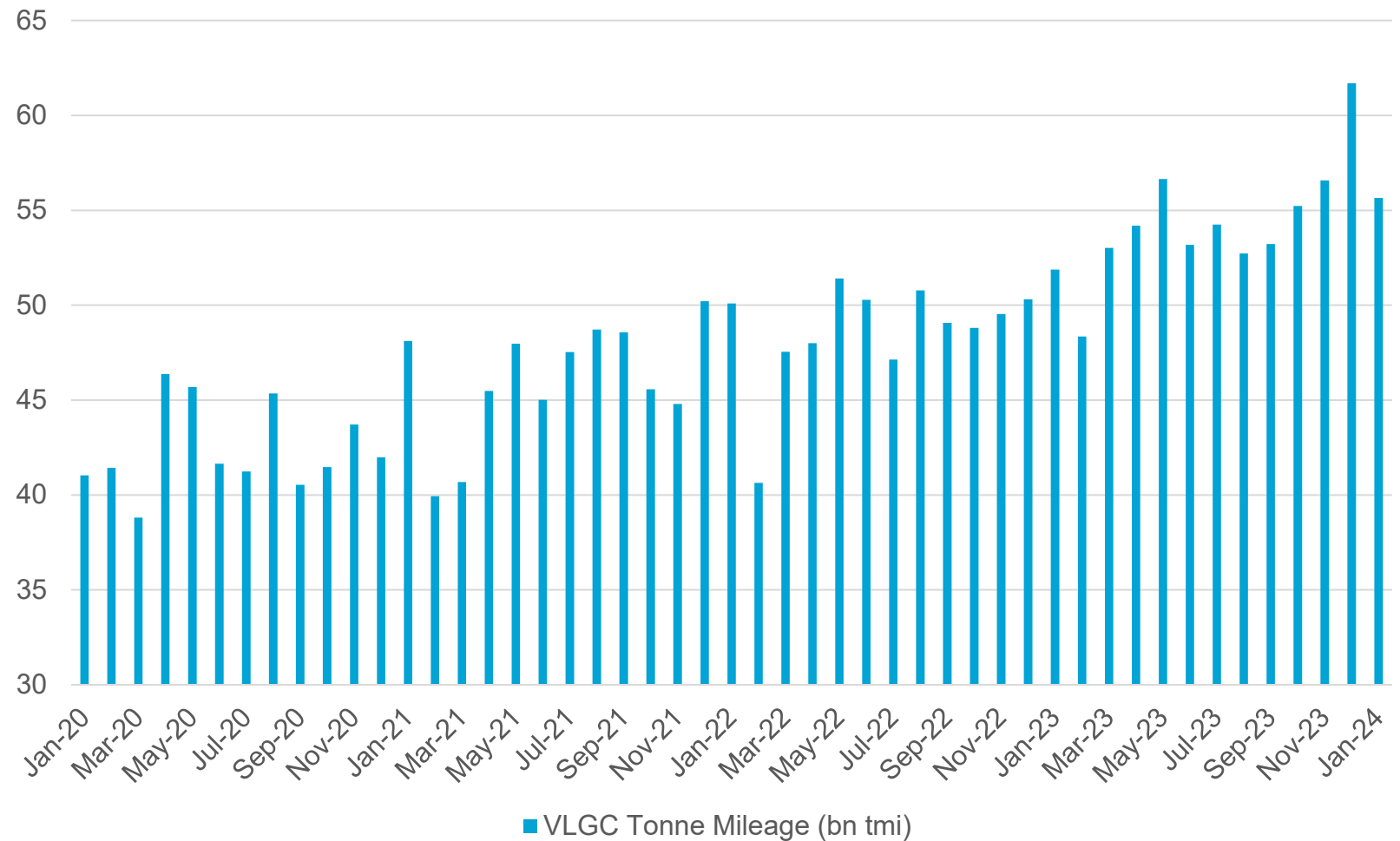
Freight rates reach multi-year lows

- VLGC rates crashed to multi-year lows at the start of February.
- Bunker fuel prices collapsed Oct-Dec before rebounding in Jan-Feb.
- Arbitrage opportunities closed globally weighing on the VLGC rates – netbacks flipping negative.
- Vessel availability improved dramatically as spot cargo demand diminished – Suez Canal amplified this with fewer Yanbu cargoes.
- Rates have bounced back – Houston-Chiba now back over \$100/mt



