OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

From Black Gold to New Frontiers

Petrochemical Value Chain Outlook

15 May 2025

OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

Global Energy & Chemicals Future

Emerging Into a New World

Dewey Johnson

Dow Jones Senior Vice President &
Chemical Market Analytics by OPIS Global Lead


SAVE the DATE
OPIS
A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS
WORLD CHEMICAL FORUM
Innovate. Evolve. Thrive.
Embracing the New Reality: Transform to Thrive
March 25-26, 2026 · The Woodlands, TX
worldchemicalforum.com

OPIS
A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Agenda

- Economy
- Industry Fundamentals
- Industry Reconfiguration
- Disruptors
- Takeaways

The Chemicals Values Chain

From Natural Resources to the Consumer, Improving People's Lives

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Natural Resources

Refining & Processing

Fuels

Base Chemicals

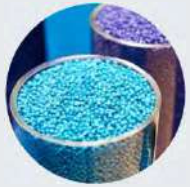
Olefins
- Ethylene
- Propylene
- Butadiene
- Butylenes

Aromatics
- Pygas
- Benzene
- Toluene
- Xylenes

Chlor-Alkali
- Chlorine
- Caustic Soda

Others
- Ammonia
- Phosphorous
- Methanol

Chemical Intermediates



Polyethylene
Polypropylene
PET
PVC
Rubber
Polyester
Nylon
ABS
Polyurethane
Polycarbonate
Polystyrene
Soda Ash

Converted Products

Plastics & engineering resins
- Extruded films, pipes, profiles, coatings, sheets, foams
- Blow-molded parts
- Injection molded parts
- Composites

Synthetic fibers
Rubber products
Paints & coatings
Adhesives & sealants
Lubricants
Water treatment products
Cleaning products
Industrial chemicals
Flame retardants
Many others…

End Consumer

From Cheap Feedstocks → **To Versatile Molecules** → **To Quality Of Life**

DOW JONES

OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

Comprehensive analysis of **global and regional markets**

Over 200 dedicated chemical experts, covering **>350 core building** block chemicals & derivatives

Actionable **near-term analysis** on market dynamics, current and forecast Price, Cost and Margin, and S/D/T

Long-term market outlook with in-depth coverage of 60 countries and regions to the year 2050

Research & Insights

200+ Chemicals
Experienced SMEs

Consulting

Strategy Advisory Support
M&A Advisory Support
Market Advisory

Chemical Conferences

World Chemical Forum
Unparallelled Insights & Networking

Global Economic Growth Outlook

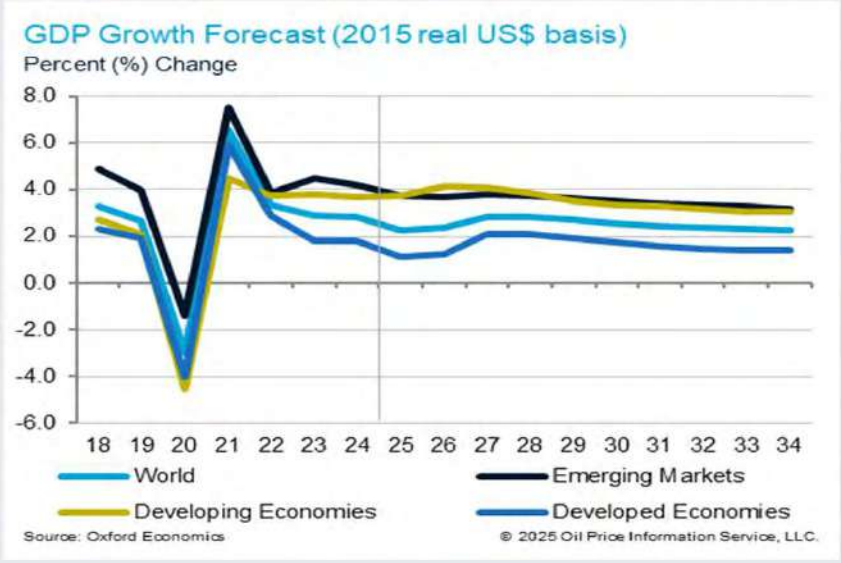
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

- Global GDP growth is forecast to slow in 2025 as headwinds such as tariffs and uncertainty dampen business and household spending. The slowdown extends into 2026 due to adverse effects on international supply chains, capital spending, and inflation.
- Although the US is expected to avoid a recession, the economies of Canada, Mexico, Japan and several Western European countries are projected to contract in 2025 / 2026.
- Protectionism is expected to increase as economies globally seek to safeguard their domestic industries. Regional trading blocks will gain in importance as US trading partners look for alternative markets.

Real GDP

Percent change	2022	2023	2024	2025	2026	2027
World	3.3	2.9	2.8	2.3	2.4	2.9
Brazil	3.1	3.2	2.9	1.3	1.6	1.8
Canada	4.2	1.5	1.5	0.7	-0.2	3.2
Mexico	3.7	3.3	1.2	0.0	2.0	2.4
United States	2.5	2.9	2.8	1.2	1.6	2.6
Eurozone	3.6	0.5	0.8	0.9	1.0	1.7
Russia	-1.3	3.7	3.9	1.8	-0.7	-0.2
Turkey	5.5	5.1	3.2	2.8	2.2	2.2
China (mainland)	3.1	5.4	5.0	4.1	3.9	3.9
Japan	0.9	1.5	0.1	0.8	0.2	0.4
India	7.0	8.8	6.7	6.5	6.6	6.6

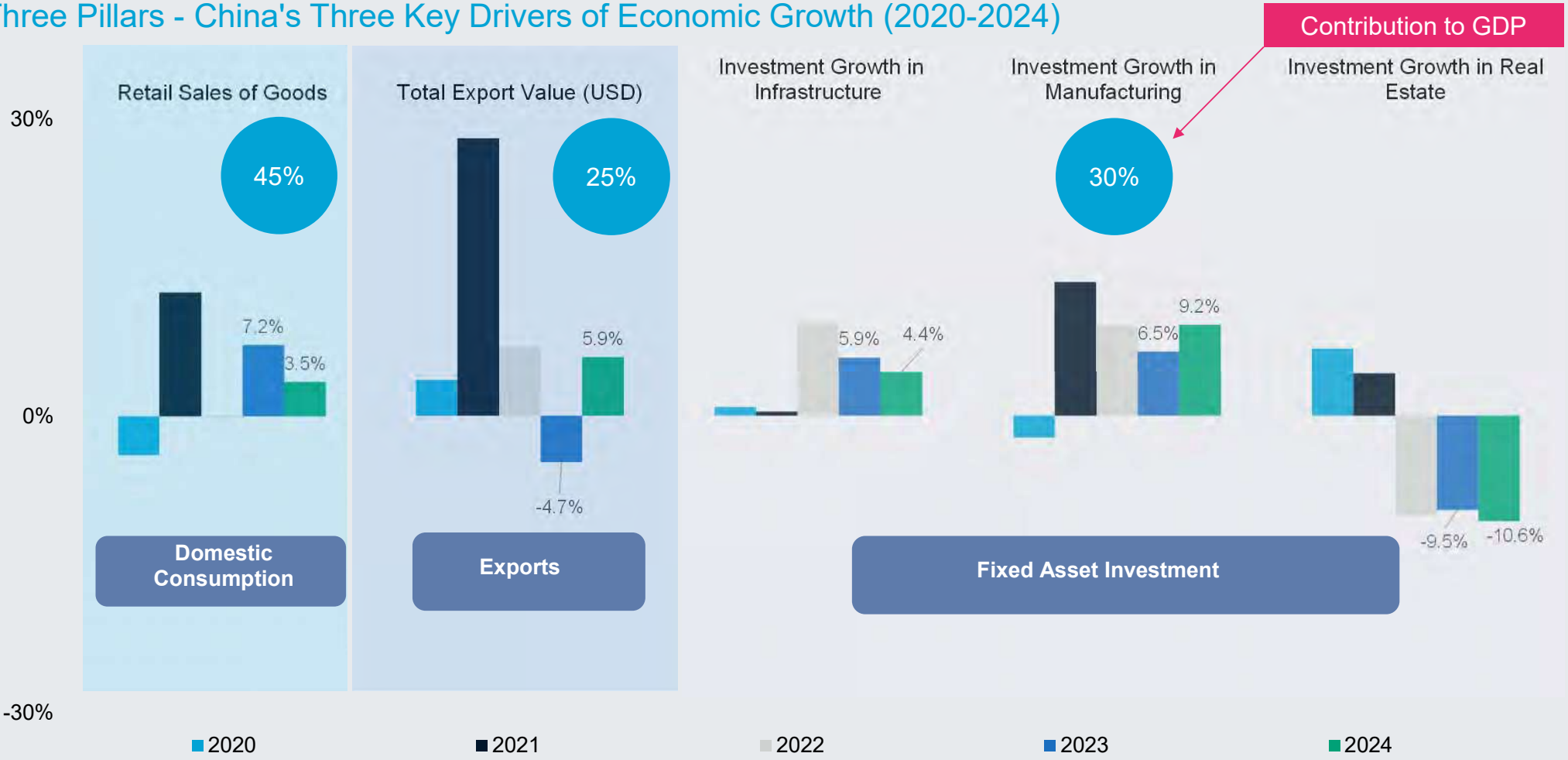
Source: Oxford Economics
© 2025 Oil Price Information Service, LLC.



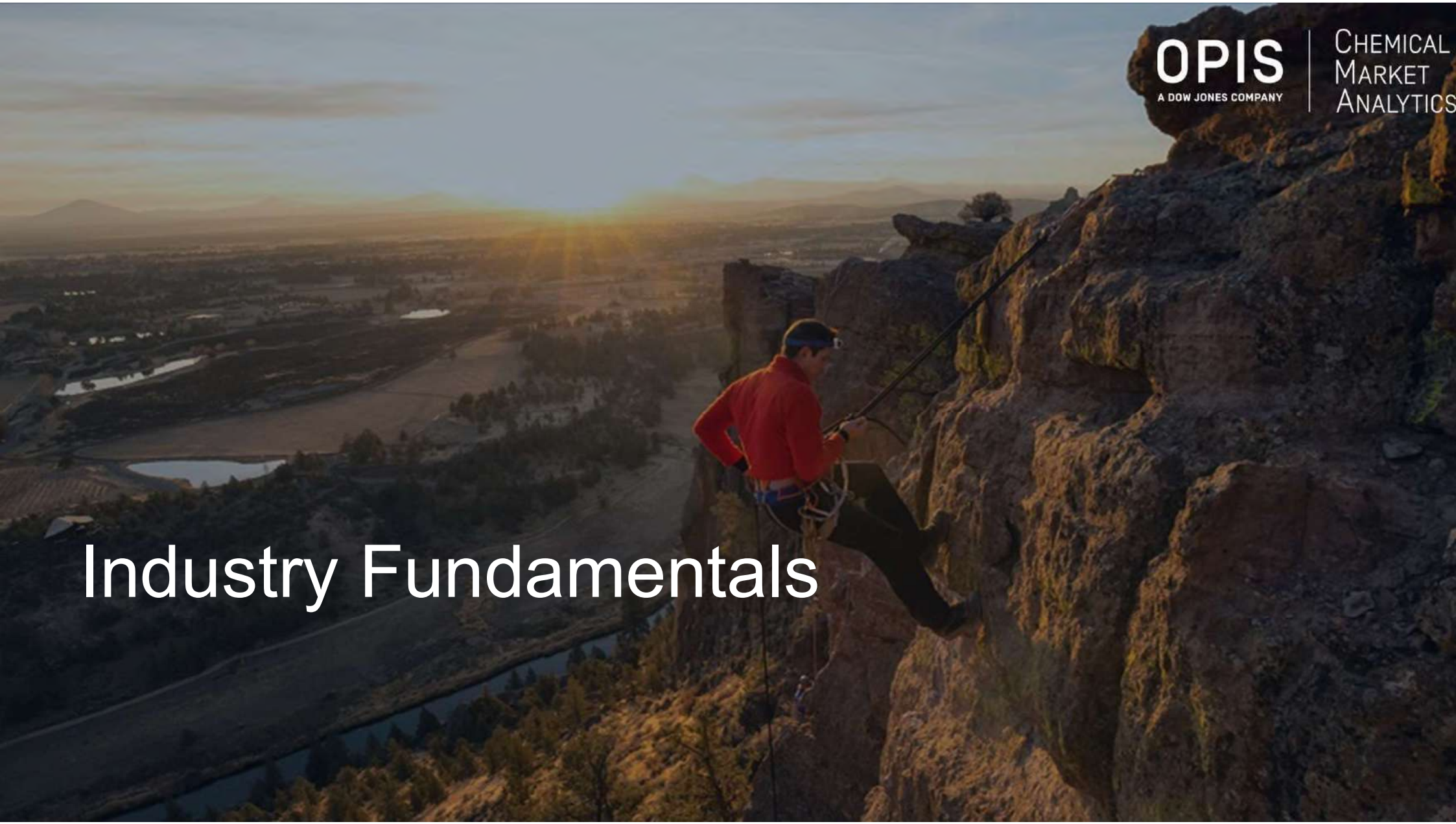
Push for 5% Growth Hinges on Domestic Consumption, but Persistent Deflationary Pressure and Tariff-Induced Economic Fears Threaten Momentum

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Three Pillars - China's Three Key Drivers of Economic Growth (2020-2024)



Source: Oxford Economics

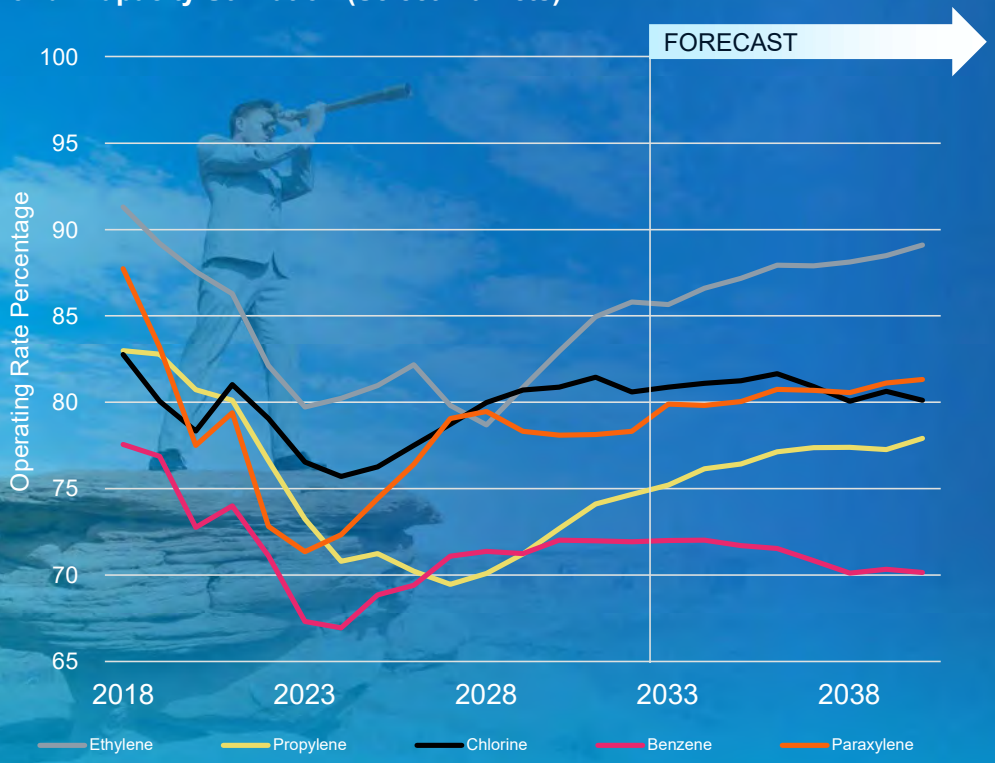

OPIS
A DOW JONES COMPANY
CHEMICAL
MARKET
ANALYTICS
Industry Fundamentals

Forecasting Long-Term Surplus Markets:
The Trough Is Wide… and a Different World Sits on the Other Side

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

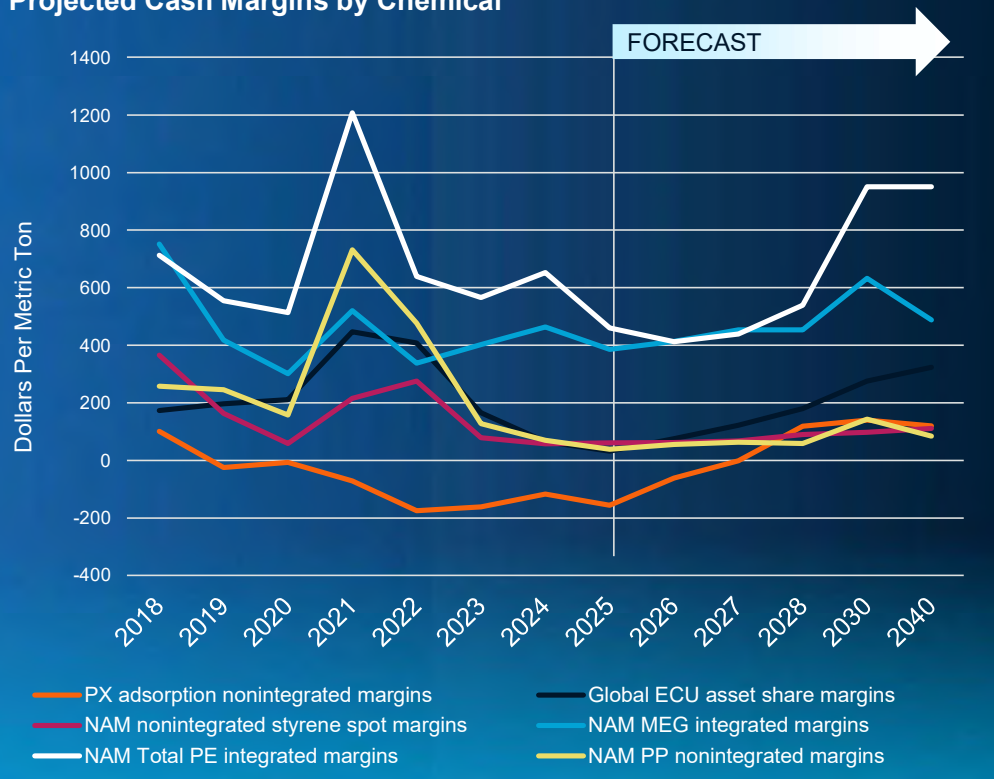
Global Chemical Markets have an excess supply. Market rebalancing requires demand growth with supply constraints.

World: Capacity Utilization (Select Markets)



Source: Chemical Market Analytics by OPIS

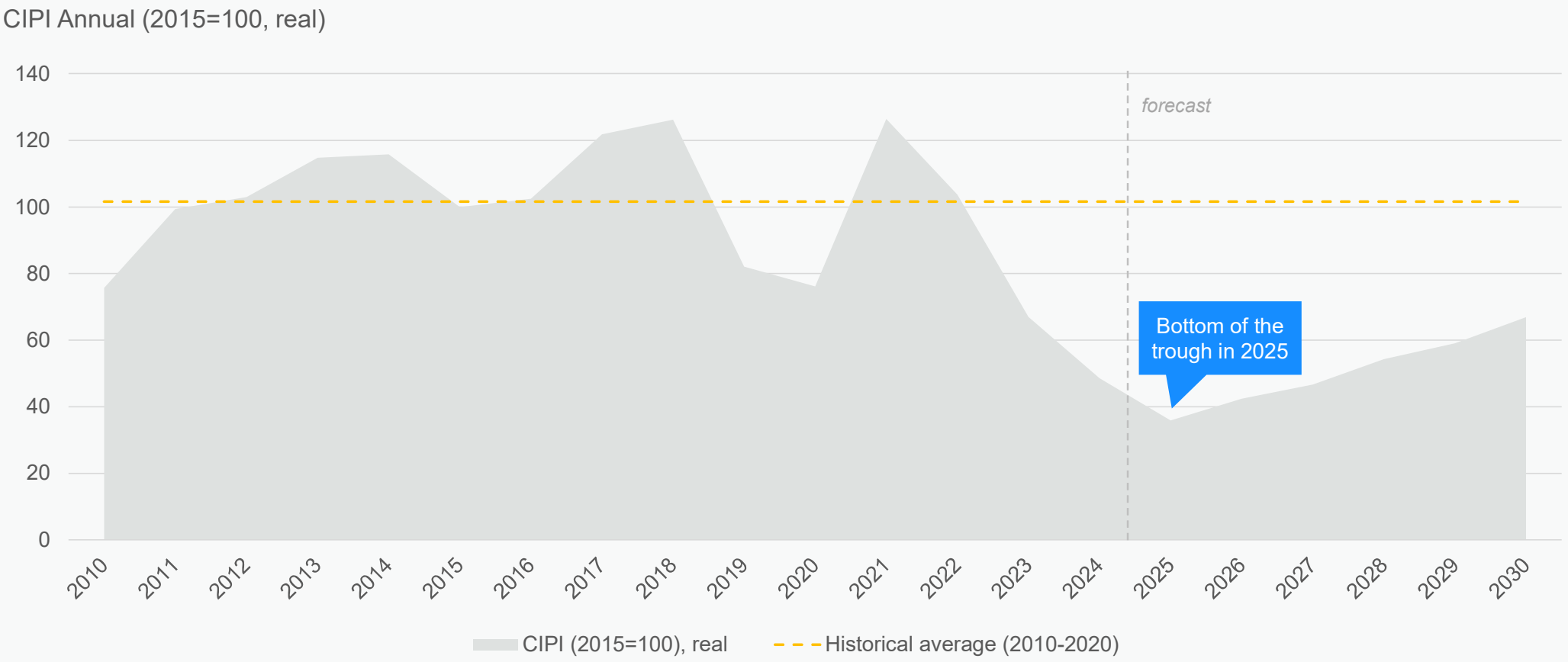
Projected Cash Margins by Chemical



Source: OPIS, A Dow Jones Company

Long trough persists: The CIPI shows global industry will not return to historical average margins well into the 2030s

