

# Exploring the future in an unbalanced chemicals market

2024 Global Chemicals Outlook Webinar

27 February 2024

# Global Petrochemical Market Update

James Wilson, Senior Analyst (Olefins)

# Global Petchem Operating Rates | No short-term recovery expected



Olefins Supply & Demand (Global)



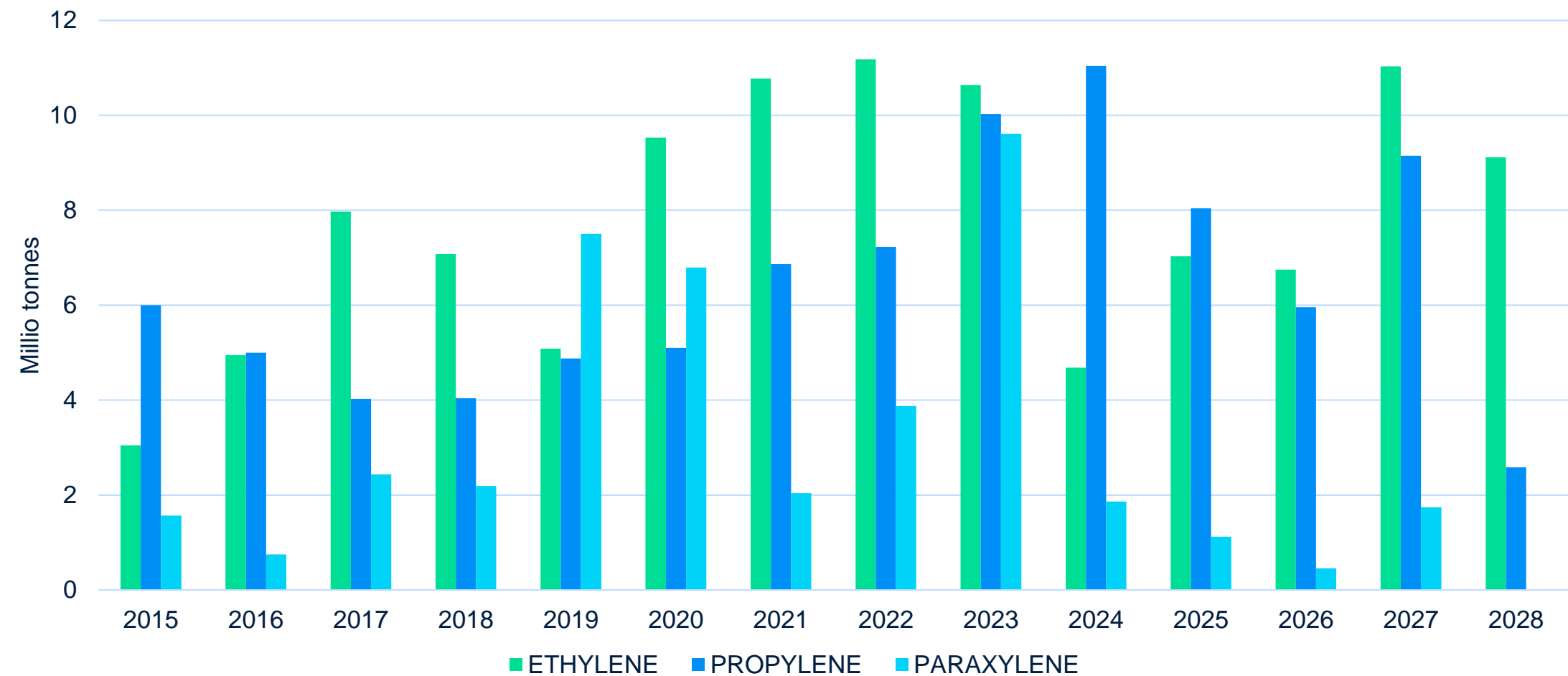
Aromatics Supply & Demand (Global)



# Global Capacity Investments | Record levels of addition



Incremental Capacity Growth by Product

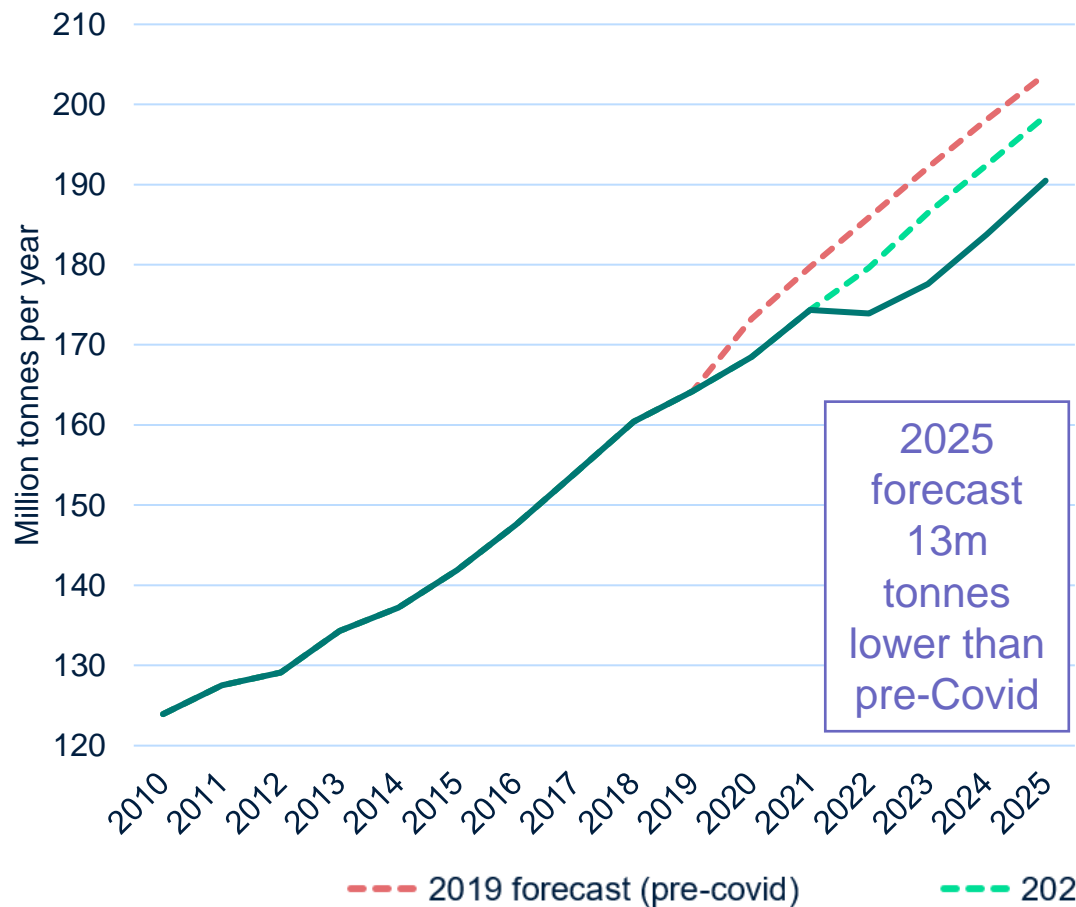


Source: ICIS Supply & Demand Database

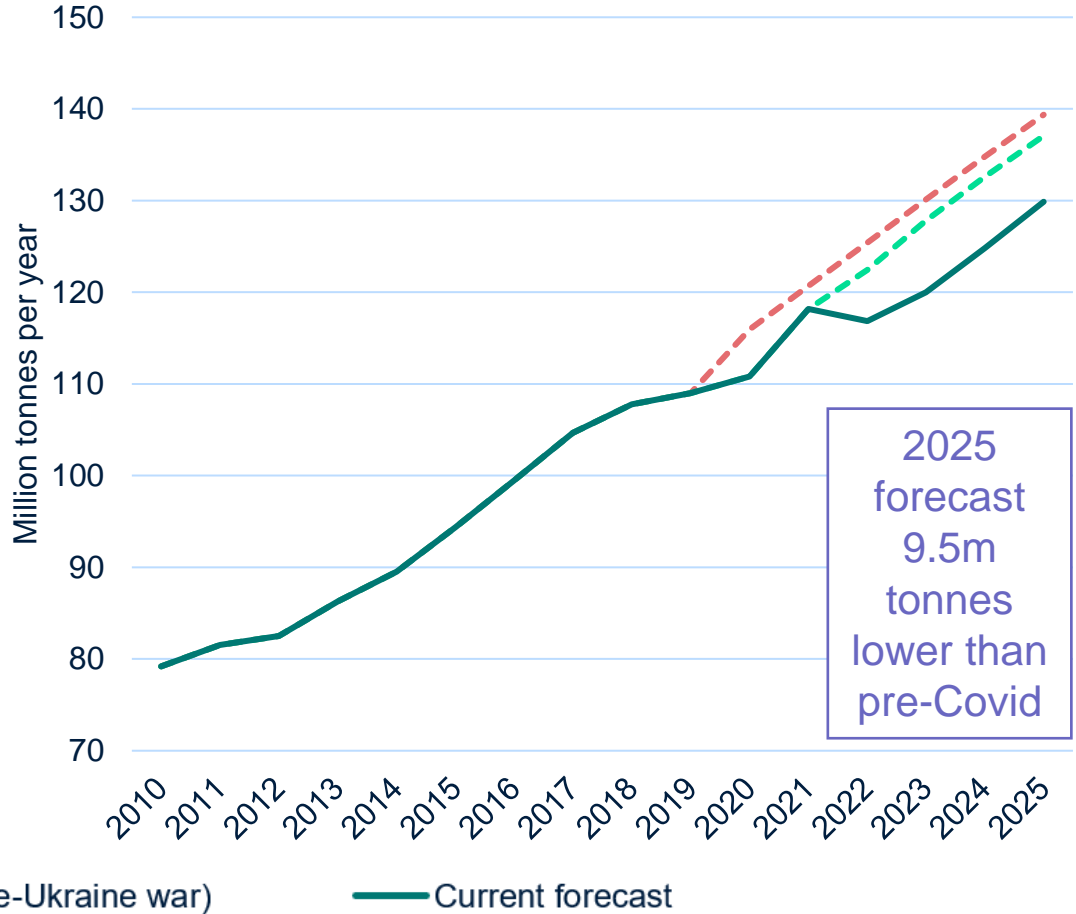
# Global Olefin Demand | Robust but growth has been lost



Global Ethylene Demand



Global Propylene Demand



Source: ICIS Supply & Demand Database

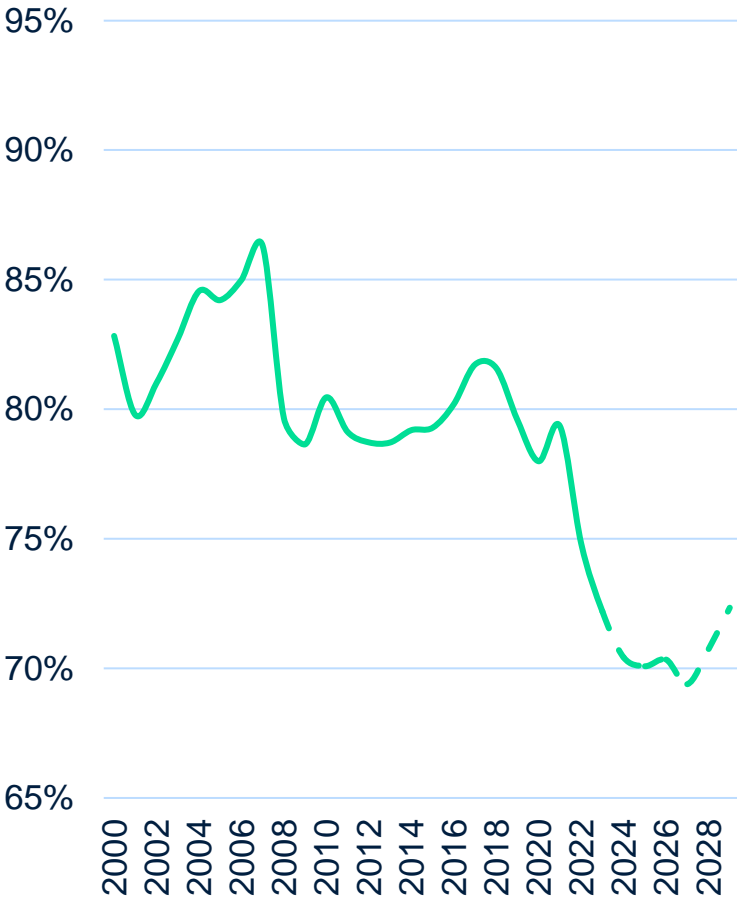
# Global Operating Rates | Unprecedented lows



