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Navigating through PVC market recovery while entering new horizon in circular economy initiatives

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Agenda

- Recovery Path
- Factors – China, India, US
- Future Landscape

Vinyl in the middle of the market trough…
➡ while caustic soda carrying the CA/VIN margin

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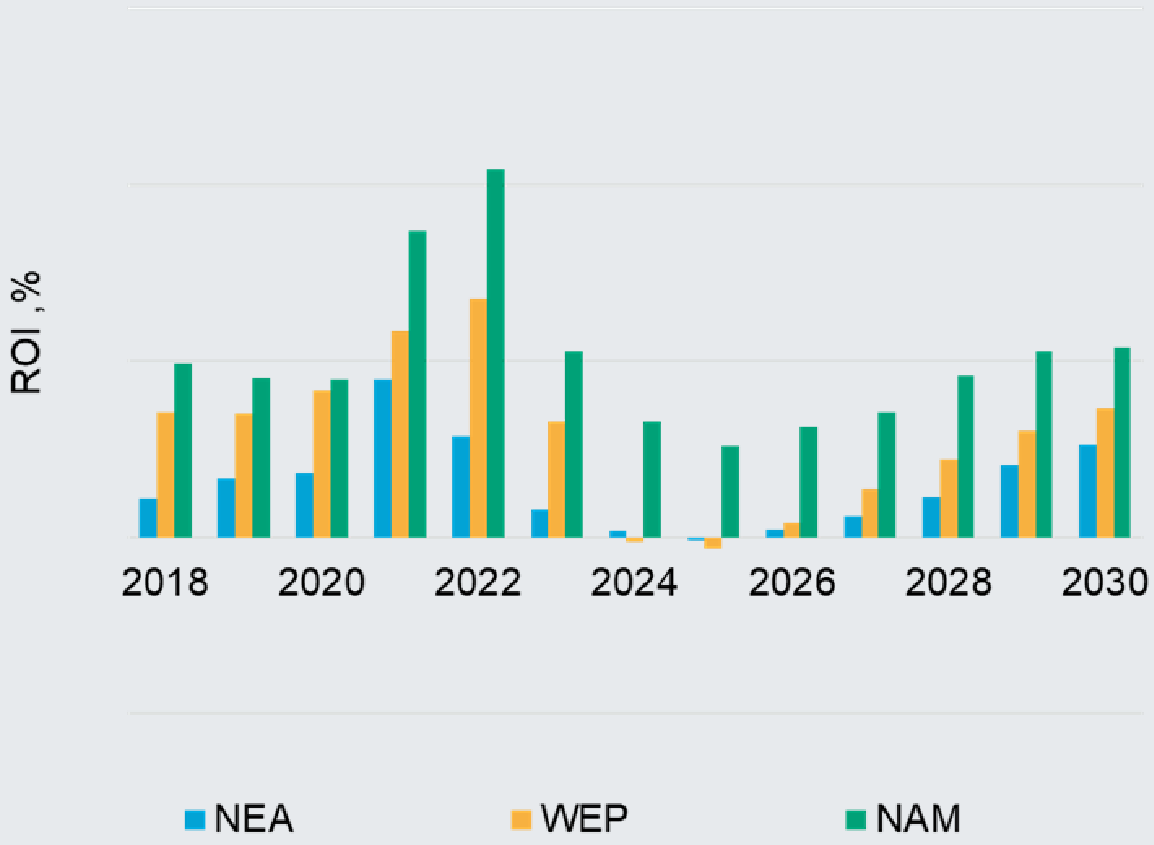
NEA Chlor-alkali economics

Source: Chemical Market Analytics by OPIS

Global CA/VIN ROI by regions



Source: Chemical Market Analytics by OPIS

Recovery Path

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In the middle of market trough, what next? Lower for longer or is there a case for quicker recovery?

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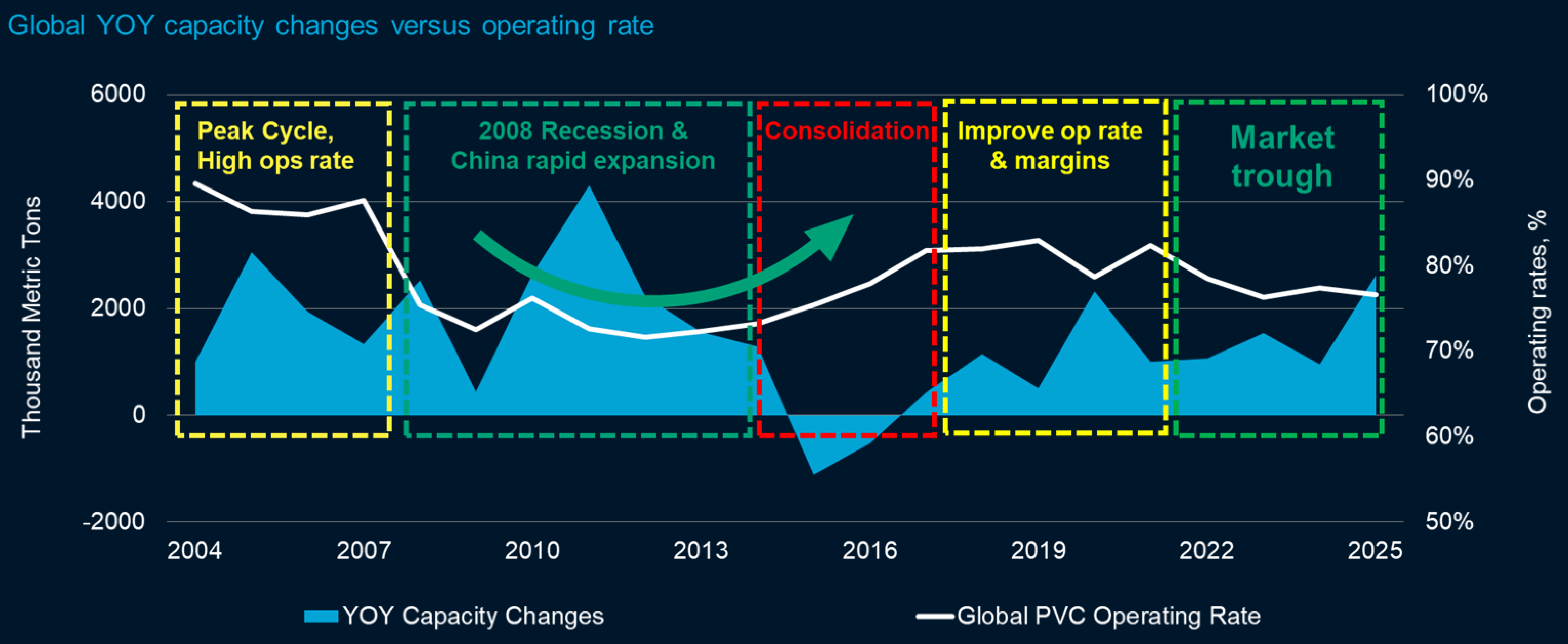

Source: Chemical Market Analytics by OPIS

ISC & MDE take over the expansion decisions from China with ISC & SEA driving the demand growth recovery