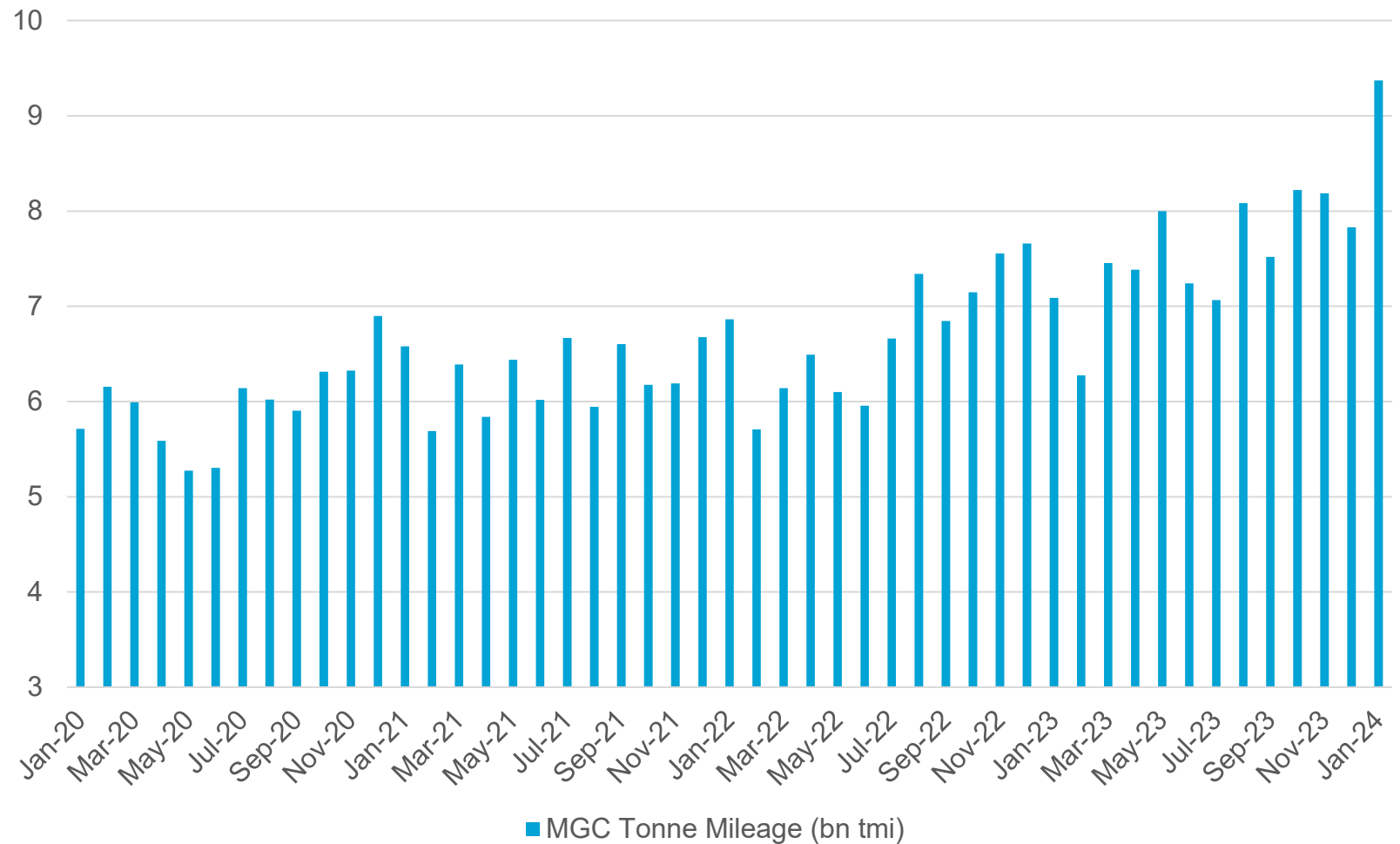
VLGC tonne mileage skyrockets

- Climbing tonne-mileage helped absorb the large newbuild delivery list in 2023.
- High US production coupled with firmer Chinese demand boosted TM.
- Transit restrictions at Panama/MEG tensions = higher TM
- Houston to Chiba via the Panama Canal around 25 days vs 38 days via the Suez Canal and 40 days via the Cape of Good Hope
- Panama + Suez + greater U.S/Asia trade = More TM = More vessel inefficiencies



