

## China Oil &amp; Gas

## Weekly Theme: 2024 export quota; Nov ind. profit; Sinopec hydrogen project issue

Industry Overview

## New refined product export quota issued in end-2023

Per industry consultant JLC, China issued the first batch of 2024 refined product export quotas (incl. gasoline, diesel, and kerosene). The newly issued quota of 19mnt was flat YoY vs. 18.99mnt in the first batch of 2023, largely in line with market expectation. The total 19mnt is allocated to PetroChina (5.78mnt, -3% YoY), Sinopec (7.44mnt, flat YoY), CNOOC (1.7mnt, -3% YoY), Sinochem (2.06mnt, +7% YoY), Zhejiang Petrochemical (1.73mnt, +4% YoY), Norinco (0.23mnt, +15% YoY) and China Aviation Oil (0.06mnt, flat YoY). Meanwhile, LSFO quota was issued with volume of 8mnt (flat YoY). The total 8mnt is allocated to PetroChina (3.41mnt, +13% YoY), Sinopec (3.83mnt, -11% YoY), CNOOC (0.68mnt, +10% YoY), Sinochem (0.02mnt, -33% YoY), and Zhejiang Petrochemical (0.06mnt, +50% YoY). In 11M23, China exported 39mnt of refined oil product (+39% YoY, accounting for 98% of total quota in 2023), incl. 13.1mnt of diesel (+61% YoY), 11.5mnt of gasoline (+8% YoY), and 14.4mnt of kerosene (+57% YoY).

## Ind. profits: gas/chem. improved; refining deteriorated

According to data from China National Statistical Bureau, in Nov 2023: **E&P** sector profit came in at RMB30bn, -3% YoY and -7% MoM, in line with international crude price movement; 11M23 profit reached RMB355bn, -8% YoY. **Refining** sector profit further plunged to RMB4bn, -160% YoY and -48% MoM, dragged by weak GRM; 11M23 refining profit was RMB51bn, -28% YoY due to inventory loss and narrowed byproduct margin.

**Gas distribution** profit recorded RMB9bn, +112% YoY and +23% MoM, amid winter heating demand; 11M23 profit was RMB81bn, +23% YoY along with demand recovery in FY23. **Basic chemical** producers continued to improve to RMB55bn of profit, +13% YoY and +3% MoM, witnessing improvement for four consecutive months since Aug23; 11M23 profit was RMB422bn, -39% YoY. **Polyester** producers' profit recorded RMB4bn, 71% YoY and +36% MoM; 11M23 profit was RMB20bn, -6% YoY.

## Controversy over Sinopec Guop Kuqa hydrogen project

Per the *Bloomberg* report in Dec 2023, Sinopec Group 260MW Kuqa hydrogen project in Xinjiang, the world's largest green hydrogen project, is facing issues. As input green electricity is less than the nameplate value, the electrolyzers would not work at a full load (100% working point). However, all the electrolyzers failed safety tests at the 30% working point (risk of explosion due to membrane issues), with actual safe working range likely narrower than 50-100%. Sinopec was thus forced to adjust the operating algorithm: instead of having all the electrolyzers at the same status, as planned, the control unit would dictate some electrolyzers to run while others to idle, in order to keep running electrolyzers at 50-100%. The switch from "intra-electrolyzer management" to "inter-electrolyzer management" may not only shorten lifespans, but also hurt economic efficiencies. According to *Sinopec news* report, the narrow working point range of electrolyzer is a common industrial issue, and they are exploring to expand the working range by using systemic method to better adopt to PV electricity fluctuations.