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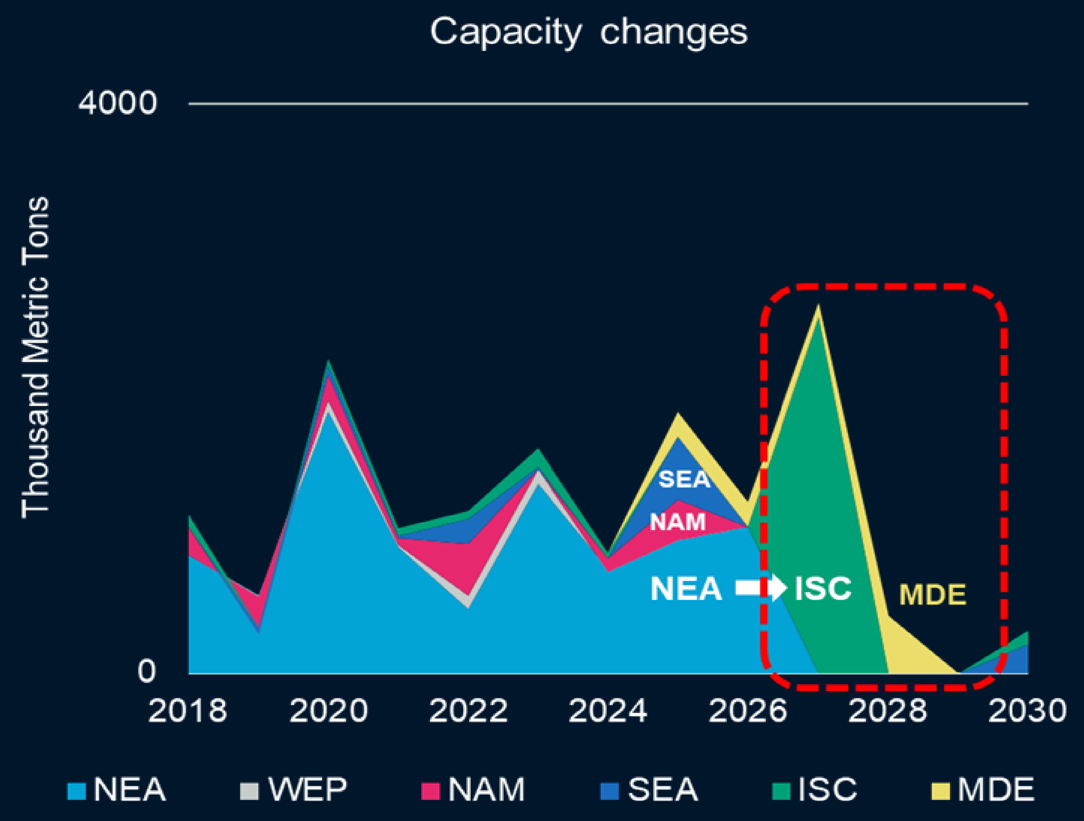
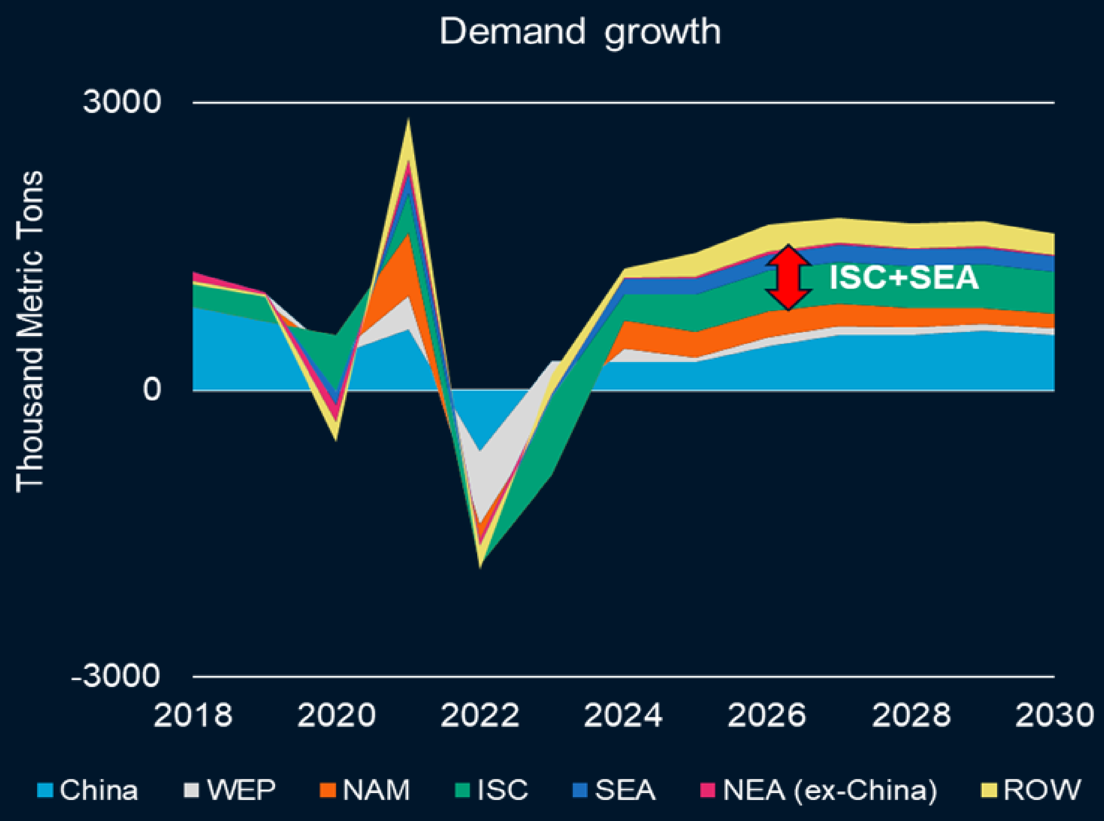
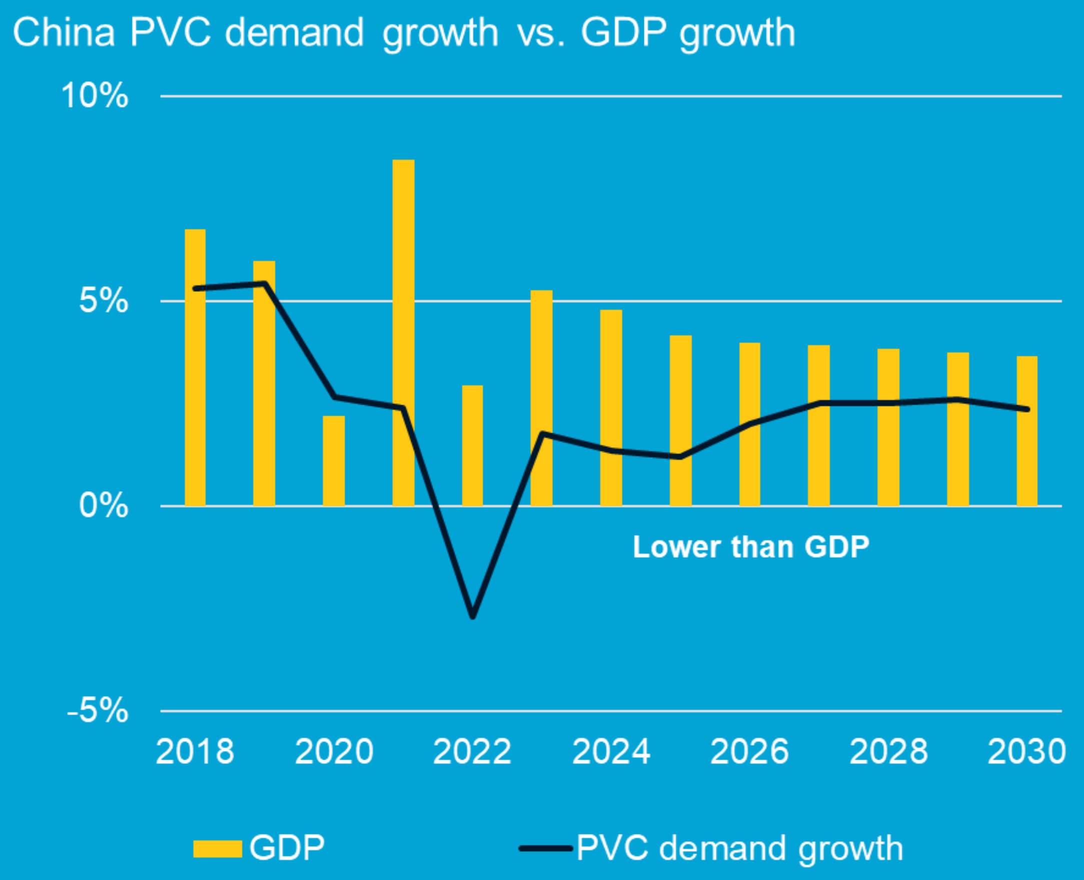
Global PVC capacity changes and demand growth by region