MGC tonne mileage follows suit

- Red Sea and Panama impacts visible on the MGC market too.
- MGC's hit record high 9.37 billion TM in January.
- The trend on the MGC market tends to be less volatile than VLGC given the vast majority of trade is TC.
- MGC's operate both for LPG and ammonia.



Coasters

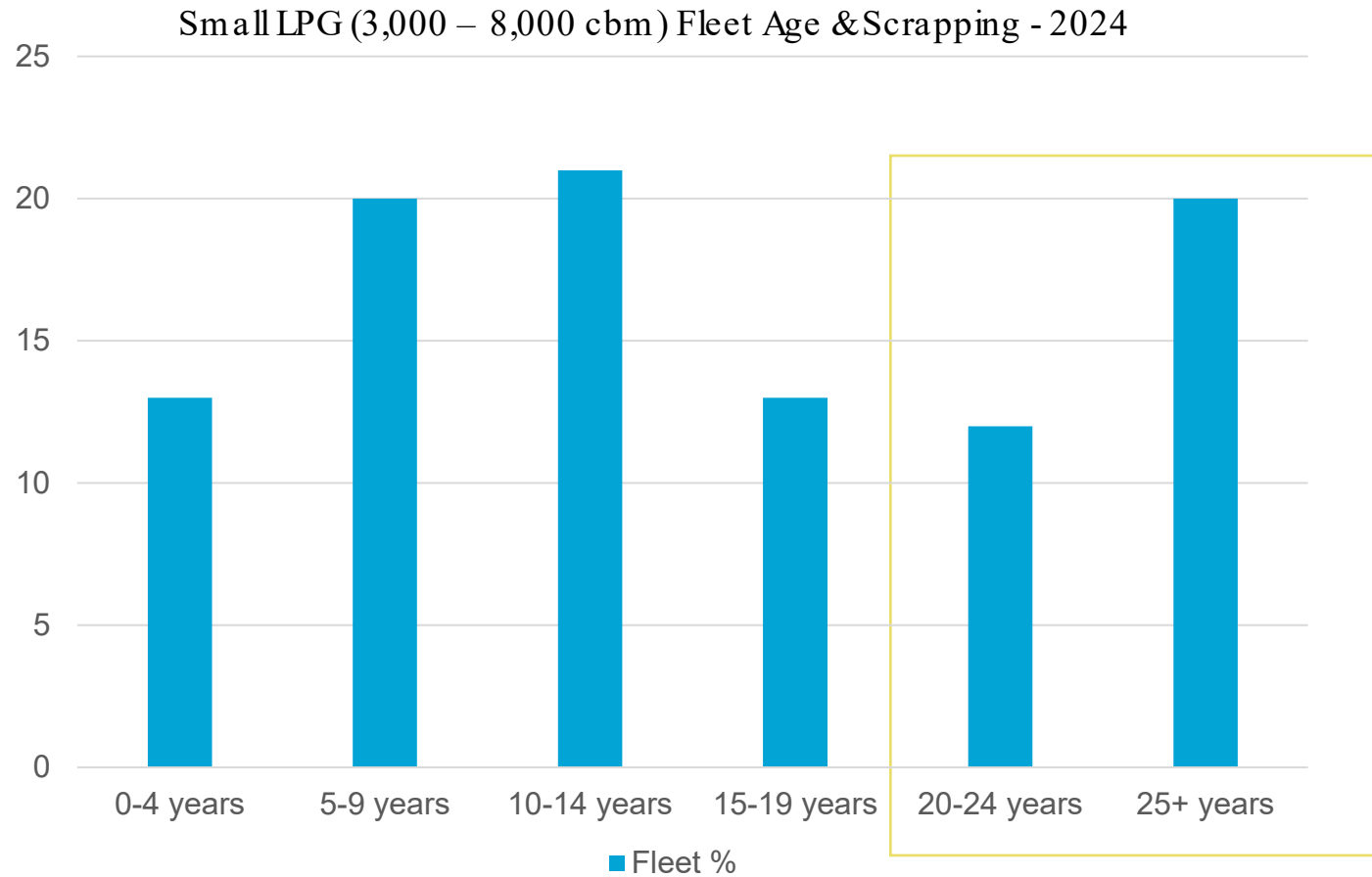
Coasters	2024	2025	2026>
Pressurized 3,000-7,500 cbm	9	9	0
Handysize	3	2	2
MGC	8	6	21
- Stealthgas, DART (as of Feb 24)			

