

## China Oil &amp; Gas

## Weekly Theme: Post-CNY update on oil, refining and petrochemical

## Industry Overview

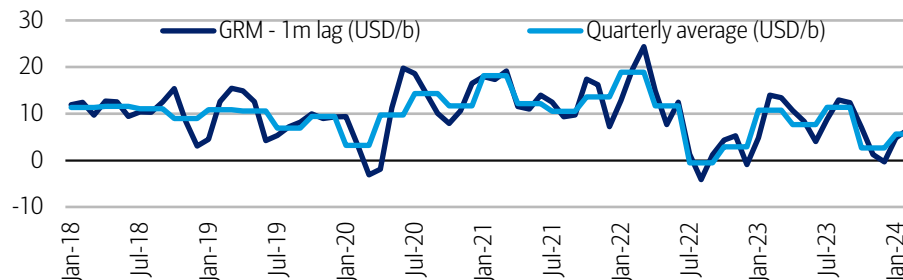
**Oil – Gasoline destocking and diesel stocking during CNY:** Oil prices of Brent and WTI were at USD82/77/b as of 23 Feb, vs. USD82/77/b pre-CNY, indicating a roughly stable movement amid geopolitics tensions and Red Sea supply disruptions. According to data from industrial consultancy *OilChem*, China gasoline inventory and diesel inventory witnessed an opposite trend during CNY, with 765kton decline in gasoline commercial inventory and 1,939kton increase in diesel commercial inventory, mainly due to muted diesel demand from construction & logistics and robust gasoline demand from intracity travelling.

**Refining – further improved GRM but a plunge in diesel export spread:** Our tracked China's GRM (gross refining margin, one-month crude price lag) further improved from Jan's US\$4.8/b to US\$6.5/b, up 35% MoM, given 1) oil price slightly rose 6% MoM, which is likely to contribute to inventory gains; 2) recovery in byproduct prices (including fuel oil, LPG, asphalt, sulfur, etc). Further, according to our tracked data, export arbitrage spreads of diesel between Singapore and China plunged to negative US\$0.1/b from US\$14.1/b pre-CNY, while gasoline spread came in at US\$10.1/b, exhibiting a similar trend with domestic demand growth. Considering current export spread and inventory, we believe China refineries to rise gasoline volume by lifting run rate and output mix.

**Chemical – lukewarm demand with high inventory:** According to JLC, post-CNY chemical demand (mainly include PE/PP) was lukewarm given producers were not fully back to normal operation before Lantern Festival (24 Feb) and curbed downstream demand on limited orders from overseas. Meanwhile, inventories of PE/PP both rose during CNY, up by 1%/57% for PE/PP, respectively. We believe prices will be contained in the near term considering support from solid oil prices and a slower-than-expected recovery in demand (prices of PE/PP slightly plunged from RMB8,136/7,336/ton pre-CNY to RMB8,119/7,335/ton as of 21 Feb).

**Exhibit 1: China gross refining margin (GRM) with 1 month lag in crude prices**

GRM of US\$6.5/b in Feb 2024, vs. US\$4.8/b in the previous month



Source: Wind, BofA Global Research estimates

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26 February 2024

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CNY: Chinese New Year

PE: Polyethylene

PP: Polypropylene

More abbreviations in appendix

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Timestamp: 26 February 2024 12:00PM EST

## Weekly updates

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Oil prices: Brent oil price decreased 2.2% WoW to US\$81.6/b and WTI oil price decreased 3.4% WoW to US\$76.5/b in the week ended 23 Feb 2024. WTI discount to Brent expanded to US\$5.1/b.

Factors supporting oil prices include:

- *Reuters* reports that the Middle East tensions continued as Houthi attacks showed little sign of stopping despite US and UK's actions, affecting waters that is about 12% of global maritime traffic;
- *Bloomberg* reports that Iraq and Kazakhstan, who failed to make full production cuts in Jan as promised, are poised to compensate in the next four months;

