ICIS
Independent Commodity Intelligence Services

# Europe Petrochemicals Transform to thrive

9 October 2024

# Agenda

01 | Europe Petrochemicals – Transform to thrive

# Introduction

**Nigel Davis**
*Business Solutions Specialist, ICIS*
nigel.davis@icis.com


These checklists are intended for the good conduct of EPCA Organized Meetings but their principles should be complied with also when discussions take place outside the framework of EPCA Organized Meetings. The checklists are non-exhaustive.

## DO'S

Do ensure strict compliance as follows:

### SUPERVISION

- Have an EPCA staff member at each EPCA organized meeting.
- Consult with company counsel/specialized external counsel on all questions related to competition law.
- Limit discussions at the meeting to agenda topics.
- Provide each attendee with a copy of these checklists and have a copy available at all meetings
- Remind meeting participants of the importance of competition law compliance, also when discussions may continue or occur outside meetings.

### RECORD KEEPING

- Have an agenda and minutes that accurately reflect what is discussed, as well as an attendance list, and ensure that these documents are kept.
- Ensure the review of agendas, minutes and other important documents by appropriate staff and/or external legal counsel, in advance of distribution.
- Fully describe the purposes, structures and authorities of the groups, meetings and specific projects.

### VIGILANCE

- Immediately protest against any discussion or meeting activities that appear to violate these checklists and may raise competition law concerns.
- Have this protest recorded in the minutes
- Ask for those discussions/activities to be stopped so that appropriate legal checks can be made by external counsel
- Actively dissociate yourself from any such discussion or activities.
- Leave any meeting in which these activities continue despite protest and have your departure minuted.

## DON'TS

Do not attend EPCA organized meetings if no EPCA staff member is present.
Do not discuss or exchange with competitors any sensitive competitive information that would normally not be publicly disclosed by a company, including for example information on:

### PRICES

- Individual company/industry prices, price changes, price differentials, discounts, allowances & credit terms
- Individual company data on costs, production, capacity (other than nameplate capacities), inventories & sales

### PRODUCTION

- Plans/strategy of individual companies concerning the design, production, distribution or marketing of particular products, including proposed territories of customers
- Changes in production capacities (other than nameplate capacities) or inventories

### TRANSPORTATION RATES & POLICIES

- Rates or rate policies for individual shipments, including basing point systems, zone prices & freight

### MARKET PROCEDURES

- Company bids on contracts for particular products; company procedures for responding to bid invitations
- Matters relating to actual or potential individual suppliers or customers
- Plans to discriminate against or blacklist or boycott customers, suppliers or competitors
- Prohibited discussion topics apply equally to social gatherings incidental to EPCA Organized Meetings.

epca.eu/dos-donts

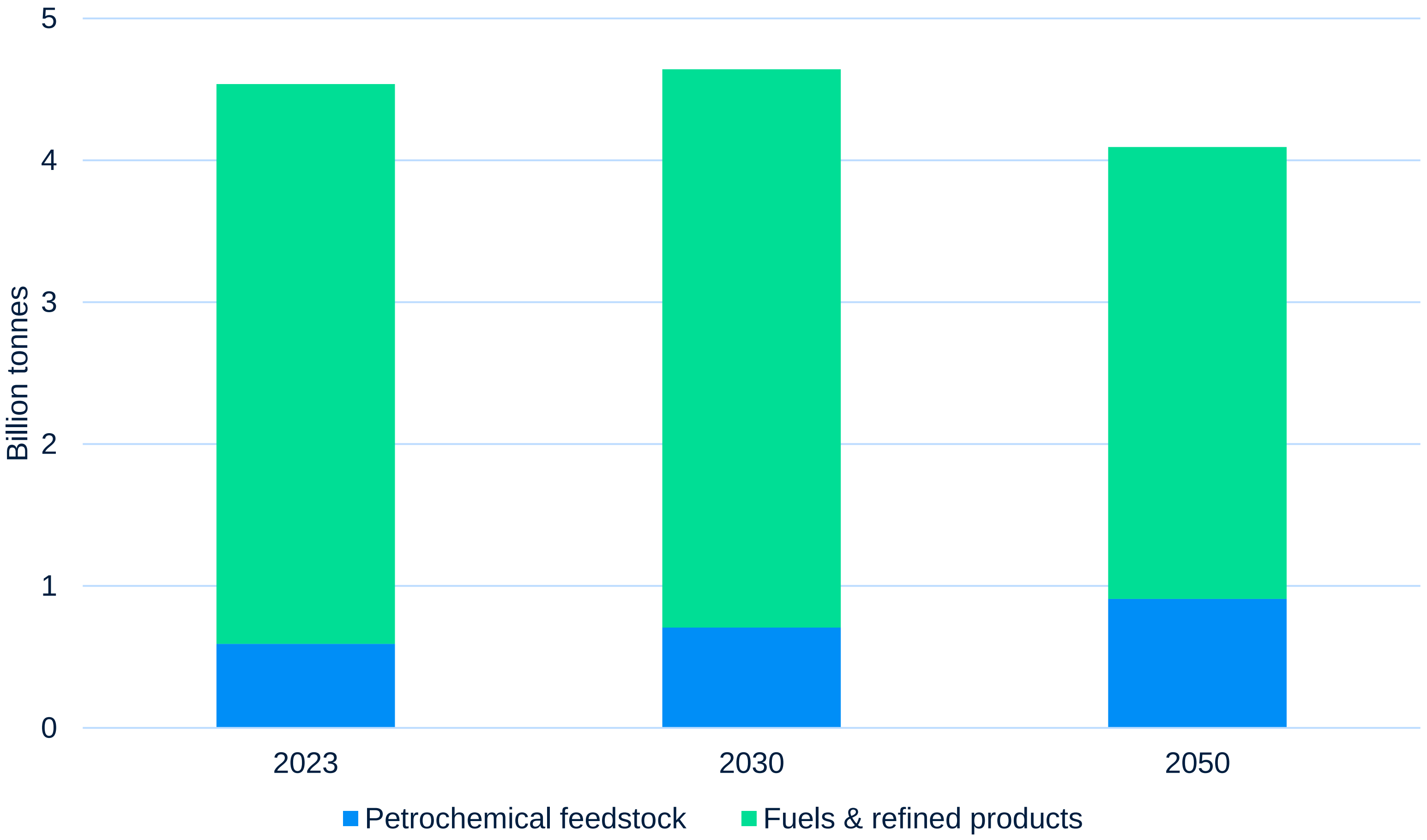
02 | Europe Petrochemicals – Transform to thrive

# Global petrochemical update


**James Wilson**
*Senior Manager, Olefins, ICIS*
james.wilson@icis.com

# Oil Demand | Petrochemicals demand growth to continue

## Global Oil Demand




Petchem Feedstocks CAGR, 2023-2050

**~1.5%**

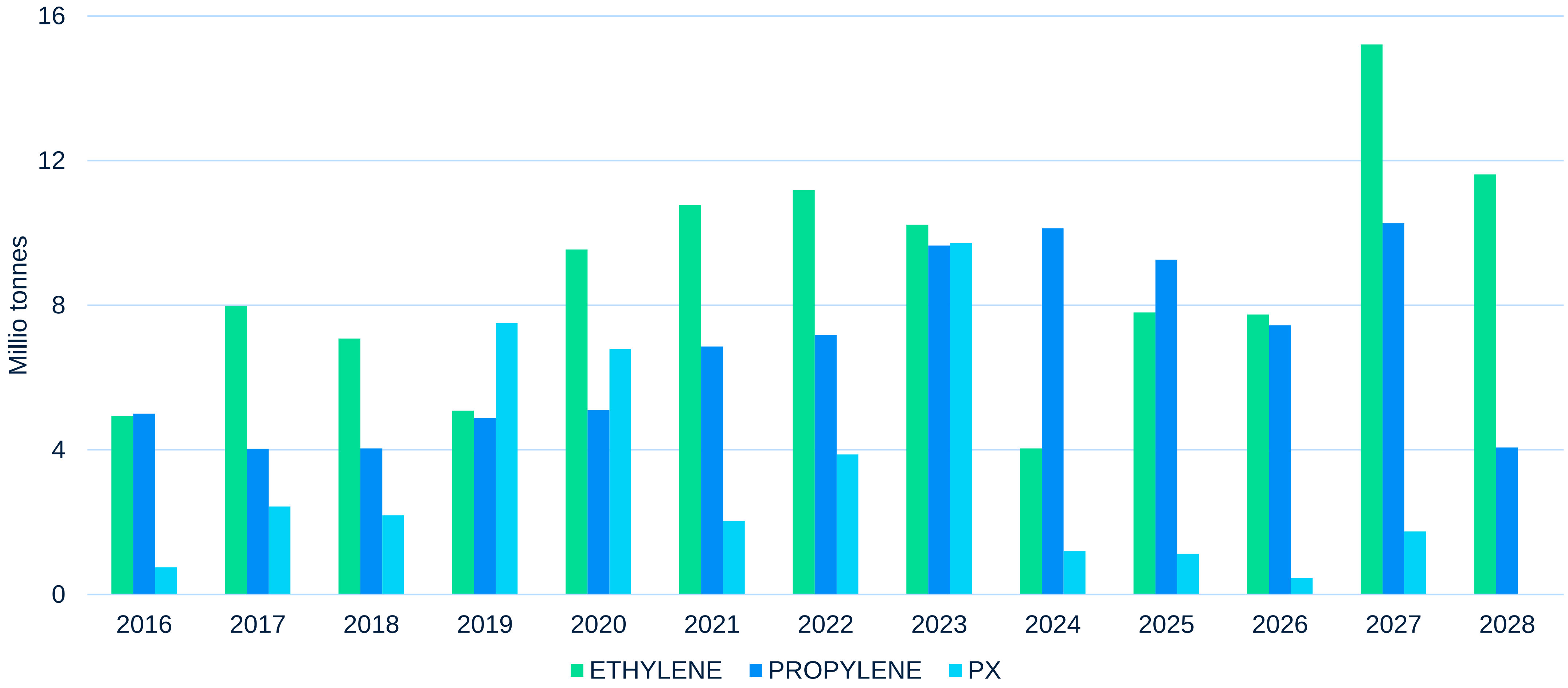
Refined Products CAGR, 2023-2050

**<0%**

Source: ICIS Supply & Demand Database

# Global Capacity Investments | Record levels of addition

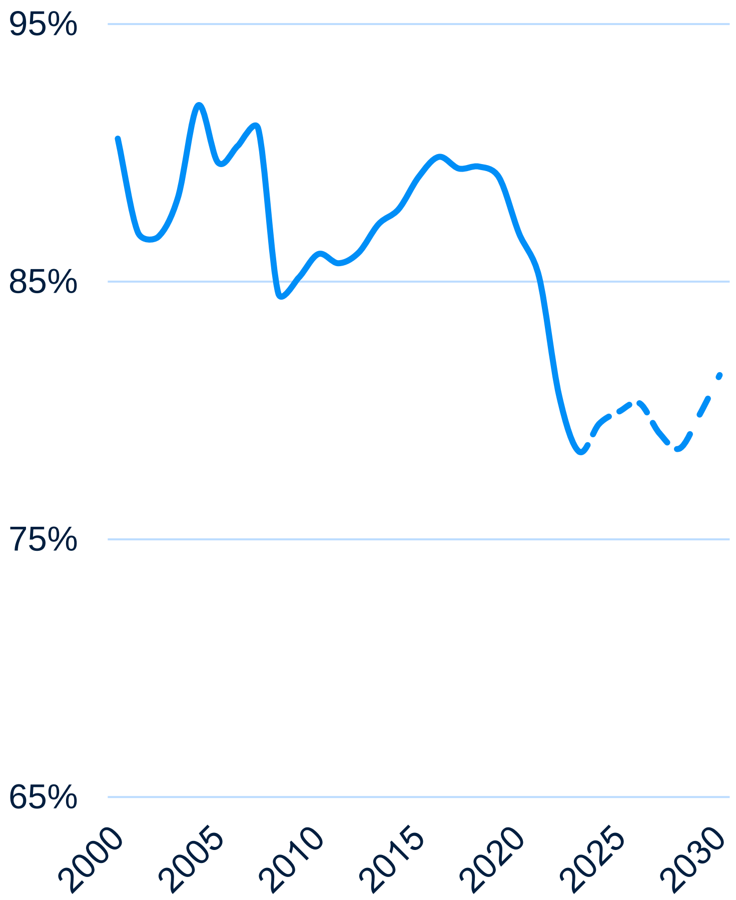
## Incremental Capacity Growth by Product