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**Matty Zhao** >>  
Research Analyst  
Merrill Lynch (Hong Kong)  
+852 3508 4001  
[matty.zhao@bofa.com](mailto:matty.zhao@bofa.com)

**Cheng Gao** >>  
Research Analyst  
Merrill Lynch (Hong Kong)  
+852 3508 4340  
[cheng.gao2@bofa.com](mailto:cheng.gao2@bofa.com)

**Yiming Wang** >>  
Research Analyst  
Merrill Lynch (Hong Kong)  
+852 3508 5037  
[yiming.wang@bofa.com](mailto:yiming.wang@bofa.com)

**Edward Leung, CFA** >>  
Research Analyst  
Merrill Lynch (Hong Kong)  
+852 3508 3282  
[edward.leung@bofa.com](mailto:edward.leung@bofa.com)

**Miriam Chan, CFA** >>  
Research Analyst  
Merrill Lynch (Hong Kong)  
+852 3508 7478  
[miriam.chan@bofa.com](mailto:miriam.chan@bofa.com)

Abbreviations in appendix

More charts in following pages

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## Weekly updates

Oil prices: Brent oil price decreased 2.6% WoW to US\$77/b and WTI oil price also decreased 2.6% WoW to US\$71.7/b in the week ended 29 Dec 2023. WTI discount to Brent narrowed to US\$5.4/b.

Factors supporting oil prices include:

- *Reuters* reports that China has emphasized the aim to restore and expand consumption to accelerate economy recovery in the interim report on the 14th five-year plan;
- *Reuters* reports that Middle East tensions escalated in the final week of 2023 with Israel intensifying the attacks in the south of Gaza;
- US commercial crude oil inventory dropped 7mb WoW to 437mb through the week ended 22 Dec 2023;

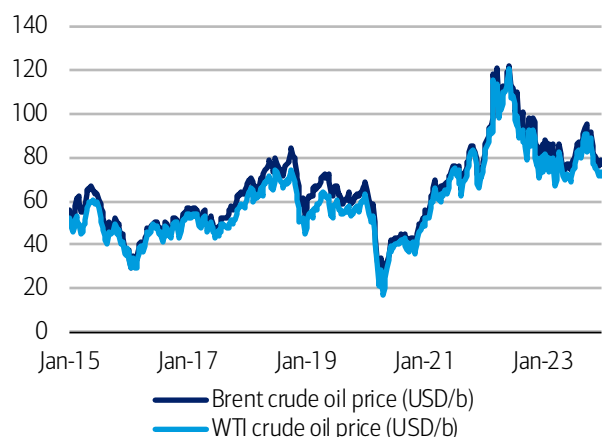
Factors suppressing oil prices include:

- *Reuters* reports that Denmark's shipping giant Maersk was resuming journeys through Suez Canal given military operations led by US, possibly signaling an eased Red Sea shipping disruptions;
- *Bloomberg* reports that Angola decided to leave OPEC due to the disagreement on oil production quotas, shrinking the organization's market share and raising concerns over its unity;
- The US rigs count increased to 620 rigs (oil rigs +2 WoW to 500 and gas rigs flat WoW at 120) through the week ended 29 Dec 2023;
- US crude output (one-week lag) was flat WoW at 13.3mbd through the week ended 22 Dec 2023;

*Bloomberg* reports that Russia started to implement zero export duties on crude oil, as well as light and dark petroleum products from Jan 2024.

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

Brent oil price decreased 2.6% WoW to US\$77/b and WTI oil price decreased 2.6% WoW to US\$71.7/b in the week ended 29 Dec 2023

