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Argus LPG Outlook

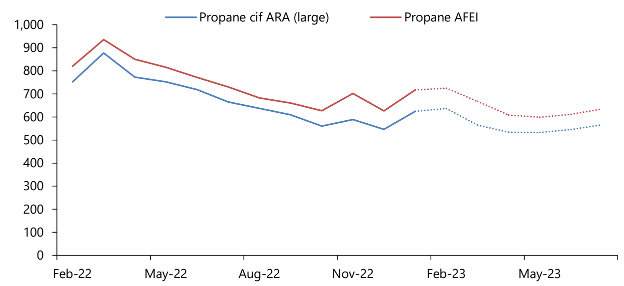
The quarter ahead

Atlantic basin benchmark North Sea Dated is forecast to hover around $80/bl, while a significant recovery in oil demand is yet to emerge following the lifting of China's Covid-19-related restrictions. Fears of a recession and weak global demand growth still persist. EU sanctions on Russian crude and refined products exports are in full force but price support will depend on the extent to which demand increases.

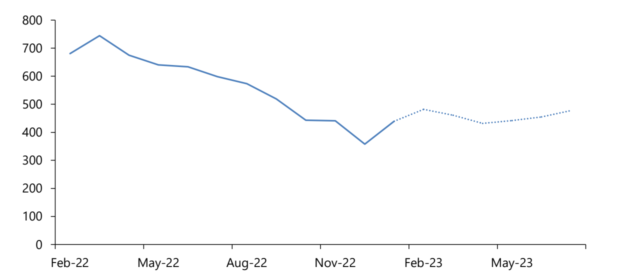
Relative to crude, the LPG market has had a bullish run in recent weeks, but factors pushing prices up will be short-lived. Lingering effects from delays at the end of last year, a less optimistic economic outlook that has diminished term contract buying, and supply constraints from Middle Eastern producers have all led to strong buying on the spot market in recent weeks, at the same time as the Chinese economy opened up. But fundamentals suggest that there will be a weakening of prices towards the end of this quarter.

Protracted negative margins in the petrochemicals market are not showing signs of ending soon. Expansion to China's propane dehydrogenation sector and propylene capacity will continue this year. The unprecedented expansion seen in recent years brings uncertainty around how the market will balance. Our forecast expects operating rates to remain below capacity because of growing oversupply in the market.

Propane cif ARA, AFEI $/t



Propane Mont Belvieu (EPC) $/t



Forecast prices

$/t	Feb 23	Mar 23	Apr 23	1Q23	2Q23	3Q23	2023	2024	2025
Propane cif ARA (large)	637	565	534	609	537	607	615	676	697
Butane cif ARA (large)	601	527	499	575	505	584	586	664	690
Propane Mt Belvieu EPC	482	461	432	461	443	518	513	612	643
Butane Mt Belvieu EPC	512	428	396	481	410	479	492	601	631
USGC propane export	525	487	458	502	470	545	544	638	675
Propane Conway	455	437	404	442	417	503	500	609	639
Propane Edmonton	336	330	296	338	314	420	411	519	547
Mixed butane Edmonton	412	342	306	391	323	361	398	528	549
Propane AFEI	725	667	608	703	606	675	686	748	785
Butane AFEI	727	679	612	712	608	679	693	731	769
Propane ANI	727	670	610	706	607	676	688	750	787
Butane ANI	730	682	613	714	609	680	695	733	771
Daf Brest Propane	516	499	443	498	451	530	526	710	732
Propane Saudi CP	790	615	505	665	508	613	639	729	759
Butane Saudi CP	790	660	565	685	565	670	688	715	754
North Sea Dated (*$/bl*)	80	78	78.0	80.3	78.3	82.0	82	90	94.9
LLS (*$/bl*)	76.8	74.8	74.8	77.1	75.3	79.9	78.9	88.8	92.8
Naphtha cif NWE	679	664	645	676	640	675	678	760	805
Naphtha Japan C and F	679	672	640	675	643	691	687	785	830

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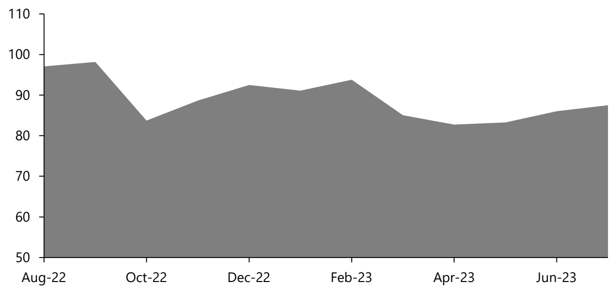
Petrochemical feedstock prices - Jan

$/t	Price	±
Ethane fob Mt Belvieu (¢/USG)	25.98	-9.54
Naphtha cif NWE	686	+96
Naphtha c+f Japan	673	+41
Ice gasoil	925.27	+37

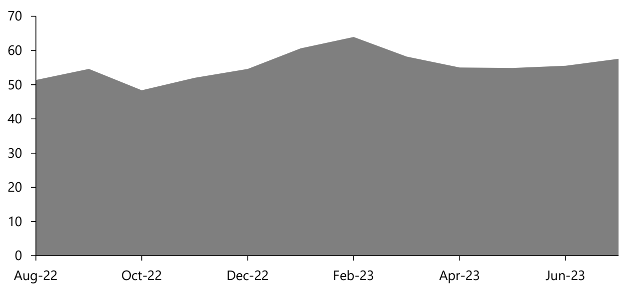
Crude prices - Jan

$/bl	Price	±
North Sea Dated	82.86	+2.5
Ice Brent	83.91	+2.6
Louisiana Light Sweet	80.64	+2.6
Nymex WTI	78.16	+1.6
Dubai	80.67	+3.6

Propane cif ARA large as percentage of naphtha cif



Propane cif ARA large as percentage of North Sea Dated



Outlook summary

- The bullish price run in LPG markets is expected to be short-lived and weak fundamentals will take over towards the end of the first quarter.
- US export availability remains high, filling gaps in supply constraints in the Middle East in the immediate term.
- Oil demand remains muted as a full recovery in Chinese demand is yet to materialise. North Sea Dated is forecast to average $80/bl in the first half of this year.

A huge weight of uncertainty has been lifted as China abandoned its zero-Covid policy on 28 January. But a significant recovery in oil products is needed to support crude prices. This has not materialised so far and our forecast sees North Sea Dated average $80/bl in the first quarter and $78/bl in the second quarter.

Propane AFEI prices surged in late January as the lifting of Chinese restrictions boosted demand following the lunar new year holiday period. But lingering effects from market conditions last year have exacerbated market tightness this year.

The uncertainty around China's Covid-19 policies saw market players drop from term contracts last year, so buyers are now seeking cargoes on the spot market to meet a recent uptick in demand. Sea fog on the US Gulf coast at the end of December led to several loading delays from Houston, Texas, which put pressure on terminal schedules in January and February. Maintenance at Saudi Arabia's Yanbu refinery and the UAE's Ruwais refinery will cap supply in the short term, but we expect a return to normal operations from March.