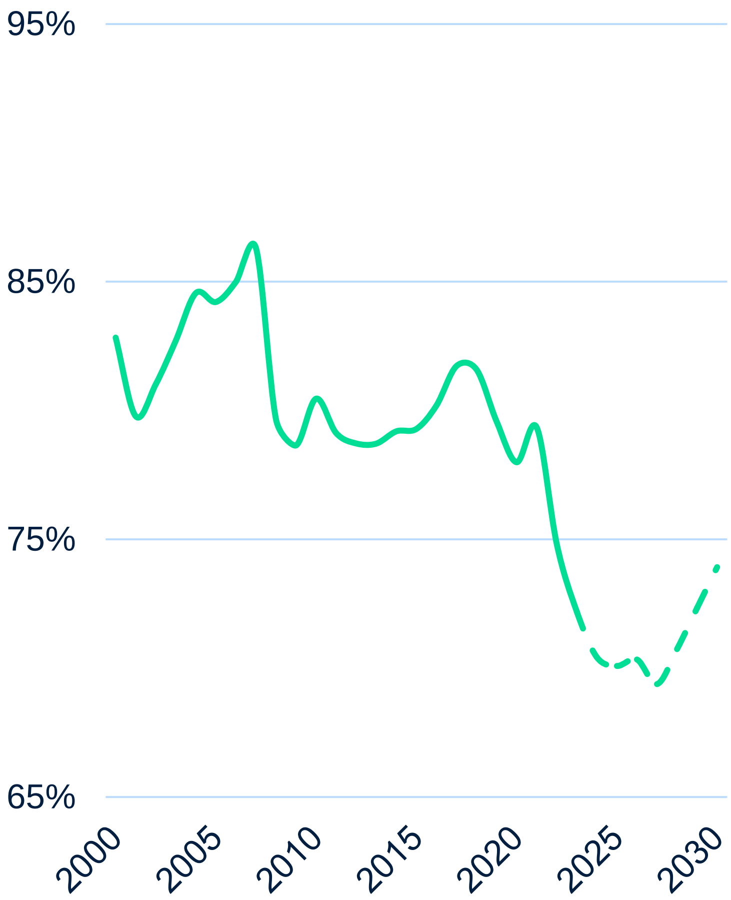

Source: ICIS Supply & Demand Database

# Global Operating Rates | Unprecedented lows

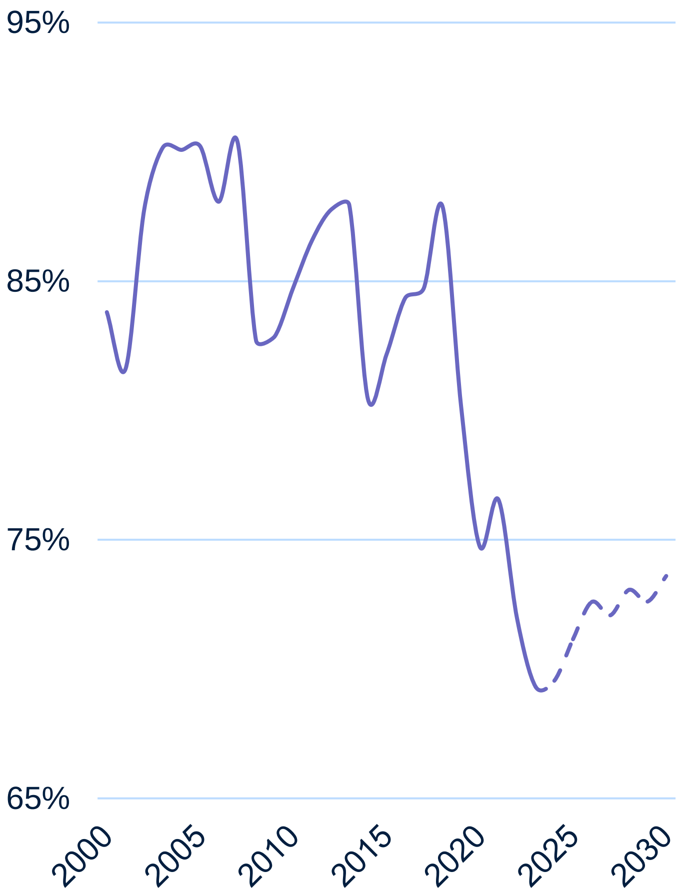
## Ethylene




## Propylene




## PX

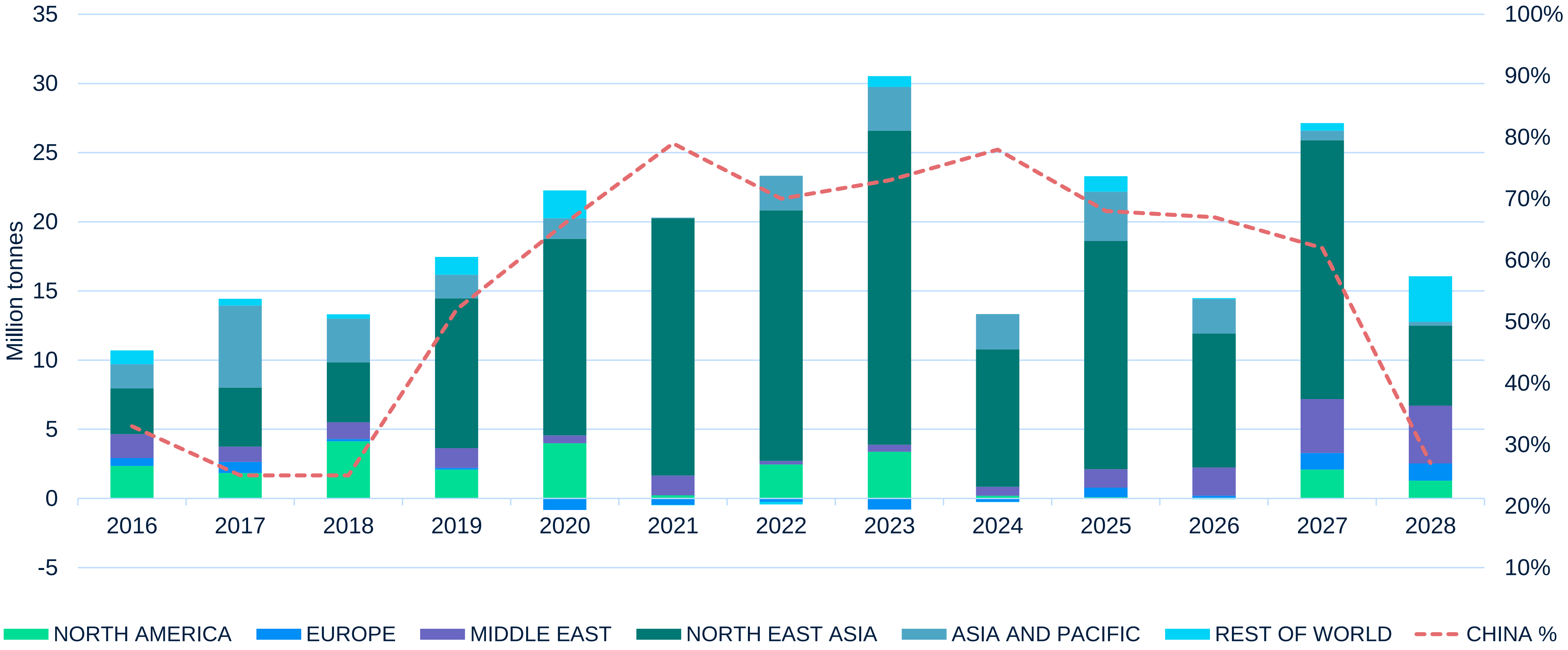



Source: ICIS Supply & Demand Database

# China and Asia

# Global Capacity | China driving current capacity growth

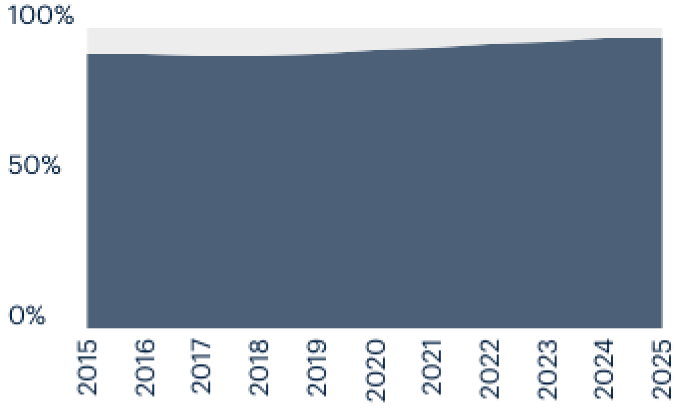
## Incremental Capacity Growth by Region (Ethylene, Propylene, Paraxylene)