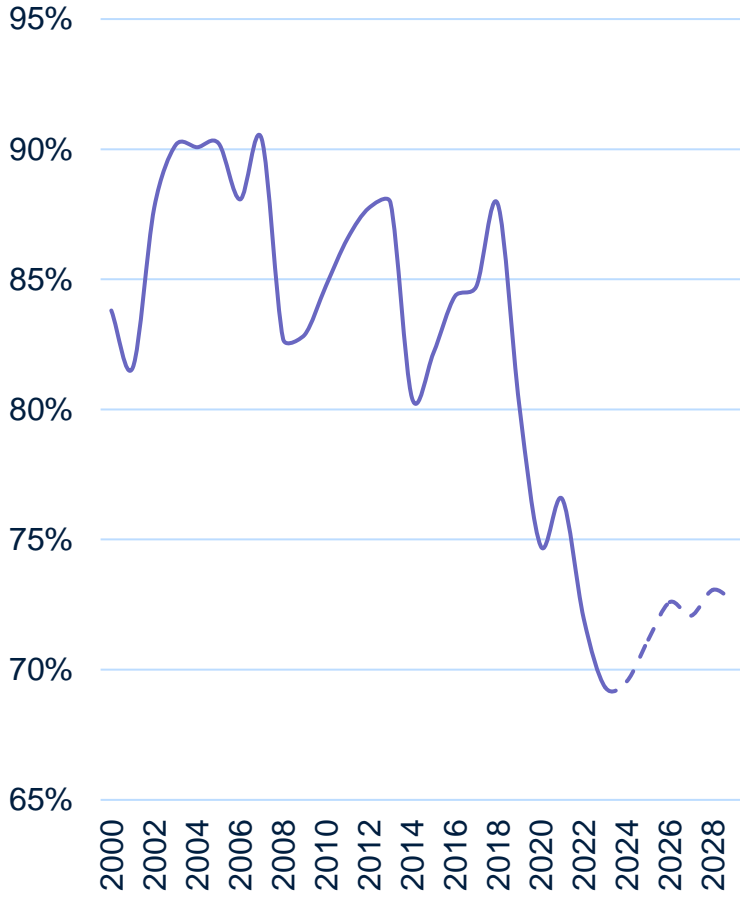
Ethylene



Propylene

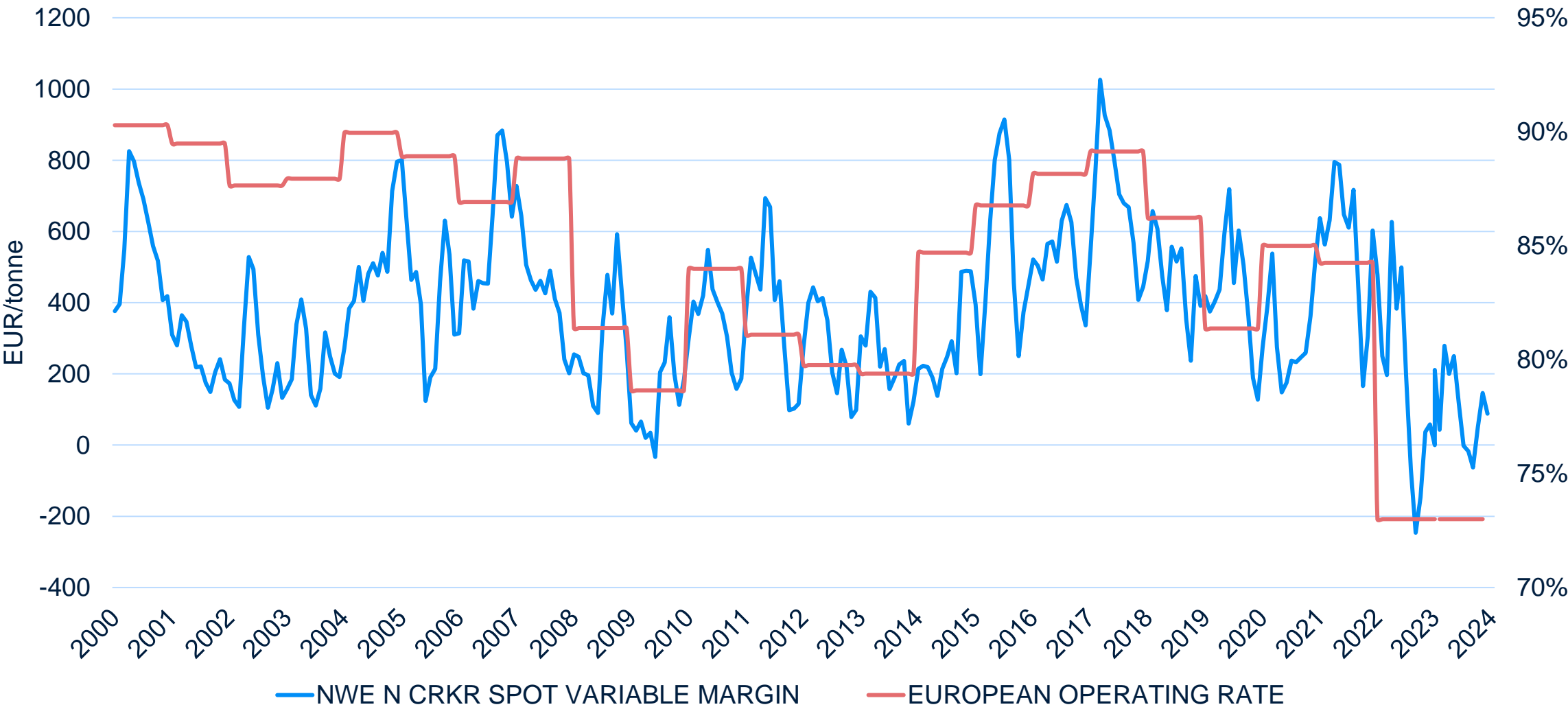


PX



Source: ICIS Supply & Demand Database

# Europe Ethylene Margins | Unprecedented lows



Source: ICIS Supply & Demand Database, ICIS Margin Analytics



# **China and Asia**

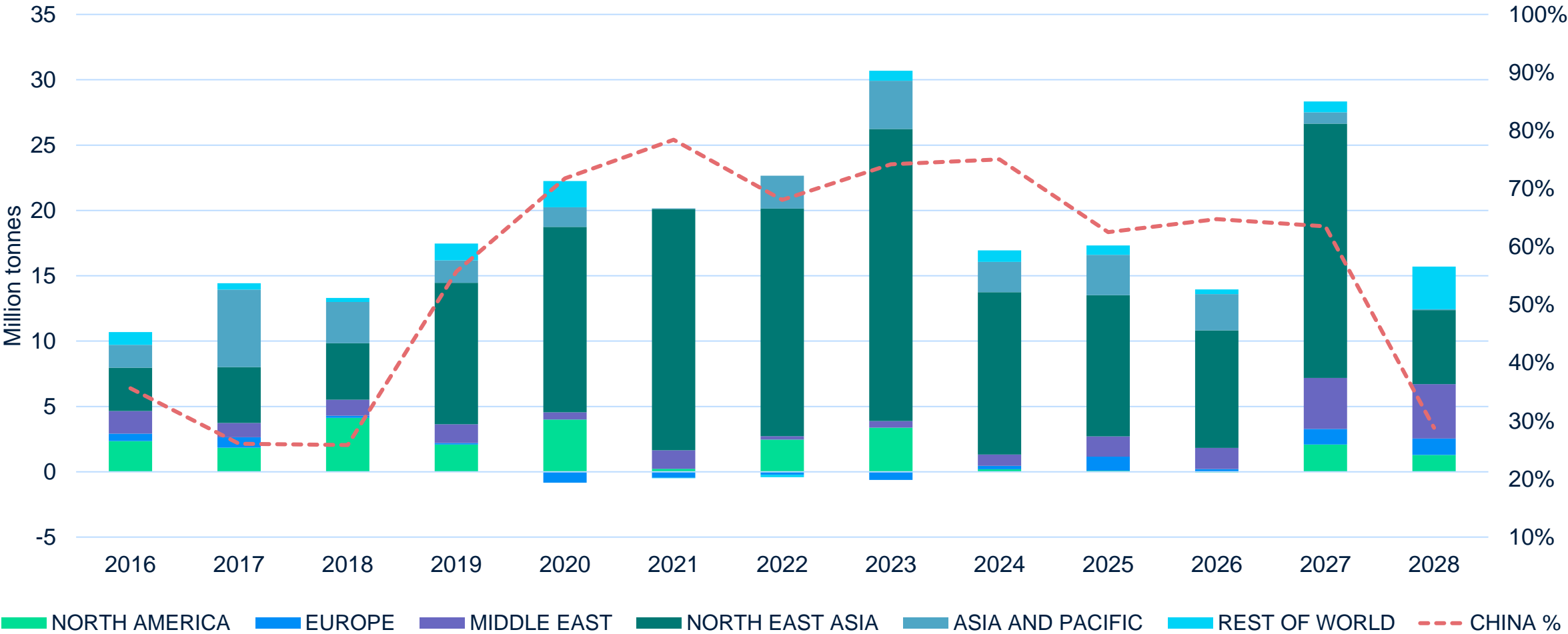
## **Key regions for capacity and demand**



# Global Capacity Investments | China driving current capacity growth



## Incremental Capacity Growth by Region (Ethylene, Propylene, Paraxylene)

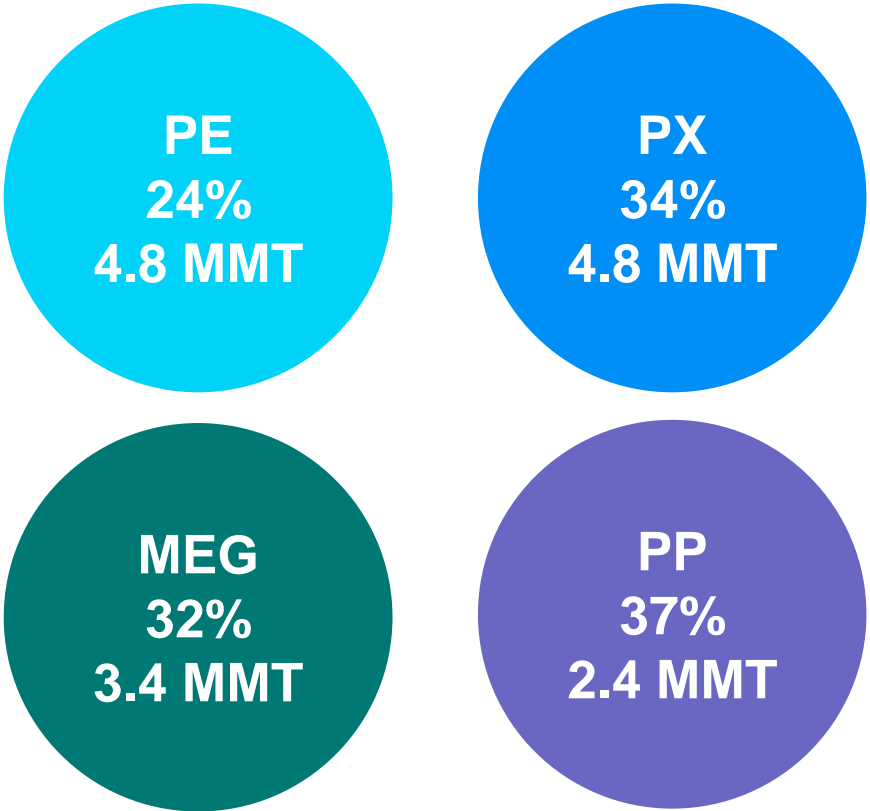


Source: ICIS Supply & Demand Database

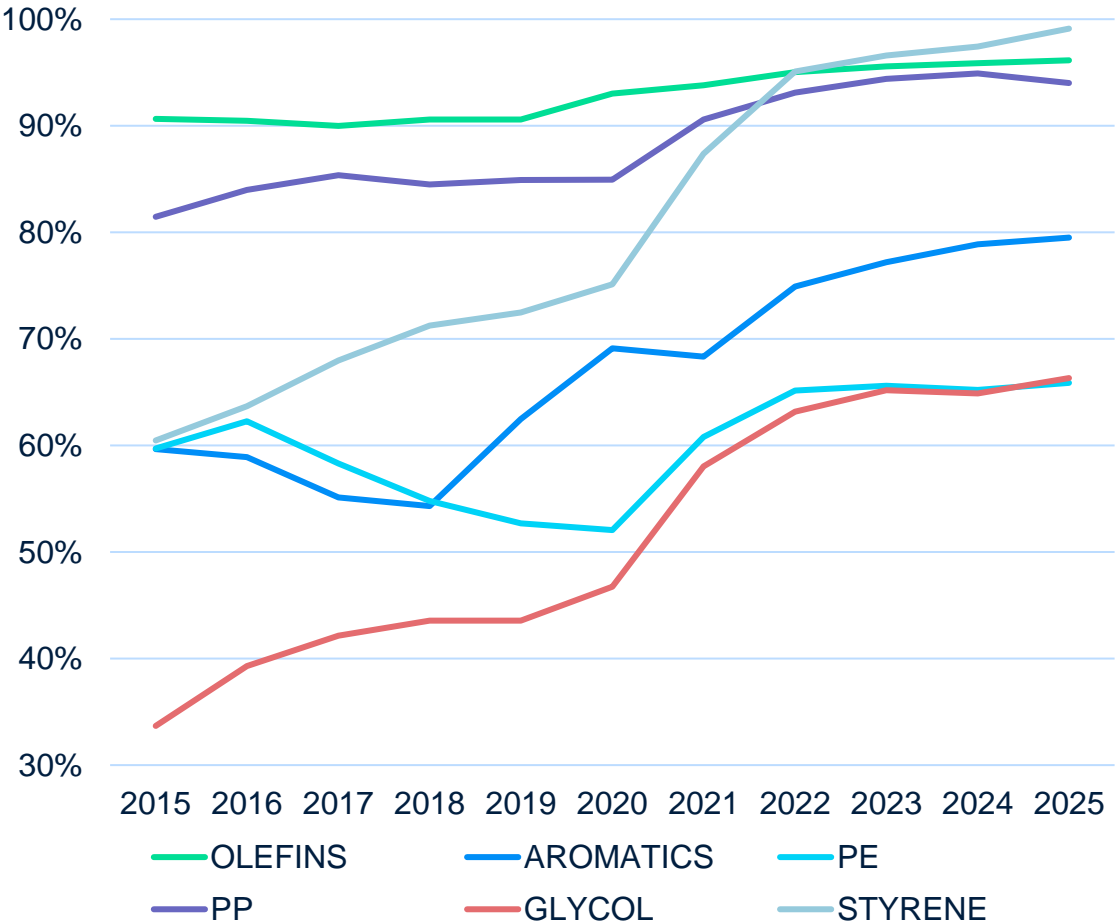
# China Trade | Import dependency falling fast



China import decrease, 2020-2023



China self-sufficiency

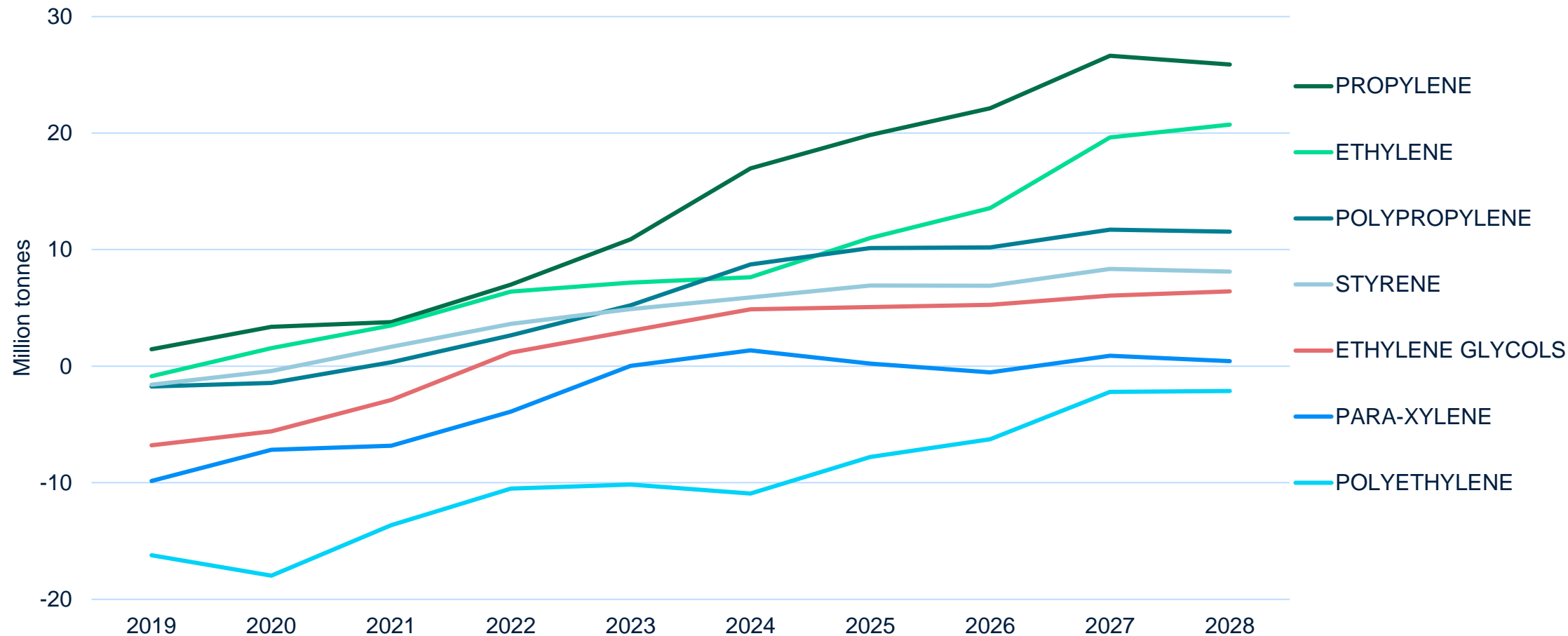


Source: ICIS Analytics

# China Capacity Additions | Continuing to outpace demand



China production capacity minus domestic demand

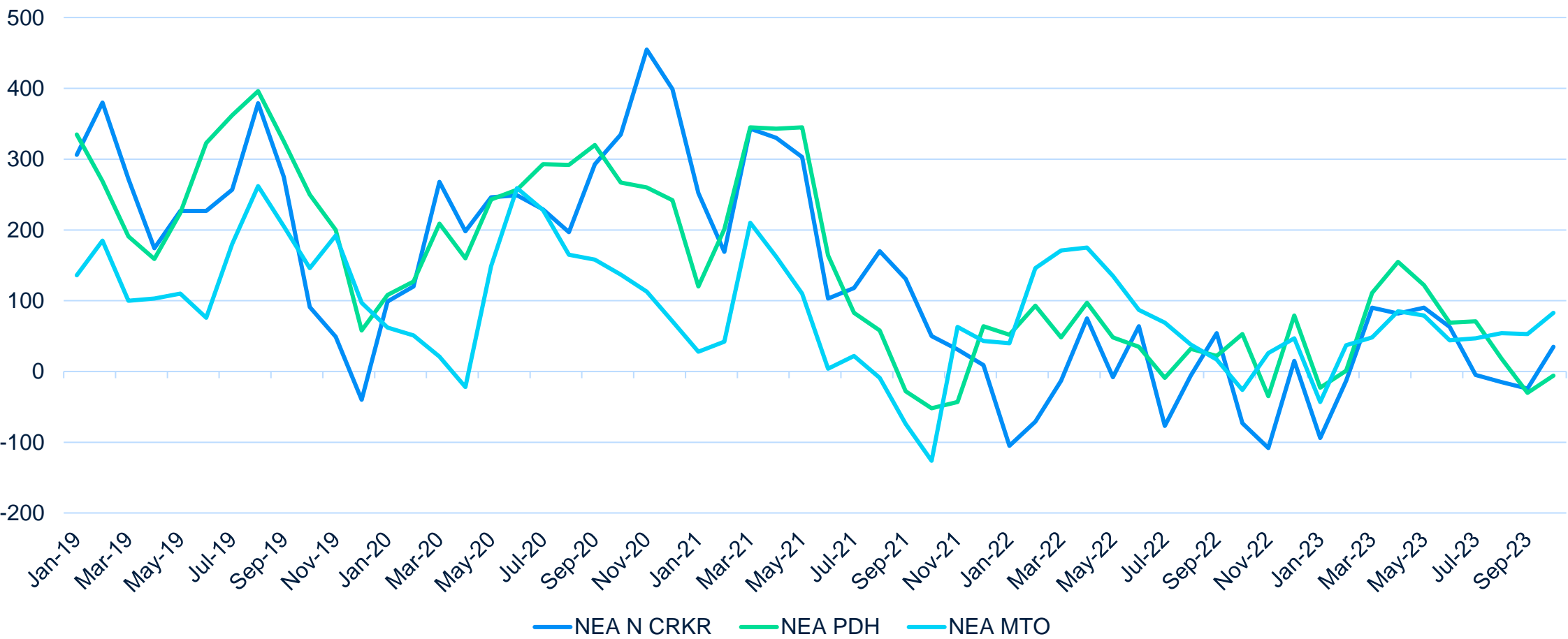


Source: ICIS Analytics

# Asian Olefin Operations | Margins depressed since end-2021



Light Olefin Variable Margins (USD/MT)