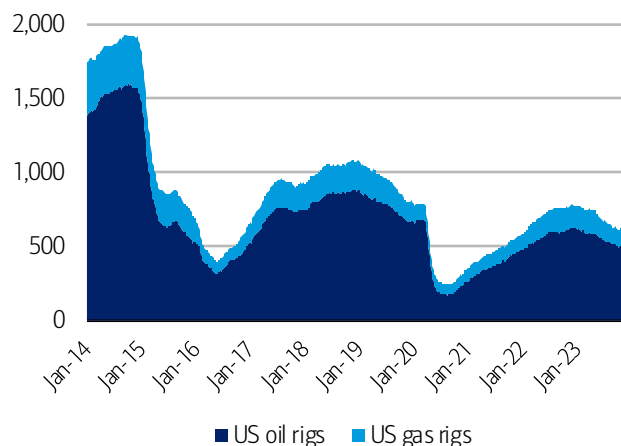


Source: Bloomberg, BofA Global Research

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

Oil rigs +2 and gas rigs flat WoW

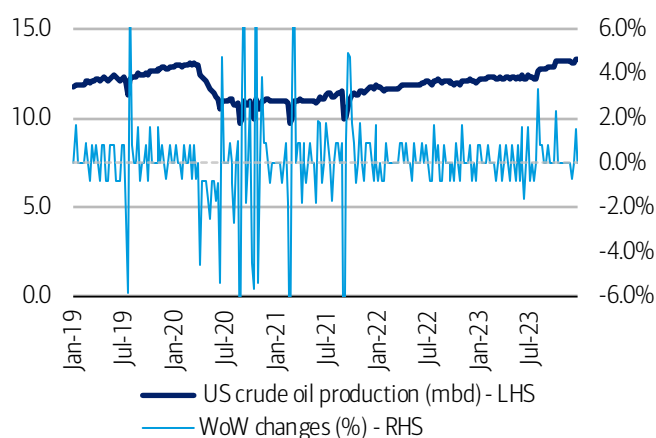


Source: Baker Hughes, Bloomberg, BofA Global Research

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**Exhibit 3: US crude oil production**

Flat WoW at 13.3mbd

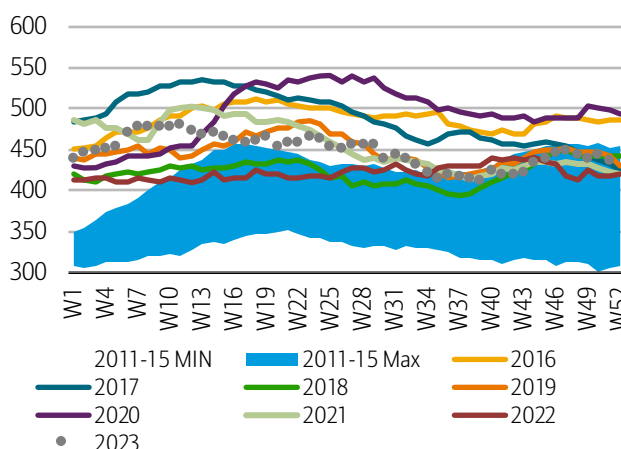


Source: EIA, Bloomberg, BofA Global Research

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

Decreased 7mb WoW to 437mb

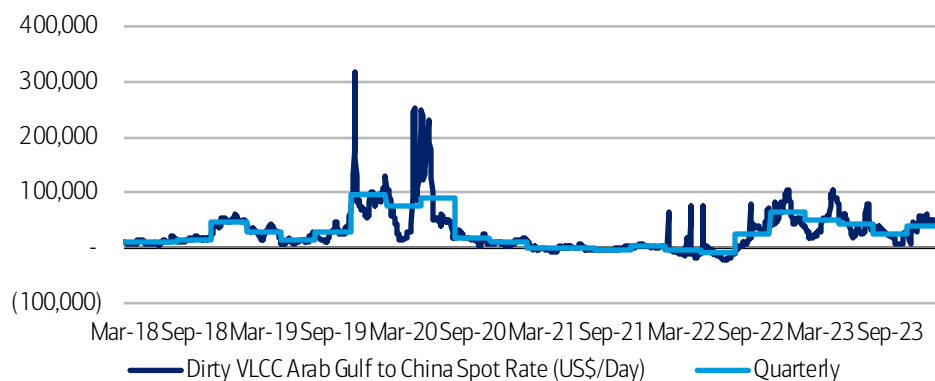


Source: EIA, Bloomberg, BofA Global Research

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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