Macroeconomic expectations will be boosted now that Covid restrictions have been lifted and travel and other economic activities have resumed. But a significant recovery hangs in the balance as major industries in China remain under pressure. A slowdown in the country's real estate market has had a significant impact on petrochemicals demand. But with the onset of the spring construction season, Chinese demand could see a rebound.

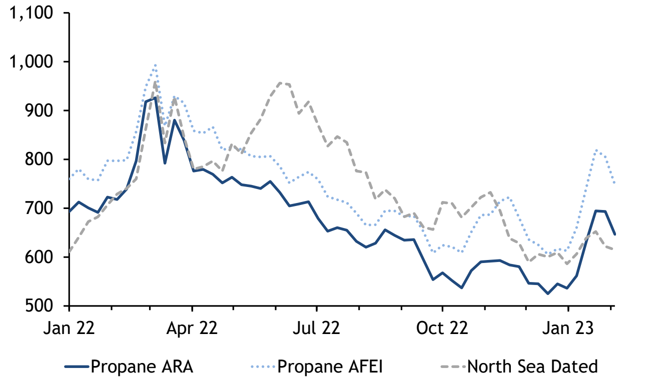
Propane dehydrogenation (PDH) cash margins and propane-based cracker margins in China reached historical lows amid the recent surge in propane prices, but margins had been largely negative throughout 2022. The level of petrochemicals capacity expansion has been unprecedented in recent years. China's PDH capacity is forecast to expand to an incremental 8mn t/yr in 2023. The economic outlook for this year is unlikely to boost downstream derivative prices and so this trend should continue for the foreseeable future.

Operating rates in China's PDH plants averaged 70pc in January, a marginal decrease from the 72pc average in December. Utilisation stood at 68pc in early February. With several plants undergoing maintenance and some reducing their operations because of low margins, the next month is likely to see slightly higher operating rates in line with the opening up China's economy.

Strength in Asian cascaded to other regions, especially Europe. But Europe also has weak fundamentals, as it was well stocked ahead of the winter season and petrochemical demand is lacklustre. Imports from the US will continue to gain significance amid enduring weak local supply and prices will move closely in line with those in Asia-Pacific.

In the US, propane Mont Belvieu prices averaged 45pc of West Texas Intermediate prices in January, in line with values during years that had similar market length. Propane prices typically trend lower compared with North Sea Dated, with strength increasing in the winter when heating demand is at its peak. Recent price spikes saw propane gain more momentum relative to crude (*see chart*). Ongoing volatility implies that fundamentals continue to be upended.

Crude vs propane *$/t*



Global fundamentals								*'000t*
	2022	**1Q23**	**2Q23**	**3Q23**	**4Q23**	**2023**	**2024**	**2025**
LPG supply								
Gas processing	224,185	56,806	62,120	60,628	54,812	234,365	244,928	251,556
Refining	121,978	30,788	32,925	32,548	29,691	125,952	130,336	130,433
Total LPG supply	346,163	87,593	95,045	93,176	84,503	360,317	375,264	381,989
Capacity ('000 b/d)	100,553	101,536	102,480	103,895	103,698	103,698	105,690	106,446
Utilisation (%)	0.81	0.83	0.82	0.82	0.82	0.82	0.82	0.81
Trade position								
LPG import requirement	139,720	37,240	36,050	36,675	37,751	147,715	154,828	162,108
LPG export availability	139,330	39,173	36,672	36,065	42,107	154,016	165,506	172,320
LPG demand	340,117	91,606	84,793	86,160	91,459	354,017	364,587	371,776

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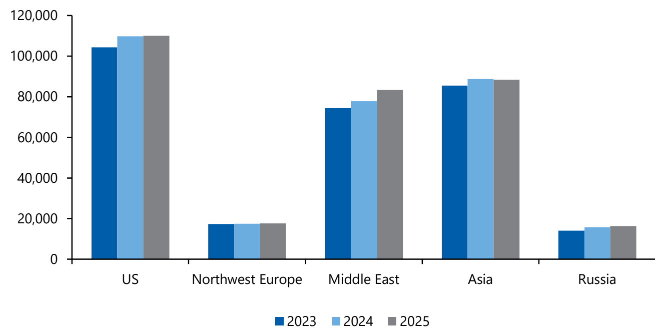
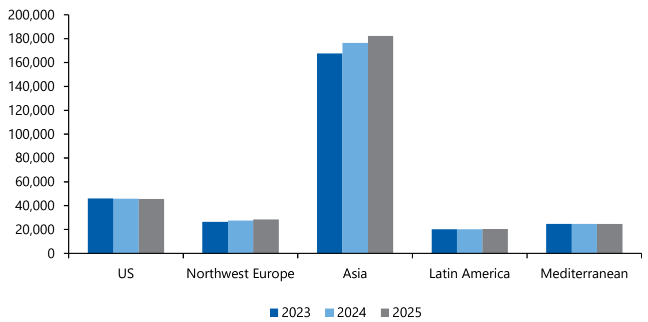
LPG major producing regions 2023-25 *'000t*



LPG major consuming regions 2023-25 *'000t*



LPG Fundamentals Overview

■ US gas processing production has been updated to reflect strong supply growth, partly a consequence of higher natural gas prices and strong LNG demand.

■ A small OPEC quota cut has done little to stem LPG production in the Middle East. We have raised our 2022 production and export numbers in line with the most recent data.

■ Russian production likely grew in 2022 despite falls in natural gas production. A priority was placed on maintaining NGL-rich gas streams while shutting NGL-poor streams. We expect production will fall in the future as the industry continues to face difficult headwinds.