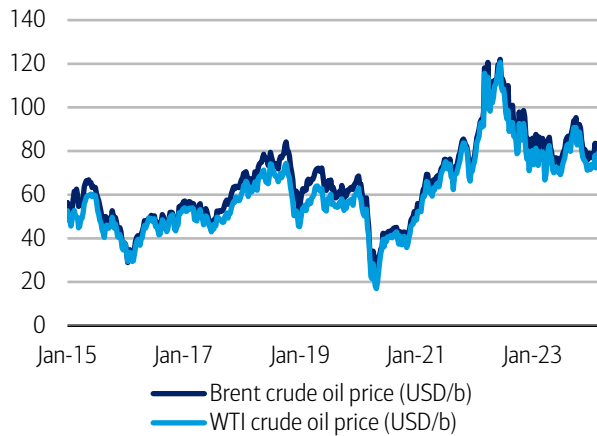
Factors suppressing oil prices include:

- *Bloomberg* reports that IEA trimmed its forecast for 2024 oil demand growth to 1.22mbd, slightly down from its last month's estimate (1.24mbd), given the slowdown in China consumption;
- *Reuters* reports that Fed policymakers could wait for another couple more months to start cutting interest rates as they need to verify whether the progress on inflation in the second half of 2023 will continue;
- The US rigs count increased to 623 rigs (oil rigs +6 WoW to 503 and gas rigs -1 WoW to 120) through the week ended 23 Feb 2024;
- The US commercial crude oil inventory increased 4mb WoW to 443mb through the week ended 16 Feb 2024;
- The US crude output (one-week lag) was flat WoW at 13.3mbd through the week ended 16 Feb 2024;

*Bloomberg* reports that the Energy Minister of Saudi Arabia claimed the capacity expansion halt at Aramco is primarily due to energy transition, aiming to go into chemicals and renewables.

**Exhibit 1: Brent and WTI weekly prices**

Brent oil price decreased 2.2% WoW to US\$81.6/b and WTI oil price decreased 3.4% WoW to US\$76.5/b in the week ended 23 Feb 2024

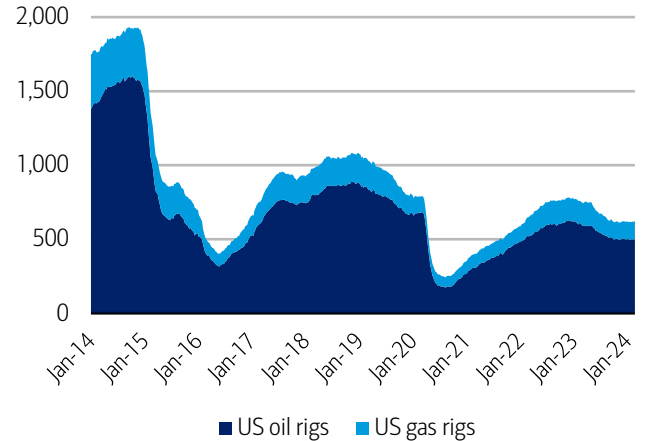


Source: Bloomberg, BofA Global Research

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**Exhibit 2: US weekly oil and gas rig count**

Oil rigs +6 and gas rigs -1 WoW

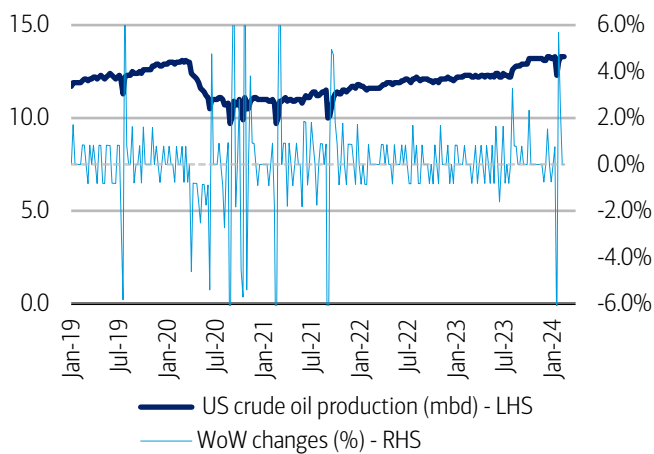


Source: Baker Hughes, Bloomberg, BofA Global Research

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**Exhibit 3: US crude oil production**