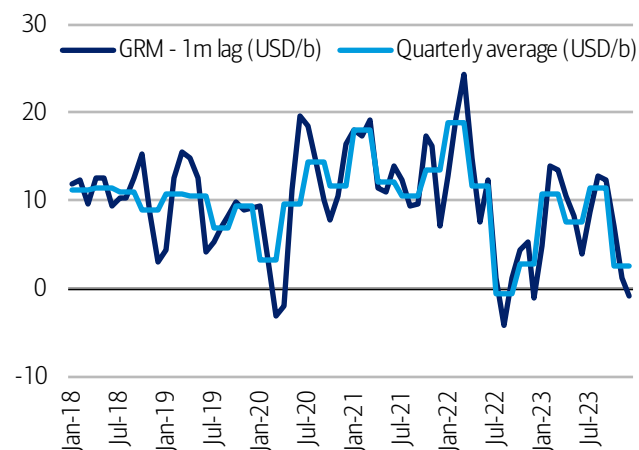
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## Refining

- China's refining margin (one-month crude price lag) in Dec 2023 decreased to negative US\$0.8/b, from US\$1.2/b in Nov 2023. YTD, average GRM came in at US\$8.1/b;
- National Development and Reform Commission (NDRC) cut gasoline and diesel retail prices by RMB415/ton and RMB400/ton in the latest round of price adjustment on 19 Dec 2023; prices are now RMB8,630/ton and RMB7,605/ton, respectively. The next round of price adjustment is scheduled for 3 Jan 2024;
- The run rate of independent refineries in Shandong in the week ended 29 Dec rose to 58.0% vs. 56.7% in Nov. The YTD rate averaged 61.9% in 2023, vs 62.0% in 2022, nearly flat YoY;
- Based on one-month lag crude price, China diesel crack margin was flat WoW at US\$5.6/b and gasoline crack margin was flat WoW at negative US\$0.7/b in the week ended 29 Dec 2023;
- Compared with Singapore Dubai Crack margin, the export arbitrage spread for diesel narrowed WoW to a positive US\$16.7/b (-US\$2.3/b WoW) and for gasoline it narrowed WoW to positive US\$15.1/b (-US\$0.5/b WoW) in the week ended 29 Dec 2023;
- Reuters reports that China has released first batch of refined fuel export quota for 2024 at 19mnt, nearly flat compared with last year's level (18.99mnt).

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

Profit of -US\$0.8/b in Dec 2023, vs. US\$1.2/b in the previous month

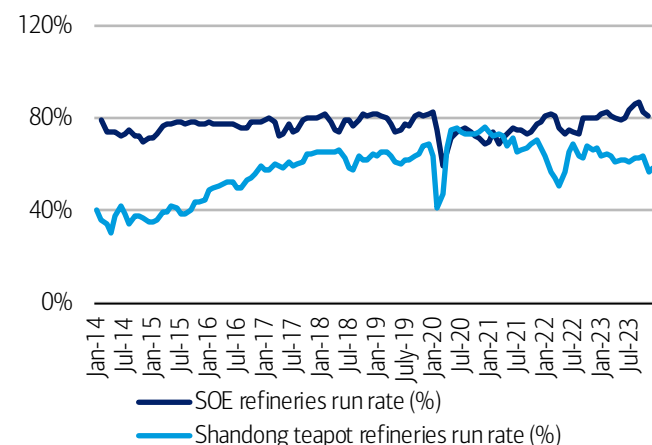


Source: Wind, BofA Global Research estimates

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

Average run rate of teapots rose to 58.0% vs. 56.7% in Nov for the week ended 29 Dec