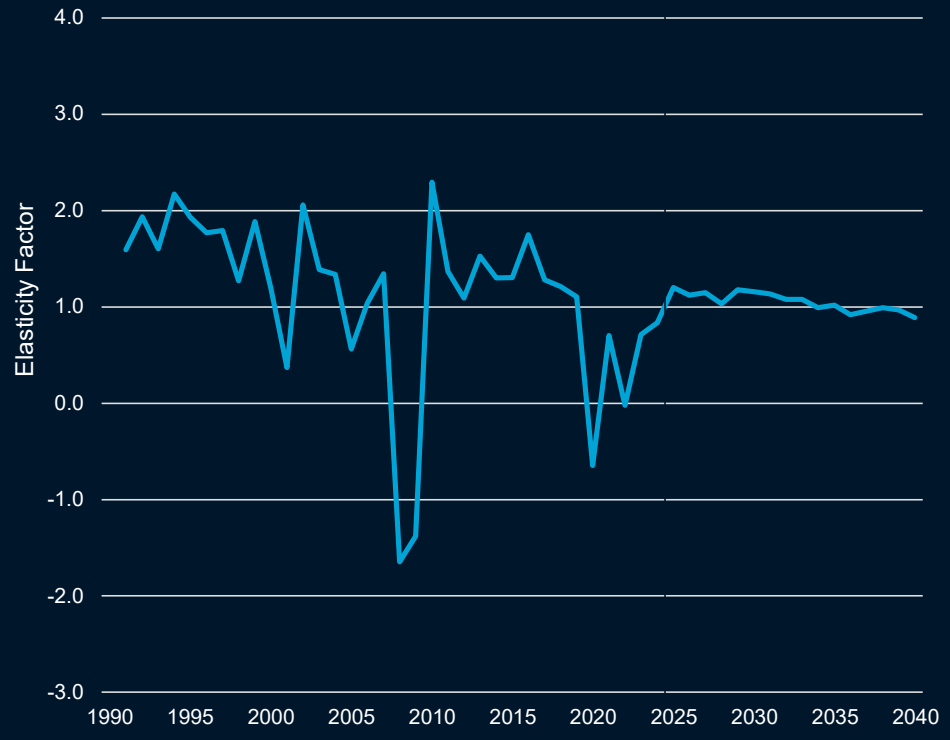
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



Chemical Demand Elasticity Shows Demand Growth at or Above GDP Growth Levels With Disconnects at Economic Extreme Conditions

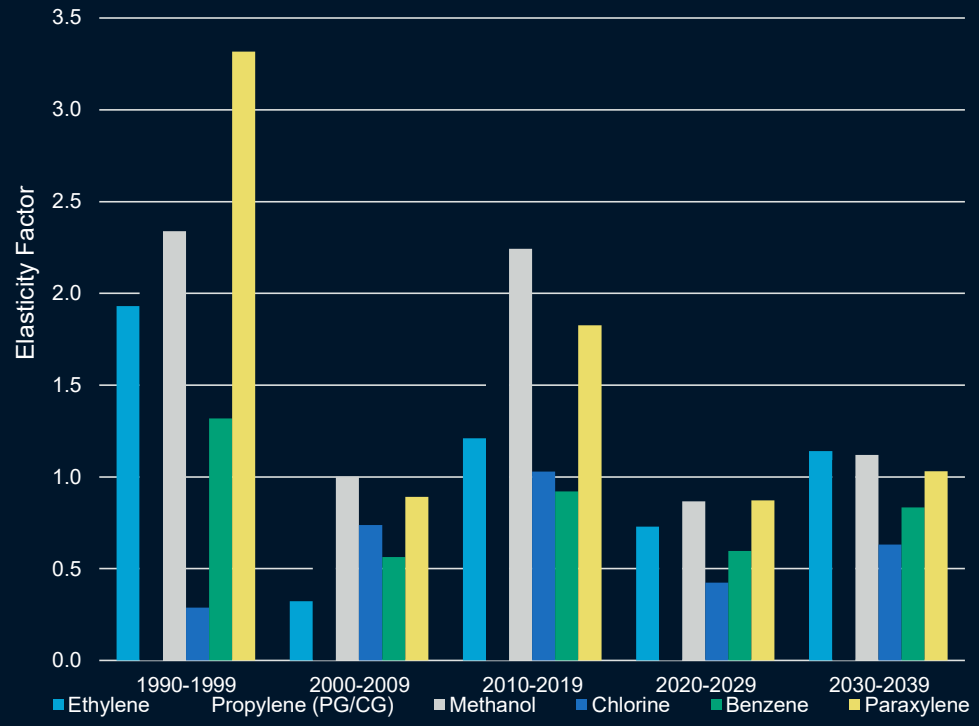
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

World Weighted Average Elasticity



Source: Chemical Market Analytics by OPIS

World Average Elasticity Over Time

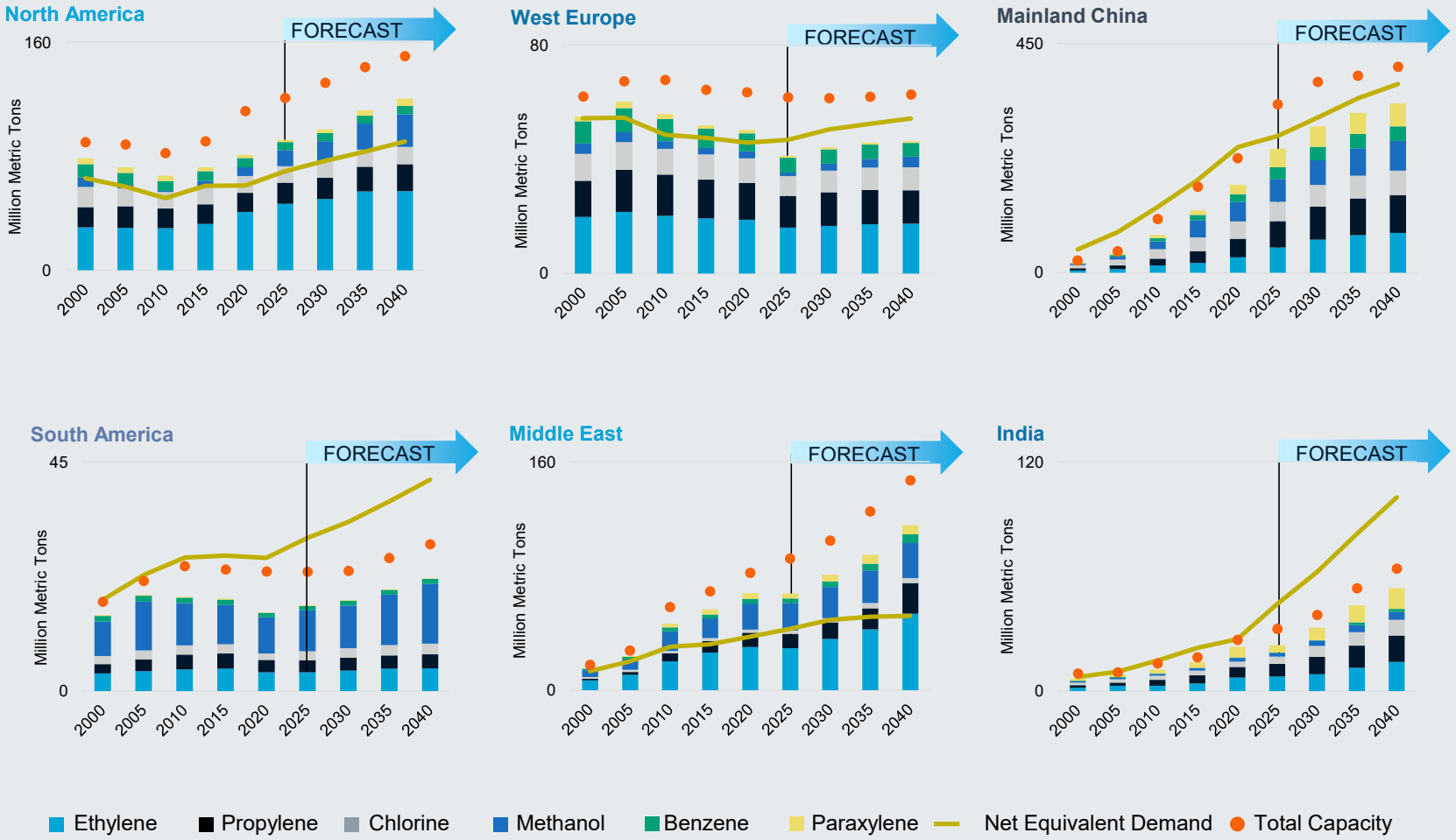


Source: Chemical Market Analytics by OPIS


Disruptors
OPIS
A DOW JONES COMPANY
CHEMICAL
MARKET
ANALYTICS

Regional Behaviors Polarizing Further as Net Consumers and Net Producers

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



North America

- Advantaged NG & NGLs
- Exporter of incremental supply

Middle East

- Crude & Gas Advantage
- Build out of derivatives & invest internationally

West Europe

- No cost advantage; Specialization
- Sustainable chemistry

India

- Robust demand growth
- Increasing import dependency

South America

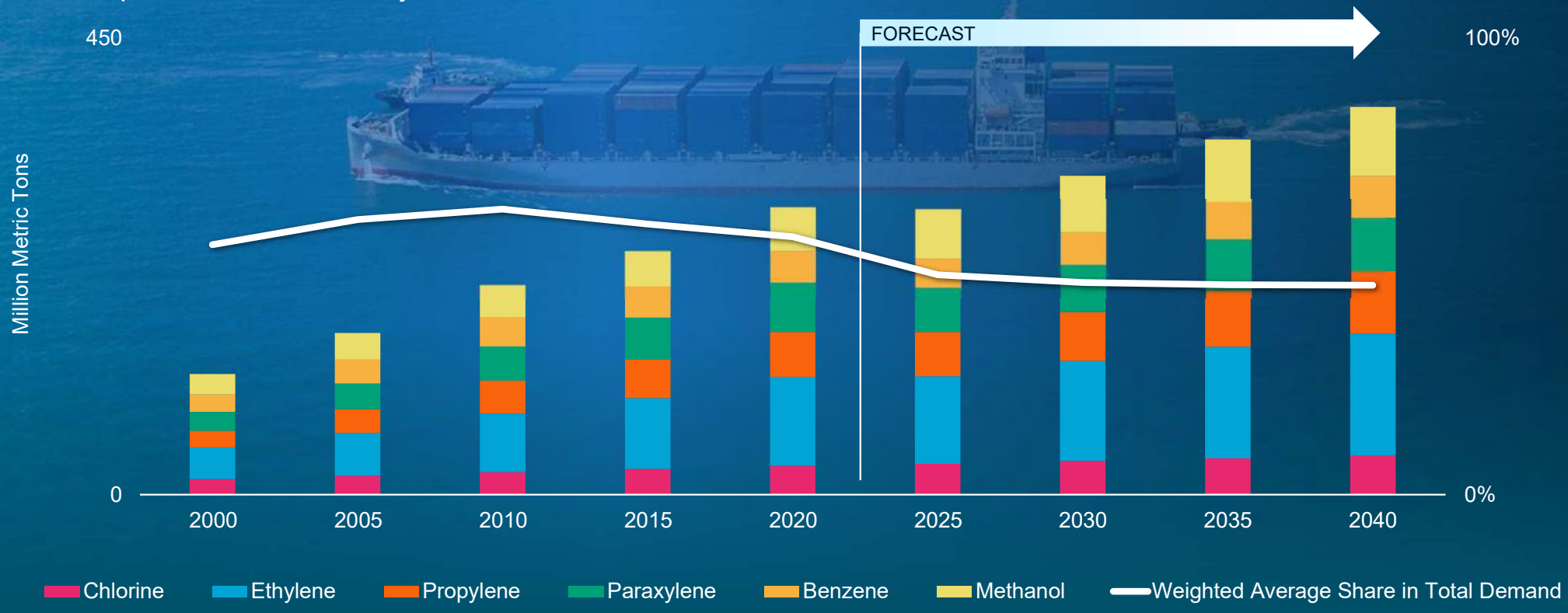
- Significant Imports for Demand
- Sustainability chemistry

Mainland China

- Capital and labor advantage
- March to self-sufficiency & to export

International Trade of Chemicals is Increasing in Volume and Importance

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



Source: OPIS, A Dow Jones Company

Increasing Politicization of Trade

Rise in Bilateral/Multilateral Agreements Undermine WTO Architecture

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

WORLD TRADE ORGANIZATION

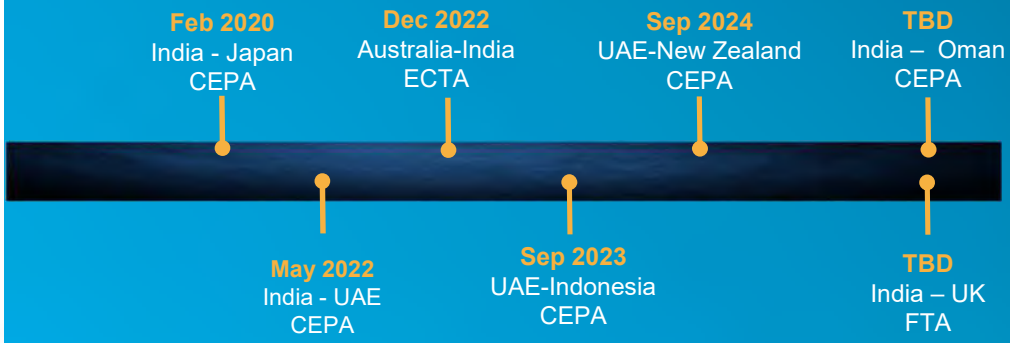
Objective Functions | **Scorecard**

- Settling trade disputes
- Forum for trade negotiations
- Reviewing national trade policies
- Building trade capacity of developing economies
- Administering trade agreements
- Cooperation with other international organizations

China's operational FTAs' partners account for 38% of its exports

Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)

Asia and Middle East bilateral trade and investment agreements

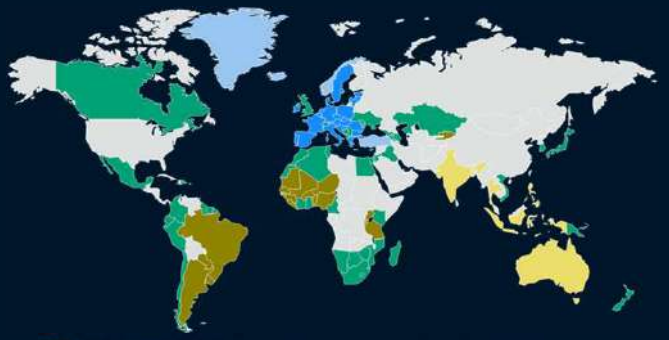


The US is Clearly Lagging vs the EU and China in FTAs

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

- → China significantly boosted trade agreement negotiations with third parties since the onset of the first US-China trade war, contributing to a strong exporter position and doubling trade as a % of GDP.
- → The EU has also taken up a defensive position in recent years, looking to secure trade relationships with strategic suppliers. Critical minerals seem to be at the forefront of recent negotiations.
- → The difference in the US trade strategy is clear; cutting trade relationships will most likely be detrimental to the US long-term.

EU



China

US

The New Trade Paradigm Shift Has Major Players Reassessing Their Priorities

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

- Bridge trade (& fiscal) deficit through tariff revenues (ST) Reverse trade deficits in the long term
- Return the to production economy (manufacturing, agriculture, services)
- Return US multinationals' R&D spending to the US
- Redirect investment flows into the US
- Take initiative in trade disputes/agreements to fast-track results (vs WTO).
- Promote global supply chains with more U.S. engagement

- Realizing region's import dependency is not sustainable, as many sectors rely on US and/or China
- Reduce dependency on the US for defence
- EU seeks to revitalize manufacturing sector (namely the chemical industry), and secure significant self-sufficiency.
- Seek new trade partners and seek to ensure that the global trade system prevails.

- Revive domestic demand in the mid/long term
- Seeking new trade partnerships for resilience to US flows
- Act as a promotor of stability, favorable business environment
- Reflect a lead in maintaining a semblance of WTO rules-based order
- Carefully balance trade with other partners to reduce potential friction

- Neutral vs choosing a "side", carefully balancing US and mainland China.
- Leverage domestic market to attract new investment into manufacturing
- Strike new bilateral trade deals with all the major economies: the EU, UK, US, mainland China.

- A primary area for US-China competition.
- Threats to the WTO-based open global trade system, thus risking its own development models
- ASEAN is looking to negotiate with the US while balancing relationship with China
- Diversify trade relationships with other countries, nonetheless

- Balance between the US and China in strategic areas
- Develop agreements with Asian economies and the EU, to offset some likely breakdown of the WTO system
- Risk regarding the impact of tariffs on US dollar and how it could affect these currencies

OPIS
A DOW JONES COMPANY

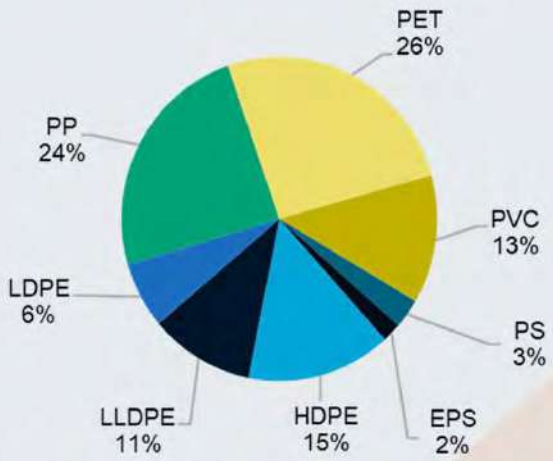
CHEMICAL MARKET ANALYTICS

Sustainability: Important & Urgent?

Initial bans focusing only on single use plastics fail to address the core of the recycling/circularity issue effectively

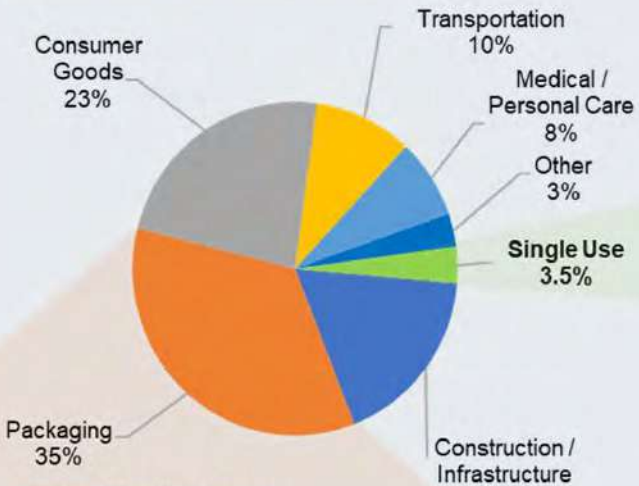
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Commodity plastics demand

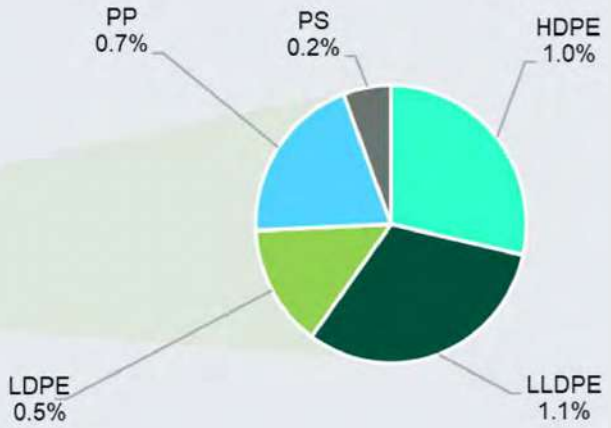


Source: Chemical Market Analytics by OPIS

Commodity plastics end-use



Other includes wide range of durable and non-durable industrial applications



Quantitatively, the packaging segment is the largest contributor of plastics waste generated that needs to be addressed from a circularity/recycling perspective

UN's Global Plastics Treaty (INC ILBI)

A global agreement is crucial for a universal framework to accelerate circularity

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

United Nations Environment Programme
UNEP

Objective Targets | **Scorecard**

- Production Caps
- Primary Plastic Fees
- "Chemicals of Concern"
- Globally Applied vs Nationally Determined
- Extended Producer Responsibility (EPR)
- Minimum Recycle Content

UN Global Plastics Treaty Timeline

2025
- **INC "5.2" August Geneva, Switzerland**

2024
- INC 5 November Busan, Republic of Korea
- INC 4 April, Canada
- Revised Draft Treaty

2023
- INC 3 November Nairobi, Kenya
- Draft Treaty
- INC 2 May Paris, France
- Elements paper

2022
- INC 1 November Punta del Este, Uruguay
- Prep Meeting June Dakar, Senegal
- UNEA 5.2 February Nairobi

Carbon Border Adjustment Mechanism (CBAM)
Potential fallout may impact Europe and its trading partners

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

CBAM does not currently directly impact major petrochemicals due to the complexity of embedded emissions

CBAM Indicative Development Timeline
As of 2024

2005
ETS Comes into force annual caps on emissions and a carbon market emerges for trading of emissions permits

July 2021
European commission adopted its proposal for a CBAM

October 2023
CBAM's **Transitional Period** kicked off.

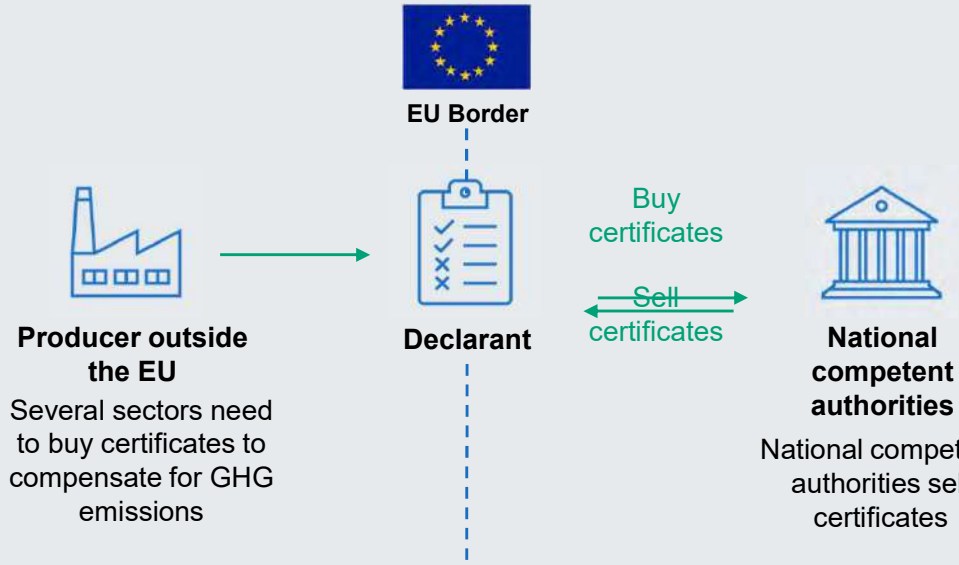
Q4 2025
EU Commission reports on CBAM and potential to extend its scope

Jan 2026
CBAM **Definitive Period** begins; importers must purchase CBAM Certificates.