Source: ICIS Margin Analytics

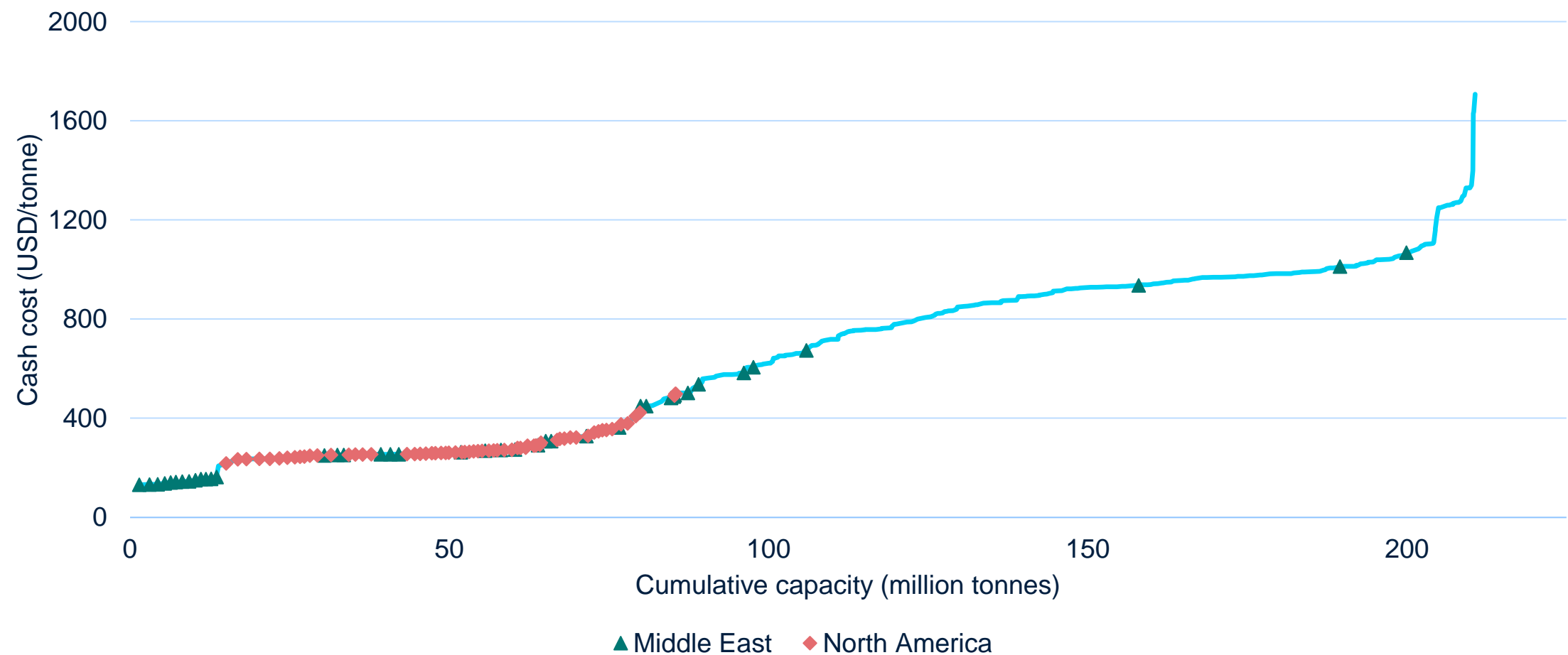


**North America and Middle East**  
**Cost advantaged, export focused**

# Cost Advantaged Regions | North America and Middle East



Global Ethylene Cost Curve, 2023

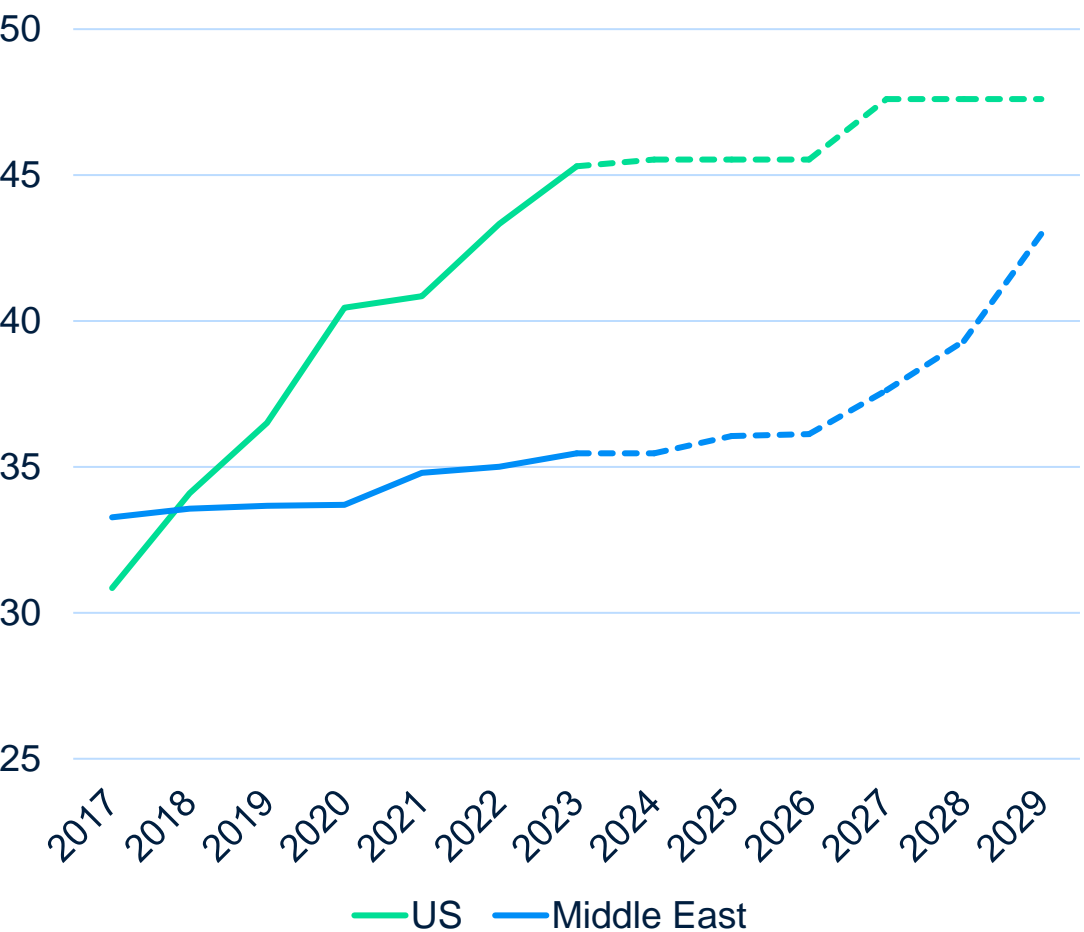


Source: ICIS Analytics

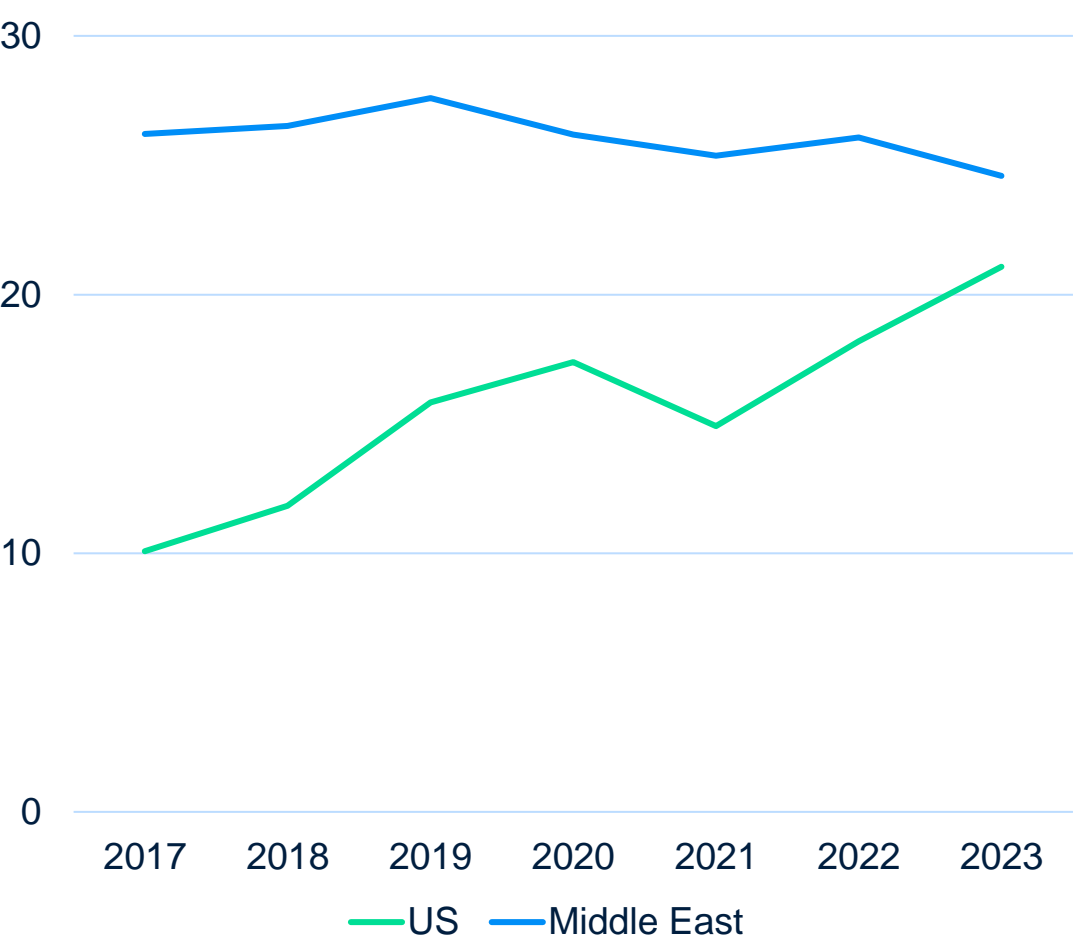
# Exports | US and Middle Eastern volumes to increase in the future



Ethylene Production Capacity (million tonnes)



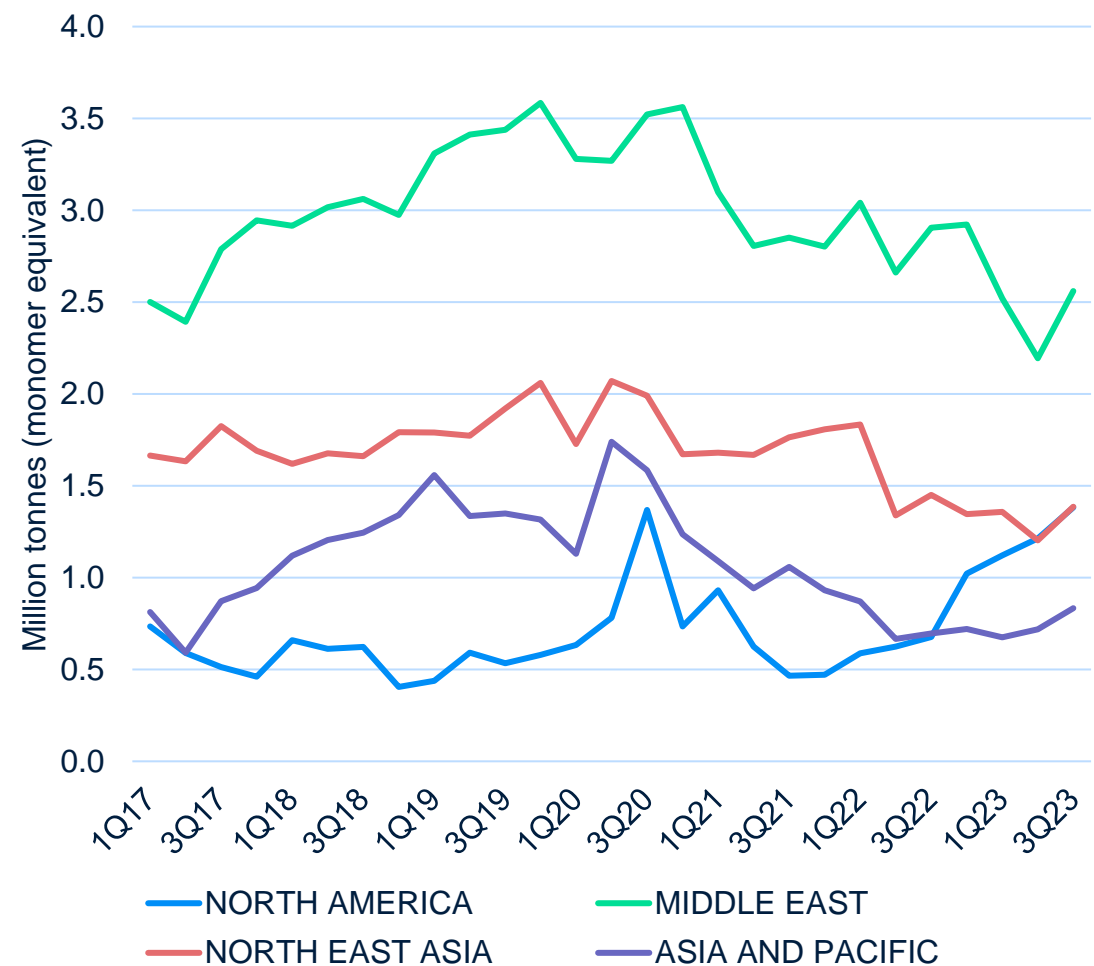
Ethylene & Derivative Exports, monomer basis (million tonnes)



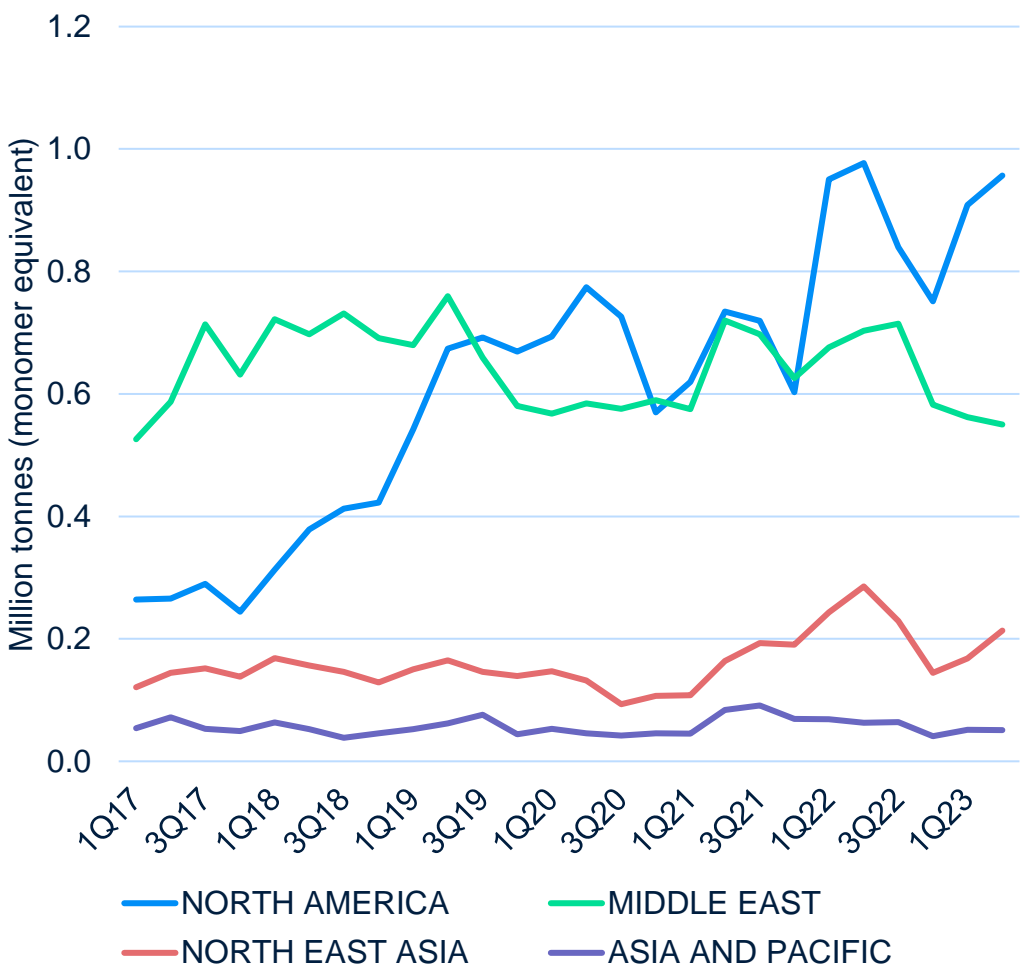
# Changing Trade Flows | US export penetration growing