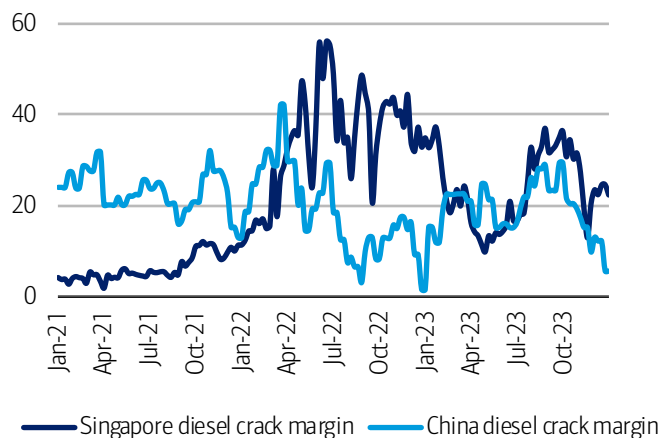


Source: Bloomberg, S&P Global, BofA Global Research

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

China diesel crack margin was US\$5.62/b for the week ended 29 Dec

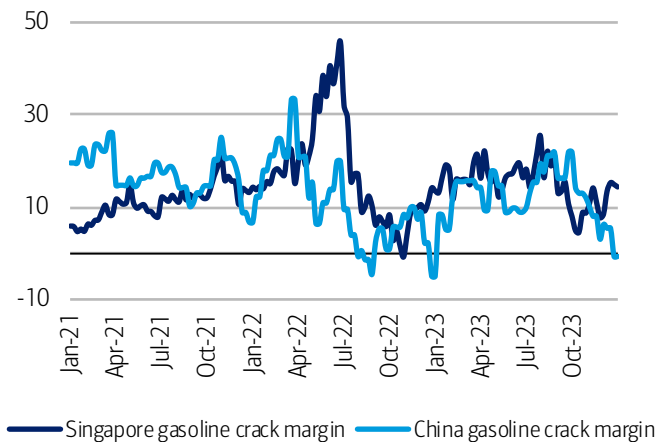


Source: Bloomberg, Wind, BofA Global Research

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

China gasoline crack margin was -US\$0.68/b for the week ended 29 Dec

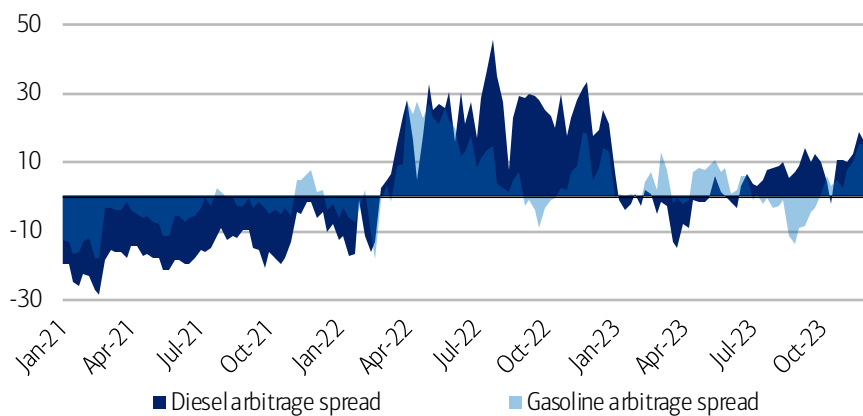


Source: Bloomberg, Wind, BofA Global Research

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

Export arbitrage spread for diesel and gasoline narrowed WoW to positive US\$16.7/b (-US\$2.3/b WoW) and positive US\$15.1/b (-US\$0.5/b WoW), respectively, for the week ended 29 Dec



Source: Bloomberg, Wind, BofA Global Research

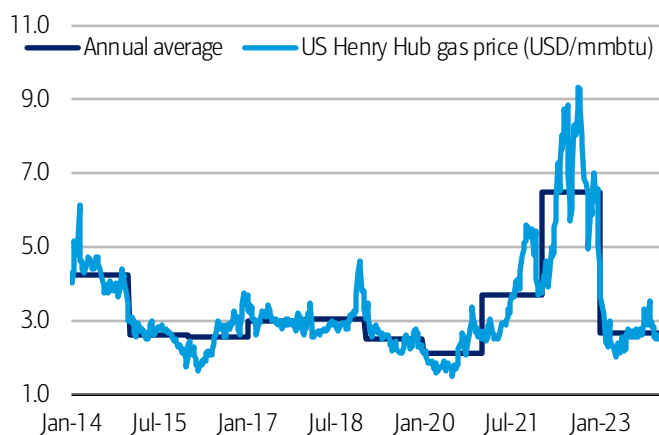
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## Natural gas