2030
EU Commission aims to cover all EU ETS sectors (**organic chemicals, polymers**, lime, aviation, all metals, etc.)

2034
Free allowance allocation ends; importers responsible for 100% of embedded emissions

CBAM Conceptual Functionality



Industrial sectors currently covered

- Cement
- Steel and iron
- Aluminum
- Fertilizers
- Electricity
- Hydrogen

Key Takeaways

- ✓ Chemical market demand growth continues with global dispersion
- ✓ The cycle surplus (extended & deep) will drive further rationalization and/ or M&A
- ✓ International trade is a vital for chemical commodity growth with shifting import/ export positioning
- ✓ Supply chain flexibility takes strategic center stage
- ✓ Energy Transition continues to progress, but faces headwinds on financing and geopolitical fallouts on the policy front in certain areas
- ✓ Circularity still on the list, but lower on the C-suite radar. But failure to address this issue in the long-term will be a ‘license to operate’ risk.

OPIS
A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

Diverging Paths: The Shifting Dynamics of Energy and Petrochemical Feedstocks

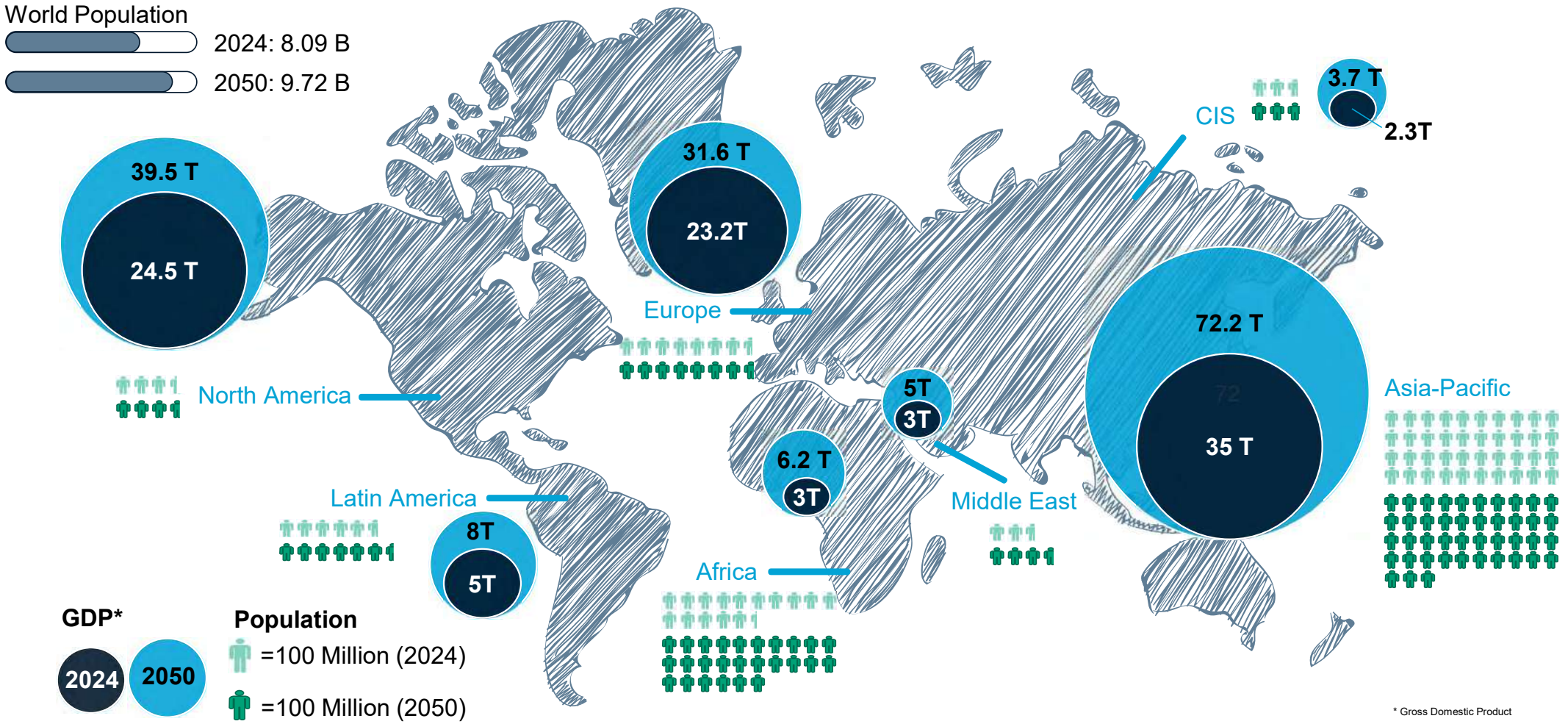
Executive Summary

15 May 2025

Raheel Shafi
Vice President, Consulting
Raheel.shafi@chemicalmarketanalytics.com

Macro level assumptions: slower, steadier growth

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



Carbon policy expectations

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

United States: Perpetual patchwork

The US has a patchwork of programs including California Cap-and-Trade, Washington Cap-and-Invest, and the Regional Greenhouse Gas Initiative (RGGI) in the Northeast. With the Washington program slated to link with California and Quebec and the RGGI program challenged to maintain consensus with its member states, it is expected that this patchwork approach will remain, with California as the focal point of US carbon activity. *At the federal level, the US is not expected to create a unified carbon policy during the forecast period. State-level policy development, however, will slow during periods of economic downturn.*

Europe: Carbon leadership with challenges

The EU emission trading system (ETS) began in 2005 as the first global cap-and-trade program. After Brexit, the UK left the EU ETS and established the UK ETS program in 2021. Linkage between the UK and EU ETS is a strong possibility toward the end of this decade. We expect the EU ETS to remain stable in the coming years as the carbon border adjustment mechanism (CBAM) is phased in. *The impact of CBAM, while well-intentioned, is expected to pressure the EU's manufacturing competitiveness and slowly move the continent towards de-industrialization throughout the forecast period.*

Latin America: Nascent regulation

Despite progress in Latin America's carbon markets, there is still a large regulatory backlog that needs to be implemented in the region. Convergence among national, international, and voluntary markets is expected, driven by the Paris Agreement and domestic compensation schemes. Countries like Colombia, Chile, and Mexico allow carbon credit projects to be eligible for offset carbon tax obligations. *Even though more complex carbon pricing mechanisms are under development in Brazil and Mexico, the impact to energy demand will be minimal throughout the forecast period.*

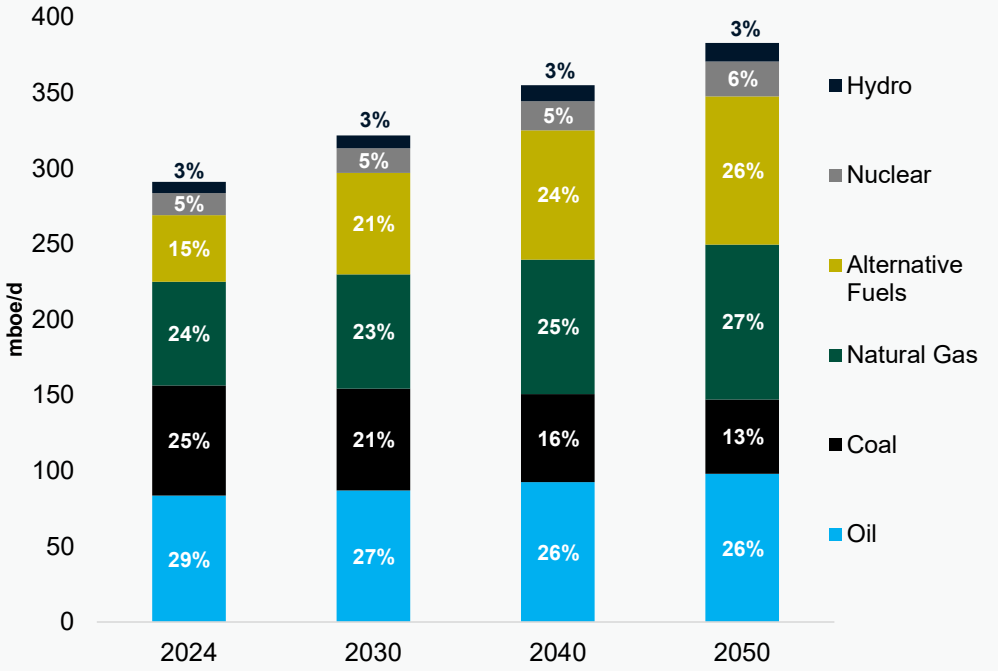
Asia: Driven to compete

Asia has been actively developing national ETS' in recent years, partly driven by the introduction of the EU's CBAM. China, Indonesia, India, Japan, and Vietnam are expanding or launching ETS', while South Korea is reforming its existing system. However, most ETS' are still in early stages and are characterized by low carbon price/cost. *As the EU's CBAM is implemented and fees increase over the next decade, expect more ambitious carbon policies in the region to strengthen the international competitiveness of their manufacturing sectors.*

Total energy view: more people, increased GDP, higher demand

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

World Energy Demand by Fuel Type



Source: OPIS

"Oil" includes crude oil, condensate, natural gas liquids and refinery processing gains, the total of which is converted to million barrels of oil equivalent per day (mboe/d) resulting in a lower number than the corresponding measure of million barrels per day (mb/d)

We expect to see total energy demand increasing by a compound annual growth rate (CAGR) of 1.30% between 2020 and 2050

- Energy demand will rise in response to both economic and population growth, particularly the increasing urban population in developing regions like Africa, Latin America and others.
- Hydrocarbons will remain an important energy source (66% in 2050); the market shares for coal and oil will decline, but natural gas' share is expected to increase (24% to 27%) as it will act as a bridge fuel to reduce overall carbon intensity.
- The share of alternative fuels (biomass, geothermal, solar, wind, waste) is expected to grow considerably from 15% in 2020 to 26% in 2050, largely at the expense of the share of coal.
- While the use of alternative fuels grow in Western economies, widespread implementation in the developing world is limited by lack of infrastructure, logistics and distribution, as well as limited financial incentives to remove or replace existing infrastructure.
- As an example, the adoption of hydrocarbon fuels, such as liquified petroleum gas (LPG), will be favored by developing countries for their affordability and ease of access.

OPIS
A DOW JONES COMPANY

CHEMICAL
MARKET
ANALYTICS

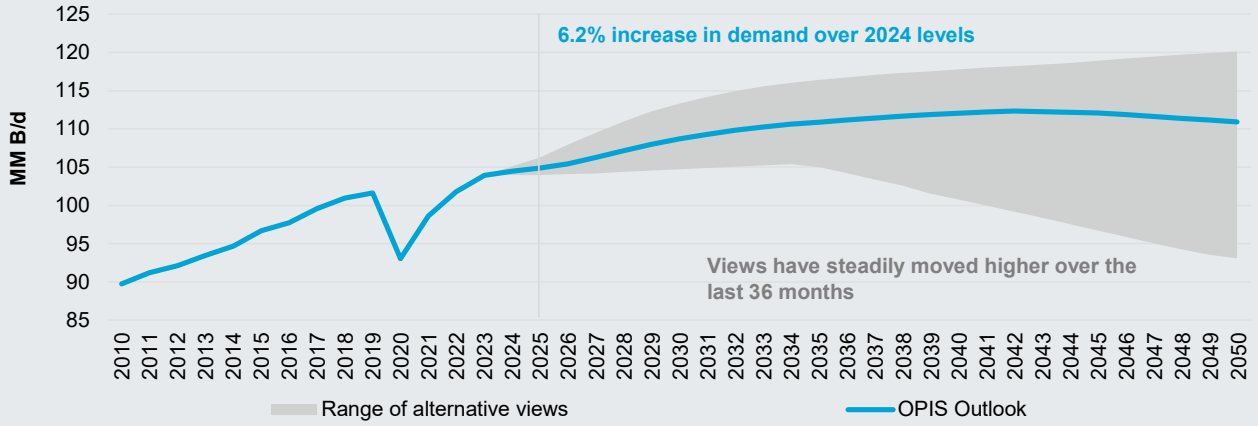
Oil demand

Global view of demand: evolution rather than transition

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

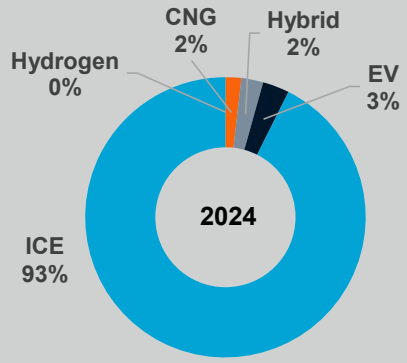
- Contrary to many of the competing views in the marketplace, OPIS have assessed that oil demand is firmly entrenched not only in transport fuels, but also in non-fuel applications.
- Rising trade barriers, waning enthusiasm for EVs plus the rise of energy-intense AI applications complicate a rapid transition.
- Furthermore, the projected growth in population and economic activity, especially in developing countries, necessitate increased consumption.
- Thus, the OPIS forecast shows a gradual increase of demand with a plateau occurring in the early 2040's, then small declines thereafter as energy efficiency measures outpace growth.
- EV will play a critical role in mobility, but instead of replacing existing mobility, they will be used to accommodate the growth in mobility, largely in the urban centers in the developed world.
- Internal combustion engines (ICE, including hybrids) decline by only 100 million units throughout the forecast period, increasing transport fuel efficiency.

Global Liquids Demand

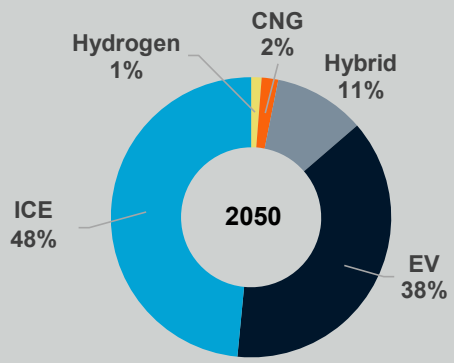


Source: OPIS

Vehicle Fleet Evolution



Total Fleet: 1.505 billion

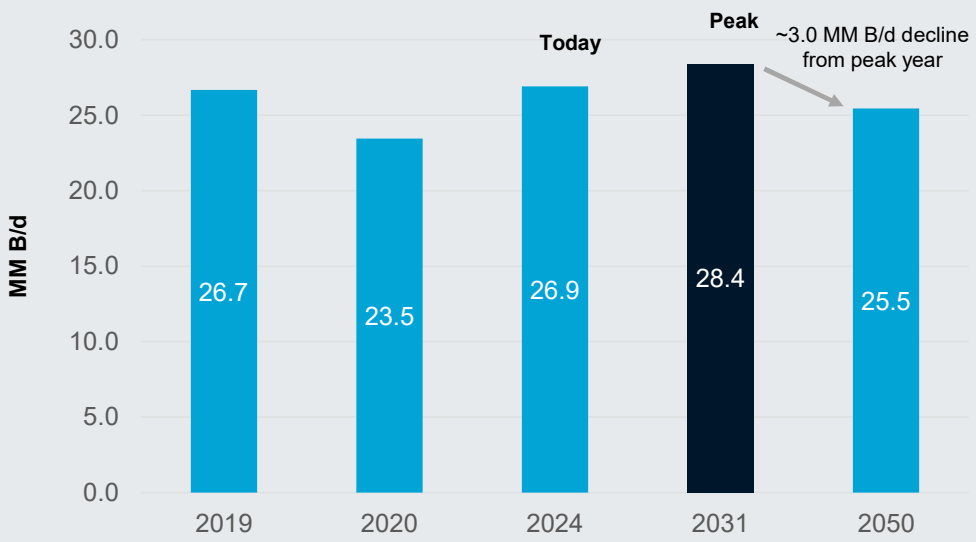


Total Fleet: 2.260 billion

Transport fuel demand: modest declines from peak years

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

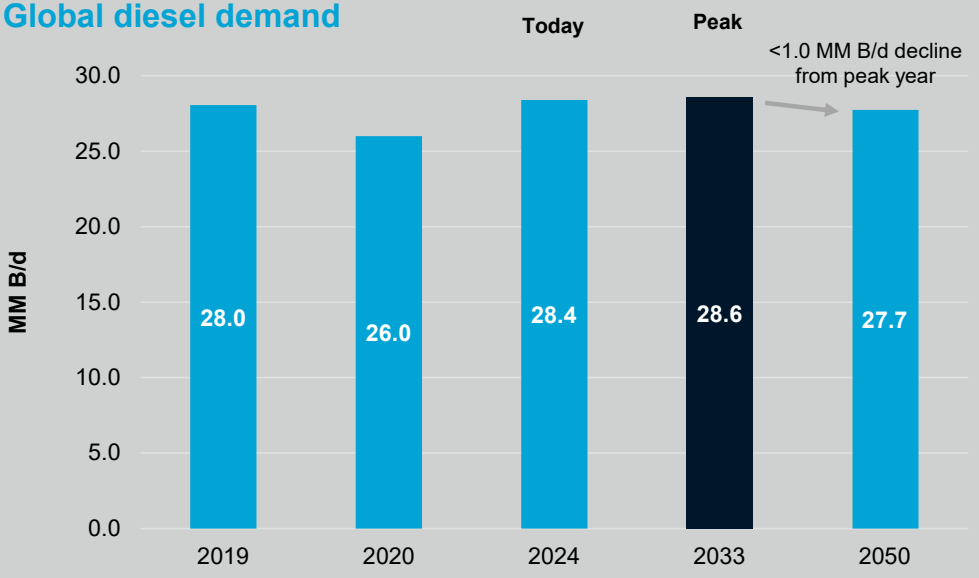
Global gasoline demand



Source: OPIS

- The rapid adoption of EVs in Europe and China is setting the stage for a structural shift in gasoline consumption, but such penetration will be challenging for growing markets such as Africa, South Asia and Latin America.
- The combined effect of an evolving fleet composition and continued growth elsewhere is expected to yield a net decline of 5.5% in global gasoline consumption between 2024 and 2050.
- Infrastructure gaps, affordability, and policy inertia could delay widespread adoption, preserving gasoline's role in the fuel mix for longer.

Global diesel demand



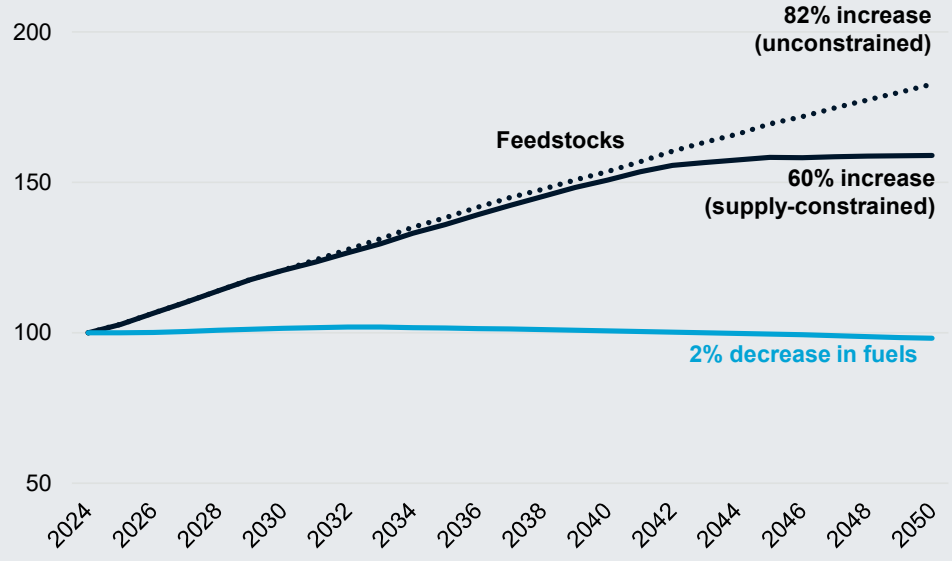
Source: OPIS

- Unlike gasoline, diesel demand is expected to see more resilience as truck transportation of goods steadily increases in developing economies.
- Gradual penetration of electric vehicles will take place in this sector as well; however, long-haul and heavy-load transport will remain anchored to diesel due to range and payload constraints until we see major technological breakthrough.
- Diesel consumption is projected to edge down 2.5% by 2050 with a mild retreat from the peak.

Fuels vs feedstocks: chemicals to be the primary driver of growth

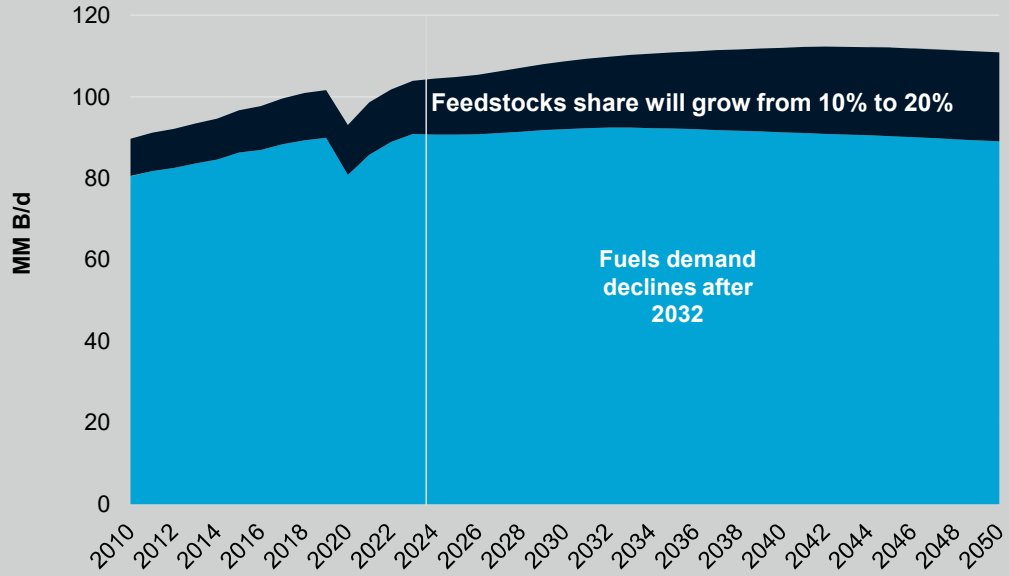
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Global Liquids Demand Index: Fuels vs Feedstocks (2024=100)



Source: OPIS Note: OPIS base case outlook is based on a constrained feedstock scenario

Global Liquids Demand: Fuels vs Feedstocks



Source: OPIS

→ Two cases for chemicals were assessed, constrained (refinery limited) and unconstrained (growth aligned with macro level assumptions).

