

# How does Chinese polyester industry impact global market

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Jacky Wang & Alicia Goh



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# Glance of Chinese polyester industry

# Capacity expansions in 2023

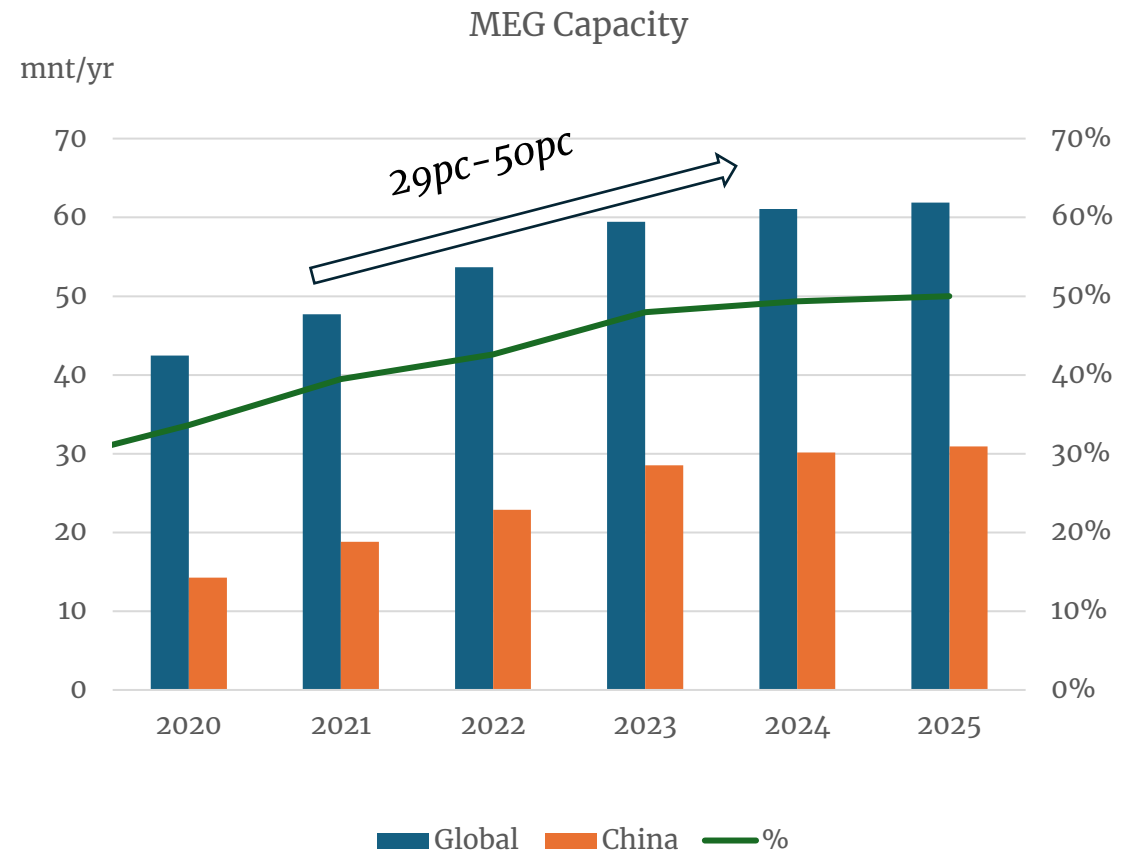
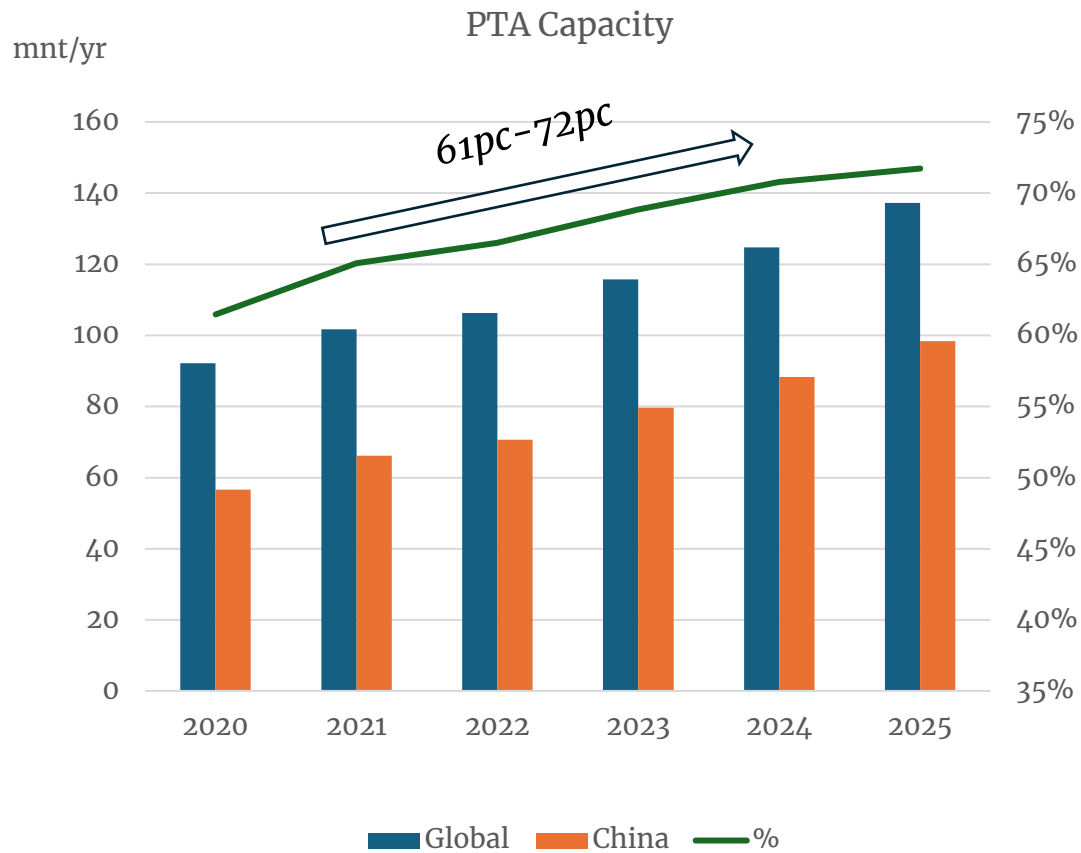
Product	Company	Location	Capacity(kt/yr)
PX	PetroChina Guandong(中石油广东)	Jieyang, Guandong	2600
	CNOOC Huizhou(中海油惠州) No.2	Huizhou,Guangdong	1500
	Shenghong Petrochemicals(盛虹)	Lianyungang, Jiangsu	2000
	CNOOC Ningbo Daxie(中海油大榭)	Ningbo, Zhejiang	1600
<b>Total</b>			<b>7700</b>
PTA	Tongkun Nantong(嘉通能源)	Nantong, Jiangsu	2500
	Dongying Weilian(东营威联)	Dongying, Shandong	1250
	Hengli Huizhou(恒力惠州)	Huizhou, Guangdong	2500*2
	Yisheng Hainan(逸盛海南) No.2	Yangpu, Hainan	2500
<b>Total</b>			<b>11250</b>
MEG	Shenghong Petrochemicals(盛虹)	Lianyungang, Jiangsu	900
	Sinopec Hainan(中石化海南)	Hainan	800
	Zhejiang Sanjiang(三江化学)	Jiaxing, Zhejiang	1000
	Shaanxi Yulin Energy(陕西榆能)	Yulin, Shaanxi	400
	Xinjiang Zhongkun(新疆中昆)	Xinjiang	600
<b>Total</b>			<b>3700</b>

# Ongoing expansions during 2024-2026

Unit:kt/yr

Region	Company	Location	2024Q1	2024Q2	2024Q3	2024Q4	2025	2026
PX	Yulong Petrochemical(裕龙石化)	Yantai, Shandong					3000	
	Huajin Petrochemicals(华锦)	Panjin, Liaoning						2000
	Zhongjin(中金) No.2	Ningbo, Zhejiang						1600
	Sinopec Jiujiang(中石化九江) No.2	Jiujiang, Jiangxi						1500
	Gulei Petrochemical(古雷石化)	Zhangzhou, Fujian						3200
<b>Total</b>							<b>3000</b>	<b>8300</b>
PTA	FCFC Ningbo(台化宁波) No.2	Ningbo, Zhejiang	1500					
	Sanfangxiang(三房巷)	Jiangyin, Jiangsu					3200	
	Sinopec Yizheng(仪征化纤)	Yizheng, Jiangsu		1500	1500			
	Xinfengming(新凤鸣)	Pinghu, Zhejiang					2700	2700
	Fuhaichuang(福海创) No.2	Gulei, Fujian					3000	
	Tongkun Guangxi(桐昆广西)	Qinzhou, Guangxi						3000
	Shenghong(虹港石化) No.3	Lianyungang, Jiangsu					2400	
<b>Total</b>			<b>4500</b>				<b>11300</b>	<b>5700</b>
MEG	Sichuan Zhengdakai(正达凯)	Dazhou, Sichuan				600	600	
	Yulong Petrochemical(裕龙石化)	Yantai, Shandong				800	800	
<b>Total</b>			<b>1400</b>				<b>1400</b>	

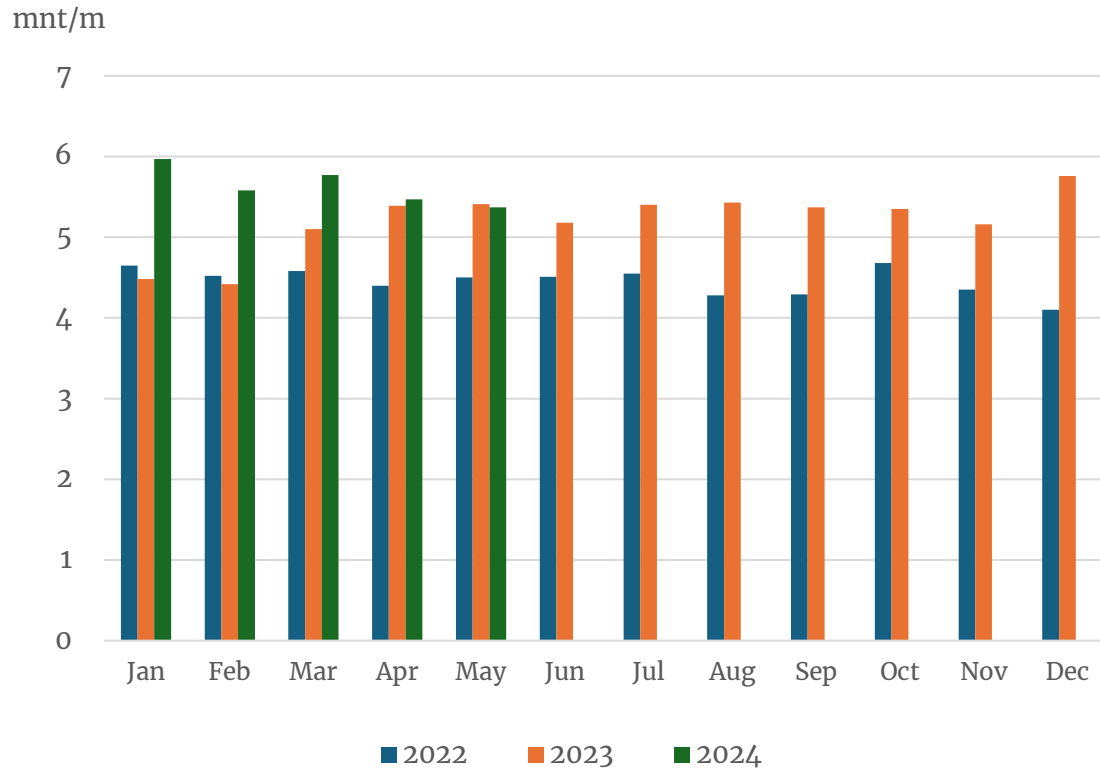
# China's PTA and MEG capacity





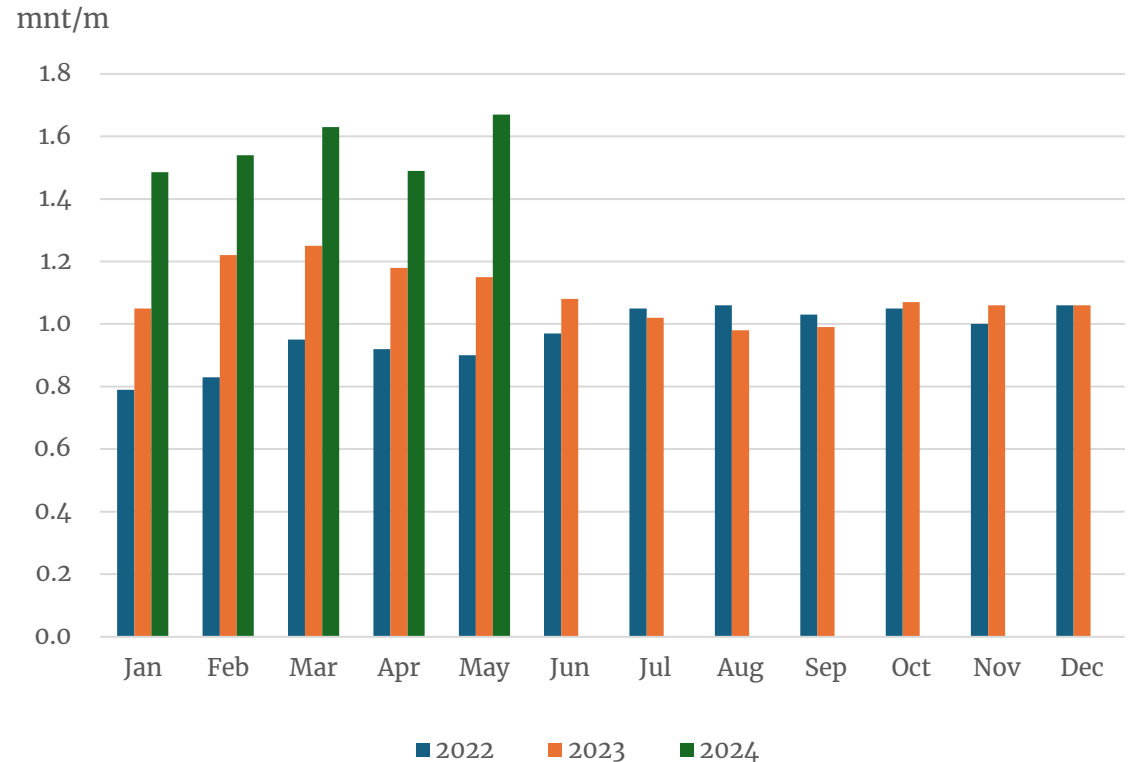
# Substantial increase in PTA and MEG production

China's PTA production



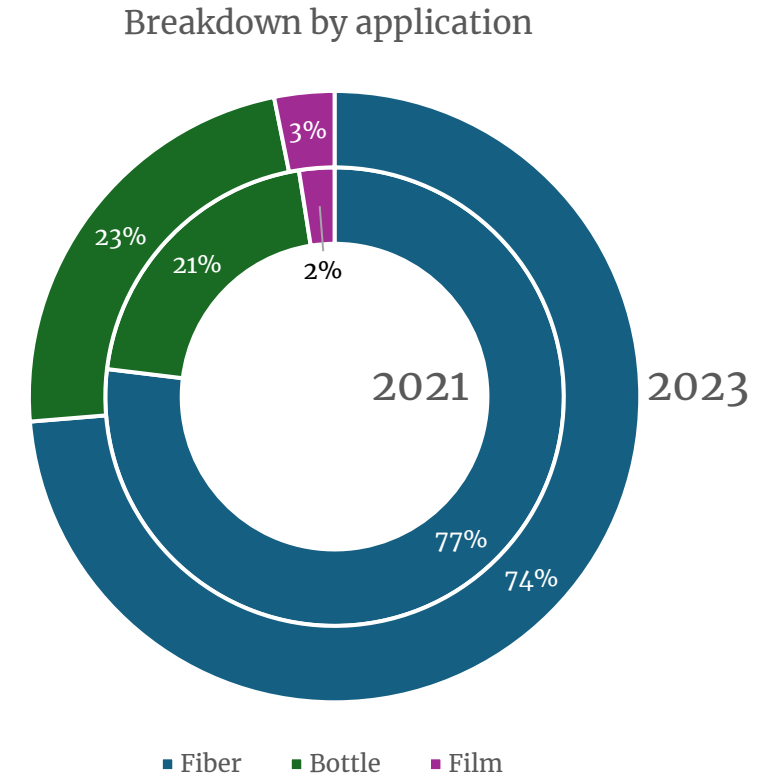
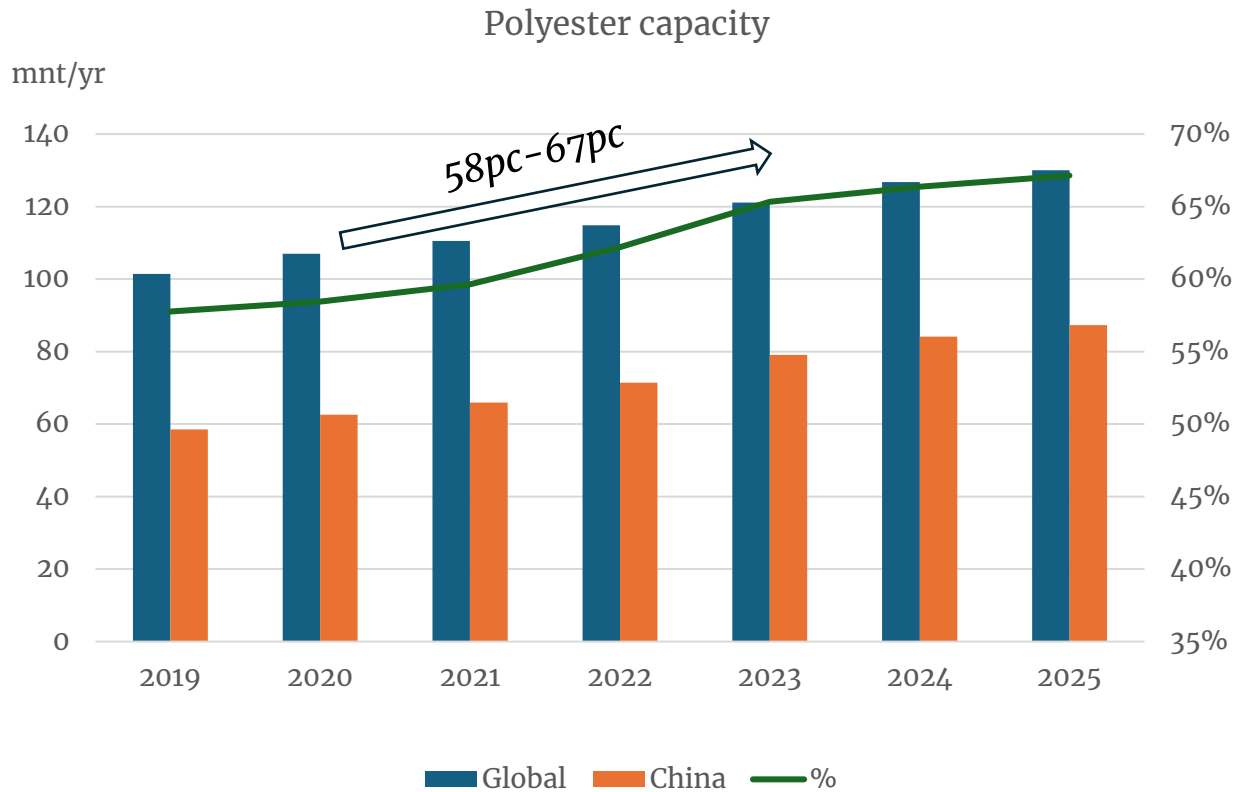
2022	2023	2024(1-5)E
4.4	5.2	5.6