Orderbooks across shipping are limited by:

- High steel prices
- uncertainty about future propulsion technologies
- Shipyard congestion from containership glut
- This will slow down the number of new SGCs entering the market, and is also leading to higher prices for second hand ships

SGC orderbook:

- 12 vessels to be built in Japan/South Korea
- 6 vessels to be built in China - mostly for the Chinese cabotage trade - by 2025
- Although OPIS does not track newbuild or second-hand prices, we understand both second prices have increased recently – with a 5,000cbm newbuild around \$20 million

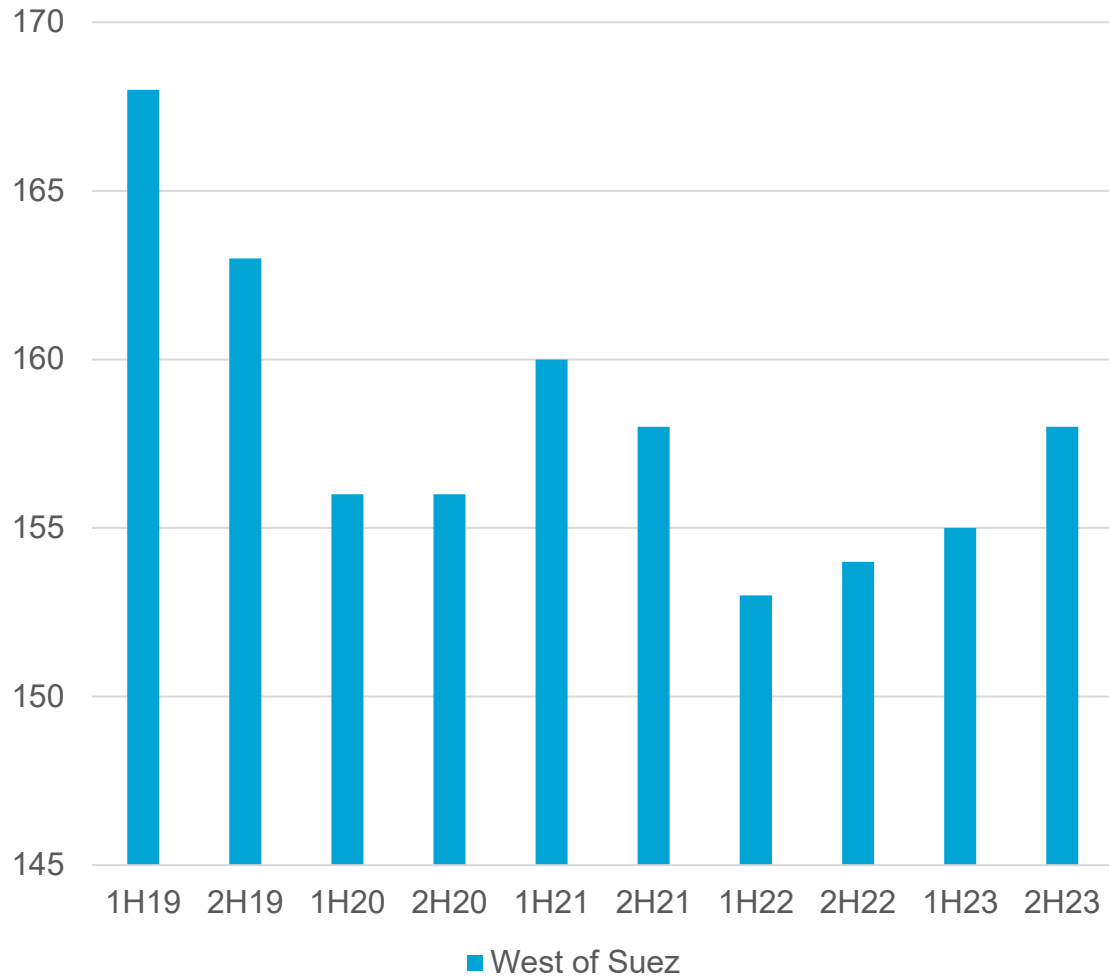


* *Grieg Shipbrokers, Clarkson, Fearnleys data*

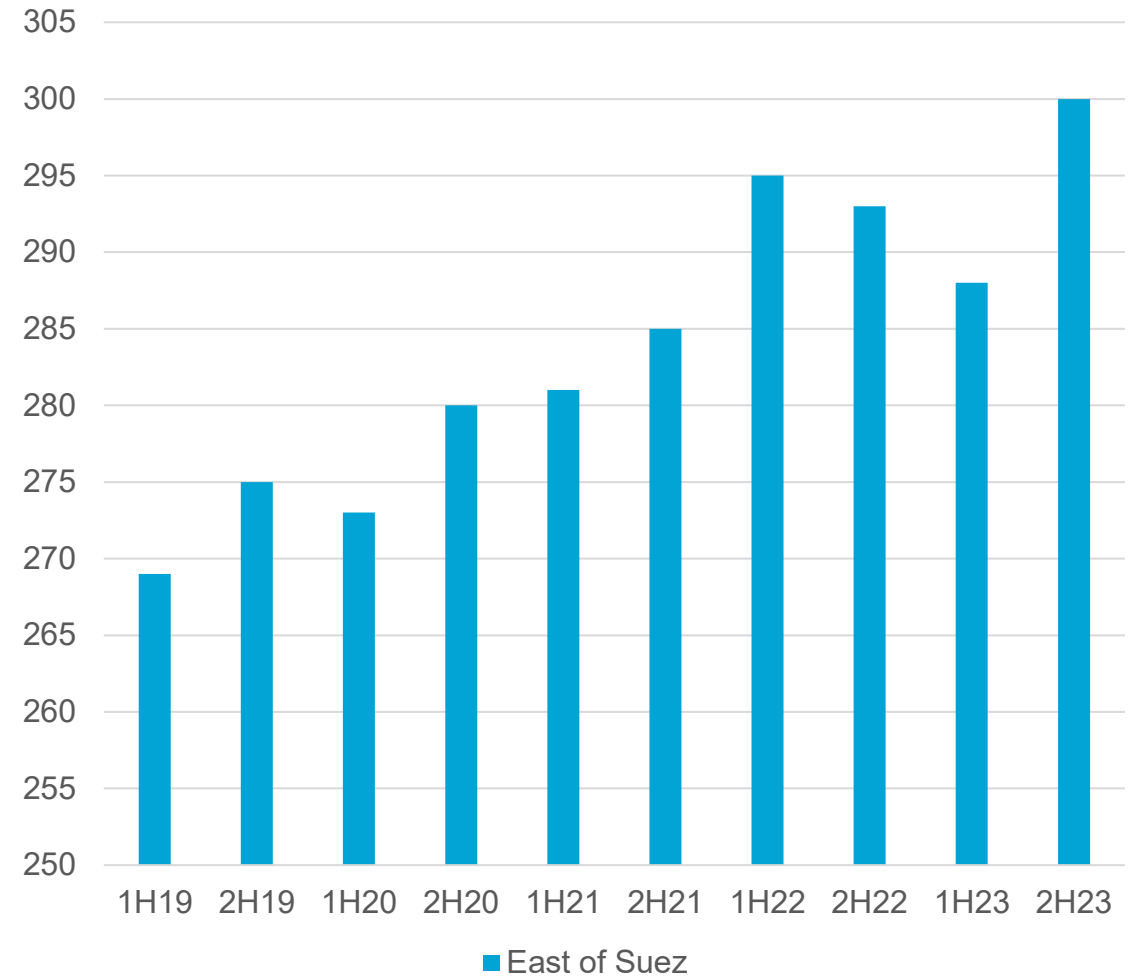
- Around 30% of the small LPG fleet is now above 20 years old.
- We have seen limited scrapping with firmer trading activity – but EEXI and CII regulations may kick start this.
- Meanwhile, the SGC orderbooks remain on the quieter side – 18 to be delivered until 2026 – the majority are likely to serve the southeast Asian markets.