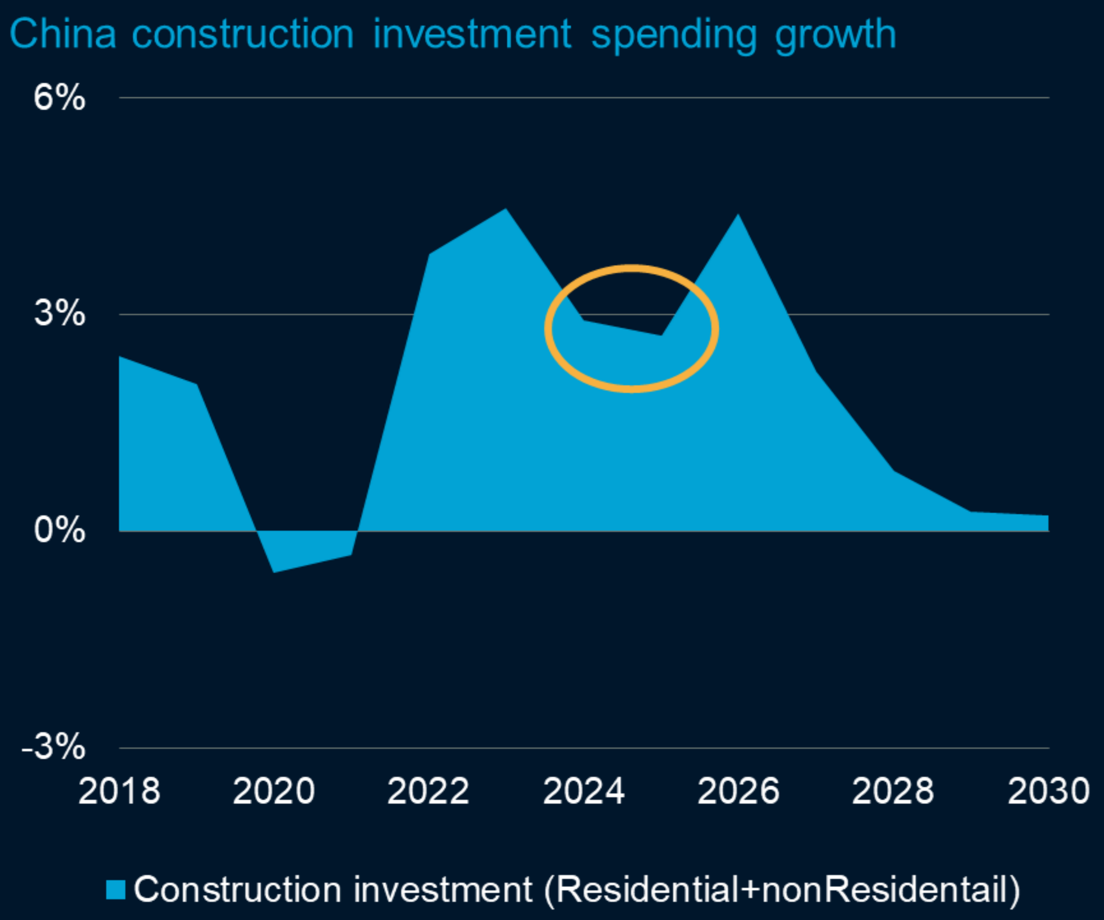


Source: Chemical Market Analytics by OPIS

China- Slow construction growth drag PVC demand growth



Source: Chemical Market Analytics by OPIS



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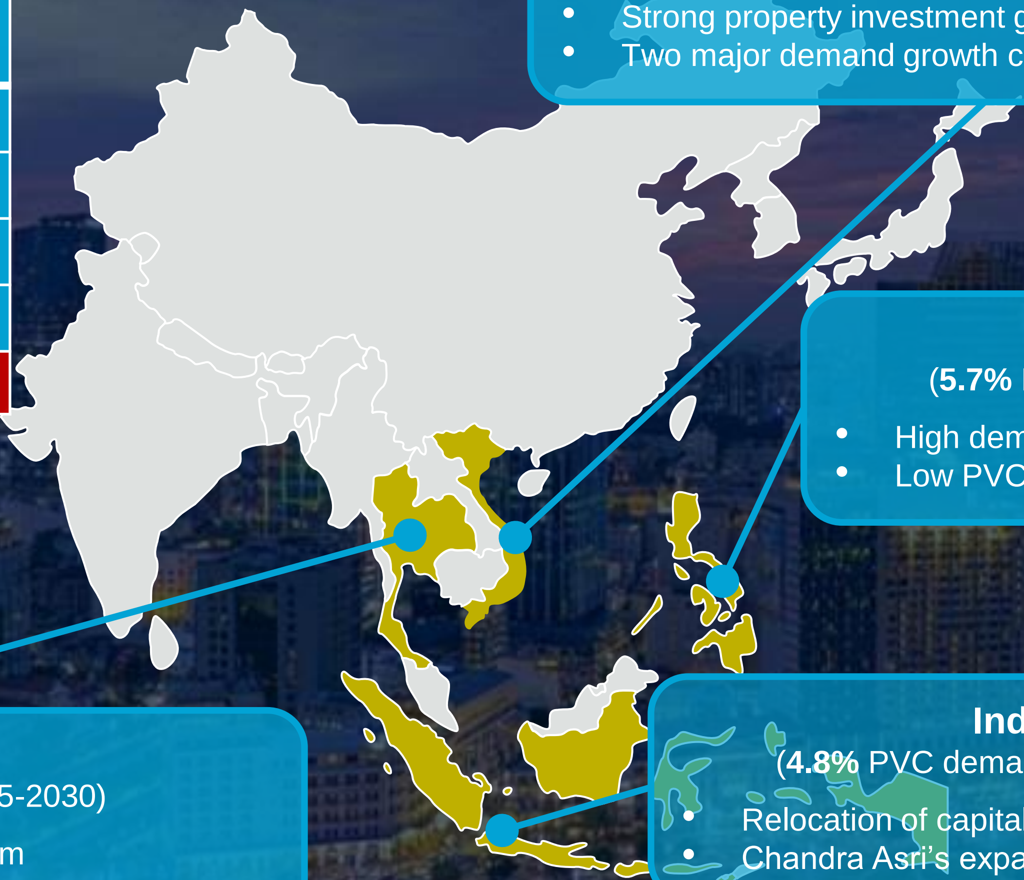
SEA – Growing population, increase housing and infrastructure

	2025-2030 AAGR (%)	Demand Elasticity Over GDP
Vietnam	7.3	1.3
Philippines	5.7	1
Indonesia	4.8	1
Thailand	2.2	0.8
China	2.2	0.6



Vietnam (#15*)
(**7.3%** PVC demand growth AAGR 2025-2030)
- Strong property investment growth
- Two major demand growth center

Philippine (#12*)
(**5.7%** PVC demand growth AAGR 2025-2030)
- High demographic dividend
- Low PVC consumption per capita

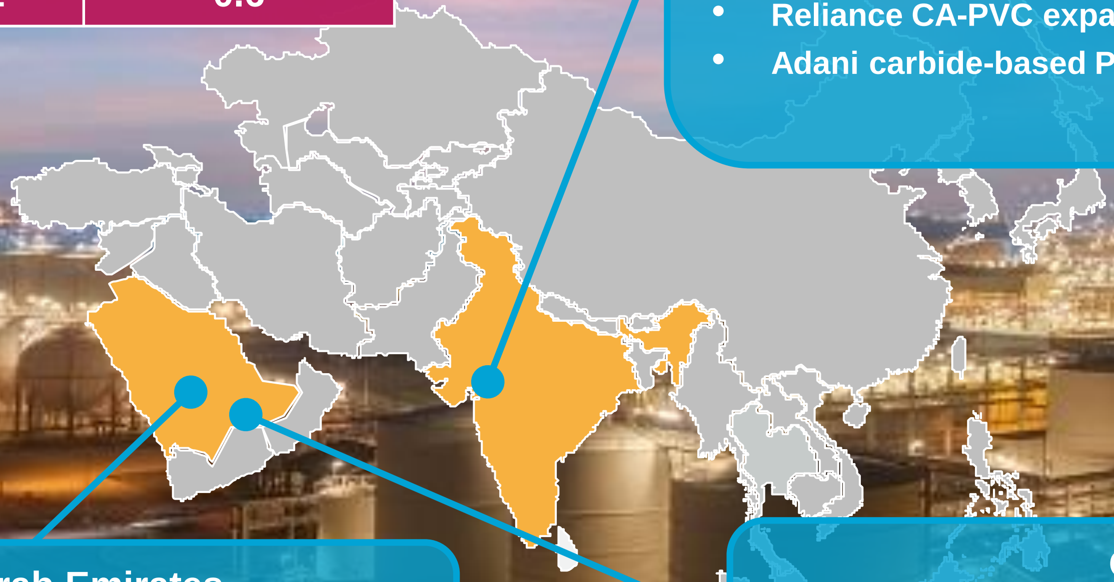
Thailand (#22*)
(**2.2%** PVC demand growth AAGR 2025-2030)
- Potentials on Infrastructure and irrigation system
- AGC Vinythai 440kta PVC expansion in 2025

Indonesia (#4*)
(**4.8%** PVC demand growth AAGR 2025-2030)
- Relocation of capital
- Chandra Asri's expansion project

***# No: World population ranking**

ISC – Largest demand growth driving future expansion
MDE – Pivot toward integration with downstream expansion

	2025-2030 AAGR (%)	Demand Elasticity Over GDP
ISC	7.1	1.2
MDE	2.3	0.8
China	2.2	0.6



India (#1*)

(**7.5%** PVC demand growth AAGR 2025-2030)

- **Amrit Kaal vision by 2047**
- **5 states expect to be more than 50% urbanization in 2030**
- **Numbers of metropolitan cities increase from 46 to 68 in 2030**
- **Reliance CA-PVC expansion in 2027**
- **Adani carbide-based PVC project?**

United Arab Emirates

- **Adnoc potential CA-PVC project?**
- Extra EDC export?

Qatar

- **QVC 350kta PVC expansion in 2025**
- No more extra VCM availability

*# No: World population ranking

PVC demand growth exceed capacity growth in next 5 years

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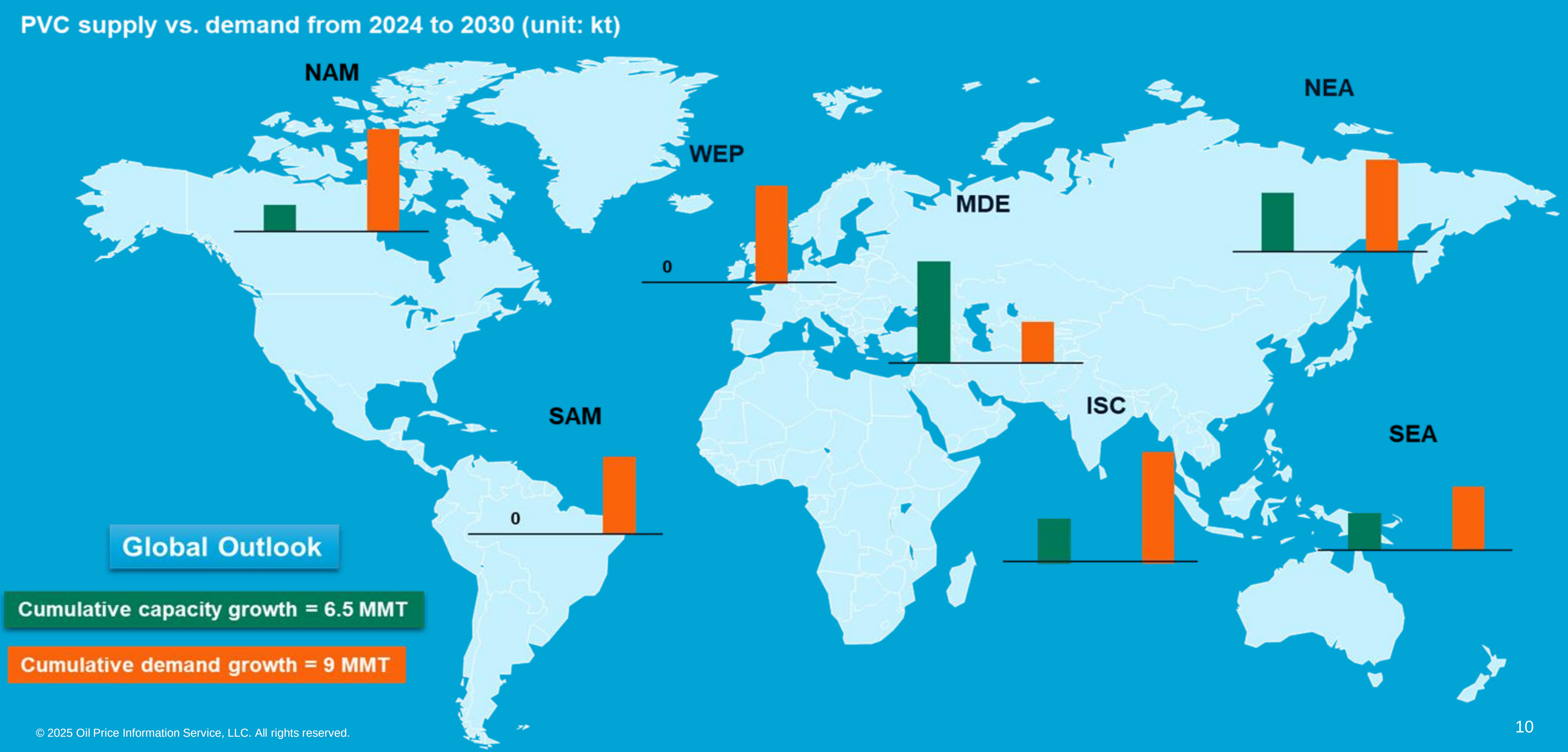

Factors – China, India, US

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China - Low plants utilization rate might not be sustainable