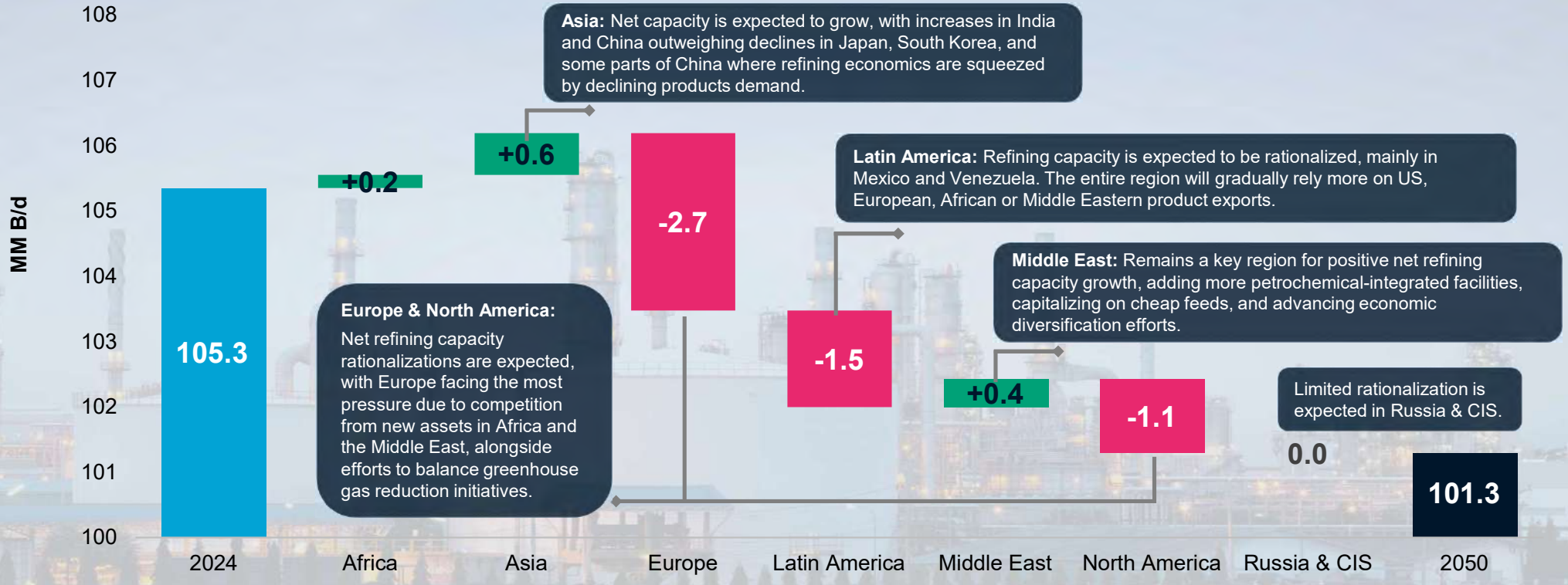
→ Robust demand for plastics and synthetic materials will continue well into the future, to the point where the existing refining complex (which has largely been built to deliver fuel products) is unable to meet the demands by the late 2030's.

→ Even with the constrained case, oil demand for chemicals grows from a 10% of the total to a 20% share, the biggest shift across the demand sectors

Refining sector reactions

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Global Refining Capacity Changes



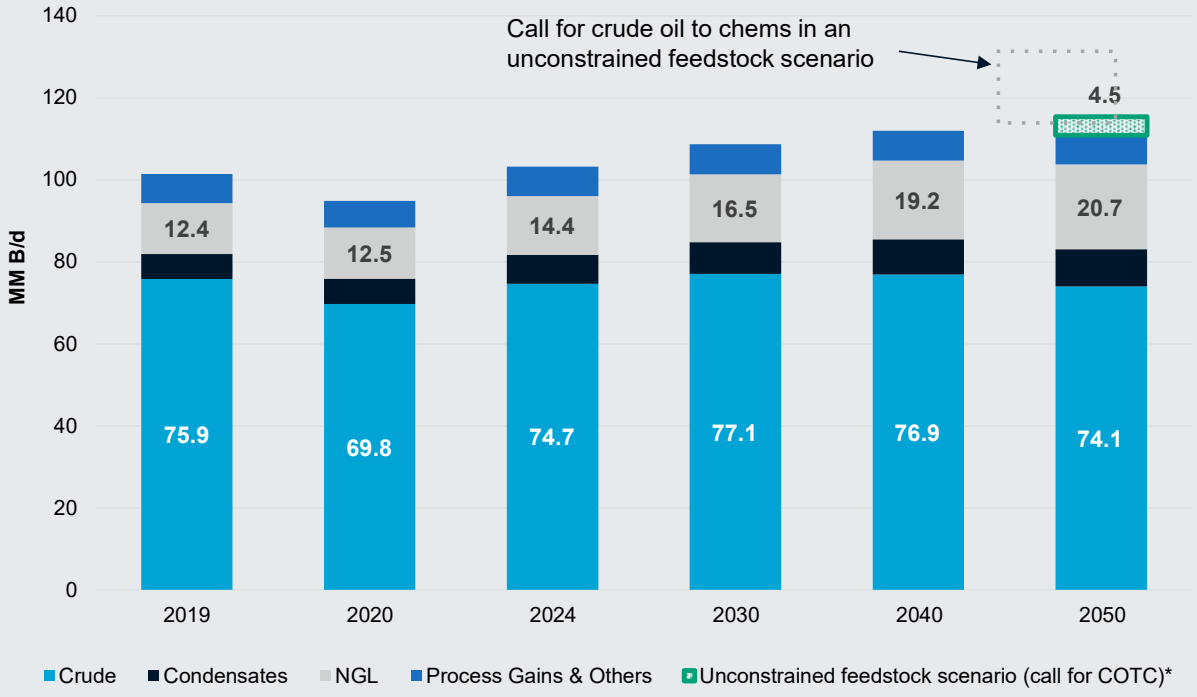
Source: OPIS

Note: These refining capacity changes are estimated on top of the capacity that has been announced, under construction or testing as of 2024 and 2025, such as Dangote, Aramco HAPCO, Rajastan, Vadinar, Long Son, Sitra, Vizag, Cilacap, Yulong, Yiejiang, Al Zour and Midor projects

Supply response: call on crude oil is considerable

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Liquids Supply Stack



* Call for crude oil to chems (COTC) to address the feedstock imbalance in the unconstrained feedstock scenario, assuming a 60% crude to naphtha conversion

Source: OPIS

- Crude oil supply needs to approximate current levels to satisfy sticky demand. When accounting for supply declines, the world will need to replace roughly 80% of its 2024 supply of crude oil and condensates by 2050.
- The bulk of the supply will continue to originate from OPEC+ countries and short-cycle oil production from North America.
- Crude qualities become greater focus as refiners will tailor runs to best respond to increasing needs of the chemical sector while simultaneously reducing gasoline production.
- In an unconstrained chemical feedstock scenario, the existing refining complex will require significant reconfigurations as well as new investment in crude oil to chemicals facilities to address the demands of the chemical sector.


For more details about our long-term liquids balance…
Introducing
OPIS World Analysis
Energy & Feedstocks
Global liquids balance: Supply and demand for crude, condensate, refined products, NGLs and naphtha for 156 countries to 2050
Quarterly price forecast updates to 2050
30 page executive summary
Monthly insights from special topic deep dives
Access to our industry experts
OPIS
A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS
Marketing meeting will be set up to discuss; could sell the whole portfolio, or parts:
“Long-term detail: WA – Energy & Feedstocks”
“Short-term offerings also available: Energy Macro Service, NGL & Naphtha Service”
“Coming soon: Global Ethane Outlook, Global LPG Outlook, Global Naphtha Outlook”
“Coming 2026: Global Oil Outlook, Global Oil Products Outlook, Global Gas Outlook”
A fundamentals-based, long-term forecast you can trust, powered by a bottom-up, demand-driven methodology with downstream insights for actionable decision-making

OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

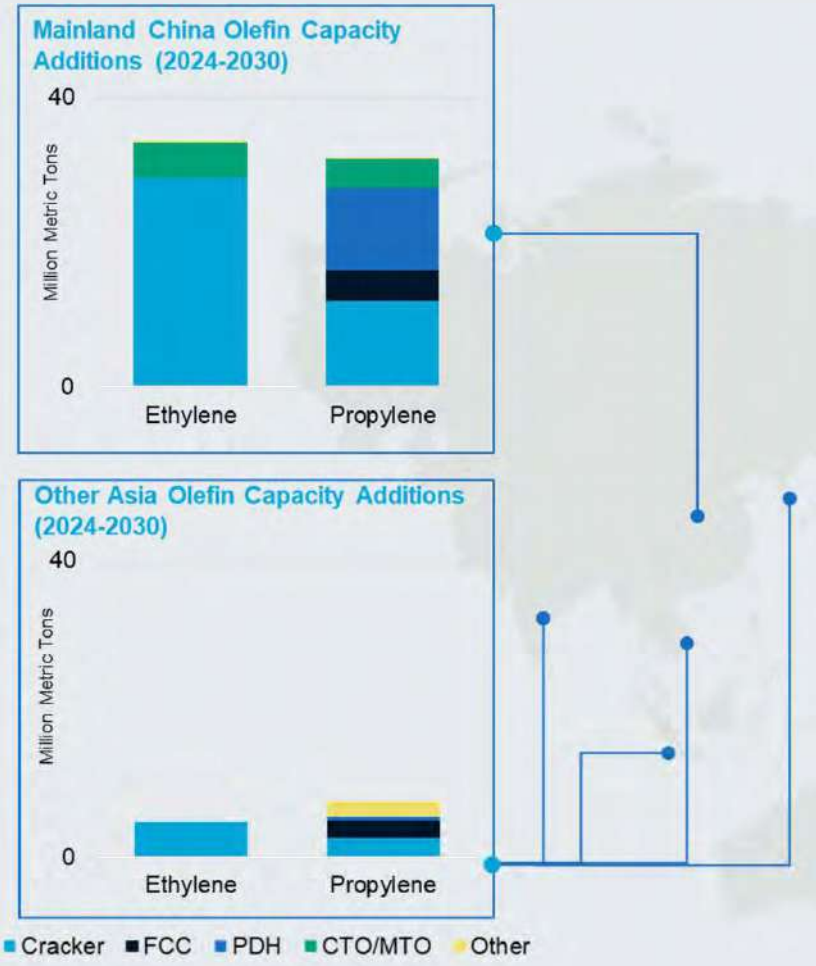
Olefins: Trends, Challenges, and Future Prospects

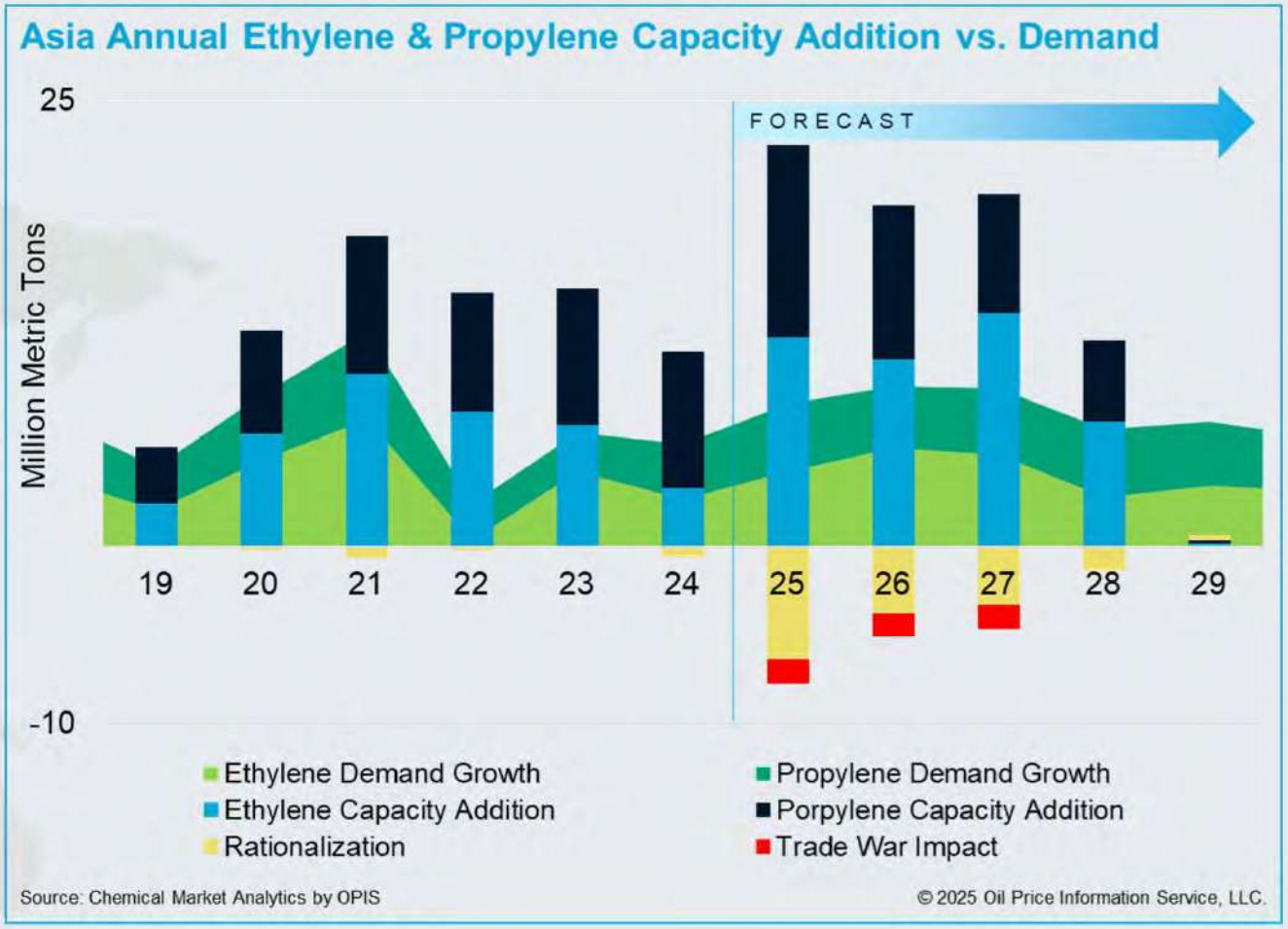
15 May 2025

William Chen
Vice President
William.chen@chemicalmarketanalytics.com

Asian Olefins Fundamentals & Current state:
Overcapacity will persist with more rationalizations required

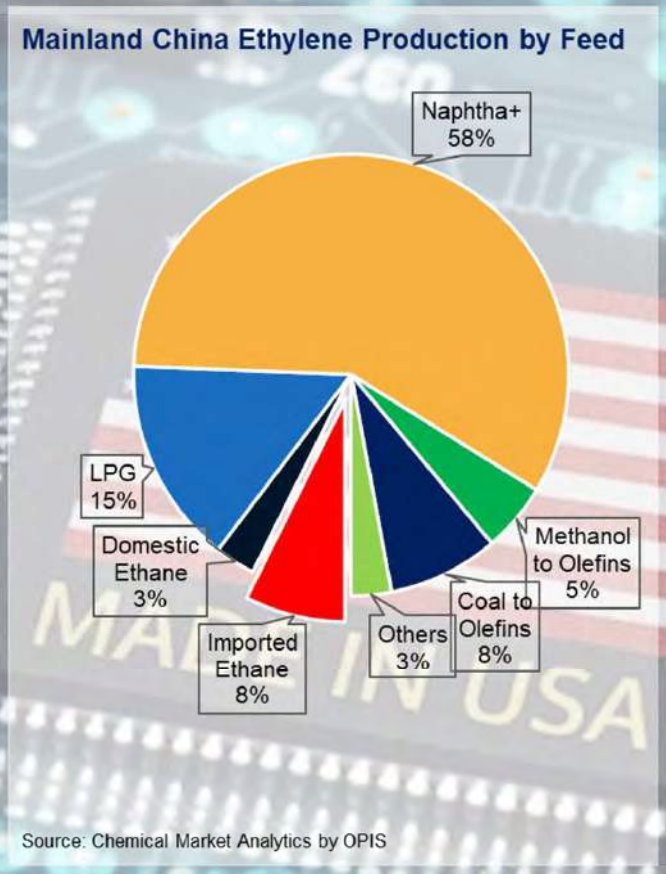
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

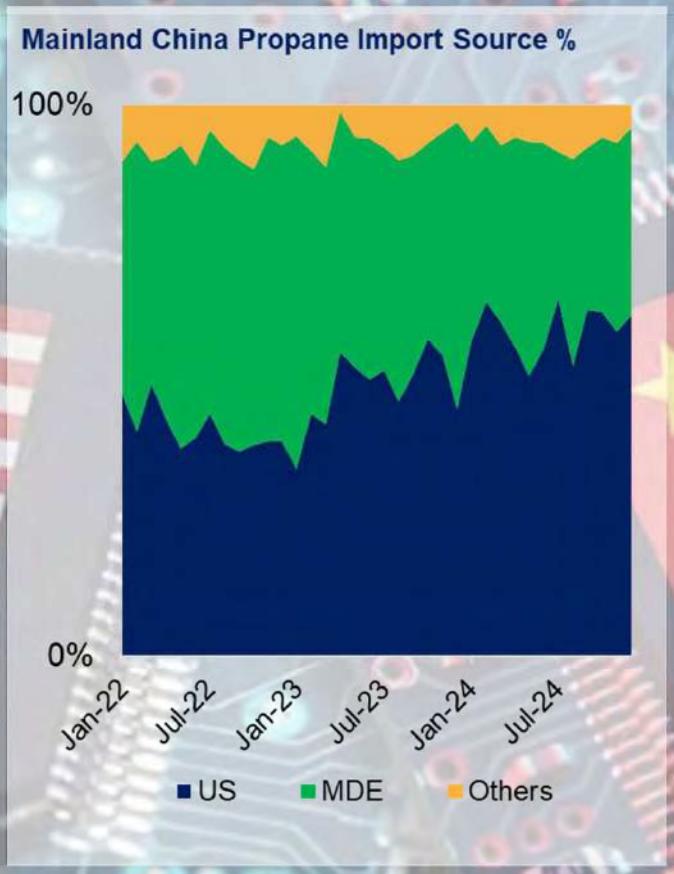


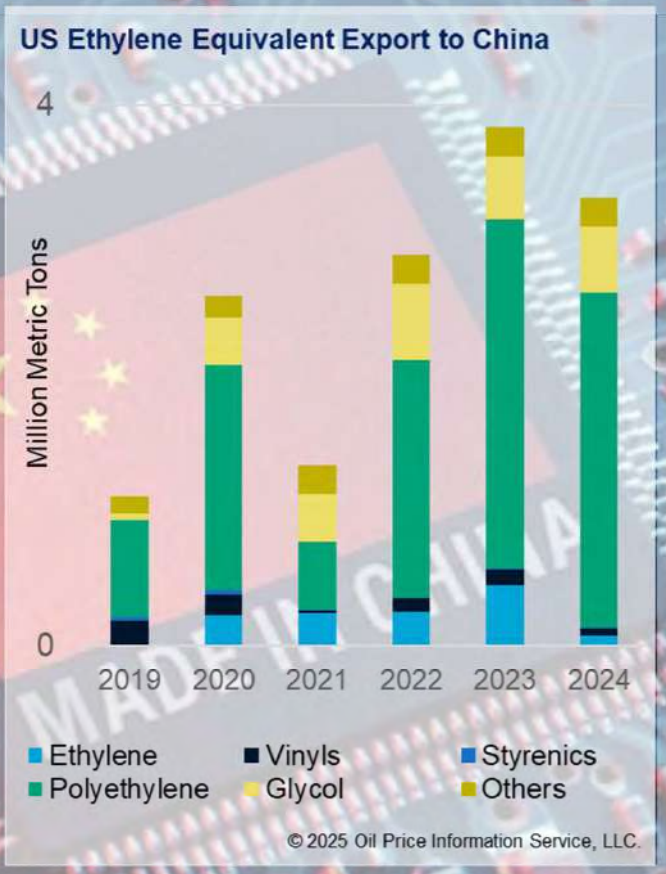


Trade war could disrupt the Asian olefins market fundamental

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



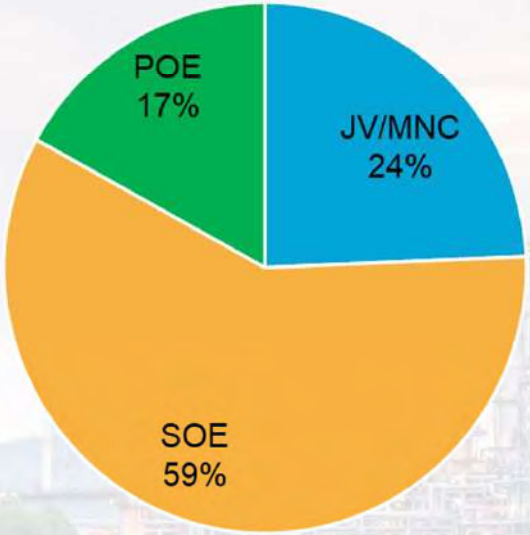




Energy transition is pushing up mainland Chinese self-sufficiency…

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

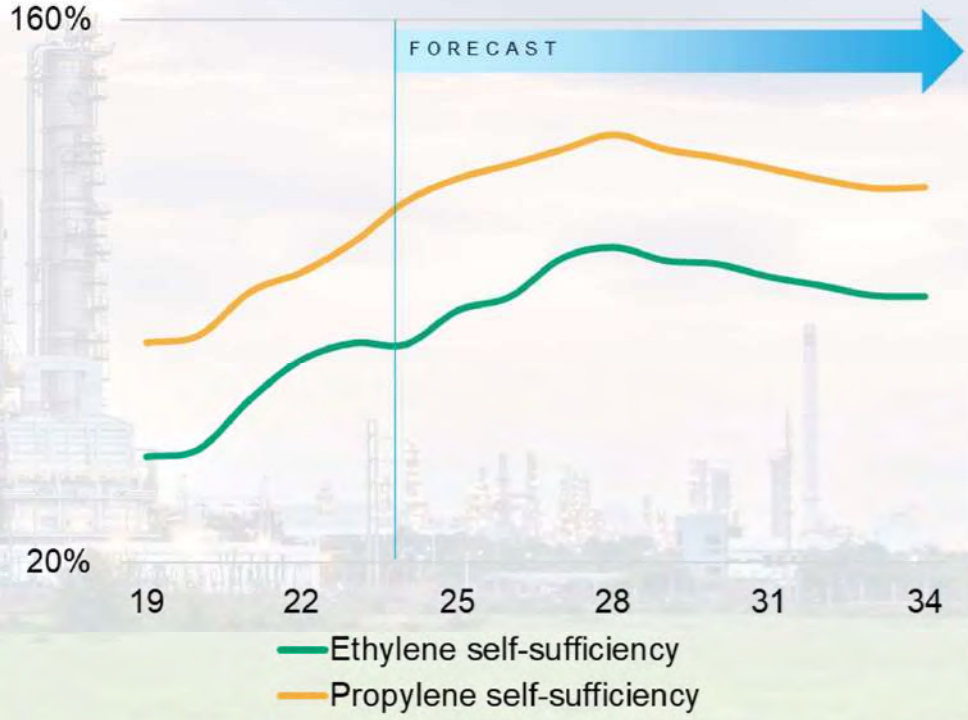
2026 Onward Chinese Steam Cracker Ethylene Capacity Share