China's MEG production



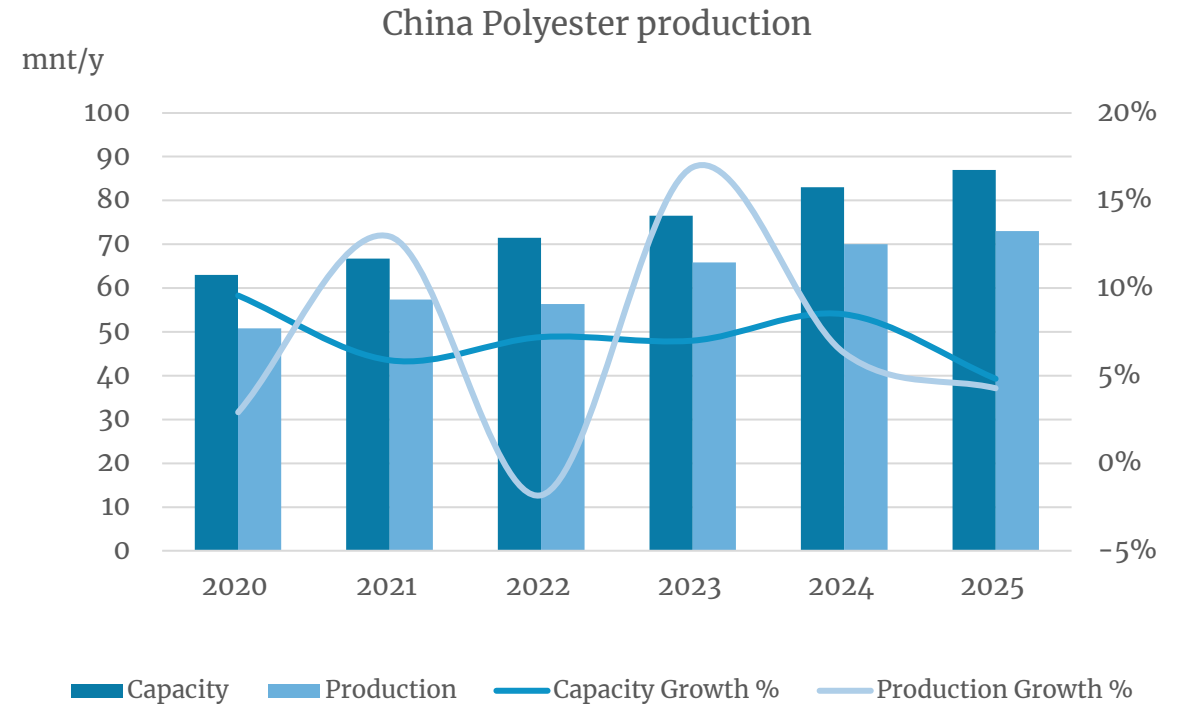
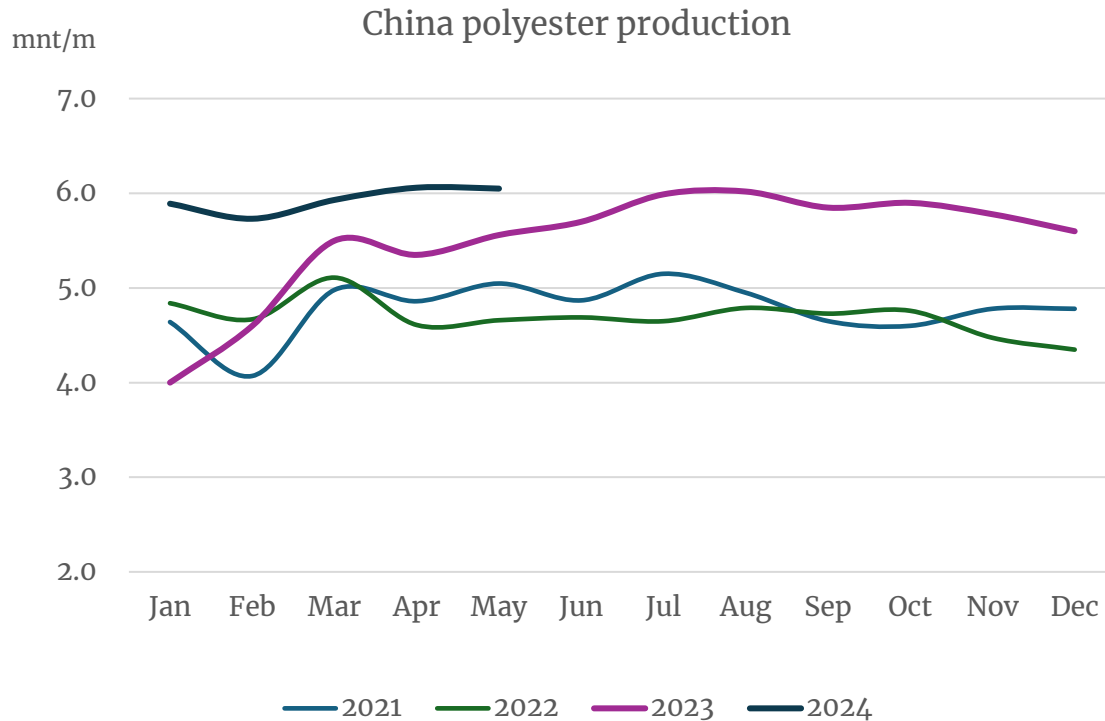
2022	2023	2024(1-5)E
0.97	1.09	1.56

# China's polyester capacity



- China's polyester capacity expanded from 59mn t/yr in 2019 to around 79mn t/yr by the end of 2023

# Polyester production continue to increase



- PET fiber and resin production largely increased from Q2 2023, and the annual production reached 65mnt, about 16pc higher than 2022.

# Competitiveness analysis

# Backward integration to strengthen competitiveness

Backward integration from leading polyester producers

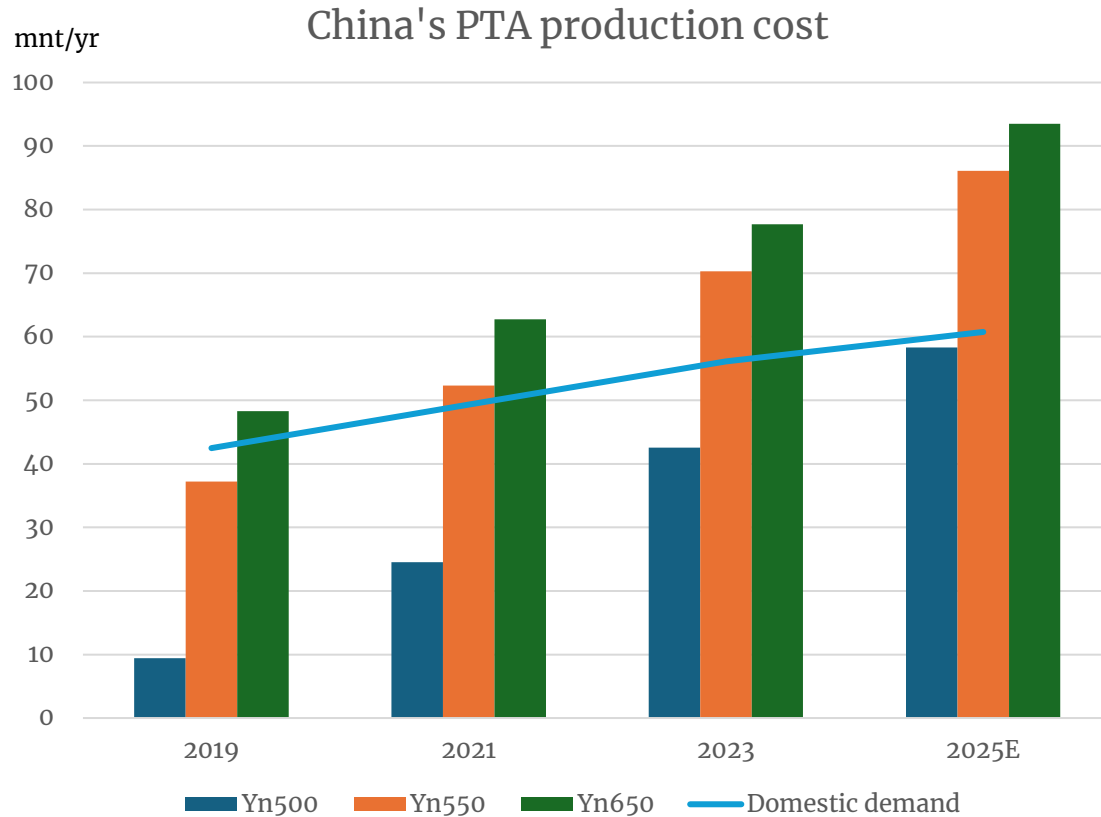
	Refinery	PX	PTA	MEG	Polyester	PTA self-sufficient
Hengyi(恒逸)	8,000	1,500	10,750	-	9,300	1.3
Rongsheng(荣盛)	20,400	6,088	10,750	1,224	1,750	7.1
Tongkun(桐昆)	8,000	1,760	8,700	1,080	12,000	0.8
Shenghong(盛虹)	16,000	4,000	3,900	1,900	3,200	1.4
Hengli(恒力)	20,000	8,500	16,600	1,800	4,000	4.8
Xinfengming(新凤鸣)	-	-	5,000	-	8,500	0.7
Sanfangxiang(三房巷)	-	-	2,400	-	5,000	0.6
Fujian Billion(百宏)	-	-	2,500	-	3,700	0.8

Unit: kt/yr

CR4	
PTA	65%
MEG	30%
Polyester	44%

- Leading polyester producers have changed their role to be complex petrochemical manufacturers after adding mega-refinery projects.
- Most of them have sufficient raw material supply from upstream facilities.

# PTA production cost lowers



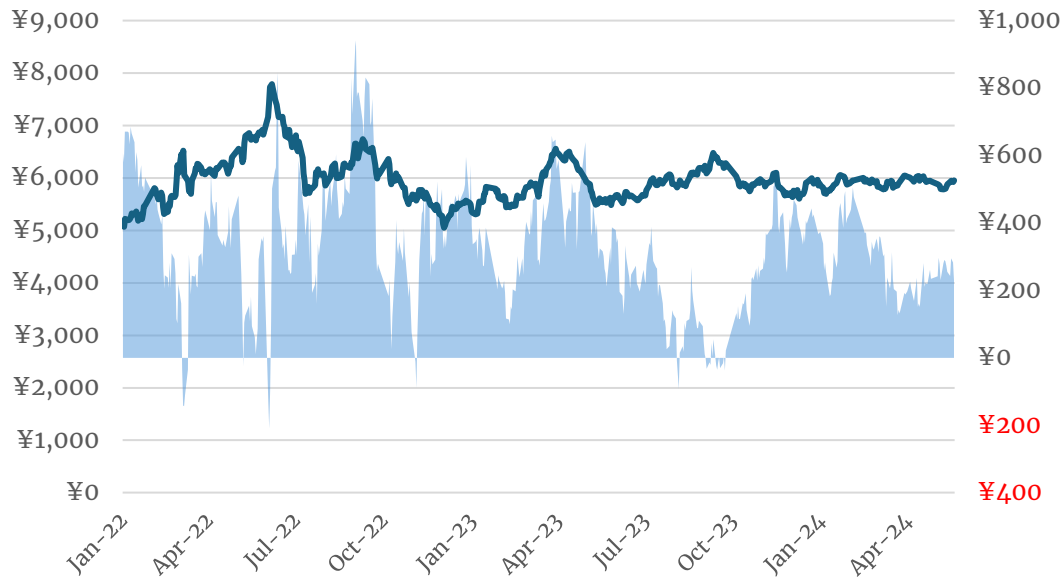
## Production cost compare(2023)

		Cost	Capacity (mnt/yr)
China	Low	<Yn500 (\$70)	42.6
	Mid	Yn500~650 (\$70~90)	35.1
	High	>Yn650 (\$90)	4.8
Other NEA		\$90-140	9.5

- The overall production cost of whole Chinese PTA capacity reduced from 558yuan/t to 509yuan/t during 2019 to 2023.
- Capacities with cost lower than 500yuan/t increased from 9.5mn t/yr to 42.6mn t/yr in just five years.

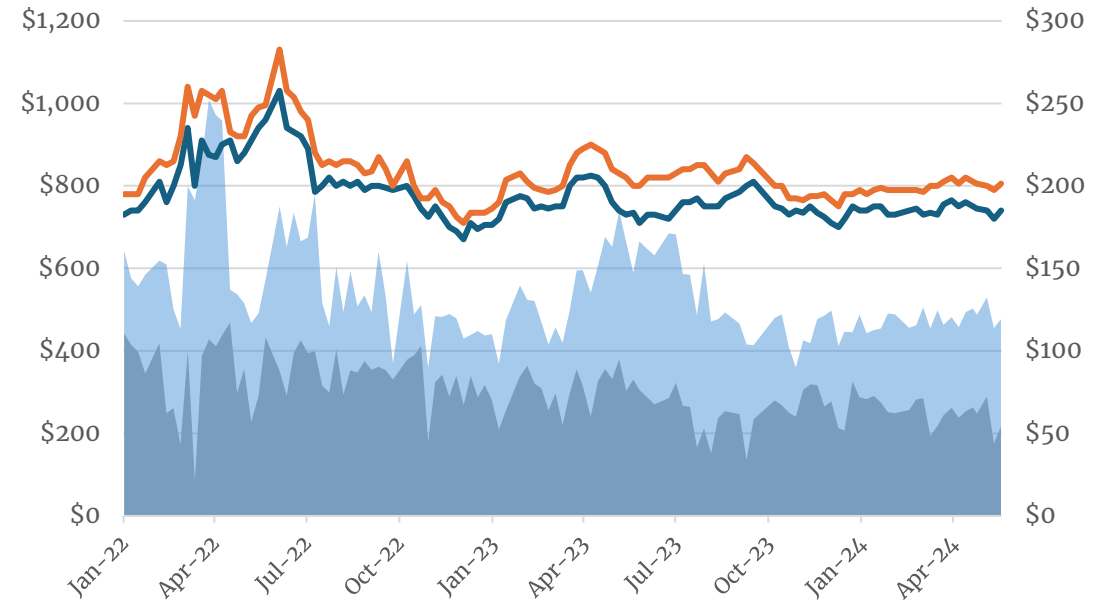
# PTA production margin narrows

Chinese domestic PTA price and margin



Margin CNY/t(Right) PTA Chinese domestic CNY/t(Left)