Flat WoW at 13.3mbd

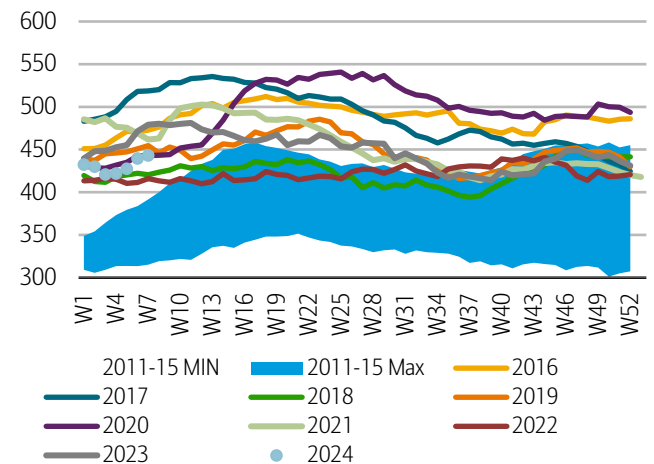


Source: EIA, Bloomberg, BofA Global Research

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**Exhibit 4: US weekly crude oil inventory (mb)**

Increased 4mb WoW to 443mb

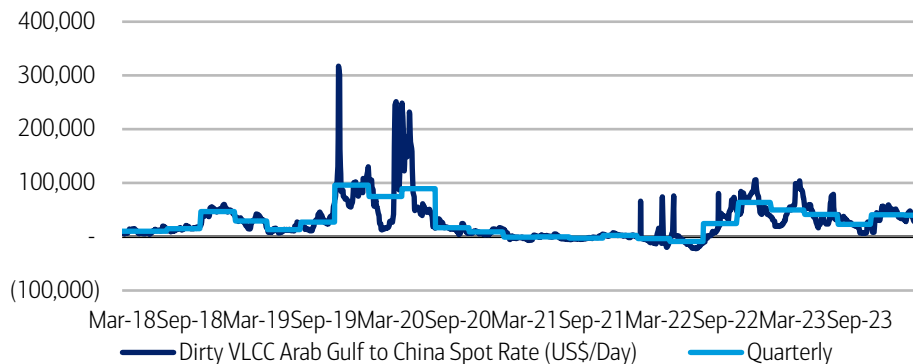


Source: EIA, Bloomberg, BofA Global Research

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**Exhibit 5: Dirty VLCC Arab Gulf to China spot rate (US\$/day)**

Crude oil shipping cost from Arab Gulf to China



Source: Bloomberg, BofA Global Research

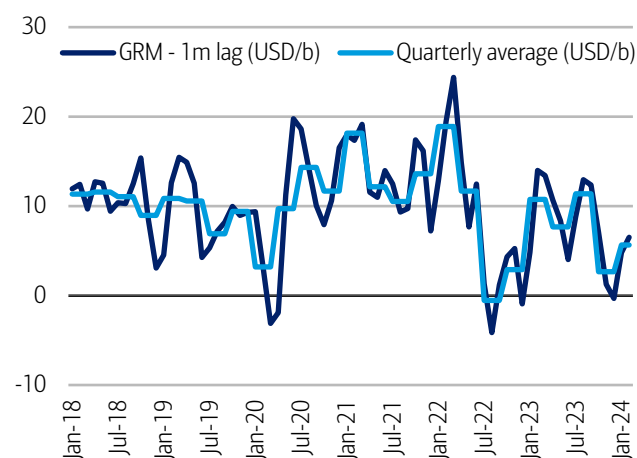
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## Refining

- China's refining margin (one-month crude price lag) in Feb 2024 rose to US\$6.5/b, from US\$4.8/b in Jan 2024. YTD, average GRM came in at US\$5.7/b;
- National Development and Reform Commission (NDRC) kept gasoline and diesel retail prices unchanged in the latest round of price adjustment on 19 Feb 2024; prices are now RMB8,980/ton and RMB7,945/ton, respectively. The next round of price adjustment is scheduled for 4 Mar;
- The run rate of independent refineries in Shandong in the week ended 23 Feb 2024 decreased WoW to 54.8% vs. 62.1% in Jan 2024. The YTD rate averaged 59.4% in 2024, vs 61.9% in 2023;
- Based on one-month lag crude price, China diesel crack margin was flat WoW at US\$17.6/b and gasoline crack margin was flat WoW at US\$10.8/b in the week ended 23 Feb 2024;
- Compared with Singapore Dubai Crack margin, the export arbitrage spread for diesel narrowed WoW to a negative US\$0.1/b (-US\$9.9/b WoW) and for gasoline expanded WoW to positive US\$10.1/b (+US\$0.9/b WoW) in the week ended 23 Feb 2024;
- Reuters reports that BP plans to resume its 435kbd refinery in Whiting, Indiana to full production in March, which was shut down before due to power outage.