SOE: state-owned enterprises; POE: private-owned enterprises;
MNC: multinational corporation

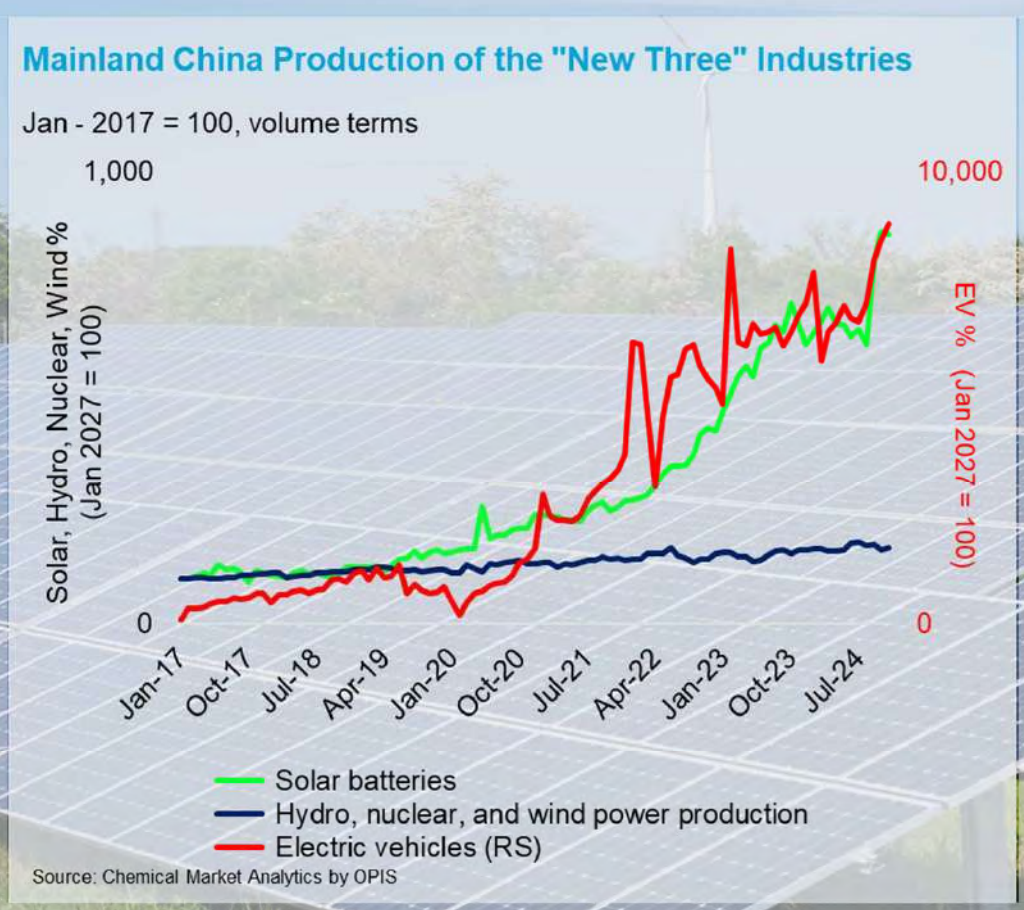
Source: Chemical Market Analytics by OPIS

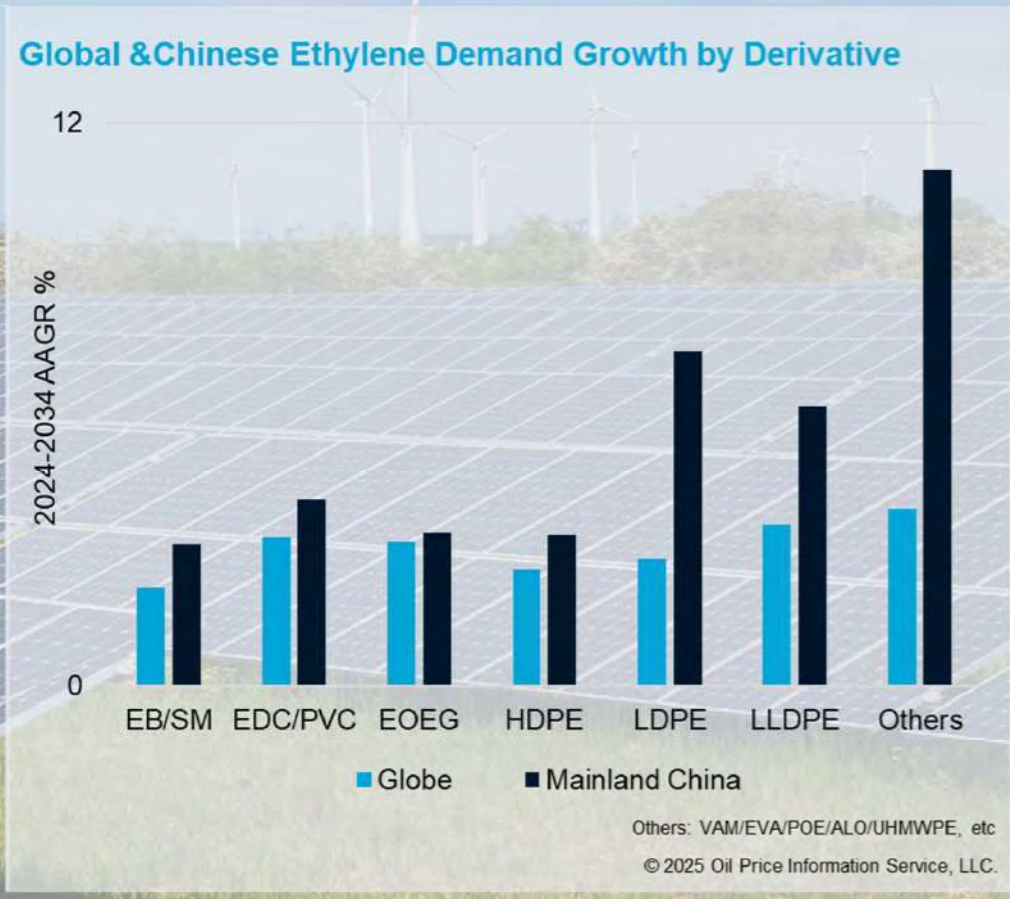
Mainland China's Ethylene and Propylene Self-sufficiency



…and driving incremental demand opportunities

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

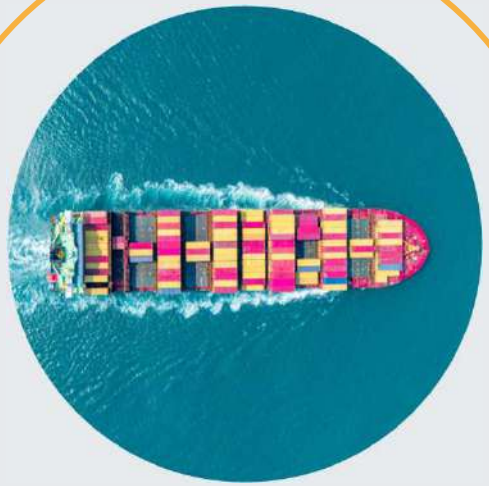




Key Takeaways

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

- Energy transition is another disruptor, driving aggressive capacity expansions and affecting demand growth patterns



- Trade war is disrupting olefins fundamentals, may delay/cancel projects. Overcapacity will persist, prompting further rationalizations
- Producer success will hinge on feedstock flexibility, integration, and derivative diversity

OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

Global Polyolefins – Surviving in a VUCA World

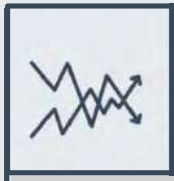
15 May 2025

Utpal Sheth

Vice President, Plastics
Utpal.Sheth@chemicalmarketanalytics.com

We are living in a VUCA World

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



Volatile

- Crude Oil ↓
- Naphtha ↓
- Propane ↓
- Polyethylene ↓
- Stocks ↓

Uncertain

- Tariff Outlook
- GDP Growth
- Polyolefins Demand

Complex

- Trade Flow Directions
- Operating Rates in US / Asia

Ambiguous

- Ethane tariffs in mainland China
- PE import tariffs in mainland China
- US Tariffs beyond 90-day pause

Global PE Outlook for 2025

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

+10% tariffs on exports from the US to mainland China

US

10% on all imports into US (except China)

- Exports to China declines, thus need to divert sales to other markets
- PE Operating Rates decline due to weaker domestic and global demand
- Will become price setters in Asia (ex-mainland China)
- Demand growth declines due to weak economic activities

No additional tariffs on US supplies to EU despite threats

EU

- US suppliers will strive to capture larger volumes in intense competition with the MDE
- Lower naphtha and propane prices reduce integrated PE production cost in the region
- Easing of supply chain bottlenecks will further bolster import volumes
- Demand growth turns flat due to weak economic activities

Mainland China

- Exports to US will take a hit, thus impacting overall economic growth
- Weaker economy and risk averse buyers reduces import arrivals
- Critical PE grade imports from the US continue, however commodity grades imports, decline
- Reduced PE demand growth compared to the year beginning outlook

+30% tariffs on all exports from mainland China to the US

LATAM

- US producers gain market share displacing imports from the MDE and Asia

MDE

- Producers will continue to optimize their portfolio, yielding market share to the US producers where prices are too low
- Shall maintain optimum operating rates

Asia (ex-mainland China)

- US increases regional share considering higher netback vis a vis China
- CFR SEA premium over China prices declines
- MDE suppliers may consider optimizing volume to mainland China by reducing allocation to Asia (ex-China)
- Cheap finished goods imports from China may impact regional demand

Global PP Outlook for 2025

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

+10% tariffs on exports from the US to mainland China

US

+10% on all imports into US(except China)

- Higher import tariffs on finished goods give a moderate boost to reshoring of converting activities
- Overall demand growth takes a bigger hit than PE due to larger dependence on discretionary spending

No additional tariffs on US supplies to EU despite threats

EU:

- Little change in PP market dynamics in the region since US exports negligible quantities
- Lower Propane prices reduce domestic producers' integrated production cost

Mainland China

- Operating Rates of PDH-PP producers declines due to uncompetitive economics
- Mainland China will continue to remain almost fully self sufficient, thus no boost to imports
- PP demand growth rate declines due to weaker exports and slower economic growth
- PP exports volume growth slow down

+30% tariffs on all exports from mainland China to the US

LATAM

- The region continues to attract PP imports from all over the globe

MDE

- Producers will continue to optimize their portfolio, yielding market share to the US producers where prices are too low
- Shall maintain optimal operating rates

Asia (ex-China)

- Competitive propane prices support higher profitability and Operating Rates of PDH-PP producers
- Lesser competition from the mainland Chinese PP producers support improved economics
- Cheap finished goods imports from China may impact regional demand

Key Takeaways

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Weaker Polyolefins demand growth

- Slower global economic growth
- Uncertain outlook leading to risk aversion
- Lower inventory in the value chain

Significant changes in Trade Flows

- US-China PE trade decoupling
- Re-directing trade flows will take several months
- Relatively fewer trade flow changes in PP

***Advantage* - Asian (ex-China) PO producers**

- Lower feedstock cost improves profitability
- Less intense competition from the Chinese PDH-PP producers

OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

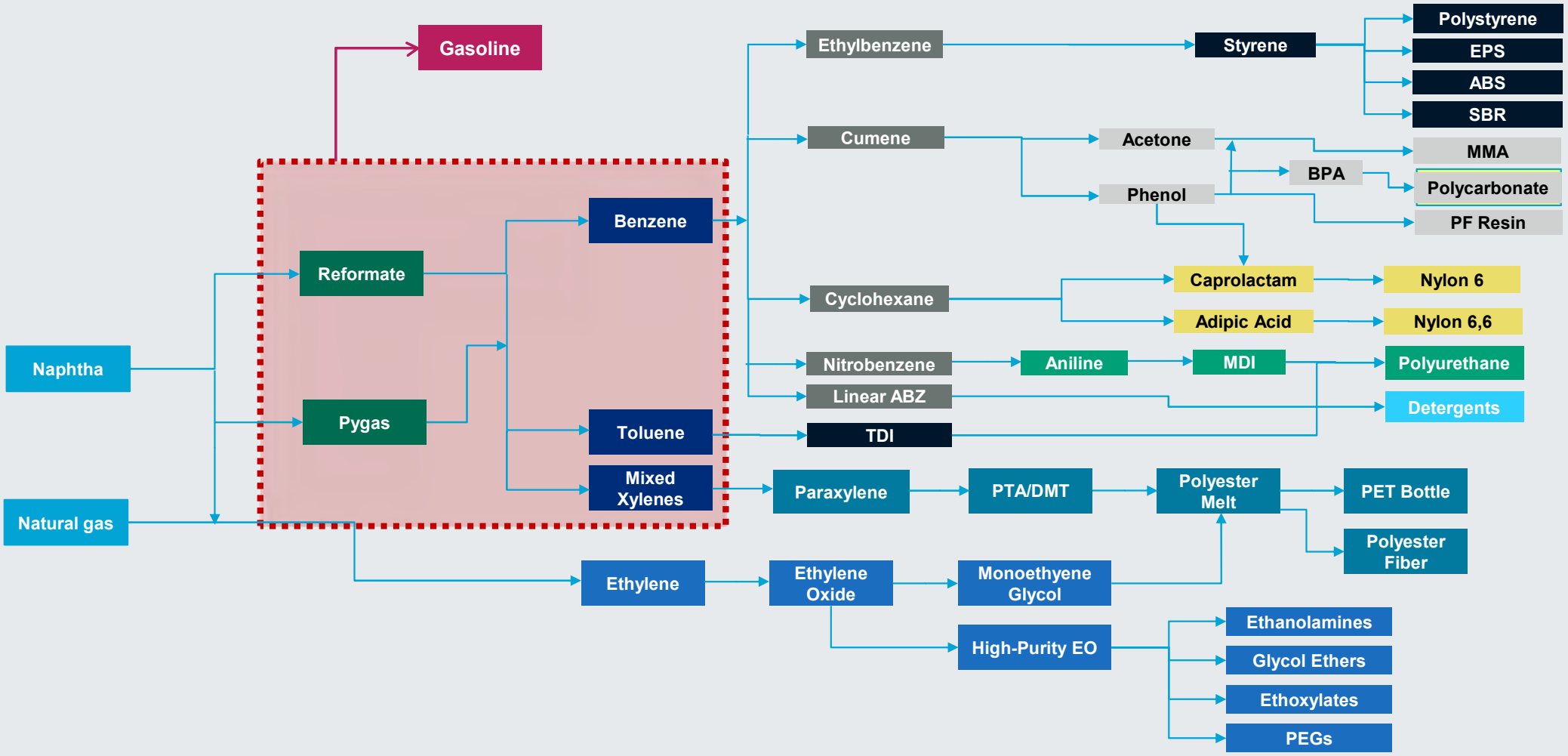
Aromatics: New Realities, New Beginnings

15 May 2025

Ashish Pujari
Vice President, Asian Aromatics
Ashish.Pujari@chemicalmarketanalytics.com

Aromatics: Integrated complex chain, with familiar end products

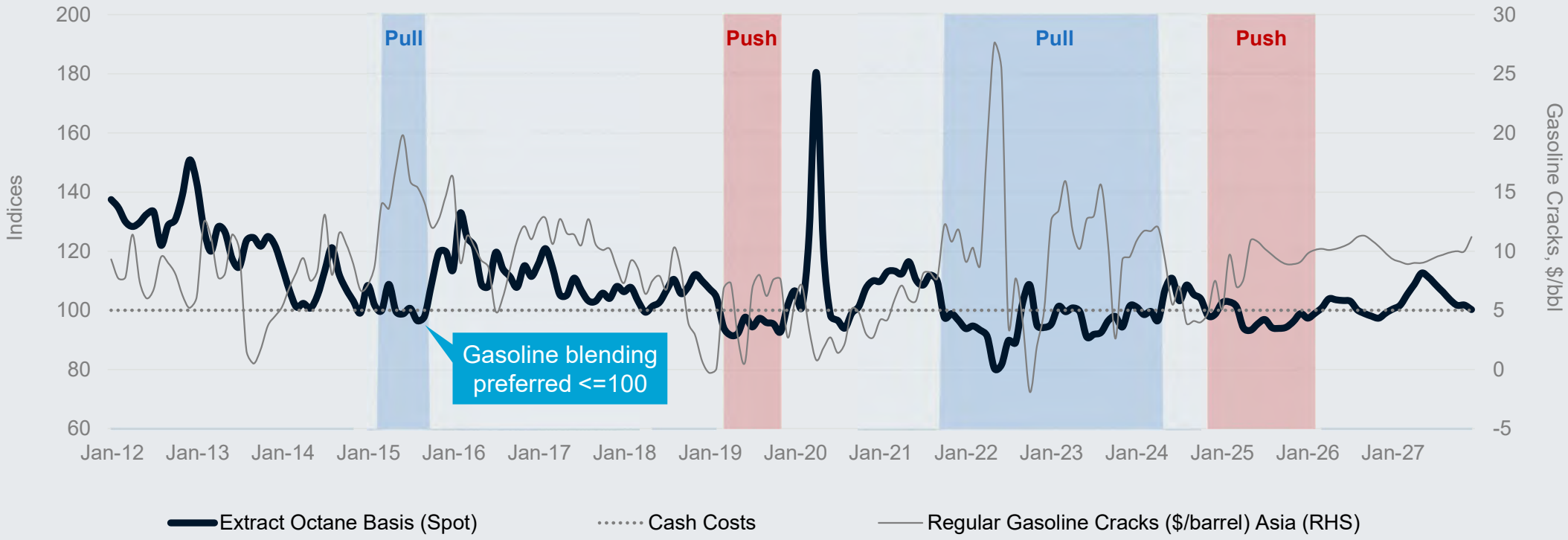
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



From a **"PULL"** driven by high gasoline cracks to a **"PUSH"** led by weak aromatics prices

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Reformer & Extraction Indices



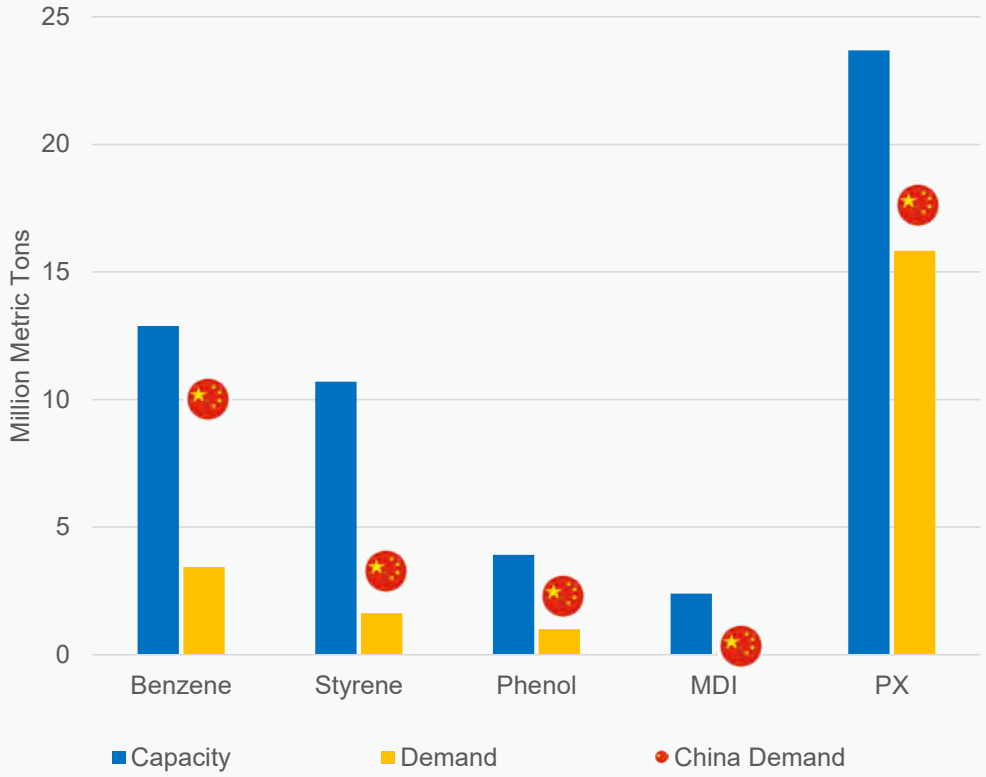
Note: Extract – Octane Basis index compares BTX prices and Reformate at Blend Value. An index >100 means that the reformate should be used to produce BTX and an index <100 means that the reformate should be used in gasoline.