PTA fob NEA price and margin



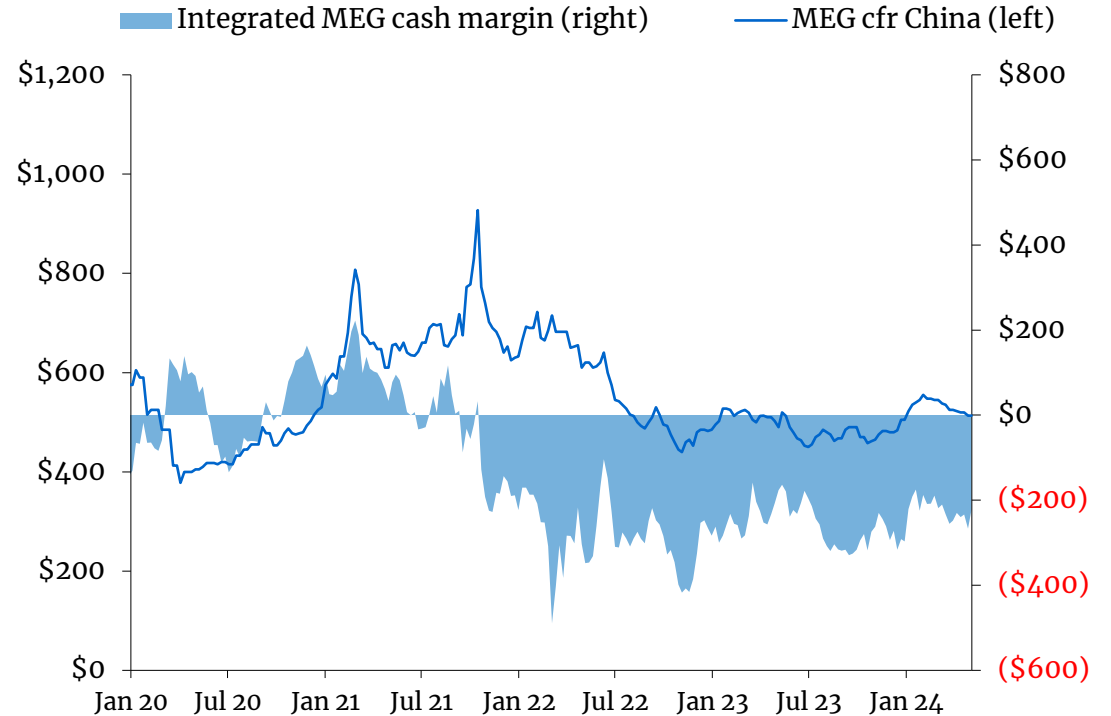
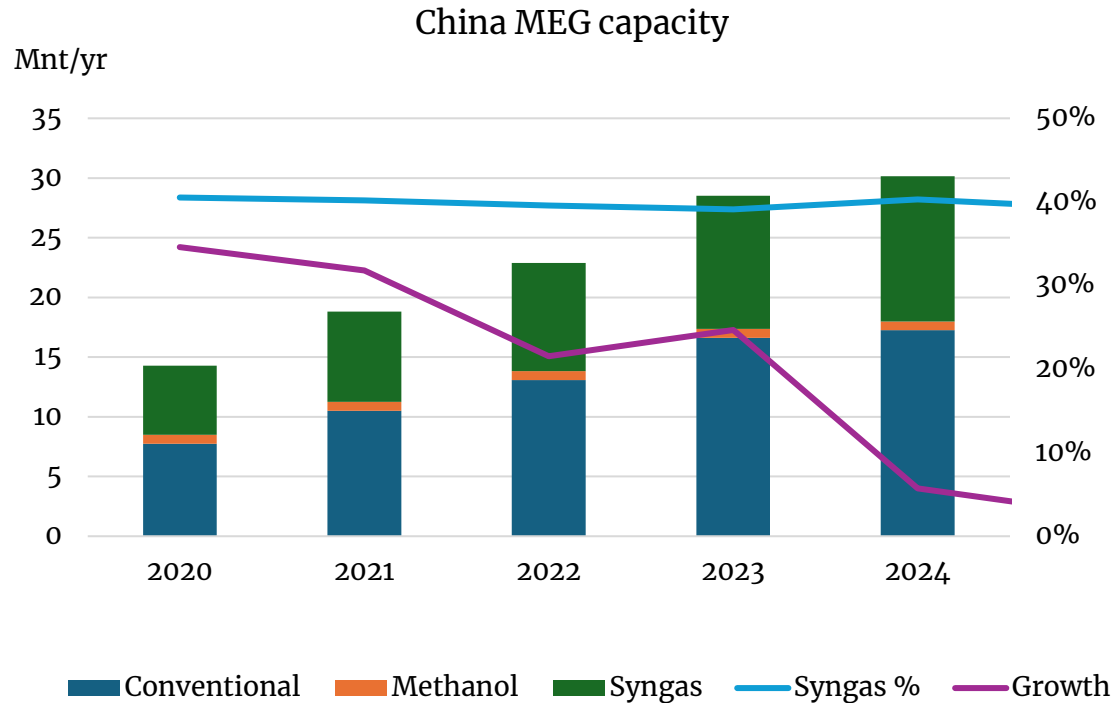
Spread(low) Spread(high) PTA fob Low PTA fob High

- The Chinese domestic market sees more competitions compared with the international market because of oversupply.

# Syngas-based MEG plays more important role

Capacity increase during 2020-2024

Production loss at conventional MEG

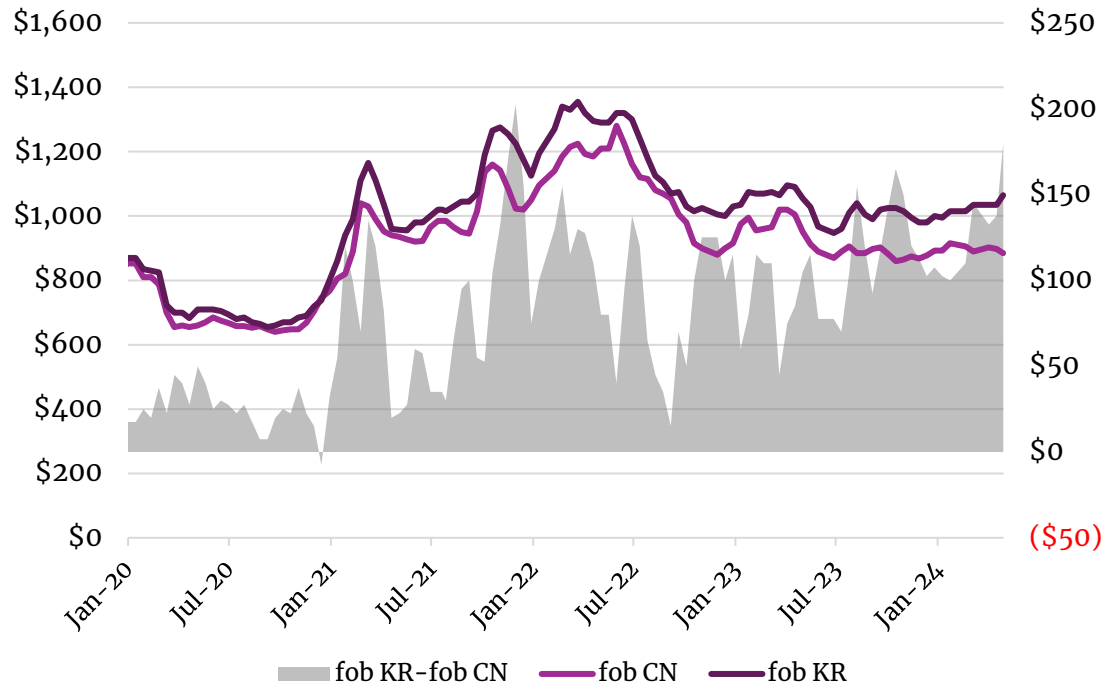


- Syngas-based MEG still takes around 40pc of total capacity in China, although a couple of large-scaled conventional MEG units were commissioned with upstream mega-refineries in the past three years.

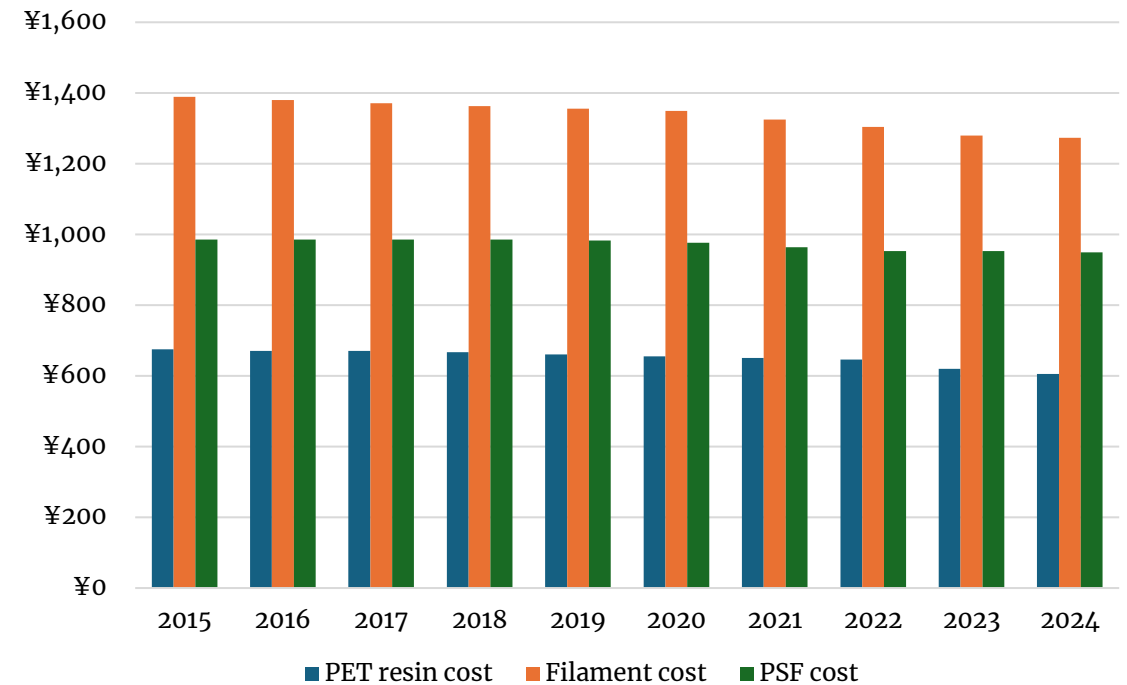


# Chinese polyester products are more competitive

PET resin fob Korea vs fob China



Polyester production cost



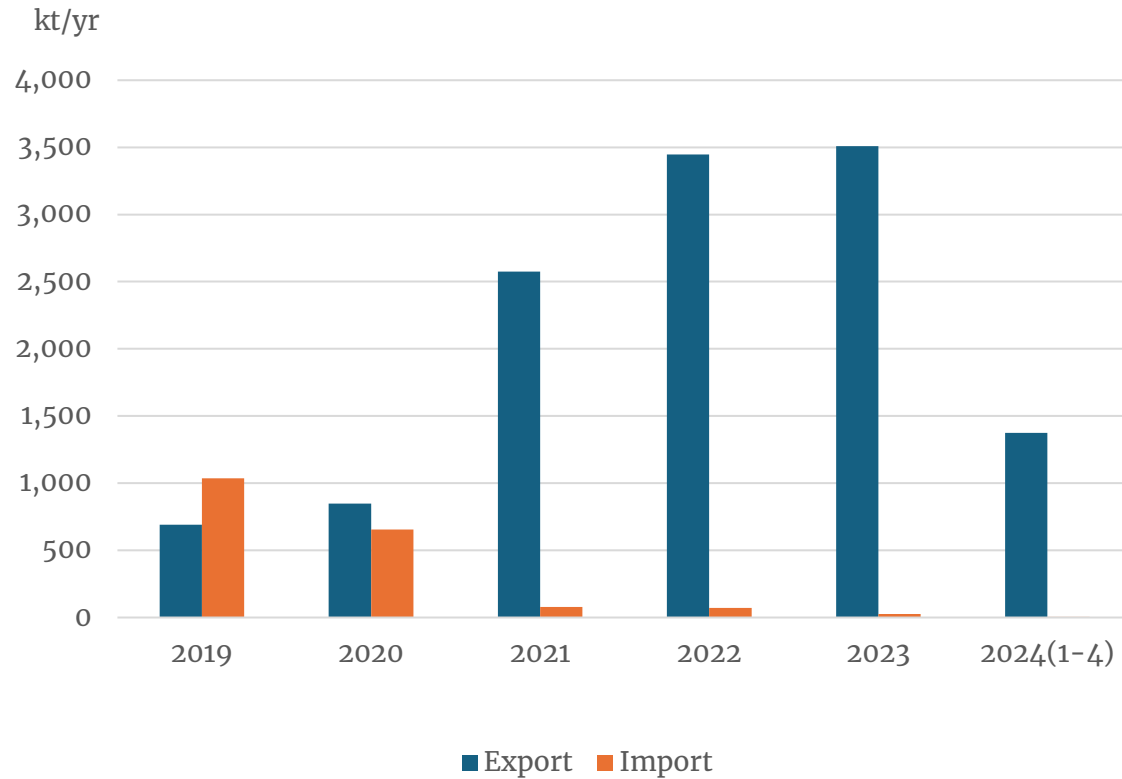
- Polyester production cost reduced by 8pc, 9pc and 3pc for resin, filament and PSF respectively during 2015 to 2023, because of new capacities have less energy consumption and higher efficiency.

	PET	Filament	PSF
2000	1	1	1
2010	0.86	0.83	0.92
2020	0.79	0.66	0.82

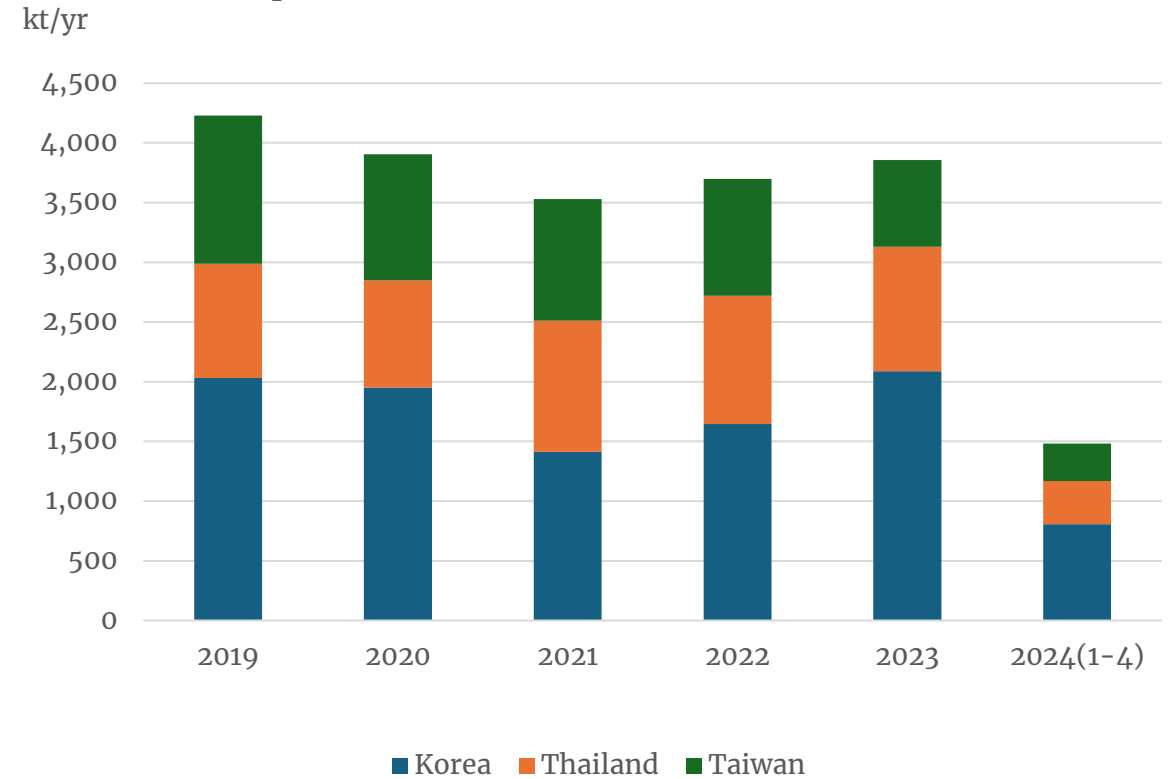
# Changes of global trading

# China's PTA export slows

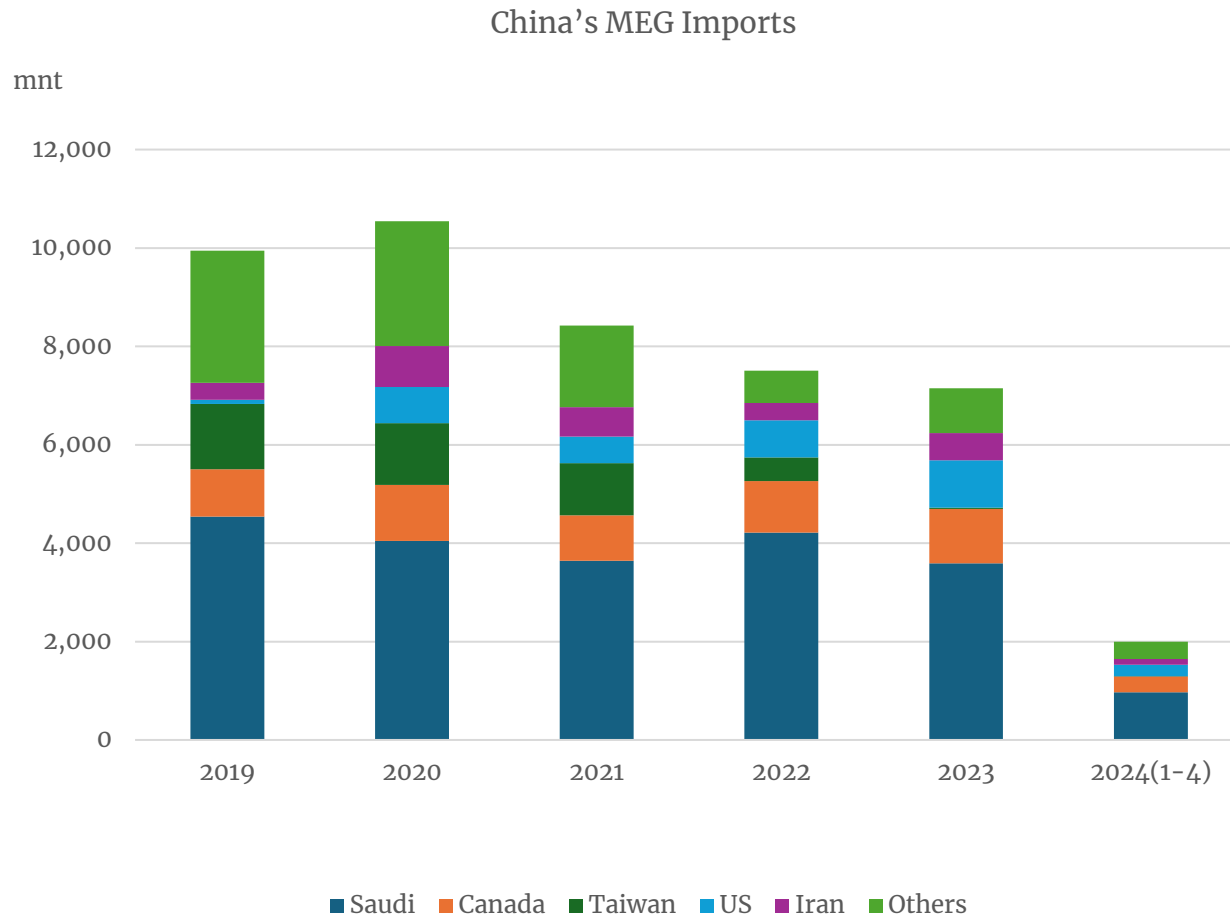
China's PTA Import and Export



PTA exports (Korea, Taiwan and Thailand)