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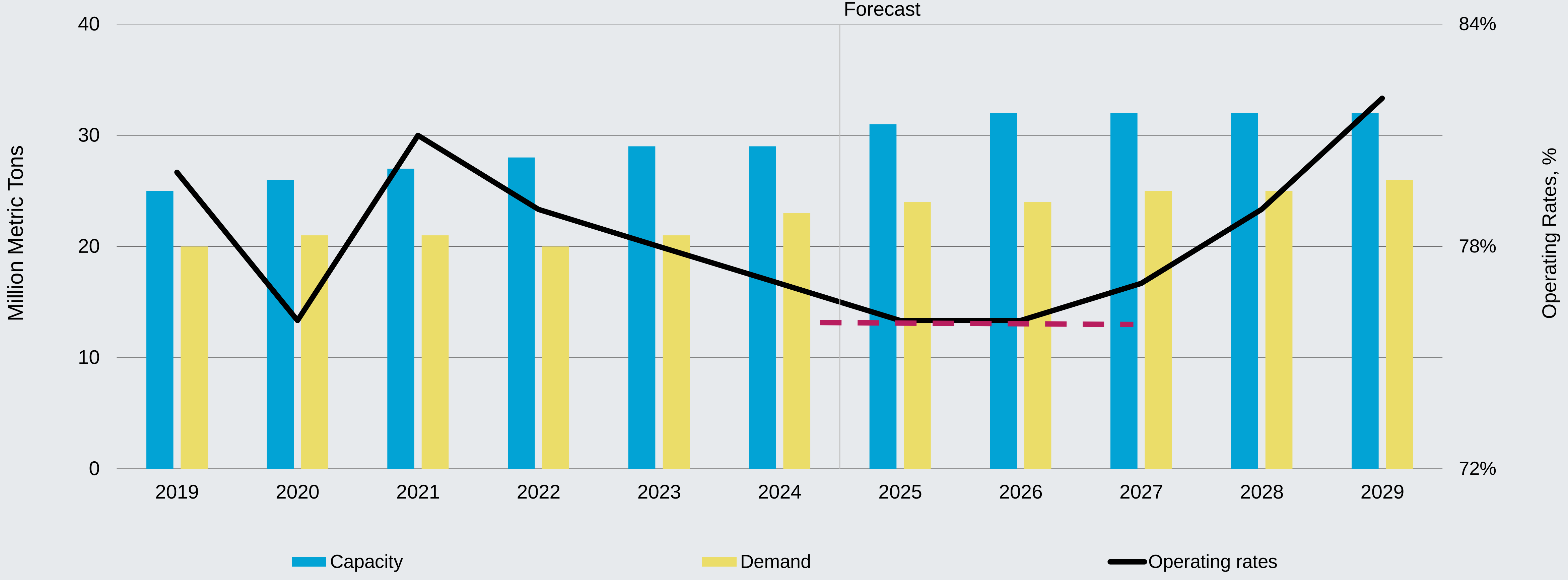
Mainland China PVC supply demand



Source: Chemical Market Analytics by OPIS

Especially for nonintegrated carbide-based producers

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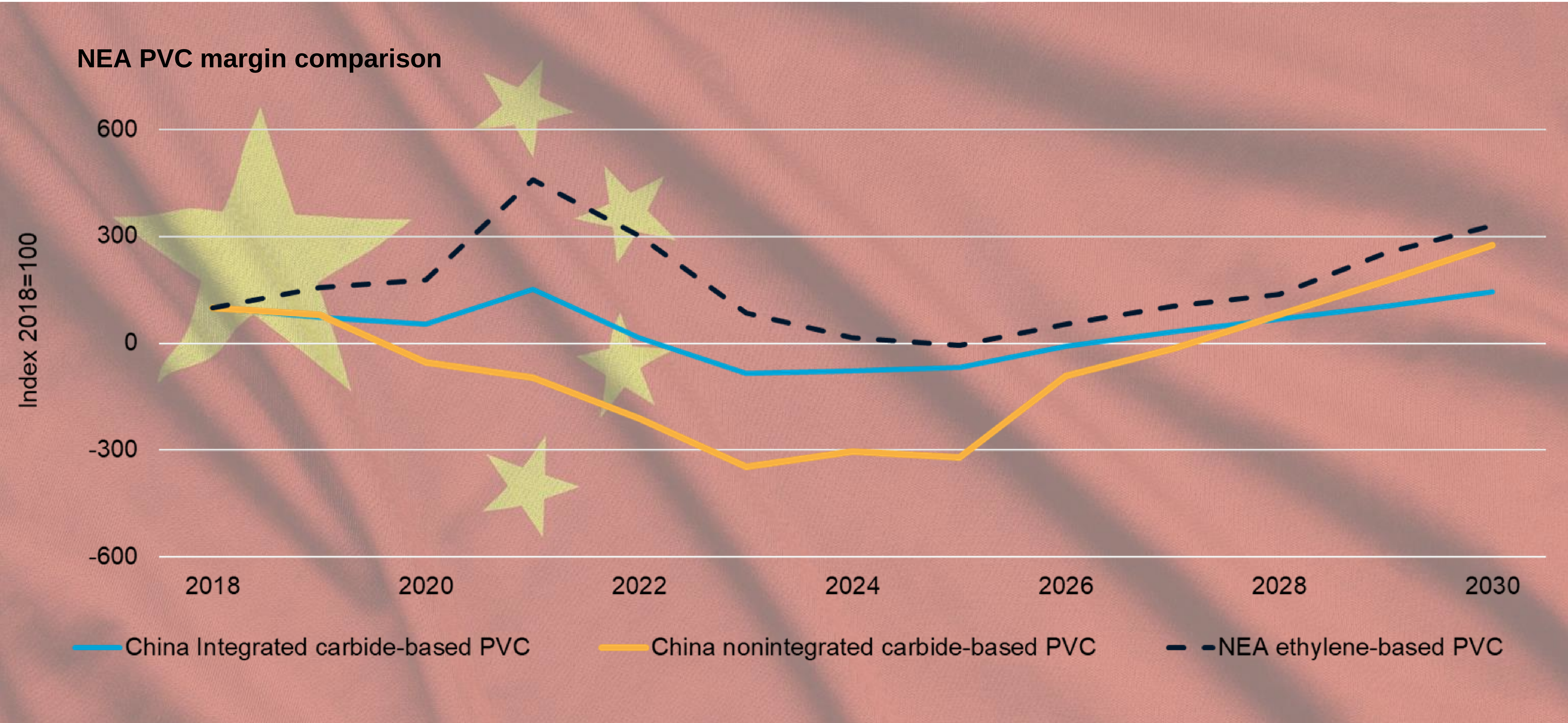
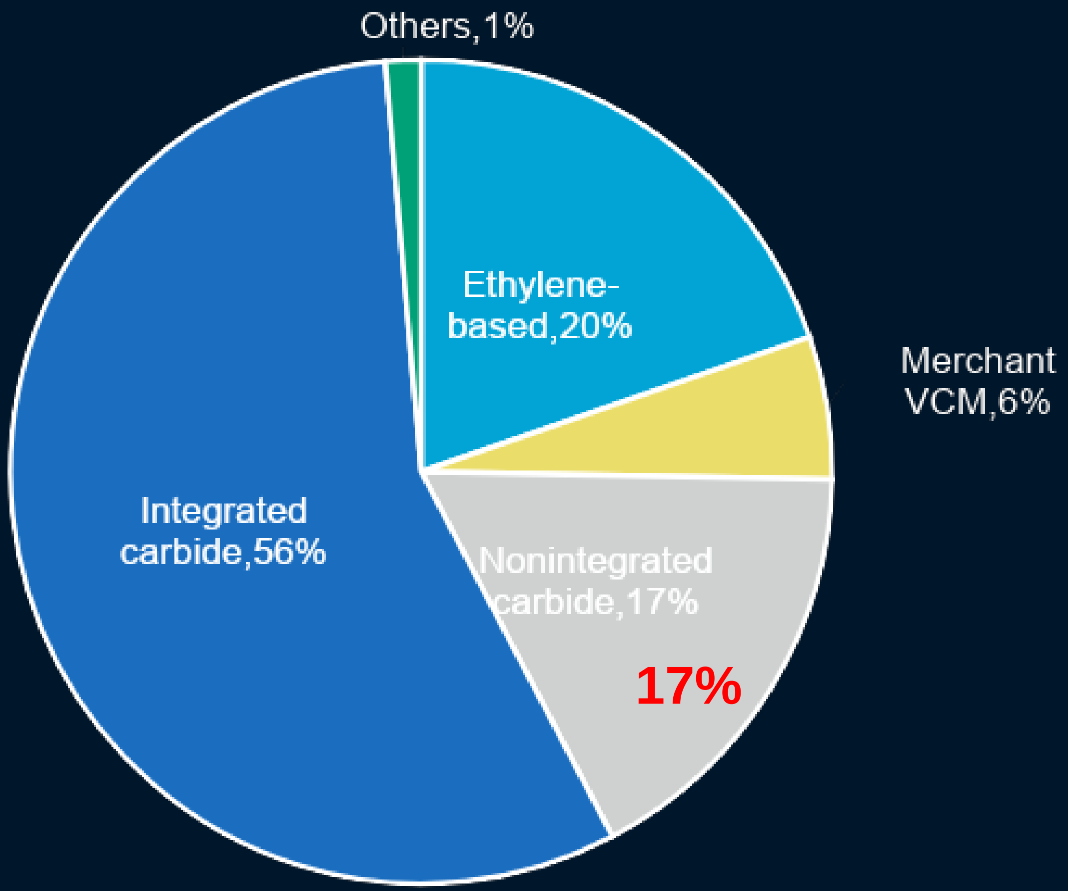


Source: Chemical Market Analytics by OPIS

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

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?