China Imports of Ethylene & Derivatives



EU28 Imports of Ethylene & Derivatives



Source: ICIS Analytics

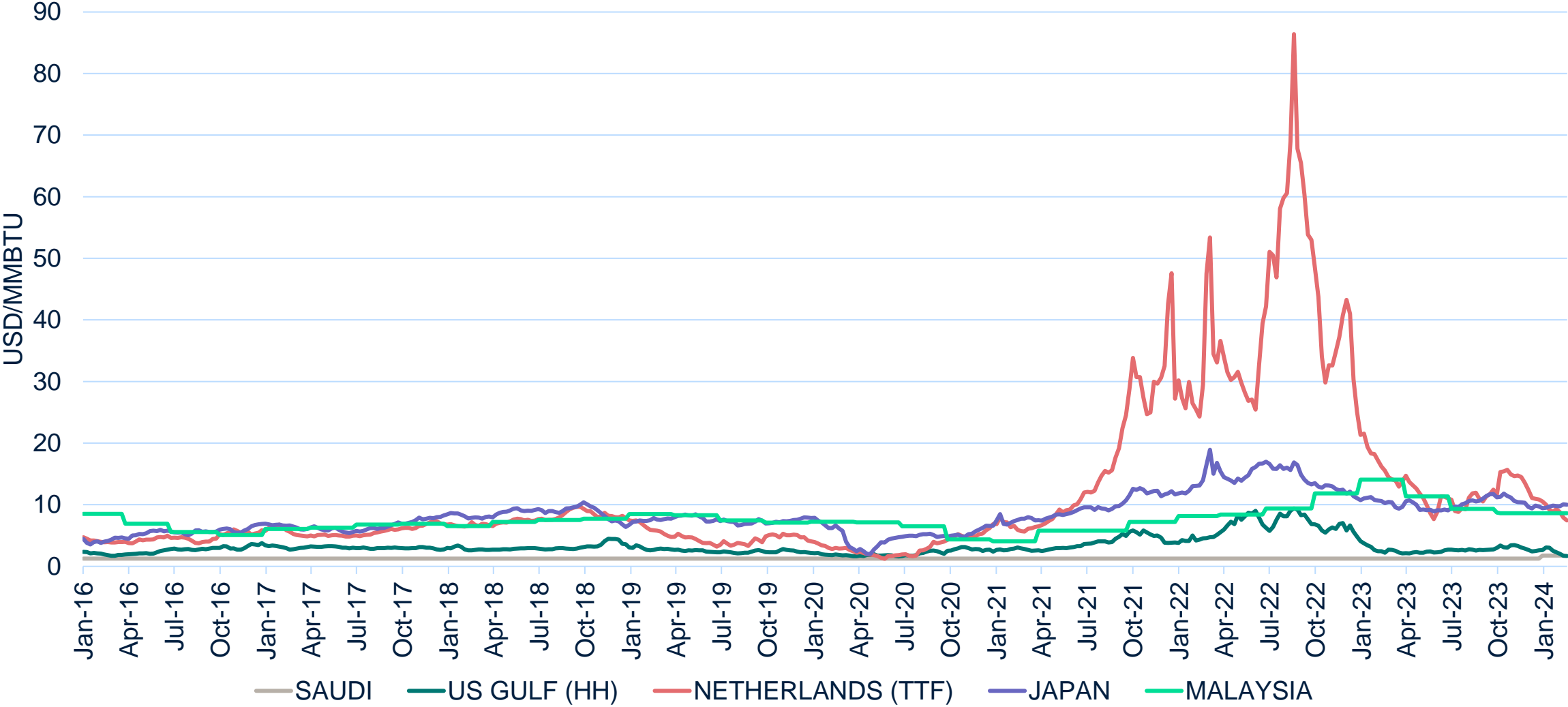




**Europe**

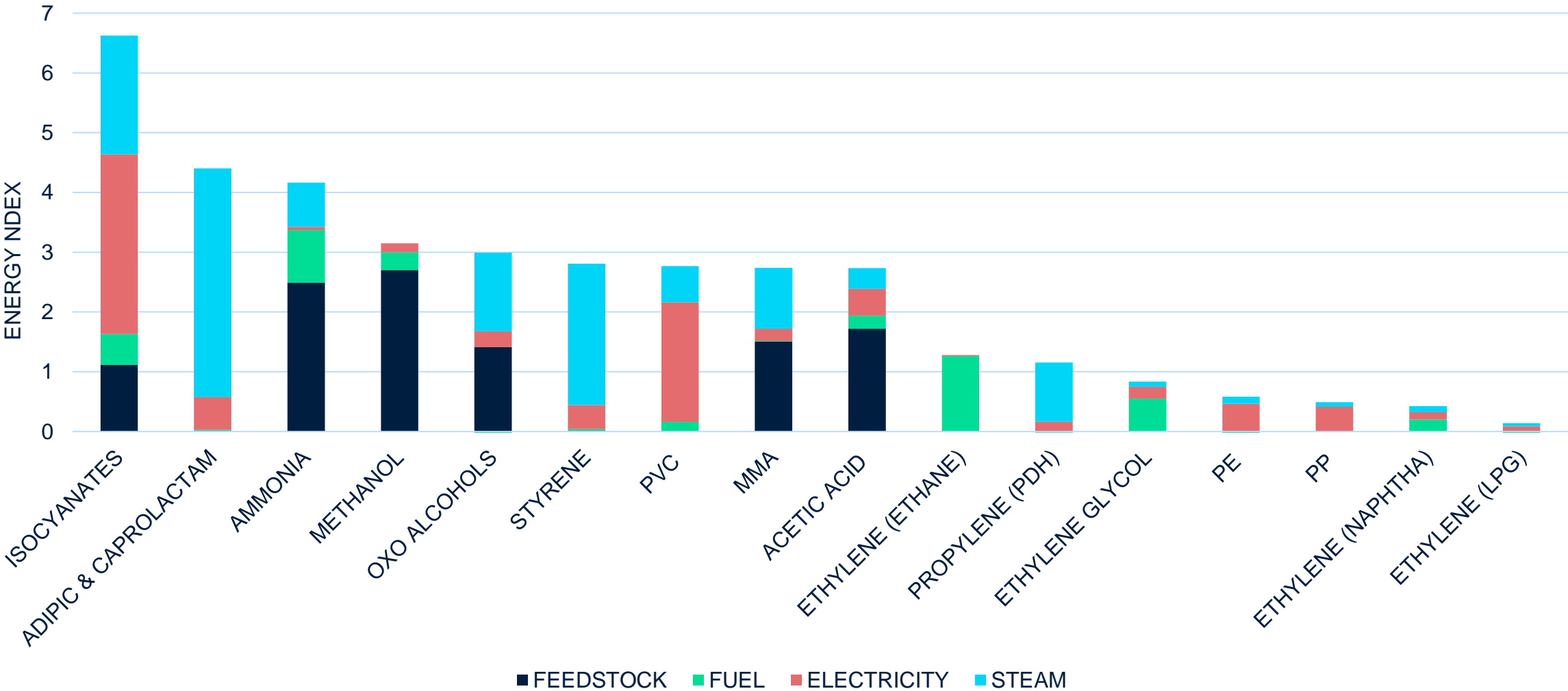
**The new high cost region for production**

# Global Gas Pricing | Structural differences



Source: ICIS Pricing, ICIS Analytics

# Energy Intensity | Comparing different chemical products

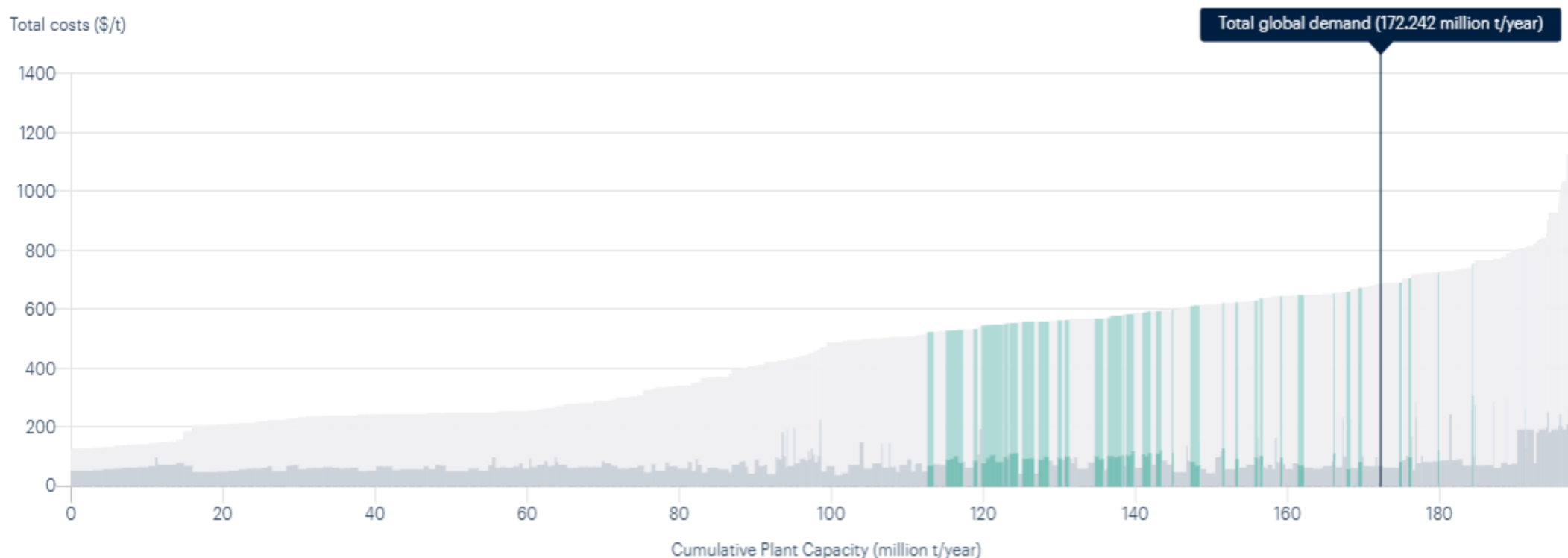


Source: ICIS Analytics

# Cost of Production | Before the energy crisis...



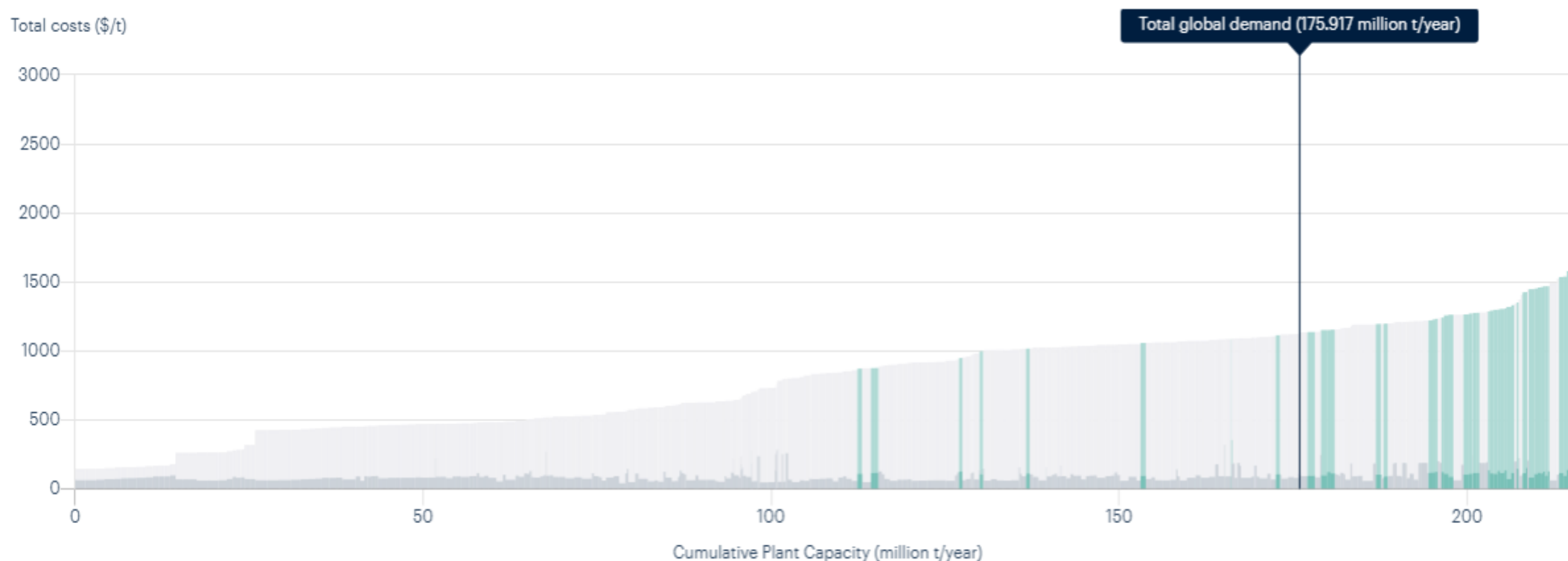
Ethylene, April 2021, European producers highlighted



# Cost of Production | At the height of the crisis...



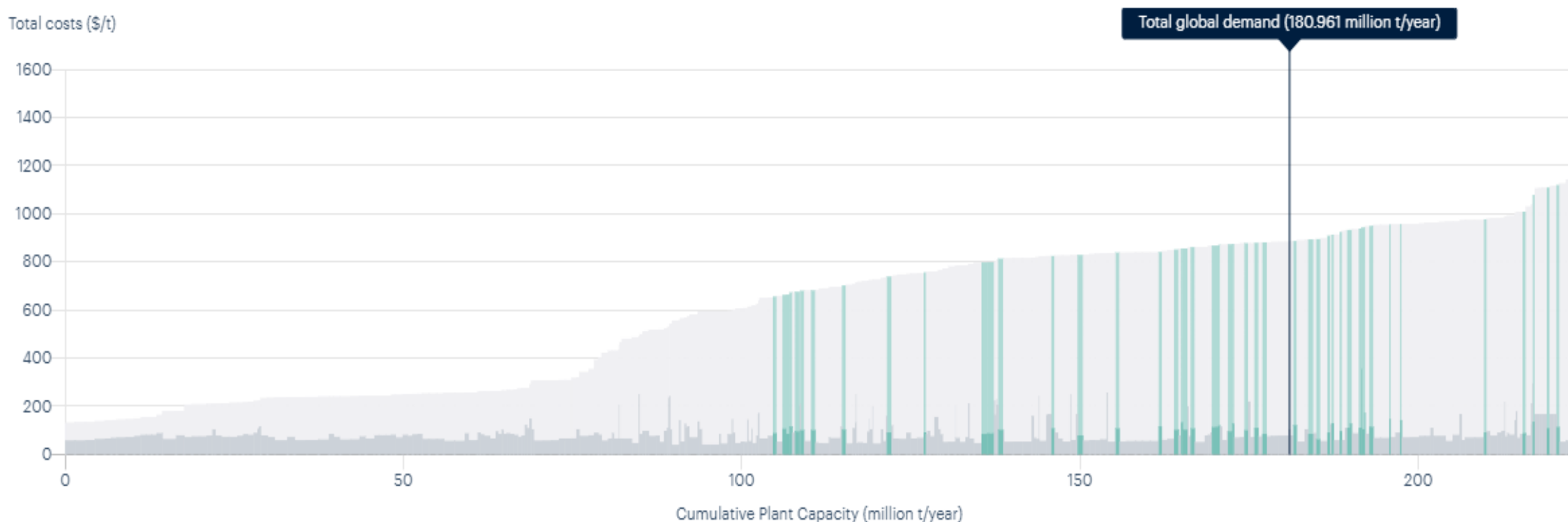
Ethylene, September 2022, European producers highlighted



# Cost of Production | The new normal?



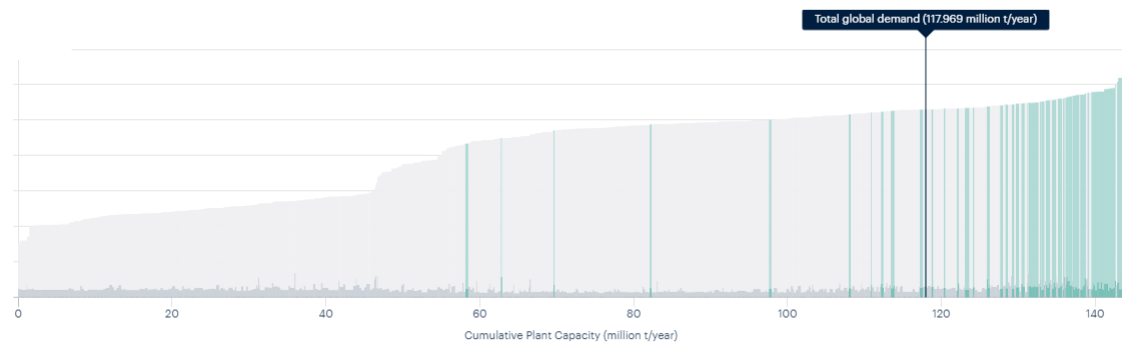
## Ethylene, November 2023, European producers highlighted



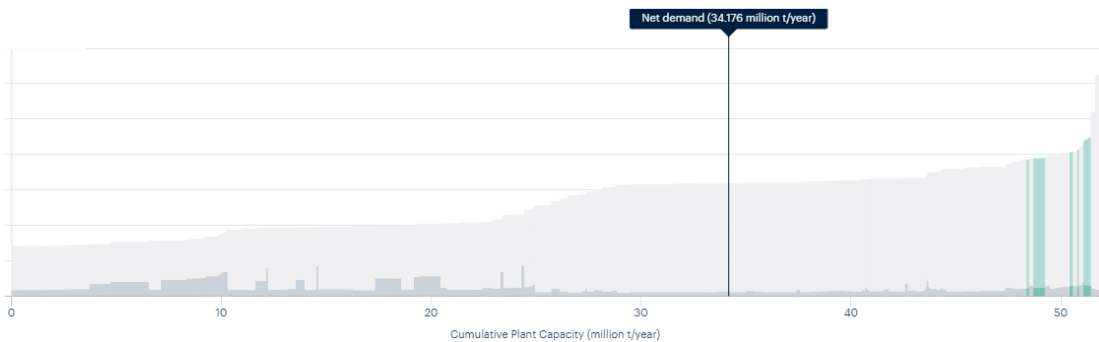
# Cost of Production | Europe is the highest cost region



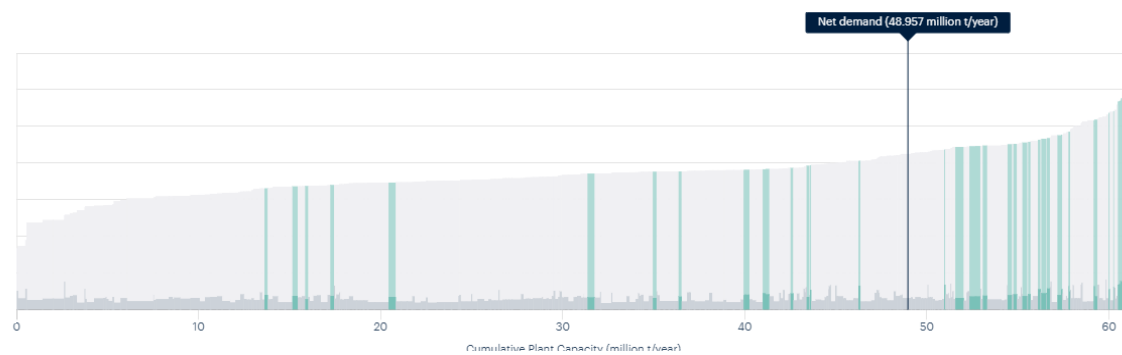
## Polyethylene September 2023



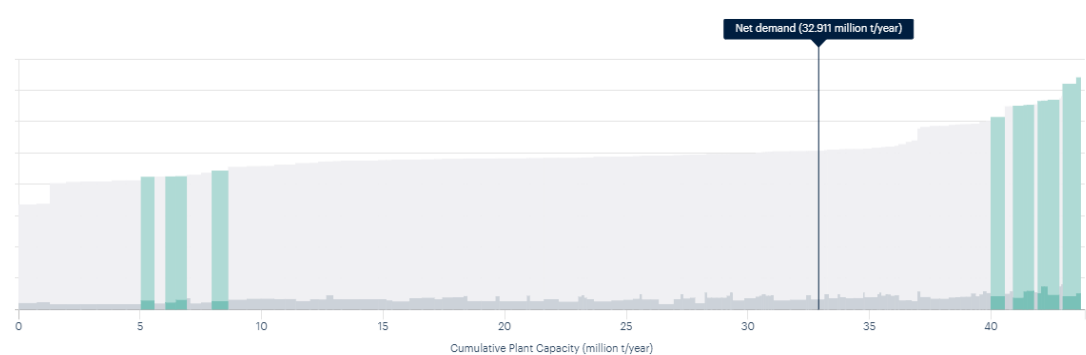
## Ethylene Glycol August 2023



## PVC July 2023



## Styrene June 2023

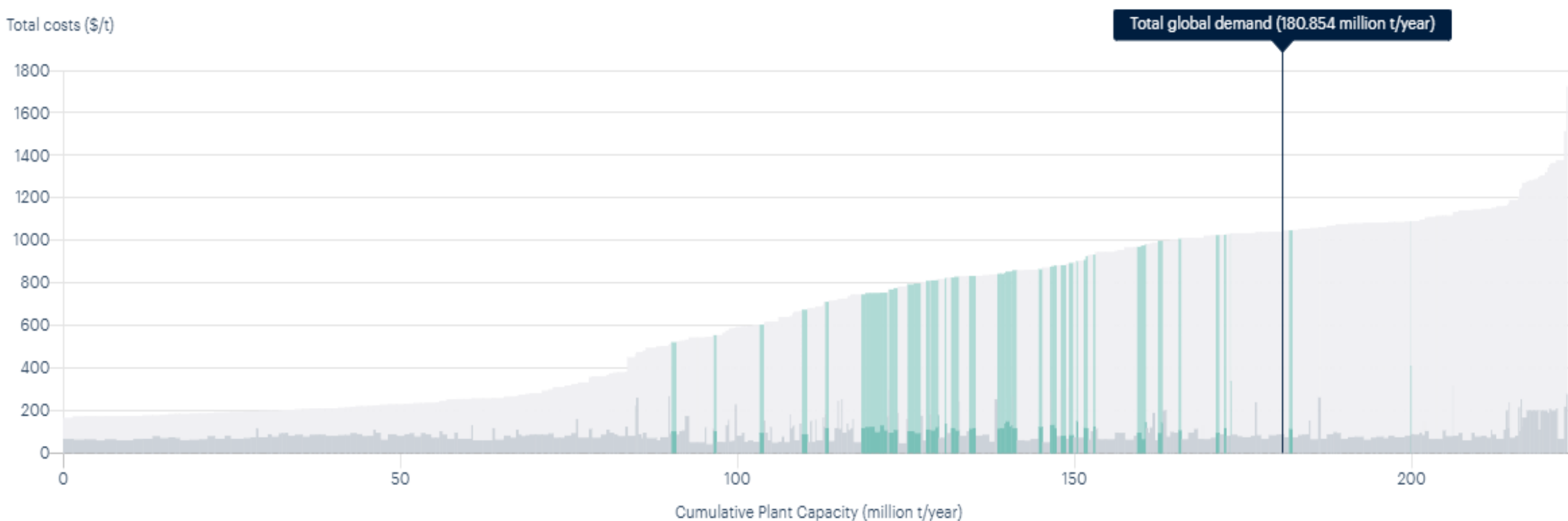


Source: ICIS Cost Curves (European producers highlighted)