Regional fundamentals - LPG								'000t
	2022	1Q23	2Q23	3Q23	4Q23	2023	2024	2025
US								
Production	98,396	22,939	28,795	29,173	23,494	104,402	109,833	110,038
Import requirement	4,864	1,466	958	1,056	1,383	4,864	4,864	4,864
Export availability	53,537	14,245	15,586	16,104	17,164	63,098	68,694	69,256
Consumption	45,742	13,597	9,542	9,761	13,267	46,168	46,003	45,646
Canada	3,980							
Production	16,404	4,713	3,870	4,196	3,789	16,568	16,732	17,005
Import requirement	316	83	85	70	78	316	316	316
Export availability	7,512	1,329	2,294	3,019	1,217	7,859	7,994	8,192
Consumption	9,123	2,536	2,027	2,362	2,099	9,025	9,054	9,129
Mexico	85							
Production	2,929	791	779	757	707	3,034	3,019	3,029
Import requirement	6,458	1,659	1,385	1,322	2,011	6,376	6,379	6,328
Export availability	21	0	6	2	12	21	21	21
Consumption	9,366	2,516	2,061	2,190	2,622	9,389	9,377	9,335
Latin America								
Production	13,765	3,731	3,338	3,483	3,334	13,886	13,775	13,709
Import requirement	8,806	2,087	2,312	2,350	2,202	8,952	9,103	9,233
Export availability	2,522	949	512	375	731	2,567	2,574	2,554
Consumption	20,049	4,704	5,293	5,361	4,913	20,270	20,304	20,388
Northwest Europe								
Production	16,767	4,400	4,528	4,407	3,934	17,268	17,442	17,599
Import requirement	18,166	5,574	4,765	5,112	5,261	20,712	21,505	22,528
Export availability	11,607	3,044	2,788	2,659	2,884	11,375	11,390	11,567
Consumption	23,355	6,965	6,432	6,813	6,395	26,605	27,556	28,559
Mediterranean								
Production	17,752	4,697	4,322	4,565	4,350	17,934	17,979	17,965
Import requirement	14,281	3,994	3,230	3,250	3,643	14,116	14,010	13,919
Export availability	7,296	1,727	1,958	1,947	1,599	7,231	7,126	7,176
Consumption	24,633	6,846	5,790	5,873	6,309	24,818	24,863	24,707
Middle East	104							
Production	70,398	17,824	21,272	18,972	16,394	74,463	77,780	83,372
Import requirement	174	79	45	23	38	185	200	209
Export availability	42,521	13,346	9,880	8,599	14,371	46,196	49,249	54,756
Consumption	28,051	7,595	7,076	6,546	7,234	28,451	28,731	28,825
Africa	0							
Production	5,605	2,063	1,868	1,172	1,252	6,355	7,330	7,626
Import requirement	3,081	718	1,076	804	626	3,224	3,336	3,490
Export availability	3,204	1,665	588	403	1,140	3,796	4,628	4,817
Consumption	5,482	1,479	1,580	1,354	1,371	5,784	6,038	6,300
Russia	0							
Production	15,305	3,806	3,428	3,290	3,435	13,959	15,672	16,306
Import requirement	0	0	0	0	0	0	0	0
Export availability	3,422	686	618	593	619	2,517	4,278	4,507
Consumption	11,003	3,050	2,614	2,825	2,954	11,442	11,393	11,799
Other Eastern Europe								
Production	5,085	1,792	1,698	1,606	1,812	6,907	6,960	7,013
Import requirement	1,383	326	319	408	354	1,407	1,419	1,429
Export availability	2,496	936	1,052	936	836	3,760	3,698	3,651
Consumption	3,972	1,203	1,127	1,117	1,107	4,554	4,681	4,792
Asia-Pacific								
Production	83,757	20,838	21,147	21,555	22,001	85,541	88,743	88,328
Import requirement	82,192	21,255	21,875	22,280	22,155	87,564	93,696	99,792
Export availability	5,193	1,246	1,389	1,427	1,533	5,595	5,853	5,824
Consumption	159,341	41,114	41,251	41,957	43,188	167,510	176,586	182,296

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Regional analysis

Northwest Europe and Mediterranean

Prices in the region were boosted as a knock-on effect of the bullishness of the Asian market. Short-term shocks aside, the region faces enduring weak supply from a structurally declining refining sector and substitution of LPG for natural gas in refining and other industrial processes. To fill the gap, imports from the US have been plentiful.

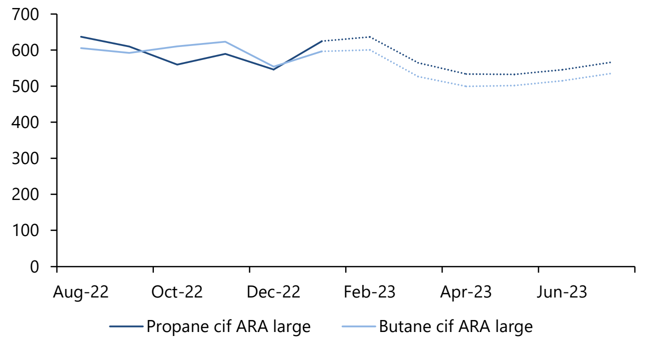
Winter temperatures have on average been mild, with a few cold snaps boosting demand momentarily. Ship-tracking data show that 39 very large gas carriers arrived into the Amsterdam-Rotterdam-Antwerp hub over July-December, compared with 23 during the same period in 2021.

The naphtha market is underlying outright prices for LPG. A ban on Russian products imports — which came into force on 5 February — has cast a long shadow over naphtha prices. Even after the onset of the Russia-Ukraine war, northwest Europe still imported 400,000-800,000 t/month of naphtha from Russia. With refineries already running at close to maximum capacity, Europe will need to import naphtha to make up the shortfall. Mediterranean cargoes are firmly directed towards the north but are currently unable to cover demand. Europe will likely see additional shipments from the US and Middle East, but this has led to products prices in Europe rising to levels not seen since early 2022.

Behind the supply uncertainty is a growing demand for gasoline blending. Strong Atlantic basin demand has pushed up gasoline exports from Europe and in turn increased gasoline blending demand. This is in contrast to petrochemicals demand, which remains poor despite a favourable spread to both propane and butane, as most crackers expect LPG's current premium to naphtha to be short-lived.

We forecast naphtha prices to weaken in Europe heading into the summer, after the scramble to obtain naphtha following the onset of the Russian products ban calms. As Russian products finds new routes into the market, the current supply crunch will likely ease. Petrochemicals demand is unlikely to pick up significantly in the current economic environment and gasoline demand is unlikely to rise further, given its current strength. Over the long term, naphtha is likely to follow Asia's lead as China's reopening helps support demand.

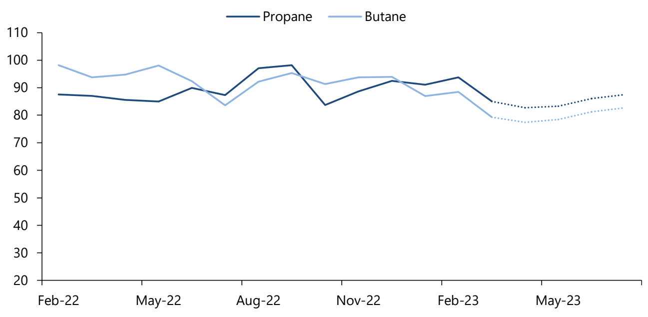
Propane and butane cif ARA large **$/t**



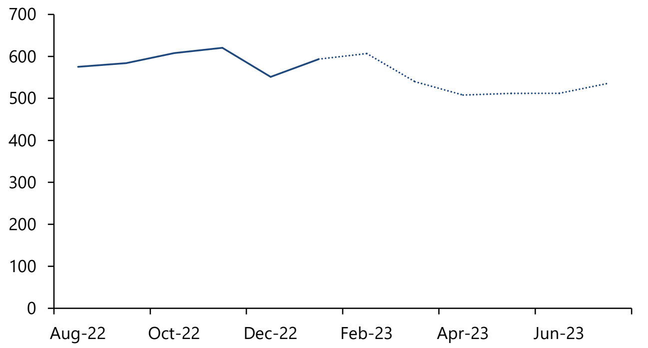
Russia and other eastern Europe

Propane daf Brest prices plummeted to $450/t in mid-January, the lowest level since March 2020 owing to lacklustre demand from Polish buyers amid ample product availability. January values averaged $479.2/t compared with $624.5/ in December. Prices rebounded towards the end of the month, mostly driven by a rise in propane prices in northwest Europe. Propane values could strengthen further — some market participants expect an uptick in trading activity in late February as stocks could be drawn down.