Source: Chemical Market Analytics by OPIS

An extended downcycle looms for the Aromatics industry, where growth has been dominated by China

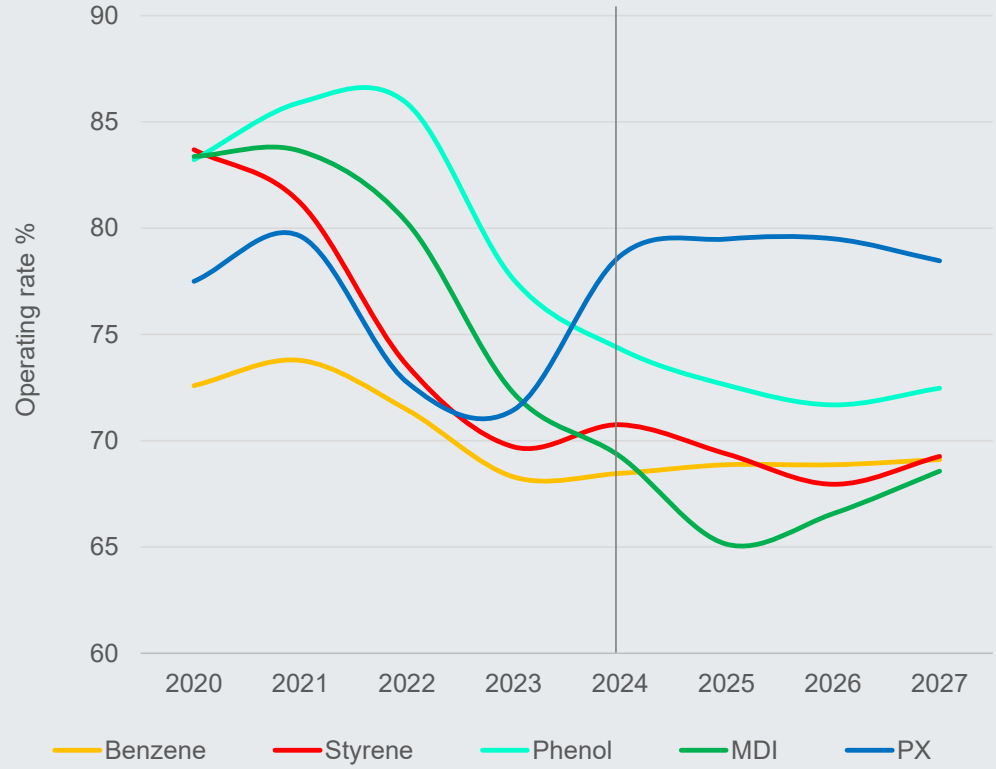
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Global capacity versus demand growth 2019-2024



Source: Chemical Market Analytics by OPIS

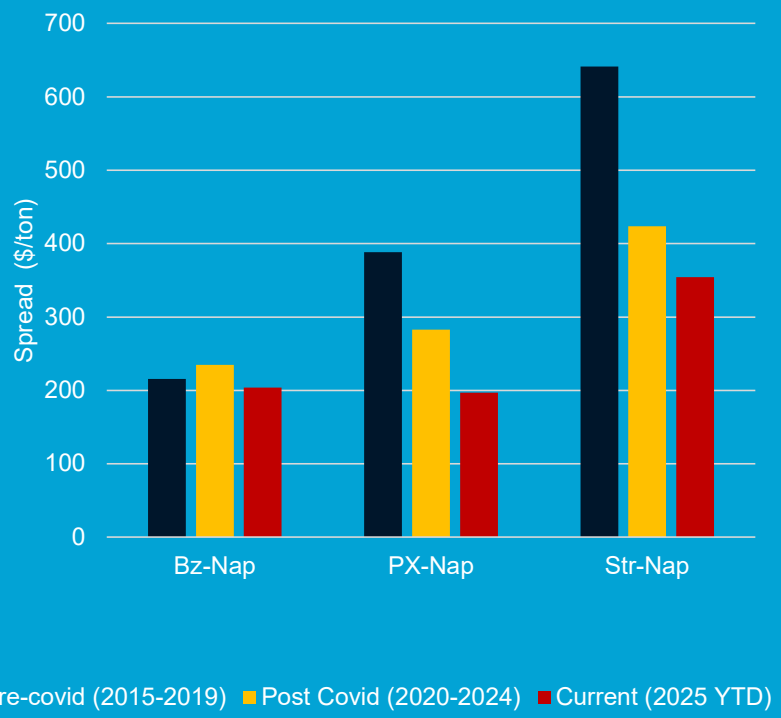
Global nameplate capacity operating rates



Margins have declined with increasing China self sufficiency

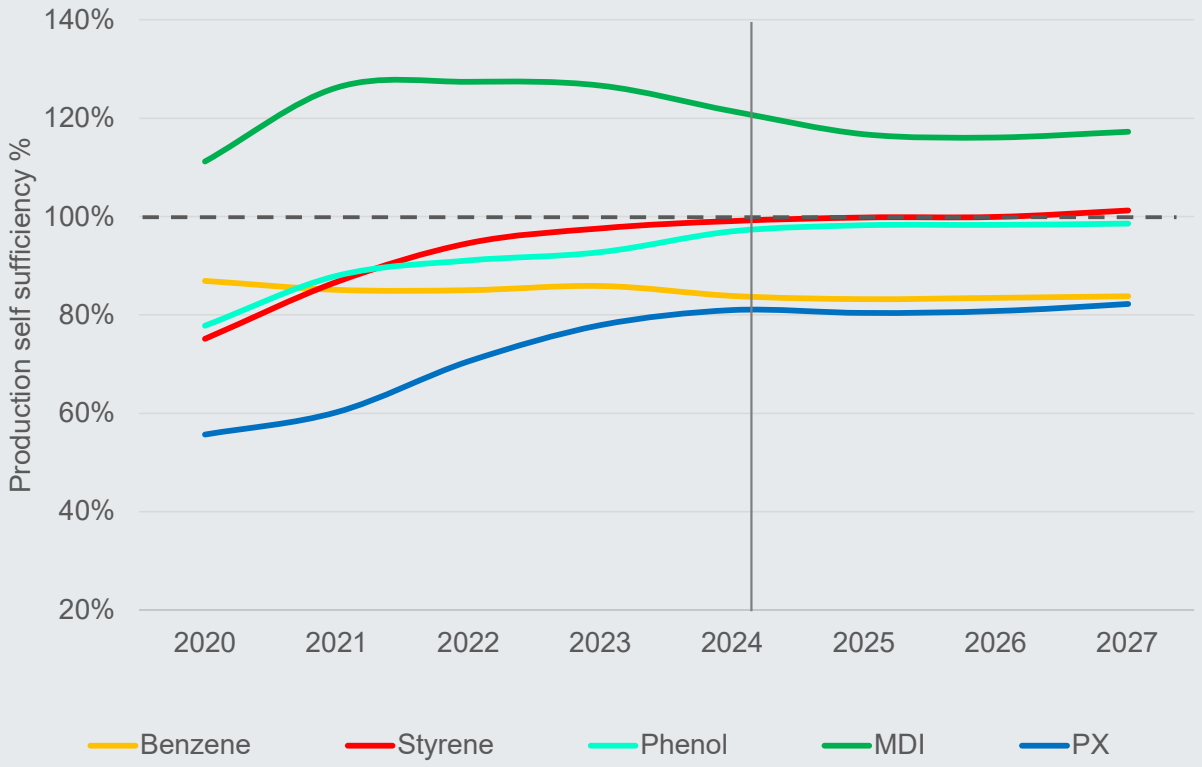
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Aromatics-Naphtha Spreads



Source: Chemical Market Analytics by OPIS

Mainland China aromatics self sufficiency



The growing threat of tariffs

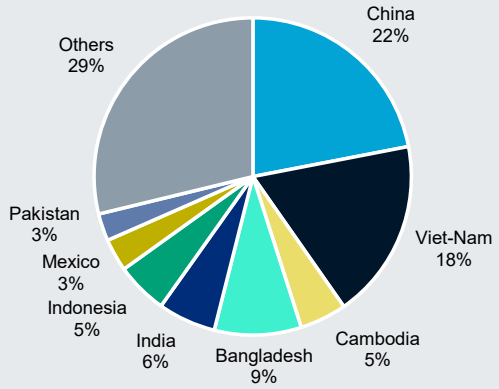
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

	Mainland China	United States
Aromatics Market Size	Approx. 50% of global aromatics market • global polyester ~ 65%	Large market for aromatics ~ 10%
Feedstock Position	Importer of crude oil/heavy naphtha for aromatics production	Major exporter of oil, natural gas providing cost advantage
Aromatics Capacity	Excess capacity in most aromatics	Relative balance in aromatics capacity versus demand. Imports of benzene, octane blend components and PX
Aromatics Derivative Trade Position	Exporter of aromatics derivatives – polyester, nylon, polycarbonate, PS, MDI, TDI, polyols	Exporter of styrene, MEG to higher cost or short markets such as Europe, Latin America, Middle East Pressure from aromatics derivative imports e.g., PET resin, MDI, polycarbonate etc.
Finished Goods Trade Position	Major exporter of cars, electronics, apparel, furniture, appliances	Major importer of cars, electronics, apparel, furniture, appliances

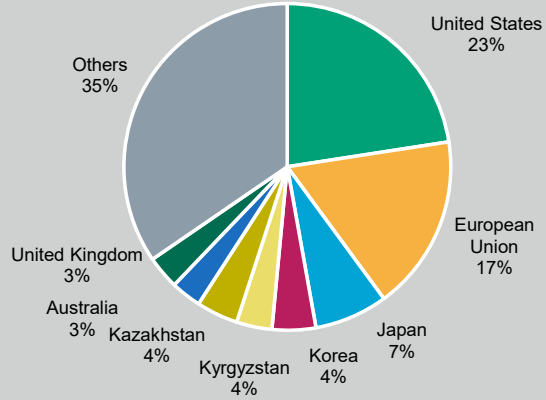
Interdependence of trade between US and China may be hard to change for several sectors in the short term

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

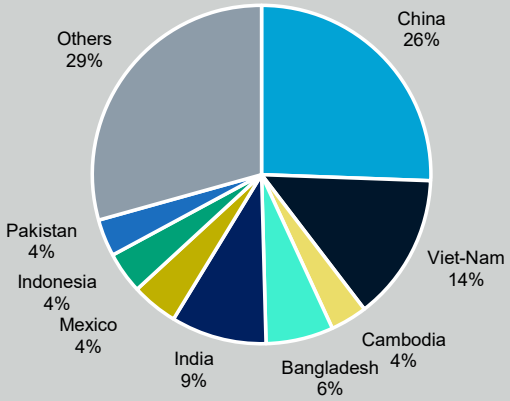
US Apparel Import share - 2024



China Apparel Export Share - 2024

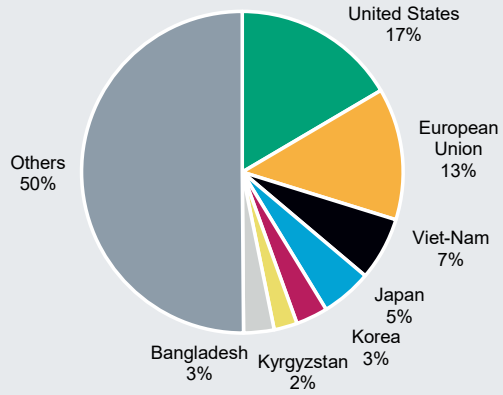


US Textile Import share - 2024



Source: Chemical Market Analytics by OPIS

China Textile Export share - 2024

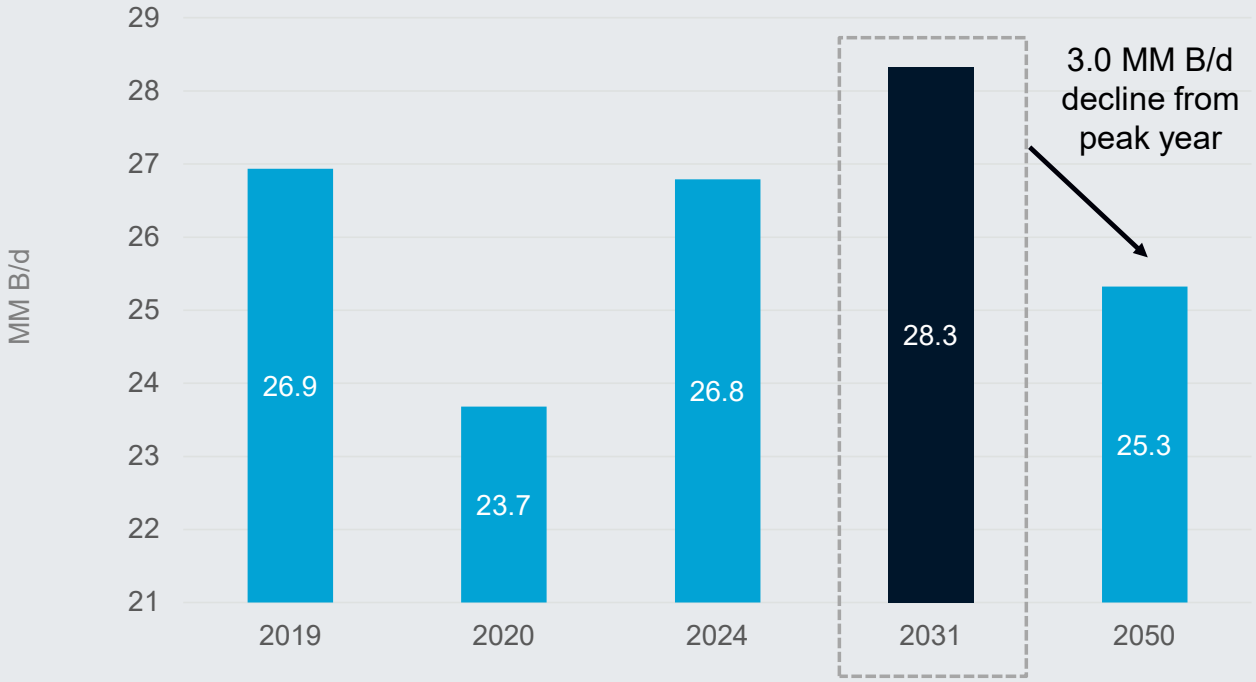



OPIS
A DOW JONES COMPANY
CHEMICAL
MARKET
ANALYTICS
Disruptors &
Emerging Trends

Energy Transition: Changing fuel mix alters feedstocks dynamics

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Global gasoline demand



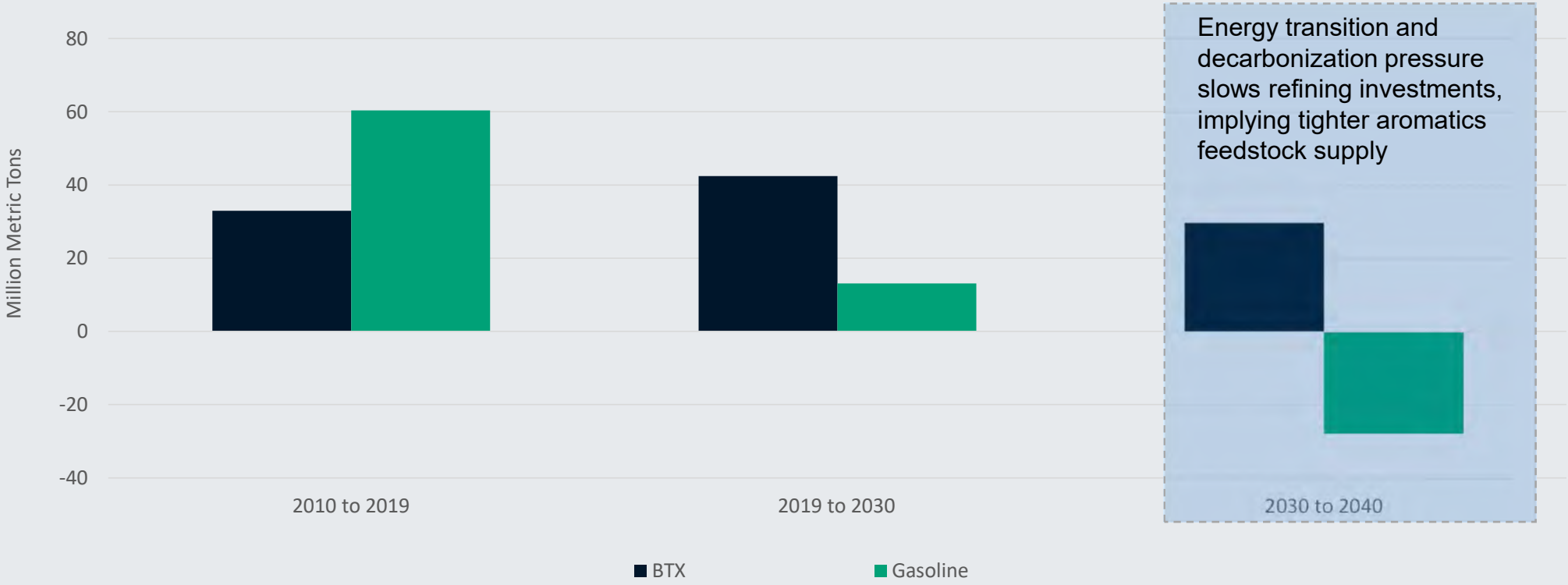
Source: OPIS

- **Investments** in pure "refining" and new reformers slows down
- **Some** existing reforming capacity will switch to aromatics
- Higher **extraction** from existing feedslates will push margins higher
- Crude to chemical integration **(COTC)** essential for continued growth

Aromatics feedstock demand increasing more quickly than octane demand

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Global Reformate Demand Growth (aromatics vs gasoline production)

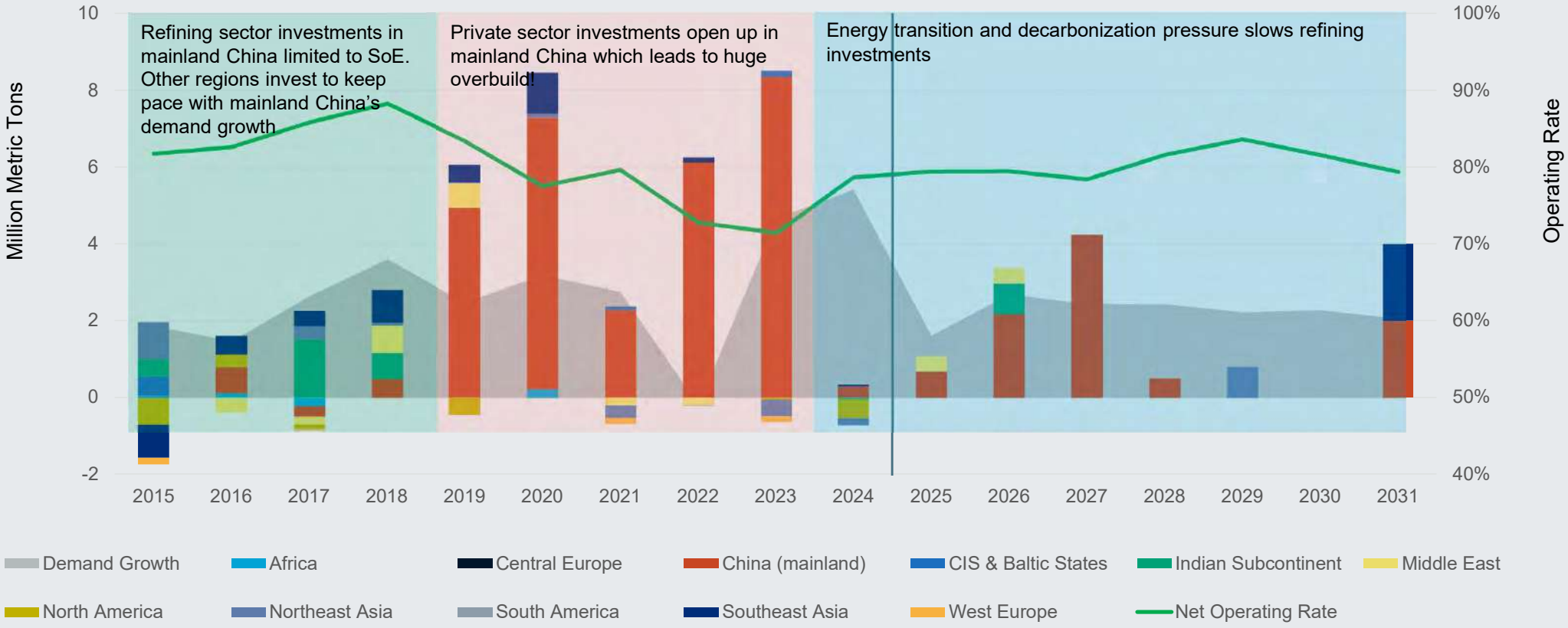


Source: Chemical Market Analytics by OPIS

Case study Paraxylene – Capacity expansion slows with refining!

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Paraxylene Capacity and Demand Growth

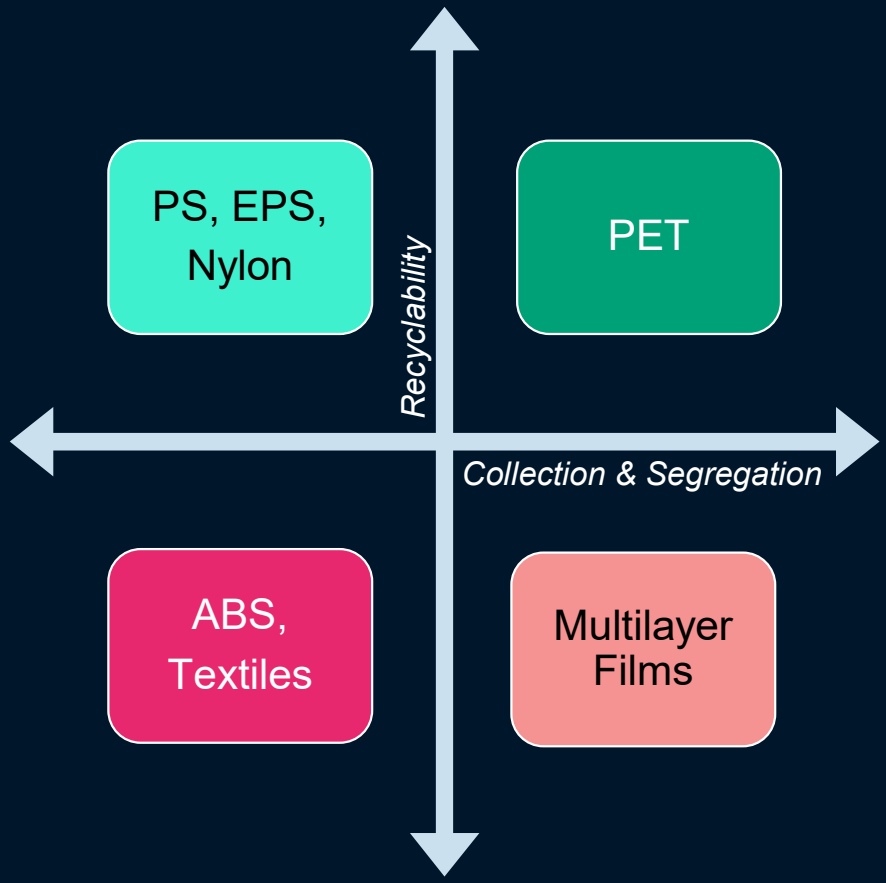


Source: Chemical Market Analytics by OPIS

Sustainability on a strong footing; major changes yet to come

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

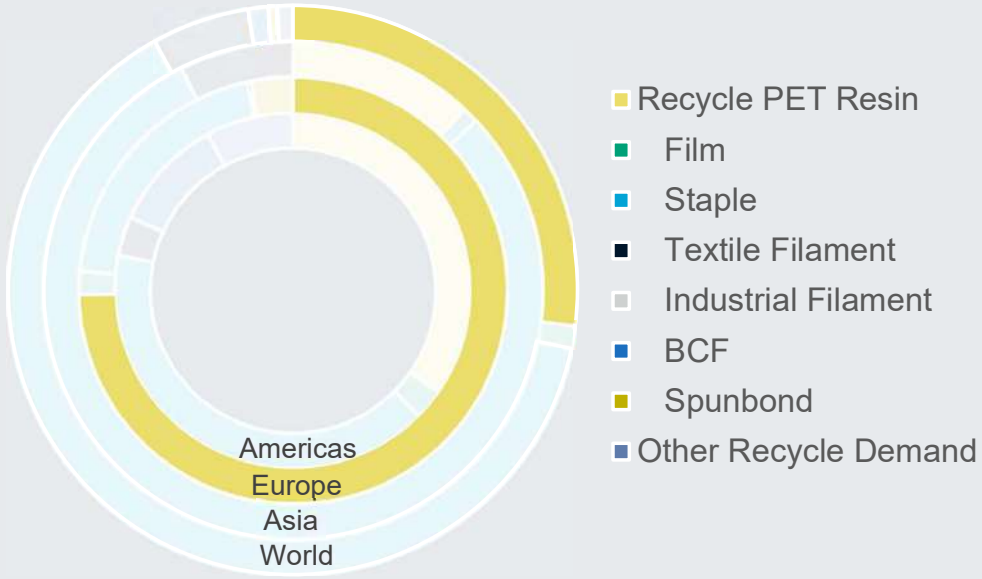
- Scope extends beyond “Recycle”, which has caught global attention from stakeholders
  - ➢ Reduce & Reuse – Still in a nascent stage. Lifestyle changes are required for mass adoption.
- Carbon Emissions – Industry is waking up to the challenge
  - ➢ Consumer awareness and participation are poor.
- Price & Economics
  - ➢ Growth faces cost impediments
  - ➢ Regulation & Compliance costs