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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

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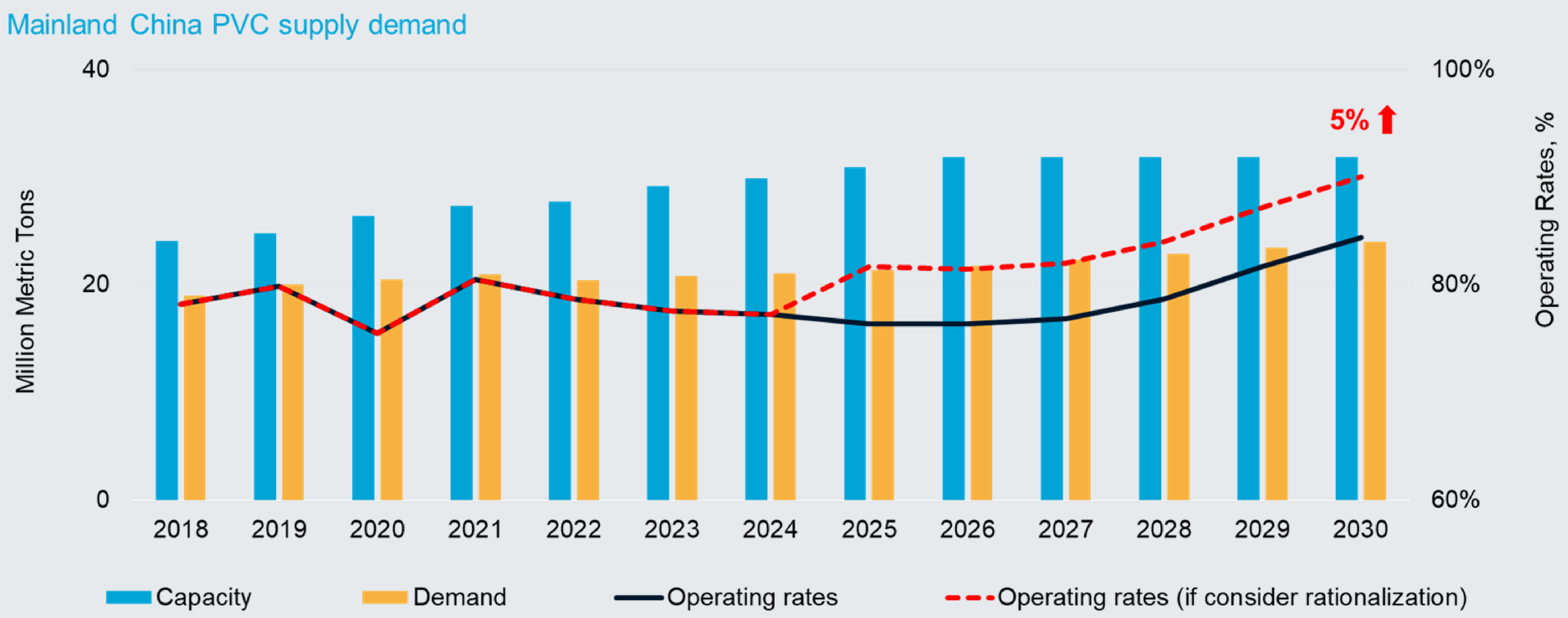

Source: Chemical Market Analytics by OPIS

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

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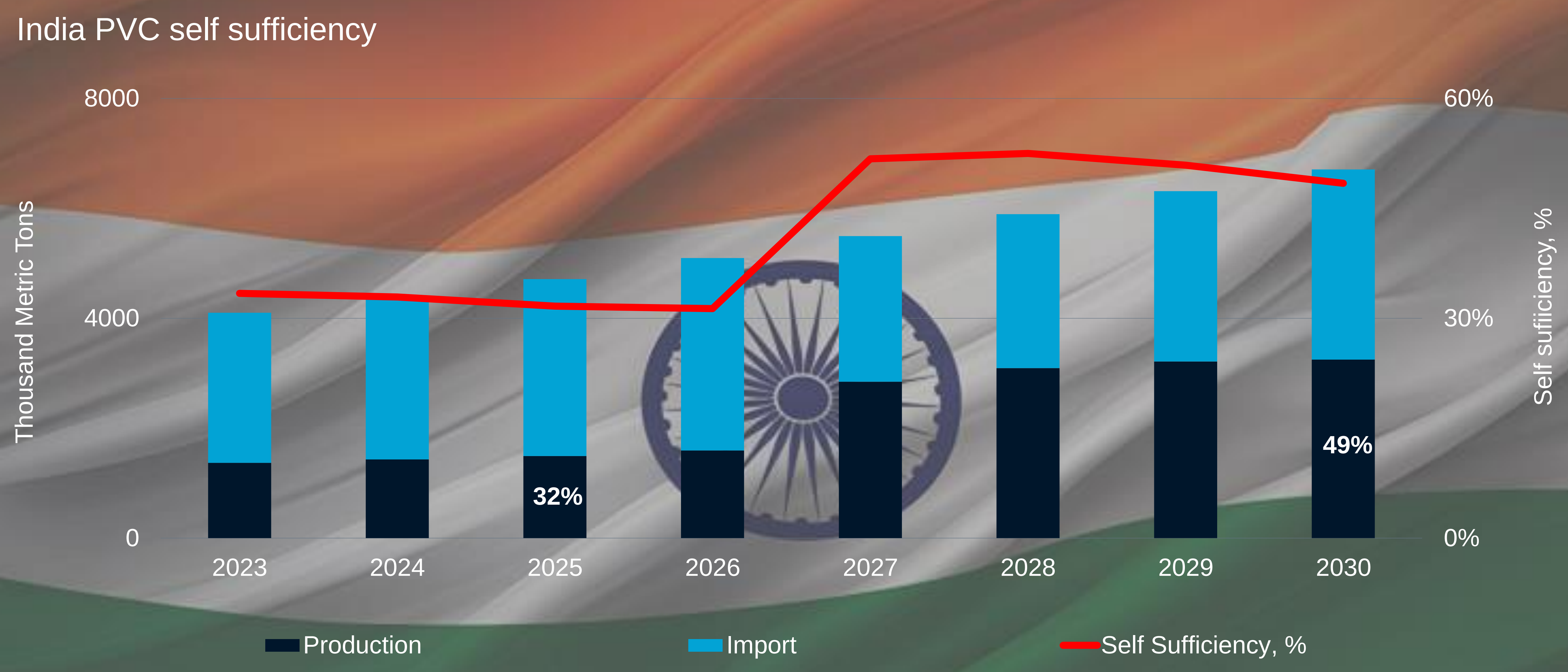
China PVC Export	PVC Resin Equivalent Volume (kMT)	
	2023	**2024**
PVC Flooring Materials	1350	1400
Other PVC finish goods, glove, sheets, board & pipes	670	840
Total	**2020**	**2240**
Share of Domestic PVC Demand (%)	10	10
Export to US (%)	40%	30%

- 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

India- Increasing PVC self-sufficiency with expansion



Source: Chemical Market Analytics by OPIS

India- Potential trade barrier to support domestic producers …until local expansions kick in?

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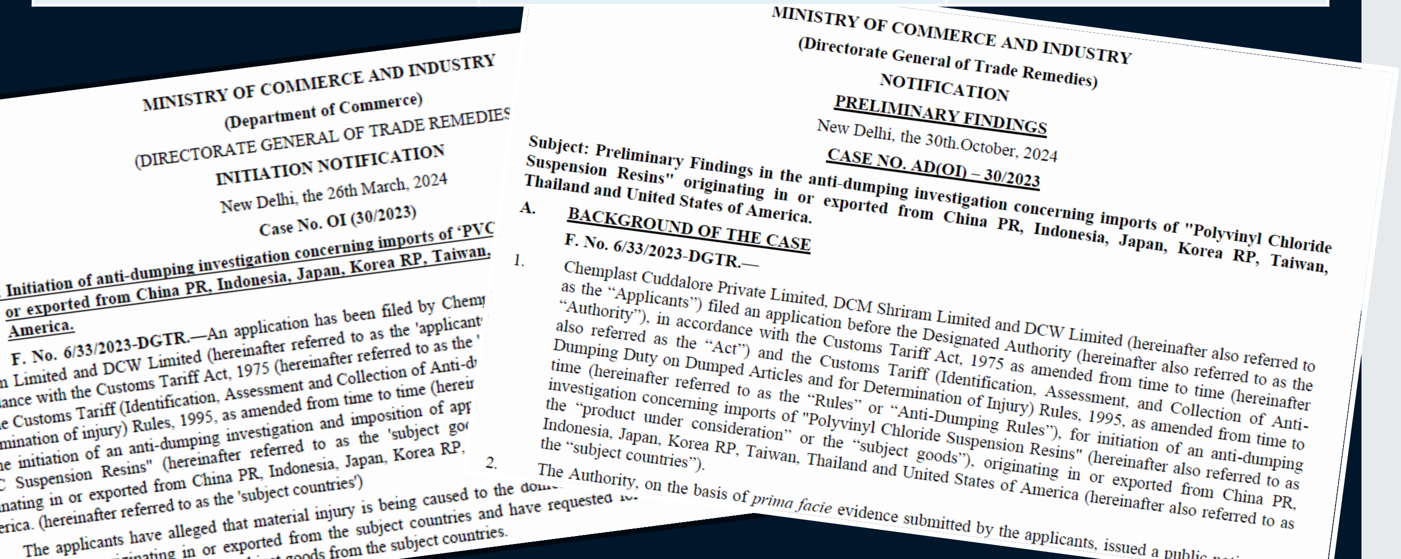
ADD (Anti-Dumping Duty) → Expect to launch within 2025/1H?

India ADD Preliminary Findings announcement October 2024)		
Country/Place	**Company**	**Amount ($/mt)**
Japan	Kaneka & Shin Dai Ichi & Shinetsu	**54~73**
Taiwan, China	FPC & GCPC & OPC	**25~74**
China	Multiple producers	**82~125**
South Korea	Hanwha & LG	**0~51**
Indonesia	TPC & Asahimas	**61~73**
Thailand	TPC & AGC Vinythai	**53~80**
USA	Shintech & Westlake	**104~164**


MINISTRY OF COMMERCE AND INDUSTRY
(Department of Commerce)
(DIRECTORATE GENERAL OF TRADE REMEDIES)
INITIATION NOTIFICATION
New Delhi, the 26th March, 2024
Case No. OI (30/2023)

MINISTRY OF COMMERCE AND INDUSTRY
(Directorate General of Trade Remedies)
NOTIFICATION
PRELIMINARY FINDINGS
New Delhi, the 30th October, 2024
CASE NO. AD(OI) – 30/2023

Subject: Preliminary Findings in the anti-dumping investigation concerning imports of "Polyvinyl Chloride Suspension Resins" originating in or exported from China PR, Indonesia, Japan, Korea RP, Taiwan, Thailand and United States of America.

A. BACKGROUND OF THE CASE

F. No. 6/33/2023-DGTR.—

1. Chemplast Cuddalore Private Limited, DCM Shriram Limited and DCW Limited (hereinafter also referred to as the "Applicants") filed an application before the Designated Authority (hereinafter also referred to as the "Authority"), in accordance with the Customs Tariff Act, 1975 as amended from time to time (hereinafter also referred as the "Act") and the Customs Tariff (Identification, Assessment, and Collection of Anti-Dumping Duty on Dumped Articles and for Determination of Injury) Rules, 1995, as amended from time to time (hereinafter referred to as the "Rules" or "Anti-Dumping Rules"), for initiation of an anti-dumping investigation concerning imports of "Polyvinyl Chloride Suspension Resins" (hereinafter also referred to as the "product under consideration" or the "subject goods"), originating in or exported from China PR, Indonesia, Japan, Korea RP, Taiwan, Thailand and United States of America (hereinafter also referred to as the "subject countries").