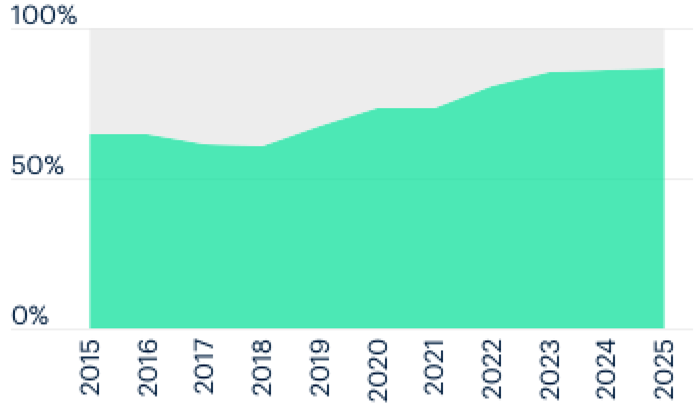

Source: ICIS Supply & Demand Database

# China Self Sufficiency | Rising quickly

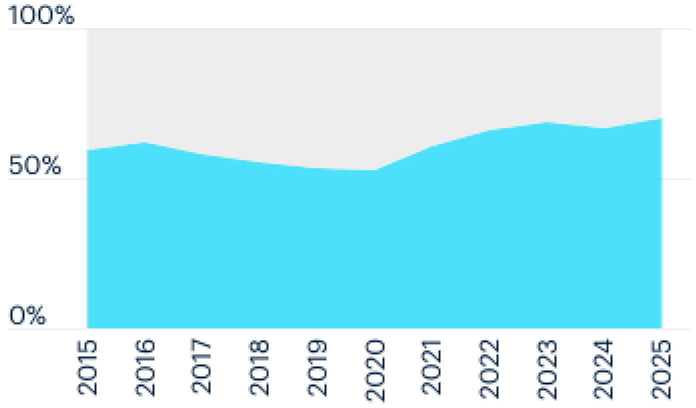
**Olefins**



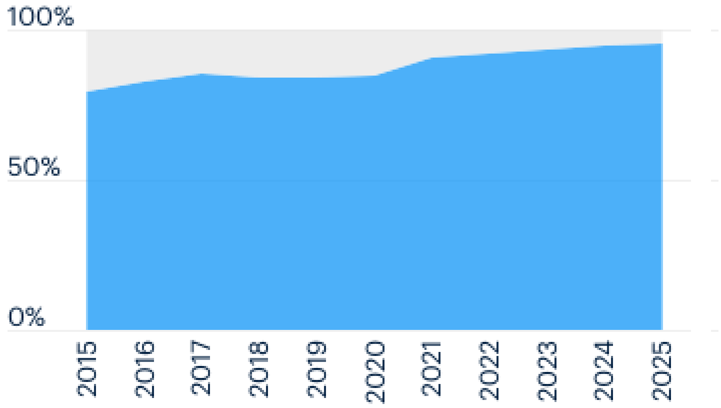

**Aromatics**



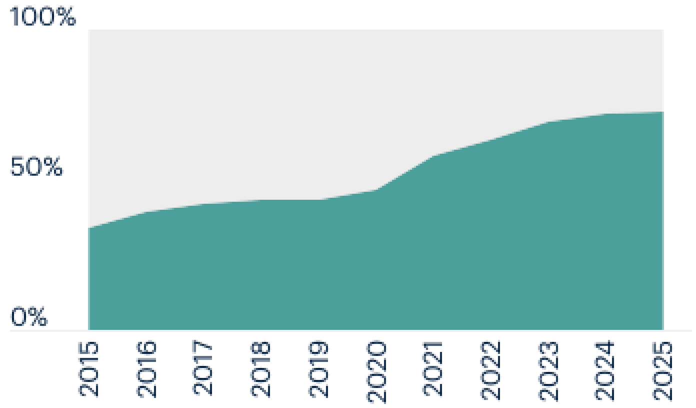

**PE**



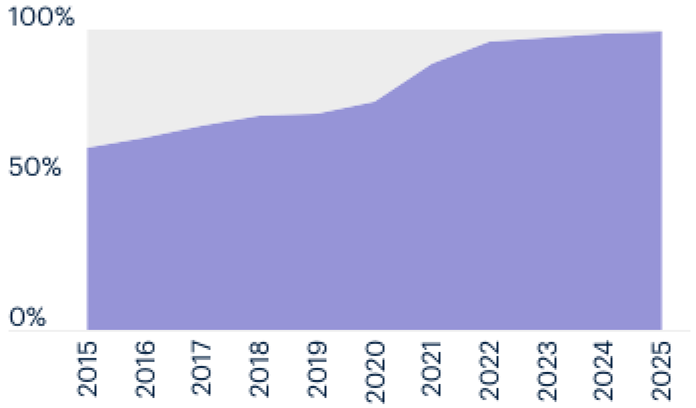

**PP**




**Glycol**



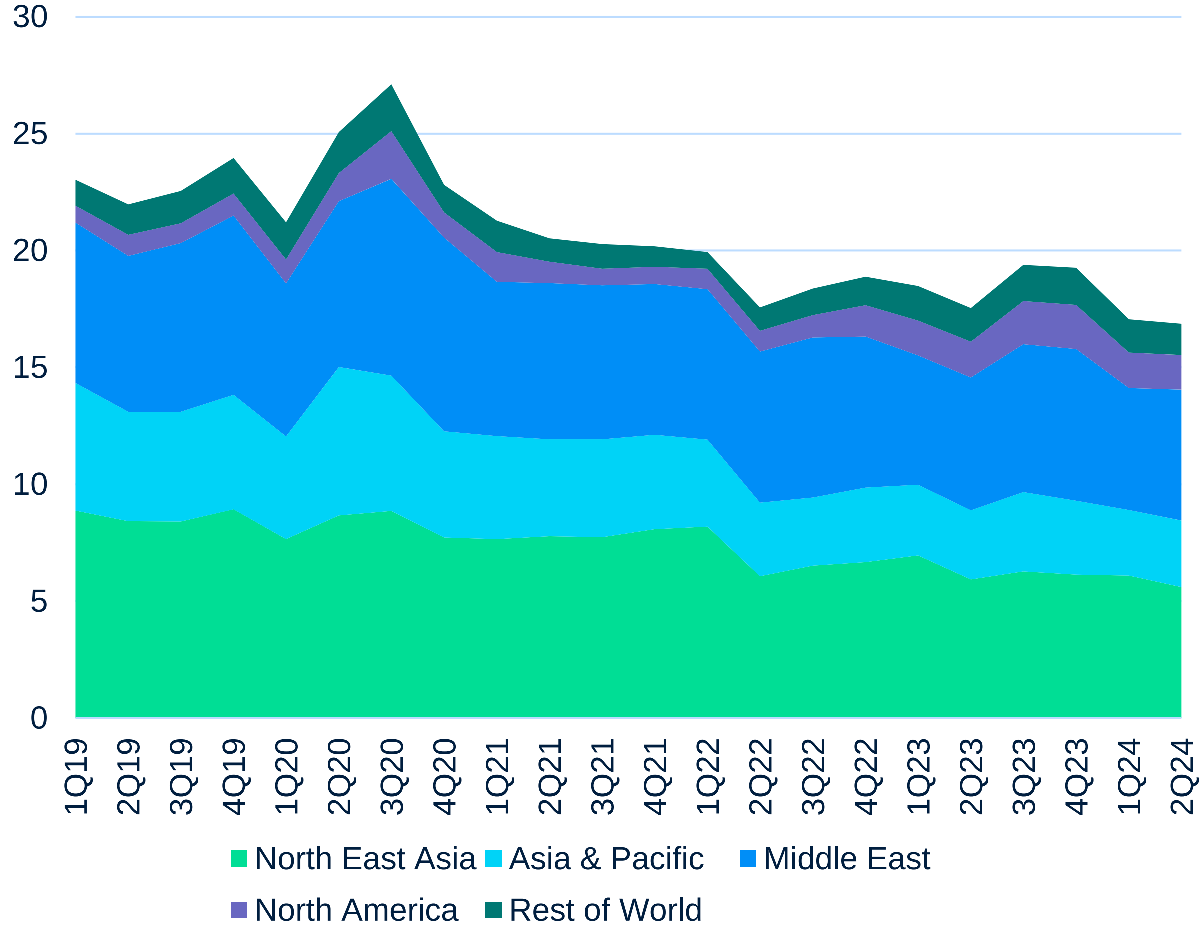

**Styrene**




Source: ICIS Analytics

# China Trade | H1 2024 imports down 25% since 2019

**China chemical imports volumes by source**
(includes all major olefin and aromatics derivatives)




**China import decrease, 2020-2023**

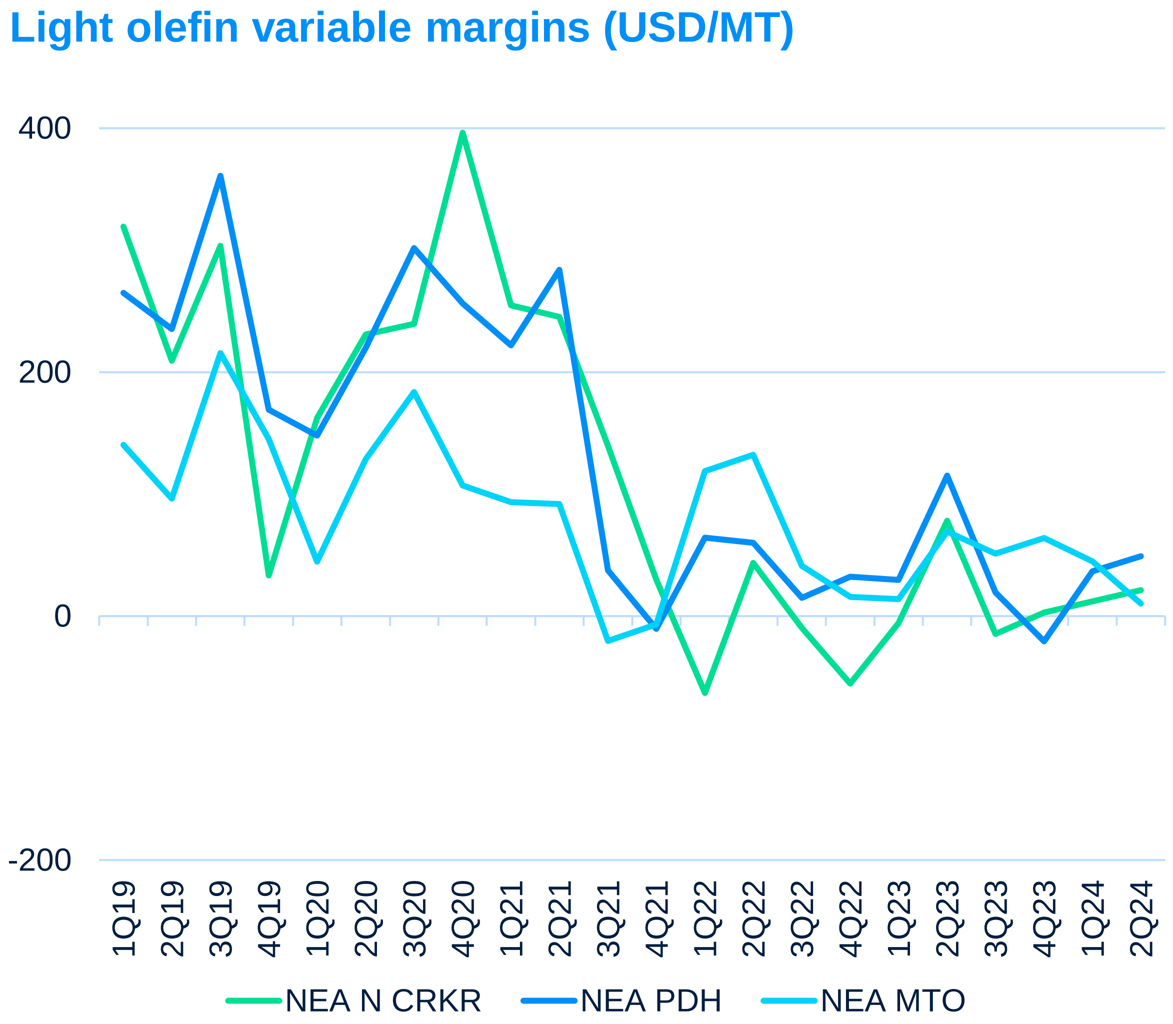
**PE**
**24%**
**5.1 MMT**

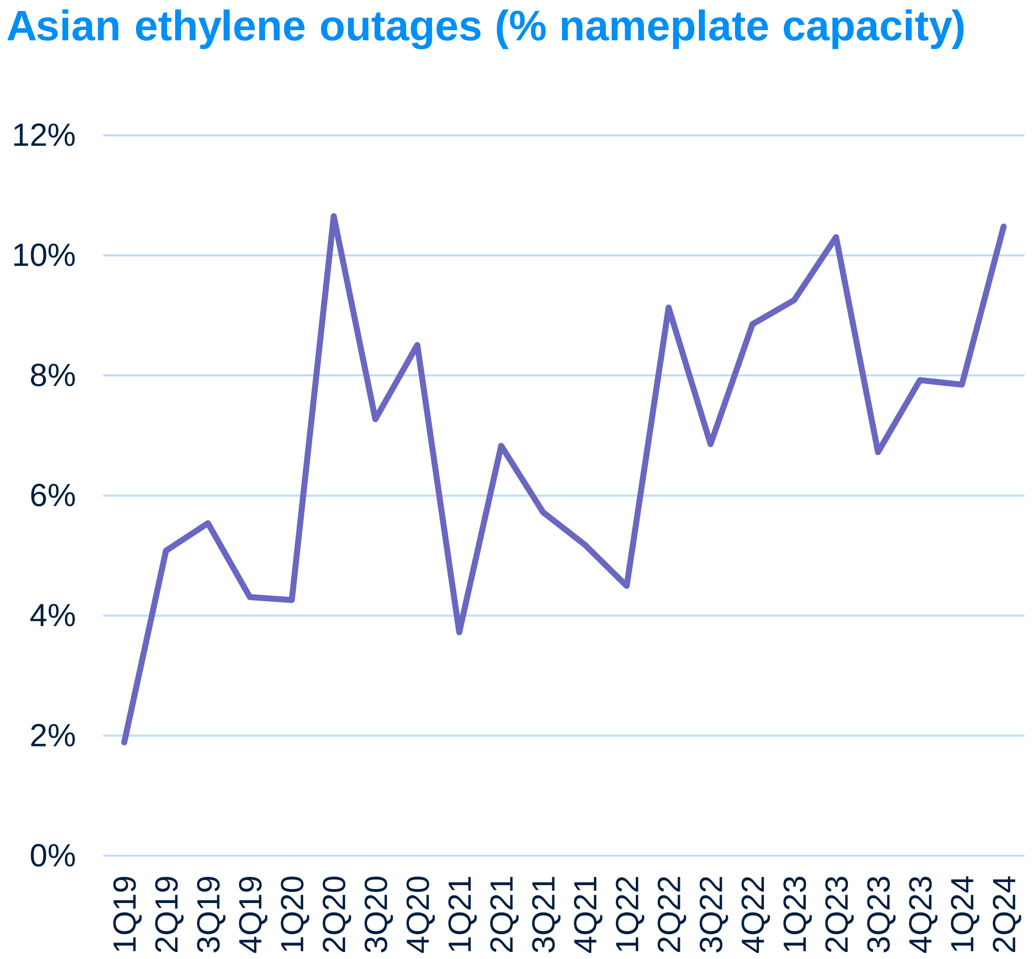
**PX**
**34%**
**4.8 MMT**

**MEG**
**32%**
**3.4 MMT**

**PP**
**37%**
**2.4 MMT**

# Asia Olefins | Margins near zero for third year, record capacity offline

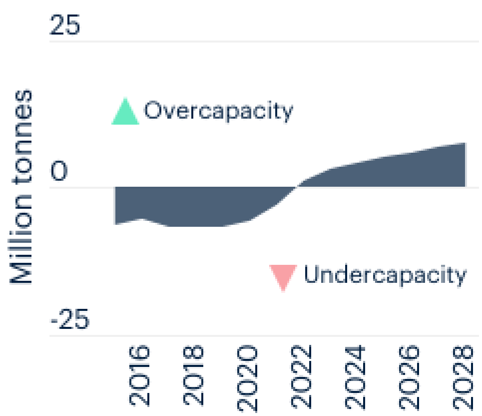


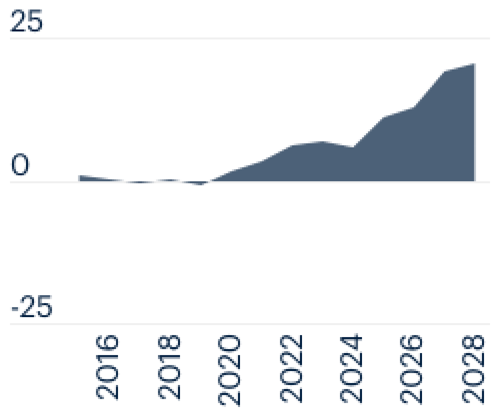

Source: ICIS Margin Analytics, World Ethylene Plant Report

# China Overcapacity | Olefin oversupply to continue to grow

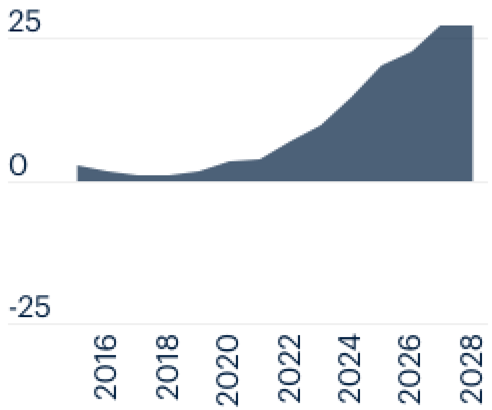