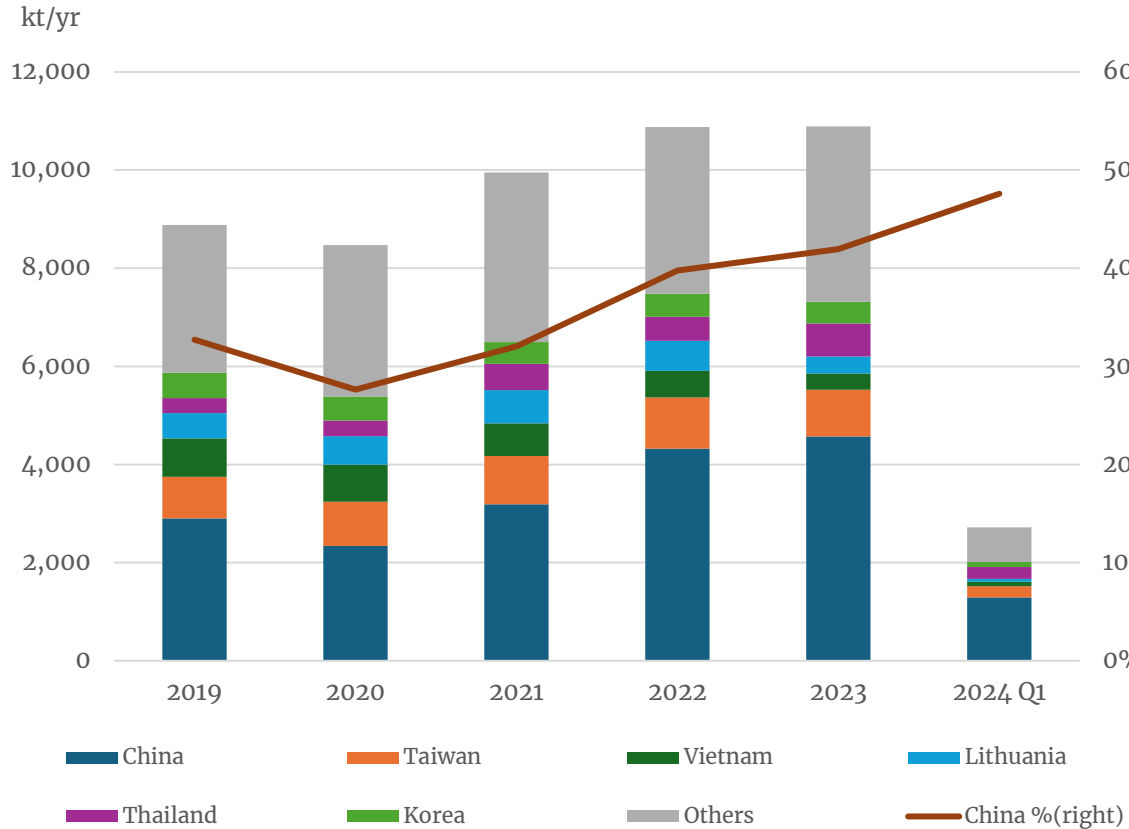
# China's MEG imports decline



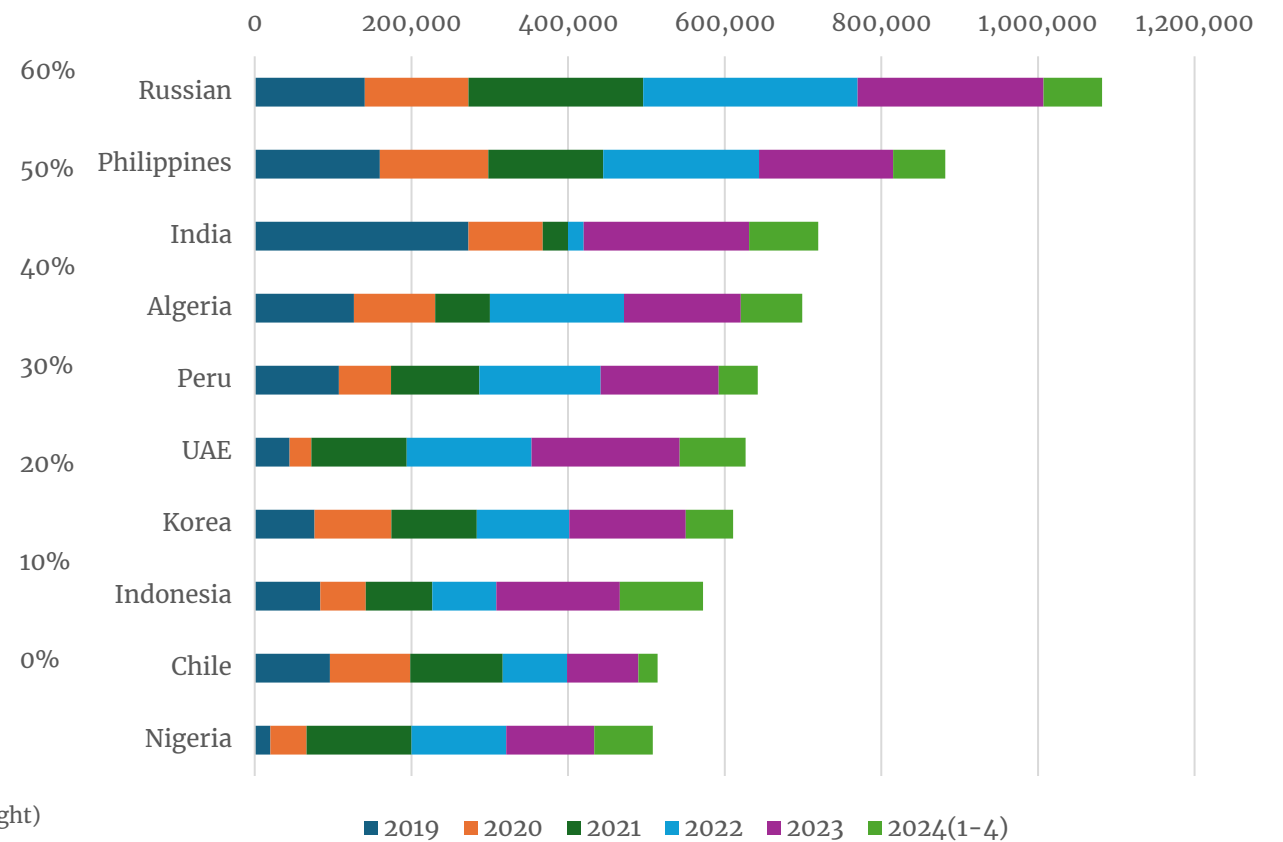
- China's MEG import has been falling for three years and it's quite likely to see another fall in 2024.
- Volumes come from Saudi Arabia and Canada roughly held steady during 2019 to 2023.
- Imports from the US increased but imports from Taiwan declined sharply because of different raw material feeds.
- Meanwhile imports from other regions also declined significantly because of negative margin of MEG production in the past three years.

# Global PET resin trades

PET resin trades(export basis)

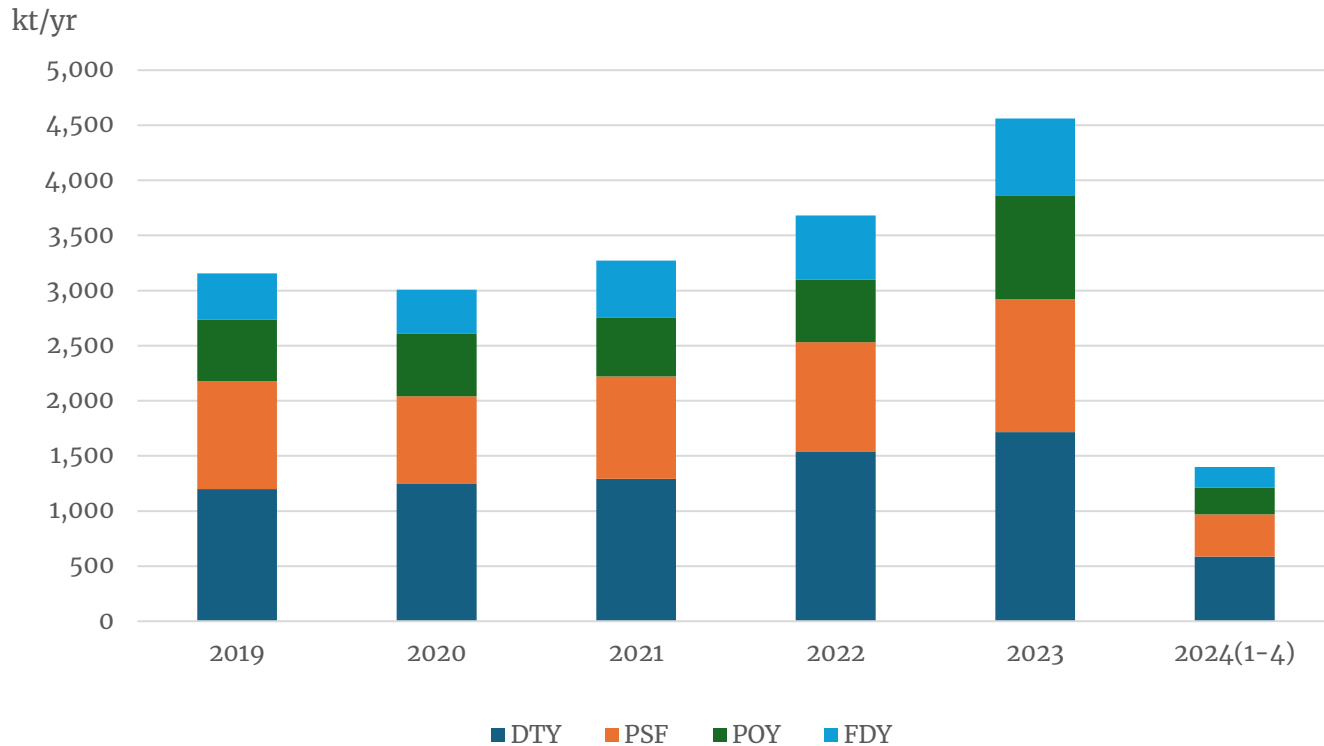


Top 10 buyers of Chinese PET resin



# Fiber Exports raise

China's PET fiber export



Top 10 partners

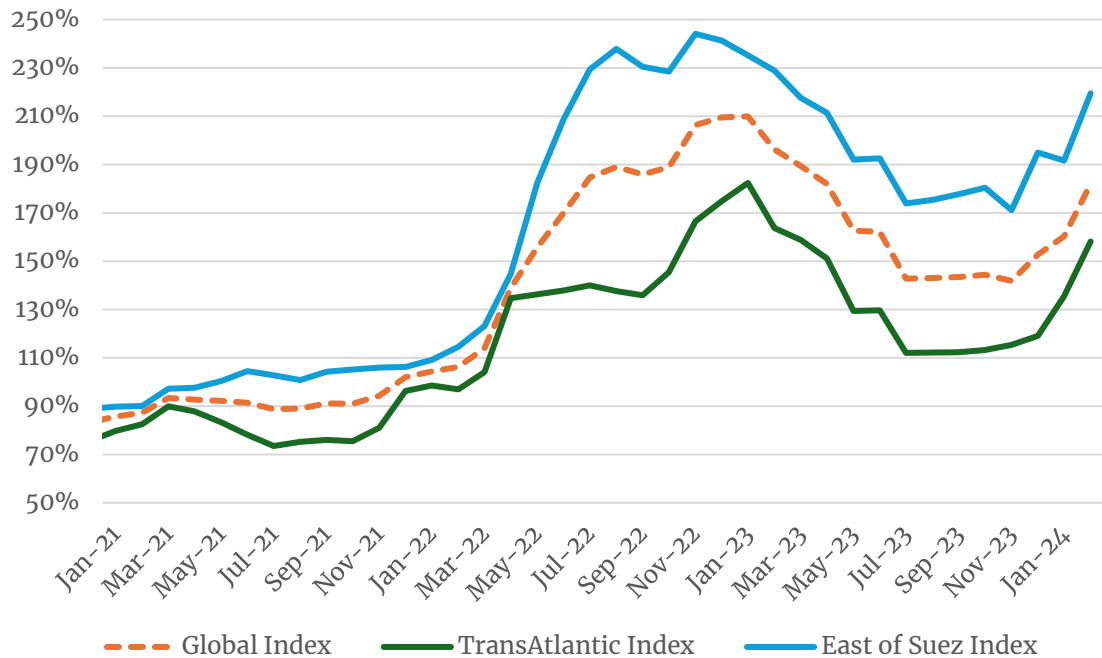
	2019	2023	Growth
Vietnam	394024	478568	21%
Pakistan	249680	428187	71%
Egypt	272650	437773	61%
Turkey	398779	424948	7%
Brazil	200880	334806	67%
India	110889	533982	382%
Indonesia	196496	250885	28%
Korea	170250	204317	20%
Bangladesh	117770	217316	85%
Mexico	81997	90513	10%

- PET fiber trade is not as active as PET resin, but we have seen a significant growth in recent years.
- In 2023, China's polyester fiber exports exceeded 4.5mnt, increased by nearly 23pc compared with 2022.
- With the gradual outward migration of China's garment industry, the export volume to southeast Asian, middle east and Latin America sharply increased.

**More things we need to know**

# Ocean freight also impacts trading flow

Global freight index tracker



SCFI Shanghai-Europe



Source: SSE

- Ocean freight rates fluctuated largely in the past few years because of the Russia-Ukraine conflict, Panama Canal issue and the Red Sea crisis. These factors lifted the composite global index rising more than 70pc from the base in January 2016.
- Shanghai container freight index(SCFI) surged by the end of 2023 due to the Red Sea crisis and continued its rise from this April boosted by EV car exports.



# China's PET resin export faces more challenges

## Persistent trade conflicts

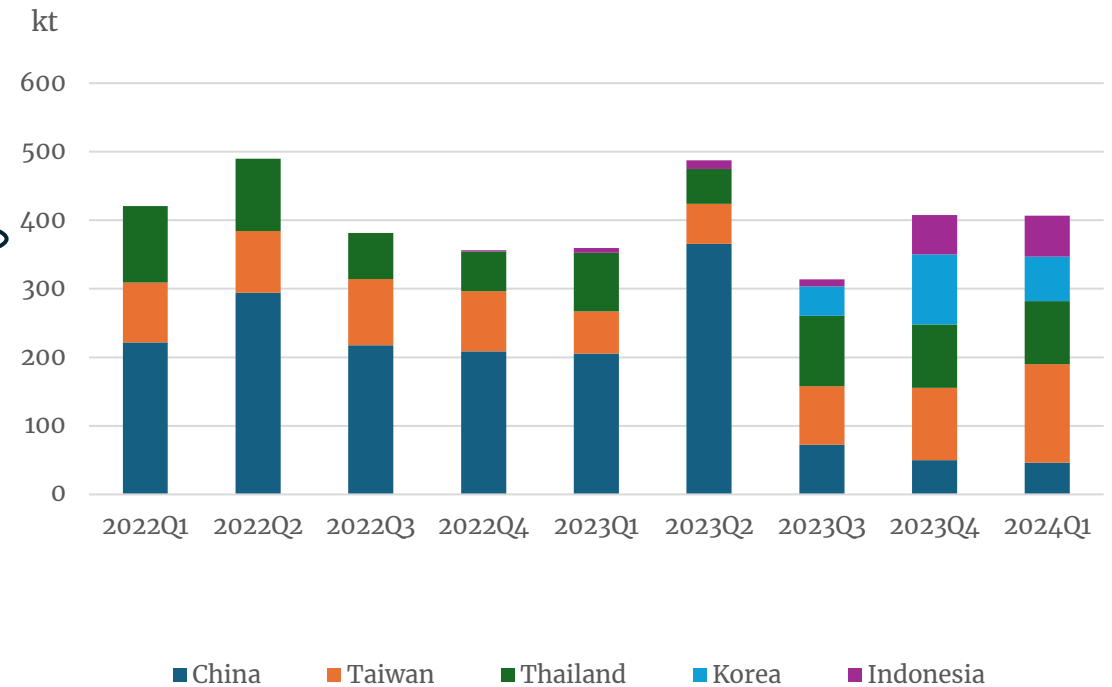
US	May 2016, anti-dumping duty (104.98%-126.43%); counter-vailing duty ( 7.53%-47.56%) March 2022, extend by 5 years
Brazil	Nov 2016, anti-dumping duty (\$87-682/t) Nov 2022, extend by 5 years
Japan	Aug 2017, provisional anti-dumping duty(39.8%-53%), Jan 2018, anti-dumping duty(39.8%-53%), Jan 2023, extend by 5 years
South Africa	May 2020, anti-dumping duty (26.4%-28.9%), SFX exempted
India	Aug 2020, anti-dumping duty(\$15.5-200.7/t)
EU	Nov 2023, provisional anti-dumping duty (6.6%-24.2%) Apr 2024, anti-dumping duty (6.6%-24.2%)
Korea	Jan 12, 2024, anti-dumping investigation launched, HS code 390761
Mexico	Jan 29, 2024, anti-dumping investigation launched, HS code 390761, 390769

# BIS certification impacts PTA and fiber trades

BIS certification

Products	Time	2022 Imports(China)
PTA	2023.7.1	1,653(942)
MEG	2023.6.28	1,407(0)
FDY	2023.10.5	160(125)
POY	2023.10.5	107(101)
Spun yarn	2023.10.5	165(64)

India's PTA imports



- India's BIS certification obviously impacted PTA trading flow and China's exports to India sharply declined.
- But Indian polyester producers have to pay higher prices to get feedstocks from Korea, Thailand and other areas.