# Cost of Production | Warmer winter and disrupted trade flows

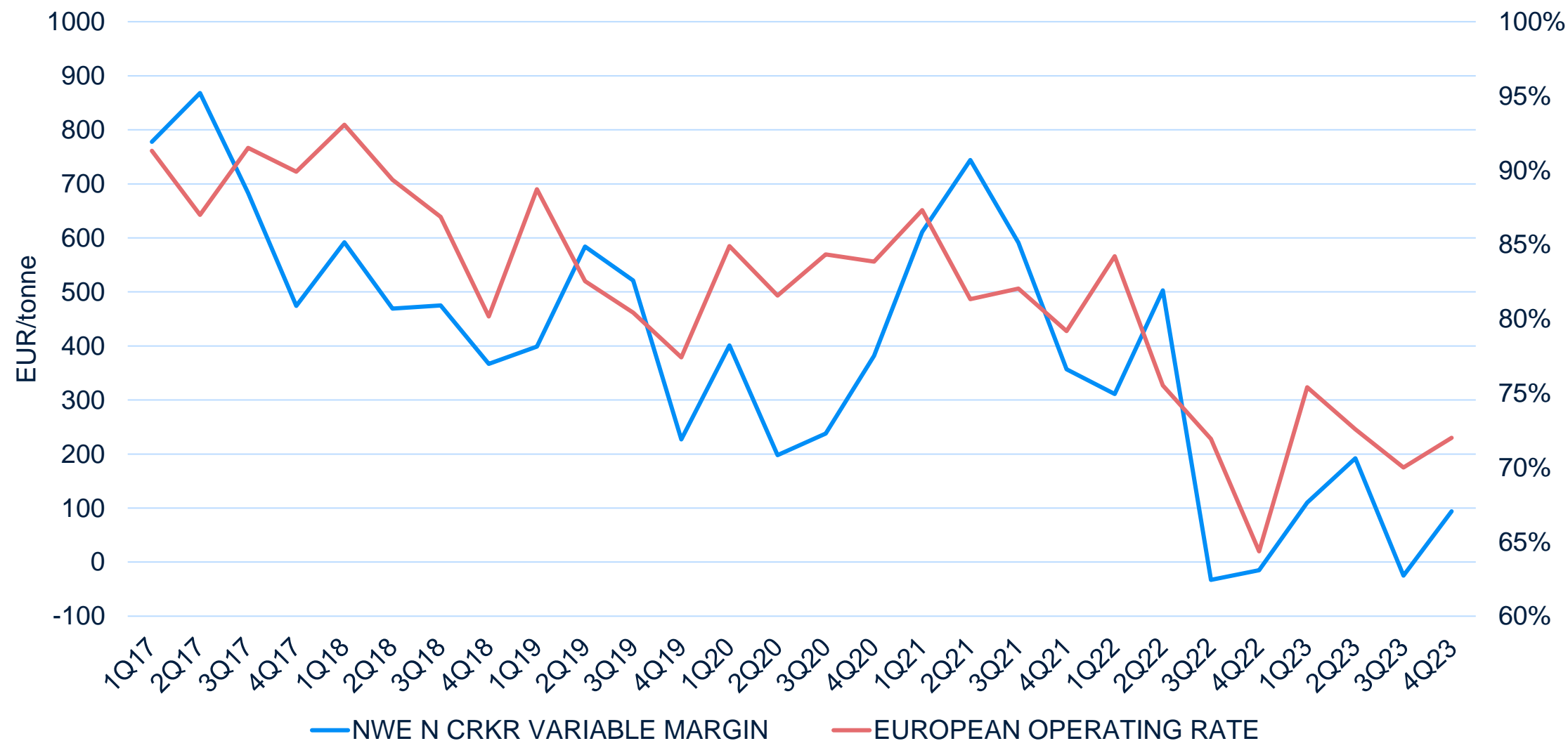


## Ethylene, February 2024, European producers highlighted





# Europe Ethylene Margins | Unprecedented lows



Source: ICIS Supply & Demand Database, ICIS Margin Analytics

# Ethylene Capacity Rationalisation | Potential scale



Global operating rate (2028)

Demand CAGR  
(2022-2028)

	82%	83%	84%	85%
3.5%	3.5	6.5	9.0	11.5
<b>3.0%*</b>	<b>9.0</b>	<b>12.0</b>	<b>14.5</b>	<b>17.0</b>
2.5%	15.5	18.5	21.0	23.5

Required reduction in global capacity to achieve target operating rate (million metric tonnes)

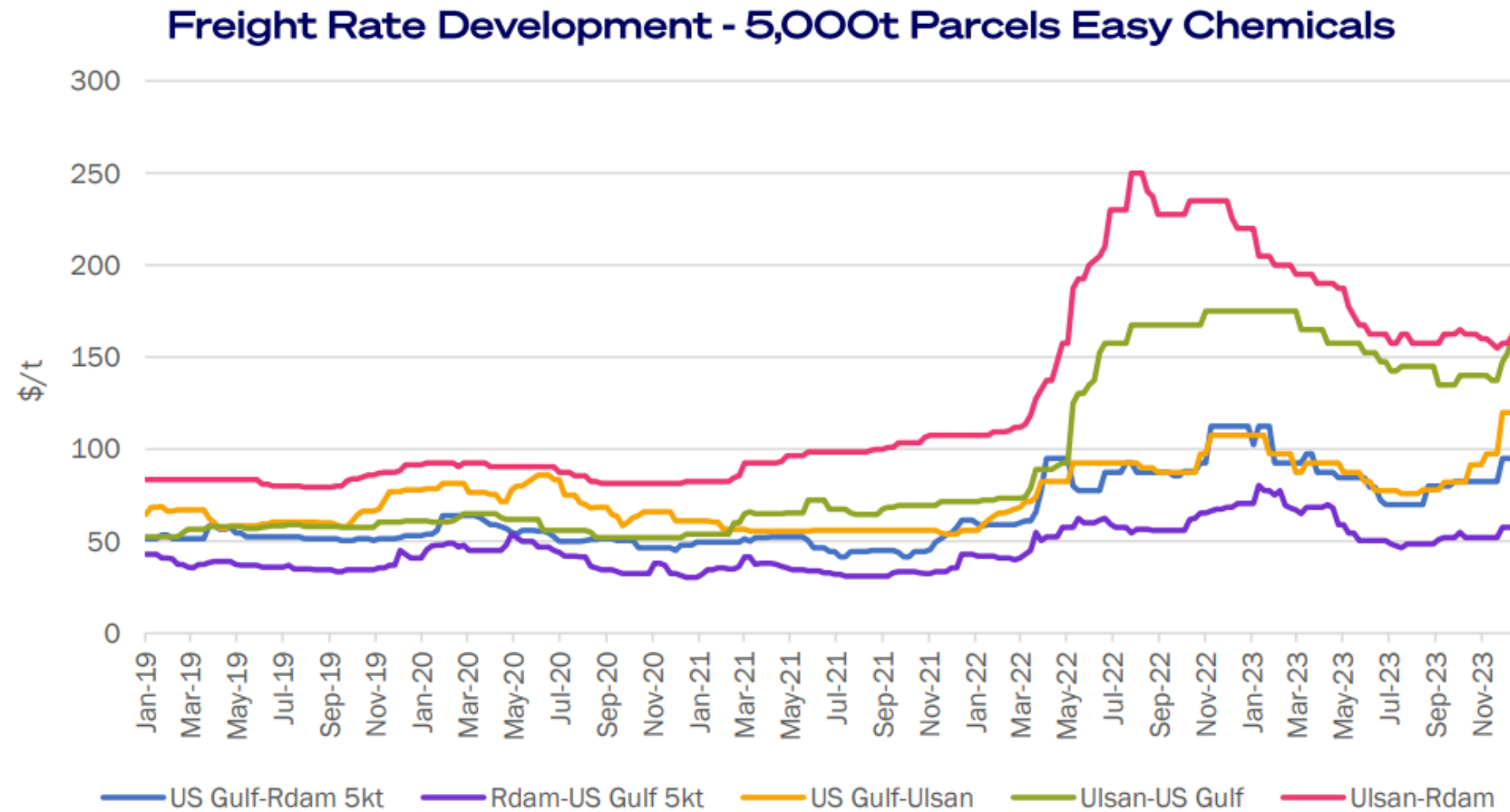
# State of Chemical Shipping Markets

Kevin Callahan - Senior Editor

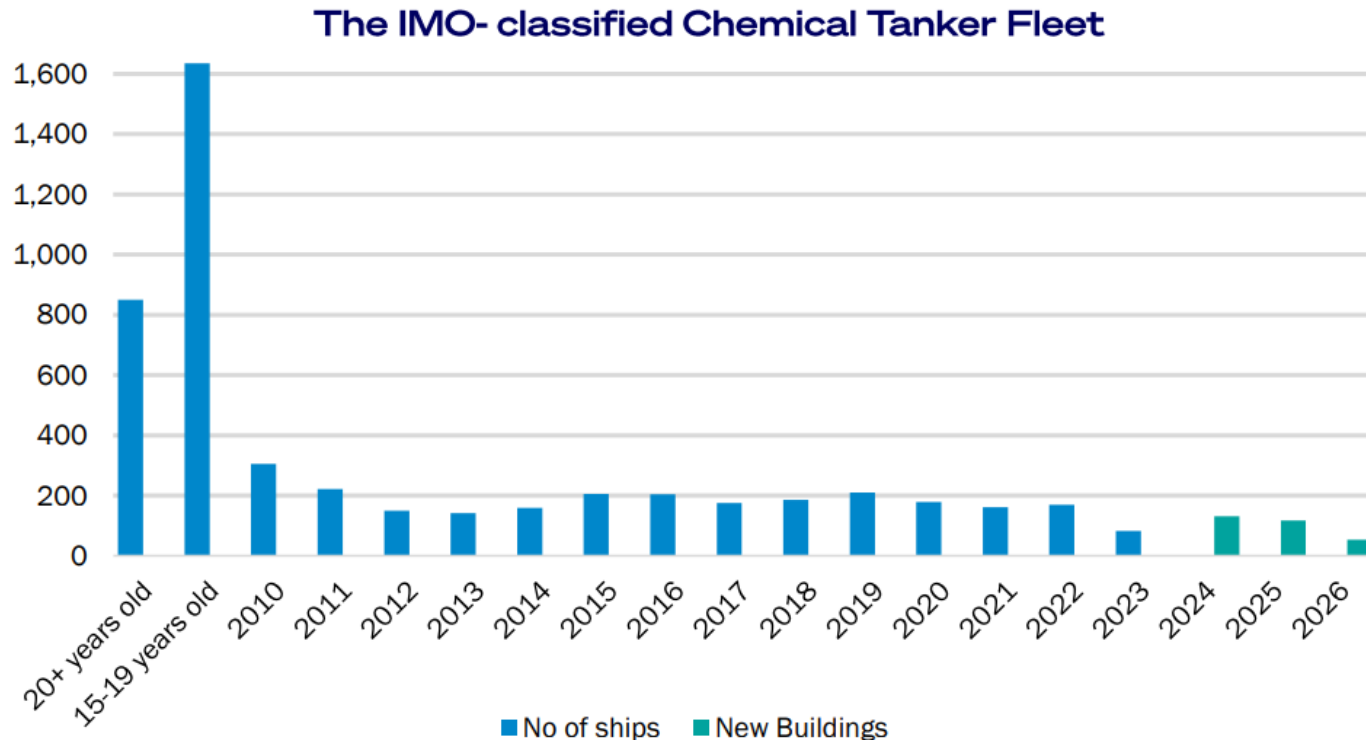
Adam Yanelli - Senior Reporter



# Freight rates continue to remain strong



# Why have rates remained high?

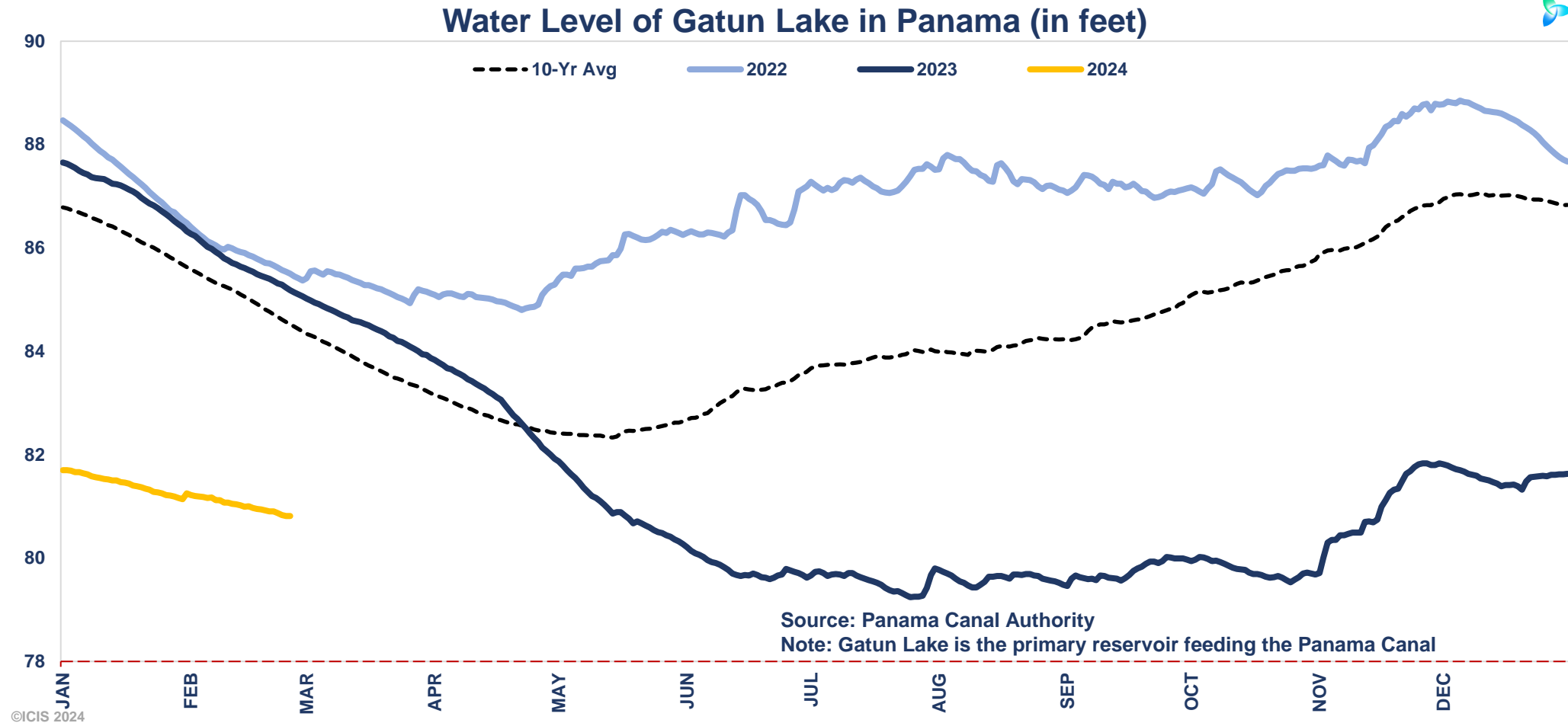


- Fleet rationalization has led to a shortage in tonnage
- Bunker costs have followed higher energy costs
- Newer trade flows are replacing traditional trade lanes

# Global Logistical Challenges in today's world



- Historically low water levels impact Panama Canal transits



# Global Logistical Challenges in today's world



- Houthi rebel attacks significantly impact Suez Canal transits



## Alternative maritime route to the Red Sea

— Via Red Sea/ Suez Canal  
7,400 nautical miles  
22 days\*

— Around Cape of Good Hope  
12,300 nautical miles  
37 days\*

\*Based on tanker's average speed of 12.5 knots

# Impact of decarbonization on shipping



- New IMO regulations to reduce carbon emissions come into effect
  - Who does this impact? The shipping companies (ship-owner, ship manager or responsible organization or person for operation) are required to reduce bunker emissions effective April 2023, submitting document of compliance.
- European Union Allowance takes the lead on enforcement by establishing MRV's (monitoring, reporting and verification) effective January 2024.
  - What is the European allowance (EUA)? A EUA represents 1 ton of CO<sub>2</sub> emission. One ton of fuel = Three EUA's.
  - Compliance deadline for shipping companies is at the end of September the following year.
- Higher freight costs passed onto the market
- All major markets will soon require similar documentation