**Ethylene Glycols**



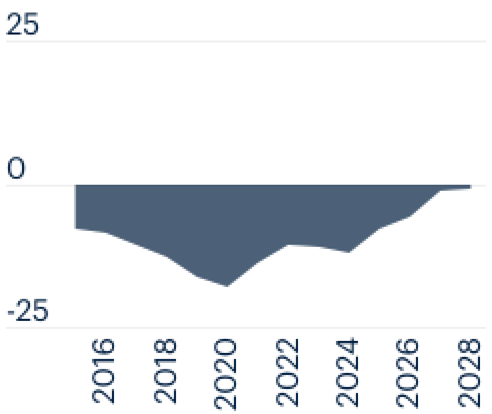

**Ethylene**



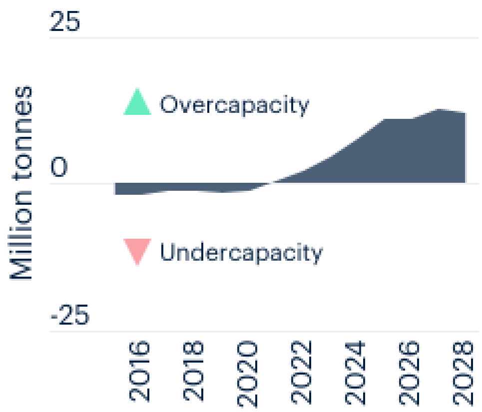

**Propylene**



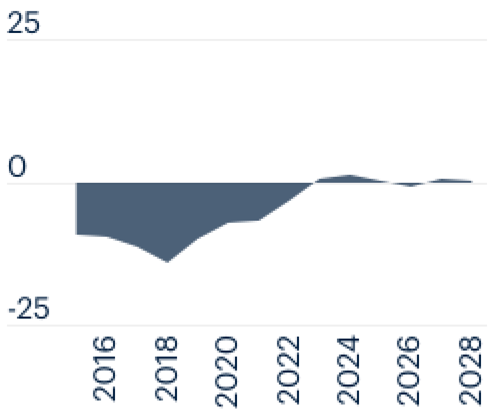

**Polyethylene**



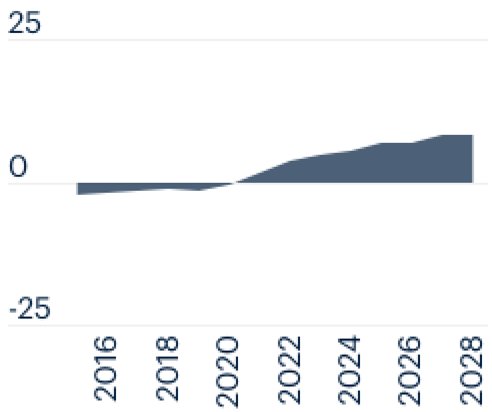

**Polypropylene**



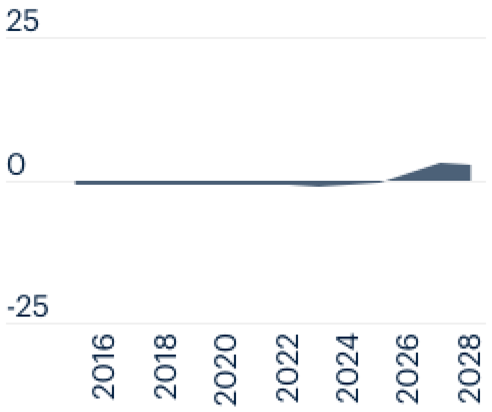

**Paraxylene**




**Styrene**




**EVA**

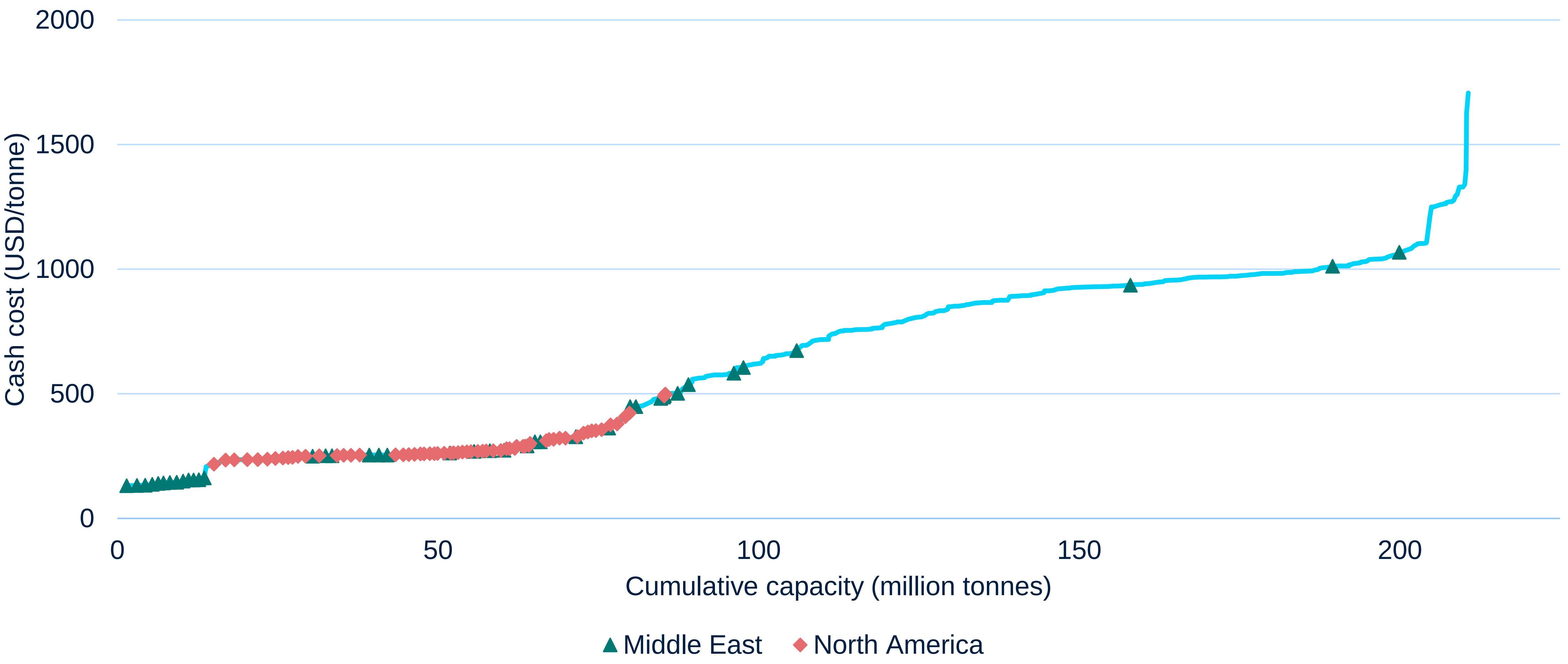



Source: ICIS Analytics

# Middle East and North America

# Cost Advantaged Regions | North America and Middle East

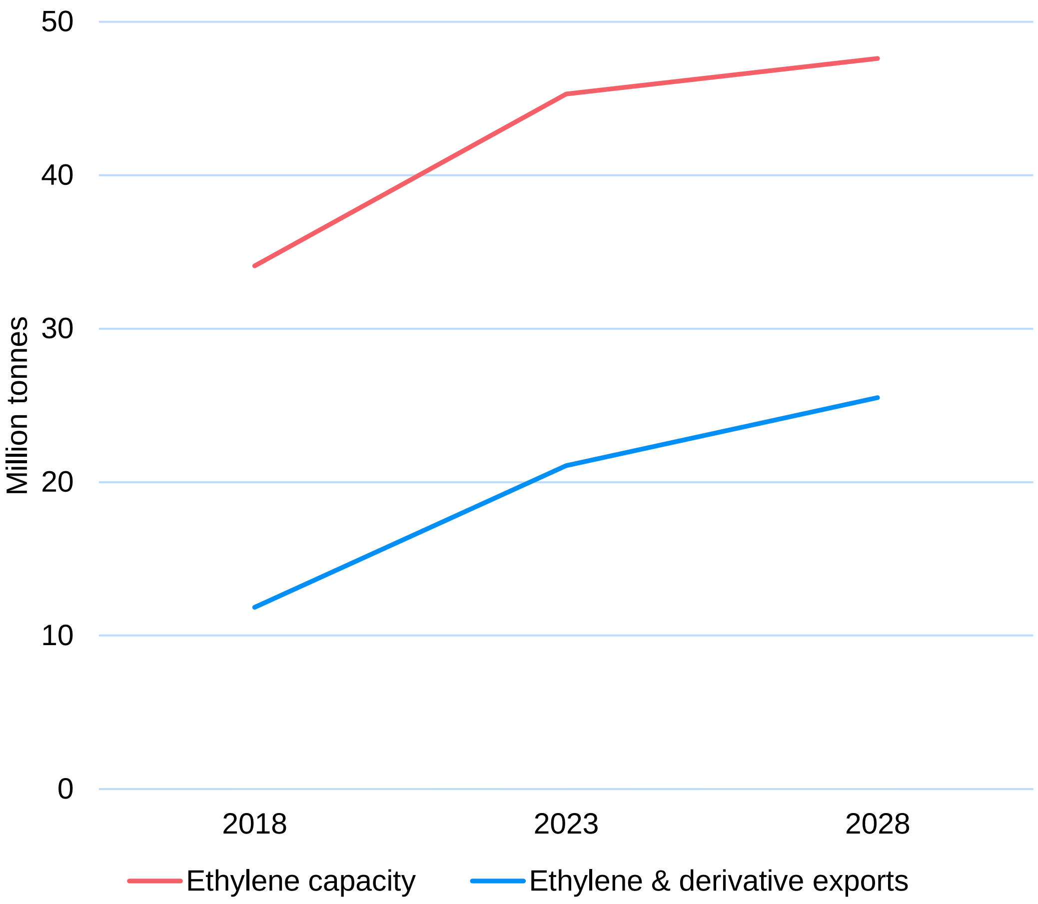
## Global Ethylene Cost Curve, 2023



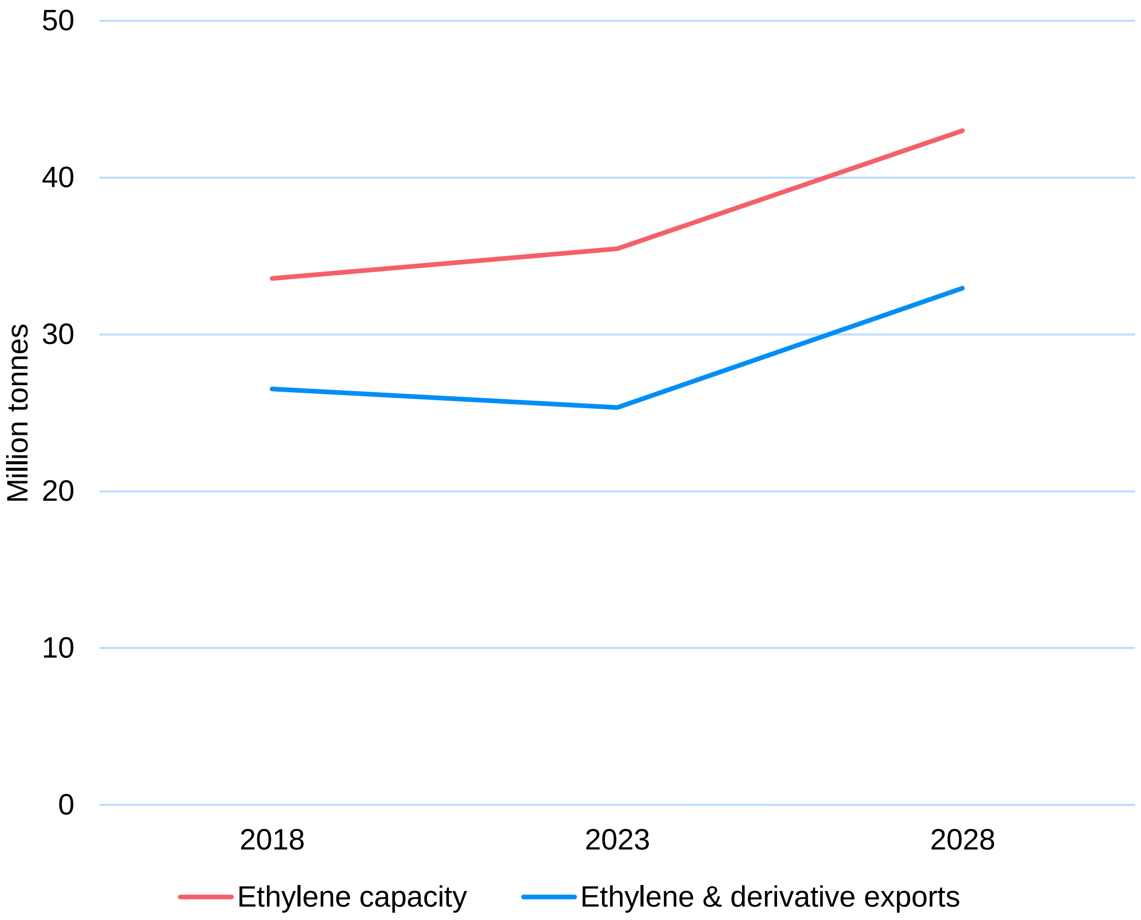

Source: ICIS Analytics

# Export Focused | US and ME volumes to increase further

## United States

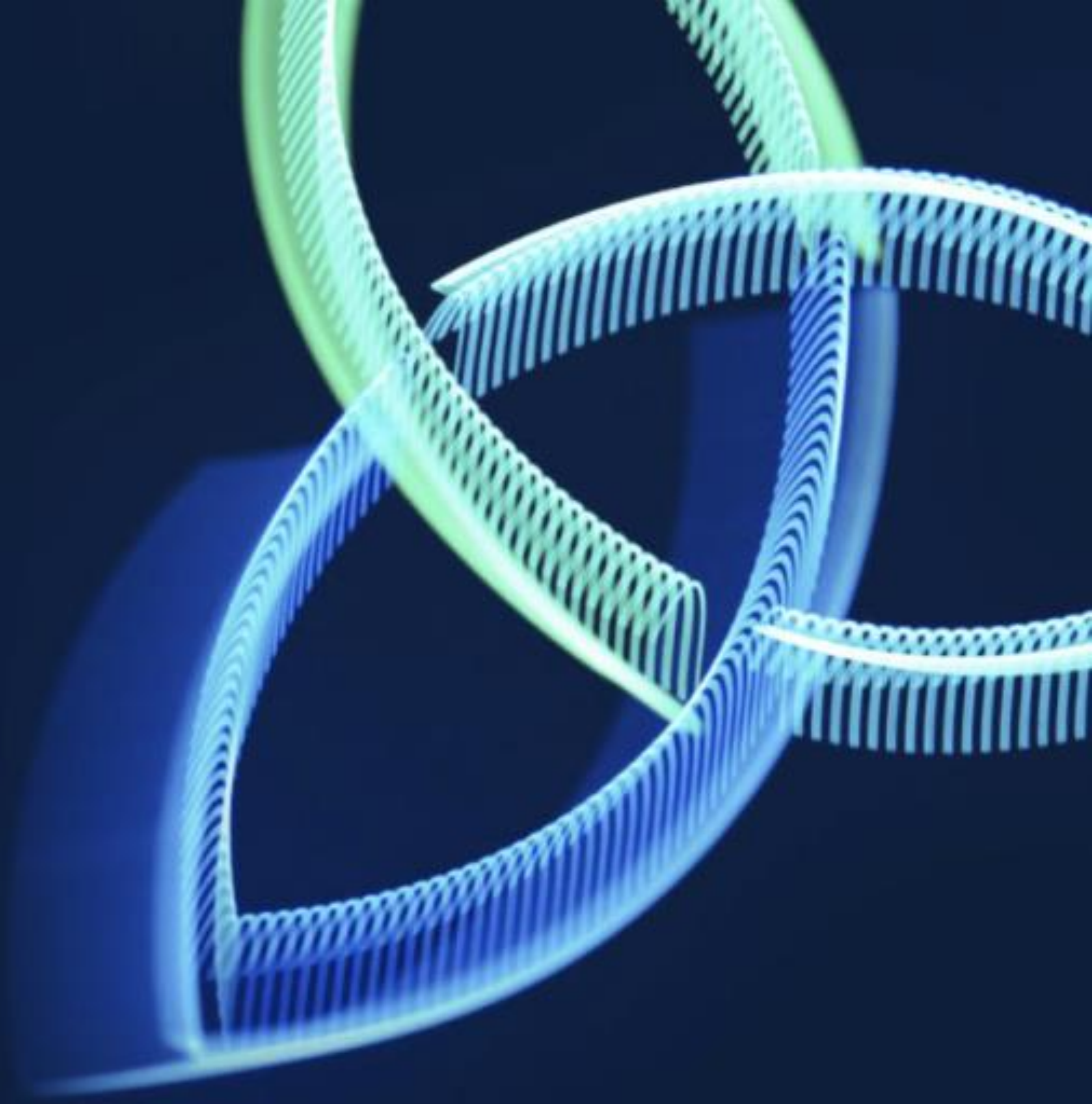



## Middle East

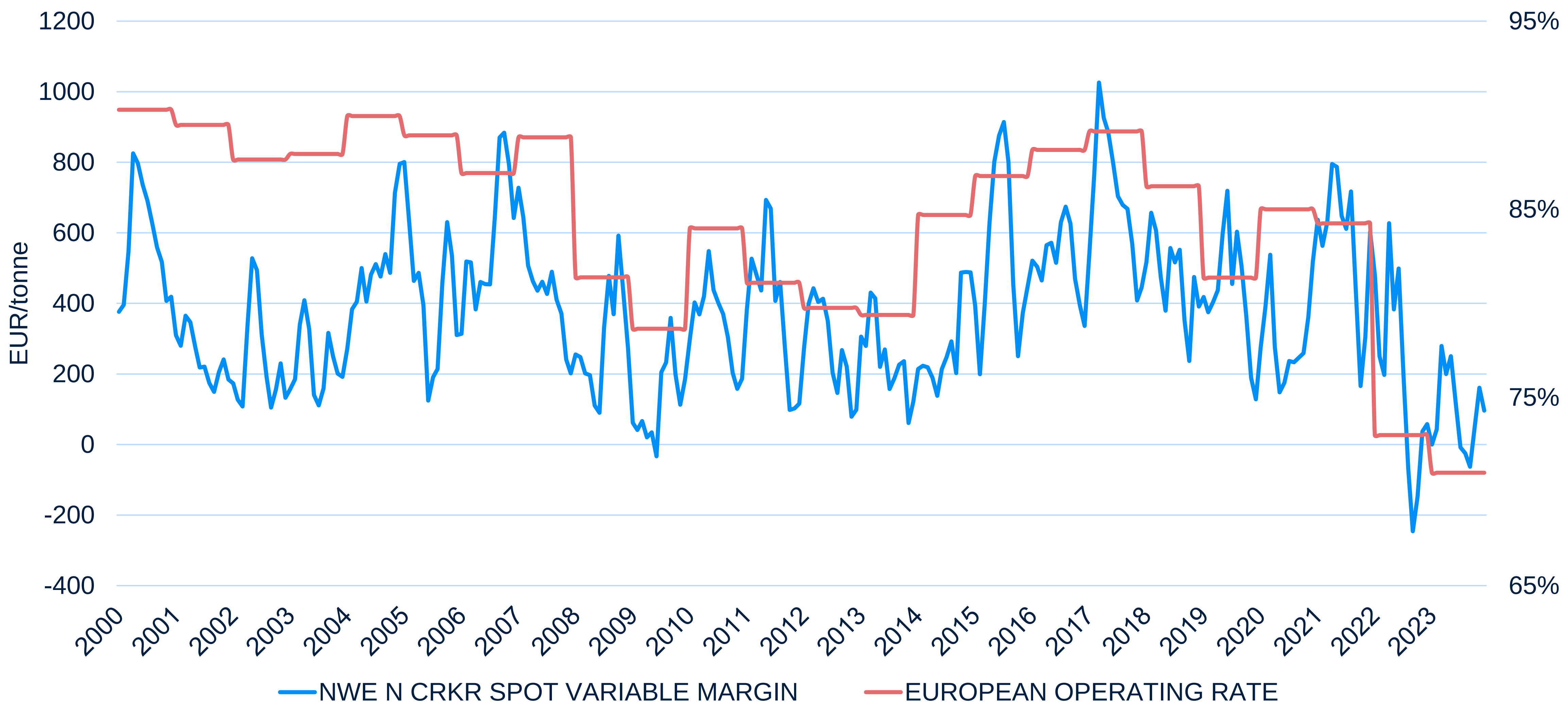



Source: ICIS Analytics

# Europe

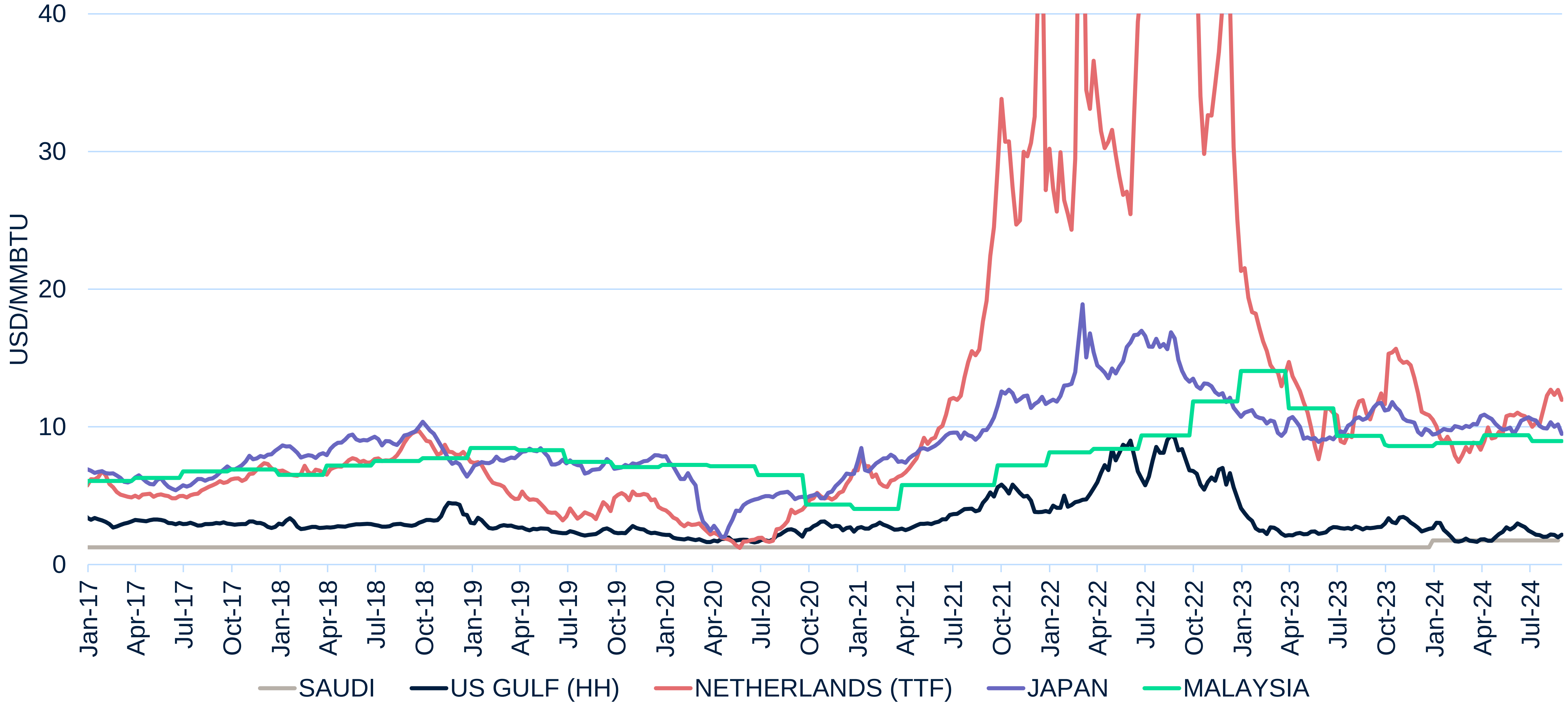


# Europe Ethylene Margins | Unprecedented lows




Source: ICIS Supply & Demand Database, ICIS Margin Analytics

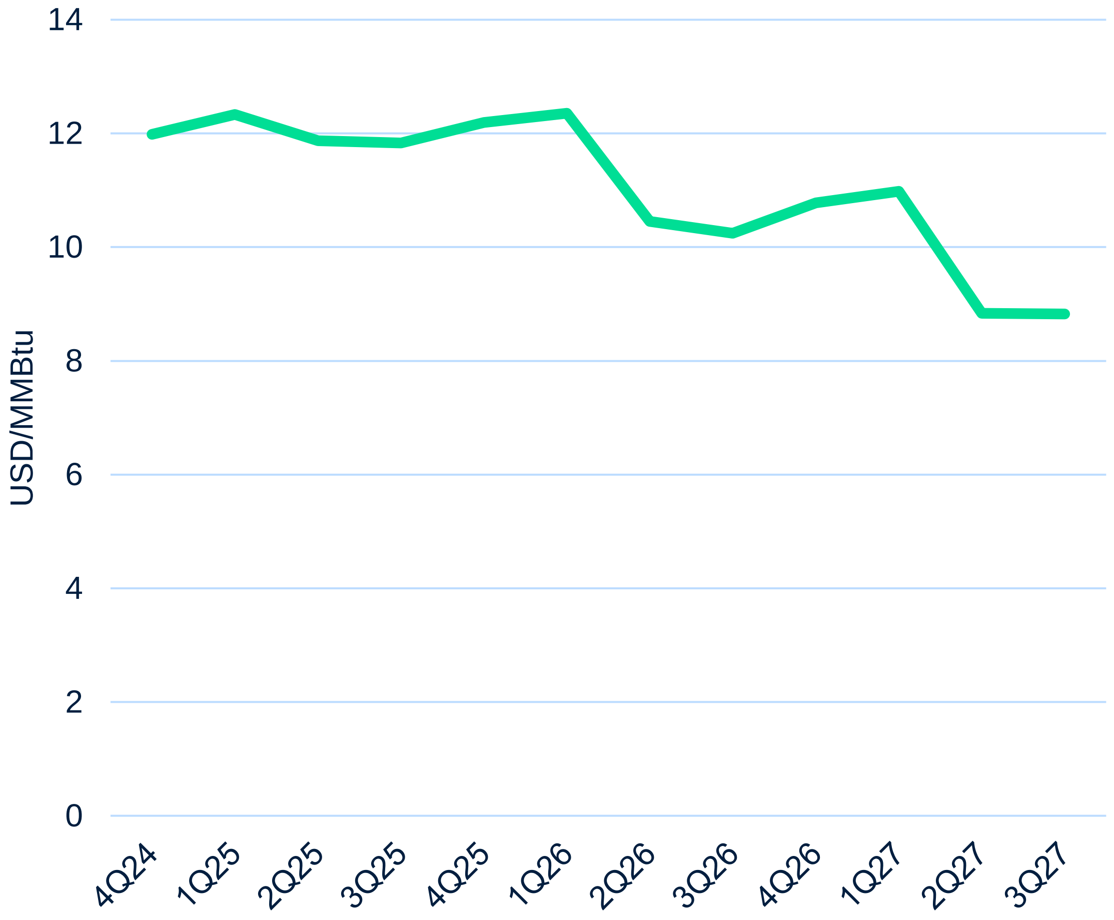
# Global Gas Pricing | Structural differences