2. The Authority, on the basis of *prima facie* evidence submitted by the applicants, issued a public

BIS Certification → Implement target in June 2025?

- Around 10 producers have completed the authority's plant inspection and received a BIS license
- Some major producers in Japan, Taiwan, Thailand, Indonesia, WEP and the US have completed the authority's plant inspection and are in the final stage, waiting for the official approval of the BIS license
- No Chinese producers have started the authority's plant inspection after submitting the application

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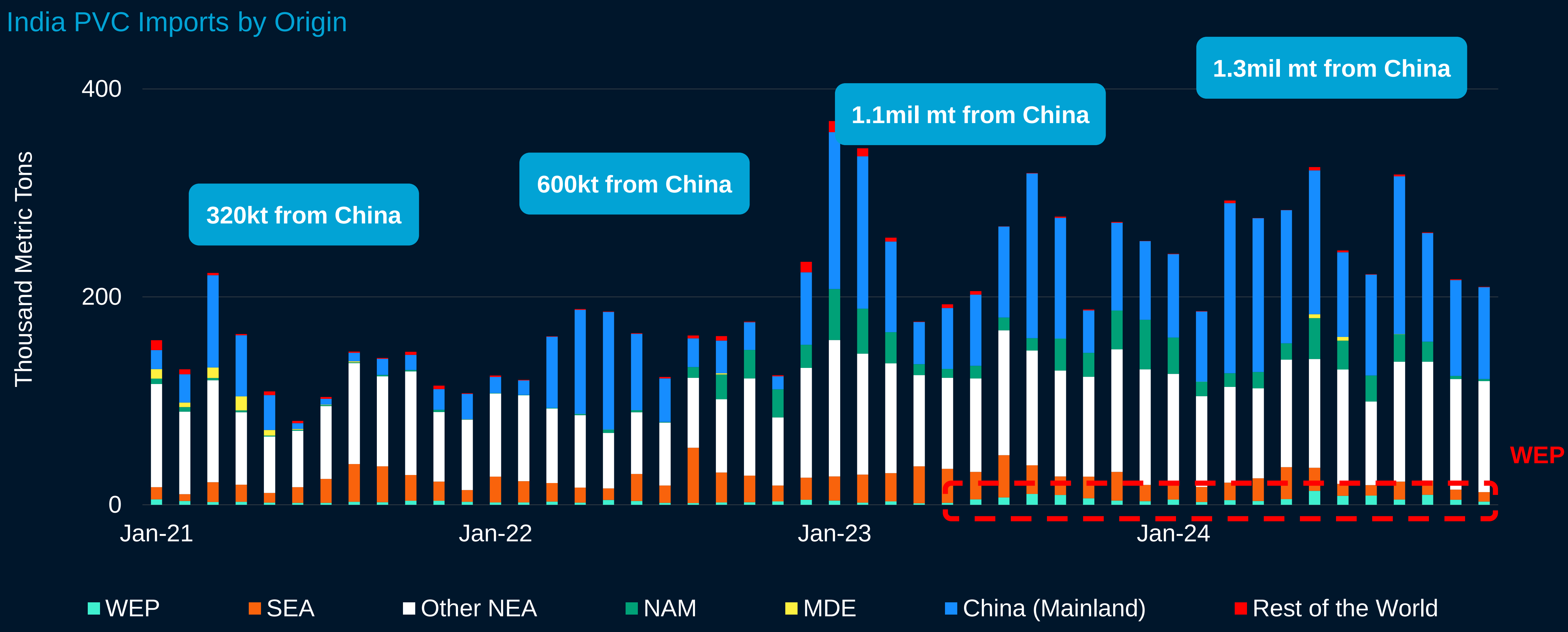
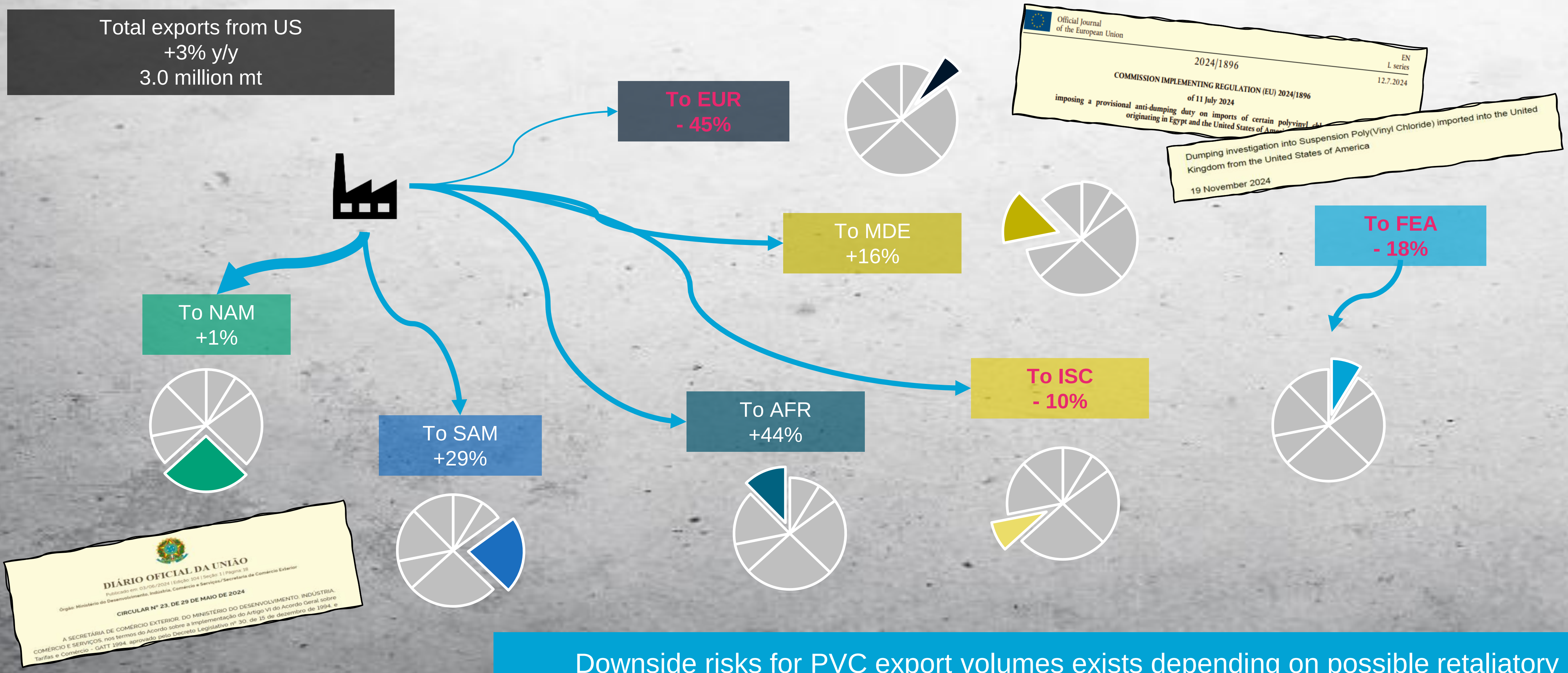
India still heavily rely on Chinese PVC import



Source: Chemical Market Analytics by OPIS

US- Export more than one-third of its PVC production in 2024, despite ADD reshaping the trade flow



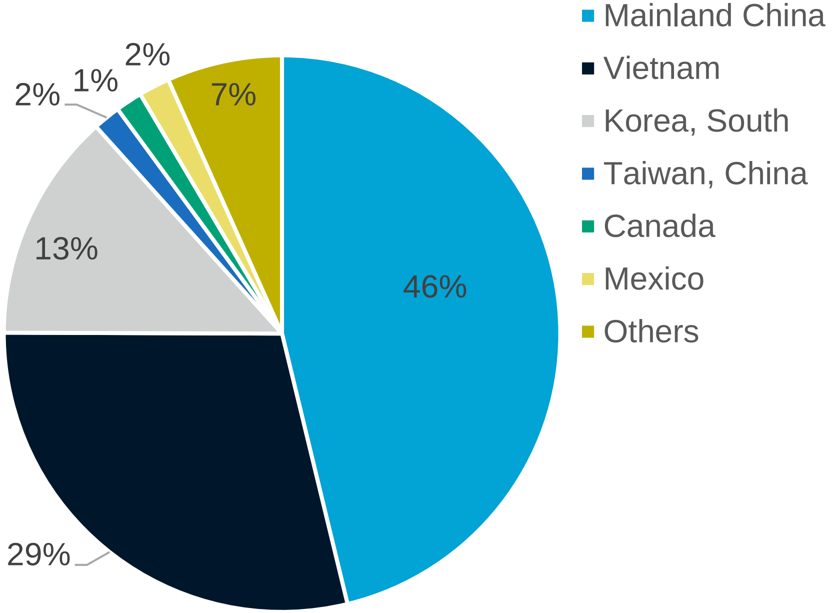
Downside risks for PVC export volumes exists depending on possible retaliatory measures from other countries regarding the new US reciprocal import tariffs.