### Exhibit 6: China gross refining margin (GRM) with 1 month lag in crude prices

Profit of US\$6.5/b in Feb 2024, vs. US\$4.8/b in the previous month

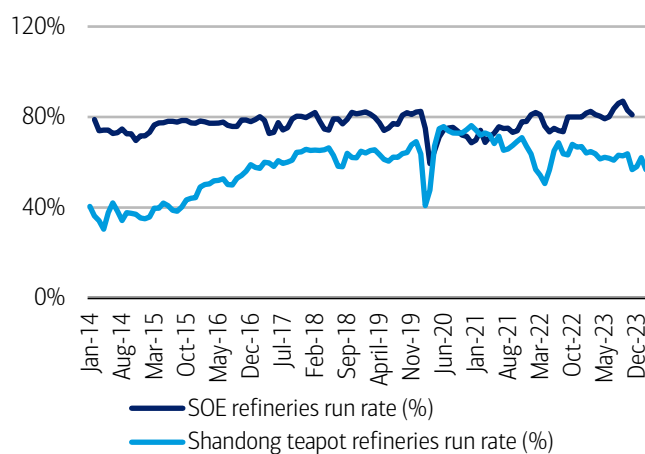


Source: Wind, BofA Global Research estimates

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### Exhibit 7: Shandong teapots refinery run rates (%)

Average run rate of teapots declined to 54.8% vs. 62.1% in Jan for the week ended 23 Feb

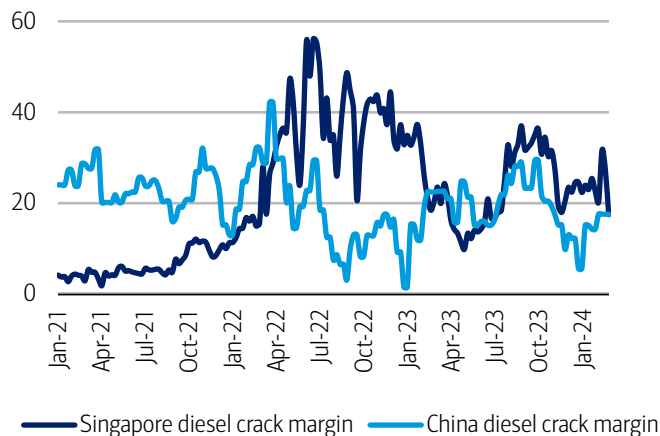


Source: Bloomberg, S&P Global, BofA Global Research

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**Exhibit 8: Diesel crack margin in China vs. Singapore (US\$/b)**

China diesel crack margin was US\$17.6/b for the week ended 23 Feb

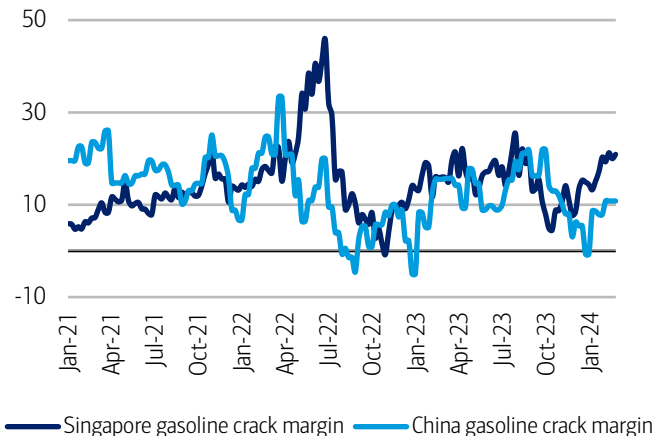


Source: Bloomberg, Wind, BofA Global Research

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**Exhibit 9: Gasoline crack margin in China vs. Singapore (US\$/b)**