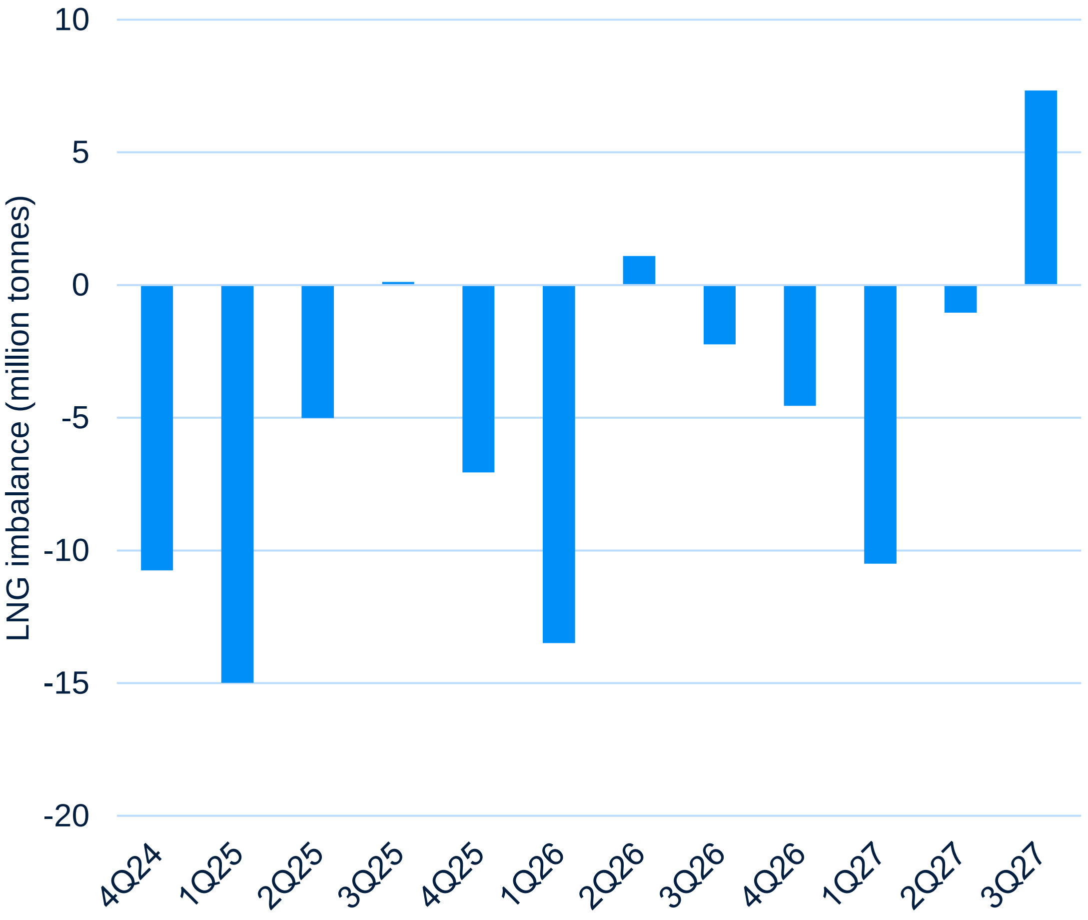

Source: ICIS Pricing, ICIS Analytics

# LNG Project Delays | Global supply deficit expected until 2027

## ICIS TTF forward curve



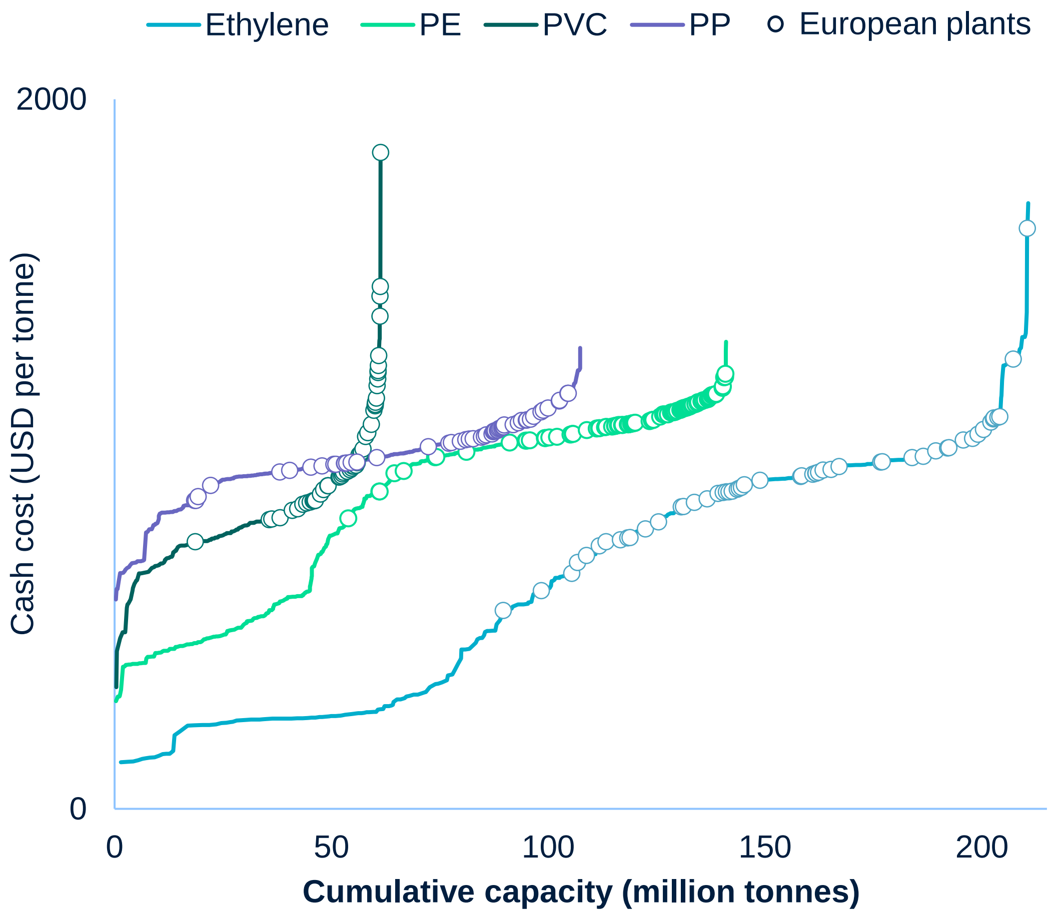

## Global LNG balance (forecast)




Source: ICIS LNG Edge, ICIS Analytics

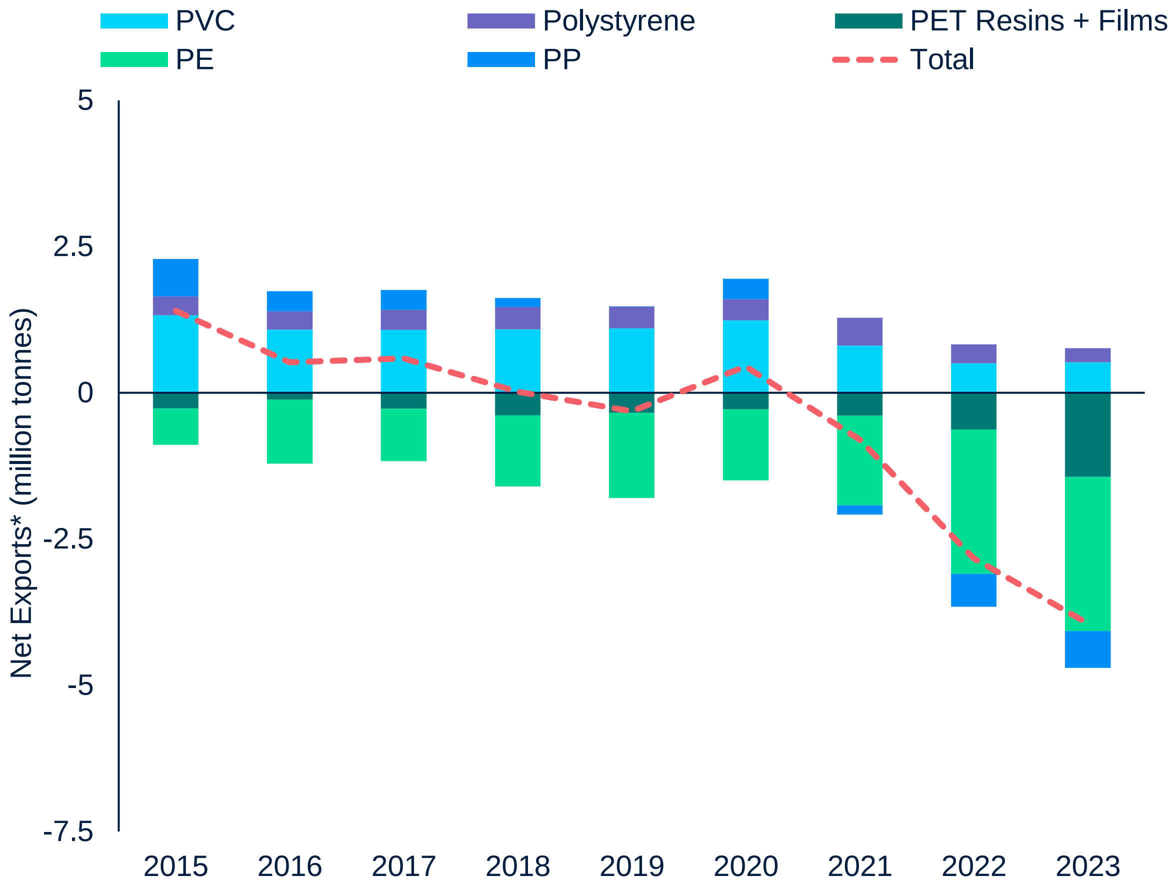
# European Competitiveness | EU now net importer of polymers

## Global cost curves (2023)




Source: ICIS Research & Analysis

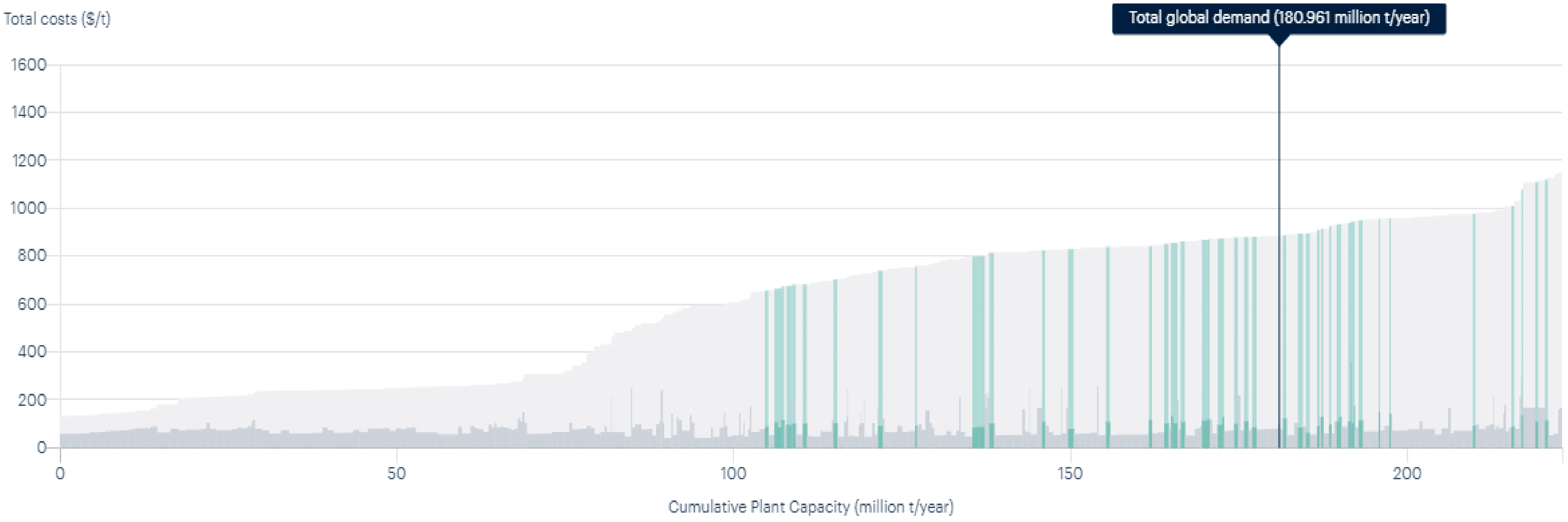
## EU27 polymer net exports




*Net exports: Exports-Imports

# European Cost of Production | The new normal?

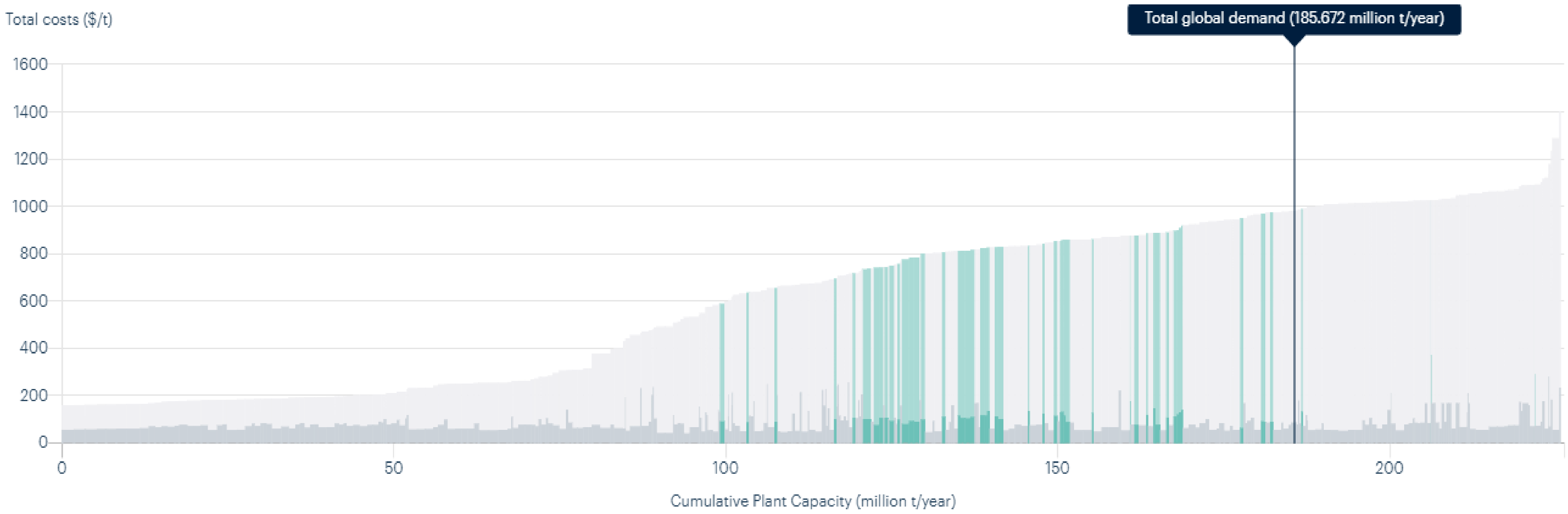
## Ethylene, November 2023, European producers highlighted




Source: ICIS Analytics

# European Cost of Production | Lower gas pricing, import disruptions

## Ethylene, September 2024, European producers highlighted

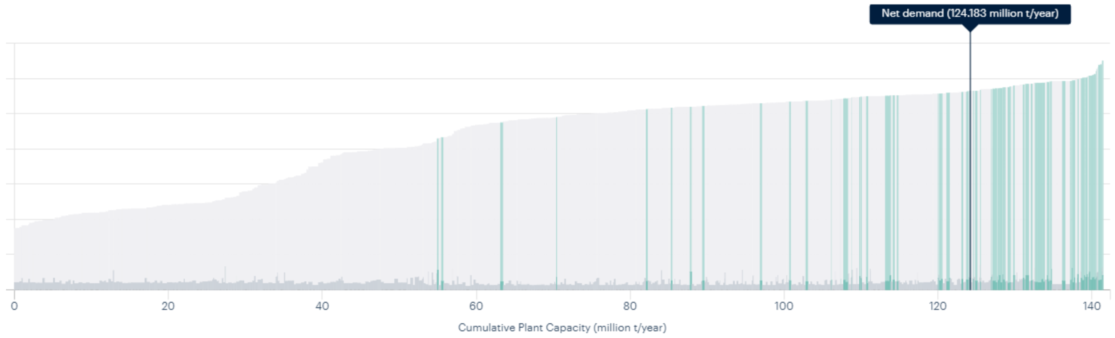



Source: ICIS Analytics

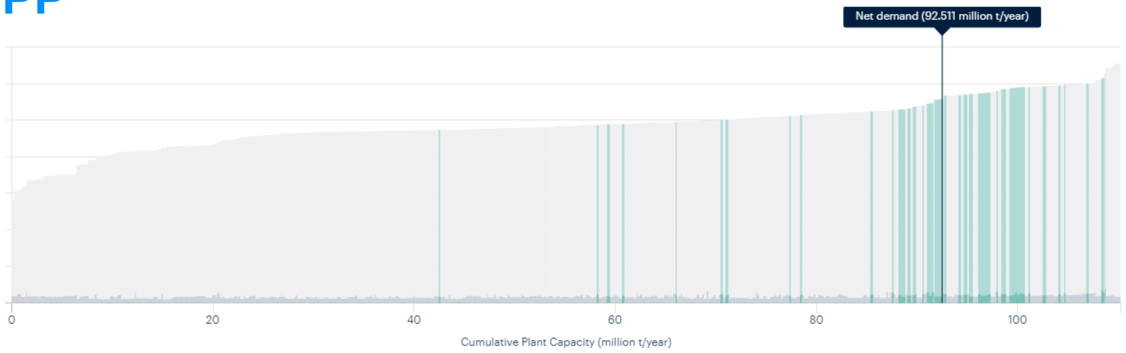
# European Cost of Production | Structural challenges remain