# | Conclusions

- Expansion in the Chinese polyester value chain will continue in the coming years, but growth rates to slow down due to oversupply issue.
- In the Chinese domestic PTA market, old lines will be idled or shut down permanently because new capacities are much more competitive. However, situation in the international PTA market is different. Production margin to maintain at current level because of limited expansions outside China.
- We can not see improvement in MEG production margins because the competition among conventional, natural gas and syngas-based MEG manufacturers will continue.
- China's export of polyester products is likely to increase in the future because of its strong competitiveness. But exporters will face more challenges from trading conflicts, shipping, geopolitics and etc. issues.

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Jacky Wang 王未栋

Email: [jacky.wang@argusmedia.com](mailto:jacky.wang@argusmedia.com)

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# | Argus MX and PX Overview

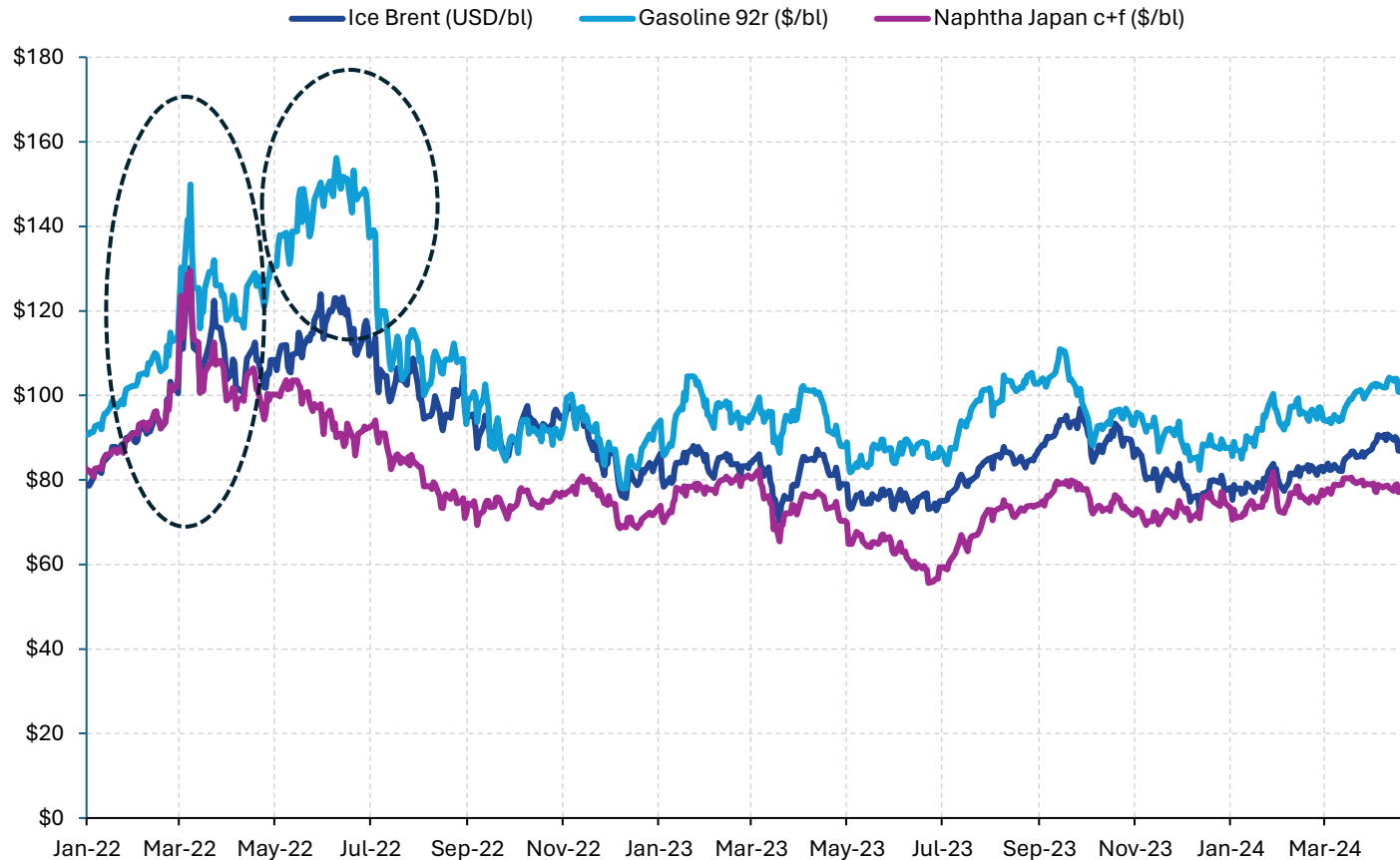
- Upstream overview
- Mixed-xylene market overview
  - Arbitrages to the US
- Paraxylene market overview
- MX and PX Trade flows
- Argus Open Market (AOM) and methodology
- Conclusion

# Upstream Overview



# A glance at upstream market

Brent-Gasoline-Naphtha, \$/bl



## Weak Macroeconomics

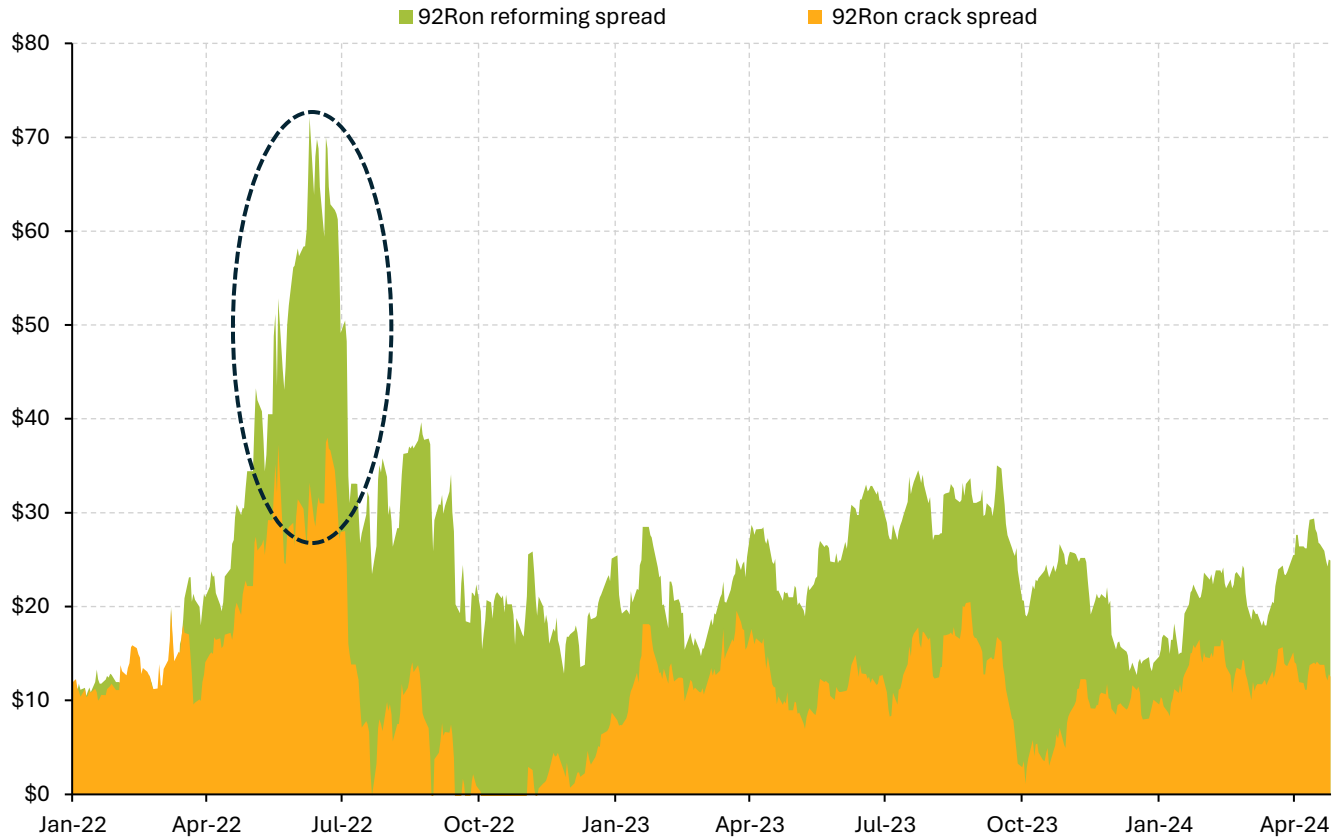
- Slow opening up and recovery of Chinese markets
- Supply overhang along with weak recovery in downstream demands.
- High interest rates capped global market growth

## Strong Macroeconomics

- Extensions of Opec+ production cuts and sea routes/transportation disruptions.
- Seasonality demand to boost gasoline and naphtha.
- Weak petrochemical demand to cap gains in naphtha

# Reforming/crack spreads limit outputs

Reforming & crack spread, \$/bl



- Crack spreads widened on gasoline demand.
- Reforming spreads widened in tandem.
- Limited Naphtha supplies .
- Production cuts in downstream MX and PX.
- Wide spreads are expected to moderate . MX and PX outputs to be less impacted.

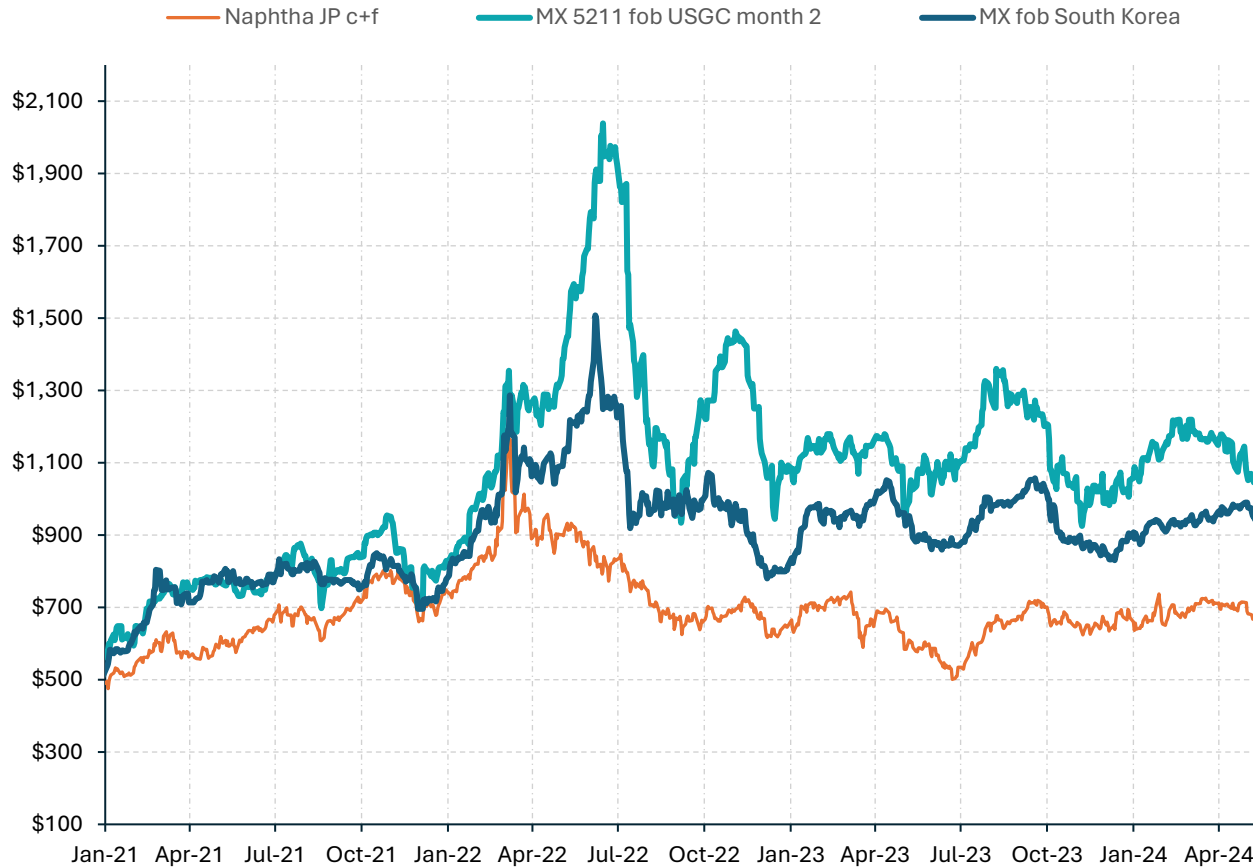


# MX market overview



# MX price trend impacted by?

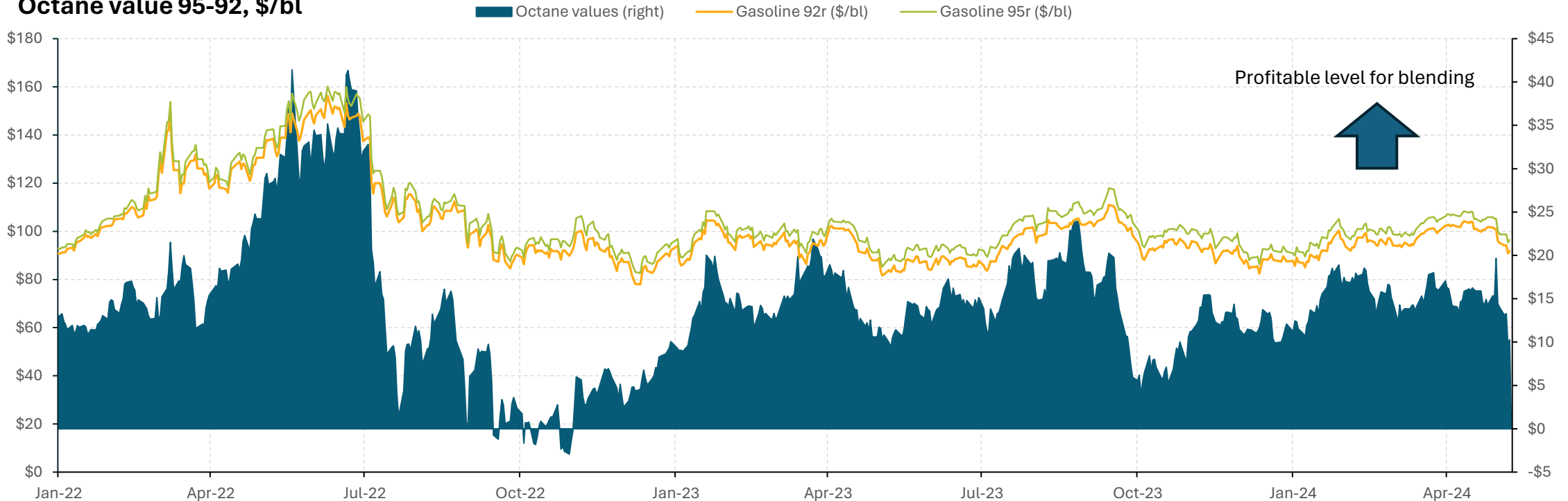
MX price trend, \$/t



- Supply crunch in US for octane boosters pulled away Asia MX supplies.
- Naphtha market fundamentals recalibrated.
- US price is expected to continue to impact Asia's price but will be less dramatic.