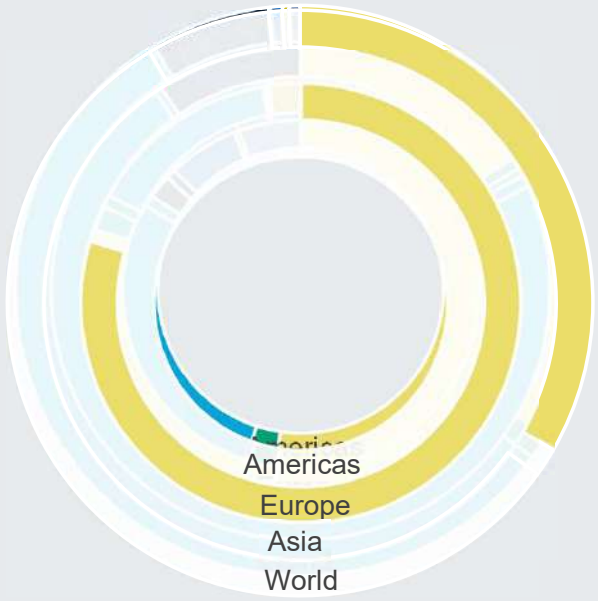
PET can be recycled into virtually any polyester application, but only Bottle Resin closes the circularity loop

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

2022 World: 9 Million Metric Tons



2030 World: 14 Million Metric Tons



Source: Chemical Market Analytics by OPIS

Greenhouse Gas Emissions (GHG) threaten to become the biggest pain point for the textile chain

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

- The textile chain accounts for 10% of global greenhouse gas emissions and has attracted significant attention after the 2015 Paris climate summit.
- Since 2019, actions by big brands have reduced GHG emissions by less than 10% at the garment and retail stages.
- 2030 targets call for GHG emission reduction by approximately 30%, from the 2019 baseline, with Scope 1 targets as high as 70%
- Net Zero targets call for an even more aggressive reduction across, but Scope 2 and 3 emissions are proving hard to implement

OPIS
A DOW JONES COMPANY

CHEMICAL
MARKET
ANALYTICS

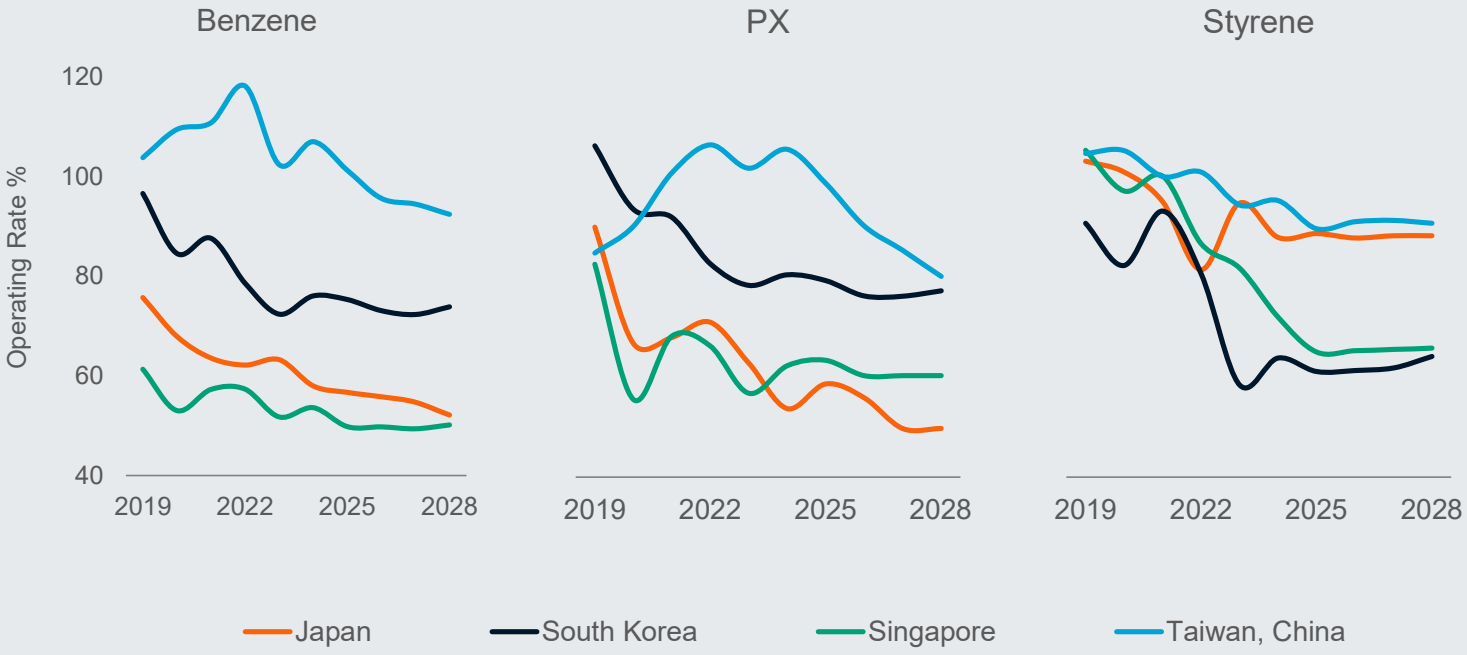
Challenges & Opportunities

Challenges for the Asian Aromatics Industry

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

- Ex-China Asian producers have seen significant hit on export demand and margins
- Some rationalizations have been announced and more may be forced
- Will China rationalize some capacity and help margins return to?

Operating rates for ex-China Asian countries have declined post-2021



Source: Chemical Market Analytics by OPIS

Opportunities on the horizon

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Technology

- Sustainability
  - → Mechanical
  - → Chemical
- Energy Transition
  - Refinery reconfiguration
  - Alternate feedstock

Markets

- South & Southeast Asia
  - Amongst the fastest growing regions with a large population base, lower labor costs, and low per capita consumption
- Market access
  - Helped push some investments into these markets, opportunity now to integrate end-to-end

3 Key Takeaways

OPIS A DOW JONES COMPANY | CHEMICAL MARKET ANALYTICS

State of the Industry

- **Gasoline blending** alternative has moved from a "**Pull**" to a "**Push**"
- **Overcapacity** is now reflecting in cyclical low operating rates & margins
- **Tariff impact** on base aromatics trade may be small, but major challenge for end products

Disruptors & Trends

- **Energy Transition** will disrupt feedstock supply and mix. Investments in asset reconfiguration need of the hour!
- **Sustainability**
- Participate or Perish!

Opportunities

- **INVEST**
  - Markets
  - Technology
  - Asset Rebuild

Rebuilding competitiveness critical for long term survival

OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

Methanol: Evolution or Revolution

15 May 2025

Xiaomeng Ma
Director, Asia Methanol
Xiaomeng.ma@chemicalmarketanalytics.com

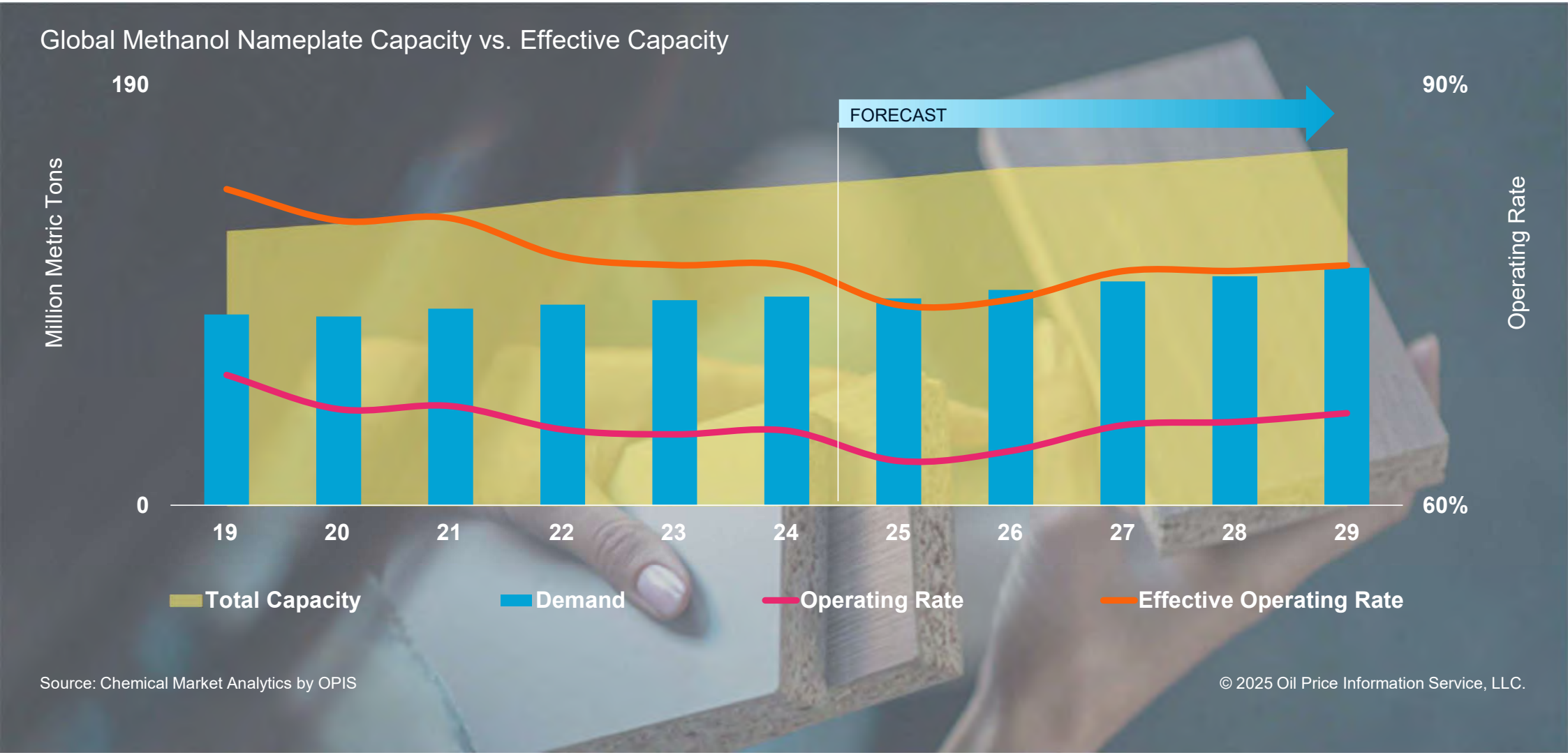
OPIS
A DOW JONES COMPANY

CHEMICAL
MARKET
ANALYTICS

Methanol Market Fundamentals

Global Operating Rates set to Pick up From 2026

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

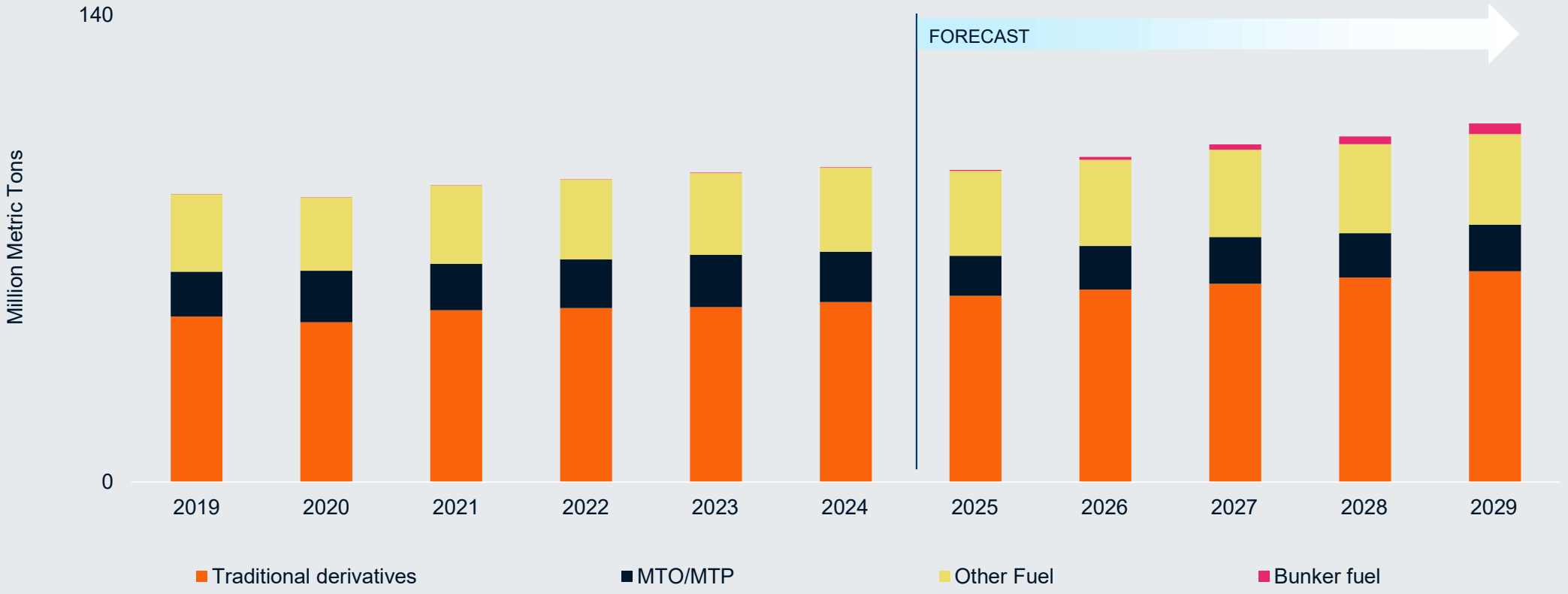


Source: Chemical Market Analytics by OPIS

Methanol Growth Rate Lower but Still Above GDP: Reliant more on marine fuel, chemicals, less on MTO/fuels

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Global Methanol Consumption



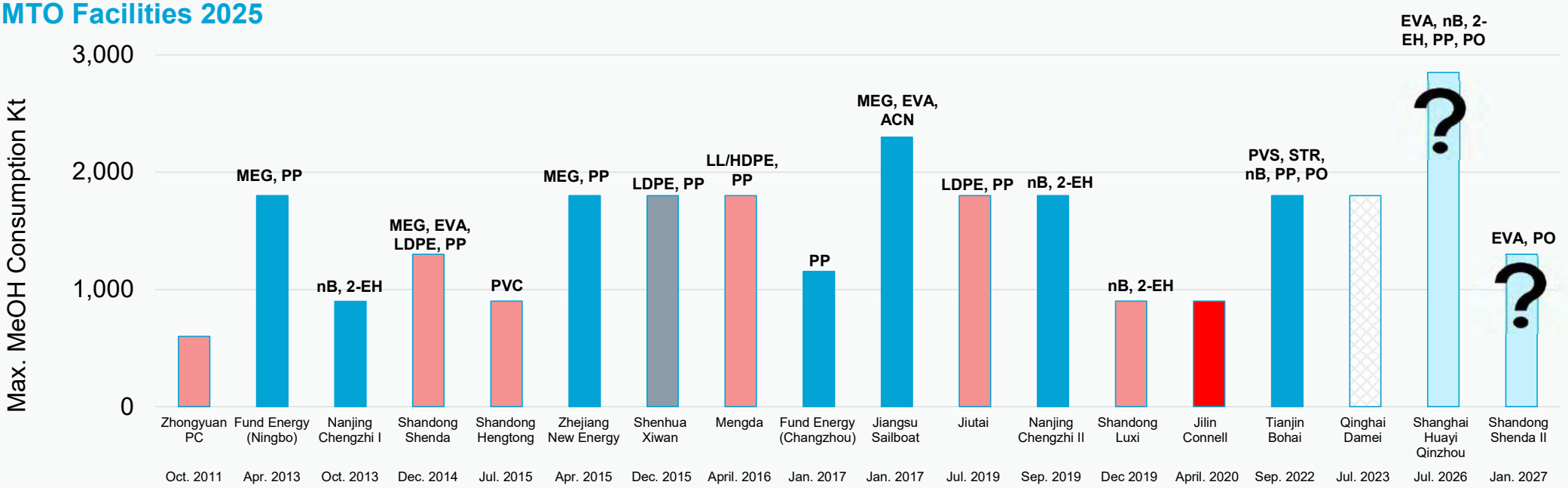
Source: Chemical Market Analytics by OPIS

Disruptor: Methanol-to-Olefins (MTO)

The methanol to olefins market: slower capacity growth and challenging economics

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

MTO Facilities 2025



Source: Chemical Market Analytics by OPIS

- Methanol to olefin accounts for 16% of the global methanol demand
- Annual operating rates 2021-2024 are 71-73% with additional olefin capacity online from non-MTO production processes
- Estimated operating rates for 2025 to 2026 are around 70%
- Two new units are developing to plan: start-up 2026-2027
- The impact of reciprocal tariffs: both a threat and an opportunity for MTO’s competitiveness

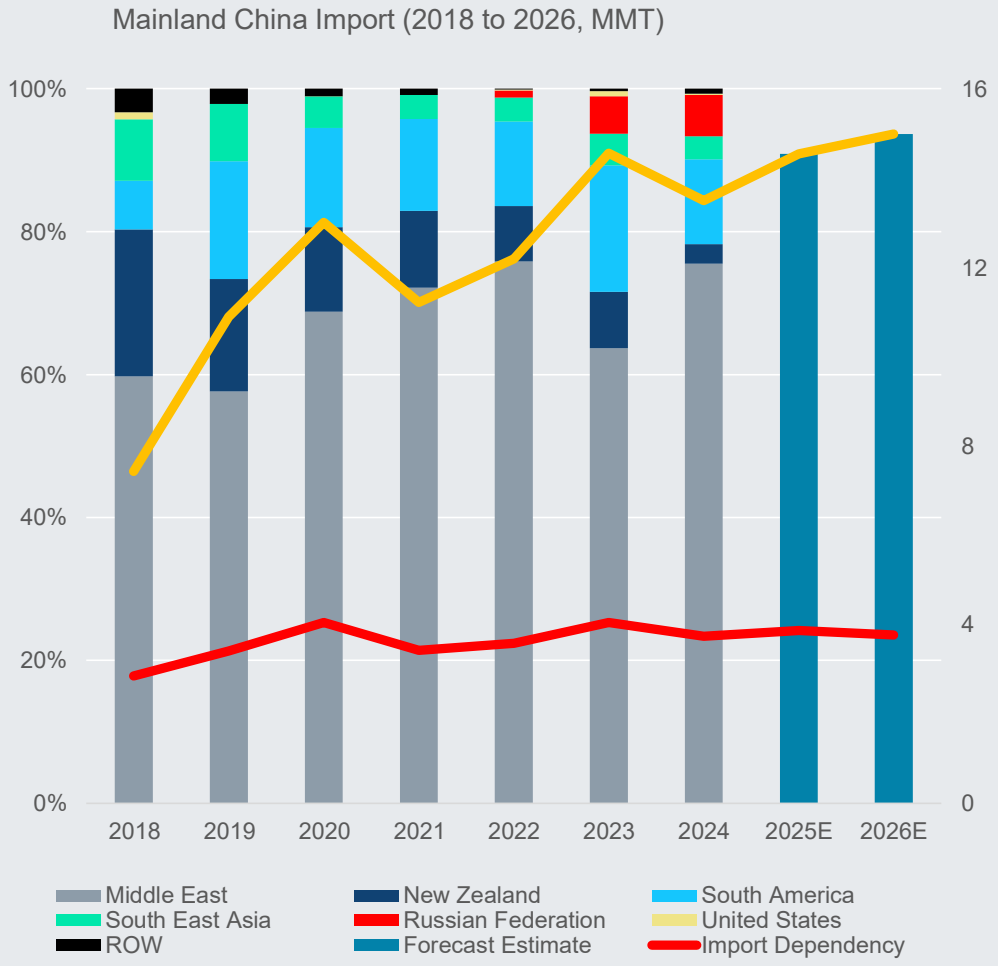
OPIS
A DOW JONES COMPANY

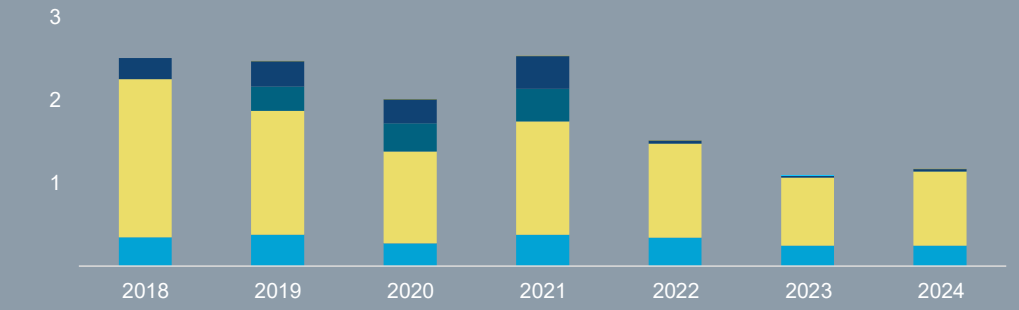
CHEMICAL
MARKET
ANALYTICS

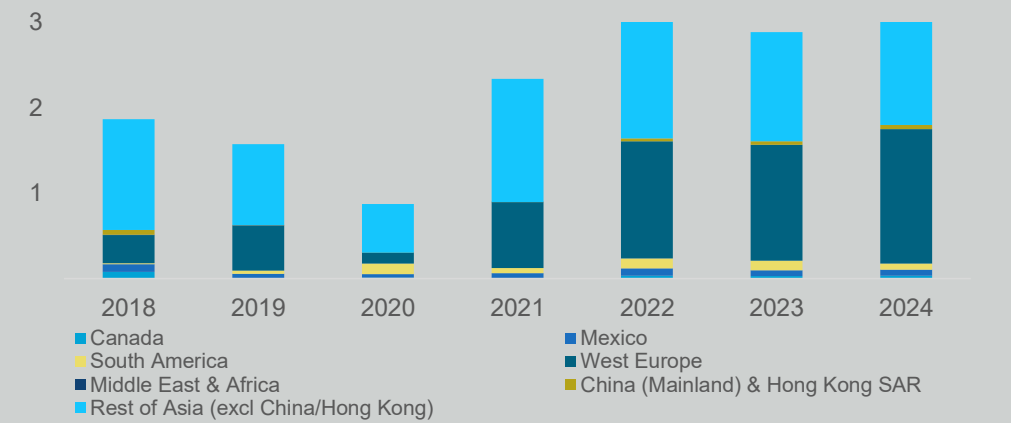
Challenges: Geopolitical Tensions & Trade Barriers