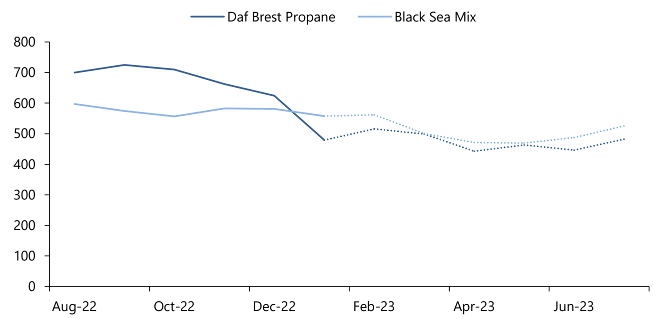
LPG ratio to naphtha northwest Europe **%**



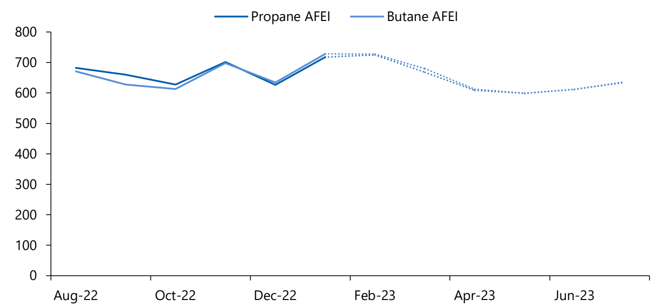
Butane cif Lavera large **$/t**



Daf Brest propane and Black Sea LPG mix $/t



Propane and butane AFEI $/t



A sharp rise in Black Sea propane assessments following a surge in Sonatrach SP prices for February cargoes may result in a slight rise in Russian LPG exports to the Mediterranean and the Balkans. This could help to ease oversupply on the Polish border and support prices. But it is unlikely that propane daf Brest prices will recover to early-December levels.

Direct rail supplies of Russian LPG to Poland fell to 80,000t in January from 103,000t in December, market participants say. Deliveries were affected by temporary rail restrictions in Belarus in late January. Seaborne LPG supplies to Poland fell in January to 100,000t, down by 20,000t on the month.

Asia-Pacific

AFEI prices were boosted in January by bullish factors that lingered from the tail end of 2022. Long waits at the Panama Canal and fog-related delays on the US Gulf coast hampered export flows from the US to Asia-Pacific. Cargoes delayed from December were rescheduled for January and February.

Iran is a key supplier of the Chinese market and experienced supply chain-related issues at the end of 2022, coupled with strong domestic heating demand. Exports averaged 528,000t in November-December, 17pc lower than the May-October average of 639,000t. Exports ramped up to 732,000 t in January, confirming that supply constraints were short-lived.

China lifted its remaining Covid-19 restrictions on 28 January. But uncertainty around China's reopening and poor petrochemical margins left buyers cautious, with many reportedly not extending term contracts into this year. Market participants are now looking for cargoes on the spot market, which is reflected in propane AFEI's unusual premium to naphtha of up to 24pc at the end of January.

Prices have since eased back to where we would more or less expect them at this time of the year, reflecting seasonal patterns. In the immediate term, supply constraints from the Middle East will continue to support prices. But key fundamentals point towards a downward price direction. A steep backwardated structure of the forward curve until April suggests the bullish environment is not expected to last.

Propane dehydrogenation cash margins and propane-based cracker margins reached historical lows amid the recent surge in propane prices. We forecast propane prices to ease over the longer term, but the outlook for downstream derivative prices is not particularly strong, suggesting that petrochemical operators could be facing a challenging environment for the foreseeable future.

Outright price-setter naphtha remains weak but crack spreads have risen as supply becomes scarcer. The European ban on Russian products imports has caused a shortage of naphtha in Europe, which is pulling product to Europe that would normally go to Asia. On top of that, an uptick in Indian gasoline demand has caused more naphtha to be sent for blending and less for exporting.

The petrochemical sector has failed to strengthen, despite the repeal of China's zero-Covid policy. Downstream demand remains weak. This is possibly because of a weak property sector and a delay as crackers prepare to restart.

Asian pricing will likely be dictated by whether Russian naphtha can find new markets, and how quickly it does this. There is a lot of Russian product travelling through commercial storage tanks already, especially in Singapore, but current volumes are not enough to compensate for the naphtha lost to Europe from the Mediterranean, and possibly the Middle East.

We expect Russian naphtha will eventually be recycled through the Middle East and Turkey and still supply Europe, but in the near term we can expect a global shortage and much stronger crack spreads. Even after the market settles down after the products ban, we are unlikely to return to the weakness of 2022 because of higher clean tanker rates and an anticipated improvement in petrochemicals demand.

Middle East

Saudi Aramco raised its February propane and butane contract price (CP) on the month by $200/t and $185/t, respectively, rendering the propane-butane CP spread at parity. The hike in prices is a result of tightening supplies. Refinery maintenance at Saudi Arabia's Yanbu refinery is expected to limit supplies and in turn will likely see exports from Saudi Arabia decline this month. Prices rose following a 2.4pc gain in front-month Brent crude values over the same period.

The February propane CP stood at $790/t, a nine-month high. A stronger than expected resurgence in Chinese demand, fuelled by increased purchases by northeast Asian importers for heating demand purposes, has supported the market. Heating demand in the northern hemisphere is likely to decline next month as it typically starts to get warmer. Meanwhile, LPG consumption in China is expected to increase this year as a result of further expansions in propane dehydrogenation capacity and domestic supplies, and a switching from LPG to coal or electricity in the residential sector.

The February butane CP was set at $790/t as the market is firming on the back of strong demand in India, which is expected to grow this year. According to Indian state-controlled refiner IOC, India's LPG consumption is expected to grow by 1.5-2pc in 2023. But growth is likely to slow as the Indian government has removed the LPG subsidy for poor households from its budget for the April 2023-March 2024 fiscal year, which could limit demand for LPG from low-income households.

While both prices were set on a higher range than what *Argus* anticipated, fundamentals are still expected to put pressure on prices from next month. And expectations that maintenance at the Yanbu refinery and at Abu Dhabi's Ruwais plant from February-early March is likely to ease the supply tightness in March.