China gasoline crack margin was US\$10.8/b for the week ended 23 Feb

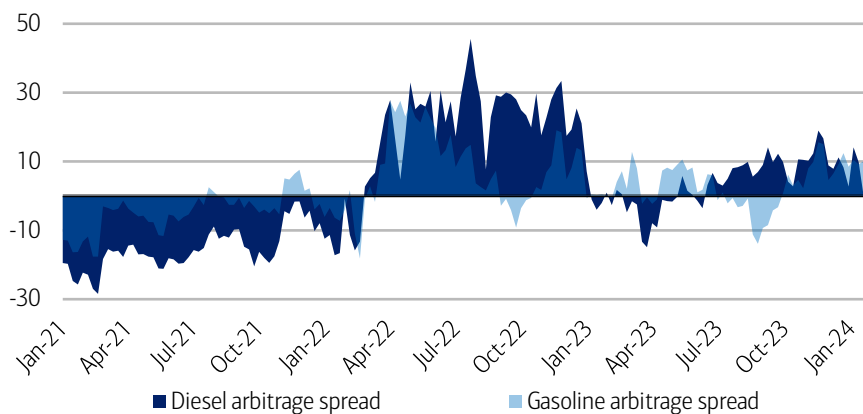


Source: Bloomberg, Wind, BofA Global Research

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**Exhibit 10: Diesel/gasoline export arbitrage spread**

Export arbitrage spread for diesel narrowed WoW to negative US\$0.1/b (-US\$9.9/b WoW) and that for gasoline expanded to positive US\$10.1/b (+US\$0.9/b WoW), respectively, for the week ended 23 Feb



Source: Bloomberg, Wind, BofA Global Research

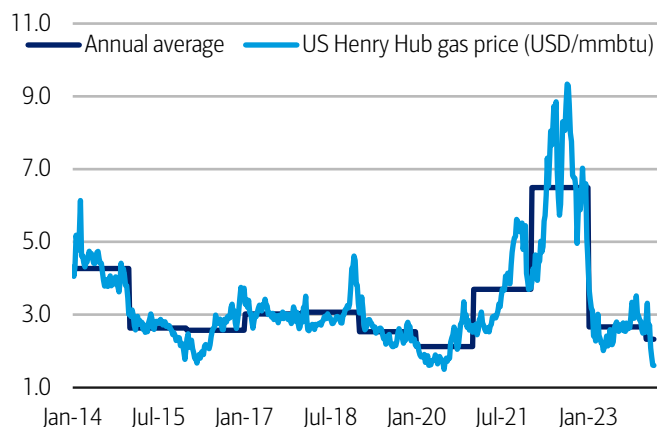
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## Natural gas

- The US Henry Hub natural gas price decreased by 0.4% WoW to US\$1.60/mmbtu in the week ended 23 Feb 2024, 34.6% lower YoY;
- The Netherlands TTF natural gas price decreased by 4.9% WoW to US\$7.41/mmbtu in the week ended 23 Feb 2024, 52.8% lower YoY;
- The JKM swap future decreased by 5.2% WoW to USD8.13/mmbtu (US\$0.72/mmbtu premium over TTF) in the week ended 23 Feb 2024;
- *Bloomberg* reports that Qatar will sign additional LNG deals with more Asian and European buyers for the North Field expansion project;
- *Bloomberg* reports that China LNG importers were more actively seeking cargoes from the spot market amid lowest price level since 2021, with China Resources has purchasing a shipment for mid-March delivery.

### Exhibit 11: US Henry Hub natural gas price (US\$/mmbtu)

Decreased by 0.4% WoW to US\$1.60/mmbtu

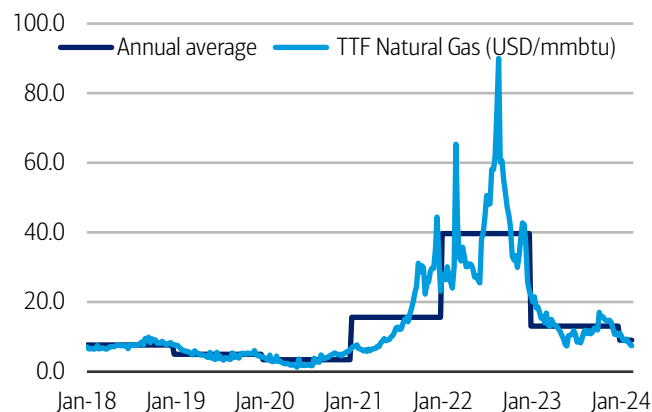


Source: Bloomberg, BofA Global Research

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### Exhibit 12: Netherlands TTF Natural gas price (US\$/mmbtu)