Import tariffs not expected to have a significant direct impact on the US methanol market

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS







Source: GTT

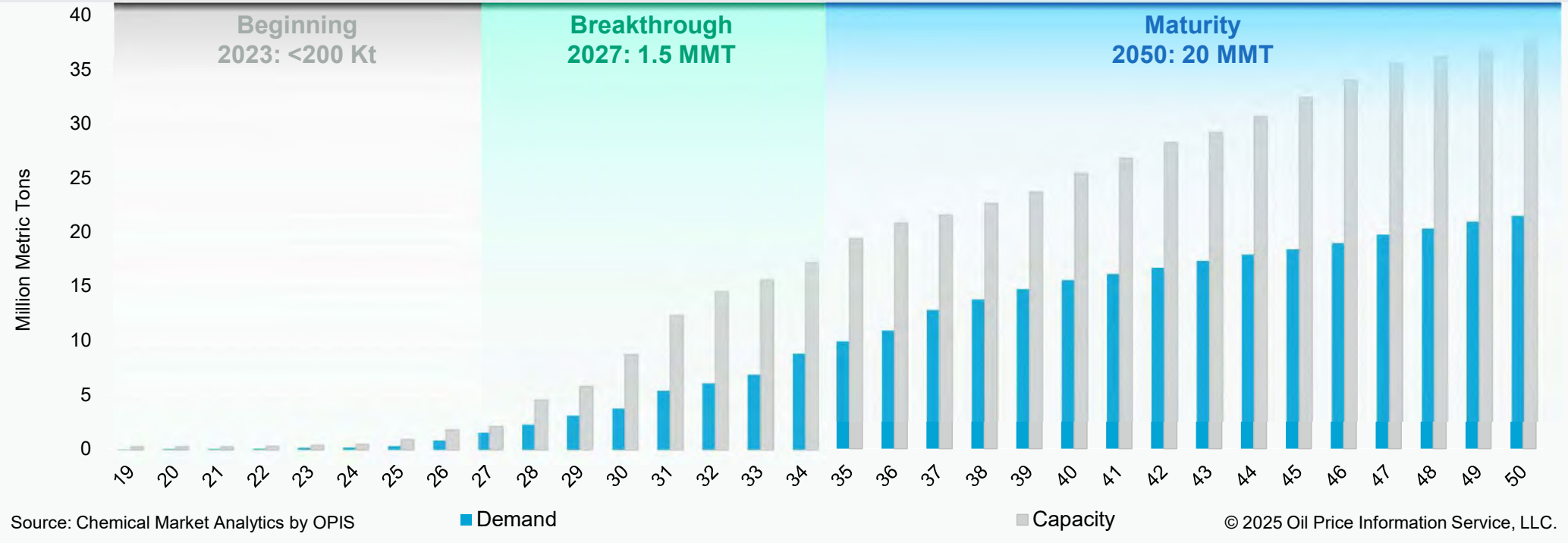
OPIS
A DOW JONES COMPANY

CHEMICAL
MARKET
ANALYTICS

The Methanol Industry and Sustainability

Methanol and Sustainability: Will low-carbon methanol supply keep pace with demand, especially for marine fuel?

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



Source: Chemical Market Analytics by OPIS

Short Term

- Demand is higher than supply
- Premium price of E-Methanol
- Very high unit production cost
- Intermediate solution – mix of grey and green methanol

Medium Term

- Balanced supply-demand
- Premium price of E-Methanol
- Optimization of production cost
- Global expansion

Long Term

- Healthy supply with efficient technology
- Direct competition with fossil fuels (MGO, VLSFO, etc)
- Green methanol demand from various applications, not only bunker fuel

Global Ammonia Analysis launched in January 2025

OPIS
A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

An integrated insight, data, forecasting and analysis tool. To include:

- Dashboard delivery and functionality
- A monthly report covering key trade developments, margin analysis and raw material fundamentals
- Supply-demand analytics for ammonia and derivatives to 2050
- Key legislation reviewed and new project developments analyzed
- Short and long-term (to 2050) price forecast for conventional and low-carbon ammonia

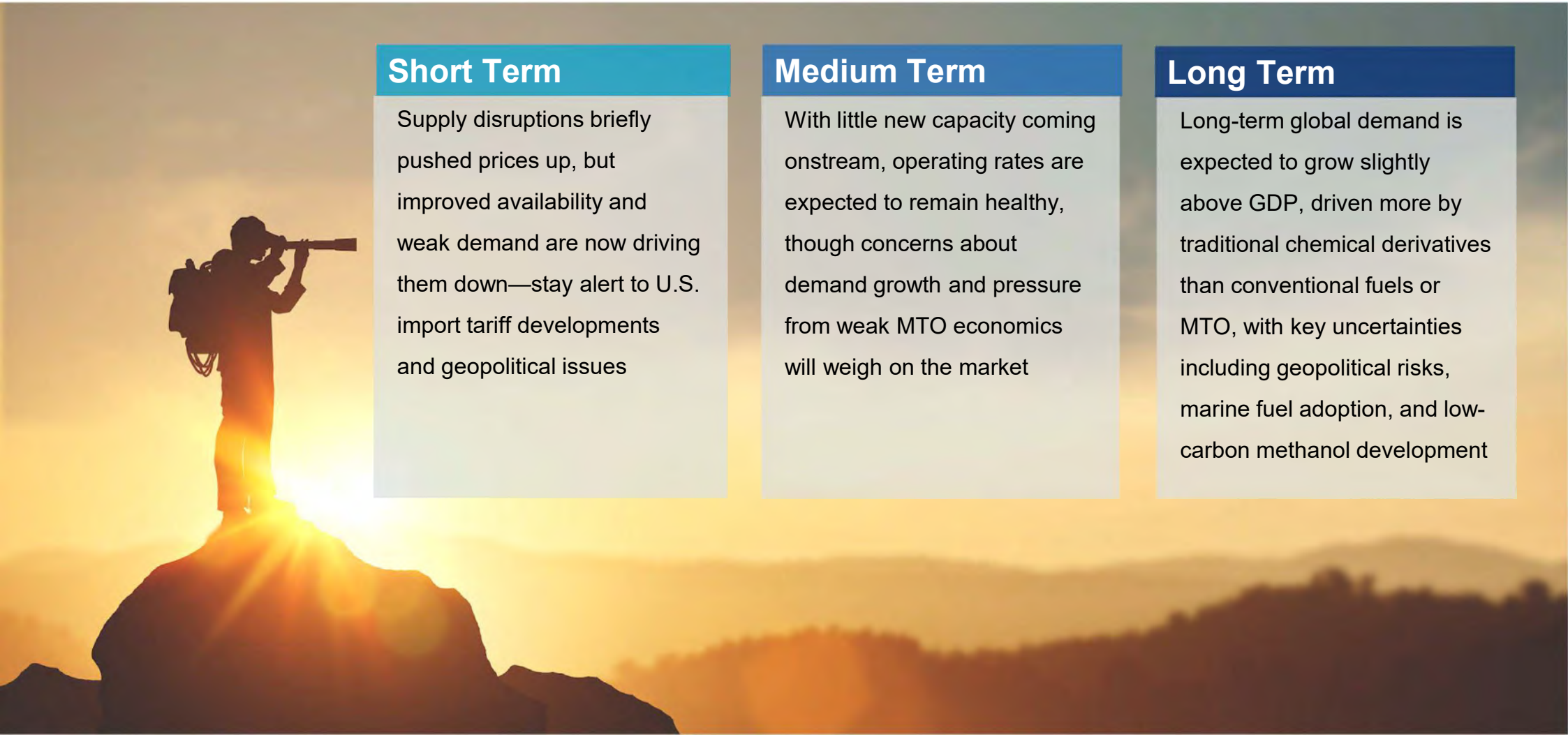
Visit the website and learn more

For further details please contact:
carl.roache@chemicalmarketanalytics.com

For more information, visit https://chemicalmarketanalytics.com/services/global-ammonia-analysis/

Key Takeaways

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



Short Term

Supply disruptions briefly pushed prices up, but improved availability and weak demand are now driving them down—stay alert to U.S. import tariff developments and geopolitical issues

Medium Term

With little new capacity coming onstream, operating rates are expected to remain healthy, though concerns about demand growth and pressure from weak MTO economics will weigh on the market

Long Term

Long-term global demand is expected to grow slightly above GDP, driven more by traditional chemical derivatives than conventional fuels or MTO, with key uncertainties including geopolitical risks, marine fuel adoption, and low-carbon methanol development

OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

Chlor-Vinyls:
Exiting the PVC Trough in a Multi-Dimensional World

15 May 2025

Gordon Kuo
Director, APAC Vinyls & India Chlor-Alkali
Gordon.Kuo@checmialmarketanalytics.com

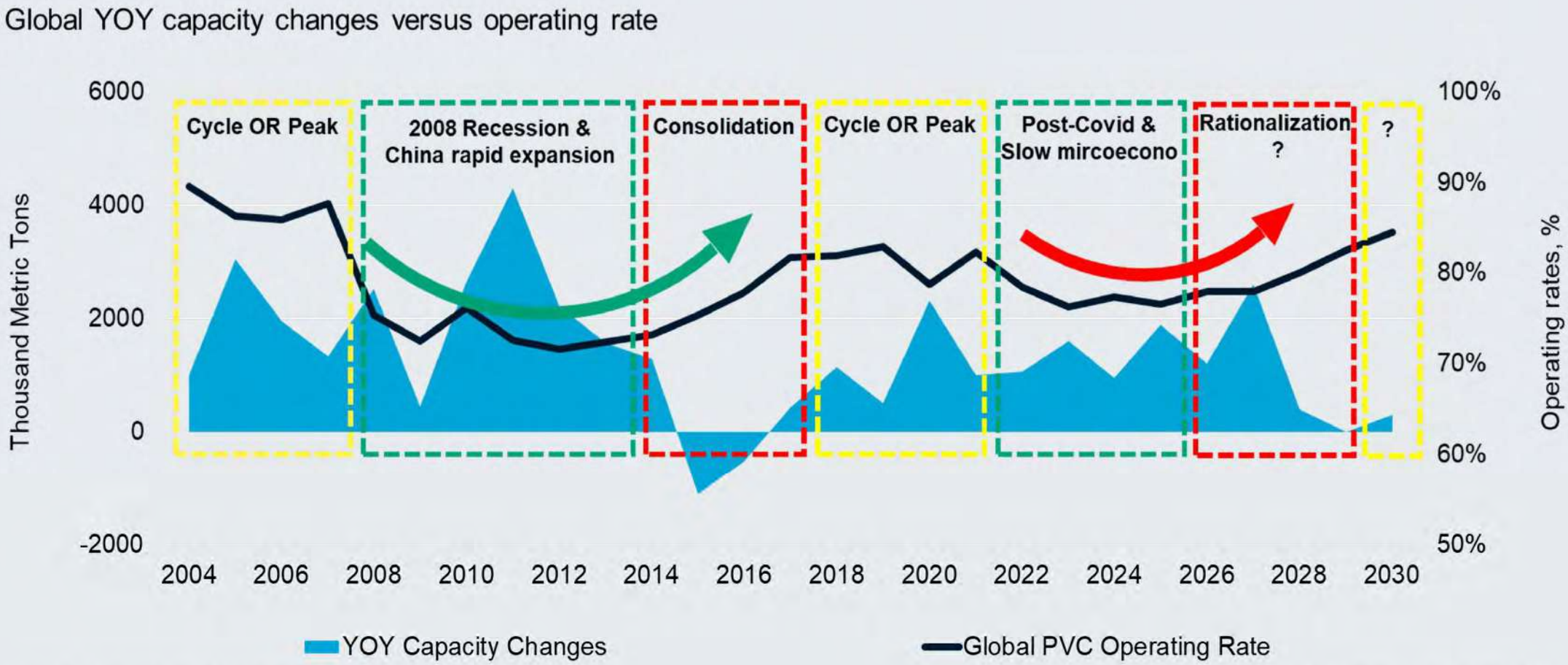
OPIS
A DOW JONES COMPANY

CHEMICAL MARKET ANALYTICS

Industry: Fundamentals and Current State

Chances of quicker recovery?

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

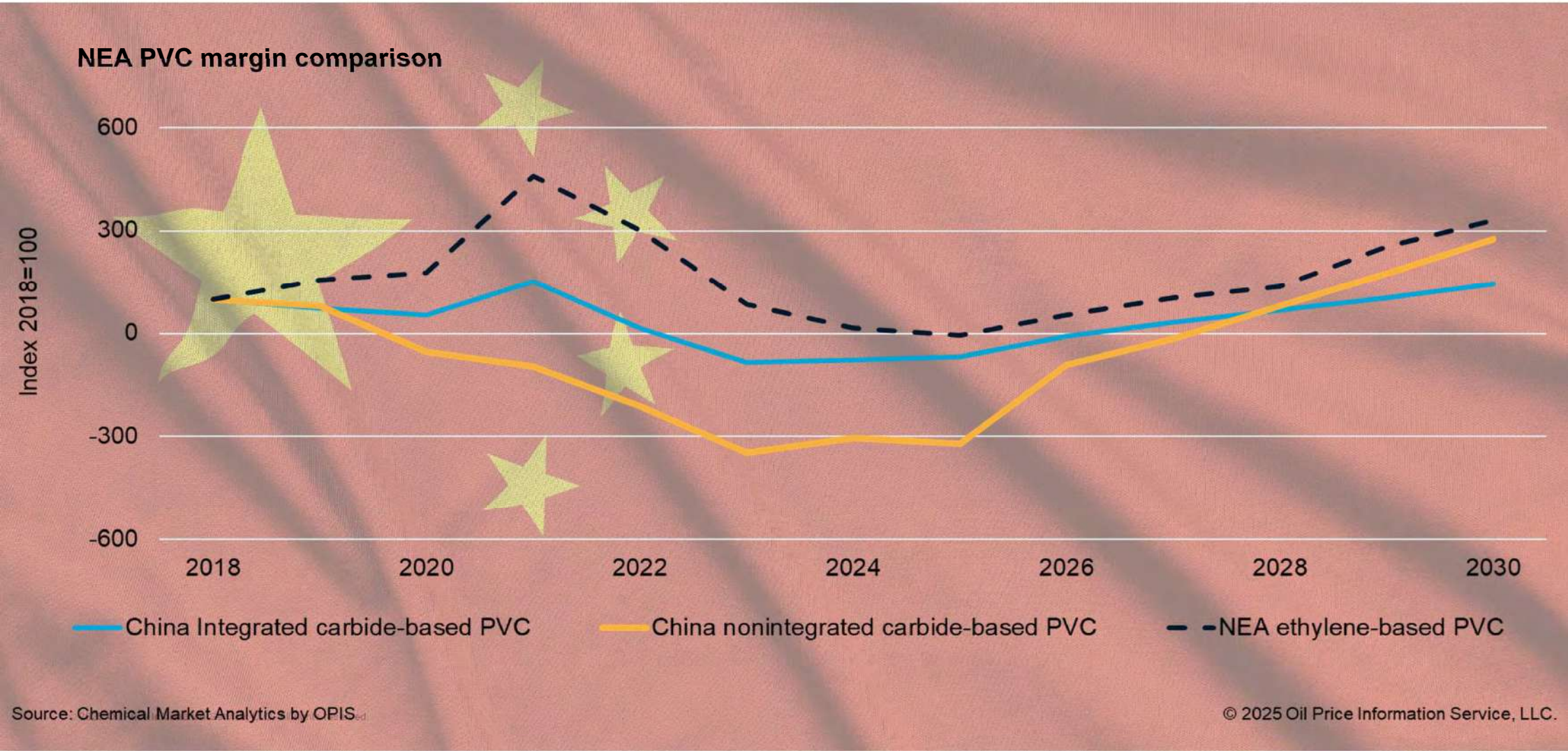


Source: Chemical Market Analytics by OPIS


OPIS
A DOW JONES COMPANY
CHEMICAL
MARKET
ANALYTICS
Disruptors &
Emerging Trends

Especially for nonintegrated carbide-based producers

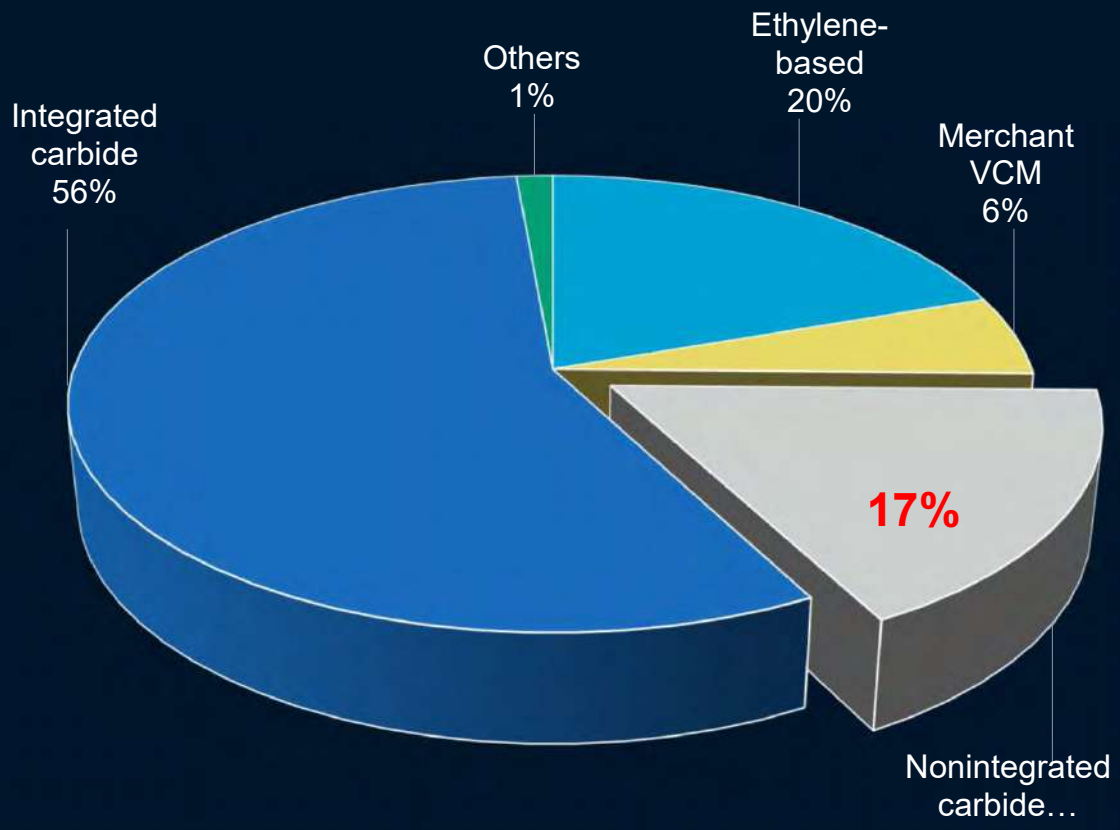
OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS



Slower growth, new start-ups and poor operating economics put higher-cost facilities at increased risk of closure

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

2024 China PVC producers by process



Source: Chemical Market Analytics by OPIS

Process	Capacity (Million mt)	% of total
Integrated + non-integrated ethylene-based	7.5	25%
Integrated carbide-based	16.8	56%
Non-integrated carbide-based	**5**	**17%**

Source: Chemical Market Analytics by OPIS

Prime for rationalization and consolidation; who and when?

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Capacities under operation risk

	No. of Plants	Capacities (kt)	% of total Chinese capacity	Remark
All other plants of < 200kt	8	955	3%	High risk
Non-integrated carbide plants of < 200kt	16	1975	7%	Highest risk
Non-integrated carbide plants of > 200kt	8	2830	10%	Moderate-to-high risk

Source: Chemical Market Analytics by OPIS

Already 8 non-integrated carbide-based PVC producers (size < 200kt) shutdown/idled in 2023-2024, with combined volume of 1.2 mil mt

2 mil mt more of non-integrated carbide-based capacity (size less than 200kt) under pressure, at highest risk of closure

A question of speed: Improvement in Chinese supply/demand balance & plant utilization rate

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

Source: Chemical Market Analytics by OPIS

OPIS
A DOW JONES COMPANY

CHEMICAL
MARKET
ANALYTICS

Challenges & Opportunities

Demand risk in China – PVC finish goods export exposure to U.S. market

OPIS A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS

China PVC Export	PVC Resin Equivalent Volume (kMT)	
	2023	**2024**
PVC Flooring Materials	1350	1400
Other PVC finish goods, glove, sheets, board & pipes	670	840
Total	**2020**	**2240**
Share of Domestic PVC Demand (%)	10	10
Export to US (%)	40%	30%

- US tariffs increase risk of dampening finished goods exports to US
- Full impact of tariffs - potential loss of 500kt PVC resin equivalent demand or 2% of Chinese demand
- Likely shift in finished goods trade flow to other markets
- And bottleneck in ramping-up U.S. domestic production to replace may mitigate losses
- Realistically around 200kt of demand is at risk, equal to 0.5% of mainland China demand

Key Takeaways

- Expect PVC op rates and margins trough through 2025, caustic to support ECU in the balance. In question is the speed of recovery
- Low plants utilization rate might not be sustainable in Mainland China, chances of rationalization in supporting a speedier global CA/VIN recovery
- Tariffs increase the risk of demand destruction for Chinese PVC finish goods exports to the US, India is also under the radar on new tariff barriers

OPIS
A DOW JONES COMPANY
CHEMICAL MARKET ANALYTICS