- The US Henry Hub natural gas price decreased by 3.7% WoW to US\$2.51/mmbtu in the week ended 29 Dec 2023, 43.8% lower YoY;
- The Netherlands TTF natural gas price declined by 6.7% WoW to US\$10.34/mmbtu in the week ended 29 Dec 2023, 56.0% lower YoY;
- The JKM swap future decreased by 3.6% WoW to USD11.52/mmbtu (US\$1.18/mmbtu premium over TTF) in the week ended 29 Dec 2023;
- Reuters reports that Russia's Novatek issued force majeure notifications to some clients on future supplies from Arctic LNG 2 project, on which is imposed sanctions by US earlier.

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

Decreased by 3.7% WoW to US\$2.51/mmbtu

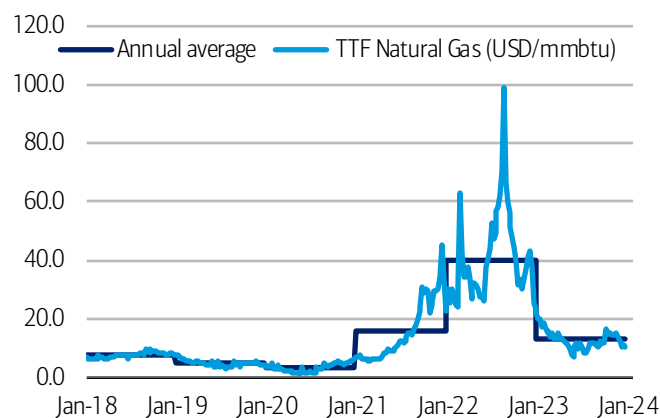


Source: Bloomberg, BofA Global Research

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

Decreased by 6.7% WoW to US\$10.34/mmbtu

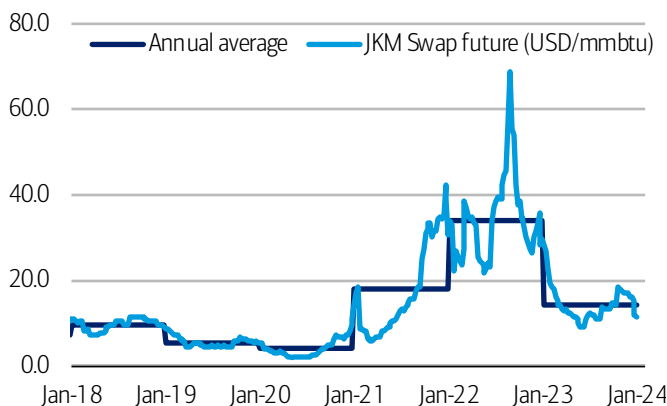


Source: Bloomberg, BofA Global Research

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

Decreased WoW by 3.6% to US\$11.52/mmbtu



Source: Bloomberg, BofA Global Research

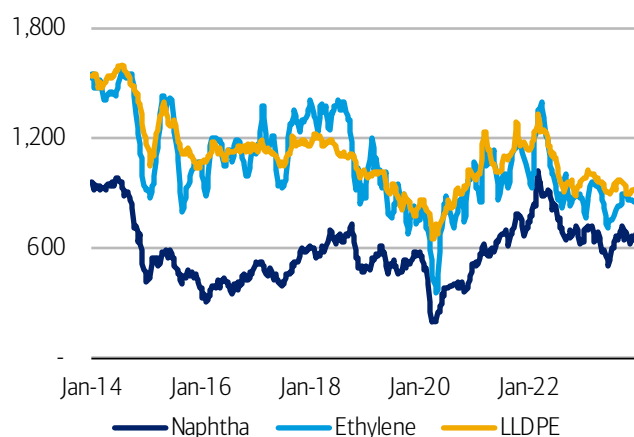
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## Chemicals

- Northeast Asia LLDPE price increased WoW to US\$941/ton and PP price was flat WoW at US\$874/ton in the week ended 29 Dec 2023;
- LLDPE-ethylene spread expanded WoW to US\$80/ton;
- PP-propylene spread was flat WoW at US\$63/ton;
- East China m-MDI price decreased by 2.5% WoW to RMB19,800/ton and p-MDI price decreased by 1.0% WoW to RMB15,400/ton in the week ended 29 Dec 2023.