Type of Fuel	Emission factor (t CO <sub>2</sub> / t fuel)
Heavy Fuel Oil	3.114
Light Fuel Oil	3.151
Diesel/Gas Oil	3.206
Liquefied Petroleum Gas (Propane)	3.000
Liquefied Petroleum Gas (Butane)	3.030
Liquefied Natural Gas	2.750
Methanol	1.375
Ethanol	1.913

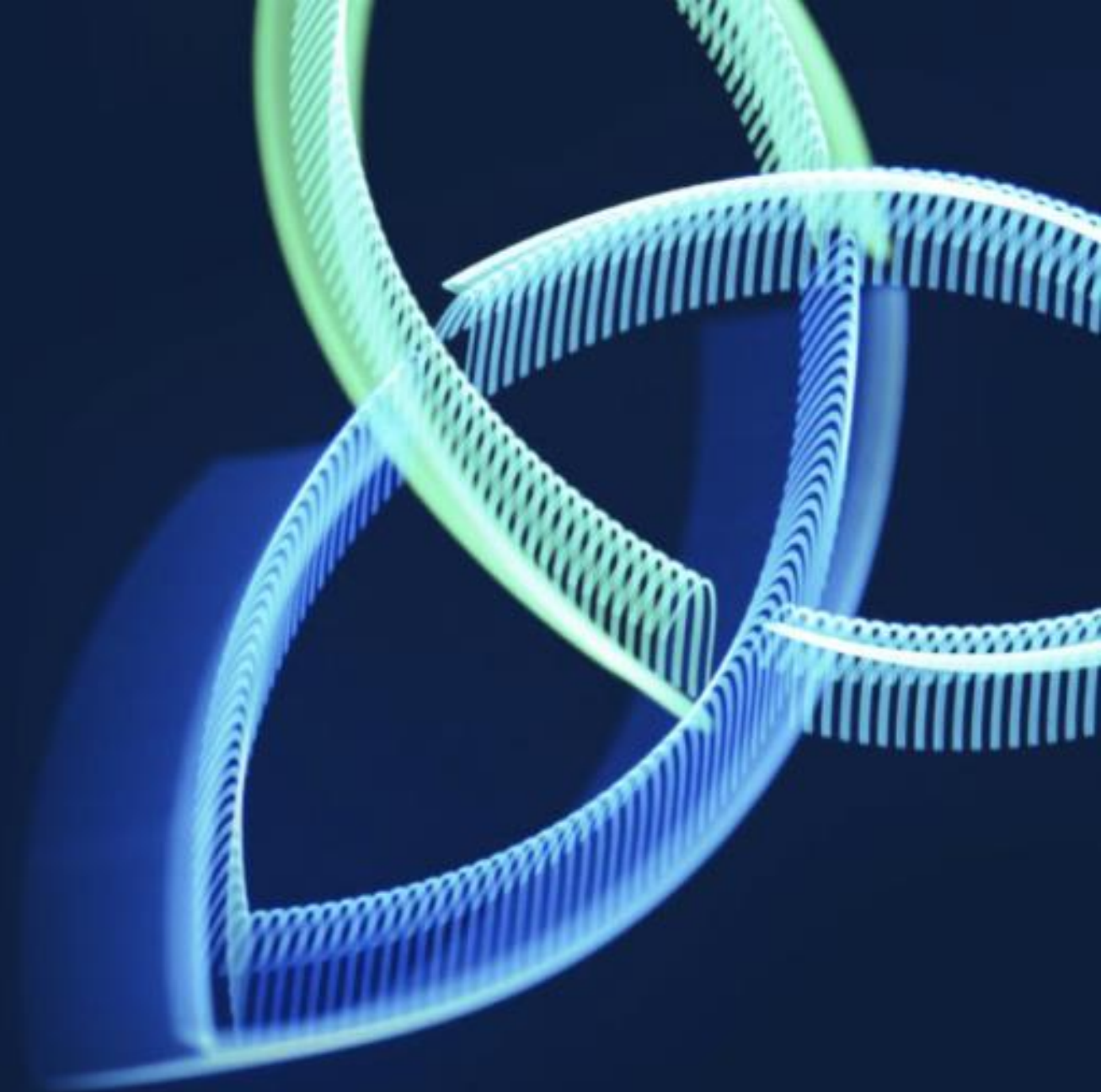


- Panama Canal could add slots when rainy season starts in April/May
- Some importers shifting back to West Coast
- Wait times ease for non-booked vessels to transit



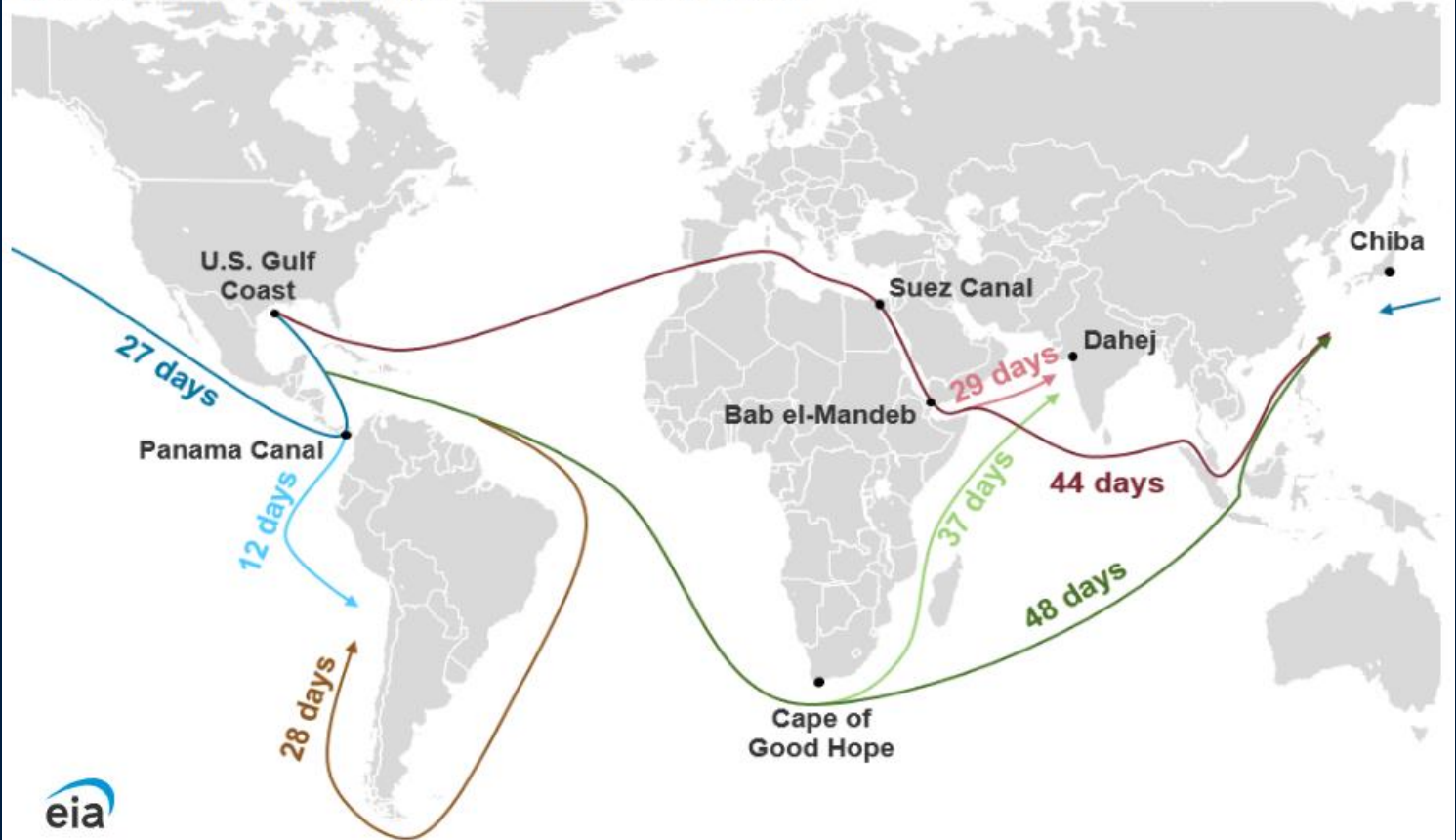
# Container Shipping

Panama Canal drought, Suez Canal  
diversions to create headwinds for  
container shipping into second half of 2024



- Shippers, importers adjusting to higher costs, longer lead times
- Attacks by Houthi rebels began in November, diversions in December
- 30% of all global container traffic transits Suez Canal
- Only 12% of US-bound cargo transits Suez Canal

Selected commercial shipping routes, as of February 2024

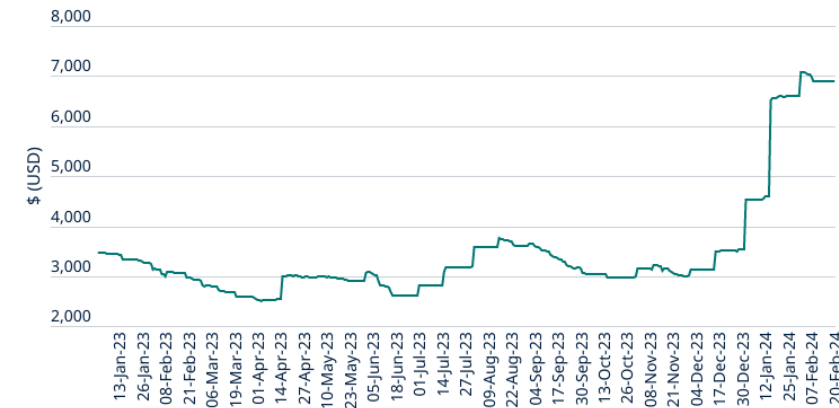


**Data source:** U.S. Energy Information Administration, using calculations from Vortexa

**Note:** Voyage time is calculated for laden Very Large Gas Carriers traveling at 14 knots without extended chokepoint delays.

### North China to US Gulf Coast shipping

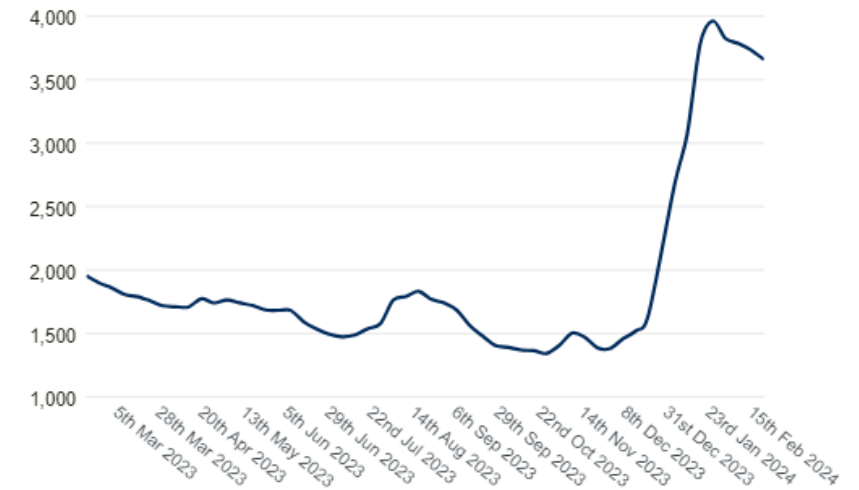
40ft Dry Cargo weekly container freight rates (short contract type, terminal handling charges at both ports)



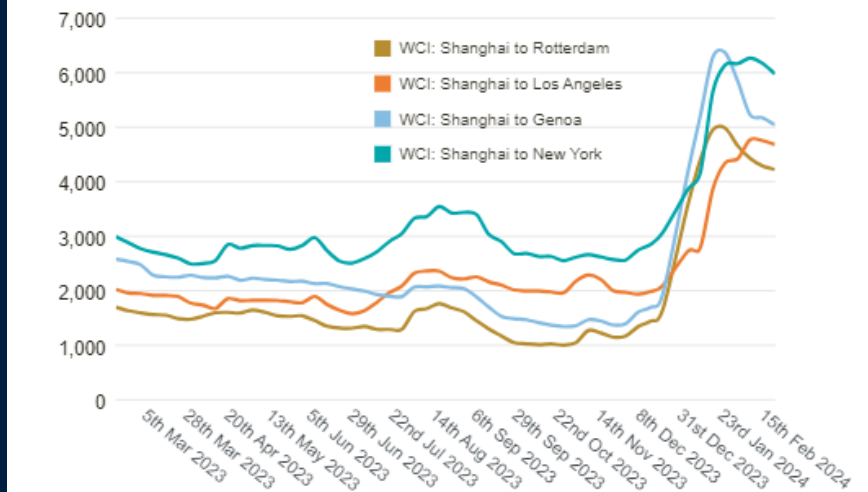
SOURCE: Xeneta (updated till 20 February 2024, mean values used)

- Asia-US container rates easing but remain elevated
- Rates more than twice as high as in December
- Asia to Europe rates falling faster

### Drewry World Container Index (WCI) - 22 Feb 24 (US\$/40ft)



### Drewry WCI: Trade Routes from Shanghai (US\$/40ft)





- Suez Canal diversions could extend into H2
- Carriers use floating capacity, faster sailing speeds
- Newbuilds in 2023, 2024 doubled from 2021, 2022
- Other increased costs associated with longer trips



- Panama Canal could add slots when rainy season starts in April/May
- Some importers shifting back to West Coast
- Wait times ease for non-booked vessels to transit



# The Outlook for the Global Economy

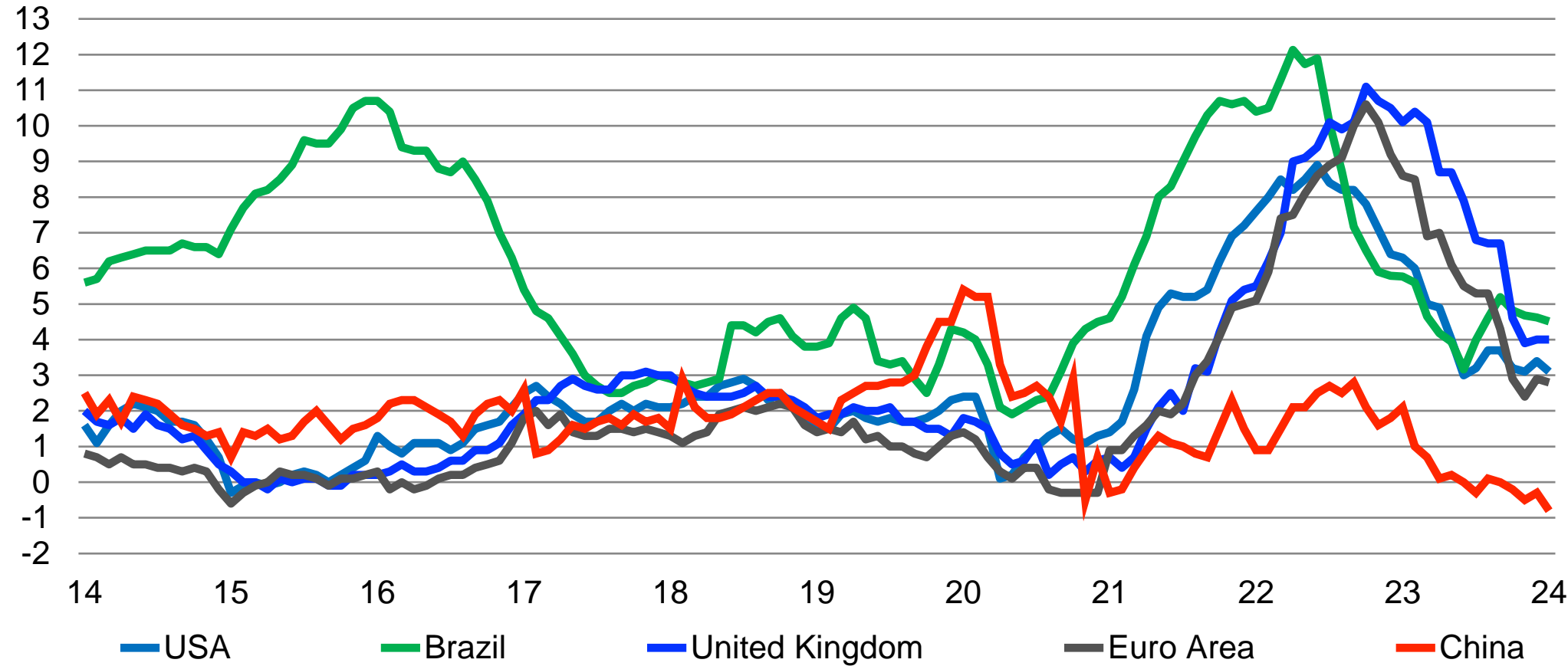
Kevin Swift

Senior Economist for Global Chemicals

# Inflation has fallen around the world, with deflation in China



% Change Year-Over-Year



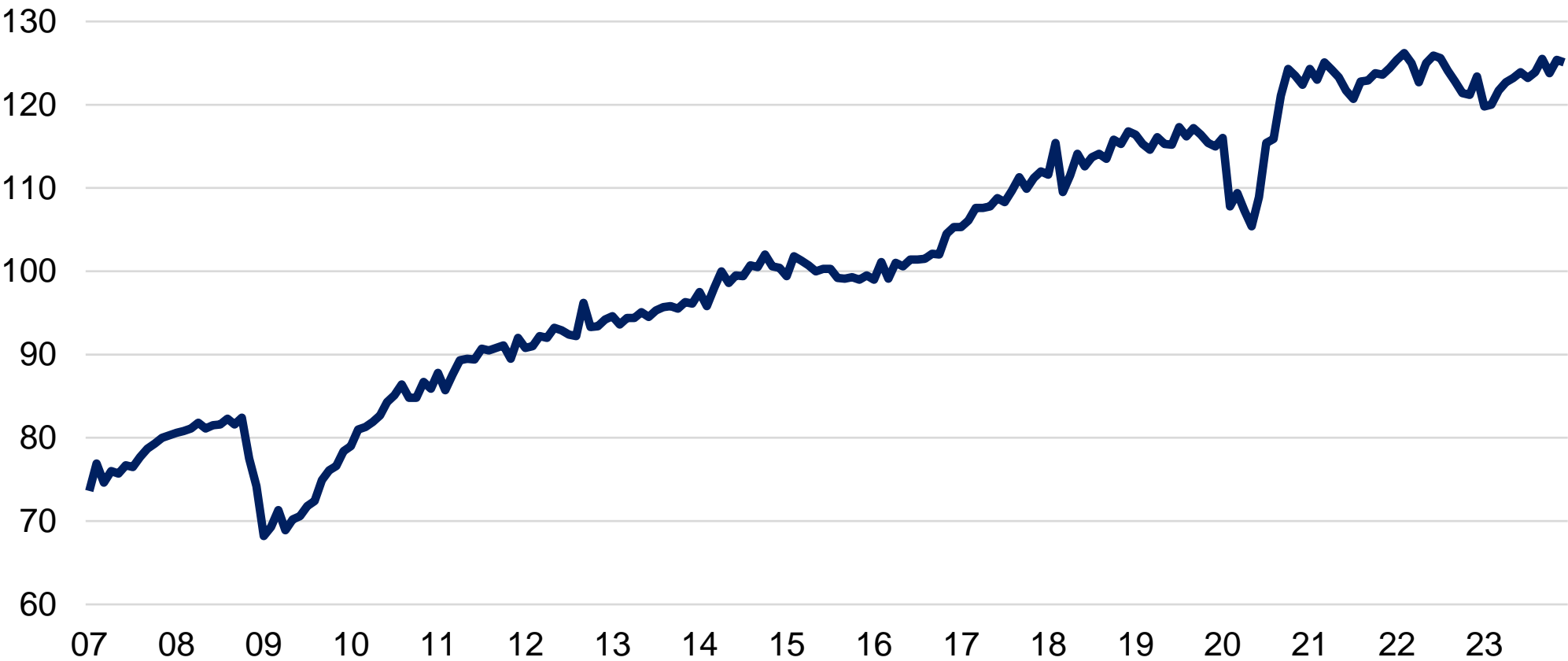
Sources: Bureau of Labor Statistics, Office of National Statistics, Eurostat, National Bureau of Statistics of China, Instituto Brasileiro de Geografia e Estatística (IBGE)