## September 2024, European producers highlighted

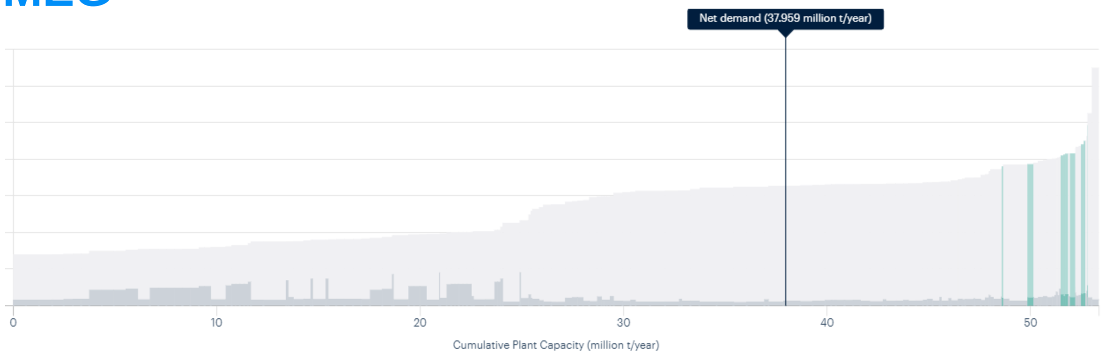
### PE



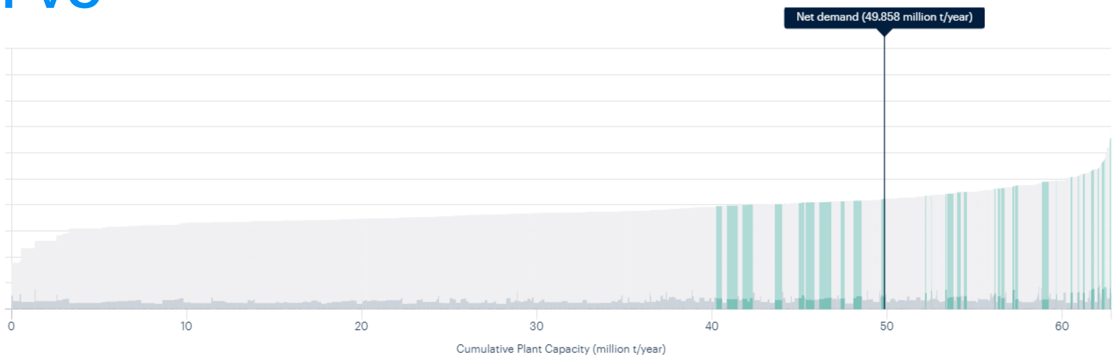

### PP




### MEG

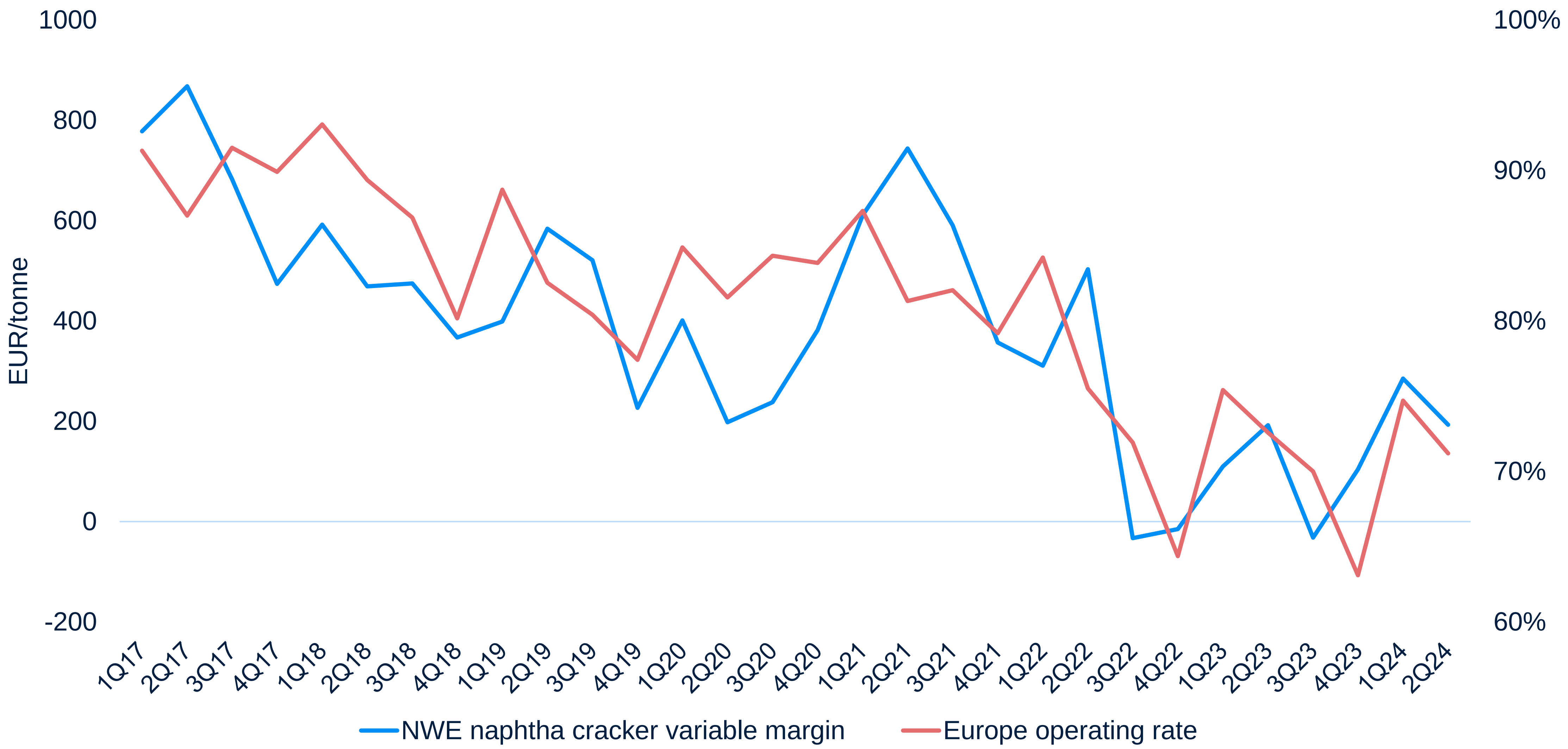



### PVC




Source: ICIS Analytics

# Europe Ethylene | Improvement in 2024 but still challenged




Source: ICIS Supply & Demand Database, ICIS Margin Analytics

# Ethylene Capacity Rationalisation | Potential scale

**Global operating rate (2030)**

| Demand CAGR (2023-2030) | | 83% | 84% | 85% | 86% |
|---|---|---|---|---|---|
| | 3.5% | 1.0 | 4.0 | 7.0 | 10.0 |
| | **3.0%** | **10.0** | **13.0** | **16.0** | **19.0** |
| | 2.5% | 19.0 | 22.0 | 25.0 | 28.0 |

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

Source: ICIS Analytics

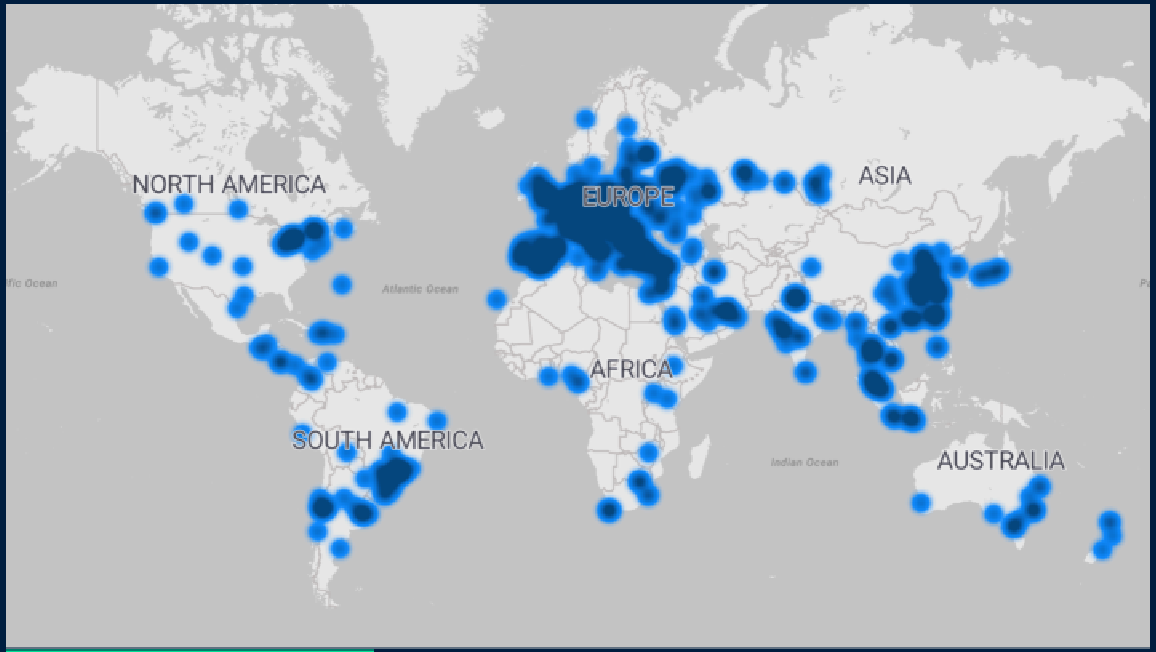
03 | Europe Petrochemicals – Transform to thrive

# Sustainability update

**Egor Dementev**
*EMEA Analyst Team Lead, Plastics Recycling & Sustainability*
egor.dementev@icis.com

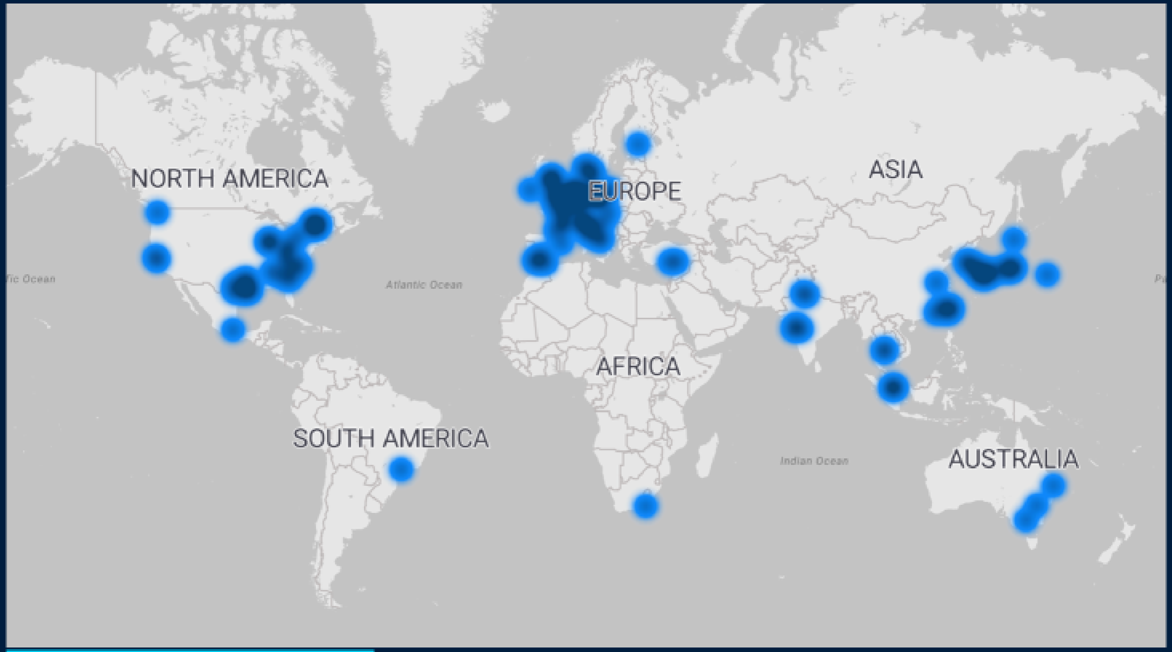
# Mechanical recycling is relatively established in comparison to nascent but fast developing chemical recycling

Mechanical recycling plants*, operating and announced (FID)
~2500 plants globally




MECHANICAL RECYCLING

Chemical recycling plants**, operating and announced (FID)
~130 plants globally




CHEMICAL RECYCLING

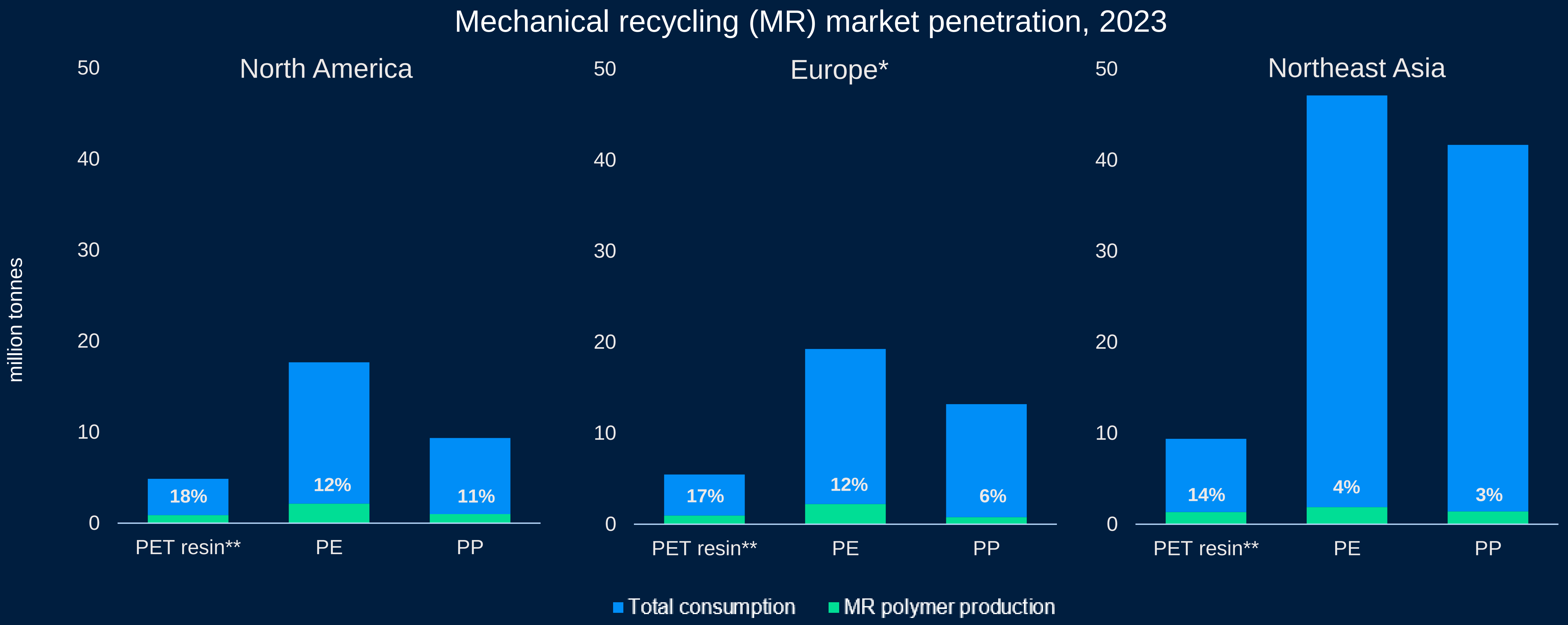
* Includes PET, PE and PP capacities

** Includes pyrolysis-based projects (all types, excludes tyre pyrolysis), glycolysis, hydrolysis, methanolysis and dissolution projects for all relevant polymers; all plant scales (both pre-commercial and commercial)

Source: ICIS Recycling Supply Tracker – Mechanical, 2024; ICIS Recycling Supply Tracker – Chemical, 2024