Source: GTT

US- The real impact may be on imports of PVC additives and finished products

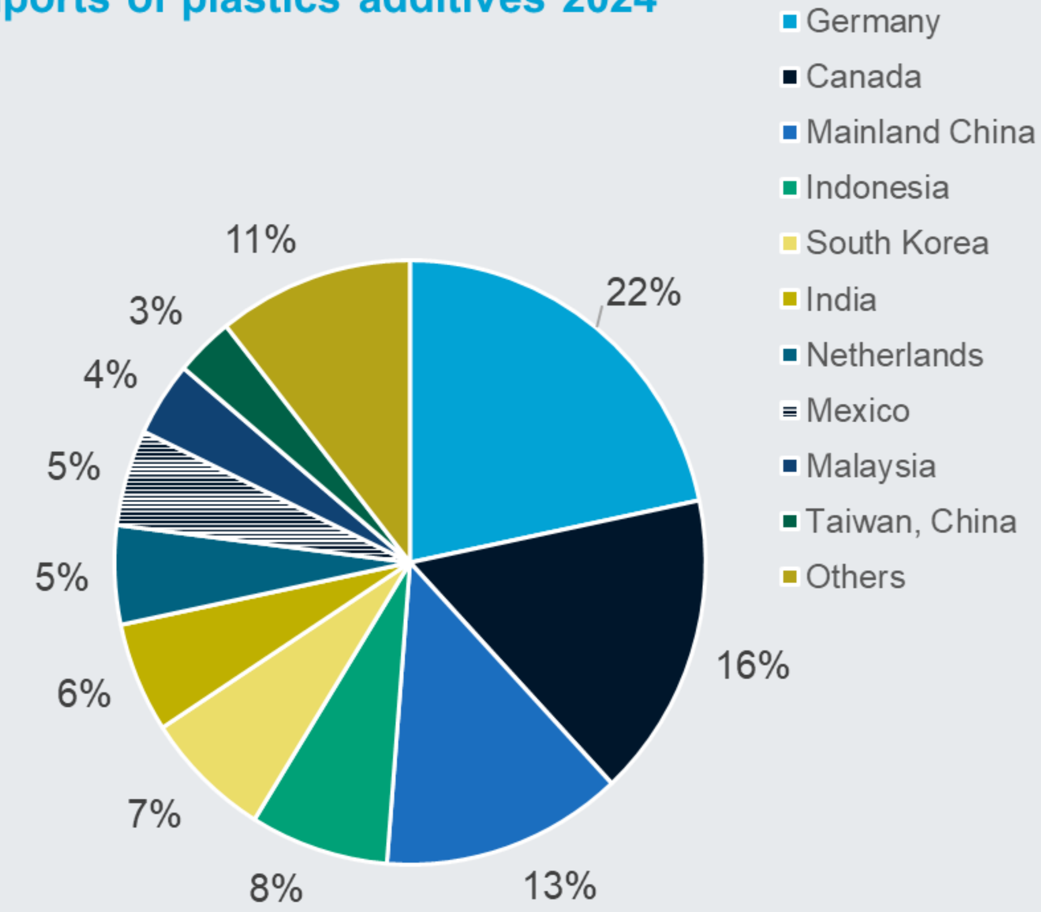
- The US imported in 2024 nearly 105 thousand mt of plastics additives, up 32% vs 2023
- Additives from Canada and Mexico were only 21% of imports
- Vinyl flooring imports mainly come from Mainland China, Vietnam and South Korea, up 4% avg vs 2023

Origins for PVC Floor & Wall coverings 2024



Source: Chemical Market Analytics by OPIS

US imports of plastics additives 2024



Source: GTT, Chemical Market Analytics by

US- Improved residential and infrastructure construction should support PVC prices long term

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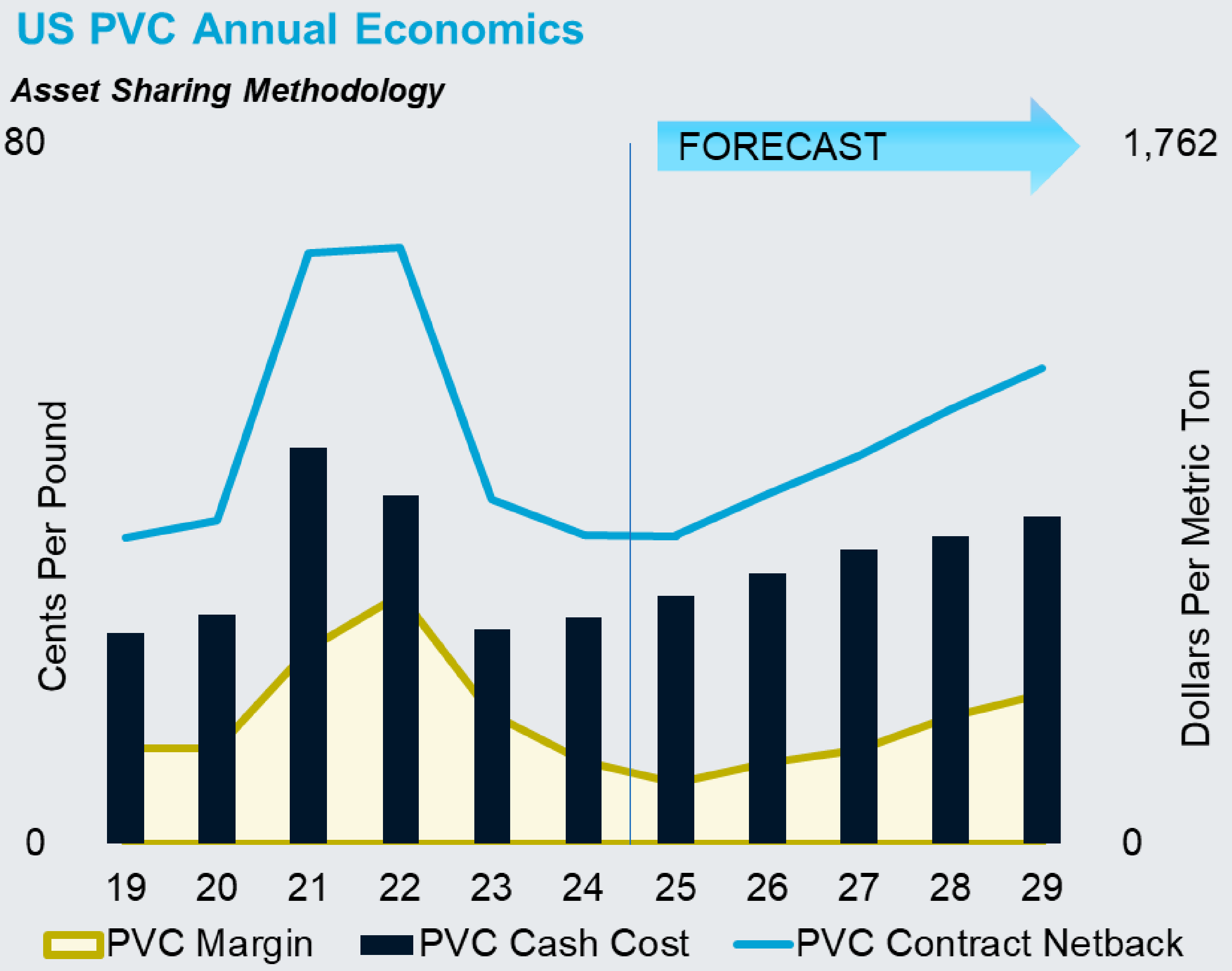
- North American PVC demand growth in 2025 should continue its recovery near 3-4%.
- PVC contract prices are expected to follow the demand increase and cost profile.
- Newer assets and more reliable assets should translate into less operational downtime.
- New US import tariffs for finished products may bring some opportunities but may not offset the impact if other countries impose retaliatory measures on US PVC exports.



Source: Chemical Market Analytics by OPIS

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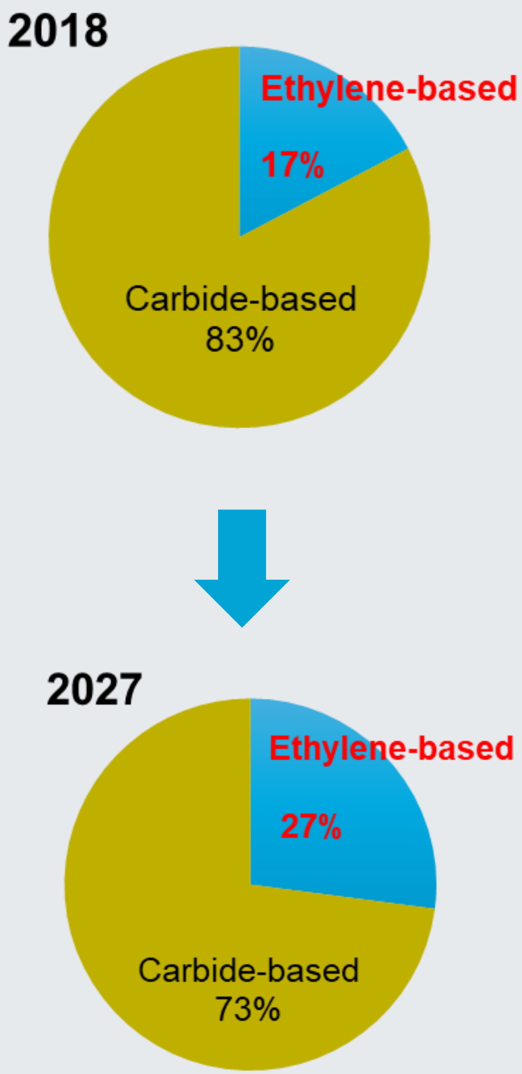
Future Landscape

Restriction – Limiting new expansion in China

National Development and Reform Commission (NDRC)
- Guiding Catalogue for Industrial Structure Adjustment (2024 Edition)

Restriction class	New caustic soda capacity, relocation projects excepted, use industry waste salt more than 40% excepted
	The initial scale is less than 300,000 tons of ethylene oxychloride process PVC
	PVC ordinary artificial leather production line
	PVC food insurance packaging film
Obsolete class	High mercury catalysts (more than 6.5% mercury chloride) and carbide-based PVC plant using high mercury catalysts



Regulation – Green development and low carbon transformation in China

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The National Development and Reform Commission (NDRC) Benchmark

Industry		Unit	Benchmark	Standard	Reference standard
Caustic soda	membrane liquid caustic soda ≥ 30%	Standard coal kg/ton	315	350	GB 21257
	membrane liquid caustic soda ≥ 45%	Standard coal kg/ton	420	470	
	membrane solid caustic soda ≥ 98%	Standard coal kg/ton	620	685	
PVC	Carbide-based	Standard coal kg/ton	193	270	GB 30527
	Carbide-based(paste)	Standard coal kg/ton	450	480	
	Ethylene-based	Standard coal kg/ton	620	635	
	Ethylene-based (paste)	Standard coal kg/ton	950	1100	