US

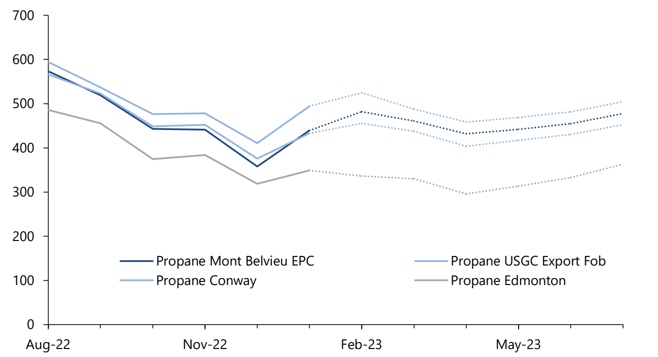
US propane inventory levels continued to post draws from December after an uninterrupted build from mid-March to late November. Stocks fell by an average of 2pc in January — in line with previous years but weaker than the average 6pc and 7pc January draws in 2021 and 2022, respectively. Despite high very large gas carrier freight rates, high demand for spot cargoes in Asia-Pacific is keeping the arbitrage open for exports

In Conway, high stocks for most of January have been balanced against fears over the closure of the Medford fractionator. As it became clearer that stocks are sufficient to survive the winter, we have seen significant falls compared with Mt Belvieu prices. Prices are likely to stabilise, but the fundamentals indicate little chance of a propane price recovery soon.

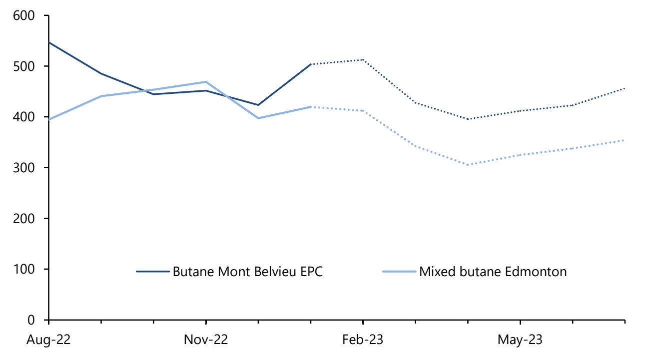
Ample supplies and warm weather created strong bearish sentiment for Edmonton propane in January. Prices slid from discounts of $20/t to Mt Belvieu in late December to wider than $135/t at the start of February. Prices are likely to recover as colder weather is forecast, but it will take time to clear excess stocks. We forecast weak pricing for the rest of the winter.

Butane in Edmonton moved largely in line with seasonal expectations compared with Mt Belvieu. But prices had support at the end of January from an outage on the Northern NGL pipeline. Supply concerns could keep prices higher than in mid-January, but steady demand will limit any rise.

Propane fob Mt Belvieu and USGC export fob *$/t*



Butane Mt Belvieu EPC *$/t*



Freight and arbitrage

The rollercoaster of spot very large gas carrier (VLGC) rates continued in January. Prices crashed, halving across all major routes in a month. This was followed by a sudden rebound, with prices jumping by $30-40/t in around a week at the end of January. At the centre of the recovery was a bidding war between Europe and Asia for US cargoes.

LPG supplies to Asia were disrupted in January because of delays at the Panama Canal in November-December. Many of the ships caught in the traffic were due to arrive in January or late December but were forced to wait for the delays to clear, or travel the longer route through the Suez Canal. This left many Asian buyers searching for spot LPG to fill the supply gap, which pushed prices up. The rise was made more acute by the decision of many purchasers to decrease their term contracts this year, owing to a less optimistic demand outlook.

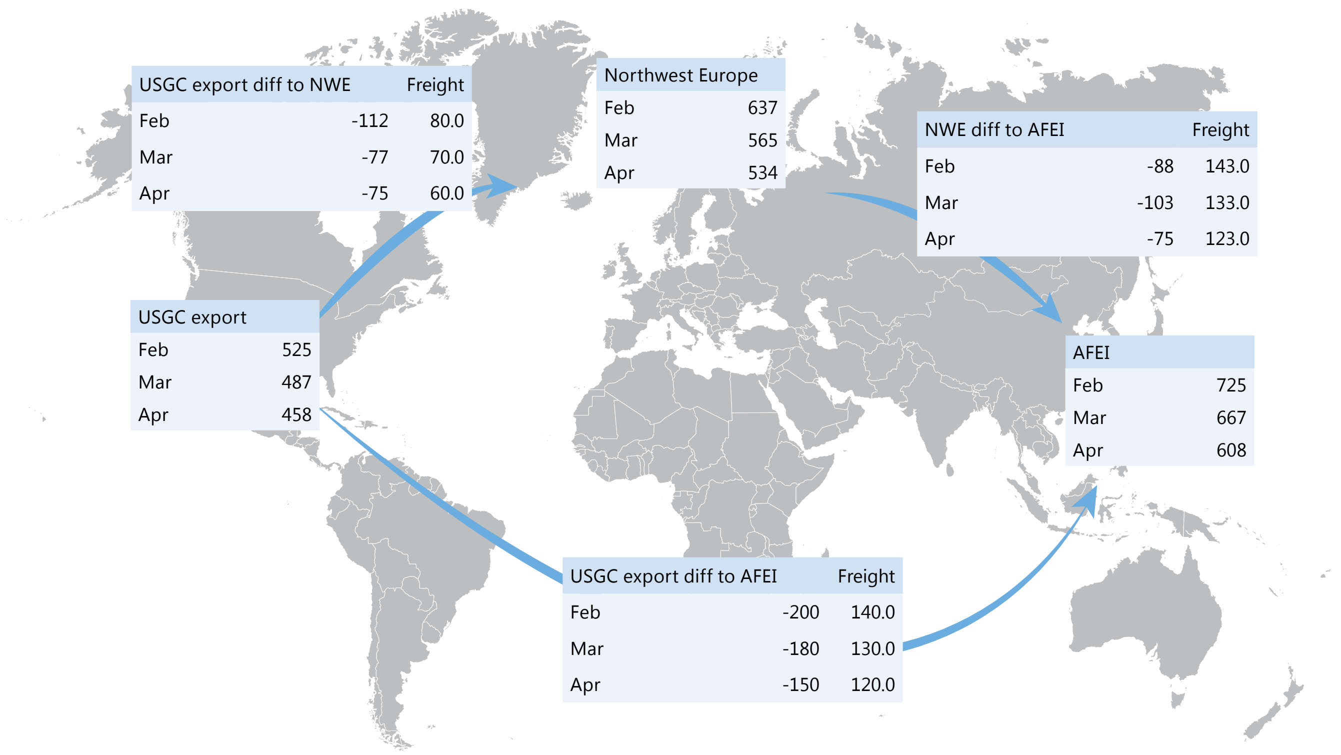
At the same time, cold weather in Europe has depleted inventories and many buyers were looking to restock. The market entered a steep physical premium of $50/t to paper, the widest since 2013. As prices rose in both regions, the arbitrage from the US increased, encouraging more charters and pushing up freight prices.

Short-term forecast freight rates		$/t
	Feb	Mar
VLGC Mideast Gulf-Japan	85.0	85.0
VLGC Houston-Chiba	140.0	130.0
VLGC Houston-Flushing	80.0	70.0

Prices eased at the start of February as the high costs caused petrochemical margins in Asia to erode, resulting in buyers leaving the spot markets. Prices in Europe fell as there was less competition for US LPG. The weakening prices have reduced arbitrage opportunities and lessened the demand for shipping, causing VLGC rates to stabilise.