Western coasters dwindle, eastern activity firms

Small LPG (3,000 – 8,000 cbm) carriers

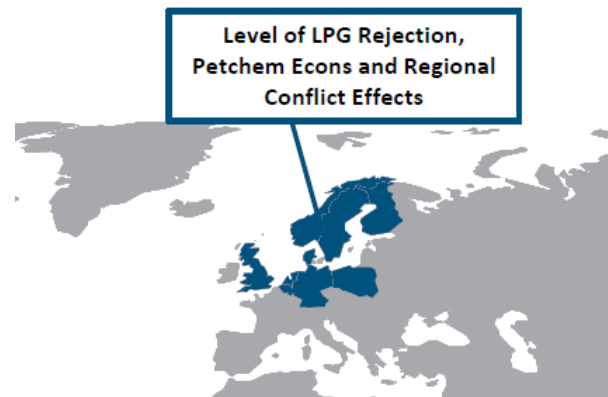


Small LPG (3,000 – 8,000 cbm) carriers



Outlook 2024

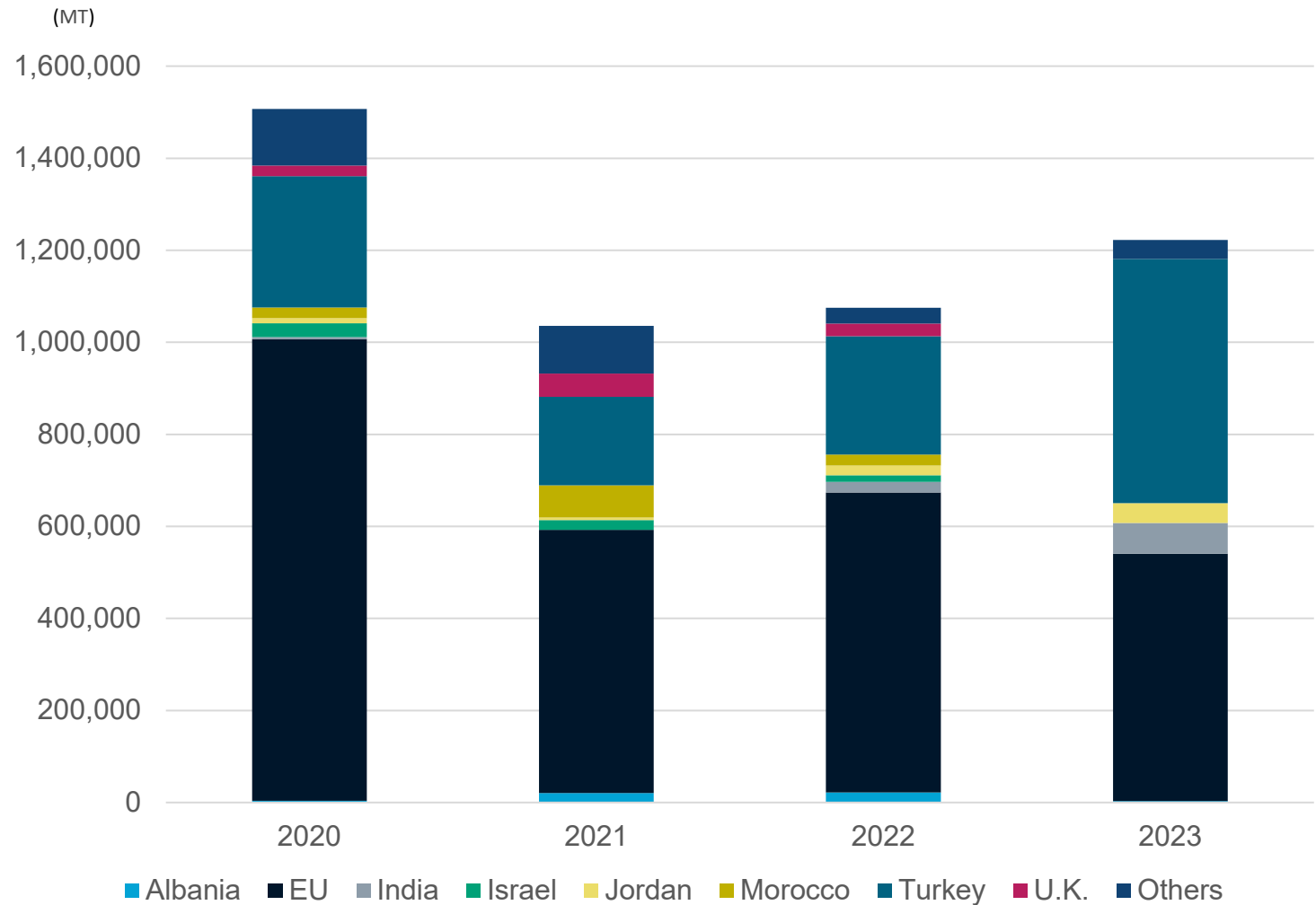
- LPG imports from the U.S. are likely to continue help meet demand in Europe in 2024. Last year, U.S. LPG imports into Europe totalled an estimated 5.7 million metric tons, or an average 476,000 mt/month.
- U.S. LPG production is expected to increase by around 4% YOY, attributable to increased fractionation and terminal capacity.
- The price of natural gas in Europe has fallen considerably, broadly equal to propane and butane. This has recently prompted North Sea producers to reduce the amount of LPG re-injected into natural gas and return it to the export market – nearing pre-war levels.
- Panama Canal concerns – with more trade expected in 2024 between the U.S and Asia, flows are expected to ramp up through the canal. If delays return, we may see more U.S. cargoes offered to Europe like we saw in 4Q23.