# Recycled polymers currently hold marginal share in plastics markets

## Year 2023 proved to be challenging for European plastics recycling amid the macroeconomic headwinds

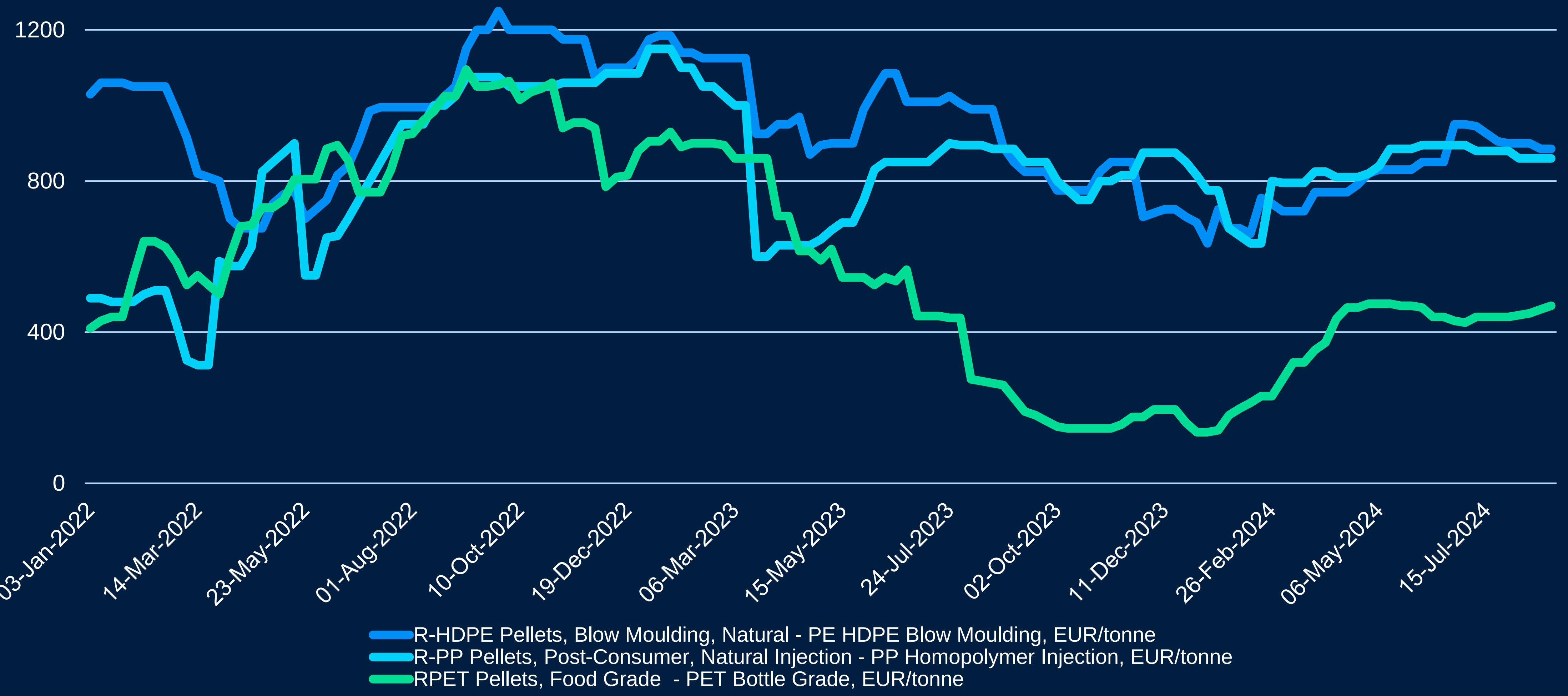



** Europe includes both EU, non-EU countries and Turkey* *** PET resin includes bottle grade resin, which is most commonly used in bottle and container packaging*

*Source: ICIS Supply & Demand Database and Recycling Supply Tracker – Mechanical, 2024*

# High-quality recycled polymers are typically traded at premium but macroeconomics and virgin prices still matter

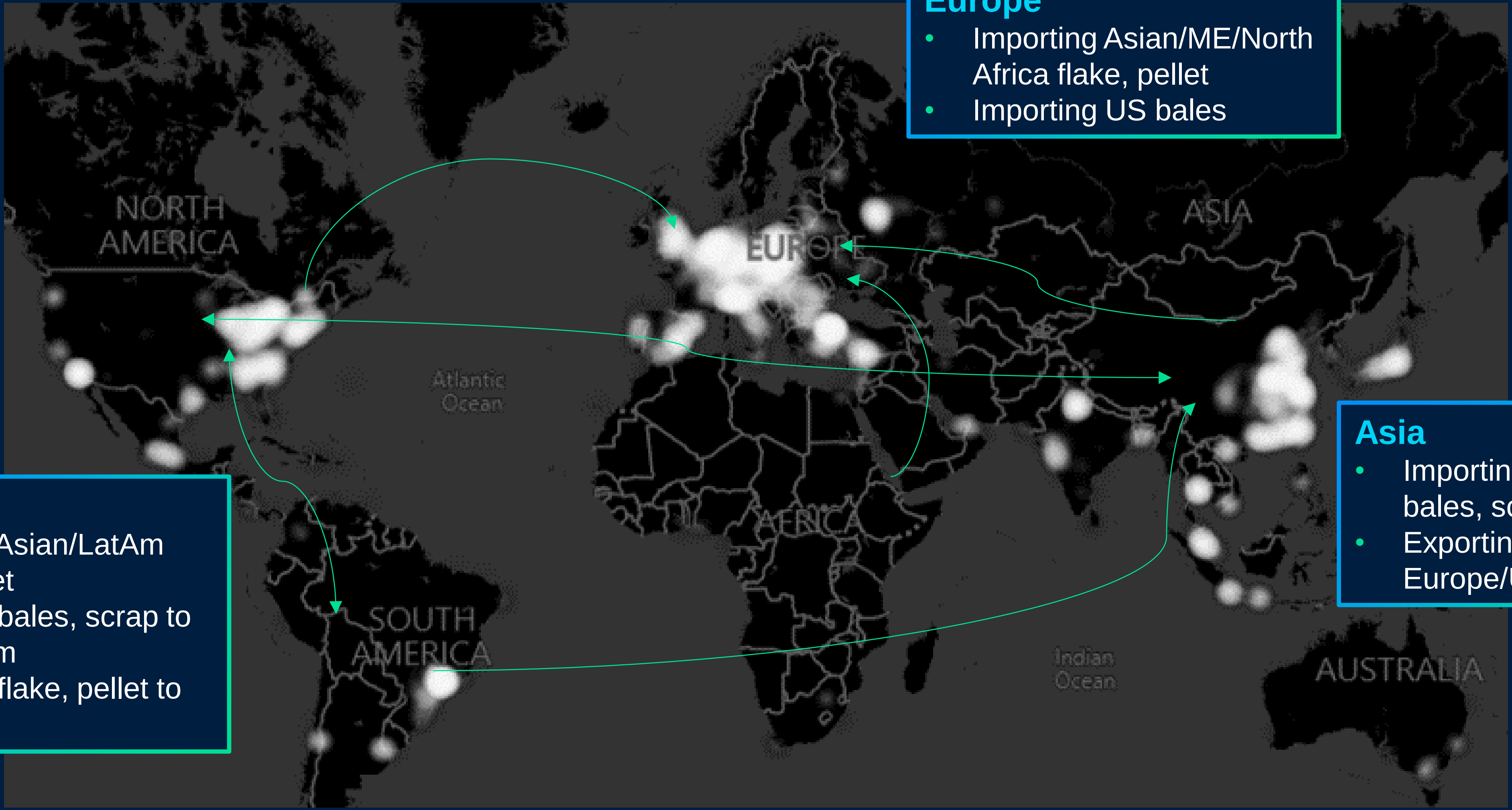
Example of European price spreads (recycle minus virgin), EUR/tonne




*Source: ICIS*

# Trade patterns strengthening

## New mechanisms to be established on how imported materials can count towards the EU targets



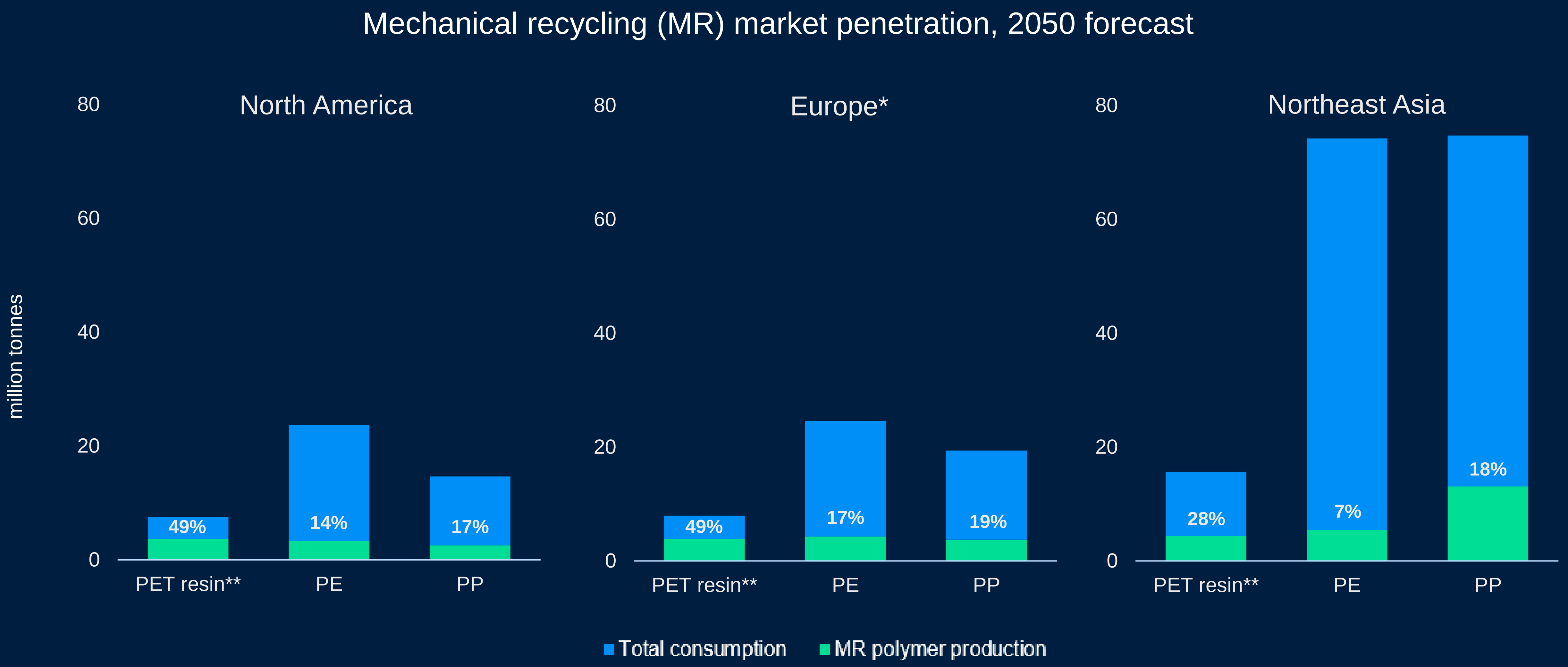

**Europe**
- Importing Asian/ME/North Africa flake, pellet
- Importing US bales

**Asia**
- Importing US/LatAm bales, scrap
- Exporting flake, pellet to Europe/US/North Africa

**US**
- Importing Asian/LatAm flake, pellet
- Exporting bales, scrap to Asia/LatAm
- Exporting flake, pellet to Europe

*Source: ICIS analytics*

# By 2050 share of mechanically recycled polymers is forecast to increase but the penetration level is still limited




** Europe includes both EU, non-EU countries and Turkey*

*** PET resin includes bottle grade resin, which is most commonly used in bottle and container packaging*

*Source: ICIS Supply & Demand Database*

# Chemical recycling has potential to help but faces its own battles

## Cautious optimism or growing concern?

### Capacity

- – Start-up delays
- + New geographies
- + Pre-FID pipeline growth
- + Average standalone capacity growth
- + Technology / focus on purification

### Feedstock

- + Viable price range
- – Cost volatility
- + Vertical integration and partnerships
- + Integrated MR and CR centres
- = Waste management infrastructure

### Economics

- – CAPEX
- + Energy cost
- + Consolidation / M&A
- – Virgin prices and demand

### Regulation

- + PPWR
- + Regulation expansion (auto)
- = Legislative status
- = Mass balance
- + Environmental impact studies (LCA)

### Collaboration

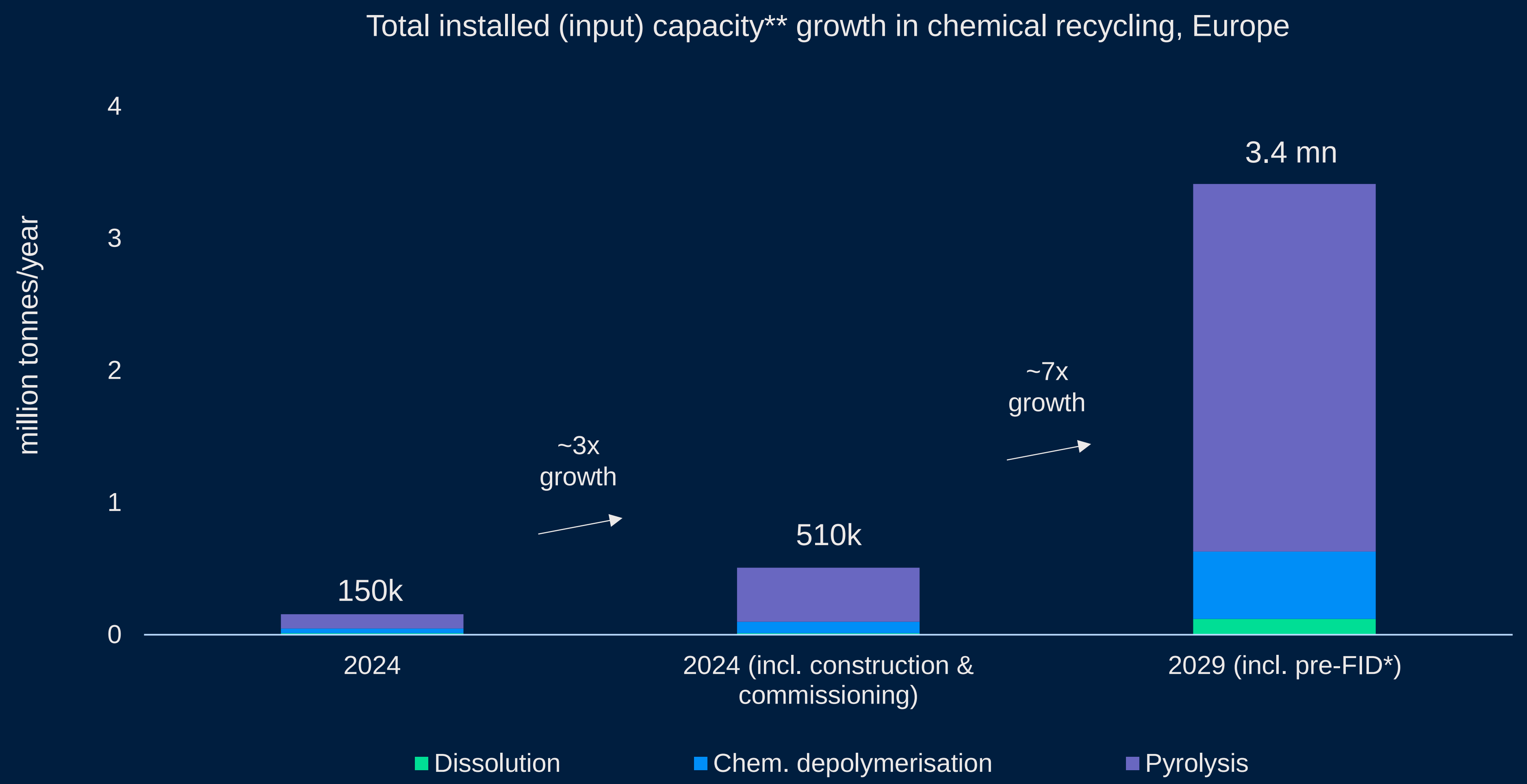
- + Industry’s joint letters
- – Terminology unification
- + Consumer awareness