The wide-open arbitrages that fuelled January's freight rate rise are unlikely to continue. The end of winter in the northern hemisphere will cause demand to fall in Europe and Asia. Export supply in the US and the Middle East is strong but with the poor economic environment it is hard to see petrochemicals demand improving in the short term. The VLGC market remains tight and rising exports will mitigate the long VLGC newbuild list in 2023. VLGC freight rates are likely to ease but we may still see some bullishness before the winter is over.

PROPANE ARBITRAGE MAP $/t



Crude overview

North Sea Dated traded at an average of just under $83/bl in January — higher than the $80/bl forecast in our previous *Outlook*. When we published that report, Dated was trading below $80/bl and the market looked vulnerable to a sustained sell-off in the face of mounting fears of a global recession. In the event, China's decision to end its zero-Covid policies was enough to propel the market higher. But lingering fears of recession and weak global demand growth this year appear to be limiting the upside to this recovery — and, as expected, the market continues to trade broadly in the $80-85/bl range.

News of the lifting of lockdown measures in China stoked expectations that demand growth would swiftly accelerate and with it refinery utilisation and the call on imports. The announcement of two batches of crude import quotas clearly lays the basis for a big increase in receipts. The ministry of commerce awarded 19mn t of crude import allowances to 21 independent refiners in a first round of quotas in October. Now a second round has awarded a combined 112mn t to 44 companies. Together, the combined allowance for 2023 is 2.65mn b/d, which is equivalent to around 58pc of recipients' full-year entitlements for 2022.

Perhaps not surprisingly given the surge in Covid infections that followed the end of lockdown, Chinese refiners have shown themselves reluctant to take advantage of this opportunity to secure imports. Unipec — trading affiliate of state-owned Sinopec — has been in the market to make large purchases from a wide range of different sellers, but other trading entities and refiners have not followed suit. After an initial upward reaction both in terms of outright value and crude differential, prices across the regions have stabilised and, indeed, fallen back.

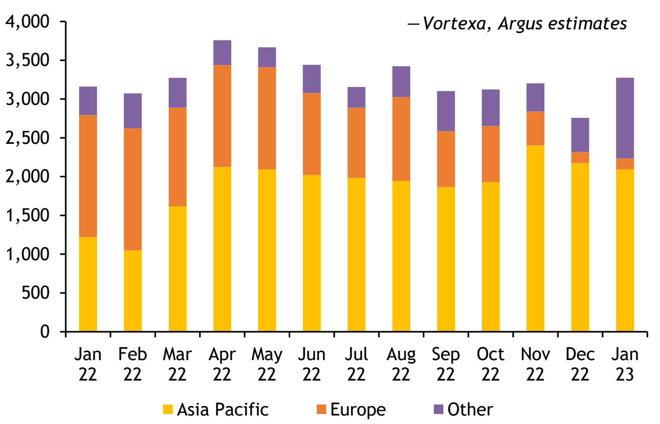
It appears that Chinese refiners are playing it safe ahead of more concrete signs that domestic demand is growing again. The chances are this will happen — once Covid infections subside and the construction season gets into full swing during the second quarter. We continue to forecast year-on-year demand growth in China of 500,000-600,000 b/d on this basis. This is one of the key factors underpinning our forecast of global demand growth of 1.7mn b/d.

But the absence of widespread buying by Chinese refiners is keeping the crude market in Asia under pressure. Without strong demand in China, the market is struggling to absorb all the crude headed its way. For the first time since the start of the Ukraine crisis, the arbitrage to move Atlantic barrels to Asia is finally supportive. The Brent-Dubai EFS — Ice Brent's premium to Dubai swaps and a key measure of the west-east arbitrage — is now only around $4/bl, compared with almost $10/bl in November and over $15/bl in the immediate wake of the escalation in hostilities in March. And the cost of shipping crude on this route has fallen sharply — by 20pc or so.

This will increase competition in the region, where established Middle East suppliers are already reducing prices. It is notable that none of the main Middle East sellers seems inclined to reduce volumes, with full contractual volumes on offer to buyers each month.

Meanwhile, with EU sanctions on Russian crude imports now fully in effect, no seaborne crude is being delivered to Europe — other than the small exempt volumes for Bulgaria. Latest data show that Russia's total seaborne exports in January — loaded in Europe and the far east of the country — amounted to some 3.3mn b/d, which is 500,000 b/d up on December and 100,000 b/d higher than in January last year. Russian crude exports are continuing to flow as normal, with sellers finding ready offtakers outside Europe (*see graph*).

Russia crude exports by destination *'000 b/d*



Russian Urals is trading consistently under the $60/bl cap imposed by the G7, so there is no reason this trade should dwindle, let alone halt. Far-east ESPO Blend is trading around $10/bl above the cap, but since this trade — like the bulk of Urals trade into India — is priced on a delivered basis, the

Summary of global oil balance												mn b/d
	1Q22	2Q22	3Q22	4Q22	2022	1Q23	2Q23	3Q23	4Q23	2023	2024	2025
Demand	98.71	97.32	98.99	99.54	**98.64**	98.99	99.81	100.86	101.46	**100.28**	**102.13**	**103.12**
Supply	97.62	97.70	99.89	100.61	**98.96**	99.48	99.90	100.94	101.11	**100.36**	**102.74**	**104.23**
Opec crude	28.44	28.71	29.54	29.23	**28.98**	29.03	29.03	29.03	29.03	**29.03**	**30.10**	**30.10**
Opec NGL and condensate	5.22	5.22	5.22	5.22	**5.22**	5.32	5.32	5.32	5.32	**5.32**	**5.46**	**5.73**
Non-Opec crude and NGL	58.63	57.86	58.96	60.36	**58.95**	59.92	59.56	60.25	60.82	**60.14**	**61.19**	**62.34**
Other supply	5.34	5.91	6.16	5.80	**5.80**	5.21	5.99	6.34	5.93	**5.87**	**5.99**	**6.06**
Global balance*	-0.63	1.47	1.97	1.45	**1.06**	0.46	0.09	0.08	-0.36	**0.07**	**0.61**	**1.12**

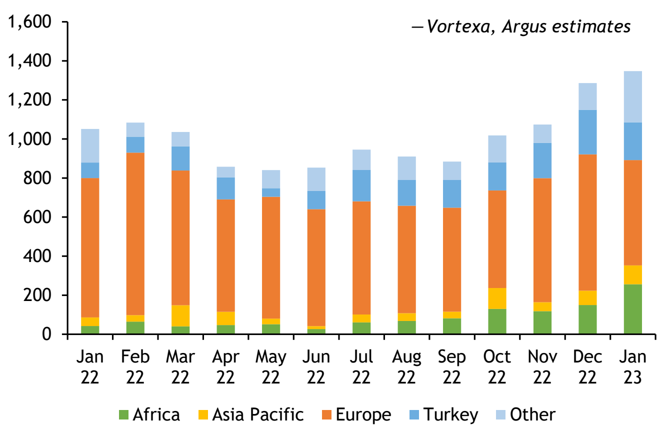
**equivalent to global stock change*

price cap and associated constraints on the provision of marine insurance are essentially irrelevant. Meanwhile, plans to review the cap this month have been scrapped and the first review will now take place in March.