Recycle - The growing but possibly peaking role in Europe

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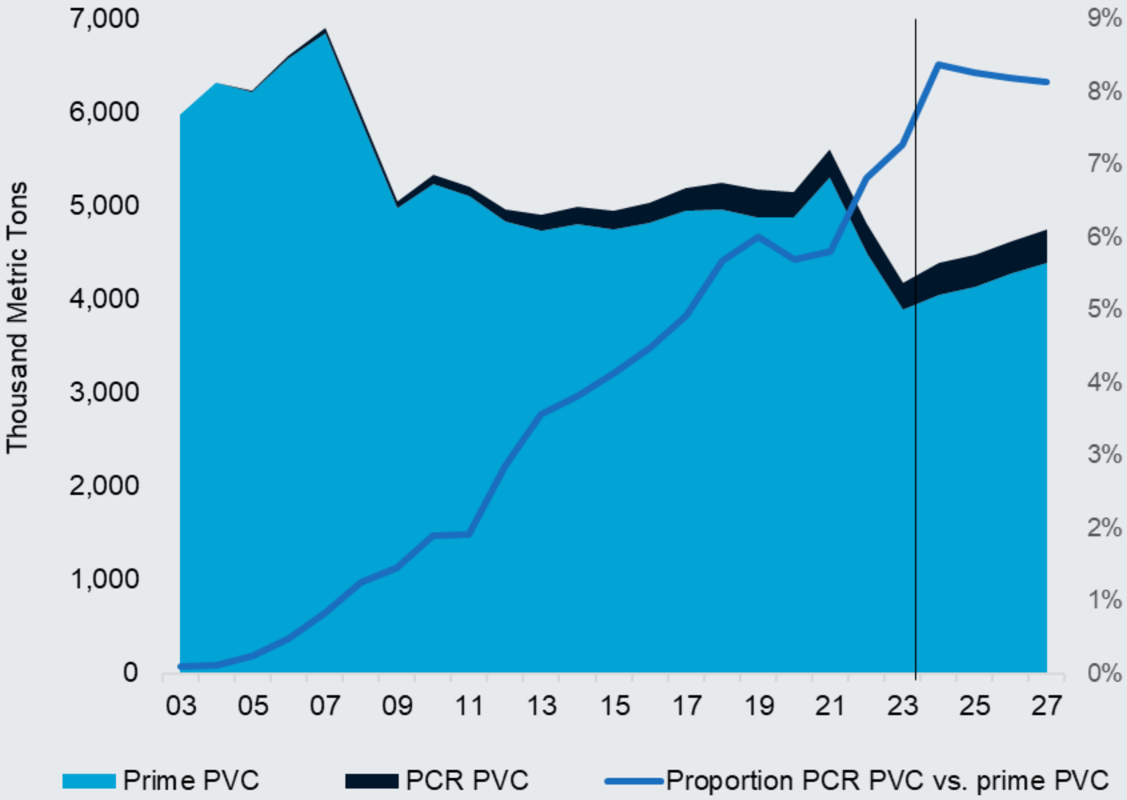
Europe prime PVC and PCR PVC demand evolution



Source: Chemical Market Analytics by OPIS & VinylPlus

Recycle - Sustainability initiatives by the industry in the US

Vinyl industry in the US is already recycling 160 milion lbs per year of post-consumer PVC (~73kt, 1%)

- Vinyl roofing membrane
- Vinyl siding
- Medical devices & IV bags

Source: Vinyl Sustainability Council 2022 progress report, Baxter, Northwestern Medicine

Key takeaways

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PVC margin already at the bottom, speed of climbing out from trough in question

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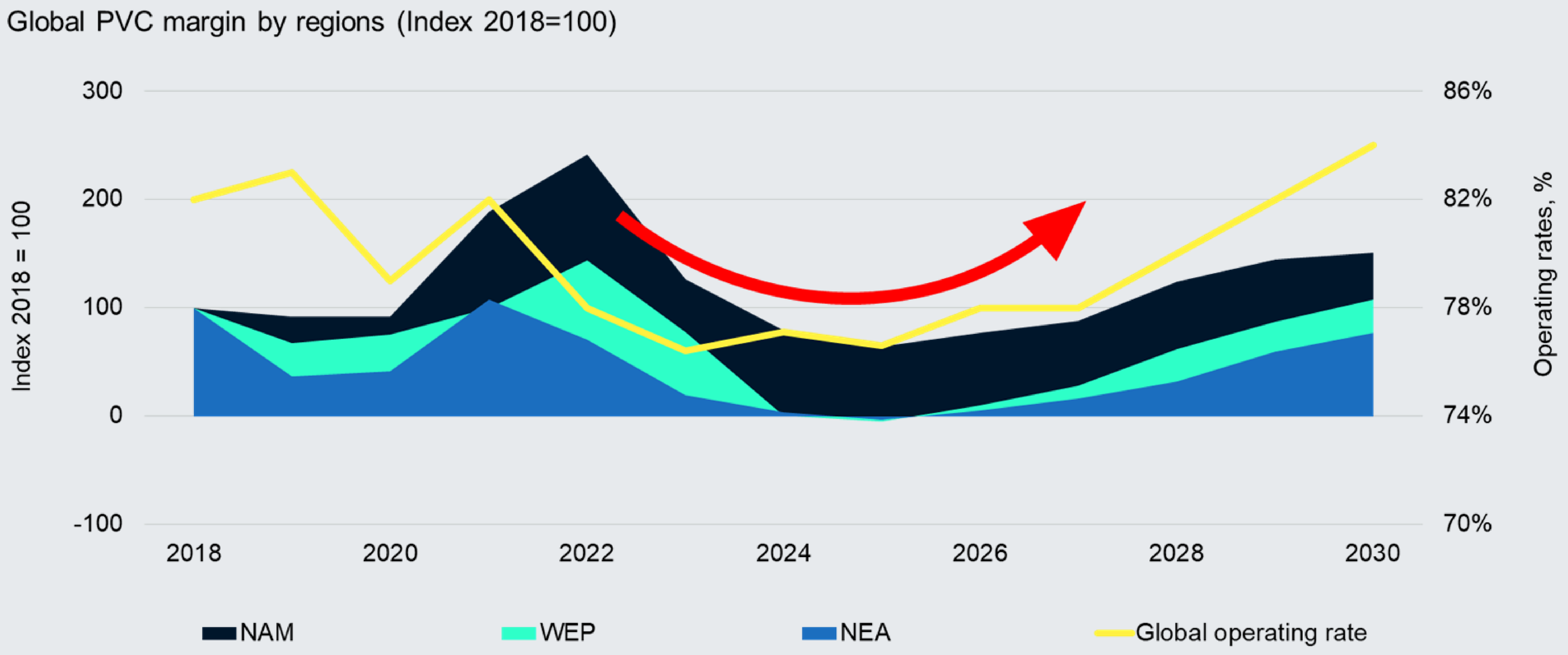

Source: Chemical Market Analytics by OPIS

Chances of quicker recovery?

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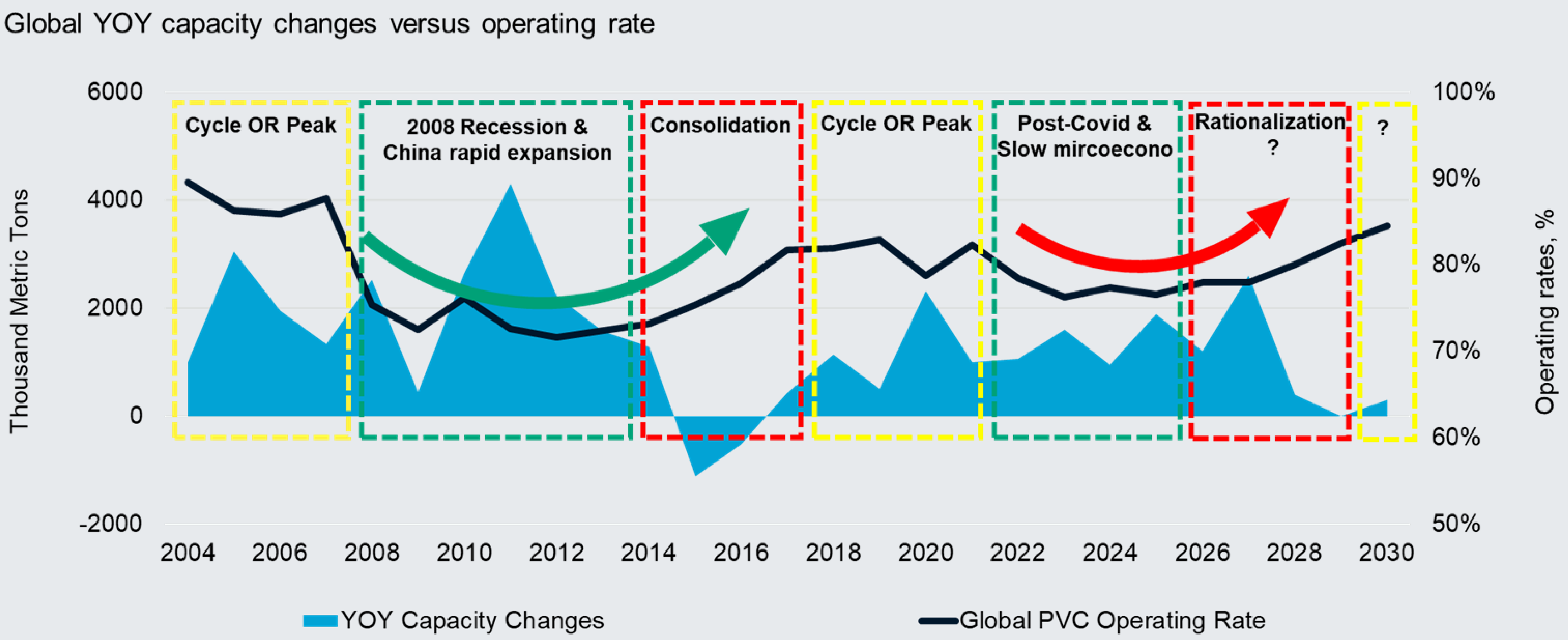

Source: Chemical Market Analytics by OPIS

Key Takeaways

- Expect PVC op rates and margins trough through 2025, caustic to support ECU in the balance.
- CA/VIN both capacity and demand growth shift from NEA to SEA & ISC
- Low plants utilization rate might not be sustainable in Mainland China, chances of rationalization in supporting a speedier global CA/VIN recovery
- U.S demand is supported by strong construction & infrastructure spending. Tariffs may provide further upside on domestic PVC finish goods demand.
- Tariffs increase the risk of demand destruction for Chinese PVC finish goods exports

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