Decreased by 4.9% WoW to US\$7.41/mmbtu

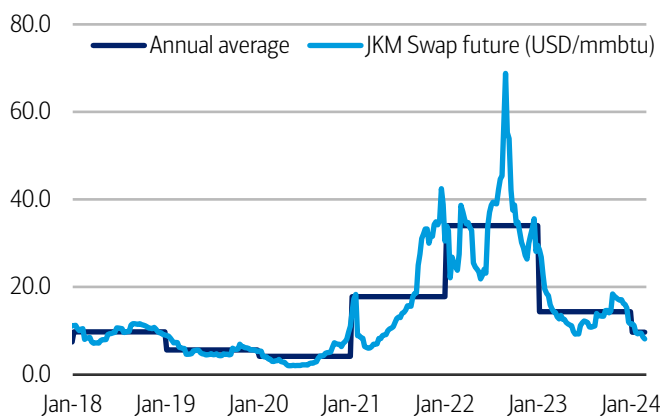


Source: Bloomberg, BofA Global Research

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### Exhibit 13: Northern Asia LNG-JKM swap future (US\$/mmbtu)

Decreased by 5.2% WoW to US\$8.13/mmbtu



Source: Bloomberg, BofA Global Research

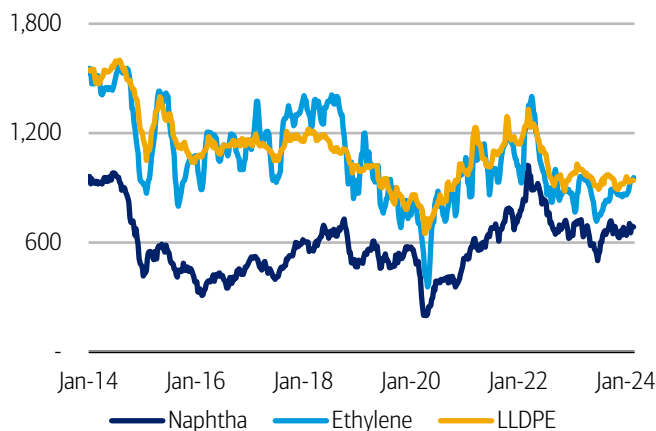
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## Chemicals

- Northeast Asia LLDPE price was flat WoW at US\$941/ton and PP price was flat WoW at US\$869/ton in the week ended 23 Feb 2024;
- LLDPE-ethylene spread turned to a loss of US\$15/ton;
- PP-propylene spread was flat WoW at US\$53/ton;
- East China m-MDI price increased by 4% WoW to RMB20,800/ton and p-MDI price increased by 3.4% WoW to RMB16,650/ton in the week ended 23 Feb 2024.

### Exhibit 14: Northeast Asia naphtha, ethylene and LLDPE prices (US\$/ton)

Ethylene price increased and LLDPE price flat WoW

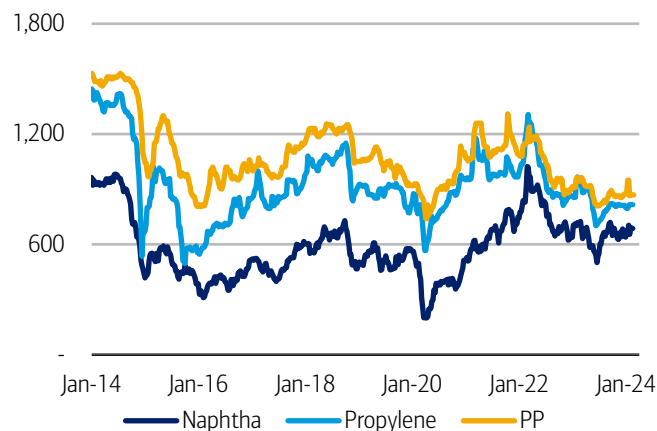


Source: Wind, BofA Global Research

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### Exhibit 15: Northeast Asia naphtha, propylene and PP prices (US\$/ton)