Russia's threat to halt sales to any country signing up to the price cap also looks empty. Recently enforced legislation requires companies to report to the energy ministry and federal customs authority if they discover any reference to a price cap in documents related to trade operations. They are required to take action to eliminate such references, and customs authorities will be able to prohibit exports of crude — and even production — until the company is able to resolve the situation. But it is not clear why there would be any such reference in the first place.

So with sanctions in place, crude continues to flow. But at least the G7 can take comfort in the fact that Urals trade continues at the expense of around 45pc of potential revenue. But what can we expect now that sanctions are in force on Russia's products exports?

Russia diesel exports by destination *'000 b/d*



Before the crisis, Russia typically exported around 1mn b/d of diesel, with about two-thirds going to Europe. In January, exports appear to have increased to over 1.3mn b/d, with 40pc bound for Europe (*see graph*). Sanctions have been in force since 5 February, and Europe will now need to source over 500,000 b/d of diesel from alternative destinations — and Russia will be looking for alternative markets to export its product to.

Russia seems to have enjoyed some success in diversifying its sales. Loadings data for last month suggest that 800,000 b/d of diesel flowed to non-European destinations, compared with just 300,000 b/d a year earlier. But it might not be as easy to achieve further diesel sales to these markets as it was with crude.

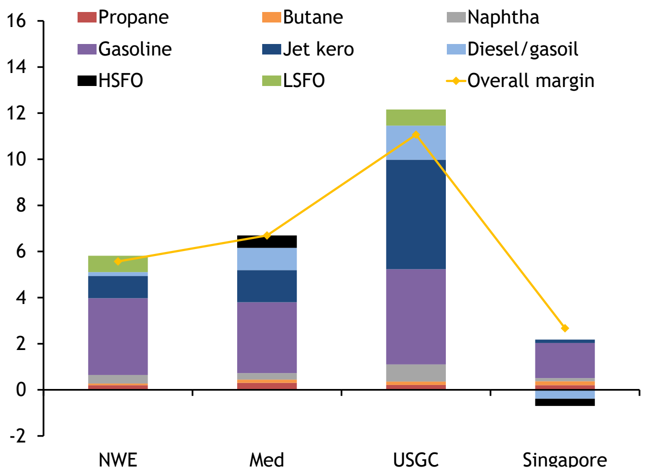
A G7 price cap on Russian product exports has also been introduced, with the diesel cap set at $100/bl. Recently, *Argus* reported that Russian cargoes loading in the Baltic were trading at discounts of over $200/t, or $27/bl. February's cif northwest Europe diesel price has averaged $116/bl, against January's $126/bl. At these levels, it seems that Russian diesel should be able to trade without breaching the price cap — unless crude prices rise again.

In the balance presented above, we assume that Russian crude output will be averaging 9.5mn b/d by the middle of this year — 1mn b/d below the estimated level in January. This is based on the view that Russian sellers will only be able to redirect a limited amount of sanctioned product to non-European markets, leading to lower refinery runs and ultimately to reduced wellhead production. But if product keeps flowing under the price cap, it remains to be seen whether buyers will be able to resist the big discounts on offer. Russian crude production might end up being much less affected than currently expected.

Refining economics

Refining margins strengthened across all regions in January, underpinned by rising gasoline and jet kerosine crack spreads. EU sanctions on Russian refined product imports were imposed on 5 February, with consumers stepping up purchases in advance to mitigate against any tightness once sanctions are in force. This has helped to push up crack spreads and refiners have been enjoying higher margins as a result.

Yield-weighted crack spread change: Jan vs Dec ***$/bl***



The US Gulf coast saw the greatest month-on-month increase in the indicator fluid catalytic cracking (FCC) margin of any of the key refining regions in January. The margin against WTI Houston climbed by $11.10/bl, as a heavy spell of refinery maintenance tightened product markets. The latest weekly data from the EIA suggest that refinery utilisation in the US averaged just 85pc over the first four weeks of January, down by 7.5 percentage points on the previous month. That equates to a reduction in crude throughputs of 1.35mn b/d. Gasoline output has borne the brunt of the cuts, with production falling by 580,000 b/d in January. Diesel production dropped by just 300,000 b/d — refiners looked to safeguard diesel production as much as possible, given that the fuel is currently trading at premiums of more than $40/bl to crude on the US Gulf coast. The sharp fall in gasoline production has pushed gasoline cracks to their highest in three months, although even at $20/bl they are still less than half of diesel cracks. Maintenance at several refineries in the US is expected to last for much of the first quarter, and this should continue to support refining margins.

Moving into the second quarter, even if US refinery utilisation rates begin to ramp up, US margins could be supported by export demand to Europe, as the region adjusts to the absence of Russian oil imports. European product markets have tightened in recent weeks because of a surge in buying as consumers look to stock up on products — particularly diesel — before sanctions began on 5 February. Product cracks in Europe have gained as a result, which drove up the indicator FCC margin to $12.70/bl in January — the highest in three months. January's buying spree has reportedly left storage tanks close to full, which should keep the region well-supplied for the remainder of the current quarter. But by the second quarter Europe will probably be seeking new sources as long-term replacements of Russian oil. The US will probably be called on to fill some of the supply gap, which should keep both markets tight, supporting margins. We see the European refining margin remaining in double-digit territory through to the middle of the year, before retreating back to around $5/bl by the end of 2023.

The Singapore refining margin against Dubai rose to $8/bl in January — a seven-month high — supported by China's relaxation of Covid-19 restrictions, which coincided with the Chunyun holiday period and a surge in travel. Markets in Asia-Pacific have tightened, despite the higher export quotas announced by Beijing, as the rise in domestic demand is squeezing any surplus available to export. Data from vessel-tracking firm Vortexa show that Chinese clean product exports dipped to 1.2mn b/d in January, having touched 2mn b/d in December.