# Higher blend margins drives up demand for octane boosters

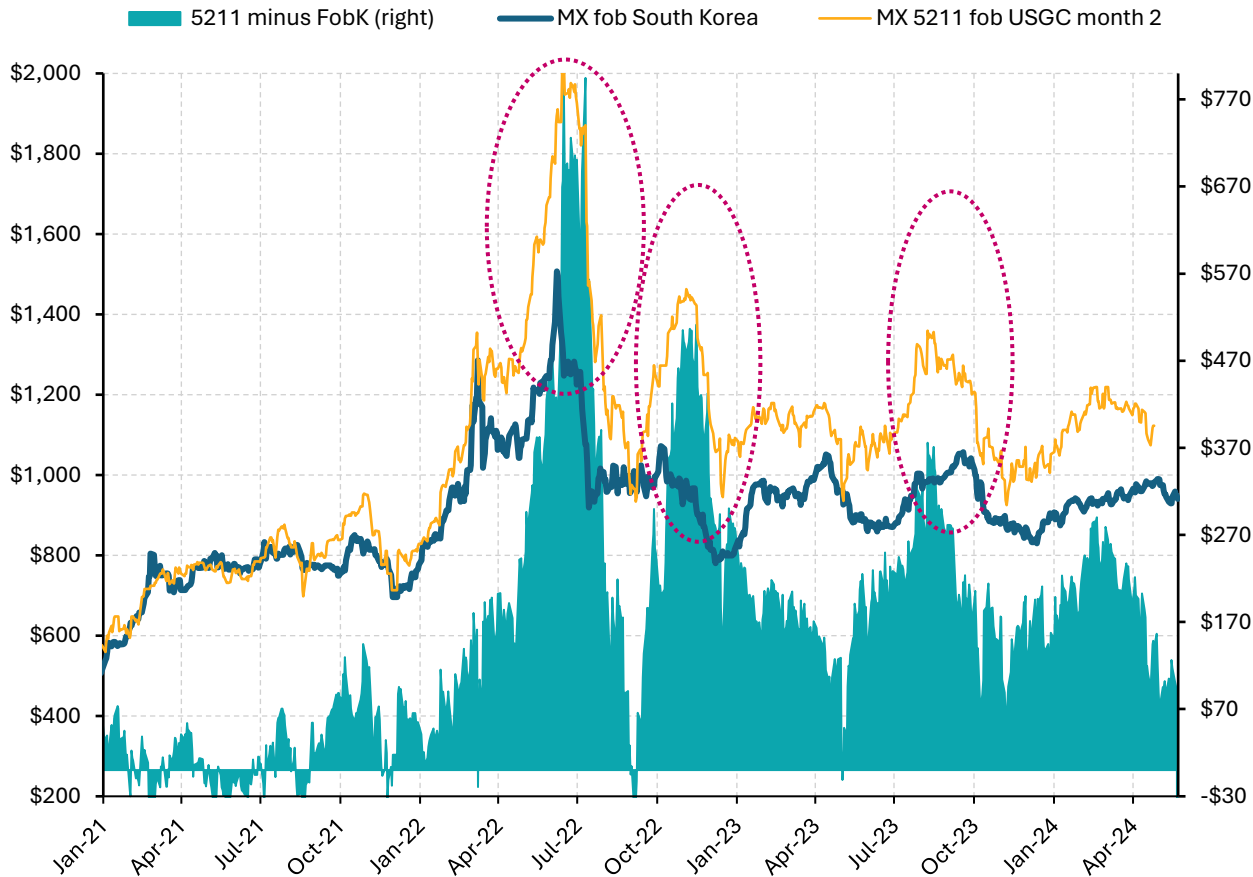
Octane value 95-92, \$/bl



- Wide octane values attracted producers to seek octane boosters
- MX demand to remained firm and even better seasonally.
- Values wider than \$2.5/bl increase attraction for blenders.

# S.Korea to US Arbitrage to remain open?

## US Arbitrage

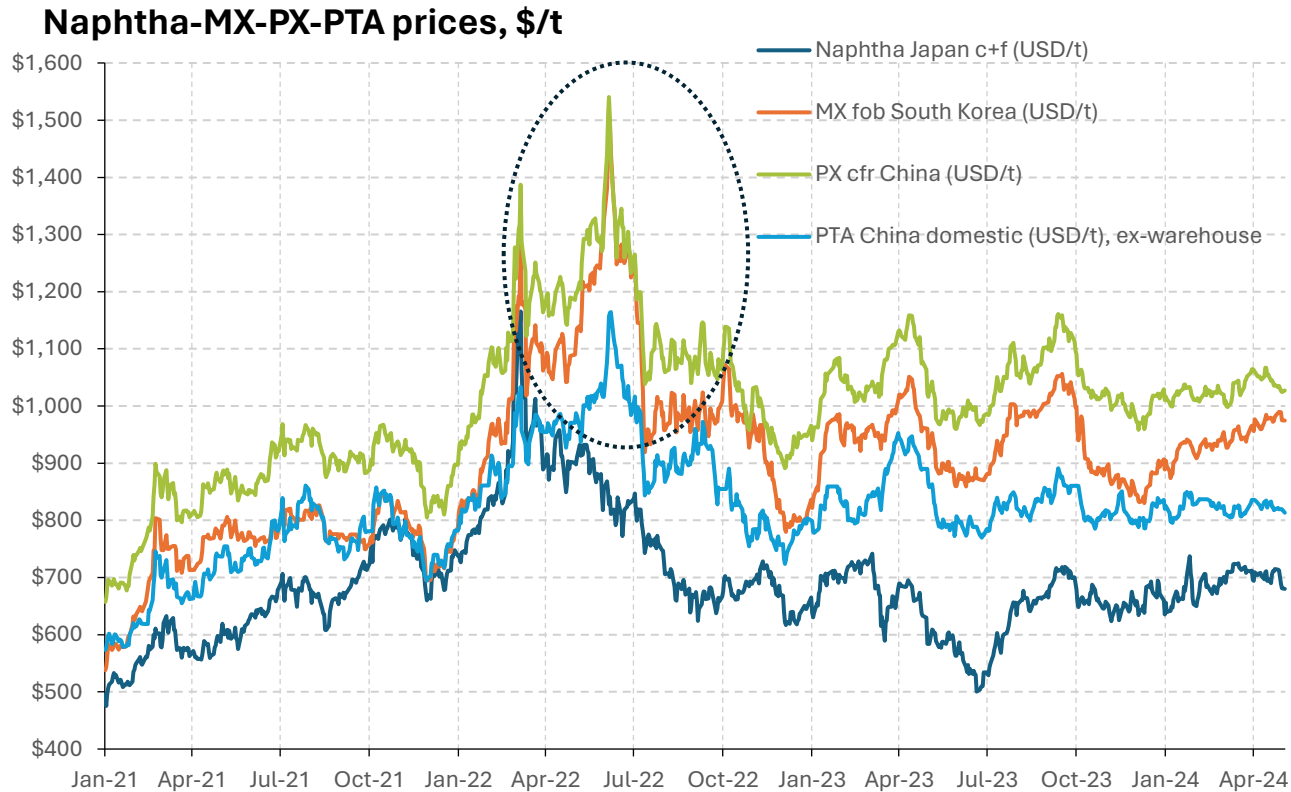


- NO arbitrage opportunities before 2022.
- Price gaps widened to \$770/t. Arbitrage was wide open.
- Seasonal demand and tight vessel space erodes arbitrage margins.
- Wide reforming spreads to keep arbitrage opportunities open.

# PX market overview



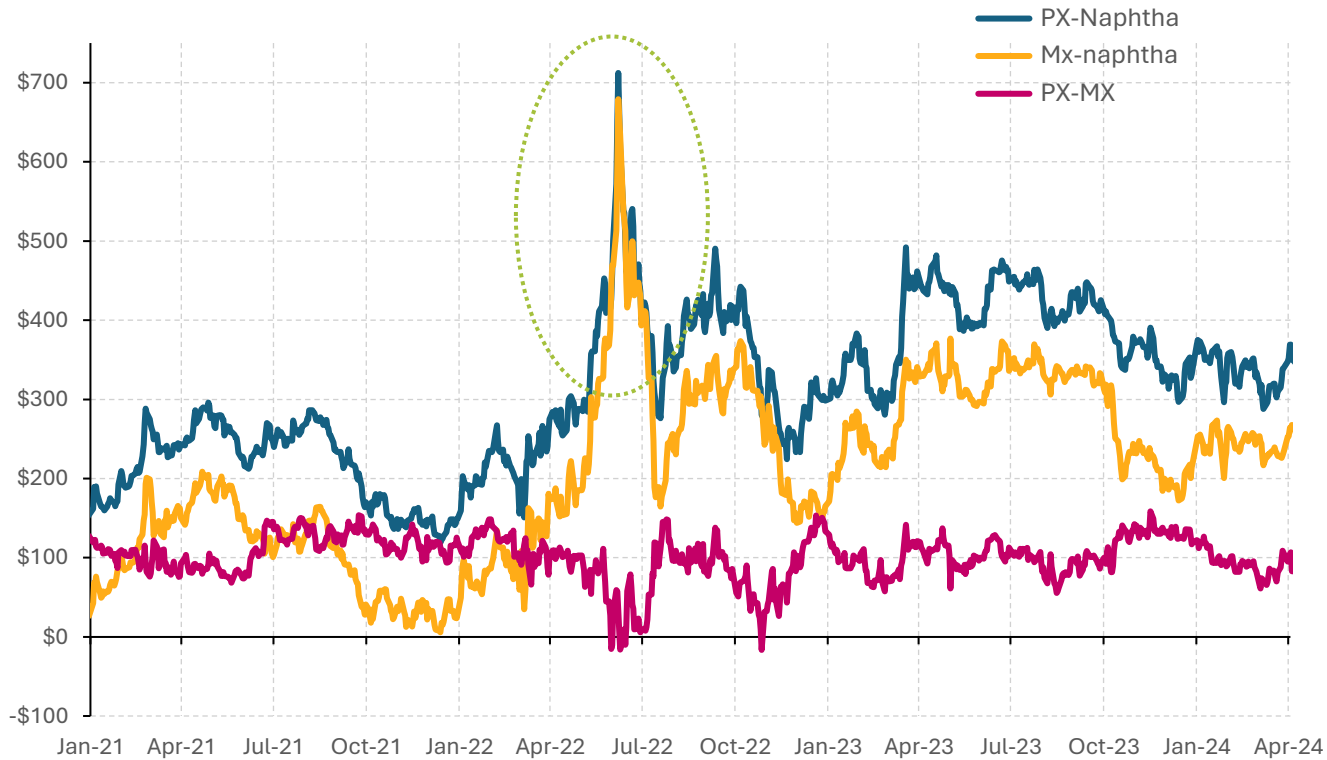
# PX price movement changed



- PX prices rallied on feedstock (MX) limitations.
- PTA growth outpaced PX, but price impact were not significant.
- Unconventional factors to continue influence PX prices.
- Expectations of seasonal spikes because of MX.

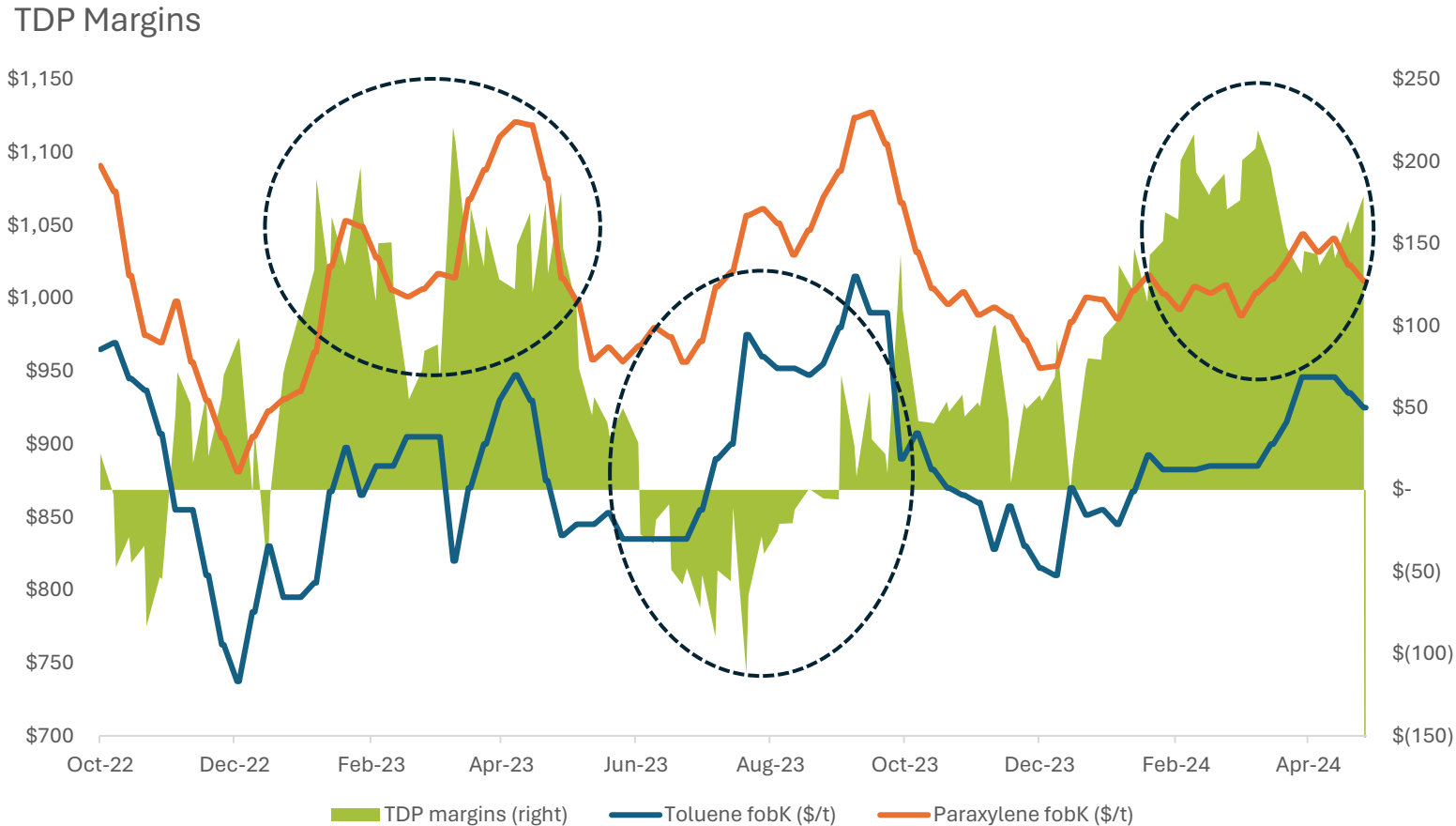
# PX-naphtha spreads volatility softens

Supply chain spreads, \$/t



- PX-naphtha spread widened to 10 year high.
- Supply glut in naphtha along with PTA growth supported spreads.
- PX supply demand is expected to be rather balance this year.
- Tepid PX demand to subdue PX-MX margins.

# TDP Margins

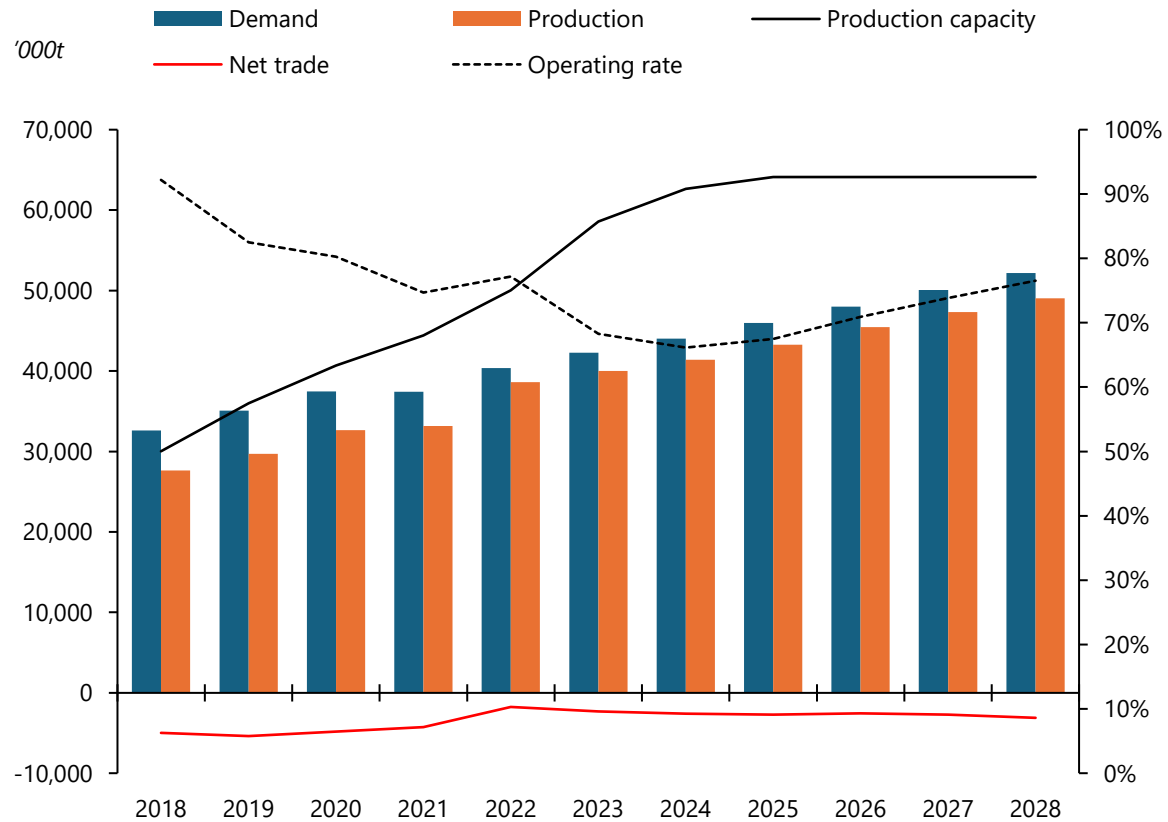


- PX prices and TDP margins were trending in tandem
- High toluene prices impacts margins and supplies.
- Prolonged high TDP margins lengthens PX supplies.
- PX faced extended periods of spot discounts this year.