Propylene price and PP price flat WoW

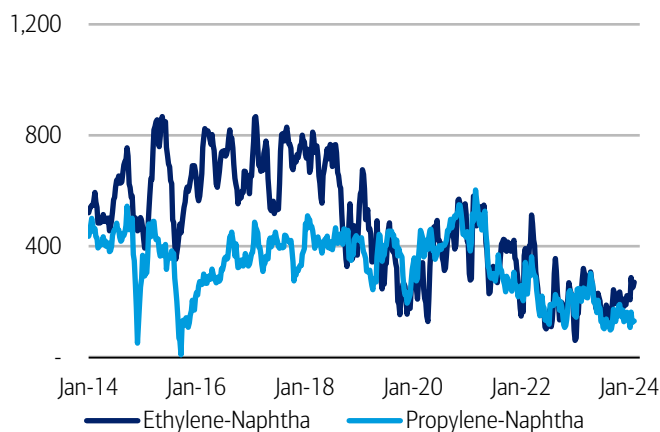


Source: Wind, BofA Global Research

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### Exhibit 16: Northeast Asia ethylene/propylene-naphtha spread (US\$/ton)

Ethylene-naphtha spread and propylene-naphtha spread expanded WoW

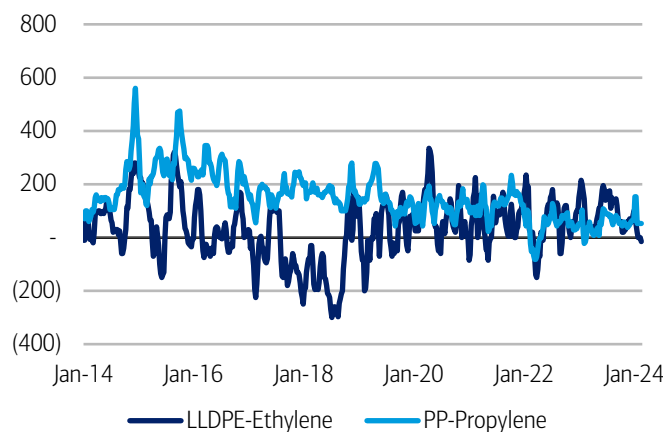


Source: Wind, BofA Global Research

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### Exhibit 17: Northeast Asia LLDPE-ethylene and PP-propylene spread (US\$/ton)

LLDPE-ethylene spread narrowed and PP-propylene spread flat WoW



Source: Wind, BofA Global Research

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**Exhibit 18: East China m-MDI and p-MDI price (RMB/ton)**

East China m-MDI price increased by 4% WoW to RMB20,800/ton and p-MDI price increased by 3.4% WoW to RMB16,650/ton in the week ended 23 Feb



Source: Wind, BofA Global Research

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## Appendix

**Exhibit 21: Abbreviations**

Abbreviations used in the report

Abbreviation	Full name	Abbreviation	Full name
bbl/b	Barrel(s)	m-MDI	Monomeric methylene diphenyl isocyanate
bnt	Billion tons	mntpa	Million tons per year
CCS	Carbon capture and storage	MoM	Month on month
CDU	Crude distillation unit	mnt	Million tons
cm	Cubic meters	MTBE	Methyl tert-butyl ether
CNPC	China national petroleum corporation	NBS	National bureau of statistics
EOR	Enhanced oil recovery	NDRC	National Development and Reform Commission
EVA	Ethylene vinyl acetate	PTR	PetroChina
FDPE	Full density polyethylene	p-MDI	Polymeric methylene diphenyl isocyanate
GRM	Gross refining margin	PP	Polypropylene
HDPE	High density polyethylene	SNP	Sinopec
JKM	Japan/Korea Marker (Northeast Asian spot price index for LNG delivered ex-ship to Japan and Korea)	SOE	State owned enterprise
ktpa	Thousand tons per year	t	Ton(s)
LLDPE	Linear low-density polyethylene	TTF	Title transfer facility
LNG	Liquefied natural gas	UHMWPE	Ultra-high molecular weight polyethylene
mb	Million barrels	VLCC	Very large crude carrier
mbd	Million barrels per day	WoW	Week on week
mmbtu	Metric million British thermal unit	WTI	West Texas Intermediate
mmt	Million metric tons	YoY	Year on year
MDI	Methylene diphenyl isocyanate	YTD	Year to date

Source: BofA Global Research

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Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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