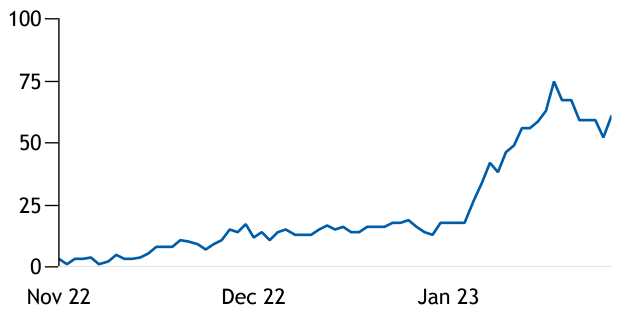
Refining margins ***$/bl***

	Dec	Jan	Feb	Mar	Apr
Northwest Europe					
vs North Sea Dated	7.14	12.71	12.80	11.30	13.30
vs Urals	38.14	47.64	45.80	40.70	42.50
Mediterranean					
vs Urals	34.38	41.08	39.30	36.20	39.20
vs CPC Blend	14.69	16.79	15.90	14.60	16.70
US Gulf coast					
vs LLS	7.05	16.49	12.90	12.70	16.60
vs WTI (Houston)	10.90	21.97	17.70	16.90	20.00
vs Mars	3.92	10.25	8.20	7.20	7.50
Singapore					
vs Dubai	5.39	8.06	6.40	10.00	12.30
vs ESPO Blend	20.64	24.42	25.10	27.30	29.90

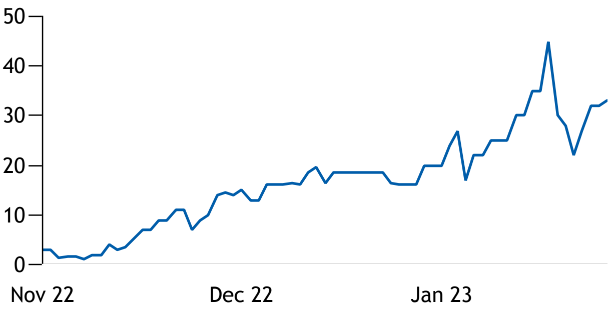
Margins calculated based on FCC unit yields

LPG swaps

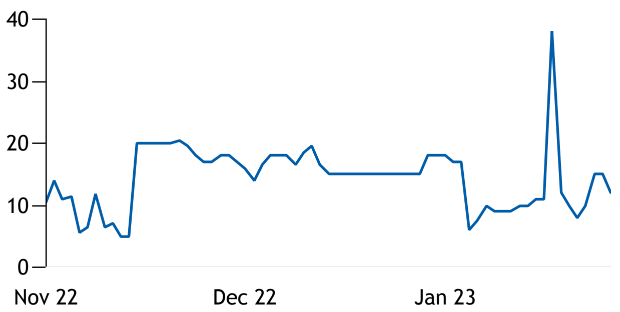
Propane NW Europe month 1 vs month 2 — $/t



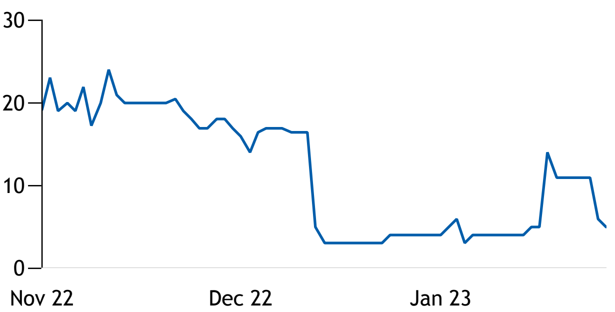
Propane NW Europe month 2 vs month 3 — $/t



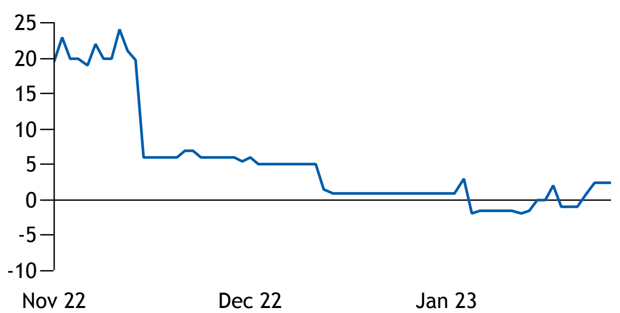
Propane NW Europe month 3 vs month 4 — $/t



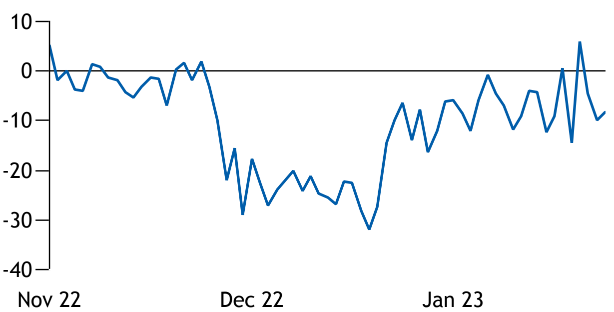
Propane NW Europe month 4 vs month 5 — $/t



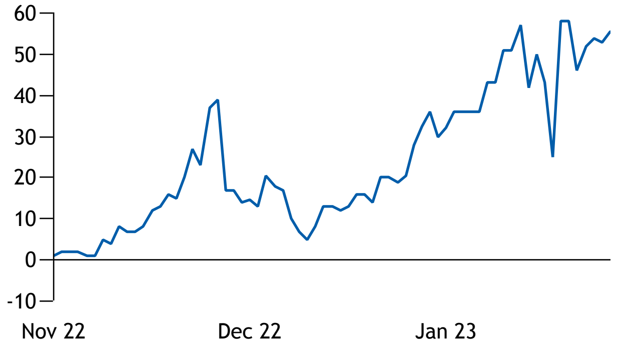
Propane NW Europe month 5 vs month 6 — $/t



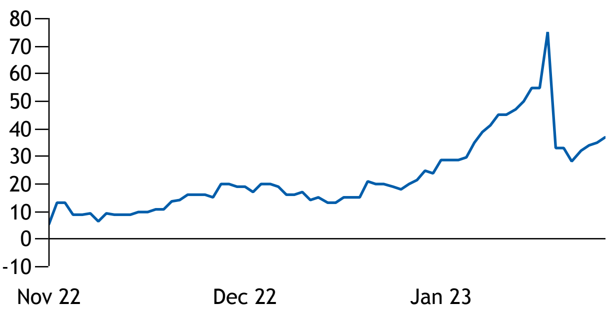
Mont Belvieu month 1 vs month 2 — $/t



Saudi CP month 1 vs month 2 — $/t



Saudi CP month 2 vs month 3 — $/t



LPG developments to watch

China PDH start-ups
1H 2023
Sinochem Ruiheng
Yanchang Zhongran Taixing
Huahong Petrochemical No 2
Shandong Befar Chemical
Oriental Maoming No 1
Juzhengyuan No 2
Guoheng Chemicals
2H 2023
Ningbo Jinfa No 2
Fujian Soft Packaging Meide
Formosa Ningbo
Shandong Zhenhua Chemical
Qingdao Jinneng No 2

Argus LPG Outlook provisional publication schedule 2023

	Publication date
Issue 1	12 January
Issue 2	9 February
Issue 3	9 March
Issue 4	13 April
Issue 5	11 May
Issue 6	8 June
Issue 7	13 July
Issue 8	10 August
Issue 9	7 September
Issue 10	12 October
Issue 11	9 November
Issue 12	7 December

Announcement

All data change announcements can be viewed online at www.argusmedia.com/announcements. Alternatively, to be added to the email distribution list for all announcements, please email: **datahelp@argusmedia.com.**

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