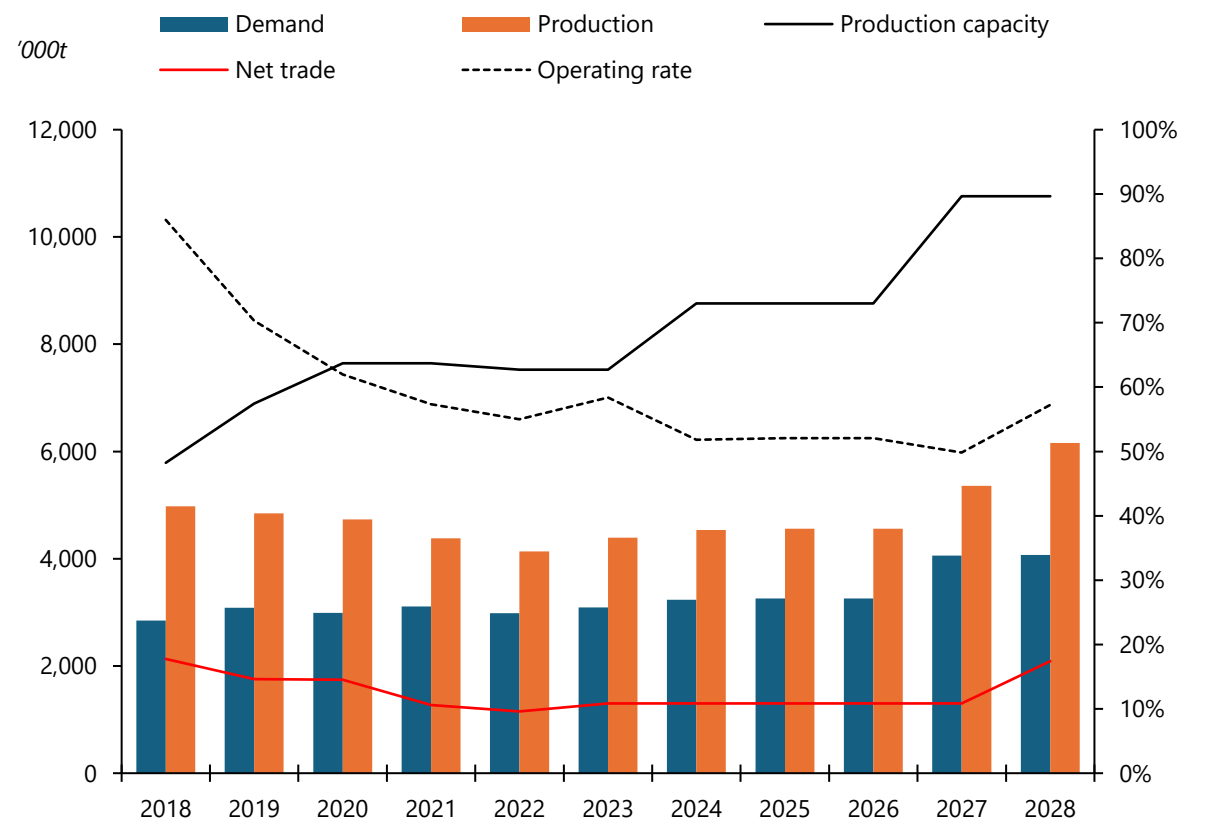
# Northeast and Southeast Asia Supply/Demand

## Northeast Asia PX Supply/Demand



-Argus Consulting Services

## Southeast Asia PX Supply/Demand



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# PX new capacities

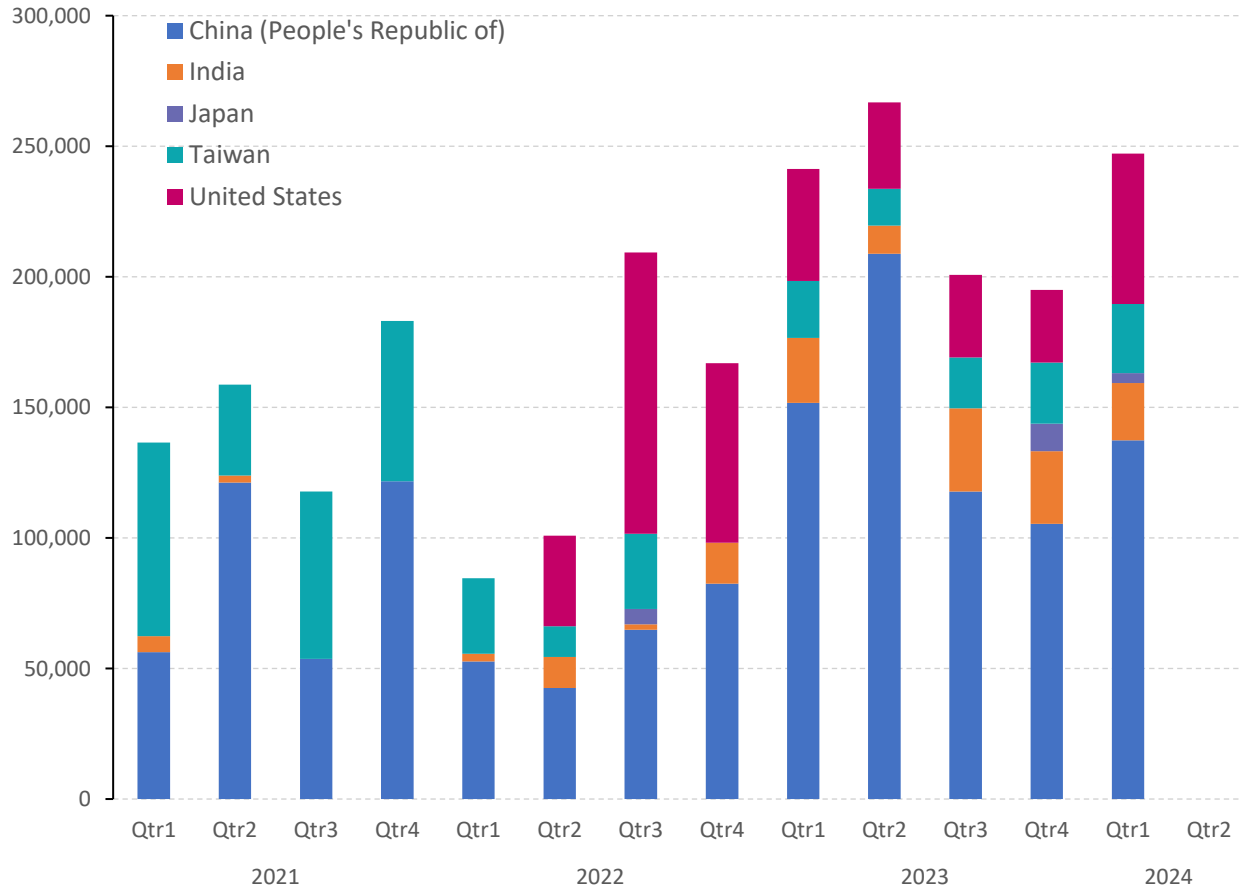
Region	Company	Location	2023	2024				2025	2026	2027
				Q1	Q2	Q3	Q4			
China	PetroChina Guandong(中石油广东)	Jieyang, Guandong	2600							
	CNOOC Huizhou(中海油惠州) Phase2	Huizhou,Guangdong	1500							
	Shenghong Petrochemicals(盛虹)	Lianyungang, Jiangsu	2000							
	CNOOC Ningbo Daxie(中海油大榭)	Ningbo, Zhejiang	1600							
	Yulong Phase 1(裕龙石化)	Yantai, Shandong						3000		
	Huajin Petrochemicals(华锦)	Panjin, Liaoning							2000	
	Zhongjin Phase 2	Ningbo, Zhejiang							1600	
	Sinopec Jiujiang(中石化九江) Phase 2	Jiujiang, Jiangxi							1500	
	Gulei PC	Zhangzhou							3200	
	Tongkun	Qinzhou								2800
	Sinochem Phase 2	Quanzhou								1200
Middle East	Aramco	Jazan, Saudi Arabia				800				
	KIPC	Al Zour, Kuwait							1400	
Southeast Asia	TPPI(Expansion)	Tuban, Indonesia			165					
	Pertamina-Rosneft	Tuban, Indonesia								1300
	Hengyi Industries phase 2	Brunei								2000
India	Haldia Petrochemicals	Cuddalore Tamil nadu								1600
	IOCL (Paradip refinery)	Odisha						800		
<b>Total</b>			<b>7700</b>	<b>965</b>				<b>3800</b>	<b>9700</b>	<b>8900</b>

# Trade flows & arbitrage



# Diversions in South Korea MX trade flow

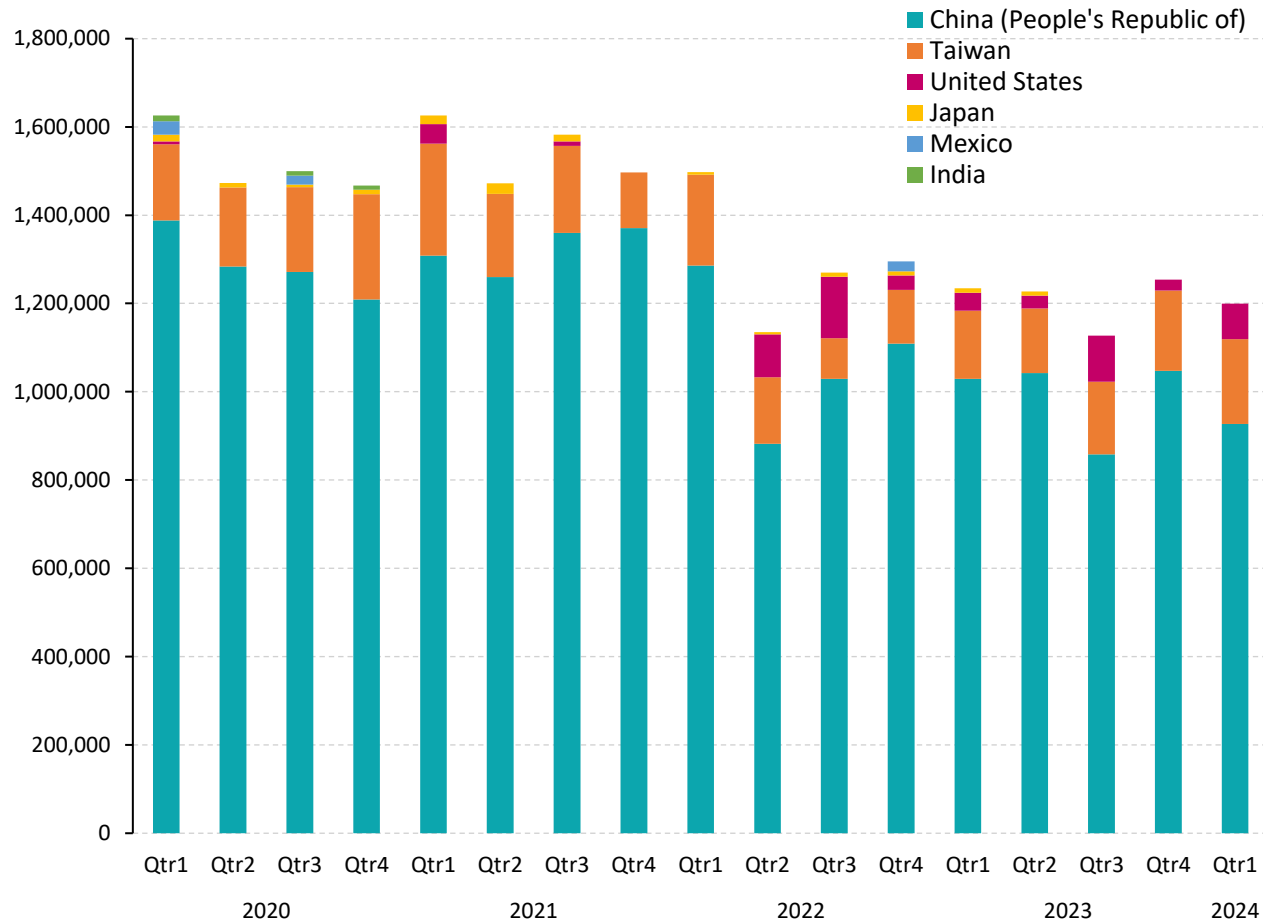
South Korea's MX exports, t



- US competes with China for MX.
- In 2022, MX exports to US was just 12pc lower than China imports.
- In 2023, China counter compete with high premiums.
- Flows into US to continue in 2024.

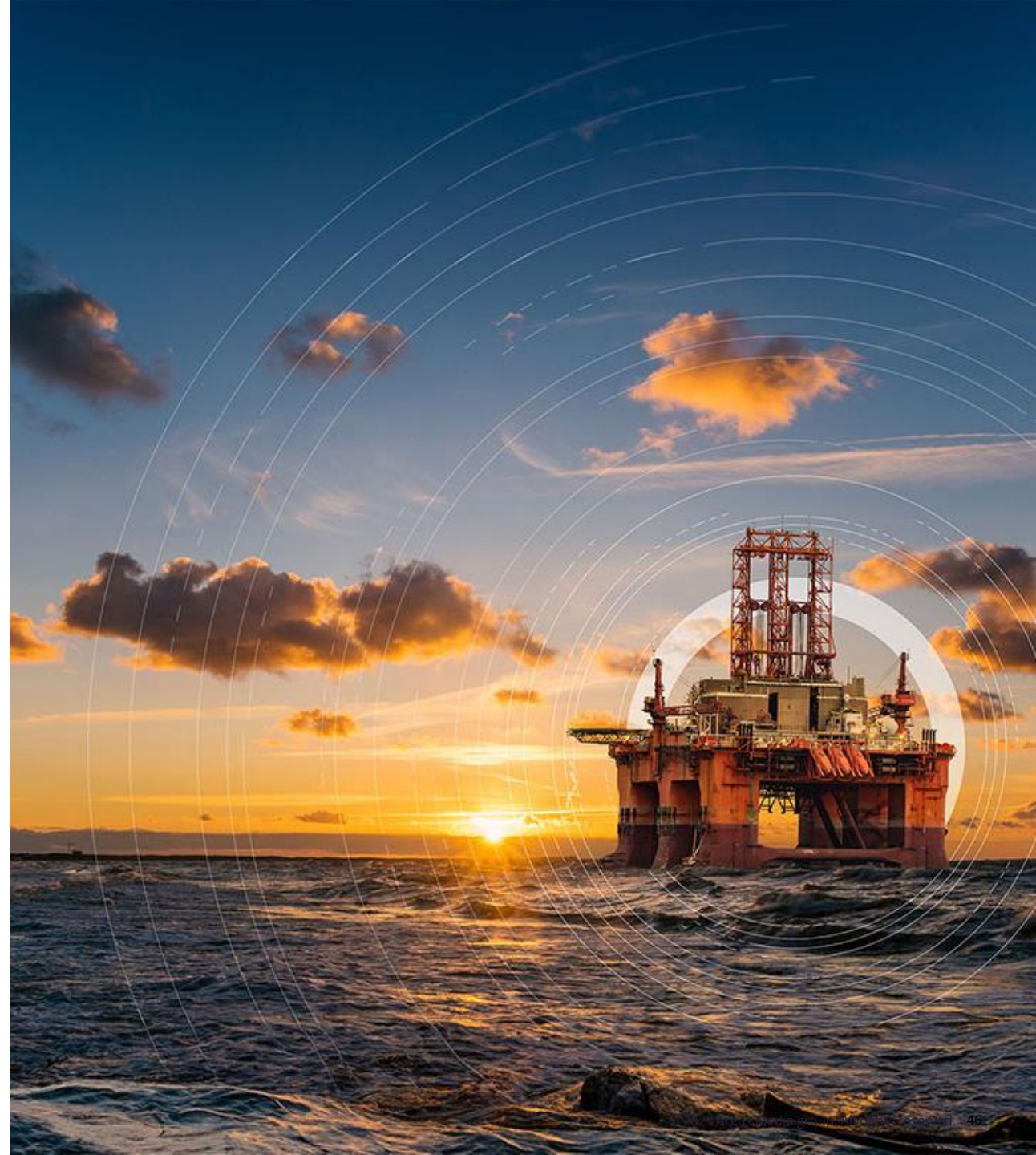
# S.Korea's PX to China shrank

South Korea's PX exports, t



- There was a YoY decline in imports by 18.7pc from 2021 to 2022, and 7.7pc from 2022- to 2023.
- China increases self sufficiency with YoY PX growth
- More imports are expected to shrink in 2025 – Yulong Petrochemical.
- PX co-loading along with MX for the US is anticipated to continue .