- Petrochemical margins remain challenging in Europe – high power costs and stuttering downstream demand. Inland naphtha-fed steam crackers are facing the greatest malaise, with extended shut-downs at units.
- Asian petrochemical demand remains the key factor in determining the supply/demand balance of the global market and that's likely to be no different in 2024. PDH margins have been negative since mid-2021.
- However, Europe will continue to face strong competition for LPG from rising demand in the Asia-Pacific, with more PDH capacity coming online.
- 12-month implementation ban on Russian imports in the EU – expectation is that this will be filled with U.S. volumes.

Reliance on Russian seaborne trade

- Six EU countries received Russian seaborne flows in 2023 – Bulgaria, Belgium, Estonia, Finland, Poland and Romania.
- Russia to EU – 537,500mt of propane/butane in 2023.
- Russia to EU in 2022 – 651,500mt of propane/butane – 12 countries.
- Estonia - #1 EU destination for Russian LPG in 2023 – 255,000mt.
- Turkey - #1 destination for Russian seaborne – 531,000mt in 2023.
- More pressure on the U.S. to supply the shortfall in 2024.



- With 60-70% of petrochemical demand met by imports, so the cost of freight from the U.S. to NW Europe and the arbitrage are vital to keep spot flows moving.
- All eyes will be on the Panama Canal again in 2024 – although delays have eased significantly of late - as capacity grows in the Far East more volumes are expected to travel via the Canal this year.
- Ongoing tensions in the Middle East has spurred owners to avoid voyages via the Suez Canal – adding to VLGC tonne mileage.
- Against the backdrop of the large number of VLGCs delivered in 2023 with firm freight rates, and anticipated production growth in North American NGL's, the absorption of the future orderbook appears less formidable than in past industry cycles.
- 21 newbuild VLGC's expected in 2024 and 13 in 2025 – Avance Gas
- Drydocking is expected to be busier in 2024 – around 75 drydocked in 2023 and around 80 are due this year – given the age profile of the fleet.

To learn more about our methodologies go to...

<https://www.opisnet.com/about/methodology/>

This compliance policy encompasses responsibilities assumed by OPIS's administrative, editorial and operational departments. Our commitment to excellence and objectivity in market assessments enables OPIS to provide the marketplace with the most comprehensive, equitable, verifiable and reliable price intelligence available. Please email OPIS_Compliance_Team@dowjones.com to let us know if you have a question, complaint or comment about one of our spot assessments.

Thank You!

Questions?