# Global container traffic eased in December but effects of Red Sea disruptions yet to be seen in the data



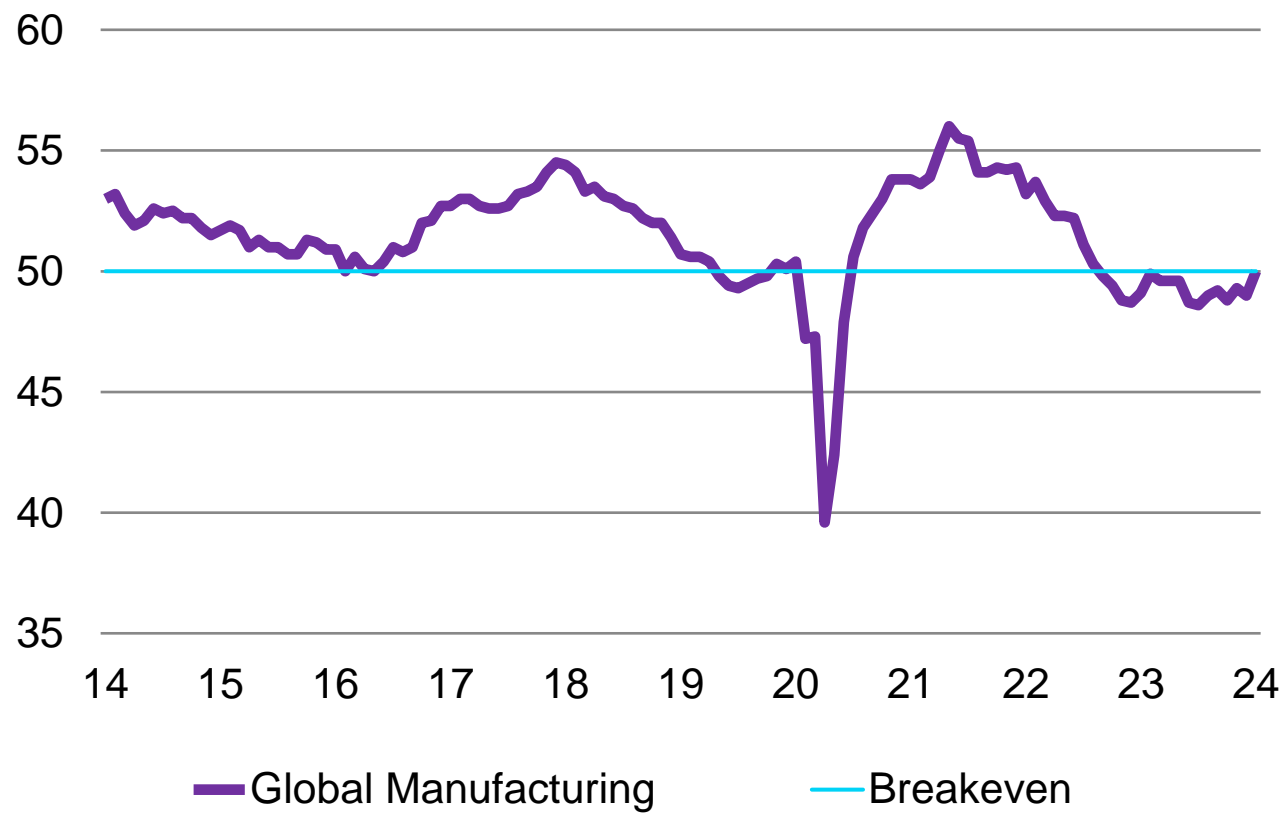
Index where 2015 = 100



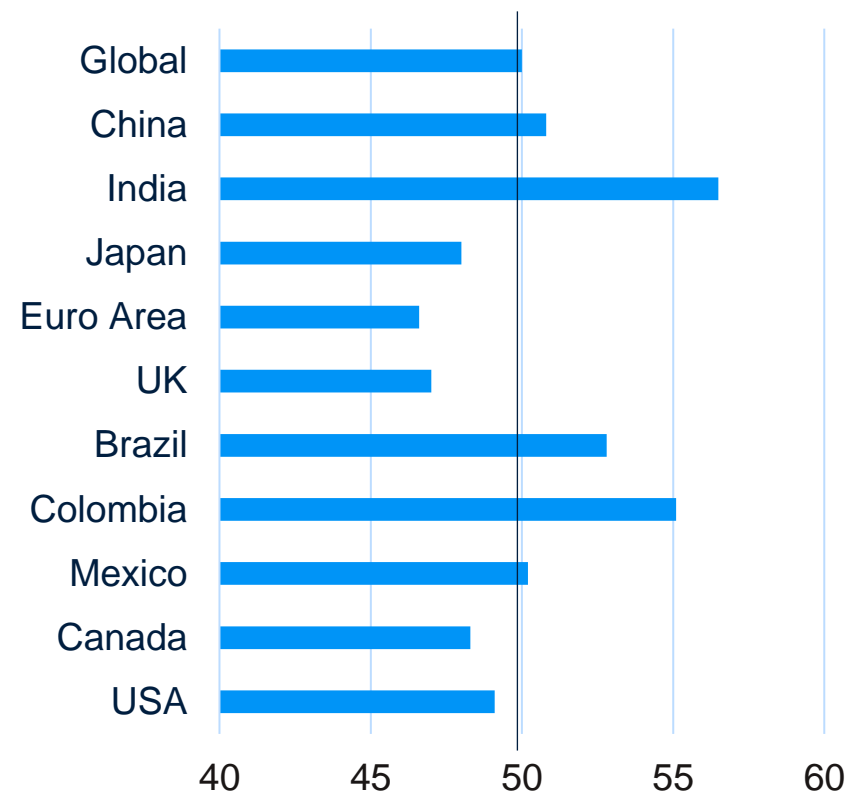
# After 16 months of contraction, global manufacturing has stabilized



Diffusion Index

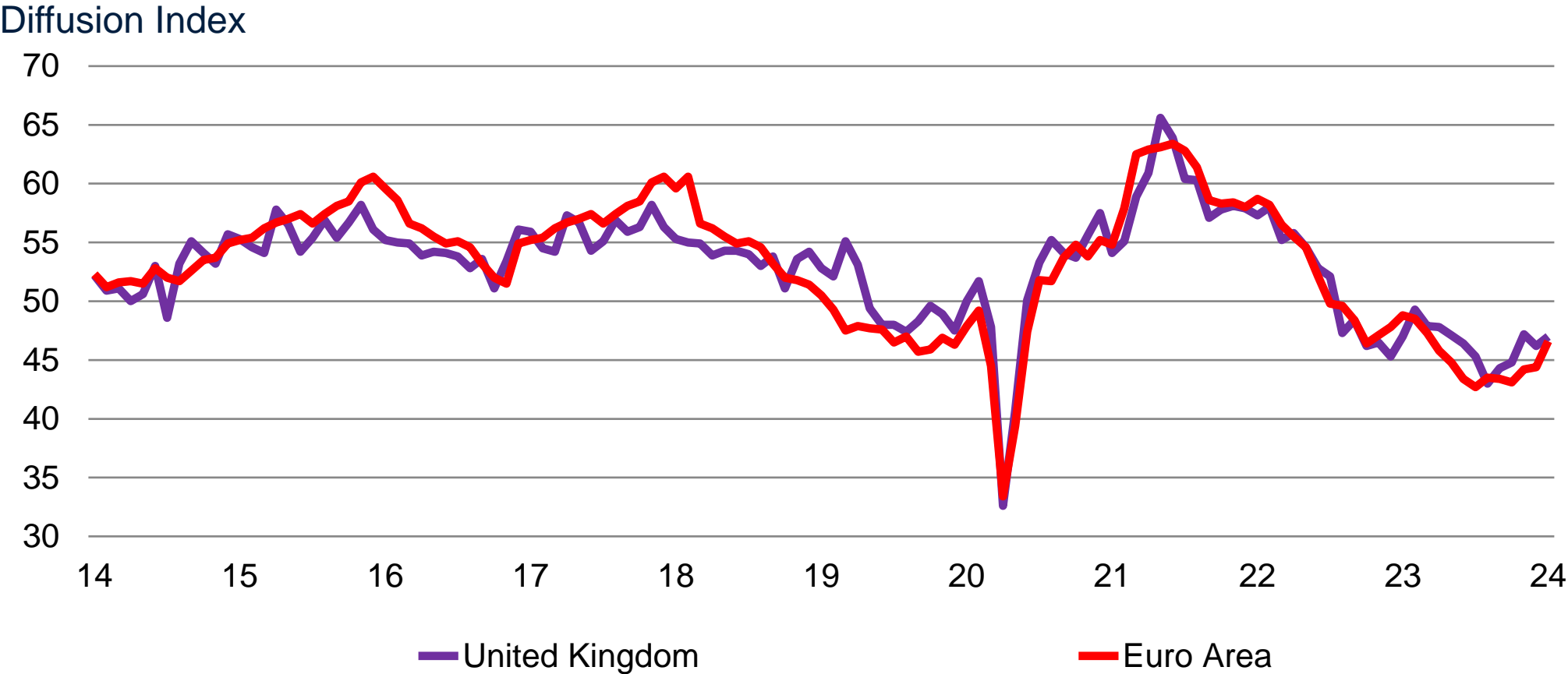


Manufacturing PMI Details



Note: An index of 50 or over indicates that manufacturing is expanding, while an index below 50 indicates that it is declining.  
Sources: ISM, S&P Global and JP Morgan

# Manufacturing in the Euro Area and UK still contracted in January but may be stabilizing

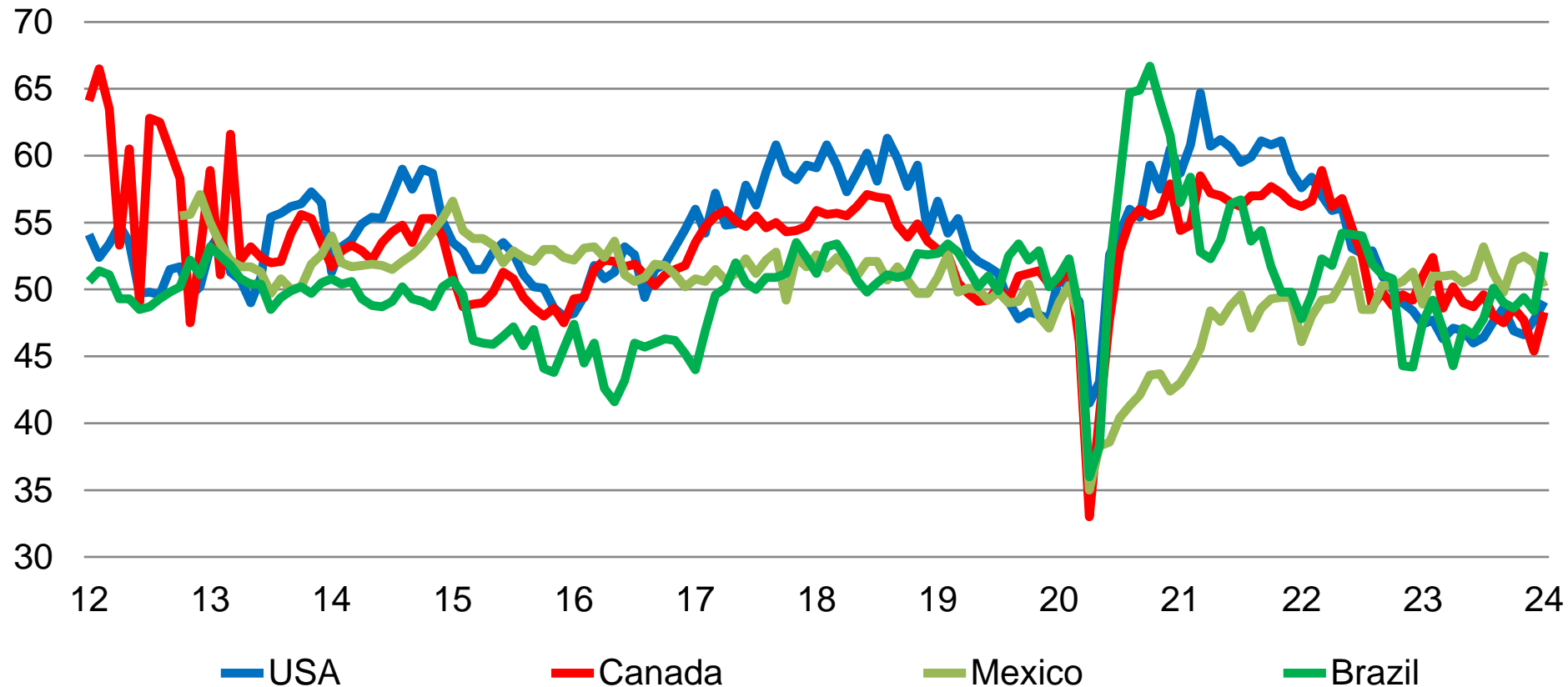


Note: An index of 50 or over indicates that manufacturing is expanding, while an index below 50 indicates that it is declining. Sources: CIPS and S&P Global

# Mixed but more positive results in the manufacturing PMIs for the Americas



Diffusion Index



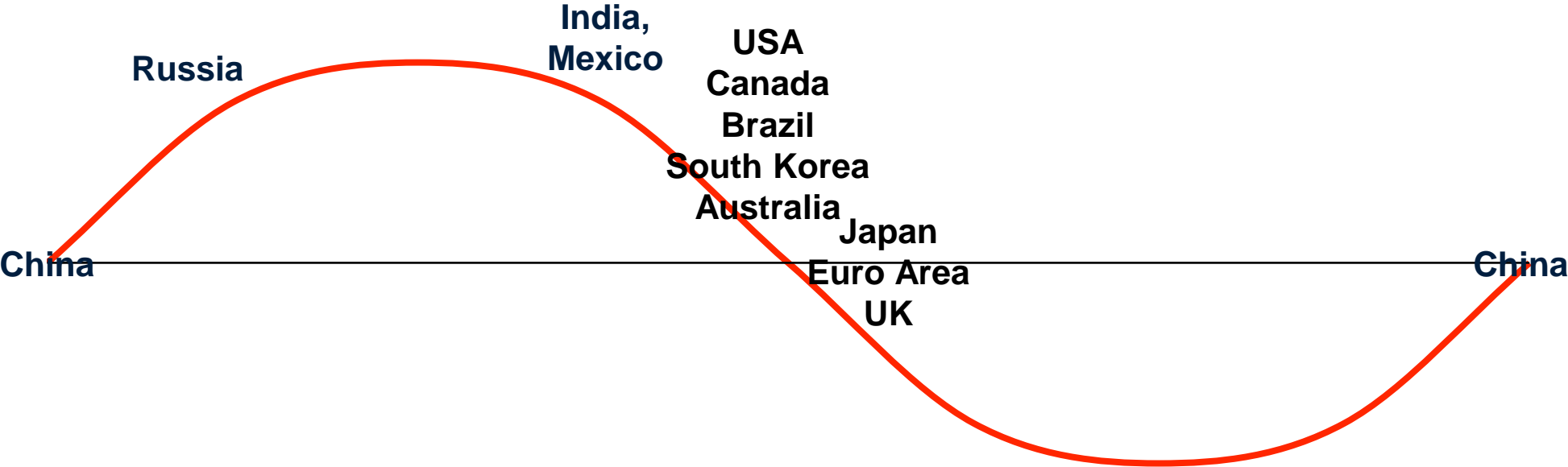
Note: An index of 50 or over indicates that manufacturing is expanding, while an index below 50 indicates that it is declining.