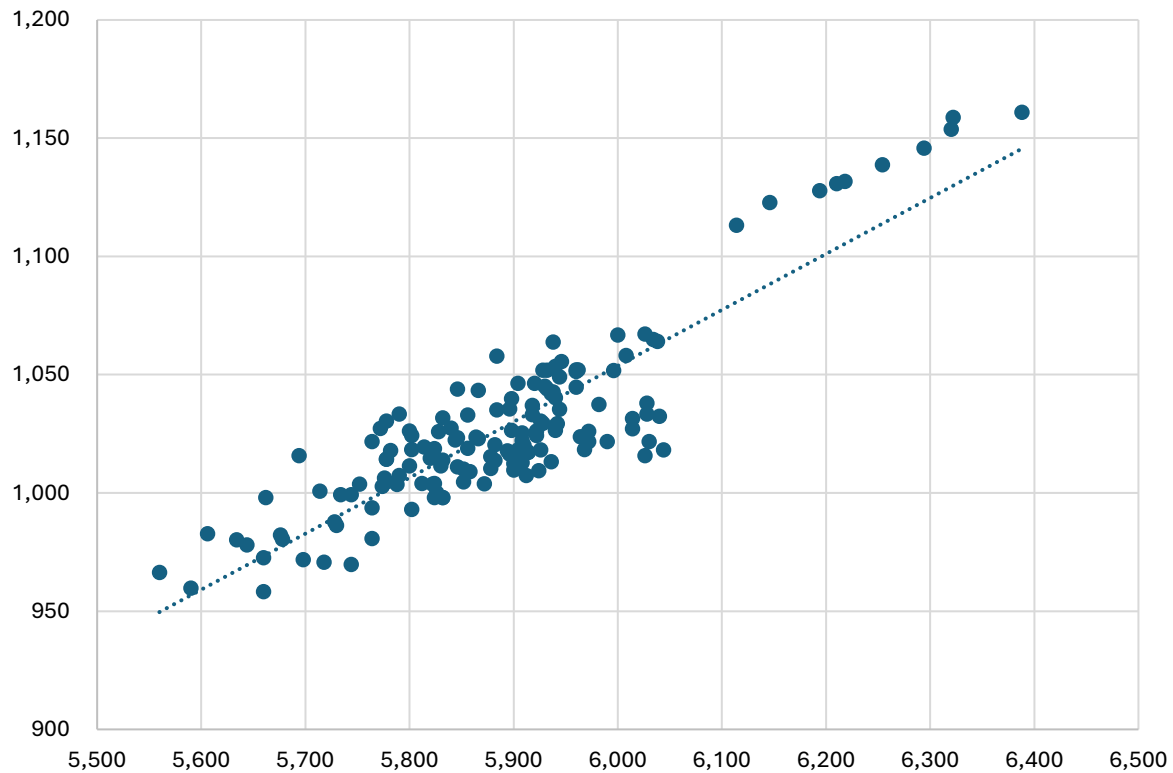
# PX physical futures trading



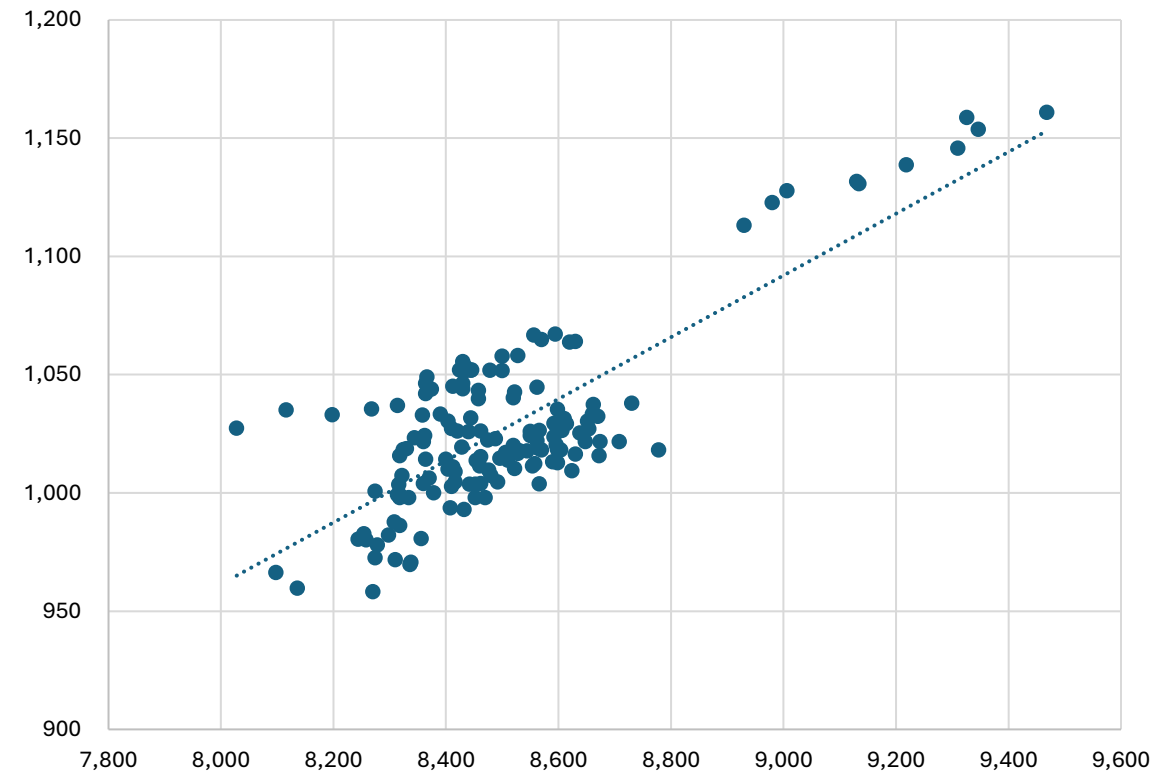
# New hedging tool for PX market

## PX futures and Cfr China relationship tightens

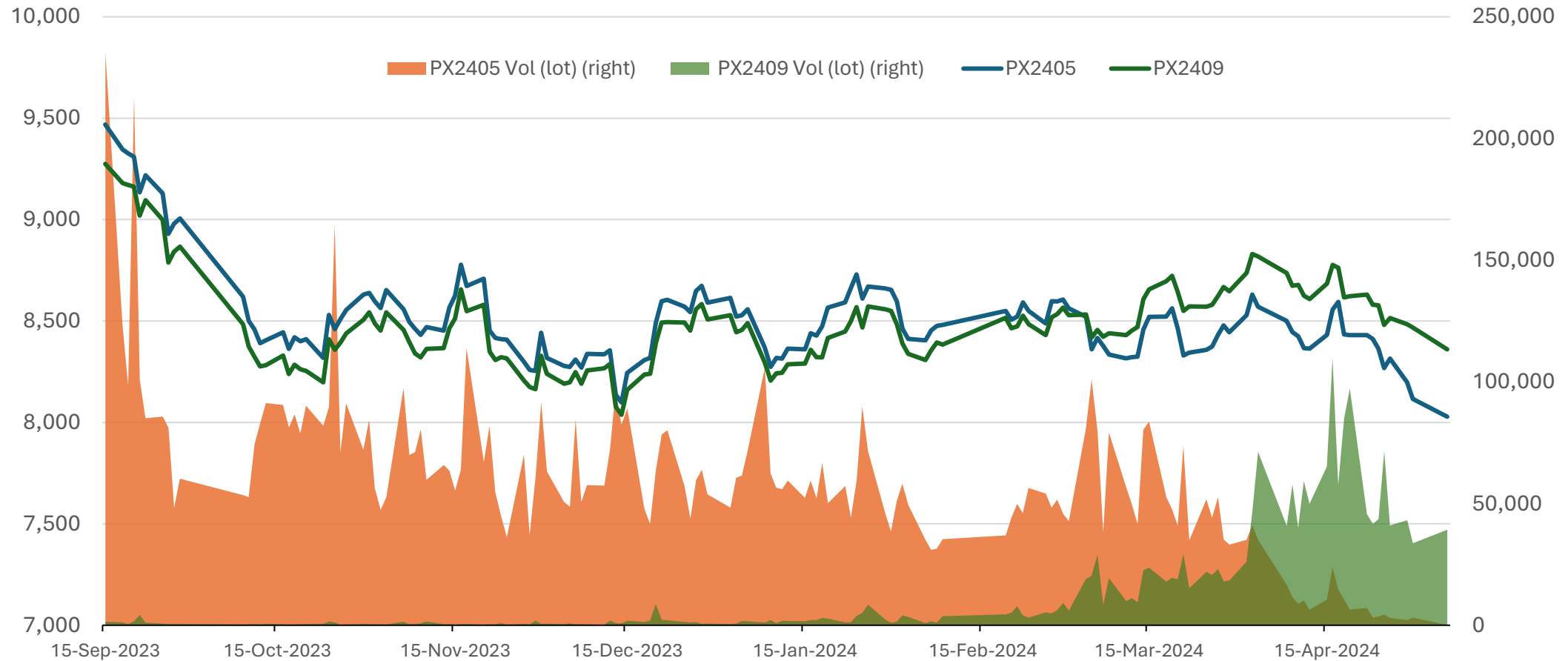
PTA futures - PX cfr China



PX futures - PX cfr China



# PX Futures liquidity steadies







# Argus Open Market (AOM) and Methodology

# PX – Asia Contract Price (ACP)

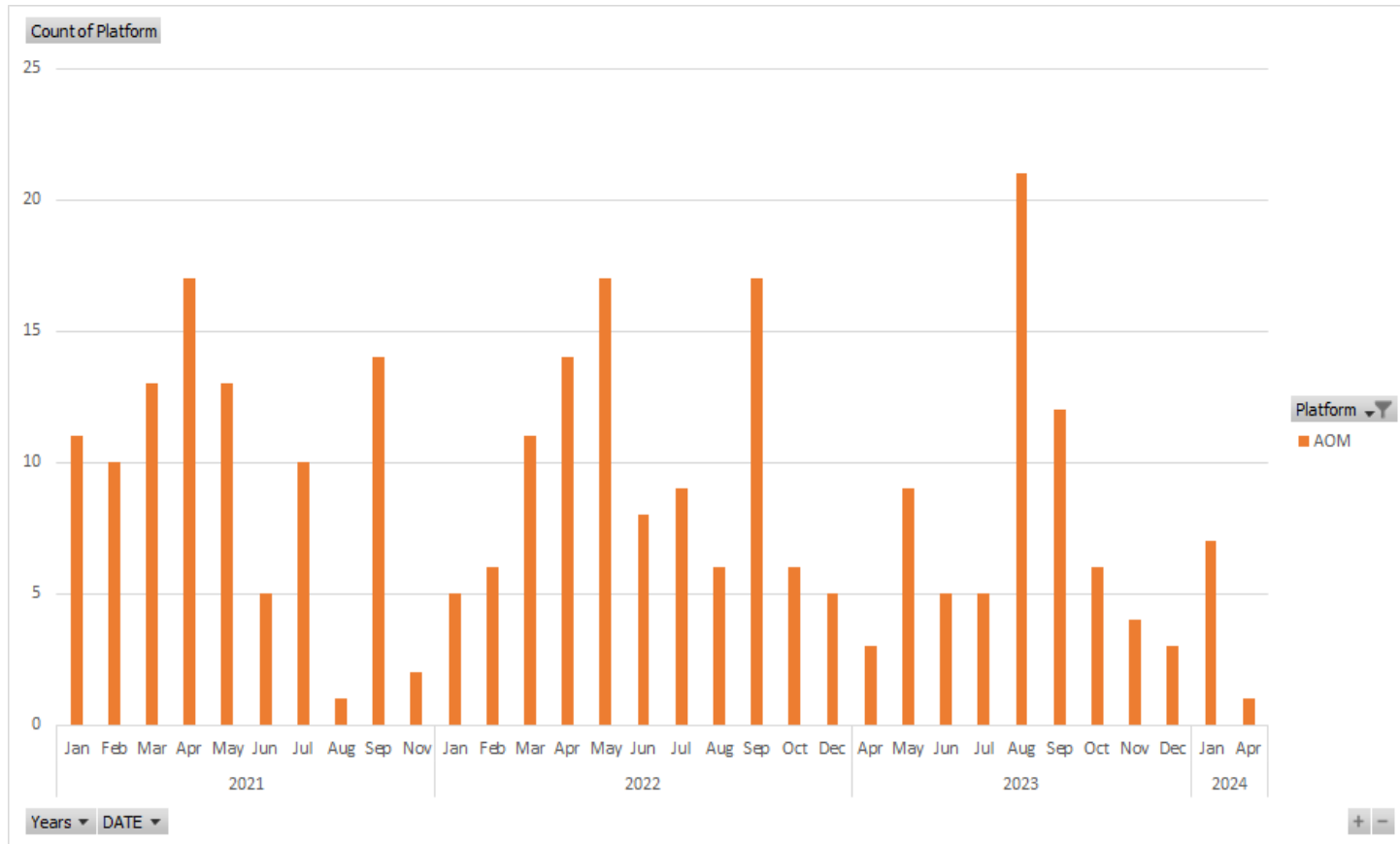
- Historical term contracts uses 50pc ACP + 50pc spot pricing.
- ACP negotiators revised in 2024 to three producers and six consumers.
- Settlements basis 100pc spot pricing gaining traction.
- Online trading platforms to gain liquidity, serving more purposeful price discovery for the market.

ACP negotiators	
Producers	Consumers
ENEOS	Yisheng Petrochemical
Idemitsu Kosan	Shenghong Petrochemical
ExxonMobil	Ineos (formerly BP)
SK Geo Centric	CAPCO
S-oil	OPTC
	Mitsui Chemical



ACP negotiators	
Producers	Consumers
ENEOS	Yisheng Petrochemical
Idemitsu Kosan	Shenghong Petrochemical
ExxonMobil	Ineos (formerly BP)
	CAPCO
	OPTC
	Xinfengming

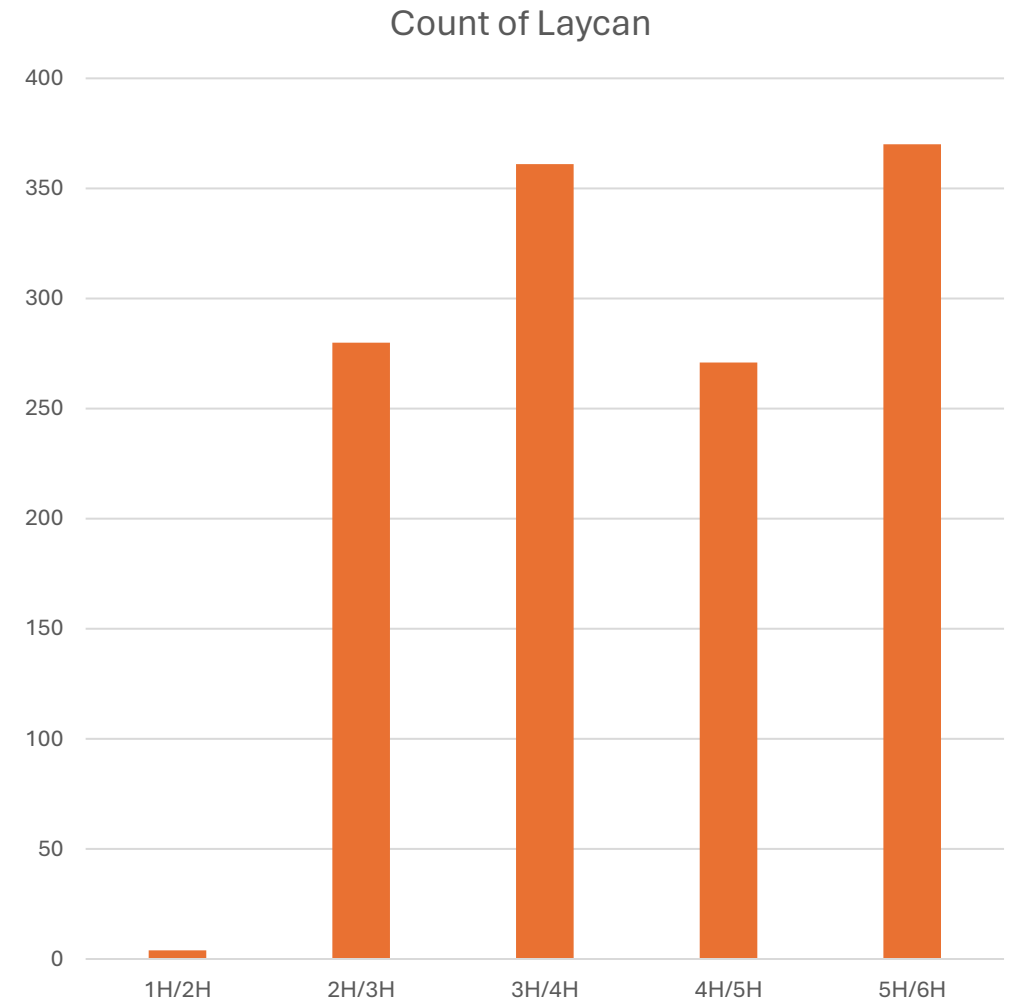
# Argus Open Market (AOM) progressions



- Argus launched an online trading platform (AOM) in Jan 2021.
- AOM participants grew to 28 companies in a short span of 3 years.
- New feature in progress - **Time swaps.**
- AOM platform is open to all Argus reports' subscribers at **no extra costs.**

# PX – Key methodology

Argus Key methodologies	
Cfr Taiwan/China marker	Average of <u>2nd, 3rd &amp; 4th</u> laycans
Port Basis	Cfr Taiwan/Ningbo/Dalian/Jiangyin/Jiaxing Added Jiaxing port as a standard since 2022
Cargo origin	Both Asia and Open origin cargoes are included in the price assessment  (With defined voyage duration for Asia Origin)
Collection of bids/offers/deals	(Argus Open Markets) Direct from buyers/sellers From PX brokers
Deals recognition	All deals done at 4-4.30pm Singapore time are included



# Conclusions

- Exponential growth in downstream plants to continue to support the PX market.
- Weak macroeconomics and demand may continue to keep idled plants offline
- Non-integrated units would have to further decrease operating rates to support margins
- PX margins is expected to narrow into the near future as feedstock prices are likely to rise on supply limitations.



# Further information

**In the first instance please contact:**

## **Contact name**

Email: [Alicia.goh@argusmedia.com](mailto:Alicia.goh@argusmedia.com)

Call: +65 9798 2877

# Thank you