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

Ethylene price decreased and LLDPE price increased WoW

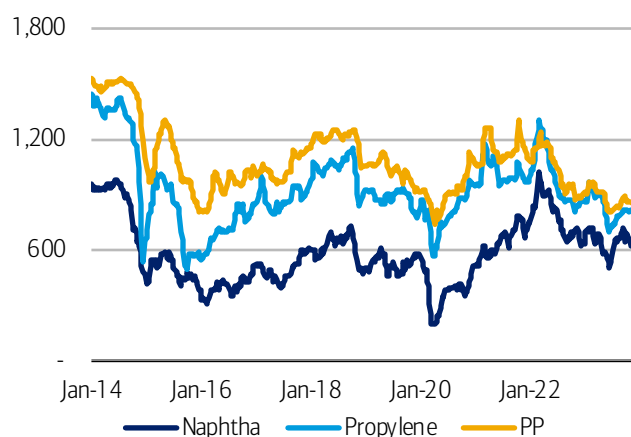


Source: Wind, BofA Global Research

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

Propylene price and PP price flat WoW

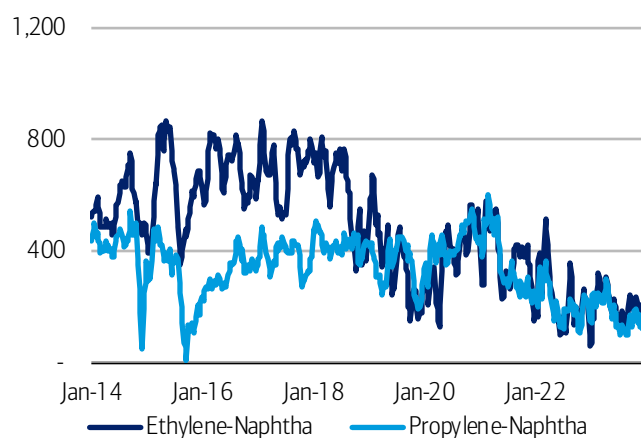


Source: Wind, BofA Global Research

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

Ethylene-naphtha spread and propylene-naphtha spread narrowed WoW

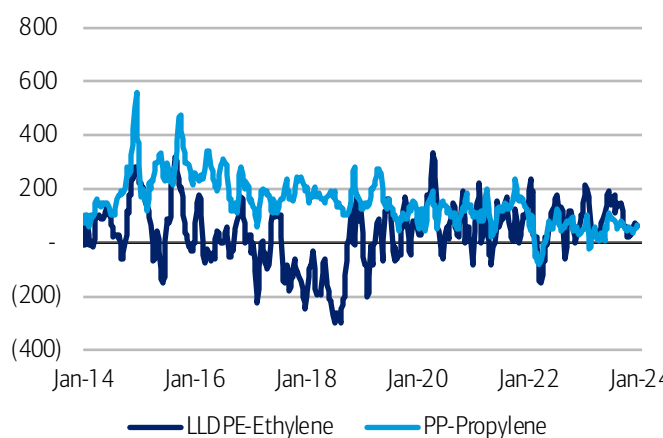


Source: Wind, BofA Global Research

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

LLDPE-ethylene spread expanded 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 decreased by 2.5% WoW to RMB19,800/ton and p-MDI price decreased by 1.0% WoW to RMB15,400/ton in the week ended 29 Dec



Source: Wind, BofA Global Research

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## Appendix

**Exhibit 19: 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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