Sources: ISM and S&P Global

# A de-synchronized global economic cycle



## Country by phase of economic cycle



Accelerating Y/Y Growth (Expansion)	Decelerating Y/Y Growth (Slowdown)	Accelerating Y/Y Decline (Recession)	Decelerating Y/Y Decline (Recovery)
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# Scenarios for the global economy



	Base Case	Productivity Boom	Supply Shock / Global Recession
2022 Global GDP Growth/Inflation	3.0%/8.7%		
2023 Global GDP Growth/Inflation	2.5%/6.3%		
2024 Global GDP Growth/Inflation	2.4%/4.9%	2.8%/4.3%	2.1%/6.1%
2025 Global GDP Growth/Inflation	2.8%/4.1%	3.0%/3.3%	0.5%/4.8%
2026 Global GDP Growth/Inflation	3.0%/4.3%	3.3%/3.0%	2.5%/4.5%
Probability	50%	20%	30%
Growth	Lagged effects of monetary policy leads to vulnerable US slowdown, slight European recession/flatline, China recovery	Economies prove more resilient with recession avoided in Europe and productivity boost	With a vulnerable global economy, a supply chain shock heightens inflation and spreads financial turmoil. Global recession starting in 2H and lasts well into 2025
Inflation	Dis-inflation continues with near-term deflation in China (eventually drifting higher)	Inflation falls more sharply/quickly	Supply shock drives inflation higher everywhere and remains elevated
Monetary Policy	Central banks largely pause interest rate hikes and with falling inflation may cut rates	With lower inflation central banks face dilemma between lower inflation and stronger economic growth	Central banks respond to higher inflation but “go too far” and then pivot to looser policy stance.
Geopolitical	Tensions continue to simmer	Tensions moderate	Intensification of trade conflicts and other geopolitical risks.
Oil Prices (Brent)	~\$83 per barrel in 2024 and \$80 in 2025	>\$85 per barrel	>\$100 per barrel (surge before collapsing)



# Real GDP growth in major economies

% Change in Real GDP



	World	USA	UK	Euro Area	Japan	Brazil	Russia	China	India
2018	3.2	3.0	1.7	1.8	0.6	1.8	2.8	6.8	6.5
2019	2.5	2.5	1.6	1.6	-0.4	1.2	2.2	6.0	3.9
2020	-3.2	-2.2	-10.4	-6.1	-4.2	-3.3	-2.7	2.2	-5.8
2021	6.1	5.8	8.7	5.6	2.2	5.0	5.6	8.5	9.1
2022	3.0	1.9	4.3	3.3	1.0	2.9	-2.1	3.0	7.2
2023	2.6	2.5	0.1	0.5	1.9	2.9	2.4	5.2	6.6
2024	2.4	2.1	0.4	0.7	0.8	1.6	1.5	4.6	6.4
2025	2.8	1.7	1.3	1.5	1.0	2.2	1.2	4.4	6.4
2026	3.0	1.9	1.9	1.5	0.8	2.1	1.0	4.1	6.3

# Real GDP growth in major economies in the Americas



% Change in Real GDP



World

Argentina

Brazil

Chile

Colombia

Mexico

Peru

Canada

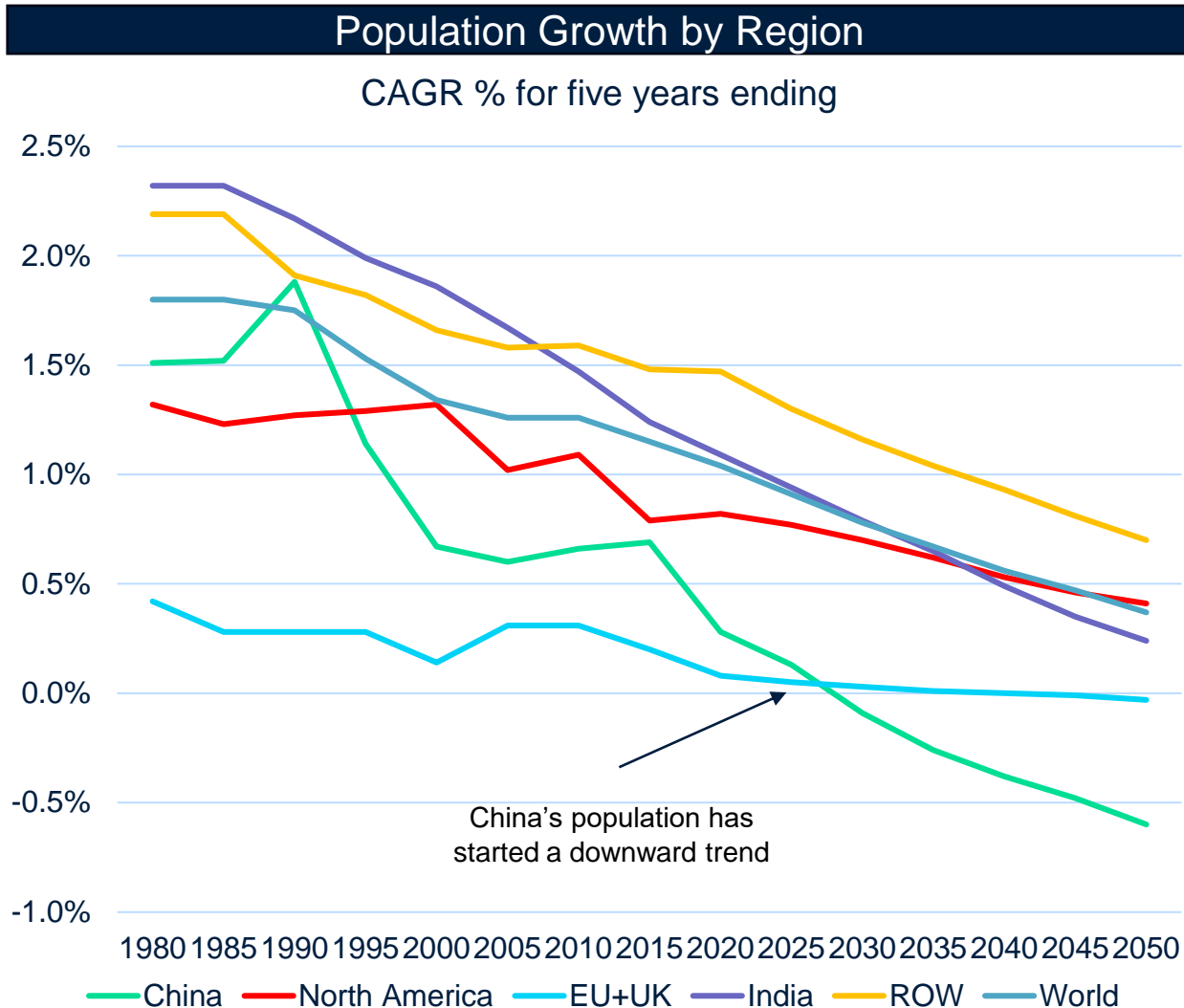
USA

2018	3.2	-2.6	1.8	4.0	2.6	2.0	4.0	2.8	3.0
2019	2.5	-2.0	1.2	0.7	3.2	-0.3	2.2	1.9	2.5
2020	-3.2	-9.9	-3.3	-6.1	-7.3	-8.7	-11.0	-5.1	-2.2
2021	6.1	10.7	5.0	11.7	11.0	5.8	13.4	5.0	5.8
2022	3.0	5.0	2.9	2.4	7.3	3.9	2.7	3.4	1.9
2023	2.6	-2.2	2.9	-0.1	1.2	3.1	-0.3	1.1	2.5
2024	2.4	-1.0	1.6	1.8	1.6	2.2	2.6	0.6	2.1
2025	2.8	3.1	2.2	2.5	2.8	2.0	2.7	1.9	1.7
2026	3.0	3.0	2.1	2.4	3.1	1.8	2.9	1.9	1.9

Sources: IMF, World Bank, ICIS

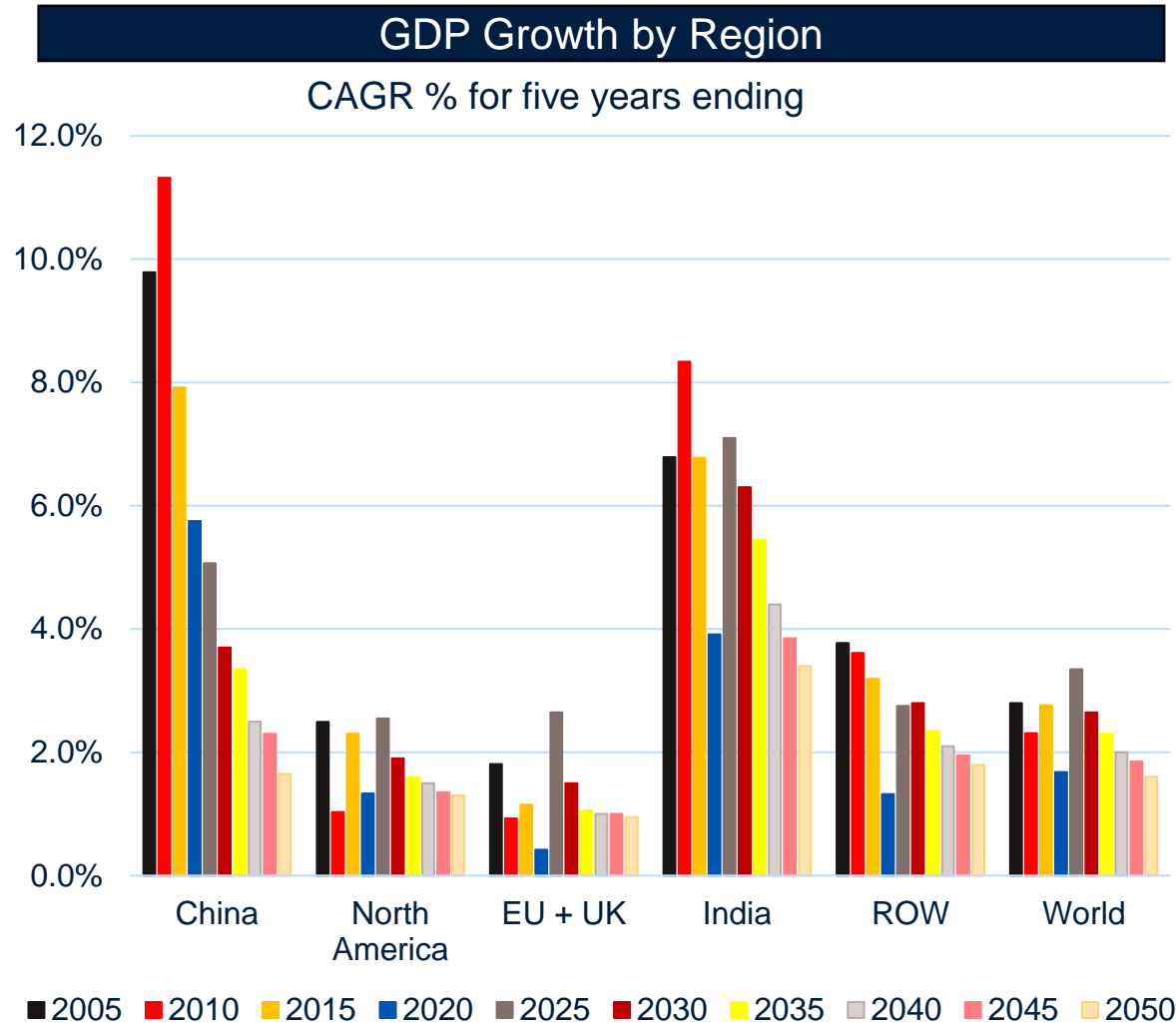


# Demographics will shape economic growth and market opportunities for product value chains



- Urbanization and female education have been leading factors behind declining fertility rates, causing population growth to slow around the world. The rise of a global Middle Class has been a defining feature of the last several decades.
- The world is getting more urbanized and older,. Population growth around the world is slowing, and in more nations, population has peaked and declining.
- Demographic change is best viewed using a long-term approach. Demographic factors affect LT economic growth potential as well as LT demand for most consumer products.
- China's population has peaked and will gradually decline. The nation will turn older quickly, following other Northeast Asian nations.
- India's population is younger, and the nation has overtaken China as the world's largest. This will be an attractive market.
- Europe is getting older, and population has largely stabilized in the aggregate, with immigration offsetting decline in native-born populations.
- North America's population will age, and growth will slow. Immigration, however, will provide some support and growth.
- The ROW includes several advanced nations with population profiles like that of Europe, as well as a mix of emerging markets. South & Central America will increasingly parallel that of Europe and some Southeast Asian nations will parallel those of Northeast Asia. Africa, the Middle East, and some South Asia nations will experience more dynamic population trends, making them attractive markets.
- A great demographic reversal is underway. After 2050, world population will peak sooner (2070s) and at a lower level with most major advanced and emerging economies experiencing declining populations; the exceptions being many nations of Africa and the Middle East.

# Macroeconomics will shape market opportunities for product value chains

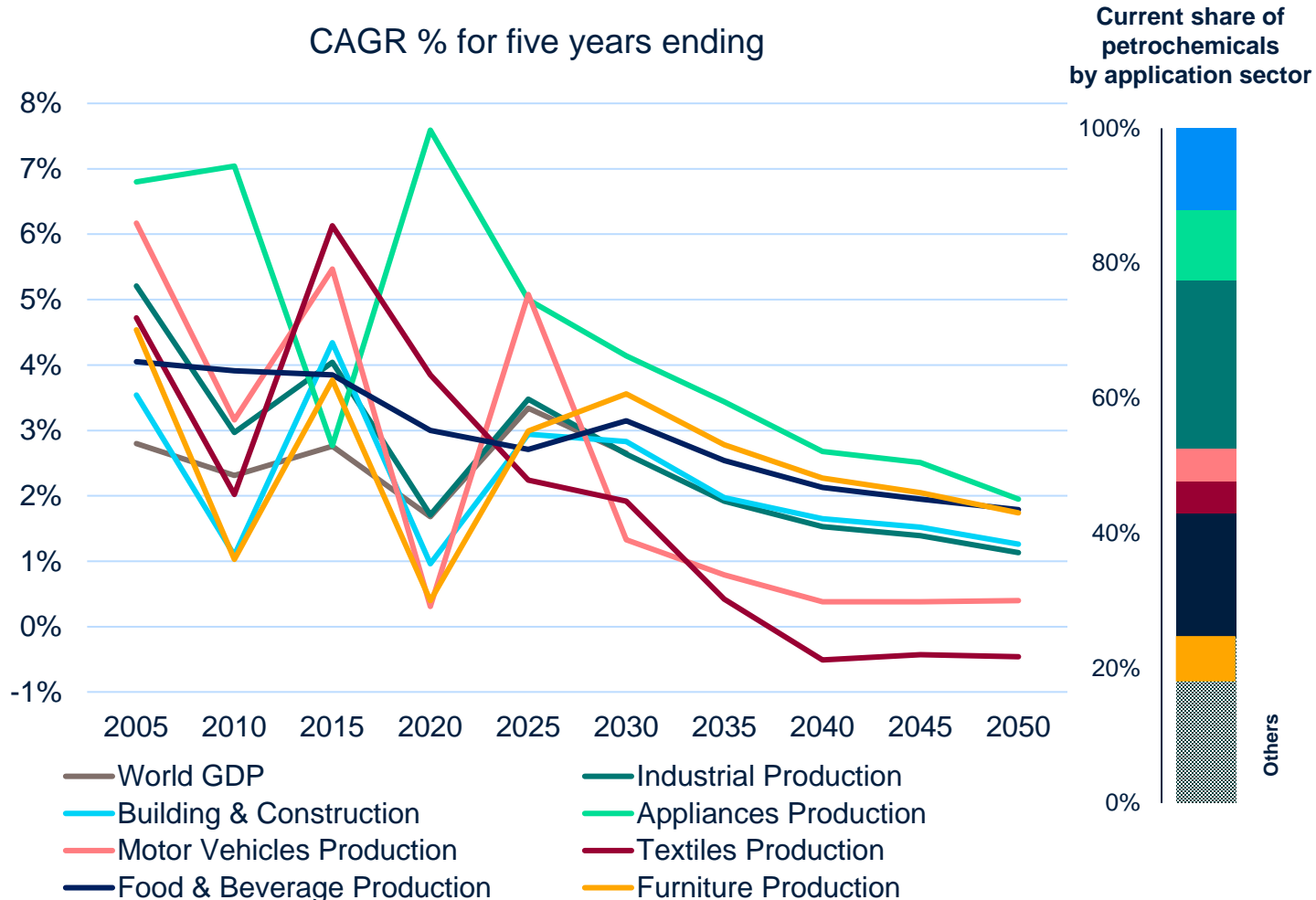


- Despite AI and other exciting technologies, evolving demographic dynamics along with slowing capital formation are leading to slowing LT economic growth.
- High debt levels, property woes, evolving global supply chains, and a declining/aging population herald a pronounced economic slowdown in China.
- With younger and growing population, India has emerged as the growth leader among the G20 nations, but the nation will also see moderating economic growth. Improved infrastructure development could boost economic growth.
- With Europe getting older and population stabilizing, economic growth will slow to 1% p.a. in the long-term.
- North America's LT economic growth will slow as well, but immigration will allow for higher growth than Europe.
- The ROW includes several advanced nations with LT economic profiles like that of Europe and North America, as well as a mix of emerging markets. South & Central America economic prospects will increasingly parallel that of Europe and North America, and some Southeast Asian nations will parallel those of Northeast Asia. Africa, the Middle East, and some South Asia nations will present more attractive markets.
- After 2050, demographic pressures will cause economic growth to slow even further, with most nations experiencing growth of less than 1% p.a. and many nations featuring static no growth dynamics.

# Macroeconomics will shape global market opportunities for product value chains



## Sector Trends



- **Food & Beverages (Packaging)** – In advanced markets, demand parallels population growth while in emerging markets rise of the urban Middle Class (and convenience) leads to stronger gains. Legislation vs. convenience, shelf life, and lightweighting are other factors behind demand dynamics.
- **Construction** – Demand reflects buildings and homes and underlying demographic dynamics. Urbanisation factors will foster growth in emerging markets.
- **Automotive** – The light vehicle parc in the advanced economies have likely reached their peak with demand entirely replacement in nature. Strong growth is expected in emerging markets with rise of the Middle Class. Electrification, tax incentives, and infrastructure availability are other growth dynamic factors.
- **Industrial & Manufacturing** – Supply chain and energy security are influencing investment.
- **Textiles** – A mature market, with demand stronger in developing regions. Re-use trends will play a role.
- **Appliances** – Linked to construction and replacement demand rates. Softer LT growth in advanced economies will be offset by demographic factors, urbanization, and stronger consumer dynamics in emerging markets
- **Furniture** – Furniture demand dynamics will parallel those for appliances.

Thank you