**Developments and effects on industry outlook**

+ – positive / progress   – – negative / regress   = – neutral

# Chemical recycling and dissolution capacity in Europe: Many projects are only awaiting final approval

## Pre-FID* project pipeline can unlock ~3 million tonnes/year of additional capacity




* *Final Investment Decision*

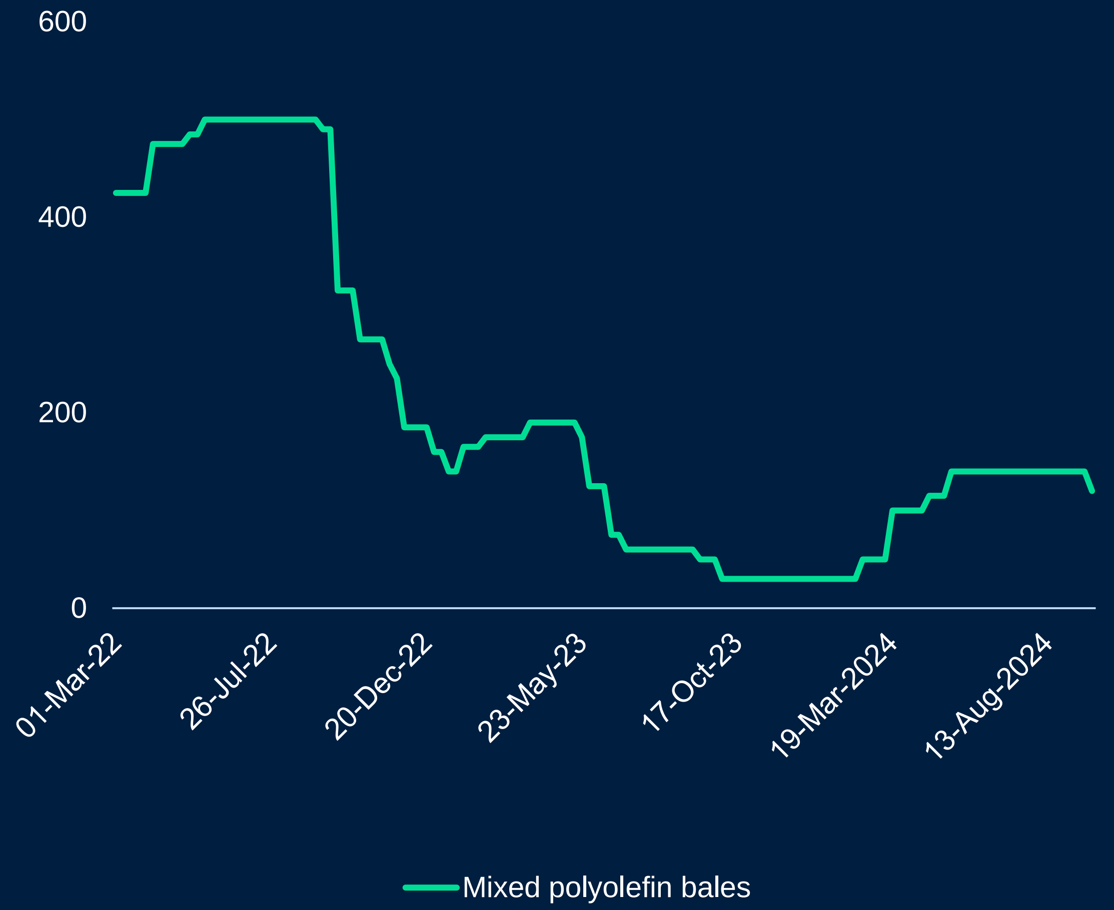
** *Includes pyrolysis-based projects (all types, for all relevant polymers; excludes tyre pyrolysis), glycolysis, hydrolysis, methanolysis and dissolution projects*

*Source: ICIS Recycling Supply Tracker – Chemical, 2024*

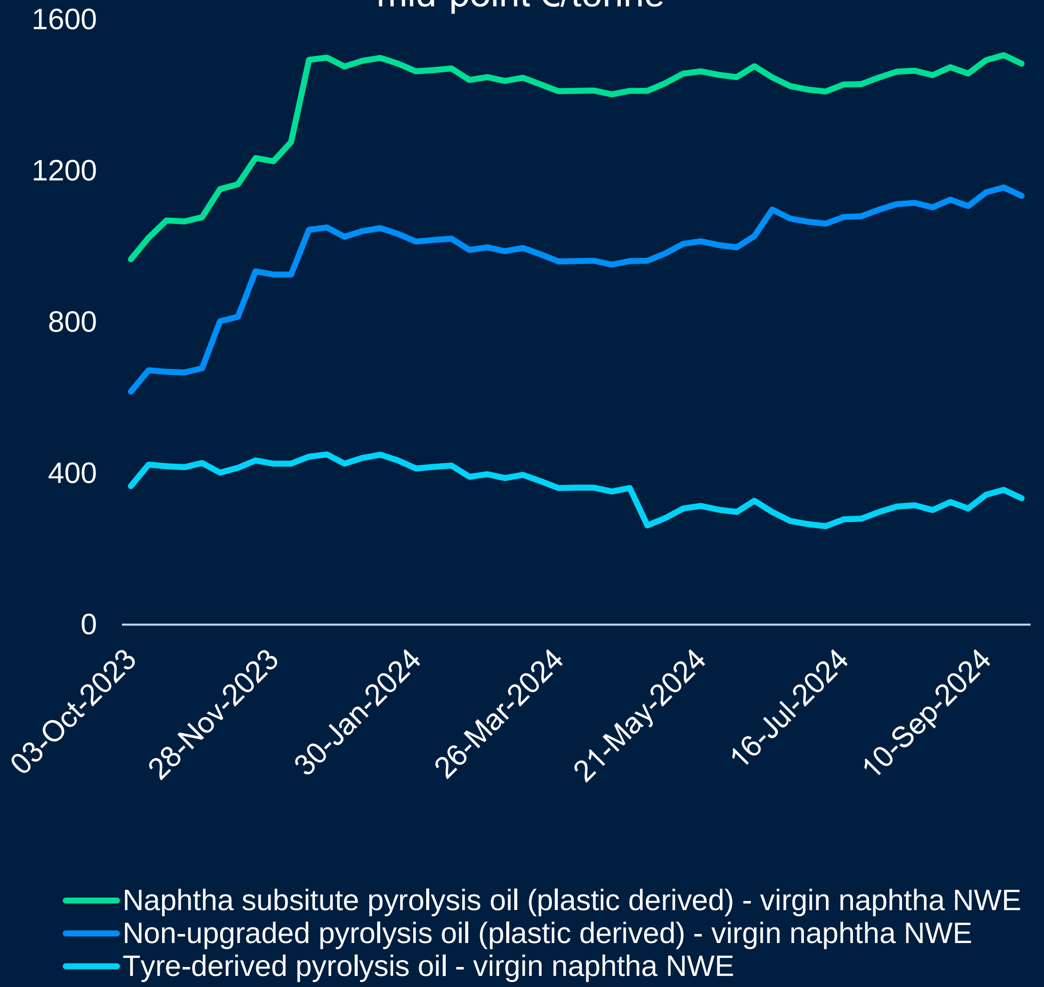
# Chemical recycling case study: pyrolysis in Europe

## Naphtha substitute pyrolysis oil is traded multiple times higher than virgin naphtha driven by supply/demand imbalance and cost

Europe: 90% mixed polyolefin bale prices 2022-2023, mid-point €/tonne

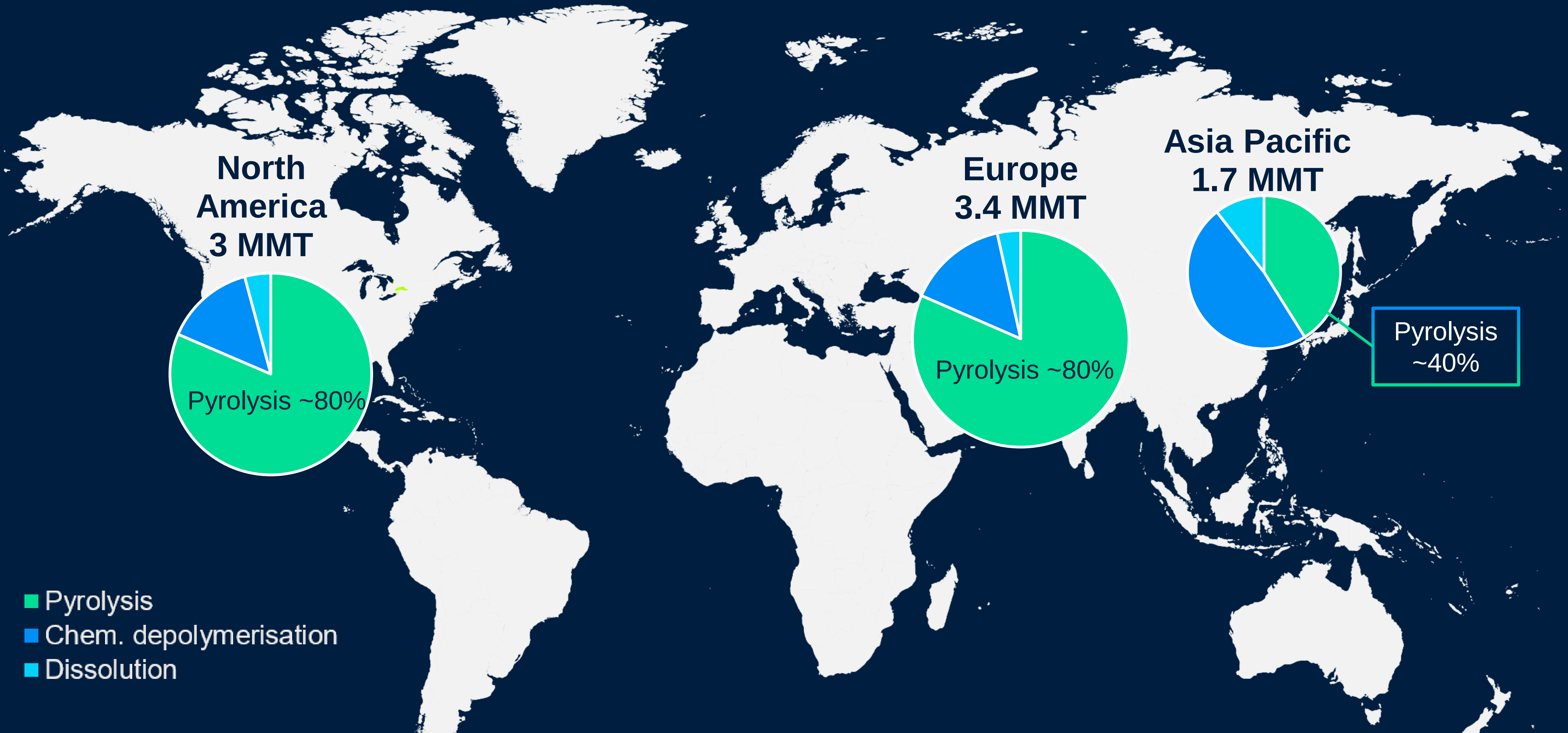



Europe: pyrolysis oil vs naphtha spot (price spread), mid-point €/tonne




*Source: ICIS Mixed Plastic Waste and Pyrolysis Oil Europe*

# Europe has potentially the world's largest chemical recycling project pipeline (operating + announced* plants)




** Based on all announcements, including both FID (final investment decision) and pre-FID projects at all stages, based on installed (input waste processing) capacity*
*Source: ICIS Recycling Supply Tracker – Chemical, 2024*

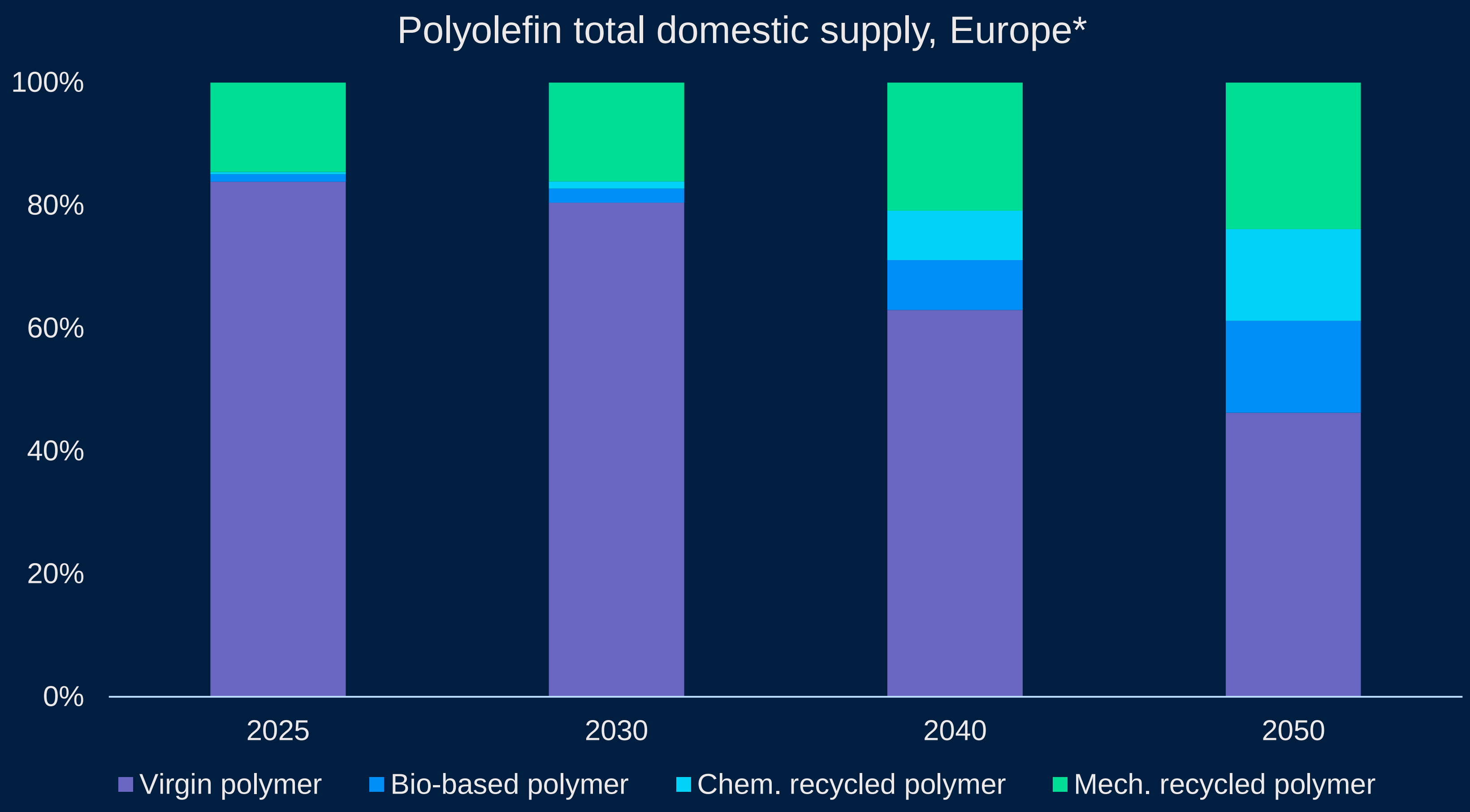
# Circular economy has the potential to become a major competitive advantage for the European chemical industry

Broader alternative feedstocks (bio as well as carbon capture and utilisation (CCU)) also contribute to the circular transition but are currently lagging behind recycling in the supply mix

| Now | Next | Future |
|---|---|---|
| Mechanical Recycling | Chemical Recycling & Bio | CCU |
| Chemical recycling should complement mechanical recycling | Policy developments should provide further incentives for demand growth, e.g. SAF mandates and PPWR targets | Innovations and green energy are the key to accelerate progress |

# Domestic polymer production in Europe is forecast to change significantly in the long term

## For example, in the domestic supply of polyolefins, the share of circular polymers could increase from ~15% in 2025 to ~50% in 2050




** Europe includes both EU, non-EU countries and Turkey*
*Source: ICIS Analytics scenario*

# System level approach is required to accelerate growth of the recycled polymer market

| Key areas | Particular measures |
| --- | --- |
| incentives for long-term demand | mandated recycled content targets and well-tuned plastic taxes |
| economic support to infrastructure development | extended producer responsibility (EPR) schemes and eco-modulated fees |
| best practices and innovations in waste management | aligned guidelines and standards, design for recycling, high-tech for sorting (e.g. watermarks and artificial intelligence (AI)) and complex integrated recycling centres |
| new recycling technologies | legally recognised chemical recycling and a mass balance chain of custody model, greenfield capacity building |
| pro-active engagement with consumers | benefits of deploying all the recycling technologies available and transparent environmental impact studies (LCA) |

# ICIS Topics connects breaking news and critical market data with expert analysis

## Overcapacity: Impact on Chemicals

- The petrochemical industry is currently seeing a record period of overcapacity. Operating rates are at multiyear lows across various value chains and are expected to remain depressed over the next five years at least.

Support your strategic decisions with the latest insight on prices, trade and profits.

## Recycled Plastics focus

- Discover our newest global and regional outlooks on R-PET, R-PE, R-PP, Pyrolysis Oil and Mixed Plastic Waste.

Keep up to date on global trade, legislation, and supply-demand dynamics.

Log in to ICIS Clarity to learn about the latest topics

# Thank you